ABB DRIVE PRODUCTS

Powering machine innovations

Servo drive and motor packages



ENGINEERED
TO OUTRUN

One drive, many possibilities

Every detail and feature is reimagined with users in mind, to deliver one of the most flexible and dynamic servo drive-motor packages available. The package helps address the most demanding needs of system integrators, OEMs and machine builders. It provides unprecedented levels of productivity and performance improvements to the smart factory of today and tomorrow.

Table of contents

04	**ABB highly dynamic packages**
05	**Matched performance and typical application**
06 - 07	**MicroFlex e190 and MotiFlex e180 servo drives**
08 - 09	**Servo motors**
10 - 16	**Capable of yesterdays, todays and tomorrows control methodologies**
17	**Application versatility**
18	**Easy commissioning tool for ABB servo products**
19	**How to select a servo system**
20	**200 V package combination**
21 - 23	**400 V package combination**
24 - 27	**MicroFlex e190 overview**
28 - 31	**MotiFlex e180 overview**
32 - 51	**Servo motor overview**
52 - 53	**Accessories for MicroFlex e190 and MotiFlex e180**
54 - 56	**eSM motor cables**
57 - 63	**DSM motor cables**
64 - 75	**AC500/AC500-eCo Motion PLC**
76 - 77	**More motion control solutions**
78 - 79	**Servo drives and servo motors are compatible with the wide ABB product offering**
80	**A lifetime of peak performance**

ABB highly dynamic packages





MicroFlex e190 and 220 V servo motor package

- The package offers two series of motors, the eSM and the DSM.
- The package's AC operating voltage is 1-phase/3-phase 200...240 V. The DC operating voltage is 270...340 V.
- The MicroFlex e190 servo drive and 220 V servo motor provide a compact and highly dynamic motion control package with matched and tested components.
- The package is suited to single axis intelligent applications as well as centralized motion control systems which use a controller supporting EtherCAT, POWERLINK, PROFINET IO, EtherNet/IP, and Modbus TCP/IP.
- Low inertia system, higher acceleration, shorter operating cycle.

MotiFlex e180 and 400 V servo motor package

- The package offers two series of motors, the eSM and the DSM.
- The package's AC operating voltage is 3-phase 200...480 V. The DC operating voltage is 270...650 V.
- The MotiFlex e180 servo drive and 400 V servo motor provide a versatile motion control package with matched and tested components.
- The package is suited to single axis intelligent applications as well as centralized motion control systems which use a controller supporting EtherCAT, POWERLINK, PROFINET IO, EtherNet/IP, and Modbus TCP/IP.
- High inertia system, higher torque accuracy and extremely low speed fluctuation, ensuring better product quality.

Highlights of the servo drive and motor packages

Low cost

- The package provides a lower cost of ownership through the efficient installation, commissioning, operation and maintenance. ABB's global service and support network provide high quality after sales service.
- A free license is provided for the Mint programmable drive. The memory unit authorized by the Mint Workbench is a factory standard option.

Easy to use

- The configuration, tuning and motion programming can be simplified by the commissioning tool when you use the optional motion programming function.
- Integrates two real time Ethernet interfaces and one TCP/IP interface for commissioning and other protocols.
- Solder-free connector is easy to assemble.
- The memory unit makes it convenient to copy the firmware from the Mint Workbench to drive.
- Commissioning tool makes the configuration and machine tuning more simply.

Excellent servo performance

- The Package can operate with PTI control, analog control, or one of the selectable built-in Ethernet protocols. The drive can also act as a simple motion controller to realize easy positioning tasks and receive the feedback signal from the master (line shaft) encoder. The drive performs the Human Computer Interaction by communicating with the HMI.
- Various industry standard encoder supported to meet different application needs.
- Powerful and intelligent commissioning tool with advanced motion programming - Mint language
- Minimizes EMC related start-up and reliability issues by providing effective and easy-to-use earth bar for EMC bonding and cable shield connection

Reliable operation

- The drive integrates the Safe Torque Off (STO) function as standard.
- The degree of protection of the motor is IP67 except for the shaft opening and connectors.
- Equipped with a high quality motor shaft.

Matched performance and typical application

MicroFlex e190 and 220 V servo motor package

MicroFlex e190	
Voltage	1-phase or 3-phase 200...240 V AC ± 10% 270...340 V DC ± 10%
Communications	EtherCAT, POWERLINK, PROFINET IO, EtherNet/IP, Modbus TCP/IP
Degree of Protection	IP20 (cabinet installation)
Accessories	See page 52
eSM servo motor	
Rated power	1.3 kW, 1.8 kW, 2 kW
Rated/Peak torque	8.34...11.5 N·m/23.3...28.7 N·m
Rated/Max. speed	1500...2000 rpm/2200...2800 rpm
Motor Inertia	Without brake 12.14...26.66 kg·cm^2 With brake 12.84...27.36 kg·cm^2
Various Encoder supported	T3 = incremental 23 bits T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn
Degree of Protection	IP67 rated except for the shaft opening and connectors
Motor cables	See page 54
DSM servo motor	
Rated power	0.05 kW ~ 1.5 kW
Rated/Peak torque	0.16...9.55 N·m/0.56...28.65 N·m
Rated/Max. speed	1500...3000 rpm/3000...6000 rpm
Motor Inertia	Without brake 0.02...20.88 kg·cm^2 With brake 0.027...21.54 kg·cm^2
Various Encoder supported	T3 = incremental 23 bits T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn
Degree of Protection	IP67 rated except for the shaft opening and connectors
Motor cables	See page 57
Advantages	
Highly dynamic: Low inertia package, higher acceleration, shorter operating cycle **High speed:** Maximum speed could be 6000rpm, improve system's productivity **Small size:** Can be used in portable equipment, and meet critical installation requirements	

MotiFlex e180 and 400 V servo motor package

MotiFlex e180	
Voltage	3-phase 200...480 V AC ± 10% 270...650 V DC ± 10%
Communications	EtherCAT, POWERLINK, PROFINET IO, EtherNet/IP, Modbus TCP/IP
Degree of Protection	IP20 (cabinet installation)
Accessories	See page 52
eSM servo motor	
Rated power	1.5 kW ~ 7.5 kW
Rated/Peak torque	4.8...48 N·m/14.3...119 N·m
Rated/Max. speed	1500...3000 rpm/3200...3500 rpm
Motor Inertia	Without brake 6.26...129.8 kg·cm^2 With brake 6.96...132.4 kg·cm^2
Various Encoder supported	T3 = incremental 23 bits T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn
Degree of Protection	IP67 rated except for the shaft opening and connectors
Motor cables	See page 54
DSM servo motor	
Shaft length	0.85 kW ~ 7.5 kW
Rated/Peak torque	3.18...48 N·m/9.54...120 N·m
Rated/Max. speed	1500...3000 rpm/3000...6000 rpm
Motor Inertia	Without brake 1.58...154.6 kg·cm^2 With brake 1.89...160.1 kg·cm^2
Various Encoder supported	T3 = incremental 23 bits T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn
Degree of Protection	IP67 rated except for the shaft opening and connectors
Motor cables	See page 57
Advantages	
Stable operation: Higher torque accuracy and extremely low speed fluctuations ensure better product quality **Torque output:** Rated torque reaches 48 N·m **Broad range of applications:** Big power range and large range of inertias, can be used for wide range of applications	

Typical industries and applications		MicroFlex e190 and 220 V servo motor	MotiFlex e180 and 400 V servo motor
	Food and beverage	Labelling, HFFS, VFFS	VFFS Cartoners
	Metal cutting/forming	CNC laser/plasma/MMC/Lathe	CNC tube bending Drilling Metal cutting/forming
	Rubber and plastic	Plastic bag making	Plastic bag making End of line extrusion processes
	Other	Water-jet, glue-laying, pick&place, woodworking	Textiles Wood working

MicroFlex e190 and MotiFlex e180 servo drives
Technology highlights

MicroFlex e190 and MotiFlex e180 drives deliver versatile motion control performance, capability and dependability to power machine innovations. Flexible connectivity with Ethernet and motor feedback technologies is highly integrated and optimized for demanding motion applications. With the Mint Workbench commissioning tool you can quickly and easily customize the drive to the exact control requirements of your machine.



—

Dual encoder

Dual encoder input for position and commutation. Provides line shaft following or dual loop control to eliminate mechanical errors.

—

I/O-digital and analog

I/O can be used for configurable drive functions, such as enable/disable limit switches, home sensors or provide the inputs/outputs for typical machine functions (e.g. buttons) within the Mint programming.

—

Two high speed registration inputs

Precise registration of print marks or product position achieved with 2 x 24 V fast isolated inputs which can be used to latch feedback device position in hardware and trigger software events locally in Mint.

—

HMI connection via multiple Ethernet protocols

PROFINET IO, Modbus TCP/IP and EtherNet/IP provide support for HMI, PLC or upstream communication network.

—

Dynamic overload

3 times overload current of the rated current maximizes available torque for dynamic acceleration to 300%. The 300% peak torque delivers a faster dynamic response.

—

Wide range of feedback interfaces

Drive feedback options support different serial encoders (SSI, 1V pk-pk SinCos, BiSS-B, EnDat2.1/2.2, SmartAbs, Hiperface), resolver and incremental encoders. Besides DSL encoders are supported on e180 (46 A and below) to provide the single cable solution.



—

Memory unit

The compact memory unit stores drive's settings, parameters and application programs. With it you can prepare drive settings off-site, manage functionality levels or copy parameters from one drive to another.

—

Safety

Safe Torque Off (STO) SIL3 PLe is a standard feature. STO prevents torque from being applied at the motor shaft for machine safety applications. It eliminates the need of removing AC power supply in most applications, and minimizes the downtime and maximizes the machine utilization.

—

Flexible Ethernet connectivity

Integrated Ethernet interfaces realize the connectivity with EtherCAT, PROFINET IO and POWERLINK protocols via E1 and E2 ports (simply select the required protocol by switches on the drive). In addition, EtherNet/IP, Modbus TCP/IP and socket communication are supported via the E3 port.

—

Comply with the Ecodesign Regulation (EU)

The energy efficiency complies with the Ecodesign Regulation (EU) 2019/1781. Our drives play a active role in containing worldwide energy consumption and in reducing CO_2 emissions.

—

Advanced motion programming

The intelligent drive offers Mint programming - a high level multitask language which is tailored for motion applications. This powerful but simple programming language is accessed by the Mint Workbench software which provides the control of the communication, logic, motion and HMI interactions.

—

Rotary and linear motors

Provides precision control of rotary servo motors and linear servo motors. Universal encoder interface can be simply configured by the software to support a wide range of feedback types.

Servo motors
Technology highlights

Thanks to its high torque density, the ABB servo motor is perfect for highly dynamic, precision motion. You can choose a incremental or multi-turn high resolution absolute encoder to match the application requirements.

The power range of the servo motor is 0.05 kW to 7.5 kW, in five nominal flange sizes from 40 mm to 180 mm. The motors are available with an optional brake and have a degree of protection of IP67 except the shaft opening and connectors.



Compact and rugged brushless motors

Available in five flange sizes, 40 mm, 60 mm, 80 mm, 130 mm and 180 mm, with high torque density and quick dynamic response.



High reliability and efficiency combined

The servo motors have a high reliable, low-maintenance, and energy efficient design. Combined with the servo drives, the overall system reliability and efficiency are greatly improved.



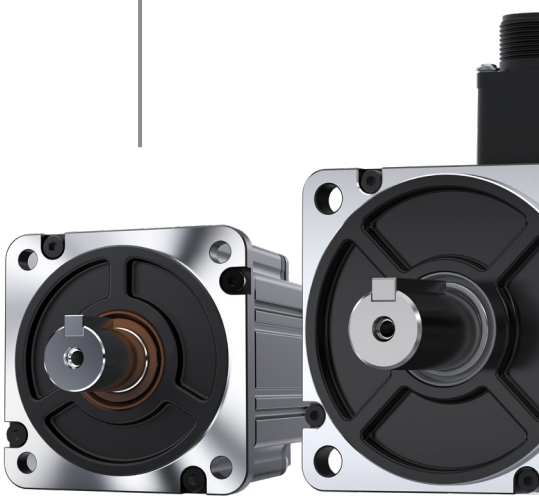
Practical installation options

The pre-assmbled cable sets fitted for all feedback types, with or without drive interface connector, provide a flexible choice of drive connection to make installation simple.

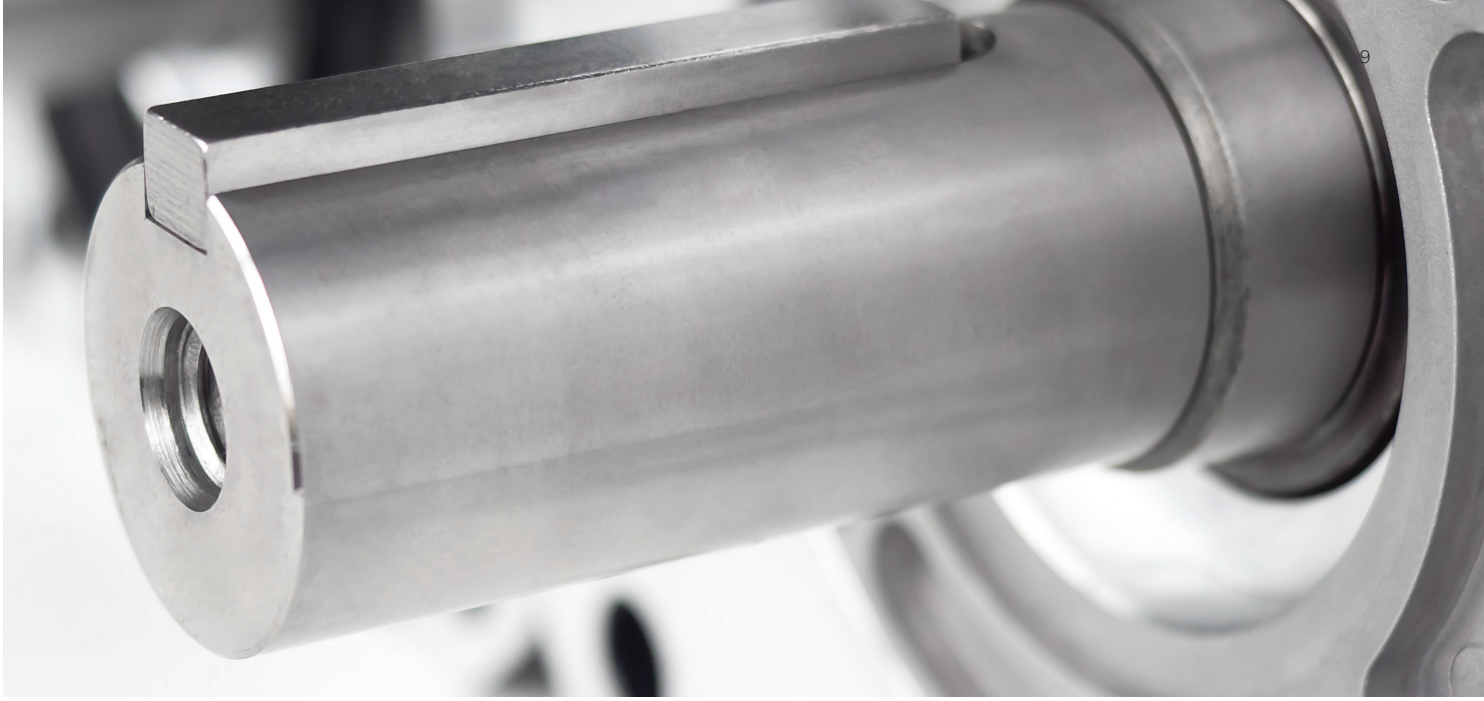


Options and configuration

An optional 24 V holding brake is available on ESM06, ESM08, ESM13 and ESM18 motors.



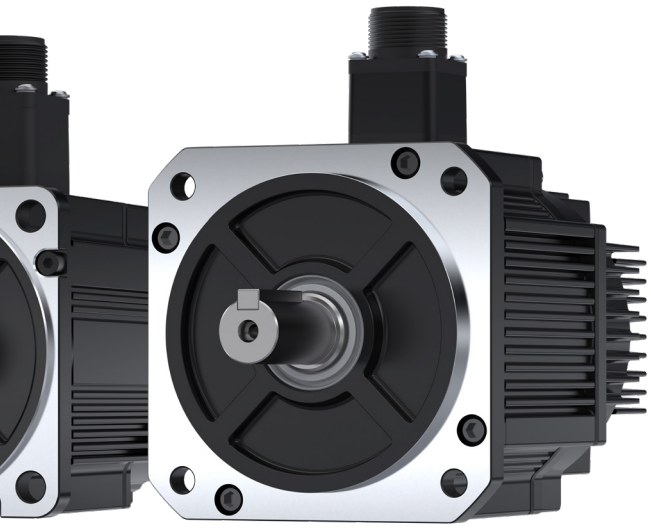
Note: the UL cetifications for the eSM motors of rated power of 1.3 kW and 1.8 kW are under application.



—

International standards

eSM motors have cUL/UL, CE approvals.



—

Absolute precision and performance

To meet the demands of higher productivity and product quality, eSM motor digital feedback provides precise position information resulting in tighter control and lower settling times in dynamic movement. An absolute multi-turn option can eliminate homing cycles, reducing machine set-up time.

—

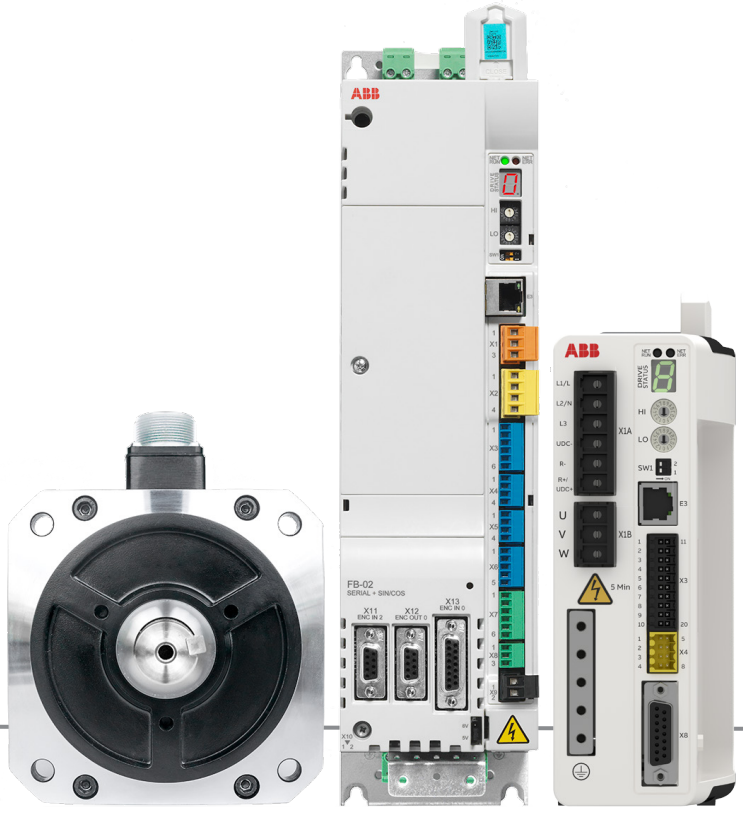
Dynamic performance

The wide ranges of the rated power and continuous torque provide flexible choice for you.

Capable of yesterdays, todays and tomorrows control methodologies

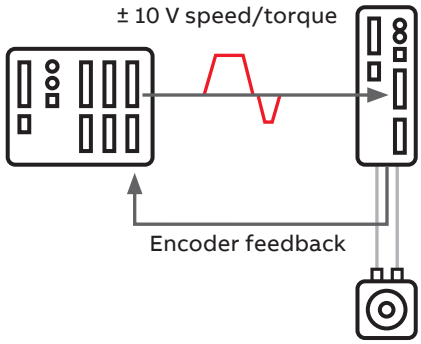
MicroFlex e190 and MotiFlex e180 both provide expanded solutions that adapt to many different control modes. Operating with the PTI control, analog control, or one of the selectable built-in Ethernet protocols the e190 and e180 are a versatile choice for solving different levels of machine control.

The e180 and e190 can also act as a simple motion controller to realize easy positioning tasks and receive the feedback signal from the master (line shaft) encoder. The drive performs the Human Computer Interaction by communicating with the HMI, thus forming a complete control system.



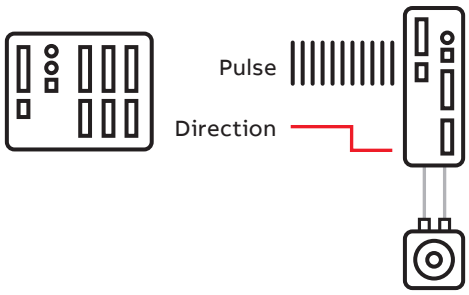
Analog control

- ±10 V torque or speed setpoint
- Encoder frequency dividing output



Pulse Train Input (PTI) control

- Pulse and Direction interface
- 5 V differential (via 2nd encoder)
- 24 V single end (via fast inputs DI1 and DI2)

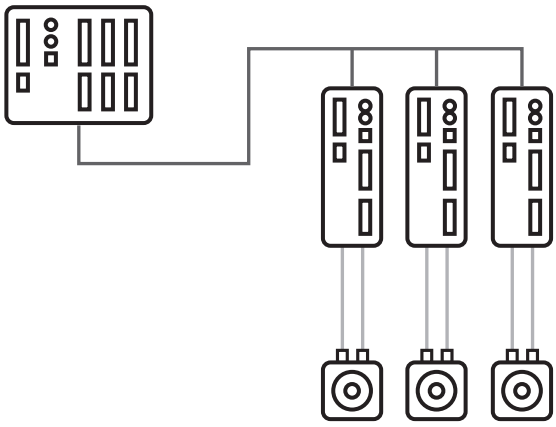




—

Ethernet control

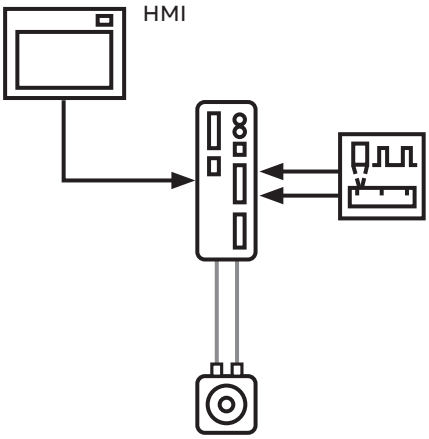
- EtherCAT
- POWERLINK
- PROFINET IO
- EtherNet/IP
- Modbus TCP/IP



—

Programmable motion drive

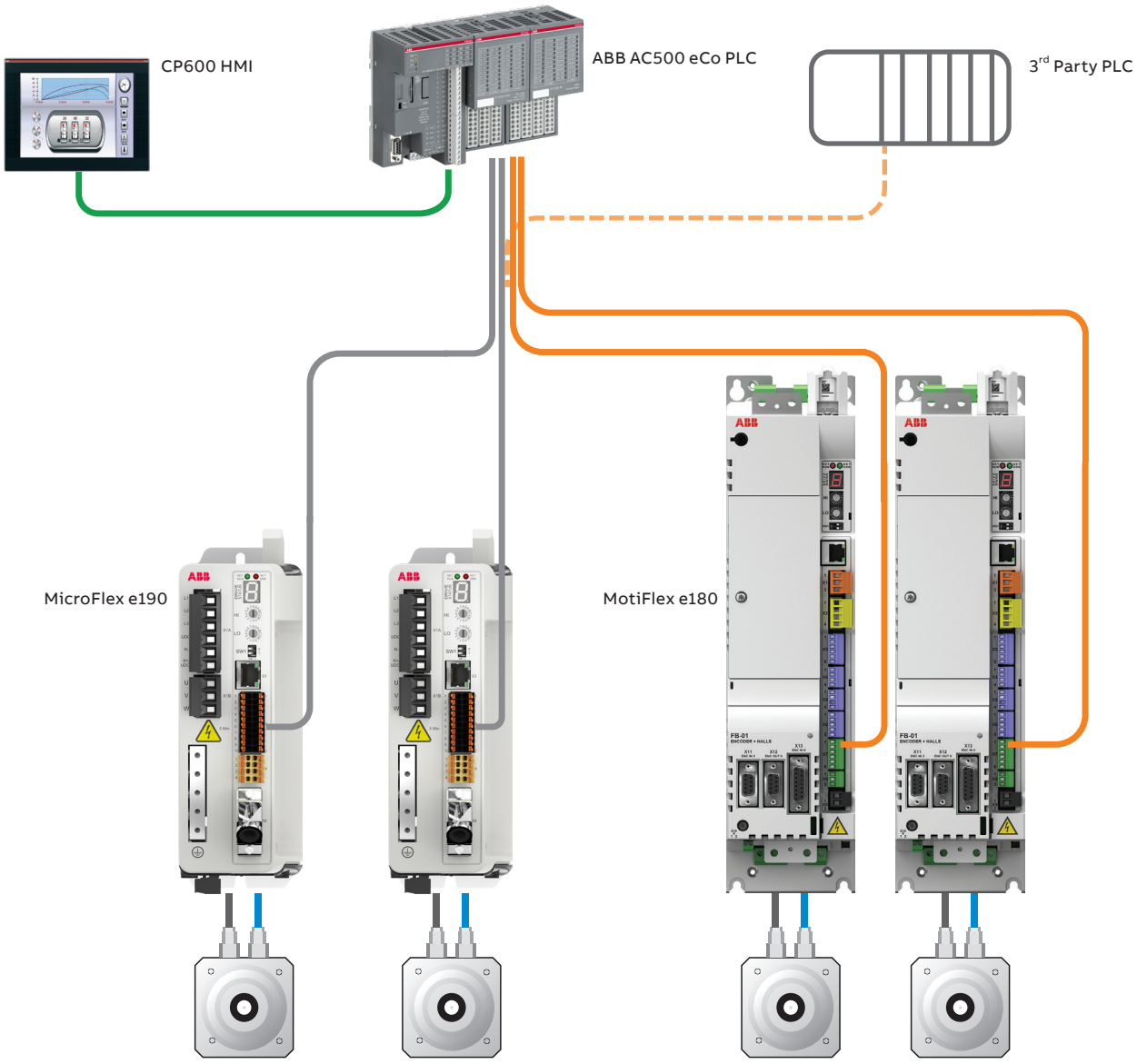
The memory unit authorized by the Mint Workbench unlocks powerful programmable control features. This helps solve simple motion tasks or create a self-controlled solution for the flying shear or labelling control with HMI and registration.



Capable control methodologies
PTI and Analog control methods

MicroFlex e190 and MotiFlex e180 can operate in the PTI control mode or analog control mode. They have the following advantages:

- Configuration and control are simple
- Responses are fast
- Lower cost



Capable control methodologies
Generic Drive Interface

Users of a range of PLCs can now take advantage of our free pre-written motion function libraries that provides control of ABB motion drives via a range of protocols including; AB RSLogix5000 Family (EtherNet/IP), Siemens S7 using TIA14 or later (PROFINET IO), ABB AC500 (EtherCAT/PROFINET), B&R PLC (POWERLINK/Modbus TCP/IP) or any CoDeSys compatible controller.
The libraries can easily be imported directly into your project and combined with the Generic Drive Interface (GDI) mint program in the drive, to directly control and monitor motion axes.

Save time with pre-written functions

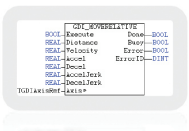
The libraries comprise a set of prewritten motion functions and data mappings, which directly handle all process data interaction logic, providing commands for most common motion tasks. The function library can easily be imported into your project, reducing code development time and risk in implementing motion control.

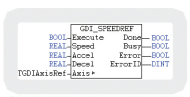
Customizable for your application

The function library makes use of our Generic Drive Interface (GDI), a flexible drive profile for Ethernet based drive control. The GDI can be used without modification, but if you have special requirements to implement at low level for a specific axis task, then the source code is available and can be modified to add your own custom application functions directly in any drive using Mint.

Benefits of pre-written libraries and a flexible drive control profile

Prewritten drive control interface, ready to use
Prewritten library of motion control function blocks
Highly flexible/configurable behavior and functions
Extensible - simplify or extend features by customising the provided Mint application
Note: prewritten libraries are also available for ABB AC500 with Modbus TCP/IP







Standard control features

The standard features supported in the GDI are listed below. These can be reduced to a subset or enhanced by adding or customizing the functions in the Mint application.
The sample programs included with the application note provide a mechanism for an ABB PLC to:

- Issue a home command
- Issue a relative/absolute move
- Issue an incremental relative move (and optionally stop a programmed distance past a “fast-latch” position)
- Issue an incremental absolute move (and optionally stop a programmed distance past a “fast-latch” position). Effectively a ready-made solution for indexing conveyor applications
- Jog the axis
- Set the axis position
- Issue a speed reference
- Issue a torque reference
- Enable/disable the axis
- Enable/disable hardware limits
- Reset axis errors
- Perform a controlled stop or crash stop on the axis
- Gear the axis to a secondary encoder input
- Set speed, acceleration times, deceleration times and jerk times for all motion
- Control modulo or non-modulo axes
- Standard monitoring functions

At the same time the PLC is able to monitor status information from the drive including:

- Enabled state
- Idle state
- Motor brake state
- Forward limit state
- Fault state
- Indication of missing fast latch interrupt
- Phase search status
- Measured position
- Axis mode of operationReady to be enabled state
- In Position state
- Homed state
- Reverse limit state
- Stop input state
- Error code
- Measured velocity
- Following error
- RMS current

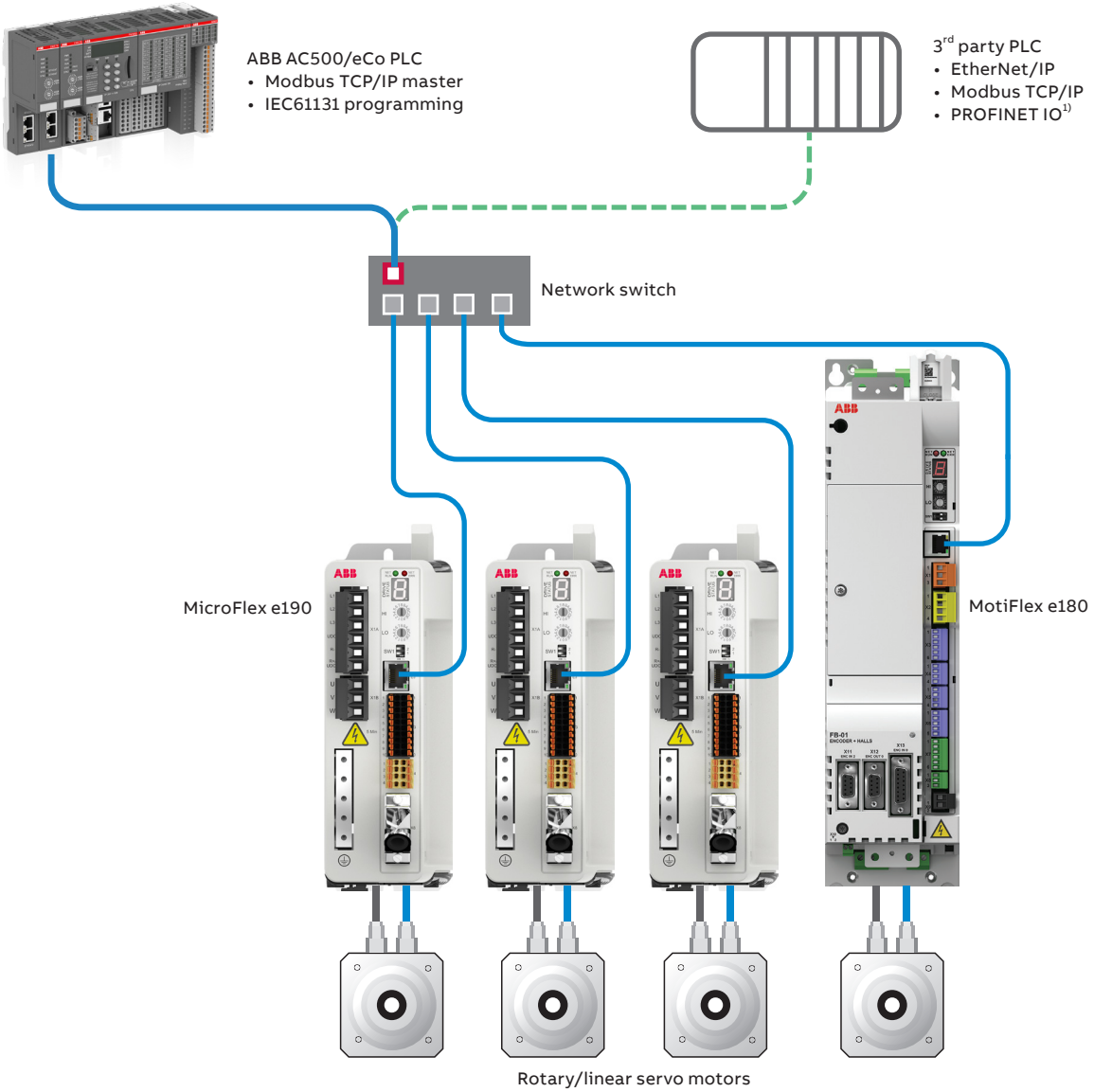
Capable control methodologies
Standard Ethernet protocols

Ethernet simple multi-axis motion solutions

- RJ45 interface E3 support the max. speed of 100 Mbps
  - Generic Drive Interface (GDI)
  - Predefined PLC drive control interface
  - Customization possible though Mint to optimize the solution
  - Prewritten PLC function libraries for AC500 and other PLCs
- Simple wizard drive-based configuration and predefined PLC drive data
  - Up and running in shorter time
  - Making distributed control easy
  - Application note AN00204 available at the website of ABB servo products

EtherNet/IP drive control for distributed axes

- RJ45 interface E3 support the max. speed of 100 Mbps
- Drives perform the homing and motion functions (home sensor connects to the drive)
- Generic Drive Interface (GDI) can be used or customized
- Function libraries available for RSLogix, Siemens TIA portal, Automation Builder, Generic CoDeSys master, and Automation Studio for easy control of MicroFlex e190 and MotiFlex e180



1) MotiFlex e180/MicroFlex e190 supports the PROFINET IO protocol via the ports E1 and E2.

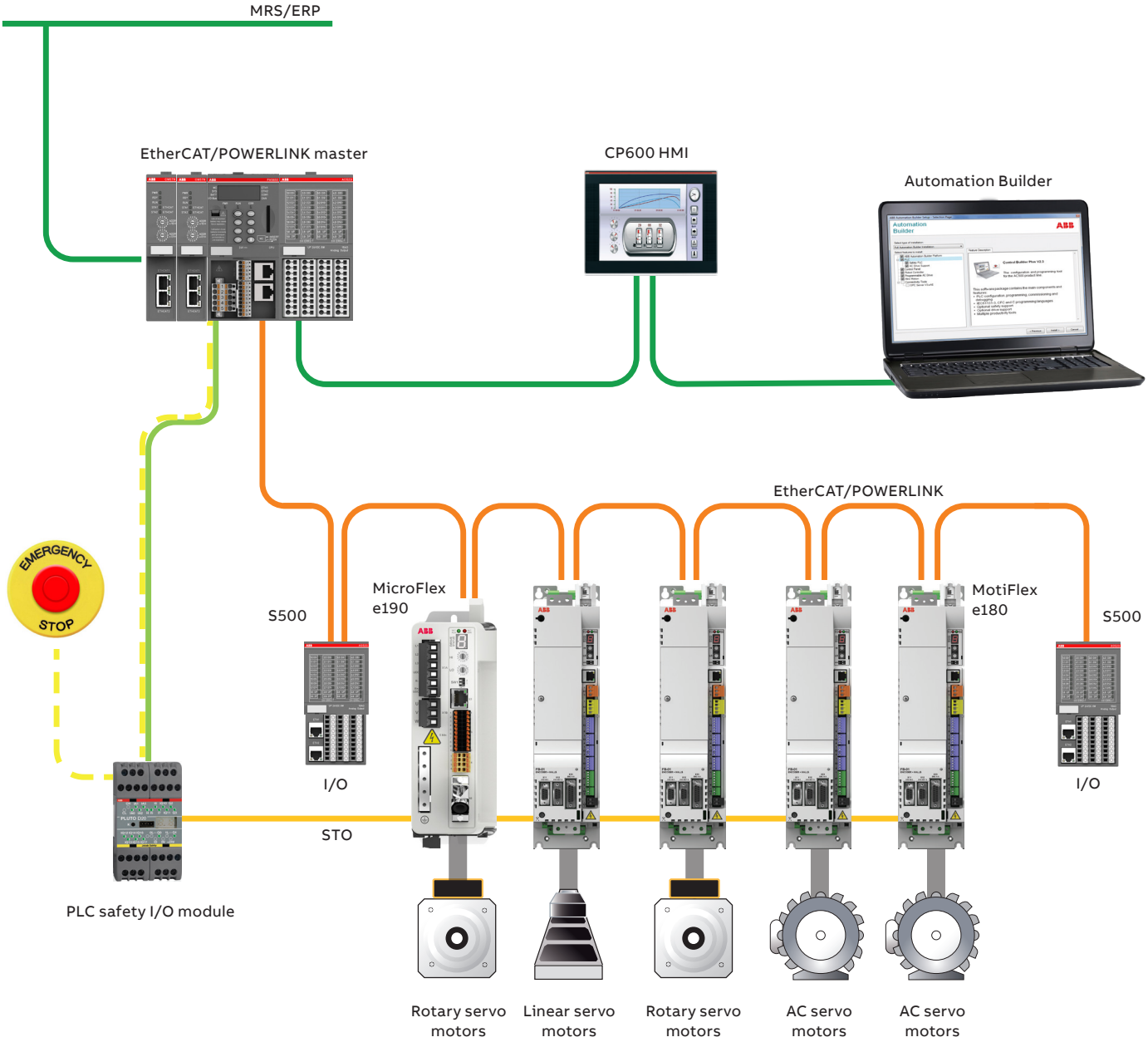
Capable control methodologies
Realtime Ethernet protocols

Multi-axis coordinated motion via the realtime Ethernet

MicroFlex e190 and MotiFlex e180 support the Ethernet protocols EtherCAT and POWERLINK via the ports E1 and E2. The drives can work together with the masters which support the above protocols, for example, the ABB's AC500 PLC and B&R X20 PLC, to realize the real time motion control.

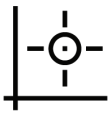
The realtime Ethernet ports have the following features:

- The RJ45 interfaces E1 and E2 support the max. speed of 100 Mbps, and integrate the switch function
- Support DS402 profile (IEC 61800-7) (CSP, CSV, CST, Homing), which can control the drive to realize the position control, velocity control, homing, and touch probe function via the standard motion control commands



Capable control methodologies
Intelligent drive solutions - Mint

MicroFlex e190/MotiFlex e180 Mint - advanced motion control functions



Homing (referencing/datuming)

Provides a method of finding a start or reference position for an axis. This can also be avoided altogether when using motors with absolute encoders.



Input Latch/touch probe handling

Fast inputs provide position LATCH functionality that can automatically trigger software EVENTS to perform calculations, and positional corrections at high speed.



JOG (in position or velocity control)

Provides a method of Jogging of an axis while maintaining position control.



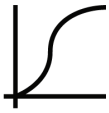
INCR/A target change on the fly

Final position of an axis can be adjusted 'on the fly' to compensate for some measurement or trigger, for example, cut to length of printed material, accurate product positioning, press feeder applications, etc.



Splines and PVT profiles

Spline and PVT (Position-Velocity-Torque) motion use a series of data points and interpolation to provide smooth path control. (single axis only).



Jerk control (S ramp)

Jerk limitation controls the rate of change of acceleration during motion, to provide a smooth control reducing shock and vibration on the load. This results in 'softer' motion and improves mechanical life of the system.



Electronic gearing with simulated clutch

Replace mechanical linkages with software gearing that can be dynamically controlled at the touch of a button. Change ratio, advance or retard an axis, simulate mechanical clutch engage/disengage



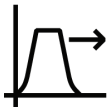
Flying shear segments (FLY)

FLY segments provide a means to create simple or complex motion which is 'geared' to a second axis (master encoder) position.



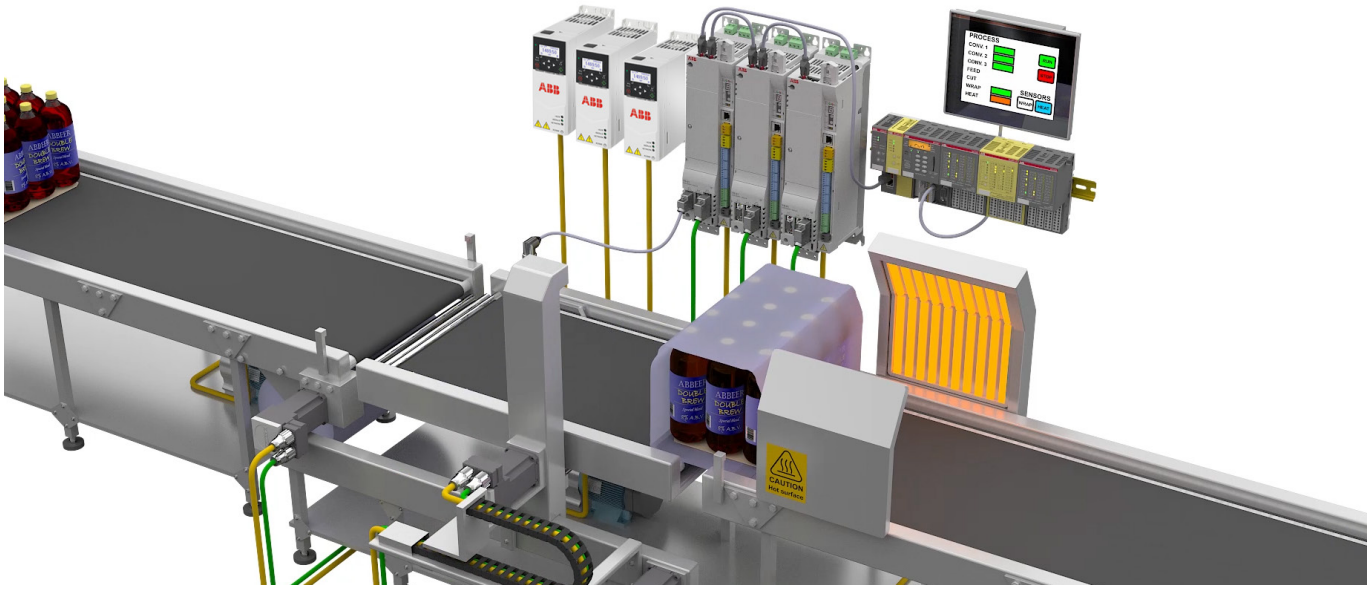
Electronic CAMs

Software CAMs eliminate mechanical wear or 'bounce' issues associated with mechanical systems. CAM data can be changed for different 'recipes' or dynamically varied during operation.



Incremental/absolute moves

Simple point to point motion.

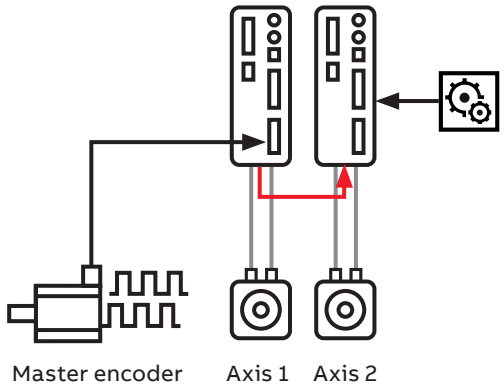


Application versatility
Dual encoder solutions

Master follower configuration

For simple multi-axis systems, the analog encoder output of one drive can be connected to the encoder input of the next drive, which helps to form a following movement system including one or more axes while without a motion controller.

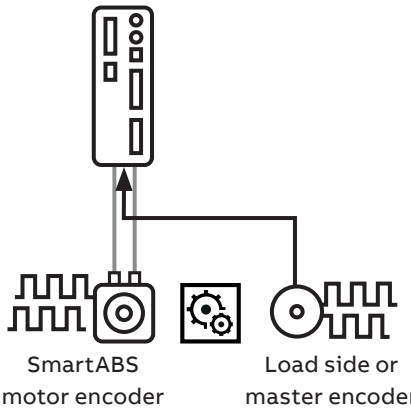
2-axis system



- For the motor using SSI feedback, the output of the master encoder is input to the encoder interface of the axis 1
- The simulated encoder output of axis 1 is input to the encoder interface of the axis 2

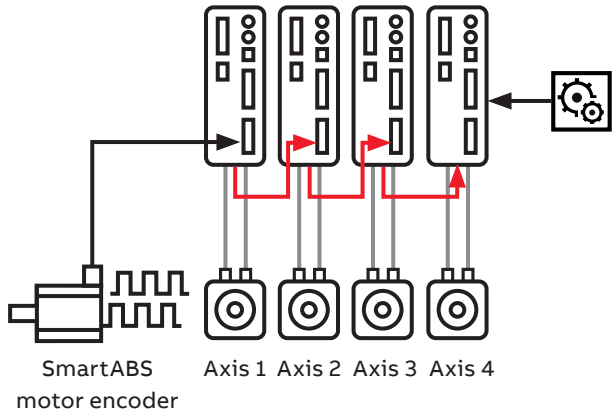
Dual encoder operation

In precision applications such as CNC milling or grinding, errors introduced by mechanical transmission can be compensated by load side encoders. MicroFlex e190 and MotiFlex e180 support dual encoder inputs for this purpose.



- Motor feedback serial e.g. SmartAbs or SSI
- Load side encoder/master ABZ encoder
- Eliminates errors introduced by the mechanical transmission
- Improves precision of the control and process

Multi-axis system



- The output of the master encoder is input to the encoder interface on axis 1
- The simulated encoder output of each axis is input to the encoder interface of the next axis within the axis chain

Easy commissioning tool for ABB servo products
Mint WorkBench

Mint Workbench is a commissioning tool for ABB's motion controllers and servo drives. It provides a simple way to configure drives, and program in the smart drives and multi axis motion controllers.

Easy drive commissioning

Drive commissioning is simplified by the smart navigation panels. You can connect more than one drives to the commissioning tool at the same time. It also provides the auto tuning function which makes the system tuning easy.

Intelligent support with one click

If you are using one of our electronic products that requires the use of Mint Workbench, the SupportMe function will gather important information about your device configuration and environment. This information helps our engineers in assisting you with your inquiry and going straight to the point.

Smart program editor

Mint WorkBench offers a smart program editor for the motion program development with its code hinting function. The context sensitive help provides you clear instructions of each command word and gives you tips for using it without the need of the user manual. The Program navigator makes it a breeze to navigate the source code, no matter how complicated it is.

Advanced motion programming language with Mint

Designed on the basis of Basic language, the Mint motion programming language is a feature-rich motion programming language, with English like keywords and high level functionality, comparable to Structured Text (ST).

Software features

- The smart navigation panels simplify 'expert' tasks such as drive configuration and network configuration
- The program editor provides code hinting and debugging functions
- Command line interface to interrogate the controller even when the program is running
- Watch window to monitor common motion variables, I/O, communications and more
- 6-channel software oscilloscope
- SupportMe function with automatic email generation for rapid technical support
- Updates of firmware within the Mint Workbench
- Easy management of firmware and project files

How to get Mint Workbench

Download easily from the website of ABB servo products for free.



How to select a servo system
ABB servo products selection procedures

STEP 1: Servo motor selection

Calculate and confirm below technical data:

- Torque
- Speed
- Inertia
- Encoder
- Brake



Select your motor order code based on the information on page 32, page 51.

STEP 2: Servo drive selection

- Current
- Input voltage
- Overload mode



Select your drive order code based on the information on page 20, page 21, page 27, page 31.

STEP 3: Options and accessories selection

Select drive and motor's options and accessories from page 52, page 54.

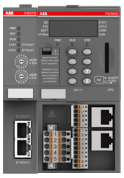




STEP 4: Controller selection

- B&R X20
- ABB AC500
- 3rd party product





200 V package combination

MicroFlex e190 and DSM/eSM servo motor - Matched performance drive and motor package

Motor type and rating									Drive type and ratings				Package rating		
Motor type					Inertia type	Rated power (kW)	Rated current (A)	Max. current (A)	Drive type (MFE190-...)	Mode	Rated current (A)	Max. current (A)	Cont Torque (Nm)	Peak Torque (Nm)	Rated power (kW)
DSM04L-0KWA-302-	xx	x	x	1		0.05	0.98	3.5		200%	3	6	0.16	0.56	0.05
DSM04L-0KW1-302-	xx	x	x	1	Low	0.1	0.96	3.4		200%	3	6	0.32	1.12	0.1
DSM06L-0KW2-302-	xx	x	x	1		0.2	1.5	5.3	04UD-03A0-2	200%	3	6	0.64	2.24	0.2
DSM06L-0KW4-302-	xx	x	x	1	Low	0.4	2.8	9.8		200%	3	6	1.27	2.72	0.4
										300%	2.5	7.5	1.13	3.41	0.36
									04UD-06A0-2	200%	6	12	1.27	4.45	0.4
DSM06M-0KW4-302-	xx	x	x	1	Medium	0.4	2.7	9.5		200%	6	12	1.27	4.45	0.4
									04UD-03A0-2	200%	3	6	1.27	2.81	0.4
										300%	2.5	7.5	1.18	3.51	0.37
DSM08L-0KW8-302-	xx	x	x	1	Low	0.75	5.4	19.8		200%	9	18	2.39	7.61	0.75
DSM08M-0KW8-302-	xx	x	x	1	Medium	0.75	5	17.5		200%	9	18	2.39	8.37	0.75
DSM13M-1KW0-202-	xx	x	x	1	Medium	1	5.8	16.9		200%	9	18	4.77	14.31	1
DSM13M-1KW5-202-	xx	x	x	1	Medium	1.5	8.4	25.2		200%	9	18	7.16	15.36	1.5
										300%	7.5	22.5	6.39	19.20	1.34
DSM10L-1KW0-302-	xx	x	x	1	Low	1	7.8	23		200%	9	18	3.18	7.47	1
										300%	7.5	22.5	3.06	9.33	0.96
DSM10L-1KW5-302-	xx	x	x	1	Low	1.5	9.5	28.8	04UD-09A0-2	200%	9	18	4.52	8.94	1.42
										300%	7.5	22.5	3.77	11.17	1.18
DSM13H-0KW9-152-	xx	x	x	1	High	0.85	6.6	21		300%	7.5	22.5	5.39	16.17	0.85
ESM13B-202-202-	xx	x	0x	00	Medium	2	9	27		200%	9	18	9.6	20.5	2
										300%	7.5	22.5	8.6	25.7	1.8
ESM13E-132-152-	xx	x	0x	00	High	1.3	6.6	18.4		200%	9	18	8.3	22.7	1.3
										300%	7.5	22.5	8.3	23.3	1.3
ESM13E-182-152-	xx	x	0x	00	High	1.8	9	22.5		200%	9	18	11.5	23	1.8

Motor model description

xx Motor encoder type: T3 = incremental encoder, 23 bits; T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn

x Motor brake type: N = without brake; B = with brake

x Motor shaft type: A = shaft with key slot and key, without oil seal; B = shaft with key slot and key, with oil seal

400 V package combination

MotiFlex e180 and DSM/eSM motor - Matched performance drives and motor packages

Motor type and rating									Drive type and ratings				Package rating		
Motor type					Inertia type	Rated power (kW)	Rated current (A)	Max. current (A)	Drive type (MFE180-...)	Mode	Rated current (A)	Max. current (A)	Cont Torque (Nm)	Peak Torque (Nm)	Rated power (kW)
DSM10L-1KW0-304-	xx	x	x	0	Low	1	4.5	14.5	04AN-07A0-4	200%	4.7	9.4	3.18	6.18	1
										300%	3.2	9.6	2.26	6.32	0.71
									04AN-016A-4	200%	9	18	3.18	9.54	1
										300%	7	21	3.18	9.54	1
DSM10L-1KW5-304-	xx	x	x	0	Low	1.5	5.1	16	04AN-07A0-4	200%	4.7	9.4	4.52	8.64	1.42
										300%	3.2	9.6	3.07	8.82	0.97
									04AN-016A-4	200%	9	18	4.9	14.7	1.5
										300%	7	21	4.9	14.7	1.5
DSM10L-2KW0-304-	xx	x	x	0	Low	2	6.5	21	04AN-016A-4	200%	9	18	6.36	16.35	2
										300%	7	21	6.36	19.08	2
DSM10L-2KW5-304-	xx	x	x	0	Low	2.5	8	25.5	04AN-016A-4	200%	9	18	7.96	16.86	2.5
										300%	7	21	6.97	19.67	2.19
									04AN-024A-4	200%	13.5	27	7.96	23.88	2.5
										300%	10	30	7.96	23.88	2.5
DSM13H-0KW9-154-	xx	x	x	0	High	0.85	3.5	8.8	04AN-05A0-4	200%	4	8	5.39	12.25	0.85
										300%	2.7	8.1	4.16	12.41	0.65
									04AN-07A0-4	200%	4.7	9.4	5.39	13.48	0.85
										300%	3.2	9.6	4.93	13.48	0.77
									04AN-016A-4	200%	9	18	5.39	13.48	0.85
										300%	7	21	5.39	13.48	0.85
DSM13H-1KW3-154-	xx	x	x	0	High	1.3	4.8	12	04AN-07A0-4	200%	4.7	9.4	8.17	16.33	1.28
										300%	3.2	9.6	5.56	16.68	0.87
									04AN-016A-4	200%	9	18	8.34	20.85	1.3
										300%	7	21	8.34	20.85	1.3
DSM13H-1KW8-154-	xx	x	x	0	High	1.8	6.5	16.5	04AN-016A-4	200%	9	18	11.5	28.75	1.81
										300%	7	21	11.5	28.75	1.81

Motor model description

xx Motor encoder type: T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn

x Motor brake type: N = without brake; B = with brake

x Motor shaft type: A = shaft with key slot and key, without oil seal; B = shaft with key slot and key, with oil seal

MicroFlex e180 and DSM servo motor - Matched performance drive and motor package

Motor type and rating									Drive type and ratings				Package rating		
Motor type					Inertia type	Rated power (kW)	Rated current (A)	Max. current (A)	Drive type (MFE180-...)	Mode	Rated current (A)	Max. current (A)	Cont Torque (Nm)	Peak Torque (Nm)	Rated power (kW)
DSM13L-3KW0-304-	xx	x	x	0	Low	3	10	30	04AN-016A-4	200%	9	18	8.82	17.64	2.77
										300%	7	21	6.86	20.58	2.15
									04AN-024A-4	300%	10	30	9.8	29.4	3
										200%	13.5	27	9.8	26.46	3
DSM13L-4KW0-304-	xx	x	x	0	Low	4	12.5	37.5	04AN-024A-4	200%	13.5	27	12.6	27.22	4
										300%	10	30	10.08	30.24	3.17
									04AN-031A-4	300%	16	48	12.6	37.8	4
										200%	21	42	12.6	37.8	4
DSM13L-5KW0-304-	xx	x	x	0	Low	5	16.2	48.6	04AN-031A-4	300%	16	48	15.6	46.81	4.9
										200%	21	42	15.8	40.96	5
									04AN-046A-4	200%	28	56	15.8	47.4	5
										300%	20	60	15.8	47.4	5
DSM18H-2KW9-154-	xx	x	x	0	High	2.9	11.8	33.2	04AN-016A-4	200%	9	18	14.19	25.21	2.23
										300%	7	21	11.03	29.41	1.73
									04AN-024A-4	200%	13.5	27	18.6	37.82	2.9
										300%	10	30	15.76	42.02	2.48
									04AN-031A-4	300%	16	48	18.6	46.5	2.9
										200%	21	42	18.6	46.5	2.9
DSM18H-4KW4-154-	xx	x	x	0	High	4.4	16.5	42	04AN-031A-4	200%	21	42	28.4	71	4.4
										300%	16	48	27.54	71	4.33
									04AN-024A-4	300%	10	30	17.21	50.71	2.7
										200%	13.5	27	23.24	45.64	3.65
									04AN-046A-4	200%	28	56	28.4	71	4.4
										300%	20	60	28.4	71	4.4
DSM18H-5KW5-154-	xx	x	x	0	High	5.5	21.5	53	04AN-046A-4	200%	28	56	35	87.5	5.5
										300%	20	60	32.56	87.5	5.11
									04AN-031A-4	200%	21	42	34.19	69.34	5.37
										300%	16	48	26.05	79.25	4.09
									04AN-060A-4	200%	35	70	35	87.5	5.5
										300%	25	75	35	87.5	5.5
DSM18H-7KW5-154-	xx	x	x	0	High	7.5	27.5	64.5	04AN-046A-4	200%	28	56	48	104.19	7.5
										300%	20	60	34.91	111.63	5.48
									04AN-060A-4	200%	35	70	48	120	7.5
										300%	25	75	43.64	120	6.85
									04AN-090A-4	200%	55	110	48	120	7.5
										300%	40	120	48	120	7.5

Motor model description

xx Motor encoder type: T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn

x Motor brake type: N = without brake; B = with brake

x Motor shaft type: A = shaft with key slot and key, without oil seal; B = shaft with key slot and key, with oil seal

MotiFlex e180 and DSM motor - Matched performance drives and motor packages

Motor type and rating									Drive type and ratings				Package rating		
Motor type					Inertia type	Rated power (kW)	Rated current (A)	Max. current (A)	Drive type (MFE180-...)	Mode	Rated current (A)	Max. current (A)	Cont Torque (Nm)	Peak Torque (Nm)	Rated power (kW)
ESM13B-152-304-	xx	x	0x	00	Medium	1.5	3	9	04AN-03A0-4	200%	3	6	4.8	9.5	1.5
										300%	2	6	3.2	9.5	1.5
									04AN-05A0-4	200%	4	8	4.8	12.7	1.5
										300%	2.7	8.1	4.3	13	1.5
									04AN-07A0-4	200%	4.7	9.4	4.8	14.3	1.5
										300%	3.2	9.6	4.8	14.3	1.5
ESM13B-302-304-	xx	x	0x	00	Medium	3	6	18	04AN-07A0-4	200%	4.7	9.4	7.5	15	3
										300%	3.2	9.6	5.1	15.2	3
									04AN-016A-4	200%	9	18	9.6	28.7	3
										300%	7	21	9.6	28.7	3
ESM13B-502-304-	xx	x	0x	00	Medium	5	8.6	25.8	04AN-016A-4	200%	9	18	16.1	33.7	5
										300%	7	21	13.1	39.3	5
									04AN-024A-4	200%	13.5	27	16.1	48.2	5
										300%	10	30	16.1	48.2	5
ESM18E-292-154-	xx	x	0x	00	High	2.9	11.4	27.7	04AN-016A-4	200%	9	18	14.7	29.4	2.9
										300%	7	21	11.4	34.2	2.9
									04AN-024A-4	200%	13.5	27	18.6	44	2.9
										300%	10	30	16.3	45.1	2.9
									04AN-031A-4	200%	21	42	18.6	45.1	2.9
										300%	16	48	18.6	45.1	2.9
ESM18E-442-154-	xx	x	0x	00	High	4.4	17.6	44.1	04AN-024A-4	200%	13	27	20.9	44	4.4
										300%	10	30	16.1	48.3	4.4
									04AN-031A-4	200%	21	42	28	67.6	4.4
										300%	16	48	25.8	71.1	4.4
									04AN-046A-4	200%	28	56	28.4	71.1	4.4
										300%	20	60	28.4	71.1	4.4
ESM18E-552-154-	xx	x	0x	00	High	5.5	20.5	51.3	04AN-024A-4	200%	13	27	35	40.4	5.5
										300%	10	30	17.1	51.3	5.5
									04AN-031A-4	200%	21	42	35	71.8	5.5
										300%	16	48	27.4	82.1	5.5
									04AN-046A-4	200%	28	56	35	87.6	5.5
										300%	20	60	34.2	87.6	5.5
									04AN-060A-4	200%	35	70	35	87.6	5.5
										300%	25	75	35	87.6	5.5
ESM18E-752-154-	xx	x	0x	00	High	7.5	27.4	68	04AN-031A-4	200%	21	42	36.8	73.5	7.5
										300%	16	48	28	84	7.5
									04AN-046A-4	200%	28	56	48	98	7.5
										300%	20	60	35	105	7.5
									04AN-060A-4	200%	35	70	48	119	7.5
										300%	25	75	43.8	119	7.5

Motor model description

xx Motor encoder type: T3 = incremental encoder, 23 bits; T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn

x Motor brake type: N = without brake; B = with brake

x Motor shaft type: A = shaft with key slot and key, without oil seal; B = shaft with key slot and key, with oil seal

MicroFlex e190 overview

MicroFlex e190 technical specifications

Type designation	Current at PWM switching frequency 8 kHz (A)					
	Low speed output[1] (< 2 Hz)		200% 3 s		300% 3 s	
	$I2_n$	$I2_{max}$	$I2_n$	$I2_{max}$	$I2_n$	$I2_{max}$
MFE190-04UD-03A0-2	3.00	4.50	3.00	6.00	2.50	7.50
MFE190-04UD-06A0-2	6.00	9.00	6.00	12.00	5.25	15.75
MFE190-04UD-09A0-2	9.00	13.50	9.00	18.00	7.50	22.50

Ratings	
MicroFlex e190 has two different overload modes for user selection: 200%, 300%	
$I2_n$	Rated output current in selected overload mode. The rms current when continuous working should be lower than this.
$I2_{max}$	Max output current (last 3 s) in one duty cycle under the selected overload mode.
[1] The maximum overload current between 0 Hz and 2 Hz is 150% of rated current	

Technical specifications	
Voltage/Frequency	1-phase 200 to 240 V AC ± 10% 3-phase 200 to 240 V AC ± 10% 270...340 V DC ± 10% 50/60 Hz ± 5%
Efficiency	> 95%
PWM switching frequency/control	8 kHz/Space Vector Modulation
Motor types	Asynchronous motors (standard induction, servo), synchronous motors (servo, high torque), linear servo motors
Braking resistor (external)	0.25 kW nominal/2.7 kW peak 10% duty: 57 Ω nominal (min 39 Ω, max 100 Ω)
Product compliance	
Approvals	CE, cUL/UL, RoHS, UKCA, TüV functional safety
EMC	EN61800-3 C2 emissions with external filter (30 m motor cable limit)
Environmental limits	
Operating temperature	0 ~ 55 °C no derating
Altitude	0...2000 m (6560 ft) above sea level Note: when above 1000 m (3280 ft), with derating of 1%/100 m
Degree of Protection	IP20 (cabinet installation)
Safety	
Safe torque-off (STO)	Two-channel STO function comply with the IEC 61800-5-2, SIL3 PLe as standard
I/O (Standard)	
4 × digital inputs	Opto-isolated 24 V 2 inputs can be programmed as fast position latch inputs 1 µs (feedback device dependent) or pulse direction inputs (max 2 MHz)
3 × digital outputs	Opto-isolated 24 V 100 mA per channel Configurable/programmable function
1 × ±10 V analog input 1 × ±10 V analog output	12 bit . Analog speed/torque control with emulated encoder output

Technical specifications	
I/O (Expansion option)	
I/O and serial port expansion option	OPT-SIO-1 provides an additional 6 DIs, 4 DOs, 1 AI and a serial port (2-wire RS485 or 4-wire RS422). User installed via the expansion interface of the e190. Note when installed it increases the drive width by approximately 2 mm
Communications	
EtherCAT (E2=In, E1=Out)	2 RJ45 interfaces for daisy chain connection LED indication built into RJ45 sockets Drive profile: DS402/IEC61800-7-1
POWERLINK (E2, E1)	2 RJ45 interfaces for daisy chain connection LED indication built into RJ45 sockets Drive profile: DS402/IEC61800-7-1
PROFINET IO (E2, E1)	2 RJ45 interfaces for daisy chain connection Communication with the PROFINET masters Drive operation can be customized with a Mint program
EtherNet/IP (E3 port only)	Drive operation can be customized with a Mint program Note: CIP™ sync not supported
Modbus TCP/IP (E3 port only)	Communication with PLCs/Industrial PCs/IO/HMIs. Drive operation can be customized with a Mint program
E3 Ethernet configuration port	Mint PC support tool Mint WorkBench
7-segment status display	For error and communications notification to quickly identify problems and minimize downtime
NET RUN&NET ERR LEDs	Indicate EtherCAT status of operation in accordance with EtherCAT Technology Group (ETG) guidelines
Motor feedback	
Universal digital feedback	Incremental encoder + Halls, SSI (Synchronous Serial Interface), EnDat 2.1/2.2, 1V pk-pk SinCos, BiSS-B, SmartAbs, SmartInc, Hiperface (8 V)
Dual encoder input	For line shaft following or dual loop control (position/velocity and commutation) to eliminate mechanical errors
Ethernet and motor encoder feedback interfaces	Highly integrated with minimal latency, optimized for demanding motion applications
Encoder splitter	Provides the motor encoder and the 2nd encoder input interface via the option OPT-MF-200
Resolver	Support by option OPT-MF-201 adapter

MicroFlex e190 connection

Simple mounting
- 2 key-holes

PE connection for AC supply

AC power 1-phase or 3-phase
- 200...240 V AC 50/60 Hz

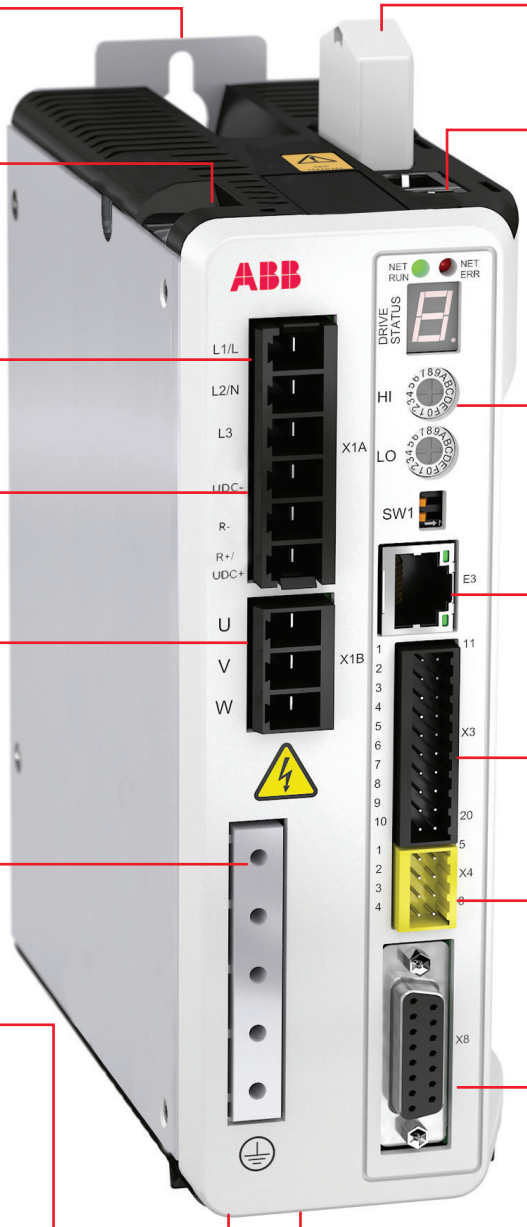
DC bus connection and braking resistor connection
- 270...340 V DC

Separate motor power
- Easy to wire
- Easy to isolate the motor during startup/service

EMC/PE plate
- Shield bonding
- Motor PE

24 V control supply
- Maintain communications and position after the AC power is removed

Simulated encoder output/2nd incremental encoder input
- Electronic gearing (line-shaft) or dual-loop feedback operation



Memory unit
- For backing up the configuration information, firmware, and motion programming

Ethernet ports E1 and E2
2 Ethernet ports with LED indicators for:
- EtherCAT
- POWERLINK
- PROFINET IO

Status/Node ID
- 2 LED network status/error indicators
- 7-segment status display
- 2 hex switches for node ID/protocol setting

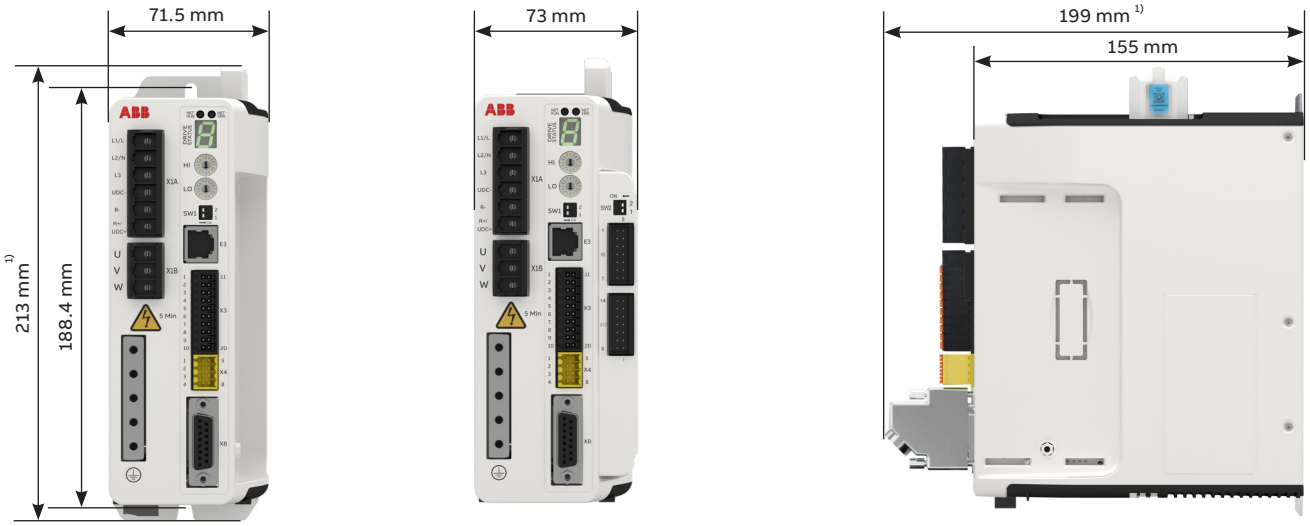
Ethernet port E3
- Port for drive commissioning
- Modbus TCP/IP (server/client)
- EtherNet/IP

Digital and analog I/O
- 4 DIs, 3 DOs, 1 AI, 1 AO
- Including 2 latch inputs for position registration <1 µs latency
- Expandable via OPT-SIO-1 to a total of 10 DIs, 7 DOs, 2 AIs, 1 AO + serial port 2-wire RS485 or 4-wire RS422

STO PLe SIL 3
- Daisy chain and pulse tolerance
- Allows removal of STO leaving main I/O in-place for system testing

Universal encoder interface
- Incremental (ABZ) + Halls
- 1V pk-pk SinCos, SSI, BiSS-B, EnDat 2.1/2.2
- Smart Inc/Smart Abs and Hiperface
- 5 V/8 V selectable encoder supply
- Resolver support via adapter OPT-MF-201

MicroFlex e190 dimensions



1) Approximate dimensions. Allow extra space for feedback and other control cables.

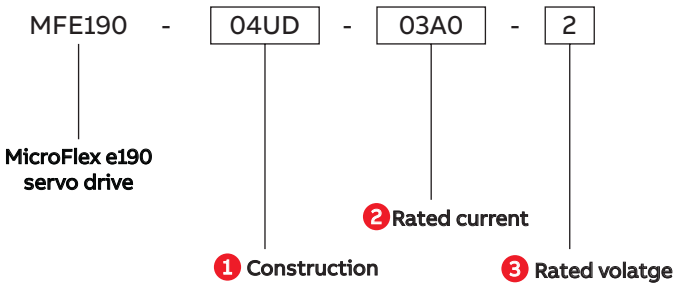
MicroFlex e190 supported accessories and installation methods

Accessories	
Braking chopper	•
Braking resistor	*
AC choke	*
DC choke	-
Mains filter (EMC)/C3	*
Installation features	
Air cooling (fan)	•
Removable connectors Control/Power	•/•
Side by side mounting	•
DIN rail mounting	-
Horizontal mounting	-

- • Standard
- * External option
- - Not available

For the ordering information about the accessories, see page 52.

MicroFlex e190 ordering information



1

Code	Construction
04	Construction/frame size
U	Universal encoder, slave/ CN
D	Dual port PROFINET, programmable

2

Code	Rated current
03A0	3 A
06A0	6 A
09A0	9 A

3

Code	Voltage rating
2	200...240 V AC ± 10% 270...340 V DC ± 10%



MotiFlex e180 overview

MotiFlex e180 technical specifications

Type designation	Frame size	Current at PWM switching frequency 4/8 kHz (A)			
		200% 3 s		300% 3 s	
		$I2_n$	$I2_{max}$	$I2_n$	$I2_{max}$
MFE180-04AN-03A0-4	A	3.00	6.00	2.00	6.00
MFE180-04AN-05A0-4	A	4.00	8.00	2.70	8.10
MFE180-04AN-07A0-4	A	4.70	9.40	3.20	9.60
MFE180-04AN-016A-4	B	9.00	18.00	7.00	21.00
MFE180-04AN-024A-4	C	13.50	27.00	10.00	30.00
MFE180-04AN-031A-4	C	21.00	42.00	16.00	48.00
MFE180-04AN-046A-4	C	28.00	56.00	20.00	60.00
MFE180-04AN-060A-4	D	35.00	70.00	25.00	75.00
MFE180-04AN-090A-4	D	55.00	110.00	40.00	120.00

Ratings	
MotiFlex e180 has two different overload modes as user selection: 200%, 300%	
$I2_N$	Rated output current in selected overload mode. The rms current when continuous working should be lower than this.
$I2_{max}$	Max output current (last 3 s) in one duty cycle under the selected overload mode.

Technical specifications	
Supply connection	
AC Supply	3-phase 200 to 480 V AC ± 10% 270...650 V DC ± 10% 50/60 Hz ± 5%
Motor connection	
Voltage	3-phase output voltage
Frequency	0 to ± 500 Hz
Motor control	Vector
Motor types	Asynchronous motors (standard induction, servo), synchronous motors (servo, high torque), linear servo motors
Switching frequency/control	4 to 8 kHz/Space Vector Modulation
Braking power connection	
Braking chopper	As standard in all types
Braking resistor	External resistor connected to drive
Product compliance	
Approvals	CE, UKCA, cUL/UL
EMC	Category C3 with optional filter (according to EN 61800-3)
Functional safety	Safe torque off (STO according EN 61800-5-2) EN 61508 ed2: SIL 3 EN 62061: SIL CL 3 EN ISO 13849-1: PL e

Technical specifications	
Environmental limits	
Ambient temperature	
Transport Storage Operation	-40 to +70°C (-40 to +158°F) -40 to +70°C (-40 to +158°F) 0 to +55°C (32 to 131°F), no frost allowed. Note: When above 40°C (104°F), with derating of 2%/1°C
Cooling method	Air-cooled, dry clean air
Altitude	0 to 2000 m (6560 ft) above sea level Note: When above 1000 m (3280 ft), with derating of 1%/100 m (328 ft)
Relative humidity	Max. 95%, no condensation allowed
Degree of protection	IP20 acc. to EN 60529; Open Type acc. to UL 508C
Contamination levels	No conductive dust allowed
Vibration	Sinusoidal vibration (EN 60068-2-6:2008): 2 to 9 Hz: 3.0 mm (0.12") 9 to 200 Hz: 1 g
Shock	Half sine pulse (IEC 60068-2-27:2008): 10 g for 11 ms

MotiFlex e180 connection

AC power 1-phase or 3-phase
- 200...480 V AC 50/60 Hz

DC supply connection and Braking resistor connection
- 270...650 V DC

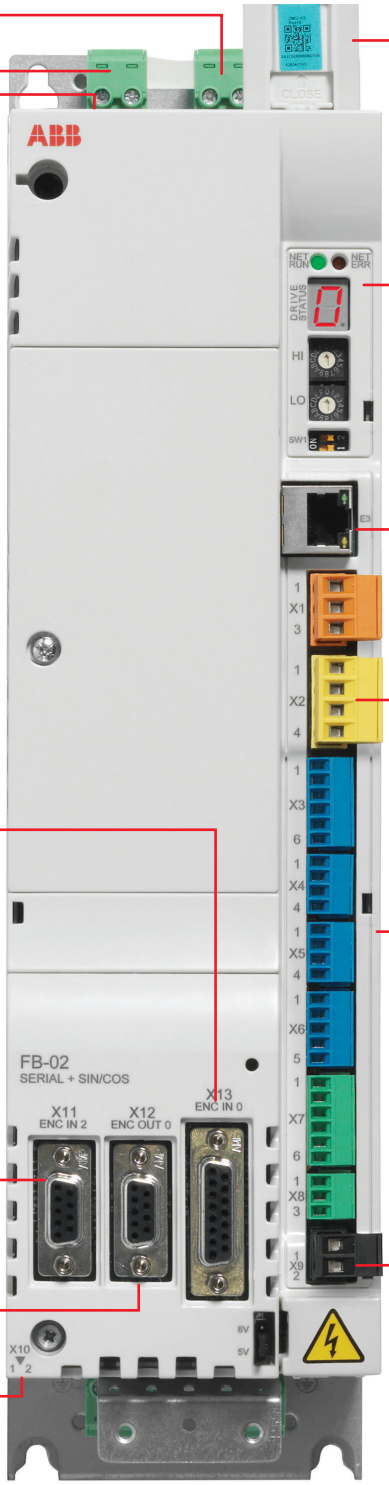
Ethernet ports E1 and E2
2 Ethernet ports with LED indicators for:
- EtherCAT
- POWERLINK
- PROFINET IO

Feedback options
- Serial Encoder + SinCos (1V pk-pk), EnDat 2.1/2.2, SSI, BiSS-B, SmartAbs, SmartInc,Hiperface
- Incremental + Halls
- Resolver
- DSL

Incremental encoder input
- Dual loop or line shaft functions

Simulated encoder output

Motor thermal PTC
(isolated)



Memory unit
- For backing up the configuration information, firmware, and motion programming

Status/Node ID
- 2 LED network status/error indicators
- 7-segment status display
- 2 hex switches for node ID/protocol setting
- 2 × DIP switches comms functions

Ethernet port E3
- Modbus TCP/IP
- EtherNet/IP
- PROFINET IO *

* Can be selected by the DIP switches

2 channel STO SIL 3 PL e

Digital and analog I/O
- 2 fast latch inputs (1 micro sec)
- 8 DIs (inc fast latch input)
- 4 DOs
- 2 AIs (12 bit, ±10 V)
- 1 AOs (12 bit, ±10 V)
- 1 Relay out (240 V 2.0 A)

24 V control supply

MotiFlex e180 dimensions

Frame	Height (H)	Width (W)	Depth (D)	Weight
	mm	mm	mm	kg
A	364	90	144	3
B	380	100	221	5
C	467	165	223	10
D	467	220	223	17

Note: Height is the maximum measure without clamping plates
In depth, an additional 50 mm should be reserved for feedback cabling



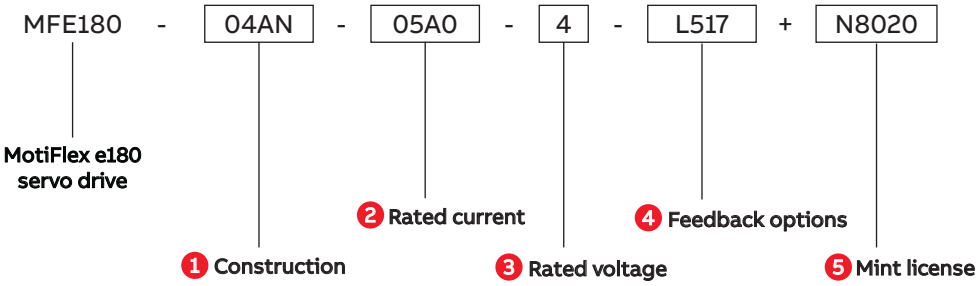
MotiFlex e180 supported accessories and installation methods

Frame size	A	B	C	D
Accessories				
Braking chopper	•	•	•	•
Braking resistor	*	*	*	*
AC choke	*	*	*	*
DC choke	-	-	*	*
Mains filter (EMC)/C3	*	*	*	*
Installation features				
Air cooling (fan)	•	•	•	•
Removable connectors Control/Power	•/•	•/•	•/-	•/-
Side by side mounting	•	•	•	•
DIN rail mounting	•	•	-	-
Horizontal mounting	•	•	•	•

- • Standard
- * External option
- - Not available

For the ordering information about the accessories, see page 52.

MotiFlex e180 ordering information



2

Code	Construction
04AN	Air-cooled module

3

Code	Rated current
03A0	3 A
05A0	5 A
07A0	7 A
016A	16 A
024A	24 A
031A	31 A
046A	46 A
060A	60 A
090A	90 A

4

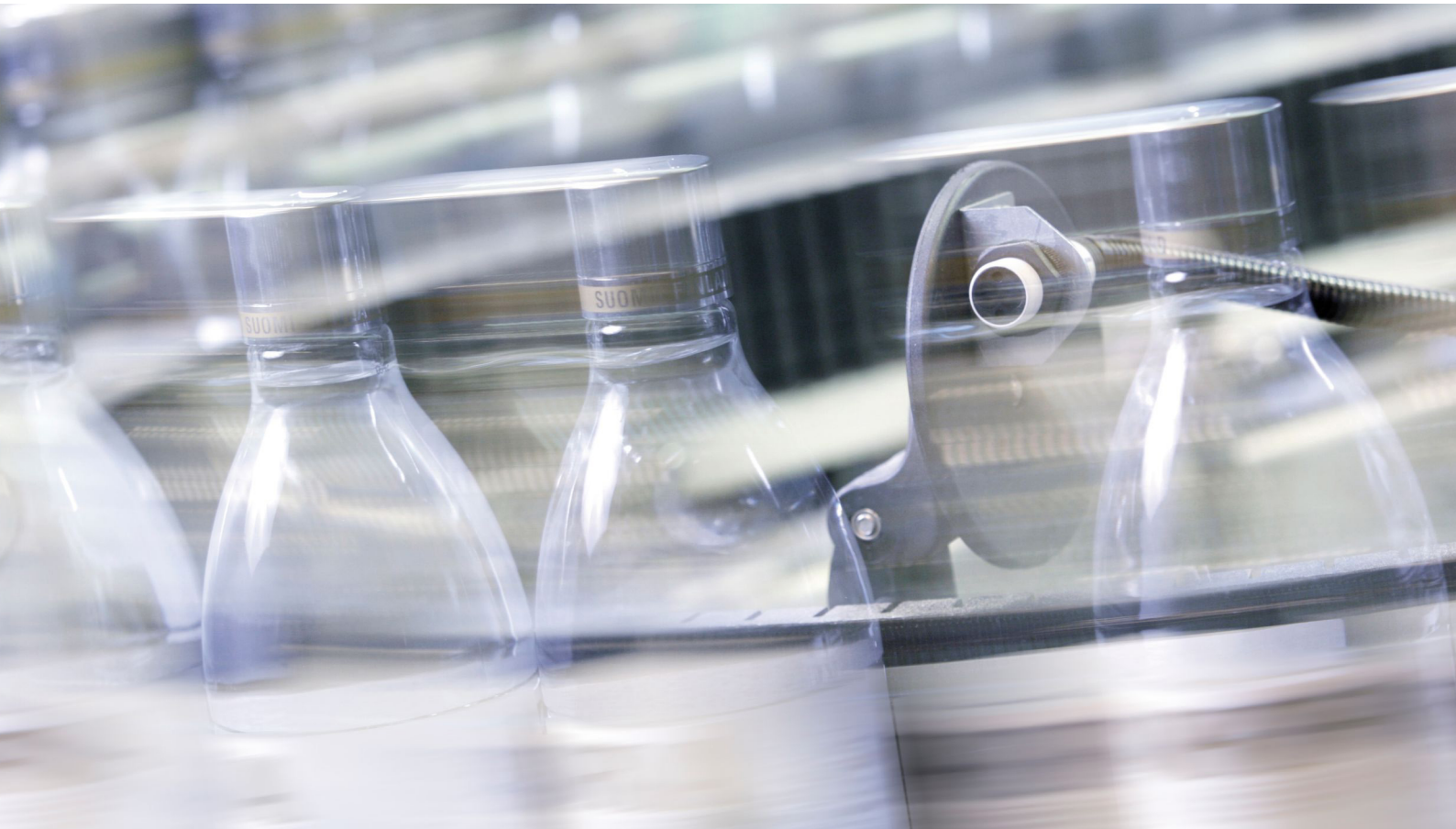
Code	Voltage rating
4	200...480 V AC ± 10% 270...650 V DC ± 10%

5

Code	Feedback options
L517	FB-01: Incremental encoder + Halls
L518	FB-02: Serial Encoder + SinCos (1V pk-pk)
L516	FB-03: Resolver
L530	FB-04: DSL (stegmann 2 wire solution)

6

Code	Mint license
N8020	Mint single axis (included as standard)



Servo motor overview

220 V technical specifications

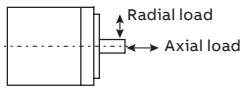
Flange size	40	40	60	60	60
Motor model (DSM...)	**04L-0KWA-302**	**04L-0KW1-302**	**06L-0KW2-302**	**06L-0KW4-302**	**06M-0KW4-302**
Rated power P (kW)	**0.05**	**0.1**	**0.2**	**0.4**	**0.4**
General					
Rated voltage (V AC)	220	220	220	220	220
Rated torque T_N (Nm)	0.16	0.32	0.64	1.27	1.27
Peak torque T_p (Nm)	0.56	1.12	2.24	4.45	4.45
Continuous stall torque T_0 (Nm)	0.16	0.32	0.64	1.27	1.27
Rated current I_N (A_{rms})	0.98	0.96	1.5	2.8	2.7
Peak current I_p (A_{rms})	3.5	3.4	5.3	9.8	9.5
Rated speed n_N (rpm)	3000	3000	3000	3000	3000
Max. speed n_{max} (rpm)	6000	6000	6000	6000	6000
Electrical					
Torque constant K_t (Nm/A)	0.163	0.333	0.427	0.45	0.47
Voltage constant K_e (V_{rms}/krpm)	11.16	22.8	29	32.2	33.7
Winding resistance R_L (ohms)	12.034	22.8	9.3	4.1	3.26
Winding inductance L_L (mH)	9.68	23.8	21.46	13.56	9.44
Mechanical					
Rotor inertia with brake J_M (kg·cm^2)	0.027	0.036	0.21	0.31	0.54
Rotor inertia without brake J_M (kg·cm^2)	0.02	0.03	0.15	0.25	0.478
Number of motor poles p	10	10	10	10	10
Weight with brake W (kg)	0.6	0.65	1.2	1.55	1.6
Weight without brake W (kg)	0.34	0.41	0.85	1.15	1.15
Max. radial load[1] (N)	75	75	245	245	245
Max. axial load (N)	35	35	74	74	74
Environmental					
Insulation class	F				
Operating temperature (°C)	0...40: no derating				
Operating humidity (%)	20...80				
Operating altitude (m)	0...1000: no derating				
Storage temperature (°C)	-20...60				
Storage humidity (%)	20...80				

Power derating factor

Altitude/temp.	40 °C	45 °C	50 °C	55 °C
<1000 m	1.00	0.95	0.89	0.84
1500 m	0.95	0.90	0.85	0.79
2000 m	0.90	0.85	0.80	0.75

Brake data[2]					
Rated voltage (V DC ± 10%)	24	24	24	24	24
Current (A)	0.25	0.25	0.3	0.3	0.3
Input power (W)	6	6	7.2	7.2	7.2
Static friction torque (Nm)	0.35	0.35	2	2	2
Armature release time (ms)	20	20	20	20	20
Armature pull-in time (ms)	50	50	50	50	50

[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



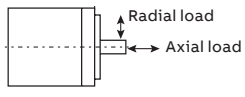
Flange size	80	80	100	100
Motor model (DSM...)	**08L-0KW8-302**	**08M-0KW8-302**	**10L-1KW0-302**	**10L-1KW5-302**
Rated power P (kW)	**0.75**	**0.75**	**1.0**	**1.5**
General				
Rated voltage (V AC)	220	220	220	220
Rated torque T_N (Nm)	2.39	2.39	3.18	4.77
Peak torque T_p (Nm)	8.37	8.37	9.54	14.31
Continuous stall torque T_0 (Nm)	2.39	2.39	3.18	4.77
Rated current I_N (A_{rms})	5.4	5.0	7.8	9.5
Peak current I_p (A_{rms})	19.8	17.5	23.0	28.8
Rated speed n_N (rpm)	3000	3000	3000	3000
Max. speed n_{max} (rpm)	6000	6000	6000	6000
Electrical				
Torque constant K_t (Nm/A)	0.44	0.48	0.408	0.502
Voltage constant K_e (V_{rms}/krpm)	29.4	33.0	29.5	34.2
Winding resistance R_L (ohms)	0.79	1.43	0.5	0.4
Winding inductance L_L (mH)	4.68	5.78	3.64	3.0
Mechanical				
Rotor inertia with brake J_M ($kg \cdot cm^2$)	0.93	1.66	1.79	2.52
Rotor inertia without brake J_M ($kg \cdot cm^2$)	0.78	1.53	1.69	2.4
Number of motor poles p	10	10	10	10
Weight with brake W (kg)	3.1	2.89	4.5	5.4
Weight without brake W (kg)	2.3	2.14	3.6	4.5
Max. radial load[1] (N)	392	392	565	565
Max. axial load (N)	147	147	196	196
Environmental				
Insulation class	F			
Operating temperature (°C)	0...40: no derating			
Operating humidity (%)	20...80			
Operating altitude (m)	0...1000: no derating			
Storage temperature (°C)	-20...60			
Storage humidity (%)	20...80			

Power derating factor

Altitude/temp.	40 °C	45 °C	50 °C	55 °C
<1000 m	1.00	0.95	0.89	0.84
1500 m	0.95	0.90	0.85	0.79
2000 m	0.90	0.85	0.80	0.75

Brake data[2]				
Rated voltage (V DC ± 10%)	24	24	24	24
Current (A)	0.48	0.48	0.73	0.73
Input power (W)	11.5	11.5	17.5	17.5
Static friction torque (Nm)	3	3	6.5	6.5
Armature release time (ms)	20	20	20	20
Armature pull-in time (ms)	60	60	60	60

[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



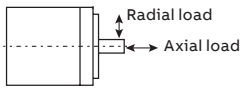
Flange size	130	130	130	130	130
Motor model (DSM...)	**13M-1KW0-202**	**13M-1KW5-202**	**13M-2KW0-202**	**13H-0KW9-152**	**13H-1KW3-152**
Rated power P (kW)	**1.0**	**1.5**	**2.0**	**0.85**	**1.3**
General					
Rated voltage (V AC)	220	220	220	220	220
Rated torque T_N (Nm)	4.77	7.16	9.55	5.39	8.34
Peak torque T_p (Nm)	14.31	21.5	28.65	16.17	25.0
Continuous stall torque T_0 (Nm)	4.77	7.16	9.55	5.39	8.34
Rated current I_N (A_{rms})	5.8	8.4	11.0	6.6	10.0
Peak current I_p (A_{rms})	16.9	25.2	33.0	21.0	31.0
Rated speed n_N (rpm)	2000	2000	2000	1500	1500
Max. speed n_{max} (rpm)	3000	3000	3000	3000	3000
Electrical					
Torque constant K_t (Nm/A)	0.822	0.852	0.868	0.817	0.834
Voltage constant K_e (V_{rms}/krpm)	56	56	57.6	53.7	54.4
Winding resistance R_L (ohms)	1.0	0.52	0.38	0.628	0.37
Winding inductance L_L (mH)	7.88	4.8	3.72	5.9	4.2
Mechanical					
Rotor inertia with brake J_M (kg·cm^2)	6.88	9.74	12.65	14.7	21.54
Rotor inertia without brake J_M (kg·cm^2)	6.18	9.04	11.95	14	20.88
Number of motor poles p	10	10	10	10	10
Weight with brake W (kg)	6.8	8.0	9.25	8.35	10.6
Weight without brake W (kg)	6.0	7.0	8.0	6.85	9.0
Max. radial load[1] (N)	686	686	686	890	890
Max. axial load (N)	196	196	196	320	320
Environmental					
Insulation class	F				
Operating temperature (°C)	0...40: no derating				
Operating humidity (%)	20...80				
Operating altitude (m)	0...1000: no derating				
Storage temperature (°C)	-20...60				
Storage humidity (%)	20...80				

Power derating factor

Altitude/temp.	40 °C	45 °C	50 °C	55 °C
<1000 m	1.00	0.95	0.89	0.84
1500 m	0.95	0.90	0.85	0.79
2000 m	0.90	0.85	0.80	0.75

Brake data[2]					
Rated voltage (V DC ± 10%)	24	24	24	24	24
Current (A)	0.81	0.81	0.81	0.81	0.81
Input power (W)	19.5	19.5	19.5	19.5	19.5
Static friction torque (Nm)	20	20	20	20	20
Armature release time (ms)	60	60	60	60	60
Armature pull-in time (ms)	120	120	120	120	120

[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



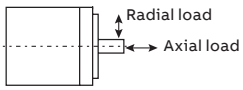
Flange size	**130**	**130**	**130**
Motor model (eSM...)	**13E-132-152**	**13E-182-152**	**13B-202-202**
Rated power P (kW)	**1.3**	**1.8**	**2.0**
General			
Rated voltage (V AC)	220	220	220
Rated torque T_N (Nm)	8.34	11.5	9.55
Peak torque T_p (Nm)	23.3	28.7	28.65
Continuous stall torque T_0 (Nm)	8.34	11.5	9.55
Rated current I_N (A_{rms})	6.6	9.0	9.0
Peak current I_p (A_{rms})	18.4	22.5	27.0
Rated speed n_N (rpm)	1500	1500	2000
Max. speed n_{max} (rpm)	2200	2200	2800
Electrical			
Torque constant K_t (Nm/A)	1.26	1.28	1.14
Voltage constant K_e (V_{rms}/krpm)	85	85.2	68.9
Winding resistance R_L (ohms)	0.94	0.694	0.58
Winding inductance L_L (mH)	9.7	7.3	3.8
Mechanical			
Rotor inertia with brake J_M (kg·cm^2)	20.77	27.36	12.84
Rotor inertia without brake J_M (kg·cm^2)	20.07	26.66	12.14
Number of motor poles p	8	8	8
Weight with brake W (kg)	10.5	12.7	11.8
Weight without brake W (kg)	9.0	11.1	10.2
Max. radial load[1] (N)	599	655	491
Max. axial load (N)	100	100	220
Environmental			
Insulation class		F	
Operating temperature (°C)		0...40: no derating	
Operating humidity (%)	< 80	< 80	< 90
Operating altitude (m)		0...1000: no derating	
Storage temperature (°C)	-20...60	-20...60	-25...60
Storage humidity (%)	< 80	< 80	< 90

Power derating factor

Altitude/temp.	40 °C	45 °C	50 °C	55 °C
<1000 m	1.00	0.95	0.89	0.84
1500 m	0.95	0.90	0.85	0.79
2000 m	0.90	0.85	0.80	0.75

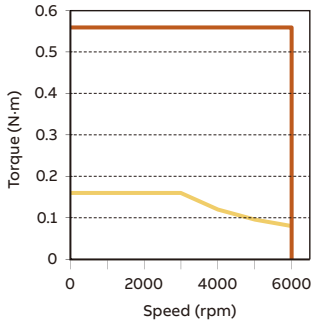
Brake data[2]				
Rated voltage (V DC ± 10%)	24	24		24
Current (A)	0.81	0.81		0.81
Input power (W)	19.5	19.5		19.5
Static friction torque (Nm)	20	20		20
Armature release time (ms)	27	27		27
Armature pull-in time (ms)	76	76		76

[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.

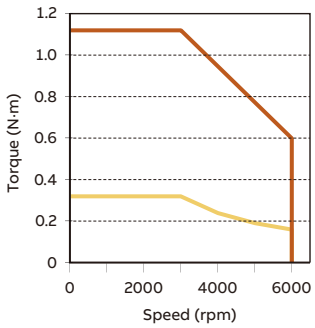


220 V motor torque curves

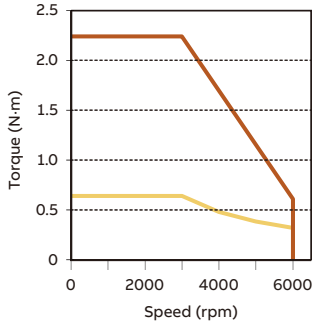
DSM04L-0KWA-302
0.05 kW



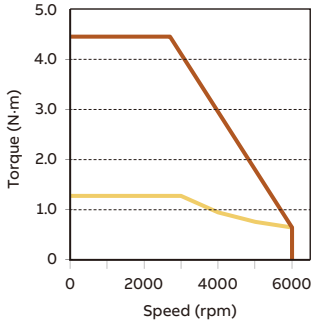
DSM04L-0KW1-302
0.1 kW



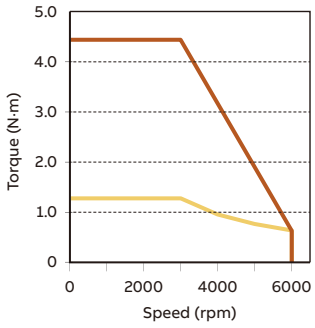
DSM06L-0KW2-302
0.2 kW



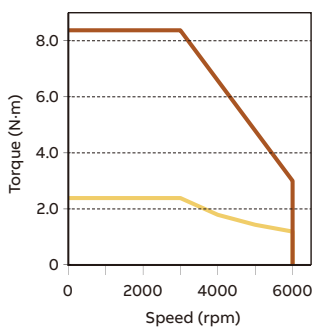
DSM06L-0KW4-302
0.4 kW



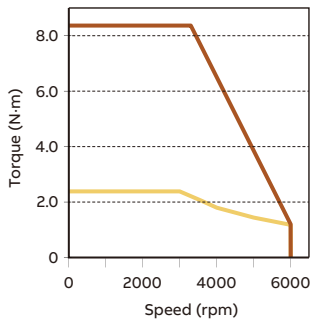
DSM06M-0KW4-302
0.4 kW



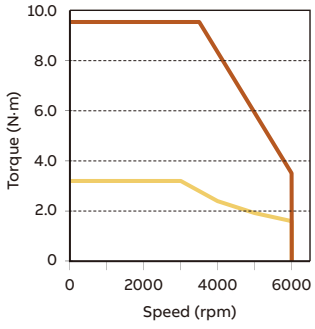
DSM08L-0KW8-302
0.75 kW



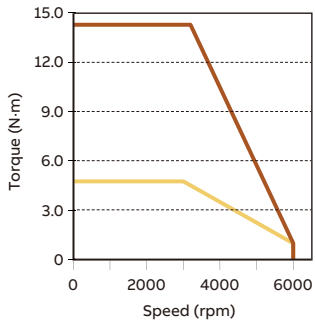
DSM08M-0KW8-302
0.75 kW



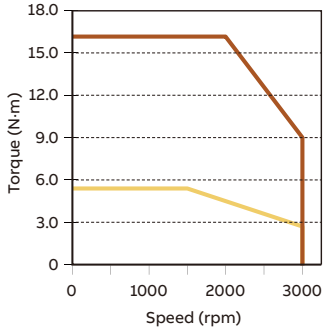
DSM10L-1KW0-302
1.0 kW



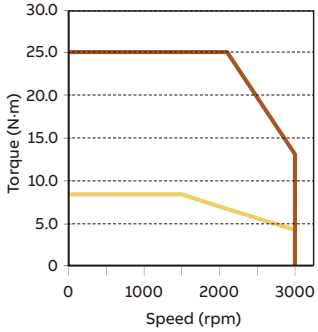
DSM10L-1KW5-302
1.5 kW



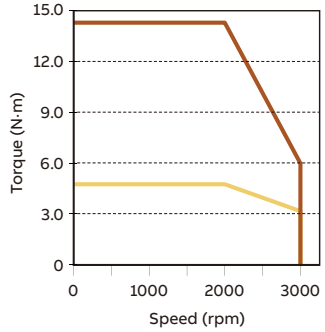
DSM13H-0KW9-152
0.85 kW



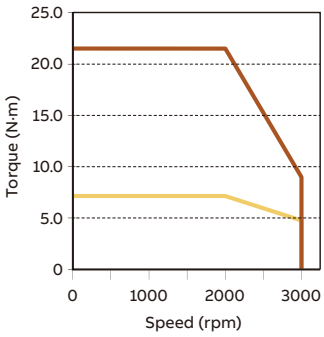
DSM13H-1KW3-152
1.3 kW



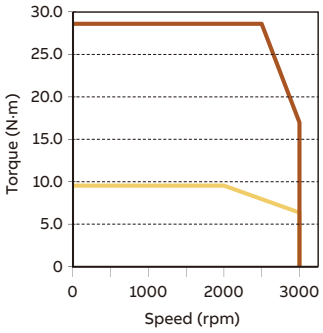
DSM13M-1KW0-202
1.0 kW



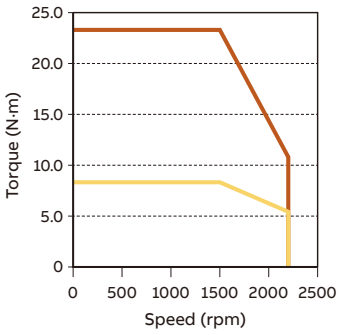
DSM13M-1KW5-202
1.5 kW



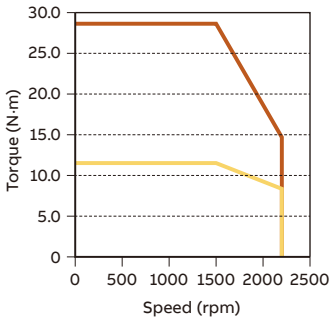
DSM13M-2KW0-202
2.0 kW



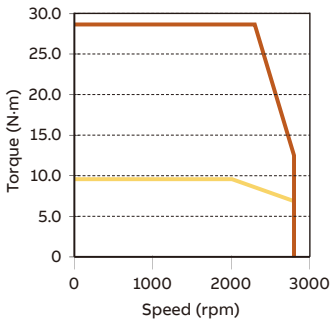
ESM13E-132-152
1.3 kW



ESM13E-182-152
1.8 kW



ESM13B-202-202
2.0 kW



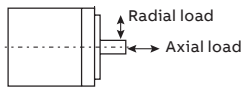
Peak torque - speed curve

Continuous torque-speed curve

400 V technical specifications

Flange size	130	130	130	180	180	180	180
Motor model (eSM...)	**B-152-304**	**B-302-304**	**B-502-304**	**E-292-154**	**E-442-154**	**E-552-154**	**E-752-154**
Rated power P (kW)	**1.5**	**3.0**	**5.0**	**2.9**	**4.4**	**5.5**	**7.5**
General							
Rated voltage (V AC)	400	400	400	400	400	400	400
Rated torque T_N (Nm)	4.8	9.6	16.1	18.6	28.0	35.0	48.0
Peak torque T_p (Nm)	14.3	28.7	48.2	45.1	71.1	87.6	119
Continuous stall torque T_0 (Nm)	4.8	9.6	16.1	18.6	28.0	35.0	48.0
Rated current I_N (A_{rms})	3.0	6.0	8.6	11.4	17.6	20.5	27.4
Peak current I_p (A_{rms})	9.0	18.0	25.8	27.7	44.1	51.3	68.0
Rated speed n_N (rpm)	3000	3000	3000	1500	1500	1500	1500
Max. speed n_{max} (rpm)	3500	3500	3200	3500	3500	3500	3200
Electrical							
Torque constant K_t (Nm/A)	1.59	1.59	1.87	1.63	1.61	1.71	1.75
Voltage constant K_e (V_{rms}/krpm)	106.7	107.4	122.1	107.5	107.2	113.5	116.5
Winding resistance R_L (ohms)	3.8	1.6	1.1	0.5	0.3	0.2	0.2
Winding inductance L_L (mH)	20.1	9.1	7.5	11.2	7.4	6.2	4.2
Mechanical							
Rotor inertia with brake J_M (kg·cm^2)	6.96	12.84	18.62	48	67.8	92.4	132.4
Rotor inertia without brake J_M (kg·cm^2)	6.26	12.14	17.9	45.6	65.4	89.98	129.8
Number of motor poles p	8	8	8	8	8	8	8
Weight with brake W (kg)	8.1	11.77	15.1	22.5	28.0	35.0	45.7
Weight without brake W (kg)	6.5	10.6	13.87	18	23.5	30.5	41.2
Max. radial load[1] (N)	330	470	449	999	1112	1072	1216
Max. axial load (N)	89	89	67	221	221	221	221
Environmental							
Insulation class	F						
Operating temperature (°C)	0...40: no derating						
Operating humidity (%)	< 90						
Operating altitude (m)	0...1000: no derating						
Storage temperature (°C)	-20...60						
Storage humidity (%)	< 90						
Power derating factor	Altitude/temp.	40 °C	45 °C	50 °C	55 °C		
	<1000 m	1.00	0.95	0.89	0.84		
	1500 m	0.95	0.90	0.85	0.79		
	2000 m	0.90	0.85	0.80	0.75		
Brake data[2]							
Rated voltage (V DC ± 10%)	24	24	24	24	24	24	24
Current (A)	0.82	0.82	0.82	1.29	1.29	0.79	0.79
Input power (W)	19.5	19.5	19.5	31	31	19	19
Static friction torque (Nm)	20	20	20	35	35	50	50
Armature release time (ms)	27	27	27	30	30	100	100
Armature pull-in time (ms)	76	76	76	120	120	220	220

[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



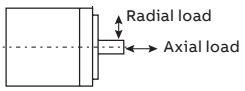
Flange size	100	100	100	100	130
Motor model (DSM...)	**10L-1KW0-304**	**10L-1KW5-304**	**10L-2KW0-304**	**10L-2KW5-304**	**13H-0KW9-154**
Rated power P (kW)	**1.0**	**1.5**	**2.0**	**2.5**	**0.85**
General					
Rated voltage (V AC)			380		
Rated torque T_N (Nm)	3.18	4.9	6.36	7.96	5.39
Peak torque T_p (Nm)	9.54	14.7	19.08	23.88	13.48
Continuous stall torque T_0 (Nm)	3.18	4.9	6.36	7.96	5.39
Rated current I_N (A_{rms})	4.5	5.1	6.5	8	3.5
Peak current I_p (A_{rms})	14.5	16	21	25.5	8.8
Rated speed n_N (rpm)	3000	3000	3000	3000	1500
Max. speed n_{max} (rpm)	5700	5000	5000	5000	3000
Electrical					
Torque constant K_t (Nm/A)	0.707	0.961	0.978	0.995	1.54
Voltage constant K_e (V_{rms}/krpm)	48.6	68.3	64.9	67.6	101.33
Winding resistance R_L (ohms)	1	1.17	0.692	0.58	3
Winding inductance L_L (mH)	10.36	12.84	8.42	6.92	25.4
Mechanical					
Rotor inertia with brake J_M (kg·cm^2)	1.889	2.554	3.296	3.924	14.42
Rotor inertia without brake J_M (kg·cm^2)	1.578	2.204	2.881	3.605	13.516
Number of motor poles p	10	10	10	10	10
Weight with brake W (kg)	5.3	6.4	7.7	9	7.3
Weight without brake W (kg)	4.1	5.2	6.5	7.8	5.7
Max. radial load[1] (N)	565	565	565	565	686
Max. axial load (N)	196	196	196	196	196
Environmental					
Insulation class			F		
Operating temperature (°C)			-10 ... 40		
Operating humidity (%)			20 ... 80		
Operating altitude (m)			0...1000: no derating		
Storage temperature (°C)			-20 ... 60		
Storage humidity (%)			20 ... 80		

Power derating factor

Altitude/temp.	40 °C	45 °C	50 °C	55 °C
<1000 m	1.00	0.95	0.89	0.84
1500 m	0.95	0.90	0.85	0.79
2000 m	0.90	0.85	0.80	0.75

Brake data[2]					
Rated voltage (V DC ± 10%)	24	24	24	24	24
Current (A)	0.92	0.92	0.95	0.92	0.96
Input power (W)	22	22	22	22	23
Static friction torque (Nm)	9	9	9	9	12
Armature release time (ms)	40	40	40	40	40
Armature pull-in time (ms)	100	100	100	100	80

[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



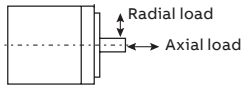
Flange size	130	130	130	130	130
Motor model (DSM...)	**13H-1KW3-154**	**13H-1KW8-154**	**13L-3KW0-304**	**13L-4KW0-304**	**13L-5KW0-304**
Rated power P (kW)	**1.3**	**1.8**	**3.0**	**4.0**	**5.0**
General					
Rated voltage (V AC)			380		
Rated torque T_N (Nm)	8.34	11.5	9.8	12.6	15.8
Peak torque T_p (Nm)	20.85	28.75	29.4	37.8	47.4
Continuous stall torque T_0 (Nm)	8.34	11.5	9.8	12.6	15.8
Rated current I_N (A_{rms})	4.8	6.5	10	12.5	16.2
Peak current I_p (A_{rms})	12	16.5	30	37.5	48.6
Rated speed n_N (rpm)	1500	1500	3000	3000	3000
Max. speed n_{max} (rpm)	3000	3000	5000	5000	5000
Electrical					
Torque constant K_t (Nm/A)	1.733	1.769	0.98	1.008	0.975
Voltage constant K_e (V_{rms}/krpm)	114.7	117.56	66.92	70.75	69.45
Winding resistance R_L (ohms)	2.11	1.346	0.226	0.162	0.124
Winding inductance L_L (mH)	20.22	14.34	4.74	3.96	2.94
Mechanical					
Rotor inertia with brake J_M (kg·cm^2)	19.596	28.598	8.61	11.447	13.718
Rotor inertia without brake J_M (kg·cm^2)	18.692	27.694	7.761	10.6	12.869
Number of motor poles p	10	10	10	10	10
Weight with brake W (kg)	8.8	10.3	12	15.4	18
Weight without brake W (kg)	7.2	8.7	10.3	13.7	16.3
Max. radial load[1] (N)	686	686	976	976	976
Max. axial load (N)	196	196	342	342	342
Environmental					
Insulation class			F		
Operating temperature (°C)			-10 ... 40		
Operating humidity (%)			20 ... 80		
Operating altitude (m)			0...1000: no derating		
Storage temperature (°C)			-20 ... 60		
Storage humidity (%)			20 ... 80		

Power derating factor

Altitude/temp.	40 °C	45 °C	50 °C	55 °C
<1000 m	1.00	0.95	0.89	0.84
1500 m	0.95	0.90	0.85	0.79
2000 m	0.90	0.85	0.80	0.75

Brake data[2]					
Rated voltage (V DC ± 10%)	24	24	24	24	24
Current (A)	0.96	0.96	0.96	0.96	0.96
Input power (W)	23	23	23	23	23
Static friction torque (Nm)	12	12	20	20	20
Armature release time (ms)	40	40	20	20	20
Armature pull-in time (ms)	80	80	100	100	100

[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



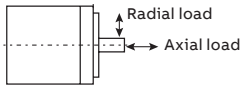
Flange size	**180**	**180**	**180**	**180**
Motor model (DSM...)	**18H-2KW9-154**	**18H-4KW4-154**	**18H-5KW5-154**	**18H-7KW5-154**
Rated power P (kW)	**2.9**	**4.4**	**5.5**	**7.5**
General				
Rated voltage (V AC)		380		
Rated torque T_N (Nm)	18.6	28.4	35	48
Peak torque T_p (Nm)	46.5	71	87.5	120
Continuous stall torque T_0 (Nm)	18.6	28.4	35	48
Rated current I_N (A_{rms})	11.8	16.5	21.5	27.5
Peak current I_p (A_{rms})	33.2	42	53	64.5
Rated speed n_N (rpm)	1500	1500	1500	1500
Max. speed n_{max} (rpm)	3000	3000	3000	3000
Electrical				
Torque constant K_t (Nm/A)	1.576	1.721	1.628	1.745
Voltage constant K_e (V_{rms}/krpm)	108.7	123.3	117.2	124.77
Winding resistance R_L (ohms)	0.474	0.288	0.166	0.132
Winding inductance L_L (mH)	4.66	8.28	5.28	4.48
Mechanical				
Rotor inertia with brake J_M (kg·cm^2)	53.2	90.124	124.107	160.096
Rotor inertia without brake J_M (kg·cm^2)	47.4	84.671	118.654	154.643
Number of motor poles p	10	10	10	10
Weight with brake W (kg)	20	25.4	32.5	37.6
Weight without brake W (kg)	14.7	20.1	27.2	32.3
Max. radial load[1] (N)	1540	1540	1720	1720
Max. axial load (N)	530	530	580	580
Environmental				
Insulation class		F		
Operating temperature (°C)		-10 ... 40		
Operating humidity (%)		20 ... 80		
Operating altitude (m)		0...1000: no derating		
Storage temperature (°C)		-20 ... 60		
Storage humidity (%)		20 ... 80		

Power derating factor

Altitude/temp.	40 °C	45 °C	50 °C	55 °C
<1000 m	1.00	0.95	0.89	0.84
1500 m	0.95	0.90	0.85	0.79
2000 m	0.90	0.85	0.80	0.75

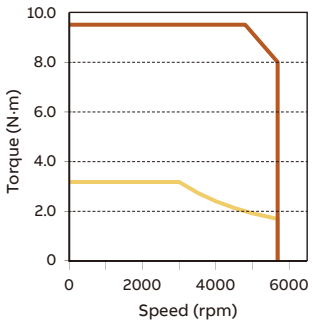
Brake data[2]				
Rated voltage (V DC ± 10%)	24	24	24	24
Current (A)	1.5	1.5	1.5	1.5
Input power (W)	36	36	36	36
Static friction torque (Nm)	50	50	50	50
Armature release time (ms)	120	120	120	120
Armature pull-in time (ms)	135	135	135	135

[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.

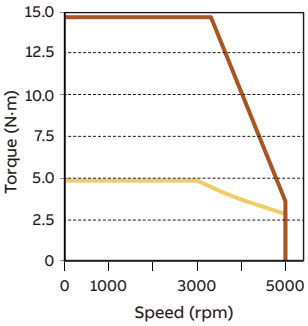


400 V motor torque curves

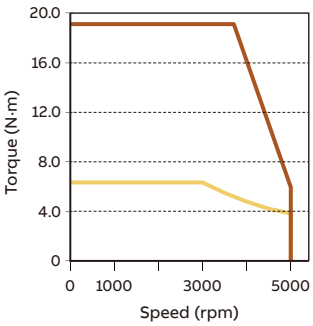
DSM10L-1KW0-304
1.0 kW



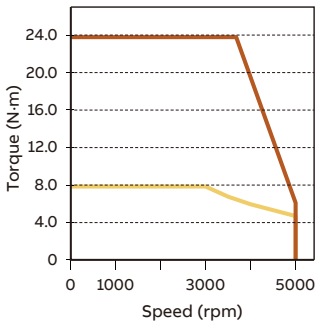
DSM10L-1KW5-304
1.5 kW



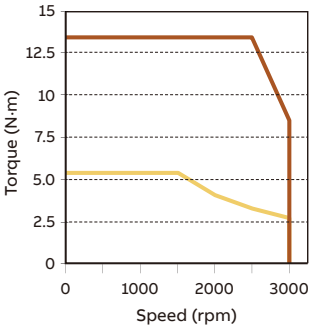
DSM10L-2KW0-304
2.0 kW



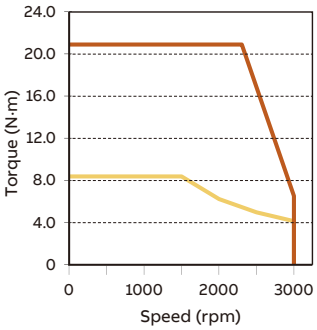
DSM10L-2KW5-304
2.5 kW



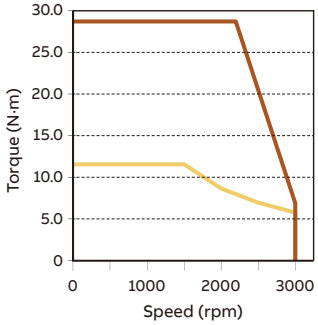
DSM13H-0KW9-154
0.85 kW



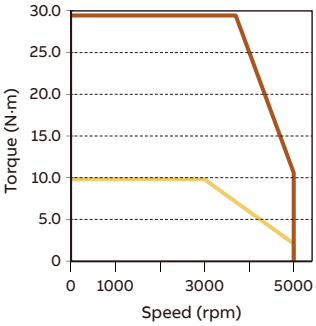
DSM13H-1KW3-154
1.3 kW



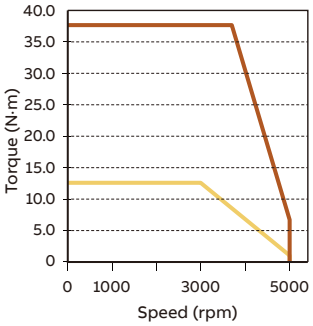
DSM13H-1KW8-154
1.8 kW



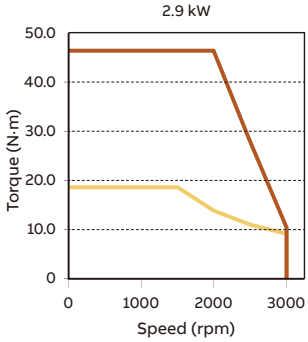
DSM13L-3KW0-304
3.0 kW



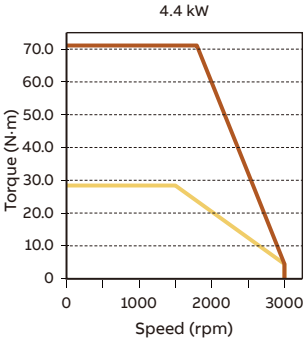
DSM13L-4KW0-304
4.0 kW



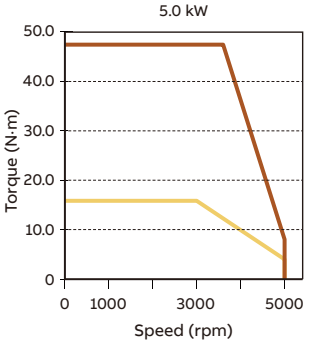
DSM18H-2KW9-154
2.9 kW



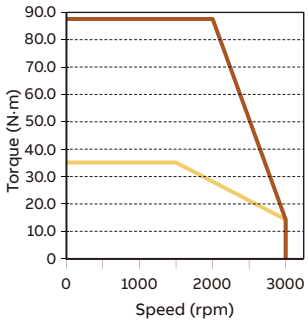
DSM18H-4KW4-154
4.4 kW



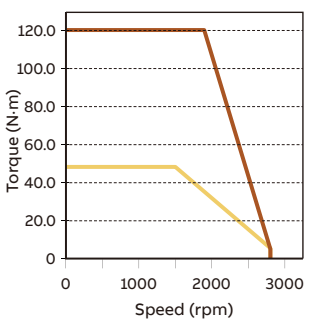
DSM13L-5KW0-304
5.0 kW



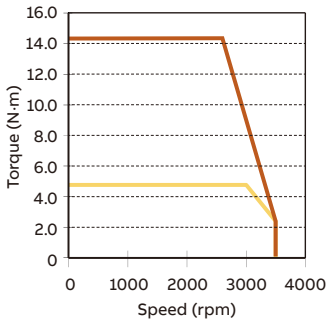
DSM18H-5KW5-154
5.5 kW



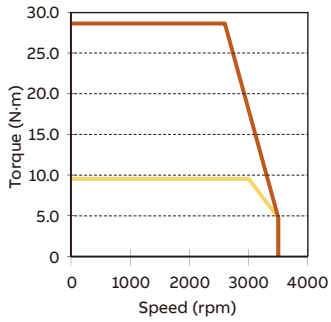
DSM18H-7KW5-154
7.5 kW



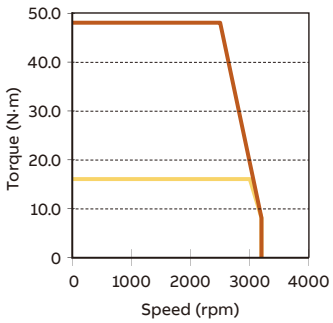
ESM13B-152-304
1.5 kW



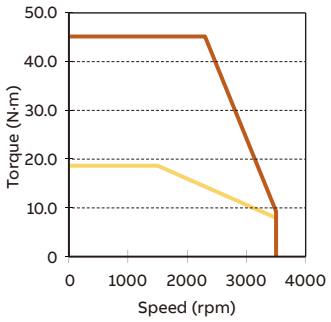
ESM13B-302-304
3.0 kW



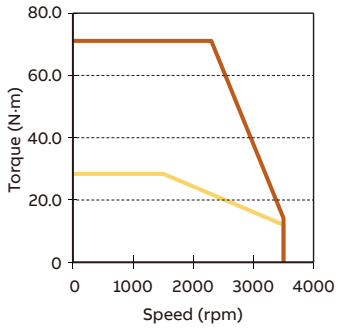
ESM13B-502-304
5.0 kW



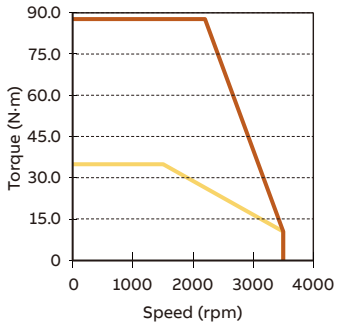
ESM18E-292-154
2.9 kW



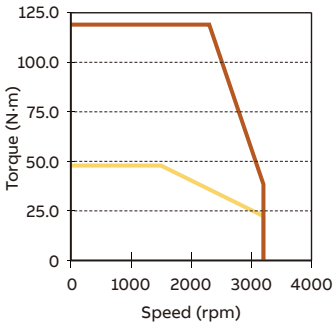
ESM18E-442-154
4.4 kW



ESM18E-552-154
5.5 kW



ESM18E-752-154
7.5 kW

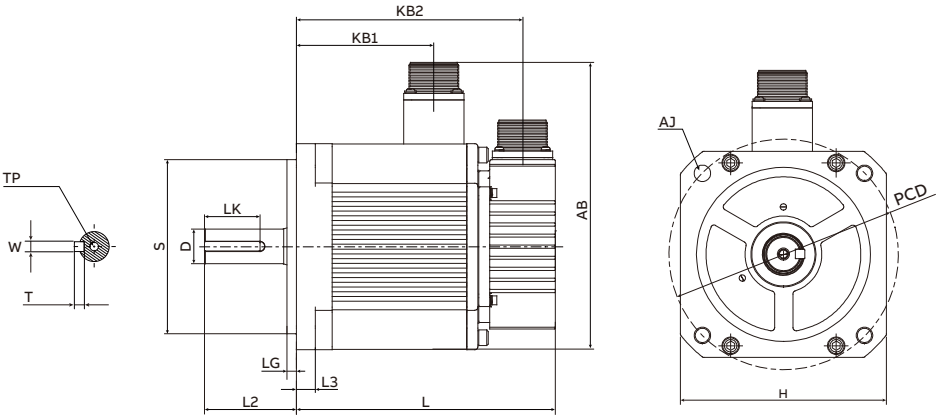


Peak torque - speed curve

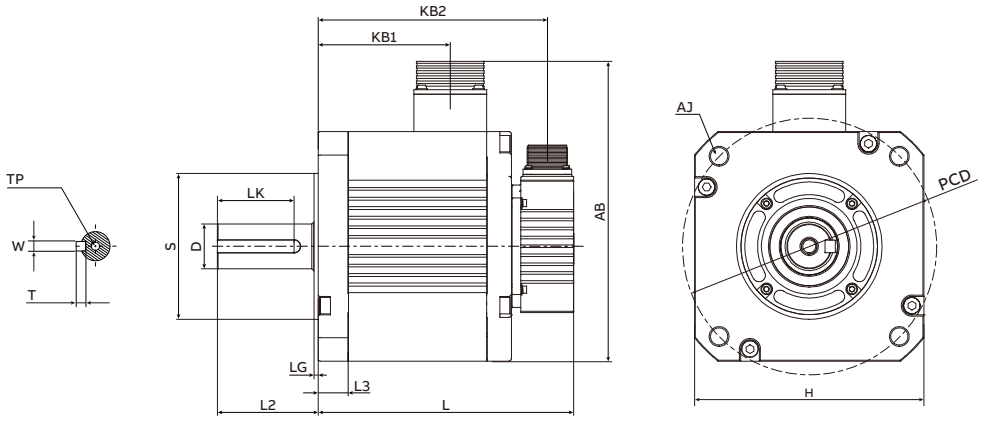
Continuous torque-speed curve

Motor drawings

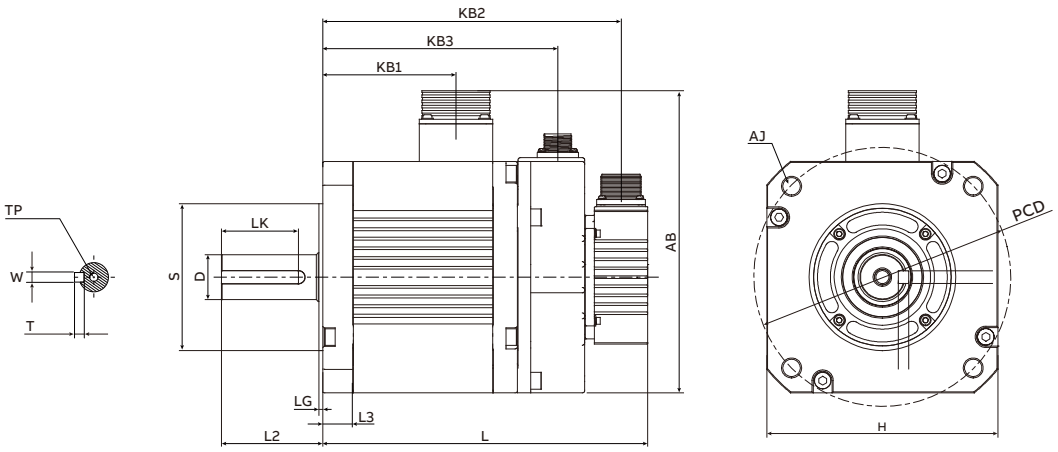
ESM13B/ESM13E



ESM18E, without brake



ESM18E, with brake



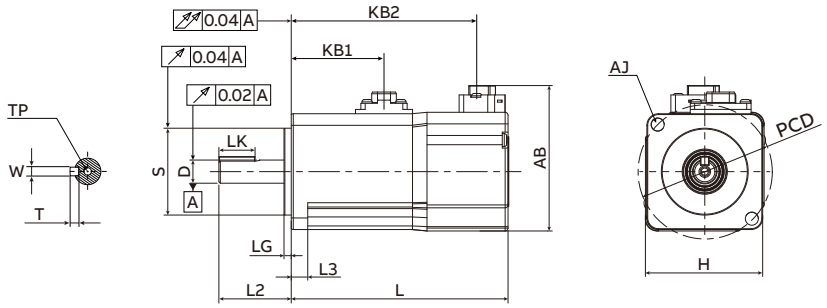
Unit: mm

ESM...	13B-202-202	13B-152-304	13B-302-304	13B-502-304	13E-132-152	13E-182-152
L (without brake)	214.8	164.8	214.8	264.8	179.3	204.3
KB1 (without brake)	137	87	137	187	101.7	126.7
KB2 (without brake)	194.1	144.1	194.1	244.1	158.6	183.6
L (with brake)	269.3	219.3	269.3	319.3	220.9	246.9
KB1 (with brake)	137	87	137	187	101.7	126.7
KB2 (with brake)	248.6	198.6	248.6	298.6	201.2	226.2
L2	58	58	58	58	58	58
D	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$28\ ^{-0.015}_{-0.03}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$
LG	6	6	6	6	6	6
L3	12	12	12	12	11.5	
LK	35	35	35	35	35	35
T	$6\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$	$7\ ^{0}_{-0.09}$	$6\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$
W	$6\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$	$8\ ^{0}_{-0.036}$	$6\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$
TP	M6 × 15	M6 × 15	M6 × 15	M6 × 15	M6 × 15	M6 × 15
H[1)]	130	130	130	130	130	130
AB	183.4	183.4	183.4	183.4	183.4	183.4
S	$110\ ^{0}_{-0.03}$	$110\ ^{0}_{-0.03}$	$110\ ^{0}_{-0.03}$	$110\ ^{0}_{-0.03}$	$110\ ^{0}_{-0.03}$	$110\ ^{0}_{-0.03}$
AJ	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9
PCD	Φ145	Φ145	Φ145	Φ145	Φ145	Φ145

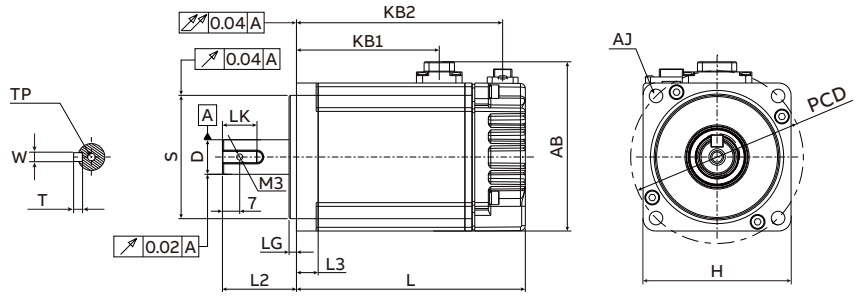
ESM...	18E-292-154	18E-442-154	18E-552-154	18E-752-154
L (without brake)	201.4	233.4	269.4	343.4
KB1 (without brake)	103.5	135.5	171.5	245.5
KB2 (without brake)	180.7	212.7	248.7	322.7
L (with brake)	253.6	285.6	321.6	395.6
KB1 (with brake)	103.5	135.5	171.5	245.5
KB2 (with brake)	232.9	264.9	300.9	374.9
KB3 (with brake)	182.7	214.7	250.7	324.7
L2	79	79	113	113
D	$35\ ^{0}_{-0.013}$	$35\ ^{0}_{-0.013}$	$42\ ^{0}_{-0.013}$	$42\ ^{0}_{-0.013}$
LG	3.2	3.2	3.2	3.2
L3	23.8	23.8	23.8	23.8
LK	60	60	90	90
T	$8\ ^{0}_{-0.09}$	$8\ ^{0}_{-0.09}$	$8\ ^{0}_{-0.09}$	$8\ ^{0}_{-0.09}$
W	$10\ ^{0}_{-0.036}$	$10\ ^{0}_{-0.036}$	$12\ ^{0}_{-0.036}$	$12\ ^{0}_{-0.036}$
TP	M12 × 24	M12 × 24	M16 × 32	M16 × 32
H[1)]	180	180	180	180
AB	238.2	238.2	238.2	238.2
S	$114.3\ ^{0}_{-0.022}$	$114.3\ ^{0}_{-0.022}$	$114.3\ ^{0}_{-0.022}$	$114.3\ ^{0}_{-0.022}$
AJ	4 -Φ13.5	4 -Φ13.5	4 -Φ13.5	4 -Φ13.5
PCD	Φ200	Φ200	Φ200	Φ200

[1)] There are tolerances in the motor outline dimensions. Do not mount the motors side by side. To ensure the hot dissipation, you are recommended to reserve at least 100 mm between two motors, otherwise, the motors must be derated. Contact ABB for details.

DSM04L



DSM06X/DSM08X

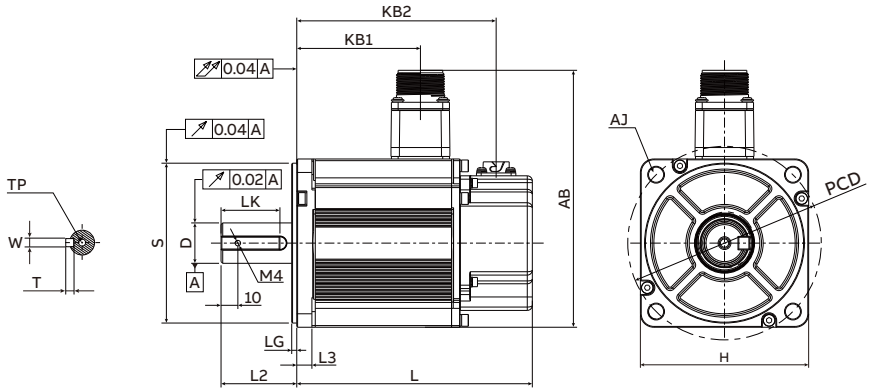


Unit: mm

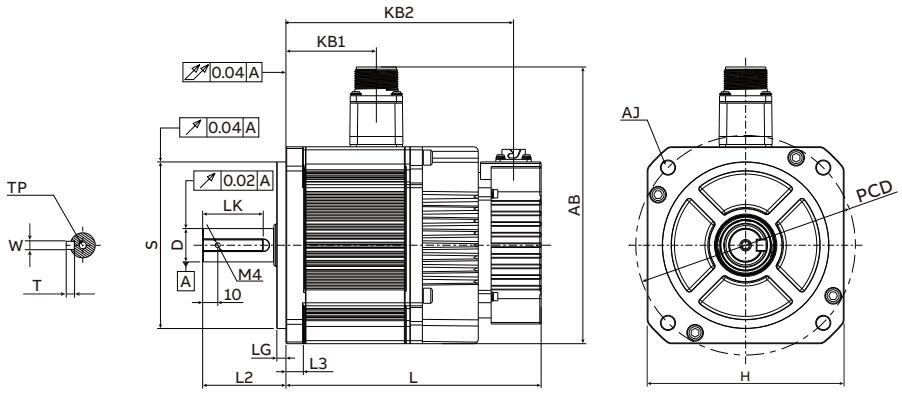
DSM...	04L-0KWA-302	04L-0KW1-302	06L-0KW2-302	06L-0KW4-302	06M-0KW4-302	08L-0KW8-302	08M-0KW8-302
L (without brake)	75	83.8	76.7	92.8	96.1	105.3	107.7
KB1 (without brake)	32.1	41	41.8	57.9	61.2	70.2	70.2
KB2 (without brake)	64.1	74.8	67.5	83.6	86.9	98.7	98.7
L (with brake)	118.9	127.8	116.2	132.3	135.6	144.1	146.5
KB1 (with brake)	32.1	41	41.8	57.9	61.2	72.6	72.6
KB2 (with brake)	108.1	118.8	107	123.1	126.4	139.9	139.9
L2	25	25	30	30	30	35	35
D	$8\ ^{0}_{-0.013}$	$8\ ^{0}_{-0.013}$	$14\ ^{0}_{-0.011}$	$14\ ^{0}_{-0.011}$	$14\ ^{0}_{-0.011}$	$19\ ^{0}_{-0.013}$	$19\ ^{0}_{-0.013}$
LG	2.5	2.5	3	3	3	3	3
L3	5.7	5.7	8	8	8	7	7
LK	12.5	12.5	14	14	14	22	22
T	$3\ ^{0}_{-0.025}$	$3\ ^{0}_{-0.025}$	$5\ ^{0}_{-0.03}$	$5\ ^{0}_{-0.03}$	$5\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$
W	$3\ ^{0}_{-0.025}$	$3\ ^{0}_{-0.025}$	$5\ ^{0}_{-0.03}$	$5\ ^{0}_{-0.03}$	$5\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$	$6\ ^{0}_{-0.03}$
TP	M3 × 6	M3 × 6	M5 × 12	M5 × 12	M5 × 12	M5 × 12	M5 × 12
H [1)]	40	40	60	60	60	80	80
AB	50	50	68.6	68.6	68.6	88.6	88.6
S	$30\ ^{0}_{-0.021}$	$30\ ^{0}_{-0.021}$	$50\ ^{0}_{-0.025}$	$50\ ^{0}_{-0.025}$	$50\ ^{0}_{-0.025}$	$70\ ^{0}_{-0.03}$	$70\ ^{0}_{-0.03}$
AJ	2 -Φ4.5	2 -Φ4.5	4 -Φ5.5	4 -Φ5.5	4 -Φ5.5	4 -Φ6.5	4 -Φ6.5
PCD	Φ46	Φ46	Φ70	Φ70	Φ70	Φ90	Φ90

[1)] There are tolerances in the motor outline dimensions. Do not mount the motors side by side. To ensure the hot dissipation, you are recommended to reserve at least 100 mm between two motors, otherwise, the motors must be derated. Contact ABB for details.

DSM10L



DSM13M

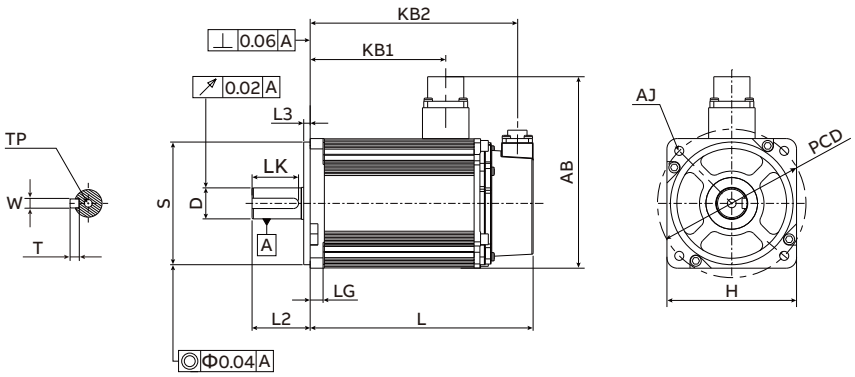


Unit: mm

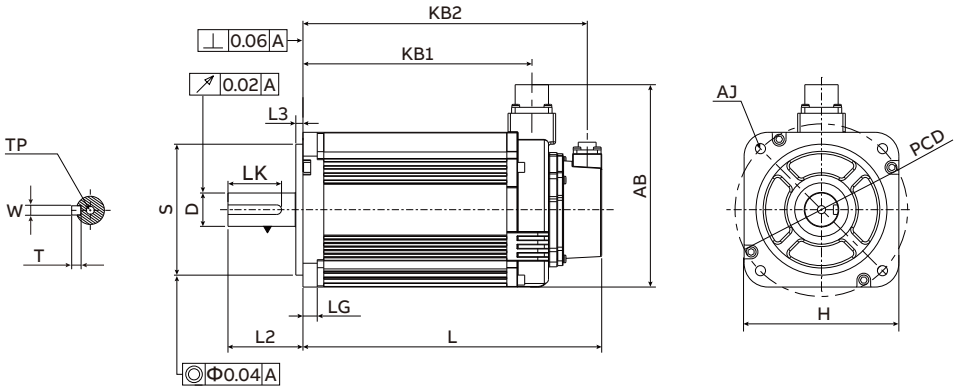
DSM...	10L-1KW0-302	10L-1KW5-302	13M-1KW0-202	13M-1KW5-202	13M-2KW0-202	13H-0KW9-152	13H-1KW3-152
L (without brake)	140	159	125.9	140.9	155.9	145.9	170.9
KB1 (without brake)	73.5	92.5	59.7	74.7	89.7	79.7	104.7
KB2 (without brake)	118.5	137.5	107.7	122.7	137.7	127.7	152.7
L (with brake)	180.5	199.5	168	183.5	199	188.5	213.5
KB1 (with brake)	73.5	92.5	59.7	74.7	89.7	79.7	104.7
KB2 (with brake)	159	178	150.3	165.3	180.3	170.3	195.3
L2	45	45	55	55	55	55	55
D	$24\ ^{0}_{-0.013}$	$24\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$
L3	9	9	11.5	11.5	11.5	11.5	11.5
LG	3	3	6	6	6	6	6
LK	35	35	40	40	40	35	35
T	$7\ ^{0}_{-0.09}$	$7\ ^{0}_{-0.09}$	$7\ ^{0}_{-0.09}$	$7\ ^{0}_{-0.09}$	$7\ ^{0}_{-0.09}$	$7\ ^{0}_{-0.09}$	$7\ ^{0}_{-0.09}$
W	$8\ ^{0}_{-0.036}$	$8\ ^{0}_{-0.036}$	$8\ ^{0}_{-0.036}$	$8\ ^{0}_{-0.036}$	$8\ ^{0}_{-0.036}$	$8\ ^{0}_{-0.036}$	$8\ ^{0}_{-0.036}$
TP	M6 × 15	M6 × 15	M6 × 15	M6 × 15	M6 × 15	M6 × 15	M6 × 15
H [1)]	100	100	130	130	130	130	130
AB	152.7	152.7	182.7	182.7	182.7	182.7	182.7
S	$95\ ^{0}_{-0.035}$	$95\ ^{0}_{-0.035}$	$110\ ^{0}_{-0.022}$	$110\ ^{0}_{-0.022}$	$110\ ^{0}_{-0.022}$	$110\ ^{0}_{-0.022}$	$110\ ^{0}_{-0.022}$
AJ	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9
PCD	Φ115	Φ115	Φ145	Φ145	Φ145	Φ145	Φ145

[1)] There are tolerances in the motor outline dimensions. Do not mount the motors side by side. To ensure the hot dissipation, you are recommended to reserve at least 100 mm between two motors, otherwise, the motors must be derated. Contact ABB for details.

DSM10L



DSM13L

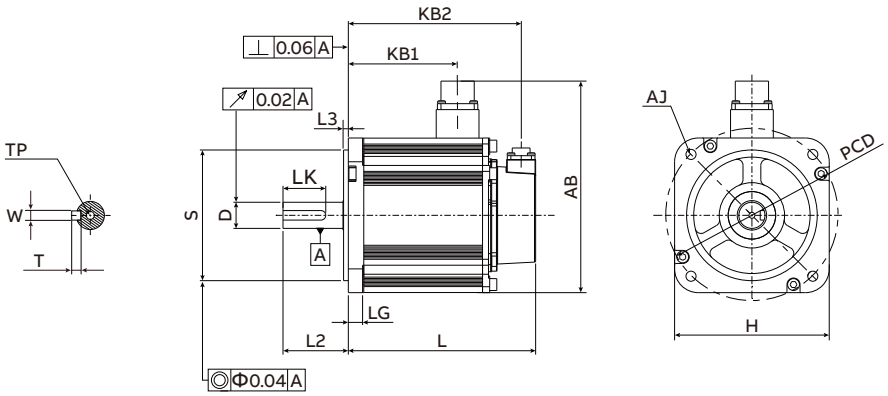


Unit: mm

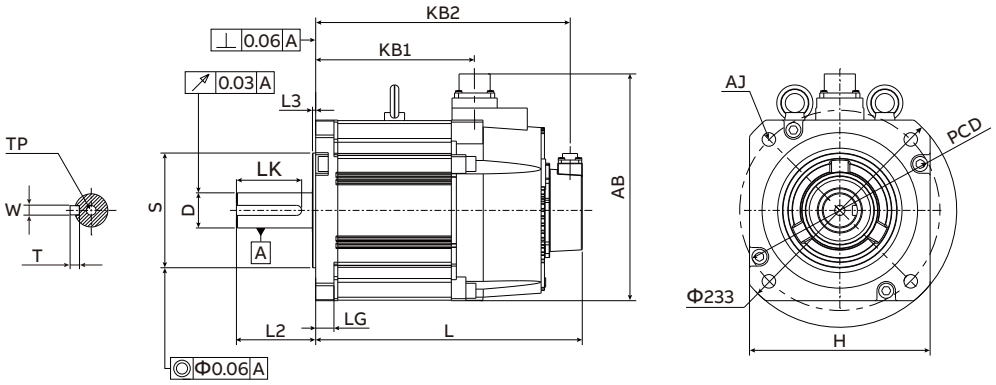
DSM...	10L-1KW0-304	10L-1KW5-304	10L-2KW0-304	10L-2KW5-304	13L-3KW0-304	13L-4KW0-304	13L-5KW0-304
L (without brake)	148.7	172.7	202.7	228.7	209	251	281
KB1 (without brake)	81	105	135	161	150.3	192.3	222.3
KB2 (without brake)	136.5	160.5	190.5	216.5	196.8	238.8	268.8
L (with brake)	188.7	212.7	242.7	268.7	237	279	309
KB1 (with brake)	121	145	175	201	178.3	220.3	250.3
KB2 (with brake)	176.5	200.5	230.5	256.5	224.8	266.8	296.8
L2	45	45	45	45	63	63	63
D	$24^{\ 0}_{-0.013}$	$24^{\ 0}_{-0.013}$	$24^{\ 0}_{-0.013}$	$24^{\ 0}_{-0.013}$	$28^{\ 0}_{-0.013}$	$28^{\ 0}_{-0.013}$	$28^{\ 0}_{-0.013}$
LG	10	10	10	10	12.5	12.5	12.5
LK	36	36	36	36	54	54	54
T	7	7	7	7	7	7	7
W	8	8	8	8	8	8	8
TP	M8 × 16	M8 × 16	M8 × 16	M8 × 16	M8 × 20	M8 × 20	M8 × 20
H [1)]	100	100	100	100	130	130	130
AB	148	148	148	148	170	170	170
L3	5	5	5	5	6	6	6
S	$95^{\ 0}_{-0.03}$	$95^{\ 0}_{-0.03}$	$95^{\ 0}_{-0.03}$	$95^{\ 0}_{-0.03}$	$110^{\ 0}_{-0.035}$	$110^{\ 0}_{-0.035}$	$110^{\ 0}_{-0.035}$
AJ	4 -Φ7	4 -Φ7	4 -Φ7	4 -Φ7	4 -Φ8.5	4 -Φ8.5	4 -Φ8.5
PCD	Φ115	Φ115	Φ115	Φ115	Φ145	Φ145	Φ145

[1)] There are tolerances in the motor outline dimensions. Do not mount the motors side by side. To ensure the hot dissipation, you are recommended to reserve at least 100 mm between two motors, otherwise, the motors must be derated. Contact ABB for details.

DSM13H



DSM18H

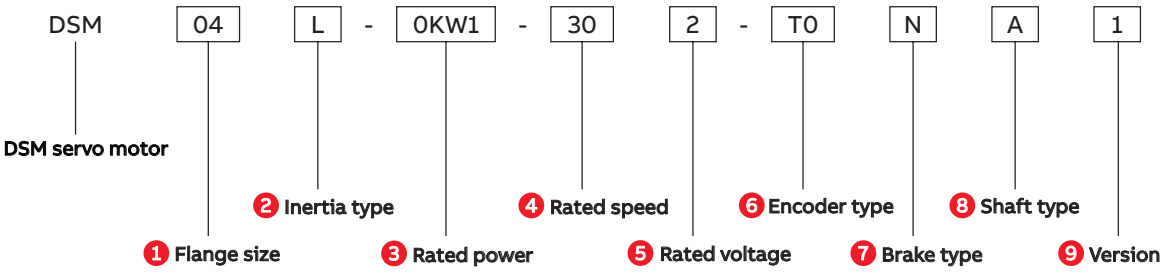


Unit: mm

DSM...	13H-0KW9-154	13H-1KW3-154	13H-1KW8-154	18H-2KW9-154	18H-4KW4-154	18H-5KW5-154	18H-7KW5-154
L (without brake)	139.7	157.7	176.7	182.7	217.7	256.7	299.7
KB1 (without brake)	74	92	111	123.4	158.4	197.4	240.4
KB2 (without brake)	127.5	145.5	164.5	218.5	205.5	244.5	287.5
L (with brake)	162.7	180.7	199.7	217.7	265.7	304.7	347.7
KB1 (with brake)	97	115	134	123.4	158.4	197.4	240.4
KB2 (with brake)	150.5	168.5	187.5	218.5	253.5	292.5	335.5
L2	55	55	55	79	79	113	113
D	$22^{\ 0}_{-0.013}$	$22^{\ 0}_{-0.013}$	$22^{\ 0}_{-0.013}$	$35^{\ 0}_{-0.016}$	$35^{\ 0}_{-0.016}$	$42^{\ 0}_{-0.016}$	$42^{\ 0}_{-0.016}$
LG	12	12	12	18	18	18	18
LK	36	36	36	65	65	96	96
T	7	7	7	8	8	8	8
W	8	8	8	10	10	12	12
TP	M6 × 20	M6 × 20	M6 × 20	M12 × 25	M12 × 25	M16 × 32	M16 × 32
H [1)]	130	130	130	180	180	180	180
AB	178	178	178	224.5	224.5	224.5	224.5
L3	4	4	4	3.2	3.2	3.2	3.2
S	$110^{\ 0}_{-0.035}$	$110^{\ 0}_{-0.035}$	$110^{\ 0}_{-0.035}$	$114.3^{\ 0}_{-0.025}$	$114.3^{\ 0}_{-0.025}$	$114.3^{\ 0}_{-0.025}$	$114.3^{\ 0}_{-0.025}$
AJ	4 -Φ8.5	4 -Φ8.5	4 -Φ8.5	4 -Φ13.5	4 -Φ13.5	4 -Φ13.5	4 -Φ13.5
PCD	Φ145	Φ145	Φ145	Φ200	Φ200	Φ200	Φ200

[1)] There are tolerances in the motor outline dimensions. Do not mount the motors side by side. To ensure the hot dissipation, you are recommended to reserve at least 100 mm between two motors, otherwise, the motors must be derated. Contact ABB for details.

DSM motor ordering information



1

Code	Flange size
04	40 mm
06	60 mm
08	80 mm
10	100 mm
13	130 mm
18	180 mm

2

Code	Inertia type
L	Low inertia
M	Medium inertia
H	High inertia

3

Code	Rated power
0KWA	0.05 kW
0KW1	0.1 kW
0KW2	0.2 kW
0KW4	0.4 kW
0KW8	0.75 kW
0KW9	0.85 kW
1KW0	1.0 kW
1KW3	1.3 kW
1KW5	1.5 kW
1KW8	1.8 kW
2KW0	2.0 kW
2KW5	2.5 kW
2KW9	2.9 kW
3KW0	3.0 kW
4KW0	4.0 kW
5KW0	5.0 kW
5KW5	5.5 kW
7KW5	7.5 kW

4

Code	Rated speed
15	1500 rpm
20	2000 rpm
30	3000 rpm

5

Code	Rated voltage
2	220 V AC
4	380 V AC

6

Code	Encoder type
T3	Incremental encoder, 23 bits
T0	Multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn

7

Code	Brake type
N	Without brake
B	With brake

8

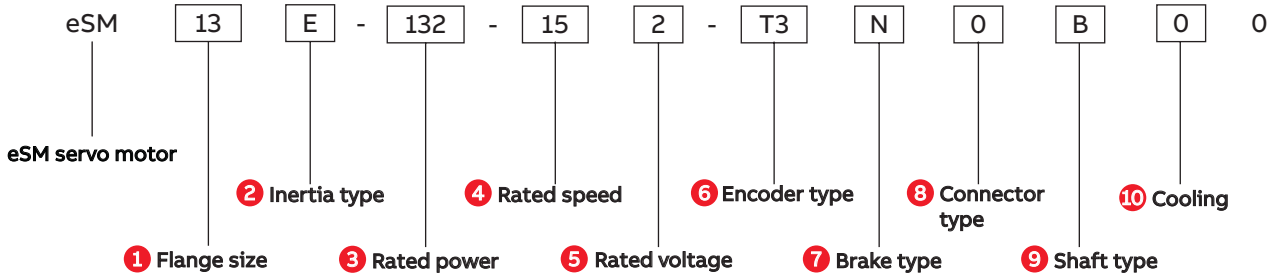
Code	Shaft type
A	Shaft with key slot and key, without oil seal
B	Shaft with key slot and key, with oil seal

The 220 V motors are equipped with oil seals by default, while 400 V motors are not equipped with oil seals by default.

9

Code	Version
0	For 400 V variant
1	For 220 V variant

eSM motor ordering information



1

Code	Flange size
04	40 mm
06	60 mm
08	80 mm
13	130 mm
18	180 mm

2

Code	Inertia type
B	Medium inertia
E	High inertia

3

Code	Rated power
132	1.3 kW
152	1.5 kW
182	1.8 kW
202	2.0 kW
292	2.9 kW
302	3.0 kW
442	4.4 kW
502	5.0 kW
552	5.5 kW
752	7.5 kW

4

Code	Rated speed
15	1500 rpm
20	2000 rpm
30	3000 rpm

5

Code	Rated voltage
2	220 V AC ± 10%
4	400 V AC ± 10%

7

Code	Brake
N	No brake
B	With brake

6

Code	Feedback
T3	Incremental encoder, 23 bits
T0	Multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn

8

Code	Connector type
0	Aviation socket

9

Code	Shaft type
A	Shaft end fitted key way and key, without shaft seal
B	Shaft end fitted key way and key, with shaft seal

10

Code	Cooling
0	Self-cooling, without thermistor connection

Accessories for MicroFlex e190 and MotiFlex e180

MicroFlex e190 accessories

Code	Description
OPT-SIO-1	I/O and serial port expansion option
OPT-MF-201	Resolver adapter - in-line adapter in the D-shell housing
OPT-MF-200	Encoder splitter - simplified the wiring for dual encoder connection

EMC filters

Code	Description		Rated Amps	Leakage current @40 °C	Weight kg (lbs)	Comppatible with MFE190-04UD-		
						03A0-2	06A0-2	09A0-2
OFI-01	Foot-mount filter with pre-drilled drive mounting holes and shielded AC input cable, suitable for all ratings. Saves space and install time	1-phase 230 V AC	20	12	0.72 (0.59)	•	•	•
OFI-03	Compact filter	3-phase 230 V AC	7	33	0.5 (1.1)	•		
JFI-02	Compact filter		16	33	0.8 (1.76)		•	•

All filters meet EN 61800-3, category C2 with motor cables <50 m

MotiFlex e180 accessories

Code	Description
FB-01	Encoder Adapter, for Incremental + Halls (+L517)
FB-02	Encoder Adapter, for Serial Encoder + SinCos (1V pk-pk) (+L518)
FB-03	Encoder Adapter, for Resolver (+L516)
FB-04	Encoder Adapter, for DSL (Stegmann 2 wire solution) (+L530)

Mains chokes

Each individual case should be checked to ascertain whether a mains choke needs to be installed. Mains chokes are typically used to:

- Reduce harmonics in the mains current
- Achieve a reduction in the rms mains current
- Reduce mains disturbance and low frequency interference
- Increase the allowed DC bus continuous power

AC chokes	
CHK-01	AC Choke/MFE180 size: 03A0-4
CHK-02	AC Choke/MFE180 size: 05A0-4, 07A0-4
CHK-04	AC Choke/MFE180 size: 016A-4
CHK-05	AC Choke/MFE180 size: 024A-4, 031A-4
CHK-06	AC Choke/MFE180 size: 046A-4
CHK-07	AC Choke/MFE180 size: 060A-4
CHK-08	AC Choke/MFE180 size: 090A-4

EMC filters

Code	
JFI-02	EMC filter/MFE180 size: 03A0-4, 05A0-4, 07A0-4
JFI-03	EMC filter/MFE180 size: 016A-4
JFI-05	EMC filter/MFE180 size: 024A-4, 031A-4, 046A-4
JFI-07	EMC filter/MFE180 size: 060A-4, 090A-4

General accessories for MicroFlex e190 and MotiFlex e180

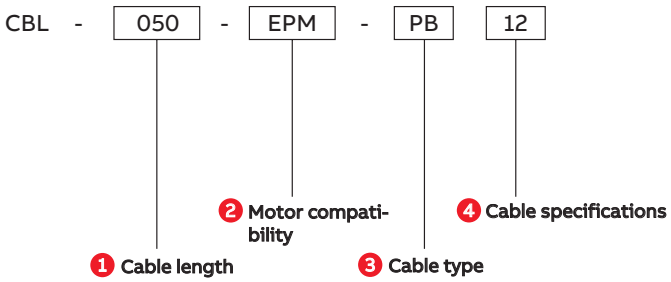
Braking resistor

JBR series	
JBR-01	Braking resistor, IP20 (145 W/120 ohm)
JBR-03	Braking resistor, IP20 (185 W/80 ohm)
JBR-04	Braking resistor, IP20 (360 W/40 ohm)
JBR-05	Braking resistor, IP20 (570 W/20 ohm)
JBR-06	Braking resistor, IP20 (790 W/13 ohm)



eSM motor cables

Motor power and feedback cables are available in lengths from 5 m to 30 m to complete the drive and motor package, and can be configured from the code structure below:



1

Code	Cable length
050	5 m
100	10 m
150	15 m
300	30 m

2

Code	Motor compatibility
EPM	ESM13, ESM18 power and brake cable
EFM	ESM13, ESM18 feedback cable

3

Code	Cable type
F2	Single-turn (SmartInc), aviation plug on the motor side
T2	Absolute, multi-turn (SmartAbs), including battery case, aviation plug on the motor side
P	Power only (ESM18 only)
B	Brake only (ESM18 only)
PB	Power and brake

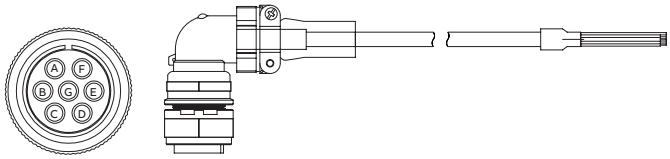
4

Code	Power specifications
12	12 Amp motor power cable (ESM13B, ESM13E)
20	20 Amp motor power cable (ESM18E-292, ESM18E-442)
35	35 Amp motor power cable (ESM18E-552, ESM18E-752)
2	Feedback cable with 15 way D type fitted

—

CBLxxx-EPM-PB12
Power and brake cable for ESM13B and ESM13E

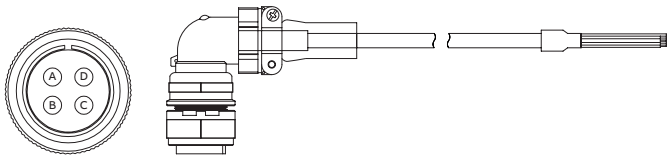
Motor	Color	Function
B	Red	U
G	White	V
E	Black	W
A	Blue	Brake 0V
F	Yellow	Brake 24V
C	Green	FG



—

CBLxxx-EPM-P20
Power cable for ESM18E-292 and ESM18E-442
CBLxxx-EPM-P35
Power cable ESM18E-552 and ESM18E-752

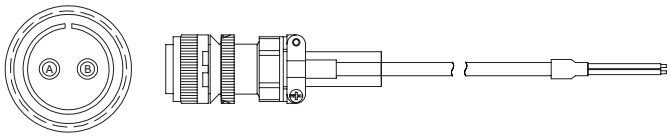
Motor	Color	Function
A	Red	U
B	White	V
C	Black	W
D	Green	FG



—

CBLxxx-EPM-B02
Brake cable for ESM18

Motor	Color	Function
A	Red	Brake 24V
B	Black	Brake 0V

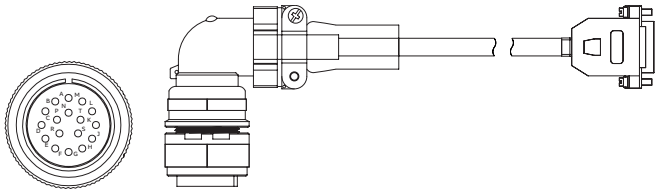


—

CBLxxx-EFM-F22

Encoder signal cable for ESM13 and ESM18, single-turn absolute encoder

Motor	Color	Function	Drive
C	Blue	SD+	1
D	Blue/Black	SD-	9
G	Black	0 V	13
K	Red	5 V	12
T	Shield	Shield	Shell



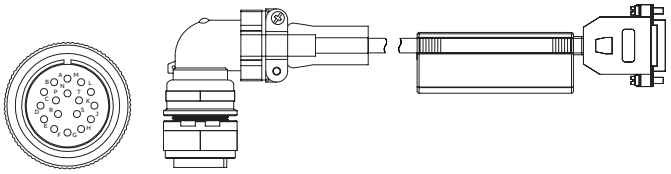
—

CBLxxx-EFM-T22

Encoder signal cable for ESM13 and ESM18, multi-turn absolute encoder [1)]

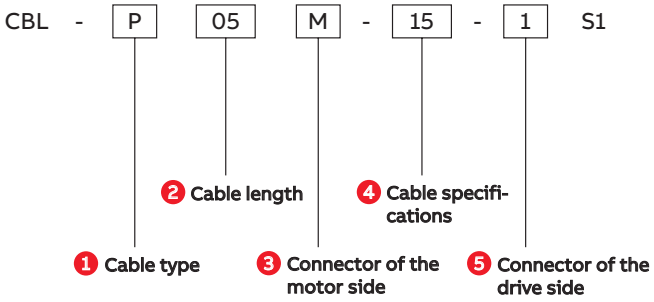
Motor	Color	Function	Drive
C	Blue	SD+	1
D	Green	SD-	9
G	Black	0V	13
H	Red	VB-	-
J	Brown	VB+	-
K	White	5V	12
T	Shield	Shield	Shell

[1)] Absolute feedback battery data-please use a 3.6 V Lithium Thionyl Chloride AA non-rechargeable battery, available from electrical suppliers.



DSM motor cables

Motor power and feedback cables are available in lengths from 5 m to 30 m to complete the drive and motor package, and can be configured from the code structure below:



1

Code	Cable type
P	Power cable (without brake)
C	Power cable (with brake)
F	Encoder cable

2

Code	Cable length
03	3 m
05	5 m
10	10 m
15	15 m
20	20 m
30	30 m

3

Code	Connector of the motor side
T	Terminal connector
M	Military connector

4

Code	Cable specification
xx	A two-digit number or a combination of a digit and a letter, which represents the power cable or the encoder cable for different motors. See page 57 for more details.

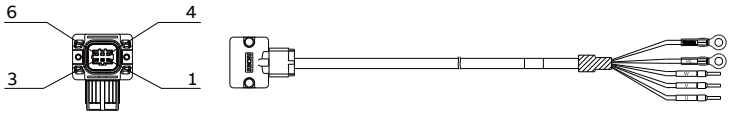
5

Code	Connector of the drive side
1	Pin type terminal
2	D-Sub 15-pin connector
3	Bare wires

—

Power cable, CBL-PxxT-03-1S1
For 220 V DSM motors of 0.05 kW to 0.1 kW, without brake

Motor side	Wire color	Signal	Drive side
1	Brown	U	Pin type
2	Black	V	Pin type
3	Gray	W	Pin type
4	Yellow-green	PE	Ring type
4	Shield	SHIELD	Ring type



—

Power cable, CBL-CxxT-34-1S1
For 220 V DSM motors of 0.05 kW to 0.1 kW, with brake

Motor side	Wire color	Signal	Drive side
1	Brown	U	Pin type
2	Black	V	Pin type
3	Gray	W	Pin type
4	Yellow-green	PE	Ring type
5	White	BK+	Pin type
6	Black	BK-	Pin type
4	Shield	SHIELD	Ring type



—

Power cable, CBL-PxxT-07-1S1
For 220 V DSM motors of 0.2 kW to 0.75 kW, without brake

Motor side	Wire color	Signal	Drive side
1	Brown	U	Pin type
2	Black	V	Pin type
3	Gray	W	Pin type
4	Yellow-green	PE	Ring type
4	Shield	SHIELD	Ring type

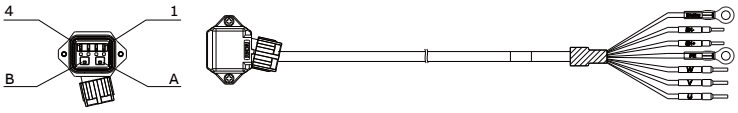


—

Power cable, CBL-CxxT-72-1S1

For 220 V DSM motors of 0.2 kW to 0.75 kW, with brake

Motor side	Wire color	Signal	Drive side
1	Brown	U	Pin type
2	Black	V	Pin type
3	Gray	W	Pin type
4	Yellow-green	PE	Ring type
A	White	BK+	Pin type
B	Black	BK-	Pin type
4	Shield	SHIELD	Ring type

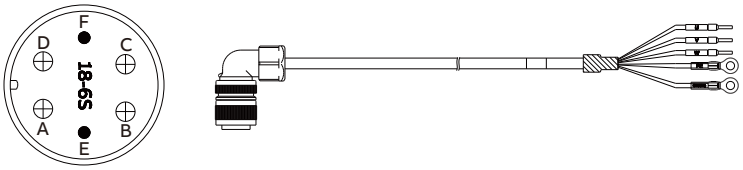


—

Power cable, CBL-PxxM-B5-1S1

For 220 V DSM motors of 1.3 kW to 2.0 kW, without brake

Motor side	Wire color	Signal	Drive side
A	Black	U	Pin type
B	Black	V	Pin type
C	Black	W	Pin type
D	Yellow-green	PE	Ring type
D	Shield	SHIELD	Ring type

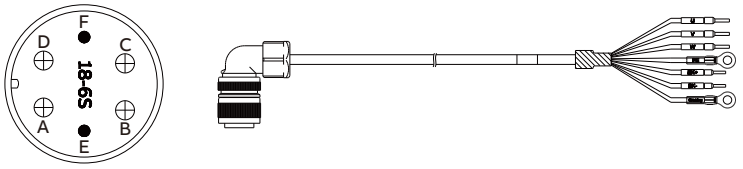


—

Power cable, CBL-PxxM-5B-1S1

For 220 V DSM motors of 1.3 kW to 2.0 kW, with brake

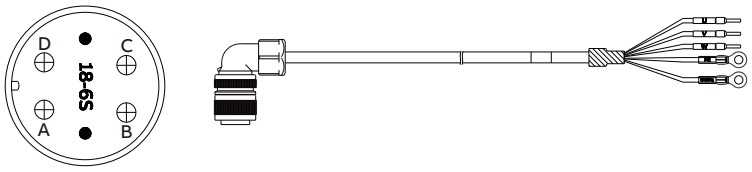
电机端	芯线颜色	信号	驱动器端
A	Black	U	Pin type
B	Black	V	Pin type
C	Black	W	Pin type
D	Yellow-green	PE	Ring type
E	Black	BK+	Pin type
F	Black	BK-	Pin type
D	Shield	SHIELD	Ring type



—

Power cable, CBL-PxxM-15-1S1
For 220 V DSM motors of 0.85 kW to 1.0 kW and 400 V DSM motors of 0.85 kW to 2.0 kW, without brake

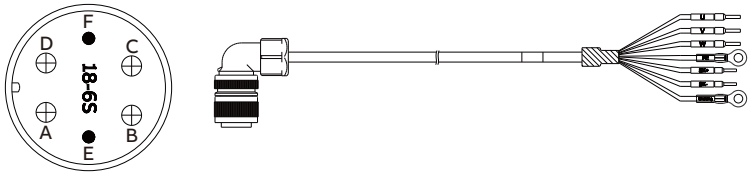
Motor side	Wire color	Signal	Drive side
A	Brown	U	Pin type
B	Black	V	Pin type
C	Gray	W	Pin type
D	Yellow-green	PE	Ring type
D	Shield	SHIELD	Ring type



—

Power cable, CBL-PxxM-15-1S1
For 220 V DSM motors of 0.85 kW to 1.0 kW and 400 V DSM motors of 0.85 kW to 2.0 kW, with brake

Motor side	Wire color	Signal	Drive side
A	Brown	U	Pin type
B	Black	V	Pin type
C	Gray	W	Pin type
D	Yellow-green	PE	Ring type
E	White	BK+	Pin type
F	Black	BK-	Pin type
D	Shield	SHIELD	Ring type



—

Power cable, CBL-PxxM-44-5S1
For 400 V DSM motors of 2.5 kW, 3.0 kW, 4.0 kW and 5.0 kW, without brake

Motor side	Wire color	Signal	Drive side
A	Brown	U	Bare wire
B	Black	V	Bare wire
C	Gray	W	Bare wire
D	Yellow-green	PE	Bare wire
D	Shield	SHIELD	Bare wire

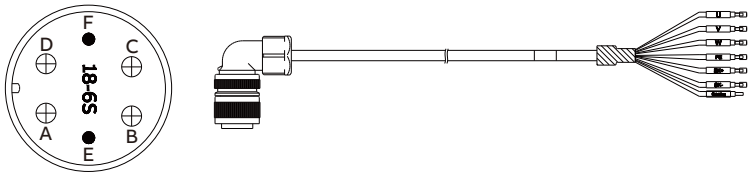


—

Power cable, CBL-PxxM-54-5S1

For 400 V DSM motors of 2.5 kW, 3.0 kW, 4.0 kW and 5.0 kW, with brake

Motor side	Wire color	Signal	Drive side
A	Brown	U	Bare wire
B	Black	V	Bare wire
C	Gray	W	Bare wire
D	Yellow-green	PE	Bare wire
E	White	BK+	Bare wire
F	Black	BK-	Bare wire
D	Shield	SHIELD	Bare wire

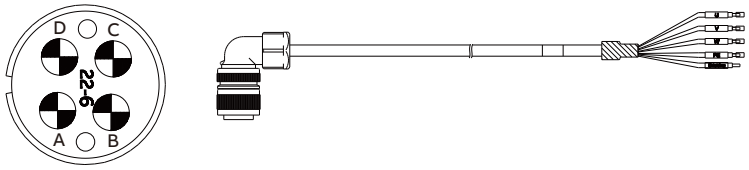


—

Power cable, CBL-PxxM-84-5S1

For 400 V DSM motors of 2.9 kW, 4.4 kW, 5.5 kW and 7.5 kW, without brake

Motor side	Wire color	Signal	Drive side
A	Brown	U	Bare wire
B	Black	V	Bare wire
C	Gray	W	Bare wire
D	Yellow-green	PE	Bare wire
D	Shield	SHIELD	Bare wire

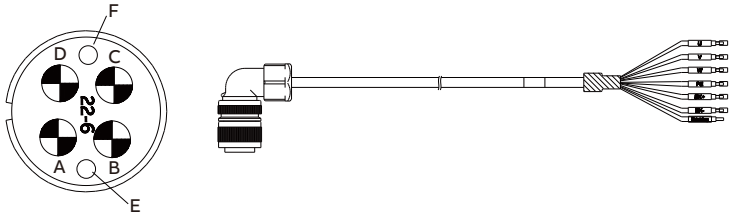


—

Power cable, CBL-PxxM-48-5S1

For 400 V DSM motors of 2.9 kW, 4.4 kW, 5.5 kW and 7.5 kW, with brake

Motor side	Wire color	Signal	Drive side
A	Brown	U	Bare wire
B	Black	V	Bare wire
C	Gray	W	Bare wire
D	Yellow-green	PE	Bare wire
E	White	BK+	Bare wire
F	Black	BK-	Bare wire
D	Shield	SHIELD	Bare wire

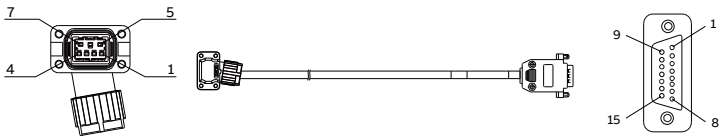


—

Encoder cable, CBL-FxxT-S1-4S0

For 220 V DSM motors of 0.05 kW to 0.75 kW, with the incremental or single-turn absolute encoder

Motor side	Wire color	Signal	Drive side
5	Red	VCC	12
7	Black	GND	13
3	Green	SD+	1
4	Yellow	SD-	9
6	Shield	SHIELD	Shell

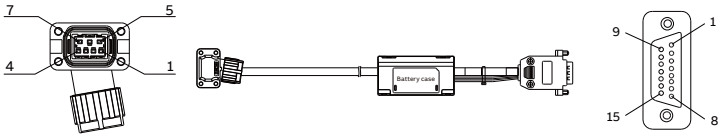


—

Encoder cable, CBL-FxxT-S2-4S0

For 220 V DSM motors of 0.05 kW to 0.75 kW, with the multi-turn absolute encoder

Motor side	Wire color	Signal	Drive side
5	Red	VCC	12
7	Black	GND	13
3	Green	SD+	1
4	Yellow	SD-	9
1	Pink	BAT+	-
2	Blue	BAT-	-
6	Shield	SHIELD	Shell

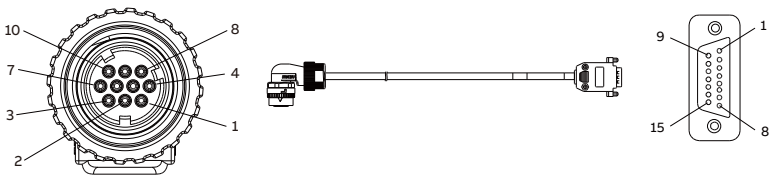


—

Encoder cable, CBL-FxxM-M1-4S0

For 220 V DSM motors of 0.85 kW to 2.0 kW and 400 V DSM motors of 0.85 kW to 7.5 kW, with the incremental or single-turn absolute encoder

Motor side	Wire color	Signal	Drive side
7	Red	VCC	12
5	Black	GND	13
6	Green	SD+	1
4	Yellow	SD-	9
10	Shield	SHIELD	Shell

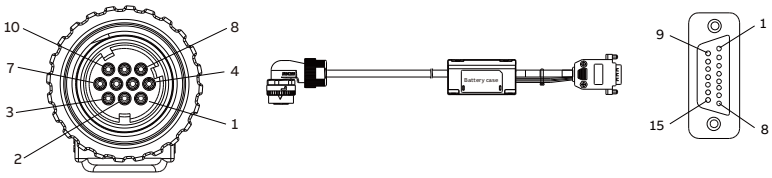


—

Encoder cable, CBL-FxxM-M2-4S0

For 220 V DSM motors of 0.85 kW to 2.0 kW and 400 V DSM motors of 0.85 kW to 7.5 kW, with the multi-turn absolute encoder

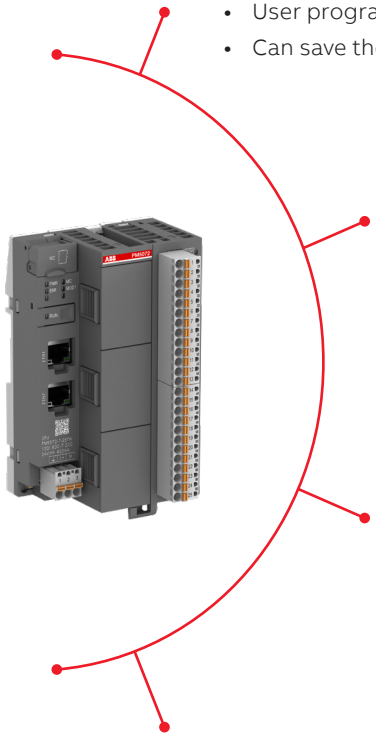
Motor side	Wire color	Signal	Drive side
7	Red	VCC	12
5	Black	GND	13
6	Green	SD+	1
4	Yellow	SD-	9
3	Pink	BAT+	-
2	Blue	BAT-	-
10	Shield	SHIELD	Shell



AC500/AC500-eCo Motion PLC

AC500-eCo general Motion PLC

AC500-eCo Motion PLC kit is the recommended controller kit for the motion applications. It supports the pulse train output (PTO) and EtherCAT protocol. The kits are available in various variants to satisfy the requirements of applications which need up to 16 axes. Combined with the E530 servo system, ABB provides the high cost-effective motion control solutions to customers. The kit allows the user to order the CPU module, terminal blocks and motion library license (PS5611) via one order number. Using the Automation Builder the user can commission their device easily.



High performance and low cost

- Based on Codesys platform, compliant with IEC61131-3 PLCOPEN coding standard
- User program memory capacity up to 8 MB
- Can save the program and data without a battery

Rich motion control functionality

- Supports virtual axis, encoder axis and axis configuration
- Supports electronic cam, electronic gearing and advanced functions such as 2-axis linear and circular interpolation
- EtherCAT performance up to 8 axes@2 ms and 16 axes@4 ms
- Supports the mixed interpolation of pulse train output axis and EtherCAT axis at the same time
- Intergrated the functions of compare output and touch probe

Comprehensive communication and options

- Up to two Ethernet interfaces for communication and web server for user defined visualizations
- Up to three serial ports for decentralized I/O and communication using option boards
- Supports various protocols such as OPC UA, tagged traffic and MQTT
- Supports Ethernet/IP protocol (for specific models)

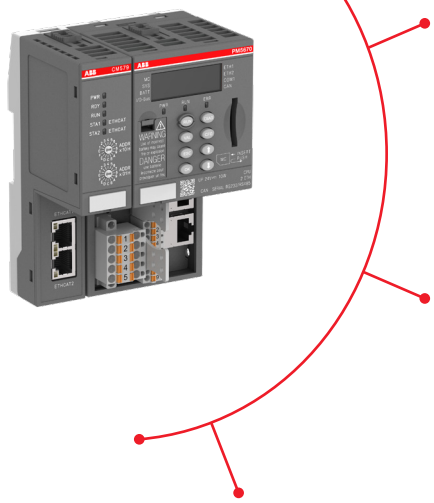
I/O module inherit and expansion

- Integrated onboard fast I/O for motion applications and axis control
- Up to 3 onboard I/O expansion using option boards for digital or analog channels
- Up to 10 I/O modules connected
- Compatible with all standard I/O modules (S500-eCo and S500)

* The terminal blocks (TA5212-TSPF) are included as the standard part when you order the AC500-eCo Motion PLC kit. You can also order it separately via the type code 1SAP187400R0005 when necessary.

AC500 high performance Motion PLC

AC500 Motion PLC kit is the recommended controller kit for the motion applications. The independent EtherCAT communication module ensures the communication quality, reduces the CPU consumption and improves the system stability. The kits are available in various variants to satisfy the requirements of applications which need up to 64 axes. The kit allows the user to order the CPU module, CPU terminal base, communication module CM579 and motion library license (PS5611) via one order number. Using the Automation Builder the user can commission their device easily.



High performance and large memory

- Based on the Codesys platform, comply with the IEC61131-3 PLCOPEN programming specification
- User program memory up to 32 Mb

Rich motion control functionality

- Supports virtual axis, encoder axis and axis configuration
- Supports electronic cam, electronic gearing and advanced functions such as 2-axis linear and circular interpolation
- EtherCAT performance up to 16 axes@1 ms, 32 axes@2 ms and 64 axes@4 ms

Comprehensive communication and options

- Up to two Ethernet interfaces for communication and web server for user defined visualizations
- Up to three serial ports for decentralized I/O and communication using option boards
- Supports Ethernet/IP protocol (for specific models)

I/O module inherit and expansion

- Up to 10 I/O modules connected
- Compatible with all standard I/O modules (S500-eCo and S500)

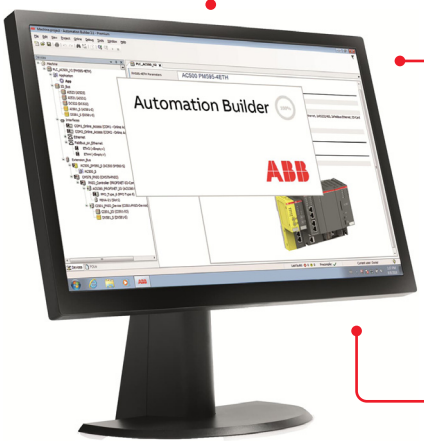
ABB Ability™ Automation builder

Automation Builder key features:

- Automation Builder connects the engineering tools for PLC, safety, drives, motion and control panels. The software suite integrates products into solutions that create value for your customers, giving you greater control of your projects, reducing risk and saving time.
- The open system leads to more innovation, value and freedom of choice for your business. Automation Builder enables you to adapt the tool chain to your needs and workflows. The software is open for your specific product and communication technology to build your distinct solution.
- Automation Builder provides advanced features, further increasing engineering productivity for your automation solutions.

—

Motion control: Specific motion library, complies with IEC61131-3 PLCOPEN coding standard, supports electronic cam, electronic gear and so on



—

Virtual sumulation: Test systems effortlessly in virtual time without real hardware using advanced simulation support

—

Networking easily: Supports a variety of mainstream protocol for promoting the industrial digitalization

—

Increase efficiency: Guided and modularized coding style accelerates the project progress

Software	Version	Download from
Automation Builder	V2.7.0 Basic	https://new.abb.com/drives/zh/lv-ac-drive/servo-products/software-tools

Motion PLC overview

AC500-eCo Motion PLC (EtherCAT variant) technical data

Product kit	PM5072 MC-KIT-E	PM5082 MC-KIT-E	PM5092 MC-KIT-E
CPU	PM5072-T-2ETH	PM5082-T-2ETH	PM5092-T-2ETH
Terminal block	TA5212-TSPF		
Motion library (PS5611) license	Paper document (import, do not lose it)		
Voltage			
Supply voltage	24 V DC	24 V DC	24 V DC
CPU performance (TI ARM Cortex-A9 32-bit-RISC)			
CPU clock speed	300 MHz	600 MHz	800 MHz
RAM	128 MB	256 MB	256 MB
Total program memory	8 MB	8 MB	8 MB
User program memory	1 MB	1 MB	2 MB
VAR retain persistent	36 KB	36 KB	36 KB
Register variable	64 KB	64 KB	64 KB
Cycle time for one instruction			
Binary/Word/Floating-point	0.02 µs/0.02 µs/0.6 µs		
Onboard digital inputs/outputs			
Digital inputs	12		
Digital outputs	8		
Fast counter	4 high-speed 100 kHz		
A/B encoder	2 high-speed 200 kHz		
PTO performance			
Pulse + direction	4 high-speed 200 kHz		
CW/CCW pulse	4 high-speed 200 kHz		
Communication and commissioning			
Ethernet interface	2	2	2
EtherCAT (by ETH1)	yes	yes	yes
EtherCAT performance[1)]	4 axes@2ms, 8 axes@4ms	8 axes@2ms, 16 axes@4ms	4 axes@1ms, 12 axes@2ms, 24 axes@4ms
OPC UA	yes	yes	yes
Number of free tags	1000	3000	3000
Number of connections	10	10	10
Min. sampling rate (limit)	1000 ms	1000 ms	1000 ms
Web Server	yes (7 MB)	yes (7 MB)	yes (6 MB)
EtherNet/IP	no	no	no
Communication methods	EtherCAT, Modubs TCP/IP, Modbus RTU, tagged traffic, RS232, RS485		
Supported commissioning tool	Automation Builder		
Option board slots for expansion			
Max. number of option board slots	3	3	3
Motion function			
Basic applications	Electronic cam, electronic gearing, linear and circular interpolation, compare output, touch probe		
CPU dimensions			
Width × height × depth (mm)	82 × 142 × 73.05		
Mounting method			
Assembly on DIN rail	DIN rail type: 35 mm, depth 7.5 mm or 15 mm, according to IEC 60715		
Assembly with screws	Screw diameter 4 mm, fastening torque 1.2 Nm		
Temperature			
Operating temperature	-20 °C ... 60 °C		

[1)] Test method: The data is calculated according to the PLC Load when execute the CAM function with one virtual axis and a different number of real axes without the user program. The PLC supports the mixed interpolation of pulse train output axis and EtherCAT axis at the same time. The supported axis number of the different time cycle is the total amount of the PTO axes and EtherCAT axes.

For more detailed specifications, refer to AC500-eCo V3 CPUmodules. Please find the data via the Catalog 3ADR020077C0204.

AC500 Motion PLC (EtherCAT variant) technical data

Product kit	PM5072 MC-KIT-EIP	PM5082 MC-KIT-EIP	PM5092 MC-KIT-EIP
CPU	PM5072-T-2ETH	PM5082-T-2ETH	PM5092-T-2ETH
Terminal block	TA5212-TSPF		
Motion library (PS5611) license	Paper document (import, do not lose it)		
Voltage			
Supply voltage	24 V DC	24 V DC	24 V DC
CPU performance (TI ARM Cortex-A9 32-bit-RISC)			
CPU clock speed	300 MHz	600 MHz	800 MHz
RAM	128 MB	256 MB	256 MB
Total program memory	8 MB	8 MB	8 MB
User program memory	1 MB	1 MB	2 MB
VAR retain persistent	36 KB	36 KB	36 KB
Register variable	64 KB	64 KB	64 KB
Cycle time for one instruction			
Binary/Word/Floating-point	0.02 µs/0.02 µs/0.6 µs		
Onboard digital inputs/outputs			
Digital inputs	12		
Digital outputs	8		
Fast counter	4 high-speed 100 kHz		
A/B encoder	2 high-speed 200 kHz		
PTO performance			
Pulse + direction	4 high-speed 200 kHz		
CW/CCW pulse	4 high-speed 200 kHz		
Communication and commissioning			
Ethernet interface	2	2	2
EtherCAT (by ETH1)	yes	yes	yes
EtherCAT performance[1)]	4 axes@2ms, 8 axes@4ms	8 axes@2ms, 16 axes@4ms	4 axes@1ms, 12 axes@2ms, 24 axes@4ms
OPC UA	yes	yes	yes
Number of free tags	1000	3000	3000
Number of connections	10	10	10
Min. sampling rate (limit)	1000 ms	1000 ms	1000 ms
Web Server	yes (7 MB)	yes (7 MB)	yes (6 MB)
EtherNet/IP	yes (master-slave/32)	yes (master-slave/32)	yes (master-slave/32)
Communication methods	EtherCAT, EtherNet/IP, Modubs TCP/IP, Modbus RTU, tagged traffic, RS232, RS485		
Supported commissioning tool	Automation Builder		
Option board slots for expansion			
Max. number of option board slots	3	3	3
Motion function			
Basic applications	Electronic cam, electronic gearing, linear and circular interpolation, compare output, touch probe		
Industrial applications	Rotary cutting, longitudinal cutting blade, unwinding and winding, labeling (As versions are updated, the industry library is continuously expanded. For more information, please contact ABB.)		
CPU dimensions			
Width × height × depth (mm)	82 × 142 × 73.05		
Mounting method			
Assembly on DIN rail	DIN rail type: 35 mm, depth 7.5 mm or 15 mm, according to IEC 60715		
Assembly with screws	Screw diameter 4 mm, fastening torque 1.2 Nm		
Temperature			
Operating temperature	-20 °C ... 60 °C		

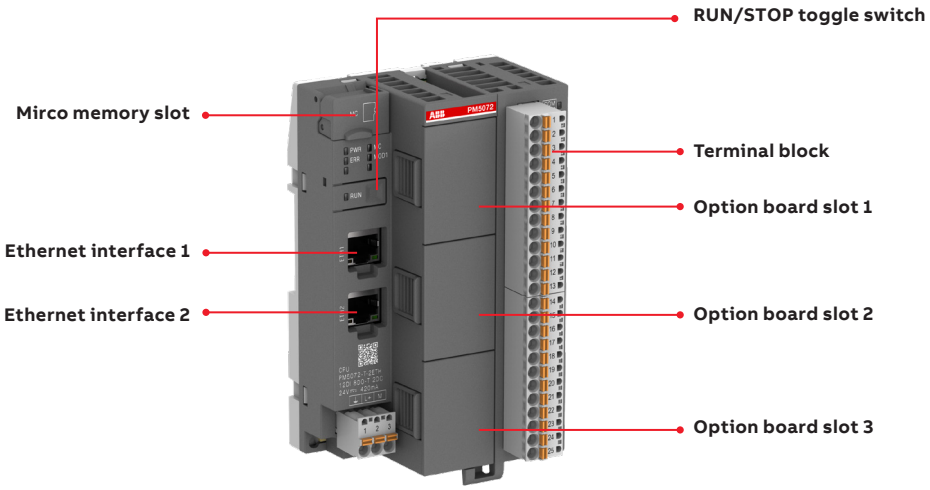
[1)] Test method: The data is calculated according to the PLC Load when execute the CAM function with one virtual axis and a different number of real axes without the user program. The PLC supports the mixed interpolation of pulse train output axis and EtherCAT axis at the same time. The supported axis number of the different time cycle is the total amount of the PTO axes and EtherCAT axes.

AC500 Motion PLC (EtherCAT variant) technical data

Product kit	PM5650-MC-KIT	PM5670-MC-KIT	PM5650-MC-KIT-EIP	PM5670-MC-KIT-EIP
CPU	PM5650-2ETH	PM5670-2ETH	PM5650-2ETH	PM5670-2ETH
CPU terminal base	TB-5610			
EtherCAT communication module	CM579			
Motion library (PS5611) license	Paper document (import, do not lose it)			
Voltage				
Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
CPU performance (TI ARM Cortex-A9 32-bit-RISC)				
CPU clock speed	600 MHz	1 GHz	300 MHz	1 GHz
RAM	512 MB	1024 MB	512 MB	1024 MB
Total program memory	80 MB	160 MB	80 MB	160 MB
User program memory	8 MB	32 MB	8 MB	32 MB
VAR retain persistent	128 KB	1024 KB	128 KB	1024 KB
Register variable	128 KB	512 KB	128 KB	512 KB
Web Server program memory	72 MB	128 MB	72 MB	128 MB
Cycle time for one instruction				
Binary/Word/Floating-point	0.01 µs/0.01 µs/0.01 µs	0.002 µs/0.002 µs/0.002 µs	0.01 µs/0.01 µs/0.01 µs	0.002 µs/0.002 µs/0.002 µs
Program execution				
Min. cycle time configurable for cyclical task	1 ms	0.5 ms	1 ms	0.5 ms
Onboard interfaces				
Ethernet interface on the terminal base	2 (routing function)			
Communication module on the terminal base	1 slot			
Serial interface	RS485 × 1			
On board CANopen	1 channel (CANopen master communication, CAN 2A/2B, J1939 protocol, CAN sync)			
Max. number of variables allowed (input/output)	4 KB/4 KB	5 KB/5 KB	4 KB/4 KB	5 KB/5 KB
Communication and commissioning				
Min. cycle time for EtherCAT master	1 ms	0.5 ms	1 ms	0.5 ms
Number of synchronous axes within 1 ms	8	16	8	16
Number of synchronous axes within 2 ms	16	32	16	32
Number of synchronous axes within 4 ms	32	64	32	64
OPC UA	yes	yes	yes	yes
Number of free tags	10000	30000	10000	30000
Number of connections	20	50	20	50
Min. sampling rate (limit)	100 ms	50 ms	100 ms	50 ms
Web Server	yes	yes	yes	yes
EtherNet/IP	no	no	yes (master-slave/32)	yes (master-slave/32)
Communication methods	EtherCAT, Modubs TCP/IP, Modbus RTU, tagged traffic, RS485, MQTT			
Supported commissioning tool	Automation Builder			
Motion function				
Applications	Electronic cam, electronic gearing, linear and circular interpolation			
Dimensions (TB + CPU + CM)				
Width × height × depth (mm)	95.5 × 135 × 75			
Mounting method				
Assembly on DIN rail	DIN rail type: 35 mm, depth 7.5 mm or 15 mm, according to IEC 60715			
Assembly with screws	Screw diameter 4 mm, fastening torque 1.2 Nm			

Interface overview

AC500-eCo Motion PLC



The number of the option board slot and Ethernet interface varies according to the Motion PLC type.

Motion PLC	Option board slot 1	Option board slot 2	Option board slot 3	Ethernet interface 1	Ethernet interface 2
PM5032 MC-KIT	•	•		•	
PM5052 MC-KIT	•	•	•	•	
PM5072 MC-KIT	•	•	•	•	•
PM5072 MC-KIT-E	•	•	•	•	•
PM5082 MC-KIT-E	•	•	•	•	•
PM5092 MC-KIT-EC	•	•	•	•	•
PM5072 MC-KIT-EIP	•	•	•	•	•
PM5082 MC-KIT-EIP	•	•	•	•	•
PM5082 MC-KIT-EC-EIP	•	•	•	•	•

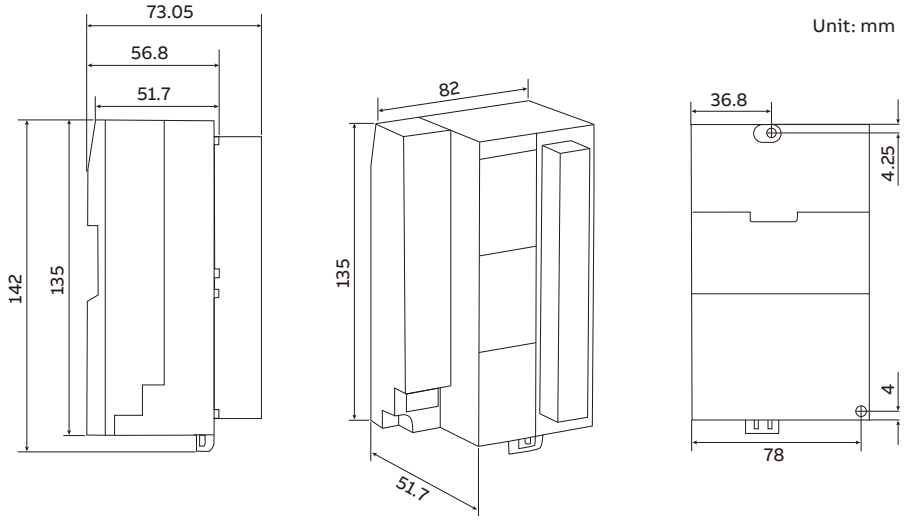
AC500 Motion PLC



Dimensions

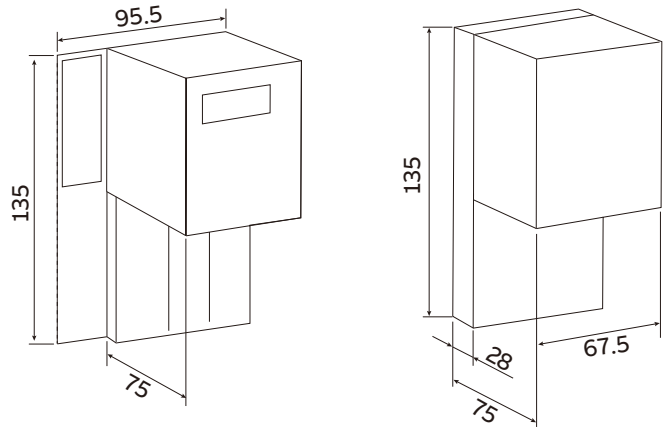
AC500-eCo Motion PLC

Unit: mm



AC500 Motion PLC

Unit: mm



Expansion modules

AC500-eCo option board I/O expansion modules

Description	I/O quantity	Output type	Type	Order number
Option board for digital input/output channel expansion				
4 DI digital input channels 24 V DC, 5 pole spring/cable front terminal 3.50 mm pitch	4DI	-	TA5101-4DI	1SAP187000R0001
4 DO digital output channels transistor 24 V DC / 0.5 A, 7 pole spring/cable front terminal 3.50 mm pitch	4DO	Transistor	TA5105-4DOT	1SAP187000R0002
2 DI/2DO digital input/output channels transistor 24 V DC / 0.5A, 7 pole spring/cable front terminal 3.50 mm pitch	2DI/2DO	Transistor	TA5110-2DI2DOT	1SAP187000R0003
2 AI analog input channels U/I, 0 … 10 V/0 … 20 mA, 6 pole spring/cable front terminal 3.50 mm pitch	2AI	-	TA5120-2AI-UI	1SAP187100R0001
2 AI analog input channels TC thermocoupler, 6 pole spring/cable front terminal 3.50 mm pitch	2AI	-	TA5122-2AI-TC	1SAP187100R0004
2 AI analog input channels RTD PT100, PT1000, 8 pole spring/cable front terminal 3.50 mm pitch	2AI	-	TA5123-2AI-RTD	1SAP187100R0002
2 AO analog output channels U/I, 0 … 10 V/0 … 20 mA, 6 pole spring/cable front terminal 3.50 mm pitch	2AO	-	TA5126-2AO-UI	1SAP187100R0003

Module type	Communication type	Type	Order number
Option board for communication address setting or real time clock			
KNX address switch option board, 1 push button	-	TA5130-KNXPB	1SAP187200R0001
Real Time Clock without battery, option board for AC500-eCo Basic CPU only	-	TA5131-RTC	1SAP187200R0002
Option board for serial communication expansion			
RS232 serial adapter isolated, 5 pole spring/cable front terminal 3.50 mm pitch	RS232 isolated	TA5141-RS232I	1SAP187300R0001
RS485 serial adapter isolated, 5 pole spring/cable front terminal 3.50 mm pitch	RS485 isolated	TA5142-RS485I	1SAP187300R0002
RS485 serial adapter non-isolated, 5 pole spring/cable front terminal 3.50 mm pitch	RS485 non-isolated	TA5142-RS485	1SAP187300R0003

S500-eCo I/O modules

I/O quantity	Input signal	Output type	Output signal	Terminal block required		Type	Order number
				TA565-9	TA565-11		
Digital I/O							
8DI	24 V AC/DC	-	-	1	-	DI561	1TNE968902R2101
16DI	24 V AC/DC	-	-	1	1	DI562	1TNE968902R2102
8DI	100 ~ 240 V AC	-	-	1	1	DI571	1TNE968902R2103
16DI	100 ~ 240 V AC	-	-	1	1	DI572	1SAP230500R0000
8DO	-	Transistor	24 V DC, 0.5 A	-	1	DO561	1TNE968902R2201
16DO	-	Transistor	24 V DC, 0.5 A	1	1	DO562	1SAP230900R0000
8DO	-	Relay	24 V AC/DC, 120/240 V AC, 2 A	-	1	DO571	1TNE968902R2202
8DO	-	Triac	24 V AC, 100/240 V AC, 0.3 A	1	1	DO572	1TNE968902R2203
16DO	-	Relay	24 V DC, 120/240 V AC, 2 A	1	1	DO573	1SAP231300R0000
8DI/8DO	24 V DC	Transistor	24 V DC, 0.5 A	1	1	DX561	1TNE968902R2301
8DI/8DO	24 V AC/DC	Relay	24 V AC/DC, 120/240 V AC, 2 A	1	1	DX571	1TNE968902R2302
16DC	24 V DC	Transistor	24 V DC, 0.5 A	1	1	DC562	1SAP231900R0000

I/O quantity	Input signal	Output signal	Terminal block required		Type	Order number
			TA565-9	TA565-11		
Analog I/O						
4AI	±2.5 V, ±5 V, 0...5 V, 0...10 V, 0...20 mA, 4...20 mA	-	1	1	AI561	1TNE968902R1101
2AI	PT100, PT1000, Ni100, Ni1000, Resistance: 150 Ω, 300 Ω	-	-	1	AI562	1TNE968902R1102
4AI	S, T, R, E, N, K, J Voltage range: ±80 mV	-	1	1	AI563	1TNE968902R1103
2AO	-	-10...+10 V, 0...20 mA, 4...20 mA	-	1	AO561	1TNE968902R1201
4AI/2AO	±2.5 V, ±5 V, 0...5 V, 0...10 V, 0...20 mA, 4...20 mA	-10...+10 V, 0...20 mA, 4...20 mA	1	1	AX561	1TNE968902R1301

—

AC500 terminal units

Description	Supply	Connection type	Type	Order number
I/O modules transistor	24 V DC	Screw	TU515	1SAP212200R0001
		Spring	TU516	1SAP212000R0001
I/O modules AC/relay	230 V AC	Screw	TU531	1SAP217200R0001
		Spring	TU532	1SAP217000R0001
High current I/O module (DO526)	24 V DC	Screw	TU541	1SAP213000R0001
		Spring	TU542	1SAP213200R0001
I/O modules - for Hot Swap	24 V DC	Spring	TU516-H	1SAP215000R0001
I/O modules AC/relay - for Hot Swap	230 V AC	Spring	TU532-H	1SAP215100R0001
High current I/O module - for Hot Swap	24 V DC	Spring	TU542-H	1SAP215200R0001

—

S500 I/O modules

I/O quantity	Input signal	Output type	Output signal	Screw/spring terminal block	Type	Order number
Digital I/O						
32DI	24 V DC	-	-	TU515/TU516	DI524	1SAP240000R0001
16DC	24 V DC	Transistor	24 V DC, 0.5 A	TU515/TU516	DC522	1SAP240600R0001
24DC	24 V DC	Transistor	24 V DC, 0.5 A	TU515/TU516	DC523	1SAP240500R0001
16DI/16DC	24 V DC	Transistor	24 V DC, 0.5 A	TU515/TU516	DC532	1SAP240100R0001
8DI/8DO	24 V DC	Relay	230 V AC, 3 A	TU531/TU532	DX522	1SAP245200R0001
8DI/4DO	230 V AC	Relay	230 V AC, 3 A	TU531/TU532	DX531	1SAP245000R0001
32DO	-	Transistor	24 V DC, 0.5 A	TU515/TU516	DO524	1SAP240700R0001
8DO	-	Transistor	24 V DC, 2 A	TU541/TU542	DO526	1SAP240800R0001

I/O quantity	Input signal	Output signal	Screw/spring terminal block	Type	Order number
Analog I/O					
16AI	0...10 V, ±10 V 0/4...20 mA, PT100, PT1000, Ni1000	-	TU515/TU516	AI523	1SAP250300R0001
4AI/4AO		±10 V 0/4...20 mA	TU515/TU516	AX521	1SAP250100R0001
8AI/8AO			TU515/TU516	AX522	1SAP250000R0001
16AO	-		TU515/TU516	AO523	1SAP250200R0001
8AI	0…5 V, 0…10 V, ±50 mV, ±500 mV, 1 V, ±5 V, ±10 V, 0/4…20 mA, ±20 mA, PT100, PT1000, Ni1000, Cu50, 0…50 kΩ, S, T, N, K, J	-	TU515/TU516	AI531	1SAP250600R0001

I/O quantity	Input signal	Output type	Output signal	Screw/spring terminal block	Type	Order number
Analog/digital mixed I/O						
4AI/2AO/16DI/8DC	24 V DC/0…10 V, -10…+10 V, 0…20 mA, 4…20 mA, PT100, PT1000, Ni100, Ni1000	Transistor	24 V DC, 0.5 A/-10…+10 V, 0…20 mA, 4…20 mA	TU515/TU516	DA501	1SAP250700R0001
4AI/2AO/16DO/8DC					DA502	1SAP250800R0001
Function module (not hot swap capable) - Encoder and PWM module						
2DI/8DC	24 V DC and 2 encoder inputs A/B/C differential	2 PWM outputs	24 V DC, 0.1 A	TU515/TU516	CD522	1SAP260300R0001

More motion control solutions

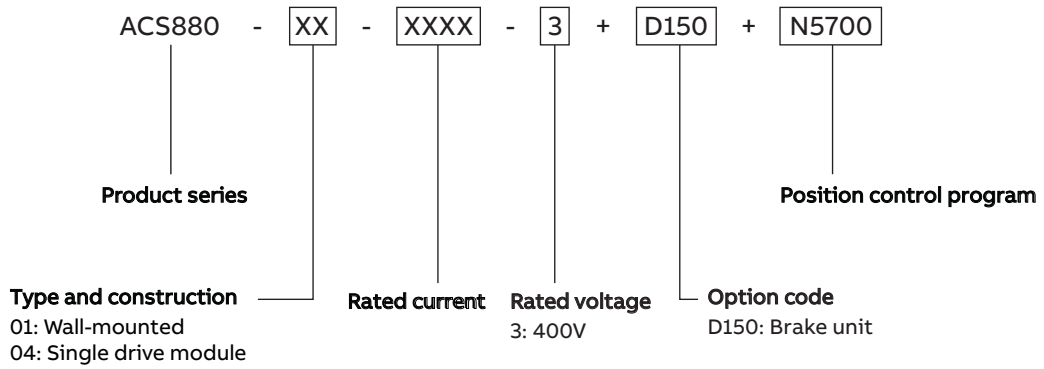
ACS880 (+N5700) - choice of the high power position control application

For the position control applications required a high power range, you can choose the ACS880 drives which are configured with the position control program (+N5700). Its wide power range and various drive variants make the ACS880 position control ideal for any axis. Motion functions are based on PLCopen motion control blocks and can be easily configured by parameters. Programming flexibility and connectivity to all motors and PLCs ensure optimized solutions for production machinery and material handling applications.

ACS880 position control program (+N5700)	
Motor and feedback	
Motors	Asynchronous, permanent magnet (servo and high torque), synchronous reluctance motors
Feedback devices	HTL, TTL, sin/cos, EnDat, Hiperface, SSI, resolvers
Position control function	
Homing	Different modes with home switch, and index pulse
Absolute/relative positioning	Linear/rotary/modulo
Profiled positioning	Target position, velocity, acceleration/deceleration, jerk 8 predefined sets via DI/fieldbus Target change on the fly
Position synchronizing/electrical shaft	Reference via master encoder, drive-to-drive link, or virtual master
Fast position latching	With 2 position registers for homing, position correction
Jogging	Adjusting an axis while maintaining smooth position control
Control performance	
Position control loop	500 µs
Drive-to-drive link	500 µs
Speed control loop	500 µs
Torque control loop	125 µs

ACS880 position control program (+N5700)	
Programmability	
IEC61131 programming	Ladder, IL, CFC, FBD, ST, SFC
Motion control library	PLCopen motion function blocks and additional ABB specific blocks
Adaptive programming	20 blocks for flexible adjustments
Programming tools	Drive application builder for IEC programming Drive composer for adaptive programming
ACS880 drive product family	
Power and voltage range	0.55 to 5600 kW, 3-phase, 230 to 690 V
Enclosure	IP00 to IP55
Configurations	Single and multidrive (common DC)
Mounting	Wall-mounting up to IP55, stand-alone cabinet-built, modules for cabinet mounting, flange (push through) mounting
Functional safety	
Supported functions	Safe torque off (STO), Safe stop 1 (SS1), Safe stop emergency (SSE), Safe brake control (SBC), Safely limited speed (SLS) with/without encoder, Safe maximum speed (SMS), Prevention of unexpected startup (POUS), Safe direction (SDI), Safe speed monitoring (SSM), Safe temperature monitoring (SMT)
Safety data	PL e, SIL 3
Safety communication	PROFIsafe over PROFINET IO

Ordering information of the ACS880 for position control



For more information about the ACS880, refer to catalog 3AUA0000098111 and 3AUA0000115038.

Technical data of the ACS880 for position control

Drive type	Frame size	Brake unit	Nominal ratings			Low overload		High overload		Noise level (dB (A))	Heat dissipation (W)	Air flow (m^3/h)
			I_N(A)	I_{MAX}(A)	P_N(KW)	I_{Ld}(A)	P_{Ld}(kW)	I_{Hd}(A)	P_{Hd}(kW)			
ACS880-01-02A4-3+N5700	R1	Built-in	2.4	3.1	0.75	2.3	0.75	1.8	0.55	46	30	44
ACS880-01-03A3-3+N5700	R1	Built-in	3.3	E4.1	1.1	3.1	1.1	2.4	0.75	46	40	44
ACS880-01-04A0-3+N5700	R1	Built-in	4.0	5.6	1.5	3.8	1.5	3.3	1.1	46	52	44
ACS880-01-05A6-3+N5700	R1	Built-in	5.6	6.8	2.2	5.3	2.2	4.0	1.5	46	73	44
ACS880-01-07A2-3+N5700	R1	Built-in	8.0	9.5	3.0	7.6	3.0	5.6	2.2	46	94	44
ACS880-01-09A4-3+N5700	R1	Built-in	10	12.2	4.0	9.5	4.0	8.0	3.0	46	122	44
ACS880-01-12A6-3+N5700	R1	Built-in	12.9	16	5.5	12	5.5	10	4.0	46	172	44
ACS880-01-017A-3+N5700	R2	Built-in	17	21	7.5	16	7.5	12.6	5.5	51	232	88
ACS880-01-025A-3+N5700	R2	Built-in	25	29	11	24	11	17	7.5	51	337	88
ACS880-01-032A-3+N5700	R3	Built-in	32	42	15	30	15	25	11	57	457	134
ACS880-01-038A-3+N5700	R3	Built-in	38	54	18.5	36	18.5	32	15	57	562	134
ACS880-01-045A-3+N5700	R4	Built-in	45	64	22	43	22	38	18.5	62	667	134
ACS880-01-061A-3+N5700	R4	Built-in	61	76	30	58	30	45	22	62	907	280
ACS880-01-072A-3+N5700[1]	R5	Optional	72	104	37	68	37	61	30	62	1117	280
ACS880-01-087A-3+N5700[1]	R5	Optional	87	122	45	83	45	72	37	62	1120	280
ACS880-01-105A-3+N5700[1]	R6	Optional	105	148	55	100	55	87	45	67	1295	435
ACS880-01-145A-3+N5700[1]	R6	Optional	145	178	75	138	75	105	55	67	1440	435
ACS880-01-169A-3+N5700[1]	R7	Optional	169	247	90	161	90	145	75	67	1940	450
ACS880-01-206A-3+N5700[1]	R7	Optional	206	287	110	196	110	169	90	67	2310	450
ACS880-01-246A-3+N5700[1]	R8	Optional	246	350	132	234	132	206	110	65	3300	550
ACS880-01-293A-3+N5700[1]	R8[2]	Optional	293	418	160	278	160	246[5]	132	65	3900	550
ACS880-01-363A-3+N5700[1]	R9[3]	Optional	363	498	200	345	200	293	160	68	4800	1150
ACS880-01-430A-3+N5700[1]	R9[4]	Optional	430	545	250	400	200	363[6]	200	68	6000	1150
ACS880-04-505A-3+N5700[1]	R10	Optional	505	560	250	485	250	361	200	72	5602	1200
ACS880-04-585A-3+N5700[1]	R10	Optional	585	730	315	575	315	429	250	72	6409	1200
ACS880-04-650A-3+N5700[1]	R10	Optional	650	730	355	634	355	477	250	72	8122	1200
ACS880-04-725A-3+N5700[1]	R11	Optional	725	1020	400	715	400	566	315	72	8764	1200
ACS880-04-820A-3+N5700[1]	R11	Optional	820	1020	450	810	450	625	355	72	9862	1200
ACS880-04-880A-3+N5700[1]	R11	Optional	880	1100	500	865	500	725[7]	400	71	10578	1420

Note	
I_N	Rated current available continuously without overloadability at 40 °C.
P_N	Typical motor power in no-overload use.
I_{MAX}	Maximum output current. Available for 10 seconds at start, then as long as allowed by drive temperature. Low overload.
I_{Ld}	Continuous current allowing 110% I_{Ld} for 1 minute every 5 minutes at 40 °C.
P_{Ld}	Typical motor power in low overload use.
I_{Hd}	Continuous current allowing 150% I_{Hd} for 1 minute every 5 minutes at 40 °C.
P_{Hd}	Typical motor power in high overload use.

The ratings apply at 40 °C ambient temperature. At higher temperatures (up to 55 °C) the derating is 1%/1 °C.

[1] For the drives with the frame size from R5 to R11, you can choose to assemble an optional brake unit. Add the option code "+D150" when you order the drives and then the brake unit is assembled at delivery.

[2] For drives with enclosure class IP55 the ratings apply at 40 °C ambient temperature. At higher temperature the derating is from 40 to 45 °C 1%/1 °C and 45 to 55 °C 2.5%/1 °C.

[3] For drives with enclosure class IP55 the ratings apply at 40 °C ambient temperature. At higher temperatures the derating is from 40 to 45 °C. 1%/1 °C and 45 to 50 °C 2.5%/1 °C and 50 to 55 °C 5%/1 °C.

[4] For drives with enclosure class IP55 the maximum ambient temperature is 35 °C

[5] = 130% overload

[6] = 125% overload

[7] Continuous rms output current allowing 40% overload for 1 minute every 5 minutes

Servo drives and servo motors are compatible with the wide ABB product offering



AC500

ABB's powerful flagship PLC offering a wide range of performance levels and scalability within a single simple concept where most competitors require multiple product ranges to deliver similar functionality. Web server integrated and IEC 60870-5-104 remote control protocol for all Ethernet versions.



CP600/SP500

The control panels offer a wide range of touchscreen graphical displays from 3.5" up to 15". They are provided with user-friendly configuration software that enables tailor made customized HMI solutions. Rich sets of graphical symbols and the relevant drivers for ABB automation products are provided. Control panels for visualization of AC500 web server applications are available.



Automation Builder

Automation Builder integrates the engineering and maintenance for PLC, drives, motion, HMI and robotics. It complies with the IEC 61131-3 standard offering all five IEC programming languages for PLC and drive configuration. In addition, it includes continuous function chart, C, extensive function block libraries and powerful embedded simulation/ visualization features. Automation Builder supports a number of languages (English, German, French, Chinese, Spanish) and comes with new libraries, FTP functions, SMTP, SNTP, smart diagnostics and debugging capabilities.



B&R X20

There are many different plug-in I/O systems. With the introduction of the X20 system, B&R set a new standard for the automation industry under the guidance of the "perfect automation" concept. With global application experience, long-term cooperation with customers, and the pursuit of simplicity, economy, and safety, the X20 system has become a universal solution for all automation tasks of machinery and system manufacturers.



ACS180

The ACS180 machinery drive is part of ABB's all compatible drives portfolio. This cost-effective and compact drive is optimized for machine builders requiring ease of use and reliable machine performance. Typical applications including Fans and water pumps, Logistics, Material mixers, Automatic doors.



Robotics

ABB's robotic automation offers cell automation by integrating AC500 PLCs in IRC5 robot controllers. More productivity with robots is achieved by wireless interfaces for sensors and actuators on robot tools. Wireless from ABB is an innovative, proven solution well-suited for robots, presses, rotary tables and gantries.



ACS880

ABB’s all-compatible drives are designed to provide customers across industries and applications with unprecedented levels of compatibility and flexibility. Our ACS880 drive modules are optimized for panel building. They are customized to meet the particular needs of specific industries, such as oil and gas, mining, metals, chemicals, cement, power plants, material handling, pulp and paper, sawmills, marine,water and wastewater, food and beverage, and automotive. They can control a wide range of applications, including cranes, extruders, winches, winders, conveyors, mixers,compressors, centrifuges, test benches, elevators, extruders, pumps and fans.



ACS380

The ACS380 machinery drive is part of ABB’s all-compatible drives portfolio. The preconfigured ACS380 machinery drive comes in several variants ensuring seamless integration into machines and connecting perfectly to automation system. Drive usability is enhanced with the built-in icon based user interface and other optional control panels. Adaptive programming offers an easy alternative for simple programming needs. The drive is suitable for industries such as food and beverage, material handling and textile. Typical applications include mixers, conveyors, cranes and other constant-torque applications.



AC motors

ABB’s low voltage AC motors are designed to save energy, reduce operating costs and enable demanding motor applications to perform reliably and without unscheduled downtime. General performance motors combine convenience and easy handling seamlessly with ABB’s engineering expertise. Process performance motors provide the most comprehensive, versatile set of motors for the process industries and heavy-duty applications.

A lifetime of peak performance

You're in control of every life cycle phase of your servo products. At the heart of servo product services is a four-phase product life cycle management model. This model defines the services recommended and available throughout drives lifespan.

Now it's easy for you to see the exact service and maintenance available for your servo products.

ABB servo products life cycle phases



	Active	Classic	Limited	Obsolete
Product	Product is in active sales and manufacturing phase	Serial production has ceased. Product may be available for plant extensions, as a spare or for installed base renewal	Product is no longer available	Product is no longer available
Services	Full range of life cycle services is available	Full range of life cycle services is available. Product enhancements may be available through modernizations	Limited range of life cycle services is available. Spare parts availability is limited to available stock	Replacement and end-of-life services are available

Keeping you informed

We notify you every status of the product using the life cycle status announcements and statements. It helps you know the status and available services of your products.

You can plan the preferred services ahead of time and make sure that continuous support is always available.

Step 1

Life Cycle Status Announcement

Provides early information about the upcoming life cycle phase change and how it affects the availability of services.

Step 2

Life Cycle Status Statement

Provides information about the drive's current life cycle status, availability of product and services, life cycle plan and recommended actions.

Notes



Additional information
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents-in whole or in parts-is forbidden without prior written consent of ABB AG.

—

For more information contact your local ABB representative or visit:

new.abb.com/motion
new.abb.com/drives
new.abb.com/drives/drivespartners
new.abb.com/PLC
new.abb.com/drives/low-voltage-ac/servo-products

© Copyright 2022 ABB. All rights reserved.
Specifications subject to change without notice.

3AXD50000751464 REVH EN 09/09/2025