



Motion Control Products

Drives, Motors and Controller Products



ENGINEERING YOUR SUCCESS.



WARNING – USER RESPONSIBILITY

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Integrated Industry - Join Our Network



More information
www.parker.com



Motion Control Products

- Servo Drives
- Servo Motors
- Gearboxes
- Controller Products
- HMI

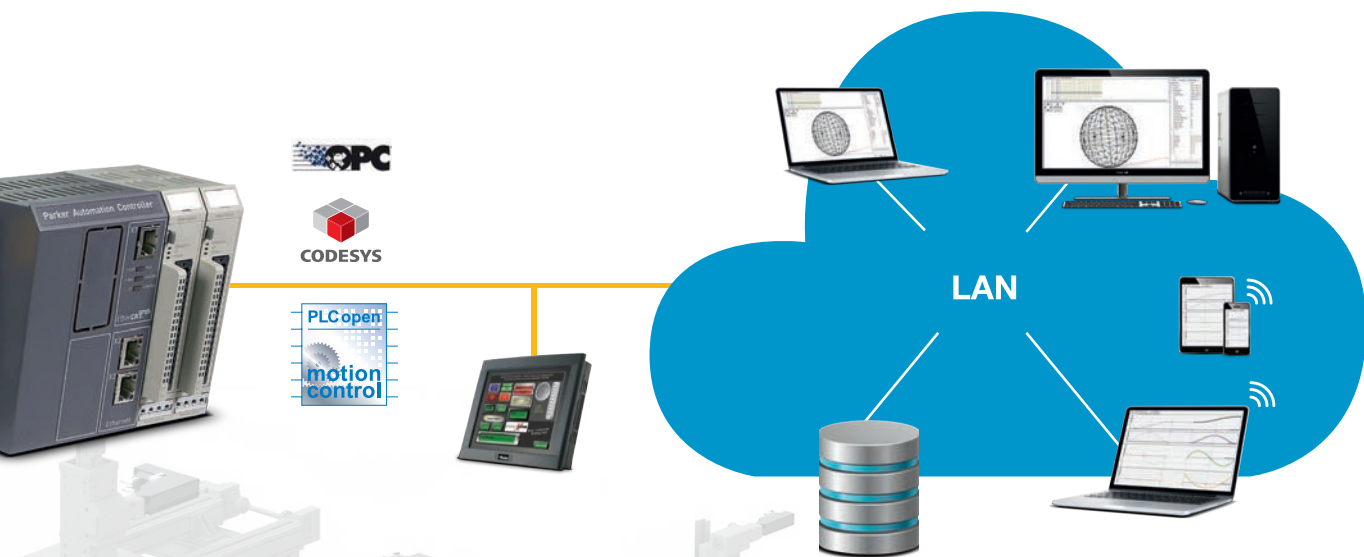
192-490123



AC & DC Drives and Motors

- Compact Drives
- Modular Drives
- AC & DC Drives
- HMI
- Accessories
- AC Motors

192-490423



Multi-Technology Machine Control



Servo Drives

AC Drives



Electro Cylinders



Linear Motors



Linear Actuators



Torque Motors



AC Motors



192-490023

Linear Actuators

- Toothed Belt Driven Actuators
- Screw Driven Actuators
- Linear Motor Driven Actuators



192-591011

Precision Technology

- Screw Driven Tables
- Linear Motor Driven Tables
- Linear Motors
- Linear Positioners
- Miniature Stages



PDE2600PNUK

Parker One Pneumatic

A complete range of pneumatic system components

- Actuator Products
- Control Devices
- Air Preparation & Airline Accessories

Parker Hannifin

The global leader in motion and control technologies

A world class player on a local stage

Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

Electromechanical Worldwide Manufacturing Locations

Europe

Littlehampton, United Kingdom
Dijon, France
Offenburg, Germany
Filderstadt, Germany
Milan, Italy

Asia

Wuxi, China
Jangan, Korea
Chennai, India

North America

Rohnert Park, California
Irwin, Pennsylvania
Charlotte, North Carolina
New Ulm, Minnesota



Offenburg, Germany

Local Manufacturing and Support in Europe

Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout Europe.

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Milan, Italy



Littlehampton, UK



Filderstadt, Germany



Dijon, France

Drives

Servo Drives



Compax3



SLVD-N



PSD1



Motornet DC



Servonet DC



Hi-Drive

Markets and Applications



Product	Compax3	SLVD-N	PSD1	Motornet DC	Servonet DC	Hi-Drive
Description	Intelligent Servo Drive	Compact Servo Drive	Single and Triple Axis Servo Drive	Integrated Motor/Servo Drive	Decentralized Double axis Servo Drive	Flexible Servo Drive
Food, Pharma & Beverage	■	■	■	■	■	■
Packaging Machines	■	■	■	■	■	■
Material Forming	■		■			■
Material Handling	■	■	■	■	■	■
Factory Automation	■	■	■	■	■	■
Life Science Diagnostic		■				
Automotive Industry / In-Plant	■	■	■	■	■	■
Printing Industry	■	■	■	■	■	■
Textile Machines	■	■	■			■
Robotics	■	■	■	■	■	■
Machines Tools		■	■			■
Servo Hydraulic Pumps	■					

Key Features

Product	Key Features	
Compax3	<ul style="list-style-type: none"> • Simple system integration • Fieldbus & Ethernet Communication • Wide Power / Voltage Range • Drives all motor types • Supports most feedback devices 	<ul style="list-style-type: none"> • Standard IEC61131-3 programming • Application software integrated • Drive based safety • Fast control loops for demanding applications
SLVD-N	<ul style="list-style-type: none"> • Miniature / Compact Servo Drive • Optimized for centralized automation structures 	<ul style="list-style-type: none"> • Use for applications with low number of axis • CANopen / EtherCAT communication • Simple application based programming
PSD1	<ul style="list-style-type: none"> • Triple Servo Axis per Unit (3 drives in 1 Unit) • Optimized for centralized automation structures 	<ul style="list-style-type: none"> • Use for applications with high number of axis • PROFINET / EtherCAT communication
Motornet DC	<ul style="list-style-type: none"> • Servo Electronics integrated into the motor • Use in totally centralized automation structures • Dramatically reduced control cabinet space 	<ul style="list-style-type: none"> • Reduced cabelling needs • CANopen / EtherCAT communication • Modular machine design
Servonet DC	<ul style="list-style-type: none"> • Protection class IP65/IP67 • Use in totally centralized automation structures • Dramatically reduced control cabinet space 	<ul style="list-style-type: none"> • Double axis servo drive • Modular machine design • EtherCAT communication
Hi-Drive	<ul style="list-style-type: none"> • Simple programming • Multiple communication & feedback 	

Drives by Function



Product	Compax3	SLVD-N	PSD1	Motornet DC	Servonet DC	Hi-Drive
Description	Intelligent Servo Drive	Compact Servo Drive	Single and Triple Axis Servo Drive	Integrated Motor/Servo Drive	Decentralized Double axis Servo Drive	Flexible Servo Drive
Servo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Servo Motor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Induction Motor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
Direct Drive Motors	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
Absolute Feedback	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Low Voltage Drives						
110/230 VAC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
400/460 VAC	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Single Axis Technology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
Multi Axis Technology	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Integrated Motor/ Drive				<input checked="" type="checkbox"/>		
Fieldbus Connectivity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Standard Safety (STO)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Advanced Safety	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			
IEC 61131-3 Programming	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>
Proprietary Programming		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>
Application Macros	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				

Associated Drives & Motors



		Drive						
		Compax3	SLVD-N	PSD1	Motornet DC	Servonet DC	Hi-Drive	
Motor	SMB / SMH		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	n/a	<input type="checkbox"/>	<input type="checkbox"/>
	MB / MH		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	NX		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	EY		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	EX		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	NV		<input type="checkbox"/>					<input type="checkbox"/>
	TM		<input type="checkbox"/>					
	K		<input type="checkbox"/>					
	NK		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>
	SKW		<input type="checkbox"/>					
	HKW							
	TK		<input type="checkbox"/>					<input type="checkbox"/>



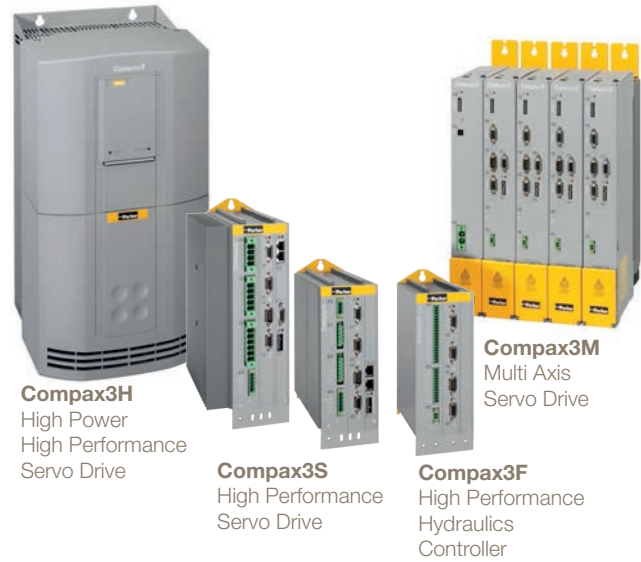
Intelligent Servo Drive Compax3

Overview

Description

Compax3 is Parker Hannifin's global servo drive. The drive series includes single and multi axis drives as well as hydraulic controllers. It features a power range from 1 to 109 kVA.

The servo drives are completely developed and manufactured in Germany. An additional Compax3 production site was established in the US. As a global servo drive controller, Compax3 is of course available all over the world. Service and support sites are located in the vicinity of all major industry locations - worldwide. The "Parker Authorized Distribution Partners" do play an important role in this context - well-trained and experienced application and support specialists will provide the necessary professional support in any situation.



Features

Hardware

- Power range from 1 to 109 kW
- 1 encoder output / 1 encoder input
- 8 digitale inputs /4 digital outputs
- 2 analog inputs (14 Bit)
- 2 analog outputs (8 Bit)
- Several fieldbuses
- Extensive safety technology

Technology Functions

- I10T10: Drive control via: velocity/torque control, step/direction input, encoder input
- I12T11: Positioning via digital I/Os, RS232/RS485, absolute/relative positioning, registration mark related positioning, electronic gearbox, dynamic positioning
- T30: Programming based on IEC61131-3 with CoDeSys
 - PLCopen function modules
 - IEC61131-3 - standard modules
 - C3-specific function modules
- T40: T30 functionality + cam function

Technical Characteristics - Overview

Device:	Current [A]		Supply voltage	Power [kVA]
	I _{cont.}	I _{peak} (<5 s)		
Compax3				
S025V2	2.5	5.5	1 *	1.0
S063V2	6.3	12.6	230/240 VAC	2.5
S100V2	10	20	3 *	4.0
S150V2	15	30	230/240 VAC	6.0
S015V4	1.5	4.5	3 * 400/480 VAC	1.25
S038V4	3.8	9.0		3.1
S075V4	7.5	15		6.2
S150V4	15	30		11.5
S300V4 ⁽¹⁾	30	60		25.0
H050V4	50	75	3 * 400/480 VAC	35.0
H090V4	90	135		70.0
H125V4	125	187.5		91.0
H155V4	155	232.5		109.0

⁽¹⁾ Operation with capacitor module ModulC4.

Device:	Current [A]		DC bus voltage
	I _{cont.}	I _{peak} (<5 s)	
Compax3			
M050D6	5	10	325...679 VDC (Rated voltage 560 VDC)
M100D6	10	20	
M150D6	15	30	
M300D6	30	60	

System Layout

Ethernet



XPR



Parker Automation Controller

Communication channel



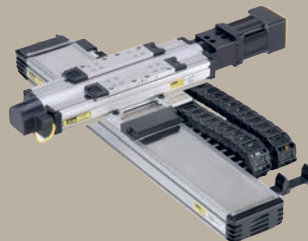
Compax3S
High Performance
Servo Drive



Compax3M
Multi Axis
Servo Drive



Synchronous Servo Motors



Precision Actuators



Handling Actuators



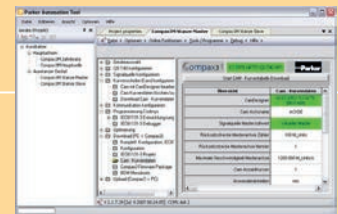
Compax3H
High Power
High Performance
Servo Drive



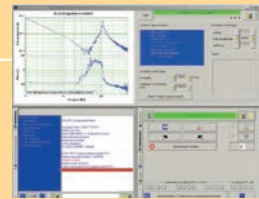
Compax3F
High Performance
Hydraulics
Controller

Parker Automation Tools

IEC 61131-3
PLCopen
Data handling
Visualization
Communication (Process Control)
Access to all components
Project management



Communication
Multi-axis tool
C3 ServoManager
Drive Interface



IEC 61131-3
PLCopen
CamDesigner
Optimization
Setup
Diagnosis / Analysis / Maintenance
Oscilloscope

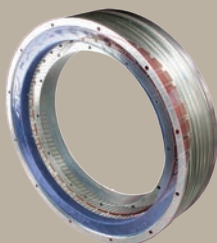


MotorManager
Motor library
Actuator library
HydraulicsManager
Valve library

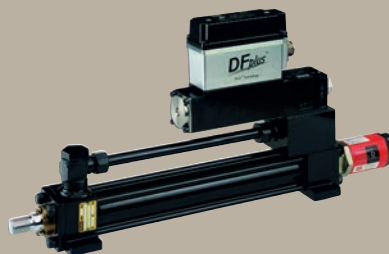


Sizing Tool
SERVOsoft® (available on request)

PC Software



Direct drives



Hydraulics Components

Innovative, Flexible Device Technology

The development of Compax3 was focused on maximum openness and flexibility for a wide variety of applications.

Motors / Actuators

Today, motors and actuators are available in many different versions and technologies. The Compax3 servo drives support most common motors. Among these are:

- Sine commutated synchronous and asynchronous motors
- Direct drives
 - Torque Motors
 - Linear servo motors



Feedback Systems

In this context, the Compax3 servo drives support the following feedback systems:

- Resolver
- Sine - Cosine Feedback (Single or Multiturn)
 - Hiperface interface
 - Optical and capacitive sensors
 - EnDat Interface
- Analog and digital Hall sensors
- Rotary and Linear Encoders
 - Distance coded
 - Incremental and RS422
 - EnDat Interface

Control Technology

The drive controller's modern control technology with automatic load identification / self control as well as an observer function which can be optionally activated is a guarantor of optimized motion control under all conditions.

Communication

The support of all common Fieldbus interfaces is an essential feature of open systems. Among these are Profibus, CANopen, DeviceNet as well as the modern Ethernet based interfaces such as EtherCAT, PROFINET and Powerlink interfaces. The open OPC communication standard simplifies system integration considerably.

For dynamic, multi axis synchronized applications, a real-time drive bus is available for all drives from the Compax3 family.



Software / Tools

Simple and efficient use of a modern and complex automation component offering high functionality such as Compax3 is guaranteed by an intuitively operable software tool. The specially designed "Parker Integrated Engineering Tool". Integral components of this software package are:

- Multi axis system management
- ServoManager
- MotorManager
- ActuatorManager
- HydraulicsManager
- CamDesigner
- IEC 61131-3 / CoDeSys – programming environment
- IEC 61131-3 – Debugger

This software tool supports the user in the configuration, the setup and optimization, the programming as well as the maintenance of all Compax3 devices. ("Software and Tools" see page 24)

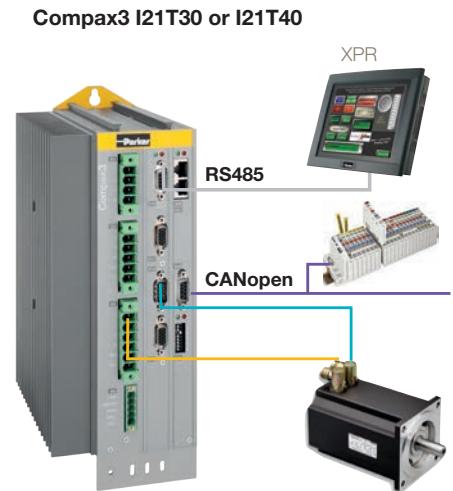


System Solutions

The Compax3 series servo drives represent an important component for the design of complete automation systems. The user can choose between additional components optimally suited for the use with Compax3.

Among those are:

- Operating and observing - XPR operator panels for all graphics and text applications
- Service and maintenance - BDM plug-in module
 - Change of parameters
 - Manual mode
 - Device exchange without PC
- Extension modules for the field level - external devices for digital and analog signal acquisition and control



Electromechanical overall solutions

Electromechanical system solutions play a special role today. Parker Hannifin is not only the manufacturer of modern drive and control technology, but also of

- Handling technology
- Precision Mechanics

As a special service we offer our customers complete, ready-to-mount electromechanic solutions, especially developed and manufactured for special industries or individual customers. In many cases, this reduces the development overhead on the user side considerably.

Thousands of systems installed prove Parker Hannifin's as well as their partner's - the "Parker Automation Technology Centers" - high competence and long experience.

Prefabricated integrated technology functions support the user's tasks. Furthermore, you can extend these functions by your own know-how at any time.

Quality

Our customer systems must meet the highest demands with respect to resilience. Compax3 by Parker Hannifin exceeds by far the high quality requirements for an automation component. Not only the quality characteristics but also our customers speak volumes.

Safety

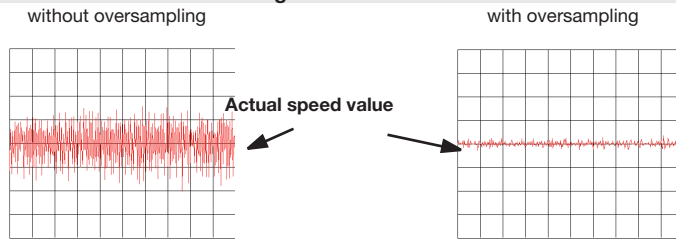
With many applications in harsh and arduous environments such as presses and robot cells, Parker ensures that product and system reliability and quality are second to none. Drive integrated systems as implemented in Compax3 support the machine designer in realizing safe and cost-efficient solutions.

Control Technology

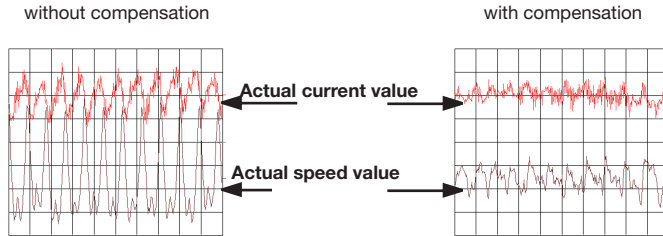
Real-time signal processing

- Reduction of the quantization noise
- Increase of the signal resolution
 - Due to oversampling of the speed and current signals
- Online feedback error compensation of offset and gain errors
- 14 Bit resolution increase (Increase of the resolution of the scale graduation of up to 14 Bit)
 - By interpolation of sine-cosine feedback signals
- Determination of the speed by the observer technique
- Doubling of the controller bandwidth
 - By load torque observer principle

Signal resolution



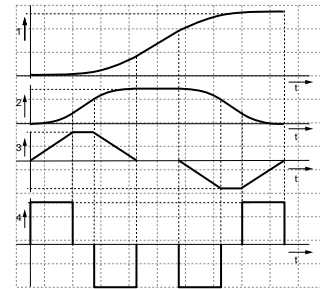
Online feedback error compensation



Jerk-limited setpoint generation, resulting in:

- Gentle handling of the moved goods
- Increased service life of mechanical components
- Overshoot free positioning
- Reduced excitation for mechanical resonance frequencies

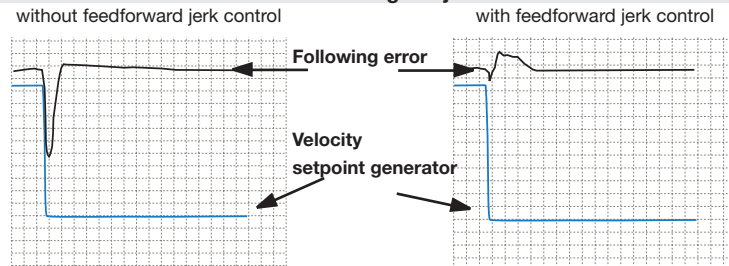
- 1: Position
- 2: Speed
- 3: Acceleration
- 4: Jerk



Control:

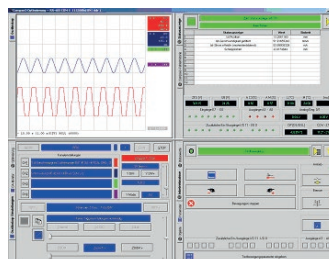
- Controller in the feedback path helps avoid differentiating components in the numerator of the transmission function (which will result in a significant overshoot of the actual value)
- Automatic and robust controller design
 - User-oriented optimization parameters "damping" and "stiffness"
- Optimization of the response behavior
- Minimization of the following error
 - Due to feedforward of speed, acceleration, motor current and jerk
- Dual Loop Option
 - The load control can be activated via an additional feedback system for the acquisition of the actual position of the load.

Effect of the feedforward measures using the jerk feedforward as an example



Commissioning / controller optimization

- Automatic determination of the load moment of inertia
- Compax3 MotorManager for determining the motor characteristics and the motor position feedback
- Optimization with integrated oscilloscope function



Safety Technology

Integrated Safety in the Compax3

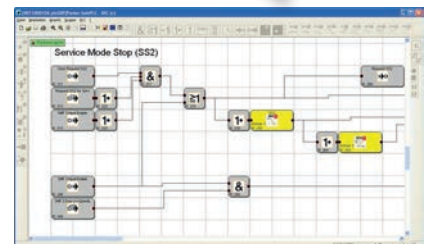
In addition to the typical tasks of motion control, a modern drive controller must also be able to perform relevant safety tasks in order to comply with the requirements of the new machinery directive 2006/42/EG. Thanks to the integrated STO - "Safe Torque OFF" safety function, you will save space and money for external power relays. It also reduces error-prone external wiring.

STO is today offered as a standard integrated into the Compax3 family servo drives. Furthermore, the Compax3M multi-axis servo drive is able to offer additional sophisticated safety functions with the aid of option card S3. For details, please see "Technical Data" "Safety technology" (page 20)

Compax3M Series Servo Drives with integrated Safety Technology as an option

Compax3 Series servo drives offer the STO (Safe Torque Off) function which helps to implement important functions, such as protection against unexpected start up as a standard. In many cases, the basic STO (Safe Torque Off) function is however no longer sufficient, as setup is frequently required while the machine is powered. For these applications, Compax3M offers option card S3, which provides the following functions in accordance with EN61800-5-2:

- SS1 - Safe Stop 1
- SS2 - Safe Stop 2
- SOS - safe operating stop
- SLS – Safely Limited Speed
- SLP - Safely Limited Position
- SLI – Safely Limited Increment
- SDI – Safe Direction
- SSM - Safe Speed Monitor (Diagnostics output for SLS)



Programming and validation of the safe motion functions takes place with the aid of the SafePLC safety editor, which is integrated in the Compax3 ServoManager.

Increased productivity thanks to drive integrated safety technology

Hazard: Setup

Measures:

Safely limited speed (SLS)

The "safely limited speed" function monitors that the drive keeps a defined maximum speed. If the speed limit value is exceeded, the drive is safely switched off.

Safe direction (SDI)

The "safe direction" function ensures that the motion of a drive can only be in one (defined) direction. If the defined motion direction is not respected, the drive is safely switched off.

Advantages

Safe working while the protection grids are open will:

- Reduced changeover times due to a better insight into the changeover zone
- Increased working safety by guaranteeing the direction of motion as selected by jog function
- Increased working safety thanks to safely limited setup speed

Hazard: Intervention into the process

Measures:

Safe operating stop (SOS)

The "safe operating stop" function monitors the attained stop position of the axis and prevents that the position window is left. The control functions of the drive remain completely active. If the position window monitored is left, the drive is safely switched off.

Safe Stop 2 (SS2)

With the "Safe Stop 2" function, the drive is shut down in a controlled manner, after that, the "safe operating stop" is introduced. In the "safe operating stop", the control functions of the drive remain completely active.

Advantages

Safe Operating Stop, (SOS and SS2) results in increased productivity due to:

- Axis synchronicity being maintained
- Quick and easy re-startup of the system
- Increased safety thanks to protection against unwanted startup of the system

Device Technologies

Compax3 I10T10: Step/Direction and Analog Command Input I10T10 Scope of Functions

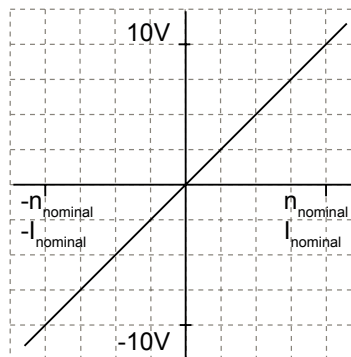
With its analogue interface or alternatively with step/direction or encoder step signals, the Compax3 I10T10 gives you easy and reasonably priced access to the world of servo-drive technology. Irrelevant of whether you have a PLC or PC central control unit, this remains unchanged.

The Compax3 I10T10 represents an ideal way of migrating from analog ± 10 V drives to digital, intelligent servo-drives.

You can choose between the different operating modes:

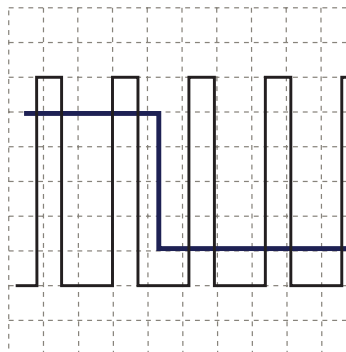
± 10 V Input

- ± 10 V predefined speed with encoder simulation as actual value feedback
- ± 10 V predefined current setpoint with encoder emulation for actual position value feedback and configurable holding functions
- Zero pulse of the emulation within a motor revolution can be freely selected



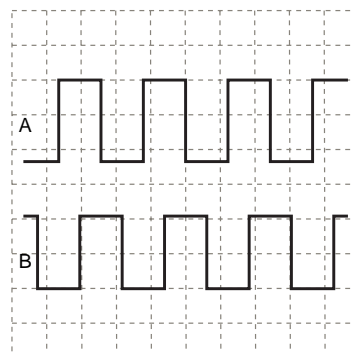
Step/Direction Command Input

- Step/direction signals as 24 V logic levels or
- With step/direction logic signals conforming to RS422



Encoder Input

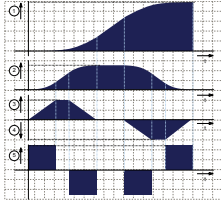
- RS422
- 24 V level



Compax3 T11: Positioning

T11 Scope of Functions

Due to its high functionality, the Positioning version of Compax3 forms an ideal basis for many applications in high-performance motion automation.

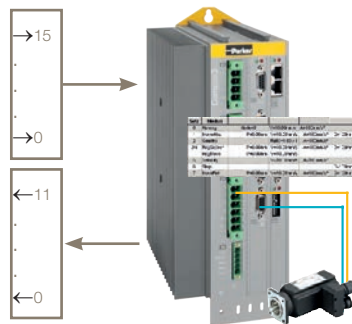


- Up to 31 motion profiles can be created with the help of the PC software:
 - Absolute or relative positioning
 - Electronic Gearbox (Gearing)
 - Reg-related positioning
 - Speed control
 - Stop - Set
- Dynamic positioning
- Movement profiles in non-volatile flash
- Motion profiles can be selected via field bus or digital inputs/outputs
- Wide choice of machine zero modes for your individual application
- Detection of the absolute position by distance-coded feedback
- Easy commissioning
 - Guided configuration with the Compax3 ServoManager
 - Flexible Optimization
- Adjustable jerk limitation
- Optional extension of the digital I/Os

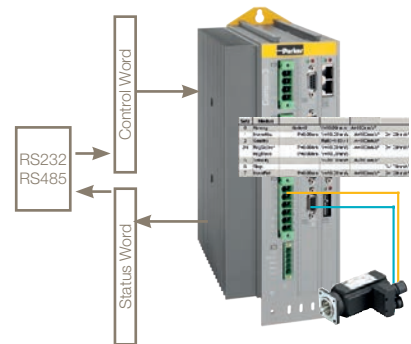
Compax3 I12T11 / Motion Control:

- Via digital I/Os
- Via RS232 / RS485 with the aid of control & status word
- Up to 31 motion functions via set table
- Status bits for each motion set

Access via Compax3 inputs and outputs:



Access via RS232 / RS485:

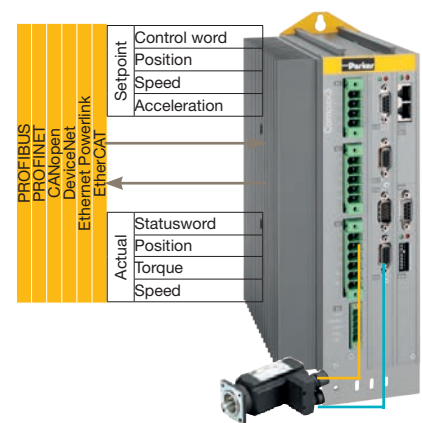


Compax3 I2xT11 / I3xT11 Motion Control:

- Standard profiles via PROFIBUS, PROFINET, CANopen, DeviceNet, Ethernet Powerlink and EtherCAT
- Direct set specification via fieldbus telegrams or
- Set selection (31 motion sets)
- Status bits for each motion set
- Operating modes:
 - Speed controller, direct positioning, positioning via set selection

Characteristics:

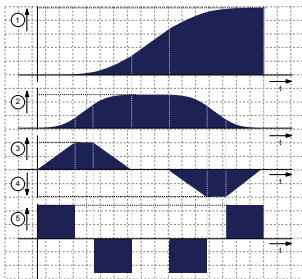
PROFIBUS	
Profile:	PROFdrive Profile drive system V3
DP versions:	DPV0/DPV1
Baud rate:	up to 12 Mbit/s
PROFINET	
Profile:	PROFdrive profile drive technology V4.1
Version:	PROFINET IO (RT)
Transmission mode:	100BASE-TX (Full Duplex)
CANopen	
Profile:	MotionControl CiADS402
Baud rate:	20...1000 Kbit/s
DeviceNet	
I/O Data:	up to 32 bytes
Baud rate:	125...500 Kbit/s
Nodes:	up to 63 slaves
Ethernet Powerlink	
Profile:	MotionControl CiADS402
Baud rate:	100 Mbit/s (FastEthernet)
Cycle time:	from 500 µs
EtherCAT	
Profile:	MotionControl CiADS402
Baud rate:	100 Mbit/s (FastEthernet)
Cycle time:	from 125 µs



Motion Function:

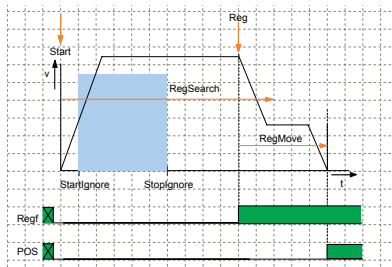
Absolute / Relative Positioning:
MoveAbs and MoveRel

- A motion set defines a complete motion with all settable parameters.
 - (1) Target position
 - (2) Travel speed
 - (3) Maximum Acceleration
 - (4) Maximum deceleration
 - (5) Maximum Jerk



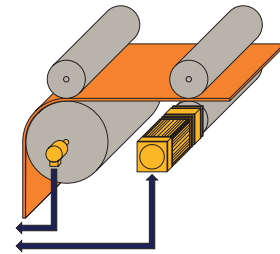
Reg-related positioning:
RegSearch, RegMove

- For registration mark-related positioning, 2 motions are defined.
 - RegSearch: Search of an external signal - a reg; e.g. a mark on a product
 - RegMove: The external signal interrupts the search movement and the second movement by an offset follows without transition
- Accuracy of the reg detection: <math>< 1 \mu s</math>



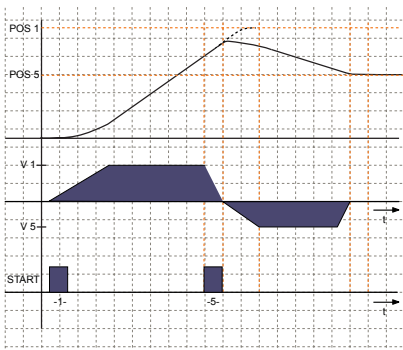
Electronic Gearbox:
Gearing

- Synchronous motion to a leading axis with any transmission ratio. The position of a master axis can be detected via:
 - +/-10 V analog input
 - Step / direction input
 - the encoder input or
 - HEDA, with Compax3 master



Dynamic positioning

- You can switch to a new motion profile during a positioning sequence - a dynamic transition takes place.



Speed control:
Velocity

- Defined via speed and acceleration.

Stop movement:
Stop

- The Stop set interrupts the current motion set.

2/3 Satztafel

Satz	Modus	Mode=0	V=10.00mm/s	A=100mm/s²			
0	Homing						000
1	MoveAbs	P=10.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	1XX
2	Velocity		V=30.00mm/s	A=100mm/s²			XX
3	Gearing		Ratio=0.25 / 1	A=100mm/s²			XX1
4	Stop				D=100mm/s²	J=1000000mm/s³	0XX
5/6	RegSearch	P=50.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	0XX
	RegMove	P=60.00mm	V=10.00mm/s				XDX
7	MoveRel	P=-100.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	11X
8	Gearing		Ratio=0.33 / 1	A=100mm/s²			XX1
9	MoveAbs	P=20.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	0XX
10	Stop				D=100mm/s²	J=1000000mm/s³	0XX
11	MoveAbs	P=40.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	1XX
12/13	RegSearch	P=100.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	000
	RegMove	P=0.00mm	V=10.00mm/s				111
14	MoveRel	P=-40.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	0XX
15	Stop				D=100mm/s²	J=1000000mm/s³	0XX
16	Velocity		V=25.00mm/s	A=100mm/s²			0XX
17	Gearing		Ratio=1.00 / 1	A=100mm/s²			XX1
18/19	RegSearch	P=70.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	0XX
	RegMove	P=0.00mm	V=10.00mm/s				1XX
20	MoveAbs	P=0.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	0XX
21	Gearing		Ratio=0.13 / 1	A=100mm/s²			0XX
22	MoveAbs	P=0.00mm	V=10.00mm/s	A=100mm/s²	D=100mm/s²	J=1000000mm/s³	0XX
23	Stop				D=100mm/s²	J=1000000mm/s³	0XX
24	End						000

Entry of motion sets

Compax3 T30: IIEC 61131-3 Positioning with function modules based on PLCopen

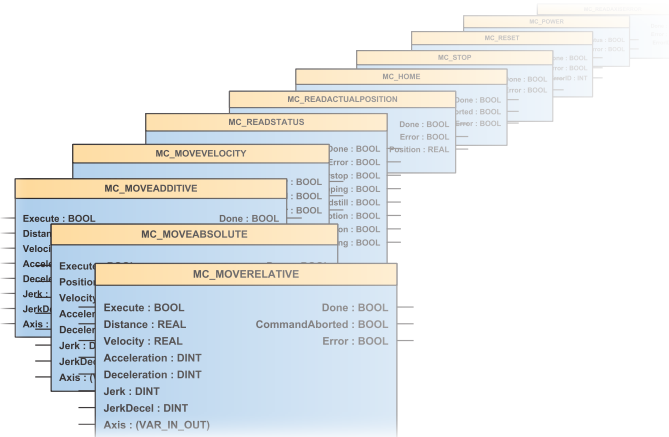
T30 Scope of Functions

- Programming in accordance with IEC 61131-3
- Programming system: CoDeSys
- up to 6000 instructions
- 650 16bit variables / 200 32bit variables
- Recipe table with 288 variables
- 3 16-bit retain variables / 3 32-bit retain variables
- Inputs/outputs:
 - 8 digital inputs (24 V level)
 - 4 digital outputs (24 V level)
 - 2 analog inputs (14 Bit)
 - Optional extension of 12 inputs/ outputs
- IEC 61131-3 standard modules:
 - Up to 8 timers (TON, TOF, TP)
 - Triggers (R_TRIG, F_TRIG)
 - Flip-flops (RS, SR)
 - Counters (CTU, CTD, CTUD)
- Device-specific function modules:
 - C3_Input: Generates an input process image
 - C3_Output: Generates an output process image
 - C3_ReadArray: Access to recipe table
 - Force control on request
- PLCopen function modules:
 - Positioning: absolute, relative, additive, continuous
 - Machine Zero
 - Stop, energizing the power stage, Quit
 - Position, device status, reading axis error
 - Electronic gearbox (MC_GearIn)



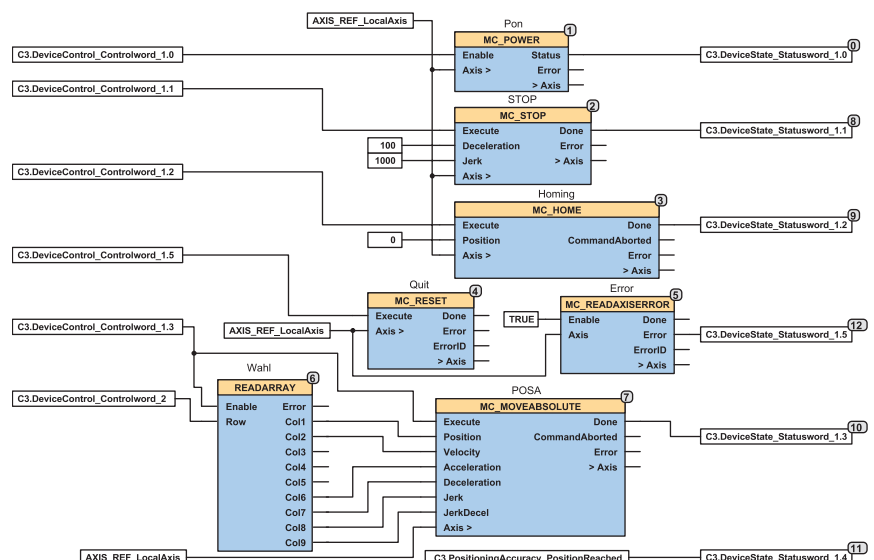
Compax3 Function Blocks

- Absolute Positioning
- Stop
- Reading axis error
- Relative Positioning
- Machine Zero
- Acknowledging errors
- Additive positioning
- Energizing the power stage
- Reading the current position
- Continuous positioning
- Reading device status
- Electronic Gearbox (Gearing)



Example of an IEC 61131 application controlled by means of a bus interface:

- 2 control words are placed on the cyclic channel of the bus.
- The position data records (position, speed, acceleration, ... are stored in a table (array).
- The desired position data record is selected with Controlword_2.
- The individual bits of Controlword_1 control positioning.
- A return message is given through a status word on the cyclic channel of the bus.



Compax3 T40: IEC 61131-3 positioning with cam function modules

T40 Scope of Functions:

Compax3 T40 is able to simulate mechanical cams and cam switching mechanisms electronically.

The “Electronic Cam - T40 was especially optimized for

- Packaging Machinery,
- Printing Industry as well as
- all applications where a mechanical cam is to be replaced by a flexible, cyclic electronic solution.

This helps to realize discontinuous material supply, flying knife and similar drive applications with

distributed drive performance.

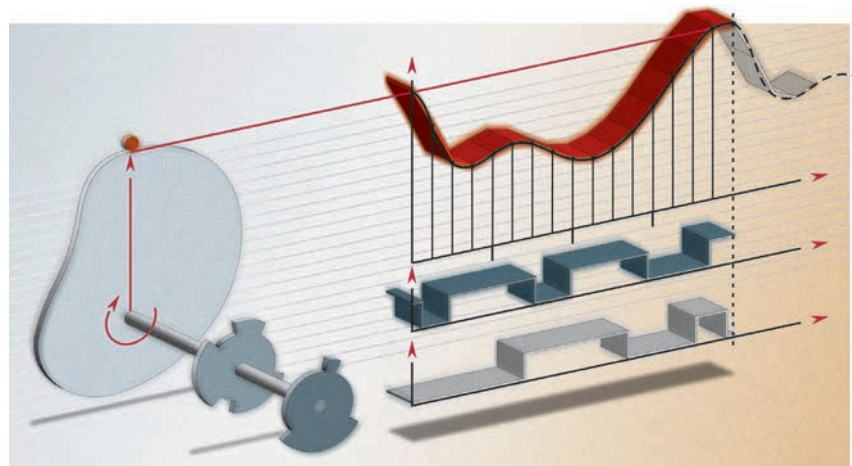
Compax3 T40 supports both real and virtual master movements. In addition, the user can switch to other cam profiles or cam segments on the fly.

Programming is carried out in the IEC 61131-3 environment.

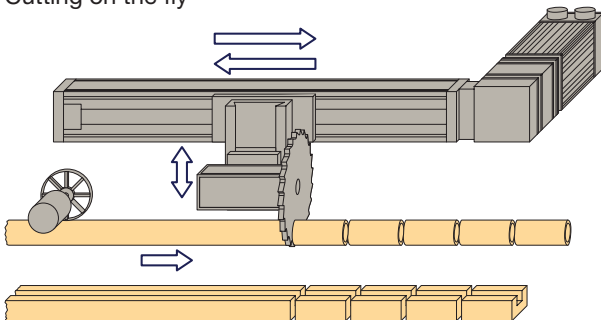
Cam applications can be easily implemented with the aid of the cam function modules and the CamDesigner.

T40 Function Overview:

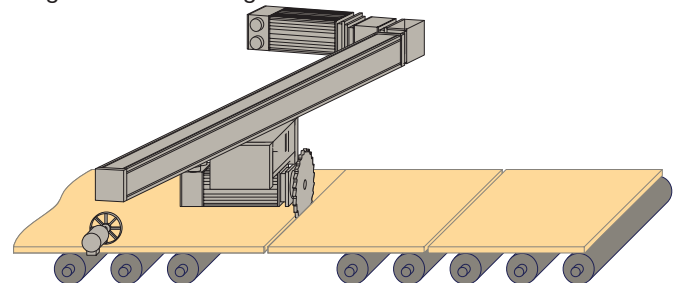
- T30 Technology Functions completely integrated and available
- Master position acquisition
- Reg synchronization
- Electronic Cam switches
- Coupling and decoupling functions
- Cam profiles
- Cam memory
- Cam creation with the CamDesigner



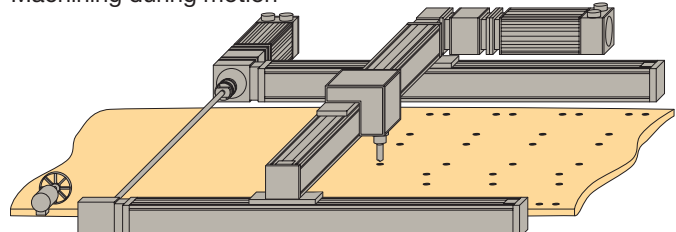
Cutting on the fly



Diagonal-beam sawing

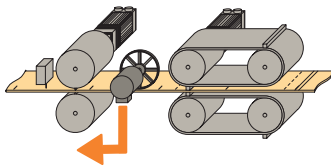


Machining during motion



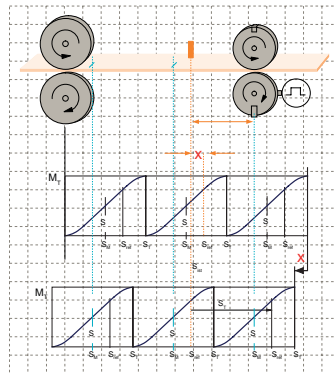
Master Position Acquisition

- Acquisition via SSI encoder or incremental encoder
- Acquisition by the HEDA real-time bus
- Virtual master:
 - A second axis in the IEC - program can be used to program a motion profile which serves as a master for one or several slaves



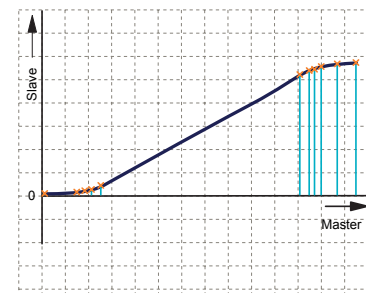
Reg Synchronization

- Master or slave oriented (simultaneous, cam-independent)
- Highly precise reg mark recognition (accuracy < 1 μ s; Touchprobe)



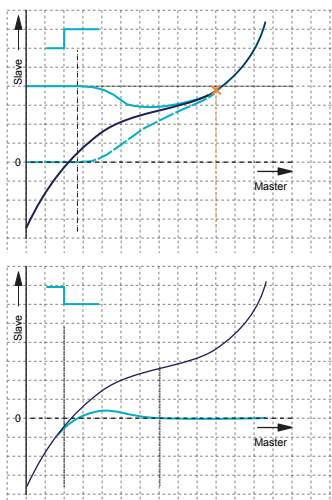
Cam Memory

- 10000 points (master / slave) in 24 bit format
- High-precision profile generation:
 - Non equidistant interpolation points of the master and slave coordinates (stored fail-safe)
 - Linear interpolation between interpolation points
- Cam memory for up to 20 curves



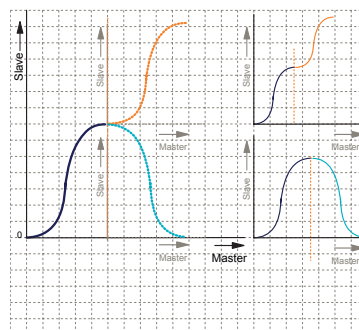
Coupling and Decoupling Functions

- By means of a setpoint generator
- By means of a change-over function
- Without overspeeding by coupling over several master cycles
- Virtually free set-up of the coupling and decoupling movement
- Master-guided coupling movement
- Random standstill position



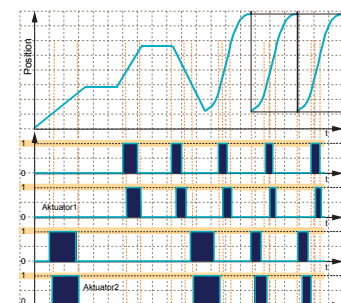
Cam Profiles

- Up to 20 cam segments can be produced by:
 - Virtually random cam links (forwards and backwards)
 - Freely programmable event-controlled cam branches
 - Scalable cam segments and complete cam profiles



Cam Controller

- 36 cams with individual profiles.
- 4 fast cams (125 μ s per cam) standard: 500 μ s.
- 32 serial cams, 16 ms/cam cycle (0.5 ms/cam).
- Delay-time compensated cams: Compax3 can advance the cam to compensate for delays in switching elements.



Compax3F: Hydraulics Controller

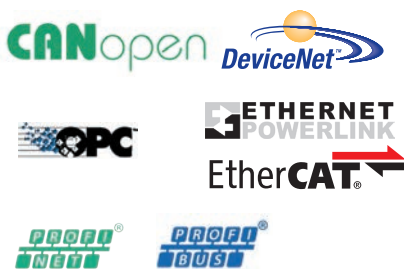
The Compax3F hydraulics controller is another member of the Compax3 family based on the well-known Compax3 digital drive.

Thus, all advantages offered by the Compax3 family are now also available in servo- and proportional hydraulics. The hydraulics controller is available with the following technologies:

Technology Functions

- T11: Positioning
- T30: Motion control programmable in accordance with IEC 61131-3
- T40: Electronic cam

Communication

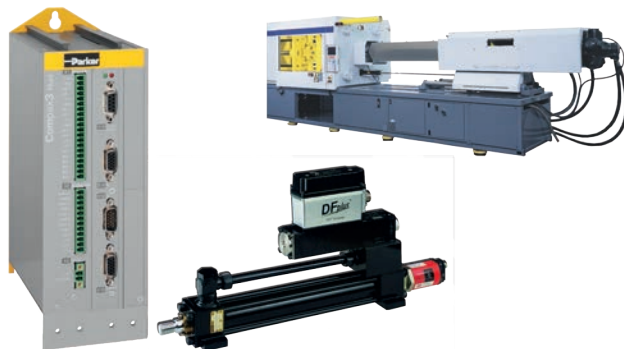


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Your Advantage:

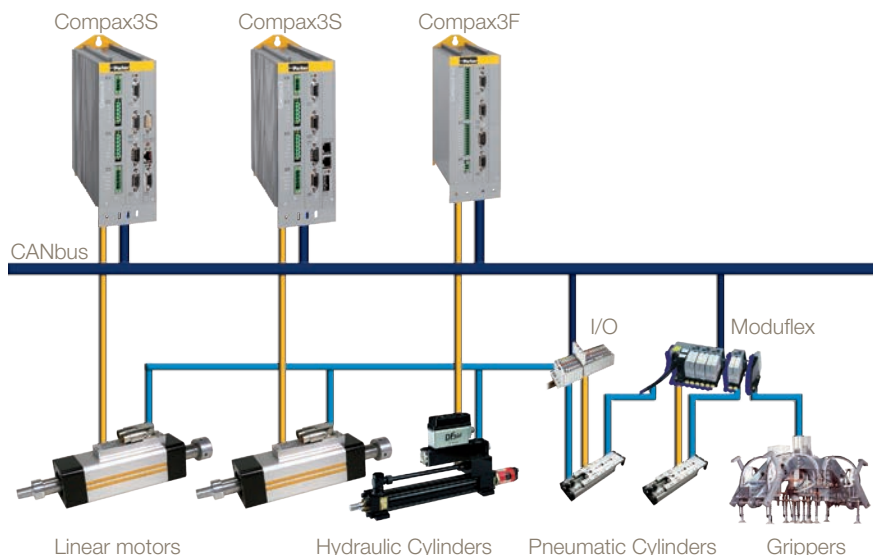
- It is no longer necessary to distinct between the motion of a hydraulic or an electromechanical axis on the control technology level .
- Common software tools for electromechanics and hydraulics supporting the design of hybrid machines.

Especially the combination with the highly dynamic DFplus valve can be used to efficiently increase your machine performance.



Device:	Compax3 F001 D2 F12 Ixx Txx Mxx
Power Supply	
Voltage Operating Range	21-27 VDC
Inputs and outputs	
8 control inputs	24 VDC / 10 kOhm
4 control outputs	Active HIGH / short-circuit proof / 24 V / 100 mA
4 analog current inputs	14 Bits
2 analog voltage inputs	14 Bits
4 analog outputs	16 Bits, current or voltage
2 analog monitor outputs	8 bits
Communication	
RS232	115200 Bauds
RS485 (2 or 4-wire)	9600, 19200, 38400, 57600 or 115200 Bauds
...	
Feedback	
	1 V _{PP} SineCosine (max. 400 Hz) RS422 Encoder (max. 5 MHz, or Step/Direction) SSI (RS422) Start / Stop (Time of Flight, RS422) EnDat2.1, EnDat2.2
Size / Weight	
HxWxD [mm]	199x80x130
Weight [kg]	2.0
Housing / protection class	Enclosed metal housing, IP20

Example: System Layout



Technical Characteristics

Technical Data

Compax3S

Compax3		S025V2	S063V2	S100V2	S150V2	S015V4	S038V4	S075V4	S150V4	S300V4 ⁽¹⁾
	Unit									
Power supply and device currents										
Power supply	[V]	1*230/240 VAC (80...253 VAC) / 50...60 Hz		3*230/240 VAC (80...253 VAC) / 50...60 Hz		3*400/480 VAC (80...528 VAC) / 50...60 Hz				
Output nominal current (rms)	[A]	2.5	6.3	10	15	1.5	3.8	7.5	15	30
Peak current (<5 s)	[A]	5.5	12.6	20.0	30.0	4.5	9.0	15.0	30.0	60.0
Power	[kVA]	1.0	2.5	4.0	6.0	1.25	3.1	6.2	11.5	25.0
Control voltage	[V]	24 VDC ±10 %, ripple <1 Vpp								
Electric current drain	[A]	0.8 A (Compax3) (+ digital outputs 0.1 A each + motor brake up to 1.6 A)								
Dynamic Brake										
Capacitance	[µF]	560	1120	780	1170	235	235	470	690	1100
Storable energy	[Ws]	15 @230 V	30 @230 V	21 @230 V	31 @230 V	37@400 V 21@480 V	37@400 V 21@480 V	75@400 V 42@480 V	110@400 V 61@480 V	176@400 V 98@480 V

⁽¹⁾ Operation with capacitor module ModulC4.

Compax3H

Compax3		H050V4	H090V4	H125V4	H155V4
	Unit				
Power supply and device currents					
Power supply	[V]	3*400/480 VAC (350...528 VAC) / 50...60 Hz			
Output nominal current (rms)	[A]	50.0	90.0	125.0	155.0
Peak current (<5 s)	[A]	75.0	135.0	187.5	232.5
Power	[kVA]	35.0	70.0	91.0	109.0
Control voltage	[V]	24 VDC ±10 %, ripple <1 Vpp			
Electric current drain	[A]	0.8 A (Compax3) (+ digital outputs 0.1 A each + motor brake up to 1.6 A)			
Dynamic Brake					
Capacitance	[µF]	2600	3150	5000	5000
Storable energy	[Ws]	602@400 V 419@480 V	729@400 V 507@480 V	1158@400 V 806@480 V	1158@400 V 806@480 V

Compax3M

Compax3		M050D6	M100D6	M150D6	M300D6
	Unit				
Power supply and device currents					
Power supply	[V]	325...679 VDC (Rated voltage 560 VDC)			
Output nominal current (rms)	[A]	5	10	15	30
Peak current (<5 s)	[A]	10	20	30	60
Power (@ 560 VDC)	[kVA]	3.33	6.66	10	20
Dynamic Brake					
Capacitance	[µF]	110	220	220	440
Storable energy	[Ws]	18@400 V 10@480 V	37@400 V 21@480 V	37@400 V 21@480 V	74@400 V 42@480 V

PSUP Mains module

Mains Module	Unit	PSUP10			PSUP20			PSUP30 ⁽¹⁾		
Power supply		3*230...480 VAC ±10 % 50...60 Hz (Rated voltage 3*400 VAC)								
Output Voltage		325...680 VDC ±10 %								
Power supply	[VAC]	230	400	480	230	400	480	230	400	480
Output power	[kVA]	6	10	10	12	20	20	18	30	30
Pulse power (<5 s)	[kVA]	12	20	20	24	40	40	34	60	60
Control voltage		24 VDC ±10 %								
Maximum ripple		<1 Vpp								
Electric current drain	[A]	0.2 A			0.3 A			0.3 A		
	[A]	C3M050D6: 0.85 A		C3M100D6: 0.85 A		C3M150D6: 0.85 A		C3M300D6: 1.0 A		
		(+ total load of the digital outputs + current for motor holding brake up to 1.6 A)								

⁽¹⁾ Operation of the PSUP30 only with line choke "Required line choke for the PSUP30: 0.45 mH / 55 A" see page 27

Safety Technology

Compax3S

STO (Safe torque off) in accordance with EN ISO 13849:2008, category 3:PL=d/e.
 Certified: BG-PRÜFZERT

Compax3M

- Standard S1
 - STO (Safe torque off) in accordance with EN ISO 13849:2008, category 3:PL=e. Certified: BG-PRÜFZERT
- Enhanced (S3 Option)
 - The Compax3M device with option S3 complies with the requirements of the test principles (Kat. 4 / PL e PL=e to EN ISO 13849-1, SIL CL 3 in accordance with EN61800-5-1 / EN 62061 / EN 61508) and may be used in applications up to cat. 4 / PL e in accordance with EN ISO 13849-1 and SIL 3 in accordance with EN 62061 / EN 61508.

Positioning

Positioning on the motor shaft

- Resolver (option F10)
 - Resolution: 16 Bit (= 0.005°)
 - Absolute accuracy: +/-0.167°
 - SinCos® (Option F11)
 - Position resolution: 13.5Bit/Encoder sine period => 0.03107°/encoder resolution
 - Direct drives (F12)
 - Maximum position resolution:
 Linear: 24 bits per motor magnet spacing
 Rotary: 24 bits per motor revolution
 - For 1 Vpp sine-cosine encoders (e.g. EnDat): 13.5 bits / graduation of the encoder scale.
 For RS422 encoders: 4xEncoder resolution / Encoder Bypass possible. Accuracy of the feedback zero pulse acquisition = accuracy of the feedback resolution. For analog hall sensors with 1 Vpp signal: 13.5 bits / motor magnet spacing
- The exactitude of the position signal is above all determined by the type and exactitude of the feedback system used.

Setpoint generator

- Jerk-limited ramps
- Travel data in increments, mm, inch or variable by scale factor
- Specification of speed, acceleration, deceleration and jerk

Monitoring functions

- Power/auxiliary supply range
- Motor power stage temperature/stall protection
- Following error monitoring

Supported Motor and Feedback Systems

Motors

- Sinusoidally commutated synchronous motors
 - Maximum electrical turning frequency: 1000 Hz
 - Maximum velocity at 8 pole motors: 15 000 min⁻¹
 - Maximum speed: 60°1000/number of pole pairs in min⁻¹
- Sinusoidal commutated asynchronous motors
 - Maximum electrical turning frequency: 1000 Hz
 - Maximum speed: 60°1000/number of pole pairs - slip in min⁻¹
- 3 phase synchronous direct drives

Feedback systems

Option F10 for

- Resolver
 - Litton: JSSBH-15-E-5, JSSBH-21-P4, RE-21-1-A05, RE-15-1-B04
 - Tamagawa: 2018N321 E64
 - Siemens: 23401-T2509-C202

Option F11 for

- Sine Cosine - Encoder with Hiperface® -
 - Rotary feedback with HIPERFACE® interface in Single or Multiturn version (absolute position up to 4096 motor revolutions):
 - For example: SRS/M50, SRS/M50S, SKS/M36, SEK52, SEL57, SEK37, SEL37, SEK 90/180/260

Option F12 for

- EnDat 2.1 or EnDat 2.2 feedback systems with/without incremental track (sine-cosine track)
 - Rotary feedback in Single or Multiturn version (absolute position up to 4096 motor revolutions):
 - Linear feedbacks
- Analog hall sensors
 - Sine - cosine signal (max. 5 VSS; typical 1 VSS) 90° offset
 - U-V Signal (max. 5 VSS; typical 1 VSS) 120° offset
- Linear or rotary encoders
 - U-V Signal (max. 5 VSS; typical 1 VSS) (max. 400 kHz) or
 - TTL (RS422) (max. 5 MHz) with the following modes of commutation: Automatic commutation or digital hall sensors
- Distance coded feedback systems
 - Distance coding with 1VSS interface
 - Distance coding with RS422 - Interface
 - Feedback error compensation: Automatic feedback error compensation

Ambient Conditions

Temperature range

	Compax3S & Compax3H	PSUP / Compax3M
	0...45 °C	0...40 °C

Tolerated humidity

max. relative air humidity <=85% class 3K3; non-condensing

Elevation of operating site

- ≤1000 m asl for 100 % load ratings
- ≤2000 m above sea level for 1 % / 100 m power reduction
- please inquire for greater elevations

Degree of protection

IP20 protection level in accordance with EN 60529

Ports

COM ports

- RS232, 115200 Baud
- RS485, (2- or 4-wire) 9600, 19200, 38400, 57600 or 115200 Bauds
- USB (Compax3M), USB 2.0 Full Speed compatible

Bus systems



- PROFIBUS DP V0-V2 (I20), 12 Mbit/s, PROFIdrive profile drive technology
- CANopen (CiADS402) (I21), 20...1000 Kbit/s, SDO1, PDO1, ... PDO4
- DeviceNet (I22), up to 32 bytes I/O, 125...500 Kbit/s, up to 63 slaves
- Ethernet Powerlink (I30), 100 Mbit/s (FastEthernet), from 500 µs (typ. 1 ms) cycle time
- EtherCAT (I31), 100 Mbit/s (FastEthernet), from 125 µs (typ. 1 ms) cycle time
- PROFINET (I32) certified, PROFINET IO (RT), 100BASE-TX (Full Duplex)

Inputs and outputs

- 8 control inputs: 24 VDC / 10 kOhm
- 4 control outputs: Active HIGH / short-circuit proof/ 24 V / 100 mA
- 2 analog inputs (14 Bit)
- 2 analog outputs (8 Bit)

Encoder simulation

- 4-16384 increments per revolution (zero pulse can be freely selected within one motor revolution)
- Limit frequency: 620 kHz

Standards and Conformance

Insulation requirements

- Protection class in accordance with EN 60664-1
- Protection against human contact with dangerous voltages: in accordance with EN 61800-5-1
- Overvoltage: Voltage category III in accordance with EN 60664-1
- Level of contamination 2 in accordance with EN 60664-1 and EN 61800-5-1

CE compliance

- EG low voltage directive 2006/95/ECEN 61800-5-1, Standard for electric power drives with settable speed; requirements to electric safety EN 60664-1, isolation coordinates for electrical equipment in low-voltage systems EN 60204-1, Machinery norm, partly applied
- EC-EMC-directive 2004/108/EC EN 61800-3, product standard for speed adjustable drives

UL certification

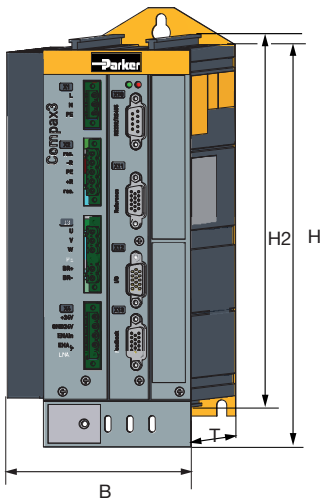
- UL conform according to UL508C
 - Compax3S: Recognized Component Mark for Canada and the US
 - PSUP / Compax3M & Compax3H: UL Listing

RoHS Compliance

Available for Compax3S, Compax3M, Compax3F Complies with European Union Directive 2002/95/EC - Restriction of Hazardous Substances (RoHS)

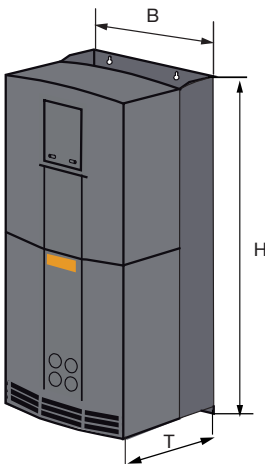
Dimensions

Compax3S



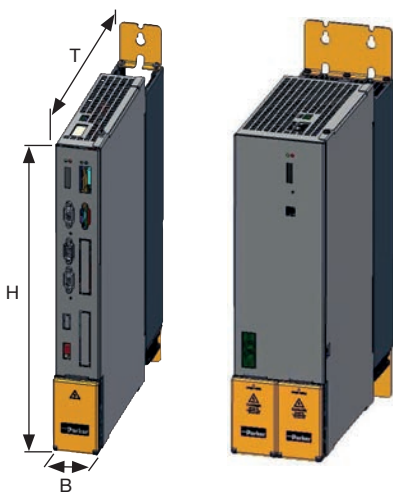
Device:	Dimensions [mm]				Weight [kg]
	H	B	T	H2	
Compax3					
S025V2	216	84	172	203	2.0
S063V2		100			2.5
S100V2	115	4.3			
S150V2 / S150V4	158	6.8			
S015V4	273	84	259	3.1	
S038V4		100		3.5	
S075V4		115		4.3	
S300V4	380	175		391	10.9

Compax3H



Device:	Dimensions [mm]			Weight [kg]
	H	B	T	
Compax3				
H050V4	453	252	245	17.4
H090V4	669	257	312	32.5
H125V4	720	257	355	41.0
H155V4	720	257	355	41.0

PSUP & Compax3M



Device:	Dimensions [mm]			Weight [kg]
	H	B	T	
Compax3				
M050D6	360	50	263	3.5
M100D6	360	50	263	3.6
M150D6	360	50	263	3.6
M300D6	360	100	263	5.25
Mains Module				
PSUP10D6	360	50	263	3.95
PSUP20D6	360	100	263	6.3
PSUP30D6	360	100	263	6.3

Enclosure

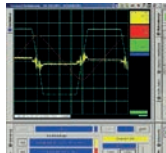
Insulation:
VDE 0160 / Protection class IP20 in accordance with EN 60 529 (not for C3H1xxV4)

Accessories and Options

Software and Tools

C3 ServoManager

- Guided configuration
 - Automatic querying of all necessary entries
 - Graphical support
- Setup mode
 - Manual motion of individual axes
 - Predefined profiles
 - Convenient operation
 - Storage of defined profiles
 - Automatic determination of the moment of inertia
- integrated 4-channel oscilloscope
 - Signal tracking directly on the PC
 - Various modes (single/normal/auto/roll)
 - Zoom function
 - Export as image or table (for example to Excel)



MotorManager

- Complete library for Parker motors
 - Integration of customer motors
 - Determination of motor characteristics and of the motor position feedback



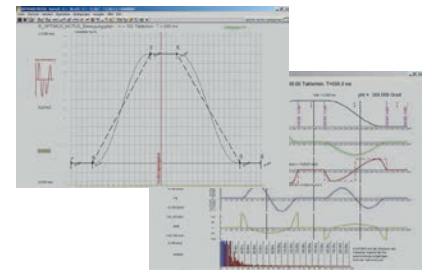
HydraulicsManager

- Valve library for Parker valves
 - Integration of customer valves

CamDesigner

Cam creation tool

- Standard and expert mode
- Evaluation of the motion profiles
- Verification of the drive selection
- Transition laws from the VDI directive 2143



Programming

CoDeSys

CoDeSys is a development environment for programming that saves a significant amount of time as applications are created.

- Powerful developing environment, worldwide established
- Universal programming platform for various devices
- Complete offline simulation
- Visual elements
- Library management for user-defined applications
- Context-sensitive help wizard
- Data exchange between devices from different manufacturers
- Complete online functionality
- Sophisticated technological features
- Free of charge

IEC61131-3

IEC 61131-3 is the only company- and product independent programming language with world-wide support for industrial automation devices.

IEC 61131-3 includes graphical and textual programming languages:

- Instruction list
- Structured text
- Ladder diagram
- Sequential function chart
- Function block diagram
- Integrated standards offer:
 - a trusted programming environment
 - standardized programming
- Integrated standards reduce:
 - the overhead of development
 - maintenance costs
 - software upkeep
 - training overhead
- Integrated standards increase:
 - productivity
 - software quality
 - concentration on core competence

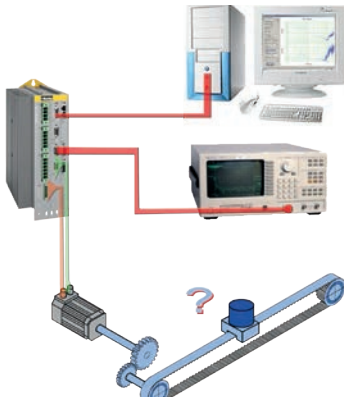
PLCopen

PLCopen is an organization that plays a significant role in supporting the IEC 61131-3 programming language. It is independent of individual companies or products. Its specific tasks also include defining basic processes relevant to motion. The PLCopen organization consists of both users and manufacturers of automation components. Parker Hannifin is an active member of the "Motion Control" task force. This represents a great advantage to users of Parker drive technology, since they are constantly able to profit directly from the latest developments in PLCopen.

**Parker is a member of the
"CoDeSys Automation Alliance"**



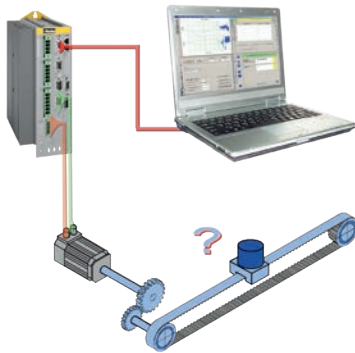
Signal Analysis for the System Identification



formerly

Implementation prerequisites:

- Expensive and complex measurement technology required
- Special knowledge required
- Implementation only possible in an open control loop (=dangerous)



today

Implementation prerequisites:

- Implementation with a common PC
- Simple and safe operation with the Compax3 ServoManager Software
- No special knowledge required
- The safety functions implemented in the servo drive ensure safe measurement in a closed position control loop

What do these functions provide?

Analysis and optimization of the mechanic system

Transmission behavior of the mechanic system

- Simple measurement of the mechanic dynamic behavior, therefore:
 - Possibilities to improve the mechanic construction can be spotted.
 - Increased stiffness and precision of the entire system. (improved mechanic system = improved controller performance)

Modal analysis

- Vibration analysis of the mechanic construction by specification of a sinusoidal motor force with a defined frequency.
- It is often possible to work without additional excitation by electrodynamic shakers or pulse hammers.

Analysis and optimization of the control

Transmission behavior of the mechanic system

- Better and faster controller optimization due to the knowledge of the transmission behavior of the control path.
- Specific suppression of disturbances at the mechanic resonance points with the aid of notch or low-pass filters.

Transmission behavior of the control

- Quality assessment of the control with respect to the response behavior:
 - In the time range by step response
 - In the frequency range by frequency response
 - Optimization of the control by application of stability criteria from the control theory (e.g. Nyquist criterion or Hurwitz criterion)
- Quality assessment of the control with respect to the disturbance behavior:
 - In the time range by the disturbance current - step response¹
 - In the frequency range by measurement and analysis of the resilience - frequency response²

¹ Emulation of an external volatile change in the disturbance force.

² The compliance frequency response states the size of the control deviation caused by a disturbance force in dependence of its frequency.

Order Code

Devices: Compax3

	1	2	3	4	5	6	7	8
Example:	C3	S	025 V2	F10	I10	T10	M00	

1 Device family

C3 Compax3

2 Device type

S Single-axis
H High power
M Multi-axis device
F Hydraulics controller (C3F001D2F12)

3 Device currents static/dynamic; supply voltage

Compax3S

025 V2 2.5 A / 5 A; 230 VAC (single phase)
063 V2 6.3 A / 12.6 A; 230 VAC (single phase)
100 V2 10 A / 20A; 230 VAC (3 phase)
150 V2 15 A / 30 A; 230 VAC (3 phase)
015 V4 1.5 A / 4.5 A; 400 VAC (3 phase)
038 V4 3.8 A / 9 A; 400 VAC (3 phase)
075 V4 7.5 A / 15.0 A; 400 VAC (3 phase)
150 V4 15.0 A / 30.0 A; 400 VAC (3 phase)
300 V4 30.0 A / 60.0 A; 400 VAC (3 phase) ⁽¹⁾

Compax3H

050 V4 50 A / 75 A; 400 VAC (3 phase)
090 V4 90 A / 135 A; 400 VAC (3 phase)
125 V4 125 A / 187.5 A; 400 VAC (3 phase) ⁽²⁾
155 V4 155 A / 232.5 A; 400 VAC (3 phase) ⁽²⁾

Compax3M

050 D6 5.0 A / 10.0 A; 400 VAC (3 phase)
100 D6 10 A / 20 A; 400 VAC (3 phase)
150 D6 15 A / 30 A; 400 VAC (3 phase)
300 D6 30 A / 60 A; 400 VAC (3 phase)

Compax3F

001 D2 24 VDC

4 Feedback

F10 Resolver (not for C3F)
F11 SinCos© (Hiperface) (not for C3F)
F12 Encoder, Sine/cosine with/without hall, EnDat

5 Interface

I10 Step/direction / analog input (only I10T10)
I11 Positioning via inputs/outputs (only I11T11)
I12 Positioning via I/Os or RS232 / RS485 / USB
I20 PROFIBUS DP V0/V1/V2 (12 Mbaud)
I21 CANopen
I22 DeviceNet
I30 Ethernet Powerlink
I31 EtherCAT
I32 PROFINET

6 Technology function

T10 Servo controller (only I10)
T11 Positioning
T30 Motion control programmable in accordance with IEC 61131-3
T40 Motion control programmable in accordance with IEC 61131-3 & electronic cam

7 Options

M00 No additional supplement
M10 Extension by 12 digital I/Os & HEDA Motionbus (not for T10, T11)
M11 HEDA Motionbus (not for T10, T11)
M12 Extension by 12 digital I/Os (not for T10, T11)
M21 Analog current / voltage inputs (0...20 mA) and (-10...+10 V) (3 each)

8 Optional safety technology for C3M

S1 Safe torque off (furnished with the device)
S3 Extended safety technology

⁽¹⁾ Operation of the C3S300V4 with capacitor module ModulC4.
⁽²⁾ external voltage supply for ventilator fan required. Available in two versions for single phase feed. Standard: 220/240 VAC: 140 W, on request: 110/120 VAC: 130 W

Software dongle for SafePLC

	1
Example:	SafePLC

1 Accessories

SafePLC Dongle for programming the safety technology for the C3M option S3

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Accessories

Power module: PSUP

	1	2	3	4	5
Example:	PSU	P	10	D6	USB M00

1	Device family	PSU Mains Module
2	Device type	P Mains Module
3	Nominal power; supply voltage	10 D6 10 kW; 400 VAC (3 phase) 20 D6 20 kW; 400 VAC (3 phase) 30 D6 30 kW; 400 VAC (3 phase) ⁽¹⁾
4	Interface	USB USB connection
5	Options	M00 no additional supplement

⁽¹⁾ Operation of the PSUP30 only with line choke.
Required line choke for the PSUP30: 0.45 mH / 55 A

We offer the following line chokes:

LCG-0055-0.45 mH

(WxDxH: 180x140x157 mm; 10 kg)

LCG-0055-0.45 mH-UL

(with UL certification, WxDxH: 180x170x157 mm; 15 kg)

Connection set for Compax3 and PSUP

Mating plug connector (furnished with the device)

	1
Example:	ZBH02/02

1	Accessories	
	ZBH02/01	for C3S0xxV2
	ZBH02/02	for C3S0xxV4 / S150V4 / S1xxV2
	ZBH02/03	for C3S300V4
	ZBH02/04	for C3F00xD2
	ZBH04/01	for C3M050D6, C3M100D6, C3M150D6
	ZBH04/02	for C3M300D6
	ZBH04/03	for PSUP10
	ZBH04/04	for PSUP20/PSUP030

Motor Cable

	1	2
Example:	MOK	55/02

1	Accessories	MOK Motor cable ⁽²⁾
2	Type	for SMH / MH56 / MH70 / MH105 ⁽³⁾
	55/.... ⁽¹⁾	1.5 mm ² ; to 13.8 A
	54/.... ⁽¹⁾	1.5 mm ² ; up to 13.8 A cable chain compatible
	56/.... ⁽¹⁾	2.5 mm ² ; to 18.9 A
	57/.... ⁽¹⁾	2.5 mm ² ; up to 18.9 A cable chain compatible
		for MH145 / MH205 ⁽⁴⁾
	60/.... ⁽¹⁾	1.5 mm ² ; to 13.8 A
	63/.... ⁽¹⁾	1.5 mm ² ; up to 13.8 A cable chain compatible
	59/.... ⁽¹⁾	2.5 mm ² ; to 18.9 A
	64/.... ⁽¹⁾	2.5 mm ² ; up to 18.9 A cable chain compatible
	61/.... ⁽¹⁾	6 mm ² ; up to 32.3 A cable chain compatible
	62/.... ⁽¹⁾	10 mm ² ; up to 47.3 A cable chain compatible

MOK55 and MOK54 are also possible for linear motors LXR406, LXR412.

Feedback cable

	1
Example:	REK42/02

1	Accessories	for MH/SMH motors
	REK42/.... ⁽¹⁾	Resolver cable ⁽²⁾
	REK41/.... ⁽¹⁾	Resolver cable ⁽²⁾ cable chain compatible
	GBK24/.... ⁽¹⁾	SinCos© feedback cable ⁽²⁾ cable chain compatible
	GBK38/.... ⁽¹⁾	EnDat 2.1 feedback cable ⁽²⁾ cable chain compatible (C3S, H, M)
	GBK23/.... ⁽¹⁾	Encoder cable ⁽²⁾ cable chain compatible
		for linear motors
	GBK33/.... ⁽¹⁾	Feedback cable to LXR cable chain compatible
	GBK40/.... ⁽¹⁾	SSI, Start Stop (C3F)
	GBK41/.... ⁽¹⁾	EnDat 2.1 Feedback cable (C3F) cable chain compatible
	GBK56/.... ⁽¹⁾	EnDat 2.2 feedback cable (C3S, H, M) cable chain compatible
	GBK57/.... ⁽¹⁾	EnDat 2.2 Feedback cable (C3F) cable chain compatible

⁽¹⁾ - ⁽⁴⁾ see "Length code for cables" (page 28)



Order code for interface cables and connectors

	1
Example:	SSK01/01

1	Accessories
SSK01/.... ⁽¹⁾	RS232 (PC-Compax3)
SSK33/.... ⁽¹⁾	USB (PC-PSUP)
SSK21/.... ⁽¹⁾	Ref / analog - with flying leads (X11, X13 @C3F001D2)
SSK22/.... ⁽¹⁾	Digital I/Os with flying leads (X12 / X22)
SSK23/.... ⁽¹⁾	Ref /analog for I/O terminal block (X11)
SSK24/.... ⁽¹⁾	Digital I/Os for I/O terminal block (X12, X22)
SSK25/.... ⁽¹⁾	RS232 (PC-Pop)
SSK27/.../.. ⁽⁶⁾	RS485 (C3-Pop for more than one C3H on request)
SSK28/.... ⁽⁵⁾	RJ45 Crossover cable (C3 HEDA-HEDA, PC-C3 powerPLmC, C3M-C3M communication, PROFINET, EtherCAT, Ethernet Powerlink)
SSK29/.... ⁽¹⁾	Encoder coupling of 2 axes (X11-X11)
SSK31/.... ^{(1),(7)}	Cable Modem-Compax3 X10
SSK32/20	Adapter cable for C3H to SSK01 (15 cm furnished with the device)
VBK17/01	RS232 connection controller-programming interface (furnished with the device for C3H X10)
BUS07/01	Bus terminal connector (1st. and last C3 in the HEDA bus/or multi-axis system)
SSL01 ⁽⁷⁾	PROFIBUS cable ⁽²⁾ not prefabricated
BUS08/01	Profibus connector Plug with 2 cable inputs (1 arriving, 1 continuing PROFIBUS cable), as well as a switch for activating the terminal resistor
SSL02 ⁽⁷⁾	CAN Bus cable ⁽²⁾ not prefabricated
BUS10/01	CAN bus connector Plug with 2 cable inputs (1x arriving, 1x continuing CANbus cable), as well as a switch for activating the terminal resistor

^{(1) - (6)} see "Length code for cables" (page 28)

DeviceNet -A mating plug is included in the delivery. Additional information on DeviceNet wiring can be found under: www.odva.org

Length code for cables

⁽¹⁾ **Length code 1 (Example: SSK01/09 = length 25 m)**

Length [m]	1.0	2.5	5.0	7.5	10.0	12.5	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0
Order code	01	02	03	04	05	06	07	08	09	10	11	12	13	14

⁽²⁾ Color according to DESINA

⁽³⁾ with motor connector

⁽⁴⁾ with cable eye for motor terminal box

⁽⁵⁾ **length code 2 for SSK28**

Length [m]	0.17	0.25	0.5	1.0	3.0	5.0	10.0
Order code	23	20	21	01	22	03	05

⁽⁶⁾ **Order code: SSK27/nn/..**

Length A (Pop - 1st. Compax3) variable (the last two numbers corresponding to the cable length code for example SSK27/nn/01)

Length B (1st. Compax3 - 2nd. Compax3 - ... nth. Compax3) fixed 50 cm (only if there is more than 1 Compax3, i.e. nn greater than 01)

Number n (the last two digits)

⁽⁷⁾ Number ordered corresponds to the cable length in m



Braking resistors

	1	2
Example:	BRM	05/01

1 Accessories	BRM	Braking resistor
2 Type	05/01	56 Ω / 0.18 kW _{cont.} (for C3S063V2, C3S075V4)
	05/02	56 Ω / 0.57 kW _{cont.} (for C3S075V4)
	08/01	100 Ω / 60 W _{cont.} (for C3S025V2, C3S038V4)
	10/01	47 Ω / 0.57 kW _{cont.} (for C3S150V4)
	04/01	15 Ω / 0.57 kW _{cont.} (for C3S150V2, C3S300V4)
	04/02	15 Ω / 0.74 kW _{cont.} (for C3S150V2, C3S300V4)
	04/03	15 Ω / 1.5 kW _{cont.} (for C3S300V4)
	09/01	22 Ω / 0.45 kW _{cont.} (for C3S100V2)
	11/01	27 Ω / 3.5 kW _{cont.} (for C3H0xxV4)
	13/01	30 Ω / 0.5 kW _{cont.} for PSUP10D6, for PSUP20D6 (2x30Ω parallel)
	14/01	15 Ω / 0.5 kW _{cont.} (for PSUP10D6 2 x 15 Ω in series for PSUP20, PSUP30)
	12/01	18 Ω / 4.5 kW _{cont.} (for C3H1xxV4, PSUP30)

Mains filter

For radio interference suppression and compliance with the emission limit values for CE conform operation.

	1	2
Example:	NFI	01/01

1 Accessories	NFI	Mains filter
2 Type	01/01	for C3S025V2 or S063V2
	01/02	for C3S0xxV4, S150V4 or S1xxV2
	01/03	for C3S300V4
	02/01	for C3H050V4
	02/02	for C3H090V4
	02/03	for C3H1xxV4
	03/01	for PSUP10 Reference axis combination 3x480 V 25 A 6x10 m motor cable length
	03/02	for PSUP10 Reference axis combination 3x480 V 25 A 6x50 m motor cable length
	03/03	for PSUP20, PSUP30 Reference axis combination 3x480 V 50 A 6x50 m motor cable length

Motor output choke

For disturbance suppression when the motor connecting cables are long

	1	2
Example:	MDR	01/04

1 Accessories	MDR	Motor output choke (for Compax3S, Compax3M >20 m motor cable)
2 Type	01/01	up to 16 A rated motor current
	01/02	up to 30 A rated motor current
	01/04	up to 6.3 A rated motor current

Capacitor module

	1
Example:	ModulC4

1 Accessories	ModulC4	1100 µF for C3S300V4 optional for C3H
----------------------	----------------	--

Inputs/Outputs:



Terminal block: EAM06/..

For additional wiring of the inputs/outputs:

- Can be mounted in the control cabinet via top hat rail
- Connection EAM06/.. via SSK23/.. to X11, SSK24/.. to X12

Terminal block

	1	2
Example:	EAM	06/01

1 Accessories	EAM	Terminal block
2 Type	06/01	I/Os without luminous indicator (for X11, X12, X22)
	06/02	I/Os with luminous indicator (for X12, X22)





Compact Servo Drive - SLVD-N

Overview

Description

SLVD-N is the family of compact digital servo drives for brushless motors which, in addition to positioning applications with trapezoidal profile, electrical shaft, electronic cam, spindle orientation, simulator of stepper motor and torque control, holds a PLC inside able to talk to the most common industrial programming systems, giving a great freedom of use of the inputs and outputs. It also allows the development of additional configurations to the basic features of the drive, such as gains adjustment of the loop in relation to speed or space, torque monitoring used for tools etc.

The SLVD-N range is equipped with a serial interface RS422/RS485 allowing the operator to configure, monitoring, give commands to up to 32 units simultaneously. A CANbus interface is available both in communication mode and in real time mode with SBCCAN, CANopen, DS402 protocols.

Typical applications:

- Packaging machines
- Pick & place systems
- General purpose machines

Features

- Torque/current/speed control
- Advanced manager of torque limits
- Management of speed windows
- Positioner
- Electric shaft
- Electronic cam
- Controls the motor torque with the addition of speed control
- Virtual master
- Internal PLC - programming according to IEC61131 (option)
- Configurable feedback
- Standard interface: RS422/485, CANopen
- Optional interface: EtherCAT / PROFINET
- Internal braking resistor
- Internal EMC filter for three phase power supply
- Safety: STO function optional



Technical Characteristics - Overview

Power supply	200...230 VAC single/three phase (±10 %) 50-60 Hz (±5 %) - only TT/TN networks
Control supply	24 VDC (-0/+10 %)
Overload	200 % for 2 s
Operating temperature	0...45 °C
Operating humidity	<85 % non condensing
Altitude	1000 m asl with 1.5 % derating every 100 m, up to 2000 m
Protections	IP20
International standards	CE, cUL

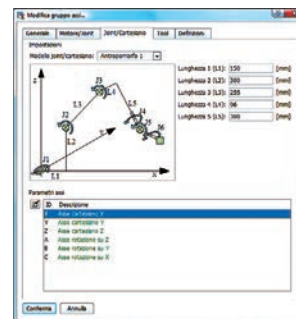
Model	Continuous current [A]	Peak current [A]	Size
SLVD1N	1.25	2.5	1
SLVD2N	2.5	5	
SLVD5N	5	10	
SLVD7N	7	14	
SLVD10N	10	20	2
SLVD15N	15	30	
SLVD17N	17	34	

Typical Applications

Industry: Robotics

Application: Painting robot

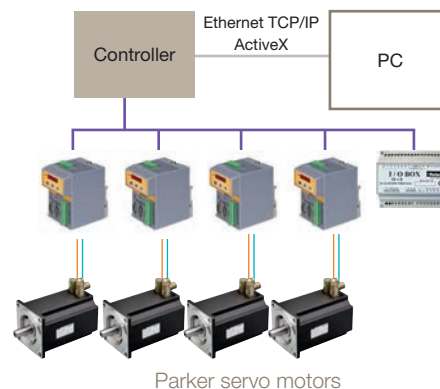
6/7 axes painting robot controlled by the SLVD-N servo drive. Full control of the machine is done with a dedicated motion controller and the remote I/O is managed over CANopen.



Industry: Glass Industry

Application: Machining Centre

A 4 axis machine (x, y, z, mandrel) executing the following operations: drilling, threading and linear milling on materials of different types. The system comprises of 4 SLVD-N and 4 SMB motors. The control of the machine is via a dedicated motion controller. The remote I/O is controlled with CANopen protocol.



Industry: Beverage Industry

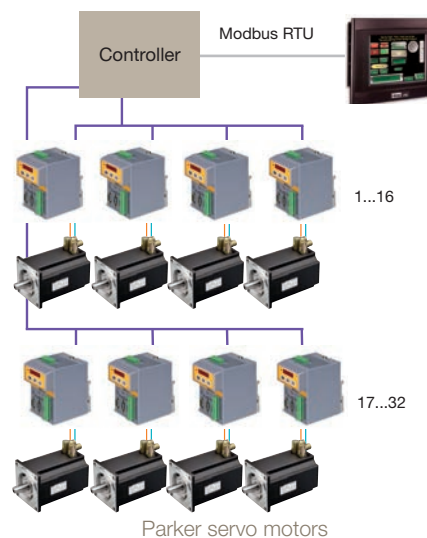
Application: Multi-head bottle capper

A multi-head machine able to cap bottles of different format. Each head, in order to reduce setup time, installs 2 SLVD-Ns, one dedicated to the vertical movement of the head depending on the carousel position and the other dedicated to the capping with preset torque. The machine is made of up to 16 heads with 2 SLVD-Ns each. The control of the machine based to a motion controller. The remoted I/O is controlled with CANopen protocol.



Multi-head bottle capper

A multi-head machine to cap bottles of different formats. Each head has 1 SLVD-N dedicated to cap fastening with torque control. The machine is made of up to 32 heads with 1 SLVD-N per head. The control of the machine based on a motion controller. The remote I/O is controlled with CANopen protocol.



Technical Characteristics

Technical Data

Model		SLVD1N	SLVD2N	SLVD5N	SLVD7N	SLVD10N	SLVD15N	SLVD17N	
	Unit								
Input and output characteristic									
Rated input current (FLA)	[A _{eff}]	1.5	2.99	5.99	8.38	11.97	17.96	20.36	
Rated output current	[A _{eff}]	1.25	2.5	5	7	10	15	17	
Peak output current (2 s)	[A]	2.5	5	10	14	20	30	34 (30@8 kHz)	
Shaft power	[kW]	0.345	0.7	1.5	2.2	3.0	4.5	5	
Continuous service installed load (power derating)	1ph [kVA]	0.85	1.5	1.5	1.8	3.0	3.3	3.3	
	3ph [kVA]	0.95	1.6	2.3	3	5.25	6.5	6.5	
Continuous service input current (power derating)	1ph [A _{eff}]	3.8	6.5	6.5	7.8	14.3	14.3	14.3	
	3ph [A _{eff}]	2.4	4.2	5.9	7.6	13.3	17.2	17.2	
Power stage dissipation	[W]	9.3	19.2	52.0	75.1	100.3	158.3	180	
Switching frequency	[kHz]	4...8						4...8	
Output frequency	[Hz]	0...450							
Dynamic braking and intermediate DC circuit									
Internal DC capacitors (±20 %)	[µF]	680			820		1800		
Braking resistor internal	[Ω]	40					16		
Peak internal braking power to 415 VDC	[kW]	4.3					10.7		
Max continuous external braking power	[kW]	1					2		
Max duty cycle (internal resistance)	[%]	1.20					1.10		

SLVD-N Features

Feedback	<ul style="list-style-type: none"> • Resolver (SLVD-N) • Encoder (SLVD-NE) • Encoder+Hall (SLVD-NH)
Auxiliary encoder input	in quadrature
Max frequency encoder input	400 kHz
RS422 encoder simulation output	4...65 000 steps/rev
Max frequency	160 kHz
Serial link	RS422 / RS485
Fieldbus	CAN ISO/DIS11898
Inputs / outputs	<ul style="list-style-type: none"> • 4 digital inputs 0...24 V • 2 digital outputs • 1 differential analog reference ±10 V • 1 differential auxiliary analog input ±10 V • 1 analogue output single ended ±4 V
Safety technology	STO function optional - category 3 performance level in compliance with UNI EN ISO 13849-1- SIL capability 3 in compliance with CEI EN 61800-5-2, PL=e

Electrical Characteristics

Power supply

Model		SLVD-N
	Unit	Control stage
Supply voltage	[VDC]	24 V (-0...+10 %)
Max. ripple	[V _{pkpk}]	Do not go over the range
Current rating of the external power supply	[A]	1
Control electronics dissipation	[W]	15
EMC filter	-	internal
		Power stage
Mains frequency	[Hz]	50...60 ±5 %
Supply voltage (3-phase or 1-phase)	[VAC]	200...230 ±10 % (only for TT, TN mains)
DC voltage range	[VDC]	282...325 ±10 %
EMC filter	-	internal

Environmental Characteristics

Ambient conditions

Temperature range	<ul style="list-style-type: none"> Operating temperature: 3K3 class, 0...+45 °C (+32...+113 °F) Storage temperature: 1K4 class, -25 ...+55 °C (-4...+131 °F) Transportation temperature: 2K3 class, -25 ... +70 °C (-13...+158 °F)
Humidity	<ul style="list-style-type: none"> Operating humidity: 3K3 class, 5...85 % without ice and condensation Storage humidity: 1K3 class, 5...95 % without ice and condensation Transportation humidity: 2K3 class, 95 % a 40 °C
Altitude (*)	≤1000 m asl (≤3281 feet asl)
Protection degree	IP20 (only in close electric cabinet), UL open type equipment
Pollution degree	2 or lower (no conductive dust allowed)

* For higher installation altitude, derate the output current by 1.5 % each 100 m up to 2000 m maximum

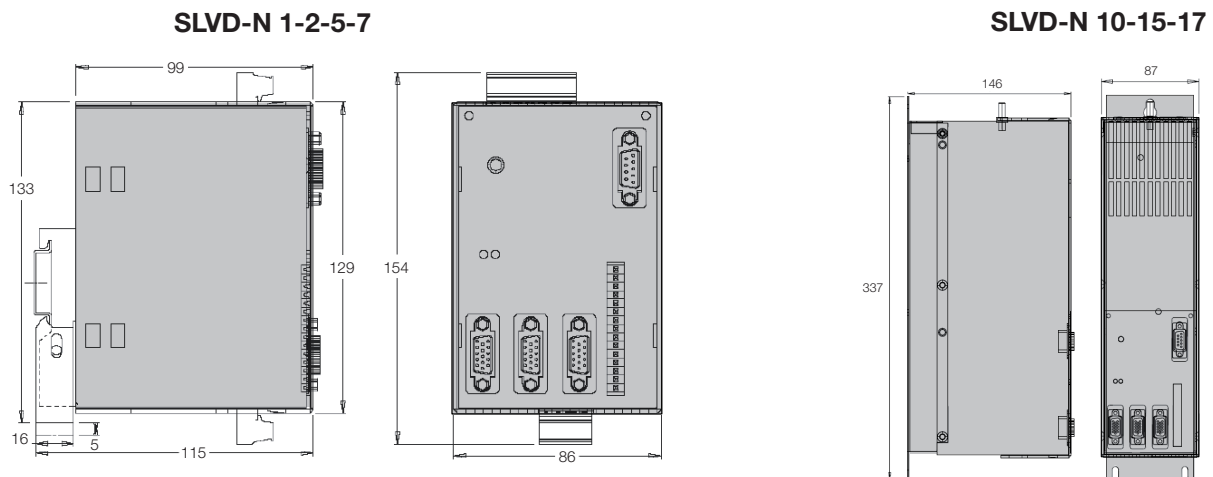
Shock and vibration

IEC60068-2-6	Frequency [Hz]	Width [mm]	Acceleration [m/s ²]
	10 ≤ f ≤ 57	0.075	-
	57 < f ≤ 150	-	9.81

Standards and Conformance

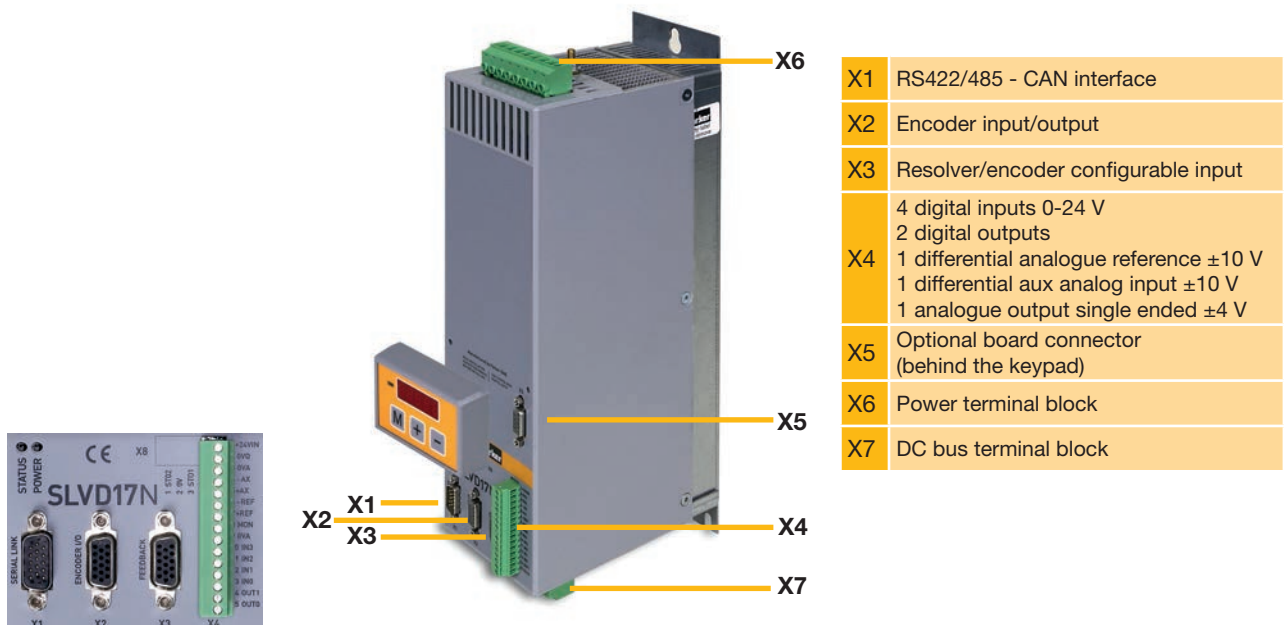
Safety standards	<ul style="list-style-type: none"> 2006/95/EC: Low voltage directive EN 61800-5-1: Adjustable speed electrical power drive systems - part 5-1: safety requirements, electrical, thermal and energy
Certification	<ul style="list-style-type: none"> UL: UL508C (USA) Power Conversion Equipment CSA: CSA22.2 Nr. 14-5 (Canada) Power Conversion Equipment
Electromagnetic compatibility	<ul style="list-style-type: none"> 2004/108/EC: EMC directive EN 61800-3: Adjustable speed electrical power drive systems - part 3: EMC requirement and specific test methods

Dimensions



Model	Height [mm]	Width [mm]	Depth [mm]	Weight [kg]
SLVD-N 1-2-5-7	154	86	115	1.1
SLVD-N 10-15-17	337	87	146	3.1

Connector Layout



Accessories and Options

Keypad

SK158/L ¹⁾

Easy to use to program the functional data, control the status of the converter and send commands.



I/O Expansion Module

SK135/S

- 16 in + 8 out
- SBCCAN interface



Cables

- Power and signal cables for resolver, incremental and absolute encoder and SinCos feedback
- Cable to connect a Bridge with several SLVD-N drives



Safety Option

Option "Safe Torque off" (STO) for all SLVD-N drives available



Fieldbus

Applying industrial standard fieldbus systems enables the SLVD-N to be very versatile.

Option EtherCAT (E5, E6):

Feature: 1 EtherCAT option for up to 3 SLVD-N (requirement SLVD-N with EtherCAT protocol)

Option PROFINET (P1, P2)



Fieldbus box (option E5,E8)

¹⁾ Not in combination with option E5,E8

Software

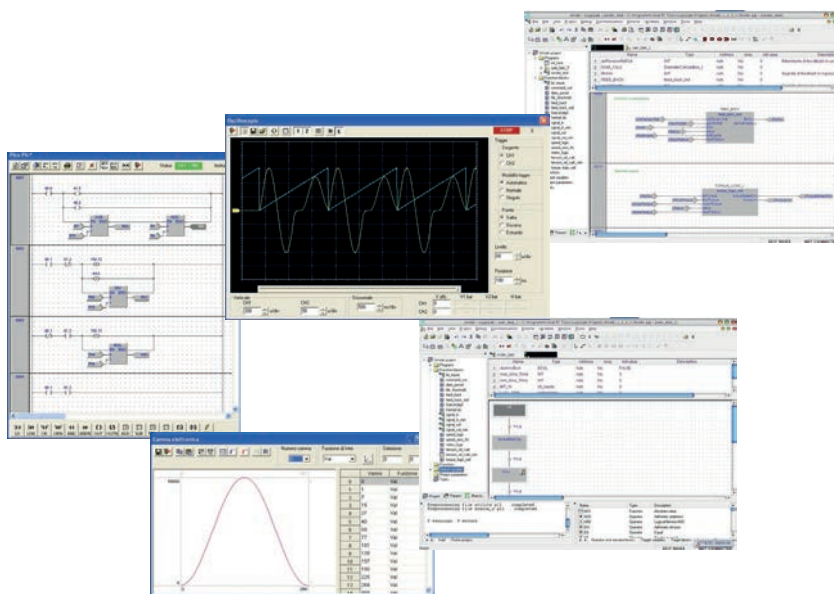
MotionWiz and LogicLab

The free MotionWiz configuration software is available to configure the SLVD-N system with just a few clicks of the mouse. MotionWiz features an easy and "friendly" interface to speed up installation, optimisation and diagnostics procedures. To simplify configuration, MotionWiz shows a typical Windows® environment on the monitor with dialogue windows and toolbars.

MotionWiz permits performing operations in both "on line" mode, directly in the mechanism, and in "off line" mode in remote on the PC. In this case, personalised configuration can be sent to the mechanism subsequently.

To simplify the configuration of systems with a large number of axis but with different cuts and the same operating mode, MotionWiz permits maintaining the same mechanism configuration and only changing the type of selected motor. Inside the MotionWiz configurator is a database containing the data of standard Parker motors.

MotionWiz incorporates "picoPLC", a built-in PLC environment programmable with standard language. PicoPLC allows the external word to communicate with the drive and to execute function sequences. Should the custom application require additional computational resources, an option software environment can be used, programmable with PLC commands according to IEC61131-3.



Order Code

Compact Servo Drive - SLVD-N

	1	2	3	4	5	6	7	8
Order example	SLVD	1	N	S	E			UL

1	Servo family	
	SLVD	Compact Digital Servodrive
2	Drive size (nominal current)	
	1	1 A
	2	2 A
	5	5 A
	7	7 A
	10	10 A
	15	15 A
	17	17 A
3	Version	
	N	New version
4	Protocol	
	S	SBCCAN protocol (standard)
	C	CANopen protocol (DS301)
	D	CANopen protocol (DS402)
	E5	EtherCAT protocol (only with optional board E5 or E6 in the bus system)
	P1	PROFINET (only with optional board P1 or P2)

5	Encoder input	
	Empty field	Resolver
	E	EnDat/incremental/SinCos encoder input (from motor feedback)
	H	Incremental encoder input with Hall sensor (from motor feedback)
	F	SinCos encoder input
6	Optional boards	
	Empty field	without optional board
	E5	OP-ETCAT - EtherCAT option (for up to 3 SLVD-N, keypad SK158/L not possible)
	E6	E5 + DB9 for keypad SK158/L (for up to 3 SLVD-N)
	P1	PROFINET
	P2	P1 + DB9 for keypad SK158/L
7	Safety	
	Empty field	without STO
	R	STO (Safe Torque Off function)
8	Firmware review	
	Empty field	without UL certification
	UL	UL certification (not for all drive sizes available, please contact your Parker partner)

Parker Servo Drive - PSD

Overview

Description

The PSD1 is Parker Servo Drive family, available with different power rating from 2 to 30A and form factors. Today the offering contains:

The PSD1-S is a standalone drive which can be connected directly to the main supply.

The PSD1-M is a multi-axis servo system where each axis module can supply up to three servo motors. The base configuration consists of a common DC bus supply and multiples PSD1-M modules, connected through DC bus bars. The modules are available as one, two or three axis versions. This makes the system highly flexible.

PSD1-M servo system is particularly suitable for all centralised automation systems, such as those found in many packaging machines, where large numbers of drives are often required offering significant advantages.

- Packaging machines
- Material forming machines
- Handling machines
- General automation

Common Features

- Hiperface DSL feedback ®
Reduced cabling; only one cable connection between drive & motor
- EtherCAT / PROFINET communication
- Quick and simple wiring
- Removable SD card
- Same software functionalities for standalone drive and multi-axis servo system

PSD1-S unique features

- Single or three phases power supply
- Compact housing
- Particularly suitable for small machines

PSD1-M unique features

- The most compact multi-axis servo system on the market
- One, two or three axis versions combined in one housing
- Common DC bus connection for energy exchange between drives



Technical characteristics - Overview

Standalone axis PSD1 S	Continuous current [A _{rms}]	Peak current A (≤ 2 s)
PSD1 SW1200	2	6
PSD1 SW1300	5	15



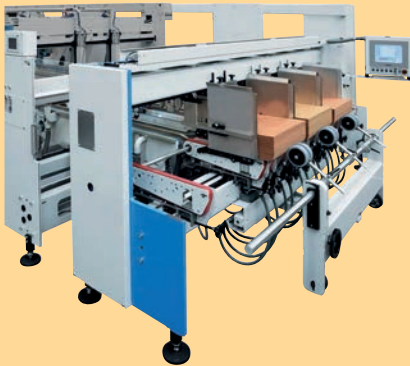
Multi axis PSD1 M	Continuous current [A _{rms}]	Peak current A (≤ 2 s)
PSD1 MW1300	5	10
PSD1 MW1400	8	16
PSD1 MW1600	15	30
PSD1 MW1800	30	60
PSD1 MW2220	2 + 2	4 + 4
PSD1 MW2330	5 + 5	10 + 10
PSD1 MW2440	8 + 8	16 + 16
PSD1 MW2630	15 + 5	30 + 10
PSD1 MW3222	2 + 2 + 2	4 + 4 + 4
PSD1 MW3433	8 + 5 + 5	16 + 10 + 10

(additional module on request)

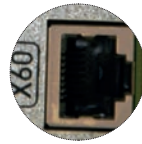
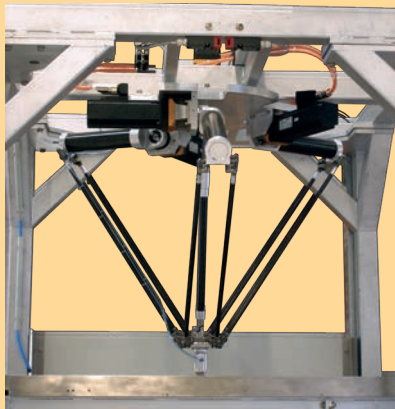
PSD Overview

Applications

PSD1-M has been developed for all applications where multiple drives are normally used and gives both OEMs and end users the opportunity to reduce build, configuration and operating costs, whilst boosting productivity and profitability.



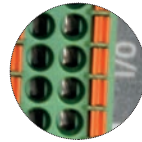
Typical applications for PSD1-M include packaging machines, material forming machines, textile, paper, converting and plastics machines, where large numbers of axes are required.



EtherCAT
PROFI
NET

High speed communication

- Communication over Ethernet
- Onboard connection



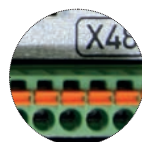
Inputs / Outputs

- PSD offers 4 fast digital inputs and 2 digital outputs per axis.
- Connection via fast and simple push-in direct plug-in technology.



Optional Motor Feedback

- Resolver, Endat 2.2, Biss C



Quick and Simple Wiring

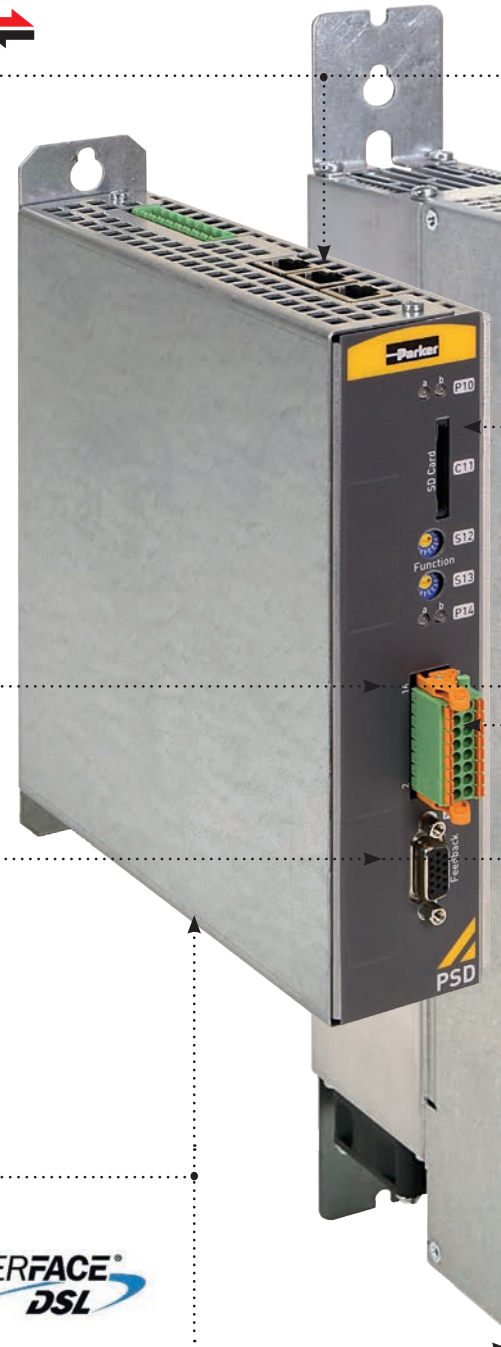
- Single cable connection between drive and SMH motor
- Reduction in wiring costs
- Increase reliability

HIPERFACE
DSL



Reduce machine footprint

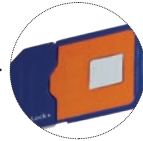
- Up to 3 axis in one single housing
- Reduce the size of the cabinet
- Electronics footprint is up to 40 % smaller than traditional solutions





High Performance and customization capabilities

- Autotuning
- Observer technology
- Anti resonance adjustments, vibration suppression, notch-filter...
- Fast control loops (sample times):
 - Current control 62,5 μ s,
 - Speed control 125 μ s,
 - Position control 125 μ s



Removable SD card

- Easy exchange between drives less than 1 minute
- Software upgrade
- Parameters and application memory



STO Safety Functions reduce time and cost, no need additional cabling

- 2 Safety Torque Off (STO) circuits for 3 axis module (one for axis1 and one for axis 2,3).
- 2 independent Safety Torque Off circuits for 2 axis module
- 1 Safety Torque Off circuit for 1 axis module
- Optional Safety Functions over EtherCAT FSoE (in development)

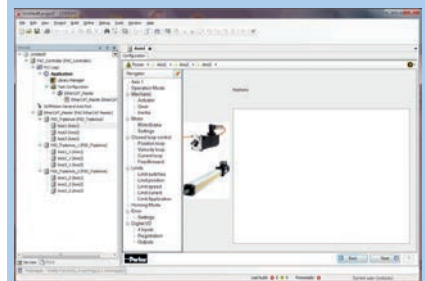


DC Bus energy saving

- Energy exchange between drives
- No accessories required

PSD Configuration Plug-in

With the help of the Parker Automation Manager (PAM) all ongoing tasks can be managed. Based on the PAM framework a complete integrated tool is available. The set-up and commissioning of the drive can be done easily using the wizard based configuration tool. Parker motors will be recognized by a electronic nameplate. Technical data for the Parker linear actuators such as ETH, HPLA etc are available in database.

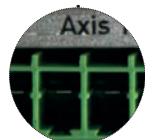
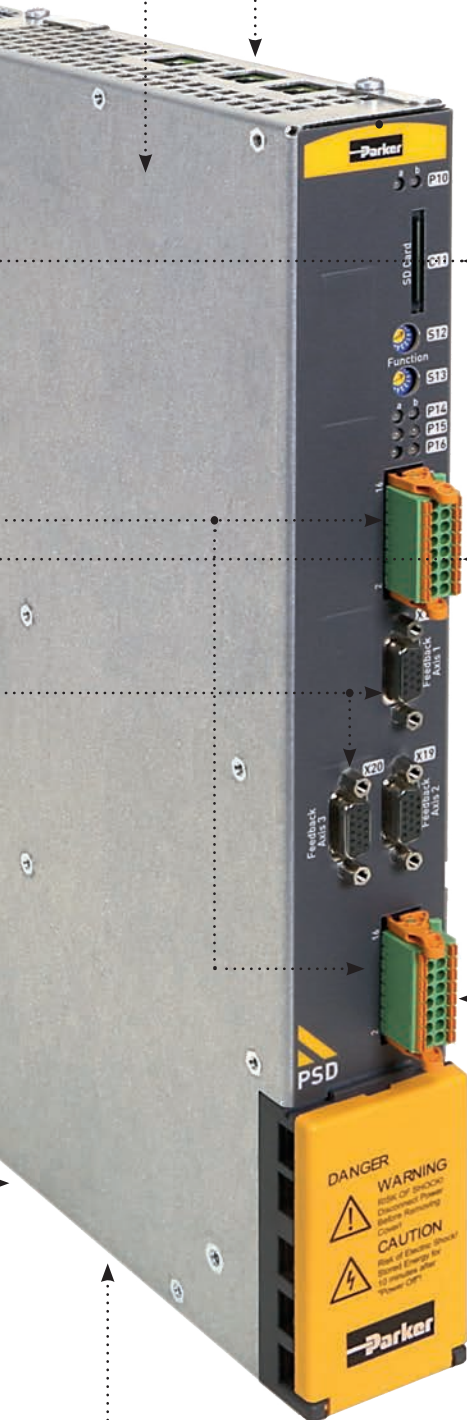


Configuration / parameterization

- Wizard-guided query of all necessary inputs
- Graphically supported selection
- Reference to mechanical system / application

Diagnostics / maintenance / service


- Complete support of diagnostics and analysis functions
- Test functions
- 4-channel oscilloscope
- Signal tracking directly on the PC
- Various modes (single/normal/ auto/roll)
- Zoom function
- Export as image or table (for example to Excel)
- Enhanced optimisation possibilities for the drive technology Set-up
- Predefined motion profiles
- Convenient operation
- Automatic determination of the moment of inertia




Technical Characteristics


Technical Data


PSD1 SW Standalone Axis

	Type		Standalone Axis			
	Input voltage	VAC	3*230 VAC ±10 % 50...60 Hz 1*230 VAC ±10 % 50...60 Hz 30...253 VAC			
	PWM Frequency nom.	kHz	8		8	
	Possible PWM frequency	kHz	4 / 8 / 16		4 / 8 / 16	
	Continuous current	A	2		5	
	Peak current (≤ 2 s)	A	6		15	

PSD1 MW Multi-Axis Module

	Type		Single Axis			
	DC Bus voltage	VDC	325...680 VDC ±10 % (Rated voltage 560 VDC)			
	PWM Frequency nom.	kHz	8	8	4	4
	Possible PWM frequency	kHz	4 / 8 / 16	4 / 8 / 16	4 / 8 / 16	4 / 8 / 16
	Continuous current	A	5	8	15	30
	Peak current (≤ 2 s)	A	10	16	30	60

	Type		Twin Axis			
	DC Bus voltage	VDC	325...680 VDC ±10 % (Rated voltage 560 VDC)			
	PWM Frequency nom.	kHz	8	8	8	4
	Possible PWM frequency	kHz	4 / 8 / 16	4 / 8 / 16	4 / 8 / 16	4 / 8 / 16
	Continuous current*	A	2 + 2	5 + 5	8 + 8	15 + 5
	Peak current (≤ 2 s)	A	4 + 4	10 + 10	16 + 16	30 + 10

	Type		Triple Axis			
	DC Bus voltage	VDC	325...680 VDC ±10 % (Rated voltage 560 VDC)			
	PWM Frequency nom.	kHz	8		8	
	Possible PWM frequency	kHz	4 / 8 / 16		4 / 8 / 16	
	Continuous current*	A	2 + 2 + 2		8 + 5 + 5	
	Peak current (≤ 2 s)	A	4 + 4 + 4		16 + 10 + 10	

*with an continuous limit current at 16A max. by module

PSD1-MW-P - Power Supply Unit

Mains Supply

Power Supply Type	Unit	PSD1 MW P010			with LCG-0030-0,86mH-UL*			PSD1 MW P020			with LCG-0055-0,45mH*		
Input Voltage		3*230 ... 480 VAC ±10 % 50...60 Hz (Rated voltage 3*400 VAC)											
Output Voltage		325...680 VDC ±10 % (Rated voltage 560 VDC)											
Supplied Voltage	[VAC]	230	400	480	230	400	480	230	400	480	230	400	480
Output Power	[kVA]	6	10	10	9	15	15	12	20	20	19	30	30
Peak Output Power (<5 s)	[kVA]	12	20	20	18	30	30	24	40	40	36	60	60

Control Supply

Rated Input Voltage		24 VDC ±10 %											
Maximum Ripple		1 V _{pkpk}											
Supply Current	[A]	0.2 A			0.8 A			0.3 A			0.3 A		

(*) Operation of the P010 and P020 power supplies with additional line choke (to be ordered separately).

Environmental Characteristics

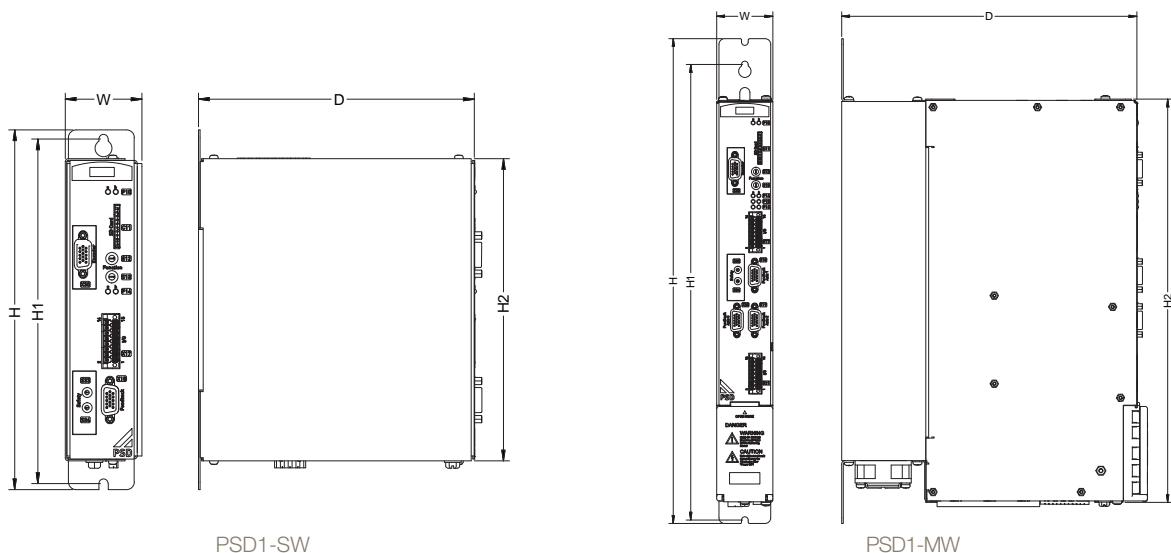
Operating Temperature	0...+40 °C
Storage Temperature	-25 °C...+70 °C
Shipping Temperature	-25 °C...+70 °C
Product Enclosure Rating	IP20 (only in closed electrical cabinet) UL open type equipment
Altitude	1000 m ASL. Derate output current by 1.0 % per 100 m to a maximum of 2000 m
Operating Humidity	Class 3K3 - Maximum 85 % non-condensing
Storage Humidity	Class 1K3 - Maximum 95 % non-condensing
Shipping Humidity	Class 2K3 - Maximum 95 % at 40 °C
Operating Vibration	IEC60068-2-6 10...57 Hz width 0.075 mm 57...150 Hz accel. 9.81 m/s ²

Standards & Conformance

2006/95/EC	Low voltage directive
EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 61800-5-1	Adjustable speed electrical power drive systems - safety requirements, thermal and energy
UL	Power Conversion Equipment UL508C
2004/108/EC	EMC directive
EN 61800-3	Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test method
STO	Performance Level PL=e according to EN ISO 13849

Dimensions

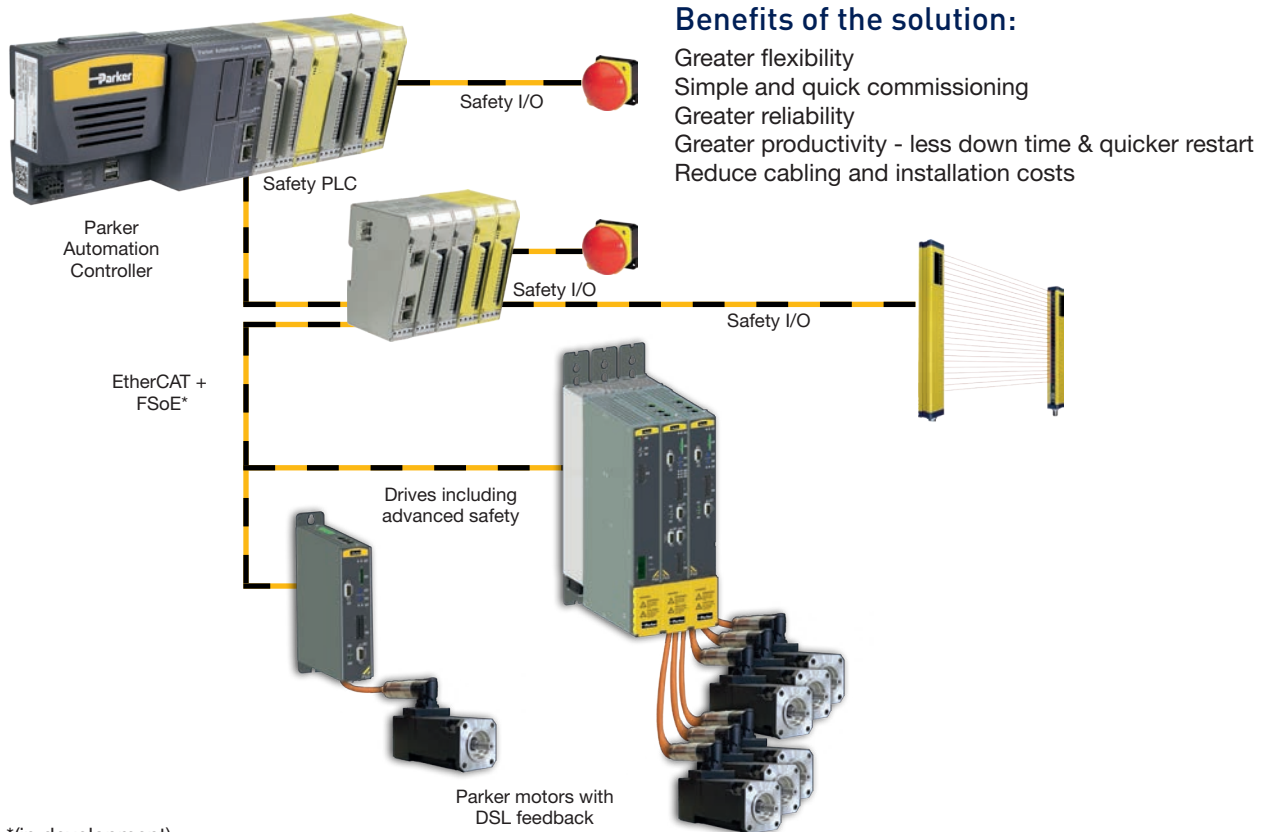
Type	H [mm]	H1 [mm]	H2 [mm]	W [mm]	D [mm]	Weight [kg]
PSD1-SW	235	225	200	50	180	1.8
PSD1-MW 1/2/3 axes	432	405	360	50	263	4.3
PSD1-MW Single axis 30 A	432	405	360	100	263	8.6
PSD1-MW-P-010	432	405	360	50	263	3.6
PSD1-MW-P-020	432	405	360	100	263	5.4



Specific Functionalities

Safety configuration

The Parker Servo Drives have featured "Safe Torque Off" (STO) as standard function, helping to protect users and machinery against unexpected motor start-up. Performance Level PL=e according to EN ISO 13849. In order to fulfil the new machinery directive 2006/42/EG, the PSD can be equipped with a safety option board. The system does not need any additional wiring, as the Functional Safety over EtherCAT (FSoE)* uses the existing wiring.



Benefits of the solution:

- Greater flexibility
- Simple and quick commissioning
- Greater reliability
- Greater productivity - less down time & quicker restart
- Reduce cabling and installation costs

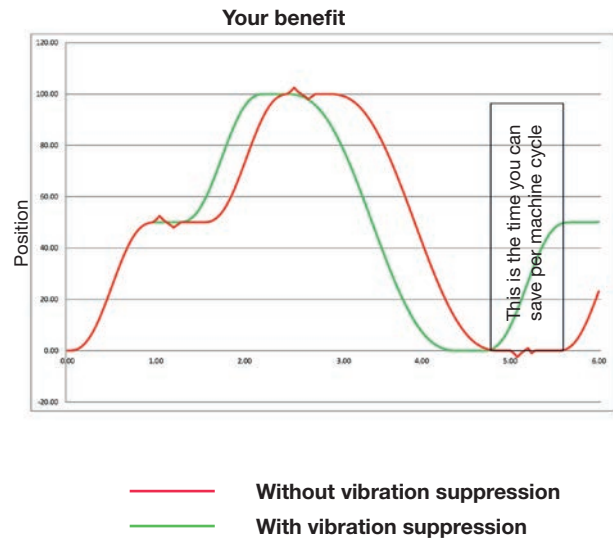
*(in development)

Specific control feature for high dynamic machines

Vibration suppression

New machines need increasingly higher clock rates, but highly dynamic setvalue changes stimulate mechanical resonance of the machine. Mechanical vibrations lead to quality loss and/or reduced clock rates

=> Vibration suppression helps to boost the performance of your machine



Order Code

ParkerServo Drive PSD1

	1	2	3	4	5	6	7	8	9	10	11
Order example	PSD1	M	W	3	433	B	1	1	0	0	000

1 Drive Family	PSD1	Parker Servo Drive
2 Device Type	S	Standalone 230VAC
	M	Multi-axis 400VAC
3 Mounting Type	W	Wall mounting
	C	Cold plate*
	P	Push through IP20*
4 Device Type	1	One powerstage
	2	Two powerstages
	3	Three powerstages
	P	Power module
5 Device Type	PSD1SW1	Standalone
	200	2 Ampere
	300	5 Ampere
	PSD1MW1	One powerstage
	300	5 Ampere
	400	8 Ampere
	600	15 Ampere
	800	30 Ampere*
	PSD1MW2	Two powerstages
	220	2 + 2 Ampere
	330	5 + 5 Ampere
	440	8 + 8 Ampere
	630	15 + 5 Ampere*
	PSD1MW3	Three powerstages
	222	2 + 2 + 2 Ampere
	433	8 + 5 + 5 Ampere
	PSD1MWP	Passive power supply
	010	10 kVA
	020	20 kVA

6 Technology	B	Basic
7 Interface	1	EtherCAT
	2	PROFINET
	3	Ethernet/IP*
8 Feedback	1	DSL
	2	EnDat 2.2*
	3	BiSS C*
	4	Resolver*
9 Option 1	0	No option
	1	Functional Safety over Ethercat*
10 Option 2	0	No option
11 Customisation	000	Non customized

Note: in bold, reference already available
* in development



Brushless Servomotor with Integrated Servo Drive - Motornet DC

Overview

Description

Motornet DC is a brushless servomotor system with integrated servo drive, supplied from a DC-bus voltage. Hybrid power, control and communications cables, a Power supply and Interface module complete the system and local I/O's can be connected directly to the motor.

Ideally suited to multi-axis applications where a number of motors are mounted in close proximity on the machine, Motornet DC allows a decentralized approach to motion control to be taken.

- Packaging Machines
- Rotary Tables
- Filling, bottling and capping machines

Motion control functionality is executed by means of EtherCAT communication or optionally CANopen DS402 communication.

Features

- Feedback: Resolver / EnDat (optional)
- Fieldbus: EtherCAT
- 2 digital Inputs / 2 digital Outputs
- Protection level: IP64 standard, IP65 / IP67 (optional)
- STO (optional)
- CAN Service Bus



Technical Characteristics - Overview

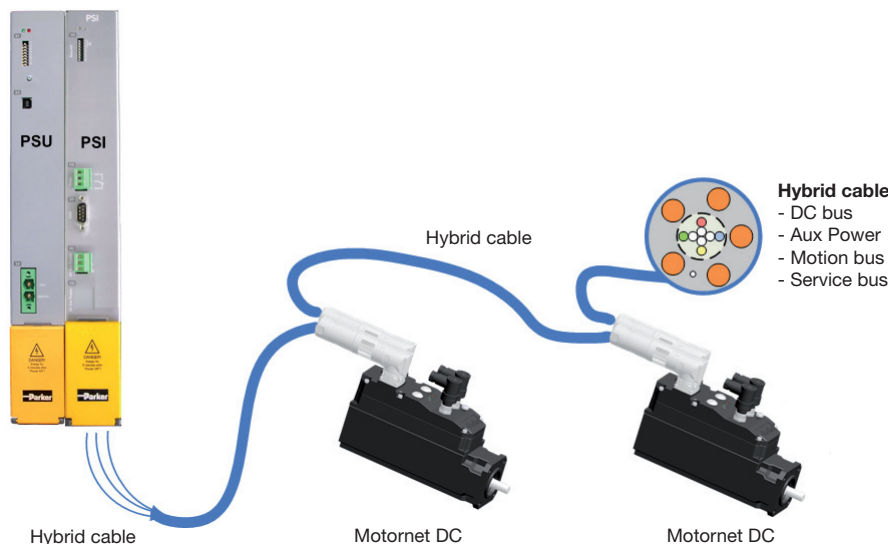
230 VAC supply

		Size		
		MDC60	MDC70	MDC100
Speed 3000 min ⁻¹	Stall torque [Nm]	1	2.5	6.5
	Peak torque [Nm]	4	11	15
Speed 6000 min ⁻¹	Stall torque [Nm]	0.9	1.9	-
	Peak torque [Nm]	4	7	-
Inertia without brake [kgmm ²]		30.2	100	504

400 VAC supply

		Size		
		MDC60	MDC70	MDC100
Speed 3000 min ⁻¹	Stall torque [Nm]	1	2.6	7.5
	Peak torque [Nm]	4	11	26.7
Speed 5200 min ⁻¹	Stall torque [Nm]	-	-	5.7
	Peak torque [Nm]	-	-	15
Speed 6000 min ⁻¹	Stall torque [Nm]	0.9	2.2	-
	Peak torque [Nm]	4	7	-
Inertia without brake [kgmm ²]		30.2	100	504

Typical System Architecture



Motornet DC System

Description

The next logical evolution in machine motion control, Motornet DC integrates servo control electronics into a brushless servomotor creating a self-contained motor and servo controller. This offers considerable benefits in terms of machine design by allowing a decentralised motion control architecture to be used. This in turn allows substantial savings in time and materials to be realised, while reducing machine footprints.

Typical applications for Motornet DC include packaging machines and rotary tables where numerous motors are mounted on the machine.



Motornet DC

Features and Benefits

Quick and simple machine configuration and reduced wiring

The hybrid cabling solution, which contains all power supply, control and communications signalling offers machine builders a number of benefits including:

- Simplified plug and socket connections at the motor
- Reduced number of connections and potential points of failure
- Reduced wiring time and cost of associated cabling

Reduced machine footprint

With a power supply and PSI Interface module being the only additional components required in the cabinet, the electronics footprint is up to 70 % smaller than traditional centralised solutions. Additionally, all wiring changes are made on the machine via plug and socket connections rather than in the electrical cabinet.

Modular machine design

Because of the modular nature of Motornet DC, machine design becomes very easy. Additional axes can be added with very little effort, simply by duplicating schematic drawings from other axes. This not only reduces engineering time and costs, but simplifies build and significantly improves time to market.

Efficient power control

Motornet DC works on a common DC bus power supply that allows the system to share much of the braking energy to other Motornet DC units rather than dissipating it in the form of heat via external resistors. In some instances, the resistor can be removed completely and in others a smaller resistor is required.

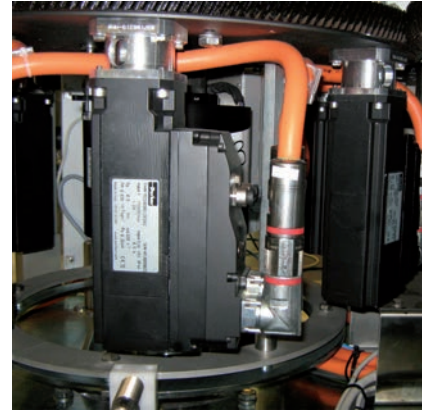


PSUP - Power Supply Unit and
PSI - Power Supply Interface for
Motornet DC

Application

Motornet DC is ideally suited to applications where a number of motors are mounted in close proximity on a machine, such as a filling machine. In this case, the reduced cabling and electronics allow a much smaller physical footprint for the machine to be developed. Motornet DC is suited to packaging lines in general as the plug and play nature of its cable architecture allows new machine modules to be easily added or removed without considerable rewiring cost being incurred.

- **Packaging lines**
- **Rotary tables**
- **Filling, bottling and capping machinery**



Functionality

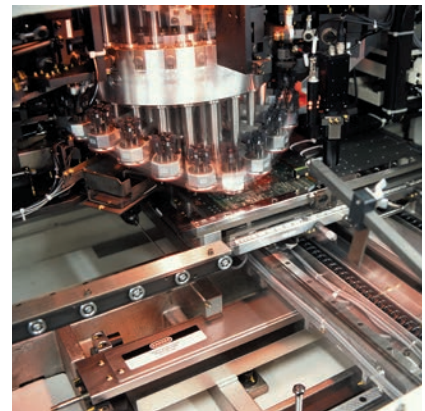
Motornet DC offers full motion control and is designed to complement the existing Parker servo drive and motor product range. Being flexible in its configuration, Motornet DC can be used to provide repeatable and accurate motion control for a wide range of applications and can be integrated into a larger hybrid motion solution.



Standard Version

Available in flange sizes of 60 mm, 70 mm and 100 mm with continuous torque ratings of 0.9 to 7.5 Nm and motor speeds up to 6000 min⁻¹. Motornet DC can be configured to suit the needs of any number of applications with a range of options. As standard Motornet DC is supplied with:

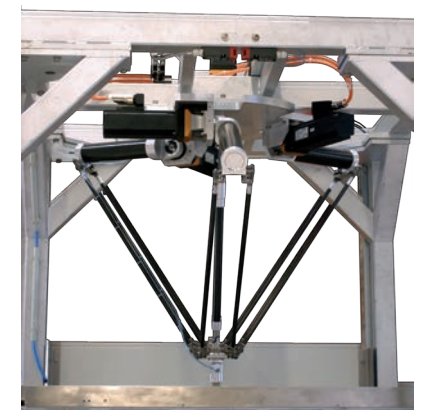
- **EtherCAT**
- **Localised I/O - 2 digital inputs and 2 digital outputs**
- **Resolver feedback**
- **CAN Service Bus**



Options

The capabilities of Motornet DC can be further enhanced with numerous options which are available upon request, including:

- **IP65 protection for harsh environments**
- **Safe Torque Off (STO) functionality**
- **CANopen DS402 communication in place of EtherCAT**
- **Encoder feedback**
- **Holding brake**



Technical Characteristics

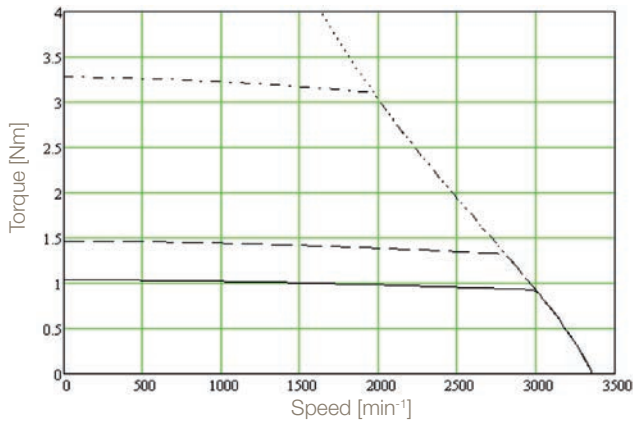
General Characteristics

Type	AC Voltage Power Supply [VAC]	Speed [min ⁻¹]	Rated torque [Nm]	Rated power [W]	Cont. stall torque [Nm]	Peak torque [Nm]	Peak power [W]	Inertia (without brake) [kgmm ²]
MDC60	230	3000	0.90	314	1.0	4.0	1257	30.2
		6000	0.55	384	0.9	4.0	2513	
	400	3000	0.90	314	1.0	4.0	1257	
		6000	0.55	384	0.9	4.0	2513	
MDC70	230	3000	2.00	698	2.5	11.0	3456	100
		6000	0.50	620	1.9	7.0	4398	
	400	3000	2.00	698	2.6	11.0	3456	
		6000	0.50	698	2.2	11.0	6911	
MDC100	230	3000	4.40	1535	6.5	15.0	4712	504
	400	3000	4.40	1535	7.5	26.7	8388	
		5200	1.00	1536	5.7	15.0	8168	

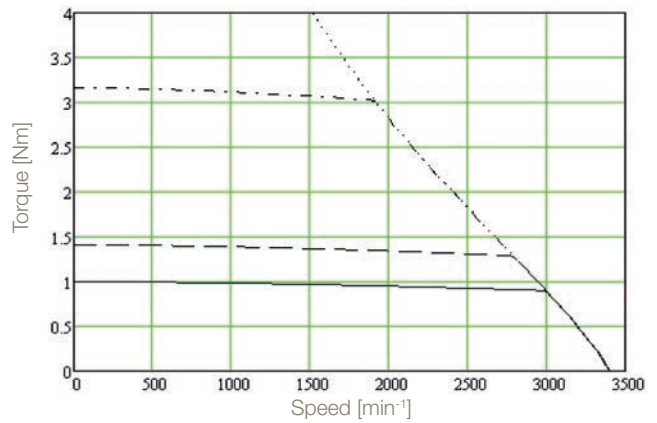
Data refer to MDC mounted in horizontal position to allow for free convection , at 40 °C ambient temperature.

Motornet DC - Torque vs Speed Characteristic Curves

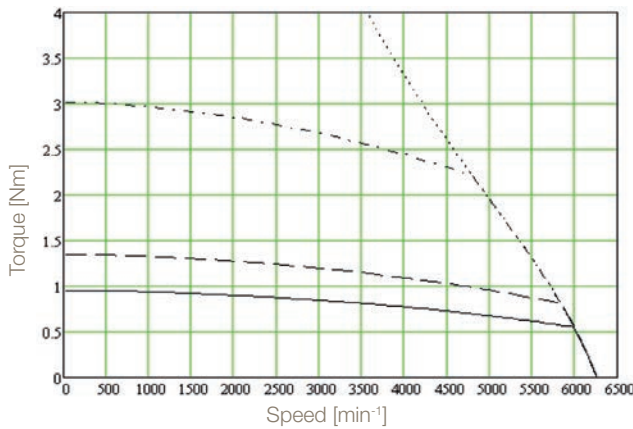
MDC60 - 3000 min⁻¹ 230 VAC



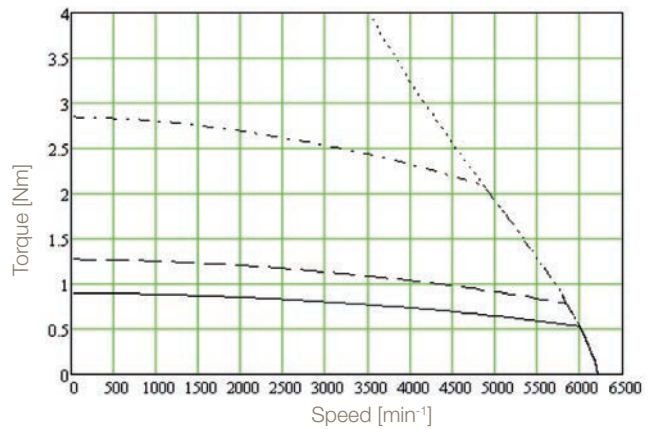
MDC60 - 3000 min⁻¹ 400 VAC



MDC60 - 6000 min⁻¹ 230 VAC



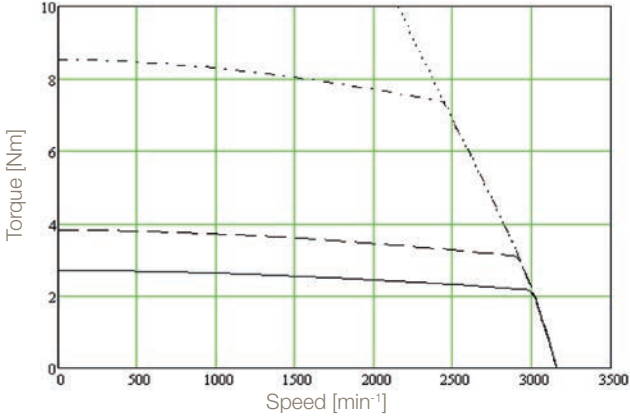
MDC60 - 6000 min⁻¹ 400 VAC



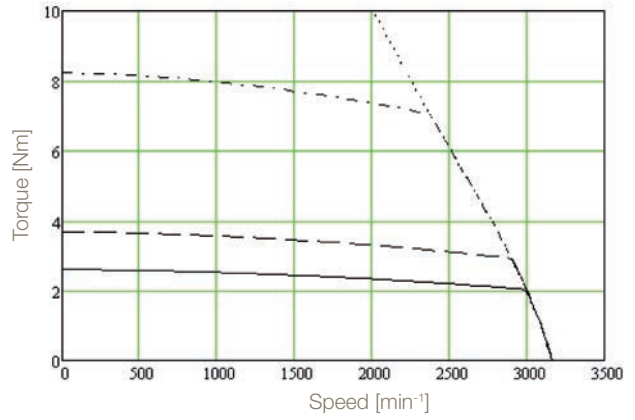
Key

- Voltage Limit
- S1 60 K ΔT
- - S3 50 %
- · S3 10 %

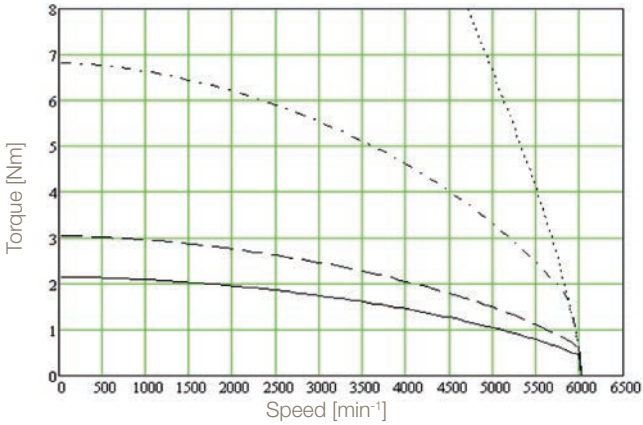
MDC70 - 3000 min⁻¹ 230 VAC



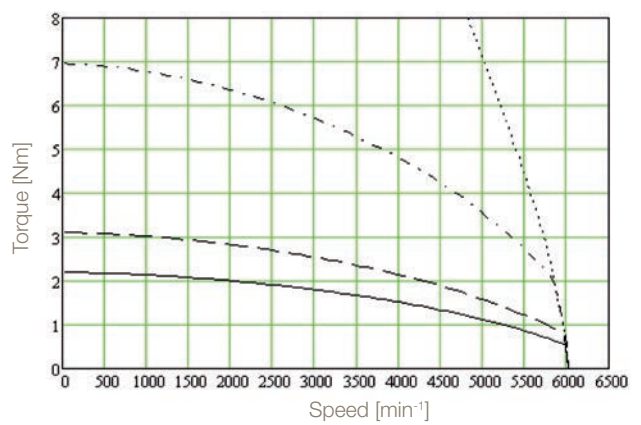
MDC70 - 3000 min⁻¹ 400 VAC



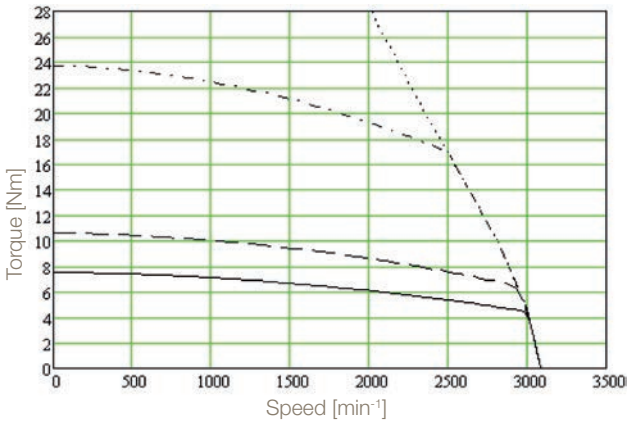
MDC70 - 6000 min⁻¹ 230 VAC



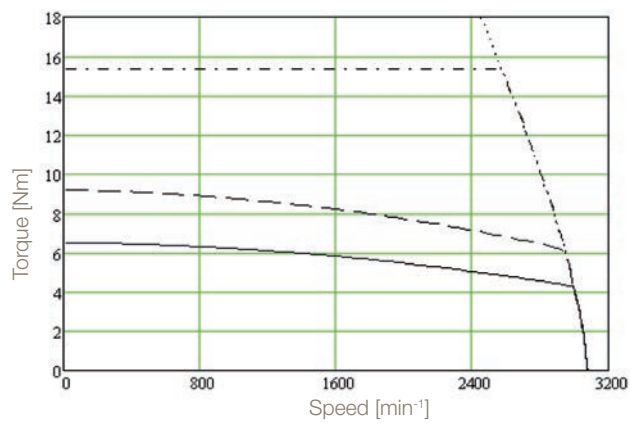
MDC70 - 6000 min⁻¹ 400 VAC



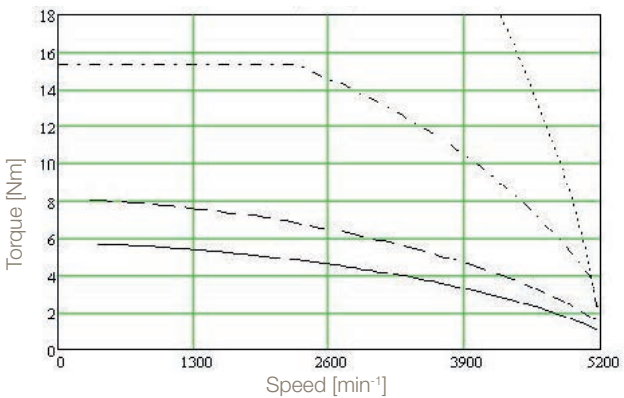
MDC100 - 3000 min⁻¹ 400 VAC



MDC100 - 3000 min⁻¹ 230 VAC



MDC100 - 5200 min⁻¹ 400 VAC



- Key**
- Voltage Limit
 - S1 60 K ΔT
 - - S3 50 %
 - · S3 10 %

Electrical Characteristics

MDC - Motornet DC

Motornet DC Model		MDC60	MDC70	MDC100
	Unit			
Auxiliary Voltage Supply				
Rated Input Voltage	[V]	24...48 VDC (0...+10 %)		
Maximum Input Current ¹⁾	[A]	20		
Control Stage Input Power	[W]	12		
Power Stage Voltage				
Maximum DC Voltage Supply	[V]	750 VDC		

¹⁾ This is the maximum rated input current that may be supplied to the overall MDC branch. To calculate the maximum number of MDC units that can be connected in a single branch without exceeding this value, the user must also consider the input braking current.

PSUP - Power Supply Unit

Mains Supply

Power Supply Type	Unit	PSUP10			PSUP20			PSUP30 ⁽²⁾		
Input Voltage		3*230...480 VAC ±10 % 50...60 Hz (Rated voltage 3*400 VAC)								
Output Voltage		325...680 VDC ±10 %								
Supplied Voltage	[VAC]	230	400	480	230	400	480	230	400	480
Output Power	[kVA]	6	10	10	12	20	20	18	30	30
Output Peak Power (<5 s)	[kVA]	12	20	20	24	40	40	34	60	60

Control Supply

Rated Input Voltage		24 VDC ±10 %								
Maximum Ripple		1 V _{pkpk}								
Supply Current	[A]	PSUP10D6: 0,2 A			PSUP20D6: 0,3 A			PSUP30D6: 0,3 A		

⁽²⁾ Operation of the PSUP30 only with line choke.

PSI - Power Supply Fieldbus Interface for Motornet DC

Power Supply Interface	Unit	PSI5	PSI10	PSI20
Supply Voltage				
DC Voltage Range	[V]	300...750 VDC		
Regenerative braking				
Capacity	[µF]	470	940	940
Storable energy	[WS]	75@400 VAC 42@480 VAC	150@400 VAC 84@480 VAC	150@400 VAC 84@480 VAC

Environmental Characteristics

Motornet DC, PSUP - Power Supply Unit and PSI - Power Supply Interface

Temperature			
<ul style="list-style-type: none"> Operating Temperature: 0...+40 °C Storage Temperature: -25...+55 °C Shipping Temperature: -25...+70 °C 			
Product Enclosure Rating			
	Motornet DC	PSUP	PSI
	IP64, IP65 / IP67 as option	IP20 (only in closed electrical cabinet) UL open type equipment	
Altitude			
1000 m ASL. Derate output current by 1.5 % per 100 m to a maximum of 2000 m			
Humidity			
<ul style="list-style-type: none"> Operating Humidity: Class 3K3 - Maximum 85 % non-condensing Storage Humidity: Class 1K3 - Maximum 95 % non-condensing Shipping Humidity: Class 2K3 - Maximum 95 % at 40 °C 			
Operating Vibration			
	Motornet DC	PSUP	PSI
	3M1 Class 2...9 Hz width 0.3 mm 9...200 Hz accel. 1 m/s ²	IEC60068-2-6 10...57 Hz width 0.075 mm 57...150 Hz accel. 9.81 m/s ²	

Standards & Conformance

Motornet DC

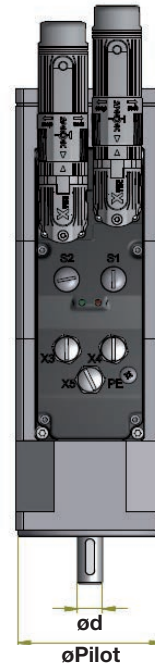
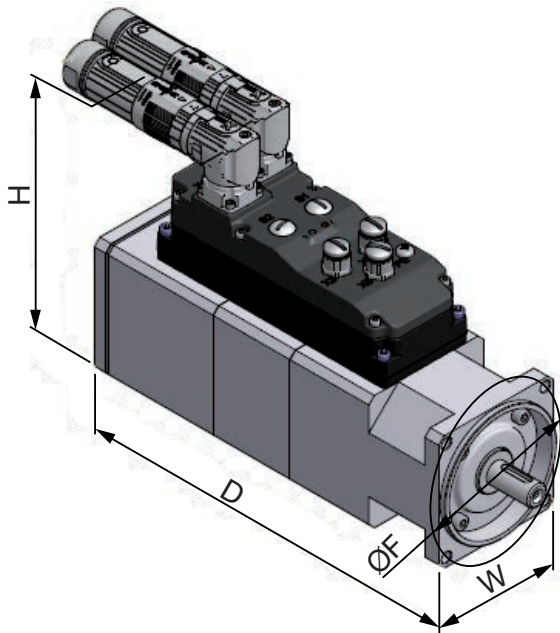
2006/95/EC	Low Voltage Directive
2004/108/CE	EMC Directive
EN 61800-3	Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test method
EN 61800-5-1	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
EN 60034-1	Rotating electrical machines - Part 1: Rating and performances
EN 60034-5	Rotating electrical machines. Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification

PSUP - Power Supply Unit and PSI - Power Supply Interface for Motornet DC

2006/95/EC	Low voltage directive
2004/108/CE	EMC Directive
EN 61800-3	Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test method
EN 61800-5-1	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy

Dimensions

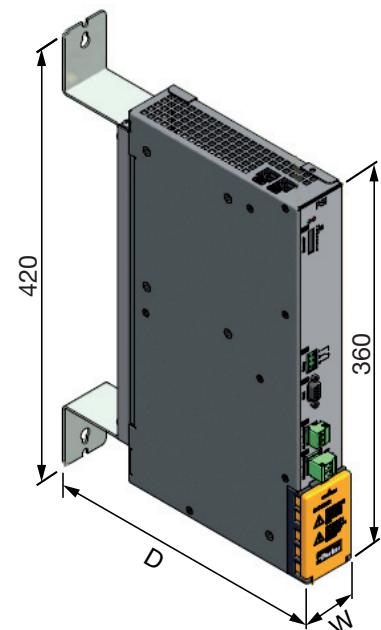
Motornet DC



Type	Flange	H [mm]	W [mm]	D [mm]	ød x length [mm]	øPilot [mm]	F [mm]	Weight [kg]
MDC60	5	154	70	192	9x20 / 11x 23	60	75	2.7
	8		60			40	63	
MDC70	5	164	70	287	11x23 / 14x30 / 19x40	60	75	5.2
MDC100	5	194	100	262	19x40 / 24x50	95	115	8.6
	8					80	100	

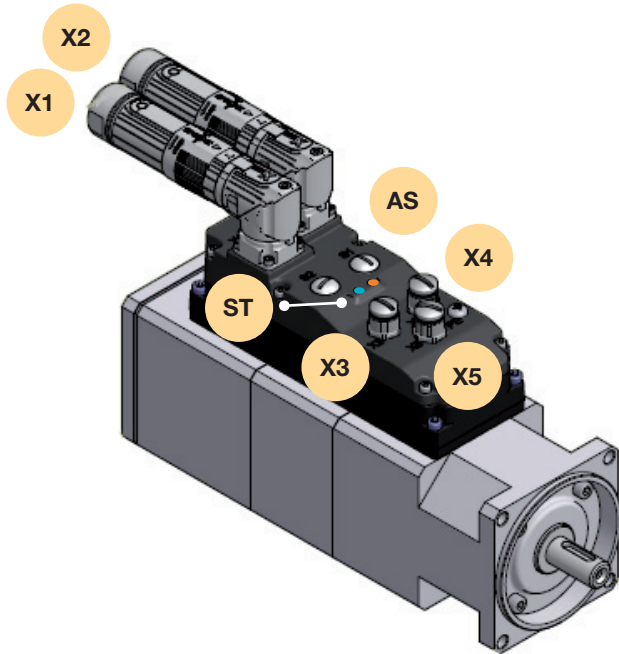
PSU - Power Supply Unit and PSI - Power Supply Interface for Motornet DC

Type	W [mm]	D [mm]	Weight [kg]
PSUP10, PSI5/PSI10/PSI20	50	270	3.6
PSUP20/PSUP30	100	270	5.4



Connector Layout

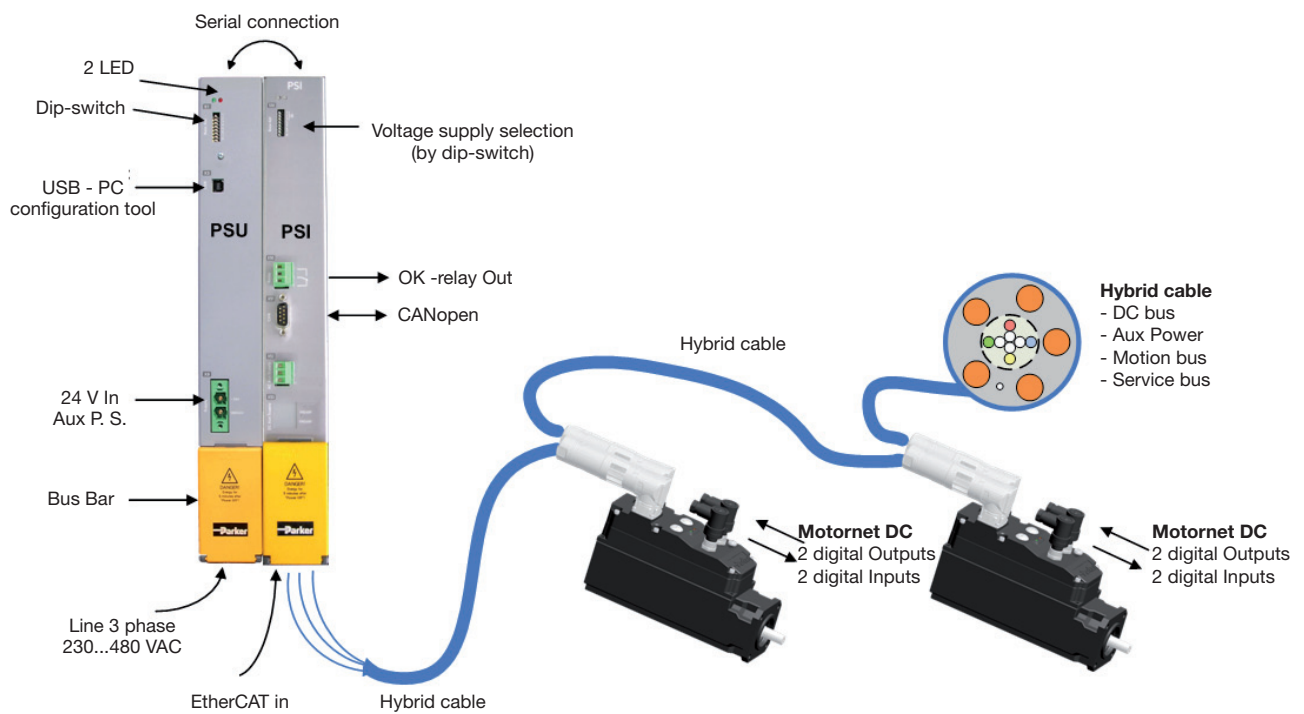
Motornet DC



Key	Description
X1	IN: DC Bus, 24 VDC Supply, Motion Bus, Service Bus
X2	OUT: DC Bus, 24 VDC Supply, Motion Bus, Service Bus
X3	Digital Inputs
X4	Digital Outputs
X5	I/O STO, RS232
AS	Address setting selector switches
ST	Status LEDs: Green - Power On, Red - Status

Typical Connection Diagram

Motornet DC



Accessories

Configuration Software - MotionWiz

MotionWiz is free of charge downloadable configuration software that allows users to configure and optimise the Motornet DC series with a few easy clicks of the mouse.

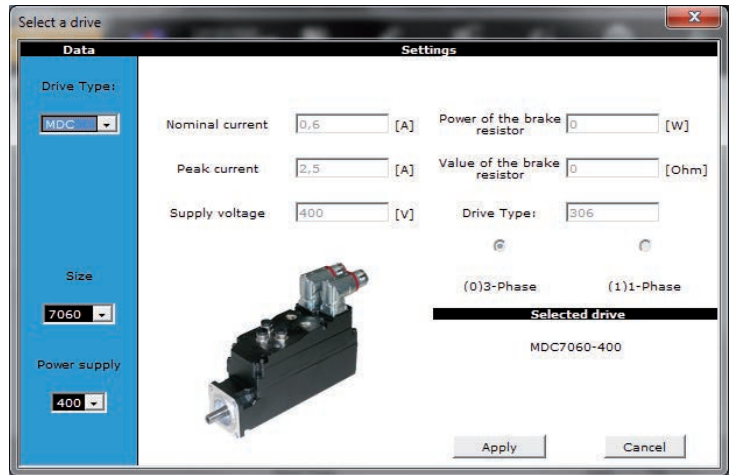
MotionWiz features an intuitive, easy and simple to use Windows® style environment to aid installation, optimisation and diagnostic use.

MotionWiz permits operation in both "on line" mode, directly in the controller, and in "offline" mode, remotely on the PC before downloading to the controller.

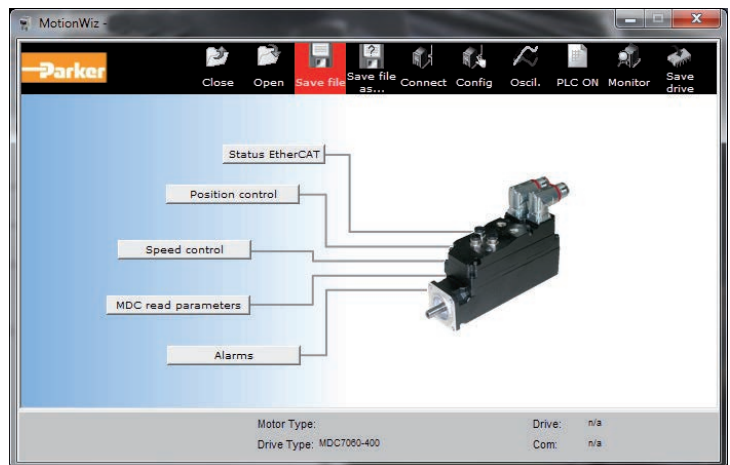
To simplify the configuration of systems with a large number of similar axes but with different motion profiles, MotionWiz allows users to copy the configuration from one application to another.

Inside the MotionWiz configurator is a database containing the technical characteristics of the full range of Parker motors and drives.

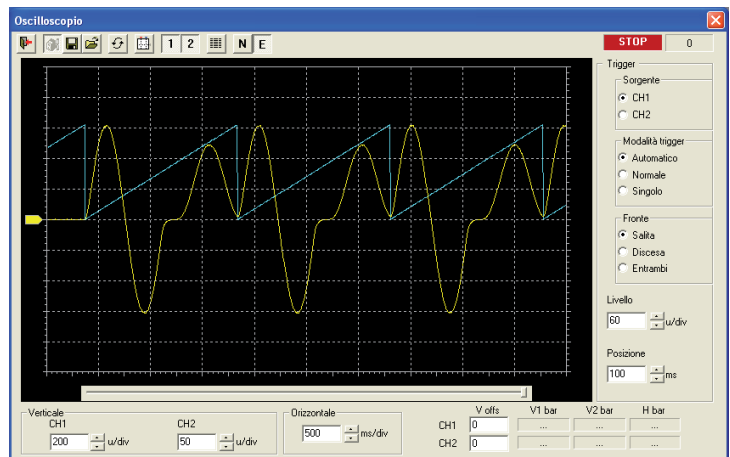
MotionWiz can be downloaded at www.parker.com/eme/motornet



MotionWiz: Motor's size selection



MotionWiz: MDC page - Main electronic control parameters and fieldbus status



MotionWiz Oscilloscope: Real speed & torque trends

Order Code

MDC - Motornet DC

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Order example	MDC	E	A	60	30	5	9	S	Hxx	F4	M	R	E	64	4

1 Motor family	MDC	Motornet DC - integrated resolver
2 Encoder*	Empty field	Resolver
	E	Encoder (option)
3 Brake*	Empty field	Without holding brake
	A	With holding brake (option)
4 Motor frame size (Refer to compatibility table)	60	60 mm motor frame
	70	70 mm motor frame
	100	100 mm motor frame
5 Nominal speed (Refer to compatibility table)	30	3000 min ⁻¹ (230/400 VAC - all frames)
	52	5200 min ⁻¹ (400 VAC - frame 100 only)
	60	6000 min ⁻¹ (230/400 VAC - not frame 100)
6 Flange	5	Flange 5 (available for all sizes)
	8	Flange 8 (contact your local sales office)
7 Shaft diameter	9	9 mm shaft (frame 60 only)
	11	11 mm shaft (frame 60 and 70)
	14	14 mm shaft (frame 70 only)
	19	19 mm shaft (frames 70 and 100)
	24	24 mm shaft (frame 100 only)
8 Smooth shaft - keyway	Empty field	With keyway
	S	Without keyway

9 Motor shaft*	Empty field	Standard shaft
	Hxx	Hollow shaft, xx = internal dia. (max 12 mm) Available only for MDC70 and MDC100 with resolver
10 Feedback	Empty field	Standard resolver
	F4	Encoder EQ11130 (EnDat) (with E selected in block 2)
11 Increased inertia*	Empty field	Standard inertia
	M	Increased inertia (option)
12 Safe torque off (STO)*	Empty field	Without safe torque off
	R	With safe torque off (option)
13 Fieldbus	E	EtherCAT
	D*	CANopen (option)
14 Protection level	64	IP64 protection
	65	IP65 protection (option)
	67	IP67 protection (option)
15 AC supply voltage (PSU supply voltage)	2	230 VAC
	4	400 VAC

* Option currently under development

Motornet DC Hybrid Cables

	1	2	3	4
Order example	HYBCA	0030	PSI	4

1 Cable type	HYBCA	Hybrid cable for Motornet DC
2 Length (x10 mm)	0030	300 mm
	0100	1000 mm (1 m)
	1000	10 m
Note: maximum cable length is 15 m		
3 Connector Type	PSI	Wired cable for PSI to MDC with PSI connector and female mating MDC connector
	MDC	Wired cable for MDC to MDC with male and female mating MDC connectors
4 Cable Size	Empty field	2.5 mm ² cable size
	4	4.0 mm ² cable size

Cables options

HYBCA1	MDC hybrid cable only (no connectors) - 1 m length / 2.5 mm ²
HYBCA14	MDC hybrid cable only (no connectors) - 1 m length / 4 mm ²
CONMDCMV	MDC hybrid connector (male)
CONMDCFV	MDC hybrid connector (female)
TAPMDCETH	Terminal cup for MDC EtherCAT
TAPMDCETHS	Terminal cup for MDC EtherCAT with Service Bus

Mains module: PSUP

	1	2	3	4	5
Order example	PSU	P	10	D6	USB M00

1 Device family	PSU	Power module
2 Device typ	P	Power module
3 Nominal power; supply voltage	10 D6	10 kW; 400 VAC (3-phase)
	20 D6	20 kW; 400 VAC (3-phase)
	30 D6	30 kW; 400 VAC (3-phase) ¹⁾
4 Interface	USB	USB connection
5 Options	M00	no additional supplement

¹⁾ Operation of the PSUP30 only with line choke. Required line choke for the PSUP30: 0.45 mH / 55 A
We offer the following line chokes:
 LCG-0055-0.45 mH (WxDxH: 180 mmx140 mmx157 mm; 10 kg)
 LCG-0055-0.45 mH-UL (with UL certification) (WxDxH: 180 mmx170 mmx157 mm; 15 kg)

Capacitor module

	1	2
Order example	PSC	023 M00

1 Accessories	PSC	Capacitor module
2 Type	023 M00	2300 µF no additional supplement
	047 M00	4700 µF no additional supplement
	068 M00	6800 µF no additional supplement

Mains filter for PSUP

	1	2
Order example	NFI	03/01

1 Accessories	NFI	Mains filter
2 Type	03/01	for PSUP10 Reference axis combination 3 x 480 V 25 A 6 x 10 m motor cable length
	03/02	for PSUP10 Reference axis combination 3 x 480 V 25 A 6 x 50 m motor cable length
	03/03	for PSUP20, PSUP30 Reference axis combination 3 x 480 V 50 A 6 x 50 m motor cable length

Braking resistors

	1	2
Order example	BRM	05/01

1 Accessories	BRM	Braking resistor
2 Type	13/01	30 Ω / 0.5 kW _{cont.} for PSUP10D6, for PSUP20D6 (2x30Ω parallel)
	14/01	15 Ω / 0.5 kW _{cont.} for PSUP10D6 (2 x 15 Ω in series) for PSUP20, PSUP30
	12/01	18 Ω / 4.5 kW _{cont.} for PSUP30

PSI - Power Supply Interface for Motornet DC

	1	2	3
Order example	PSI	10	P

1 Device type	PSI	Power supply interface for Motornet DC
2	5	5 kW rating
	10	10 kW rating
	20	20 kW rating

Decentralised Double-Axis Servo Drive with Robust IP67 Housing - Servonet DC

Overview

Description

Servonet DC is a double-axis servo drive built in a robust IP67 housing, allowing the drive to be used in rough environments outside the cabinet and close to the motor. The system is completed by a wide range of rotary and linear servo motors, a power supply and an interface module, which is the only system component which remains in the cabinet. The wiring of the system is fast and easy thanks to the hybrid cable, transferring power and communication.

Ideally suited to multi-axis applications with a number of drives mounted in close proximity on the machine, Servonet DC allows a decentralised motion control approach. Motion control functionality is executed by means of EtherCAT communication or optionally CANopen DS402 communication, allowing substantial savings in time and materials, while reducing machine footprints.

Typical applications for Servonet DC include packaging machines and rotary tables where numerous drives and motors are mounted on the machine.

Application

- Food, pharmaceuticals & beverage
- Packaging machines
- Material forming
- Material handling
- Factory automation
- Robotics

Features

- Multi-axis servo system
- Double axis servo drive module (5A/5A, 10A/5A or 10A/10A)
- Power range from 2.7 kW to 10.8 kW
- Protection class IP67
- Fieldbus: EtherCAT (option CANopen)
- Feedback: DSL[®], resolver



Technical Characteristics - Overview

Model	Current		DC Voltage	
	Continuous [A]	Peak [A]	Min [VDC]	Max [VDC]
SDC20505NxxxxK000	5 + 5	10 + 10		
SDC21005NxxxxK000	10 + 5	20 + 10	300	680
SDC21010NxxxxK000	10 + 10	20+20		

Servonet DC

Overview

Machine design becomes very easy because of the modular nature of Servonet DC, additional axes can be added with minimal effort, simply by duplicating schematic drawings from other axes. This not only reduces engineering time and costs, but simplifies build and significantly improves time to market.

Servonet DC works on a common DC bus power supply that allows the system to absorb and re-supply much of the braking energy to other Servonet DC units rather than dissipating it in the form of heat via external resistors. In some instances, resistors can be removed completely and in others smaller resistors are sufficient.

Servonet DC solutions are usable together with motor integrated drives of the Motornet DC family, as the cabling concept and communication is identical.

Machines equipped with Servonet DC have a minimal machine footprint: power supply and interface module being the only additional components required in the cabinet. The electronics footprint is up to 70 % smaller than traditional centralised solutions. Additionally, all wiring changes are made on the machine via plug and socket connections rather than in the electrical cabinet.

EtherCAT[®]



High speed communication

- Communication over Ethernet via TCP/IP.
- Onboard EtherCAT connection
- 100 Mbit/s, 500 µs cycle time



Optional motor feedback

- Resolver, Hiperface, Hall



Quick and simple wiring

- Reduction in wiring costs
- Increased reliability
- SpeedTec



DSL feedback interface

- Single cable feedback interface as standard
- Electronic motor nameplate



HIPERFACE[®]
DSL

Inputs / outputs

- Servonet DC offers 1 digital input and 1 digital selectable input/output
- Connection via fast and simple push-in direct plug-in technology.



Configuration Software - MotionWiz -

MotionWiz is free of charge downloadable configuration software that allows users to configure and optimise the Servonet DC series with a few easy clicks of the mouse.

MotionWiz features an intuitive, easy and simple to use Windows® style environment to aid installation, optimisation and diagnostic use.

MotionWiz permits operation in both “on line” mode, directly in the controller, and in “offline” mode, remotely on the PC before downloading to the controller.

MotionWiz allows users to copy the configuration from one application to another to simplify the configuration of systems with a large number of similar axes but with different motion profiles.

Inside the MotionWiz configurator is a database containing the technical characteristics of the full range of Parker motors and drives.

MotionWiz can be downloaded from www.parker.com/eme

EtherCAT monitor

- EtherCAT alias address or CAN address
- 2 communication's status led

DC bus energy saving

- Energy exchange between drives
- No accessories required

Technical Characteristics

Electrical Characteristics

Servonet DC

Servonet DC Model	Unit	SDC20505	SDC21005	SDC21010
Continuous Current	[A]	5 + 5	10 + 5	10 + 10
Peak Current	[A]	10 + 10	20 + 10	20 + 20
DC Voltage Min	[VDC]	300		
DC Voltage Max	[V]	680		

PSUP - Power Supply Unit

Mains Supply

Power Supply Type	Unit	PSUP10			PSUP20			PSUP30 ⁽²⁾		
Input Voltage		3*230...480 VAC ±10 % 50...60 Hz (Rated voltage 3*400 VAC)								
Output Voltage		325...680 VDC ±10 %								
Supplied Voltage	[VAC]	230	400	480	230	400	480	230	400	480
Output Power	[kVA]	6	10	10	12	20	20	18	30	30
Output Peak Power (<5 s)	[kVA]	12	20	20	24	40	40	34	60	60

Control Supply

Rated Input Voltage		24 VDC ±10 %								
Maximum Ripple		1 V _{pkpk}								
Supply Current	[A]	PSUP10D6: 0,2 A			PSUP20D6: 0,3 A			PSUP30D6: 0,3 A		

⁽²⁾ Operation of the PSUP30 only with line choke.

PSI - Power Supply Fieldbus Interface for Servonet DC

Power Supply Interface	Unit	PSI5	PSI10	PSI20
Supply Voltage				
DC Voltage Range	[V]	300...750 VDC		
Regenerative Braking				
Capacity	[µF]	470	940	940
Storable Energy	[WS]	75@400 VAC 42@480 VAC	150@400 VAC 84@480 VAC	150@400 VAC 84@480 VAC

PSC - Capacitor Module

Capacitor Module	Unit	PSC023	PSC047	PSC068
Capacity	[µF]	2300	4700	6800

Environmental Characteristics

Servonet DC, PSUP - Power Supply Unit and PSI - Power Supply Interface

Temperature			
	<ul style="list-style-type: none"> Operating Temperature: 0...+40 °C Storage Temperature: -25...+55 °C Shipping Temperature: -25...+70 °C 		
Product Enclosure Rating			
	Servonet DC	PSUP	PSI
	IP65 / IP67	IP20 (only in closed electrical cabinet) UL open type equipment	
Altitude			
	1000 m ASL. Derate output current by 1.5 % per 100 m to a maximum of 2000 m		
Humidity			
	<ul style="list-style-type: none"> Operating Humidity: Class 3K3 - Maximum 85 % non-condensing Storage Humidity: Class 1K3 - Maximum 95 % non-condensing Shipping Humidity: Class 2K3 - Maximum 95 % at 40 °C 		
Operating Vibration			
	Servonet DC	PSUP	PSI
		IEC60068-2-6 10...57 Hz width 0.075 mm 57...150 Hz accel. 9.81 m/s ²	

Standards & Conformance

Servonet DC

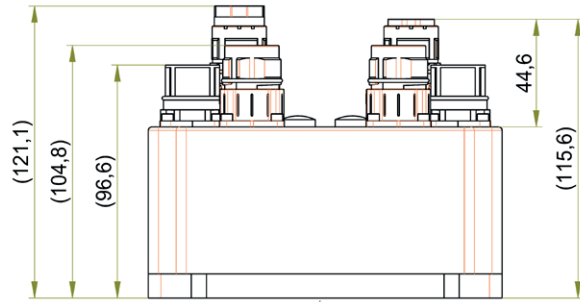
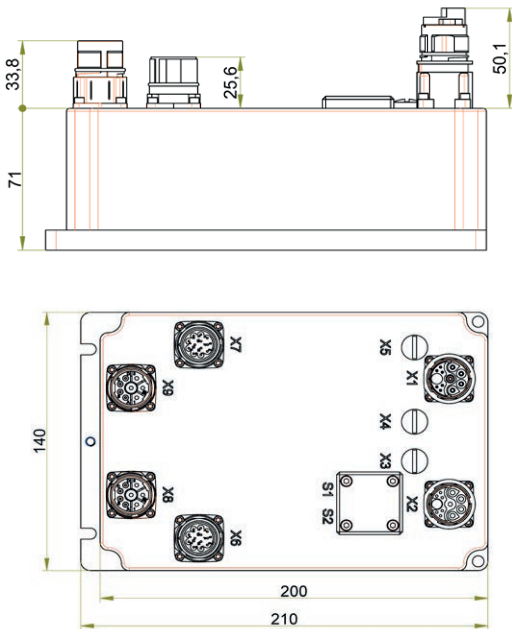
2014/35/EU	Low Voltage Directive
EN61800-5-1	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
UL61800-5-1	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy (under preparation)
CSA22.2 No. 274-13	(Canada) Power Conversion Equipment (under preparation)
2014/30/EU	EMC Directive
EN61800-3	Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test method

PSUP - Power Supply Unit and PSI - Power Supply Interface for Servonet DC

2006/95/EC	Low voltage directive
2004/108/CE	EMC Directive
EN 61800-3	Adjustable speed electrical power drive systems - Part 3: EMC product standard including specific test method
EN 61800-5-1	Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy
UL508C	(USA) Power Conversion Equipment
CSA22.2 No. 274-13	(Canada) Power Conversion Equipment

Dimensions

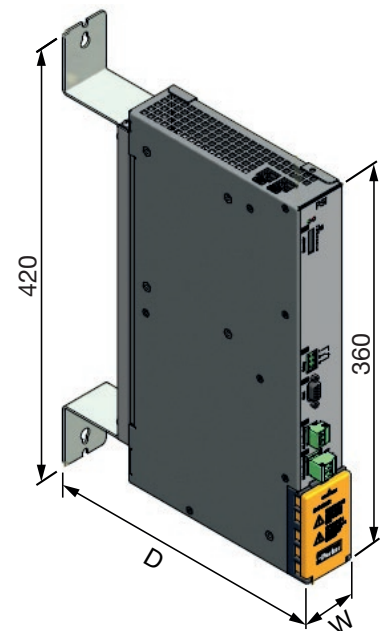
Servonet DC



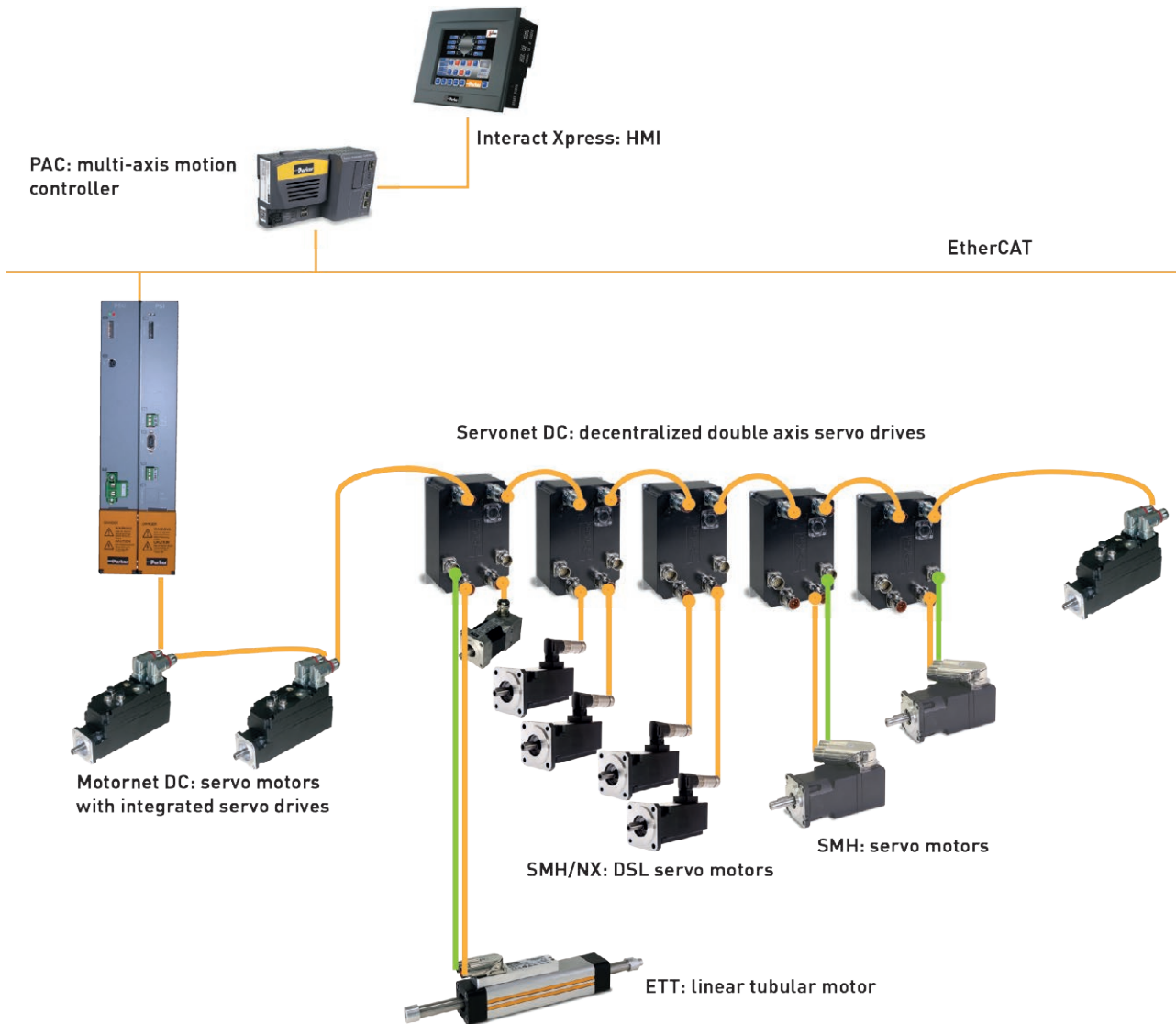
Type	H [mm]	W [mm]	D [mm]	Weight [kg]
SDC20505	71	210	140	2.3
SDC21005				
SDC21010				

PSU - Power Supply Unit and PSI - Power Supply Interface for Servonet DC

Type	W [mm]	D [mm]	Weight [kg]
PSUP10, PSI5/PSI10/PSI20	50	270	3.6
PSUP20/PSUP30	100	270	5.4



Hybrid Integrated Motion Solutions



In this example Servonet DC is shown in a system which also uses the Motornet DC servo motors with integrated servo drives, SMB/H single cable DSL servo motors series, InteractXpress series HMI, PAC multi-axis controller with I/O to form a complete integrated hybrid motion solution. This type of architecture can be used for the complete control of packaging or process lines.

Order Code

Servonet DC

	1	2	3	4	5	6	7	8
Example	SDC	2	1005	N	1	H	00	K000

1	Product type	
	SDC	Servonet DC servo drive
2	Number of axis	
	2	2 Axis available
3	Size [A]	
	0505	Axis one 5 A, axis two 5 A
	1005	Axis one 10 A, axis two 5 A
	1010	Axis one 10 A, axis two 10 A
4	Feedback type	
	N	Fixed field (Hiperface DSL & resolver)
5	Fieldbus	
	1	EtherCAT
	2	CANopen
6	Safety	
	H	In development
7	Option	
	00	No option
8	Customizing	
	K000	No Custom Version

PSUP - Mains Module

	1	2	3	4	5	
Example	PSU	P	10	D6	USB	M00

1	Device family	
	PSU	Power module
2	Device type	
	P	Power module
3	Nominal power; supply voltage	
	10 D6	10 kW; 400 VAC (3-phase)
	20 D6	20 kW; 400 VAC (3-phase)
	30 D6	30 kW; 400 VAC (3-phase) ¹⁾
4	Interface	
	USB	USB connection
5	Options	
	M00	No additional supplement

¹⁾ Operation of the PSUP30 only with line choke. Required line choke for the PSUP30: 0.45 mH / 55 A

PSI - Power Supply Interface

	1	2	3
Example	PSI	10	P

1	Device type	
	PSI	Power supply interface for Servonet DC
2	Power	
	5	5 kW rating
	10	10 kW rating
	20	20 kW rating

Capacitor Module

	1	2
Order example	PSC	023 M00

1 Accessories		
PSC	Capacitor module	
2 Type		
023 M00	2300 μ F no additional supplement	
047 M00	4700 μ F no additional supplement	
068 M00	6800 μ F no additional supplement	

Mains filter for PSUP

	1	2
Order example	NFI	03/01

1 Accessories		
NFI	Mains filter	
2 Type		
03/01	For PSUP10 Reference axis combination 3 x 480 V 25 A 6 x 10 m motor cable length	
03/02	For PSUP10 Reference axis combination 3 x 480 V 25 A 6 x 50 m motor cable length	
03/03	For PSUP20, PSUP30 Reference axis combination 3 x 480 V 50 A 6 x 50 m motor cable length	

Braking Resistors

	1	2
Order example	BRM	05/01

1 Accessories		
BRM	Braking resistor	
2 Type		
13/01	30 Ω / 0.5 kW _{cont.} for PSUP10D6, for PSUP20D6 (2x30 Ω parallel)	
14/01	15 Ω / 0.5 kW _{cont.} for PSUP10D6 (2 x 15 Ω in series) for PSUP20, PSUP30	
12/01	18 Ω / 4.5 kW _{cont.} for PSUP30	

Servonet DC/Motornet DC Hybrid Cables

	1	2	3	4
Order example	HYBCA	0030	PSI	4

1	Cable type	
	HYBCA	Hybrid cable for Servonet DC/Motornet DC
2	Length (x10 mm)	
	0030	300 mm
	0100	1000 mm (1 m)
	1000	10 m
	Note: maximum cable length is 15 m	
3	Connector Type	
	PSI	Wired cable for PSI to Servonet DC with PSI connector and female mating Servonet DC connector
	MDC	Wired cable for Servonet DC to Servonet DC with male and female mating Servonet DC connectors
4	Cable Size	
	Empty field	2.5 mm ² cable size
	4	4.0 mm ² cable size

Cables options

HYBCA1	Servonet DC hybrid cable only (no connectors) - 1 m length / 2.5 mm ²
HYBCA4	Servonet DC hybrid cable only (no connectors) - 1 m length / 4 mm ²
CONMDCMV	Servonet DC hybrid connector (male)
CONMDCFV	Servonet DC hybrid connector (female)
TAPMDCETH	Terminal cup for Servonet DC/Motornet DC
TAPMDCETHS	Terminal cup for Servonet DC/Motornet DC EtherCAT
TAPMDCANS	Terminal cup for Servonet DC/Motornet DC CANbus

Power Motor Cables Accessories

HYBCA-U	Hybrid cable 200 mm for connecting 2 Servonet DC drives
CBACAP00-M23-SDX-0000-00	Cover for M23 interconnectron receptable (plastic black)
CBACAM00-M23-SDX-0000-00	Cover for M23 Phoenix receptable (metal)

Power Motor Cables

	1	2	3	4	5	6	7	8
Example	CBM	007	H	D	M23	SDX	0050	00

1	Cable type	CBM Motor motor cable
2	Cable Section	007 Section 0.75 mm ² 010 Section 1 mm ² 015 Section 1.5 mm ² 025 Section 2.5 mm ²
3	Cable Type	S Standard motor cable H High flex motor cable
4	Brake	0 Power cable without brake B Power cable with brake D Power DSL cable with brake
5	Motor Connection Type	M15 Interconnectron connector M23 Interconnectron connector motor type: Mx 70,105,145 SMx 60,82,100,115,142 TBX Terminal box solution
6	Drive Connection Type	SDX Servonet DC
7	Cable Length	0030 3 m 0050 5 m 0070 7 m 0100 10 m
8	Fixed Field	00 Fixed field

Feedback Motor Cables

	1	2	3	4	5	6	7	8
Example	CBF	RE0	H	0	M23	SDX	0050	00

1	Cable type	
	CBF	Feedback motor cable
2	Feedback Type	
	RE0	Resolver
	HFO	Hiperface
	INO	Incremental
	HLO	Hall
3	Cable Type	
	H	High flex feedback cable
4	Brake	
	0	Fixed field
5	Motor Connection Type	
	M15	Interconnectron connector
	M23	Interconnectron connector motor type: Mx 70,105,145 SMx 60,82,100,115,142
	TBX	Terminal box solution
6	Drive Connection Type	
	SDX	Servonet DC
7	Cable Length	
	0030	3 m
	0050	5 m
	0070	7 m
	0100	10 m
8	Fixed Field	
	00	Fixed field

Flexible Servo Drive - Hi-Drive

Overview

Description

Hi-Drive is a fully digital drive for brushless motors with currents from 2 to 450 A and operating from 230 VAC or 480 VAC supplies. Hi-Drive is able to control induction motors; its target market is where high precision, accuracy, performance, fieldbus connectivity and custom applications are required.

Hi-Drive features several built-in motion control functions, including current, torque and speed control, positioning with trapezoidal profiles, digital lock with variable ratio and phase correction, electronic cam, real-time mode, S-ramp positioning, homing functions and position capture.

An axis card with Power PC 400 MHz micro processor which is able to control up to 32 interpolated axes via CANopen DS402, further enhances the Hi-Drive functionality.

The Hi-Drive series is suited for simple as well as extremely sophisticated applications such as: Printing machines, wood and metal working machines, feeders, palletizers, applications with different interpolated axes and robots.

Features

- Current, torque and speed control
- Positioner with trapezoidal profile and S-ramps
- Digital lock with variable ratio and phase correction
- Electronic cam
- Configurable feedback input
- Configurable second encoder input
- Fieldbus RS232, RS422/485, SBCCan, EtherCAT, CANopen DS402, PROFINET
- DC bus connection to clamping board is possible (mono or three-phased)
- Built-in braking resistor (to 45 A)
- Safety relay optional CAT.3 EN 954-1
- Built-in EMC filter: HID2...HID10, HID75...HID450
- Built-in three-phased line choke (HID75...HID155)



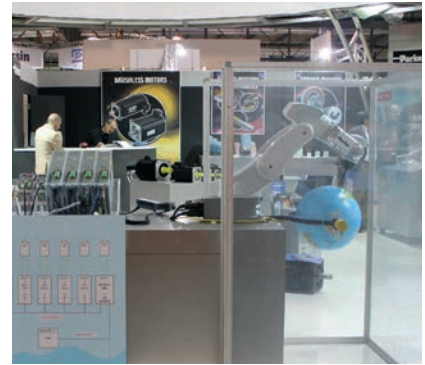
Technical Characteristics - Overview

Device	Nominal current [A]	Peak current [A]	Peak current time [s]	Frame size
HID2	2	4	2	1
HID5	5	10		
HID8	8	16		
HID10	10	20		2
HID15	15	30		
HID16	16	32		
HID25	25	50		
HID35	35	70	3	3
HID45	45	90		
HID75	75	135		
HID100	100	180		
HID130	130	234		
HID155	155	232		
HID250	250	375		
HID450	450	675	-	

Applications

Trajectory control of a six axis vertical robot

This is a six axis vertical robot that drives the globe in order to direct a laser pointer on the desired city, selected from the onboard operator panel or from a remote interface. The application is driven by six servo drives, controlled by a CN board integrated in one of the drives. In the board resides the interpolation and transformation part of the robot coordinates. The data for the optimized trajectory are transmitted to the individual axes via CANopen with DSP402 profile, at defined times by the sync protocol. In order to reach motion uniformity, the controller card transmits the demand speed together with the optimized motion data. Thus, every servo drive can internally execute a cubical interpolation of the information received. Moreover at every synch the real CN quota are sent back to the six joints.



The human-machine interface is represented by an industrial PC. By the PC, the operator choose in a graphical globe the city it wants to reach and gives the start/stop command.

Technical Characteristics

Technical Data

Hi-Drive

Model		HID2	HID5	HID8	HID10	HID15	HID16	HID25
	Unit							
Supply voltage and device currents								
Supply voltage	[V]	200...277 VAC single phase(±10 %) 50-60 Hz (±5 %) 200...480 VAC three phase (±10 %) 50-60 Hz (±5 %)						
Nominal current	[A]	2	5	8	10	15	16	25
Peak current	[A]	4	10	16	20	30	32	50
Peak current time	[s]	2						
Control Voltage	[V]	24 VDC (0/ +10 %)						
Overload		200 % for 2 s						

Model		HID35	HID45	HID75	HID100	HID130	HID155	HID250	HID450	
	Unit									
Supply voltage and device currents										
Supply voltage	[V]	200...480 VAC three phase (±10 %) 50-60 Hz (±5 %)			380...480 VAC three phase (±10 %) 50-60 Hz (±5 %)					
Nominal current	[A]	35	45	75	100	130	155	250	450	
Peak current	[A]	70	90	135	180	234	232	375	675	
Peak current time	[s]	2			3				4.5	
Control Voltage	[V]	24 VDC (0/ +10 %)								
Overload		200 % for 2 s								

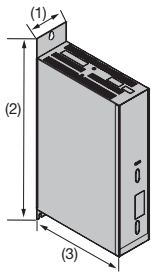
Ambient Conditions

Temperature range	Operating temperature 0...45 °C
Tolerated humidity	<85 % non condensing
Elevation of operating site	1000 m ASL (derate by 1.5 % every 100 m)
Product Enclosure Rating	IP20

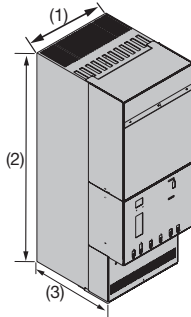
Standards and Conformance

In compliance with Directive 89/336/EEC following the standard:	<ul style="list-style-type: none"> EN61800-3 (I° and II° environment) with built-in filter when available/A11 Electromagnetic Compatibility
In compliance with Directive 73/23/EEC following the standard:	<ul style="list-style-type: none"> EN 50178 (Safety, Low Voltage Directive) EN 60204-1 EN 61800-2 EN 61800-5-1
Safety technology	EN 954-1/ISO 13849-1 (optional safety relay)
Conformance CE and UL	<ul style="list-style-type: none"> UL508C (USA) CSA 22.2 No. 14-05 (Canadian) CE marked
ATEX	for use in or in connection with potentially explosive environments

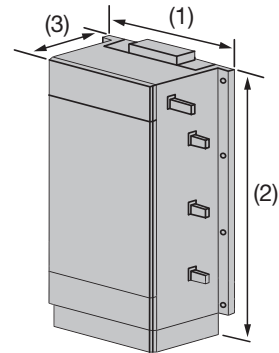
Dimensions



Sizes 1-2-3:



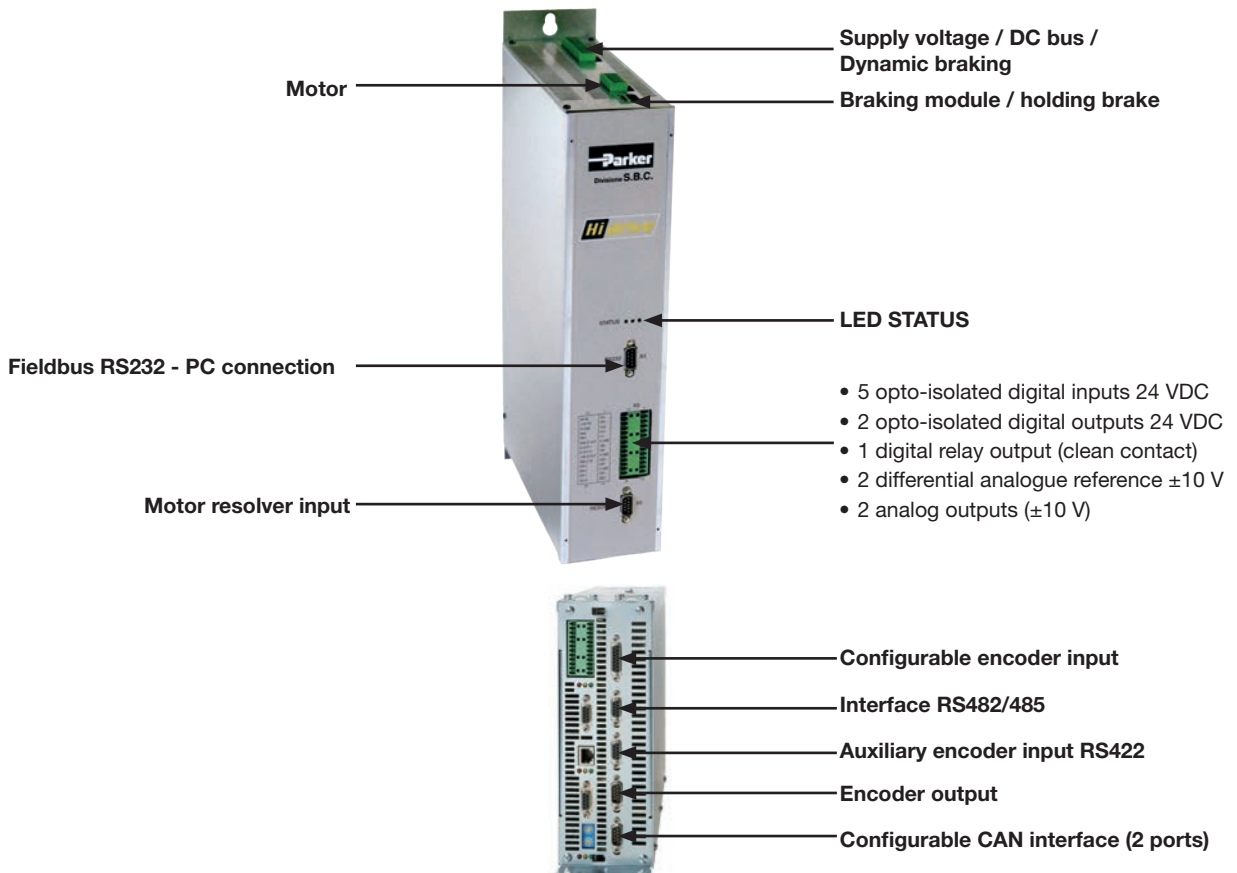
Sizes 4-5:



Size 6:

Model	Frame size	Height (2) [mm]	Width (1) [mm]	Depth (3) [mm]	Weight [kg]
HID 2-5-8-10-15	1	428	87	227	5.8
HID 15			-		
HID 16-25	2	428	122		8.5
HID 35-45	3		227	16	
HID 75	4	660	250	320	40
HID 100-130-155	5	720		365	59
HID 250	6	1145	600	465	100
HID 450	-	1400	900	465	-

Connection Layout



Accessories and Options

Keypad

SK161

Optional keypad, size 2x6 characters with upload/download functions (port RS232)



Cables

- Resolver cable
- Incremental encoder cable
- Absolute encoder EnDat + SinCos cable
- Absolute encoder Hiperface + SinCos cable
- Encoder SinCos cable
- Motor cable
- Servoventilation cable



Fieldbus Options

By selecting one of the numerous fieldbus options the Hi-Drive becomes a highly versatile networked drive. EtherCAT based on the Ethernet industry standard, has been implemented within the Hi-Drive to exploit operating performance of industrial PC's.

- EtherCAT
- CANopen (DS402)
- Profibus DP
- PROFINET
- SBCCan (standard)



EtherCAT®

CANopen

PROFI®
BUS

PROFI®
NET

Axis Board

High performances CN

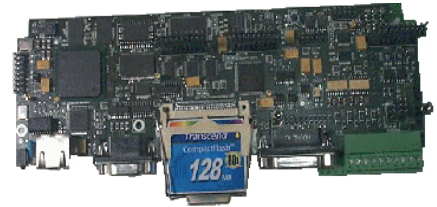
This board is an axis controller which can be integrated into the Hi-Drive in order to increase the servo drive performance.

The board can generate trajectories of "n" interpolated axes with a low dissipated power, piloting the slave axis via CANopen DSP402.

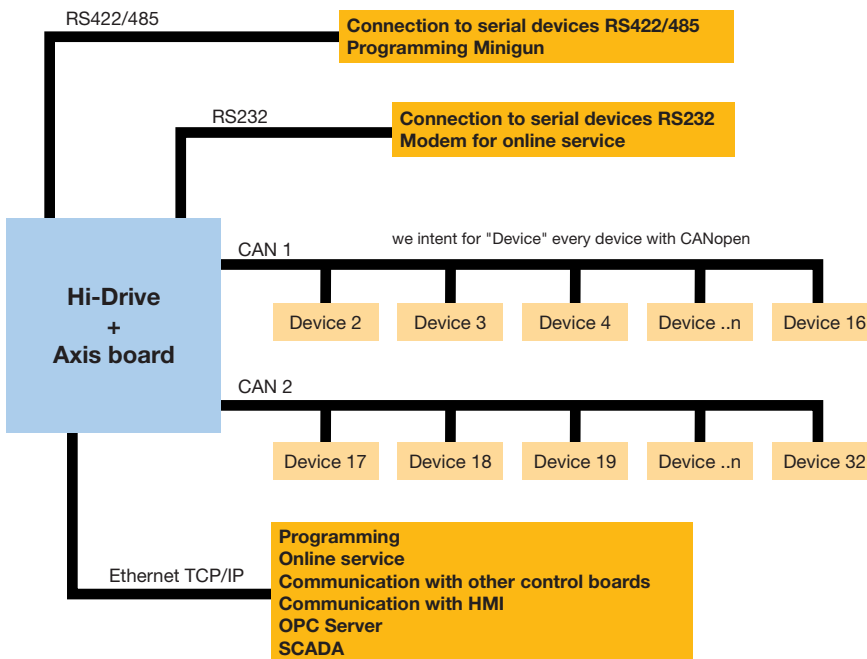
Managing resident I/O and field bus remote I/O the CN board can be linked to the plant network or to any operator panels via Ethernet TCP/IP. The board is equipped with an embedded OPC server.

Equipped with a multitasking real time operating system and can be programmed using standard programming and motion control languages.

- Power PC 400 MHz microprocessor
- Real time multitasking RTE operating system
- Cycle tasks, event control and background
- Interpolation of up to 32 axes for CPU
- CANopen DS402 communication channels
- Libraries with a wide range of function blocks
- 64 MB RAM, 128 MB extractable flash memory and 128 kB EEPROM
- RS232, RS485 and Ethernet



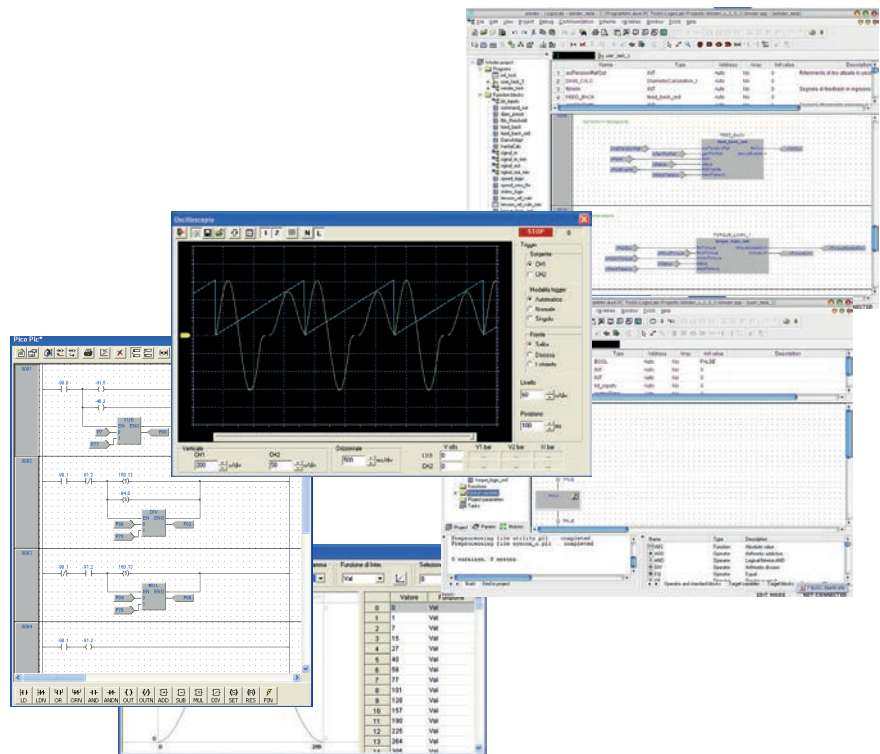
Programming language	
Structured text	for motion control functions
Ladder diagram	for machine cycles programming
ISO	for tool machines programming
RHLL	for robot programming



Software

MotionWiz and LogicLab

The free MotionWiz configuration software is available to configure the Hi-Drive system with just a few clicks of the mouse. MotionWiz features a simple and user-friendly interface to speed up installation, optimization and diagnostics procedures. To simplify configuration, MotionWiz shows a typical Windows® environment on the monitor with dialogue windows and toolbars. MotionWiz permits performing operations in both "online" mode, directly in the device, and in "offline" mode on a remote PC. In this case, personalized configuration can be sent to the mechanism subsequently. To simplify the configuration of systems with a large number of axis but with different cuts and the same operating mode, MotionWiz permits maintaining the same mechanism configuration and only changing the type of selected motor. Inside the MotionWiz configurator is a database containing the data of standard Parker motors. MotionWiz incorporates "picoPLC", a built-in PLC environment programmable with standard languages. PicoPLC allows the external word to communicate with the drive and to execute function sequences. If the customer application requires additional calculation resources, an option board programmable with PLC commands in accordance with IEC61131-3 can be inserted.



Order Code

Hi-Drive

	1	2	3	4	5	Y1	Y2	Y3	9	10
Order example	HID	X	2	S	S	I	E5	C2	R	M

1	Device family	
	HID	Servo drive
2	Version	
	Empty field	Standard version
	X	ATEX device version
3	Device current (nominal current rms)	
	2	2 A
	5	5 A
	8	8 A
	10	10 A
	15	15 A
	16	16 A
	25	25 A
	35	35 A
	45	45 A
	75	75 A
	100	100 A
	130	130 A
	155	155 A
	250	250 A
	450	450 A
4	Protocol	
	S	SBCCan (standard)
	D	CANopen (DS402)

5	Second input encoder	
	S	for SinCos - 1 V _{pp} signal
	E	for digital signals after quadrature - RS422
	H	for SinCos signal + Hall sensor
Y1...Y3	Option cards (slot1, slot2, slot3)	
	Empty field	without option
	P	PROFIBUS DP
	I	I/O option (8 digital inputs, 8 digital outputs)
	E5	EtherCAT
	P1	PROFINET
	C	Axis board, without compact flash
	C1	Axis card for up to 1.5 axes (with CANopen DS402)
	C2	Axis card for up to 4 axes (with CANopen DS402)
	C3	Axis card for up to 32 axes (with CANopen DS402)
9	Safety technology	
	Empty field	without option
	R	Built-in Safety relay cat. 3 in accordance with EN 954-1
10	Memory	
	Empty field	without option
	M	Memory area for retentive variables

Motors

Servo Motors

Spindle Motors

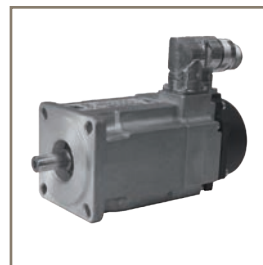
DC Servo Motors



SMB / SMH



MB / MH



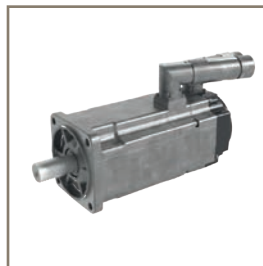
NX



EY



EX



NV



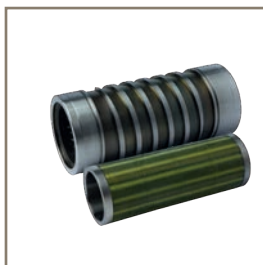
TM



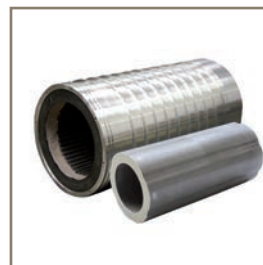
K



NK



SKW



HKW



TK



RS



RX



AXEM

Markets and Applications

Product	Image	Description	Markets											
			Food, Pharma & Beverage	Packaging Machines	Material Forming	Material Handling	Factory Automation	Life Science Diagnostic	Automotive Industry / In-Plant	Printing Industry	Textile Machines	Robotics	Machine Tools	Servo Hydraulic Pumps
SMB / SMH		Low Inertia Servo Motor	■	■	■	■	■	■	■	■	■	■	■	■
MB / MH		Servo Motor	■	■	■	■	■	■	■	■	■	■	■	■
NX		Low Cogging Servo Motor				■	■	■	■		■	■	■	■
Motornet DC		Integrated Motor/ Servo Drive	■	■	■	■	■			■	■	■	■	
EY		Explosion Proof Servo Motor Zone 2	■	■	■		■			■	■	■		
EX		Explosion Proof Servo Motor Zone 1	■	■	■		■			■	■	■		
NV		High Speed Servo Motor											■	
TM		Torque Motors			■								■	
K		Frameless Servo Motor Low Voltage						■	■			■		
NK		Frameless Servo Motor					■	■	■			■	■	■
SKW		Frameless Spindle Motor									■		■	
HKW		Frameless AC Brushless Motor									■		■	
TK		Frameless Servo Motor			■								■	
RS		High Performance DC Servo Motor					■	■			■			
RX		DC Servo Motor					■	■			■			
AXEM		Pancake DC Servo Motor					■	■			■			

	Pulp & Paper	Renewable Energy	Aerospace	Radiation Hardend	Marine	Continuous Process	Hazardous / Ex Environment	Simulation / Testing	Mobile Hybrid Solutions	Key Features
	■					■		■	■	<ul style="list-style-type: none"> High dynamical Low inertia Multiple feedback devices <ul style="list-style-type: none"> Option: Brake Platform for customization
	■					■		■	■	<ul style="list-style-type: none"> High dynamical Low inertia Multiple feedback devices <ul style="list-style-type: none"> Option: Brake Platform for customization
	■	■	■	■	■	■		■	■	<ul style="list-style-type: none"> Smooth rotation Low cogging Option: sensorless <ul style="list-style-type: none"> High torque density Medium inertia
	■					■		■	■	<ul style="list-style-type: none"> Servo Electronics integrated into the motor Use in total de-centralized automation structures <ul style="list-style-type: none"> Reduced cabelling needs CANopen / EtherCAT communication
							■			<ul style="list-style-type: none"> Explosion proof design / ATEX High motion quality <ul style="list-style-type: none"> Compact, robust Low cogging
							■			<ul style="list-style-type: none"> Explosion proof design / ATEX Flameproof by UL <ul style="list-style-type: none"> Compact, robust Low cogging
										<ul style="list-style-type: none"> Smooth rotation Low cogging High accuracy balanced <ul style="list-style-type: none"> Low vibration High torque density
	■	■			■	■		■		<ul style="list-style-type: none"> High power compact design Water or natural cooling Integrated thrust bearing <ul style="list-style-type: none"> Customizable shaft ends IP54 protection
									■	<ul style="list-style-type: none"> Large hollow shaft Low voltage <ul style="list-style-type: none"> Direct drive Light and compact design
		■			■				■	<ul style="list-style-type: none"> Hollow shaft Smooth rotation Low cogging <ul style="list-style-type: none"> Very compact / reduced weight Direct drive
										<ul style="list-style-type: none"> Compact design High speed <ul style="list-style-type: none"> Hollow shaft
										<ul style="list-style-type: none"> Watercooled <ul style="list-style-type: none"> High speed (up to 50 000 min⁻¹)
	■	■			■	■				<ul style="list-style-type: none"> Hollow shaft Frameless design High torque direct drive <ul style="list-style-type: none"> High number of poles: 24 to 120 Direct machine integration Direct drive
				■						<ul style="list-style-type: none"> Compact design High dynamic <ul style="list-style-type: none"> Smooth at low speed Long life time
										<ul style="list-style-type: none"> Compact design High dynamic <ul style="list-style-type: none"> Low speed smoothness Long life time
					■					<ul style="list-style-type: none"> Ultra compact housing No cogging <ul style="list-style-type: none"> Low speed smoothness Robust

Main Functions

Product		Description	Low Inertia	Low Cogging	High Speed	Direct Drive	Resolver	Encoder	Absolute Feedback	Sensorless Option	Brake Option	Kit Option	Hollow Shaft Option	Water Cooling Option
SMB / SMH		Low Inertia Servo Motor	■				■	■	■	■	■			
MB / MH		Servo Motor	■				■	■	■		■			
NX		Low Cogging Servo Motor		■			■	■	■	■	■			■
Motornet DC		Integrated Motor/ Servo Drive	■				■	■	■		■			
EY		Explosion Proof Servo Motors Zone 2		■			■	■	■	■	■			
EX		Explosion Proof Servo Motors Zone 1		■			■	■	■	■	■			
NV		High Speed Servo Motor		■	■		■	■			■			
TM		Torque Motor		■		■	■	■	■	■				■
K		Frameless Servo Motor Low Voltage				■	■	■	■	■		■	■	
NK		Frameless Servo Motor		■		■	■	■	■	■	■	■	■	■
SKW		Frameless Spindle Motor	■		■	■	■					■	■	■
HKW		Frameless AC Brushless Motor	■		■	■	■					■	■	■
TK		Frameless Servo Motor		■		■		■	■	■		■	■	■
RS		High Performance DC Servo Motors	■	■				■		■	■			
RX		DC Servo Motor		■				■		■	■			
AXEM		Pancake DC Servo Motor	■	■				■		■	■			

	Integrated Electronics	Customization Platform	Explosion Proof	Speed [min ⁻¹]		Torque [Nm]	
		■		7 500		17	
		■		10 000		285	
		■		8 900		64	
	■	■		6 000		8	
		■	■	6 800		41	
		■	■	8 000		35	
		■		17 000		11.5	
		■		635		22 100	
				10 000		23	
				8 000		72	
		■		12 000		24.4	
		■		50 000		1 800	
		■		835		21 000	
		■		3 000		13	
		■		3 000		8	
		■		4800		20	



Low Inertia Servo Motors - SMH / SMB

Overview

Description

The SMH / SMB Series of highly-dynamic brushless servo motors have been design to combine the cutting-edge technology of Parker Hannifin products with an extremely high performance.

Thanks to the innovative "salient pole" technology, the motor's dimensions are considerably reduced with significant advantages in terms of specific torque, overall dimensions and dynamic performance. Compared to traditional-technology brushless servo motors, the specific torque is approximately 30 % higher, overall dimensions are considerably reduced and, consequently rotor inertias are extremely low. Thanks to the high quality of Neodymium-Iron-Boron magnets, and also the encapsulation method used to fasten them to the shaft, the SMH/B motors can achieve very high acceleration and withstand high overloads without risk of demagnetisation or detachment of the magnets.

Specific applications for the SMH/B Series include all types especially those for the packaging and handling industry, and all those applications where very high dynamic performances and very low inertias are required.

Features

- High number of feedback options
- Customised windings/voltages
- Increased Inertia option
- Multiple connection options

Application

- Food, Pharma & Beverage
- Packaging Machines
- Material Forming
- Material Handling
- Factory Automation
- Life Science Diagnostic
- Automotive Industry / In-Plant
- Printing Industry
- Textile Machines
- Robotics
- Servo Hydraulic Pumps



Technical Characteristics - Overview

Motor Type	Permanent magnets synchronous servomotor
Rotor Design	Rotor with surface rare earth magnets
Number of poles	8
Power Range	0.1 – 9.4 kW
Torque Range	0.19 – 60 Nm
Speed Range	0 – 7500 min ⁻¹
Mounting	Flange with smooth holes
Shaft End	Plain keyed shaft Plain smooth shaft (option)
Cooling	Natural ventilation
Protection Level (IEC60034-5)	IP64 IP65 (option/standard for SM_170)
Feedback sensor	Resolver Absolute Endat or Hiperface Incremental Encoder
Thermal protection	PTC for SMB and KTY compatible with SMH
Other options	Brake Second shaft Increased inertia
Marking	CE UL (SM_40 and SM_170 excluded)
Voltage Supply	80 / 230 / 400 VAC other voltage under request
Temperature Class	Class F
Connections	Rotatable connectors Flying cables Terminal Box (see table option for combination) Special connector (under request)

Technical Characteristics

Technical Data

230 VAC supply voltage

Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾			Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
SM_40 60 0,19	40	0.19	0.78	0.16	6000	0.66	0.6	3.7	-	0.14	0.242
SM_40 60 0,38		0.38	1.2	0.27	6000	0.86	1.17	6.1		0.181	0.31
SM_60 30 0,55	60	0.55 (0.68)	0.7	0.50	3000	0.66	1.7	18	30.5	0.44	0.76
SM_60 45 0,55			1.0	0.39	4500	0.74				0.30	0.53
SM_60 60 0,55			1.4	0.24	6000	0.60				0.23	0.40
SM_60 16 1,4		1.4 (1.7)	0.95	1.35	1600	0.91	4.4	30	42.5	0.85	1.48
SM_60 30 1,4			1.73	1.20	3000	1.50				0.47	0.81
SM_60 45 1,4			2.37	1.00	4500	1.69				0.34	0.59
SM_60 60 1,4			2.98	0.80	6000	1.70				0.27	0.47
SM_60 75 1,4			3.85	0.15	7500	0.41				0.21	0.36
SM_82 10 03	82	3 (3.7)	1.2	2.9	1000	1.2	9	140	183	1.43	2.48
SM_82 16 03			1.8	2.9	1600	1.7				0.96	1.66
SM_82 30 03			3.1	2.7	3000	2.8				0.55	0.96
SM_82 33 03			3.5	2.4	3300	2.8				0.49	0.85
SM_82 45 03			4.7	2.2	4500	3.4				0.37	0.64
SM_82 60 03			6.1	1.5	6000	3.1				0.28	0.49
SM_82 75 03			7.5	0.6	7500	1.6				0.23	0.40
SM_100 16 06	100	6 (9)	3.7	5.8	1600	3.6	18	336	440	0.92	1.60
SM_100 30 06			5.9	5.0	3000	4.9				0.59	1.02
SM_100 45 06			9.4	3.5	4500	5.5				0.37	0.64
SM_100 55 06			11.8	2.6	5500	5.1				0.29	0.51
SM_100 75 06			14.7	0.6	7500	1.5				0.24	0.41
SM_115 16 10	115	10 (12.5)	6.0	9.0	1600	5.4	32	900	1000	0.96	1.66
SM_115 30 10			10.5	8.0	3000	8.4				0.55	0.95
SM_115 40 10			14.7	7.6	4000	11.2				0.39	0.68
SM_115 54 10			18.2	7.1	5400	12.9				0.32	0.55
SM_142 18 15	142	15 (19)	9.7	13.3	1800	8.6	47	1400	1600	0.89	1.54
SM_142 30 15			16.0	12.5	3000	13.4				0.54	0.94
SM_170 11 35	170	35	13.3	30	1100	11.4	111	2900	4500	1.52	2.6
SM_170 16 35			20	28	1600	16.0				1.03	1.8
SM_170 25 35			29	26	2500	22.0				0.69	1.2

⁽¹⁾ Data referred to motor mounted on a steel flange in horizontal position with resolver and without brake. Stall torques refer to motor turning at 100 min⁻¹

⁽²⁾ Data measured at 20 °C. When "hot" consider -0.09 %/K derating

⁽³⁾ Manufacturing tolerance ±10 %

400 VAC power supply

Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾			Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
SM_60 30 1,4	60	1.4 (1.7)	0.95	1.2	3000	0.81	4.4	30	42.5	0.81	1.48
SM_60 45 1,4			1.37	1.0	4500	0.98				0.59	1.02
SM_60 60 1,4			1.73	0.8	6000	0.99				0.68	0.81
SM_60 75 1,4			2.15	0.15	7500	0.23				0.38	0.65
SM_82 30 03	82	3 (3.7)	1.8	2.7	3000	1.6	9	140	183	0.96	1.66
SM_82 45 03			2.7	2.2	4500	2.0				0.64	1.11
SM_82 56 03			3.1	1.6	5600	1.7				0.55	0.96
SM_82 60 03			3.5	1.7	6000	2.0				0.49	0.85
SM_82 75 03			4.4	0.6	7500	0.9				0.39	0.68
SM_100 30 06	100	6 (9)	3.7	5.0	3000	3.1	18	336	440	0.92	1.60
SM_100 45 06			5.6	3.5	4500	3.3				0.62	1.07
SM_100 56 06			5.9	2.5	5600	2.4				0.59	1.02
SM_100 75 06			9.4	0.6	7500	0.9				0.37	0.64
SM_115 20 10	115	10 (12.5)	4.5	9.0	2000	4.06	32	900	1000	1.28	2.22
SM_115 30 10			6.0	8.0	3000	4.82				0.96	1.66
SM_115 40 10			8.0	7.6	4000	6.05				0.73	1.26
SM_115 56 10			10.5	6.0	5600	6.30				0.55	0.95
SM_142 20 15	142	15 (19)	6.4	13.0	2000	5.5	47	1400	1600	1.36	2.35
SM_142 30 15			9.7	12.5	3000	8.1				0.89	1.54
SM_142 45 15			14.4	10.9	4500	10.5				0.60	1.04
SM_142 56 15			16.0	9.2	5600	9.8				0.54	0.94
SM_142 10 17		17 (21)	3.5	16.4	1000	3.4	54			2.83	4.90
SM_142 30 17			9.6	14.0	3000	8.1				1.02	1.77
SM_142 56 17			15.8	10.6	5600	9.8				0.62	1.08
SM_170 10 35	170	35	6.8	31	1000	6.1	111	2900	4500	2.95	5.1
SM_170 20 35			13.3	27	2000	10.3				1.52	2.6
SM_170 27 35			18	22	2700	11				1.15	2.0
SM_170 30 35			20	19	3000					1.03	1.8
SM_170 10 60		60	11.7	53	1000	10.4	190	5800	7400	2.95	5.1
SM_170 20 60			22.6	44	2000	16.6				1.53	2.7
SM_170 30 60			35.7	30	3000	17.9				0.97	1.7

⁽¹⁾ Data referred to motor mounted on a steel flange in horizontal position with resolver and without brake. Stall torques refer to motor turning at 100 min⁻¹

⁽²⁾ Data measured at 20 °C. When "hot" consider -0.09 %/K derating

⁽³⁾ Manufacturing tolerance data ±10 %

STANDARDS

In compliance with: 2006/95 EC

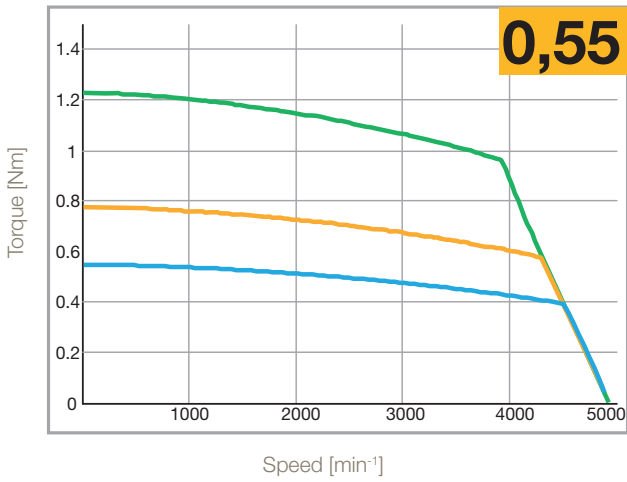
- EN60034-1
- EN60034-5
- EN60034-5/A1

Marked  Marked  us (except SM_40 and SM_170)

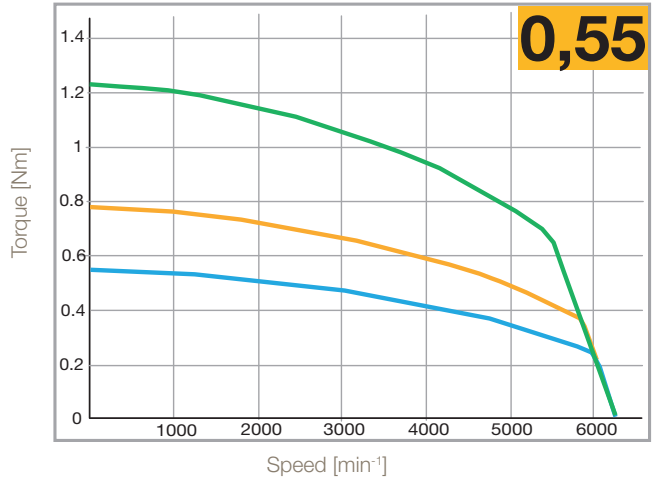
Speed Torque Curves

SMH/B60

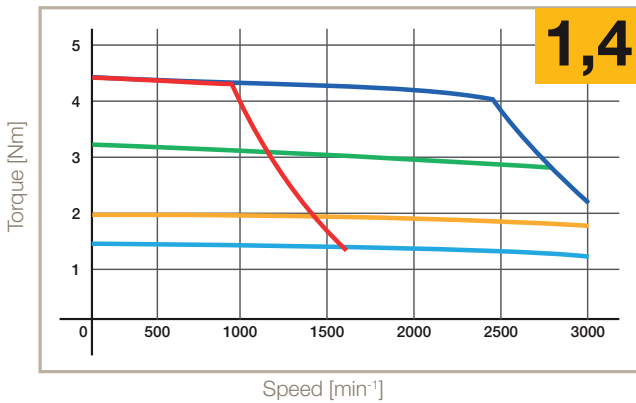
4500 min⁻¹ 230 V



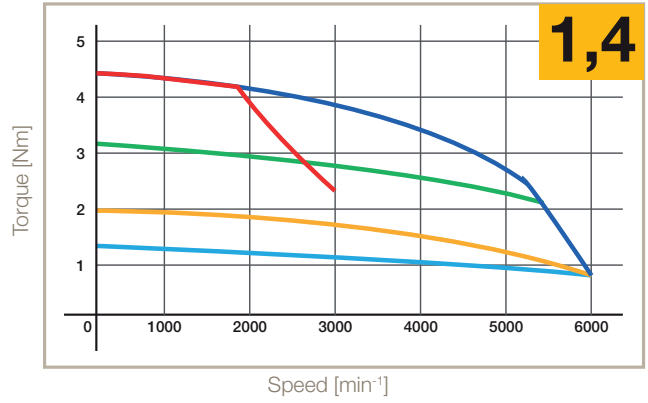
6000 min⁻¹ 230 V



1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V



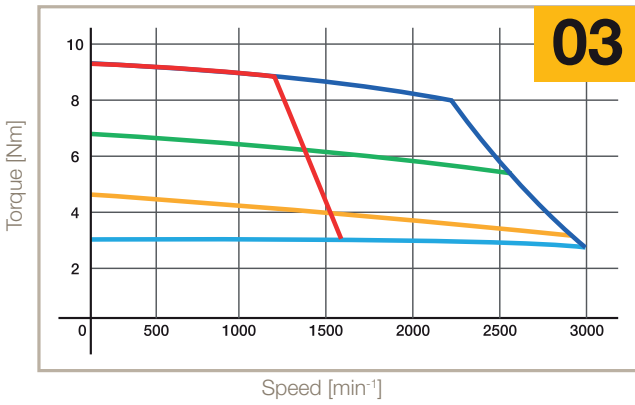
3000 min⁻¹ 230 V - 6000 min⁻¹ 400 V



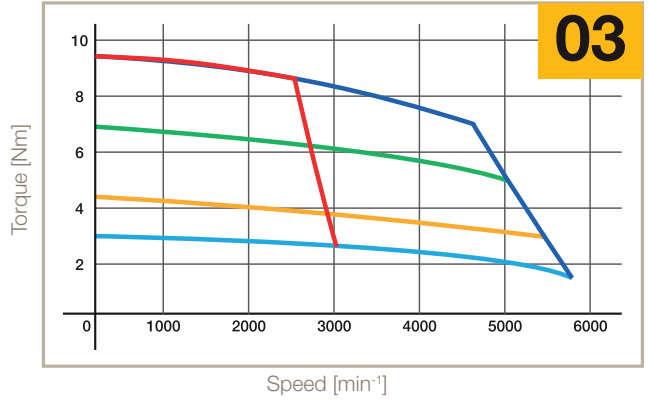
- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 50 %, 5 min
- S3 50 %, 5 min
- S3 10 %, 5 min, 230 V
- S3 50 %, 5 min
- S3 20 %, 5 min

SMH/B82

1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V

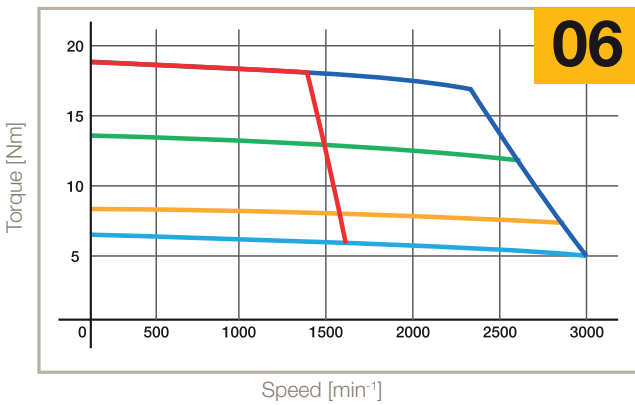


3000 min⁻¹ 230 V - 5600 min⁻¹ 400 V

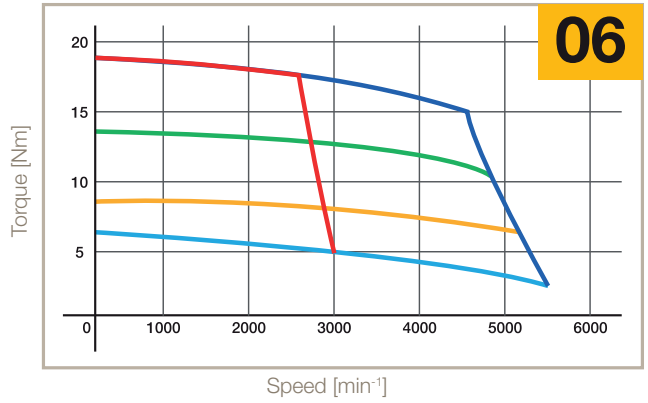


SMH/B100

1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V

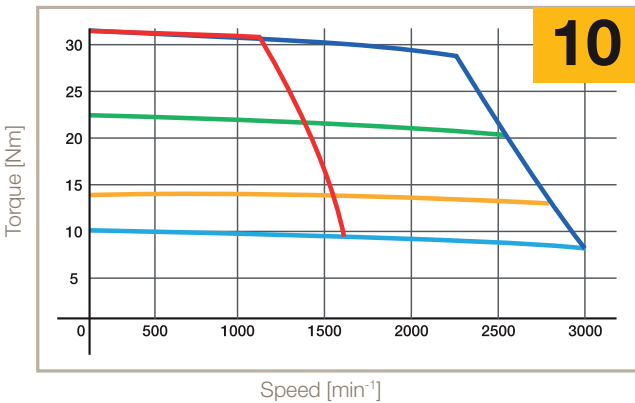


3000 min⁻¹ 230 V - 5600 min⁻¹ 400 V

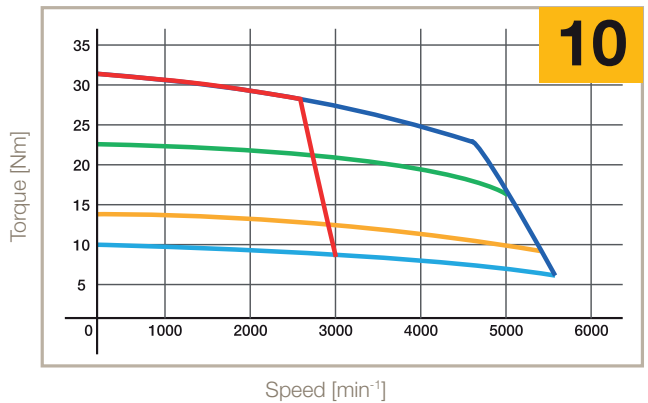


SMH/B115

1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V



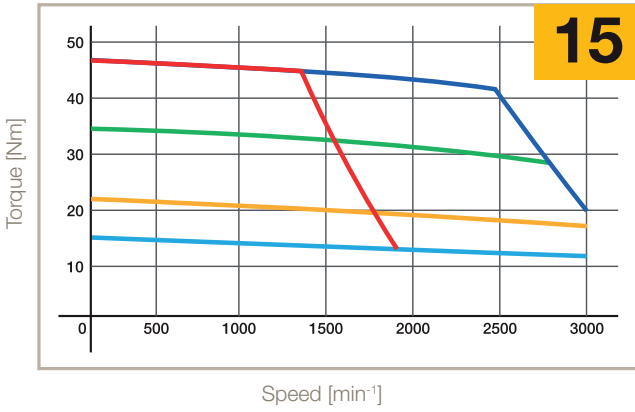
3000 min⁻¹ 230 V - 5600 min⁻¹ 400 V



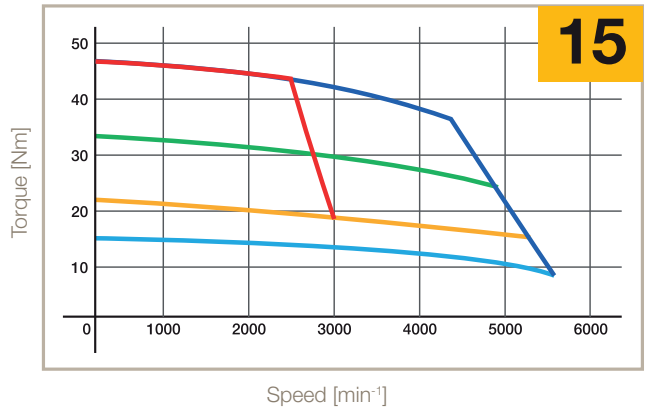
- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 50 %, 5 min
- S3 10 %, 5 min, 230 V
- S3 50 %, 5 min
- S3 20 %, 5 min

SMH/B142

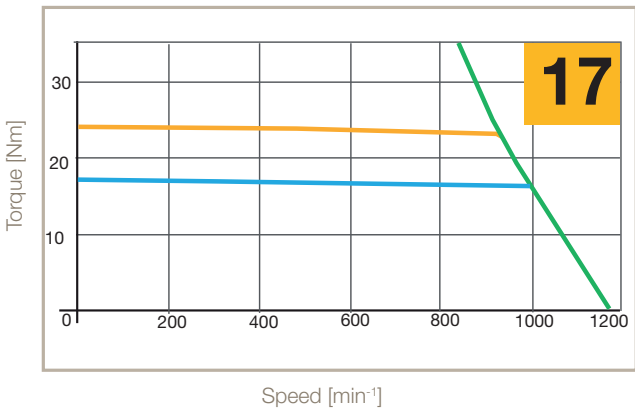
1800 min⁻¹ 230 V - 3000 min⁻¹ 400 V



3000 min⁻¹ 230 V - 5600 min⁻¹ 400 V

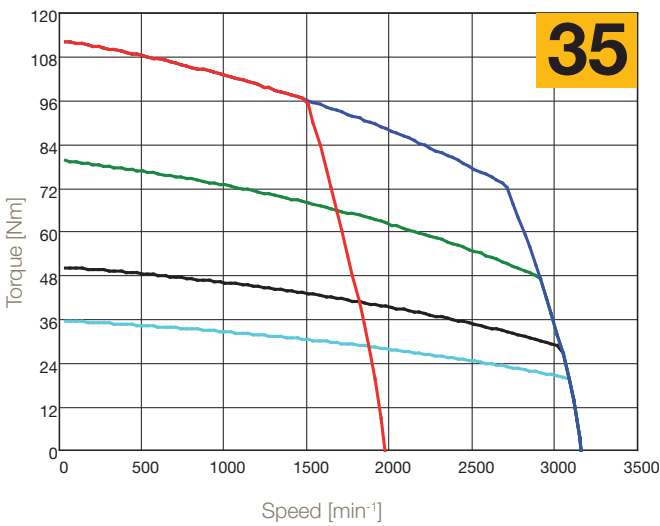


1000 min⁻¹ 400 V

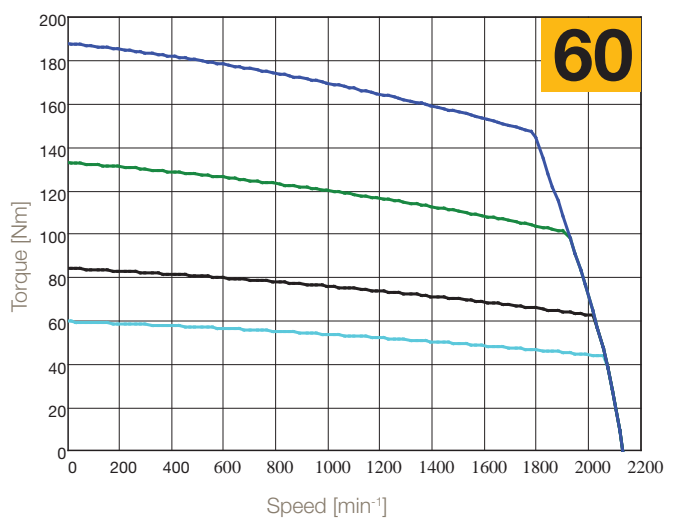


SMH/B170

1600 min⁻¹ 230 V - 3000 min⁻¹ 400 V

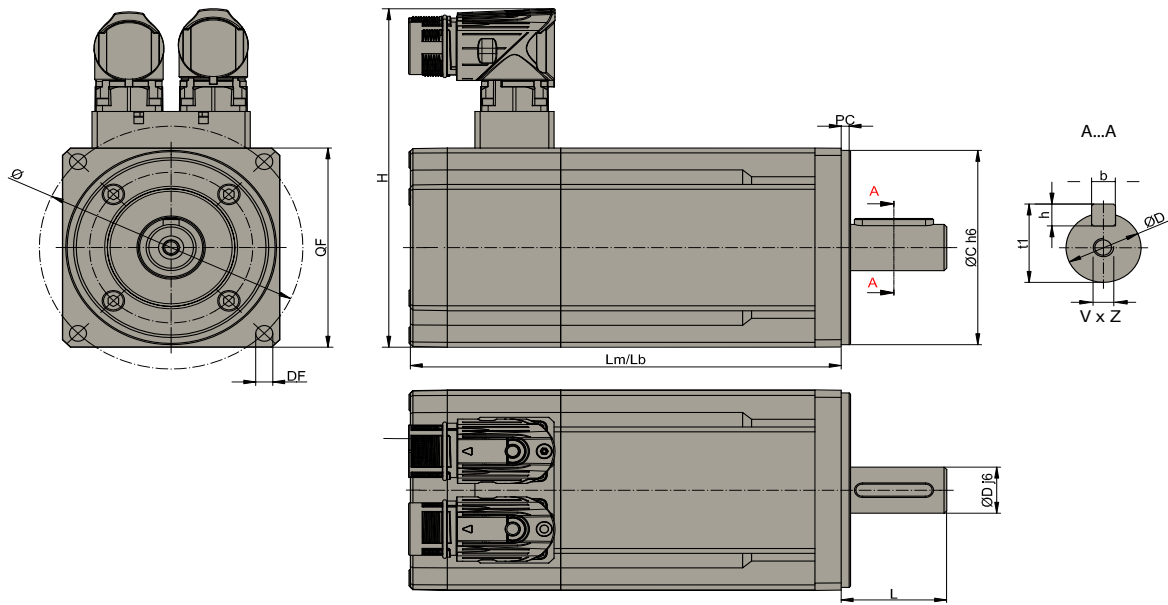


2000 min⁻¹ 400 V



- S1 65 K, ΔT
- S3 10 %, 5 min, 230 V
- S3 10 %, 5 min, 400 V
- S3 50 %, 5 min
- S3 20 %, 5 min

Dimensions of Standard Motors with Resolver Feedback



Dimensions [mm]

Motors Size		LM	LB	Weight [kg]	DxL	bxh	t1	VxZ	H	C	Ø	DF	PC	QF	Order Code QF
SMH / B	40	0,19	87.5 119.5	0.53 n.a.	8x20	3x3	9.2	n.a.	60 Layout 2Y	30	50	4.3	2.5	40	5
		0,38	105.5 137.5	0.68 n.a.	8x20	3x3	9.2	n.a.	60 Layout 2Y	30	50	4.3	2.5	40	5
	60	0,55	91.2 137	1 1.3	9x20 11x23	3x3 4x4	10.2 12.5	-	118 Layout 2I	40	63	5.5	2.5	60	8
			60	75	6	2.5	70	5							
		1,4	129.5 161	1.5 1.8	9x20 11x23	3x3 4x4	10.2 12.5	-		40	63	5.5	2.5	60	8
			60	75	6	2.5	70	5							
	82	03	159 202	3.6 4.3	11x23 ⁽²⁾ 14x30	4x4 5x5	12.5 16	M4x10 M5x12.5	140 Layout 2I	60	75	6	2.5	70	7
			163.5 206.5	3.6 4.3	11x23 ⁽²⁾ 14x30 19x40 ⁽¹⁾	4x4 5x5 6x6	12.5 16 21.5	M4x10 M5x12.5 M6x16		80	100	6.5	3.5	82	8
			95	115	9	3.5	100	5							
	100	06	191.5 238.5	4.7 5.3	19x40 24x50	6x6 8x7	21.5 27	M6x16 M8x19	157.5 Layout 2I	80	100	7	3.5	100	8
			95	115	9	3.5	100	5							
	115	10	220 265	7.7 9.7	19x40 24x50 28x60	6x6 8x7 8x7	21.5 27 31	M6x16 M8x19 M10x22	157.5 Layout 2I	95	115	9	3.5	115	9
										95	130	9	3.5	115	8
										110	130	9	3.5	130	7
										130	165	11	3.5	145	5
	142	15	243 293	13 16	19x40 24x50 28x60	6x6 8x7 8x7	21.5 27 31	M6x16 M8x19 M10x22	185 Layout 2I	130	165	11	3.5	142	5
170	35	306	30	38x80	10x8	41	M12x32	212.3 Layout 2I	180	215	14	4	205	5	
	60	409	50	38x80	10x8	41	M12x32	212.3 Layout 2I	180	215	14	4	205	5	

LM: Motor's length without brake and with resolver
LB: Motor's length with brake and resolver
DxL: Shaft diameter x shaft length
bxh: Key dimension
t1: Overall shaft height
VxZ: Shaft hole depth
C: Centering

H: Height
DF: Fixing holes
Ø: Interaxis hole
QF: Mounting flange
PC: Centre Depth

¹⁾ not available with flange 7
²⁾ only for torque <2 Nm

Options

Parker SMH / SMB family motors are available with standard and custom options to adapt motor on your application. If the option for your application is not listed, please consult our technical department.

Holding Brake

All SMH / SMB motors are available with option holding brake.

The fail-safe (supply voltage 24 VDC $\pm 10\%$) holding brake is incorporated in the motor at the opposite side of the front flange (SM_170 front side) and is applied when there is no voltage present. Because of the power loss caused by the brake, torque values must be reduced by 5 %. The holding brakes shall be used with the motor at a standstill and not for dynamic braking. For normal uses, they are maintenance free brakes.

Motor	Voltage [V]	Current [A]	Torque @20 °C [Nm]	Added Length with resolver [mm]	Added Weight [kg]	Added Inertia [kgmm ²]
SMH / SMB40	24	0.25	0.4	32	0.15	-
SMH / SMB60		0.34	2.2	31.5	0.3	12.5
SMH / SMB82		0.5	5	43	0.7	43
SMH / SMB100		0.67	11	47	0.6	104
SMH / SMB115		0.67	11	45	2	100
SMH / SMB142		0.75	22	50	3	200
SMH / SMB170		1.67	72	-	2.9	1600

Medium Inertia

Where the application needs different values of inertia, SMH / SMB can provide a standard adder.

Motor	Added inertia [kgmm ²]	Added length with resolver [mm]	Added weight [kg]
SMH / SMB60	29	31.5	0.32
SMH / SMB82	270	43	0.91
SMH / SMB100	284	47	0.68
SMH / SMB115	900	45	2.28
SMH / SMB142	690	50	2.49
SMH / SMB170	consult Parker	consult Parker	consult Parker

Feedback

Motors may be equipped with various feedback types in order to meet the different requirements for precision, signal that the application needs. The standard motor includes the resolver feedback. Hiperface Encoder, DSL Encoder, EnDat Encoder, Incremental Encoder are available like the following tables.

Resolver

Poles	2
Transformation ratio	0.5
Operating temperature	-50...+150 °C
SM_ associations	All Sizes

Incremental Encoder with Hall Sensor

Code	A1	A2	A3	B3	C4	D3
Resolution [C/T]	2000	2048	4096	2048	5000	5000
Poles	8					
System accuracy	$\pm 32''$	$\pm 32''$	$\pm 16''$	$\pm 32''$	$\pm 13''$	$\pm 13''$
Voltage	+5 VDC $\pm 5\%$ - 200 mA					
Reference mark	Yes					
Max speed [min ⁻¹]	6000					
Output circuit	Line drive differential mode 20 mA					
Operating temperature	-20 °C...+100 °C		-20 °C...+85 °C	-20 °C...+100 °C		-20 °C...+85 °C
SM_ motors associations						
SM_40	N	N	N	N	N	N
SM_60	N	N	N	Y (+17 mm length)	N	Y (+17 mm length)
SM_82	Y	Y	Y	N	Y	N
SM_100	Y	Y	Y	N	Y	N
SM_115	Y	Y	Y	N	Y	N
SM_142	Y	Y	Y	N	Y	N
SM_170	Y	Y	Y	N	Y	N

Hiperface Absolute Encoder

Code	S1	S2	S3	S4	S5	S6
Type	Optical					
Turn	Single	Multi	Single	Multi	Single	Multi
Incremental signals	1 V _{PP}				-	-
Line count	1024		128		-	-
Resolution	32 768 (15 bit)		4096 (12 bit)		262 144 (18 bits)	
Absolute rotation	1	4096	1	4096	1	4096
System accuracy	±45"		±320"		±40"	
Power supply	8 VDC				7...12 VDC	
Max speed [min ⁻¹]	6000		12 000	9000		
Temperature	-20 °C...+115 °C		-20 °C...+110 °C		20 °C...+105 °C	
Safety integrity level	SIL2 (IEC 61508), SILCL2 (IEC 62061)				SIL2 (IEC 61508), SILCL2 (IEC 62061)	
SM_ motors associations						
SM_40	N	N	N	N	N	N
SM_60	N		Y (+17 mm length without brake) (+30 mm length with brake)		Y (+17 mm length without brake) (+30 mm length with brake)	
SM_82	Y (+17 mm length without brake) (+30 mm length with brake)		Y	Y	Y	Y
SM_100	Y (+20 mm length)				Y (+20 mm length)	
SM_115	Y	Y	Y	Y	Y	Y
SM_142	Y	Y	Y	Y	Y	Y
SM_170	Y	Y	Y	Y	Y	Y

Code	A6	A7	C6	C7
Type	Optical			
Turn	Single	Multi	Single	Multi
Incremental signals	1 V _{PP}			
Line count	1024		128	
Resolution	32 768 (15 bit)		4096 (12 bit)	
Absolute rotation	1	4096	1	4096
System accuracy	±45"		±320"	
Power supply	8 VDC			
Max speed [min ⁻¹]	6000		12 000	9000
Temperature	-20 °C...+115 °C		-20 °C...+110 °C	
Safety integrity level	Not Available		Not Available	
SM_ motors associations				
SM_40	N	N	N	N
SM_60	N		Y (+17 mm length without brake) (+30 mm length with brake)	
SM_82	Y (+17 mm length without brake) (+30 mm length with brake)		Y	Y
SM_100	Y (+20 mm length)			
SM_115	Y	Y	Y	Y
SM_142	Y	Y	Y	Y
SM_170	Y	Y	Y	Y

EnDat Absolute Encoder

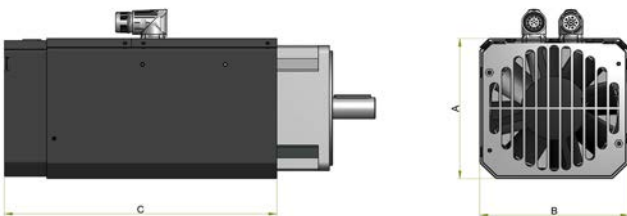
Code	B9	D5	F2	F4
Type	Inductive	Optical		Inductive
Turn	Multi			
Incremental signals	1 V _{PP}			
Line count	32	512		16
Positions per revolutions	131 072 (17 bit)	8192 (13 bit)		262 144 (18 bit)
Distinguishable revolutions	4096	4096		
System accuracy	±400"	±60"		±480"
Power supply	5 VDC			
Max speed [min ⁻¹]	12 000	7000	12 000	
Temperature	-20 °C...+115 °C	-30 °C...+115 °C	-40 °C...+115 °C	-20 °C...+115°C
Absolute position values	EnDat 2.1	EnDat 2.2		EnDat 2.1
Safety integrity level	Not Available			
SM_ motors associations				
SM_40	N	N	N	N
SM_60	N	N	Y (+17 mm length without brake) (+9 mm length with brake)	
SM_82	Y (+22.5 mm length without brake) (+18 mm length with brake)		N	N
SM_100	Y (+20 mm length)		N	N
SM_115	Y	Y	N	N
SM_142	Y	Y	N	N
SM_170	Y	Y	N	N

Servofan kit

Designed for the SMH/SMB servo motors family, the new Servofan kit allows extra performances over and above the specified motor torque rating.

Brushless servo motors are meant for high dynamic applications and where the functionality is un-constant (S3 Cycle). In this conditions the new Servofan kit increases by 25% the motor torque and it also permits the use in continuous duty (S1) improving the performances.

Suitable for 100-115, 142 and 170mm frames sizes within the SMB/SMH ranges, the kit is available with an IP20 rating and is ideal for deployment in applications within food/ packaging, hydraulic servo pump application, material forming, factory automation and material handling sectors. For customers who already have motors in the specified frame sizes and would like more torque the new Servofan kit can be purchased separately and added.



Dimensions

Model	A	B	C
SF-1000-00	131,7	128	271
SF-1420-00	162	159	296
SF-1701-00	184	186	365
SF-1702-00			465

Order code

	1	2	3	4
Order example	SF	- 100	00	- 00

1 Servofan kit

SF Servofan kit

2 SMH-SMB motor size

100 For SMH-SMB size 100 or 115

142 For SMH-SMB size 142

170 For SMH-SMB size 170

3 Motor length

0 Standard for all size except size 170

1 Only for 170 size - Length 1 - 35Nm

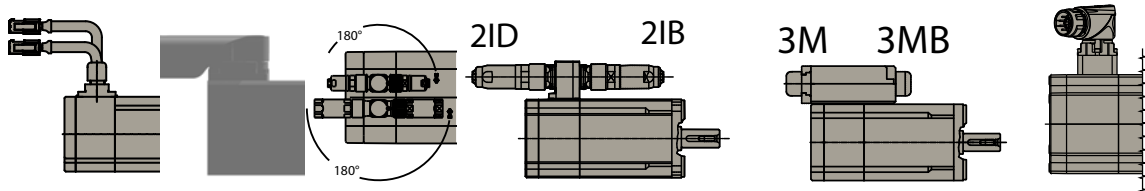
2 Only for 170 size - Length 2 - 60Nm

4 Special execution

00 Standard version

01 Special version without connectors

Layout and Connectors



	200 mm Flying leads with molex plugs 0V	Y-Tech rotatable connector 2Y	2x Parallel upright connectors 2I	2x Forward facing connectors 2IB	2x Rear facing connectors 2ID	Terminal box rear facing 3M	Terminal box forward facing 3MB	Hiperface DSL® Connector (IZ)
SMH_40	N	Y	N	N	N	N	N	N
SMH_60	Y	Y	Y	Y	N	N	N	Y
SMH_82	N	N	Y	Y	N	N	N	Y
SMH_100	N	N	Y	Y	N	N	N	Y
SMH_115	N	N	Y	Y	N	N	N	Y
SMH_142	N	N	Y	Y	N	N	N	Y
SMH_170	N	N	Y	N	N	N	N	Y
SMB_40	N	Y	N	N	N	N	N	N
SMB_60	Y	Y	Y	Y	Y	Y	Y	N
SMB_82	N	N	Y	Y	Y	Y	Y	N
SMB_100	N	N	Y	Y	Y	Y	Y	N
SMB_115	N	N	Y	Y	Y	Y	Y	N
SMB_142	N	N	Y	Y	Y	Y	Y	N
SMB_170	N	N	Y	N	N	N	N	N
SME_60	N	Y	N	Y	Y	N	N	Y
SME_82	N	N	N	Y	Y	N	N	Y
SME_100	N	N	N	Y	Y	N	N	Y
SME_115	N	N	Y	N	N	N	N	Y
SME_142	N	N	Y	N	N	N	N	Y
SME_170	N	N	Y	N	N	N	N	Y

Power connector (0V)

6	5	4
3	2	1

Pin	Description
1	GND - shield
2	Brake 0 VDC
3	Brake +24 VDC
4	W
5	V
6	U

Part number	
CONMOT6M	Female Connector

Resolver connector (0V)

12	11	10	9	8	7
6	5	4	3	2	1

Pin	Description
1	n.c.
2	n.c.
3	n.c.
4	PTC
5	PTC
6	GND - shield
7	SIN +
8	SIN -
9	COS +
10	COS -
11	EXTC -
12	EXTC +

Part number	
CONRES12M	Female Connector

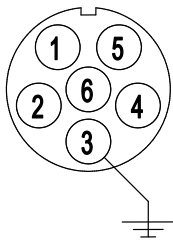
Hiperface connector (0V)

12	11	10	9	8	7
6	5	4	3	2	1

Pin	Description
1	SIN +
2	SIN -
3	RS485 +
4	0 V
5	PTC
6	PTC
7	VDC +
8	COS +
9	COS -
10	RS485 -
11	GND - shield
12	n.c.

Part number	
CONRES12M	Female Connector

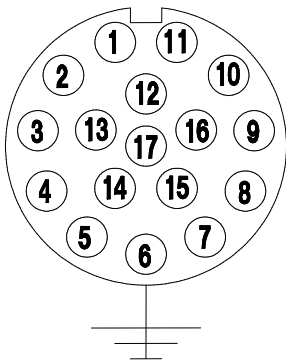
Power connector (2I, 2IB, 2ID)



Pin	Description
1	U
2	V
3	GND - shield
4	Brake +24 VDC
5	Brake 0 VDC
6	W

Part number
CONMOT82F Female Connector

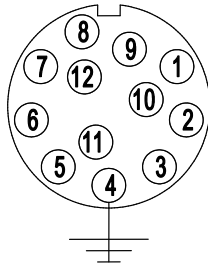
Incremental encoder connector (2I, 2IB, 2ID)



Pin	Description	
1	5 V	
2	0 V	
3	A +	
4	A -	
5	B +	
6	B -	
7	Z +	
8	PTC	KTY -
6	PTC	KTY +
10	Z -	
11	Hall A +	
12	Hall A -	
13	Hall B +	
14	Hall B -	
15	Hall C +	
16	Hall C -	
17	n.c.	

Part number
CONENCF Female Connector

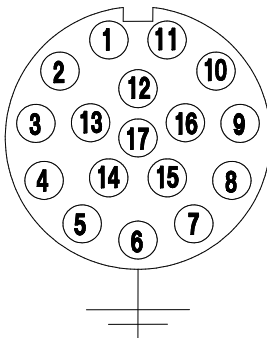
Resolver connector (2I, 2IB, 2ID)



Pin	Description	
1	SIN -	
2	SIN +	
3	n.c.	
4	GND - shield	
5	n.c.	
6	n.c.	
7	EXCT -	
8	PTC	KTY -
9	PTC	KTY +
10	EXCT +	
11	COS +	
12	COS -	

Part number
CONRES82F Female Connector

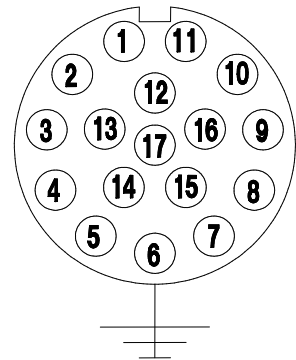
Absolute encoder SINCOS - EnDat (2I, 2IB, 2ID)



Pin	Description	
1	UP Sensor	
2	n.c.	
3	n.c.	
4	0 V Sensor	
5	PTC	KTY -
6	PTC	KTY +
7	UP	
8	CK +	
9	CK -	
10	0 V	
11	GND - shield	
12	B +	
13	B -	
14	Data +	
15	A +	
16	A -	
17	Data -	

Part number
CONENCF Female Connector

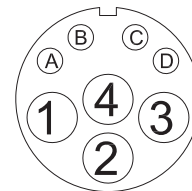
Absolute encoder SINCOS - Hiperface (2I, 2IB, 2ID)



Pin	Description	
1	SIN +	
2	SIN -	
3	RS485 +	
4	n.c.	
5	n.c.	
6	n.c.	
7	GND - shield	
8	PTC	KTY -
9	PTC	KTY +
10	+ VDC	
11	COS +	
12	COS -	
13	RS485 -	
14	n.c.	
15	n.c.	
16	n.c.	
17	n.c.	

Part number
CONRES82F Female Connector

Hiperface DSL® Connector (IZ)



Pin	Description
1	U
2	GND
3	V
4	W
A	Brake +
B	Brake -
C	Signal +
D	Signal -

Part number
CONMOT2IZF Female Connector

Associated Drives

Motor	Rated Speed [min ⁻¹]	Stall Current [A]	PSD1S	PSD1M
230 VAC supply voltage				
SM_40_60_0,19	6000	0.78	PSD1S_1200	PSD1M_1222
SM_40_60_0,38	6000	1.2	PSD1S_1200	PSD1M_1222
SM_60_30_0,55	3000	0.7	PSD1S_1200	PSD1M_1222
SM_60_45_0,55	4500	1	PSD1S_1200	PSD1M_1222
SM_60_60_0,55	6000	1.4	PSD1S_1200	PSD1M_1222
SM_60_16_1,4	1600	0.95	PSD1S_1200	PSD1M_1222
SM_60_30_1,4	3000	1.73	PSD1S_1200	PSD1M_1222
SM_60_45_1,4	4500	2.37	PSD1S_1300	PSD1M_1433
SM_60_60_1,4	6000	2.98	PSD1S_1300	PSD1M_1433
SM_60_75_1,4	7500	3.85	PSD1S_1300	PSD1M_1433
SM_82_10_03	1000	1.2	PSD1S_1200	PSD1M_1222
SM_82_16_03	1600	1.8	PSD1S_1200	PSD1M_1222
SM_82_30_03	3000	3.1	PSD1S_1300	PSD1M_1433
SM_82_33_03	3300	3.5	PSD1S_1300	PSD1M_1433
SM_82_45_03	4500	4.7	PSD1S_1300	PSD1M_1433
SM_82_60_03	6000	6.1	n.a.	PSD1M_1433
SM_82_75_03	7500	7.5	n.a.	PSD1M_1433
SM_100_16_06	1600	3.7	PSD1S_1300	PSD1M_1433
SM_100_30_06	3000	5.9	n.a.	PSD1M_1433
SM_100_45_06	4500	9.4	n.a.	PSD1M_1630
SM_100_55_06	5500	11.8	n.a.	PSD1M_1630
SM_100_75_06	7500	14.7	n.a.	PSD1M_1630
SM_115_16_10	1600	6	n.a.	PSD1M_1433
SM_115_30_10	3000	10.5	n.a.	PSD1M_1630
SM_115_40_10	4000	14.7	n.a.	PSD1M_1630
SM_115_54_10	5400	18.2	n.a.	PSD1M_1800
SM_142_18_15	1800	9.7	n.a.	PSD1M_1630
SM_142_30_15	3000	16	n.a.	PSD1M_1800
SM_170_11_35	1100	13.3	n.a.	PSD1M_1630
SM_170_16_35	1600	20	n.a.	PSD1M_1800
SM_170_25_35	2500	29	n.a.	PSD1M_1800

400 VAC supply voltage				
SM_60_30_1,4	3000	0.95	n.a.	PSD1M_1222
SM_60_45_1,4	4500	1.37	n.a.	PSD1M_1222
SM_60_60_1,4	6000	1.73	n.a.	PSD1M_1222
SM_60_75_1,4	7500	2.15	n.a.	PSD1M_1433
SM_82_30_03	3000	1.8	n.a.	PSD1M_1222
SM_82_45_03	4500	2.7	n.a.	PSD1M_1433
SM_82_56_03	5600	3.1	n.a.	PSD1M_1433
SM_82_60_03	6000	3.5	n.a.	PSD1M_1433
SM_82_75_03	7500	4.4	n.a.	PSD1M_1433
SM_100_30_06	3000	3.7	n.a.	PSD1M_1433
SM_100_45_06	4500	5.6	n.a.	PSD1M_1433
SM_100_56_06	5600	5.9	n.a.	PSD1M_1433
SM_100_75_06	7500	9.4	n.a.	PSD1M_1630
SM_115_20_10	2000	4.5	n.a.	PSD1M_1433
SM_115_30_10	3000	6.0	n.a.	PSD1M_1433
SM_115_40_10	4000	8.0	n.a.	PSD1M_1433
SM_115_56_10	5600	10.5	n.a.	PSD1M_1630
SM_142_20_15	2000	6.4	n.a.	PSD1M_1433
SM_142_30_15	3000	9.7	n.a.	PSD1M_1630
SM_142_45_15	4500	14.4	n.a.	PSD1M_1630
SM_142_56_15	5600	16	n.a.	PSD1M_1800
SM_170_10_35	1000	6.8	n.a.	PSD1M_1630
SM_170_20_35	2000	13.3	n.a.	PSD1M_1630
SM_170_27_35	2700	18	n.a.	PSD1M_1800
SM_170_30_35	3000	20	n.a.	PSD1M_1800
SM_170_10_60	1000	11.7	n.a.	PSD1M_1630
SM_170_20_60	2000	22.6	n.a.	PSD1M_1800
SM_170_30_60	3000	35.7	n.a.	n.a.

Order Code

Serie SMH / SMB / SME

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Order example	SMH	A	60	30	1,4	5	9		2I		64	A6	M	2

1 Type Of Motor (mandatory field)	SMH	Motor with Resolver for PSD/C3
	SMB	Motor with Resolver for TPDM/SLVDN
	SME	Motor with Encoder for TPDM/SLVDN
2 Brake Option	empty field	No Brake Option
	A	Motor with Holding Brake
3 Motor Frame Size (mandatory field)	40	Torque range 0.19 Nm or 0.35 Nm
	60	Torque range 0.55 or 1.4 Nm
	82	Torque range 3 Nm
	100	Torque range 6 Nm
	115	Torque range 10 Nm
	142	Torque range 15 or 17 Nm
	170	Torque range 35 or 60 Nm
4 Winding (mandatory field)	nn	min ⁻¹ (x100) see "Technical Data" (page 6)
5 Motor Torque (mandatory field)	nn	Torque [Nm] see "Technical Data" (page 6)
6 Flange (mandatory field)	5	All sizes
	7	Only for Size 82 and 115
	8	Only for Size 60, 82, 100 and 115
	9	Only for Size 115
7 Shaft (mandatory field)	8	8x20 mm for size 40
	9	9x20 mm for size 60
	11	11x23 mm for size 60
	14	14x30 mm for size 82
	19	19x40 mm for size 82/100/115/142
	24	24x50 mm for size 100/115/142
	28	28x60 mm for size 115/142
	38	38x80 mm for size 170
8 Key Shaft option	Empty field	Shaft with Key
	S	Shaft without key
9 Layout - Connectors (mandatory field)	0V	Cable exit and Molex Flying connectors - 200 mm above
	2I	Rotatable Interconnectron receptacles
	2IB	90° Interconnectron receptacles - forward facing
	2ID	90° Interconnectron receptacles - rear facing
	3M	Terminal box rear facing
	3MB	Terminal box forward facing
	2Y	Y-Tech connectors
	IZ	DSL® connectore (not for size 40)
10 Female connectors option (only for SMB/SME)	Empty field	With Female / flying connectors
	W	Without Female / flying connectors
11 Protection Degree (mandatory field)	64	IP64
	65	IP65 (standard for SMB170)
12 Feedback	Empty field	Standard Resolver
	A1	Encoder 2000 ppr + Hall - TAMAGAWA OIH48
	A2	Encoder 2048 ppr + Hall - TAMAGAWA OIH48
	A3	Encoder 4096 ppr + Hall - TAMAGAWA OIH48
	A6	SinCos Hiperface Encoder Single-Turn - STEGMANN SRS50/52
	A7	SinCos Hiperface Encoder Multi-Turn - STEGMANN SRS50/52
	B3	Encoder 2048 ppr + Hall - TAMAGAWA OIH35
	B9	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQI1331
	C4	Encoder 5000 ppr + Hall - TAMAGAWA OIH48
	C6	SinCos Hiperface Encoder Single-Turn - STEGMANN SKS36
	C7	SinCos Hiperface Encoder Multi-Turn - STEGMANN SKM36
	D3	Encoder 5000ppr + Hall - TAMAGAWA OIH35
	D5	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQN1325
	F2	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQN1125
	F4	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQI1130
	S1	SinCos Hiperface Encoder Single-Turn - STEGMANN SRS50S, SIL2
	S2	SinCos Hiperface Encoder Multi-Turn - STEGMANN SRS50S, SIL2
	S3	SinCos Hiperface Encoder Single-Turn - STEGMANN SKS36S, SIL2
	S4	SinCos Hiperface Encoder Multi-Turn - STEGMANN SKM36S, SIL2
	S5	Hiperface DSL® Encoder Feedback SIL2 32768 steps/rev Single Turn
	S6	Hiperface DSL® Encoder Feedback SIL2 32768 steps/rev x 4096 Multi Turn

13 Option Inertia

Empty field Standard Inertia

M Medium Inertia

14 Voltage

0 80 V

2 220-230 V (Standard)

4 380-400 V (Standard)

Order Code

Motor Power Cable for SMH / SMB Motors

	1	2	3	4		5		6		7		8
Order example	CBM	005	H	D	-	M15	-	PSX	-	0010	-	00

1	Power Cable Drive	
	CBM	Power cable drive
2	Section [mm²]	
	005	0.5 mm ²
	007	0.7 mm ²
	010	1 mm ²
	015	1.5 mm ²
	025	2.5 mm ²
3	Cable	
	S	Standard
	H	High Flex
4	Brake	
	0	Power cable standard - without brake
	B	Power cable standard - with brake
	D	DSL® Power cable with brake
5	Motor Connector	
	M15	M15 Interconnectron connector
	M23	M23 Interconnectron connector
	M40	M40 Interconnectron connector
6	Drive	
	PSX	Parker PSD1-S
	PMX	Parker PSD1-M
	SDX	Parker Servonet DC
7	Length	
	0000	Cable length 4 digits (example 50 m = 0500)*
8	Special Execution	
	00	Standard

* Available length in meter: 1; 2.5; 5; 7.5; 10; 15; 20; 25; 30; 35; 40; 45; 50

Motor Feedback Cable for SMH / SMB Motors

	1	2	3	4		5		6		7		8
Order example	CBF	RE0	H	0	-	M15	-	PSX	-	0010	-	00

1	Power Cable Drive	
	CBF	Feedback cable drive
2	Feedback	
	RE0	Resolver
3	Cable	
	H	High Flex
4	Brake	
	0	Power cable standard - without brake
5	Motor Connector	
	M15	M15 Interconnectron connector
	M23	M23 Interconnectron connector
	M40	M40 Interconnectron connector
6	Drive	
	PSX	Parker PSD1-S
	PMX	Parker PSD1-M
	SDX	Parker Servonet DC
7	Length	
	0000	Cable length 4 digits (example 50 m = 0500)*
8	Special Execution	
	00	Standard

* Available length in meter: 1; 2.5; 5; 7.5; 10; 15; 20; 25; 30; 35; 40; 45; 50



Servo Motor - MH / MB

Overview

Description

The MH / MB series caters for torques in the range of 0.5 to 285 Nm, speeds up to 10 000 min⁻¹ and includes a total of 50 models available across 5 frame sizes. Thanks to the high quality and performance of the Neodymium-Iron-Boron magnets, and also the encapsulation method used to fasten them to the shaft, the MH / MB series of motors can achieve very high accelerations and withstand high overload without the risk of demagnetisation or detachment of the magnets. Furthermore, shaft and flange size flexibility on all models provides the user with the possibility to optimise their motor selection for any given application.

Adequate mechanical over-sizing, low inertia in an extra-strong mechanism and a broad range of models permits the application of the MH / MB series in all fields where high dynamic performance and utmost reliability are crucial features.

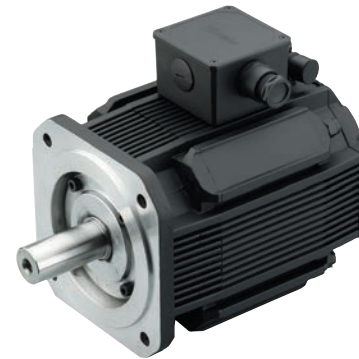
Typical applications include any type of automatic machinery, especially in the product packaging and handling industry, and wherever the demand exists for axis speed and position synchronisation.

Features

- Large set of feedback option
- Customization
- Increase inertia option
- ATEX certification for MB105/145
- Options
 - Flying cables
 - Terminal box (power and resolver)
 - External encoder
 - Increased inertia
 - Brake
 - Feedback - resolver/incremental/ SinCos/absolute encoder
 - Thermal protection (PTC for MB and KTY compatible for MH)
 - Second shaft

Application

- Food, Pharma & Beverage
- Packaging Machines
- Material Forming
- Material Handling
- Factory Automation
- Life Science Diagnostic
- Automotive Industry / In-Plant
- Printing Industry
- Textile Machines
- Robotics
- Servo Hydraulic Pumps



Technical Characteristics - Overview

Motor Type	Permanent magnets synchronous servo motor
Rotor Design	Rotor with surface rare earth magnets
Power supply	230 VAC or 400 VAC
Operating temperature	-10/+40 °C
Number of poles	4 for M_ 70 8 for M_ 105-145-205-265
Power Range	0.05...67 kW
Torque Range	0.2...285 Nm
Speed Range	0...10 000 min ⁻¹
Mounting	Flange with smooth holes B14, B3 option
Shaft End	Plain keyed shaft Plain smooth shaft (option)
Cooling	Natural ventilation Self-ventilation (option for size 105-145-205) Forced ventilation (option for size 105-145-205) Water cooled (option for size 145)
Protection Level (IEC60034-5)	IP64 IP65 (option)
Feedback sensor	Resolver Absolute EnDat or Hiperface Incremental Encoder
Voltage Supply	230 / 400 VAC
Temperature Class	Class F
Connections	Connectors Flying cables Terminal Box (see table option for combination)
Marking	CE / UL (size 145/205 under preparation)
Standards In compliance with:	73/23/CEE and 93/68/CEE EN60034-1 EN60034-5 EN60034-5/A1 EN60034-9 EN60034-14

Technical Characteristics

MH / MB Motors, Size 70 - 0.5...2.5 Nm

230 VAC

Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_70 20 0,5	70	0.5 (0.9)	0.44	0.5	2000	0.43	2.8	26	55	0.67	1.17
M_70 38 0,5			0.72	0.4	3800	0.66				0.41	0.71
M_70 75 0,5			1.37	0.4	7500	1.00				0.22	0.38
M_70 20 01		1.0 (1.6)	0.84	1.0	2000	0.80	5.1	40	69	0.72	1.25
M_70 38 01			1.39	0.8	3800	1.23				0.42	0.72
M_70 75 01			2.65	0.5	7500	1.43				0.23	0.39
M_70 20 1,5		1.5 (2.2)	1.23	1.5	2000	1.18	6.8	54	83	0.73	1.27
M_70 38 1,5			2.25	1.4	3800	1.96				0.42	0.72
M_70 75 1,5			4.07	0.7	7500	1.85				0.23	0.39
M_70 20 02		2.0 (2.7)	1.55	1.9	2000	1.47	8.4	68	97	0.78	1.36
M_70 38 02			2.82	1.7	3800	2.40				0.43	0.75
M_70 75 02			5.36	0.6	7500	1.74				0.23	0.39
M_70 20 2,5		2.5 (3.1)	1.90	2.4	2000	1.82	9.8	81	11	0.79	1.36
M_70 38 2,5			3.56	2.1	3800	3.01				0.42	0.73
M_70 75 2,5			6.77	0.6	7500	1.77				0.22	0.38

400 VAC

Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_70 37 0,5	70	0.5 (0.9)	0.44	0.5	3700	0.41	2.8	26	55	0.67	1.17
M_70 70 0,5			0.72	0.4	7000	0.55				0.41	0.71
M_70 37 01		1.0 (1.6)	0.84	0.9	3700	0.74	5.1	40	69	0.72	1.25
M_70 70 01			1.39	0.6	7000	0.85				0.42	0.72
M_70 37 1,5		1.5 (2.2)	1.23	1.3	3700	1.07	6.8	54	83	0.73	1.27
M_70 70 1,5			2.25	0.8	7000	1.27				0.42	0.72
M_70 37 2,0		2.0 (2.7)	1.55	1.7	3700	1.32	8.4	68	97	0.78	1.36
M_70 70 2,0			2.82	0.9	7000	1.35				0.43	0.75
M_70 37 2,5		2.5 (3.1)	1.90	2.1	3700	1.60	9.8	81	110	0.79	1.36
M_70 70 2,5			3.56	1.2	7000	1.73				0.42	0.73

⁽¹⁾ Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature

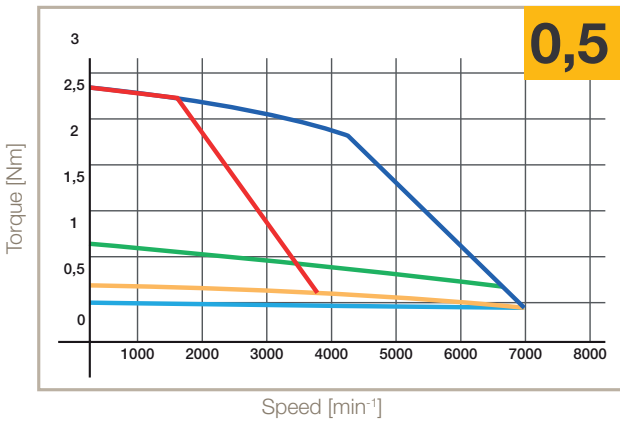
⁽²⁾ Data measured at 20 °C. When "hot" consider 5 % derating

⁽³⁾ Tolerance data ±10 %

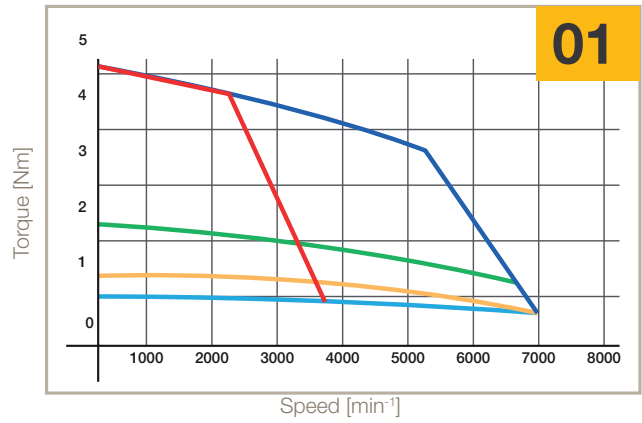
Speed Torque Curves

MH/MB70

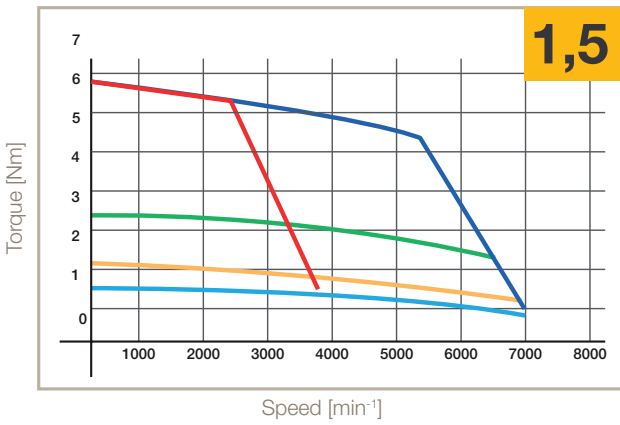
3800 min⁻¹ 230 V - 7000 min⁻¹ 400 V



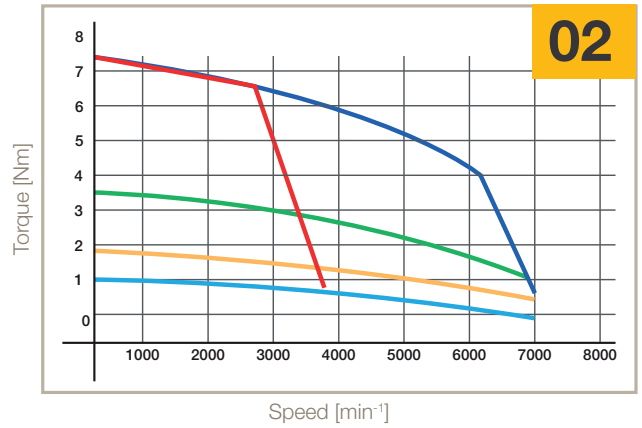
3800 min⁻¹ 230 V - 7000 min⁻¹ 400 V



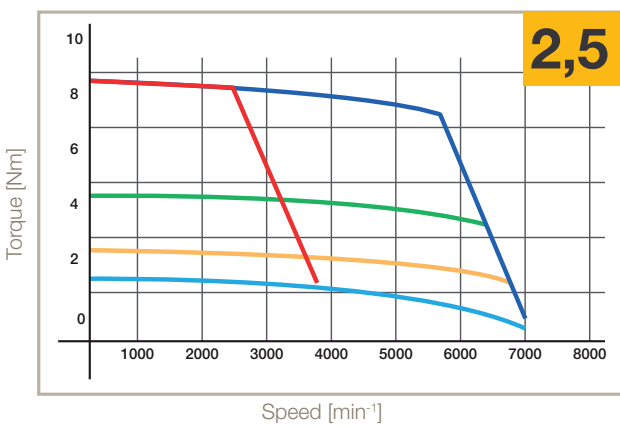
3800 min⁻¹ 230 V - 7000 min⁻¹ 400 V



3800 min⁻¹ 230 V - 7000 min⁻¹ 400 V



3800 min⁻¹ 230 V - 7000 min⁻¹ 400 V



- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 10 %, 5 min, 230 V
- S3 50 %, 5 min
- S3 20 %, 5 min

MH / MB Motors, Size 105 - 2.2...8 Nm

230 VAC

Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_105_16_02	105	2.2 (3.5)	1.5	2.2	1600	1.4	11.0	190	253	0.9	1.63
M_105_25_02			2.1	2.1	2500	2.0				0.6	1.11
M_105_30_02			2.8	2.1	3000	2.6				0.5	0.83
M_105_50_02			4.3	1.8	5000	3.5				0.3	0.55
M_105_16_04		4.0 (6.1)	2.6	4.0	1600	2.5	19.5	340	403	1.0	1.65
M_105_25_04			3.8	3.7	2500	3.5				0.7	1.13
M_105_30_04			5.0	3.6	3000	4.4				0.5	0.85
M_105_50_04			7.4	2.7	5000	5.0				0.3	0.58
M_105_16_06		6.0 (8.3)	3.9	5.9	1600	3.7	26.2	480	543	1.0	1.65
M_105_25_06			5.6	5.5	2500	5.0				0.7	1.15
M_105_30_06			7.4	5.2	3000	6.4				0.5	0.87
M_105_50_06			11.2	3.6	5000	6.7				0.3	0.58
M_105_16_08		8.0 (10.0)	5.2	7.8	1600	5.0	31.7	620	683	1.0	1.65
M_105_25_08			7.5	7.2	2500	6.6				0.7	1.15
M_105_30_08			9.7	6.8	3000	8.2				0.5	0.88
M_105_50_08			14.2	4.4	5000	7.9				0.4	0.61

400 VAC

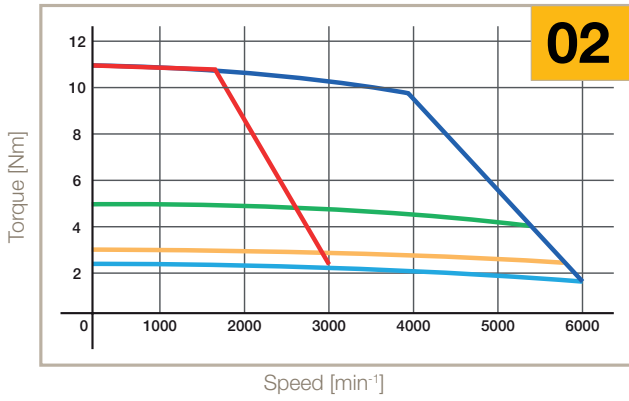
Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_105_30_02	105	2.2 (3.5)	1.5	2.1	3000	1.4	11.0	190	253	0.9	1.63
M_105_45_02			2.1	1.9	4500	1.8				0.6	1.11
M_105_60_02			2.8	1.7	6000	2.2				0.5	0.83
M_105_30_04		4.0 (6.1)	2.6	3.6	3000	2.3	19.5	340	403	1.0	1.65
M_105_45_04			3.8	3.0	4500	2.8				0.7	1.13
M_105_60_04			5.0	2.4	6000	3.0				0.5	0.85
M_105_30_06		6.0 (8.3)	3.9	5.3	3000	3.4	26.2	480	543	1.0	1.65
M_105_45_06			5.6	4.1	4500	3.8				0.7	1.15
M_105_60_06			7.4	3.0	6000	3.7				0.5	0.87
M_105_30_08		8.0 (10.0)	5.2	6.9	3000	4.4	31.7	620	683	1.0	1.65
M_105_45_08			7.5	5.2	4500	4.9				0.7	1.15
M_105_60_08			9.7	3.6	6000	4.4				0.5	0.88

⁽¹⁾ Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature
⁽²⁾ Data measured at 20 °C. When "hot" consider 5 % derating
⁽³⁾ Tolerance data ±10 %

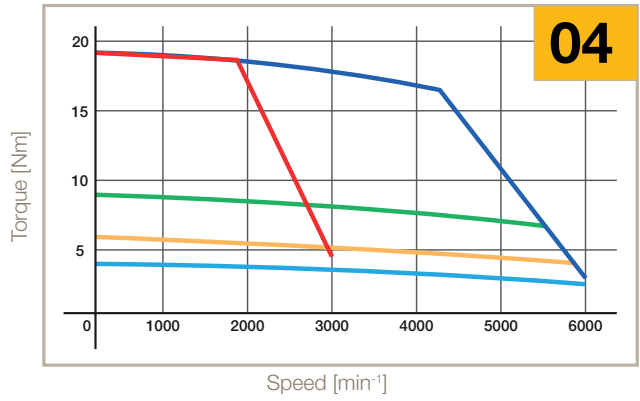
Speed Torque Curves

MH/MB105

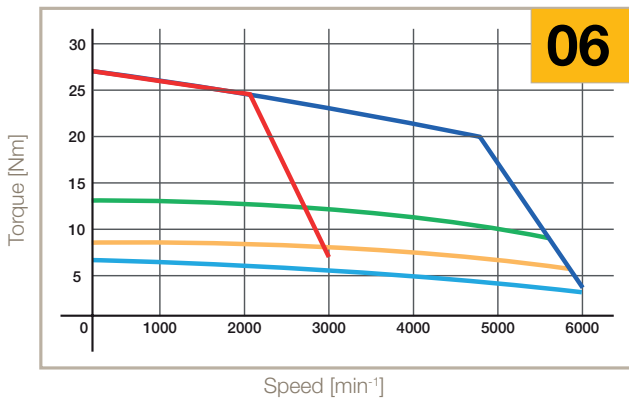
3000 min⁻¹ 230 V - 6000 min⁻¹ 400 V



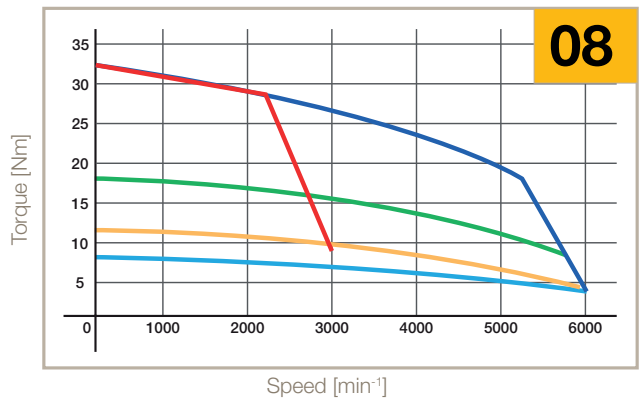
3000 min⁻¹ 230 V - 6000 min⁻¹ 400 V



3000 min⁻¹ 230 V - 6000 min⁻¹ 400 V



3000 min⁻¹ 230 V - 6000 min⁻¹ 400 V



- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 50 %, 5 min
- S3 20 %, 5 min
- S3 10 %, 5 min, 230 V

MH / MB Motors, Size 145 - 4.5...28 Nm

230 VAC

Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_145 5,5 04	145	4.5 (9)	1.1	4.6	550	1.1	28	780	975	2.1	3.65
M_145 11 04			2.3	4.6	1100	2.4				1.2	2.03
M_145 16 04			3.4	4.5	1600	3.3				0.8	1.42
M_145 25 04			4.7	4.3	2500	4.5				0.6	1.01
M_145 40 04			8.1	4.1	4000	7.2				0.4	0.60
M_145 5,5 08		8.7 (16)	2.0	8.7	550	2.0	49	1050	1245	2.7	4.69
M_145 11 08			3.7	8.7	1100	3.6				1.4	2.49
M_145 16 08			5.4	8.6	1600	5.2				1.0	1.70
M_145 25 08			8.2	8.1	2500	7.4				0.7	1.14
M_145 40 08			12.3	7.0	4000	9.7				0.4	0.76
M_145 5,5 15		15.0 (27)	3.3	15.0	550	3.2	86	1600	1795	2.9	4.94
M_145 11 15			6.2	14.7	1100	5.9				1.5	2.59
M_145 16 15			9.1	14.3	1600	8.5				1.0	1.78
M_145 25 15			14.2	13.6	2500	12.5				0.7	1.14
M_145 40 15			21.3	10.9	4000	15.0				0.4	0.76
M_145 5,5 22		22.0 (37)	4.7	21.9	550	4.6	117	2150	2345	2.9	5.03
M_145 11 22			8.9	21.3	1100	8.4				1.5	2.65
M_145 16 22			13.1	20.8	1600	12.1				1.0	1.80
M_145 25 22			20.8	19.1	2500	17.6				0.7	1.13
M_145 40 22			31.1	13.4	4000	18.6				0.4	0.76
M_145 5,5 28		28.0 (45)	5.9	27.8	550	5.8	143	2700	2895	2.9	5.07
M_145 11 28			11.3	26.9	1100	10.6				1.5	2.65
M_145 16 28			17.0	26.2	1600	15.5				1.0	1.78
M_145 25 28			26.5	23.2	2500	21.4				0.7	1.13
M_145 40 28			39.6	14.1	4000	19.7				0.4	0.76

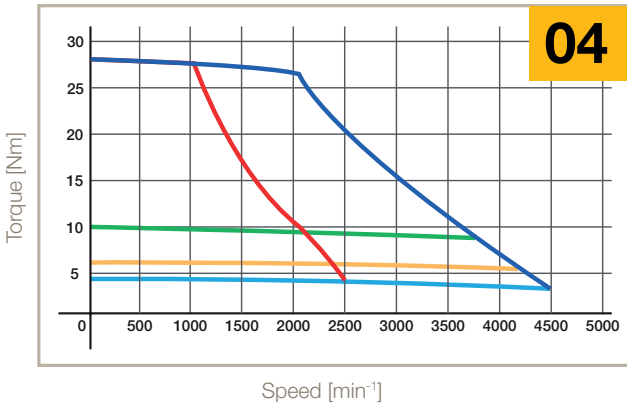
400 VAC

Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_145 10 04	145	4.5 (9)	1.1	4.5	1000	1.1	28	780	975	2.1	3.65
M_145 20 04			2.3	4.5	2000	2.3				1.2	2.03
M_145 30 04			3.4	4.3	3000	3.2				0.8	1.42
M_145 45 04			4.7	3.9	4500	4.0				0.6	1.01
M_145 10 08			8.7 (16)	2.0	8.7	1000				1.9	49
M_145 20 08		3.7		8.4	2000	3.5	1.4	2.49			
M_145 30 08		5.4		7.9	3000	4.8	1.0	1.70			
M_145 45 08		8.2		7.1	4500	6.6	0.7	1.14			
M_145 10 15		15.0 (27)		3.3	14.8	1000	3.1	86	1600	1795	
M_145 20 15			6.2	13.7	2000	5.5	1.5				2.59
M_145 30 15			9.1	12.7	3000	7.5	1.0				1.78
M_145 45 15			14.2	9.8	4500	9.1	0.7				1.14
M_145 10 22			22.0 (37)	4.7	21.4	1000	4.5				117
M_145 20 22		8.9		19.4	2000	7.6	1.5	2.65			
M_145 30 22		13.1		17.3	3000	10.1	1.0	1.80			
M_145 45 22		20.8		11.6	4500	10.8	0.7	1.13			
M_145 10 28		28.0 (45)		5.9	27.1	1000	5.6	143	2700	2895	
M_145 20 28			11.3	23.9	2000	9.4	1.5				2.65
M_145 30 28			17.0	21.1	3000	12.5	1.0				1.78
M_145 45 28			26.5	10.0	4500	9.4	0.7				1.13

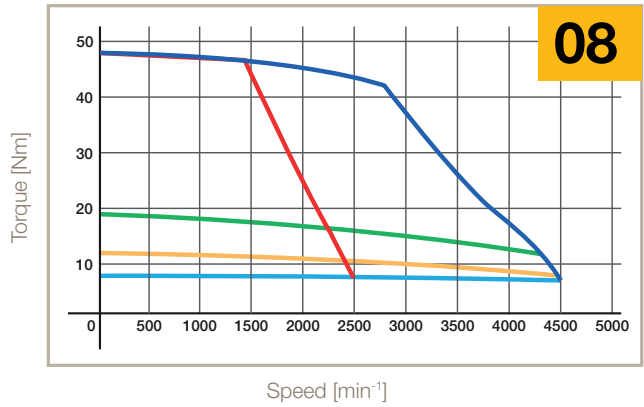
Speed Torque Curves

MH/MB145

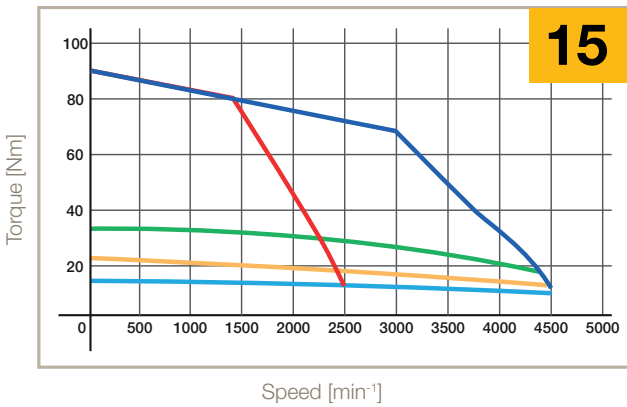
2500 min⁻¹ 230 V - 4500 min⁻¹ 400 V



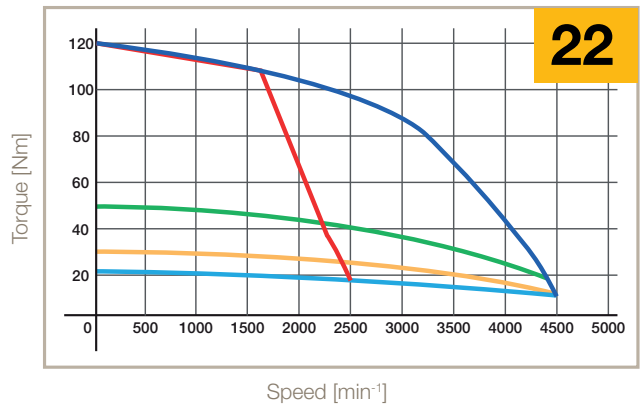
2500 min⁻¹ 230 V - 4500 min⁻¹ 400 V



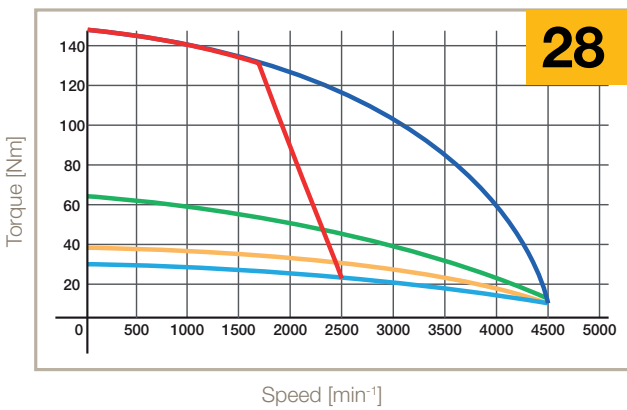
2500 min⁻¹ 230 V - 4500 min⁻¹ 400 V



2500 min⁻¹ 230 V - 4500 min⁻¹ 400 V



2500 min⁻¹ 230 V - 4500 min⁻¹ 400 V



- S1 65 K, ΔT
- S3 50 %, 5 min
- S3 10 %, 5 min, 400 V
- S3 20 %, 5 min
- S3 10 %, 5 min, 230 V

(1) Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature
 (2) Data measured at 20 °C. When "hot" consider 5 % derating
 (3) Tolerance data ±10 %

MH / MB Motors, Size 205 - 15...90 Nm

230 VAC

Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_205 11 15	205	15 (22)	6.3	14.7	1150	6.2	69	3500	4035	1.4	2.38
M_205 17 15			8.6	14.4	1700	8.3				1	1.74
M_205 5,5 28		28 (39)	6.9	28.6	550	6.9	123	5000	5535	2.5	4.35
M_205 11 28			13.0	28.2	1150	12.7				1.3	2.31
M_205 17 28			20.1	27.6	1700	19.3				0.9	1.50
M_205 5,5 50		50 (70)	12.4	51.3	550	12.3	222	8000	8535	2.5	4.35
M_205 11 50			22.1	50.0	1150	21.3				1.4	2.45
M_205 17 50			33.1	48.0	1700	30.8				0.9	1.63
M_205 5,5 70		70 (98)	16.8	71.1	550	16.5	310	11 000	11 535	2.6	4.49
M_205 11 70			30.7	68.6	1150	29.3				1.4	2.45
M_205 17 70			46.1	65.0	1700	41.7				0.9	1.63
M_205 5,5 90		90 (126)	22.1	90.9	550	21.8	398	14 000	14 535	2.5	4.35
M_205 11 90			44.3	87.0	1150	41.8				1.3	2.18
M_205 17 90			59	81.7	1700	52.4				0.9	1.63

400 VAC

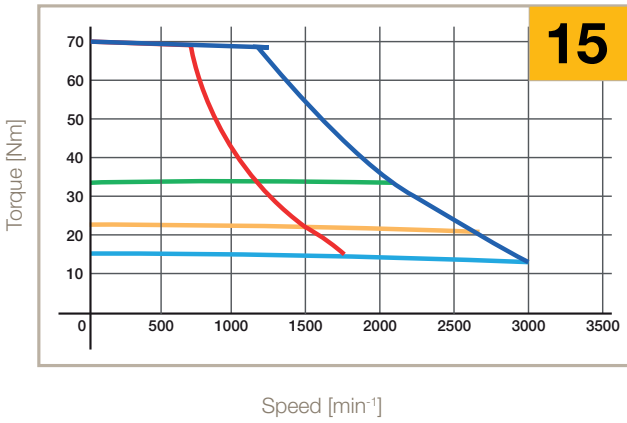
Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_205 20 15	205	15 (22)	6.3	14.1	2000	5.9	69	3500	4035	1.4	2.38
M_205 30 15			8.6	13.4	3000	7.7				1	1.74
M_205 10 28		28 (39)	6.9	28.2	1000	6.8	123	5000	5535	2.5	4.35
M_205 20 28			13.0	27.3	2000	12.3				1.3	2.31
M_205 30 28			20.1	25.7	3000	18.0				0.9	1.50
M_205 10 50		50 (70)	12.4	50.4	1000	12.1	222	8000	8535	2.5	4.35
M_205 20 50			22.1	47.0	2000	20.1				1.4	2.45
M_205 30 50			33.1	41.7	3000	26.8				0.9	1.63
M_205 10 70		70 (98)	16.8	69.4	1000	16.1	310	11 000	11 535	2.6	4.49
M_205 20 70			30.7	62.9	2000	26.9				1.4	2.45
M_205 30 70			46.1	52.3	3000	33.7				0.9	1.63
M_205 10 90		90 (126)	22.1	88.2	1000	21.2	398	14 000	14 535	2.5	4.35
M_205 20 90			44.3	78.3	2000	37.7				1.3	2.18
M_205 30 90			59.0	61.6	3000	39.7				0.9	1.63

⁽¹⁾ Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature
⁽²⁾ Data measured at 20 °C. When "hot" consider 5 % derating
⁽³⁾ Tolerance data ±10 %

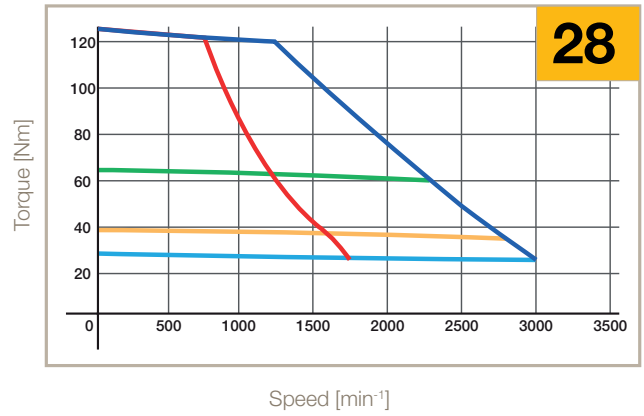
Speed Torque Curves

MH/MB205

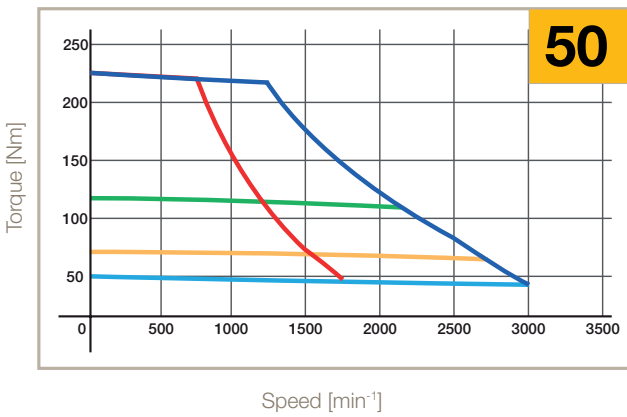
1700 min⁻¹ 230 V - 3000 min⁻¹ 400 V



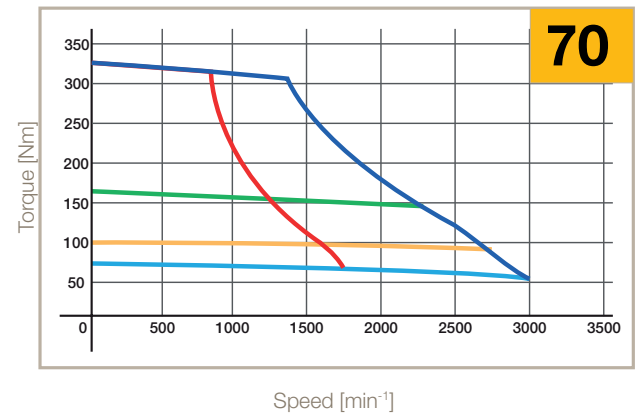
1700 min⁻¹ 230 V - 3000 min⁻¹ 400 V



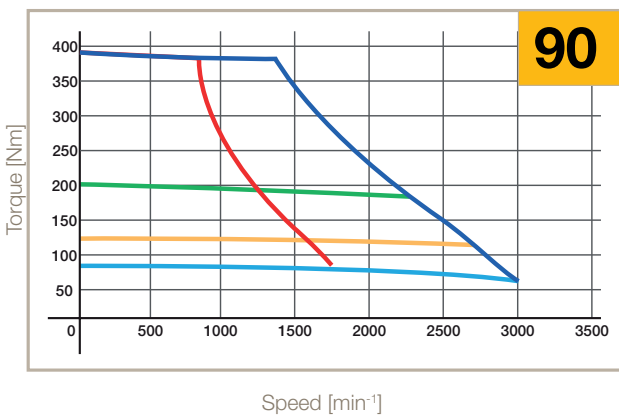
1700 min⁻¹ 230 V - 3000 min⁻¹ 400 V



1700 min⁻¹ 230 V - 3000 min⁻¹ 400 V



1700 min⁻¹ 230 V - 3000 min⁻¹ 400 V



- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 10 %, 5 min, 230 V
- S3 50 %, 5 min
- S3 20 %, 5 min

MH / MB Motors, Size 265 - 75...270 Nm

400 VAC

Model	Size	Stall		Nominal			Peak Torque ⁽¹⁾	Inertia		Ke ⁽²⁾⁽³⁾	Kt ⁽²⁾⁽³⁾
		Torque ⁽¹⁾	Current	Torque ⁽¹⁾	Speed	Current		No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₁₀₅ [A]	T _{n105} [Nm]	n [min ⁻¹]	I _{n105} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
M_265 10 75	265	75 (95)	17.8	94	1000	17.6	240	22 000	30 100	3.08	5.33
M_265 20 75			35.6	92	2000	34.5				1.54	2.67
M_265 30 75			55.3	87	3000	48.8				1.03	1.78
M_265 10 150		145 (175)	32.8	175	1000	32.8	480	36 000	44 100	3.08	5.33
M_265 20 150			73.7	170	2000	71.6				1.37	2.37
M_265 30 150			98.1	144	3000	80.7				1.03	1.78
M_265 10 220		205 (255)	47.8	254	1000	47.6	695	49 000	61 960	3.08	5.33
M_265 20 220			95.6	231	2000	86.6				1.54	2.67
M_265 30 220			143	185	3000	104				1.03	1.78
M_265 10 285		270 (330)	69.5	325	1000	68.5	900	63 000	75 960	2.74	4.75
M_265 20 285			139	288	2000	121				1.37	2.37
M_265 30 285			185	215	3000	151				1.03	1.78

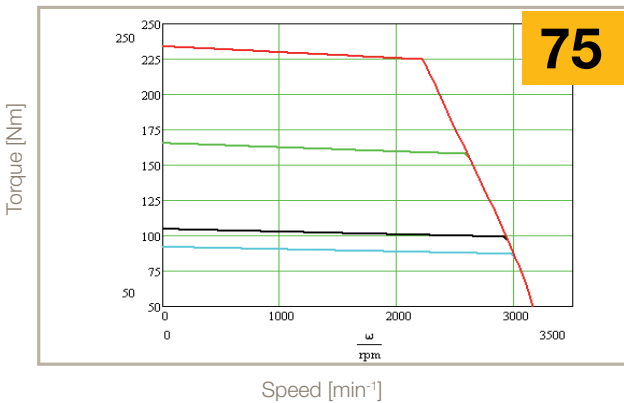
⁽¹⁾ Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature

⁽²⁾ Data measured at 20 °C. When "hot" consider 5 % derating

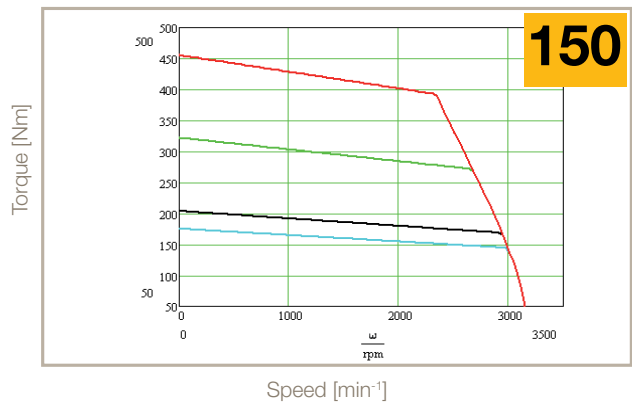
⁽³⁾ Tolerance data ±10 %

Speed Torque Curves

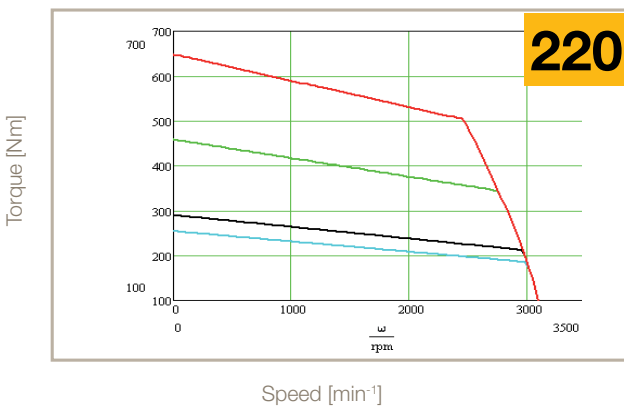
3000 min⁻¹ 400 V



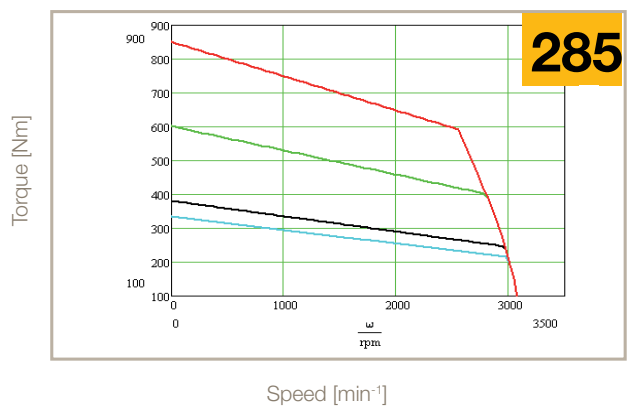
3000 min⁻¹ 400 V



3000 min⁻¹ 400 V

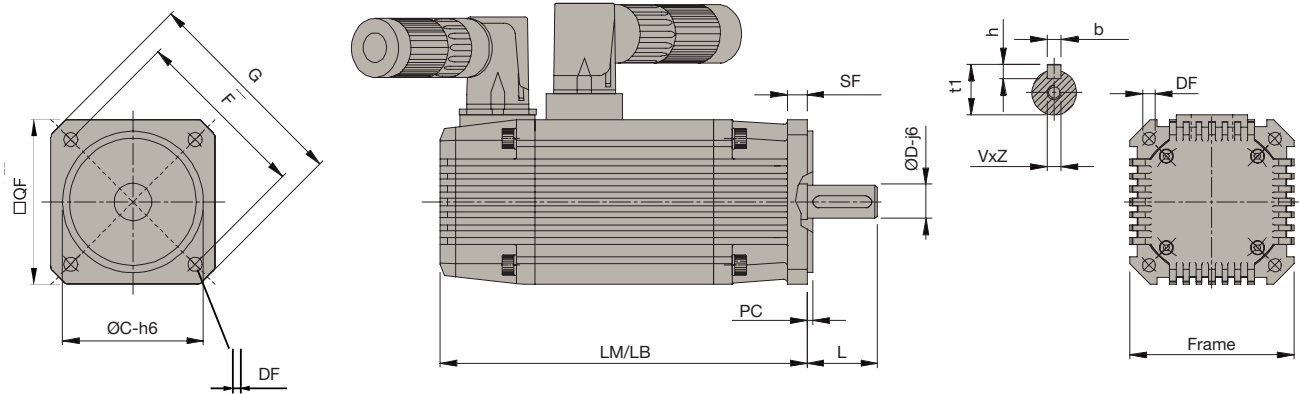


3000 min⁻¹ 400 V



— S1 65 K, ΔT — S3 50 %, 5 min
— S3 10 %, 5 min, 400 V — S3 20 %, 5 min

Dimensions



Motor - Size	LM/LB	Weight	DxL	bxh	t1	VxZ	C	F	DF	G	SF	PC	QF	Order code QF	
70	0,5	158/214	2	11x23 14x30	4x4 5x5	12.5 16	M4x10 M4x12.5	60	75	6	90	8.5	2.5	70	5
	01	188/244	2.8												
	1,5	218/274	3.5												
	02	248/304	4.3												
	2,5	278/334	5.1												
105	02	186/250	5	19x40 24x50	6x6 8x7	21.5 27	M6x16 M8x19	95	115	9.5	140	10	3.5	105	5
	04	229/293	7					95	115	9.5	140	10	3.5	105	4
	06	273/337	9					80	115	9.5	140	10	3.5	105	9
	08	317/381	11					110	115	9.5	140	10	3.5	105	6
145	04	200/274	8	19x40 24x50 28x60	6x6 8x7	21.5 27 31	M6x16 M8x19 M10x22	130	165	11.5	200	12	3.5	145	5
	08	231/305	12					130	165	11.5	200	12	3.5	145	4
	15	292/366	18					130	165	11.5	200	12	3.5	145	4
	22	354/428	23					130	165	11.5	200	12	3.5	145	4
205	15	239/338	20	38x80 42x110	10x8 12x8	41 45	M12x32 M16x40	180	215	14	250	18	4	205	5
	28	273/372	29												
	50	342/441	44												
	70	411/510	59												
265	90	480/579	74	48X110	14x9	51.5	M16x40	250	300	19	342	35	4	264	5
	75	340/475	89												
	150	447/582	126												
	220	554/689	164												
285	661/796	203													

LM: Motor length without brake with resolver

LB: Motor length with brake with resolver

DxL: Shaft

bxh: Key

t1: Overall shaft height

VxZ: Shaft hole depth

mm for dimensions, kg for weight

C: Center

F: Distance between center of holes clamp

DF: Fixing holes

G: Dimension in diagonal

SF: Flange thickness

PC: Centering depth

QF: Flange square

Options

Parker Mx family motors are available with standard and custom options to adapt motor on your application. If the option for your application is not listed, please consult our technical department.

Holding Brake

All MH, MB motors are available with an optional holding brake. Two different brake types exist, standard holding brake (option A) and special brake (option B) depending on the features of your application needs. Incorporated into the motor is the fail-safe holding brake (supply voltage 24 VDC \pm 10 %) which is applied when no voltage is present. Because of the power taken by the brake, torque values must be reduced by 5 % (10 % for size 265). The holding brake shall be used with the motor only at a standstill and not for dynamic braking. When used normally they are maintenance free.

Holding Brake ⁽¹⁾	Option	Voltage [V]	Current @20 °C [A]	Torque @20 °C [Nm]	Added Length [mm]	Added Weight [kg]	Torque derating of motor
M_70_A	A	24 \pm 10 %	0.53	2	56	1.1	5 %
M_70_B	B				n.a.		
M_105_A	A	24 \pm 10 %	1.1	10	64	3	5 %
M_105_B	B				n.a.		
M_145_A_04	A	24 \pm 10 %	1.8	4	74	5	5 %
M_145_A_08				8			
M_145_A_15				15			
M_145_A_22				22			
M_145_A_28				28			
M_145_B	B	24 \pm 10 %	0.8	22	74	5	5 %
M_205_B	B	24 \pm 10 %	2.1	120	99	14	5 %
M_265_A_75	A	24 \pm 10 %	2.9	225	135	30	10 %
M_265_A_150				450		35	
M_265_A_220							
M_265_A_285							
M_265_B	B				n.a.		

⁽¹⁾ If more than one option is required, please check with our technical department the feasibility.

Fan cooling

For high duty cycle applications, Parker offer 3 different types of cooling option: servo-ventilated, self ventilated and water cooled. With servo-ventilated the motors (order Code M_SV), an increase of 25 % torque and current based on nominal values (except for the maximum torque and current data) is provided. The servo-ventilated 205 motor is equipped with an external condenser for starting the fan.

With the self-ventilated option (order Code M_V), the torque is increased proportionally to the nominal speed.

For water-cooled motors (order code M_W, available only for size 145), consider a performance increase of approx. 100 % in the torque and current, except peak data.

Motor MB / MH	Option ⁽¹⁾	Voltage	Current [A]	Frequency [Hz]	Speed [min ⁻¹]	Added Length [mm]	Added Weight [kg]	Torque increasing of motor
105	SV	24 VDC \pm 10 %	0.17	n.a.	3000	64	1	25 %
	V	n.a.	n.a.	n.a.	n.a.	34	0.25	Depending of speed
145	SV	230 VAC Single Phase \pm 10 %	0.35	50	3000	97	2	25 %
	V	n.a.	n.a.	n.a.	n.a.	44	0.55	Depending of speed
205	SV	230 VAC Single Phase \pm 10 %	0.22	50	3000	109	2.2	25 %
	V	n.a.	n.a.	n.a.	n.a.	54	1.1	Depending of speed
265	SV	230 VAC Single Phase \pm 10 %	0.22	50	3000	109	2.2	25 %

⁽¹⁾ If more than one option is required, please check with our technical department the feasibility.

Feedback options

M_ motors are available with standard resolver feedback, but for different type of application we can offer the following types of feedback:

- Incremental Encoder with hall sensors
- Hiperface absolute encoder (single or multi-turn), DSL®
- EnDat absolute encoder (single or multi-turn)

Resolver

Poles	2
Transformation ratio	0.5
Operating temperature	-50...+150 °C
Motor associations	all sizes

Incremental Encoder with Hall Sensor

Code	A1	A2	A3	B1	C4
Resolution [C/T]	2000	2048	4096	3000	5000
Poles	8			4	8
System Accuracy	±32"	±32"	±16"	±22"	±13"
Voltage	+5 VDC ±5 % - 200 mA				
Reference Mark	Yes				
Max Speed [min ⁻¹]	6000				
Output Circuit	Line drive differential mode 20 mA				
Operating Temperature	-20...+100 °C	-20...+85 °C	-20...+100 °C		
M_ Motors Associations					
M_70	-	-	-	Δ 10 mm	-
M_105	✓	✓	✓	-	✓
M_145	✓	✓	✓	-	✓
M_205	✓	✓	✓	-	✓
M_265	-	-	-	-	-

- Not possible

✓ Possible without increment

Δ Possible with increment motor length

Hiperface Absolute Encoder

Code	S1	S2	A6	A7	S5	S6
Type	Optical					
Turn	Single	Multi	Single	Multi	Single	Multi
Incremental Signals	1 V _{PP}				-	-
Line Count	1024				-	-
Resolution	32 768 (15 bit)		32 768 (15 bit)		262 144 (18 bits)	
Absolute rotation	1	4096	1	4096	1	4096
System Accuracy	±45"				±40"	
Power Supply	8 VDC				7...12 VDC	
Max Speed [min ⁻¹]	6000				-	
Temperature	-20...+115°C				-20...+105°C	
Safety integrity level	SIL2 (IEC 61508), SILCL2 (IEC 62061)		Not Available		SIL2 (IEC 61508), SILCL2 (IEC 62061)	
MB / MH Motors Associations						
M_70	Δ 10 mm	Δ 10 mm	Δ 10 mm	Δ 10 mm	-	-
M_105	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	-	-
M_145	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm
M_205	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm
M_265	-	-	-	-	-	-

- Not possible

✓ Possible without increment

Δ Possible with increment motor length

EnDat Absolute Encoder

Code	B9	D5
Type	Inductive	Optical
Turn	Multi	Multi
Incremental Signals	1V _{PP}	
Line Count	32	512
Positions per revolutions	131 072 (17 bit)	8192 (13 bit)
Distinguishable revolutions	4096	
System Accuracy	±400"	±60"
Power Supply	5 VDC	
Max Speed [min ⁻¹]	12 000	7 000
Temperature	-20...+115 °C	-30...+115 °C
Absolute position values	EnDat 2.1	EnDat 2.2
Safety integrity level:	not available	
M_ Motors Associations		
M_70	-	-
M_105	Δ 19 mm	Δ 19 mm
M_145	✓	Δ 19 mm
M_205	Δ 19 mm	Δ 19 mm
M_265	-	✓

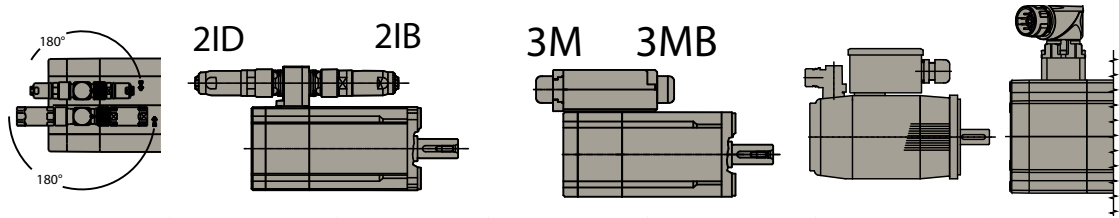
- Not possible
- ✓ Possible without increment
- Δ Possible with increment motor length

Technical specification for high inertia

Option Inertia	Added ...	Unit	105				145					205				
			02	04	06	08	04	08	15	22	28	15	28	50	70	90
M	Inertia	[kgmm ²]	140				790					4400				
	Length	[mm]	0				0					0				
	Weight	[kg]	0.340				0.990					2.065				
ML	Inertia	[kgmm ²]	530		n.a.		1770			n.a.		12 100			n.a.	
	Length	[mm]	64		n.a.		74			n.a.		99			n.a.	
	Weight	[kg]	1.5		n.a.		3.3	3.6		n.a.		7.6	11.9		n.a.	

Layout and connectors

M_ motors are available with different combinations of connectors and layout, depending of size of motor and the application




	2x Parallel upright connectors 2I	2x Forward facing connectors 2IB	2x Rear facing connectors 2ID	Terminal box rear facing 3M	Terminal box forward facing 3MB	Terminal box forward facing 3I	Hiperface DSL® connector IZ
MH_70	✓	-	-	-	-	-	-
MH_105	✓	-	-	-	-	-	-
MH_145	-	-	-	-	-	✓	✓
MH_205	-	-	-	-	-	✓	✓
MH_265	-	-	-	✓	-	-	-
MB_70	✓	-	-	✓	✓	-	-
MB_105	✓	-	-	✓	✓	-	-
MB_145	✓	-	-	✓	✓	✓	✓
MB_205	-	-	-	✓	✓	✓	✓
MB_265	-	-	-	✓	-	-	-
ME_70	✓	-	-	-	-	-	-
ME_105	✓	-	-	-	-	-	-
ME_145	✓	-	-	-	-	✓	✓
ME_205	-	-	-	-	-	✓	✓
ME_265	-	-	-	✓	-	-	-

- Not possible
- ✓ Possible without increment
- Δ Possible with increment motor length

Shaft

M_ motors are available with or without key option; shafts are available in different sizes suitable for your existing machine or gearbox

Increased Safety

M_ motors size 105 and 145 are also available with increased safety which conform to ATEX.... directive 94/9/CE  II 2G Ex e II T3 with environment temperature between -20 and +40 °C
Only with drive HIDX. The feature and characteristics of the MBX motors are different from the standard version. For more info please consult technical department of Parker EME.

Custom options

Flange and shafts

In addition to the standard product it is possible to specify a fully customized mechanical interface for the motor ie flange, shaft and mounting holes. This option requires technical collaboration between the customer and Parker.

KIT (frameless) options

We can also supply our motors as only stator + rotor. Our mechanical team will develop / propose the right solution for your mechanical application which integrates into the existing elements of the machine.

A second output shaft / external encoder mount

Certain applications need a second shaft on the rear of motor; for this reason with M_ motors we offer alternative solutions for adding existing feedback or other mechanical accessories. For more details contact your Parker sales engineer.

Order Code

MH / MB Motors

To ensure that you select the correct motor we recommend that you have the following information.

- Diagram speed / time of load cycle to identify the type of the cycle (S1, S3 or others)
- Information about inertia load system
- Check the duty cycle - acceleration/deceleration
- Calculate the average torque and peak torque of the system
- Calculate the average speed and maximum speed of the cycle
- Check the temperature and altitude of environment / application
- Check the mechanical compatibility

With these preliminary data you can start to choose the motor (with the correct drive) for your application.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Order example	MH	x	A	V	205	11	28	5	9		2IB			64	A1				2

1	Type Of Motor (mandatory field)	
MH	Motor with Resolver MH Series for PSD/C3	
MB	Motor with Resolver MB Series for TPDM/SLVDN	
ME	Motor with Encoder ME Series for TPDM/SLVDN	
2	EX Protection	
empty field	Standard motor no EX Certification	
x	Motor with EX Certification (increased protection safety) (only for 105 and 145 without the holding brake at 3000 min ⁻¹) (only with HID, MB)	
3	Brake Option	
empty field	No Brake Option	
A	Motor with Holding Brake (brakes when the supply voltage is 0)	
B	Motor with Holding Brake (size145 up to 15Nm and 205)	
4	Cooling Option	
empty field	no cooling option	
V	Motor with shaft-drive fan cooling	
SV	Motor with (single-phase) motorised fan cooling	
W	Water cooled motor (only size 145)	
5	Motor Frame Size (mandatory field)	
70	Torque range 0.5...2,5 Nm	
105	Torque range 2.2...8 Nm	
145	Torque range 4.5...28 Nm	
205	Torque range 15...90 Nm	
265	Torque range 75...265 Nm	
6	Winding (mandatory field)	
nn	min ⁻¹ (x100) except for size 205 1150 min ⁻¹ which is only 11	
7	Motor Torque (mandatory field)	
nn	Torque in Nm	
8	Flange (mandatory field)	
5	B5 Flange	
6	116 mm Flange, only for frame 105	
9	96 mm Flange, only for frame 105	

9	Shaft (mandatory field)	
11	11x23 mm for size 70	
14	14x30 mm for size 70	
19	19x40 mm for size 105/145	
24	24x50 mm for size 105/145	
28	28x60 mm for size 145	
38	38x80 mm for size 205	
42	42x110 mm for size 205	
48	48x110 mm for size 265	
A*	Special shaft under request	
10	Key Shaft option	
empty field	Shaft with key	
S	Shaft without key	
11	Layout - Connectors (mandatory field)	
2I	Interconnectron rotatables receptacles (not for size 265 and 205 with brake)	
3M	Terminal Box - opposite shaft glands	
3MB	Terminal Box -toward shaft glands	
2IB	90° Interconnectron receptacles - forward facing	
2ID	90° Interconnectron receptacles - rear facing	
3I	Terminal Box + Interconnectron 90° (not for size 265)	
3MBS	Terminal Box + Interconnectron 90° (only for size 265)	
12	Female connectors option	
empty field	With Female / flying connectors	
W	Without Female / flying connectors	
13	Form Option	
empty field	no Foot Mount Option	
3	B3 - Foot Mount Option	
14	Protection Degree (mandatory field)	
64	IP64	
65	IP65	

15 Feedback

empty field	Resolver (Standard) not for ME motors
A1	Tamagawa OIH48 2000 ppr / on request - No Stock
A2	Tamagawa OIH48 2048 ppr for size 105/145/205
A3	Tamagawa OIH48 4096 ppr for size 105/145/205
A6	Stegman SRS50 Hiperface Single-Turn for size 70/105/145/205
A7	Stegman SRM50 Hiperface Multi-Turn for size 70/105/145/205
B1	Encoder 3000 ppr + Hall - TAMAGAWA OIH35
B9	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQI1331
C4	Encoder 5000 ppr + Hall - TAMAGAWA OIH48
D5	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQN1325
S1	SinCos Hiperface Encoder Single-Turn - STEGMANN SRS50S
S2	SinCos Hiperface Encoder Multi-Turn - STEGMANN SRS50S
S5	Hiperface DSL® Encoder Feedback SIL2 32768 steps/rev Single Turn
S6	Hiperface DSL® Encoder Feedback SIL2 32768 steps/rev Multi Turn

16 Option Inertia

empty field	Standard Inertia
M	Medium Inertia
ML	High Inertia

17 Special Option

empty field	No Special Option
Exx	Prearrangement for external encoder mounting; where xx is the model of feedback

18 Voltage

2	220-230 V
4	380-400 V

Order Code

Motor Power Cable for MH / MB Motors

	1	2	3	4		5		6		7		8
Order example	CBM	005	H	D	-	M15	-	PSX	-	0010	-	00

1	Power Cable Drive	
	CBM	Power cable drive
2	Section [mm²]	
	005	0.5 mm ²
	007	0.7 mm ²
	010	1 mm ²
	015	1.5 mm ²
	025	2.5 mm ²
3	Cable	
	S	Standard
	H	High Flex
4	Brake	
	0	Power cable standard - without brake
	B	Power cable standard - with brake
	D	DSL® Power cable with brake
5	Motor Connector	
	M15	M15 Interconnectron connector
	M23	M23 Interconnectron connector
	M40	M40 Interconnectron connector
6	Drive	
	PSX	Parker PSD1-S
	PMX	Parker PSD1-M
	SDX	Parker Servonet DC
7	Length	
	0000	Cable length 4 digits (example 50 m = 0500)*
8	Special Execution	
	00	Standard

* Available length in meter: 1; 2.5; 5; 7.5; 10; 15; 20; 25; 30; 35; 40; 45; 50

Motor Feedback Cable for MH / MB Motors

	1	2	3	4		5		6		7		8
Order example	CBF	RE0	H	0	-	M15	-	PSX	-	0010	-	00

1	Power Cable Drive	
	CBF	Feedback cable drive
2	Feedback	
	RE0	Resolver
3	Cable	
	H	High Flex
4	Brake	
	0	Power cable standard - without brake
5	Motor Connector	
	M15	M15 Interconnectron connector
	M23	M23 Interconnectron connector
	M40	M40 Interconnectron connector
6	Drive	
	PSX	Parker PSD1-S
	PMX	Parker PSD1-M
	SDX	Parker Servonet DC
7	Length	
	0000	Cable length 4 digits (example 50 m = 0500)*
8	Special Execution	
	00	Standard

* Available length in meter: 1; 2.5; 5; 7.5; 10; 15; 20; 25; 30; 35; 40; 45; 50



Low Cogging Servo Motor - NX Series

Overview

Description

NX Series brushless servomotors from Parker combine exceptional precision and motion quality, high dynamic performance and very compact dimensions. A large set of torque / speed characteristics, options and customization possibilities are available, making NX Series servomotors the ideal solution for most servosystems applications.

Advantages

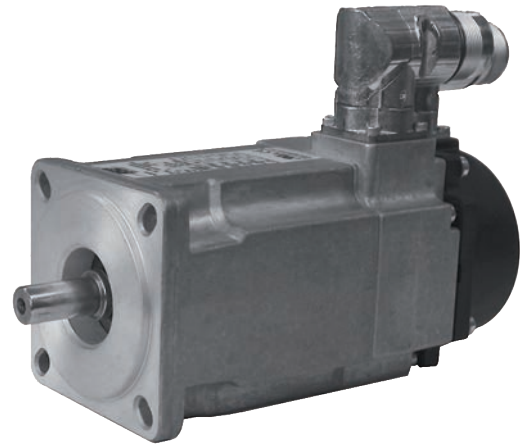
- High precision and motion quality
- High dynamic performance
- Compact robust
- Large set of options and customization possibilities
- CE and UL marking certification available

Applications

- Life Science Diagnostic
- Tooling Machines
- Pulp & Paper
- Renewable Energy
- Aerospace
- Radiation Hardend
- Marine
- Continuous Process
- Mobile Hybrid Solutions

Features

- **Mounting**
 - Flange with clearance holes
- **Shaft end**
 - Plain smooth shaft (standard)
 - Plain keyed shaft (option)
- **Cooling**
 - Natural ventilation
 - Forced ventilation (NX860V only)
- **Feedback sensors**
 - Resolver (standard)
 - Absolute EnDat or Hiperface encoder
 - Incremental encoder
- **Other options**
 - Brake
 - Thermal protection (PTC, Thermo Switch or KTY)

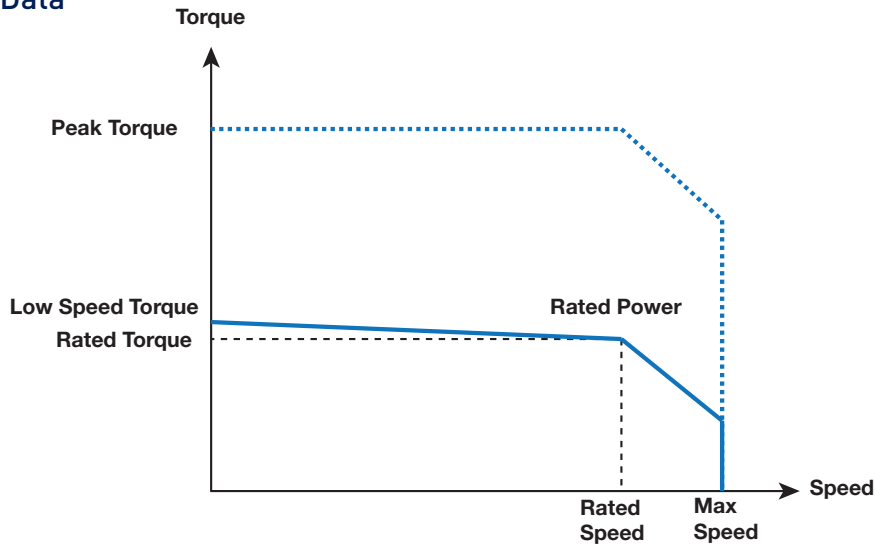


Technical Characteristics - Overview

Motor type	Permanent magnet synchronous servomotors	
Rotor design	Rotor with concentrated-flux rare earth magnets	
Number of poles	10	
Power range	0.2...13.7 kW	
Torque range	0.45...64 Nm	
Speed range	0...7500 min ⁻¹	
Protection level (IEC60034-5)	<ul style="list-style-type: none"> • IP64 (standard) • IP65 (option) • IP44 (ventilated version) 	
Marking	CE	UL
Voltage supply	230/400 VAC	230/480 VAC
Temperature class (IEC60034-1)	<ul style="list-style-type: none"> • Class F 	<ul style="list-style-type: none"> • Class A (NX1-2) • Class F (NX3-8)
Connections	<ul style="list-style-type: none"> • Connectors (standard) • Flying cables (option) • Terminal box (option) 	<ul style="list-style-type: none"> • Connectors (NX1-8) • Terminal box (NX860V)

NX1-NX2 CE Motors

Technical Data



Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾			Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T ₀ [Nm]	I ₀ [A]	T _n [Nm]	n [min ⁻¹]	I _n [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
230 VAC power supply											
NX110EAP	42.5	0.45	1.0	0.33	6000	0.79	1.7	13	14	29.9	0.455
NX205EAV		0.45	1.0	0.37	5000	0.86	2.0	21	33	30.2	0.444
NX205EAS	56.5	0.45	1.4	0.29	7500	0.96	2.0	21	33	21.9	0.322
NX210EAT		1	1.3	0.80	4000	1.11	3.4	38	50	48.6	0.749
NX210EAP		1	2.0	0.61	6000	1.32	3.4	38	50	32.6	0.503
400 VAC power supply											
NX205EAV	56.5	0.45	1.0	0.29	7500	0.69	2.0	21	33	30.2	0.444
NX205EAS		0.45	1.4	0.229	8900	0.8	2.0	21	33	21.9	0.322
NX210EAT		1	1.3	0.613	6000	0.9	3.4	38	50	48.6	0.749
NX210EAP		1	2.0	0.499	7000	1.1	3.4	38	50	32.6	0.503

⁽¹⁾ Data referred to motor mounted on aluminium flange: 280 x 280 x 8 mm (NX1-2), Temperature <40 °C near motor's flange. Stall torques refer to motor turning at 100 min⁻¹

⁽²⁾ Data measured at 20 °C. When "hot" consider -0.09 %/K derating

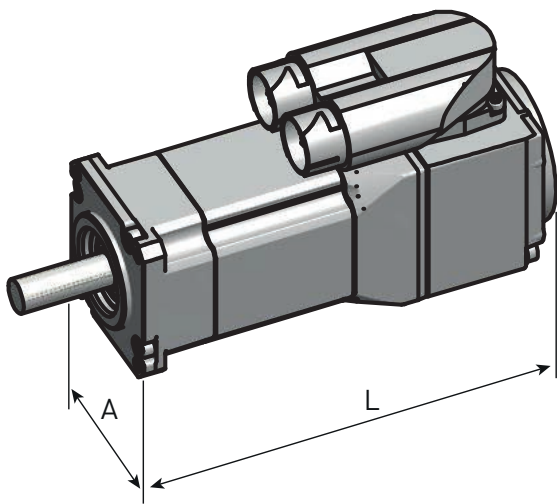
⁽³⁾ Manufacturing tolerance data ±10 %

Motor	Associated Drive Sizes					AC30
	PSD1S ⁽²⁾	PSD1M	Compax3	SLVD-N	AC890	
230 VAC power supply						
NX110EAP	PSD1SW1200...	PSD1MW3222...	C3S025V2...	SLVD1N...	-	-
NX205EAV	PSD1SW1200...	PSD1MW3222...	C3S025V2...	SLVD1N...	890SD-231300B...	-
NX205EAS	PSD1SW1200...	PSD1MW3222...	C3S025V2...	SLVD2N...	890SD-231300B...	-
NX210EAT	PSD1SW1200...	PSD1MW3222...	C3S025V2...	SLVD2N...	890SD-231300B...	-
NX210EAP	PSD1SW1200...	PSD1MW3222...	C3S025V2...	SLVD2N...	890SD-231300B...	-
400 VAC power supply						
NX205EAV	-	PSD1MW1300...	C3S015V4...	-	890SD-531200B...	31V-4D-0004
NX205EAS	-	PSD1MW1300...	C3S015V4...	-	890SD-531200B...	31V-4D-0004
NX210EAT	-	PSD1MW1300...	C3S015V4...	-	890SD-531200B...	31V-4D-0004
NX210EAP	-	PSD1MW1300...	C3S015V4...	-	890SD-531200B...	31V-4D-0004

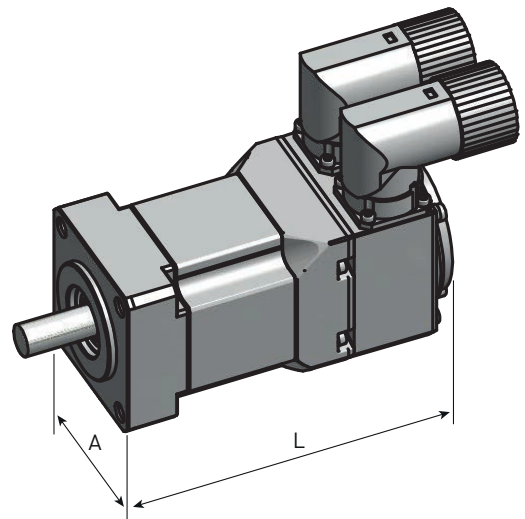
Dimensions

Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake		Fr*	Fa*
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]		
NX110	42.5	30 / 50	9 x 25	110	0.8	141	141	15	6.9
NX205	56.5	40 / 63	11 x 25	100	0.8	137	137	28	15.5
NX210				120	1.3	157	157	30	16.7

* Fr and Fa not cumulative: At 1500 min⁻¹ for a bearing service life of 20000 hours



NX1



NX2

Order Code

NX1, NX2, CE - Natural Cooling Version

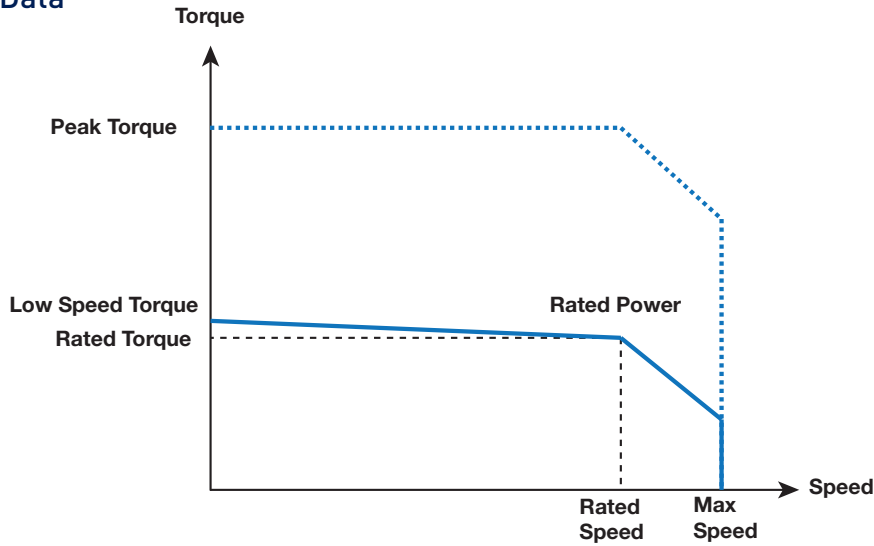
	1	2	3	4	5	6	7	8
Order example	NX110E	A	P	R	7	0	1	0

1 Motor type	NX110E see table NX1-NX2 CE Motors "Technical data"
	NX205E
	NX210E
2 Feedback sensor *	
A	2 pole resolver (standard)
Y	Without sensor
R	Absolute single-turn HIPERFACE encoder 128 ppr SKS36 (NX2 only)
S	Absolute multi-turn HIPERFACE encoder 128 ppr SKM36 (NX2 only)
X	Commutated lines 10 poles – 2048pulses (NX2 only)
3 Motor type	
P	see table NX1-NX2 CE Motors "Technical data"
V	
S	
...	
4 Painting	
R	Unpainted (standard)
B	Black mat (on request)
5 Connections	
1	Flying cables (option)
4	Flying cables with shielded sleeve (option)
7	Connectors (standard)
6 Brake	
0	Without brake
3	With brake
7 Protection degree	
0	IP64 (standard)
1	IP65
8 Shaft end	
0	Smooth shaft (standard)
1	Keyed shaft

* other types of feedback sensor are available on request

NX1-NX2 UL Motors

Technical Data



Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾			Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T ₀ [Nm]	I ₀ [A]	T _n [Nm]	n [min ⁻¹]	I _n [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
230 VAC supply voltage - mono or three-phased											
NX110AAJ	42.5	0.31	1.0	0.09	5000	0.34	0.9	13	14	22.4	0.318
NX210AAT	56.5	0.7	1.0	0.41	4000	0.61	1.9	38	50	48.6	0.701
480 VAC supply voltage - three-phased											
NX210AAT	56.5	0.7	1.0	0.154	6000	0.3	1.9	38	50	48.6	0.701

⁽¹⁾ Data referred to motor mounted on aluminium flange: 280 x 280 x 8 mm (NX1-2), Temperature <40 °C near motor's flange. Stall torques refer to motor turning at 100 min⁻¹

⁽²⁾ Data measured at 20 °C. When "hot" consider -0.09 %/K derating

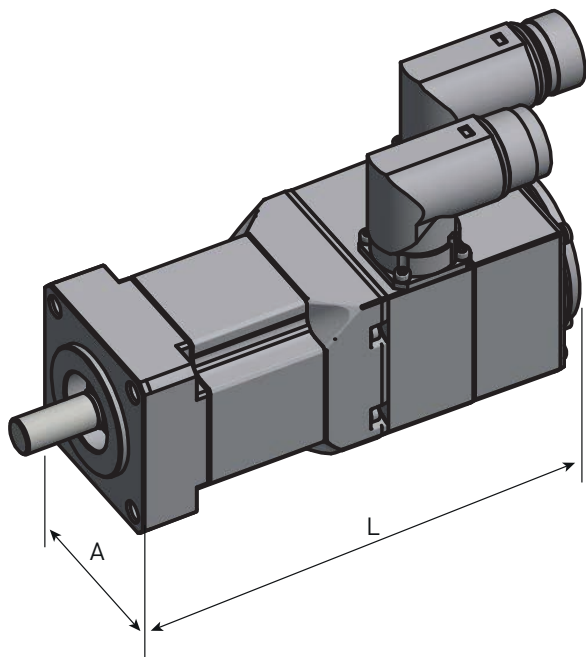
⁽³⁾ Manufacturing tolerance data ±10 %

Motor	Associated Drive Sizes					AC30
	PSD1S ⁽²⁾	PSD1M	Compax3	SLVD-N	AC890	
230 VAC supply voltage - mono or three-phased						
NX110AAJ	PSD1SW1200...	PSD1MW3222...	C3S025V2...	SLVD1N...	-	-
NX210AAT	PSD1SW1200...	PSD1MW3222...	C3S025V2...	SLVD1N...	890SD-231300B...	-
480 VAC supply voltage - three-phased						
NX210AAT	-	PSD1MW1300...	C3S015V4...	-	890SD-531200B...	31V-4D-0004

Dimensions

Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake		Fr* [daN]	Fa* [daN]
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]		
NX110	42.5	30 / 50	9 x 25	134	0.8	141	1	15	6.9
NX210	56.5	40 / 63	11 x 25	149	1.3	157	1.6	30	16.7

* Fr and Fa not cumulative: At 1500 min⁻¹ for a bearing service life of 20000 hours



Order Code

NX1, NX2, UL - Natural Cooling Version

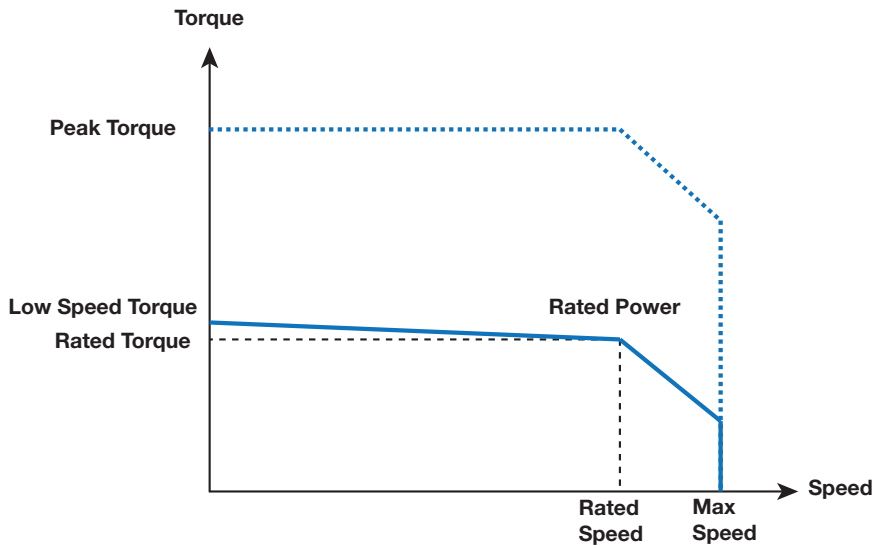
	1	2	3	4	5	6	7	8
Order example	NX110A	A	J	R	7	0	0	0

1 Motor type	NX110A	see table NX1-NX2 UL Motors
	NX205A	"Technical data"
	NX210A	
2 Feedback sensor *	A	2 pole resolver (standard)
	Y	Without sensor
	R	Absolute single-turn HIPERFACE encoder 128 ppt SKS36 (NX2 only)
	S	Absolute multi-turn HIPERFACE encoder 128 ppt SKM36 (NX2 only)
	X	Commutated lines 10 poles – 2048pulses (NX2 only)
3 Motor type	J	see table NX1-NX2 UL Motors
	V	"Technical data"
	T	
4 Painting	R	Unpainted (standard)
	B	Black mat (on request)
5 Connector	7	Standard
6 Brake	0	Without brake
	3	With brake
7 Protection degree	0	IP64 (standard)
	1	IP65
8 Shaft end	0	Smooth shaft (standard)
	1	Keyed shaft

* other types of feedback sensor are available on request

NX3-NX8 CE and UL Motors

Technical Data



Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾			Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T ₀ [Nm]	I ₀ [A]	T _n [Nm]	n [min ⁻¹]	I _n [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
230VAC power supply - single or three-phased											
NX310EAP	71	2	1.4	1.80	2300	1.27	6.6	80	87	88.9	1.440
NX310EAK	71	2	2.4	1.65	4000	2.06	6.6	80	87	50.9	0.823
NX420EAP	91.5	4	2.7	3.53	2300	2.41	13.4	290	308	89.9	1.480
NX420EAJ	91.5	4	4.7	3.14	4000	3.74	13.4	290	308	51.9	0.853
NX430EAL	91.5	5.5	3.8	5.04	2300	3.49	18.7	430	448	90.9	1.450
NX430EAF	91.5	5.5	6.6	4.29	4000	5.28	18.7	430	448	51.8	0.828
NX620EAV	121	8	2.8	7.85	1100	2.79	26.6	980	1 034	180.0	2.830
NX620EAR	121	8	5.3	7.42	2200	4.99	26.6	980	1 034	95.7	1.510
NX630EAR	121	12	5.3	10.70	1450	4.75	39.9	1 470	1 524	138.0	2.290
NX630EAN	121	12	7.9	9.81	2300	6.63	39.9	1 470	1 524	91.6	1.510
NX820EAR	155	16	11.0	14.50	2200	10.00	49.9	3 200	3 756	91.0	1.460
NX840EAK	155	28	16.8	23.50	2000	14.30	91.8	6 200	6 756	104.0	1.670
NX860EAJ	155	41	18.5	35.60	1450	16.20	136.0	9 200	9 756	140.0	2.210
230 VAC power supply - three-phased - fan cooled											
NX860VAF	155	64	42.7	56.40	2000	37.50	136.0	9 200	9 756	96.1	1.500
230 VAC power supply - three-phased - water cooled											
NX860WAF	155	90	62.6	88.30	2000	61.50	137.0	9 200	9 756	96.1	1.440

* Mounting on aluminium flange: 400 x 400 x 12 mm (NX3-8) Temperature <40 °C near motor's flange

Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾			Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T ₀₆₅ (T ₁₀₅) [Nm]	I ₀₆₅ [A]	T _{n065} [Nm]	n [min ⁻¹]	I _{n065} [A]	T _{max} [Nm]	J [kgmm ²]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]
400 VAC power supply - single or three-phased											
NX310EAP	71	2	1.4	1.65	4000	1.2	6.6	80	87	88.9	1.440
NX310EAK	71	2	2.4	1.36	7000	1.8	6.6	80	87	50.9	0.823
NX420EAP	91.5	4	2.7	3.14	4000	2.2	13.4	290	308	89.9	1.480
NX420EAJ	91.5	4	4.7	2.62	6000	3.2	13.4	290	308	51.9	0.853
NX430EAL	91.5	5.5	3.8	4.29	4000	3.0	18.7	430	448	90.9	1.450
NX430EAF	91.5	5.5	6.6	2.98	6000	3.8	18.7	430	448	51.8	0.828
NX620EAV	121	8	2.8	7.52	2000	2.7	26.6	980	1 034	180.0	2.830
NX620EAR	121	8	5.3	6.17	3900	4.3	26.6	980	1 034	95.7	1.510
NX630EAR	121	12	5.3	9.34	2700	4.2	39.9	1 470	1 524	138.0	2.290
NX630EAN	121	12	7.9	7.6	4000	5.3	39.9	1 470	1 524	91.6	1.510
NX820EAR	155	16	11.0	12.9	3900	9.1	49.9	3 200	3 756	91.0	1.460
NX840EAK	155	28	16.8	18.6	3500	11.5	91.8	6 200	6 756	104.0	1.670
NX860EAJ	155	41	18.5	27.5	2600	12.7	136.0	9 200	9 756	140.0	2.210
400 VAC power supply - three-phased - fan cooled											
NX860VAF	155	64	42.7	43.4	3750	28.9	136.0	9 200	9 756	96.1	1.500
400 VAC power supply - three-phased - water cooled											
NX860WAF	155	90	62.6	85.1	3750	59.3	137	9 200	9 756	96.1	1.440

⁽¹⁾ Data referred to motor mounted on aluminium flange: 400 x 400 x 12 mm (NX3-8) Temperature <40 °C near motor's flange. Stall torques refer to motor turning at 100 min⁻¹

⁽²⁾ Data measured at 20 °C. When "hot" consider -0.09 %/K derating

⁽³⁾ Manufacturing tolerance data ±10 %

Low Cogging Servo Motor - NX Series
 NX3-NX8 CE and UL Motors

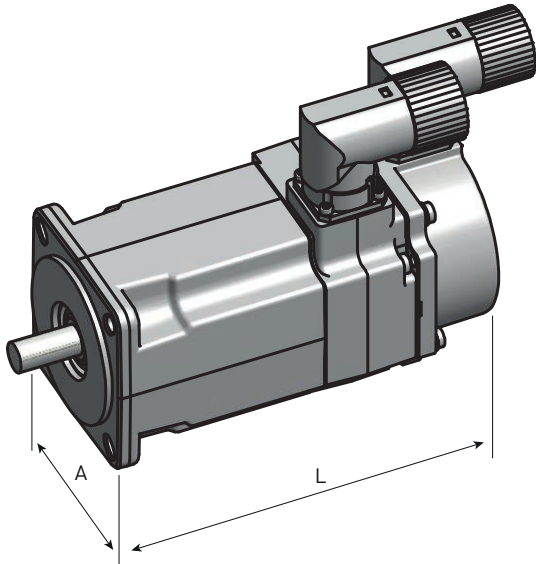
Motor	Associated Drive Sizes					AC30
	PSD1S ⁽²⁾	PSD1M	Compax3	SLVD-N	AC890	
230VAC power supply - single or three-phased						
NX310EAP	PSD1SW1200...	PSD1MW3222...	C3S025V2...	SLVD2N...	890SD-231300B...	-
NX310EAK	PSD1SW1300...	PSD1MW3433...	C3S025V2...	SLVD5N...	890SD-231550B...	-
NX420EAP	PSD1SW1300...	PSD1MW3433...	C3S063V2...	SLVD5N...	890SD-231700B...	-
NX420EAJ	PSD1SW1300...	PSD1MW3433...	C3S063V2...	SLVD5N...	890SD-231700B...	-
NX430EAL	PSD1SW1300...	PSD1MW3433...	C3S063V2...	SLVD5N...	890SD-231700B...	-
NX430EAF	-	PSD1MW2440...	C3S100V2...	SLVD7N...	890SD-232165B...	-
NX620EAV	PSD1SW1300...	PSD1MW3433...	C3S063V2...	SLVD5N...	890SD-231550B...	-
NX620EAR	-	PSD1MW2440...	C3S063V2...	SLVD7N...	890SD-231700B...	-
NX630EAR	-	PSD1MW2440...	C3S063V2...	SLVD7N...	890SD-232165B...	-
NX630EAN	-	PSD1MW2440...	C3S100V2...	SLVD10N...	890SD-232165B...	-
NX820EAR	-	PSD1MW2630...	C3S150V2...	SLVD15N...	890SD-232240C...	-
NX840EAK	-	-	-	-	890SD-232240C...	-
NX860EAJ	-	-	-	-	890SD-232240C...	-
230 VAC power supply - three-phased - fan cooled						
NX860VAF	-	-	-	-	-	-
230 VAC power supply - three-phased - water cooled						
NX860WAF	-	-	-	-	-	-

Motor	Associated Drive Sizes					AC30
	PSD1S ⁽²⁾	PSD1M	Compax3	SLVD-N	AC890	
400 VAC power supply - single or three-phased						
NX310EAP	-	PSD1MW1300...	C3S015V4...	-	890SD-531200B...	31V-4D-0004
NX310EAK	-	PSD1MW1300...	C3S038V4...	-	890SD-531350B...	31V-4D-0004
NX420EAP	-	PSD1MW1300...	C3S038V4...	-	890SD-531450B...	31V-4D-0004
NX420EAJ	-	PSD1MW1300...	C3S075V4...	-	890SD-532100B...	31V-4D-0008
NX430EAL	-	PSD1MW1300...	C3S038V4...	-	890SD-532100B...	31V-4D-0005
NX430EAF	-	PSD1MW1400...	C3S075V4...	-	890SD-532120B...	31V-4D-0008
NX620EAV	-	PSD1MW1300...	C3S038V4...	-	890SD-531450B...	31V-4D-0004
NX620EAR	-	PSD1MW1400...	C3S075V4...	-	890SD-532100B...	31V-4D-0008
NX630EAR	-	PSD1MW1400...	C3S075V4...	-	890SD-532100B...	31V-4D-0008
NX630EAN	-	PSD1MW1600...	C3S150V4...	-	890SD-532120B...	31V-4D-0010
NX820EAR	-	PSD1MW1600...	C3S150V4...	-	890SD-532160B...	31V-4D-0012
NX840EAK	-	PSD1MW1800...	C3S300V4...	-	890SD-53216SB...	31V-4E-0023
NX860EAJ	-	PSD1MW1800...	C3S300V4...	-	890SD-532240C...	31V-4E-0023
400 VAC power supply - three-phased - fan cooled						
NX860VAJ	-	-	-	-	-	-
400 VAC power supply - three-phased - water cooled						
NX860WAF	-	-	C3H090V4...	-	890SD-432730E...	31V-4G0073...

Dimensions

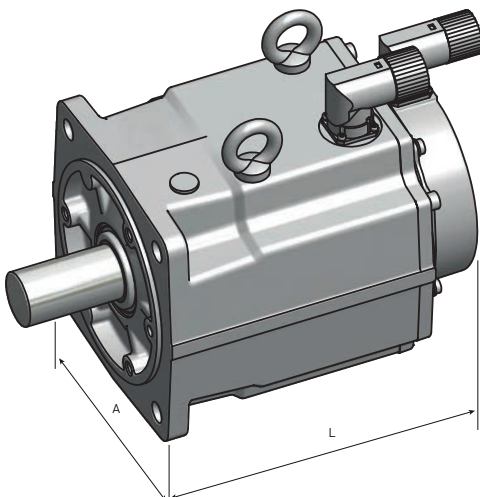
Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake		Fr* [daN]	Fa* [daN]
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]		
NX310	71	60 / 75-80	11 x 23	147	2	195	2.4	36	20
NX420	91.5	80 / 100	19 x 40	175	3.7	226	4.5	72	24
NX430	91.5	80 / 100	19 x 40	200	4.6	251	5.4	82	24
NX620	121	110 / 130	24 x 50	181	6.9	236	8	82	52
NX630	121	110 / 130	24 x 50	210	8.8	265	10	86	54

* Fr and Fa not cumulative: At 1500 min⁻¹ for a bearing service life of 20000 hours



Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake		Fr* [daN]	Fa* [daN]
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]		
NX820	155	130 / 165	32 x 58	200	13	266	16.5	151	28
NX840	155	130 / 165	32 x 58	260	20	326	23.5	165	33
NX860	155	130 / 165	32 x 58	320	27	386	30.5	172	37

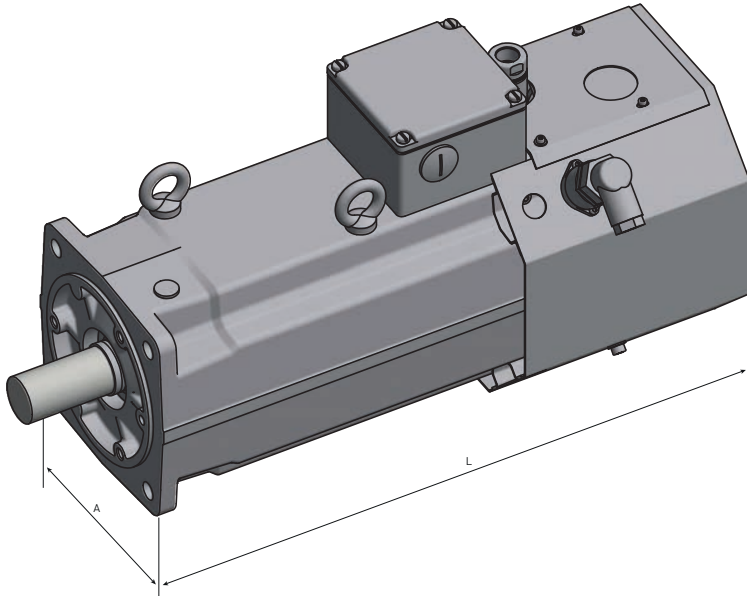
* Fr and Fa not cumulative: At 1500 min⁻¹ for a bearing service life of 20000 hours



Low Cogging Servo Motor - NX Series
 NX3-NX8 CE and UL Motors

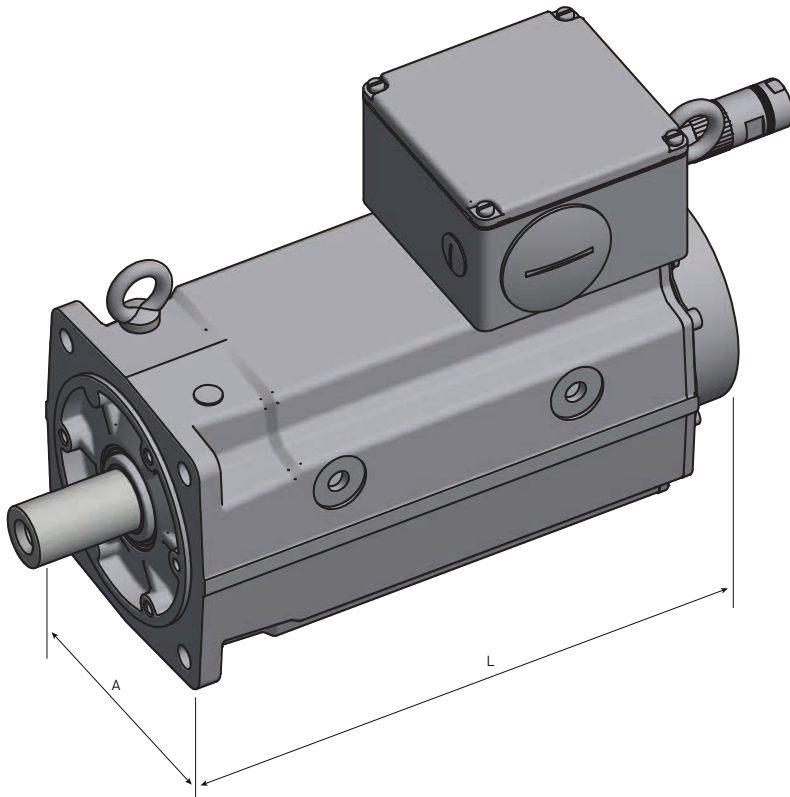
Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake		Fr* [daN]	Fa* [daN]
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]		
NX860V	185	130 / 165	32 x 58	424	30.5	490	34	172	37

* Fr and Fa not cumulative: At 1500 min⁻¹ for a bearing service life of 20000 hours



Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake		Fr* [daN]	Fa* [daN]
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]		
NX860W	155	130 / 165	32 x 58	360	28	426	31	172	37

* Fr and Fa not cumulative: At 1500 min⁻¹ for a bearing service life of 20000 hours



Order Code

NX3-NX8, CE, UL - Natural Cooling Version

	1	2	3	4	5	6	7	8
Order example	NX310E	A	P	R	7	0	0	0

1	Motor type
NX310E	see table NX3-NX8 CE and UL Motors
NX420E	"Technical data"
NX430E	
...	

2	Feedback sensor *
A	2 pole resolver (standard)
K	Without sensor
P	DSL HIPERFACE SIL2 single turn 128 ppr EKS36
Q	DSL HIPERFACE SIL2 multi turn 128 ppr EKM36
R	Absolute single-turn HIPERFACE encoder 128 ppr SKS36
S	Absolute multi-turn HIPERFACE encoder 128 ppr SKM36
X	Commutated lines 10 poles - 2048pulses

3	Motor type
P	see table "Technical data"
K	
X	
...	

4	Painting
R	Unpainted (standard)
B	Black mat (on request)

5	Connections/Ventilation
1	Shielded cables/No
7	Connectors (standard)/No
5	UL power terminal box + feedback connector (NX860V only)
9	CE power terminal box + feedback connector (NX860V only)

* other types of feedback sensor are available on request

6	Brake/Thermal Protection
0	Without brake (standard)/ No protection
1	Without brake/PTC on power connection
2	Without brake/Thermo switch on power connection (on request)
3	With brake/No protection
4	With brake/PTC on power connection
5	With brake/Thermo switch on power connection (on request)
A	Without brake/PTC on sensor connection (not available for UL version)
B	Without brake/Thermo switch on sensor connection (on request) (not available for UL version)
C	Without brake/KTY on sensor connector (not available for UL version)
D	With brake/PTC on sensor connection (not available for UL version)
E	With brake/Thermo switch on sensor connection (on request) (not available for UL version)
F	With brake/KTY on sensor connection (not available for UL version)

7	Protection degree
0	IP44 for NX860V IP64 NX3 - NX8 (standard)
1	IP65 (option for NX3 - NX8)

8	Shaft end
0	Smooth shaft (standard)
1	Keyed shaft

Accessories and Options

Parker NX motors are available with standard and custom options to adapt motor on your application. If the option for your application is not listed, please consult our technical department.

Cables

Motor cable

Drive	Cable reference ⁽¹⁾		
	NX1	NX2 to NX8	
		Current ≤ 12 A	Current ≤ 24 A
With or without brake			
Compax3	CC3UP0F4R0xxx	CC3UP1F1R0xxx	CC3UP2F1R0xxx
SLVDN	CS5UP0F4R0xxx	CS5UP1F1R0xxx	CS5UP2F1R0xxx
AC890	CS4UP0F4R0xxx	CS4UP1F1R0xxx	CS4UP2F1R0xxx
With or without brake & thermal sensor			
Compax3	-	CC3UQ1F1R0xxx	CC3UQ2F1R0xxx
SLVDN	-	CS5UQ1F1R0xxx	CS5UQ2F1R0xxx
AC890	-	CS4UQ1F1R0xxx	CS4UQ2F1R0xxx
With or without brake & Hiperface DSL encoder			
PSD1	-	CP1UD1F1R0xxx	CP1UD2F1R0xxx

Feedback cable

Drive	Cable reference ⁽¹⁾		
	Resolver for NX1	Resolver for NX2 to NX8	Hiperface encode
Compax3	CC3UA1F4R0xxx	CC3UA1F1R0xxx	CC3UR1F1R0xxx
SLVDN	CS5UA1F4R0xxx	CS5UA1F1R0xxx	CS5UR1F1R0xxx
AC890	CS4UA1F4R0xxx	CS4UA1F1R0xxx	

(*) The 3 last digits indicate cable length in meters ±5 %max
For non-standard length cable with length different from: 1/2/3/4/5/10/15/20/25/30/40/50 m please contact us.
Example CC3UP1F1R0015: power cable, length = 15 m.



Holding Brake

All NX motors are available with option holding brake.

Motor	Voltage	Power	Torque @ 20°C	Added length (resolver)	Added weight	Added inertia
	[V]	[W]	[Nm]	[mm]	[kg]	[kgmm ²]
NX1	24	6	0.4	31	0.2	0.01
NX2		8	1	37	0.3	0.12
NX3		11	2	48	0.4	0.068
NX4		12	5.5	51	0.9	0.18
NX6		18	12	55	1.1 (NX620)- 1.2 (NX630)	0.54
NX8		26	36	66	3.5	5.56

Feedback

Motors may be equipped with various feedback types in order to meet the different requirements for precision, signal that the application needs. The standard motor includes the resolver feedback. Hiperface Encoder, DSL Encoder, Incremental Encoder are available like the following tables.

Resolver 2 poles

Code	A		
Motor Association	NX1	NX2 & NX3	NX4, NX6 & NX8
Parker part number	220005P1000	220005P1001	220005P1002
Electrical specification	Values @ 8 kHz		
Polarity	2 poles		
Input voltage	7 Vrms		
Input current	70mA maximum	86mA maximum	
Zero voltage	20mV maximum		
Encoder accuracy	± 10' maxi		
Ratio	0,5 ± 5 %		
Output impedance (primary in short circuit whatever the position of the rotor)	Typical 120 + 200j Ω		
Dielectric rigidity (50 – 60 Hz)	500 V – 1 min		
Insulation resistance	≥ 10MΩ	≥ 100MΩ	
Rotor inertia	~6 g.cm	~30 g.cm ²	
Operating temperature range	-55 to +155 °C		

Incremental Encoder

Code	X
Motor Association	NX1, NX2, NX3, NX4, NX6 & NX8
Model	F10 (Hengstler)
Type	Incremental encoder with 10 pole commutation signals
Parker part number	220167P0003
Line count	2048 pulses per revolution
Electrical interface	Line driver 26LS31
System accuracy	Incremental signals ± 2.5' commutation signals ± 6'
Perating speed	5 000 rpm
Power Supply	5VDC ± 10%
Current consumption (without load)	100mA
Max pulse frequency	300 kHz
Operating temperature range	0°C to +120 °C

Hiperface encoder DSL SIL2

Code	P	Q
Motor Association	NX2, NX3, NX4, NX6 & NX8	
Model	EKS36 SIL2(Sick)	EKM36 SIL2(Sick)
Type	Absolute single turn encoder	Absolute multi turn encoder
Parker part number	220174P0011	220174P0012
Electrical interface	Hiperface DSL	
Position values per revolution	4 096	-
Revolutions	-	4 096
Integral non-linearity	± 80" (Error limits for evaluating sine/cosine period)	
Differential non-linearity	± 40" (Non-linearity within a sine/cosine period)	
Operating speed	12 000 rpm	9 000 rpm
Power Supply	7VDC to 12VDC	
Current consumption	150 mA max.	
Output frequency	0kHz – 75kHz	
Operating temperature range	-20°C to +115 °C	

Hiperface encoder

Code	R	S
Motor Association	NX2, NX3, NX4, NX6 & NX8	
Model	SKS36 (Sick)	SKM36 (Sick)
Type	Absolute single turn encoder	Absolute multi turn encoder
Parker part number	220174P0003	220174P0004
Line count	128 sine/cosine periods per revolution	
Electrical interface	Hiperface	
Position values per revolution	4 096	
Revolutions	-	4 096
Error limits for the digital absolute value	± 320" (via RS485)	
Integral non-linearity	± 80" (Error limits for evaluating sine/cosine period)	
Differential non-linearity	± 40" (Non-linearity within a sine/cosine period)	
Operating speed	12 000 rpm	9 000 rpm
Power Supply	7VDC to 12VDC	
Current consumption (without load)	60mA	
Output frequency	0kHz – 65kHz	
Operating temperature range	-20°C to +110 °C	

NX1

Power connector



Pin	Description
A	Phase U
B	Phase V
C	Phase W
	Ground
1	Brake +
2	Brake -

if the option is required

Part number	
220132R6610	

Resolver connector

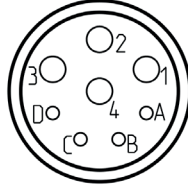


Pin	Description
1	S3 / Cos +
2	S1 / Cos -
7	S2 / Sin -
8	S4 / Sin +
10	R1 / excitation +
12	R2 / excitation -

Part number	
220132R6620	

NX2 to NX8

Power connector



Pin	Description
1	Phase U
2	Ground
3	Phase W
4	Phase V
A	Brake +
B	Brake -
C	PTC or Thermoswitch or KTY Anode
D	PTC or Thermoswitch or KTY Cathode

if the option is required

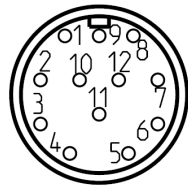
Power connector for feedback letter P/Q only

Pin	Description	
1	Phase U	
2	Ground	
3	Phase W	
4	Phase V	
A	-	Brake +
B	-	Brake -
C	DSL +	PTC or Thermoswitch or KTY Anode
D	DSL -	PTC or Thermoswitch or KTY Cathode

if the option is required

Part number	
220065R1610	

Resolver connector feedback letter A



Pin	Description
1	S3 / Cos +
2	S1 / Cos -
3	PTC or Thermoswitch or KTY Anode
6	PTC or Thermoswitch or KTY Cathode
7	S2 / Sin -
8	S4 / Sin +
10	R1 / excitation +
12	R2 / excitation -

Part number	
220065R4621	

Hiperface DSL® Connector feedback letter R/S/T/U

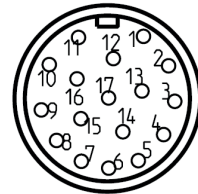


Pin	Description
1	Sin +
2	Ref Sin
3	Cos +
4	Ref Cos
5	PTC or Thermoswitch or KTY Anode
6	PTC or Thermoswitch or KTY Cathode
9	Data +
10	Data -
11	Us
12	Ground

if the option is required

Part number	
220065R4621	

Incremental encoder connector feedback letter X



Pin	Description
1	Vcc
2	PTC or Thermoswitch or KTY Anode
3	Ground
4	U
5	V \
6	V
7	PTC or Thermoswitch or KTY Cathode
8	W
9	W \
10	A
11	A \
12	B
13	B \
14	Z
15	Z \
17	U \



High Speed Servo Motor - NV Series

Overview

Description

The NV series is a range of compact servomotors specially designed for high speed operation. NV motors are balanced with high accuracy to minimize the level of vibration and to increase their service life, making them particularly suitable for auxiliary spindle applications on machine tools. NV motors feature high dynamic performance and torque densities, while taking advantage of a large variety of options and customization possibilities. Available in kit version on request

Advantages

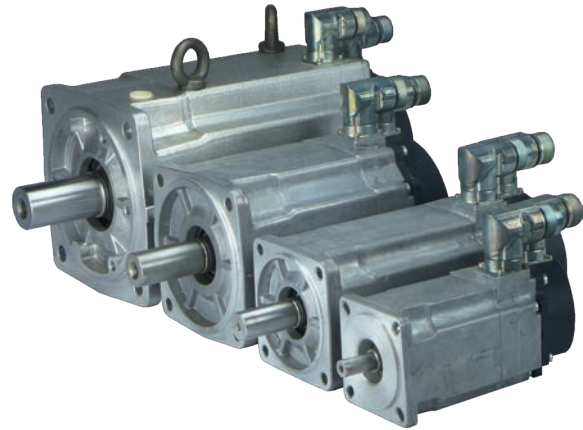
- High-Speed capabilities, precise and accurate positioning, high dynamic performance
- Compact and robust
- Design flexibility

Application

- Special Machines
- Tooling Machines
- Test Benches
- Sprayers
- Centrifuges

Features

- **Mounting**
 - Flange with clearance holes
- **Mechanical interface**
 - Solid smooth shaft
- **Feedback sensor**
 - 2 pole resolver (standard)
 - Absolute encoders: Hiperface (option)
 - Without sensor (option)
- **Connections**
 - Connectors (standard)
 - Cables (option)
 - Terminal box (fan cooled motors)
- **Options**
 - Thermal protection (PTC, KTY)



Technical Characteristics - Overview

Motor type	Synchronous permanent magnet servomotors
Poles number	10
Voltage supply	230 VAC or 400 VAC
Power range	0.7...11 kW
Torque range	0.4...11.5 Nm
Speed range	7000...17 000 min ⁻¹
Ingress protection level (IEC60034-5)	<ul style="list-style-type: none"> • IP64 (standard) • IP65 (option) • IP67 (on request)
Cooling method	<ul style="list-style-type: none"> • Natural ventilation (standard) • Fan cooling (NV860V) • Water cooled up to 60 kW (on request)
Temperature class (IEC60034-1)	Class F

Technical Data

Model	Size	Stall ⁽¹⁾		Nominal ⁽¹⁾				Peak ⁽¹⁾	Inertia		Ke ^{(2) (3)}	Kt ^{(2) (3)}
		Torque	Current	Power	Torque	Speed	Current	Torque	No brake			
		T ₀ [Nm]	I ₀ [A]	P _n [kW]	T _n [Nm]	n [min ⁻¹]	I _n [A]	T _{max} [Nm]	J [kgmm ²]	Ke [Vs]	Kt [Nm/A _{rms}]	
230VAC power supply - single or three-phased												
NV310EAW	71	0.9	5.13	0.73	0.41	17 000	2.78	1.8	73.4	11.1	0.175	
400 VAC power supply - three-phased												
NV420EAI	91.5	1.9	5.25	1.4	0.95	14 000	2.78	2.87	290	22.1	0.362	
NV430EAH	91.5	2.5	5.63	1.5	1.3	11 000	3.48	3.78	426	28	0.444	
NV620EAJ	121	3.5	9.86	1.8	1.6	11 000	5.02	5.42	900	23.8	0.355	
NV630EAI	121	5.5	11.1	2.0	1.9	10 000	4.34	8.51	1300	31.7	0.497	
NV820EAN	155	7.6	14.7	3.1	3.3	9 000	7.73	11.5	3100	34.5	0.517	
NV840EAJ	155	13.5	19.4	5.5	6.6	8 000	10.5	20.4	5700	43.8	0.697	
NV860EAE	155	18.5	28.3	7.3	9.9	7 000	16.3	27.9	8400	41.3	0.653	
400 VAC power supply - three-phased - fan cooled												
NV860VAC	155	30	57	11	11.5	9 000	23.7	37	8400	33	0.526	

- ⁽¹⁾ Data referred to motor mounted on aluminium flange: 400 x 400 x 12 mm, Temperature <40 °C near motor's flange. Stall torques refer to motor turning at 100 min⁻¹
- ⁽²⁾ Data measured at 20 °C. When "hot" consider -0.09 %/K derating
- ⁽³⁾ Manufacturing tolerance data ±10 %

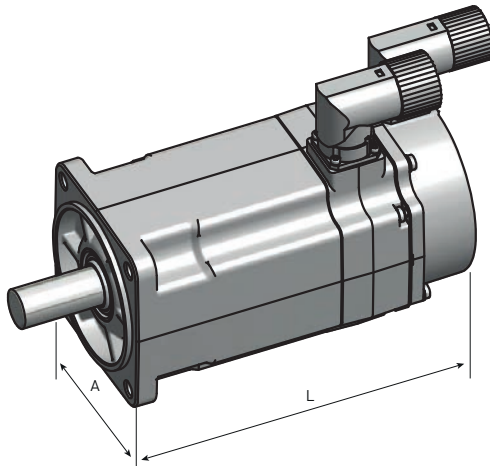
Drive Association

Motor	Associated Drive Sizes			
	PSD1	Compax3	AC890	AC30
230VAC power supply - single or three-phased				
NV310EAW	PSD1SW1300... ⁽¹⁾	C3S063V2... ⁽²⁾	890SD-231700B0-B00-1A500 ⁽²⁾	-
400 VAC power supply - three-phased				
NV420EAI	PSD1MW1400... ⁽¹⁾	C3S075V4... ⁽²⁾	890SD-532100B0-B00-1A500 ⁽²⁾	31V-4D0008
NV430EAH	PSD1MW1400... ⁽¹⁾	C3S075V4...	890SD-532100B0-B00-1A500	31V-4D0008
NV620EAJ	PSD1MW1600... ⁽¹⁾	C3S150V4...	890SD-532160B0-B00-1A500	31V-4D0012
NV630EAI	PSD1MW1600... ⁽¹⁾	C3S150V4...	890SD-532160B0-B00-1A500	31V-4E0016
NV820EAN	PSD1MW1600... ⁽¹⁾	C3S150V4...	890SD-53216SB0-B00-1A500	31V-4E0023
NV840EAJ	PSD1MW1800... ⁽¹⁾	C3S300V4...	890SD-532240C0-B00-1A500	31V-4F0032
NV860EAE	PSD1MW1800...	C3S300V4...	890SD-532240C0-B00-1A500	31V-4G0045
400 VAC power supply - three-phased - fan cooled				
NV860VAC	-	C3H090V4...	890SD-532590D0-B00-1A500	31V-4H0105

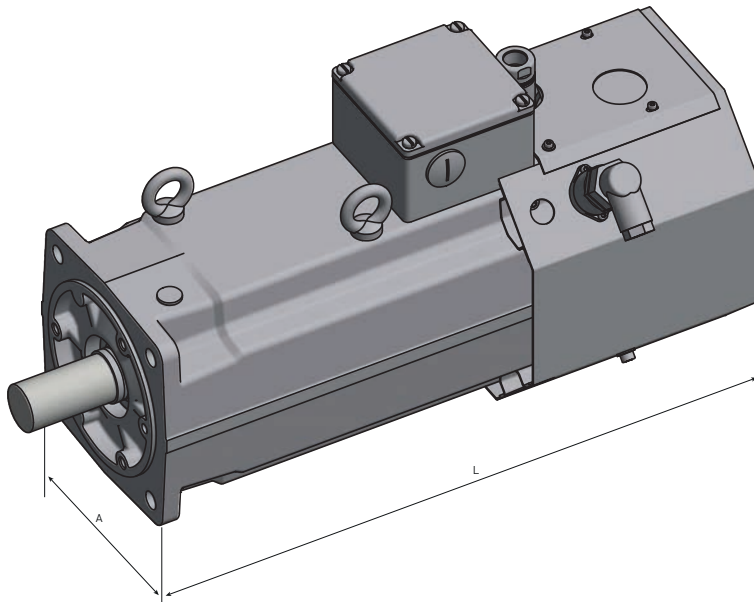
- ⁽¹⁾ max. speed: 7 200 min⁻¹
- ⁽²⁾ max. speed: 12 000 min⁻¹

Dimensions (resolver version)

Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	L	Weight	Fr* [N]	Fa* [N]
	[mm]	[mm]	[mm]	[mm]	[kg]		
NV310	71	60 / 75-80	11 x 23	147	2	170	70
NV420	91.5	80 / 100	19 x 40	175	3.7	380	30
NV430	91.5	80 / 100	19 x 40	200	4.6	395	35
NV620	121	110 / 130	24 x 50	181	6.9	380	180
NV630	121	110 / 130	24 x 50	210	8.8	400	190
NV820	155	130 / 165	32 x 58	200	13	950	50
NV840	155	130 / 165	32 x 58	260	20	1050	80
NV860	155	130 / 165	32 x 58	320	27	1100	100



Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	L	Weight	Fr* [N]	Fa* [N]
	[mm]	[mm]	[mm]	[mm]	[kg]		
NV860V	185	130 / 165	32 x 58	424	30.5	1100	100



* Fr and Fa not cumulative: At 10000 rpm (NV3,4 et 6) or 5000 rpm (NV8), for a bearing servicing life of 20 000h. At maximum speed, no axial load should be applied on motor's shaft, under penalty of shortening the servicing life.

Options

Feedback Sensors

2 poles resolver - option A

- Accuracy: $\pm 10'$ max
- Transformation ratio: $0.5 \pm 5\%$
- Max. operating speed: $17\,000\text{ min}^{-1}$
- Working temperature range: $-55\dots+155\text{ }^\circ\text{C}$

Single turn / Multiturn absolute encoder HIPERFACE SKS/SKM 36 - option R/S

- Number of sine/cosine periods per revolution: 128
- Absolute position per revolution: 4096 (12 bits)
- Number of absolutely encodable revolutions: 4096 (SKM36)
- Max. operating speed SKS36: $12\,000\text{ min}^{-1}$
- Max. operating speed SKM36: $9\,000\text{ min}^{-1}$
- Working temperature range: $-20\dots+110\text{ }^\circ\text{C}$

Single turn / Multiturn absolute encoder HIPERFACE DSL SIL2 EKS/EKM36 - option P/Q

- Absolute position per revolution: 262 144 (18 bits)
- Number of absolutely encodable revolutions: 4096 (EKM36)
- Max. operating speed EKS36: $12\,000\text{ min}^{-1}$
- Max. operating speed EKM36: $9\,000\text{ min}^{-1}$
- Working temperature range: $-20\dots+115\text{ }^\circ\text{C}$

Order Code

NV Series

	1	2	3	4	5	6	7
Order example	NV310E	A	R	7	0	0	0

1 Motor type	NV310E NV420E NV430E see table "Technical Data" ... NV860V
2 Feedback sensor	A 2 pole resolver (standard) Max. speed 17 000 min ⁻¹ R HIPERFACE encoder 128 ppr SKS36 Max. speed 12 000 min ⁻¹ S Absolute multi-turn HIPERFACE encoder 128 ppr SKM36 Max. speed 9000 min ⁻¹ P Absolute single-turn HIPERFACE DSL SIL2 encoder EKS36 Max. speed 12 000 min ⁻¹ Q Absolute multi-turn HIPERFACE DSL SIL2 encoder EKM36 Max. speed 9000 min ⁻¹
3 Painting	R Unpainted (standard) B Black mat (on request)
4 Connections / Ventilation	1 Shielded cables / No 7 Connectors (standard) / No 9 Terminal boxes / Yes
5 Thermal protection	0 Without protection (standard) 1 PTC on power connector A PTC on sensor connector C KTY on sensor connector
6 Protection degree	0 IP64 (standard) 1 IP65
7 Fix code	0

Cables

Motor cable

Drive	Cable reference ⁽¹⁾	
	Current ≤ 15 A	Current ≤ 21 A
With or without brake		
Compax3	CC3UP1F1R0xxx	CC3UP2F1R0xxx
AC890	CS4UP1F1R0xxx	CS4UP2F1R0xxx
With or without brake & thermal sensor		
Compax3	CC3UQ1F1R0xxx	CC3UQ2F1R0xxx
AC890	CS4UQ1F1R0xxx	CS4UQ2F1R0xxx
With or without brake & Hiperface DSL encoder		
PSD1	CP1UD1F1R0xxx	CP1UD2F1R0xxx

Feedback cable

Drive	Cable reference ⁽¹⁾	
	Resolver	Hiperface encoder
Compax3	CC3UA1F1R0xxx	CC3UR1F1R0xxx
AC890	CS4UA1F1R0xxx	-

(*) The 3 last digits indicate cable length in meters ±5 %max
For non-standard length cable with length different from: 1/2/3/4/5/10/15/20/25/30/40/50 m please contact us.
Example CC3UP1F1R0015: power cable, length = 15 m.



Explosion Proof Motor for Zone 2 - EY Series

Overview

Description

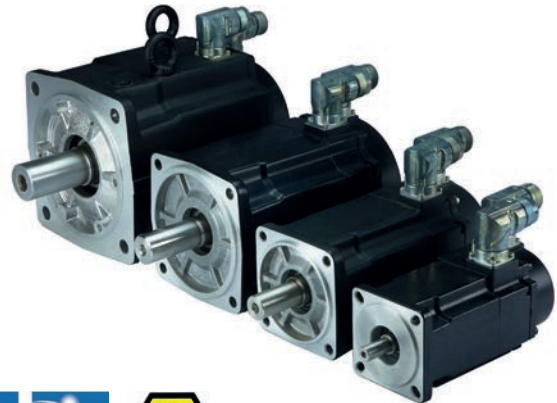
The EY series is a range of permanent magnet explosion-proof brushless servo motors designed for use in **explosive atmospheres in zone 2** for gas and dust at 40°C or 60°C ambient temperature. The EY series of servo motors are characterized by excellent motion quality, dynamic acceleration/deceleration capabilities and high torque output over a wide speed range. Various winding variants and numerous options are available to offer maximum flexibility. This range is in accordance with the European (CE) and International safety standards (IECEX).

Advantages

- Brushless servo motors with explosion proof certification from a notified body.
- Conforming with CE/ATEX and International safety standard
- For an ambient temperature at 40°C or 60°C
- For gas and dust explosive atmospheres
- High precision
- High motion quality
- High dynamic performance
- Low cogging
- Compactness and robustness
- Maintenance free
- High power density (6 kW in a 155 square frame)
- Compatible with all popular drives

Applications

- Printing machinery
- Paint spray equipments
- Chemical, petro-chemical and pharmaceutical industries
- Robot applications
- Special machines
- Cleaning applications
- Actuator for valve in Energy applications
- Waste processing plants

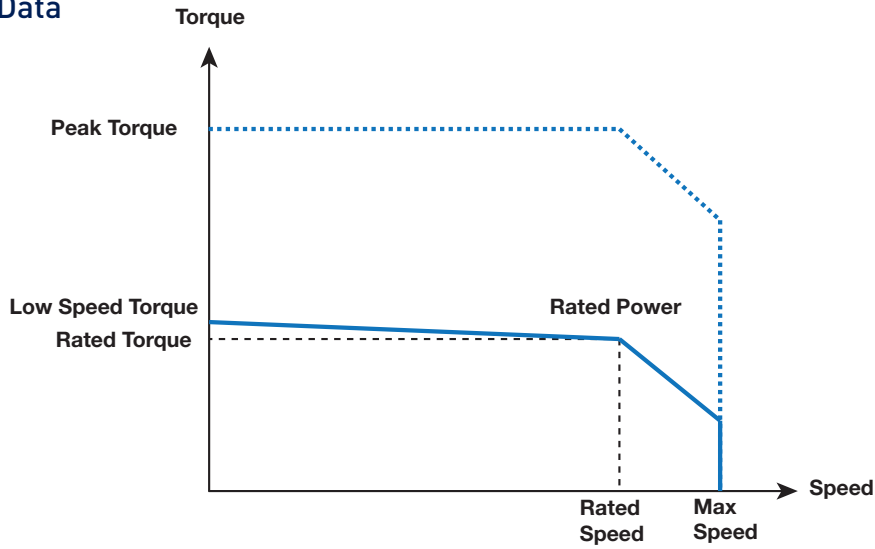


Technical characteristics

Motor type	Permanent magnet synchronous motors
Frame size	70 - 155 mm
Torque range	1.8 to 41 Nm
Speed range	Up to 6800 min ⁻¹
Number of poles	10
Mounting	Flange with smooth holes
Marking	CE / ATEX and IECEX
Voltage supply	230 / 400 VAC
Conformance	ATEX 2014/34/EU Directive IEC/EN60034-1 IEC/EN60034-5 IEC/EN60079-0 IEC/EN60079-15 (Gas) IEC/EN60079-31 (Dust)
Classification	II 3 GD Ex nA IIC T3 Gc IP65 / Ex tc IIIC T200°C Dc IP65 (Gas and dust)
Ingress protection level	IP65
Connections	Connector

EY Servo Motors - CE Marked for Explosive Atmospheres

Technical Data



230 VAC power supply - single or three-phased

Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature									
EY310EAP	0.46	1.9	2300	1.4	2	1.4	4.7	3.6	2300
EY310EAK	0.72	1.7	4000	2.2	2	2.5	4.72	6.25	4000
EY420EAP	0.9	3.8	2300	2.7	4	2.8	9.47	7.03	2300
EY420EAJ	1.4	3.4	4000	4.2	4	4.9	9.47	12.2	4000
EY430EAL	1.2	5.0	2300	3.5	5.5	3.8	13.1	9.4	2300
EY430EAF	1.7	4.1	4000	5.1	5.5	6.6	13.1	16.5	4000
EY620EAV	0.9	7.9	1100	2.8	8	2.8	18.9	7.04	1100
EY620EAR	1.7	7.4	2200	5.0	8	5.3	18.9	13.2	2200
EY630EAR	1.7	11.3	1450	5.2	12	5.5	28.4	13.7	1450
EY630EAN	2.5	10.5	2300	7.3	12	8.3	28.4	20.6	2300
EY820EAR	3.3	14.5	2200	9.7	16	10.7	36.8	26.7	2200
EY840EAK	4.9	23.5	2000	13.7	28	16.2	65.8	40.4	2000
EY860EAJ	5.2	34.4	1450	14.9	41	17.7	96.7	44.2	1450
60°C ambient temperature									
EY310EAP	0.40	1.7	2300	1.2	1.8	1.3	4.3	3.21	2300
EY310EAK	0.61	1.5	4000	1.9	1.8	2.3	4.3	5.62	4000
EY420EAP	0.8	3.1	2300	2.2	3.5	2.5	8.39	6.14	2300
EY420EAJ	1.1	2.7	4000	3.4	3.5	4.3	8.39	10.6	4000
EY430EAL	1.1	4.4	2300	3.1	5.0	3.4	12	8.54	2300
EY430EAF	1.4	3.4	4000	4.2	5.0	6.0	12	15	4000
EY620EAV	0.8	7.0	1100	2.5	7.2	2.5	17.3	6.33	1100
EY620EAR	1.5	6.4	2200	4.3	7.2	4.8	17.3	11.9	2200
EY630EAR	1.5	10.1	1450	4.6	10.8	4.9	25.9	12.3	1450
EY630EAN	2.2	9.1	2300	6.3	10.8	7.4	25.9	18.6	2300
EY820EAR	2.7	11.7	2200	7.9	14.0	9.3	32.9	23.3	2200
EY840EAK	3.9	18.4	2000	10.8	25.5	14.7	60.8	36.8	2000
EY860EAJ	4.4	29.0	1450	12.6	37.0	15.9	88.5	39.8	1450

400 VAC power supply - three-phased

Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature									
EY310EAP	0.72	1.7	4000	1.3	2	1.4	4.72	3.58	4000
EY310EAK	0.87	1.2	6800	1.6	2	2.5	4.72	6.25	6800
EY420EAP	1.1	3.6	3000	2.6	4	2.8	9.47	7.03	3000
EY420EAJ	1.7	2.6	6000	3.4	4	4.9	9.47	12.2	6000
EY430EAL	1.7	4.1	4000	2.9	5.5	3.8	13.1	9.4	4000
EY430EAF	1.6	2.7	5800	3.4	5.5	6.6	13.1	16.5	5800
EY620EAV	1.6	7.5	2000	2.7	8	2.8	18.9	7.04	2000
EY620EAR	2.5	6.2	3900	4.2	8	5.3	18.9	13.2	3900
EY630EAR	2.8	10.0	2700	4.6	12	5.5	28.4	13.7	2700
EY630EAN	3.3	7.9	4000	5.6	12	8.3	28.4	20.6	4000
EY820EAR	5.3	12.9	3900	8.8	16	10.7	36.8	26.7	3900
EY840EAK	6.8	18.6	3500	11.0	28	16.2	65.8	40.4	3500
EY860EAJ	6.3	23.0	2600	10.2	41	17.7	96.7	44.2	2600
60°C ambient temperature									
EY310EAP	0.61	1.5	4000	1.1	1.8	1.3	4.3	3.21	4000
EY310EAK	0.67	0.9	6800	1.3	1.8	2.3	4.3	5.62	6800
EY420EAP	0.9	3.0	3000	2.1	3.5	2.5	8.39	6.14	3000
EY420EAJ	1.2	2.0	6000	2.6	3.5	4.3	8.39	10.6	6000
EY430EAL	1.4	3.4	4000	2.4	5.0	3.4	12	8.54	4000
EY430EAF	1.3	2.6	4900	3.3	5.0	6.0	12	15	4900
EY620EAV	1.4	6.5	2000	2.3	7.2	2.5	17.3	6.33	2000
EY620EAR	2.0	4.9	3900	3.3	7.2	4.8	17.3	11.9	3900
EY630EAR	2.4	8.4	2700	3.9	10.8	4.9	25.9	12.3	2700
EY630EAN	2.4	5.8	4000	4.1	10.8	7.4	25.9	18.6	4000
EY820EAR	3.2	7.8	3900	5.4	14.0	9.3	32.9	23.3	3900
EY840EAK	3.9	14.1	2600	8.4	25.5	14.7	60.8	36.8	2600
EY860EAJ	4.8	21.8	2100	9.6	37.0	15.9	88.5	39.8	2100

Drive Associations

230 VAC power supply

Motor	Associated Drive Sizes ⁽¹⁾			
	PSD1 ⁽²⁾	Compax3	SLVD-N	AC890
With 40°C ambient temperature - 230 VAC power supply				
EY310EAP	PSD1SW1200...	C3S025V2...	SLVD2N...	890SD-231300B...
EY310EAK	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EY420EAP	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY420EAJ	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY430EAL	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY430EAF	-	C3S100V2...	SLVD7N...	890SD-232165B...
EY620EAV	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EY620EAR	-	C3S063V2...	SLVD7N...	890SD-231700B...
EY630EAR	-	C3S063V2...	SLVD7N...	890SD-232165B...
EY630EAN	-	C3S100V2...	SLVD10N...	890SD-232165B...
EY820EAR	-	C3S150V2...	SLVD15N...	890SD-232240C...
EY840EAK	-	-	-	890SD-232240C...
EY860EAJ	-	-	-	890SD-232240C...
With 60°C ambient temperature - 230 VAC power supply				
EY310EAP	PSD1SW1200...	C3S025V2...	SLVD2N...	890SD-231300B...
EY310EAK	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EY420EAP	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EY420EAJ	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY430EAL	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY430EAF	-	C3S063V2...	SLVD7N...	890SD-232165B...
EY620EAV	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EY620EAR	-	C3S063V2...	SLVD5N...	890SD-231700B...
EY630EAR	-	C3S063V2...	SLVD5N...	890SD-231700B...
EY630EAN	-	C3S100V2...	SLVD10N...	890SD-232165B...
EY820EAR	-	C3S100V2...	SLVD10N...	890SD-232165B...
EY840EAK	-	C3S150V2...	SLVD15N...	890SD-232240C...
EY860EAJ	-	-	-	890SD-232240C...

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

400 VAC power supply

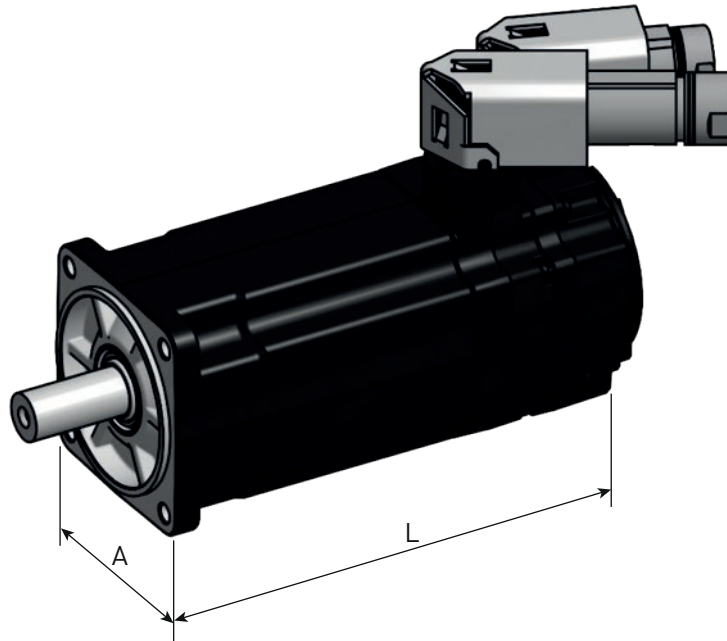
Motor	Associated Drive Sizes ⁽¹⁾			
	PSD1 ⁽²⁾	Compax3	AC890	AC30V
With 40°C ambient temperature - 400 VAC power supply				
EY310EAP	PSD1MW1300...	C3S015V4...	890SD-531200B...	31V-4D-0004
EY310EAK	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EY420EAP	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0004
EY420EAJ	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY430EAL	PSD1MW1300...	C3S038V4...	890SD-532100B...	31V-4D-0005
EY430EAF	PSD1MW1400...	C3S075V4...	890SD-532120B...	31V-4D-0008
EY620EAV	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0004
EY620EAR	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY630EAR	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY630EAN	PSD1MW1600...	C3S150V4...	890SD-532120B...	31V-4D-0010
EY820EAR	PSD1MW1600...	C3S150V4...	890SD-532160B...	31V-4D-0012
EY840EAK	PSD1MW1800...	C3S300V4...	890SD-53216SB...	31V-4E-0023
EY860EAJ	PSD1MW1800...	C3S300V4...	890SD-532240C...	31V-4E-0023
With 60°C ambient temperature - 400 VAC power supply				
EY310EAP	PSD1MW1300...	C3S015V4...	890SD-531200B...	31V-4D-0004
EY310EAK	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EY420EAP	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0004
EY420EAJ	PSD1MW1300...	C3S075V4...	890SD-531600B...	31V-4D-0006
EY430EAL	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0005
EY430EAF	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY620EAV	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EY620EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY630EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY630EAN	PSD1MW1400...	C3S075V4...	890SD-532120B...	31V-4D-0010
EY820EAR	PSD1MW1600...	C3S150V4...	890SD-532160B...	31V-4D-0012
EY840EAK	PSD1MW1600...	C3S150V4...	890SD-53216SB...	31V-4E-0023
EY860EAJ	PSD1MW1800...	C3S300V4...	890SD-53216SB...	31V-4E-0023

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

Dimensions

EY



Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake	
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]
EY310	71	60 / 75-80	11 x 23	159	2	207	2.4
EY420	91.5	80 / 100	19 x 40	181	3.7	232	4.5
EY430				206	4.6	257	5.4
EY620	121	110 / 130	24 x 50	195	6.9	249	8
EY630				224	8.8	278	10
EY820	155	130 / 165	32 x 58	213	13	279	16.5
EY840				273	20	339	23.5
EY860				333	27	399	30.5

Order Code

EY Motors

	1	2	3	4	5	6	7	8	9	10
Order example	EY	3	10	E	A	K	B	7	1	10

1	Product Series
EY	Atex servo motor Zone 2
2	Motor size
3	71 mm square
4	92 mm square
6	121 mm square
8	155 mm square
3	Motor length
10	up to 60 depending on size
4	Fixed code
E	ATEX/IECEX motor
5	Feedback sensor
A	2 pole resolver
K	Without sensor
6	Torque/Speed characteristics
	see table "Technical data"
	...
7	Painting
B	Black RAL9005
8	Electric connection
7	Connector
9	Brake and thermal sensor option*
	PTC on power connector (AC890,AC30V,...)
1	PTC sensor
4	PTC sensor + brake
	PTC on feedback connector (PSD,Compax3,SLVD,...)
A	PTC sensor
D	PTC sensor + brake
10	Mechanical interface
10	IP65 with smooth shaft
11	IP65 with keyed shaft

* other options on request

Cables

Motor cable

Drive	Cable reference ⁽¹⁾	
	Current ≤ 12 A @40°C Current ≤ 9 A @60°C	Current ≤ 24 A @40°C Current ≤ 17 A @60°C
PSD1	CP1UQ1F1R0xxx	CP1UQ2F1R0xxx
Compax3	CC3UQ1F1R0xxx	CC3UQ2F1R0xxx
SLVDN	CS5UQ1F1R0xxx	CS5UQ2F1R0xxx
AC890	CS4UQ1F1R0xxx	CS4UQ2F1R0xxx
AC30	CS7UQ1F1R0xxx	CS7UQ2F1R0xxx

Feedback cable (2 pole resolver)

Drive	Cable reference ⁽¹⁾
PSD1	CP1UA1F1R0xxx
Compax3	CC3UA1F1R0xxx
SLVDN	CS5UA1F1R0xxx
AC890	CS4UA1F1R0xxx
AC30	CS7UA1F1R0xxx

⁽¹⁾ The 3 last digits indicate cable length in meters ± 5 % max
For non-standard length cable with length different from: 3/4/5/10/15/20/25/30/40/50m please contact us.
Example CC3UA1F1R0015: power cable, length = 15 m
For connecting other drives please see the technical manual

Explosion Proof Motor for Zone 1 - EX Series

Overview

Description

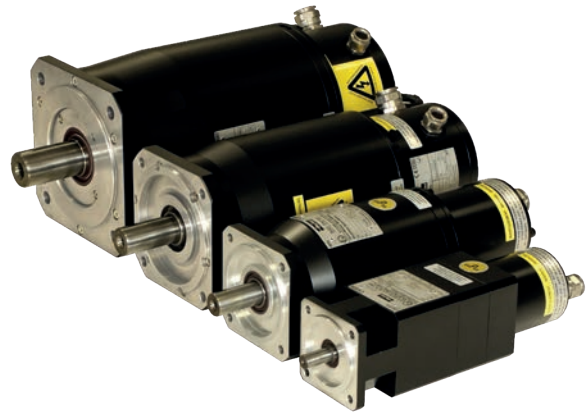
EX series is a range of permanent magnet servo motor designed for use in zone 1 explosive atmospheres. Featuring robust explosion-proof housings, EX motors are capable of bearing internal explosions with no risks of propagation to the neighbouring environment. Two versions are available, conforming with North American or European safety standards. EX servomotors are characterized by excellent motion quality, great acceleration / deceleration capabilities, and high torque output over a wide speed range. Various winding variants and numerous options are available to offer maximum flexibility.

Advantages

- Servo motors with explosion proof enclosure "d"
- Conforming with CE/ATEX, UL and IECEx
- For an ambient temperature at 40°C or 60°C
- For gas and dust explosive atmospheres
- High precision
- High motion quality
- High dynamic performance
- Low cogging
- Compactness and robustness
- Maintenance free
- High power density (6 kW in a 155 square frame)
- Compatible with all popular drives

Applications

- Printing machinery
- Packaging, filling machines
- Painting robots
- Coating machines
- Chemical, petro-chemical and pharmaceutical industries
- Robot applications
- Special machines
- Cleaning applications
- Actuator for valve in Energy applications
- Waste processing plants

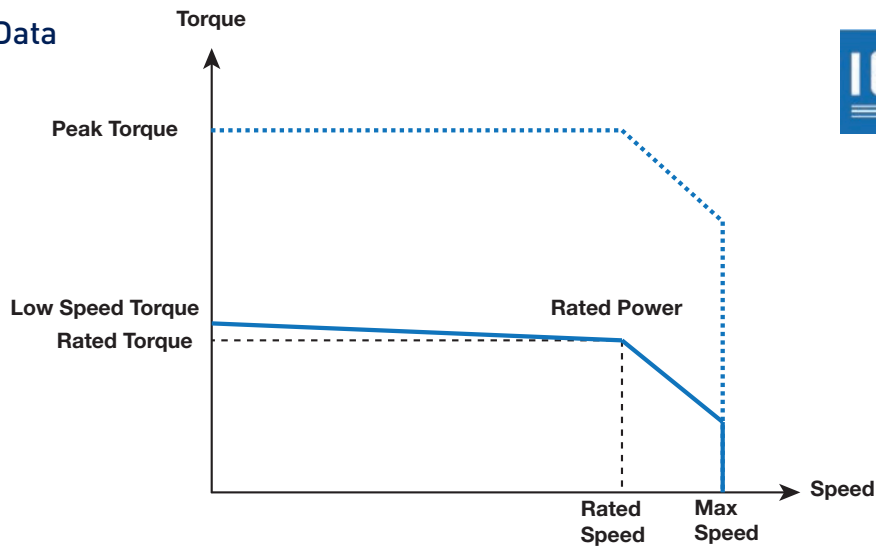


Technical Characteristics - Overview

Motor type	Permanent magnet synchronous motors	
Number of poles	10	
Torque range	1.6 ... 35 Nm	
Speed range	1100...7600 min ⁻¹	
Operating temperature	Up to +40°C (standard) Up to +60°C (with derating)	
Marking	ATEX and IECEx	UL
Voltage supply	230 / 400 VAC	230 / 480 VAC
Conformance	ATEX 2014/34/EU Directive	UL 674 standard: Electric Motors and Generators for use in Division 1 Hazardous (Classified) Locations
	IEC/EN60079-0, IEC/EN60079-1 IEC/EN60079-31 standards	
Classification	II 2G Ex d IIB T4 Gb IP64 (Gas)	Class 1, Division 1, Group C & D
	II 2GD Ex d IIB T4 Gb IP65 Ex tb IIC T135 °C Db IP65 (Gas and Dust)	
Ingress protection level	IP64 (standard)	IP65
	IP65 (option)	
Connections	Cable glands	Tapped holes

EX Servo Motors - CE Marked for Explosive Atmospheres

Technical Data



230 VAC power supply - single or three-phased

Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature									
EX310EAP	0.40	1.66	2300	1.2	1.75	1.2	4.2	3.1	2300
EX310EAK	0.64	1.54	4000	2.0	1.75	2.2	4.2	5.4	4000
EX420EAP	0.77	3.18	2300	2.3	3.5	2.5	8.3	6.2	2300
EX420EAJ	1.12	2.67	4000	3.3	3.5	4.3	8.3	10.7	4000
EX430EAL	1.02	4.2	2300	3.0	4.8	3.3	11.5	8.3	2300
EX430EAF	1.37	3.3	4000	4.1	4.8	5.8	11.5	14.5	4000
EX620EAV	0.76	6.6	1100	2.4	6.7	2.4	16.7	6.0	1100
EX620EAR	1.33	5.8	2200	4.0	6.7	4.5	16.7	11.2	2200
EX630EAR	1.43	9.4	1450	4.2	10.4	4.6	25.9	11.5	1450
EX630EAN	2.02	8.4	2300	5.7	10.4	6.9	25.9	17.3	2300
EX820EAR	2.57	11.2	2200	7.5	14	9.3	32.5	23.2	2200
EX840EAK	3.31	15.8	2000	9.4	24.5	14.3	58.2	35.6	2000
EX860EAJ	3.86	25.4	1450	11.5	35	15.7	83.3	39.2	1450
60°C ambient temperature									
EX310EAP	0.31	1.30	2300	0.9	1.75	1.2	4.2	3.1	2300
EX310EAK	0.40	0.95	4000	1.3	1.75	2.2	4.2	5.4	4000
EX420EAP	0.59	2.45	2300	1.8	3	2.1	7.3	5.3	2300
EX420EAJ	0.63	1.5	4000	1.9	3	3.7	7.3	9.1	4000
EX430EAL	0.82	3.4	2300	2.4	4.2	2.9	10.2	7.2	2300
EX430EAF	0.90	2.9	3000	3.6	4.2	5.1	10.2	12.7	4000
EX620EAV	0.63	5.5	1100	2.0	6	2.2	15.0	5.3	1100
EX620EAR	0.88	3.8	2200	2.8	6	4.1	15.0	9.9	2200
EX630EAR	1.12	7.35	1450	3.4	9	4.0	22.5	9.8	1450
EX630EAN	1.24	5.15	2300	3.7	9	6.1	22.5	14.7	2300
EX820EAR	1.65	8.5	1850	5.8	11	7.3	26.6	18.3	2200
EX840EAK	2.23	11.5	1850	6.9	21	12.2	51.0	30.6	2000
EX860EAJ	2.74	18.0	1450	8.3	31	13.9	75.1	34.8	1450

400 VAC power supply - single or three-phased

Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature									
EX310EAP	0.64	1.54	4000	1.1	1.75	1.2	4.2	3.1	4000
EX310EAK	0.87	1.23	6800	1.6	1.75	2.2	4.2	5.4	6800
EX420EAP	0.94	3	3000	2.1	3.5	2.5	8.3	6.2	3000
EX420EAJ	1.11	1.8	6000	2.3	3.5	4.3	8.3	10.7	6000
EX430EAL	1.37	3.3	4000	2.3	4.8	3.3	11.5	8.3	4000
EX430EAF	1.37	3.3	4000	4.1	4.8	5.8	11.5	14.5	5800
EX620EAV	1.25	6.0	2000	2.2	6.7	2.4	16.7	6.0	2000
EX620EAR	1.53	3.8	3900	2.7	6.7	4.5	16.7	11.2	3900
EX630EAR	2.19	7.8	2700	3.5	10.4	4.6	25.9	11.5	2700
EX630EAN	2.18	5.2	4000	3.8	10.4	6.9	25.9	17.3	4000
EX820EAR	2.84	7.5	3600	5.2	14	9.3	32.5	23.2	3900
EX840EAK	0.99	2.9	3300	2.1	24.5	14.3	58.2	35.6	3500
EX860EAJ	2.35	9.0	2500	4.4	35	15.7	83.3	39.2	2600
60°C ambient temperature									
EX310EAP	0.40	0.95	4000	0.7	1.8	1.2	4.2	3.1	4000
EX310EAK	0.40	0.95	4000	1.3	1.8	2.2	4.2	5.4	6800
EX420EAP	0.66	2.1	3000	1.5	3.0	2.1	7.3	5.3	3000
EX420EAJ	0.63	1.5	4000	1.9	3.0	3.7	7.3	9.1	6000
EX430EAL	0.90	2.9	3000	2.0	4.2	2.9	10.2	7.2	4000
EX430EAF	0.90	2.9	3000	3.6	4.2	5.1	10.2	12.7	4900
EX620EAV	0.88	4.2	2000	1.6	6.0	2.2	15.0	5.3	2000
EX620EAR	0.84	3.2	2500	2.4	6.0	4.1	15.0	9.9	3900
EX630EAR	1.18	4.5	2500	2.2	9.0	4.0	22.5	9.8	2700
EX630EAN	1.18	4.5	2500	3.3	9.0	6.1	22.5	14.7	4000
EX820EAR	1.65	8.5	1850	5.8	11.0	7.3	26.6	18.3	3900
EX840EAK	2.22	11.5	1850	6.9	21.0	12.2	51.0	30.6	2600
EX860EAJ	2.60	15.5	1600	7.2	31.0	13.9	75.1	34.8	2100

Drive Associations

230 VAC power supply

Motor	Associated Drive Sizes ⁽¹⁾			
	PSD1 ⁽²⁾	Compax3	SLVD-N	AC890
With 40°C ambient temperature - 230 VAC power supply				
EX310EAP	PSD1SW1200...	C3S025V2...	SLVD2N...	890SD-231300B...
EX310EAK	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231300B...
EX420EAP	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EX420EAJ	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EX430EAL	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EX430EAF	-	C3S063V2...	SLVD7N...	890SD-231700B...
EX620EAV	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EX620EAR	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EX630EAR	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EX630EAN	-	C3S100V2...	SLVD7N...	890SD-232110B...
EX820EAR	-	C3S100V2...	SLVD10N...	890SD-232165B...
EX840EAK	-	C3S150V2...	SLVD15N...	890SD-232240C...
EX860EAJ	-	-	-	890SD-232240C...
With 60°C ambient temperature - 230 VAC power supply				
EX310EAP	PSD1SW1200...	C3S025V2...	SLVD2N...	890SD-231300B...
EX310EAK	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231300B...
EX420EAP	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231300B...
EX420EAJ	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EX430EAL	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EX430EAF	-	C3S063V2...	SLVD7N...	890SD-231700B...
EX620EAV	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231300B...
EX620EAR	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EX630EAR	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EX630EAN	-	C3S063V2...	SLVD7N...	890SD-232110B...
EX820EAR	-	C3S100V2...	SLVD10N...	890SD-232110B...
EX840EAK	-	C3S150V2...	SLVD15N...	890SD-232240C...
EX860EAJ	-	C3S150V2...	SLVD15N...	890SD-232240C...

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

400 VAC power supply

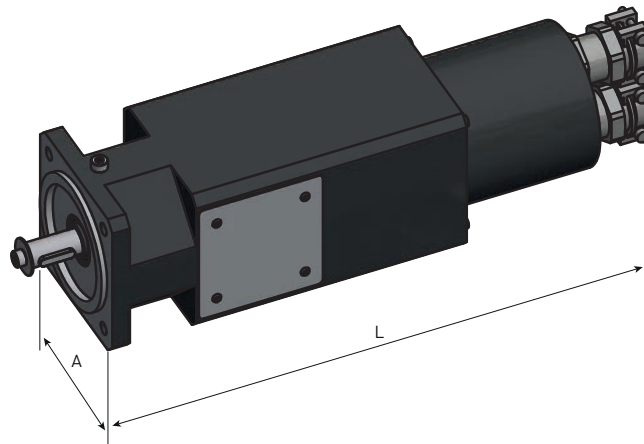
Motor	Associated Drive Sizes ⁽¹⁾			
	PSD1 ⁽²⁾	Compax3	AC890	AC30V
With 40°C ambient temperature - 400 VAC power supply				
EX310EAP	PSD1MW1300...	C3S015V4...	890SD-531200B...	31V-4D-0004
EX310EAK	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX420EAP	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX420EAJ	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0006
EX430EAL	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0005
EX430EAF	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EX620EAV	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX620EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0006
EX630EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0008
EX630EAN	PSD1MW1400...	C3S150V4...	890SD-532120B...	31V-4D-0010
EX820EAR	PSD1MW1600...	C3S150V4...	890SD-532160B...	31V-4D-0012
EX840EAK	PSD1MW1600...	C3S150V4...	890SD-53216SB...	31V-4E-0023
EX860EAJ	PSD1MW1800...	C3S300V4...	890SD-53216SB...	31V-4E-0023
With 60°C ambient temperature - 400 VAC power supply				
EX310EAP	PSD1MW1300...	C3S015V4...	890SD-531200B...	31V-4D-0004
EX310EAK	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX420EAP	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX420EAJ	PSD1MW1300...	C3S038V4...	890SD-531600B...	31V-4D-0005
EX430EAL	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0004
EX430EAF	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EX620EAV	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX620EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0006
EX630EAR	PSD1MW1300...	C3S075V4...	890SD-531600B...	31V-4D-0006
EX630EAN	PSD1MW1400...	C3S075V4...	890SD-532120B...	31V-4D-0008
EX820EAR	PSD1MW1400...	C3S075V4...	890SD-532120B...	31V-4D-0010
EX840EAK	PSD1MW1600...	C3S150V4...	890SD-53216SB...	31V-4E-0016
EX860EAJ	PSD1MW1600...	C3S150V4...	890SD-53216SB...	31V-4E-0023

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

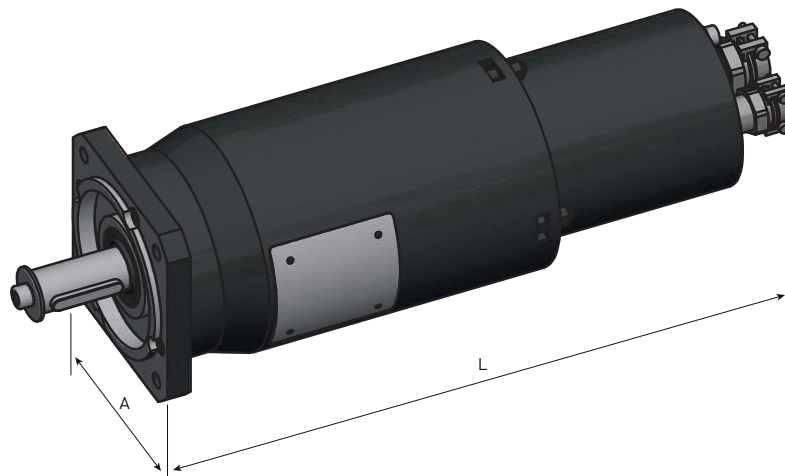
Dimensions (Resolver Version)

EX3



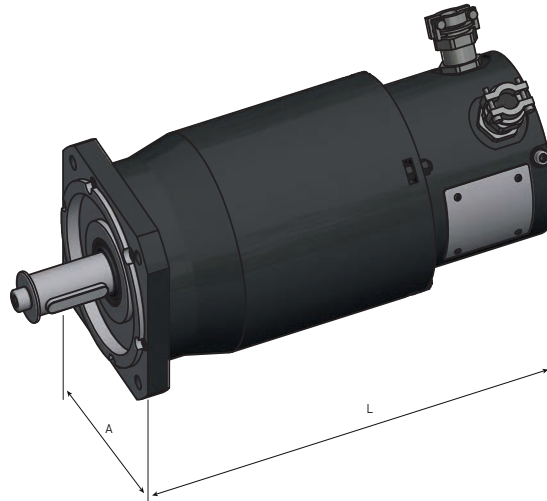
Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]
EX310	70	60 / 75	11 x 23	225	2.8	255	3.2

EX4



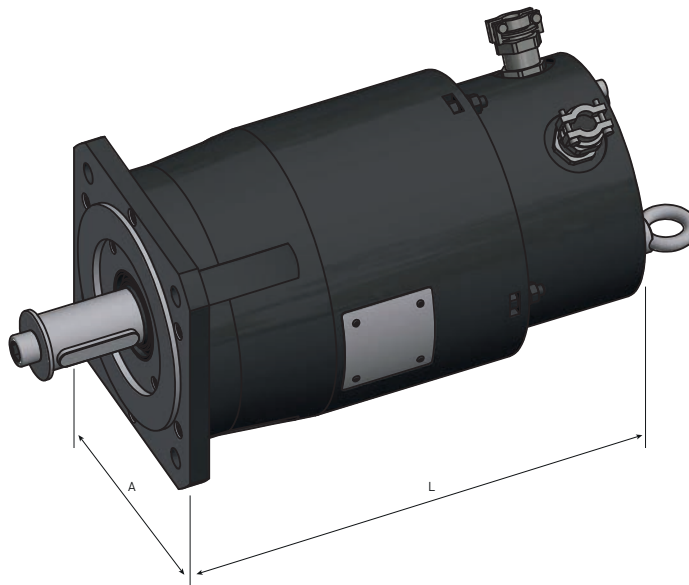
Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]
EX420	92	80 / 100	19 x 40	305	7	330	8
EX430				330	8	355	9

EX6



Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake	
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]
EX620	120	110 / 130	24 x 50	275	10	290	11
EX630				300	12.5	325	13.5

EX8



Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake	
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]
EX820	155	130 / 165	32 x 58	325	22	360	25
EX840				385	28	420	31
EX860				445	38	480	41

Order Code

EX Motors - CE Marked

	1	2	3	4	5	6	7	8	9	10	11
Order example	EX	3	10	E	A	P	B	1	2	0	1

1	Product Series	
	EX	Atex servo motor Zone 1
2	Motor size	
	3	70 mm square
	4	92 mm square
	6	120 mm square
	8	155 mm square
3	Motor length	
	10	up to 60 depending on size
4	Fixed code	
	E	ATEX/IECEX motor
5	Feedback sensor	
	A	2 pole resolver (standard)
	K	Without feedback sensor
	R	Absolute singleturn HIPERFACE SKS36 Encoder (128 periods/rev)
	S	Absolute multiturn HIPERFACE SKM36 Encoder (128 periods/rev)
6	Torque/Speed characteristics	
		see table "Technical data"
	...	
7	Painting	
	B	Black RAL9005
8	Electric connection	
	1	Cable gland
9	Brake	
	2	Motor without brake (standard) + thermal switch sensor
	5	Motor with brake + thermal switch sensor
10	Ingress protection level	
	0	IP64 (standard)
	1	IP65
11	Shaft end	
	0	Smooth shaft (standard)
	1	Key shaft

Cables

Motor cable

Drive	Cable reference ⁽¹⁾	
	Current ≤ 12 A @40°C Current ≤ 9 A @60°C	Current ≤ 24 A @40°C Current ≤ 17 A @60°C
PSD1	CP1UQ1D1R0xxx	CP1UQ2D1R0xxx
Compax3	CC3UQ1D1R0xxx	CC3UQ2D1R0xxx
SLVDN	CS5UQ1D1R0xxx	CS5UQ2D1R0xxx
AC890	CS4UQ1D1R0xxx	CS4UQ2D1R0xxx
AC30	CS7UQ1D1R0xxx	CS7UQ2D1R0xxx

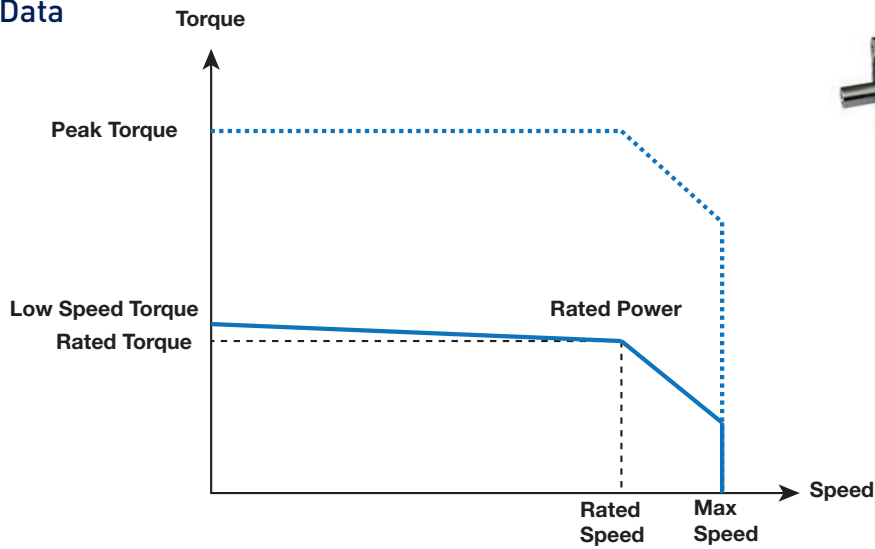
Feedback cable

Drive	Cable reference ⁽¹⁾	
	2 pole resolver	Hiperface
PSD1	CP1UA1D1R0xxx	-
Compax3	CC3UA1D1R0xxx	CC3UR1D1R0xxx
SLVDN	CS5UA1D1R0xxx	-
AC890	CS4UA1D1R0xxx	-
AC30	CS7UA1D1R0xxx	

⁽¹⁾ The 3 last digits indicate cable length in meters ± 5 % max
 For non-standard length cable with length different from: 3/4/5/10/15/20/25/30/40/50m please contact us.
 Example CC3UA1D1R0015: power cable, length = 15 m
 For connecting other drives please see the technical manual

EX Servo Motors - UL Marked for Explosive Atmospheres

Technical Data



Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature - 230 VAC power supply									
EX310UAU	0.62	1.4	4200	2.2	1.60	2.5	4.0	6.3	4200
EX420UAI	1.03	2.5	4000	3.3	3	4.2	8.0	10.8	4000
EX430UAG	1.17	3.5	3200	3.9	4.4	4.9	10.0	11.3	3200
EX620UAM	1.37	4.8	2750	4.7	6	6.0	16.0	14.8	2750
EX630UAK	2.01	7.1	2700	6.2	10	7.9	23.7	19.4	2700
EX820UAQ	2.43	10.1	2300	7.2	13	9.1	29.7	22.8	2300
EX840UAL	2.90	16.8	1650	9.0	23	12.0	56.5	32.3	1650
EX860UAJ	3.50	22.3	1500	10.0	31	13.9	78.5	37.1	1500
40°C ambient temperature - 400 VAC power supply									
EX310UAU	0.82	1.0	7600	1.7	1.6	2.5	4.0	6.3	7600
EX420UAI	0.81	1.1	7000	1.6	3.2	4.2	8.0	10.8	7000
EX430UAG	1.02	1.7	5700	2.1	4.4	4.9	10.0	11.3	5700
EX620UAM	1.27	2.8	4300	3.0	6.4	6.0	16.0	14.8	4300
EX630UAK	1.92	4.4	4200	4.0	9.5	7.9	23.7	19.4	4200
EX820UAQ	2.62	7.0	3600	5.1	12.9	9.1	29.7	22.8	3600
EX840UAL	2.08	6.8	2900	3.9	22.6	12.0	56.5	32.3	2900
EX860UAJ	2.18	8.3	2500	4.0	31.4	13.9	78.5	37.1	2500

Drive Associations

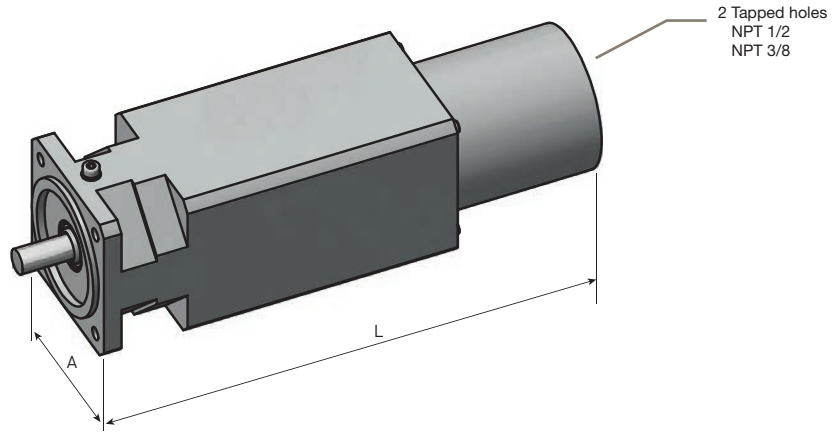
Motor	Associated Drive Sizes ⁽¹⁾			AC30	AC890
	PSD1 ⁽²⁾	Compax3	SLVD-N		
With 40°C ambient temperature - 230 VAC power supply					
EX310UAU	PSD1SW1300...	C3S025V2...	SLVD5N...	-	890SD-231550B...
EX420UAI	PSD1SW1300...	C3S063V2...	SLVD5N...	-	890SD-231700B...
EX430UAG	PSD1SW1300...	C3S063V2...	SLVD5N...	-	890SD-231700B...
EX620UAM	-	C3S063V2...	SLVD7N...	-	890SD-231700B...
EX630UAK	-	C3S100V2...	SLVD10N...	-	890SD-232110B...
EX820UAQ	-	C3S100V2...	SLVD10N...	-	890SD-232165B...
EX840UAL	-	C3S150V2...	SLVD15N...	-	890SD-232165B...
EX860UAJ	-	C3S150V2...	SLVD15N...	-	890SD-232240C...
With 40°C ambient temperature - 400 VAC power supply					
EX310UAU	PSD1MW1300...	C3S038V4...	-	31V-4D-0004	890SD-531350B...
EX420UAI	PSD1MW1300...	C3S075V4...	-	31V-4D-0006	890SD-532100B...
EX430UAG	PSD1MW1300...	C3S075V4...	-	31V-4D-0006	890SD-532100B...
EX620UAM	PSD1MW1400...	C3S075V4...	-	31V-4D-0008	890SD-532100B...
EX630UAK	PSD1MW1400...	C3S150V4...	-	31V-4D-0010	890SD-532120B...
EX820UAQ	PSD1MW1600...	C3S150V4...	-	31V-4D-0012	890SD-532160B...
EX840UAL	PSD1MW1600...	C3S150V4...	-	31V-4E-0016	890SD-532160B...
EX860UAJ	PSD1MW1600...	C3S150V4...	-	31V-4E-0023	890SD-532240B...

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

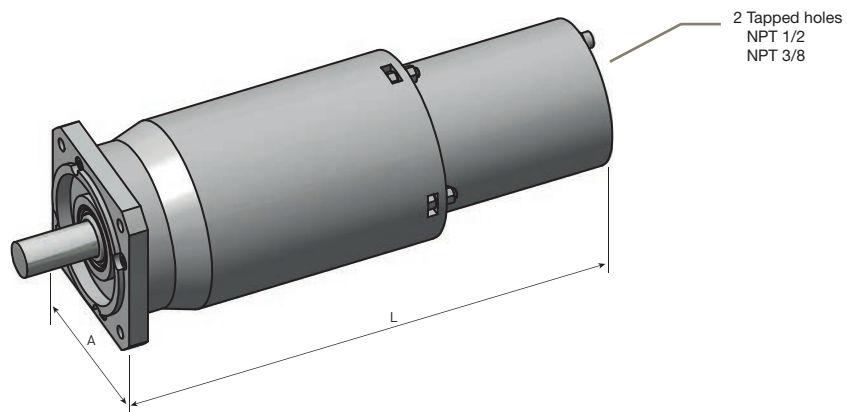
Dimensions (Resolver Version)

EX3



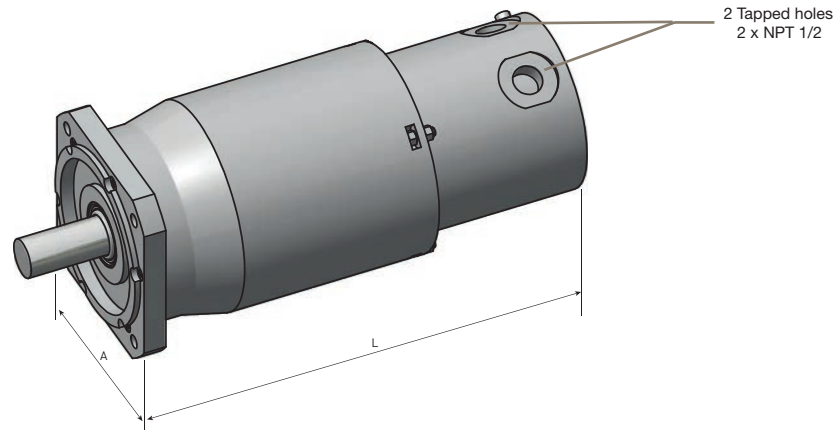
Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]
EX310	70	60 / 75	11 x 23	240	2.8	270	3.2

EX4



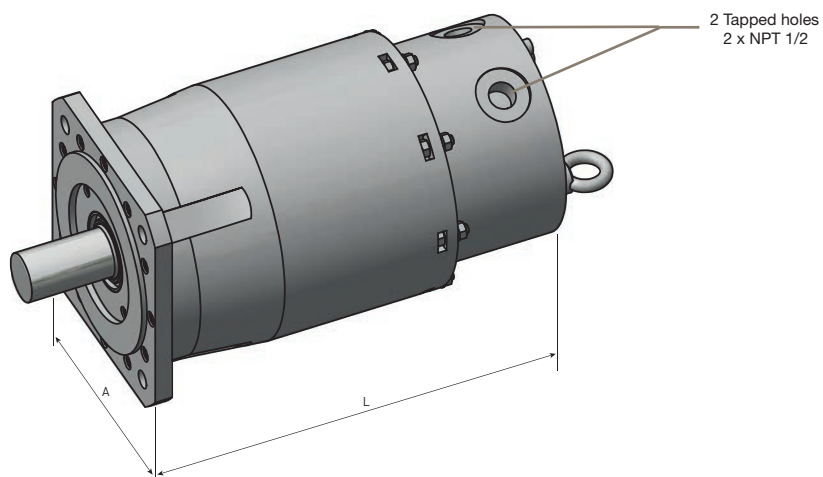
Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]
EX420	92	80 / 100	19 x 40	310	7	335	8
EX430				335	8	360	9

EX6



Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	[mm]	Weight [kg]	L [mm]
EX620	120	110 / 130	24 x 50	325	10	355	11
EX630				355	12.5	380	13.5

EX8



Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	[mm]	Weight [kg]	L [mm]
EX820	155	130 / 165	32 x 58	335	22	370	25
EX840				395	28	430	31
EX860				455	38	490	41

Order Code

EX Motors - UL Marked

	1	2	3	4	5	6	7	8	9	10	11
Order example	EX	3	10	U	A	U	R	1	2	1	0

1	Product Series	
	EX	Atex servo motor Zone 1
2	Motor size	
	3	70 mm square
	4	92 mm square
	6	120 mm square
	8	155 mm square
3	Motor length	
	10	up to 60 depending on size
4	Fixed code	
	U	UL Standard
5	Feedback sensor	
	A	2 pole resolver (standard)
	K	Without feedback sensor
	R	Absolute singleturn HIPERFACE SKS36 Encoder (128 periods/rev)
	S	Absolute multiturn HIPERFACE SKM36 Encoder (128 periods/rev)
6	Torque/Speed characteristics	see table "Technical data"
	...	
7	Fixed code	
	R	
8	Electric connection	
	1	Tapped holes
9	Brake	
	2	Motor without brake + thermal switch sensor (standard)
	5	Motor with Brake + thermal switch sensor
10	Ingress protection level	
	1	IP65
11	Shaft end	
	0	Smooth shaft (standard)
	1	Key shaft

Additional Information

Feedback Sensors

2 poles resolver - option A

- Accuracy: $\pm 10'$ max
- Transformation ratio: $0.5 \pm 5\%$
- Max. operating speed: $17\,000\text{ min}^{-1}$
- Working temperature range: $-55\dots+155\text{ }^\circ\text{C}$

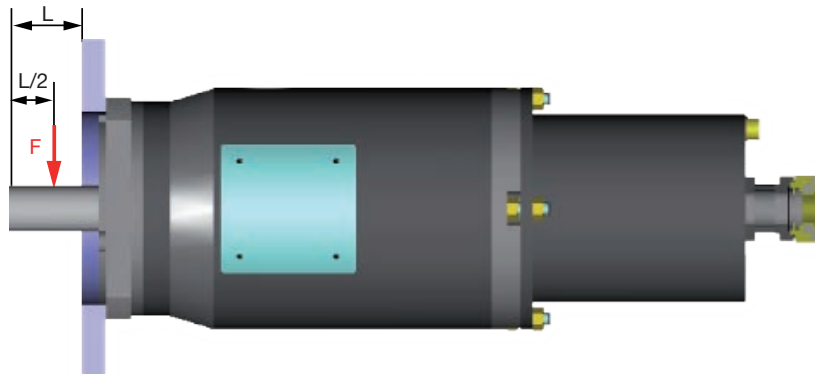
Single turn / Multiturn absolute encoder HIPERFACE SKS/SKM36 - option R/S

- Number of sine/cosine periods per revolution: 128
- Absolute position per revolution: 4096 (12 bits)
- Number of absolutely encodable revolutions: 4096 (SKM36)
- Max. operating speed SKS36: $12\,000\text{ min}^{-1}$
- Max. operating speed SKM36: $9\,000\text{ min}^{-1}$
- Working temperature range: $-20\dots+110\text{ }^\circ\text{C}$

Shaft Loads for CE and UL Motors

Maximum load acceptable on the shaft

The values written in the table are given for a load placed on the middle of the shaft like the picture below.



Due to the small ATEX airgap requirements between the shaft and the front flange, the radial loads on the shaft are lower than standard NX motors.

The ATEX airgap requirements depend on the volume of the motor and can lead to lower radial loads for bigger motors.

Regarding to these shaft loads, you must not use a pulley belt system without a load take-up system.

Type	Max. shaft load F [N]
EX310	100
EX430	500
EX630	500
EX860	250



Torque Motors - TMW Series

Overview

Description

Parker Torque motor is an innovative direct drive solution designed for industrial applications requiring high torque at low speed without any additional mechanical transmission system. Their usage results in more compact, more efficient, quieter and virtually maintenance free drive systems.

Parker torque motors are permanent magnet brushless servo motors, with a high number of poles, able to deliver torques up to 22 000 Nm at speeds up to 500 min⁻¹.

Especially designed to replace direct current or induction motors and gearboxes, they offer specific features such as built-in thrust bearing or patent pending screw extraction mechanisms, making them particularly suitable for applications in segments such as plastics and rubber extrusion, injection molding, etc. Basic versions of TM Torque Motors can also be used in many other similar applications such as winders, crushers, mixers, and more generally in all application segments requiring framed torque motors operated in speed control.

Example of energy savings

Removal of the gearbox has an immediate impact on the overall installation's efficiency, resulting in energy savings.

Example

- 100 kW extruder
- 7200 h annual operating
- Energy cost: 0.10 €/kWh

Overall efficiency improvement due to the installation of a torque motor: 5 %

Annual savings 3600 €

Features

- High power compact design
- Water or natural cooling
- Overtemperature protection built in
- Wide range of feedback devices
- Integrated thrust bearing
- Customizable shaft ends
- IP54 protection
- IM B3 or IM B34 mounting



Technical Characteristics - Overview

Torque range	1200...22 100 Nm (water-cooling)
Shaft heights	200, 315, 400 mm
Rated Voltage	400 VAC and 480 VAC
Speed	<ul style="list-style-type: none"> • 50...500 min⁻¹ (size dependent) • Field weakening operation up to 1.2 x n_{rated} • Other speeds available on request
Cooling	<ul style="list-style-type: none"> • Water Jacket as standard • Natural ventilation with derating (consult us)
Mounting	IM B3 or IM B34
Protection degree	IP54
Thermal protection	<ul style="list-style-type: none"> • 1x KTY sensor and 2x PTC probes • Temperature alarm and default
Shaft end	<ul style="list-style-type: none"> • Solid or hollow shaft with key, keyway, spline profile • Customized interfaces available on request
Bearing	<ul style="list-style-type: none"> • Roller bearing • Ball bearing • Thrust bearing (SKF 294__E)
Feedback sensor	<ul style="list-style-type: none"> • EnDat Encoder (standard) • Direct EnDat Encoder with hollow shaft (option) • Resolver (option)

Technical Characteristics

Technical Data

400 VAC Power Supply¹⁾

Model	Pn [kW]	Nn [min ⁻¹]	Mn [Nm]	In [Arms]	Nmax [min ⁻¹]	Mmax [Nm]	Inertia [kgm ²]	Water flow rate [l/min]	Drive reference ²⁾
Motor Speed 50...75 min⁻¹									
TMW305LU	29	70	3940	68	80	5880	4.40	17	890SD-432730E
TMW306LV	38	75	4830	86	85	7200	4.55	20	890SD-432870E
TMW406LV	81	75	10300	169	90	15300	16.20	28	890SD-433180F
TMW408LW	90	60	14200	197	75	21000	19.40	37	890SD-433216G
TMW40ALW	95	50	18200	219	60	26800	25.10	47	890SD-433250G
TMW40CLW	116	50	22100	271	60	32500	25.90	56	890SD-433316G
TMW40CLS	161	70	22000	348	85	32500	25.90	56	890SD-433420H
Motor Speed 75...100 min⁻¹									
TMW304LR	32	100	3040	70	115	4550	3.45	14	890SD-432730E
TMW305LT	39	95	3930	84	115	5880	4.40	17	890SD-432870E
TMW308LU	59	85	6620	133	105	9870	6.50	27	890SD-433145F
TMW30ALU	71	80	8430	163	95	12500	6.80	34	890SD-433180F
TMW30ALS	88	100	8410	191	125	12500	6.80	34	890SD-433216G
TMW406LS	108	100	10300	216	125	15300	16.20	28	890SD-433250G
TMW408LS	126	85	14200	261	105	21000	19.40	38	890SD-433316G
TMW408LP	148	100	14100	306	120	21000	19.40	38	890SD-433361G
TMW40ALQ	151	80	18100	313	100	26800	25.10	47	890SD-433361G
TMW40CLK	207	90	21900	428	110	32500	25.90	57	890SD-433520H
Motor Speed 100...125 min⁻¹									
TMW204LU	15	120	1220	35	140	1810	0.75	9	890SD-532450D
TMW205LT	21	125	1570	47	155	2320	0.78	11	890SD-532590D
TMW208LU	30	110	2640	71	125	3910	1.03	18	890SD-432730E
TMW304LQ	40	125	3030	81	150	4550	3.45	14	890SD-432870E
TMW306LS	53	105	4810	115	130	7200	4.55	21	890SD-433105F
TMW306LR	63	125	4800	129	155	7200	4.55	21	890SD-433145F
TMW308LQ	79	115	6590	167	140	9870	6.50	28	890SD-433180F
TMW30ALQ	105	120	8380	216	150	12500	6.80	34	890SD-433250G
TMW406LP	134	125	10200	266	155	15300	16.20	29	890SD-433316G
TMW40ALM	198	105	18000	398	130	26800	25.10	47	890SD-433480H
TMW40ALK	225	120	17900	446	150	26800	25.10	48	890SD-433590J
TMW40CLI	274	120	21800	536	150	32500	25.90	57	AC890SD/4/0685K ³⁾

1) Other voltages, speeds available, consult us.

2) This reference corresponds to the optimum drive for operation at nominal point of motor without overload.

Warning: this drive does not allow the maximum torque of the motor to be reached and has to be adapted to suit the requirements of the application

3) Consult Factory

400 VAC Power Supply¹⁾

Model	Pn [kW]	Nn [min ⁻¹]	Mn [Nm]	In [Arms]	Nmax [min ⁻¹]	Mmax [Nm]	Inertia [kgm ²]	Water flow rate [l/min]	Drive reference ²⁾
Motor Speed 125...150 min⁻¹									
TMW207LS	31	130	2280	70	160	3380	1.00	15	890SD-432730E
TMW208LT	39	140	2630	86	175	3910	1.03	18	890SD-432870E
TMW305LP	59	145	3900	118	180	5880	4.40	17	890SD-433105F
TMW308LN	100	145	6560	198	180	9870	6.50	28	890SD-433216G
TMW406LJ	160	150	10200	306	180	15300	16.20	29	890SD-433361G
TMW408LL	198	135	14000	388	165	21000	19.40	38	890SD-433480H
TMW40ALH	270	145	17800	526	180	26800	25.10	48	AC890SD/4/0685K ³⁾
TMW40CLG	318	140	21700	626	175	32500	25.90	57	AC890SD/4/0798K ³⁾
Motor Speed 150...175 min⁻¹									
TMW204LR	22	175	1210	47	215	1810	0.75	9	890SD-532590D
TMW206LR	33	165	1920	71	205	2850	0.81	13	890SD-432730E
TMW207LR	39	165	2270	85	205	3380	1.00	16	890SD-432870E
TMW305LN	67	165	3880	133	205	5880	4.40	17	890SD-433145F
TMW306LN	82	165	4760	161	205	7200	4.55	21	890SD-433180F
TMW308LM	116	170	6530	225	210	9870	6.50	28	890SD-433250G
TMW30ALN	135	155	8330	268	190	12500	6.80	35	890SD-433316G
TMW406LI	185	175	10100	353	215	15300	16.20	29	890SD-433420H
TMW408LJ	226	155	13900	434	190	21000	19.40	38	890SD-433520H
TMW40ALE	324	175	17700	626	205	26800	25.10	48	AC890SD/4/0798K ³⁾
Motor Speed 175...200 min⁻¹									
TMW206LQ	40	200	1910	83	250	2850	0.81	13	890SD-432870E
TMW208LQ	55	200	2620	114	250	3910	1.03	18	890SD-433105F
TMW304LM	58	185	3000	114	230	4550	3.45	14	890SD-433105F
TMW306LL	99	200	4730	191	240	7200	4.55	21	890SD-433216G
TMW308LK	136	200	6490	261	250	9870	6.50	28	890SD-433316G
TMW30ALL	156	180	8290	305	225	12500	6.80	35	890SD-433361G
TMW406LH	209	200	10000	391	250	15300	16.20	29	890SD-433480H ³⁾
TMW408LF	289	200	13800	538	250	21000	19.40	39	AC890SD/4/0590J ³⁾
Motor Speed 200...250 min⁻¹									
TMW205LQ	34	205	1560	70	255	2320	0.78	11	890SD-432730E
TMW207LN	59	250	2260	119	310	3380	1.00	16	890SD-433105F
TMW208LP	63	230	2620	128	280	3910	1.03	18	890SD-433145F
TMW304LL	67	215	2980	128	265	4550	3.45	14	890SD-433145F
TMW305LK	87	215	3840	165	265	5880	4.40	18	890SD-433180F
TMW306LI	118	240	4690	224	300	7200	4.55	21	890SD-433250G
TMW308LH	165	245	6420	311	305	9870	6.50	29	890SD-433361G
TMW30ALJ	185	215	8230	354	265	12500	6.80	35	890SD-433420H
TMW30ALH	210	245	8170	396	305	12500	6.80	36	890SD-433480H ³⁾
TMW406LG	239	230	9930	440	285	15300	16.20	30	890SD-433520H ³⁾

1) Other voltages, speeds available, consult us.

2) This reference corresponds to the optimum drive for operation at nominal point of motor without overload.

Warning: this drive does not allow the maximum torque of the motor to be reached and has to be adapted to suit the requirements of the application

3) Consult Factory

400 VAC Power Supply¹⁾

Model	P _n [kW]	N _n [min ⁻¹]	M _n [Nm]	I _n [Arms]	N _{max} [min ⁻¹]	M _{max} [Nm]	Inertia [kgm ²]	Water flow rate [l/min]	Drive reference ²⁾
Motor Speed 250...300 min⁻¹									
TMW204LP	35	280	1200	70	350	1810	0.75	9	890SD-432730E
TMW205LP	42	260	1550	85	325	2320	0.78	11	890SD-432870E
TMW206LM	60	300	1900	116	375	2850	0.81	14	890SD-433105F
TMW207LM	68	290	2250	134	360	3380	1.00	16	890SD-433145F
TMW304LH	90	295	2920	167	350	4550	3.45	15	890SD-433180F
TMW305LH	105	265	3800	196	325	5880	4.40	18	890SD-433216G
TMW305LF	116	295	3770	217	365	5880	4.40	18	890SD-433250G
TMW308LG	183	275	6370	343	340	9870	6.50	29	890SD-433420H ³⁾
Motor Speed 300...350 min⁻¹									
TMW204LM	45	355	1200	85	440	1810	0.75	9	890SD-432870E
TMW206LL	69	350	1890	131	435	2850	0.81	14	890SD-433145F
TMW208LL	84	310	2600	163	385	3910	1.03	18	890SD-433180F
TMW306LG	147	305	4610	271	370	7200	4.55	22	890SD-433316G
TMW306LF	154	320	4590	283	385	7200	4.55	22	890SD-433420H ³⁾
Motor Speed 350...400 min⁻¹									
TMW205LL	60	370	1540	113	460	2320	0.78	11	890SD-433105F
TMW205LK	64	400	1530	128	500	2320	0.78	11	890SD-433145F
TMW206LJ	79	400	1880	151	500	2850	0.81	14	890SD-433180F
TMW207LJ	88	375	2240	167	465	3380	1.00	16	890SD-433180F
TMW207LI	93	400	2230	181	500	3380	1.00	16	890SD-433216G
TMW208LJ	102	375	2580	193	465	3910	1.03	18	890SD-433216G
TMW208LH	108	400	2580	213	500	3910	1.03	18	890SD-433250G
TMW304LE	109	365	2860	199	425	4550	3.45	15	890SD-433216G
TMW304LC	119	400	2830	220	475	4550	3.45	15	890SD-433250G ³⁾
TMW305LC	149	390	3660	271	450	5880	4.40	19	890SD-433316G ³⁾

- 1) Other voltages, speeds available, consult us.
- 2) This reference corresponds to the optimum drive for operation at nominal point of motor without overload.
 Warning: this drive does not allow the maximum torque of the motor to be reached and has to be adapted to suit the requirements of the application
- 3) Consult Factory

480 VAC Power Supply¹⁾

Model	Pn [kW]	Nn [min ⁻¹]	Mn [Nm]	In [Arms]	Nmax [min ⁻¹]	Mmax [Nm]	Inertia [kgm ²]	Water flow rate [l/min]	Drive reference ²⁾
Motor Speed 50...75 min⁻¹									
TMW408LW	112	75	14200	196	90	21000	19.40	37	890SD-433216G
TMW40ALW	114	60	18100	219	70	26800	25.10	47	890SD-433250G
TMW40CLW	150	65	22000	271	75	32500	25.90	56	890SD-433316G
Motor Speed 75...100 min⁻¹									
TMW305LU	35	85	3930	67	95	5880	4.40	17	890SD-432730E
TMW306LV	45	90	4820	86	100	7200	4.55	20	890SD-432870E
TMW30ALU	88	100	8410	162	120	12500	6.80	34	890SD-433216G
TMW406LV	97	90	10300	169	105	15300	16.20	28	890SD-433216G
TMW40ALQ	179	95	18000	312	115	26800	25.10	47	890SD-433361G
TMW40CLS	195	85	22000	347	100	32500	25.90	56	890SD-433420H
Motor Speed 100...125 min⁻¹									
TMW304LR	40	125	3030	70	140	4550	3.45	14	890SD-432730E
TMW305LT	47	115	3920	84	135	5880	4.40	17	890SD-432870E
TMW308LU	76	110	6600	133	135	9870	6.50	27	890SD-433156F
TMW30ALS	110	125	8370	190	155	12500	6.80	34	890SD-433216G
TMW406LS	129	120	10200	215	145	15300	16.20	28	890SD-433250G
TMW408LS	155	105	14100	260	125	21000	19.40	38	890SD-433316G
TMW408LP	184	125	14100	304	145	21000	19.40	38	890SD-433361G
TMW40CLK	252	110	21800	426	130	32500	25.90	57	890SD-433520H
Motor Speed 125...150 min⁻¹									
TMW204LU	19	150	1210	35	170	1810	0.75	9	890SD-532450D
TMW208LU	37	135	2630	71	150	3910	1.03	18	890SD-432730E
TMW304LQ	47	150	3020	81	180	4550	3.45	14	890SD-432870E
TMW306LS	68	135	4790	114	165	7200	4.55	21	890SD-433145F
TMW308LQ	100	145	6560	167	175	9870	6.50	28	890SD-433216G
TMW30ALQ	127	145	8350	215	180	12500	6.80	34	890SD-433250G
TMW40ALM	243	130	17900	396	160	26800	25.10	47	890SD-433480H
TMW40ALK	271	145	17800	444	180	26800	25.10	48	890SD-433590J
TMW40CLI	329	145	21700	533	180	32500	25.90	57	AC890SD/4/0685K ³⁾

1) Other voltages, speeds available, consult us.

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Warning: this drive does not allow the maximum torque of the motor to be reached and has to be adapted to suit the requirements of the application

3) Consult Factory

480 VAC Power Supply¹⁾

Model	Pn [kW]	Nn [min ⁻¹]	Mn [Nm]	In [Arms]	Nmax [min ⁻¹]	Mmax [Nm]	Inertia [kgm ²]	Water flow rate [l/min]	Drive reference ²⁾
Motor Speed 150...175 min⁻¹									
TMW205LT	25	155	1560	47	190	2320	0.78	11	890SD-532590D
TMW207LS	38	160	2270	70	195	3380	1.00	15	890SD-432730E
TMW208LT	48	175	2630	86	215	3910	1.03	18	890SD-432870E
TMW305LP	71	175	3880	117	215	5880	4.40	17	890SD-433145F
TMW306LR	77	155	4770	128	190	7200	4.55	21	890SD-433145F
TMW308LN	120	175	6520	197	215	9870	6.50	28	890SD-433216G
TMW406LP	165	155	10100	264	190	15300	16.20	29	890SD-433316G
TMW408LL	240	165	13900	385	200	21000	19.40	38	890SD-433480H
TMW40ALH	324	175	17700	522	215	26800	25.10	48	AC890SD/4/0685K ³⁾
TMW40CLG	394	175	21500	621	215	32500	25.90	57	AC890SD/4/0798K ³⁾
Motor Speed 175...200 min⁻¹									
TMW306LN	99	200	4730	160	245	7200	4.55	21	890SD-433216G
TMW30ALN	165	190	8270	267	230	12500	6.80	35	890SD-433316G
TMW406LJ	190	180	10100	304	215	15300	16.20	29	890SD-433361G
TMW408LJ	268	185	13800	431	225	21000	19.40	38	890SD-433520H
Motor Speed 200...225 min⁻¹									
TMW204LR	27	215	1210	47	260	1810	0.75	9	890SD-532590D
TMW206LR	41	205	1910	71	250	2850	0.81	13	890SD-432730E
TMW207LR	49	205	2270	84	250	3380	1.00	16	890SD-432870E
TMW304LM	70	225	2970	113	275	4550	3.45	14	890SD-433145F
TMW305LN	83	205	3850	132	250	5880	4.40	17	890SD-433156F
TMW308LM	139	205	6480	224	250	9870	6.50	28	890SD-433250G
TMW30ALL	189	220	8220	303	275	12500	6.80	35	890SD-433361G
TMW406LI	225	215	9970	349	260	15300	16.20	29	890SD-433420H
TMW40ALE	393	215	17500	619	250	26800	25.10	48	AC890SD/4/0798K ³⁾
Motor Speed 225...250 min⁻¹									
TMW206LQ	50	250	1900	83	310	2850	0.81	13	890SD-432870E
TMW208LQ	68	250	2610	114	310	3910	1.03	18	890SD-433145F
TMW306LL	120	245	4680	189	290	7200	4.55	21	890SD-433216G
TMW308LK	162	240	6430	259	300	9870	6.50	28	890SD-433316G
TMW406LH	249	240	9890	387	300	15300	16.20	29	890SD-433480H ³⁾
TMW408LF	342	240	13600	532	295	21000	19.40	39	AC890SD/4/0685K ³⁾

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Warning: this drive does not allow the maximum torque of the motor to be reached and has to be adapted to suit the requirements of the application

3) Consult Factory

480 VAC Power Supply¹⁾

Model	Pn [kW]	Nn [min ⁻¹]	Mn [Nm]	In [Arms]	Nmax [min ⁻¹]	Mmax [Nm]	Inertia [kgm ²]	Water flow rate [l/min]	Drive reference ²⁾
Motor Speed 250...300 min⁻¹									
TMW205LQ	42	255	1550	69	315	2320	0.78	11	890SD-432730E
TMW208LP	78	285	2600	127	345	3910	1.03	18	890SD-433145F
TMW304LL	80	260	2950	127	320	4550	3.45	14	890SD-433145F
TMW305LK	104	260	3800	164	320	5880	4.40	18	890SD-433216G
TMW306LI	143	295	4620	221	365	7200	4.55	21	890SD-433250G
TMW308LH	199	300	6330	307	370	9870	6.50	29	890SD-433361G
TMW30ALJ	222	260	8140	351	320	12500	6.80	35	890SD-433420H
TMW30ALH	253	300	8060	391	370	12500	6.80	36	890SD-433480H ³⁾
TMW406LG	281	275	9770	433	340	15300	16.20	30	890SD-433520H ³⁾
Motor Speed 300...350 min⁻¹									
TMW204LP	43	345	1200	69	430	1810	0.75	9	890SD-432730E
TMW205LP	52	320	1550	84	400	2320	0.78	11	890SD-432870E
TMW207LN	73	310	2250	118	380	3380	1.00	16	890SD-433145F
TMW305LH	125	320	3740	194	390	5880	4.40	18	890SD-433216G
TMW308LG	220	335	6270	338	410	9870	6.50	29	890SD-433420H ³⁾
Motor Speed 350...400 min⁻¹									
TMW206LM	72	365	1890	116	455	2850	0.81	14	890SD-433145F
TMW207LM	83	355	2240	134	440	3380	1.00	16	890SD-433156F
TMW208LL	102	375	2590	162	465	3910	1.03	18	890SD-433216G
TMW304LH	107	355	2870	164	420	4550	3.45	15	890SD-433216G
TMW305LF	139	360	3700	213	445	5880	4.40	18	890SD-433250G
TMW306LG	175	370	4520	266	445	7200	4.55	22	890SD-433316G
TMW306LF	181	385	4500	278	460	7200	4.55	22	890SD-433361G ³⁾
Motor Speed 400...450 min⁻¹									
TMW204LM	54	435	1190	85	535	1810	0.75	9	890SD-432870E
TMW205LL	72	450	1530	113	555	2320	0.78	11	890SD-433145F
TMW206LL	83	420	1880	131	520	2850	0.81	14	890SD-433156F
TMW207LJ	106	455	2220	166	560	3380	1.00	16	890SD-433216G
TMW208LJ	122	455	2570	192	560	3910	1.03	18	890SD-433216G
TMW304LE	129	440	2790	194	510	4550	3.45	15	890SD-433216G
Motor Speed 450...500 min⁻¹									
TMW205LK	81	511	1520	127	630	2320	0.78	11	890SD-433145F
TMW206LJ	97	495	1860	150	615	2850	0.81	14	890SD-433216G
TMW207LI	116	500	2210	180	625	3380	1.00	16	890SD-433216G
TMW208LH	136	510	2550	211	635	3910	1.03	18	890SD-433250G
TMW304LC	143	500	2720	213	590	4550	3.45	15	890SD-433250G ³⁾
TMW305LC	175	470	3550	264	540	5880	4.40	19	890SD-433316G ³⁾

1) Other voltages, speeds available, consult us.

2) This reference corresponds to the optimum drive for operation at nominal point of motor without overload.

Warning: this drive does not allow the maximum torque of the motor to be reached and has to be adapted to suit the requirements of the application

3) Consult Factory

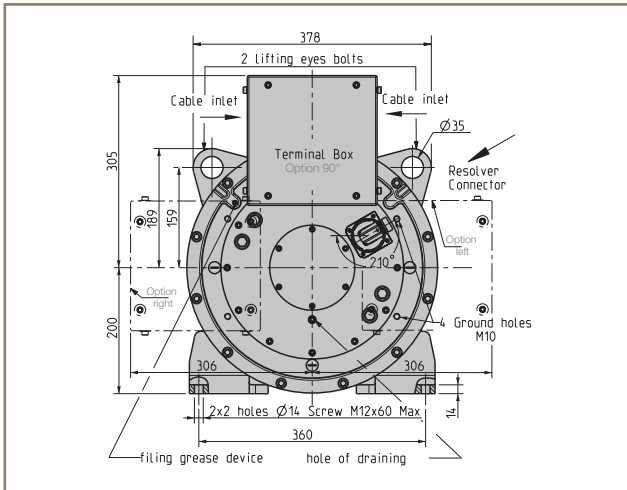
Dimensions

TMW20x-01

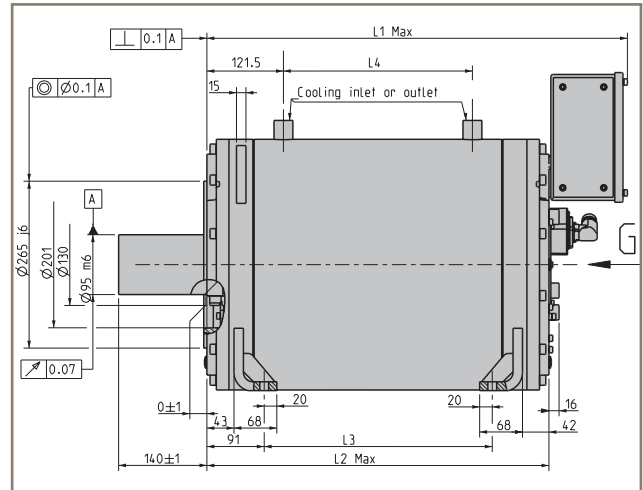
Dimensions [mm]

Shaft Height 200 mm / Roller Bearing

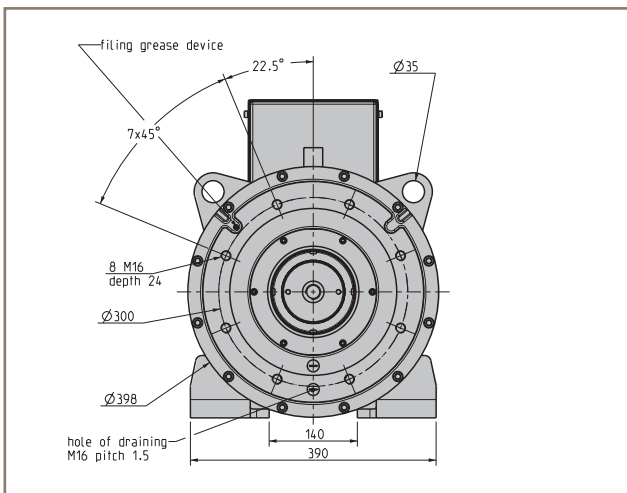
Rear view



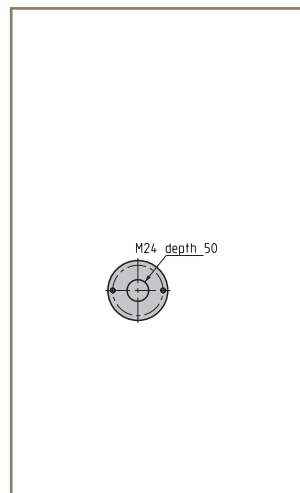
Side view



Front view



Shaft End



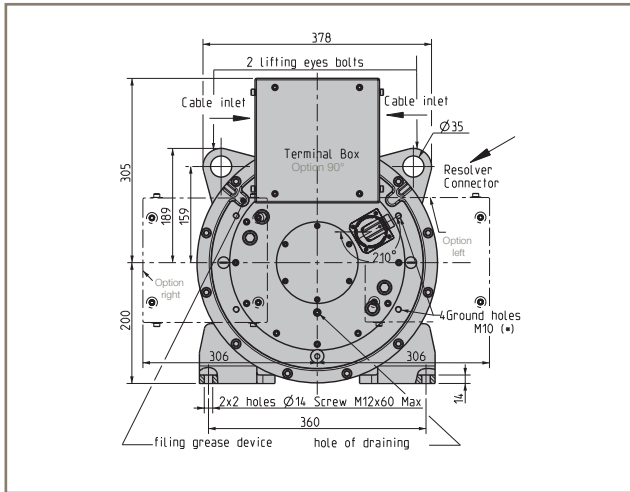
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW204	675	545	362	300	335
TMW205	675	545	362	300	350
TMW206	675	545	362	300	365
TMW207	775	645	462	400	405
TMW208	775	645	462	400	420

Dimensions [mm]

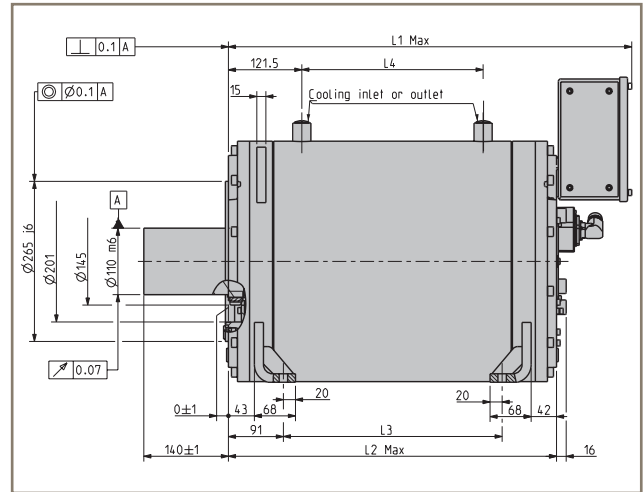
TMW20x-00

Shaft Height 200 mm / Ball Bearing

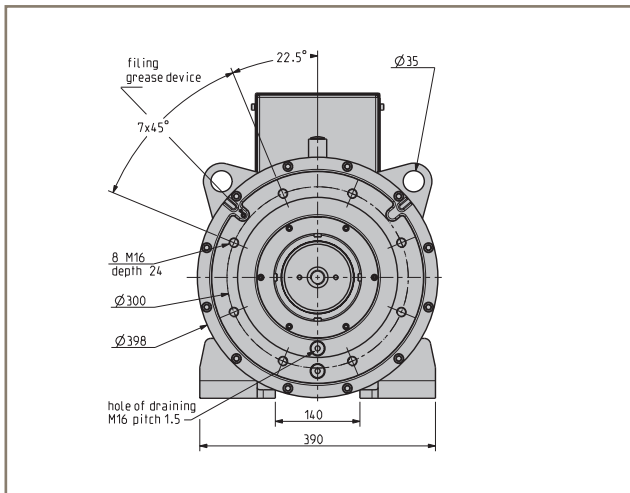
Rear view



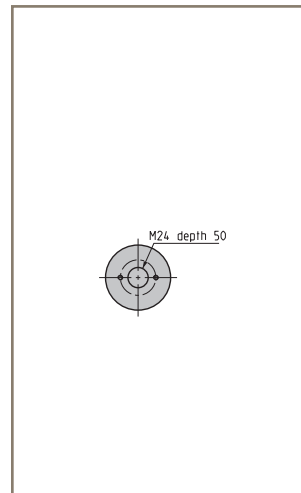
Side view



Front view



Shaft End



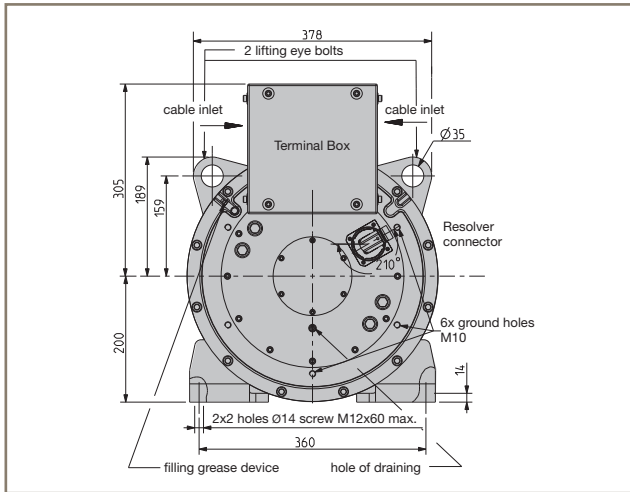
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW204	675	545	362	300	335
TMW205	675	545	362	300	350
TMW206	675	545	362	300	365
TMW207	775	645	462	400	405
TMW208	775	645	462	400	420

TMW20x-20

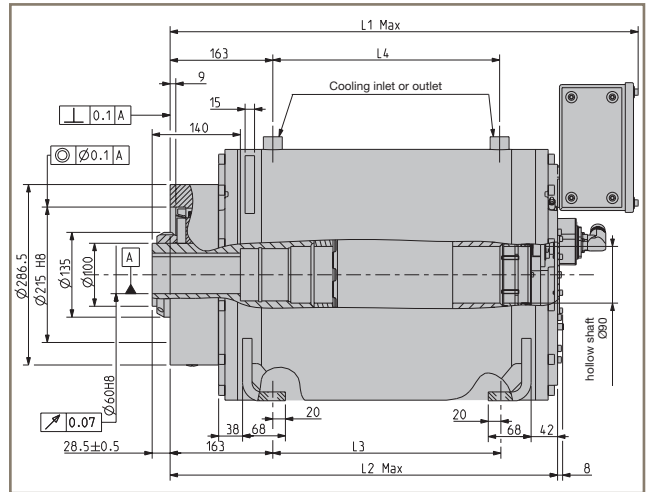
Dimensions [mm]

Shaft Height 200 mm / Thrust Bearing 29420

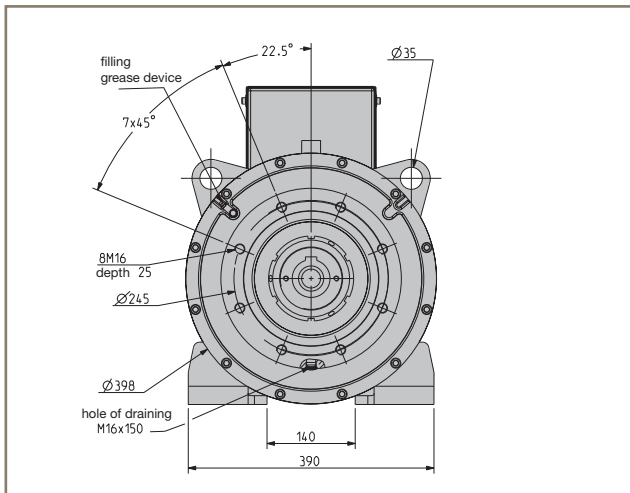
Rear view



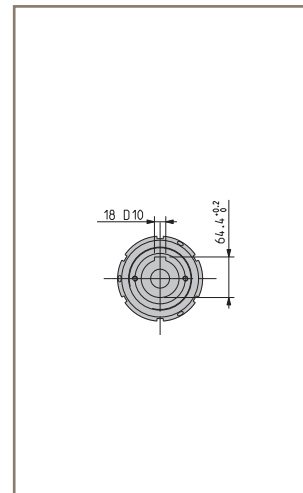
Side view



Front view



Shaft End



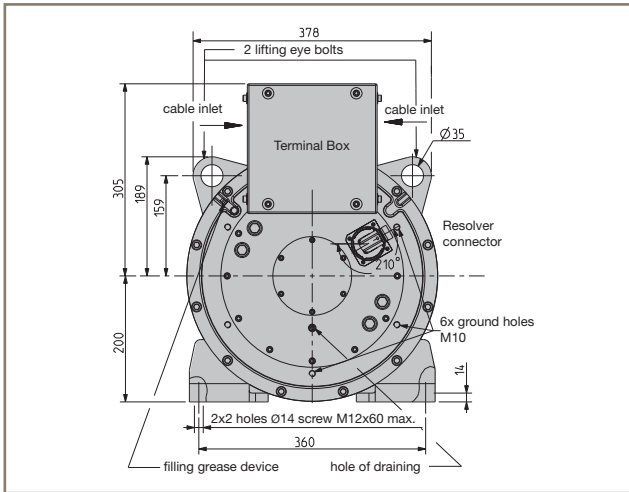
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW204	750	620	362	360	335
TMW205	750	620	362	360	350
TMW206	750	620	362	360	365
TMW207	850	720	462	460	405
TMW208	850	720	462	460	420

Dimensions [mm]

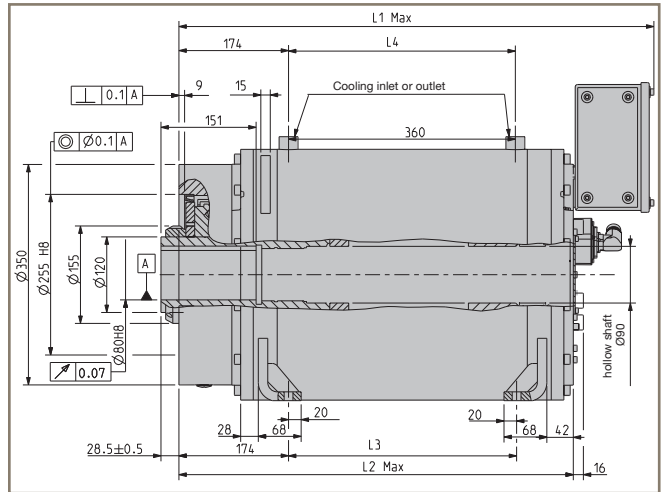
TMW20x-24

Shaft Height 200 mm / Thrust Bearing 29424

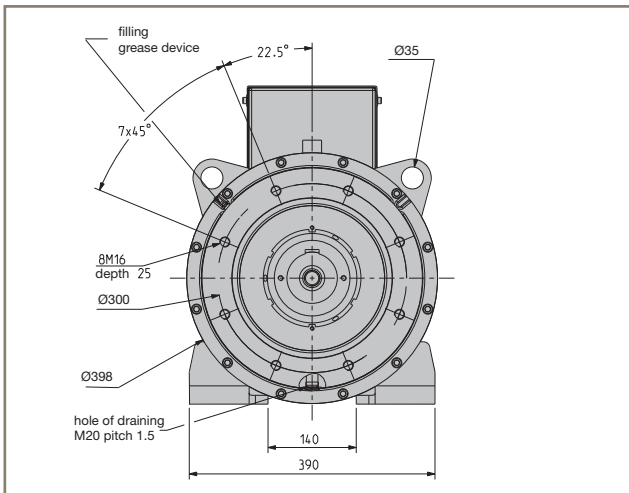
Rear view



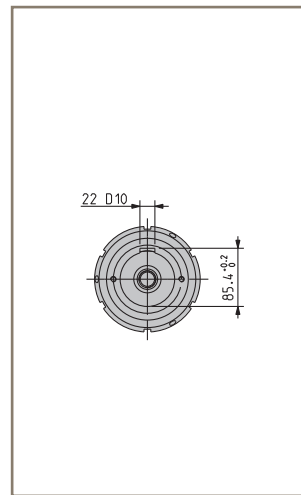
Side view



Front view



Shaft End



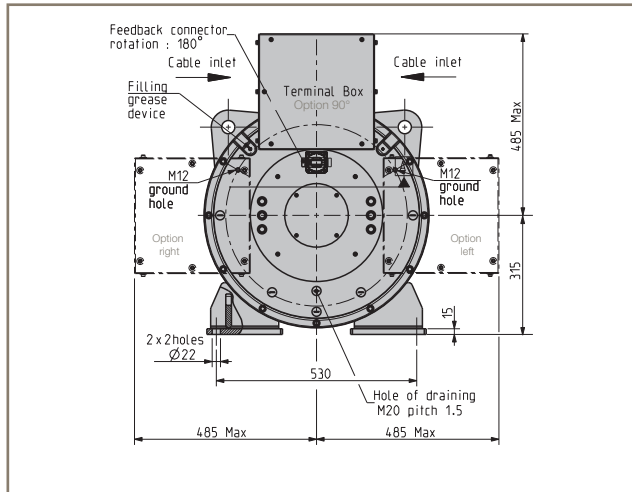
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW204	760	630	362	360	365
TMW205	760	630	362	360	380
TMW206	760	630	362	360	395
TMW207	860	730	462	460	435
TMW208	860	730	462	460	450

TMW30x-01

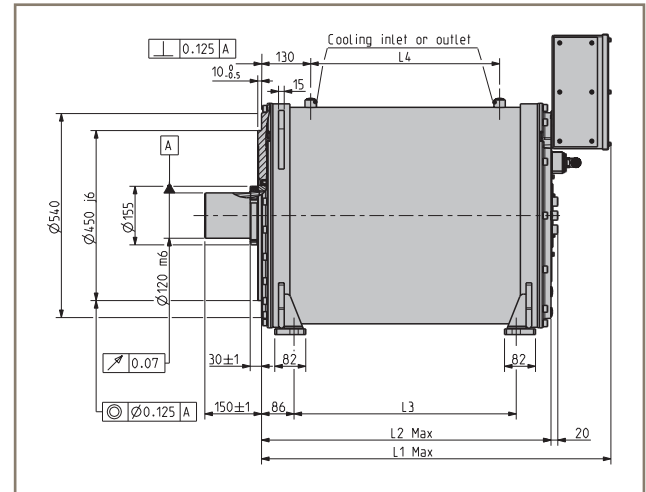
Dimensions [mm]

Shaft Height 315 mm / Roller Bearing

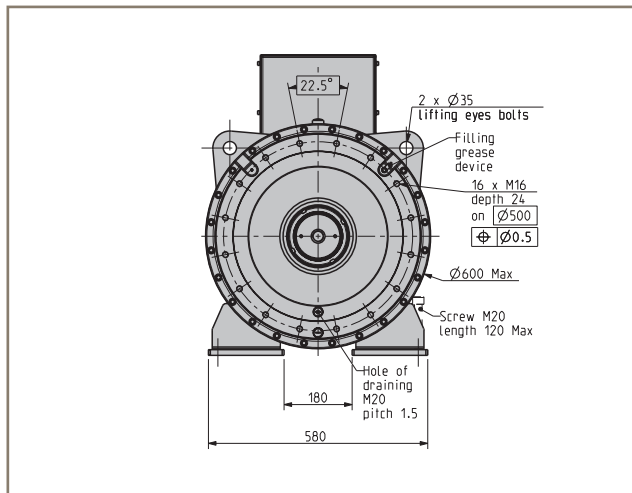
Rear view



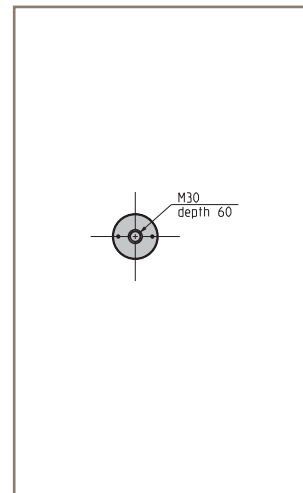
Side view



Front view



Shaft End

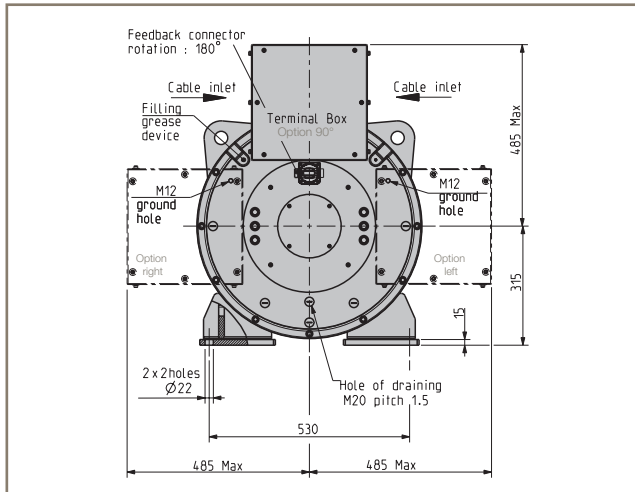


Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	630	470	288	200	520
TMW305	730	570	388	300	580
TMW306	730	570	388	300	600
TMW308	930	770	588	500	715
TMW30A	930	770	588	500	755

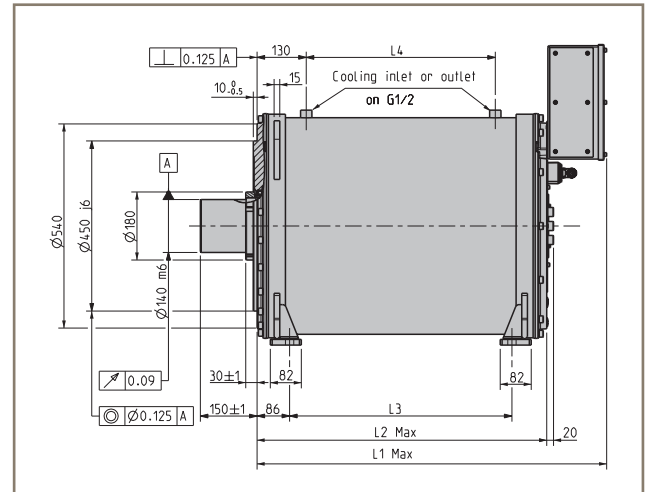
TMW30x-00

Shaft Height 315 mm / Ball Bearing

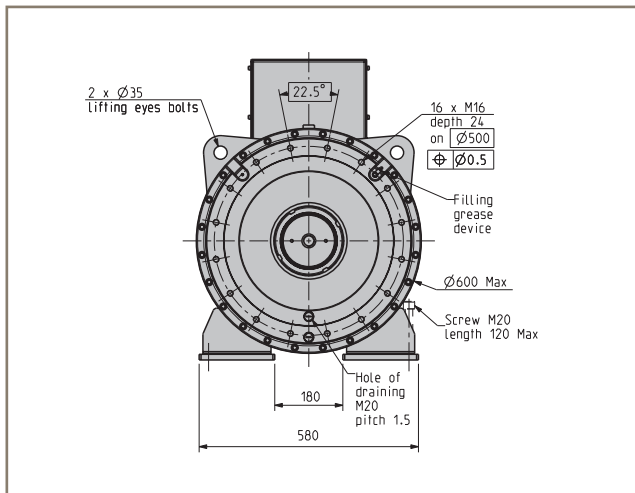
Rear view



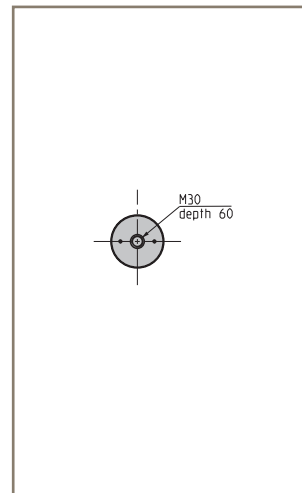
Side view



Front view



Shaft End

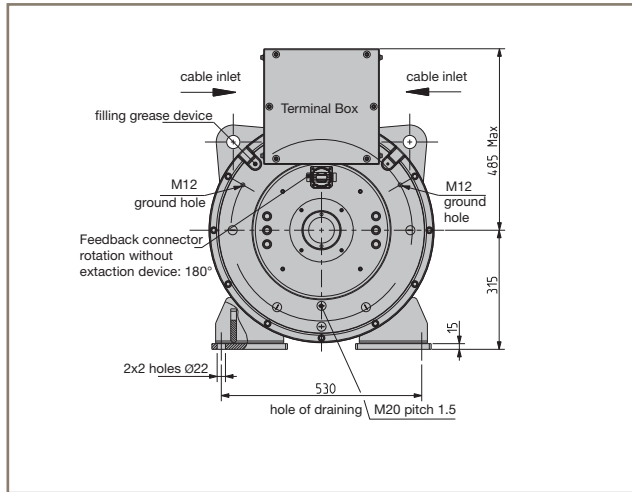


Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	630	470	288	200	525
TMW305	730	570	388	300	585
TMW306	730	570	388	300	605
TMW308	930	770	588	500	720
TMW30A	930	770	588	500	760

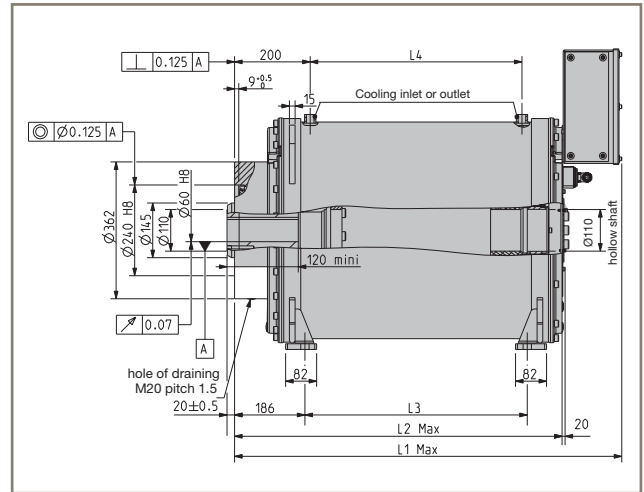
TMW30x-22

Shaft Height 315 mm / Thrust Bearing 29422

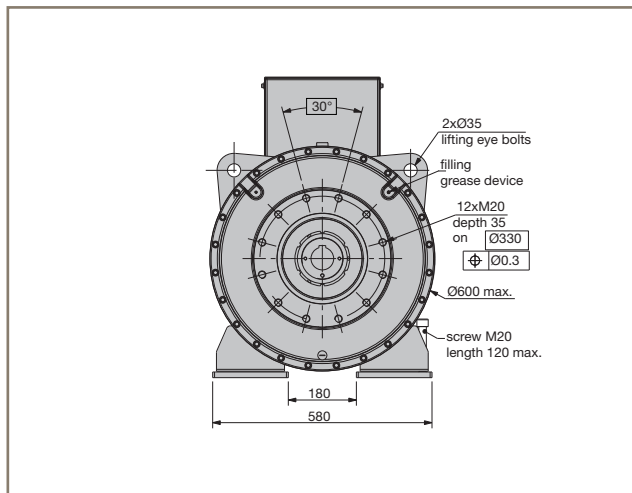
Rear view



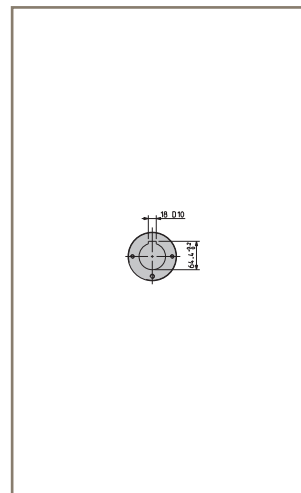
Side view



Front view



Shaft End

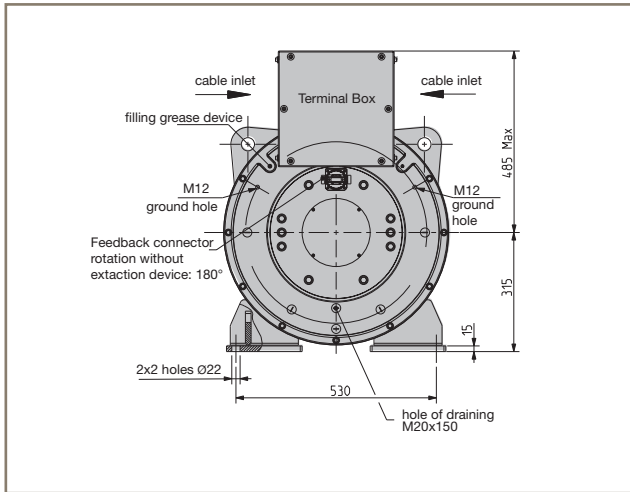


Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	730	570	288	260	585
TMW305	830	670	388	360	645
TMW306	830	670	388	360	665
TMW308	1030	870	588	560	780
TMW30A	1030	870	588	560	820

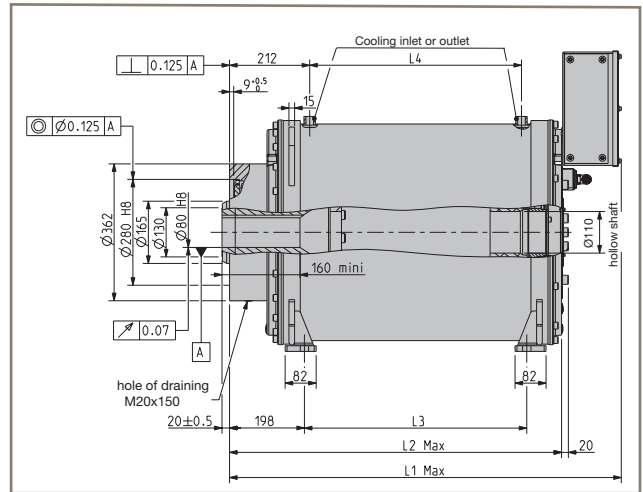
TMW30x-26

Shaft Height 315 mm / Thrust Bearing 29426

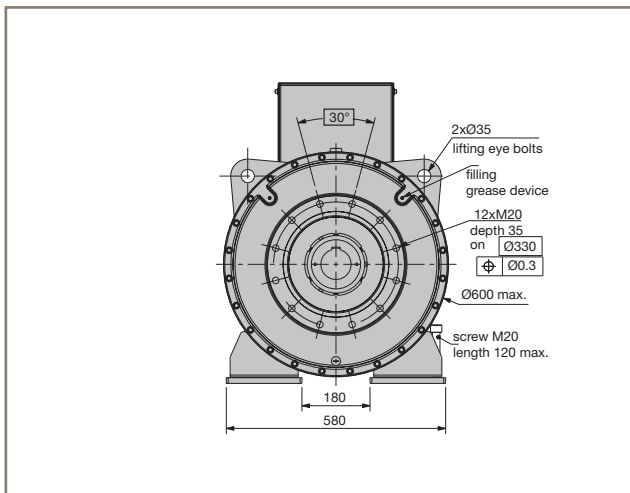
Rear view



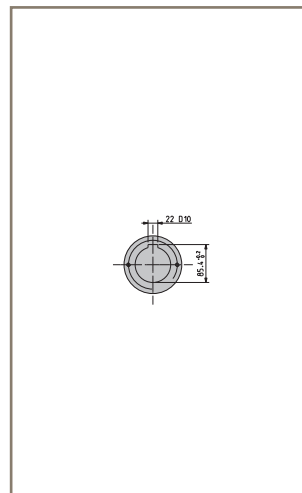
Side view



Front view



Shaft End



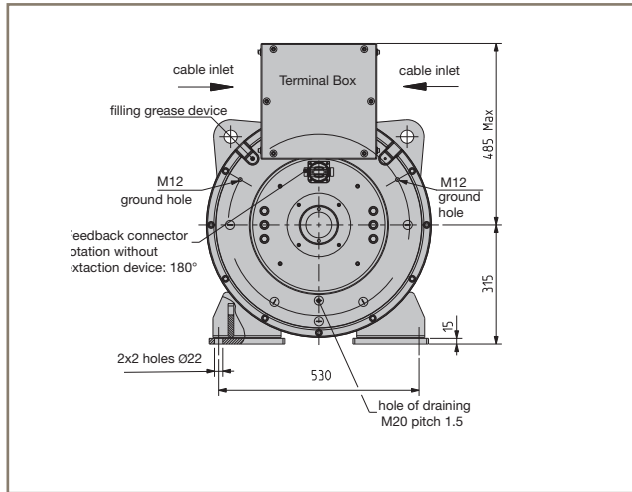
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	740	580	288	260	585
TMW305	840	680	388	360	645
TMW306	840	680	388	360	665
TMW308	1040	880	588	560	780
TMW30A	1040	880	588	560	820

TMW30x-30

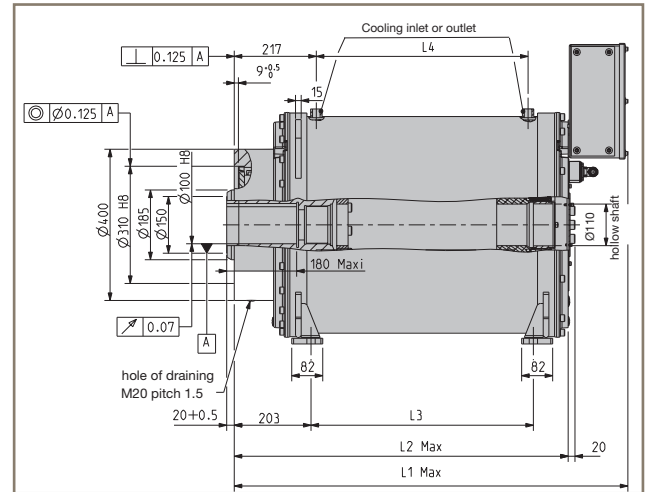
Dimensions [mm]

Shaft Height 315 mm / Thrust Bearing 29430

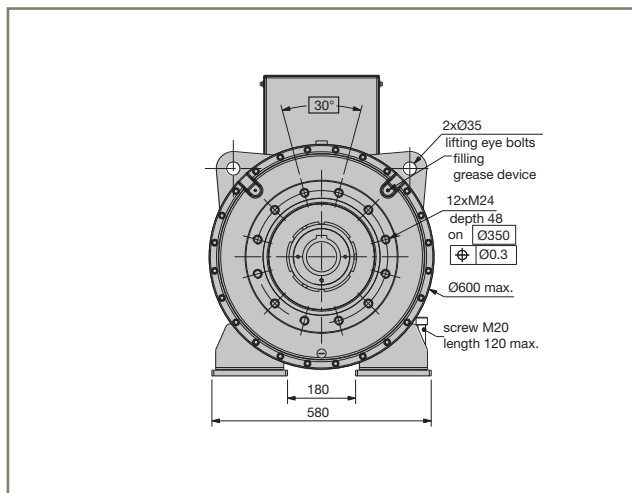
Rear view



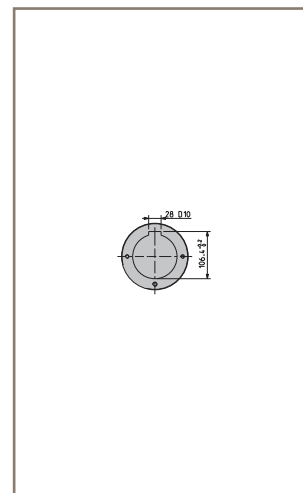
Side view



Front view



Shaft End



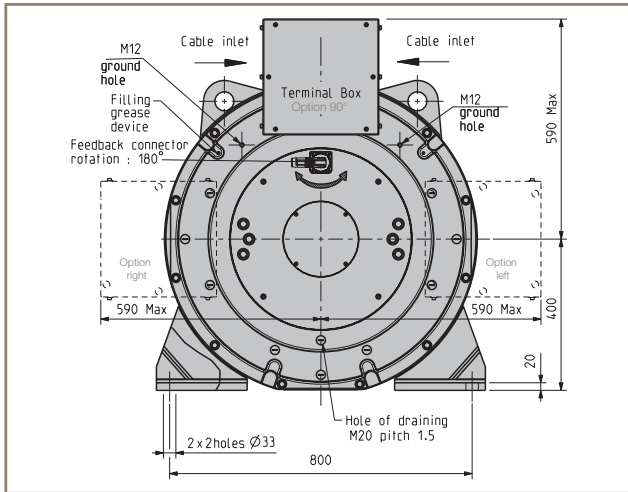
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW304	745	585	288	260	605
TMW305	845	685	388	360	665
TMW306	845	685	388	360	685
TMW308	1045	885	588	560	800
TMW30A	1045	885	588	560	840

Dimensions [mm]

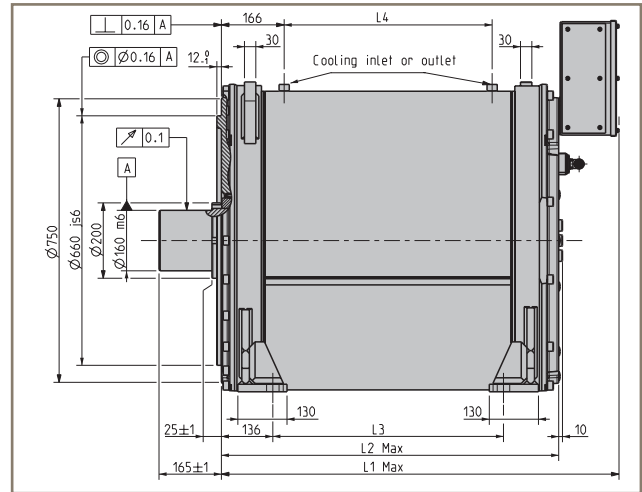
TMW40x-01

Shaft Height 400 mm / Roller Bearing

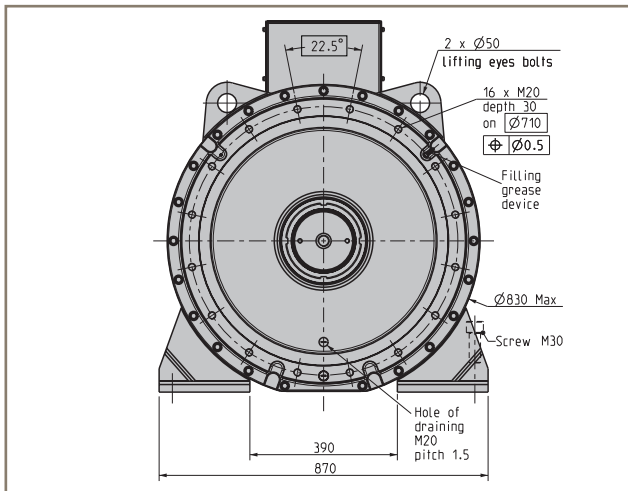
Rear view



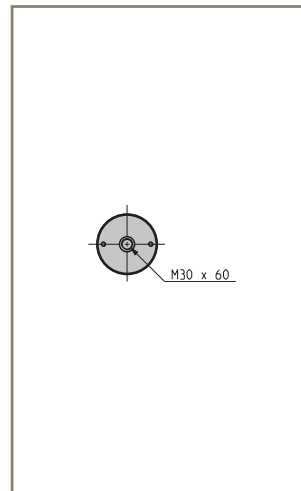
Side view



Front view



Shaft End



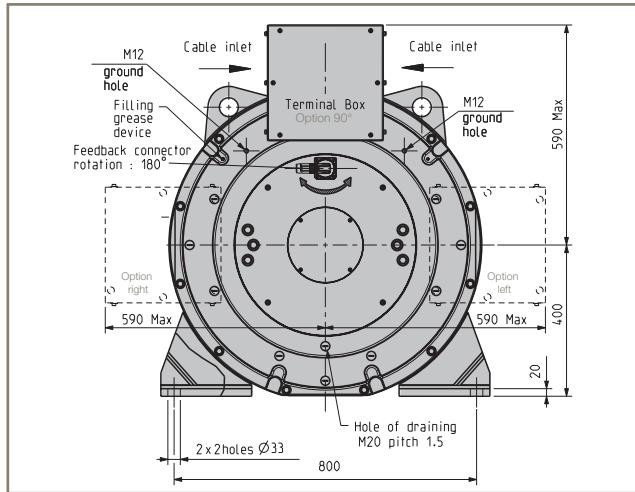
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	754	594	310	250	1290
TMW408	854	694	410	350	1430
TMW40A	1054	894	610	550	1620
TMW40C	1054	894	610	550	1700

TMW40x-00

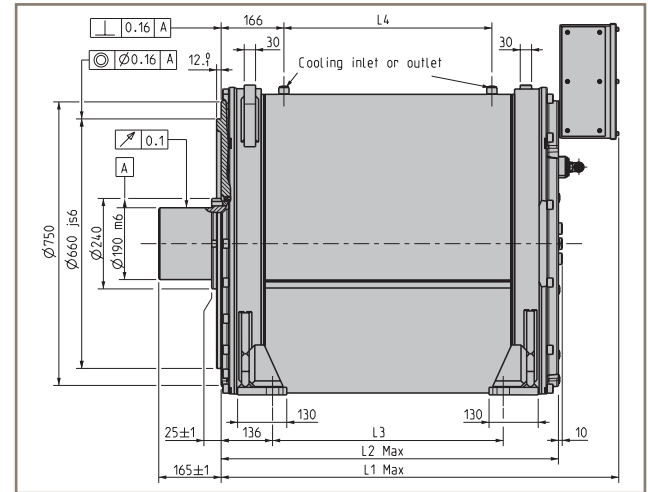
Dimensions [mm]

Shaft Height 400 mm / Ball Bearing

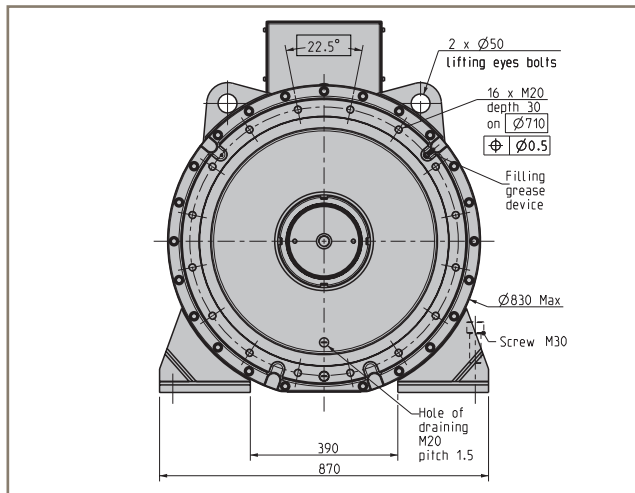
Rear view



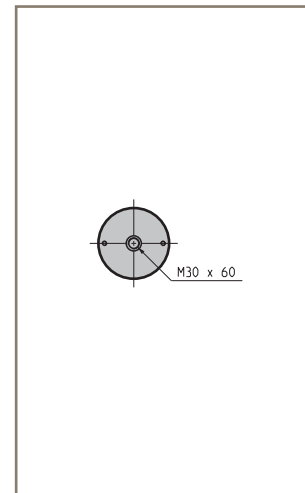
Side view



Front view



Shaft End



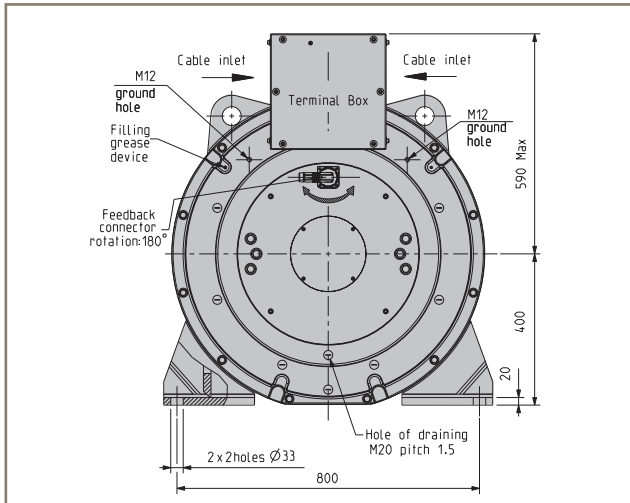
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	754	594	310	250	1290
TMW408	854	694	410	350	1430
TMW40A	1054	894	610	550	1620
TMW40C	1054	894	610	550	1700

Dimensions [mm]

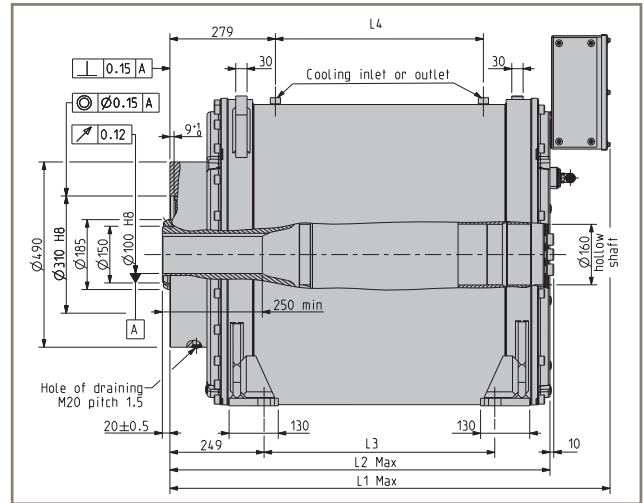
TMW40x-30

Shaft Height 400 mm / Thrust Bearing 29430

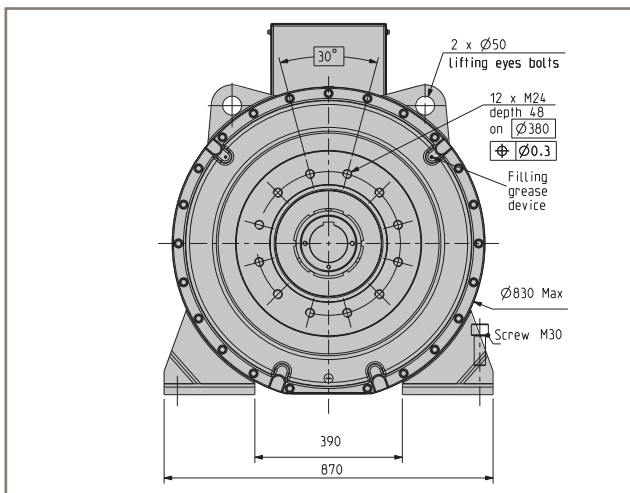
Rear view



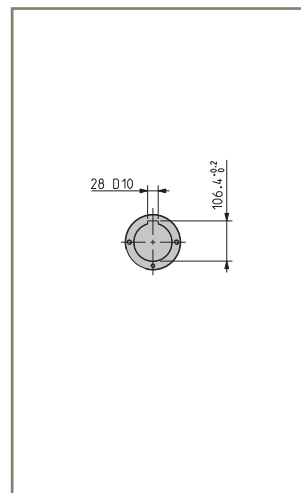
Side view



Front view



Shaft End



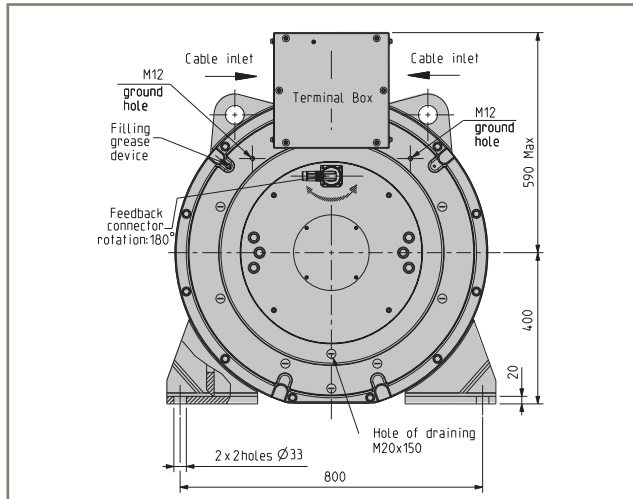
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	867	707	310	250	1410
TMW408	967	807	410	350	1550
TMW40A	1167	1007	610	550	1740
TMW40C	1167	1007	610	550	1820

TMW40x-34

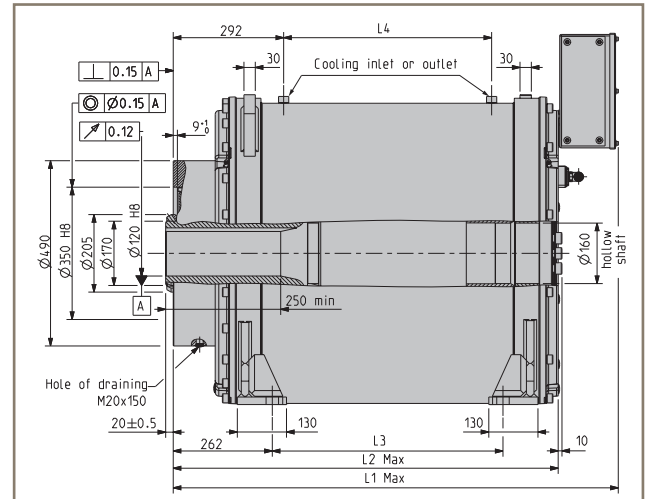
Dimensions [mm]

Shaft Height 400 mm / Thrust Bearing 29434

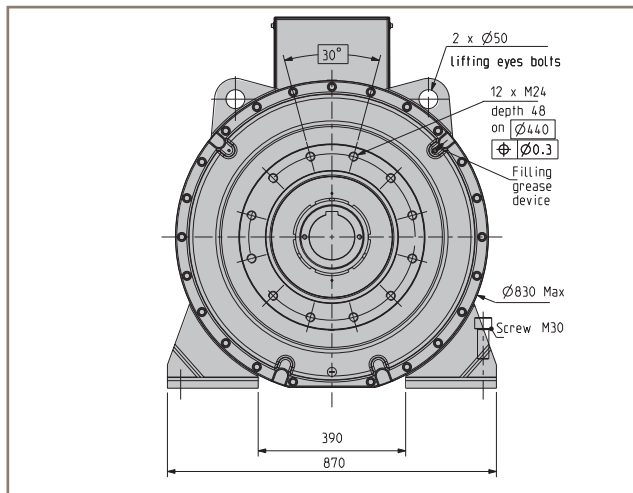
Rear view



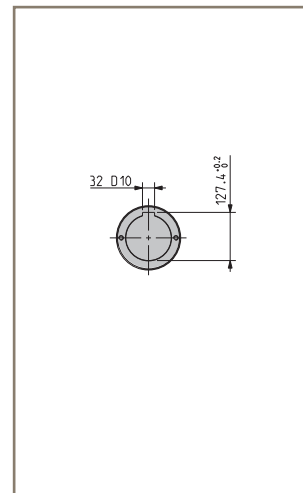
Side view



Front view



Shaft End



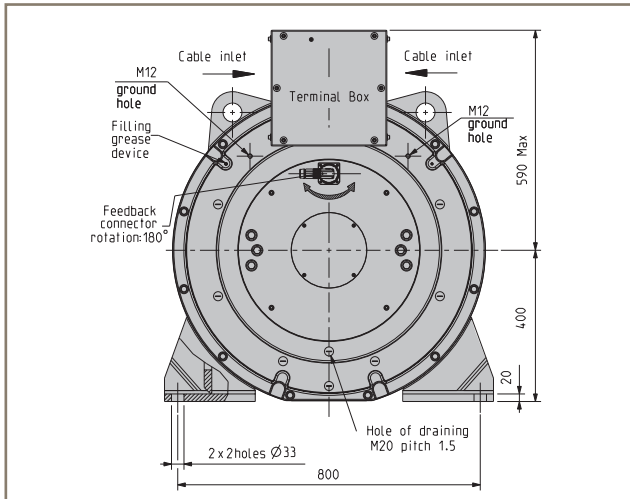
Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	880	720	310	250	1410
TMW408	980	820	410	350	1550
TMW40A	1180	1020	610	550	1750
TMW40C	1180	1020	610	550	1820

Dimensions [mm]

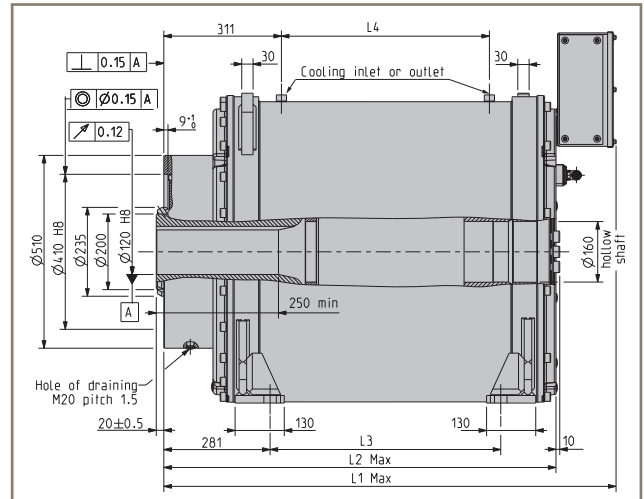
TMW40x-40

Shaft Height 400 mm / Thrust Bearing 29440

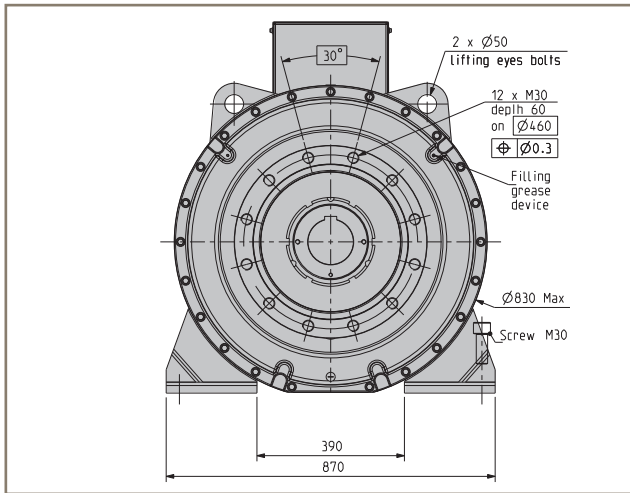
Rear view



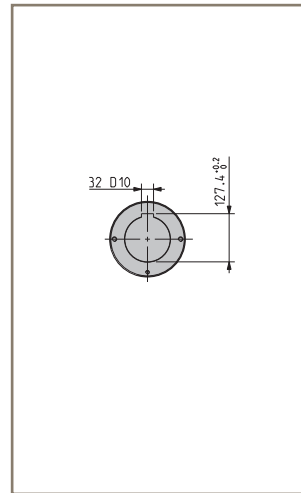
Side view



Front view



Shaft End



Model	L1 Max [mm]	L2 Max [mm]	L3 [mm]	L4 [mm]	Weight [kg]
TMW406	899	739	310	250	1445
TMW408	999	839	410	350	1585
TMW40A	1199	1039	610	550	1775
TMW40C	1199	1039	610	550	1855

User Data Checklist for Extruders

General application data

Nominal power		[kW]
Nominal/max. speed		[min ⁻¹]
Nominal/max. torque		[Nm]
Water cooling availability		[Y/N]

Extruder data

Screw diameter		[mm]
Cylinder pressure		[bar]
Screw extraction		[Front/Back]
Screw cooling		[Y/N]

Mechanical Interface

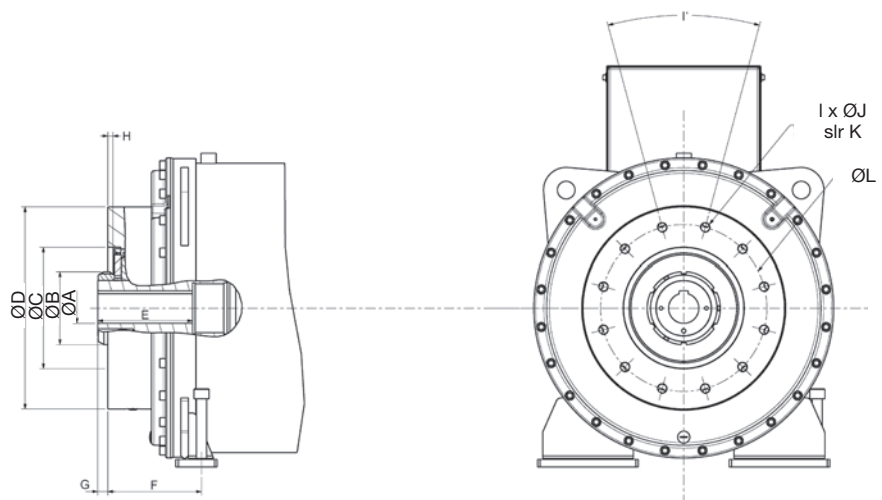
Customized Interface - Dimension Limits [mm]

Motor		TMW200		TMW300			TMW400		
Thrust bearing		29420	29424	29422	29426	29430	29430	29434	29440
Hollow shaft Ø max.	A	60	90	60	80	110	110	120	150
External shaft Ø	B	135	155	145	165	185	185	205	235
Centering Ø min.	C	215	255	240	280	310	310	350	410
External front Ø	D	286.5	350	400	400	400	490	490	510
Length keyway max. (with G max)	E	185	185	179	179	179	270	270	270
Front length min.	F	163	174	186	198	203	249	262	281
Shaft length min. (with F min.)	G	28.5	28.5	20	20	20	20	20	20
Shaft length max. (with F min.)	G	71	60	45	33	28	55	42	23
Centering depth max.	H	9	9	9	9	9	9	9	9
Other dimensions	I to L	free	free	free	free	free	free	free	free
Screw extraction from the rear									
Hollow shaft Ø max.	A	60	80 (*)	60	80	90 (*)	110	120	135 (*)

(*) don't forget the key or other part on extruder screw

Required drawings

1. Screw interface
2. Barrel interface



Order Code

	1	2	3	4	5	6	7	8	9	10
Order example	TM	W	30	6LR	C	22	U	F	R	0003

1 Motor type	TM Torque Motor
2 Cooling method	W Water cooling (standard) A Natural convection (with derating, consult local sales office for details)
3 Shaft height	20 200 mm 30 315 mm 40 400 mm
4 Torque/speed characteristics	(see motors data tables "Technical Data")
5 Feedback sensor	C EnDat encoder (standard) Cable Ref.for AC890: CS4UV1F3R0xxx* B Direct EnDat encoder (option) Cable Ref.for AC890: CS4UV1F3R0xxx* A Resolver (on request) * xxx = Cable length in meter
6 Bearing	20 Thrust bearing 29420 only for TMW204...208 24 Thrust bearing 29424 only for TMW204...208 22 Thrust bearing 29422 only for TMW304...30A 26 Thrust bearing 29426 only for TMW304...30A 30 Thrust bearing 29430 only for TMW305...30A, TMW406...40C 34 Thrust bearing 29434 only for TMW406...40C 40 Thrust bearing 29440 only for TMW406...40C 00 Ball bearing 01 Roller bearing
7 Terminal Box	U Upper rear (standard) R At the rear on the right side (front view) (option) L At the rear on the left side (front view) (option)
8 Extruder Screw Extraction/Cooling	F Front extruder screw extraction P Front extruder screw extraction (extruder screw cooling possible) R Rear extruder screw extraction (extruder screw cooling possible) (consult us) Z No screw extraction - no screw cooling
9 Fixed character	R Fixed character
10 Shaft type and mechanical interface	0001 Hollow shaft with keyway Ø60 for TM200 with 29420 0002 Hollow shaft with keyway Ø80 for TM200 with 29424 0003 Hollow shaft with keyway Ø60 for TM300 with 29422 0004 Hollow shaft with keyway Ø80 for TM300 with 29426 0005 Hollow shaft with keyway Ø100 for TM300 with 29430 0006 Hollow shaft with keyway Ø100 for TM400 with 29430 0007 Hollow shaft with keyway Ø120 for TM400 with 29434 0008 Hollow shaft with keyway Ø120 for TM400 with 29440 7001 Solid shaft Ø95 for TM200 with roller bearing 7002 Solid shaft Ø110 for TM200 with ball bearing 7003 Solid shaft Ø120 for TM300 with roller bearing 7004 Solid shaft Ø140 for TM300 with ball bearing 7005 Solid shaft Ø160 for TM400 with roller bearing 7006 Solid shaft Ø190 for TM400 with ball bearing xxxx Other shaft interface, please consult us



Frameless Servo Motor - NK Series

Overview

Description

NK Series Servo motors are an innovative direct drive solution designed for industrial applications. NK Series brushless servomotors combine exceptionally precise and quality motion, high dynamic performance with a compact footprint, allowing complete integration into a mechanical system.

NK motors are suitable for applications where constant speed is needed due to their low cogging characteristic. Support with customisation and integration are possible on request.



Advantages

- Low cogging solution
- Compact diameter
- Oil-proof on request
- Global cost reduction
- Increased reliability and reduced maintenance
- High dynamic performance and power density: increased productivity and reduced size when compared to induction motors
- Simple, light and compact machine design
- No coupling systems needed
- Greater stiffness and robustness of the system
- Low noise level
- Integration assistance

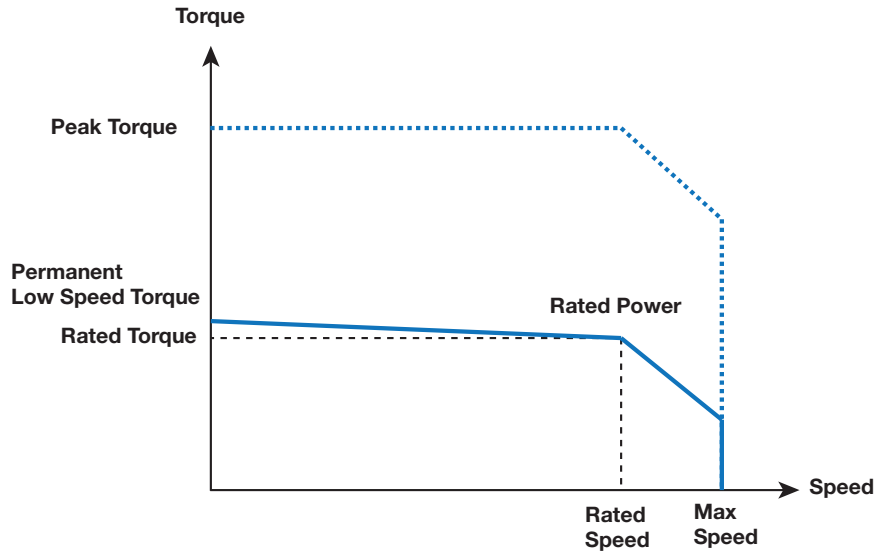
Application

- Medical
- Machine Tools
- Submarine
- Packaging Machinery
- Pump
- Compressor
- Winch
- Special Machine
- Electric Cylinder

Technical Characteristics - Overview

Cooling	Natural cooling	Water cooling
Power	0.2...7.5 kW	3.8...34 kW
Torque	0.45...41 Nm	3.1...90 Nm
Max Speed	8 900 min ⁻¹	15 000 min ⁻¹
Number of poles	10	10
Diameter	42 – 56 – 62 – 80 – 111 – 143 mm	62 – 80 – 111 – 143 mm
Power supply	24 – 48 – 230 – 400 VAC	24 – 48 – 230 – 400 VAC

Technical Data



Motor	Rated Power P _n	Rated Torque M _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}	Frequency at max speed	Moment of Inertia J
	[kW]	[Nm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[Hz]	[kgmm ²]
230VAC power supply - single or three-phased										
NK110E_P	0.21	0.33	0.79	0.45	1.0	1.7	4.0	6000	500	13
NK210E_T	0.33	0.80	1.11	1	1.3	3.4	5.4	4000	333	38
NK210E_P	0.39	0.61	1.32	1	2.0	3.4	8.0	6000	500	38
NK310E_P	0.43	1.8	1.27	2	1.4	6.6	5.6	2300	192	79
NK310E_K	0.69	1.65	2.06	2	2.4	6.6	9.7	4000	333	79
NK420E_P	0.85	3.53	2.41	4	2.7	13.4	10.9	2300	192	290
NK420E_J	1.31	3.14	3.74	4	4.7	13.4	18.9	4000	333	290
NK430E_J	1.57	4.68	4.53	5,5	5.2	18.7	21.0	3200	267	426
NK430E_F	1.80	4.29	5.28	5,5	6.6	18.7	26.6	4000	333	426
NK620E_R	1.71	7.42	4.99	8	5.3	26.6	21.2	2200	183	980
NK620E_J	2.55	6.08	7.82	8	9.9	26.6	39.5	4000	333	980
NK630E_R	1.63	10.7	4.75	12	5.3	39.9	21.0	1450	121	1470
NK630E_K	2.70	9.21	7.8	12	9.9	39.9	39.4	2800	233	1470
NK630E_G	3.48	8.31	10.1	12	13.9	39.9	55.7	4000	333	1470
NK820E_L	4.99	13.2	14.8	16	17.6	49.9	69.2	3600	300	3200
NK840E_J	5.27	22.9	15.7	28	18.9	91.8	74.8	2200	183	6200
NK860E_F	6.53	32.8	21.8	41	27.0	136.0	107.6	1900	158	9200
NK860E_D	7.48	27.5	22.5	41	33.0	136.0	131.6	2600	217	9200

Technical Data

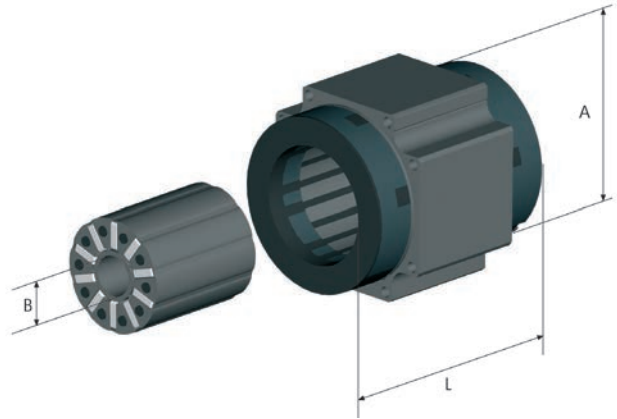
Motor	Rated Power P _n	Rated Torque M _n	Rated Current I _n	Low speed torque M ₀	Low speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}	Frequency at max speed	Moment of Inertia J
	[kW]	[Nm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[Hz]	[kgmm ²]
400VAC power supply - three-phased										
NK210E_T	0.385	0.613	0.9	1	1.3	3.4	5.4	6000	500	38
NK310E_P	0.689	1.65	1.2	2	1.4	6.6	5.6	4000	333	79
NK420E_V	0.753	3.6	1.2	4	1.4	13.4	5.5	2000	167	290
NK420E_P	1.31	3.14	2.2	4	2.7	13.4	10.9	4000	333	290
NK430E_V	0.563	5.38	1.4	5.5	1.4	18.7	5.6	1000	83	426
NK430E_P	1.5	4.77	2.5	5.5	2.8	18.7	11.3	3000	250	426
NK430E_L	1.8	4.29	3.0	5.5	3.8	18.7	15.1	4000	333	426
NK620E_V	1.57	7.52	2.7	8	2.8	26.6	11.3	2000	167	980
NK620E_R	2.52	6.17	4.3	8	5.3	26.6	21.2	3900	325	980
NK620E_J	2.45	4.1	5.6	8	9.9	26.6	39.5	5700	475	980
NK630E_V	1.53	10.8	2.4	12	2.6	39.9	10.5	1350	113	1470
NK630E_R	2.64	9.34	4.2	12	5.3	39.9	21.0	2700	225	1470
NK630E_N	3.18	7.6	5.3	12	7.9	39.9	31.7	4000	333	1470
NK820E_X	2.93	14.7	4.8	16	5.2	49.9	20.3	1900	158	3200
NK820E_R	5.29	12.9	9.1	16	11.0	49.9	43.2	3900	325	3200
NK840E_Q	5.09	23.2	8.5	28	10.1	91.8	39.9	2100	175	6200
NK840E_K	6.8	18.6	11.5	28	16.8	91.8	66.5	3500	292	6200
NK860E_J	7.48	27.5	12.7	41	18.5	136.0	74.0	2600	217	9200
400 VAC power supply - three-phased - water cooled										
NK310W_F	3.8	2.5	7.4	3.1	8.9	5.89	18.0	15000	1250	79
NK420W_D	4.9	4.64	12.6	6.1	16.3	12.6	36.4	12000	1000	290
NK430W_D	7.4	7.26	14.1	9.6	18.3	18.9	38.9	10000	833	420
NK620W_C	7.7	10.7	20.7	15	29	23.5	48.0	10000	833	980
NK630W_D	11.8	17.8	31.2	23	40.1	38.7	72.8	8000	667	1470
NK820W_G	12.6	19	35.2	24	44.1	37.9	75.0	8000	667	3200
NK840W_D	26.4	42.7	52.7	53	65.3	75.8	100.0	6500	542	6200
NK860W_D	34.8	83.2	64.6	90	70.2	140	123.2	4000	333	9200

Associated Drives

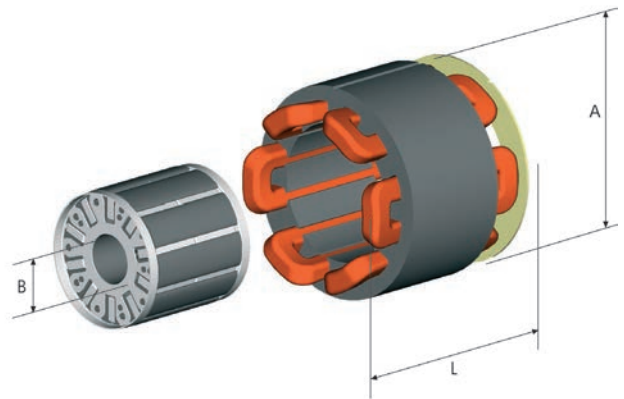
Motor	Compax3	PSD1	SLVD-N	AC890	AC30
230 VAC power supply - single or three-phased					
NK110E_P..	C3S025V2..	PSD1SW1200	SLVD1N	890SD-231300B...	-
NK210E_T..	C3S025V2..	PSD1SW1200	SLVD2N	890SD-231300B...	-
NK210E_P..	C3S025V2..	PSD1SW1200	SLVD2N	890SD-231300B...	-
NK310E_P..	C3S025V2..	PSD1SW1200	SLVD2N	890SD-231300B...	-
NK310E_K..	C3S025V2..	PSD1SW1200	SLVD2N	890SD-231550B...	-
NK420E_P..	C3S063V2..	PSD1SW1300	SLVD5N	890SD-231550B...	-
NK420E_J..	C3S063V2..	-	SLVD5N	890SD-231700B...	-
NK430E_J..	C3S063V2..	PSD1SW1300	SLVD7N	890SD-231700B...	-
NK430E_F..	C3S100V2..	-	SLVD7N	890SD-232165B...	-
NK620E_R..	C3S063V2..	PSD1SW1300	SLVD7N	890SD-231700B...	-
NK620E_J..	C3S100V2..	-	SLVD10N	890SD-232165B...	-
NK630E_R..	C3S063V2..	-	SLVD7N	890SD-231700B...	-
NK630E_K..	C3S100V2..	-	SLVD10N	890SD-232165B...	-
NK630E_G..	C3S150V2..	-	SLVD15N	890SD-232240C...	-
NK820E_L..	-	-	-	890SD-232240C...	-
NK840E_J..	-	-	-	890SD-232240C...	-
NK860E_F..	-	-	-	890SD-232300C...	-
NK860E_D..	-	-	-	-	-
400 VAC power supply - three-phased					
NK210E_T..	C3S015V4..	PSD1MW1300	-	890SD-531450B...	31V4-D0004-B...
NK310E_P..	C3S015V4..	PSD1MW1300	-	890SD-531450B...	31V4-D0004-B...
NK420E_V..	C3S015V4..	PSD1MW1300	-	890SD-531450B...	31V4-D0004-B...
NK420E_P..	C3S038V4..	PSD1MW1300	-	890SD-531450B...	31V4-D0004-B...
NK430E_V..	C3S015V4..	PSD1MW1300	-	890SD-531450B...	31V4-D0004-B...
NK430E_P..	C3S038V4..	PSD1MW1300	-	890SD-531450B...	31V4-D0004-B...
NK430E_L..	C3S038V4..	PSD1MW1300	-	890SD-532100B...	31V4-D0005-B...
NK620E_V..	C3S038V4..	PSD1MW1300	-	890SD-531450B...	31V4-D0004-B...
NK620E_R..	C3S075V4..	PSD1MW1400	-	890SD-532100B...	31V4-D0006-B...
NK620E_J..	C3S150V4..	PSD1MW1600	-	890SD-532160B...	31V4-D0006-B...
NK630E_V..	C3S038V4..	PSD1MW1300	-	890SD-531450B...	31V4-D0004-B...
NK630E_R..	C3S075V4..	PSD1MW1400	-	890SD-532100B...	31V4-D0006-B...
NK630E_N..	C3S150V4..	PSD1MW1600	-	890SD-532160B...	31V4-D0010-B...
NK820E_X..	C3S075V4..	PSD1MW1400	-	890SD-532100B...	31V4-D0006-B...
NK820E_R..	C3S150V4..	PSD1MW1600	-	890SD-532160B...	31V4-D0012-B...
NK840E_Q..	C3S150V4..	PSD1MW1600	-	890SD-532160B...	31V4-D0012-B...
NK840E_K..	C3S300V4..	PSD1MW1800	-	890SD-532240C...	31V4-E0023-B...
NK860E_J..	C3S300V4..	PSD1MW1800	-	890SD-532240C...	31V4-E0023-B...
400 VAC power supply - three-phased - water cooled					
NK310W_F..	C3S150V4..	PSD1MW1600	-	890SD-532160B...	31V4-E0016-B...
NK420W_D..	C3S300V4..	PSD1MW1800	-	890SD-532240C...	31V4-E0023-B...
NK430W_D..	C3S300V4..	PSD1MW1800	-	890SD-532240C...	31V4-F0032-B...
NK620W_C..	C3S300V4..	PSD1MW1800	-	890SD-53230SC...	31V4-G0045-B...
NK630W_D..	C3H050V4..	-	-	890SD-532590D...	31V4-G0060-B...
NK820W_G..	C3H050V4..	-	-	890SD-532590D...	31V4-G0060-B...
NK840W_D..	C3H090V4..	-	-	890SD-432730E...	31V4-H0105-B...
NK860W_D..	C3H090V4..	-	-	890SD-432730E...	31V4-G0073-B...

Dimensions

Motor	Dimensions [mm]		
	A	B	L
NK110	42	9	62
NK210	56	12	65



Motor	Dimensions [mm]		
	A	B	L
NK310	62	14	77
NK420	80	20	94
NK430			119
NK620	111	26	106
NK630			135
NK820	143	40	119
NK840			179
NK860			242
NK310W	82	14	85
NK420W	100	20	102
NK430W			127
NK620W	131	26	114
NK630W			143
NK820W	163	40	120
NK840W			180
NK860W			243



Option

Several types of sensor are available for use with servo motor kits depending upon the needs of the application, such as environment, resolution and accuracy: resolver, high resolution sensor, optical encoder...

Order Code

NK Series

	1	2	3	4	5	6	7
Order example	NK110	E	A	K	R1	0	00

1 Motor type	NK110 NK210 NK310 ...	see table "Technical Data"	4 Motor type	P T J ...	see table "Technical Data"
2 Cooling	E W	Natural cooling Water cooling	5 Fix code	R1	
3 Feedback sensors/Motors	A K P Q R S	2 pole resolver Without sensor (standard) Absolute single-turn encoder HIPERFACE DSL SIL2 - EKS36 Absolute multi-turn encoder HIPERFACE DSL SIL2 - EKM36 Absolute single-turn HIPERFACE encoder 128 ppt SKS36 Absolute multi-turn HIPERFACE encoder 128 ppt SKM36	6 Thermal protection + Brake/Motors	0 1 2 6	Without (standard) PTC (NK3-8 only) Thermo switch (NK3-8 only) KTY (NK3-8 only)
			7 Mechanical characteristics/Motors	00 XX	Standard Customization (on request)

Feedback Sensors

2 poles resolver - option A

- Accuracy: $\pm 10'$ max
- Transformation ratio: $0.5 \pm 5\%$
- Max. operating speed: $17\,000\text{ min}^{-1}$
- Working temperature range: $-55\dots+155\text{ }^\circ\text{C}$
- Compatibility: NK1 to NK8

Single turn / Multiturn absolute encoder HIPERFACE SKS/SKM36 - option R/S

- Number of sine/cosine periods per revolution: 128
- Absolute position per revolution: 4096 (12 bits)
- Number of absolutely encodable revolutions: 4096 (SKM36)
- Max. operating speed SKS36: $12\,000\text{ min}^{-1}$
- Max. operating speed SKM36: $9\,000\text{ min}^{-1}$
- Working temperature range: $-20\dots+110\text{ }^\circ\text{C}$
- Compatibility: NK2 to NK8

Single turn / Multiturn absolute encoder HIPERFACE EKS/EKM36 - option P/Q

- Up to 20 bit resolution per revolution
- Number of absolutely encodable revolutions: 4096 (EKM)
- SIL2 certified
- Max. operating speed: $12\,000\text{ min}^{-1}$ (EKS), $9\,000\text{ min}^{-1}$ (EKM)
- Working temperature range: $-20\dots+115\text{ }^\circ\text{C}$
- Compatibility: NK1 to NK8

Frameless Servo Motor - K Series

Overview

Description

K Series frameless motor are the ideal solution for machine designs that require high performance at low voltages. Kit motors allow for direct integration without any mechanical transmission device, eliminating parts that add size and complexity. Use of Frameless Kit Motors results in a smaller, more reliable system.



Advantages

- Low voltage
- Compact size (length)
- Large hollow shaft
- Integrated Hall Effect sensor as an option
- Global cost reduction
- Increased reliability and reduced maintenance
- High dynamic performance and power density: increased productivity and reduced size when compared to induction motors
- Simple, light and compact machine design
- No coupling systems needed
- Greater stiffness and robustness of the system
- Low noise level
- Integration assistance available

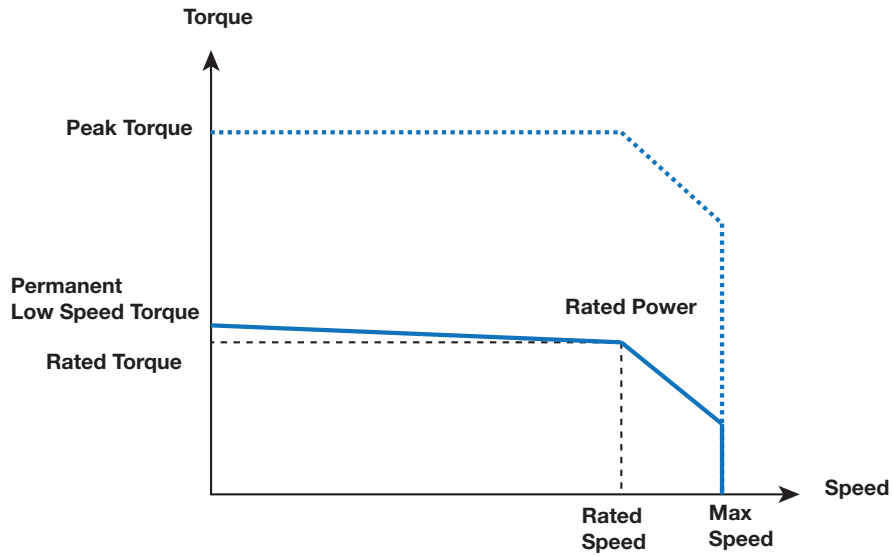
Application

- Medical
- Hand Tool
- Packaging Machinery
- Rotating Table
- Special Machines
- Pump
- Compressor

Technical Characteristics - Overview

Cooling	Natural cooling
Power	0.06...2 kW
Torque	0.07...23 Nm
Max Speed	10 000 min ⁻¹
Number of poles	4 (K32) / 6 (K44) / 8 (K64) / 12 (K89) / 18 (K178)
Diameter	32 – 44 – 64 – 89 – 178 mm
Power supply	12 - 24 – 48 – 96 VDC 240VAC only for size K178

Technical Data



Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}	Frequency at max speed	Moment of Inertia J
	[kW]	[Nm]	[min ⁻¹]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[Hz]	[kgmm ²]
24 VDC power supply											
K032050-7Y_	0.059	0.072	7795	3.1	0.074	3.2	0.26	11.2	10000	333	0.32
K032050-8Y_	0.042	0.074	5473	2.5	0.075	2.5	0,26	8.8	8155	272	0.32
K032050-EY_	0.020	0.074	2515	1.6	0.075	1.6	0,26	5.5	5126	171	0.32
K032100-7Y_	0.049	0.12	3744	2.7	0.13	2.7	0.44	9.6	5320	177	0.63
K032100-8Y_	0.034	0.13	2572	2.1	0.13	2.2	0.45	7.6	4111	137	0.63
K032100-EY_	0.014	0.13	1071	1.3	0.13	1.4	0.45	4.7	2584	86	0.63
K032200-7Y_	0.036	0.20	1704	2.2	0.21	2.2	0,72	7.8	2649	88	1.3
K032200-8Y_	0.024	0.21	1118	1.7	0.21	1.7	0.73	6.1	2047	68	1.3
K032200-EY_	0.008	0.21	365	1.1	0.21	1.1	0.73	3.9	1287	43	1.3
K044050-7Y_	0.073	0.19	3763	4.1	0.19	4,2	0.66	14.6	5361	268	1.4
K044050-8Y_	0.053	0.19	2723	3.3	0.19	3,3	0.66	11.6	4288	214	1.4
K044050-EY_	0.023	0.19	1173	2.1	0.19	2.1	0.66	7.3	2680	134	1.4
K044100-7Y_	0.061	0.33	1771	3.6	0.33	3.6	1.16	12.6	2657	133	2.9
K044100-8Y_	0.043	0.33	1250	2.8	0.33	2.9	1.15	10.1	2126	106	2.9
K044100-EY_	0.016	0.33	474	1.8	0.33	1.8	1.16	6.3	1329	66	2.9
K044200-7Y_	0.045	0.53	804	2.9	0.54	2.9	1.88	10.3	1334	67	5.8
K044200-8Y_	0.030	0.53	539	2.3	0.53	2.3	1.87	8.2	1068	53	5.8
K044200-EY_	0.008	0.54	145	1.5	0.54	1.5	1.88	5.1	667	33	5.8

Technical Data

Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}	Frequency at max speed	Moment of Inertia J
	[kW]	[Nm]	[min ⁻¹]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[Hz]	[kgmm ²]
24 VDC power supply											
K064050-8Y_	0.058	0.53	1053	4.0	0.53	4.0	1.86	14.0	1830	122	9
K064050-9Y_	0.039	0.53	700	3.2	0.53	3.2	1.85	11.1	1464	98	9
K064050-EY_	0.022	0.53	396	2.5	0.53	2.5	1.87	8.8	1144	76	9
K064100-8Y_	0.047	0.93	484	3.5	0.94	3.5	3.29	12.3	915	61	18
K064100-9Y_	0.030	0.93	305	2.8	0.93	2.8	3.28	9.8	732	49	18
K064100-EY_	0.015	0.94	152	2.2	0.94	2.2	3.30	7.7	572	38	18
K064200-8Y_	0.033	1.56	204	2.9	1.57	2.9	5.50	10.3	457	30	36
K064200-9Y_	0.018	1.56	113	2.3	1.56	2.3	5.47	8.2	366	24	36
K064200-EY_	0.006	1.57	36	1.8	1.57	1.8	5.51	6.5	286	19	36
K089050-6Y_	0.117	1.33	839	7.5	1.34	7.6	4.72	26.6	1373	137	37
K089050-7Y_	0.082	1.32	597	6.0	1.33	6.1	4.66	21.3	1115	112	37
K089050-9Y_	0.030	1.31	216	3.8	1.32	3.9	4.62	13.5	714	71	37
K089100-6Y_	0.098	2.35	396	6.6	2.37	6.7	8.32	23.4	686	69	78
K089100-7Y_	0.066	2.33	272	5.3	2.34	5.4	8.22	18.8	558	56	78
K089100-9Y_	0.019	2.32	77	3.4	2.32	3.4	8.15	11.9	357	36	78
K089200-4Y_	0.153	3.9	379	8.8	3.9	8.9	13.7	31.3	558	56	150
K089200-7Y_	0.045	3.9	111	4.4	3.9	4.5	13.7	15.6	279	28	150
K089200-9Y_	0.004	3.9	11	2.8	3.9	2.8	13.6	9.9	178	18	150
K178050-6Y_	0.217	7.0	297	13.9	7.0	14.0	26.8	53.3	486	73	470
K178050-8Y_	0.100	7.0	137	8.8	7.0	8.8	26.7	33.6	307	46	470
K178050-EY_	0.024	7.0	33	5.6	7.0	5.6	26.6	21.2	194	29	470
K178100-8Y_	0.077	13.6	54	8.6	13.7	8.6	48.0	30.2	153	23	920
K178100-9Y_	0.035	13.7	24	6.8	13.7	6.8	48.0	23.9	121	18	920
K178200-8Y_	0.047	23.2	19	7.3	23.2	7.3	81.5	25.7	77	12	1800
K178200-9Y_	0.009	23.2	4	5.8	23.2	5.8	81.6	20.3	61	9	1800
240 VAC power supply											
K178050-6Y_	1.43	4.6	3000	9.1	7.0	14.0	26.8	53.3	3000	450	470
K178050-8Y_	1.43	4.6	3000	5.7	7.0	8.8	26.7	33.6	3000	450	470
K178050-EY_	1.39	5.4	2477	4.3	7.0	5.6	26.6	21.2	2818	423	470
K178100-8Y_	2.05	9.8	2006	6.1	13.7	8.6	48.0	30.2	2225	334	920
K178100-9Y_	1.82	11.3	1531	5.7	13.7	6.8	48.0	23.9	1761	264	920
K178100-EY_	1.51	12.1	1192	4.8	13.6	5.4	47.8	19.1	1409	211	920
K178200-8Y_	2.00	19.2	994	6.1	23.2	7.3	81.5	25.7	1112	167	1800
K178200-9Y_	1.66	20.6	768	5.1	23.2	5.8	81.6	20.3	881	132	1800
K178200-EY_	1.34	21.3	601	4.3	23.1	4.6	81.3	16.2	705	106	1800

Other power voltages are possible – see technical manual or consult us

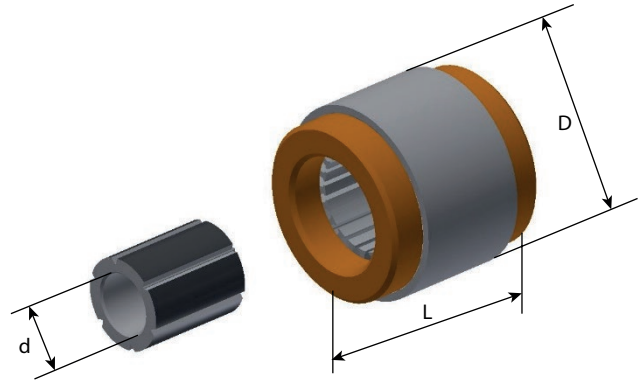
Associated Drives

Up to 80 VDC bus voltage			
Motor	VIX	Motor	VIX
	Low voltage servo drive		Low voltage servo drive
K032050-7Y_	VIX 500 IE	K064050-8Y_	VIX 500 IE
K032050-8Y_	VIX 500 IE	K064050-9Y_	VIX 500 IE
K032050-EY_	VIX 250 IE	K064050-EY_	VIX 500 IE
K032100-7Y_	VIX 500 IE	K064100-8Y_	VIX 500 IE
K032100-8Y_	VIX 250 IE	K064100-9Y_	VIX 500 IE
K032100-EY_	VIX 250 IE	K064100-EY_	VIX 250 IE
K032200-7Y_	VIX 250 IE	K064200-8Y_	VIX 500 IE
K032200-8Y_	VIX 250 IE	K064200-9Y_	VIX 250 IE
K032200-EY_	VIX 250 IE	K064200-EY_	VIX 250 IE
K044050-7Y_	VIX 500 IE	K089050-6Y_	-
K044050-8Y_	VIX 500 IE	K089050-7Y_	-
K044050-EY_	VIX 250 IE	K089050-9Y_	VIX 500 IE
K044100-7Y_	VIX 500 IE	K089100-6Y_	-
K044100-8Y_	VIX 500 IE	K089100-7Y_	-
K044100-EY_	VIX 250 IE	K089100-9Y_	VIX 500 IE
K044200-7Y_	VIX 500 IE	K089200-4Y_	-

230 VAC power supply - single or three-phased		
Motor	Compax3	AC890
K178050-6Y_	C3S150V2...	890SD-232240C...
K178050-8Y_	C3S100V2...	890SD-232165B...
K178050-EY_	C3S100V2...	890SD-232110B...
K178100-8Y_	C3S100V2...	890SD-232165B...
K178100-9Y_	C3S100V2...	890SD-232110B...
K178100-EY_	C3S063V2...	890SD-232110B...
K178200-8Y_	C3S100V2...	890SD-232110B...
K178200-9Y_	C3S063V2...	890SD-232110B...
K178200-EY_	C3S063V2...	890SD-232110B...

Dimensions

Motor	Dimensions [mm]		
	D	d	L
K032050	31.76	7.62	25.9
K032100			38.6
K032200			64.0
K044050	44.45	13.96	29.15
K044100			41.85
K044200			67.25
K064050	63.5	23.51	32.4
K064100			45.1
K064200			70.5
K089050	88.9	40.63	33.0
K089100			45.7
K089200			71.1
K178050	177.8	95.74	53.95
K178100			66.65
K178200			92.05



Order Code

K Series

	1	2	3	4	5	6		7
Order example	K	32	50	E	Y	1	-	CE

1 Motor Series	K
2 Motor Size	32 see table "Technical Data"
	44
	...
3 Motor Stack Length	50 0.50 in
	100 1.00 in
	200 2.00 in

4 Winding	7
	8 see table "Technical Data"
	...
5 Connection	Y Star connection
6 Commutation - Hall effect sensor	1 Without Hall effect sensor
	2 With Hall effect sensor
7 Certification	CE CE Conformity



Frameless Spindle Servo Motor - SKW Series

Overview

Description

SKW motors are compact and highly dynamic permanent magnet synchronous servomotors for mono and multi spindle applications up to 21 kW. Delivered as separate components to be integrated into the mechanical structure of the machine, SKW motors offer constant torque capabilities over a wide speed range with very small dimensions.



Advantages

- Compactness (small external diameter)
- Large hollow shaft
- Increased internal diameter compared to other solutions: increased rigidity and greater capacity for bar stock handling in automatic lathes
- High resistance (Oil proof)
- Compatible with cost effective sensorless drives from Parker and third parties
- Accurate speed for the spindle
 - for the best surface finish
 - for a shorter cycle time
 - for a longer tool life time
- Cold permanent magnet technology: reduced heating in the bearings compared to induction motors, low dilatation effect
- Global cost reduction
- Increased reliability and reduced maintenance
- High dynamic performance and power density: increased productivity and reduced size when compared to induction motors
- Simple, light and compact machine design
- No coupling systems needed
- Greater stiffness and robustness of the system
- Low noise level
- Integration assistance available

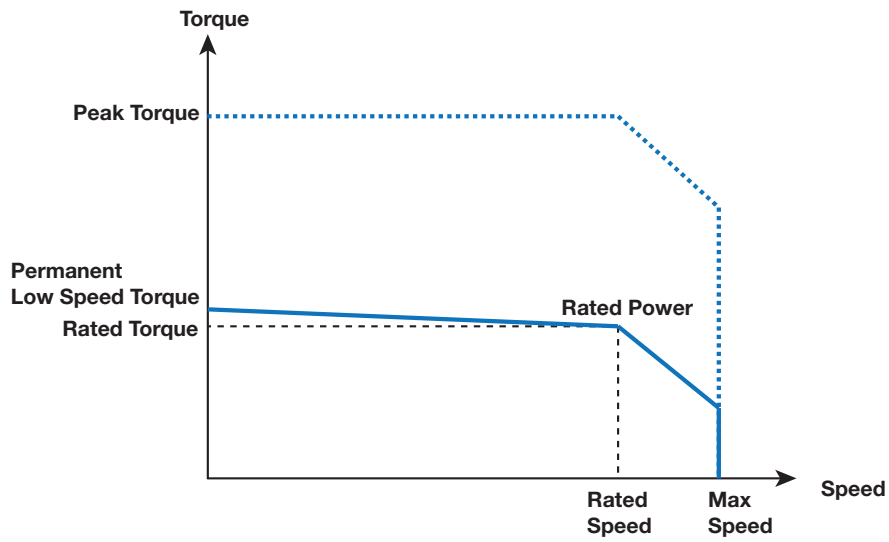
Applications

- Machine Tools (electro spindle)
- Multi Spindle Lathes

Technical Characteristics - Overview

Cooling	Water cooling
Power	0.2...7.5 kW
Torque	4...36 Nm
Speed	12 000 min ⁻¹
Number of poles	10
Diameter	73 – 82 – 91 - 96 mm
Power supply	400 VAC

Technical Data



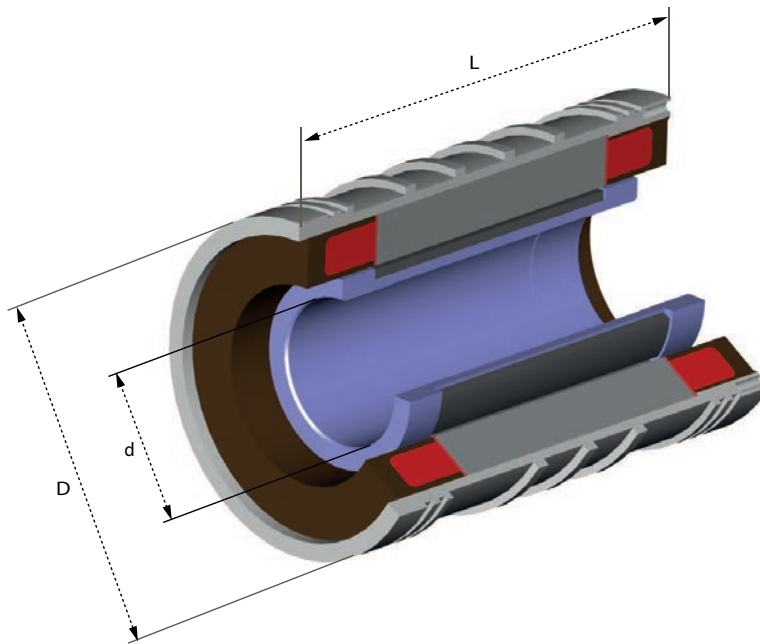
Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M _o	Low speed Current I _o	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}	Frequency at max speed	Moment of Inertia J
	[kW]	(Nm)	[min ⁻¹]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[Hz]	[kgmm ²]
400 VAC power supply - three-phased											
SKW073-050-LAM	3.1	4.0	7470	10.4	4.0	10.2	8.3	20.0	12000	1000	170
SKW073-100-LAM	6.3	8.8	6810	21.1	10.0	23.2	17.8	40.0	12000	1000	280
SKW073-150-LAM	9.7	13.5	6820	27.3	15.4	30.4	28.4	53.8	11000	917	390
SKW073-200-LAM	13.0	19.3	6450	40.9	21.8	45.2	37.8	75.8	11000	917	500
SKW082-046-LAM	5.1	4.0	12000	10.2	4.4	10.7	8.6	20.0	12000	1000	370
SKW082-092-LAM	10.7	9.3	11000	21.6	10.1	22.8	23.0	48.6	11000	917	670
SKW082-138-LAM	15.3	14.6	10000	30.6	15.8	32.3	31.0	60.0	10000	833	970
SKW082-184-LAM	21.2	20.3	10000	44.7	22.2	47.7	44.2	90.0	10000	833	1300
SKW091-046-LAM	6.9	5.5	12000	14.3	6.5	16.3	10.7	28.2	12000	1000	370
SKW091-092-LAM	15.4	12.2	12000	29.4	15.1	35.4	23.0	55.6	12000	1000	670
SKW091-138-LAM	20.8	19.9	10000	40.1	23.8	47.1	36.1	73.3	10000	833	970
SKW091-184-LAM	28.0	26.8	10000	56.8	31.9	66.4	48.1	103.4	10000	833	1300
SKW096-046-LAM	3.6	6.9	5010	12.9	7.1	13.1	13.7	26.0	10000	833	1000
SKW096-092-LAM	7.8	16.3	4570	28.1	16.8	28.7	33.8	60.0	10000	833	1800
SKW096-138-LAM	11.7	26.4	4240	41.4	27.4	42.4	54.3	87.9	9000	750	2500
SKW096-184-LAM	16.2	36.0	4300	59.6	37.4	61.2	70.6	120.0	9000	750	3300

Associated Drives

Product Code	Drive Reference		
	AC30	AC890	Compax3
SKW073_050LAM	31V-4E0023-B... (16A@ , OL 180% /3s)	890SD-532240C (16A@8kHz, OL 200%/4s)	C3S150V4...
SKW073_100LAM	31V-4F0038-B... (32A@ , OL 180% / 3s)	890SD-532390D (26A@8kHz, OL 200%/4s)	C3S300V4...
SKW073_150LAM	31V-4G0060-B... (45A@ , OL 180% / 3s)	890SD-532450D (28A@8kHz, OL 200%/4s)	C3S300V4...
SKW073_200LAM	31V-4H0105-B... (87A@ , OL 180% / 3s)	890SD-532590D (50A@4kHz, OL 200%/4s)	C3H050V4...
SKW082_046LAM	31V-4E0023-B... (16A@ , OL 180% /3s)	890SD-532240C (16A@8kHz, OL 200%/4s)	C3S150V4...
SKW082_092LAM	31V-4F0038-B... (32A@ , OL 180% / 3s)	890SD-532390D (26A@8kHz, OL 200%/4s)	C3S300V4...
SKW082_138LAM	31V-4G0060-B... (45A@ , OL 180% / 3s)	890SD-532450D (38A@4kHz, OL 200%/4s)	C3S300V4...
SKW082_184LAM	31V-4H0105-B... (87A@ , OL 180% / 3s)	890SD-532590D (50A@4kHz, OL 200%/4s)	C3H050V4...
SKW091_046LAM	31V-4F0032-B... (23A@ , OL 180% / 3s)	890SD-532240C (16A@8kHz, OL 200%/4s)	C3S300V4...
SKW091_092LAM	31V-4G0073-B... (60A@ , OL 180% / 3s)	890SD-532450D (38A@4kHz, OL 200%/4s)	C3H050V4...
SKW091_138LAM	31V-4H0105-B... (87A@ , OL 180% / 3s)	890SD-532450D (38A@4kHz, OL 200%/4s)	C3H050V4...
SKW091_184LAM	31V-4H0145-B... (145A@ , OL 110% / 60s)	890SD-432730E (76A@4kHz, OL110%/60s)	C3H090V4...
SKW096_046LAM	31V-4F0032-B... (23A@ , OL 180% / 3s)	890SD-532240C (16A@8kHz, OL 200%/4s)	C3S150V4...
SKW096_092LAM	31V-4G0060-B... (45A@ , OL 180% / 3s)	890SD-532450D (28A@8kHz, OL 200%/4s)	C3S300V4...
SKW096_138LAM	31V-4G0073-B... (60A@ , OL 180% / 3s)	890SD-532590D (50A@4kHz, OL 200%/4s)	C3H050V4...
SKW096_184LAM	31V-4H0145-B... (145A@ , OL 110% / 60s)	890SD-432730E (76A@4kHz, OL110%/60s)	C3H090V4...

Dimensions

Product Code	Dimensions [mm]		
	Total length L	Hollow shaft diameter d	External diameter D
SKW073_050LAM	114	35	80
SKW073_100LAM	164	35	80
SKW073_150LAM	219	35	80
SKW073_200LAM	274	35	80
SKW082_046LAM	104	44	96
SKW082_092LAM	150	44	96
SKW082_138LAM	201	44	96
SKW082_184LAM	252	44	96
SKW091_046LAM	104	44	102
SKW091_092LAM	155	44	102
SKW091_138LAM	206	44	102
SKW091_184LAM	262	44	102
SKW096_046LAM	104	60	108
SKW096_092LAM	155	60	108
SKW096_138LAM	206	60	108
SKW096_184LAM	262	60	108



Order Code

SKW Series

	1	2	3	4	5	6	7	8	9
Order example	SK	W	073	S	050	LAM	R	3	000

1	Product series	
	SK	Frameless permanent magnet servomotors
2	Cooling method	
	W	Water cooling (standard)
3	External diameter without water jacket	
	073	73 mm
	082	82 mm
	091	91 mm
	096	96 mm
4	Element	
	-	Motor (stator + rotor)
	S	Stator
	R	Rotor
5	Active part length	
	050	See table "Dimensions"
	...	
6	Torque/Speed characteristics	
	LAM	See table "Technical Data"
	...	(other characteristics on request)
7	Unused character	
	R	
8	Mechanical option	
	2	Without water jacket, with hub (only on request)
	3	With water jacket, with hub (standard)
9	Option	
	000	Standard motor



Frameless High Speed Motor - HKW Series

Overview

Description

HKW motors are high performance permanent magnet synchronous servomotors for spindle applications up to 276 kW.

Delivered as separate components to be integrated into the mechanical structure of the machine, HKW motors benefit from the use of field weakening, in order to achieve both high torque at slow speed, and very high maximum speed at constant power.



Advantages

- High speed
- High power
- Large hollow shaft
- High resistance (oil proof on request)
- Compatible with Parker drives and third parties
- Accurate speed for the spindle
 - for the best surface finish
 - for a shorter cycle time
 - for a longer tool life time
- Cold permanent magnet technology: reduced heating in the bearings compared to induction motors, low dilatation effect
- Global cost reduction
- Increased reliability and reduced maintenance
- High dynamic performance and power density: increased productivity and reduced size when compared to induction motors
- Simple, light and compact machine design
- No coupling systems needed
- Greater stiffness and robustness of the system
- Low noise level
- Integration assistance available

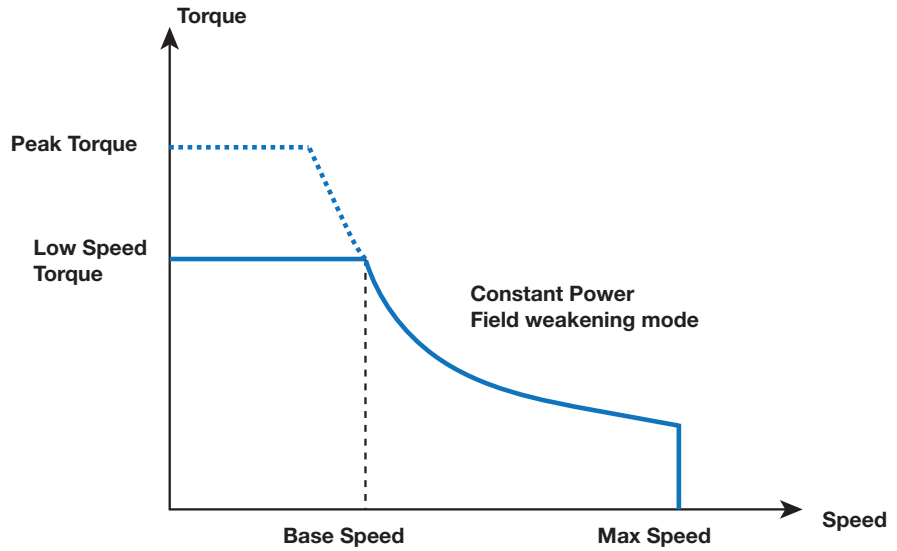
Applications

- Machines Tools
- Special Machines
- Textile Machines
- Centrifuges
- Compressors

Technical Characteristics - Overview

Cooling	Water cooling
Power	2.3...276 kW
Torque	4.5...1 250 Nm
Speed	50 000 min ⁻¹
Number of poles	4 - HKW085 6 - HKW108 / HKW155 / HKW195 8 - HKW242 16 - HKW310
Diameter	85 - 108 - 155 - 195 - 242 - 310mm

Technical Data



Motor	S1 Power Ps1	Max. Speed Nmax	Frequency at max speed	Low speed torque Mo	Low speed Current Io	Peak Torque M peak	Peak Current I peak	Base Speed Nb	Moment of Inertia J
	[kW]	[min ⁻¹]	[Hz]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[kgm ²]
400 VAC power supply - three-phased - Water cooled									
HKW085_066BAU	2.3	50000	1667	4.9	6.8	7.3	13.5	4480	0.00049
HKW085_066BAP	4.9	50000	1667	4.5	12.2	7.3	27	10400	0.00049
HKW085_066BAK	10.2	50000	1667	4.2	22.4	7.3	54	23200	0.00049
HKW085_099BAQ	4.7	50000	1667	7.4	12.6	11	25.1	6070	0.00068
HKW085_099BAL	10	50000	1667	7.3	24.7	11	50.2	13100	0.00068
HKW085_099BAI	15.6	50000	1667	6.8	35	11	78.1	21900	0.00068
HKW108_080CAN	4.9	30000	1500	10	9.6	15	14.5	4680	0.00082
HKW108_080CAI	10.4	30000	1500	10	19.2	15	28.9	9930	0.00082
HKW108_080CAF	16	30000	1500	10	28.9	15	43.4	15300	0.00082
HKW108_140CAI	10.2	30000	1500	20	21.9	30	33	4870	0.00143
HKW108_140CAF	15.6	30000	1500	20	32.9	30	49.6	7450	0.00143
HKW108_140CAD	25	30000	1500	20	49.4	30	74.3	11900	0.00143
HKW108_200CAJ	9	30000	1500	30	20.7	45	31.2	2870	0.00204
HKW108_200CAF	15.5	30000	1500	30	34.5	45	52	4940	0.00204
HKW108_200CAD	25	30000	1500	30	51.8	45	78	7960	0.00204
HKW155_080CRR	8.8	24000	1200	22	18.2	33	27.6	3820	0.0052
HKW155_080CRP	14	24000	1200	22	28.5	33	43.1	6080	0.0052
HKW155_080CAR	10.3	18000	900	28	19	42	29.4	3510	0.0052
HKW155_080CAP	16	18000	900	28	29.6	42	46	5500	0.0052
HKW155_120CAR	10	24000	1200	48	21.8	75	36.3	1990	0.0078
HKW155_120CAK	23	24000	1200	48	49.5	75	82.5	4600	0.0078
HKW155_120CAH	32	24000	1200	46	65.1	75	113	6640	0.0078
HKW155_120CAF	43	24000	1200	44	82.9	75	151	9330	0.0078
HKW155_160CAR	10	24000	1200	68	23.2	100	36.3	1410	0.0104
HKW155_160CAP	16	24000	1200	68	36.3	100	56.7	2250	0.0104
HKW155_160CAH	32	24000	1200	68	72.6	100	113	4500	0.0104
HKW155_160CAF	44	24000	1200	66	93.8	100	151	6370	0.0104
HKW155_160CAD	63	24000	1200	58	123	100	227	10300	0.0104
HKW195_120CAV	7.2	18000	900	80	19.4	120	35.1	860	0.016
HKW195_120CAP	16	20000	1000	80	42.1	120	76	1910	0.016
HKW195_120CAI	34	20000	1000	80	84.1	120	152	4050	0.016
HKW195_120CAF	52	20000	1000	75	117	120	228	6620	0.016
HKW195_120CAE	62	20000	1000	75	140	120	274	7900	0.016

Motor	S1 Power Ps1	Max. Speed Nmax	Frequency at max speed	Low speed torque Mo	Low speed Current Io	Peak Torque M peak	Peak Current I peak	Base Speed Nb	Moment of Inertia J
	[kW]	[min ⁻¹]	[Hz]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[kgm ²]
400 VAC power supply - three-phased - Water cooled									
HKW195_180CAT	10	16000	800	120	26.1	180	47.2	795	0.024
HKW195_180CAP	16	20000	1000	120	42.1	180	76	1280	0.024
HKW195_180CAM	23	20000	1000	120	58.2	180	105	1830	0.024
HKW195_180CAJ	31	20000	1000	120	75.7	180	137	2470	0.024
HKW195_180CAF	52	20000	1000	120	126	180	228	4140	0.024
HKW195_180CAC	101	20000	1000	110	227	180	456	8770	0.024
HKW195_300CAM	23	20000	1000	200	58.2	300	105	1100	0.04
HKW195_300CAJ	30	20000	1000	200	75.7	300	137	1440	0.04
HKW195_300CAF	52	20000	1000	200	126	300	228	2490	0.04
HKW195_300CAE	63	20000	1000	200	151	300	274	3010	0.04
HKW195_300CAC	105	20000	1000	200	252	300	456	5010	0.04
HKW195_300CAX	175	20000	1000	200	454	300	821	8350	0.04
HKW195_300CBU	127	20000	1000	270	289	350	419	1500	0.04
HKW195_360CBU	135	20000	1000	340	308	420	419	3790	0.048
HKW195_420CBU	126	20000	1000	400	311	490	419	3000	0.056
HKW195_420CBX	230	18000	900	390	542	490	754	5630	0.056
HKW242_225DAN	15	11000	733	280	37.2	360	49,9	510	0.105
HKW242_225DAF	33	13000	867	280	74.4	360	99,7	1130	0.105
HKW242_225DAD	50	13000	867	280	112	360	150	1710	0.105
HKW242_225DAC	67	13000	867	275	146	360	199	2330	0.105
HKW242_225DAB	101	13000	867	260	206	360	299	3710	0.105
HKW242_375DAF	30	13000	867	480	76.8	600	99,7	600	0.175
HKW242_375DAD	49	13000	867	480	115	600	150	975	0.175
HKW242_375DAC	67	13000	867	480	154	600	199	1330	0.175
HKW242_375DAB	101	13000	867	480	230	600	299	2010	0.175
HKW242_375DAA	200	13000	867	460	439	600	598	4150	0.175
HKW242_375DBB	195	13000	867	620	465	800	653	3000	0.175
HKW242_375DBY	276	13000	867	585	578	800	870	4500	0.175
HKW242_375DBW	158	10000	667	630	316	800	435	2400	0.175
HKW310_200HAJ	37	8000	1067	600	87.1	900	141	590	0.23
HKW310_200HAH	46	8000	1067	580	105	900	177	760	0.23
HKW310_200HAE	77	8000	1067	575	166	900	282	1280	0.23
HKW310_200HAD	95	8000	1067	565	204	900	353	1610	0.23
HKW310_200HAC	115	8000	1067	550	265	900	471	2000	0.23
HKW310_300HAJ	35.4	8000	1067	940	91.2	1350	141	360	0.34
HKW310_300HAH	45	8000	1067	940	114	1350	177	460	0.34
HKW310_300HAE	76	8000	1067	930	180	1350	282	780	0.34
HKW310_300HAD	95	8000	1067	920	223	1350	353	990	0.34
HKW310_300HAC	120	8000	1067	900	290	1350	471	1270	0.34
HKW310_400HAJ	34	6000	800	1250	91	1800	141	260	0.45
HKW310_400HAH	44.5	8000	1067	1250	114	1800	177	340	0.45
HKW310_400HAF	62	8000	1067	1250	152	1800	235	475	0.45
HKW310_400HAE	75	8000	1067	1250	182	1800	282	575	0.45
HKW310_400HAD	94	8000	1067	1250	227	1800	353	720	0.45
HKW310_400HAC	120	8000	1067	1250	303	1800	471	910	0.45
HKW310_400HAY	230	8000	1067	1080	520	1800	942	2030	0.45
HKW310_500HBX	160	5000	667	1890	380	2700	569	810	0.56
HKW310_500HBB	200	6000	800	1880	472	2700	711	1030	0.56
HKW310_500HBY	270	7000	933	1840	616	2700	949	1400	0.56

Associated Drives

540 VDC voltage supply		
Motor	PARKER AC890SD	
	Drive	Speed limit ⁽¹⁾ N _{max} [min ⁻¹]
HKW085_066BAU	890SD-532160B0-B00-...	13800
HKW085_066BAP	890SD-232300C0-B00-...	27500
HKW085_066BAK	890SD-532450D0-B00-...	30000
HKW085_099BAQ	890SD-232300C0-B00-...	17000
HKW085_099BAL	890SD-532450D0-B00-...	30000
HKW085_099BAI	890SD-432730E0-0...	30000
HKW108_080CAN	890SD-232240C0-B00-...	9900
HKW108_080CAI	890SD-532390D0-B00-...	19800
HKW108_080CAF	890SD-532590D0-B00-...	20000
HKW108_140CAI	890SD-532390D0-B00-...	11300
HKW108_140CAF	890SD-532590D0-B00-...	17000
HKW108_140CAD	890SD-432870E0-0...	20000
HKW108_200CAJ	890SD-532390D0-B00-...	7100
HKW108_200CAF	890SD-532590D0-B00-...	11900
HKW108_200CAD	890SD-432870E0-0...	17800
HKW155_080CRR	890SD-232300C0-B00-...	8600
HKW155_080CRP	890SD-532450D0-B00-...	13500
HKW155_080CAR	890SD-532390D0-B00-...	7000
HKW155_080CAP	890SD-532450D0-B00-...	11000
HKW155_120CAR	890SD-532390D0-B00-...	4700
HKW155_120CAP	890SD-532450D0-B00-...	7300
HKW155_120CAK	890SD-432730E0-0...	10700
HKW155_120CAH	890SD-433105F...	14700
HKW155_120CAF	890SD-433156F...	19600
HKW155_160CAR	890SD-532390D0-B00-...	3500
HKW155_160CAP	890SD-532590D0-B00-...	5500
HKW155_160CAH	890SD-433105F...	11000
HKW155_160CAF	890SD-433156F...	14700
HKW155_160CAD	890SD-433316G...	20000
HKW195_120CAV	890SD-232300C0-B00-...	2400
HKW195_120CAP	890SD-432730E0-0...	5200
HKW195_120CAI	890SD-433156F...	10400
HKW195_120CAF	890SD-433316G...	15500
HKW195_120CAE	890SD-433361G...	18600
HKW195_180CAT	890SD-532450D0-B00-...	2100
HKW195_180CAP	890SD-432730E0-0...	3500
HKW195_180CAM	890SD-432870E0-0...	4800
HKW195_180CAJ	890SD-433156F...	6200
HKW195_180CAF	890SD-433316G...	10400
HKW195_180CAC	890SD-433520H...	20000
HKW195_300CAM	890SD-432870E0-0...	2900
HKW195_300CAJ	890SD-433156F...	3700
HKW195_300CAF	890SD-433316G...	6200
HKW195_300CAE	890SD-433361G...	7500
HKW195_300CAC	890SD-433520H...	12400
HKW195_300CAX	consult us	
HKW195_300CBU	890SD-433480H...	10300
HKW195_360CBU	890SD-433520H...	8600
HKW195_420CBU	890SD-433520H...	7400
HKW195_420CBX	consult us	

(1) Due to the back emf or the maximal drive frequency

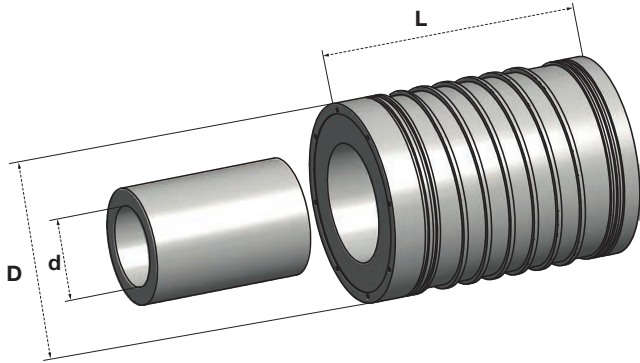
Associated Drives

540 VDC voltage supply		
Motor	PARKER AC890SD	
	Drive	Speed limit ⁽¹⁾ N _{max} [min ⁻¹]
HKW242_225DAN	890SD-532590D0-B00-...	1300
HKW242_225DAF	360 / 302	2600
HKW242_225DAD	360 / 302	3800
HKW242_225DAC	360 / 301	5100
HKW242_225DAB	890SD-433361G...	7600
HKW242_375DAF	890SD-433105F...	1500
HKW242_375DAD	480 / 401	2300
HKW242_375DAC	480 / 402	3100
HKW242_375DAB	890SD-433375H...	4600
HKW242_375DAA	consult us	
HKW242_375DBB	consult us	
HKW242_375DBY	consult us	
HKW242_375DBW	890SD-433520H...	4700
HKW310_200HAJ	890SD-433156F...	1400
HKW310_200HAH	890SD-433216G...	1800
HKW310_200HAE	890SD-433361G...	2900
HKW310_200HAD	890SD-433375H...	3600
HKW310_200HAC	890SD-433520H...	4800
HKW310_300HAJ	890SD-433156F...	1000
HKW310_300HAH	890SD-433216G...	1200
HKW310_300HAE	890SD-433361G...	1900
HKW310_300HAD	890SD-433375H...	2400
HKW310_300HAC	890SD-433520H...	3200
HKW310_400HAJ	890SD-433156F...	700
HKW310_400HAH	890SD-433216G...	900
HKW310_400HAF	890SD-433316G...	1200
HKW310_400HAE	890SD-433361G...	1400
HKW310_400HAD	890SD-433375H...	1800
HKW310_400HAC	890SD-433520H...	2400
HKW310_400HAY	consult us	
HKW310_500HBX	890SD-532730E0-0...	1900
HKW310_500HBB	consult us	
HKW310_500HBY	consult us	

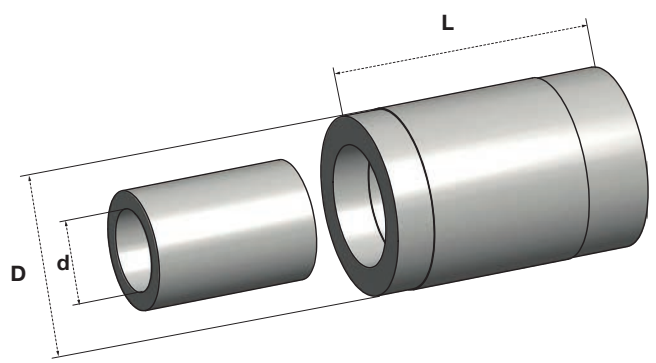
(1) Due to the back emf or the maximal drive frequency

Dimensions

Stator with cooling jacket



Stator without housing



Dimensions [mm]	Without housing			With cooling jacket		
	d	D	L	d	D	L
Product						
HKW085_066	32	85	134	32	100	136
HKW085_099			167			169
HKW108_080	47	108	148	47	130	150
HKW108_140			208			210
HKW108_200			268			270
HKW155_080	75	155.5	152	75	180	154
HKW155_120			192			194
HKW155_160			232			234
HKW155_160CAD			241			243
HKW195_120CAX	90	195	214	90	220	216
HKW195_120CAF			223			225
HKW195_120CAE			231			233
HKW195_180CAx			274			276
HKW195_180CAF			283			285
HKW195_180CAC			291			293
HKW195_300CAM/J			394			396
HKW195_300CAF			403			405
HKW195_300CAE/C			411			413
HKW195_300CAX			464			466
HKW195_300CBU			464			413
HKW195_360CBU			524			499
HKW195_420CBU			584			559
HKW195_420CBX			584			559

Dimensions [mm]	Without housing			With cooling jacket		
	d	D	L	d	D	L
Product						
HKW242_225DAN/F	130	242	313	130	270	315
HKW242_225DAD			322			324
HKW242_225DAC			330			332
HKW242_225DAB			333			335
HKW242_375DAF			463			465
HKW242_375DAD			472			474
HKW242_375DAC			480			482
HKW242_375DAB			477			479
HKW242_375DAA			513			515
HKW242_375DBB			513			515
HKW242_375DBY			513			515
HKW310_200HAJ			180			310
HKW310_200HAH	317	319				
HKW310_200HAE	328	330				
HKW310_200HAD	322	324				
HKW310_200HAC	325	327				
HKW310_300HAJ	408	410				
HKW310_300HAH	417	419				
HKW310_300HAE	428	430				
HKW310_300HAD	422	424				
HKW310_300HAC	425	427				
HKW310_400HAJ	508	510				
HKW310_400HAH	517	519				
HKW310_400HAF	525	527				
HKW310_400HAE	528	530				
HKW310_400HAD	522	524				
HKW310_400HAC	525	527				
HKW310_400HAY	540	542				
HKW310_500HBX	640	642				
HKW310_500DBB	640	642				
HKW310_500DBY	640	642				

Order Code

HKW Series

	1	2	3	4	5	6	7	8	9
Order example	HK	W	155	-	080	CAP	R	0	000

1 Motor type	HK	Frameless permanent magnet servomotors
2 Cooling	W	Water cooling (standard)
3 External diameter	085	85 mm
	108	108 mm
	155	155 mm
	195	195 mm
	242	242 mm
	310	310 mm
4 Element	-	Motor (stator + rotor)
	S	Stator
	R	Rotor
5 Length L [mm]	080	
	140	see table "Dimensions"
	200	
	...	
6 Torque/Speed characteristics	BAU	
	BAP	see table "Technical data"
	BAK	
	...	
7 Fix Code	R	
8 Mechanical options	0	Without housing, without hub
	1	With housing, without hub
	2	Without housing, with hub
	3	With housing, with hub
9 Interface	000	Standard motor



Frameless Servo Motor - TK Series

Overview

Description

TK Series torque motors, delivered as separate rotor and stator to be integrated into the mechanical structure of the machine, lead to simplified designs, reduced costs, and increased accuracy. TK series is distinguished from existing solutions by their exceptional robustness, making them particularly suited to harsh environments. Benefiting from Parker's unprecedented know-how in the design and manufacture of torque motors, TK series can also be delivered as complete sub-assemblies including frame, cooling system, bearings, feedback sensor, etc.



Advantages

- Very high torque
- Very large hollow shaft
- Coating against corrosion (on request)
- High resistance (oil proof on request)
- Compatible with Parker drives and third parties
- Global cost reduction
- Increased reliability and reduced maintenance
- Simple, light and compact machine design
- No coupling systems needed
- Greater stiffness and robustness of the system
- Low noise level
- Integration assistance available

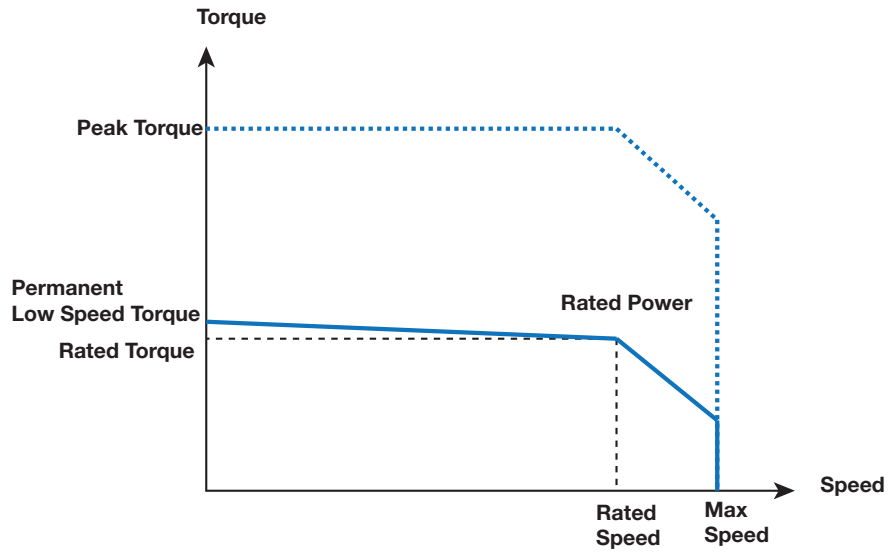
Applications

- Rotating Table
- Mixer for Pulp & Paper
- Material Forming
- Material Handling
- Machine Tools
- Winch and Marine

Technical Characteristics - Overview

Cooling	Natural cooling	Water cooling
Power	2.8...58 kW	7...207 kW
Torque	41...10 100 Nm	90...21 900 Nm
Speed	870 min ⁻¹	2 500 min ⁻¹
Number of poles	30 (TK_130) / 60 (TK_200) / 90 (TK_300) / 120 (TK_400)	
Diameter	230 – 385 – 565 - 795 mm	
Power supply	400 VAC	

Technical Data



Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}	Frequency at max speed	Moment of Inertia J
	[kW]	(Nm)	[min ⁻¹]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[Hz]	[kgm ²]
400 VAC power supply - three-phased - Natural cooling											
TKA131HL	2.8	28	5.0	940	41	7.0	200	38.2	940	235	0.01
TKA132HL	4.5	70	8.3	610	85	9.8	415	54.2	610	153	0.02
TKA133HN	6.6	108	12.2	580	130	14.4	625	78.8	580	145	0.03
TKA134HN	7.4	154	13.8	460	175	15.4	850	85.9	460	115	0.04
TKA135HP	8.5	198	16	410	220	17.6	1060	97.0	410	103	0.05
TKA136HP	10.0	239	18.6	400	265	20.4	1280	113.0	400	100	0.06
TKA201HM	4.9	109	8.9	430	145	11.4	650	63.6	430	215	0.09
TKA202HS	8.0	246	14.5	310	300	17.3	1300	93.2	310	155	0.18
TKA203HR	9.8	398	18.1	235	455	20.3	1950	108.0	235	118	0.27
TKA204HV	10.5	558	20	180	610	21.6	2600	114.0	180	90	0.35
TKA205HU	12.5	705	23.5	170	770	25.5	3250	134.0	170	85	0.44
TKA206HS	16.6	832	31.7	190	925	34.7	3900	182.0	190	95	0.52
TKA208HS	17.0	1160	32.9	140	1240	34.9	5200	182.0	140	70	0.69
TKA301HJ	7.1	273	13	250	350	16.2	1200	57.6	250	188	0.6
TKA302HP	11.4	604	20.7	180	720	24.2	2400	83.6	180	135	1.2
TKA303HN	14.9	948	27.9	150	1100	31.8	3600	108.0	150	113	1.7
TKA304HN	20.8	1240	38.6	160	1470	45.0	4800	152.0	160	120	2.3
TKA305HN	24.1	1590	44.8	145	1850	51.4	6000	173.0	145	109	2.9
TKA306HM	26.6	1950	49.1	130	2220	55.0	7200	185.0	130	98	3.4
TKA308HL	28.5	2720	55.1	100	2970	59.5	9600	199.0	100	75	4.6
TKA30AHL	29.3	3490	56.4	80	3710	59.4	12000	199.0	80	60	5.7

Motor	Rated Power Pn	Rated Torque Mn	Rated Speed Nn	Rated Current In	Low speed torque Mo	Low speed Current Io	Peak Torque M peak	Peak Current I peak	Max. Speed N max	Frequency at max speed	Moment of Inertia J
	[kW]	(Nm)	[min ⁻¹]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[Hz]	[kgm ²]
400 VAC power supply - three-phased - Natural cooling											
TKA401HG	12.6	604	22.6	200	820	29.7	3300	145.0	200	200	1.9
TKA402HP	20.4	1260	37	155	1640	47.0	6600	229.0	155	155	3.5
TKA403HL	27.4	1940	48.7	135	2460	60.4	9900	295.0	135	135	5.2
TKA404HR	30.5	2770	55.9	105	3270	64.9	13200	317.0	105	105	6.8
TKA405HQ	33.7	3570	62.2	90	4070	70.0	16500	344.0	90	90	8.5
TKA406HP	36.6	4370	69	80	4880	76.3	19800	375.0	80	80	10.1
TKA408HN	46.0	5850	84.7	75	6490	93.0	26400	459.0	75	75	13.4
TKA40AHM	49.3	7470	91.5	63	8100	98.3	33000	486.0	63	63	16.7
TKA40CHK	58.1	9400	109	59	10100	116.0	39600	550.0	59	59	20
400 VAC power supply - three-phased - water cooled											
TKW131HL	6.9	88.3	15.1	750	90	15.2	200	38.2	1120	280	0.01
TKW131HC	17.9	68.2	35.1	2500	90	44.3	200	111.0	2800	700	0.01
TKW132HL	10.1	201	23	480	205	23.4	415	54.2	720	180	0.02
TKW132HF	22.2	189	47.5	1120	205	50.6	415	118.0	1680	420	0.02
TKW133HN	14.8	314	34.7	450	320	35.2	625	78.8	675	169	0.03
TKW133HH	30.7	299	66.7	980	320	70.4	625	158.0	1470	368	0.03
TKW133HD	45.3	278	93.8	1550	320	106	625	236.0	2320	580	0.03
TKW134HN	15.3	431	37.9	340	435	38	850	85.9	510	128	0.04
TKW134HJ	27.8	422	63.2	630	435	64.6	850	146.0	945	236	0.04
TKW134HF	46.4	402	101	1100	435	108	850	243.0	1650	413	0.04
TKW135HM	27.7	540	64.8	490	550	65.4	1060	146.0	735	184	0.05
TKW135HG	54.0	515	116	1000	550	123	1060	273.0	1500	375	0.05
TKW136HM	31.0	656	72.9	450	660	72.7	1280	163.0	675	169	0.06
TKW136HF	71.2	616	155	1100	660	164	1280	367.0	1650	413	0.06
TKW201HF	20.6	219	39.9	900	275	48.6	650	143.0	1000	500	0.09
TKW201HM	10.0	262	20.8	365	275	21.6	650	63.6	540	270	0.09
TKW202HF	45.0	480	87.7	895	610	108	1300	286.0	1040	520	0.18
TKW202HS	15.8	592	34.5	255	610	35.3	1300	93.2	380	190	0.18
TKW203HD	57.5	819	115	670	960	133	1950	334.0	940	470	0.27
TKW203HE	53.7	835	108	614	960	123	1950	308.0	905	453	0.27
TKW203HR	18.2	936	42.2	185	960	43.2	1950	108.0	275	138	0.27
TKW204HI	71.1	1140	145	595	1300	163	2600	401.0	890	445	0.35
TKW204HV	18.9	1280	46.1	140	1300	46.5	2600	114.0	170	85	0.35
TKW205HH	80.7	1480	167	520	1650	184	3250	445.0	780	390	0.44
TKW205HM	51.8	1570	113	316	1650	118	3250	286.0	470	235	0.44
TKW205HU	22.2	1630	54.6	130	1650	55.1	3250	134.0	195	98	0.44
TKW206HG	92.0	1810	192	485	2000	209	3900	501.0	725	363	0.52
TKW206HM	51.3	1920	116	255	2000	120	3900	286.0	380	190	0.52
TKW206HS	31.0	1960	75	150	2000	76.1	3900	182.0	225	113	0.52
TKW208HF	106.0	2500	226	405	2700	242	5200	572.0	605	303	0.69
TKW208HM	50.9	2630	119	185	2700	121	5200	286.0	275	138	0.69
TKW208HS	29.4	2670	76.6	105	2700	77.1	5200	182.0	135	68	0.69
TKW301HB	36.1	497	67.4	695	680	87.6	1200	162.0	695	521	0.6
TKW301HJ	14.7	651	30.2	215	680	31.1	1200	57.6	320	240	0.6

Frameless Servo Motors - TK Series
 Technical Data

Motor	Rated Power Pn	Rated Torque Mn	Rated Speed Nn	Rated Current In	Low speed torque Mo	Low speed Current Io	Peak Torque M peak	Peak Current I peak	Max. Speed N max	Frequency at max speed	Moment of Inertia J
	[kW]	(Nm)	[min ⁻¹]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[min ⁻¹]	[Hz]	[kgm ²]
400 VAC power supply - three-phased - water cooled											
TKW302HE	64.0	1290	124	475	1520	143	2400	235.0	605	454	1.2
TKW302HJ	46.0	1390	91.6	315	1520	98.2	2400	162.0	470	353	1.2
TKW302HP	23.2	1480	49.7	150	1520	50.7	2400	83.5	220	165	1.2
TKW303HC	83.2	2120	166	375	2380	183	3600	288.0	550	413	1.7
TKW303HJ	47.8	2270	99.1	200	2380	103	3600	162.0	295	221	1.7
TKW303HN	30.5	2330	67.4	125	2380	68.4	3600	108.0	185	139	1.7
TKW304HG	96.4	2970	196	310	3250	211	4800	324.0	465	349	2.3
TKW304HM	51.1	3150	110	155	3250	112	4800	173.0	230	173	2.3
TKW304HN	44.8	3160	97.1	135	3250	99.1	4800	152.0	195	146	2.3
TKW305HG	99.2	3870	203	245	4100	213	6000	324.0	360	270	2.9
TKW305HN	50.6	4030	112	120	4100	113	6000	173.0	175	131	2.9
TKW305HO	42.4	4050	99.3	100	4100	100	6000	152.0	125	94	2.9
TKW306HF	113.0	4710	235	230	4950	245	7200	370.0	340	255	3.4
TKW306HM	53.9	4900	122	105	4950	122	7200	185.0	150	113	3.4
TKW306HO	41.3	4930	101	80	4950	101	7200	152.0	120	90	3.4
TKW308HC	141.0	6400	296	211	6740	309	9600	457.0	315	236	4.6
TKW308HL	55.7	6650	133	80	6740	135	9600	199.0	115	86	4.6
TKW308HO	39.3	6690	103	56	6740	103	9600	152.0	80	60	4.6
TKW30AHD	162.0	8110	340	190	8450	351	12000	518.0	280	210	5.7
TKW30AHL	52.0	8420	135	59	8450	135	12000	199.0	70	53	5.7
TKW30AHO	35.4	8450	104	40	8450	103	12000	152.0	60	45	5.7
TKW401HA	45.6	1150	87.2	380	1460	108	3300	295.0	415	415	1.9
TKW401HG	24.4	1370	50.5	169	1460	53	3300	145.0	255	255	1.9
TKW402HG	78.8	2840	158	265	3270	180	6600	434.0	375	375	3.5
TKW402HI	69.0	2930	141	225	3270	155	6600	375.0	335	335	3.5
TKW402HP	42.5	3110	90.9	130	3270	94.8	6600	229.0	195	195	3.5
TKW403HC	106.0	4590	215	220	5100	237	9900	550.0	325	325	5.2
TKW403HJ	66.3	4860	142	130	5100	148	9900	344.0	195	195	5.2
TKW403HL	56.7	4910	123	110	5100	127	9900	295.0	160	160	5.2
TKW404HI	124.0	6400	260	185	6900	278	13200	635.0	275	275	6.8
TKW404HQ	63.7	6760	148	90	6900	151	13200	344.0	135	135	6.8
TKW404HR	60.3	6780	137	84.9	6900	139	13200	317.0	125	125	6.8
TKW405HH	134.0	8270	292	155	8800	308	16500	688.0	200	200	8.5
TKW405HQ	65.1	8630	152	72	8800	154	16500	344.0	105	105	8.5
TKW406HG	148.0	10100	324	140	10600	338	19800	750.0	210	210	10.1
TKW406HP	71.4	10500	168	65	10600	169	19800	375.0	95	95	10.1
TKW406HQ	63.9	10500	154	58	10600	155	19800	344.0	70	70	10.1
TKW408HF	166.0	13800	365	115	14400	379	26400	825.0	170	170	13.4
TKW408HN	84.8	14200	208	57	14400	211	26400	459.0	85	85	13.4
TKW408HQ	59.9	14300	157	40.1	14400	158	26400	344.0	60	60	13.4
TKW40AHE	184.0	17500	413	100	18100	424	33000	917.0	145	145	16.7
TKW40AHM	88.3	17900	223	47	18100	225	33000	486.0	70	70	16.7
TKW40AHQ	54.9	18100	159	29	18100	159	33000	344.0	40	40	16.7
TKW40CHD	207.0	21200	469	93	21900	482	39600	1030.0	135	135	20
TKW40CHK	97.5	21700	255	43	21900	257	39600	550.0	60	60	20

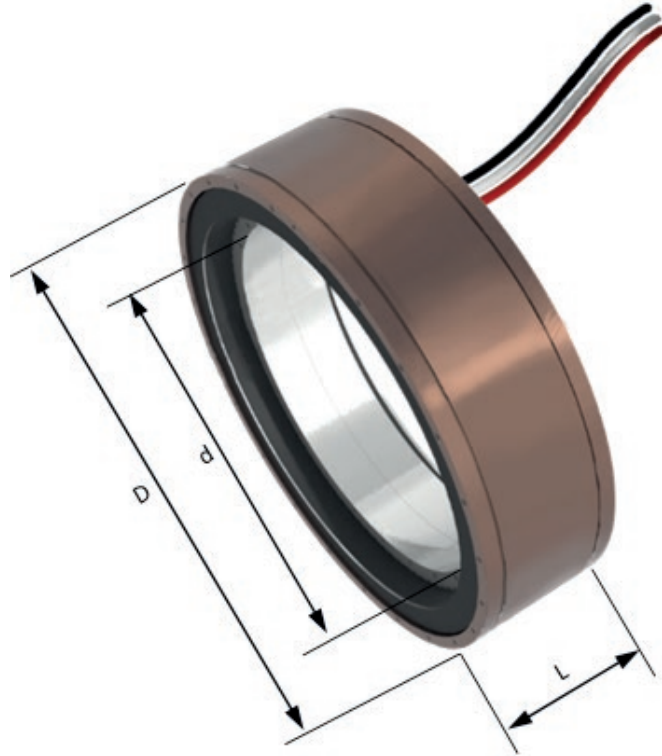
Associated Drives

Motor	AC890	Compax3
400 VAC power supply - three-phased - Natural cooling		
TKA131HL	AC890SD-531600B	C3S075V4
TKA132HL	AC890SD-532100B	C3S150V4
TKA133HN	AC890SD-532240C	C3S150V4
TKA134HN	AC890SD-532240C	C3S300V4
TKA135HP	AC890SD-532240C	C3S300V4
TKA136HP	AC890SD-532300C	C3S300V4
TKA201HM	AC890SD-532240C	C3S150V4
TKA202HS	AC890SD-532240C	C3S300V4
TKA203HR	AC890SD-532300C	C3S300V4
TKA204HV	AC890SD-532300C	C3S300V4
TKA205HU	AC890SD-532390D	C3S300V4
TKA206HS	AC890SD-532390D	C3H050V4
TKA208HS	AC890SD-532390D	C3H050V4
TKA301HJ	AC890SD-532240C	C3S300V4
TKA302HP	AC890SD-532300C	C3S300V4
TKA303HN	AC890SD-532390D	C3H050V4
TKA304HN	AC890SD-532590D	C3H050V4
TKA305HN	AC890SD-432730E	C3H090V4
TKA306HM	AC890SD-432730E	C3H090V4
TKA308HL	AC890SD-432730E	C3H090V4
TKA30AHL	AC890SD-432730E	C3H090V4
TKA401HG	AC890SD-532390D	C3S300V4
TKA402HP	AC890SD-532590D	C3H050V4
TKA403HL	AC890SD-432730E	C3H090V4
TKA404HR	AC890SD-432730E	C3H090V4
TKA405HQ	AC890SD-432730E	C3H090V4
TKA406HP	AC890SD-433105F	C3H090V4
TKA408HN	AC890SD-433145F	C3H125V4
TKA40AHM	AC890SD-433145F	C3H125V4
TKA40CHK	AC890SD-433156F	C3H125V4
400 VAC power supply - three-phased - Water cooled		
TKW131HL	AC890SD-532240C	C3S300V4
TKW131HC	AC890SD-532590D	C3H050V4
TKW132HL	AC890SD-532300C	C3S300V4
TKW132HF	AC890SD-532590D	C3H090V4
TKW133HN	AC890SD-532390D	C3H050V4
TKW133HH	AC890SD-432730E	C3H090V4
TKW133HD	AC890SD-433145F	C3H125V4
TKW134HN	AC890SD-532450D	C3H050V4
TKW134HJ	AC890SD-432730E	C3H090V4
TKW134HF	AC890SD-433145F	C3H125V4
TKW135HM	AC890SD-432730E	C3H090V4
TKW135HG	AC890SD-433156F	C3H125V4
TKW136HM	AC890SD-432730E	C3H090V4
TKW136HF	AC890SD-433216G	-
TKW201HF	AC890SD-532590D	C3H050V4
TKW201HM	AC890SD-532300C	C3S300V4
TKW202HF	AC890SD-433145F	C3H125V4
TKW202HS	AC890SD-532450D	C3H090V4
TKW203HD	AC890SD-433156F	C3H155V4
TKW203HE	AC890SD-433156F	C3H125V4
TKW203HR	AC890SD-532590D	C3H050V4
TKW204HI	AC890SD-433250G	-
TKW204HV	AC890SD-532590D	C3H050V4

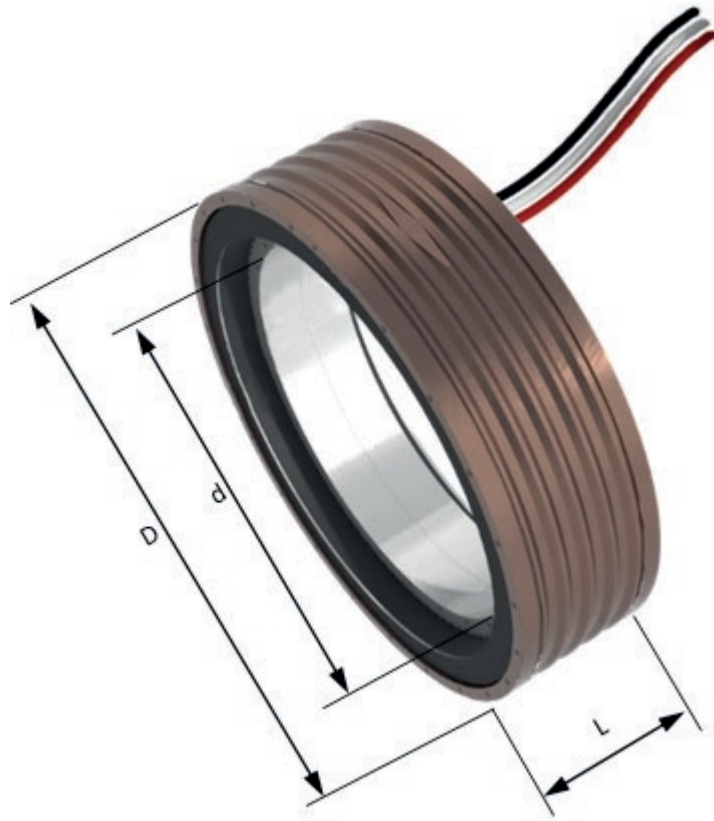
Motor	AC890	Compax3
400 VAC power supply - three-phased - Water cooled		
TKW205HH	AC890SD-433316G	-
TKW205HM	AC890SD-433156F	C3H125V4
TKW205HU	AC890SD-432730E	C3H090V4
TKW206HG	AC890SD-433316G	-
TKW206HM	AC890SD-433156F	C3H125V4
TKW206HS	AC890SD-432870E	C3H090V4
TKW208HF	AC890SD-433361G	-
TKW208HM	AC890SD-433156F	C3H125V4
TKW208HS	AC890SD-432870E	C3H090V4
TKW301HB	AC890SD-433145F	C3H090V4
TKW301HJ	AC890SD-532390D	C3H050V4
TKW302HE	AC890SD-433216G	C3H155V4
TKW302HJ	AC890SD-433145F	C3H125V4
TKW302HP	AC890SD-432730E	C3H090V4
TKW303HC	AC890SD-433316G	-
TKW303HJ	AC890SD-433145F	C3H125V4
TKW303HN	AC890SD-432730E	C3H090V4
TKW304HG	AC890SD-433316G	-
TKW304HM	AC890SD-433156F	C3H125V4
TKW304HN	AC890SD-433145F	C3H125V4
TKW305HG	AC890SD-433316G	-
TKW305HN	AC890SD-433156F	C3H125V4
TKW305HO	AC890SD-433145F	C3H125V4
TKW306HF	AC890SD-433361G	-
TKW306HM	AC890SD-433156F	C3H125V4
TKW306HO	AC890SD-433145F	C3H125V4
TKW308HC	AC890SD-433480H	-
TKW308HL	AC890SD-433216G	C3H155V4
TKW308HO	AC890SD-433145F	C3H125V4
TKW30AHD	AC890SD-433520H	-
TKW30AHL	AC890SD-433216G	C3H155V4
TKW30AHO	AC890SD-433145F	C3H125V4
TKW401HA	AC890SD-433145F	C3H125V4
TKW401HG	AC890SD-432730E	C3H090V4
TKW402HG	AC890SD-433316G	-
TKW402HI	AC890SD-433250G	C3H155V4
TKW402HP	AC890SD-433145F	C3H125V4
TKW403HC	AC890SD-433361G	-
TKW403HJ	AC890SD-433216G	C3H155V4
TKW403HL	AC890SD-433156F	C3H155V4
TKW404HI	AC890SD-433420H	-
TKW404HQ	AC890SD-433250G	C3H155V4
TKW404HR	AC890SD-433216G	C3H155V4
TKW405HH	AC890SD-433480H	-
TKW405HQ	AC890SD-433250G	C3H155V4
TKW406HG	AC890SD-433520H	-
TKW406HP	AC890SD-433250G	-
TKW406HQ	AC890SD-433250G	C3H155V4
TKW408HF	AC890SD-433590J	-
TKW408HN	AC890SD-433316G	-
TKW408HQ	AC890SD-433250G	-
TKW40AHE	AC890SD/5/0685K	-
TKW40AHM	AC890SD-433361G	-
TKW40AHQ	AC890SD-433250G	-
TKW40CHD	AC890SD/5/0798K	-
TKW40CHK	AC890SD-433420H	-

Dimensions

Motor	Dimensions [mm]		
	d	D	L
TKA131HL	132	230	90
TKA132HL			140
TKA133HN			190
TKA134HN			240
TKA135HP			290
TKA136HP			340
TKA201HM	250	385	110
TKA202HS			160
TKA203HR			210
TKA204HV			260
TKA205HU			320
TKA206HS			370
TKA208HS	470		
TKA301HJ	420	565	110
TKA302HP			160
TKA303HN			210
TKA304HN			255
TKA305HN			320
TKA306HM			370
TKA308HL	470		
TKA30AHL	580		
TKA401HG	620	795	110
TKA402HP			160
TKA403HL			215
TKA404HR			265
TKA405HQ			330
TKA406HP			385
TKA408HN	485		
TKA40AHM	590		
TKA40CHK	700		



Motor	d	D	L
TKW131HL	132	230	90
TKW131HC			100
TKW132HL			140
TKW132HF			150
TKW133HN			190
TKW133HH			205
TKW133HD			225
TKW134HN			246
TKW134HJ			256
TKW134HF			276
TKW135HM			306
TKW135HG			326
TKW136HM			356
TKW136HF			376
TKW201HF	250	385	110
TKW201HM			110
TKW202HF			170
TKW202HS			160
TKW203HD			220
TKW203HE			220
TKW203HR			210
TKW204HI			270
TKW204HV			270
TKW205HH			340
TKW205HM			340
TKW205HU			340
TKW206HG			390
TKW206HM			390
TKW206HS	390		
TKW208HF	480		
TKW208HM	480		
TKW208HS	480		
TKW301HB	420	565	110
TKW301HJ			110
TKW302HE			170
TKW302HJ			160
TKW302HP			160
TKW303HC			220
TKW303HJ			210
TKW303HN			210
TKW304HG			275
TKW304HM			275
TKW304HN			275
TKW305HG			340
TKW305HN			340
TKW305HO			340
TKW306HF	395		
TKW306HM	380		
TKW306HO	380		
TKW308HC	520		
TKW308HL	485		
TKW308HO	485		
TKW30AHD	650		
TKW30AHL	590		
TKW30AHO	590		



Motor	d	D	L
TKW401HA	620	795	130
TKW401HG			130
TKW402HG			180
TKW402HI			180
TKW402HP			180
TKW403HC			230
TKW403HJ			230
TKW403HL			230
TKW404HI			280
TKW404HQ			280
TKW404HR			280
TKW405HH			350
TKW405HQ			350
TKW406HG			400
TKW406HP	400		
TKW406HQ	400		
TKW408HF	500		
TKW408HN	500		
TKW408HQ	500		
TKW40AHE	605		
TKW40AHM	605		
TKW40AHQ	605		
TKW40CHD	710		
TKW40CHK	710		

Order Code

TK-Series

	1	2	3	4	5	6	7	8	9	10	11	12
Order example	TK	W	20	4HG	Y	Z	B	2	R	9	0	00

1 Motor type	TK	Frameless torque motors
2 Cooling method	W	Water cooling (standard)
	A	Natural convection (available with derating, consult us)
3 Shaft heights	13	130 mm
	20	200 mm
	30	315 mm
	40	400 mm
4 Torque/Speed characteristics	1HL	
	1HC	see table TK-Series technical data
	2HL	
	...	
5 Feedback sensor	K	Without sensor
	B	Direct Endat encoder
6 Transportation bridge	B	Bridges on both sides
	C	Bridges on cables output side
	D	Bridges on cables output opposite side
	Z	Without bridges (standard)
7 Cables output	B	Output towards the rear
8 Cable length	2	2 m
9 Fix code	R	
10 Connections	1	Flying cables (3 phases + ground)
11 Thermal protection	0	1 PTC 140°C + 1 PTC 150°C + 1 KTY (+1 in reserve)
12 Mechanical interface	00	Standard motor

High Performance DC Servo Motor - RS Series

Overview

Description

Using high energy magnets, RS DC motors combined with RTS drives are particularly suitable for applications which require a very compact solution or a high dynamic level.

Characteristics and advantages

- High performance characteristics
- Excellent low-speed functioning
- High compactness
- Very long service life
- Rare earth magnets
- Tacho, encoder resolver and brake in option



Features

- **Shaft**
 - RS1 to RS4: Smooth full shaft
 - RS5 and RS6: Full keyed shaft
- **2nd Shaft end**
 - RS1 to RS3: possibility to mount standard tacho or encoder
 - RS5 and RS6: possibility to mount standard tacho, adaptation for encoder mounting in option
- **Output cables 1 m without connector**
- **Options**
 - Brake (RS2 to RS6)
 - Tachometer
 - Adaptation 2nd shaft end for encoder mounting (RS5 and RS6)

Technical Characteristics - Overview

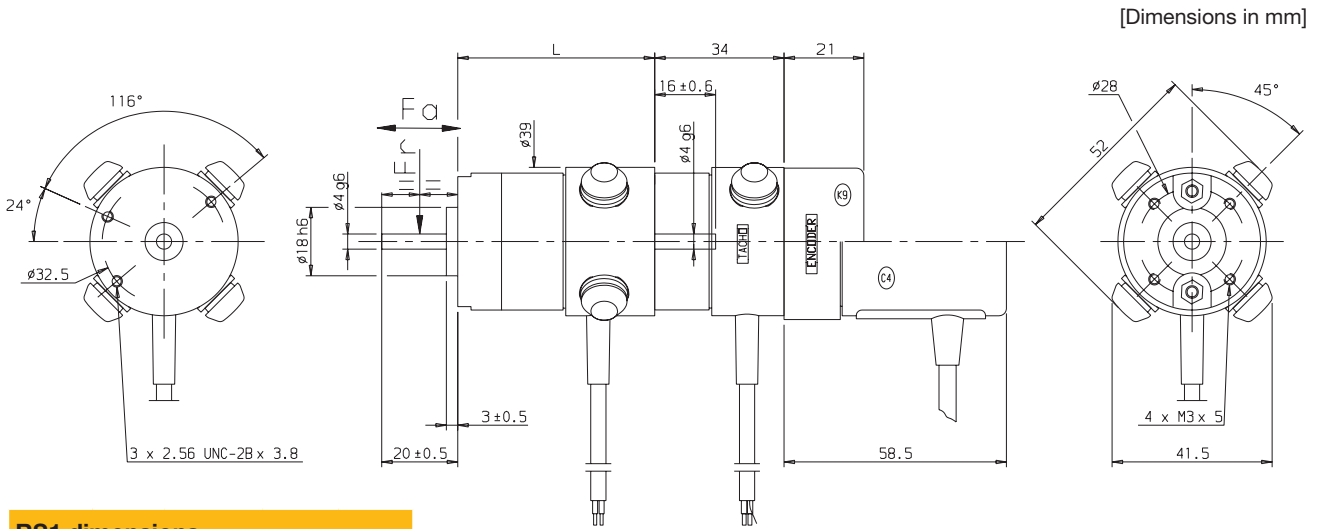
Motor type	DC motors with rare earth magnets
Number of poles	4
Protection degree	<ul style="list-style-type: none"> • RS1 to RS4: IP40 • RS5 and RS6: IP54
Insulation	Class F
Torque at low speed	0.05 ... 13 Nm
Permanent current at low speed	1.5 ... 28 A
Rated voltage	20.7 ... 105 V
Rated speed	2000 ... 3000 min ⁻¹
Rotor inertia	2.4 ... 8300 kgmm ²

Technical Data

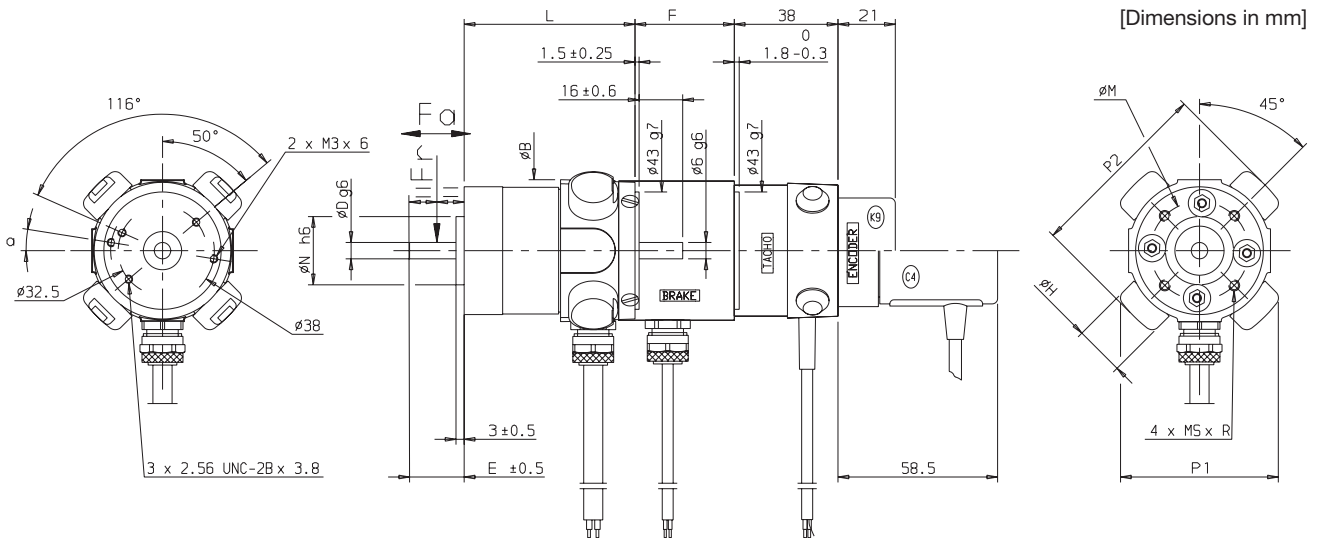
Torque at low speed M_0 [Nm]	Permanent current at low speed I_0 [A]	Rated Voltage U [V]	Rated Speed N [min ⁻¹]	Rotor Inertia [kgmm ²]	Product Code			Typical combination
0.05 0.092 0.13	1.5 2.3 2.7	20.7 21.2 23.7	3000 3000 3000	2.4 4.1 5.8	RS110MR1 RS120GR1 RS130ER1	■ ■ ■	00 00 00	RTS 3/10-40M RTS 3/10-40M RTS 3/10-40M
0.11 0.225 0.232 0.31 0.39	2.5 4.1 2.8 5.6 6	24 25.4 38.6 24 27.6	3000 3000 3000 3000 3000	13 195 195 26 325	RS210LR1 RS220FR1 RS220KR1 RS230CR1 RS240BR1	■ ■ ■ ■ ■	00 00 00 00 00	RTS 3/10-40M RTS 10/20-60 ⁽¹⁾ RTS 3/10-40M RTS 10/20-60 ⁽¹⁾ RTS 10/20-60 ⁽¹⁾
0.28 0.54 0.78 0.98	2.6 4.5 5.9 6.9	49 49 51 53	3000 3000 3000 3000	54 83 110 140	RS310NR1 RS320HR1 RS330ER1 RS340CR1	■ ■ ■ ■	00 00 00 00	RTS 10/20-60 ⁽¹⁾ RTS 10/20-60 ⁽¹⁾ RTS 10/20-60 ⁽¹⁾ RTS 10/20-60 ⁽¹⁾
0.48 0.93 1.3 1.36 1.74	3.6 6.2 8.1 6.6 7	60 60 43 78 90	3000 3000 2000 3000 3000	137 225 310 310 400	RS410RR1 RS420JR1 RS430FR1 RS430HR1 RS440GR1	■ ■ ■ ■ ■	00 00 00 00 00	RTS 10/20-60 ⁽¹⁾ RTS 10/20-60 ⁽¹⁾ RTS 10/20-60 ⁽¹⁾ RTS 12/24-130 T RTS 12/24-130 T
1.9 3.1 4 5	7.9 10.9 13 15	82 92 97 104	2700 2700 2700 2700	1000 1350 1700 2050	RS510LR1 RS520GR1 RS530ER1 RS540CR1	■ ■ ■ ■	00 00 00 00	RTS 12/24-130 T RTS 12/24-130 T RTS 20/40-130 T RTS 20/40-130 T
8 10.8 13	22.3 25 28	100 100 105	2400 2000 2000	5300 6800 8300	RS620GR1 RS630FR1 RS640ER1	■ ■ ■	00 00 00	RTS 40/80-190 T RTS 40/80-190 T RTS 40/80-190 T

⁽¹⁾ M = single phase or T = three phase

Dimensions



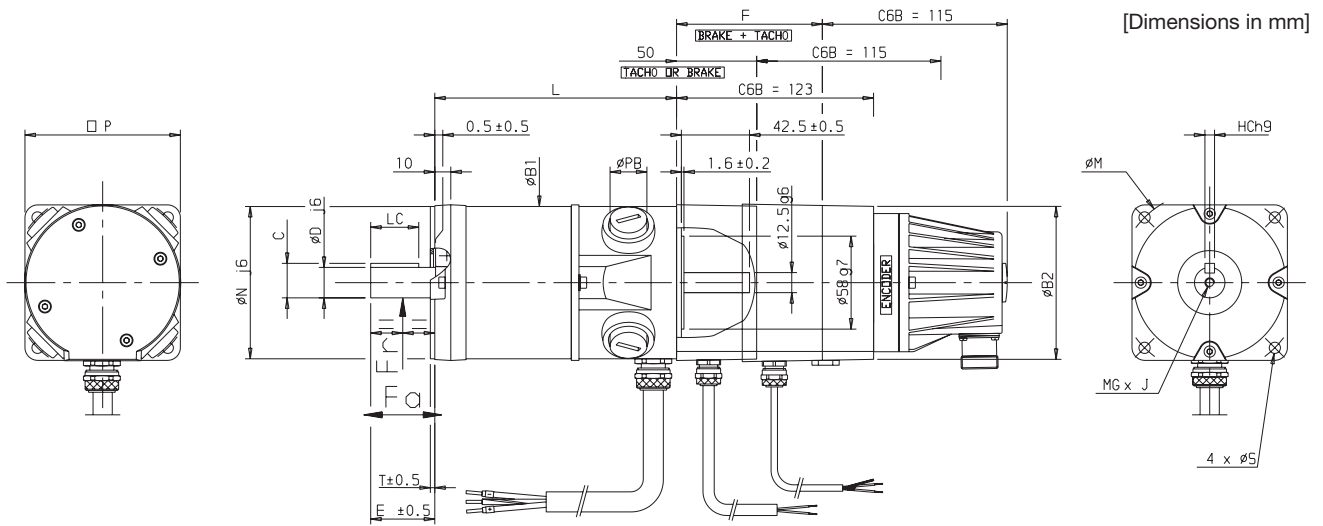
RS1 dimensions				
Motor	L	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
RS110	52.1	0.27	6	3
RS120	68.1	0.36	6	3
RS130	84.1	0.45	6	3



RS2, RS3 and RS4 with brake, tacho and encoder dimensions															
Motor	a	N	D	E	B	L	F	P1	P2	H	MSxR	M	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
RS210	9°	25	6	20	52	63	36.4	58	68	18.5	M4x6	36	0.54	18	10
RS220	9°	25	6	20	52	79	36.4	58	68	18.5	M4x6	36	0.7	18	10
RS230	9°	25	6	20	52	95	36.4	58	68	18.5	M4x6	36	0.86	18	10
RS240	9°	25	6	20	52	111	36.4	58	68	18.5	M4x6	36	1	18	10
RS310	-	32	9	25	68	80.5	41	69	83	18.5	M5x8	45	0.9	28	15
RS320	-	32	9	25	68	100.5	41	69	83	18.5	M5x8	45	1.3	28	15
RS330	-	32	9	25	68	120.5	41	69	83	18.5	M5x8	45	1.6	28	15
RS340	-	32	9	25	68	140.5	41	69	83	18.5	M5x8	45	2	28	15
RS410	-	50	11	32	83	95.5	40	82	98	22	M5x8	65	1.2	40	20
RS420	-	50	11	32	83	115.5	40	82	98	22	M5x8	65	1.8	40	20
RS430	-	50	11	32	83	135.5	40	82	98	22	M5x8	65	2.4	40	20
RS440	-	50	11	32	83	155.5	40	82	98	22	M5x8	65	3	40	20

⁽¹⁾ Fr and Fa not cumulative

High Performance DC Servo Motor - RS Series
Dimensions



RS5 and RS6 with brake, tacho and encoder dimensions

Motor	P	N	C	D	LC	E	T	B1	PB	L	F	B2	S	M	MGxJ	HC	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
RS510	97	95	21.5	19	30	40	3	96	25	151	91	96	7	115	M6x18	6	5.1	70	23
RS520	97	95	21.5	19	30	40	3	96	25	180	91	96	7	115	M6x18	6	6.3	70	23
RS530	97	95	21.5	19	30	40	3	96	25	209	91	96	7	115	M6x18	6	7.5	70	23
RS540	97	95	21.5	19	30	40	3	96	25	238	91	96	7	115	M6x18	6	8.7	70	23
RS620	120	110	27	24	40	50	3.5	117	30	246	93	117	10	130	M8x20	8	11.5	80	26
RS630	120	110	27	24	40	50	3.5	117	30	284	93	117	10	130	M8x20	8	14	80	26
RS640	120	110	27	24	40	50	3.5	117	30	321	93	117	10	130	M8x20	8	16.3	80	26

⁽¹⁾ Fr and Fa not cumulative

Options

Tachometers and brakes						
Motors	Tachometer		Brakes [Voltage 24 VDC +/- 10 %]			
	Model	EMF [V/1000 min ⁻¹]	Holding torque [Nm]		Inertia [kgmm ²]	Weight [kg]
			20 °C	100 °C		
RS1	TBN 103	3	-	-	-	-
RS2	TBN 206	6	0.6	0.55	2	0.2
RS3	TBN 206	6	1.5	1.4	10	0.18
RS4	TBN 206	6	1.5	1.4	10	0.18
RS5	TBN 306	6	6	5.5	53	0.45
RS6	TBN 306	6	12	11.5	157	0.9

Encoders					
Model	Associated motors	Pulse per rev	Encoder reference	Mounting kit reference	Connector reference
C2	RS1	500	220215P0002	220071R0025	
	RS1	1000	220215P0012	220071R0025	
	RS2 / RS3 / RS4	500	220215P0001	220071R0025	
	RS2 / RS3 / RS4	1000	220215P0004	220071R0025	
C6	RS5 / RS6	500	220024P0001	220071R0002	220065R4621
	RS5 / RS6	1000	220024P0003	220071R0002	220065R4621
	RS5 / RS6	2000	220024P0006	220071R0002	220065R4621
	RS5 / RS6	5000	220024P0005	220071R0002	220065R4621
C6B	RS5 / RS6	500	220031R0001	220071R0004	220065R4621
	RS5 / RS6	1000	220031R0003	220071R0004	220065R4621
	RS5 / RS6	2000	220031R0008	220071R0004	220065R4621
	RS5 / RS6	2500	220031R0004	220071R0004	220065R4621
	RS5 / RS6	5000	220031R0005	220071R0004	220065R4621

Order Code

RS Series

	1	2	3	4	5	6	7
Order example	RS	120	E	R	1	0	11

1	Motor type	
	RS	Motor with neodyme magnets
2	Motor size and length	
	120	
	130	see table "Technical data"
	320	
	...	
3	Winding	
	L	Depend of motor size, speed and voltage/current, see table "Technical data"
	H	
	M	
	...	
4	Fix code	
	R	
5	Mechanical features	
	1	Output cables (standard)
	2	Terminal box
	3	Motor with resolver
	5	Special motor
6	Options	
	0	No accessories (standard)
	1	Tacho
	2	Brake (RS2 to RS6)
	3	Tacho + brake (RS2 to RS6)
	4	Encoder adaptation ⁽¹⁾ (size 5 and 6 only)
	5	Tacho + Encoder adaptation (size 5 and 6 only)
	6	Brake + Encoder adaptation (size 5 and 6 only)
	7	Tacho + Brake + Encoder adaptation (size 5 and 6 only)
7	Customer specification	
	00	Standard catalogue definition - smooth shaft (size 1 -> 4) - shaft with key way (size 5-6)

⁽¹⁾ Encoder adaptation is standard for RS1, RS2, RS3 and RS4.

Low-Cost DC Servo Motor - RX Series

Overview

Description

The RX DC motors, combined with RTS drives, provide an economical solution for any servo applications. They are particularly suitable for low power systems in clean atmospheres.

Advantages

- Excellent price/performance ratio
- Very low torque modulation
- High quality construction
- Very long service life
- 2nd shaft end for tacho and encoder mounting
- Tacho and brake as option

Applications

- Factory Automation
- Life Science Diagnostic

Features

- **Shaft**
 - RX1 and RX3: Smooth full shaft
 - RX5 and RX6: Full keyed shaft
- **2nd Shaft end**
 - RX1 and RX3: possibility to mount standard tacho or encoder
 - RX5 and RX6: possibility to mount standard tacho, adaptation for encoder mounting in option
- **Output cables 1 m without connector**
- **Options**
 - Brake
 - Tachometer
 - Adaptation 2nd shaft end for encoder mounting (RX5 and RX6)



Technical Characteristics - Overview

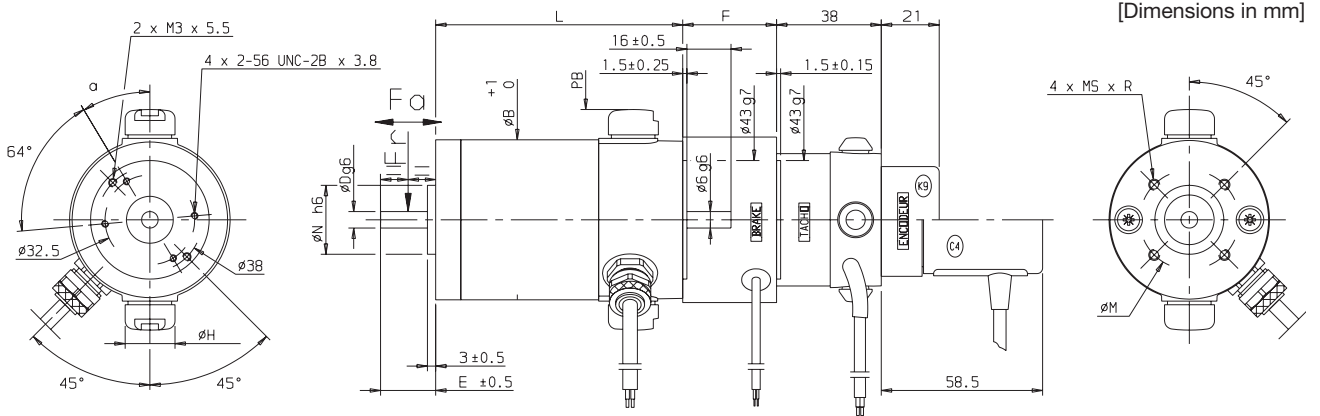
Motor type	CC Motors with rare ferrite magnets
Protection degree	<ul style="list-style-type: none"> • RX1 and RX3: IP40 • RX5 and RX6: IP54
Insulation	Class F

Technical Data

Torque at low speed M_0 [Nm]	Permanent current at low speed I_0 [A]	Rated Voltage U [V]	Rated Speed N [min ⁻¹]	Rotor Inertia [kgmm ²]	Product Code			Typical combination
0.285 0.4	2.8 3.6	44.5 46	3000 3000	50 68	RX120LR1 RX130HR1	■ ■	00 00	RTS 3/10-40 M RTS 10/20-60 ⁽¹⁾
1.08 1.54	7.8 9.4	54 59	3000 2900	500 720	RX320ER1 RX330CR1	■ ■	00 00	RTS 10/20-60 ⁽¹⁾ RTS 10/20-60 ⁽¹⁾
2.7 3.7	7.7 10.3	119 116	2800 2700	1280 1740	RX520KR1 RX530FR1	■ ■	00 00	RTS 12/24-130 T RTS 12/24-130 T
5 7.8	10.5 16	134 134	2400 2400	3500 5000	RX620JR1 RX630ER1	■ ■	00 00	RTS 12/24-130 T RTS 20/40-130 T

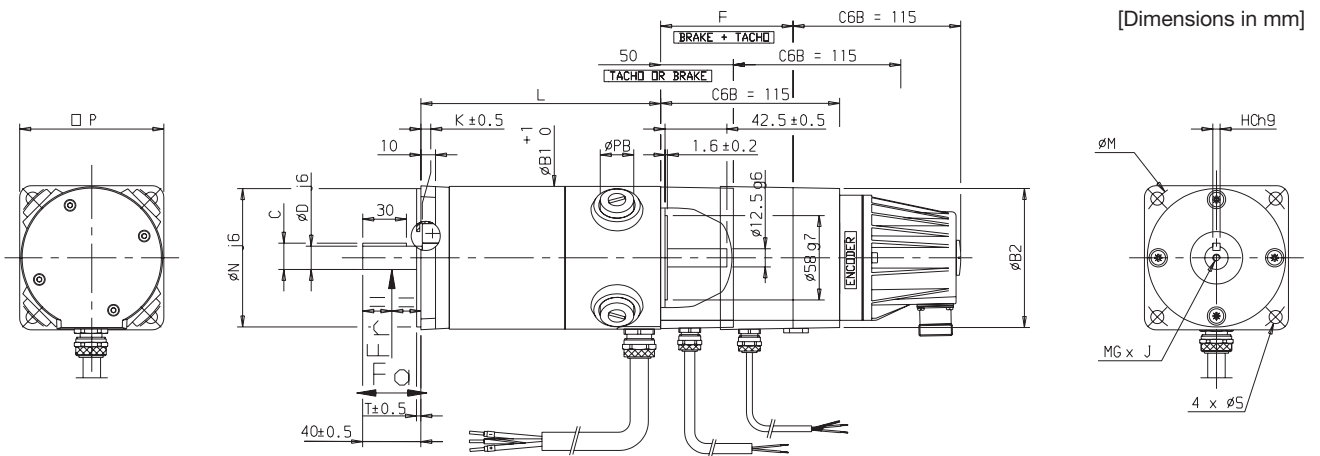
⁽¹⁾ M = single phase or T = three phase

Dimensions



RX1 and RX3 with brake, tacho and encoder dimensions

Motor	H	a	N	D	E	B	PB	L	F	MSxR	M	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
RX120	18.5	31°	25	6	20	58	80	122.5	34	M4x6	36	1.35	18	16
RX130	18.5	31°	25	6	20	58	80	147.5	34	M4x6	36	1.6	20	16
RX320	23	26°	50	11	32	84	100	178.5	40	M5x10	65	4	45	23
RX330	23	26°	50	11	32	84	100	218.5	40	M5x10	65	5.2	50	23



RX1 and RX3 with brake, tacho and encoder dimensions

Motor	P	N	C	D	T	K	B1	PB	L	F	B2	S	M	MGxJ	HC	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
RX520	100	95	18	16	3	1	98	25	216	91	96	9	115	M5x15	5	6.6	80	30
RX530	100	95	18	16	3	1	98	25	266	91	96	9	115	M5x15	5	8.7	85	30
RX620	120	110	21.5	19	3.5	0.5	116	30	272	93	117	10	130	M6x18	6	13	95	40
RX630	120	110	21.5	19	3.5	0.5	116	30	358	93	117	10	130	M6x18	6	18.5	100	40

⁽¹⁾ Fr and Fa not cumulative

Options

Tachometers and brakes						
Motors	Tachometer		Brakes [Voltage 24 VDC +/- 10 %]			
	Model	EMF [V/1000 min ⁻¹]	Holding torque [Nm]		Inertia [kgmm ²]	Weight [kg]
			20 °C	100 °C		
RX1	TBN 206	6	1	0.9	10	0.4
RX3	TBN 206	6	1.5	1.4	10	0.18
RX5	TBN 306	6	6	5.5	53	0.45
RX6	TBN 306	6	12	11.5	157	0.9

Encoders					
Model	Associated Motors	Pulse per rev	Encoder Reference	Mounting kit Reference	Connector Reference
C 2	RX1 / RX3	500	220215P0001	220071R0025	-
	RX1 / RX3	1000	220215P0004	220071R0025	-
C 6	RX5 / RX6	500	220024P0001	220071R0002	220065R4621
	RX5 / RX6	1000	220024P0003	220071R0002	220065R4621
	RX5 / RX6	2000	220024P0006	220071R0002	220065R4621
	RX5 / RX6	5000	220024P0005	220071R0002	220065R4621
C 6 B	RX5 / RX6	500	220031R0001	220071R0004	220065R4621
	RX5 / RX6	1000	220031R0003	220071R0004	220065R4621
	RX5 / RX6	2000	220031R0008	220071R0004	220065R4621
	RX5 / RX6	2500	220031R0004	220071R0004	220065R4621
	RX5 / RX6	5000	220031R0005	220071R0004	-

Order Code

RX Series

	1	2	3	4	5	6	7
Order example	RX	120	E	R	1	0	11

1	Motor type	
	RX	Motor with ferrite magnets
2	Motor size and length	
	120	
	130	see table "Technical data"
	320	
	...	
3	Winding	
	L	Depend of motor size, speed and voltage/current, see table "Technical data"
	H	
	M	
	...	
4	Fix code	
	R	
5	Mechanical features	
	1	Output cables (standard)
	2	Terminal box
	3	Motor with resolver
	5	Special motor
6	Options	
	0	No accessories (standard)
	1	Tacho
	2	Brake (RX3, RX5, RX6)
	3	Tacho + brake (RX3, RX5, RX6)
	4	Encoder adaptation ⁽¹⁾ (size 5 and 6 only)
	5	Tacho + Encoder adaptation (size 5 and 6 only)
	6	Brake + Encoder adaptation (size 5 and 6 only)
	7	Tacho + Brake + Encoder adaptation (size 5 and 6 only)
7	Customer specification	
	00	Standard catalogue definition - smooth shaft (size 1 -> 4) - shaft with key way (size 5-6)

⁽¹⁾ Encoder adaptation is standard for RX1 and RX3.



Pancake DC Servo Motor - AXEM Series

Overview

Description

The AXEM motor, with more than 2 million units produced, is one of the most widespread servo motors in the world. With its disk rotor, composed solely of copper and insulator the Axem motor achieves high dynamics and excellent regulation of motion at low speed, as well as silent and vibration-free functioning. It is robust, efficient, and low maintenance.

Advantages

- Very low speed modulation
- Exceptional regulation at low speed
- High dynamic characteristics
low rotor inertia
- Silent and vibration-free functioning
- Maintenance free
- Disk rotor
- Protection: IP44
IP20 for ventilated models
- Class F insulation

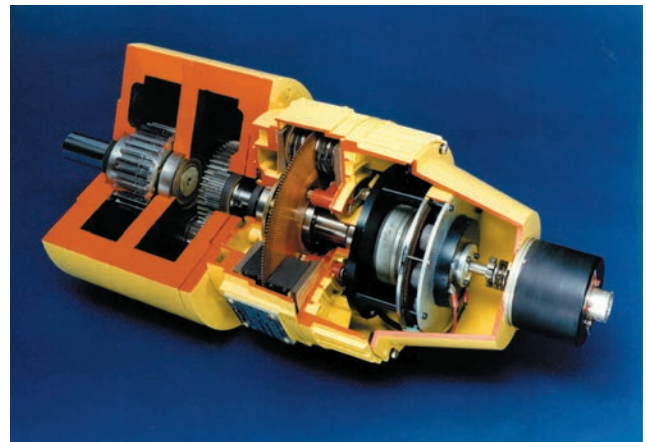
Applications

- Factory Automation
- Life Science Diagnostic



Technical Characteristics - Overview

Nominal torque	0.14...19.2 Nm
Nominal current	6.4...44 A
Nominal voltage	14...178 V
Nominal speed	3000, 4800 min ⁻¹
Inertia	29...7400 kgmm ²



Technical Data

Motor	Nominal torque [Nm]	Nominal current [A]	Nominal voltage [V]	Nominal speed [min ⁻¹]	Inertia [kgmm ²]
F9M4R	0.14	6.4	22	4800	35
F9M2	0.282	11	14	3000	29
F9M4	0.346	6.7	26	3000	35
F9M4H	0.537	6.5	35	3000	34
F12M4R	0.42	8	37	4800	150
F12M2	0.61	11.7	24	3000	105
F12M4	0.77	7.7	43	3000	150
F12M4H	1.1	7.2	61	3000	160
MC13S	1.2	7.6	64	3000	235
MC17H	1.8	6.9	102	3000	790
MC17B	1.2	24	23.5	3200	790
MC19P	3.2	14.5	83	3000	1000
MC19P ⁽¹⁾	5.1	22.2	87	3000	1000
MC19S	3.2	7.3	165	3000	1000
MC19S ⁽¹⁾	5.1	11.1	171	3000	1000
MC19B	2.8	46	23.5	3000	1000
MC23S	6.1	13	170	3000	2300
MC23S ⁽¹⁾	10.5	21.8	178	3000	2300
MC24P	7.3	18.9	136	3000	3200
MC24P ⁽¹⁾	14.3	36	142	3000	3200
MC27P	14.3	33	152	3000	7400
MC27P ⁽¹⁾	19.2	44	154	3000	7400

⁽¹⁾ Cooling by external fan 10 l/s

Encoder					
Type	Associated motor	Pulse/rev.		Inertia [kgmm ²]	Weight [kg]
		standard	option		
C2	F	500	1000	0.1	0.035
		250			
C4	F	500	1000	2.3	0.2
			2500		
C6B	MC	500	1000	3	0.45
			2500		
			5000		

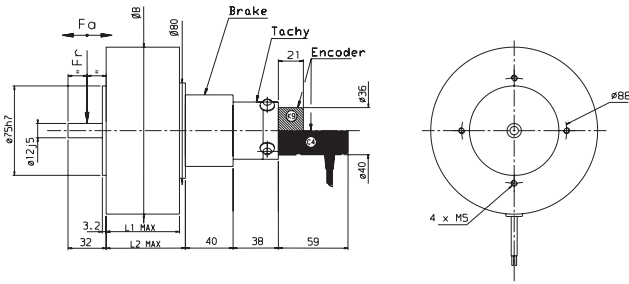
Tachy		
Type	Associated motor	EMF [V/1000 min ⁻¹]
F9T	F9	3
FC12T	F12 / MC	6
TBN 206	F9 / F12	6
TBN 420	MC	20

Brake (24 VDC ± 10%)				
Associated motor	Holding torque		Inertia [kgmm ²]	Weight [kg]
	Magnet brake [Nm]	Spring brake [Nm]		
F9 - F12	-	1.5	10	0.47
MC13	2	-	23	0.3
MC17 / MC19	5	-	65	0.6
MC23 / MC24	12	-	214	1.1
MC27	20	-	570	1.9
MC17	-	4	25	1.4
MC19	-	8	70	1.9
MC23 / 24 / 27	-	16	135	2.8

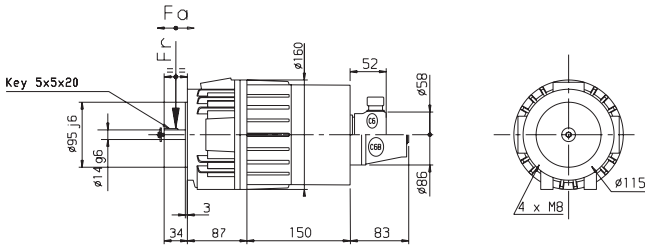
Dimensions

F9 - F12 dimensions					
Motor	L1 [mm]	L2 [mm]	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
F9M4R	34	46.5	1.1	14	2.5
F9M2	52.5	65	2.3	14	2.5
F9M4	52.5	65	2.3	14	2.5
F9M4H	64	76.5	2.8	14	2.5
F12M4R	37.5	51	2.9	14	2.5
F12M2	61.5	71.5	3.85	14	2.5
F12M4	61.5	71.5	3.85	14	2.5
F12M4H	74	84	5	14	2.5

F9: $\phi B = \phi 110$
F12: $\phi B = \phi 140$

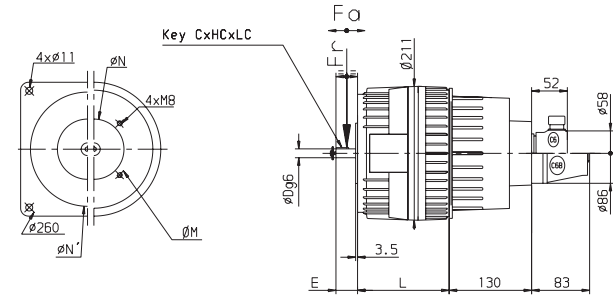


MC13 dimensions			
Motor	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
MC13	4	35	13



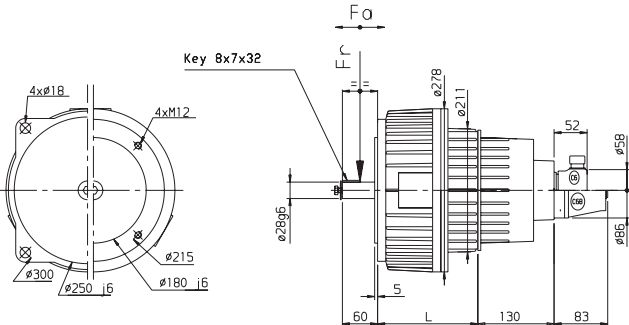
MC17 - MC19 dimensions								
Motor	M [mm]	N [mm]	N ⁽¹⁾ [mm]	E [mm]	L [mm]	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
MC17	115	95	180	34	163	6.5	60	35
MC19	165	130	130	50	163	9.7	60	35

MC17: C x HC x LC = 5 x 5 x 20
MC19: C x HC x LC = 8 x 7 x 32



MC23 - MC24 - MC27 Dimensions					
Motor	L [mm]	B [mm]	Weight [kg]	Fr ⁽¹⁾ [daN]	Fa ⁽¹⁾ [daN]
MC23	173	278	17	75	40
MC24	185	278	23	80	45
MC27	198	316	35	90	50

Dimensions including brake, tachy and encoder
⁽¹⁾ Fr and Fa not cumulative



Planetary Gearboxes

Economic Gearboxes PE Series

Precision Gearboxes PS Series

ATEX Gearboxes GXA Series



PE



PS



GXA



Economical Planetary Gearheads - PE

Overview

Description

The PE is the perfect economy gearbox. This planetary gearbox was especially designed for all applications where a considerably low backlash is not of vital importance.

Features

- Excellent price/performance ratio
- Input speeds up to 18000 min⁻¹
- Low backlash
- High output torques
- PCS-2 system
- High efficiency (96 %)
- 15 ratios $i=3...64$
- Low noise
- High quality (ISO 9001)
- Any fitting position possible
- Simple motor fitting
- Lubricated for life
- Direction of rotation equidirectional
- Balanced motor pinion



Technical Characteristics Overview

Features	Unit	PE
Geometry		Planetary Gearheads
Type		Inline
Drives sizes	[mm]	40, 60, 90, 115, 155
Maximum input speed	[min ⁻¹]	up to 18000
Nominal torque	[Nm]	460
Radial force	[N]	up to 4600
Service life	[h]	30 000
Minimum backlash	[arcmin]	< 7

Layout / Features

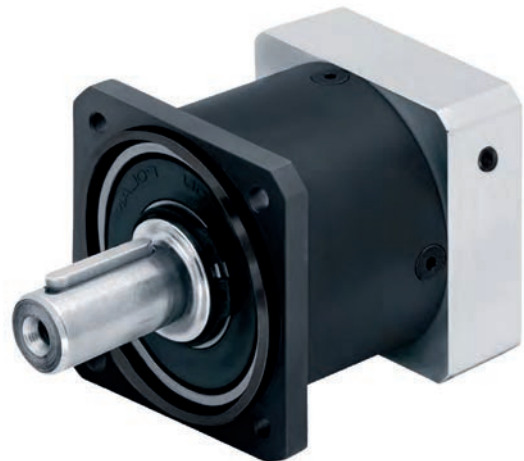
PE2 / PE3

The Economy gearbox with round output flange



PE4 / PE5

The Economy gearbox with square output flange



PE7

Gearbox for high torque applications (in combination with ETH125 electro cylinder)



Technical Data

Parameter	Unit	Ratio	PE2	PE3	PE4	PE5	PE7	
Nominal torque $T_{nom r}$ / Maximum permissible acceleration torque $T_{acc r}$ / Emergency stop torque $T_{em r}^{(5)}$ $T_{nom r} / T_{acc r} / T_{em r}^{(5)}$ (1)(2)(3)(4)	[Nm]	1 step	3	11/17.5/22.5	28/45/66	85/136/180	115/184/390	-
			4	15/24/30	38/61/88	115/184/240	155/248/520	460/736/920
			5	14/22/36	40/64/80	110/176/220	195/312/500	445/712/890
			7	8.5/13.5/26	25/40/80	65/104/178	135/216/340	-
			8	6/10/27	18/29/80	50/80/190	120/192/380	-
		2 step	10	5/8/27	15/24/80	38/61/200	95/152/480	210/336/420
			9	16.5/26/33	44/70/88	130/208/260	210/336/500	-
			12	20/32/40	44/70/88	120/192/240	260/416/520	-
			15	18/29/36	44/70/88	110/176/220	230/368/500	-
			16	20/32/40	44/70/88	120/192/240	260/416/520	460/736/920
			20	20/32/40	44/70/88	120/192/240	260/416/520	460/736/920
			25	18/29/36	40/64/80	110/176/220	230/368/500	445/712/890
			32	20/32/40	44/70/88	120/192/240	260/416/520	-
			40	18/29/36	40/64/80	110/176/220	230/368/500	460/736/920
			50		-	-	-	445/712/890
64	7.5/12/27	18/29/80	50/80/190	120/192/380	-			
Nominal drive speed at $T_{nom r}$ $N_{nom r}^{(6)}$	[min ⁻¹]	3	5000	4500	3400*	3400*	-	
		4	5000	4500	3450*	3500*	1800*	
		5	5000	4500	4000*	3500*	2150*	
		7	5000	4500	4000	3500	-	
		8	5000	4500	4000	3500	-	
		9	5000	4500	4000*	3500*	-	
		10	5000	4500	4000	3500	3000	
		12	5000	4500	4000*	3500*	-	
		15	5000	4500	4000	3500*	-	
		16	5000	4500	4000	3500*	2900*	
		20...64	5000	4500	4000	3500	3000 (* for ratio 20,25)	
Maximum mechanical input speed $N_{max r}^{(6)}$	[min ⁻¹]	3...64	18 000	13 000	7 000	6 500	5 500	
Maximum radial force $Pr_{max}^{(1)(7)}$	[N]		160	340	1 700	2 400	4 600	
Maximum axial force $Pa_{max}^{(1)(7)}$	[N]		160	450	2 000	2 100	6 000	
Lifetime	[h]		30 000 (lifetime lubrication)					
Backlash	[arcmin]	(1 step)	< 15	< 10	< 7	< 7	< 8	
		(2 step)	< 19	< 12	< 9	< 9	< 10	

(1) the data refer to an output shaft speed of $n_2=100 \text{ min}^{-1}$ and application factor $KA=1$ as well as S1 operating mode for electrical machines and $T=30 \text{ °C}$

(2) dependent on the respective motor shaft diameter

(3) with keyway: for dynamic loads

(4) permitted for 30 000 revolutions of the output shaft

(5) permitted 1000 times

(6) permitted operating temperatures may not be exceeded.

(7) referred to the center of the output shaft

* at 50 % $T_{nom r}$ and S1

Technical Characteristics

Parameter	Unit	Ratio	PE2	PE3	PE4	PE5	PE7	
Efficiency at full load ⁽⁸⁾	%	(1 step)	97					
		(2 step)	95					
Noise level at 3000 min⁻¹ ⁽⁹⁾	[dB (A)]		58	58	60	65	70	
Torsional stiffness ⁽⁸⁾	[Nm/arcmin]	(1 step)	0.7 - 1	1.7 - 2.3	5.2 - 7	11.3 - 15.2	38.5 - 52	
		(2 step)	0.8 - 1	1.9 - 2.3	5.7 - 7	12.3 - 15.2	39.5 - 52	
Operating temperature ⁽¹⁰⁾	[°C]		-25 ... +90					
Lubrication			Lifetime lubrication					
Orientation			Any					
Direction of Rotation			Same as input					
Product Enclosure Rating			IP54					
Moment of inertia ⁽¹¹⁾	[kgmm ²]	1 step	3	3.1	13.5	77	263	-
			4	2.2	9.3	52	179	707.3
			5	1.9	7.8	45	153	604.6
			7	1.8	7.2	42	141	-
			8	1.7	6.5	39	132	-
			10	1.6	6.4	39	130	466.3
		2 step	9	3.0	13.1	74	262	-
			12	2.9	12.7	72	256	-
			15	2.3	7.7	71	253	-
			16	2.2	8.8	50	175	615.6
			20	1.9	7.5	44	150	519.4
			25	1.9	7.5	44	149	514.7
			32	1.7	6.4	39	130	-
			40	1.6	6.4	39	130	445.4
50		-	-	-	975.4			
64	1.6	6.4	39	130	-			
Weight	[kg]	(1 step)		0.9	3.2	6.6	16.5	
		(2 step)		1.1	3.7	8.6	20.5	

⁽⁸⁾ depends on the ratio

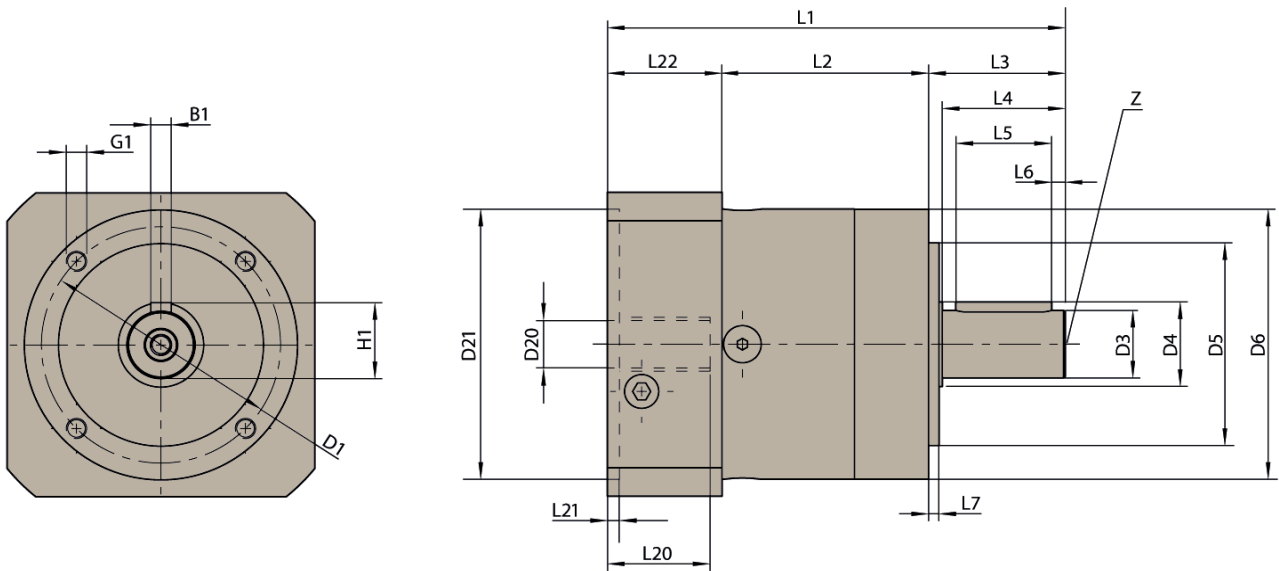
⁽⁹⁾ Noise level at a distance of 1 m; measured at a drive speed of $n_1=3000 \text{ min}^{-1}$ without load; $i=5$

⁽¹⁰⁾ referred to the center of the housing surface

⁽¹¹⁾ Inertia refers to the input shaft and to the standard motor shaft diameter D20

Dimensions

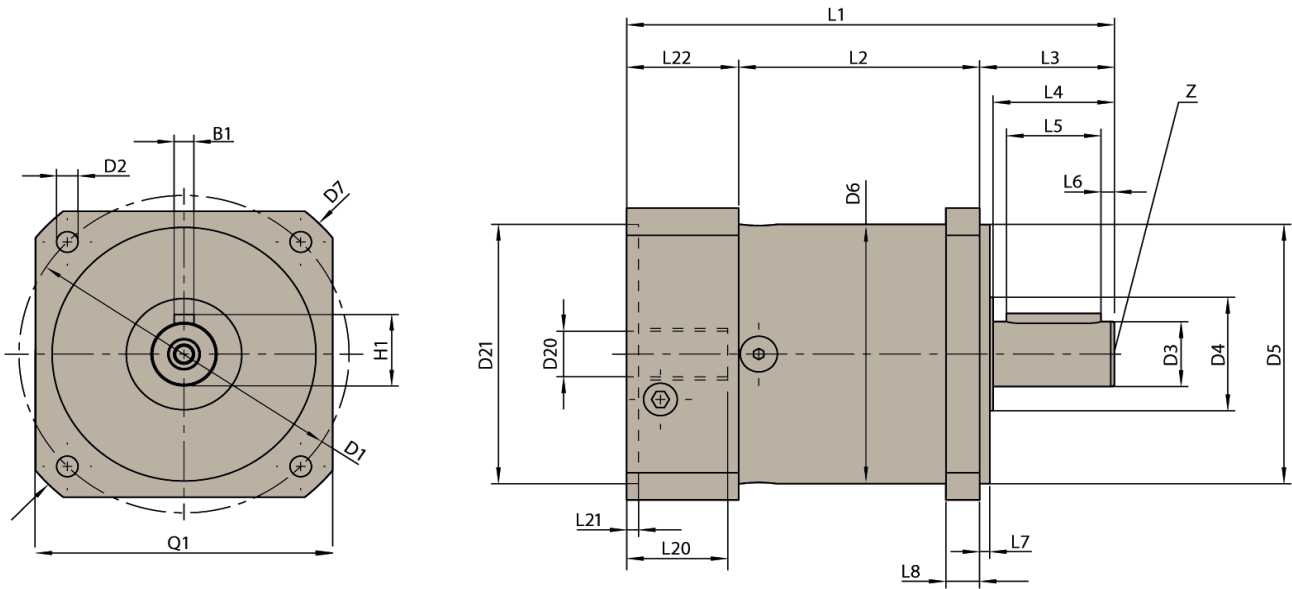
PE2 / PE3



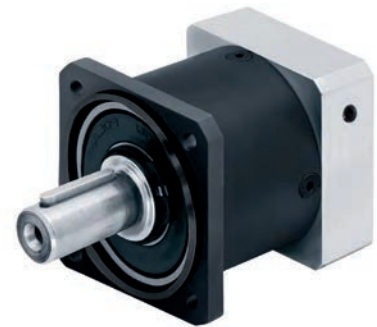
All dimensions in mm		PE2	PE3	
B1	Keyway DIN 6885 T1	3	5	
D1	Flange bolt circle	34	52	
D2	Mounting bore	-	-	
D3	Shaft diameter	10	14	
D4	Shaft collar	12	17	
D5	Centering	26	40	
D6	Housing diameter	40	60	
D20	Hole	6	9	
D21	Centering diameter for motor	30	40	
G1	Tapped hole x depth	M4x6	M5x8	
H1	Keyway DIN 6885 T1	11.2	16	
L1	Overall length	1 step	93.5	106.5
		2 step	106.5	119
L2	Housing length	1 step	39	47
		2 step	52	59.5
L3	Input shaft end	26	35	
L4	Shaft end to collar	23	30	
L5	Length of keyway	18	25	
L6	Distance to shaft end	2.5	2.5	
L7	Pilot	2	3	
L8	Flange width	-	-	
L22	Motor flange length	28.5	24.5	
Q1	Flange cross section	-	-	
Z	Centering bore DIN332, sheet 2, form DR	M3x9	M5x12	



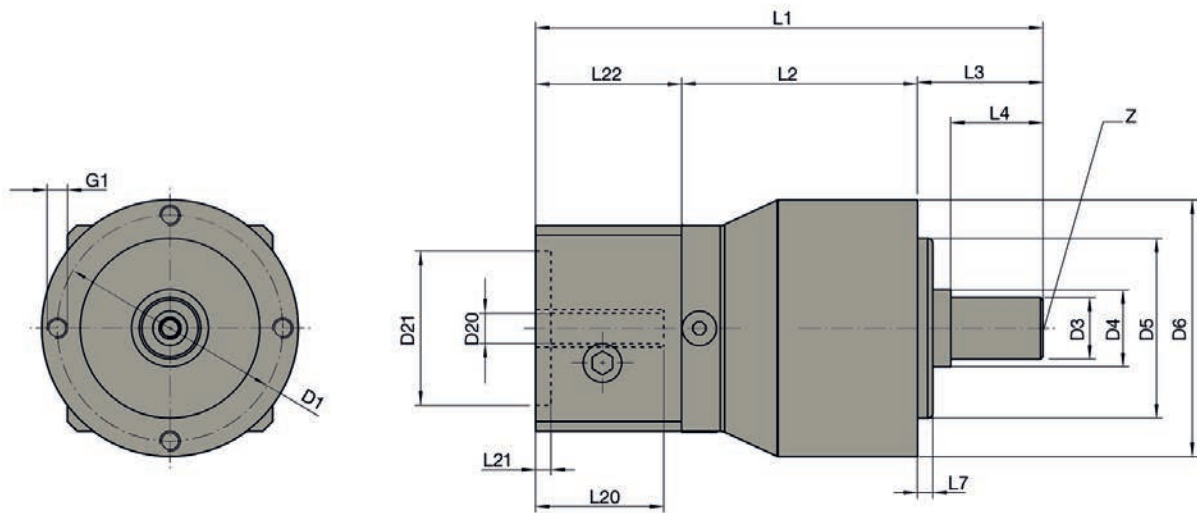
PE4, PE5



All dimensions in mm		PE4	PE5	
B1	Keyway DIN 6885 T1	6	8	
D1	Flange bolt circle	100	130	
D2	Mounting bore	6.5	8.5	
D3	Shaft diameter	20	25	
D4	Shaft collar	35	35	
D5	Centering	80	110	
D6	Housing diameter	80	115	
D20	Hole	14	19	
D21	Centering diameter for motor	80	95	
G1	Tapped hole x depth	-	-	
H1	Keyway DIN 6885 T1	22.5	28	
L1	Overall length	1 step	145	201.5
		2 step	162.5	229.5
L2	Housing length	1 step	71.5	99
		2 step	89	127
L3	Input shaft end	40	55	
L4	Shaft end to collar	36	50	
L5	Length of keyway	28	40	
L6	Distance to shaft end	4	5	
L7	Pilot	3	4	
L8	Flange width	10	15	
L22	Motor flange length	33.5	47.5	
Q1	Flange cross section	90	115	
Z	Centering bore DIN332, sheet 2, form DR	M6x16	M10x22	



PE7



All dimensions in mm		PE7	
D1	Flange bolt circle	140	
D2	Mounting bore	-	
D3	Shaft diameter	40	
D4	Shaft collar	55	
D5	Centering	120	
D6	Housing diameter	155	
D20	Hole		
D21	Centering diameter for motor		
G1	Tapped hole x depth	M10x20	
L1	Overall length	1 step	
		2 step	
L2	Housing length	1 step	100
		2 step	144.5
L3	Input shaft end	97	
L4	Shaft end to collar	82	
L7	Pilot	8	
L8	Flange width	-	
L22	Motor flange length		
Q1	Flange cross section	-	
Z	Centering bore DIN332, sheet 2, form DR	M16x36	



Motor Gearhead Combination

	Motor 1	Motor 2	Motor 3	Order Code (Gearhead)	Mounting thread G3
PE2	SMH40			PE2 XXX 10 M 030/046/06/25	M4
PE3	SMH60/B08/09		MH056/B05/09	PE3 XXX 10 M 040/063/09/20	M5
			MH056/B05/11	PE3 XXX 10 M 040/063/11/23	M5
	NX205/NX210			PE3 XXX 10 M 040/063/11/25	M5
	SMH60/B05/11	NX310	MH070/B05/11	PE3 XXX 10 M 060/075/11/23	M5
			MH070/B05/14	PE3 XXX 10 M 060/075/14/30	M5
	SY56 (NEMA 23)			PE3 XXX 10 M 038/066/06/21	M5
	SY87 (NEMA 34)			PE3 XXX 10 M 073/098/09/32	M6
PE4	SMH60/B05/11	NX310	MH070/B05/11	PE4 XXX 10 M 060/075/11/23	M5
	SMH82/B08/14			PE4 XXX 10 M 080/100/14/30	M6
	SMH82/B08/19	NX420/NX430	MH105/B09/19	PE4 XXX 10 M 080/100/19/40	M6
	SMH82/B05/19	SMH100/B05/19	MH105/B05/19	PE4 XXX 10 M 095/115/19/40	M8
	SY107 (NEMA 42)			PE4 XXX 10 M 055/125/15/32	M8
	SY87 (NEMA 34)			PE4 XXX 10 M 073/098/09/32	M6
PE5	MH105/B09/19	NX420/NX430		PE5 XXX 10 M 080/100/19/40	M6
	SMH82/B05/19	SMH100/B05/19	MH105/B05/19	PE5 XXX 10 M 095/115/19/40	M6
	SMH100/B05/24	SMH115/B09/24	MH105/B05/24	PE5 XXX 10 M 095/115/24/50	M8
	SMH115/B07/24	NX620/NX630	MH105/B06/24	PE5 XXX 10 M 110/130/24/50	M8
	SMH115/B05/24		MH145/B05/24	PE5 XXX 10 M 130/165/24/50	M10
PE7	SMH170/B05/38	MH205/B05/38		PE7 XXX 16 M 180/215/38/80	M12

Bold = Preferred motor gearhead combinations
 Only for motors with mounting bores (no mounting thread)
 Other mounting possibilities available on request (please contact Parker)

Order Code

PE Gearheads

	1	2	3	4	5	6	7	8	9
Order example	PE	3	003	10	M	038	063	06	20

1 Gearhead Type	PE	Economy planetary gearbox
2 Gearhead Size	2	PE2
	3	PE3
	4	PE4
	5	PE5
	7	PE7
3 Ratio	003	3
	...	4, 5, 7, 8, 9, 10, 12, 15, 16, 20, 25, 32, 40, 50
	064	64
4 Output shaft	16	without keyway
	10	with keyway (not possible for PE7)
5 Motor connection flange		M
6 Pilot diameter	038	38 mm
	...	
	180	180mm
7 Pilot Center Diameter PCD	063	63 mm
	...	
	215	215 mm
8 Shaft diameter	06	6 mm
	...	
	42	38 mm
9 Motor shaft length	20	20 mm
	...	
	110	110 mm



Precision Planetary Gearboxes PS Series

Overview

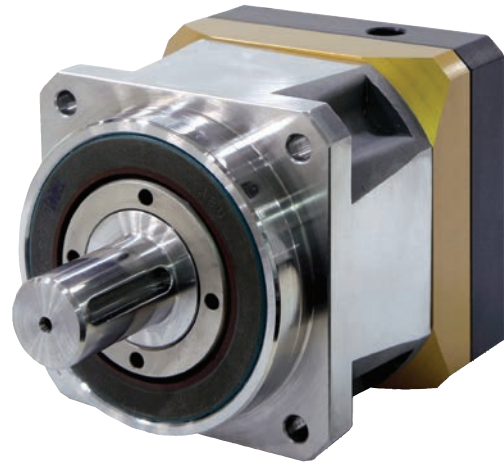
Description

The Helical Planetary Gearboxes incorporate design solutions to provide superior performance for the most demanding high performance applications.

The PS gearboxes incorporate dual angular contact bearings providing higher radial load capacities while maintaining high input speeds. The construction comprise among others, needle bearings to ensure a longer lifetime. An optimized gearing geometry provides the basis for the universal mounting position.

Common mounting kits promote quicker deliveries and ease of mounting to any servo motor.

Mounting to any servo motor is as easy as A-B-C (adapter, bushing, collet).



Features

- **High radial load capacity:**
Angular contact output bearings
- **Increased service life:**
Needle bearings
- **Life time lubrication**
- **Mounting Kits:**
Quicker deliveries and easier mounting
- **High nominal torque and low backlash:**
Helical planetary gearing
- **High wear resistance:**
Plasma Nitriding heat treating

Technical Characteristics - Overview

Series	Unit	PS
Gear geometry		Helical Planetary
Type		In-Line
Frame sizes	[mm]	60, 90, 115, 142
Maximum input speed	[min ⁻¹]	up to 6000
Nominal torque	[Nm]	27...430
Max. Radial force	[N]	10 000
Life	[h]	20 000
Backlash	[arcmin]	up to <3

Technical Characteristics

Parameter	Unit	Ratio ⁽⁸⁾	PS60	PS90	PS115	PS142
Nominal output torque ⁽¹⁾ $T_{nom r}$	[Nm]	3 , 15, 30	27	76	172	300
		4, 5 , 7, 20 , 25, 40, 50 , 70	37	110	230	430
		10 , 100	32	93	205	310
Maximum acceleration torque $T_{acc r}$	[Nm]	3 , 15, 30	34	105	225	450
		4, 5 , 7, 20 , 25, 40, 50 , 70	48	123	285	645
		10 , 100	37	112	240	465
Emergency stop output torque ⁽²⁾ $T_{em r}$	[Nm]	3 , 15, 30	80	260	600	1100
		4, 5 , 7, 20 , 25, 40, 50 , 70	70	230	500	970
		10 , 100	60	200	430	830
Nominal drive speed $N_{nom r}$	[min ⁻¹]	3	3000	2500	2000	1500
		4, 5	3500	3000	2500	2000
		7, 10 , 15	4000	3500	3000	2500
		20 , 25, 30	4500	4000	3500	3000
		40, 50	4800	4400	3800	3200
		70, 100	5200	4800	4200	3600
Maximum input speed $N_{max r}$ ⁽³⁾	[min ⁻¹]	3...100	6000	5500	4500	4000
Maximum radial force Pr_{max} ⁽⁴⁾	[N]		1650	4800	7500	10000
Maximum axial load Pa_{max} ⁽⁵⁾	[N]		2100	3600	6800	8800
Life	[h]		20 000 (lifetime lubrication)			
Backlash - standard ⁽⁶⁾	[arcmin]	3...10 (1 step)	<6	<6	<4	<4
		15...100 (2 step)	<8	<8	<6	<6
Backlash - reduced ⁽⁶⁾	[arcmin]	3...10 (1 step)	<4	<4	<3	<3
		15...100 (2 step)	<6	<6	<5	<5
Efficiency at nominal torque	%	3...10	97	97	97	97
		15...100	94	94	94	94
Noise level at 3000 min ⁻¹ ⁽⁷⁾	[db]	3...100	<62	<62	<65	<66
Torsional rigidity	[Nm/arcmin]	3...100	3	12	27	50
Operating temperature	[°C]	3...100	-20...90			
Lubrication		3...100	Lifetime lubrication			
Orientation		3...100	any			
Direction of Rotation		3...100	same as input			
Enclosure rating			IP65			
Rotor inertia			see page 20			
Weight	[kg]	3...10	1.3	3.0	7.0	14.0
		15...100	1.7	5.0	10.0	20.0

⁽¹⁾ At nominal speed $N_{nom r}$.

⁽²⁾ Maximum of 1000 stops.

⁽³⁾ Cycle mode.

⁽⁴⁾ Max. radial load applied to the center of the shaft at 100 min⁻¹

⁽⁵⁾ Max. axial load at 100 min⁻¹.

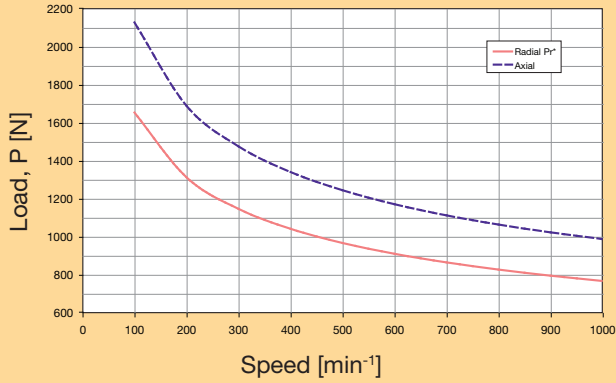
⁽⁶⁾ Measured at 2 % of rated torque.

⁽⁷⁾ Measure at 1 m.

⁽⁸⁾ Gearboxes in bold print - ratios with standard reversing play are on stock. (for PS60 to PS115 only)

Load on Input Shaft

PS60

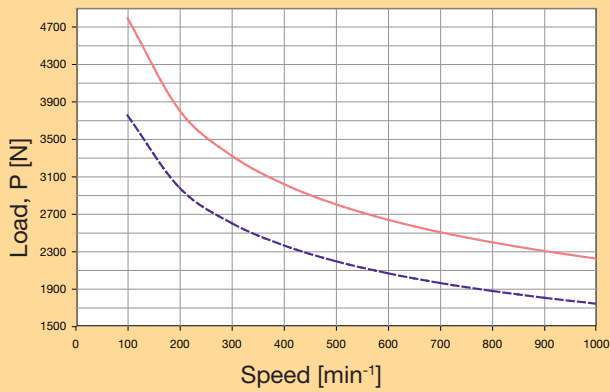


— Radial Pr*
- - Axial

Formulas to calculate radial load (Prx) at any distance "X" from the gearbox mounting surface:

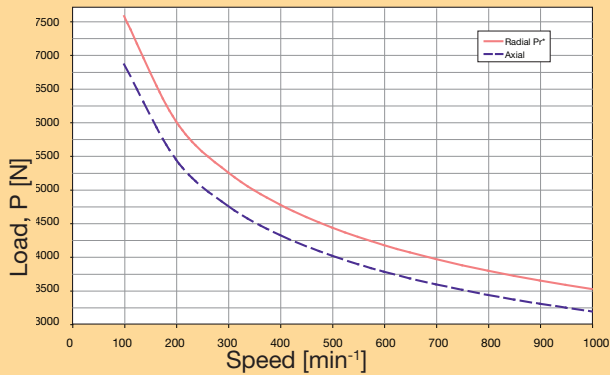
$$Pr_x = Pr * 75 \text{ mm} / (49 \text{ mm} + X)$$

PS90



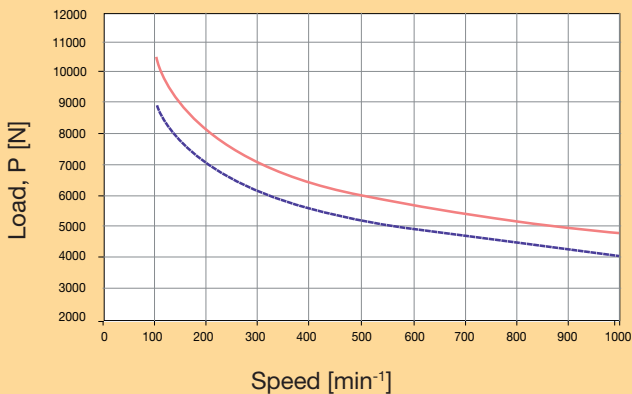
$$Pr_x = Pr * 96 \text{ mm} / (62 \text{ mm} + X)$$

PS115



$$Pr_x = Pr * 124 \text{ mm} / (81 \text{ mm} + X)$$

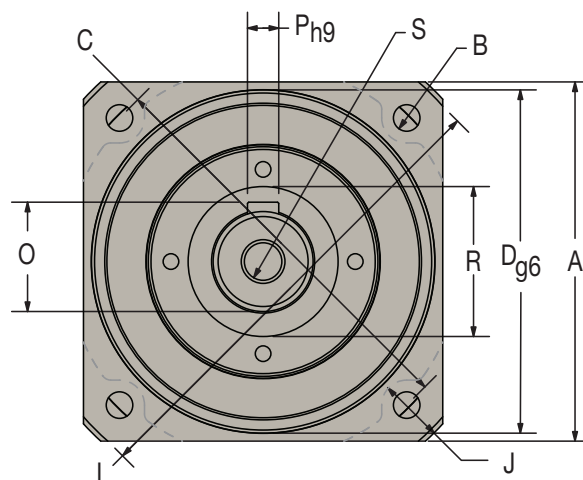
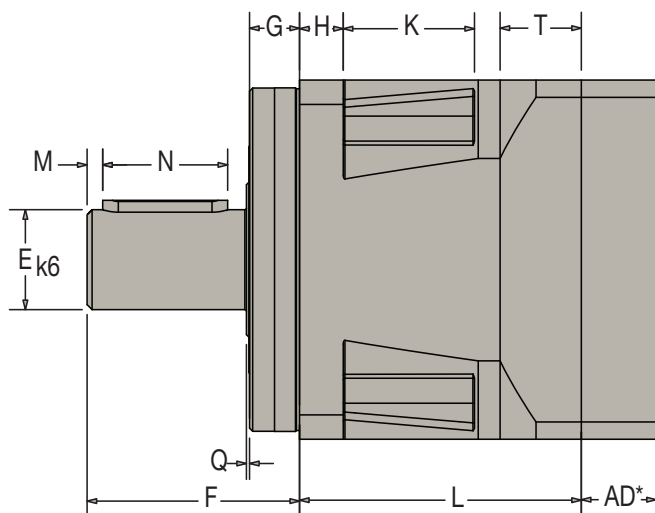
PS142



$$Pr_x = Pr * 156 \text{ mm} / (93 + X)$$

* Radial load applied to center of the shaft.

Dimensions



AD*: see table "Universal Mounting Kits"

Frame size	All dimensions in mm	PS60	PS90	PS115	PS142
A	Flange cross section	62	90	115	142
B	Fixing bore	5.5	6.5	8.5	11.0
C	Bolt circle	70	100	130	165
D	Motor pilot Ø	50	80	110	130
E	Drive shaft Ø	16	22	32	40
F	Drive shaft length	40	52	68	102
G	Motor pilot depth	11	15	16	20
H	Flange width	8	10	14	15
I	Ø Housing	80	116	152	185
J	Housing recess	5	6.5	7.5	10.0
K	Recess length	24	33	42	45
L1	Length single stage	59.8	69.5	90.2	103.7
L2	Length double stage	94.8	113	143.4	170.7
M	Distance from shaft end	2	3	5	5
N	Keyway length	25	32	40	63
O	Key height	18	24.5	35	43
P	Keyway width	5	6	10	12
Q	Collar height	1	1	1.5	2.5
R	Collar Ø	22	35	50	78
S	Center bore (shaft end)	M5x8	M8x16	M12x25	M16x32
T	Width of flange on output side	20.5	20	26	31

Universal Mounting Kits

Adapter length "AD" dimension

Frame size	Motor shaft length [mm]	Gearbox adapter length [mm]
60	16...35	16.5
	35.1...41	22.5
90	20...40	20
	40.1...48	28.5
115	22...50	24
	50.1...61	35
142	26...62	30
	62.1...82	50

PS: Rotor Inertia

All rotor inertias refer to the gearbox input

Ratio	Unit	PS60	PS90	PS115	PS142
3	[kgmm ²]	25	97	340	1480
4	[kgmm ²]	17	67	220	980
5	[kgmm ²]	15	51	170	700
7	[kgmm ²]	14	41	130	530
10	[kgmm ²]	14	37	110	440
15	[kgmm ²]	15	52	170	640
20	[kgmm ²]	15	51	170	640
25	[kgmm ²]	15	51	170	640
30, 40, 50, 70, 100	[kgmm ²]	13	37	110	420

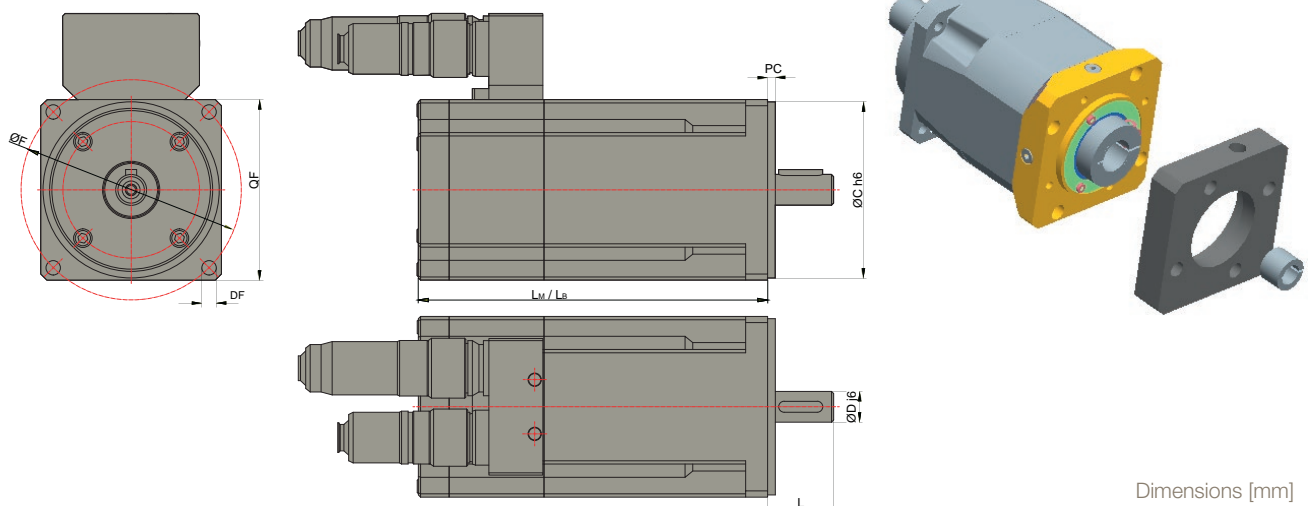
Adapter Flange / Motor - Dimensions (Gear Unit Input Side)

Motor ⁽¹⁾	Flange Type	Motor flange	Flange depth	Bolt circle Ø	Bore Ø	Pilot Ø	Pilot depth	Shaft Ø	Shaft length	Adapter flange		
		QF	PC	F	DF	C	S	D	L	Order No.	Fastening thread	AD ⁽²⁾ (short)
SM_60,###,##,5,11,S	B5	70	7	75	6	60	2.5	11	23	MU60-001	M5	16.5
M_70,###,##,5,11,S	B5	70	7	75	6	60	2.5	11	23	MU60-001	M5	16.5
NX320		56	8.5	75	5.5	60	2.5	11	23	MU60-001	M5	16.5
M_56,###,##,5,9,S	B5	56	6.5	63	5.5	40	2.5	9	20	MU60-003	M5	16.5
SM_60,###,##,8,9,S	B5	60	7	63	5.5	40	2.5	9	20	MU60-003	M5	16.5
SY56#	Nema23	56.5	4.83	66.67	5.3	38.1	1.6	6.35	25.4	MU60-005	M5	16.5
M_56,###,##,5,11,S	B5	56	6.5	63	5.5	40	2.5	11	23	MU60-254	M5	16.5
NX205/210		56	7.2-18	63	5.5	40	2.5	11	25	MU60-254	M5	16.5
NX110		42.5	6	50	3.2	30	2.5	9	25	MU60-255	M3	16.5
SM_82,###,##,8,14,S	B8	82	10	100	6.5	80	3.5	14	30	MU60-321	M6	16.5
SM_82,###,##,8,14,S	B8	82	10	100	6.5	80	3.5	14	30	MU90-001	M6	20
SM_82,###,##,8,19,S	B8	82	10	100	6.5	80	3.5	19	40	MU90-085	M6	20
NX420/430		91.5	10.5	100	7	80	3	19	40	MU90-085	M6	20
M_105,###,##,5,19,S	B5	105	10	115	9.5	95	3.5	19	40	MU90-088	M9	20
SM_100,###,##,5,19,S	B5	100	10	115	9	95	3.5	19	40	MU90-088	M8	20
SM_115,###,##,8,19,S	B8	115	10	130	9	95	3.5	19	40	MU90-345	M8	20
M_105,###,##,5,24,S	B5	105	10	115	9.5	95	3.5	24	50	MU115-005	M8	24
SM_100,###,##,5,24,S	B5	100	10	115	9	95	3.5	24	50	MU115-005	M8	24
SM_115,###,##,8,19,S	B8	115	10	130	9	95	3.5	19	40	MU115-006	M8	24
M_105,###,##,6,24,S	B6	105	10	130	9	110	3.5	24	50	MU115-010	M8	24
SM_115,###,##,7,24,S	B7	130	10	130	9	110	3.5	24	50	MU115-010	M8	24
NX620/630		121	10.5	130	9	110	3.5	24	50	MU115-010	M8	24
SM_82,###,##,8,14,S	B8	82	10	100	6.5	80	3.5	14	30	MU115-015	M6	24
SM_115,###,##,5,24,S	B5	145	10	165	11	130	3.5	24	50	MU115-026	M10	24
SM_142,###,##,5,24,S	B5	145	10	165	11	130	3.5	24	50	MU115-026	M10	24
SM_82,###,##,5,19,S	B5	100	10	115	9	95	3.5	19	40	MU115-039	M8	24
SM_100,###,##,5,19,S	B5	100	10	115	9	95	3.5	19	40	MU115-039	M8	24
SM_82,###,##,8,19,S	B8	82	10	100	6.5	80	3.5	19	40	MU115-089	M6	24
SM_115,###,##,8,24,S	B8	115	10	130	9	95	3.5	24	50	MU115-257	M8	24
M_105,###,##,9,24,S	B9	96	10	100	7	80	3.5	24	50	MU115-269	M6	24
SM_170,###,##, ,38,S	B5	170	8	215	14	180	4	38	80	MU142-40410	M12	53
MH205,###,##, ,38,S	B5	205	8	215	14	180	4	38	80	MU142-40410	M12	53

For motors not shown in the list please contact Parker

- ⁽¹⁾ MB/SMB: for drives TPDM, SLVDN,
MH/SMH: for drives Compax3, PSD

⁽²⁾ AD: Adapter length (please refer to the "dimensions" chapter)



Dimensions [mm]

Gearbox Sizing

Parker has prepared the following procedure to provide a quick method for selecting a gearbox.

1) Application parameters:

- Acceleration time (t_{acc})
- Continuous run time (t_{cont})
- Deceleration time (t_{dec})
- Dwell time (t_{dwell})
- Acceleration torque (T_{acc})
- Continuous torque (T_{cont})
- Deceleration torque (T_{dec})

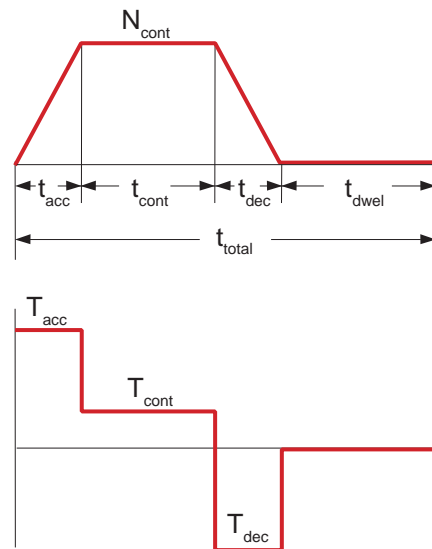
- Application speed (N_{cont})
- Transmission ratio (i)
- Gearbox nominal torque ($T_{nom r}$)
- Max. permissible acceleration torque ($T_{acc r}$)
- Percentage of acceleration torque vs. continuous cycle time (t_{total})
- Max. input speed ($N_{max r}$)

2) Duty cycle:

$$\text{Duty cycle} = t_{acc} + t_{cont} + t_{dec} / t_{total} \times 100 \%$$

If duty cycle is <60 % and ($t_{acc} + t_{cont} + t_{dec}$) is less than 20 minutes, the motion is considered to be intermittent.

If duty cycle is <60 % and ($t_{acc} + t_{cont} + t_{dec}$) is more than 20 minutes, the motion is considered to be continuous.



3) For Cycle mode applies:

Determine T_{acc} % of ($T_{acc} + T_{cont} + T_{dec}$):
 $T_{acc} / (T_{acc} + T_{cont} + T_{dec}) \times 100\%$

Define the ratio: T_{cont} / T_{acc}

Use the table to select the load factor K.

Compare Accel/Decel torque to the maximum permissible accel torque of the gearbox $T_{acc r}$: $T_{acc} < T_{acc r} \times K$, if not, please select a more suitable gearbox.

Compare the required maximum speed to the maximum rated speed of the gearbox.

$$N_{max} < N_{max r / i} \text{ i-gearbox ratio}$$

Table: Load Factor K

T_{acc} %	$0 < T_{cont} / T_{acc} < 0.25$	$0.25 < T_{cont} / T_{acc} < 0.5$
10-15	1.0	1.0
15-20	1.0	0.95
20-25	0.94	0.89
25-30	0.88	0.84
30-35	0.81	0.79
35-40	0.76	0.75
40-45	0.71	0.70
45-50	0.66	0.66

4) For continuous operation applies:

$$T_{nom} < T_{nom r}$$

$$N_{nom} < N_{nom r} / i$$

5) Check the Emergency Stop Torque Rating.

6) Verify Radial and Axial Shaft Load of the Application for the selected Gearbox.

Order Code

PS Gearboxes

	1	2		3		4	5		6
Order example	PS	60	-	003	-	S	2	/	MU60-088

1 Gearbox type		
● PS	Gearbox for in-line mounting	
2		
● 60	Flange 60	
● 90	Flange 90	
● 115	Flange 115	
● 142	Flange 142	
3 Ratio		
003	3	●
004	4	
005	5	●
007	7	
010	10	●
015	15	
020	20	●
025	25	
030	30	
040	40	
050	50	●
070	70	
100	100	
4 Reverse play / orientation		
● S	Standard	
● L	Reduced	
5 Series		
● 2	Gen 2 Gearboxes	

6 Adapter flange / Motor assignment	
● MU60-001	SMH60,###,##,5,11,S MH70,###,##,5,11,S NX3
● MU60-003	MH56,###,##,5,9,S SMH60,###,##,8,9,S
● MU60-005	SY56
● MU60-254	MH56,###,##,5,11,S NX2
● MU60-255	NX1
● MU60-321	SMH,###,###,8,14,S
● MU90-001	SMH82,###,##,8,14,S
● MU90-085	SMH82,###,##,8,19,S NX4
● MU90-088	MH105,###,##,5,19,S SMH100,###,##,5,19,S
● MU90-345	SMH115,###,##,8,19,S
● MU115-005	MH105,###,##,5,24,S SMH100,###,##,5,24,S
● MU115-006	SMH115,###,##,8,19,S
● MU115-010	MH105,###,##,6,24,S SMH115,###,##,7,24,S NX6
● MU115-015	SMH82,###,##,8,14,S
● MU115-026	SMH115,###,##,5,24,S SMH142,###,##,5,24,S
● MU115-039	SMH82,###,##,5,19,S SMH100,###,##,5,19,S
● MU115-089	SMH82,###,##,8,19,S
● MU115-257	SMH115,###,##,8,24,S
● MU115-269	MH105,###,##,9,24,S
● MU142-40410	SM_170,###,##,38,S MH205,###,##,38,S
● MUxxx-yyy	Additional motors

● On stock, short delivery times

PS gearboxes generally come with a keyway



ATEX Gearboxes GXA Series

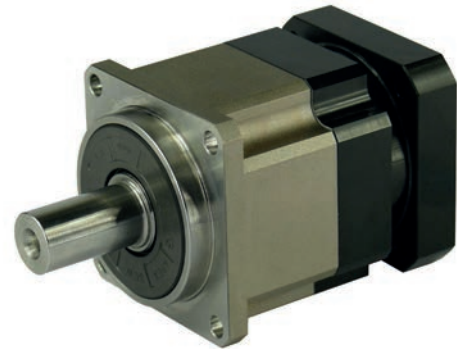
Overview

Description

GXA gearbox series has to be associated with the powerful Parker ATEX servomotors ranges for use in hazardous areas. The precision helical gearing design offers smooth and quiet operation for the most demanding high performance applications.

The solid uncaged needle roller bearings provides maximum contact points to increase stiffness and generates high output torque.

In addition the unique motor adapter and bushing module system design allows to obtain a compact structure and a quick and easy mounting of any ATEX certified Parker motor.



Features

- ATEX certify
- Low backlash
- High efficiency
- Easy mounting
- Low noise
- Compact structure
- Helical Gear Design



Technical Characteristics - Overview

Series	Unit	GXA
Gear geometry		Helical Gearing
Type		In-Line
Frame sizes	[mm]	60, 90, 115, 142, 180, 220
Maximum input speed	[min ⁻¹]	up to 10 000
Nominal torque	[Nm]	40...1800
Radial force	[N]	up to 50 000
Life	[h]	up to 20 000
Backlash	[arcmin]	up to ≤ 3
Efficiency	[%]	up to ≥ 97 %
Category		Equipment Group II Category 2 in accordance with Directive 2014/34/EU
Harmonized standard		EN 1127-1:2012
Other technical standards & specifications applied		EN 13463-1:2009, EN 13463-5:2013, ISO281:2004, ISO286:2013, DIN3960

Technical Characteristics

Model No.		Stage	Ratio ¹	GX..R02..	GX..R04..	GX..R06..	GX..R07..	GX..R09..	GX..R10..
Nominal Output Torque T_{2N}	[Nm]	1	3	55	130	208	342	588	-
			4	50	140	290	542	1050	-
			5	60	160	330	650	1200	-
			6	55	150	310	600	1100	-
			7	50	140	300	550	1100	-
			8	45	120	260	500	1000	-
			9	40	100	230	450	900	-
			10	40	100	230	450	900	-
		2	15	-	130	208	342	588	-
			20	-	140	290	542	1050	-
			25	-	160	330	650	1200	-
			30	-	150	310	600	1100	-
			35	-	140	300	550	1100	-
			40	-	120	260	500	1000	-
			45	-	100	230	450	900	-
			50	-	160	330	650	1200	-
			60	-	150	310	600	1100	-
			70	-	140	300	550	1100	1800
			80	-	120	260	500	1000	1600
			90	-	100	230	450	900	1500
100	-	100	230	450	900	1500			
Emergency Stop Torque T_{2NOT}^3	[Nm]	1,2	3~100	3 times of Nominal Output Torque					
Nominal Input Speed n_{1N}	[min ⁻¹]	1,2	3~100	5000	4000	4000	3000	3000	2000
Max. Input Speed n_{1B}	[min ⁻¹]	1,2	3~100	10 000	8000	8000	6000	6000	4000
Standard Backlash	[arcmin]	1	3~10	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
		2	15~100	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Reduced Backlash	[arcmin]	1	3~10	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
		2	15~100	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Torsional Rigidity	[Nm / arcmin]	1,2	3~100	7	14	25	50	145	225
Max. Radial Load F_{2rB}^2	[N]	1,2	3~100	1530	3250	6700	9400	14500	50000
Max. Axial Load F_{2aB}^2	[N]	1,2	3~100	765	1625	3350	4700	7250	25000
Lifetime	[h]	1,2	3~100	20 000*					
Efficiency	[%]	1	3~10	≥ 97 %					
		2	15~100	≥ 94 %					
Weight	[kg]	1	3~10	1.3	3.7	7.8	14.5	29	48
		2	15~100	1.5	4.1	9	17.5	33	60
Operating Temp	[°C]	1,2	3~100	-10 to 40 °C					
Lubrication				Synthetic grease					
Degree of Gearbox Protection		1,2	3~100	IP65					
Mounting Position		1,2	3~100	All directions					
Noise Level ($n_1=3000 \text{ min}^{-1}$, No Load)	[dB(A)]	1,2	3~100	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70

¹ Ratio (i=N in / N out)

² Applied to the output shaft center @ 100 min⁻¹

³ Max. acceleration torque $T_{2B} = 60\%$ of T_{2NOT}

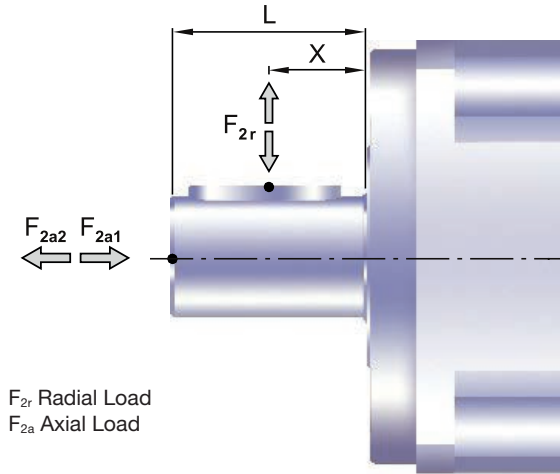
*S1 service life 10,000 hrs.

Gearbox Inertia

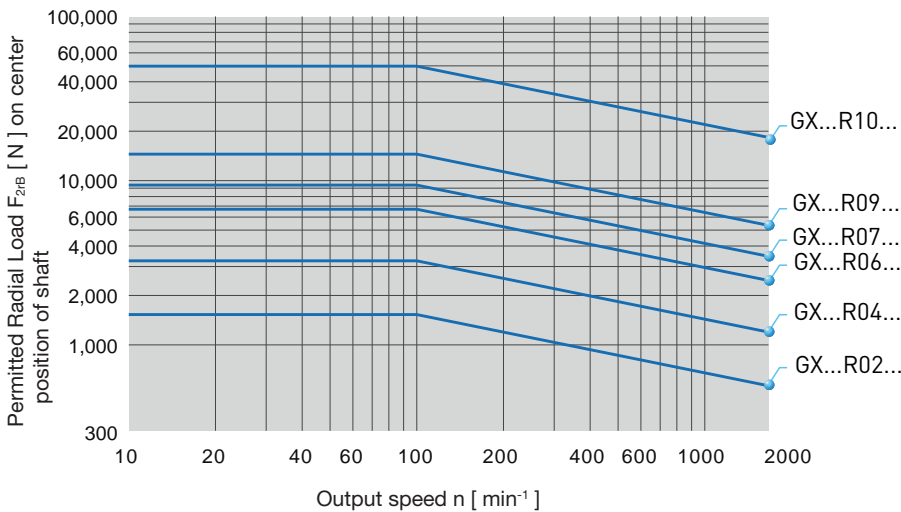
Model No.	Unit	Stage	Ratio	GX..R02..	GX..R04..	GX..R06..	GX..R07..	GX..R09..	GX..R10..
Mass Moments of inertia J ₁	[kgmm ²]	1	3	16	61	325	921	2898	-
			4	14	48	274	754	2367	-
			5	13	47	271	742	2329	-
			6	13	45	265	725	2275	-
			7	13	45	262	714	2248	-
			8	13	44	258	707	2259	-
			9	13	44	257	704	2253	-
			10	13	44	257	703	2251	-
		2	15	-	13	47	271	742	-
			20	-	13	47	271	742	-
			25	-	13	47	271	742	-
			30	-	13	47	271	742	-
			35	-	13	47	271	742	-
			40	-	13	47	271	742	-
			45	-	13	47	271	742	-
			50	-	13	44	257	703	-
			60	-	13	44	257	703	-
			70	-	13	44	257	703	2251
			80	-	13	44	257	703	2251
			90	-	13	44	257	703	2251
100	-	13	44	257	703	2251			

Permitted radial and axial loads on output shaft of the gearbox

The permitted radial and axial loads on output shaft of the gearbox depend on the design of the gearbox supporting bearings. GXA Series uses the extension straddle oversized ball bearing design. It can take heavy load from both axes.

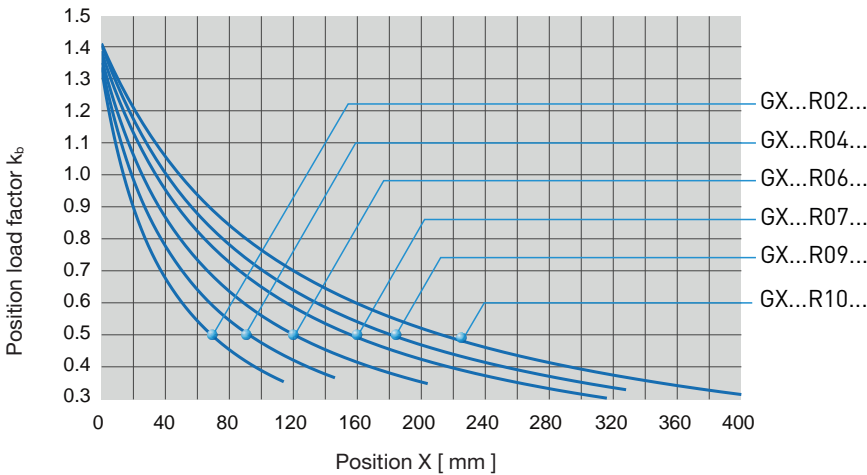


If radial force F_{2r} exert on the center of the output shaft : $X=1/2 \times L$.



The permitted radial load is given on left diagram.

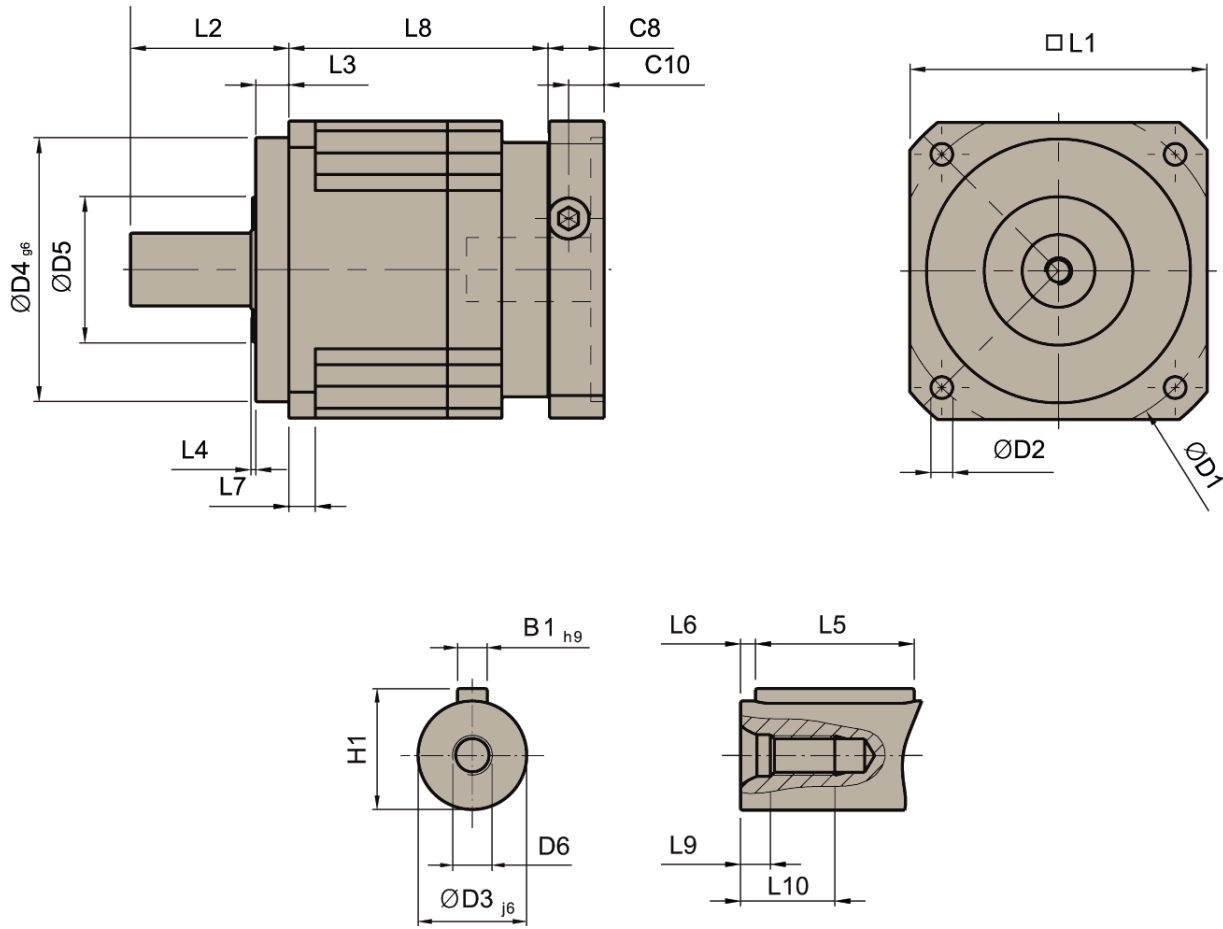
If radial force F_{2r} not exert on the center of the output shaft : $X < 1/2 \times L$ or $X > 1/2 \times L$



The permitted radial load can be calculated by multiplying the current by the position load factor K_o on the left diagram.

Dimensions

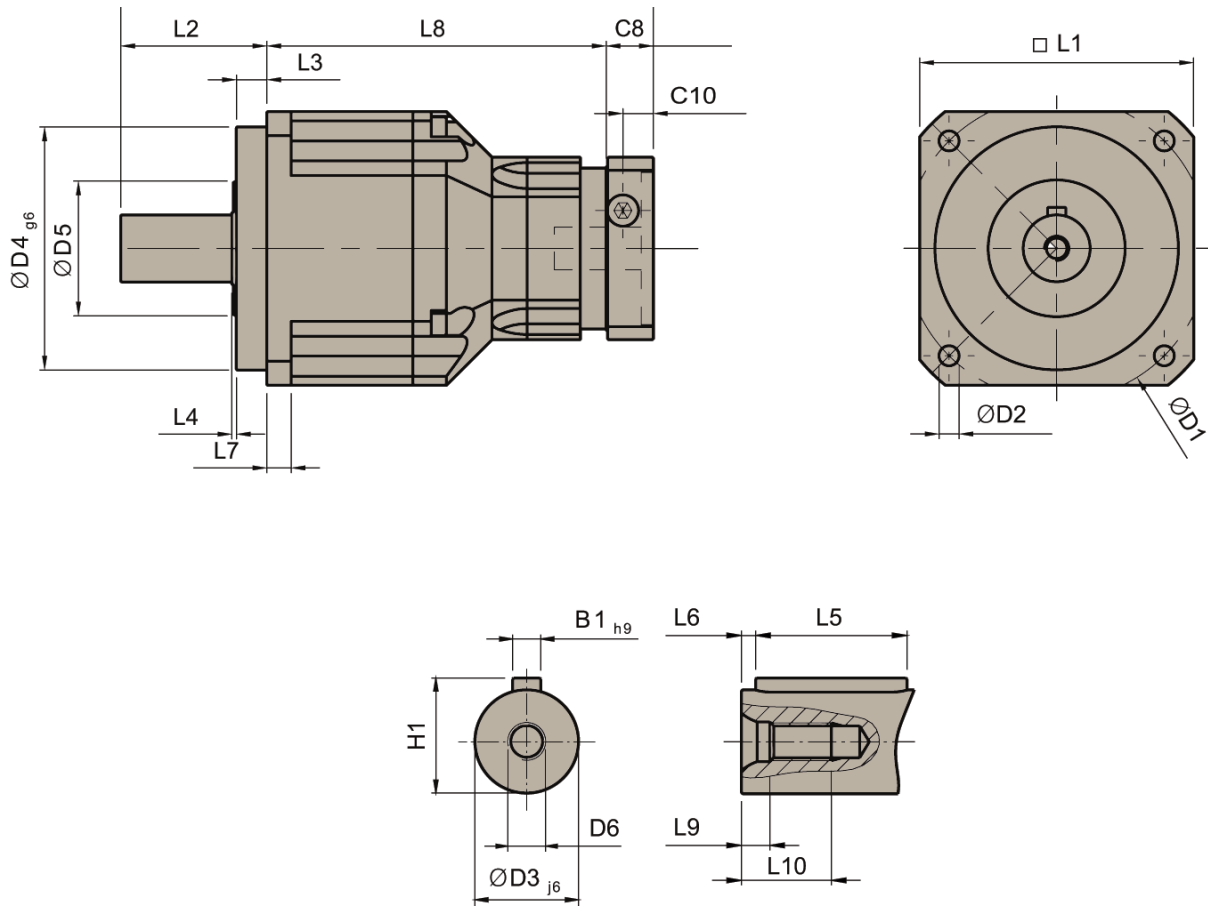
1 Stage - Ratio $i = 3 - 10$



	GX..R02..	GX..R04..	GX..R06..	GX..R07..	GX..R09..
D1	70	100	130	165	215
D2	5.5	6.6	9	11	13
D3 j6	16	22	32	40	55
D4 g6	50	80	110	130	160
D5	45	65	95	75	95
D6	M5 x 0.8	M8 x 1.25	M12 x 1.75	M16 x 0.8	M20 x 2.5
L1	60	90	115	142	180
L2	37	48	65	97	105
L3	7	10	12	15	20
L4	1.5	1.5	2	3	3
L5	25	32	40	63	70
L6	2	3	5	5	6
L7	6	8	10	12	15
L8	61	78.5	102	119.5	154
L9	4.8	7.2	10	12	15
L10	12.5	19	28	36	42
C8³	19	17	19.5	22.5	29
C10³	13.5	10.75	13	15	20.75
B1_{h9}	5	6	10	12	16
H1	18	24.5	35	43	59

³C8-C10 are motor specific dimensions.

2 Stages - Ratio $i = 15 - 100$



	GX..R04..	GX..R06..	GX..R07..	GX..R09..	GX..R10..
D1	100	130	165	215	250
D2	6.6	9	11	13	17
D3 j6	22	32	40	55	75
D4 g6	80	110	130	160	180
D5	65	95	75	95	115
D6	M8 x 1.25	M12 x 1.75	M16 x 2	M20 x 2.5	M20 x 2.5
L1	90	115	142	180	220
L2	48	65	97	105	138
L3	10	12	15	20	30
L4	1.5	2	3	3	3
L5	32	40	63	70	90
L6	3	5	5	6	7
L7	8	10	12	15	20
L8	111.5	143.5	176	209.5	248
L9	7.2	10	12	15	15
L10	19	28	36	42	42
C8⁴	19	17	19.5	22.5	29
C10⁴	13.5	10.75	13	15	20.75
B1_{h9}	6	10	12	16	20
H1	24.5	35	43	59	79.5

4. C8-C10 are motor specific dimensions.

Gearbox Combinations

	Ratio	Motor Size				
		EX3 / EY3	EX4 / EY4	EX6 / EY6	EX8 / EY8	
1 stage	3	GXA3N003R0201	GXA4N003R0401	GXA6N003R0601	GXA8N003R0701	
	4	GXA3N004R0201	GXA4N004R0401	GXA6N004R0601	GXA8N004R0701	
	5	GXA3N005R0201	GXA4N005R0401	GXA6N005R0601	GXA8N005R0701	
	6	GXA3N006R0201	GXA4N006R0401	GXA6N006R0601	GXA8N006R0701	
	7	GXA3N007R0201	GXA4N007R0401	GXA6N007R0601	GXA8N007R0701	
	8	GXA3N008R0201	GXA4N008R0401	GXA6N008R0601	GXA8N008R0701	
	9	GXA3N009R0201	GXA4N009R0401	GXA6N009R0601	GXA8N009R0701	
	10	GXA3N010R0201	GXA4N010R0401	GXA6N010R0601	GXA8N010R0701	
2 stages	15	GXA3N015R0401	GXA4N015R0601	GXA6N015R0701	GXA8N015R0901	
	20	GXA3N020R0401	GXA4N020R0601	GXA6N020R0701	GXA8N020R0901	
	25	GXA3N025R0401	GXA4N025R0601	GXA6N025R0701	GXA8N025R0901	
	30	GXA3N030R0401	GXA4N030R0601	GXA6N030R0701	GXA8N030R0901	
	35	GXA3N035R0401	GXA4N035R0601	GXA6N035R0701	GXA8N035R0901	
	40	GXA3N040R0401	GXA4N040R0601	GXA6N040R0701	GXA8N040R0901	
	45	GXA3N045R0401	GXA4N045R0601	GXA6N045R0701	GXA8N045R0901	
	50	GXA3N050R0401	GXA4N050R0601	GXA6N050R0701	GXA8N050R0901	
	60	GXA3N060R0401	GXA4N060R0601	GXA6N060R0701	GXA8N060R0901	
	70			GXA4N070R0601		GXA8N070R0901
		GXA3N070R0401	GXA4N070R0701	GXA6N070R0701	GXA8N070R1001	
	80	GXA3N080R0401	GXA4N080R0601	GXA6N080R0701	GXA8N080R0901	
			GXA4N080R0701		GXA8N080R1001	
	90	GXA3N090R0401	GXA4N090R0601	GXA6N090R0701	GXA8N090R0901	
			GXA4N090R0701		GXA8N090R1001	
	100	GXA3N100R0401	GXA4N100R0601	GXA6N100R0701		
		GXA4N100R0701		GXA8N100R1001		

Motor gearhead possible combination with torque limitation, please consult us at EM-motion@parker.com

Order Code

GXA Gearboxes

	1	2	3	4	5	6	7
Order example	GX	A	3	N	005	R060	0

1 Gearbox Series	GX	Gearbox for in-line mounting
2 Gearbox Type	A	ATEX version
3 Motor size association *	3	EX3, EY3 (60/75/11/23)
	4	EX4, EY4 (80/100/19/40)
	6	EX6, EY6 (110/130/24/50)
	8	EX8, EY8 (130/165/32/58)
4 Backlash	N	Normal
	R	Reduced
5 Ratio	3 to 10	for GXA 1 stage
	15 to 100	for GXA 2 stages
6 Gearbox Size *	R020	Size 60
	R040	Size 90
	R060	Size 115
	R070	Size 142
	R090	Size 180
	R100	Size 220
7 Shaft	0	Smooth shaft
	1	Keyed shaft

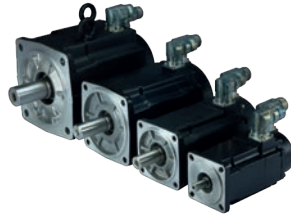
* To find out about possible combinations please refer to the table on page 31.

Explosion proof servo motor

EX Series - Zone 1
www.parker.com/eme/ex



EY Series - Zone 2
www.parker.com/eme/ey



Controller Products

Controller

HMI



Parker Automation
Controller



Interact Xpress HMI



Parker Automation Controller - PAC

Overview

Description

Powerful, integrated, and designed for the global machine market, the EtherCAT based Parker Automation Controller (PAC) combines machine logic, real-time motion control and visualization into a standard based, performance driven, fan-less and easily mountable din rail solution. This programmable automation controller comes equipped with a native, real-time EtherCAT bus for high-speed I/O and motion control, a modular interface slot for 3rd Party device communication, standard Ethernet and USB ports plus onboard SD program storage. Programmed with the Parker Automation Manager software, OEMs can produce efficient, high-performance control systems based on the IEC61131-3 and PLCopen Motion standards.

The motion controller's solid state design is precisely engineered for demanding industrial environments. The powerful, yet energy efficient Intel® Atom™ N2600 processor allows for fanless operation while supporting dual-cores, 64-bit instructions, and Hyper-threading technology. Coupled with the removable, solid state SD storage media, all moving parts have been eliminated for a robust, industrial grade control solution.

Features

- IEC61131-3 programming
- PLCopen motion control
- Simulation runtime
- High-speed EtherCAT
- Dual Ethernet networks
- Local and remote I/O
- SD application memory
- Modular communication interface
- Intel® N2600 dual core, 1.60 GHz, 64bit
- 1 GB DDR3 SDRAM
- Fan-less operation
- CNC capability
- DIN rail mounted
- Web configuration tool



Technical Characteristics - Overview

Parker Automation Controller - PAC	
Supply voltage	24 VDC -15 %/+25 %
CPU	Intel® N2600 CPU, 1.6 GHz, Dual Core, 64bit 1 MB L2 Cache
Memory	Up to 1 GB SDRAM
Storage	2 GB
Ports	2x RJ-45 10/100/1000BaseT Ethernet 1x RJ45 100Mbit/s EtherCAT supporting IEEE1588 distributed clocks 2x USB 2.0 Host Type A
Storage temperature	-25...+70 °C
Operating temperature	0...+50 °C
Relative humidity	5...95 %, non-condensing
Built-in fieldbus	EtherCAT 100 Mbit/s
Dimensions	25x120x90 mm (WxHxD)
Shielding	Connected straight to module housing
Installation	35 mm DIN rail (top-hat rail)
Protection	IP20
CE Compliant	2004/108/EC Electromagnetic Compatibility
UL	UL508 & UL61010-1 / UL61010-2-201

Product Overview Parker Automation Controller

Designed for OEMs to maximize efficiency while exceeding performance expectations, the Parker Automation Control System comprises the Parker Automation Controller (PAC), the Parker Automation Manager Integrated Development Environment (IDE), and the PAC I/O System. Together these elements provide OEMs with a powerful, standards-based programmable automation controller designed to tackle the most demanding applications. The PAC System consolidates machine logic, signal handling, advanced motion, and visualization into one performance driven solution, thus eliminating unnecessary hardware and communication links, and maximizing developer efficiency.

I/O Modules



The PAC I/O System comprises a variety of modules for digital, analog, temperature signals, high-speed counters and communication interfaces.



SD storage

- SD card allows applications and data to be stored



PAC side



I/O side

E-Bus connector

- Provides fast EtherCAT connectivity for local PACIO Modules
- Vibration proofed connection



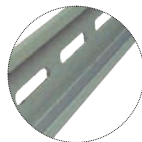
Push button

- IP address log button and clearing of the "ERROR" LED.



Intel® N2600 Dual Core Processor

- 1GB DDR3 SDRAM
- 64 bit instructions
- Fan-less Operation



DIN rail mount

- Easy installation



Power connector

- Connector for input power, +24VDC nominal.



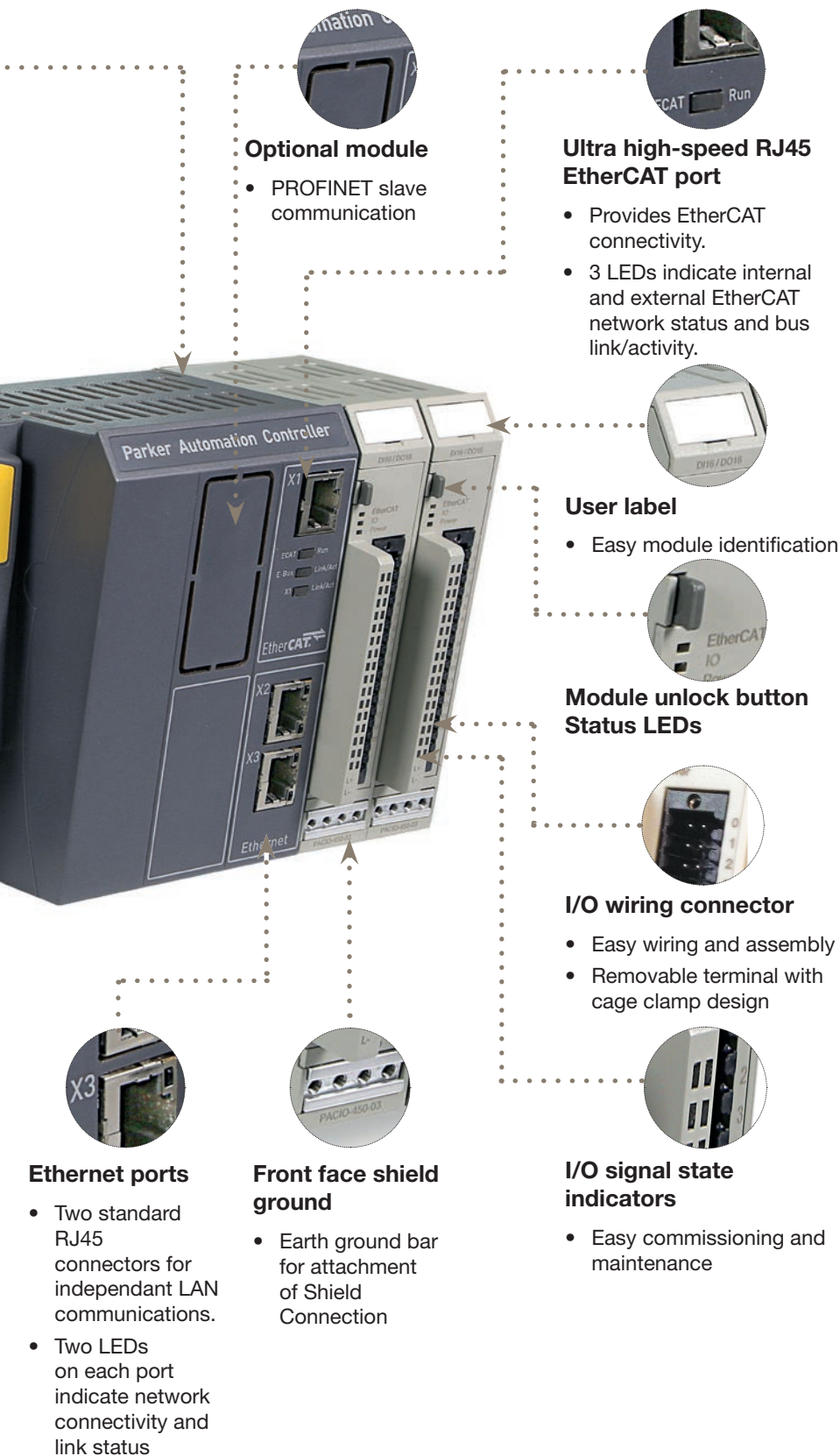
System status LEDs

- 3 LEDs indicate the system status



USB ports

- Dual standard USB 2.0 ports, type A



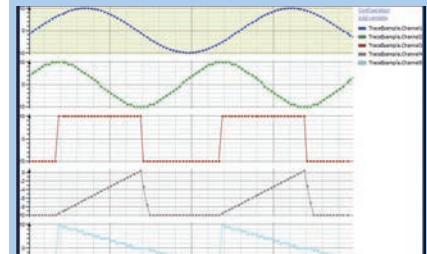
Software - Parker Automation Manager

Designed specifically to meet the needs of OEMs, the Parker Automation Manager (PAM) provides tools for faster code generation, modular code reuse and decreased commissioning times and thus supports faster times to market, decreases development cost, and increases ROI.



Engineers can work smarter, more efficiently and more effectively by choosing from the five IEC standard programming languages to optimize for an application, by using industry standard PLCopen Motion for motion control programming, deploying to the powerful simulation runtime for faster development and using online variable watch and trending for logic analysis.

Parker Automation Manager puts the engineer first and provides all the tools to make control programming smart and efficient.



- IEC61131-3 programming
- PLCopen motion control
- Simulation runtime
- Web configuration tool
- Advanced Cam Editor
- CNC capability
- PLCopen motion control I, II, III

Technical Characteristics

Technical Data

Input voltage	24 VDC (-15 %/+25 %), SELV limited energy, 1.2 A, 29 W Power must be provided by a class 2 power source. Overvoltage category 1
CPU	Intel® N2600 CPU, 1.6 GHz, Dual Core, 64bit, 1 MB L2 Cache
Memory	Up to 1 GB DDR3 SDRAM (minimum), 1066 MHz, PC3-8500, 204-pin SODIMM Socket
Storage	2 GB (minimum) Secure Digital Card (SD)
Fuse	Littelfuse Nano SMF slow blow type; part number R454002
Heat dissipation	Without optional communications module: 5.0 W maximum With optional communications module: 5.8 W maximum
Maximum number of PACIO modules	Up to 20 modules connected to the controller or, maximum 5 VDC @3 A E-bus load. More than 20 modules can be added to the PAC320 by using the extender module and bus coupler module. See the PACIO bus coupler section of the user guide
Electrical insulation	Modules electrically insulated from one another and from the bus
IO connection	Spring-assisted combi plug with mechanical ejector, 4...36 pin
Diagnosis indication	LED located next to the terminal LED: bus state, module state, broken wire/excessive current
Number of ports	Up to 32 digital I/Os on every module, up to 8 analog channels per module
Noise immunity	Zone B to EN 61131-2, installation on an earthed top at DIN rail in the earthed control cabinet
Shock rating	10 g peak; 11 ms (operating) 30 g peak; 11 ms (non-operating)
Operating vibration	10...500 Hz: 2 grms random
Altitude	3048 m (10000 Feet)

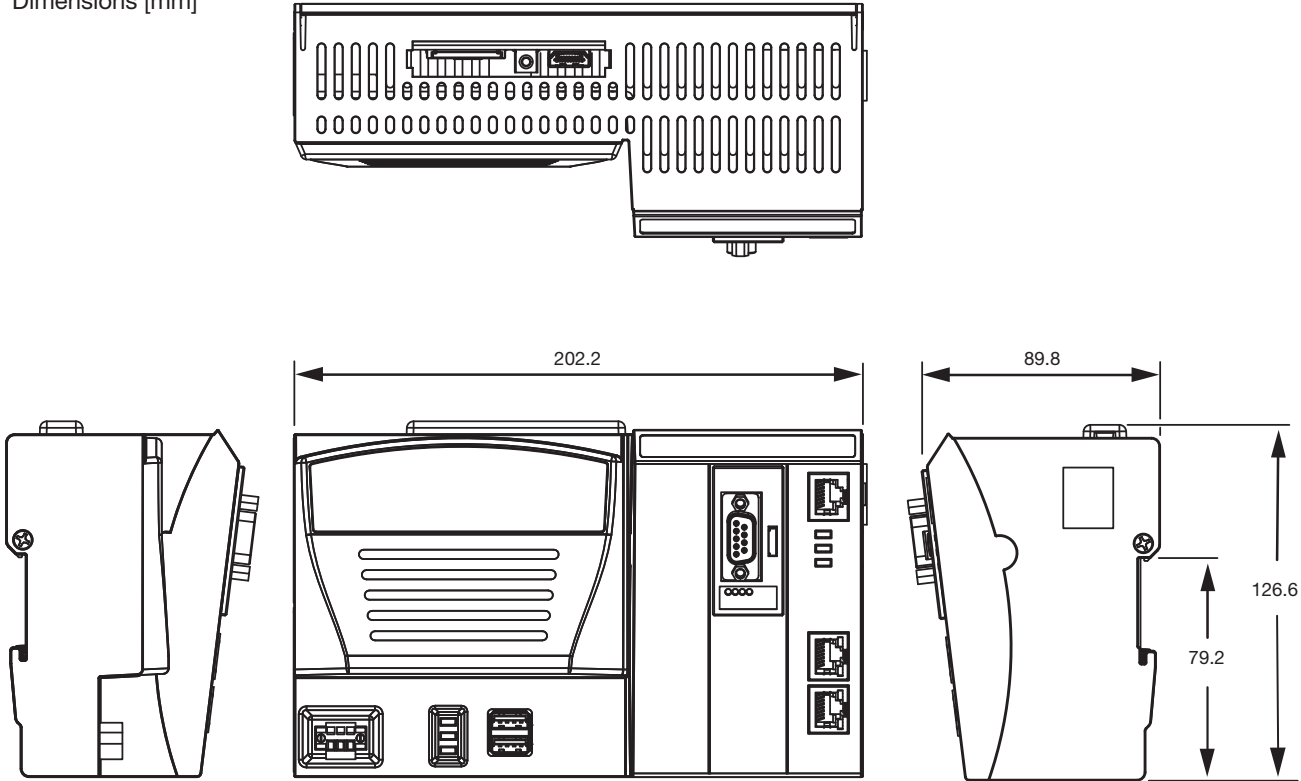
Standards and Conformance

Tests	Specification
Harmonic current emissions	EN 61000-3-2:2006 + A2:2009 IEC 61000-3-2:2009
Voltage fluctuations and flicker	EN 61000-3-3:2008 IEC 61000-3-3:2008
Electrostatic discharge immunity	IEC 61000-4-2:2008
Radiated electromagnetic field immunity	IEC 61000-4-3:2010
Electrical fast transient burst immunity	IEC 61000-4-4:2012
Surge immunity	IEC 61000-4-5:2005
Radio frequency common mode immunity	IEC 61000-4-6:2008
Power frequency magnetic field immunity	IEC 61000-4-8:2009
Voltage interrupts immunity	IEC 61000-4-11:2004
Radiated & conducted emissions	EN 55011:2009 + A1:2010
CISPR 11 Group 1, Class A	CISPR 11:2009 + A1:2010
EN61010-1:2010	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory use. Part 1 General Requirements
EN61010-2-201:2013	Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory use. Part 2-201 Particular Requirements for Control Equipment
UL 61010-1, 3rd Edition, 2012-04-17 UL File E243373	Electrical Equipment for Measurement, Control and Laboratory use. Part 1: General Requirements
CAN/CSA-C22.2 No. 61010-1, 3rd Edition, 2012-04	Electrical Equipment for Measurement, Control and Laboratory use. Part 1: General Requirements
UL 61010-2-201	Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 2-201: Particular requirements for control equipment
IEC 60529, Edition 2.1 + Corr. 1:2003 + Corr. 2:2007 + Corr. 3:2009	Protection Degree IP20

Dimensions

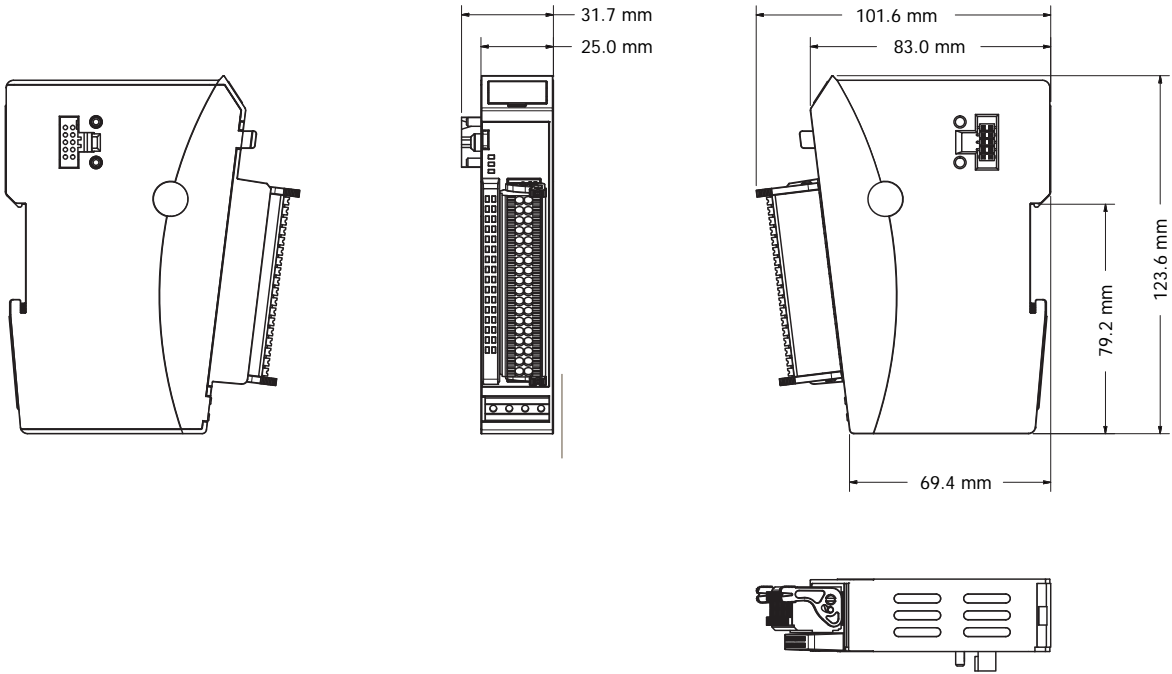
Parker Automation Controller Dimensions

Dimensions [mm]



I/O Dimensions

Dimensions [mm]



Accessories and Options

Communication Modules

The Parker Automation Controller (PAC) comes standard with the industry leading high-speed EtherCAT communication bus for motion, I/O, and 3rd party device connectivity.

Coupled with the standard modular communication interface, dual LAN capability, and ability to integrate directly into Ethernet/IP networks (Modbus TCP is also available), the PAC provides unprecedented connectivity for complimentary devices and network isolation for IT professionals.



PROFINET communication module

The following communication protocols are available:

- EtherCAT
- PROFINET
- Profibus (via PACIO slave module)
- Ethernet/IP
- Modbus TCP (Master & Slave as a standard on every unit)

Parker Automation Controller I/O Modules

The PAC I/O System comprises a variety of modules for digital, analog and temperature signals as well as communication interfaces. The modules connect directly to the controller via the built-in EtherCAT bus for local architectures and are extended to remote locations via the extender and bus coupler modules, thus supporting both local and distributed I/O architectures.

PAC I/O modules feature a removable cage-clamp terminal design which provides for easy wiring and assembly and allows for the removal and insertion of modules without interfering with wiring; LED status indicators for the EtherCAT bus, I/O, power and each signal channel; front-face shield-grounding to the din-rail; removable label inserts; easy access front mounted module disconnects; and laser etched identification and schematic information. PAC I/O communicates natively on the EtherCAT bus and is unencumbered by protocol converters; therefore it provides the full functionality and throughput of high-speed EtherCAT to meet the most demanding I/O requirements.



Module Type	Part Number	PACIO Description
Bus Coupler	PACIO-400-00	PACIO EtherCAT Bus coupler, 3 A
Digital I/O Modules	PACIO-450-02	PACIO DI16/DO8 (16 inputs/8 outputs), 1 A
	PACIO-450-03	PACIO DI16/DO16 (16 inputs/16 outputs), 1 ms delay, 0.5 A
	PACIO-450-13	PACIO DI16/DO16 (16 inputs/16 outputs), 1 ms delay, 0.5 A Low-side
	PACIO-451-02	PACIO DI32 (32 inputs), 1 ms delay
	PACIO-451-03	PACIO DI16 (16 inputs), 1 ms delay
	PACIO-450-05	PACIO DI8/DO8 (8 inputs/8 outputs), 1 ms delay, 0.5 A
	PACIO-452-01	PACIO DO16 (16 outputs), 0.5 A
	PACIO-452-02	PACIO DO8 (8 outputs)1 A
	Analog	PACIO-441-01
PACIO-441-02		PACIO AI4/8-VDC (4 differential/8 single-ended analog input module), 13 Bit
PACIO-442-02		PACIO AO4-VDC/mA (4 analog output module), 12 Bit resolution
Temperature	PACIO-443-01	PACIO AI4-Pt/Ni100 (4 analog inputs, 70 to 300 ohm resistance), 16 Bit
	PACIO-443-03	PACIO AI4-Pt/Ni1000 (4 analog inputs, 70 to 3000 ohm resistance), 16 Bit
Counter	PACIO-454-01	PACIO Counter/Enc (encoder counter module)
Interfaces	PACIO-455-03	PACIO Profibus DP Slave Module
	PACIO-400-02	PACIO Extender 2 Port (EtherCAT I/O extender)
Accessories	PACIO-412-01	PACIO Shield 2x8 mm
	PACIO-412-02	PACIO Shield 14 mm
	PACIO-411-00	Power Distribution Module (distributes 0 VDC or 24 VDC attached at pins L1 or L2)

Software - Parker Automation Manager

Smart and powerful, Parker's Automation Manager is the single, integrated development environment for programming complex machine logic, signal handling, advanced motion, and visualization.

Engineers can now manage an entire product line in one project by simply configuring multiple hardware devices and application containers, deploying reusable software packages to specific application containers and then activating the appropriate application container to download to specific machines. This method allows OEMs to maintain their program files in one project and make code changes in one place to affect all versions of a particular machine. Thus machine builders now have a development platform specifically designed to support modular machines and valuable add-on software modules.

- Customizable Interface
- Powerful cam editor
- Alarm Configuration
- PAC-to-PAC Communication
- Recipe Manager
- Unit Conversion
- Web Visualization
- Retentive Variables

With Automation Manager, engineers can leverage their existing knowledge and work smarter, more efficient and more effective than ever with the full suite of IEC 61131 programming languages and Parts I, II and III of PLCOpen Motion Control. This standards-based approach flattens the learning curve and provides a common platform for control engineers. The standard platform is complimented by Simulation Runtime for simulating logic and motion on the development computer for faster development and by a complete suite of debugging tools, including online variable watch, trending, logging and breakpoints for logic analysis. Automation Manager supports reusable, extensible software with package referencing and object oriented programming techniques, including methods to protect software

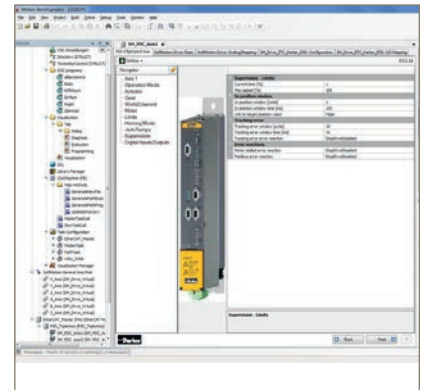


implementations and thus the intellectual property of OEMs. In short, Automation Manager is designed specifically for OEMs to decrease development and commissioning time; to support modular, reusable, extensible and protected code; and to provide engineers with the environment and tools necessary to create control applications for the complex, demanding machines of our time.

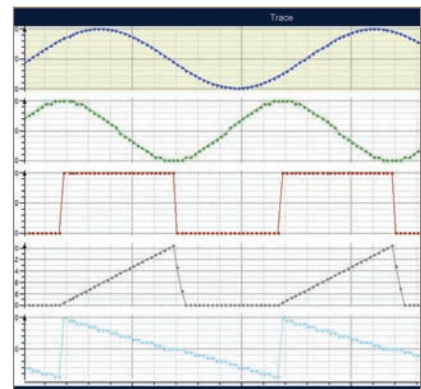
- IEC61131-3 programming languages
 - Ladder diagram
 - Structured text
 - Function block diagram
 - Sequential function chart
 - Instruction list
- PLCOpen motion control I, II, III



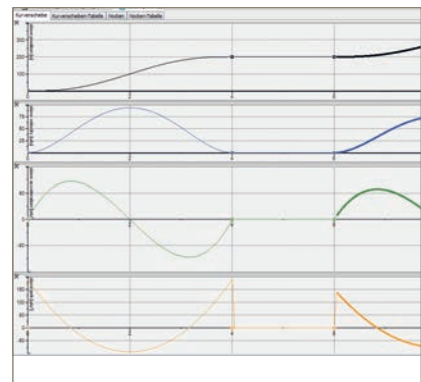
- Simulation Runtime for code & motion
- Variable watch & trending
- Auto-declaration
- Smart coding auto-complete
- Breakpoint debugging
- Custom function/function block development
- CNC development
- DXF file import
- G-code generation



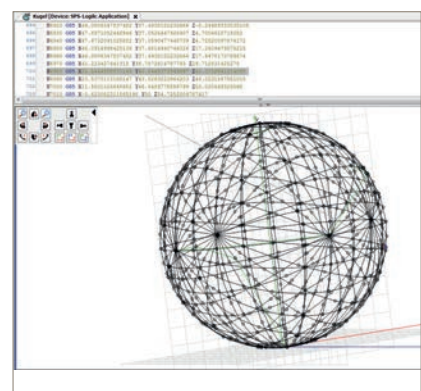
Programming



Trace / debugging

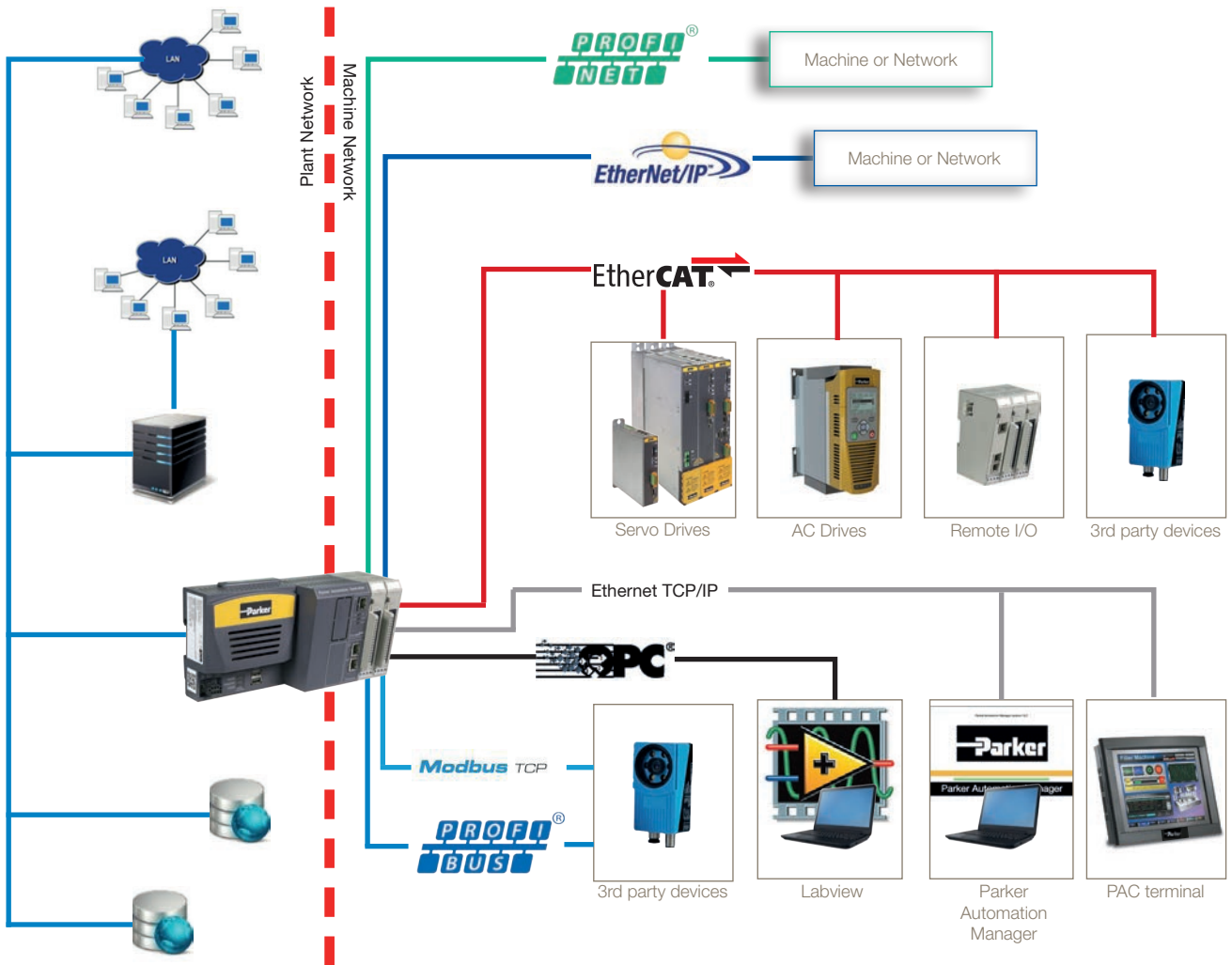


CAM Design



CNC Design

Control Network Architecture



Order Code

Parker Automation Controller

	1		2	3	4	5	6		7	8
Order example	PAC320	-	M	W	N	2	1	-	3	A

1 Series	PAC320 Controller
2 Software	C IEC, PLCopen Motion, CNC
	M IEC, PLCopen Motion
	P IEC only
3 Visualization	X Xpress Visualization
	W Web Visualization
4 Communications Options	N EtherCAT Protocol (standard)
	E EtherCAT + Ethernet/IP Protocol
	P EtherCAT + PROFINET Slave
	B EtherCAT + Ethernet/IP + PROFINET

5 Retentive Memory	2 256k Bytes
6 Processor	1 1.60 GHz Dual Core Intel® N2600
7 Agency Approvals	3 UL/cUL/CE
8 Reserved	A Reserved



Touchscreen HMI with Integrated Webserver - Interact Xpress

Overview

Description

Distributed HMI in a durable and affordable package

XPR2 PowerStation line offers a hardware/software solution that simplifies and cost-reduces distributed HMI applications. Available with a 6", 8", 10", 15" TFT panel mount touchscreen or new non-display system. XPR2 models are designed to optimize the performance, storage and connectivity features of Interact Xpress™ HMI software.

This CE-based workstations features the latest embedded processor technology supporting fanless operation, CompactFlash® storage, USB, serial and 100Base-T Ethernet connectivity.

Take full advantage of the web for; HMI design, publishing, runtime and support

Interact Xpress fully leverages the wide availability of web browsing software to enable distributed HMI software, remote support and application sharing on the internet and IP networks. Interact Xpress HMI applications are developed, edited, published and run in an HMI that is a web server, allowing users and OEMs to easily publish upgrades and applications to any global location with an internet connection and a web browser.

Interact Xpress combines a rich, graphical runtime interface with HMI development tools that can be accessed from either the HMI panel or any PC running Internet Explorer®.

Features

- Fanless operation
- More than 40 communication drivers
- Complex animation capabilities
- Alarm logging
- Sending email on alarms
- Recipes
- Real time trending
- PDF documents viewing
- Multi language support
- Screen templates



Technical Characteristics - Overview

Display	262 144 color TFT
Storage options	512 MB CompactFlash
Operating system	Windows CE
Ports	<ul style="list-style-type: none"> • 2 USB • RS232/422/485 • 10/100 Base-T Ethernet
Power supply	24 VDC

Complete Transparency and Supervisory Control

Interact Xpress provides your system with a connection to the rest of the company or the rest of the world. It offers a completely web-published environment where any plant-floor data or information can be accessed from any web browser with an Ethernet connection to the XPR PowerStation on your machine.



- Reduces HMI development time by automatically sharing tags with the ACR9640 programmable automation controller
- Pre-built template screens for common functions reduce your time to market
- Integrated development environment allows applications to be designed and edited on the runtime system
- HMI designer/editor supports multiple runtime versions, eliminating version control management headaches
- Easy, object-based screen development using a "tool bin" of pre-configured panels tools and drag-and-drop editing
- Panel tools include pushbuttons, numeric entry, selection entry, numeric displays, bar graphs, meters, gauges, sliders, message displays, time/date display and more
- 3-D, shaded panel tool graphic are available in multiple styles with no additional work
- Includes an integrated graphics library
- Jpeg (.jpg) and Flash (.swf) image support
- Complex animation capabilities and video support
- Web link support
- Pre-configured alarm tool with automatic collection of historical alarm data
- Integrated tag editor with drag-and-drop tools and import/export to Excel and other software packages



- Development software for offline design/editing supports Windows® 2000 and Windows® XP operating systems
- Reduces SCADA development time by up to 80 %, when used with our InteractX SCADA
- Interact Xpress is offered in everything from a no-display system to a 15" integrated display size
- More than 40 bundled communications servers allow Xpress to work with everything from our ACR9640 Xpress to virtually any legacy equipment you may have

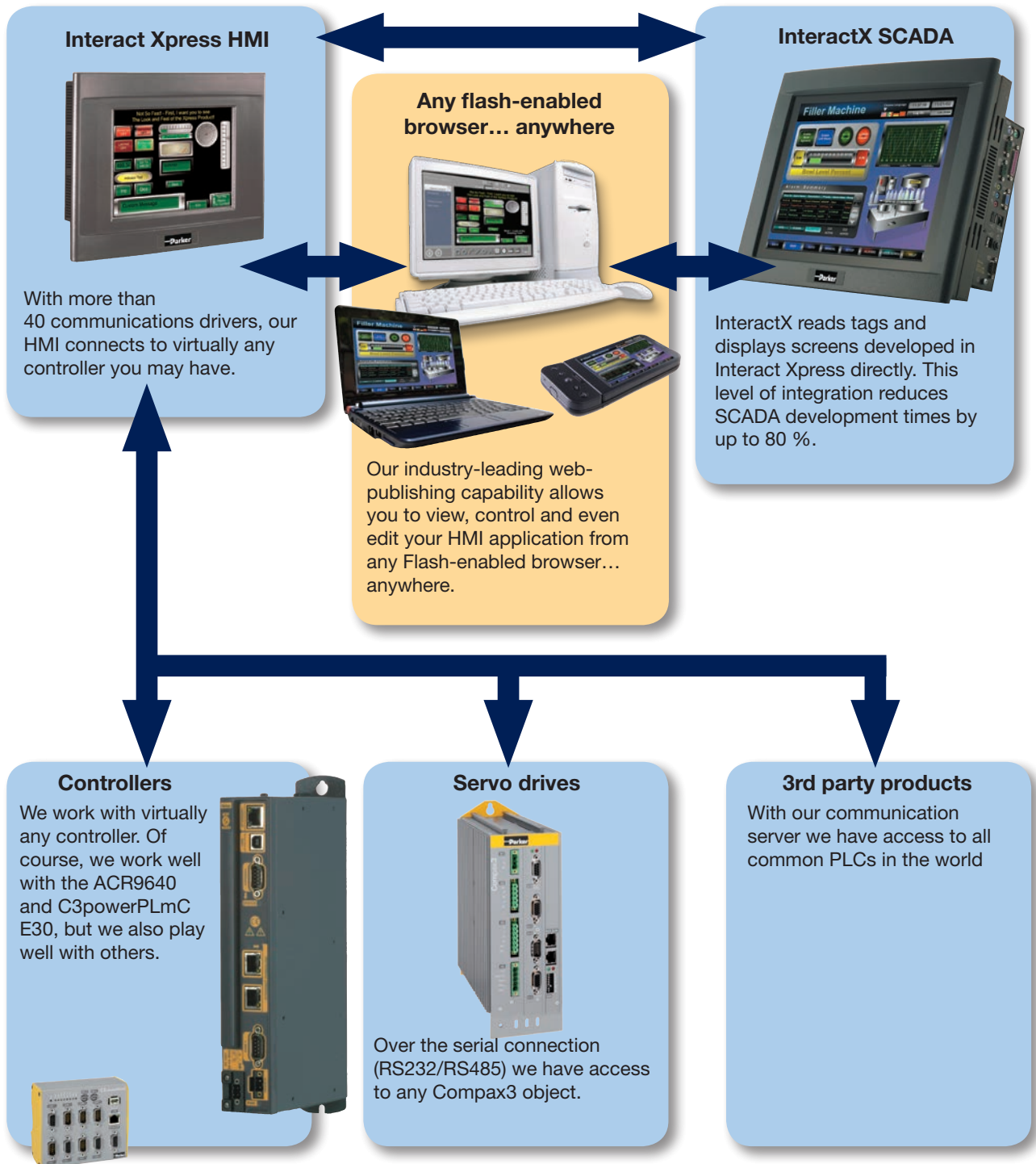
- Real time trend display capability: Up to 1000 point historical buffer Any tag or expression can be used for values
- Multi Language support: Support export applications Easily export an application and translate all text, using standard tools

Real-time trending with 1000-point buffer for each pen.



Windows® is a registered trademark of Microsoft Corporation.

Parker's Interact Xpress HMI with InteractX SCADA delivers your plant-floor data wherever it's needed, when it's needed.



HMI Power and Connectivity In a Durable, Affordable Package

Interact Xpress software is pre-installed and bundled with XPR2 PowerStation hardware, which is designed to optimize the performance, storage and connectivity features of Xpress HMI. This CE-based workstation is available with 6", 8", 10" and 15" TFT touchscreen display models, embedded fanless CPU technology, 256 MB DRAM and a full range of standard features such as CompactFlash storage, 2 USB ports, 2 RS232 and RS232/422/485 ports and a 100Base-T Ethernet port.

With standard 512 MB CompactFlash storage, XPR2 models use non-rotating storage media for high system reliability. And like all PowerStations, these units are quality tested to endure more harsh conditions in a day than most operator stations see in a lifetime.

XPR2 PowerStations offer durability and no moving parts, to complement Xpress software in providing a high-value, Distributed HMI solution.



Interact Xpress Features

- Sophisticated graphics look and feel with ease of development
- Integrated Web Publishing capability for distributed applications
- Applications can be served, created and edited online from any PC with Internet Explorer
- Available offline, development software allows work on applications when a live Internet connection is not available
- Advanced security for single or multi-user applications
- Tools for historical alarm data
- Capacity for complex graphics and animations
- Standard Ethernet port for both networking and controller communications
- More than 40 device communication drivers
- Unlimited tags
- Color depth to 262 144 colors



Technical Characteristics

Technical Data

Model	XPR200	XPR206	XPR208	XPR210	XPR215
Display size	Remote unit No display	6" color TFT, 5.7" (145 mm) diagonal	8" color TFT, 8.0" (203mm) diagonal	10" color TFT, 10.4" (264mm) diagonal	15" color TFT, 15.0" (380mm) diagonal
Resolution	-	VGA (640x480), 262 144 color TFT	VGA (640x480), 262 144 color TFT	VGA (600x480)	XGA (1024x768), 262 144 color TFT
Luminance 1 NIT = 1 cd/m ²	-	350 NIT	400 NIT	200 NIT	250 NIT
Viewing angle	-	±80° L/R, 80° U, 70° D	+70 L/R, 60° U, 65° D	+70° L/R, 50° U, 60° D	+80° L/R, 80° U, 60° D
Backlight	-	75 000 h	50 000 h	50 000 h	40 000 h

Model	XPR200	XPR206	XPR208	XPR210	XPR215
Interface	Analog resistive touchscreen				
Operating system	Windows CE version 5.0				
Processor support					
Processor	AMD 500 MHz LX800 processor				
Cache	256 kB (L1/L2)				
Memory	256 MB DRAM				
Storage options					
CompactFlash	512 MB ¹⁾ CompactFlash external type II slot (IDE bootable)				
Floppy/CD ROM	External connection via USB				
Ports					
Keyboard	USB 2.0				
Mouse	USB 2.0				
USB	(2) USB 2.0 ports type-A, CD/floppy/USB drive bootable with over current protection				
Serial	(1) RS232 9-Pin D-sub (1) RS232/422/485 9-Pin D-sub				
Ethernet	(1) 10/100Base-T w/ RJ45				
Power requirement	24 VDC, 2 A maximum, optional AC adaptor				

¹⁾ Actual storage volumes may be higher

Environmental Characteristics

Ambient conditions

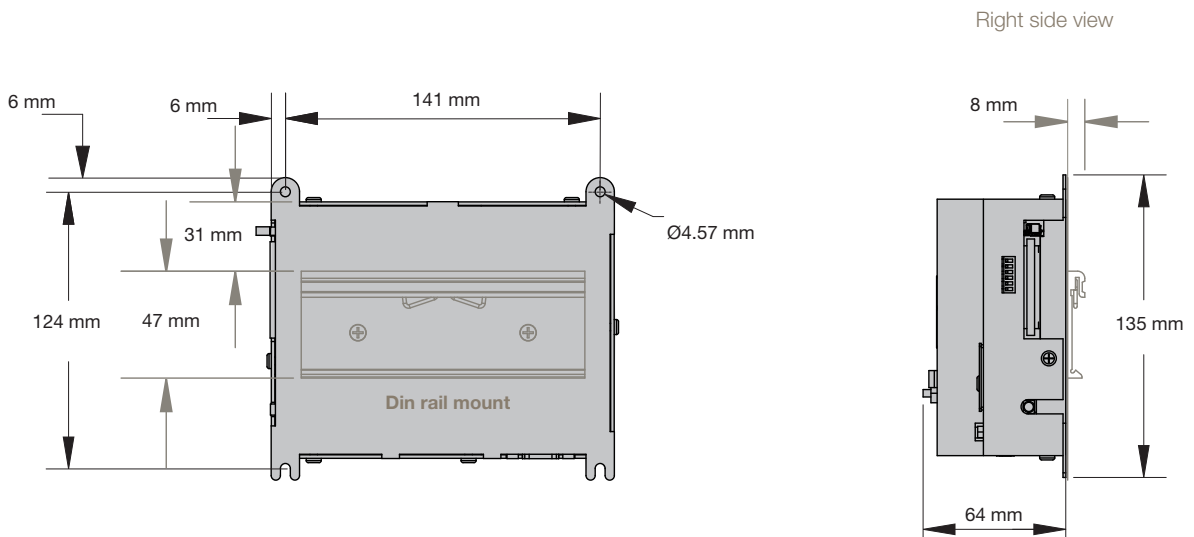
Temperature range	0...50 °C
Relative humidity	5...95 % (non-cond.)
Shock	10 g, 11 ms (operating) 30 g, 11 ms (non-operating)
Vibration	10...500 Hz, 2 grms (random-operational-CompactFlash)

Standards and Conformance

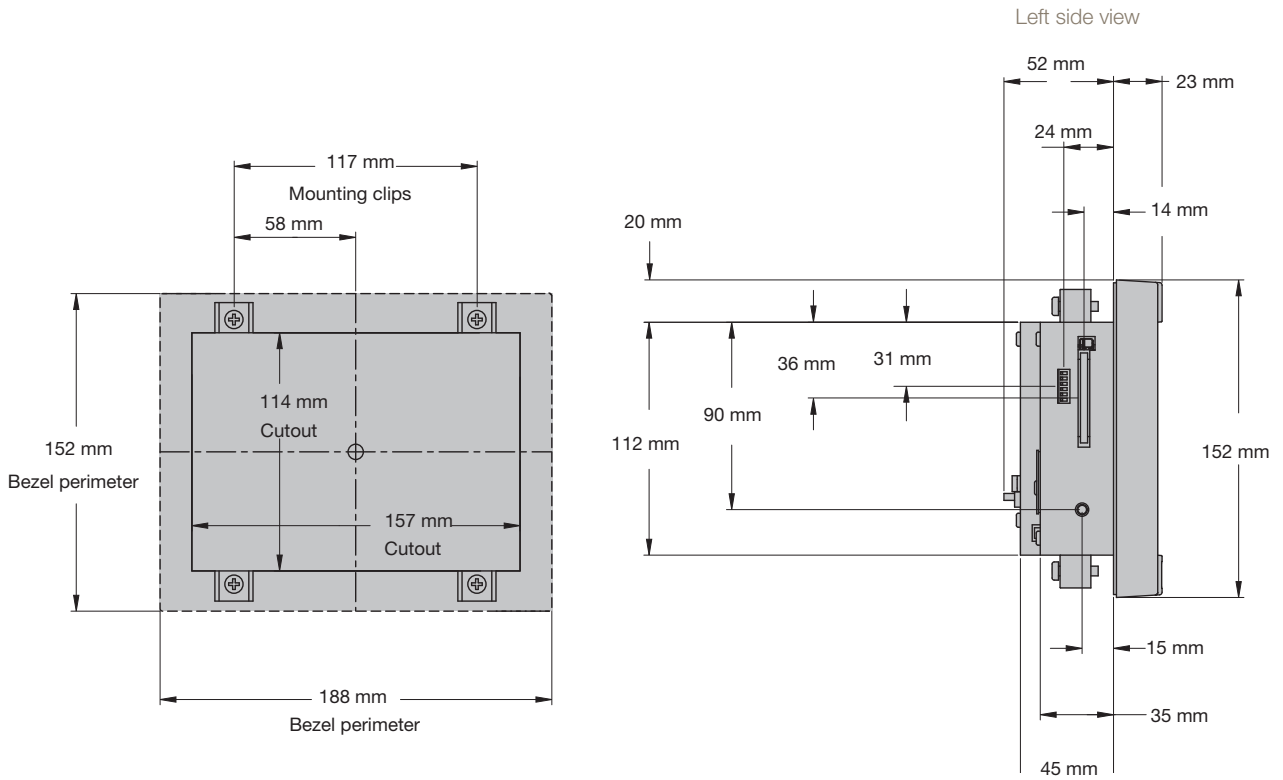
Agency approval	CE; UL/cUL
------------------------	------------

Dimensions

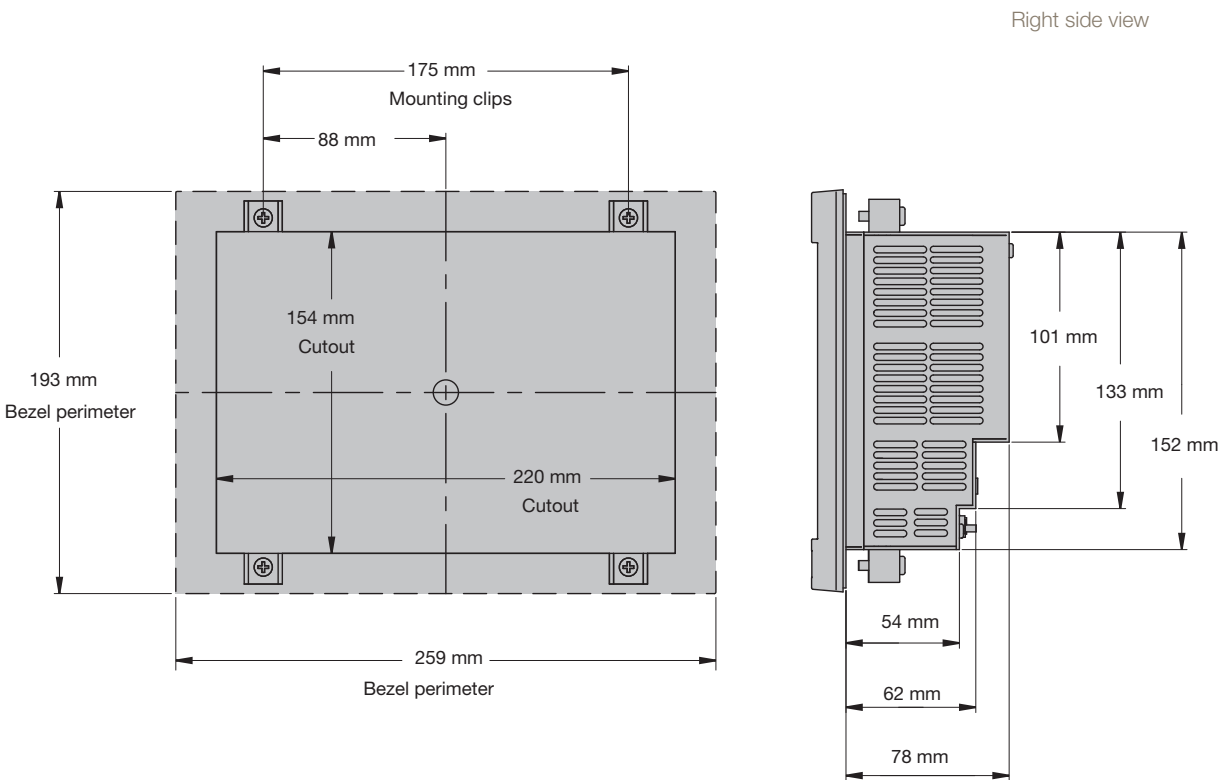
XPR200 mounting dimensions



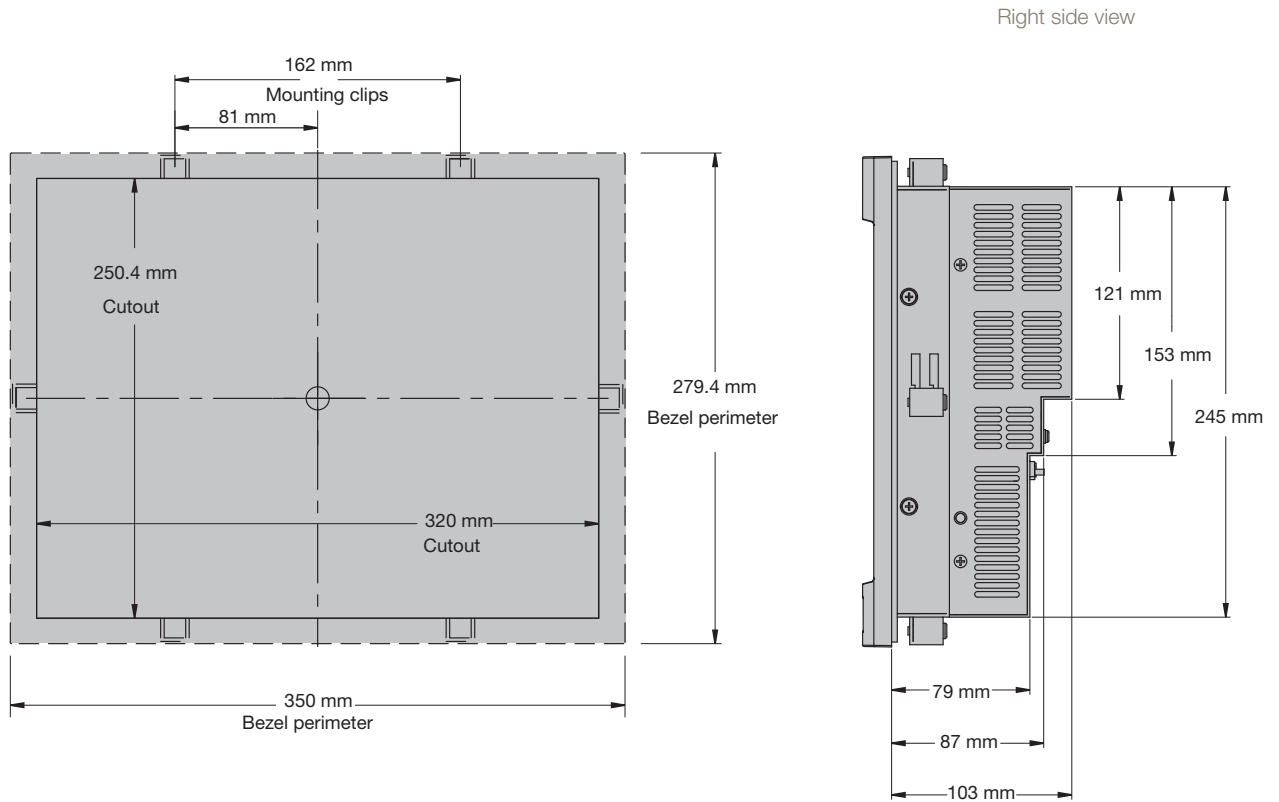
XPR206 cutout and mounting dimensions



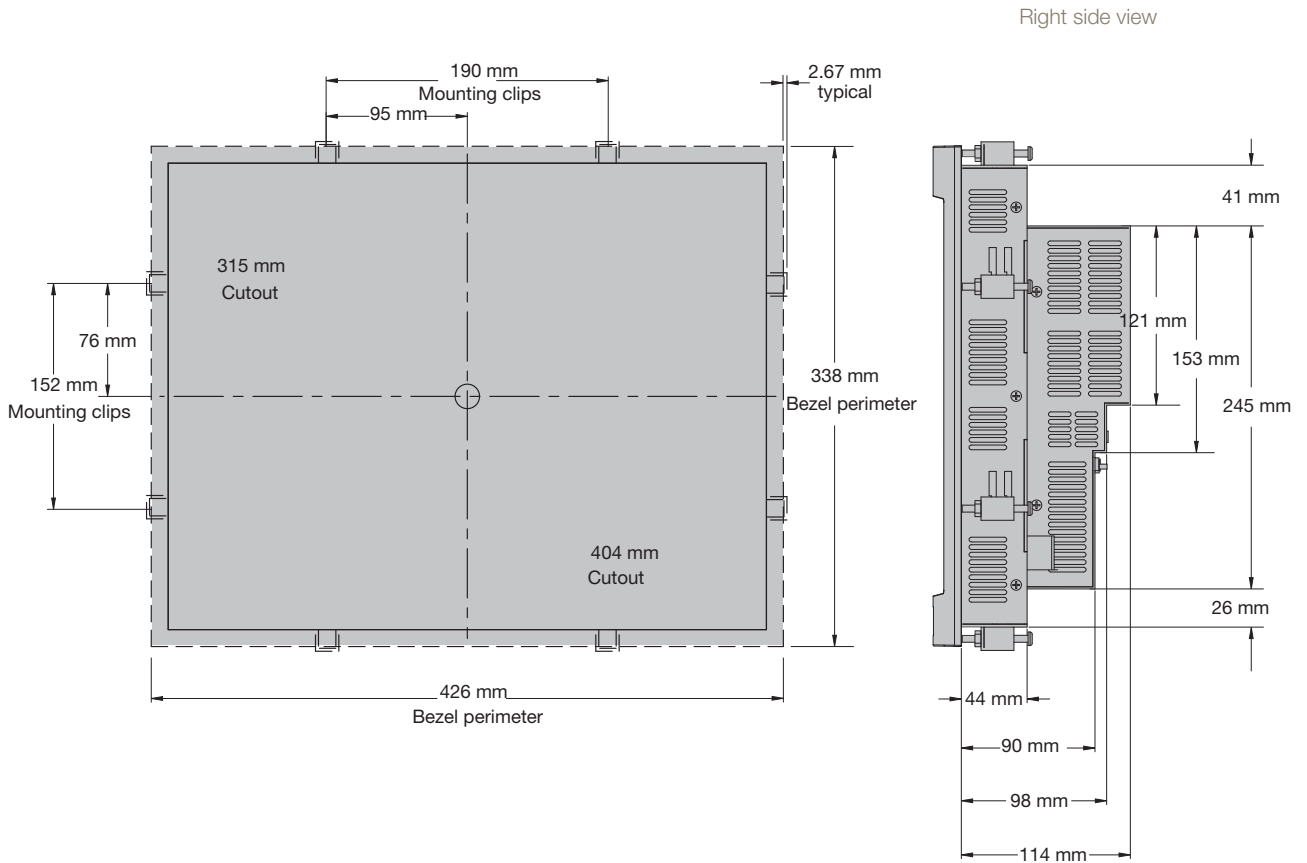
XPR208 cutout and mounting dimensions



XPR210 cutout and mounting dimensions



XPR215 cutout and mounting dimensions



Order Code

Interact Xpress

	1	2		3	4	5
Order example	XPR2	10VT	-	2	P	3

1 Series	XPR2	Industrial PC
2 Display	00XN	Non-display system
	06VT	6" color TFT VGA (640x480)
	08VT	8" color TFT VGA (640x480)
	10VT	10" color TFT VGA (640x480)
	15XT	15" color TFT XGA (1024x768)
	15AT	15" color TFT XGA (1024x768) Stainless Bezel

3 Processor	2	AMD LX800 500 MHz~
4 CompactFlash⁴⁾	P	512 MB FLASH
5 Agency approvals	3	UL/cUL/CE

Accessories

Software

	1
Order example	IXM-0200

1 Type number of accessory	IXM-0200	Xpress Manager, Offline Development Software
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Cables

	1		2
Order example	SSK01	/	01

1 Type number of accessory	SSK01/xx	RS232 cable XPR to Compax3 ¹⁾
	SSK28/xx	RJ45 Ethernet crossover cable ²⁾

Length code for cables

¹⁾ Length code 1 (Example: SSK01/09 = length 25 m)

Length [m]	1.0	2.5	5.0	7.5	10.0	12.5	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0
Order code	01	02	03	04	05	06	07	08	09	10	11	12	13	14

²⁾ Length code 2 for SSK28

Length [m]	0.17	0.25	0.5	1.0	3.0	5.0	10.0
Order code	23	20	21	01	22	03	05



Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



Aerospace

Key Markets

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes



Climate Control

Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical

Key Markets

Aerospace
Factory automation
Life science & medical
Machine tools
Packaging machinery
Plastics machinery & converting
Primary metals
Semiconductor & electronics
Textile
Wire & cable

Key Products

AC/DC drives & systems
Electric actuators, gantry robots & slides
Electrohydraulic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions



Filtration

Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems



Fluid & Gas Handling

Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings



Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors



Pneumatics

Key Markets

Aerospace
Conveyor & material handling
Factory automation
Life science & medical
Machine tools
Packaging machinery
Transportation & automotive

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors



Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves



Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

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