ABB SERVO PRODUCTS

E530 general-purpose servo system and AC500/AC500-eCo Motion PLC

Simple but effective, the high-quality choice



ABB motion control system

The E530 servo system is a member of ABB's general-purpose servo product family. It has two variants, the pulse train input variant and the EtherCAT variant, which support various control modes including position control, torque control and speed control. The optimized performance meets high positioning accuracy requirements and improves the production efficiency, and ensures the smooth operation of your equipment.

The AC500 and AC500-eCo Motion PLC are the recommended controllers to complete the E530 servo system. With this combination, ABB provides you a high cost performance motion control system solution for different industrial applications.

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ABB motion control system

Servo drives and motors

Servo drives	E530-PT	E530-EC
Voltage	0.2 kW to 1 kW: Single phase 200 V to 240 V AC, -15% to 10% 1.5 kW to 2 kW[1]: Single/three phase 200 V to 240 V AC, -15% to 10% 1.5 kW to 7.5 kW[2]: Three phase 380 V to 480 V AC, -15% to 10% 50/60 Hz, -5% to 5%	
Basic control mode[3]	PTI, FP, S, T	PP, PV, PT, HM, CSP, CSV, CST
Communication	Modbus TCP/IP	EtherCAT
Power network	TN, TT	
Commissioning tool	Servo Composer (refer to page 8)	
Protection degree	IP20 (enclosure)	
Certification	CE, UKCA, China RoHS, WEEE	
Accessories	Refer to page 62	

[1] The servo drives support single/three phase power supply. For the drive of 2 kW rated power, when connecting to the three phase power supply, the rated output current and max. output current have no derating, when connecting to the single phase power supply, those outputs will be derated to 80%.

[2] The servo drives support the EtherCAT variant only. The servo drive of 4 kW will be released in Q1 of 2025. At the moment, the corresponding motors can be matched with the servo drive of 5 kW.

[3] Details refer to page 22 and page 26.

DSM servo motors

Flange	220 V motors: 40 mm, 60 mm, 80 mm, 130 mm 400 V motors: 100 mm, 130 mm, 180 mm
Rated power range	0.05 kW to 7.5 kW
Rated torque	0.16 N·m to 48 N·m
Peak torque	0.48 N·m to 120 N·m
Rated speed	220 V motors: 3000 rpm, 2000 rpm, 1500 rpm 400 V motors: 3000 rpm, 1500 rpm Details refer to page 41
Max. speed	220 V motors: 6000 rpm, 3000 rpm 400 V motors: 6000 rpm, 5000 rpm, 3000 rpm Details refer to page 41
Motor inertia	0.02 kg·cm^2 ~ 27.694 kg·cm^2 (without brake) 0.027 kg·cm^2 ~ 28.598 kg·cm^2 (with brake)
Encoder type	S1 = single-turn absolute encoder, 20 bits per revolution S2 = multi-turn absolute encoder, 20 bits per revolution/16 bits multi-turn T0 = multi-turn absolute encoder, 23 bits per revolution[1]
Protection degree	IP65 (shaft and connectors excluded)
Certification	CE, UKCA, WEEE
Cables	Refer to page 54

[1] Can be used as a single-turn absolute encoder, the single-turn resolution is 23 bits. The 400 V DSM servo motors support T0 encoder only.

AC500-eCo Motion PLC

CPU	PM5032, PM5052, PM5072, PM5082
Output format	PM5032, PM5052: PTO (4 high-speed 200 kHz) PM5072, PM5082: EtherCAT & PTO (4 high-speed 200 kHz)
EtherCAT performance[1]	PM5072: 4 axes@2 ms, 8 axes@4 ms PM5082: 8 axes@2 ms, 16 axes@4 ms
Onboard IO	12 digital inputs/8 digital outputs
Interruption function	4 channels
Fast counter/ encoder	2 high-speed 200 kHz or 4 high-speed 100 kHz channels
Fast compare output	4 channels
Supported control modes (EtherCAT variant)	Cyclic synchronous position mode (CSP) Cyclic synchronous Velocity mode (CSV) Cyclic synchronous torque mode (CSTOL)[2]
Control functions	Electronic cam, electronic gearing, linear and circular interpolation, compare output, on board touch probe
Max. number of onboard serial interface	Up to 3 RS485 serial interface (when option board is configured)
EtherNet/IP communication	Master-slave/32 (for PM5072 and PM5082 with the EIP function)

[1] PTO axes included

[2] OL: Open loop

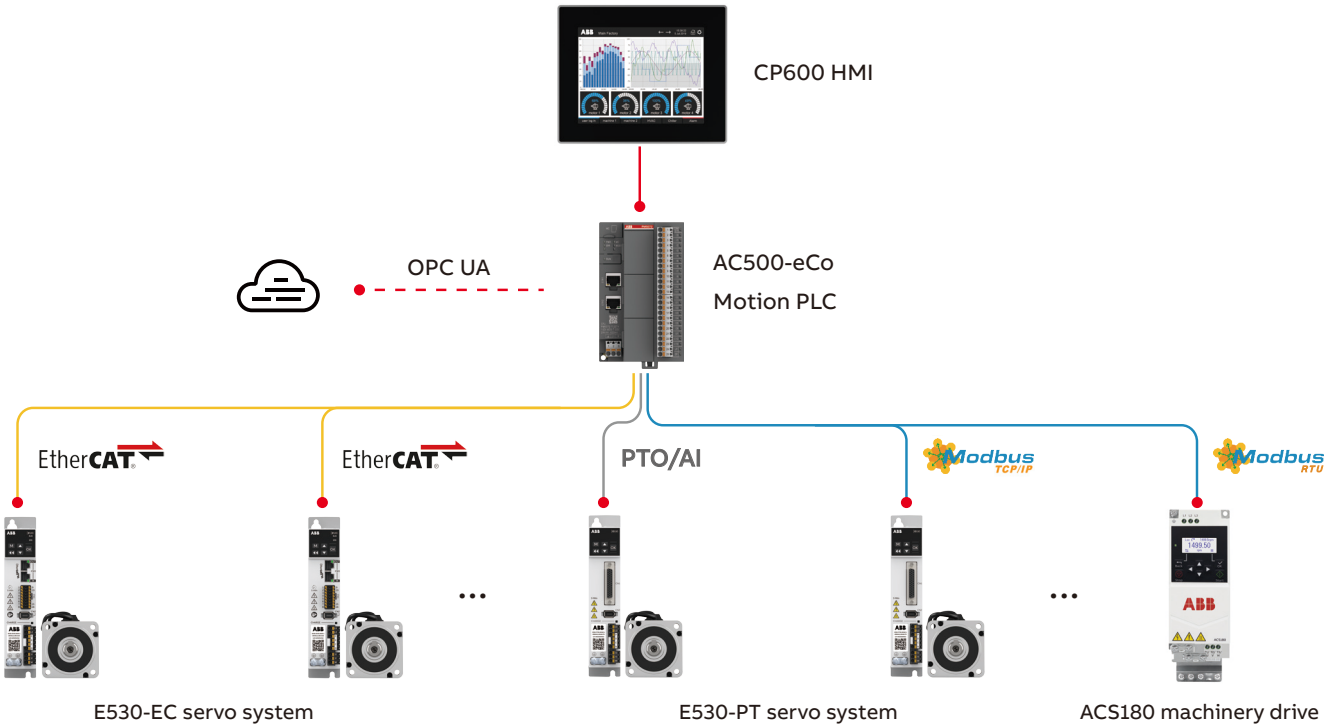
AC500 Motion PLC

CPU	PM5650, PM5670
Output format	EtherCAT
EtherCAT performance	PM5650: 8 axes@1 ms, 16 axes@2 ms, 32 axes@4 ms PM5670: 16 axes@1 ms, 32 axes@2 ms, 64 axes@4 ms
Onboard IO	None
Interruption function	None
Fast counter/ encoder	None
Fast compare output	None[1]
Supported control modes	Cyclic synchronous position mode (CSP) Cyclic synchronous Velocity mode (CSV) Cyclic synchronous torque mode (CSTOL)[2]
Control functions	Electronic cam, electronic gearing, linear and circular interpolation, EtherCAT touch probe
Max. number of onboard serial interface	1 RS485 serial interface and 1 CAN serial interface
EtherNet/IP communication	Master-slave/32 (for PM5650 and PM5670 with the EIP function)

[1] Available through additional modules

[2] OL: Open loop

Motion control system solutions



Typical applications

	Electronics & Electrical	LED die bonder, PCB assembly machine, glue dispenser, etc.
	Printing & packaging	High-speed labeling machine, high-speed laminating machine, slitting and rewinding machine, packaging machine, packing machine, folding machine, filling machine, etc.
	Metal forming	Bending machine, laser cutting machine, engraving machine, cutting machine, water knife cutting machine, etc.
	Robots	Pick and place machine for punching and injection, gantry machine, etc.
	Photovoltaic & lithium battery	Die cutting machine, coating machine, stacking machine, etc.

Simple but effective
E530 servo system

The E530 servo drive is a general-purpose servo drive. It has two variants, the pulse train input variant (E530-PT) and the EtherCAT variant (E530-EC). The power supply of the drive is single/three phase 200 V AC to 240 V AC or three phase 380 V AC to 480 V AC. The rated power range is 0.2 kW to 7.5 kW. The drive supports the position control, torque control and speed control modes. The E530-PT servo drive supports the Modbus TCP/IP protocol, while the E530-EC servo drive supports the EtherCAT protocol, which ensures the communication between the drive and controller.

The DSM servo motor is a high performance servo motor. The rated power range of the motor is 0.05 kW to 7.5 kW and the rated torque range is 0.16 Nm to 48 Nm. The motors are available in six flange sizes: 40 mm, 60 mm, 80 mm, 100 mm, 130 mm and 180 mm. The motors with flange sizes of 40 mm to 80 mm are equipped with cable outlet type connectors, while the motors with flange sizes of 100 mm to 180 mm are equipped with military connectors. ABB provides the standard preassembled cables, which make the connection more convenient.

General configuration

- The system rated power range covers 0.05 kW to 7.5 kW, which can satisfy most of applications
- The E530 servo drive supports single/three phase 200 V to 240 V AC and three phase 380 V to 480 V AC (-15%/10%) input voltage, which makes the system fit for the power network with large voltage fluctuation
- The E530-EC 400 V servo drives support the function of dynamic brake, which makes the motor stop quickly
- DSM servo motors offer options including: brake, oil seal, and encoder type, which provides flexible choices for customers
- The energy efficiency of the DSM motors (≥ 0.75 kW) meet the first grade, which reduces the energy consumption of the device



Easy to use

- The compact structure and side by side mounting design of the E530 servo drive achieve significant space savings in the electrical cabinet
- The preassembled cable makes the system wiring easier and faster
- The E530 servo drive can display up to 5 active alarms and record 20 historical alarms help you to solve the errors quickly
- The E530 servo drive integrates an Ethernet interface which can be used to quickly connect to the commissioning tool with a standard Ethernet cable
- When the motor is connected to the drive, the motor data can be identified automatically

Stable and reliable

- All drives are equipped with the UV coating PCB boards to withstand the harsh operating environment
- Optimized design of the heat dissipation channels and the power stage device featuring low temperature rise to guarantee a long lifetime of 40,000 hours for the drive
- Sufficient component reliability testing ensures the quality of the drive
- Integrated overvoltage, overcurrent and overload protection functions ensure the safety of the system
- Compliant with the EMC C2 standards when a line filter is connected, which reduces the interference to the system
- The E530-EC passes the ETG conformance test and maintains compatibility with the mainstream EtherCAT controller
- The protection degree of the motor is IP67 (shaft and connectors are excluded), which increases the reliability of the motor
- The multi-turn absolute encoder cable has a capacitance in its battery case which can provide a short-time power supply to prevent data loss



Optimized performance

- The high speed loop response of 2 kHz achieves a high dynamic response
- The maximum pulse train input/output frequency of E530-PT is 4 MHz, and the minimum synchronizing cycle of E530-EC is 250 µs, which allows for higher positioning accuracy
- The drive (≥ 0.75 kW) is designed with an built-in braking resistor, which improves performance and saves customer cost
- The package offers a max overload capacity of 300% and a motor speed of up to 6000 rpm, which will improve the machine productivity
- The rigidity table and one-button tuning functions as well as the suppression of both low- and high-frequency vibrations can reduce the complexity of system commissioning
- The DSM servo motor has a 5 pole-pairs structure, reducing the size and offering a reduced cogging torque
- The DSM servo motor with the resolution of 23 bits provides higher positioning accuracy

Product/application support and after-sales service guarantee

- Global technical support network to provides global product support
- Hotline support to respond to your needs in time
- Product optimization available for specific customer requirements
- Extensive online and offline documentation and training sessions are available

Make it easy
Smart commissioning tool Servo Composer

Servo Composer is a commissioning tool from ABB. It has the compatibility with the 32-/64-bit operating systems of Windows 7, Windows 10 and Windows 11. You can connect the drive to the tool via the drive's Ethernet interface to commission it quickly.

Download

The commissioning tool can be downloaded from the ABB servo products website without additional licensing costs.

Servo Composer

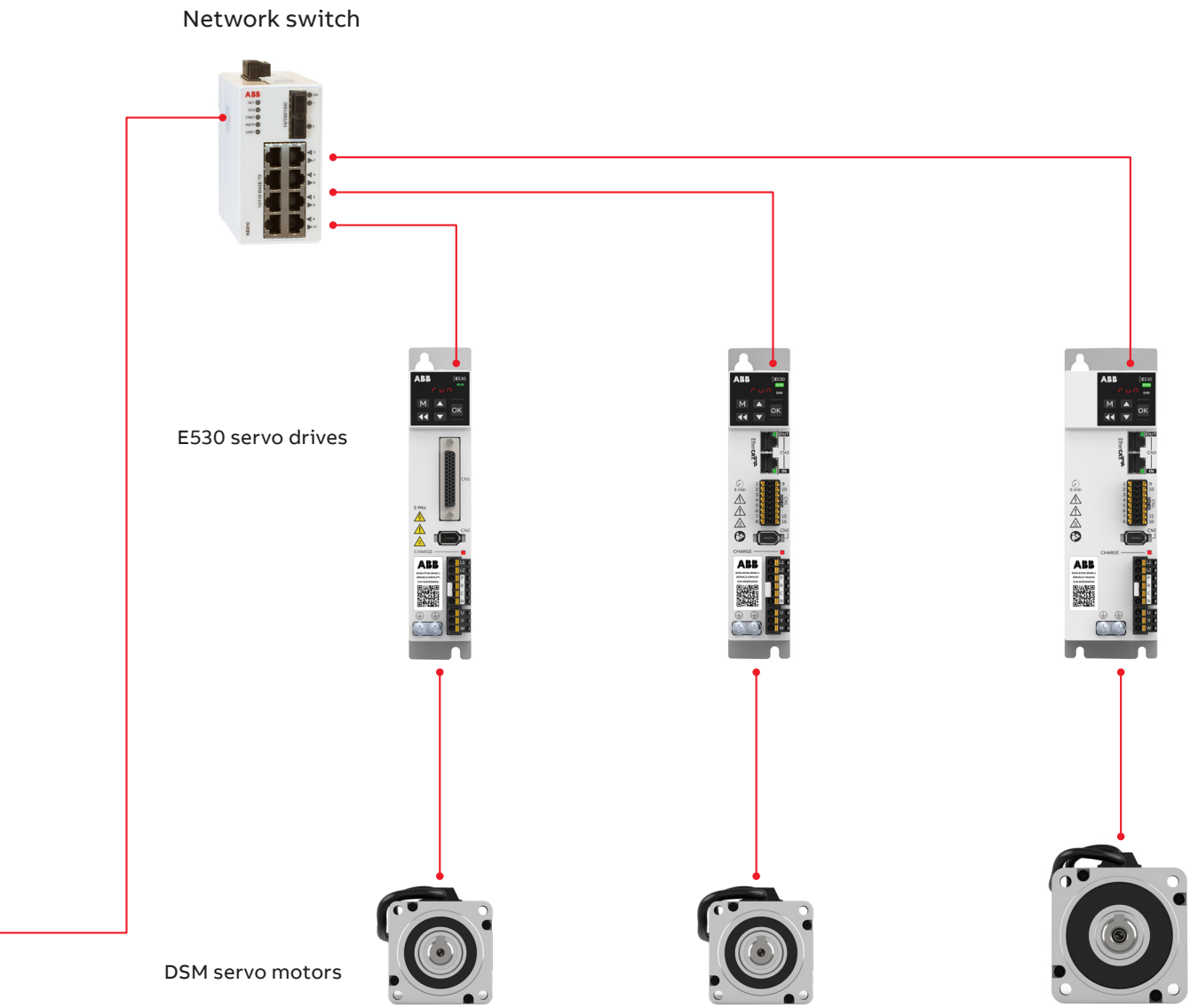


Rich functions

- The offline configuration allows for time saving configuration before the machine is ready
- The online commissioning functions allow for easy usability
- More efficient parameter configuration
- Wizards for homing, IO configuration and more
- Pre made configuration files can be easily downloaded to the drive
- Simple firmware update process

Convenient communication

- The standard Ethernet interface makes the connection between the drive and PC fast and easy
- Connect to more than one drive at the same time, to improve the commissioning efficiency
- Drive self identification function helps to find the connected drive accurately



Friendly user interface

- The interface supports Chinese and English, you can quickly switch between them
- The graphical interface greatly simplifies the commissioning process
- The drive can be monitored and operated by the drive status bar and the operation interface conveniently

Multiple drive management

- You can add several online or offline drives within one project
- The copy function can be used to copy the parameter value between different drives
- Several drives can be monitored at the same time by the user-defined monitoring parameters

How to configure the system
Servo products selection steps

Step 1: Selecting a controller



Select a correct controller according to your desired communication protocol and required performance:

- AC500-eCo Motion PLC
- Other 3rd part devices

For the technical data of the AC500-eCo Motion PLC, refer to page 69.

1

2

Step 2: Selecting a servo motor



Calculate the following technical data to select a motor:

- Torque
- Speed
- Inertia
- Encoder
- Brake

For the motor technical data and ordering information, refer to page 21 and page 41.

Note: If you need to select a motor according to the mechanical structure of the machine, you can choose the mechanism mode in Servosize. With this mode, you can get the recommended motor after the detailed mechanical parameters are entered.

3

Step 3: Selecting a servo drive via the following technical data



- Input voltage
- Rated power
- Rated current

For the drive technical data and ordering information, refer to page 18, page 20 and page 22.

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Step 4: Selecting cables, options and accessories



For the information about cables, options and accessories, refer to page 54 and page 62.

Easy and convenient
Servo product selection tool Servosize

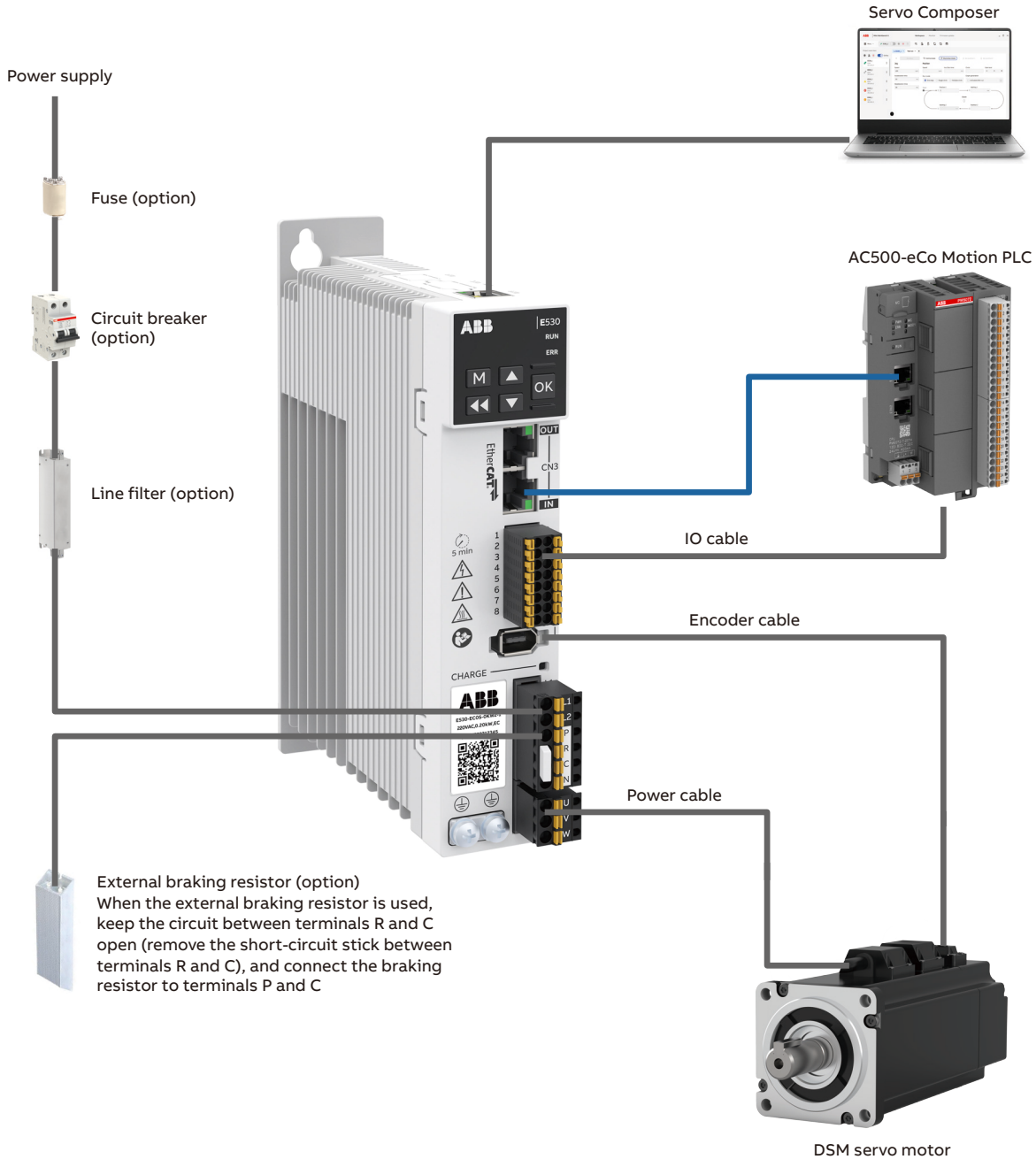
Servosize is the selection tool for the servo products. It can recommend the appropriate drives, motors as well as the accessories according to your requirements. The tool supports a variety of servo products such as the MotiFlex e180, MicroFlex e190, E530 servo drives and servo motors like eSM, DSM and HDS. You can download the tool from the ABB servo products website without additional licensing costs.



Servo system configuration diagrams

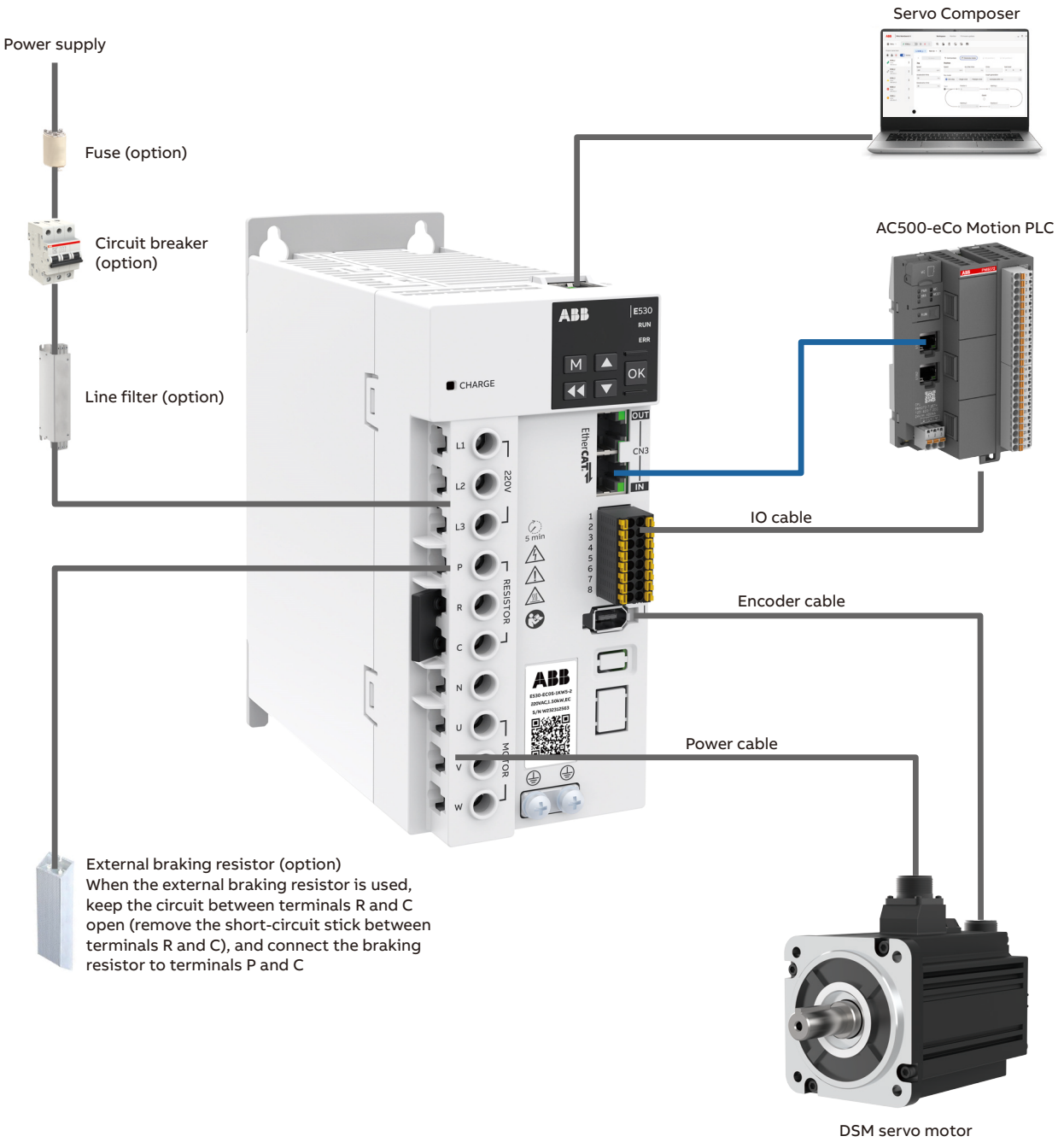
E530-EC servo system (220 V)

0.2 kW ~ 1.0 kW



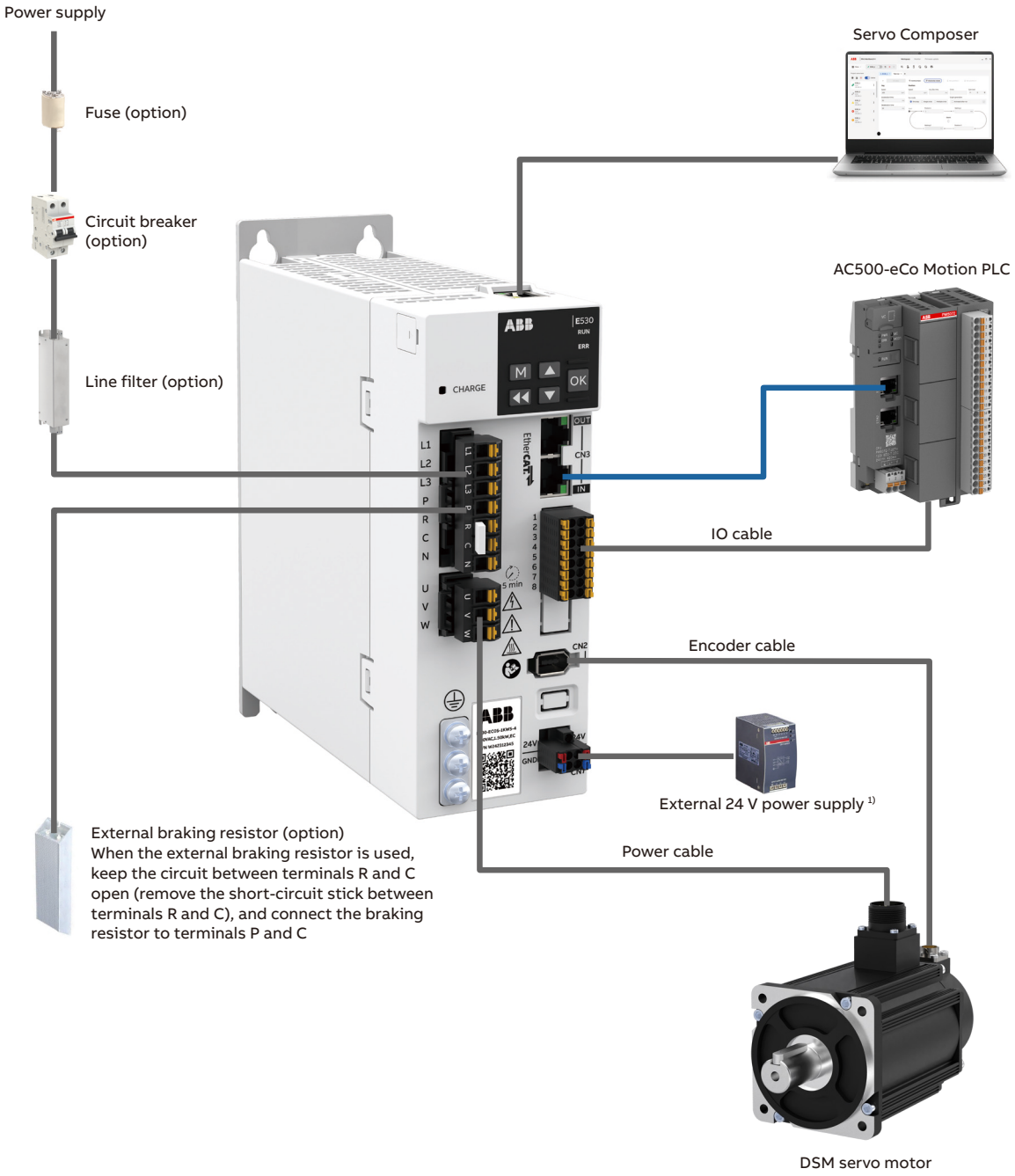
[1] The options connected in the illustration are shown as an example. Please select appropriate type based on your applications.

1.5 KW ~ 2.0 kW


Servo Composer
Power supply
Fuse (option)
Circuit breaker (option)
Line filter (option)
AC500-eCo Motion PLC
ABB
E530
RUN
ERR
M
OK
CHARGE
OUT
CN3
IN
EtherCAT
L1
L2
L3
220V
5 min
P
R
C
RESISTOR
N
U
V
W
MOTOR
IO cable
Encoder cable
Power cable
External braking resistor (option)
When the external braking resistor is used, keep the circuit between terminals R and C open (remove the short-circuit stick between terminals R and C), and connect the braking resistor to terminals P and C
DSM servo motor

E530-EC servo system (400 V)

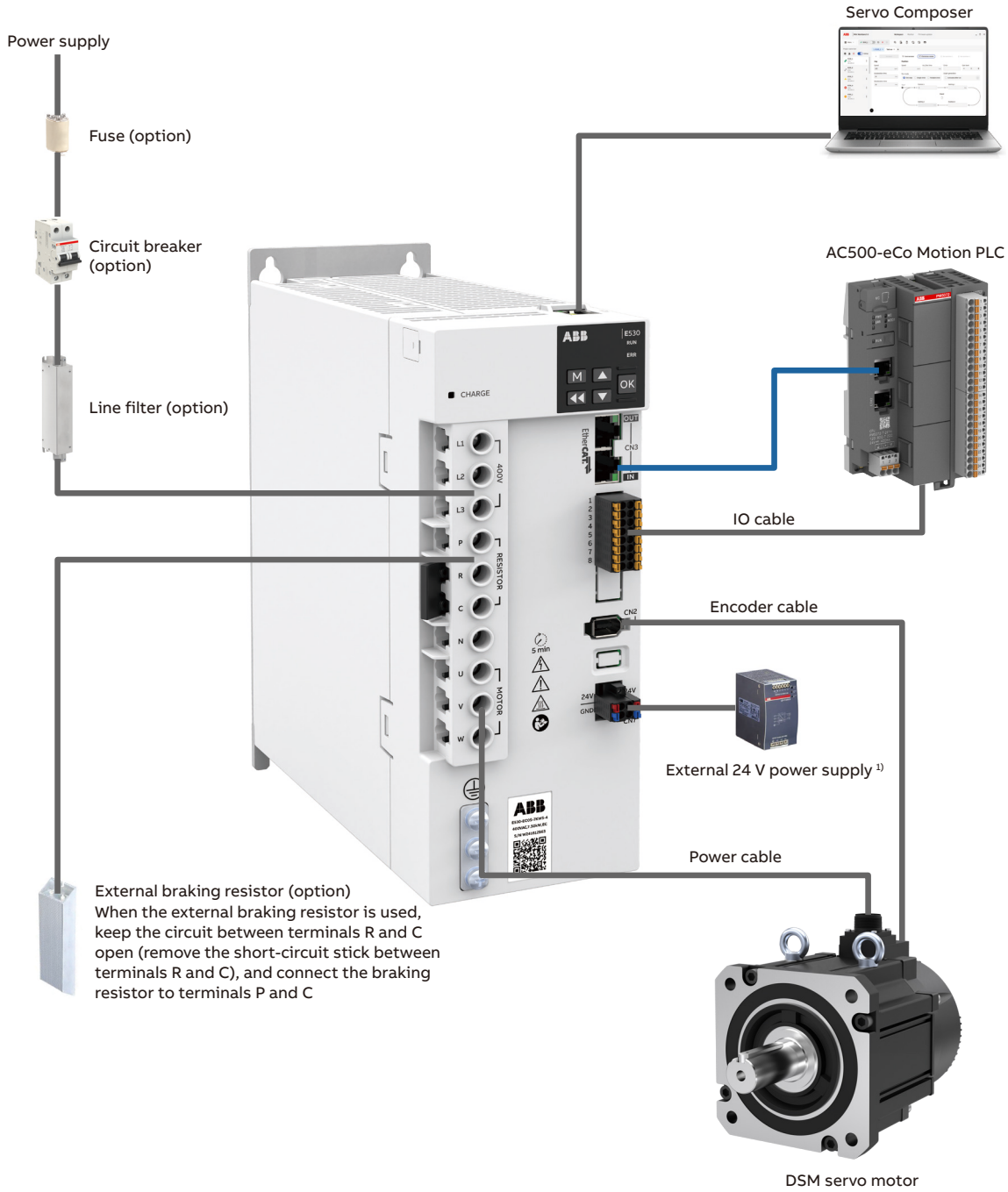
1.5 kW ~ 4.0 kW



[1] Used to provide the power supply for the control board of the drive, the required power supply is 24 V DC (-10% ~ 10%), the maximum current of one drive is 1.2 A.
[2] The options connected in the illustration are shown as an example. Please select appropriate type based on your applications.

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5.0 KW ~ 7.5 kW

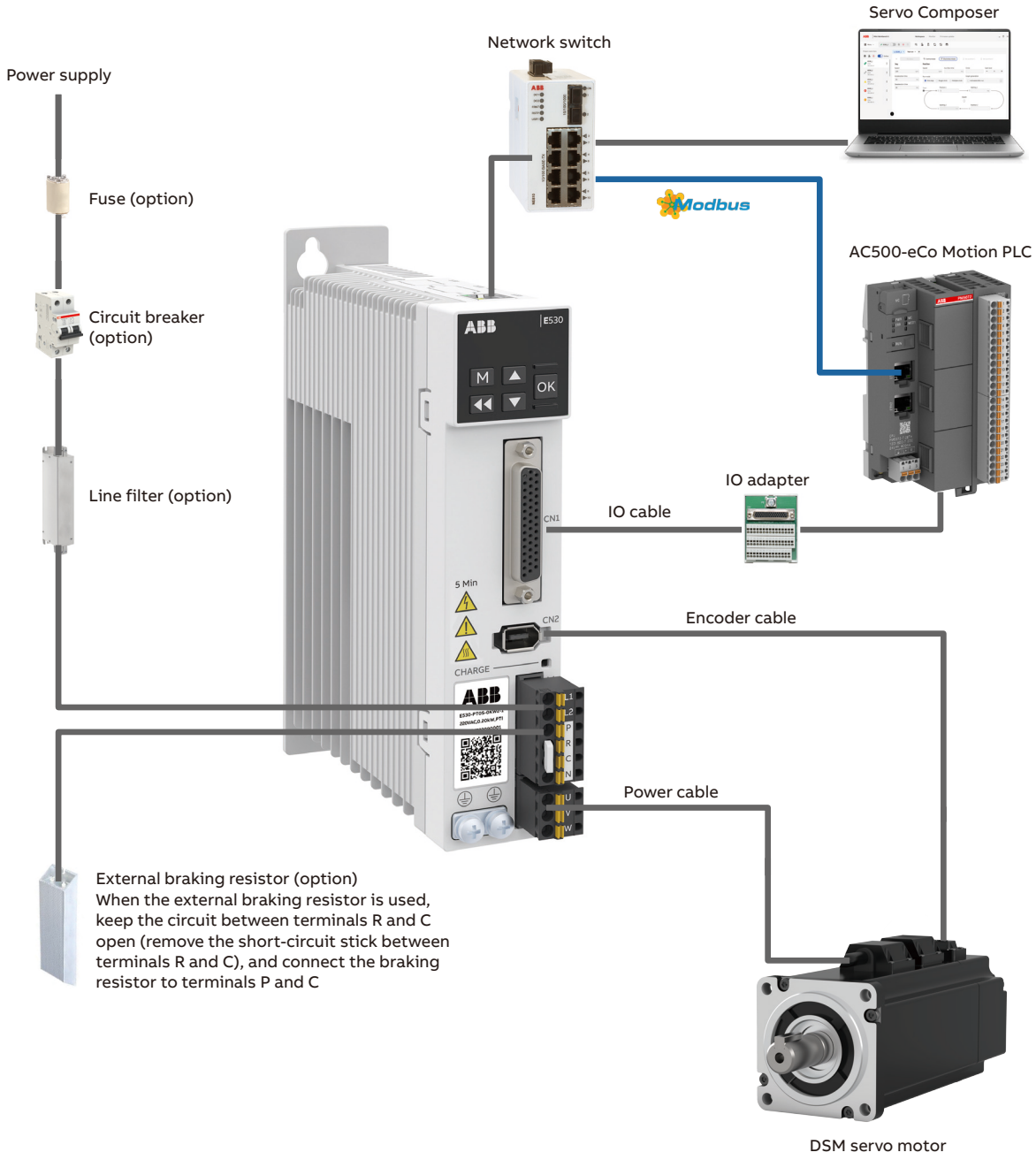


[1] Used to provide the power supply for the control board of the drive, the required power supply is 24 V DC (-10% ~ 10%), the maximum current of one drive is 1.2 A.

[2] The options connected in the illustration are shown as an example. Please select appropriate type based on your applications.

E530-PT servo system (220 V)

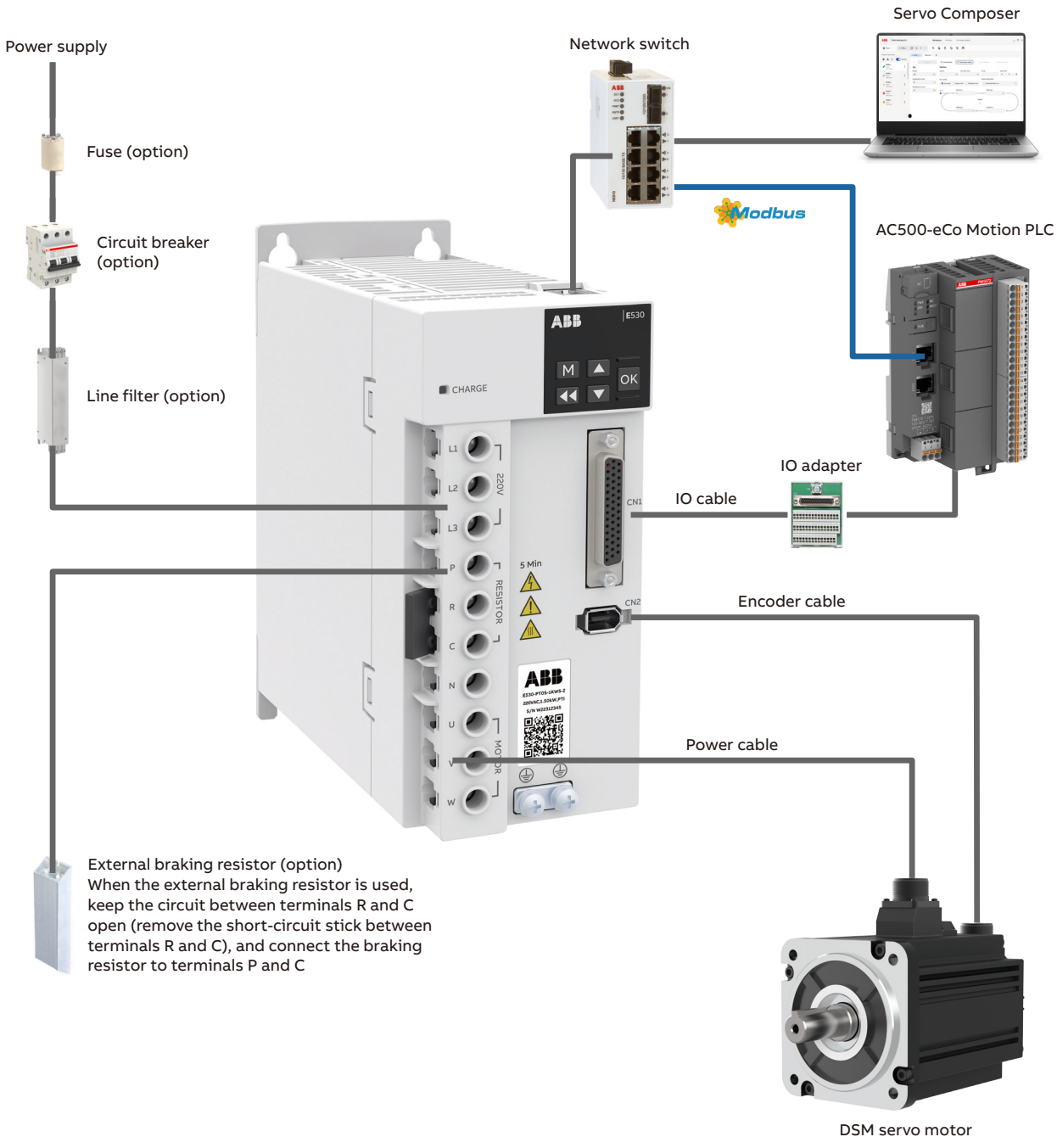
0.2 kW ~ 1.0 kW



[1] The options connected in the illustration are shown as an example. Please select appropriate type based on your applications.

—

1.5 KW ~ 2.0 kW



[1] The options connected in the illustration are shown as an example. Please select appropriate type based on your applications.

Servo system combination table

Motor model and ratings													
Motor model					**Inertia type**	**Flange (mm)**	**Rated power (kW)**	**Rated speed (rpm)**	**Max. speed (rpm)**	**Rated torque (Nm)**	**Max. torque (Nm)**	**Rated current (A)**	**Max. current (A)**
220 V combination													
DSM04L-0KWA-302-	xx	x	x	0[1]	Low	40	0.05	3000	6000	0.16	0.48	0.9	2.7
DSM04L-0KW1-302-	xx	x	x	0[1]		40	0.1	3000	6000	0.32	0.96	0.85	2.55
DSM06L-0KW2-302-	xx	x	x	0		60	0.2	3000	6000	0.64	1.92	1.5	4.5
DSM06L-0KW4-302-	xx	x	x	0	Low	60	0.4	3000	6000	1.27	3.81	2.9	8.7
DSM06M-0KW4-302-	xx	x	x	0	Medium	60	0.4	3000	6000	1.27	3.81	2.8	8.4
DSM08L-0KW8-302-	xx	x	x	0	Low	80	0.75	3000	6000	2.39	7.17	5.2	15.6
DSM08M-0KW8-302-	xx	x	x	0	Medium	80	0.75	3000	6000	2.39	7.17	5.0	15.0
DSM13M-1KW0-202-	xx	x	x	0	Medium	130	1.0	2000	3000	4.77	14.31	5.35	16.05
DSM13M-1KW5-202-	xx	x	x	0	Medium	130	1.5	2000	3000	7.16	21.48	7.6	22.8
DSM13H-0KW9-152-	xx	x	x	0	High	130	0.85	1500	3000	5.39	16.17	7.0	21.0
DSM13H-1KW3-152-	xx	x	x	0	High	130	1.3	1500	3000	8.34	25.02	11.0	33.0
DSM13M-2KW0-202-	xx	x	x	0	Medium	130	2.0	2000	3000	9.55	28.65	10.1	30.3
400 V combination													
DSM13H-0KW9-154-	T0	x	x	0	High	130	0.85	1500	3000	5.39	13.48	3.5	8.8
DSM13H-1KW3-154-	T0	x	x	0		130	1.3	1500	3000	8.34	20.85	4.8	12.0
DSM10L-1KW0-304-	T0	x	x	0	Low	100	1.0	3000	6000	3.18	9.54	4.5	14.5
DSM10L-1KW5-304-	T0	x	x	0		100	1.5	3000	5000	4.9	14.7	5.1	16.0
DSM13H-1KW8-154-	T0	x	x	0	High	130	1.8	1500	3000	11.5	28.75	6.5	16.5
DSM10L-2KW0-304-	T0	x	x	0	Low	100	2.0	3000	5000	6.36	19.08	6.5	21.0
DSM18H-2KW9-154-	T0	x	x	0	High	180	2.9	1500	3000	18.6	46.5	11.8	33.2
DSM10L-2KW5-304-	T0	x	x	0	Low	100	2.5	3000	5000	7.96	23.88	8.0	25.5
DSM13L-3KW0-304-	T0	x	x	0		130	3.0	3000	5000	9.8	29.4	10.0	30.0
DSM13L-4KW0-304-	T0	x	x	0		130	4.0	3000	5000	12.6	37.8	12.5	37.5
DSM13L-5KW0-304-	T0	x	x	0	Low	130	5.0	3000	5000	15.9	47.4	16.2	48.6
DSM18H-4KW4-154-	T0	x	x	0	High	180	4.4	1500	3000	28.4	71.0	16.5	42.0
DSM18H-5KW5-154-	T0	x	x	0	High	180	5.5	1500	3000	35.0	87.5	21.5	53.0
DSM18H-7KW5-154-	T0	x	x	0		180	7.5	1500	3000	48.0	120.0	27.5	64.5

Motor model description

xx	Motor encoder type: S1 = single-turn absolute encoder, 20 bits per revolution; S2 = multi-turn absolute encoder, 20 bits per revolution/16 bits multi-turn; T0 = multi-turn absolute encoder, 23 bits per revolution/16 bits multi-turn[1]
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

[1] Can be used as a single-turn absolute encoder, the single-turn resolution is 23 bits. The 220 V DSM motors of 0.05 kW and 0.1 kW do not support T0 encoder. The 400 V DSM servo motors support T0 encoder only.

Drive model and ratings							Cable model					
Drive model			Frame size	Rated power (kW)	Rated input current (A)	Power supply (V)	Power cable			Encoder cable		
E530-	xx	0S-0KW2-1	F2	0.2	2.5	1-phase 220 V AC	CBL-P	xx	A-07-1S0 (without brake)	CBL-F	xx	A-S1-3S0 (single turn)
E530-	xx	0S-0KW4-1	F2	0.4	4.7	1-phase 220 V AC	CBL-C	xx	A-73-1S0 (with brake)	CBL-F	xx	A-S2-3S0 (multi-turn)
E530-	xx	0S-0KW8-1	F3	0.75	8.5	1-phase 220 V AC						
E530-	xx	0S-1KW0-1	F3	1.0	10.0	1-phase 220 V AC	CBL-P	xx	M-13-1S0 (without brake)			
							CBL-C	xx	M-35-1S0 (with brake)			
E530-	xx	0S-1KW5-2[2]	F4	1.5	15.0/6.4	1-/3-phase 220 V AC				CBL-F	xx	M-S1-3S0 (single turn)
							CBL-P	xx	M-20-2S0 (without brake)	CBL-F	xx	M-S2-3S0 (multi-turn)
E530-	xx	0S-2KW0-2[2]	F4	2.0	16.0/8.0	1-/3-phase 220 V AC	CBL-C	xx	M-25-2S0 (with brake)			
E530-	EC	0S-1KW5-4	F2	1.5	6.4	3-phase 400 V AC	CBL-P	xx	M-15-1S0 (without brake)			
							CBL-C	xx	M-55-1S0 (with brake)			
E530-	EC	0S-2KW0-4	F2	2.0	7.3	3-phase 400 V AC						
E530-	EC	0S-4KW0-4[3]	F3	4.0	10.0	3-phase 400 V AC	CBL-P	xx	M-85-1S0 (without brake)			
							CBL-C	xx	M-58-1S0 (with brake)	CBL-F	xx	M-M1-3S0 (single turn)
							CBL-P	xx	M-B5-1S0 (without brake)	CBL-F	xx	M-M2-3S0 (multi-turn)
							CBL-C	xx	M-5B-1S0 (with brake)			
E530-	EC	0S-5KW0-4	F4	5.0	13.9	3-phase 400 V AC	CBL-P	xx	M-44-2S0 (without brake)			
							CBL-C	xx	M-54-2S0 (with brake)			
E530-	EC	0S-7KW5-4	F4	7.5	25.0	3-phase 400 V AC	CBL-P	xx	M-84-2S0 (without brake)			
							CBL-C	xx	M-48-2S0 (with brake)			

Drive model description

xx Drive type: PT = pulse train input variant, EC = EtherCAT variant. The 400 V drives support the EtherCAT variant only

Cable model description

xx Preassembled cable length: 03 = 3 m, 05 = 5 m, 10 = 10 m, 15 = 15 m, 20 = 20 m, 30 = 30 m. Cables with the length of 30 m are non-standard cables. Please contact ABB if required.

[2] The servo drives support single/three phase power supply. For the drive of 2 kW rated power, when connecting to the three phase power supply, the rated output current and max. output current have no derating, when connecting to the single phase power supply, those outputs will be derated to 80%.

[3] The servo drive of 4 kW will be released in Q1 of 2025. At the moment, the corresponding motors can be matched with the servo drive of 5 kW.

Servo system ordering information

E530 servo drive ordering information

E530 - EC0S - 0KW2 - 1

E530 general-purpose servo drive

Product type
PT0S: Single-axis pulse train input variant
EC0S: Single-axis EtherCAT variant

1 Rated power

Rated voltage
1: Single phase 200...240 V AC, -15% ~ 10%
2: Three phase 200...240 V AC, -15% ~ 10%
4: Three phase 380...480 V AC, -15% ~ 10%

1

Code	Rated power
0KW2	0.2 kW
0KW4	0.4 kW
0KW8	0.75 kW
1KW0	1.0 kW
1KW5	1.5 kW
2KW0	2.0 kW
4KW0	4.0 kW[1)]
5KW0	5.0 kW
7KW5	7.5 kW

[1)] The servo drive of 4 kW will be released in Q1 of 2025. At the moment, the corresponding motors can be matched with the servo drive of 5 kW.

Cable ordering information

CBL - P - 05 - A - 07 - 1 - S0

1 Cable type
2 Cable length
3 Connector type of the motor side
4 Cable specification
5 Connector type of the drive side

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
A	Plastic connector
M	Military connector

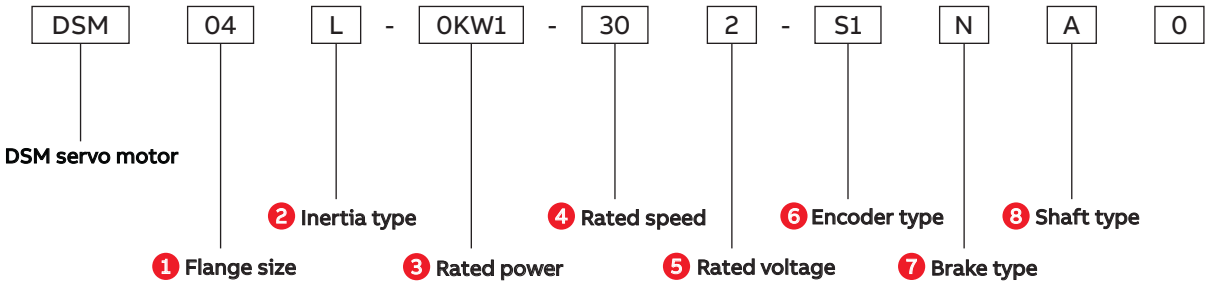
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Code	Connector of the drive side
1	Pin type terminal
2	U type terminal
3	1394 connector (6-pin)

4

	Code	Cable specification
220 V	S1	Single-turn absolute encoder cable
	S2	Multi-turn absolute encoder cable
	07	Power cable for motors of 0.75 kW and below (without brake)
	73	Power cable for motors of 0.75 kW and below (with brake)
	13	Power cable for motors of 1.0 kW (without brake)
	35	Power cable for motors of 1.0 kW (with brake)
	20	Power cable for motors of 0.85 kW, 1.5 kW to 2 kW (without brake)
	25	Power cable for motors of 0.85 kW, 1.5 kW to 2 kW (with brake)
400 V	M1	Single-turn absolute encoder cable
	M2	Multi-turn absolute encoder cable
	15	Power cable for motors of 0.85 kW to 2.0 kW (without brake)
	55	Power cable for motors of 0.85 kW to 2.0 kW (with brake)
	B5	Power cable for motors of 2.5 kW, 3.0 kW and 4.0 kW (without brake)
	5B	Power cable for motors of 2.5 kW, 3.0 kW and 4.0 kW (with brake)
	85	Power cable for motors of 2.9 kW (without brake)
	58	Power cable for motors of 2.9 kW (with brake)
	44	Power cable for motors of 5.0 kW (without brake)
	54	Power cable for motors of 5.0 kW (with brake)
	84	Power cable for motors of 4.4 kW, 5.5 kW and 7.5 kW (without brake)
	48	Power cable for motors of 4.4 kW, 5.5 kW and 7.5 kW (with brake)

DSM servo 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

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
S1	Single-turn absolute encoder, 20 bits per revolution
S2	Multi-turn absolute encoder, 20 bits per revolution/16 bits multi-turn
T0[1)]	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

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

[1)] Can be used as a single-turn absolute encoder, the single-turn resolution is 23 bits. The 400 V DSM servo motors support T0 encoder only.

E530 servo drive overview

E530-EC technical data (220 V)

E530-EC0S-...		0KW2-1	0KW4-1	0KW8-1	1KW0-1	1KW5-2[1)]	2KW0-2[1)]
Frame size		**F2**	**F2**	**F3**	**F3**	**F4**	**F4**
Main circuit and control circuit power supply		0.2 kW ~ 1 kW: Single phase 200...240 V AC, -15% ~ 10% 1.5 kW ~ 2 kW: Single/three phase 200...240 V AC, -15% ~ 10% 50/60 Hz, -5% ~ 5%					
Rated power (kW)		0.2	0.4	0.75	1.0	1.5	2.0
Rated input current (A)		2.5	4.7	8.5	10.0	15.0 (1-phase)/ 6.4 (3-phase)	16.0 (1-phase)/ 8.0 (3-phase)
Rated output current (A)		1.50	2.90	5.00	5.35	7.60	11.0 (3-phase)
Max. output current (A)		4.50	8.70	15.00	16.05	22.80	33.0 (3-phase)
Control system		Sine-wave PWM control, current control system					
Permissible supply configuration		TN, TT					
Overload capacity		300%					
Built-in braking resistor (W)		NA	NA	40	40	60	60
Protective functions		Overvoltage protection, undervoltage protection, overcurrent protection, overload protection, overspeed protection, encoder error protection, IGBT overtemperature protection, motor overtemperature protection (drive I^2t protection), others					
Overvoltage criteria		According to standard IEC/EN 60664-1: Single phase: Category II Three phase: Category III					
Communication protocol		EtherCAT					
Communication specifications	Supported profile	IEC 61800-7 CiA402 Drive Profile					
	Physical layer	100BASE-TX (IEEE802.3)					
	Topology	Line					
	Baud rate	1000 Mbps (full duplex)					
	Cable length	Up to 100 m between nodes					
	Number of slaves (axes) connected	Up to 65535					
	EtherCAT connections	CN3 IN (RJ45): EtherCAT input signal CN3 OUT (RJ45): EtherCAT output signal					
	Cable type	Twist pair CAT5e					
	Sync Manager	SM0: Mailbox out, SM1: Mailbox in SM2: Process data outputs, SM3: Process data inputs					
	FMMU	FMMU0: Maps to process data outputs area (RxPDO) FMMU1: Maps to process data inputs area (TxPDO) FMMU2: Maps to mailbox state					
	PDO data	Dynamic PDO mapping (4 RxPDO, 4 TxPDO)					
	Max. PDO data length	RxPDO: 32 bytes TxPDO: 32 bytes					
	Mailbox (CoE)	Emergency message, SDO request, SDO response, SDO information					
	Synchronous mode	Free RUN (asynchronous) DC (SYNC0 event synchronization)					
	Cycle time (DC)	250 µs, 500 µs, 1 ms, 2 ms, 4 ms, 8 ms, 10 ms					
	Control modes	Profile position mode (PP) Profile velocity mode (PV) Profile torque mode (PV) Homing mode (HM) Cyclic synchronous position mode (CSP) Cyclic synchronous Velocity mode (CSV) Cyclic synchronous torque mode (CST)					
	Touch Probe	2 fast inputs: DI5 and DI6					
Local control function		Panel operation, commissioning tool operation, internal speed command, internal torque command					
Position comparation function		Up to 8 position comparation points, 3 DO comparation signals					

E530-EC0S-...		0KW2-1	0KW4-1	0KW8-1	1KW0-1	1KW5-2[1]	2KW0-2[1]
Frame size		**F2**	**F2**	**F3**	**F3**	**F4**	**F4**
Operation environment		Indoors (without direct sunlight), free from corrosive gas, combustible gas, oil gas, or dust					
Altitude		0...1000 m: No derating 1000...2000 m: Derate 1%/100 m					
Protection degree		IP20					
Pollution degree		PD 2					
Ambient temperature	Operation	0...45 ℃: No derating 45...55 ℃: Derate 2%/1 ℃					
	Storage	-20...65 ℃					
Ambient humidity	Operation/ storage	0...90% (no condensing)					
Vibration	Operation	Comply with IEC 60721-3-3: 2002, class 3M1. Permissible according to IEC 60068-5-1 10...58 Hz: 0.075 mm deflection 58...200 Hz: 1 g vibration					
	Storage/ transport	Comply with ISTA 1A					
Shock	Operation	Comply with IEC 60721-3-3: 2002, class 3M1. Permissible according to IEC 60068-2-27 Peak acceleration: 15 g Duration time: 11 ms					
	Storage/ transport	Comply with ISTA 1A					
Digital input		6 DIs (supports both NPN and PNP)					
Digital output		3 DOs (supports both NPN and PNP)					
Parameter copy/firmware update		By Servo Composer					
Cooling method		Self-cooled		Fan-cooled			
Side by side mounting		Yes[2]					
Dimensions (width × height × depth, mm)		40 × 175 × 150		60 × 175 × 150		80 × 175 × 175	
Weight (kg)		0.77	0.77	1.08	1.08	1.60	1.60
Certification		CE, UKCA, China RoHS, WEEE					

[1] The servo drives support single/three phase power supply. For the drive of 2 kW rated power, when connecting to the three-phase power supply, the rated output current and max. output current have no derating, when connecting to the single phase power supply, those outputs will be derated to 80%.

[2] When mounted side by side, the drive need to be derated to 80%.

E530-EC technical data (400 V)

E530-EC0S-...		1KW5-4	2KW0-4	4KW0-4	5KW0-4	7KW5-4
Frame size		**F2**	**F2**	**F3**	**F4**	**F4**
Main circuit power supply		Three phase 380...480 V AC, -15% ~ 10% 50/60 Hz, -5% ~ 5%				
Control circuit power supply		24 V DC, -10% ~ 10%, the maximum current of one drive is 1.2 A				
Rated power (kW)		1.5	2.0	4.0	5.0	7.5
Rated input current (A)		6.4	7.3	10.0	13.9	25.0
Rated output current (A)		5.1	6.5	12.5	16.5	27.5
Max. output current (A)		16.0	21.0	37.5	48.6	64.5
Control system		Sine-wave PWM control, current control system				
Permissible supply configuration		TN, TT				
Overload capacity		300%				
Built-in braking resistor (W)		80	80	100	150	150
Protective functions		Overvoltage protection, undervoltage protection, overcurrent protection, overload protection, overspeed protection, encoder error protection, IGBT overtemperature protection, motor overtemperature protection (drive I^2t protection), others				
Overvoltage criteria		According to standard IEC/EN 60664-1: Category III				
Communication protocol		EtherCAT				
Communication specifications	Supported profile	IEC 61800-7 CiA402 Drive Profile				
	Physical layer	100BASE-TX (IEEE802.3)				
	Topology	Line				
	Baud rate	1000 Mbps (full duplex)				
	Cable length	Up to 100 m between nodes				
	Number of slaves (axes) connected	Up to 65535				
	EtherCAT connections	CN3 IN (RJ45): EtherCAT input signal CN3 OUT (RJ45): EtherCAT output signal				
	Cable type	Twist pair CAT5e				
	Sync Manager	SM0: Mailbox out, SM1: Mailbox in SM2: Process data outputs, SM3: Process data inputs				
	FMMU	FMMU0: Maps to process data outputs area (RxPDO) FMMU1: Maps to process data inputs area (TxPDO) FMMU2: Maps to mailbox state				
	PDO data	Dynamic PDO mapping (4 RxPDO, 4 TxPDO)				
	Max. PDO data length	RxPDO: 32 bytes TxPDO: 32 bytes				
	Mailbox (CoE)	Emergency message, SDO request, SDO response, SDO information				
	Synchronous mode	Free RUN (asynchronous) DC (SYNC0 event synchronization)				
	Cycle time (DC)	250 µs, 500 µs, 1 ms, 2 ms, 4 ms, 8 ms, 10 ms				
	Control modes	Profile position mode (PP) Profile velocity mode (PV) Profile torque mode (PV) Homing mode (HM) Cyclic synchronous position mode (CSP) Cyclic synchronous Velocity mode (CSV) Cyclic synchronous torque mode (CST)				
	Touch Probe	2 fast inputs: DI5 and DI6				
Local control function		Panel operation, commissioning tool operation, internal speed command, internal torque command				
Position comparation function		Up to 8 position comparation points, 3 DO comparation signals				
Operation environment		Indoors (without direct sunlight), free from corrosive gas, combustible gas, oil gas, or dust				

E530-EC0S-...		1KW5-4	2KW0-4	4KW0-4	5KW0-4	7KW5-4
Frame size		**F2**	**F2**	**F3**	**F4**	**F4**
Altitude		0...1000 m: No derating 1000...2000 m: Derate 1%/100 m				
Protection degree		IP20				
Pollution degree		PD 2				
Ambient temperature	Operation	0...45 °C: No derating 45...55 °C: Derate 2%/1 °C				
	Storage	-20...65 °C				
Ambient humidity	Operation/ storage	0...90% (no condensing)				
Vibration	Operation	Comply with IEC 60721-3-3: 2002, class 3M1. Permissible according to IEC 60068-5-1 10...58 Hz: 0.075 mm deflection 58...200 Hz: 1 g vibration				
	Storage/ transport	Comply with ISTA 1A				
Shock	Operation	Comply with IEC 60721-3-3: 2002, class 3M1. Permissible according to IEC 60068-2-27 Peak acceleration: 15 g Duration time: 11 ms				
	Storage/ transport	Comply with ISTA 1A				
Digital input		6 DIs (supports both NPN and PNP)				
Digital output		3 DOs (supports both NPN and PNP)				
Parameter copy/firmware update		By Servo Composer				
Cooling method		Fan-cooled				
Side by side mounting		Yes[1)]				
Dimensions (width × height × depth, mm)		65 × 175 × 175		80 × 175 × 175	90 × 230 × 220	
Weight (kg)		1.49	1.50	1.99	3.57	3.67
Certification		CE, UKCA, China RoHS, WEEE				

[1)] When mounted side by side, the drive need to be derated to 80%.

E530-PT technical data (220 V)

E530-PT0S-...			0KW2-1	0KW4-1	0KW8-1	1KW0-1	1KW5-2[1)]	2KW0-2[1)]
Frame size			**F2**	**F2**	**F3**	**F3**	**F4**	**F4**
Main circuit circuit power supply			0.2 kW ~ 1 kW: Single phase 200...240 V AC, -15% ~ 10% 1.5 kW ~ 2 kW: Single/three phase 200...240 V AC, -15% ~ 10% 50/60 Hz, -5% ~ 5%					
control circuit power supply			24 V DC (-10% ~ 10%), the maximum current of one drive is 1.2 A					
Rated power (kW)			0.2	0.4	0.75	1.0	1.5	2.0
Rated input current (A)			2.5	4.7	8.5	10.0	15.0 (1-phase)/ 6.4 (3-phase)	16.0 (1-phase)/ 8.0 (3-phase)
Rated output current (A)			1.50	2.90	5.00	5.35	7.60	11.0 (3-phase)
Max. output current (A)			4.50	8.70	15.00	16.05	22.80	33.0 (3-phase)
Control system			Sine-wave PWM control, current control system					
Permissible supply configuration			TN, TT					
Overload capacity			300%					
Built-in braking resistor (W)			NA	NA	40	40	60	60
Protective functions			Overvoltage protection, undervoltage protection, overcurrent protection, overload protection, overspeed protection, encoder error protection, IGBT overtemperature protection, motor overtemperature protection (drive I^2t protection), others					
Overvoltage criteria			According to standard IEC/EN 60664-1: Single phase: Category II Three phase: Category III					
Control modes			Pulse train input position control mode (PTI) Fixed position control mode (FP) Speed control mode (S) Torque control mode (T)					
Position control	Control command		Pulse train input/fixed position setpoint					
	Pulse train input type (for PTI only)		High-speed 5 V differential pulse train/24 V single end pulse train (pulse + direction, AB phase pulse, CCW + CW pulse)					
	Max. input pulse frequency (for PTI only)		4 MHz (differential input), 200 kHz (open collector input)					
	Electronic gear ratio		Electronic gear ratio (A/B) 1/35000 < A/B < 35000					
	Torque limit		Set through a parameter or the external analog input command (0 V DC to +10 V DC/max.torque)					
Speed control	Control command		External analog command/internal speed setpoint					
	Speed control range		1:5000					
	Analog speed command input		-10 V DC to +10 V DC/rated speed					
	Torque limit		Set through a parameter or the external analog input command (0 V DC to +10 V DC/max.torque)					
Torque control	Control command		External analog command/internal torque setpoint					
	Analog torque command input		-10 V DC to +10 V DC/rated torque					
	Speed limit		Set through a parameter or the external analog input command (0 V DC to +10 V DC/max.speed)					
Operation environment			Indoors (without direct sunlight), free from corrosive gas, combustible gas, oil gas, or dust					
Altitude			0...1000 m: No derating 1000...2000 m: Derate 1%/100 m					
Protection degree			IP20					
Pollution degree			PD 2					
Ambient temperature		Operation	0...45 °C: No derating 45...55 °C: Derate 2%/1 °C					
		Storage	-20...65 °C					
Ambient humidity		Operation/ storage	0...90% (no condensing)					

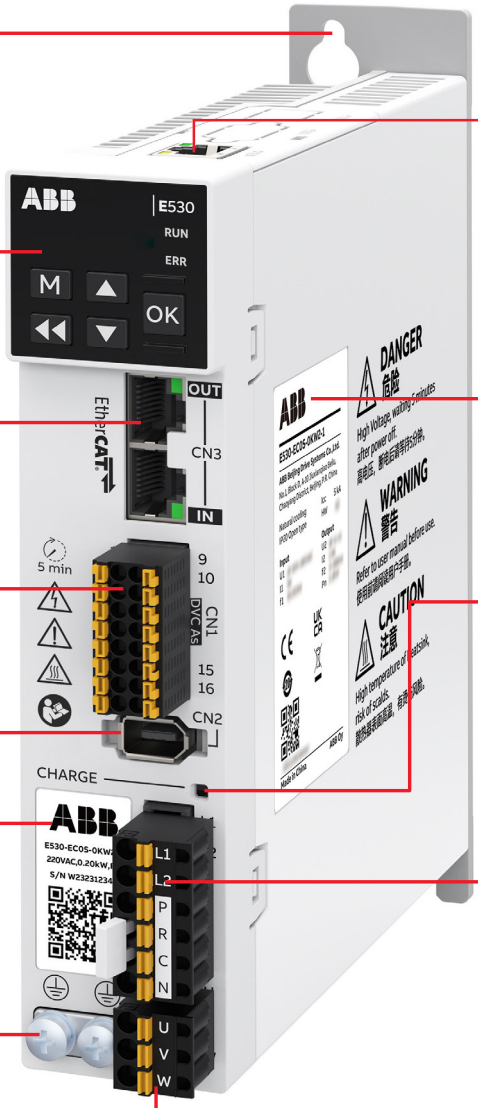
E530-PT0S-...		0KW2-1	0KW4-1	0KW8-1	1KW0-1	1KW5-2[1]	2KW0-2[1]
Frame size		**F2**	**F2**	**F3**	**F3**	**F4**	**F4**
Vibration	Operation	Comply with IEC 60721-3-3: 2002, class 3M1. Permissible according to IEC 60068-5-1 10...58 Hz: 0.075 mm deflection 58...200 Hz: 1 g vibration					
	Storage/ transport	Comply with ISTA 1A					
Shock	Operation	Comply with IEC 60721-3-3: 2002, class 3M1. Permissible according to IEC 60068-2-27 Peak acceleration: 15 g Duration time: 11 ms					
	Storage/ transport	Comply with ISTA 1A					
Digital input		7 DIs (supports both NPN and PNP)					
Digital output		6 DOs (supports both NPN and PNP)					
Analog input		2 AIs					
Communication method		Modbus TCP/IP					
Parameter copy/firmware update		By Servo Composer					
Cooling method		Self-cooled		Fan-cooled			
Side by side mounting		Yes[2]					
Dimensions (width × height × depth, mm)		40 × 175 × 150		60 × 175 × 150		80 × 175 × 175	
Weight (kg)		0.75	0.75	1.10	1.10	1.65	1.65
Certification		CE, UKCA, China RoHS, WEEE					

[1] The servo drives support single/three phase power supply. For the drive of 2 kW rated power, when connecting to the three phase power supply, the rated output current and max. output current have no derating, when connecting to the single phase power supply, those outputs will be derated to 80%.

[2] When mounted side by side, the drive need to be derated to 80%.

E530-EC interface overview (220 V)

0.2 kW ~ 1.0 kW



Mounting holes
- 200 W ~ 400 W: 2 mounting holes, one on the top and one on the bottom
- 750 W ~ 1 kW: 3 mounting holes, one on the top and two on the bottom

Integrated control panel
- 5-digit 7-segement display
- 5 function buttons
- EtherCAT status indicator: RUN/ERR

EtherCAT communication interface
With 2 EtherCAT status indicators
- L/A IN input
- L/A OUT output

IO signal interface
- 6 DIs
- 3 DOs

Encoder interface

Product label
- Product information and serial number
- Product web page QR code

PE grounding terminals

Motor power connector
- U, V, W

Ethernet interface
1 RJ45 interface with the LED indicator:
- Can connect to the Servo Composer to commission the drive

Product label
- Product information and serial number
- Basic technical data

Charging indicator
The indicator is used to display the status of the residual current when the drive power supply is off. Operations on the drive must be done after the indicator is off

Power supply connector
- L1, L2

Braking resistor connector *
- P, C

Common DC bus connector *
- P, N

*** Braking resistor connector**
- P, C

The built-in braking resistor is used by default. If an external braking resistor is needed, keep the circuit between terminals R and C open (remove the short-circuit stick between terminals R and C), and connect the braking resistor to terminals P and C.

*** Common DC bus connector**
- P, N

If the common DC bus connection is needed, connect the P terminals and N terminals of different drives in parallel. The common DC bus connection is limited to the drives of the same frame size and the maximum allowable connection quantity of the drive is 8. Make sure that the connected drives are using the same main power supply. Please contact the ABB technical personnel for the specific of using method.

—

1.5 kW ~ 2.0 kW

Mounting holes
- 4 mounting holes, two on the top and two on the bottom

Integrated control panel
- 5-digit 7-segement display
- 5 function buttons
- EtherCAT status indicator: RUN/ERR

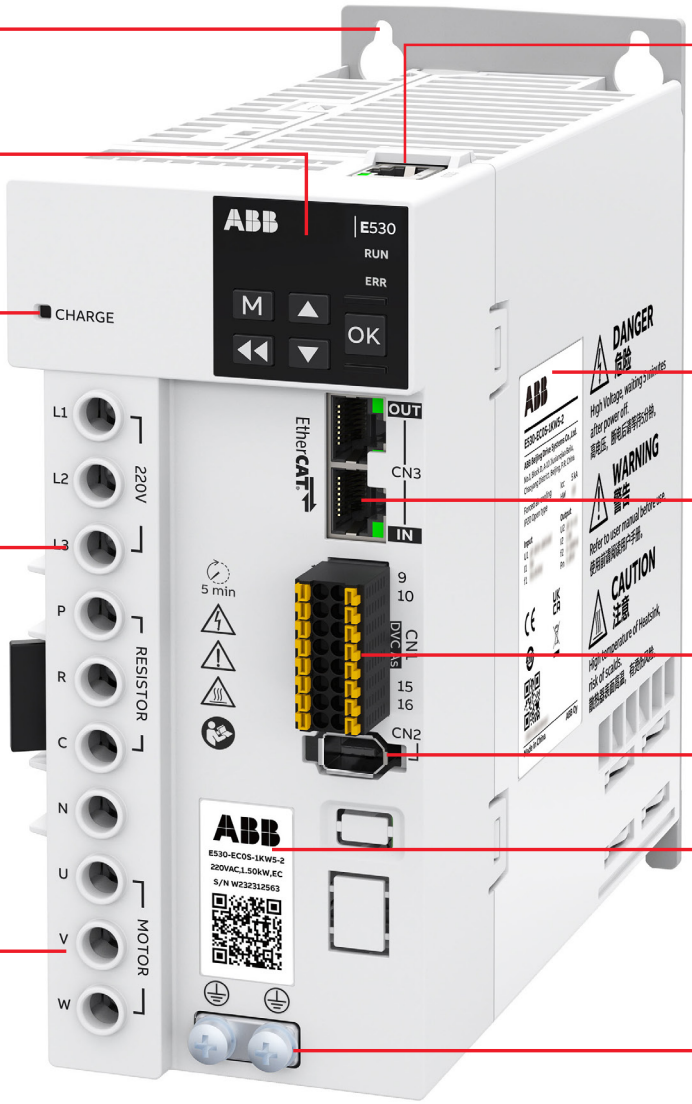
Charging indicator
The indicator is used to display the status of the residual current when the drive power supply is off. Operations on the drive must be done after the indicator is off

Power supply connector
- L1, L2, L3

Braking resistor connector *
- P, C

Common DC bus connector *
- P, N

Motor power connector
- U, V, W



Ethernet interface
1 RJ45 interface with the LED indicator:
- Can connect to the Servo Composer to commission the drive

Product label
- Product information and serial number
- Basic technical data

EtherCAT communication interface
With 2 EtherCAT status indicators
- L/A IN input
- L/A OUT output

IO signal interface
- 6 DIs
- 3 DOs

Encoder interface

Product label
- Product information and serial number
- Product web page QR code

PE grounding terminals

*** Braking resistor connector**
- P, C

The built-in braking resistor is used by default. If an external braking resistor is needed, keep the circuit between terminals R and C open (remove the short-circuit stick between terminals R and C), and connect the braking resistor to terminals P and C.

*** Common DC bus connector**
- P, N

If the common DC bus connection is needed, connect the P terminals and N terminals of different drives in parallel. The common DC bus connection is limited to the drives of the same frame size and the maximum allowable connection quantity of the drive is 8. Make sure that the connected drives are using the same main power supply. Please contact the ABB technical personnel for the specific of using method.

E530-EC interface overview (400 V)

1.5 kW ~ 4.0 kW

Mounting holes
- 4 mounting holes, two on the top and two on the bottom

Integrated control panel
- 5-digit 7-segement display
- 5 function buttons
- EtherCAT status indicator: RUN/ERR

Charging indicator
The indicator is used to display the status of the residual current when the drive power supply is off. Operations on the drive must be done after the indicator is off

Power supply connector
- L1, L2

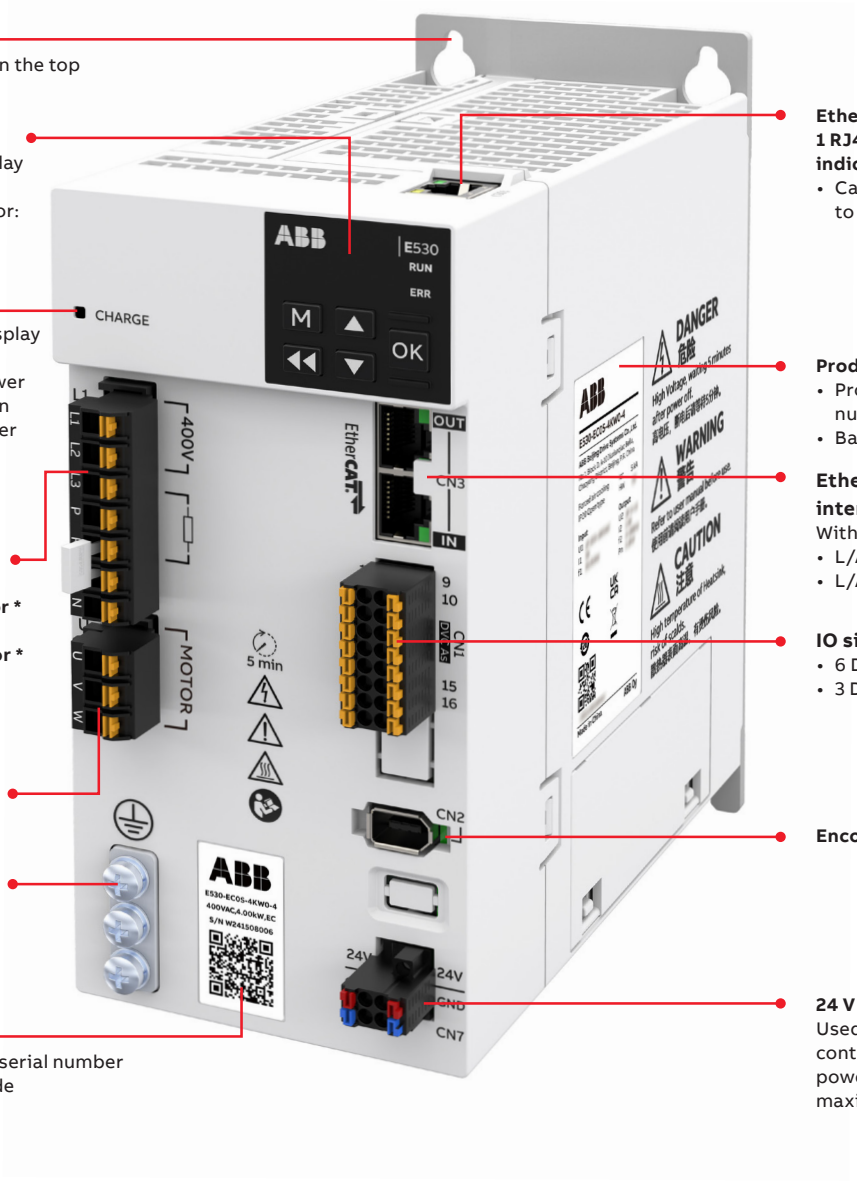
Braking resistor connector *
- P, C

Common DC bus connector *
- P, N

Motor power connector
- U, V, W

PE grounding terminals

Product label
- Product information and serial number
- Product web page QR code



Ethernet interface
1 RJ45 interface with the LED indicator:
- Can connect to the Servo Composer to commission the drive

Product label
- Product information and serial number
- Basic technical data

EtherCAT communication interface
With 2 EtherCAT status indicators
- L/A IN input
- L/A OUT output

IO signal interface
- 6 DIs
- 3 DOs

Encoder interface

24 V power connector
Used to provide the power supply for the control board of the drive, the required power supply is 24 V DC (-10% ~ 10%), the maximum current of one drive is 1.2 A

*** Braking resistor connector**
- P, C

The built-in braking resistor is used by default. If an external braking resistor is needed, keep the circuit between terminals R and C open (remove the short-circuit stick between terminals R and C), and connect the braking resistor to terminals P and C.

*** Common DC bus connector**
- P, N

If the common DC bus connection is needed, connect the P terminals and N terminals of different drives in parallel. The common DC bus connection is limited to the drives of the same frame size and the maximum allowable connection quantity of the drive is 8. Make sure that the connected drives are using the same main power supply. Please contact the ABB technical personnel for the specific of using method.

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5.0 kW ~ 7.5 kW

Mounting holes
- 4 mounting holes, two on the top and two on the bottom

Integrated control panel
- 5-digit 7-segement display
- 5 function buttons
- EtherCAT status indicator: RUN/ERR

Charging indicator
The indicator is used to display the status of the residual current when the drive power supply is off. Operations on the drive must be done after the indicator is off

Power supply connector
- L1, L2, L3

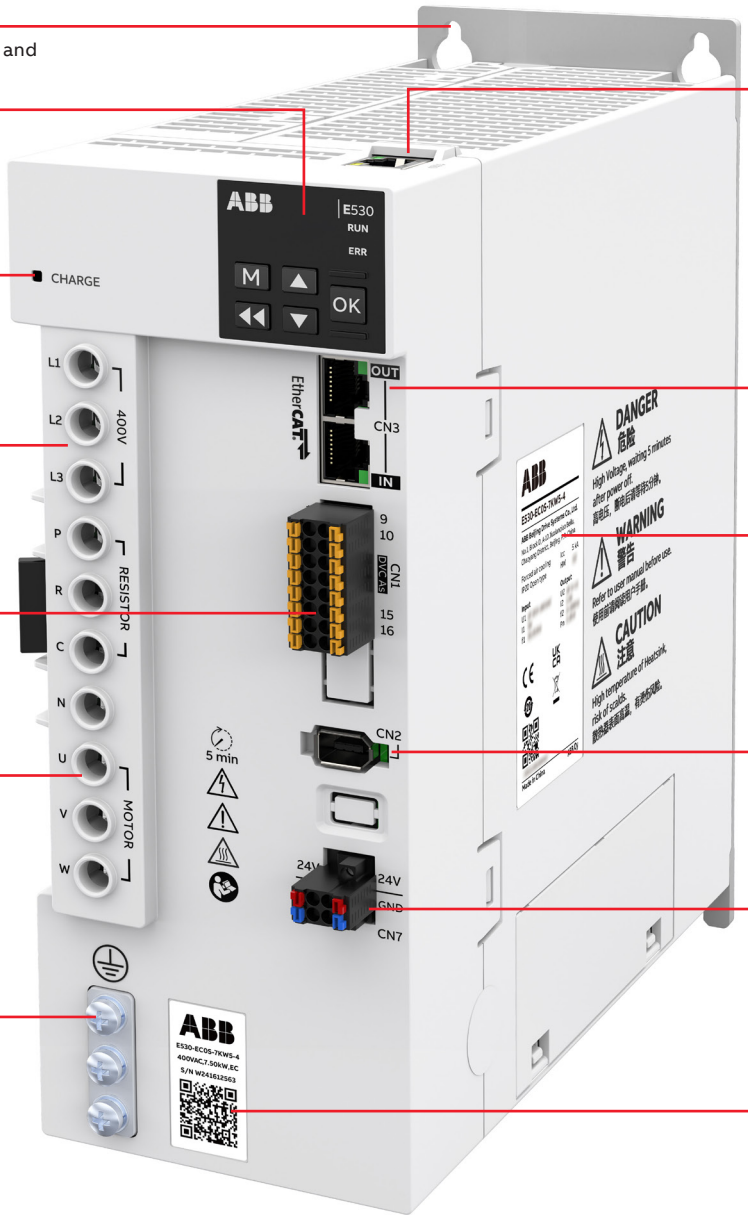
Braking resistor connector *
- P, C

Common DC bus connector *
- P, N

IO signal interface
- 6 DIs
- 3 DOs

Motor power connector
- U, V, W

PE grounding terminals



Ethernet interface
1 RJ45 interface with the LED indicator:
- Can connect to the Servo Composer to commission the drive

EtherCAT communication interface
With 2 EtherCAT status indicators
- L/A IN input
- L/A OUT output

Product label
- Product information and serial number
- Basic technical data

Encoder interface

24 V power connector
Used to provide the power supply for the control board of the drive, the required power supply is 24 V DC (-10% ~ 10%), the maximum current of one drive is 1.2 A

Product label
- Product information and serial number
- Product web page QR code

*** Braking resistor connector**
- P, C
  The built-in braking resistor is used by default. If an external braking resistor is needed, keep the circuit between terminals R and C open (remove the short-circuit stick between terminals R and C), and connect the braking resistor to terminals P and C.

*** Common DC bus connector**
- P, N
  If the common DC bus connection is needed, connect the P terminals and N terminals of different drives in parallel. The common DC bus connection is limited to the drives of the same frame size and the maximum allowable connection quantity of the drive is 8. Make sure that the connected drives are using the same main power supply. Please contact the ABB technical personnel for the specific of using method.

E530-PT interface overview (220 V)

0.2 kW ~ 1.0 kW



Mounting holes
- 200 W ~ 400 W: 2 mounting holes, one on the top and one on the bottom
- 750 W ~ 1 kW: 3 mounting holes, one on the top and two on the bottom

Integrated control panel
- 5-digit 7-segement display
- 5 function buttons
- Run and error indicators

IO signal interface
44-pin D-sub interface, includes:
- 7 DIs/6 DOs
- 2 AIs
- PTI inputs/PTO outputs

Encoder interface

Product label
- Product information and serial number
- Product web page QR code

PE grounding terminals

Motor power connector
- U, V, W

Ethernet interface
1 RJ45 interface with the LED indicator:
- Can communicate with the PLC via the Modbus TCP protocol
- Can connect to the Servo Composer to commission the drive

Product label
- Product information and serial number
- Basic technical data

Charging indicator
The indicator is used to display the status of the residual current when the drive power supply is off. Operations on the drive must be done after the indicator is off

Power supply connector
- L1, L2

Braking resistor connector *
- P, C

Common DC bus connector *
- P, N

*** Braking resistor connector**
- P, C

The built-in braking resistor is used by default. If an external braking resistor is needed, keep the circuit between terminals R and C open (remove the short-circuit stick between terminals R and C), and connect the braking resistor to terminals P and C.

*** Common DC bus connector**
- P, N

If the common DC bus connection is needed, connect the P terminals and N terminals of different drives in parallel. The common DC bus connection is limited to the drives of the same frame size and the maximum allowable connection quantity of the drive is 8. Make sure that the connected drives are using the same main power supply. Please contact the ABB technical personnel for the specific of using method.

—

1.5 kW ~ 2.0 kW

Mounting holes
- 4 mounting holes, two on the top and two on the bottom

Integrated control panel
- 5-digit 7-segement display
- 5 function buttons
- Run and error indicators

Charging indicator
The indicator is used to display the status of the residual current when the drive power supply is off. Operations on the drive must be done after the indicator is off

Power supply connector
- L1, L2, L3

Braking resistor connector *
- P, C

Common DC bus connector *
- P, N

Motor power connector
- U, V, W



Ethernet interface
1 RJ45 interface with the LED indicator:
- Can communicate with the PLC via the Modbus TCP protocol
- Can connect to the Servo Composer to commission the drive

Product label
- Product information and serial number
- Basic technical data

IO signal interface
44-pin D-sub interface, includes:
- 7 DIs/6 DOs
- 2 AIs
- PTI inputs/PTO outputs

Encoder interface

Product label
- Product information and serial number
- Product web page QR code

PE grounding terminals

*** Braking resistor connector**
- P, C

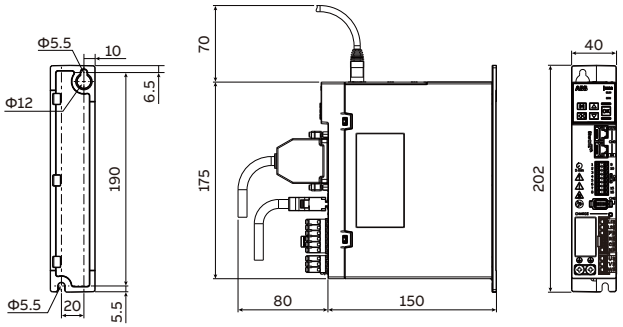
The built-in braking resistor is used by default. If an external braking resistor is needed, keep the circuit between terminals R and C open (remove the short-circuit stick between terminals R and C), and connect the braking resistor to terminals P and C.

*** Common DC bus connector**
- P, N

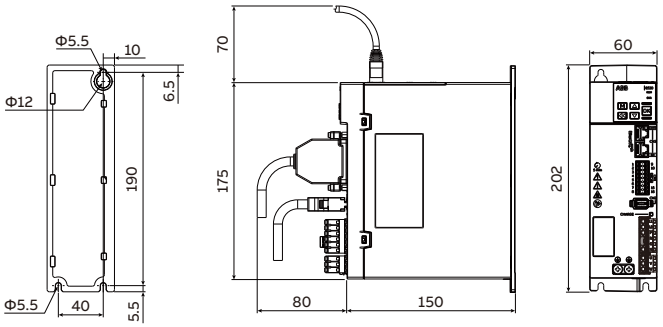
If the common DC bus connection is needed, connect the P terminals and N terminals of different drives in parallel. The common DC bus connection is limited to the drives of the same frame size and the maximum allowable connection quantity of the drive is 8. Make sure that the connected drives are using the same main power supply. Please contact the ABB technical personnel for the specific of using method.

E530 servo drive outline dimensions and mounting clearances

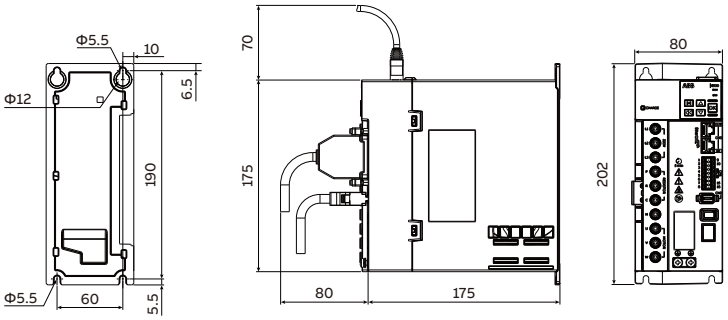
Outline dimensions (220 V)



F2 (0.2 kW/0.4 kW)

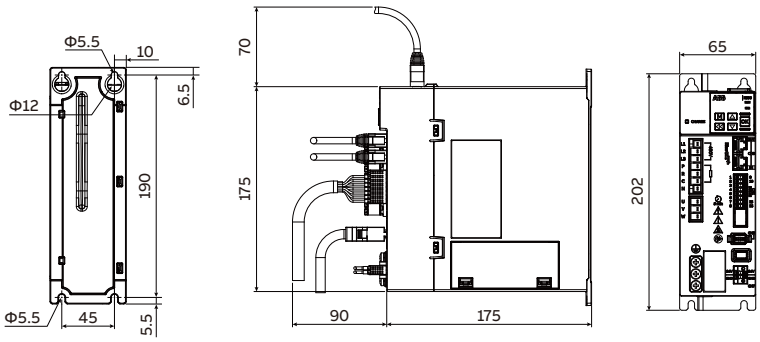


F3 (0.75 kW/1.0 kW)

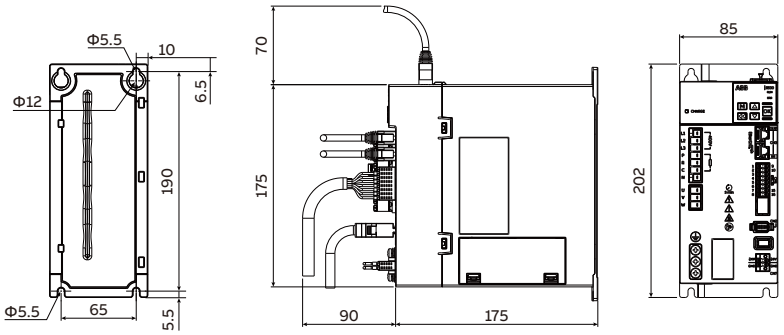


F4 (1.5 kW/2.0 kW)

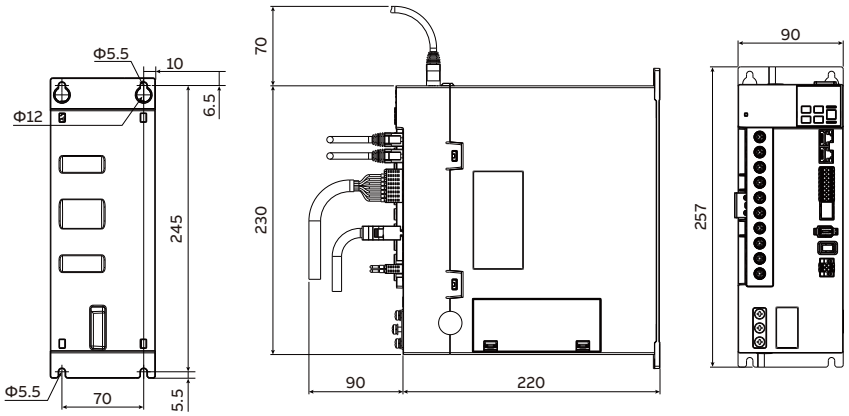
Outline dimensions (400 V)



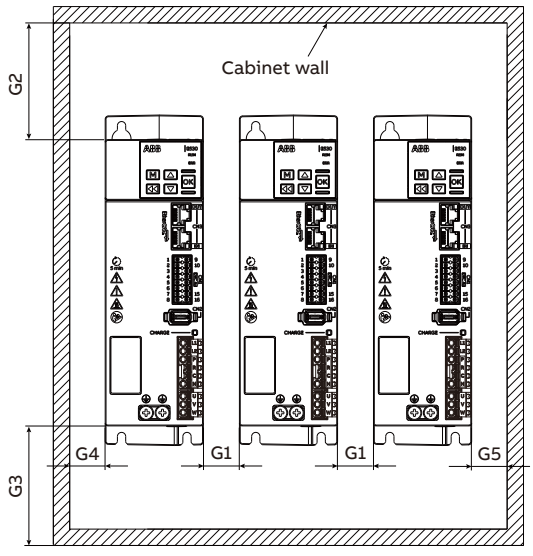
F2 (1.5 kW/2.0 kW)



F3 (4.0 kW)



F4 (5.0 kW/7.5 kW)



Mounting clearances

The data in the table is the minimum recommended value when the drive is working with the rated power, and the required wiring space has been taken into account.

If the drive is mounted side by side, the drive must be derated. When the ambient temperature is 0 ℃ to 45 ℃, the drive need to be derated to 80%, while when the ambient temperature is 45 ℃ to 55 ℃, the drive need to be derated to 64%.

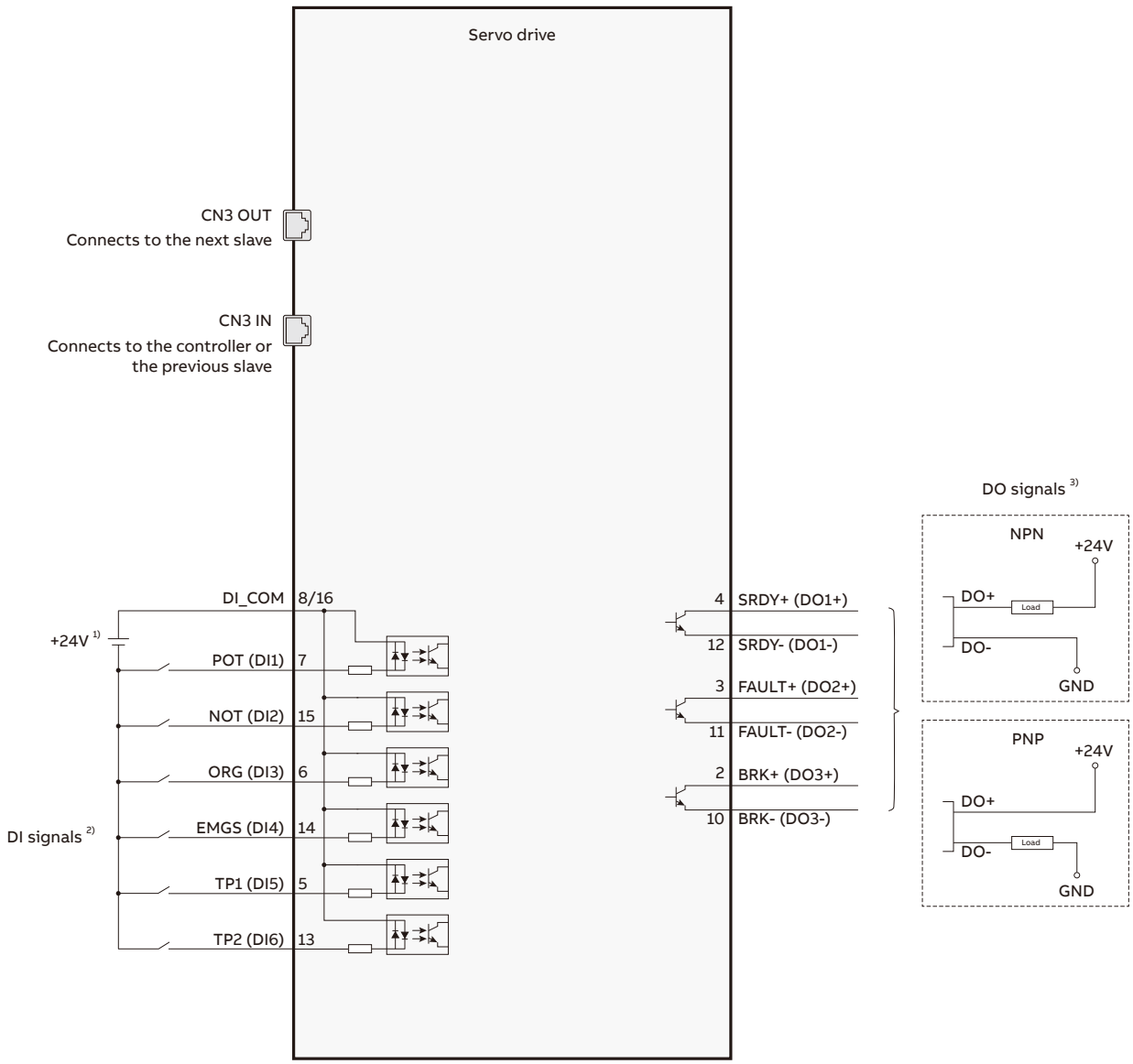
Unit: mm

Frame size	G1	G2	G3	G4	G5
F2 (200 V/400 V)	10	100	100	10	10
F3 (200 V/400 V)	10	100	100	10	10
F4 (200 V/400 V)	40[1)]	100	100	40	10

[1)] If a device with a small depth is mounted on the left of the drive and the wring of the drive is unimpeded, the data can be decreased to 10 mm.

Note: For the E530-EC and E530-PT servo drives with the same rated power, the outline dimensions of them are the same, and so do the mounting clearance requirements. The illustrations here take the E530-EC as an example.

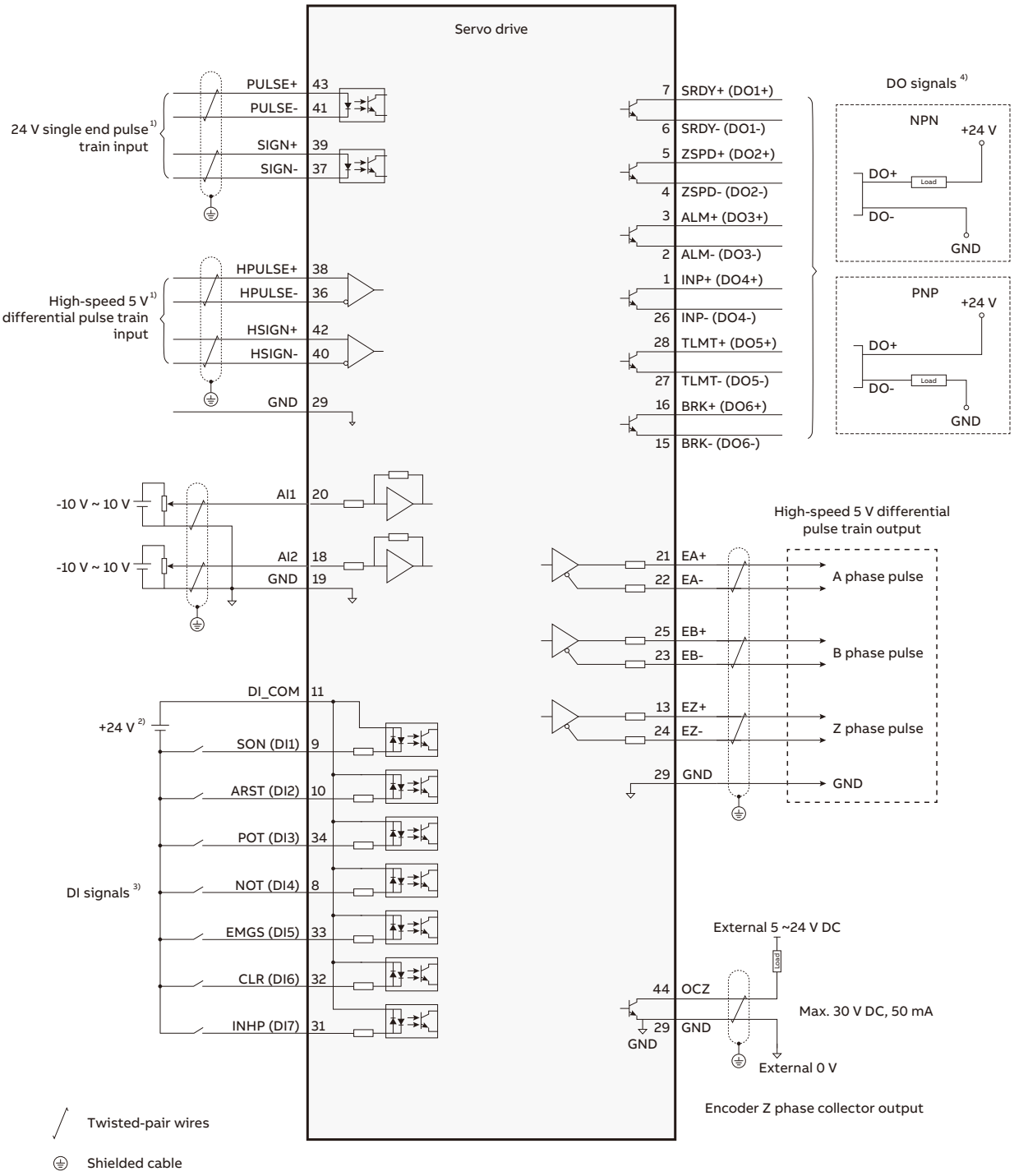
E530-EC wiring diagrams



[1] The digital inputs support both NPN and PNP types of wirings. All digital inputs must be wired in the same type when connected.
[2] The digital input assignment in the diagram is the drive factory default settings.
[3] The digital outputs support both NPN and PNP types of wirings. The maximum voltage of the digital output is 30 V DC and the maximum current is 50 mA.

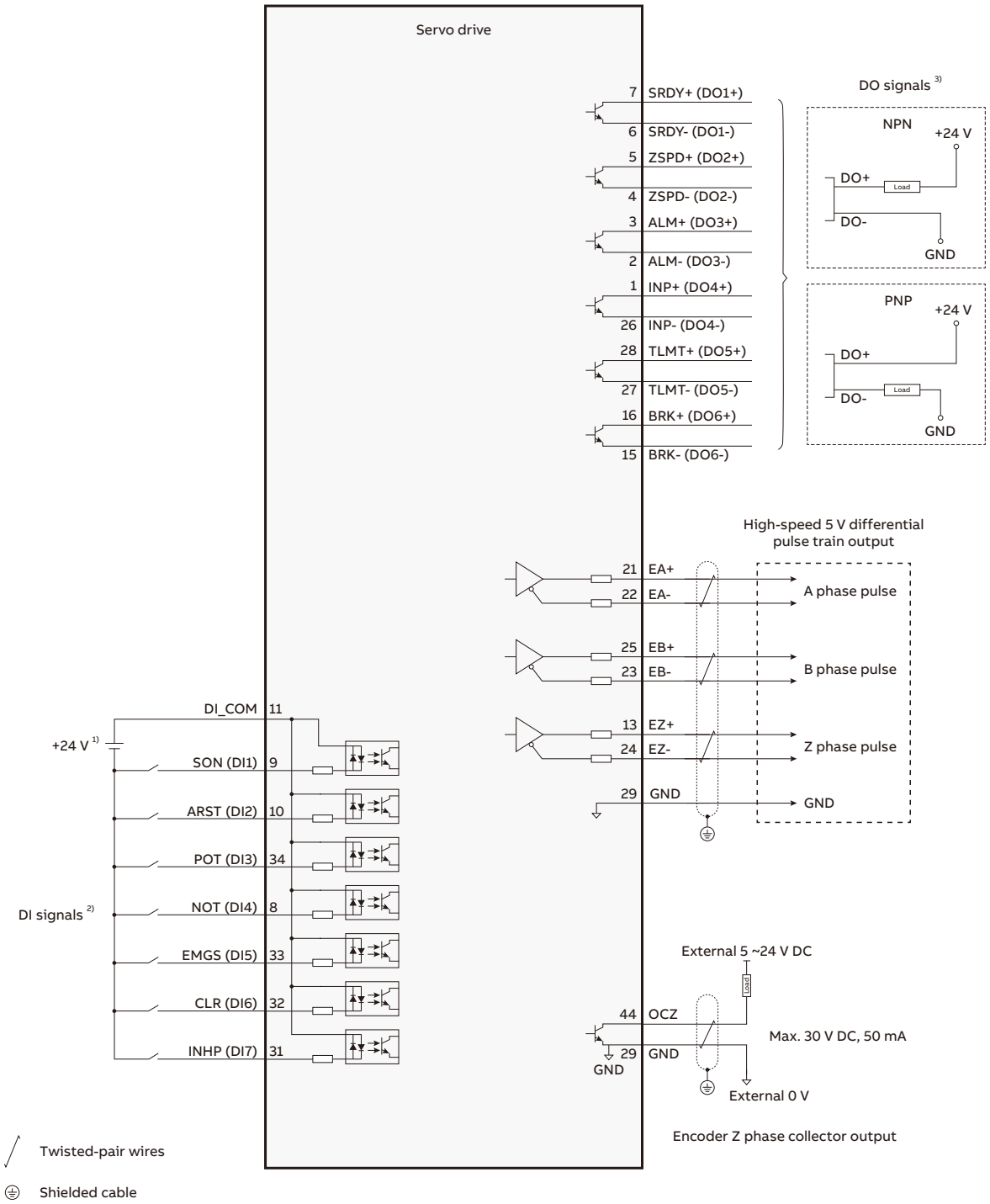
E530-PT wiring diagrams

Pulse train input position control mode (PTI)



1) The pulse train input formats of the PTI control mode. Choose one when used.
2) The digital inputs support both NPN and PNP types of wirings. All digital inputs must be wired in the same type when connected.
3) The digital input assignment in the diagram is the drive factory default settings.
4) The digital outputs support both NPN and PNP types of wirings. The maximum voltage of the digital output is 30 V DC and the maximum current is 50 mA.

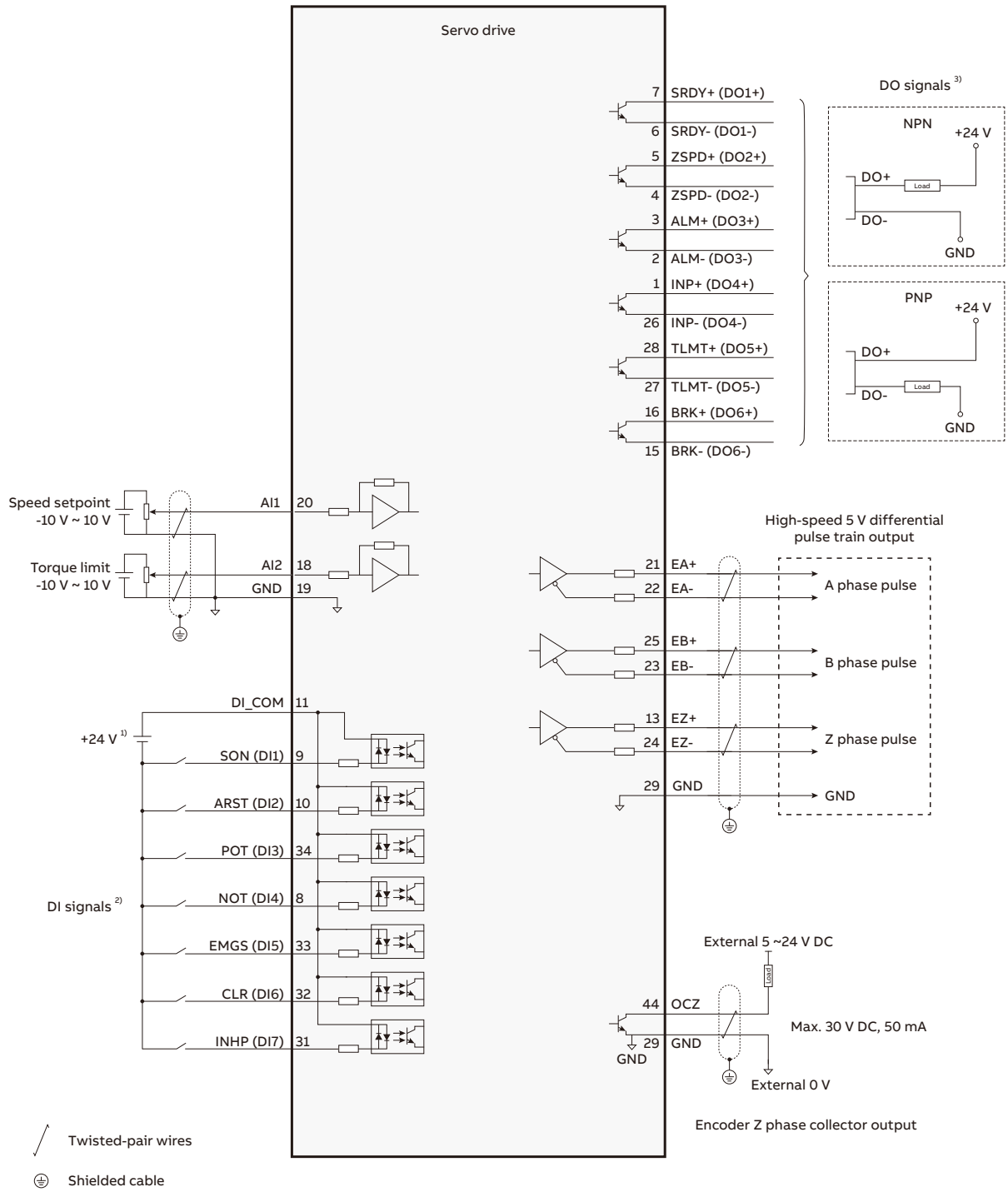
Fixed postion control mode (FP)



1) The digital inputs support both NPN and PNP types of wirings. All digital inputs must be wired in the same type when connected.
2) The digital input assignment in the diagram is the drive factory default settings.
3) The digital outputs support both NPN and PNP types of wirings. The maximum voltage of the digital output is 30 V DC and the maximum current is 50 mA.

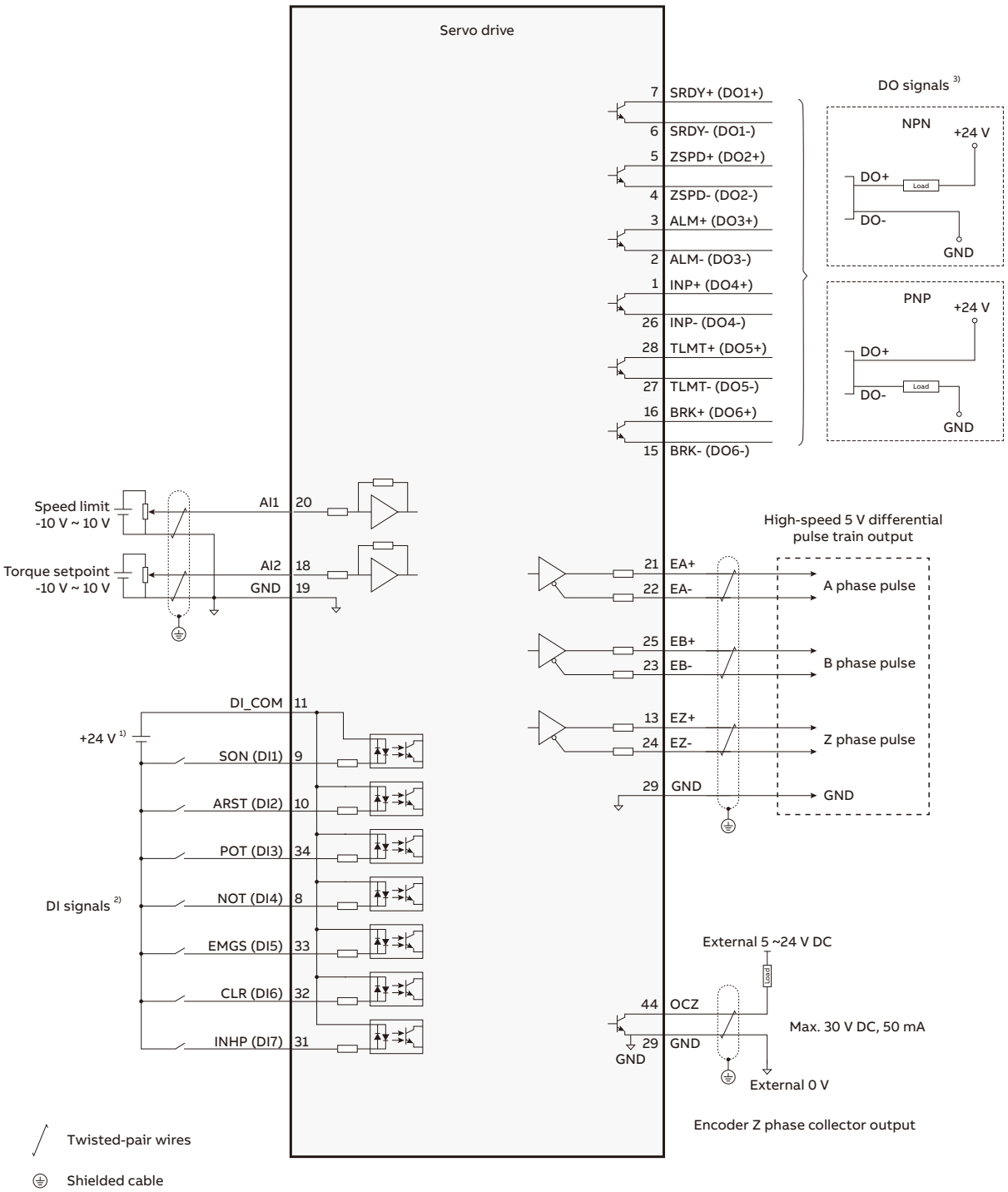
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Speed control mode (S)



1) The digital inputs support both NPN and PNP types of wirings. All digital inputs must be wired in the same type when connected.
2) The digital input assignment in the diagram is the drive factory default settings.
3) The digital outputs support both NPN and PNP types of wirings. The maximum voltage of the digital output is 30 V DC and the maximum current is 50 mA.

Torque control mode (T)



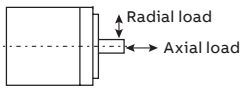
[1] The digital inputs support both NPN and PNP types of wirings. All digital inputs must be wired in the same type when connected.
[2] The digital input assignment in the diagram is the drive factory default settings.
[3] The digital outputs support both NPN and PNP types of wirings. The maximum voltage of the digital output is 30 V DC and the maximum current is 50 mA.

DSM servo motor overview

Technical data (220 V)

Flange size	40	40	60	60	60	80
Motor model (DSM...)	**04L-0KWA-302**	**04L-0KW1-302**	**06L-0KW2-302**	**06L-0KW4-302**	**06M-0KW4-302**	**08L-0KW8-302**
Rated power P (kW)	**0.05**	**0.1**	**0.2**	**0.4**	**0.4**	**0.75**
General						
Rated voltage (V AC)			220			
Rated torque T_N (Nm)	0.16	0.32	0.64	1.27	1.27	2.39
Peak torque T_p (Nm)	0.48	0.96	1.92	3.81	3.81	7.17
Continuous stall torque T_0 (Nm)	0.16	0.32	0.64	1.27	1.27	2.39
Rated current I_N (A_{rms})	0.9	0.85	1.5	2.9	2.8	5.2
Peak current I_p (A_{rms})	2.7	2.55	4.5	8.7	8.4	15.6
Rated speed n_N (rpm)	3000	3000	3000	3000	3000	3000
Max. speed n_{max} (rpm)	6000	6000	6000	6000	6000	6000
Electrical						
Torque constant K_t (Nm/A)	0.18	0.39	0.454	0.46	0.49	0.53
Voltage constant K_e (V_{rms}/krpm)	11.9	26.1	27.5	28	29.86	36.1
Winding resistance R_L (ohms)	13.5	24.5	6.82	2.79	2.62	1.33
Winding inductance L_L (mH)	12.9	26.7	16	8.2	6.2	8.1
Mechanical						
Rotor inertia with brake J_M (kg·cm^2)	0.027	0.042	0.147	0.236	0.51	0.861
Rotor inertia without brake J_M (kg·cm^2)	0.02	0.035	0.14	0.23	0.49	0.791
Number of motor poles p			10			
Weight with brake W (kg)	0.66	0.79	1.7	2.1	2.1	2.9
Weight without brake W (kg)	0.46	0.59	1.1	1.5	1.6	2.3
Max. radial load[1] (N)	78	78	245	245	245	392
Max. axial load (N)	54	54	75	75	75	147
Environmental						
Insulation class			F			
Operating temperature (°C)			-10...40			
Operating humidity (%)			20...80			
Storage temperature (°C)			-20...60			
Brake data[2]						
Rated voltage (V DC ± 10%)			24			
Current (A)	0.25	0.25	0.3	0.3	0.3	0.33
Input power (W)	6.1	6.1	7.2	7.2	7.2	8
Static friction torque (Nm)	0.32	0.32	1.3	1.3	1.3	2.5
Armature release time (ms)	20	20	40	40	40	40
Armature pull-in time (ms)	40	40	60	60	60	60

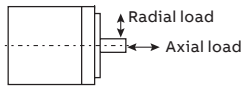
[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



Technical data (220 V)

Flange size	80	130	130	130	130	130
Motor model (DSM...)	**08M-0KW8-302**	**13M-1KW0-202**	**13H-0KW9-152**	**13M-1KW5-202**	**13H-1KW3-152**	**13M-2KW0-202**
Rated power P (kW)	**0.75**	**1.0**	**0.85**	**1.5**	**1.3**	**2.0**
General						
Rated voltage (V AC)			220			
Rated torque T_N (Nm)	2.39	4.77	5.39	7.16	8.34	9.55
Peak torque T_p (Nm)	7.17	14.31	16.17	21.48	25.02	28.65
Continuous stall torque T_0 (Nm)	2.39	4.77	5.39	7.16	8.34	9.55
Rated current I_N (A_{rms})	5.0	5.35	7	7.6	11	10.1
Peak current I_p (A_{rms})	15.0	16.1	21	22.8	33	30.3
Rated speed n_N (rpm)	3000	2000	1500	2000	1500	2000
Max. speed n_{max} (rpm)	6000	3000	3000	3000	3000	3000
Electrical						
Torque constant K_t (Nm/A)	0.48	0.94	0.882	0.98	0.88	0.98
Voltage constant K_e (V_{rms}/krpm)	31.25	60.63	53.8	62.36	53.5	62.36
Winding resistance R_L (ohms)	0.75	0.58	0.75	0.384	0.47	0.384
Winding inductance L_L (mH)	2.6	6.5	5.65	4.5	3.7	4.5
Mechanical						
Rotor inertia with brake J_M (kg·cm^2)	1.74	9.38	14.5	14.2	20.5	14.2
Rotor inertia without brake J_M (kg·cm^2)	1.72	7.5	12.5	12.32	18.5	12.32
Number of motor poles p			10			
Weight with brake W (kg)	3.3	9.8	8.81	11.5	10.44	11.5
Weight without brake W (kg)	2.7	7.0	6.15	9.2	7.82	9.2
Max. radial load[1] (N)	392	686	686	686	686	686
Max. axial load (N)	147	343	343	343	343	343
Environmental						
Insulation class			F			
Operating temperature (°C)			-10...40			
Operating humidity (%)			20...80			
Storage temperature (°C)			-20...60			
Brake data[2]						
Rated voltage (V DC ± 10%)			24			
Current (A)	0.33	0.81	0.81	0.81	0.81	0.81
Input power (W)	8	19.5	19.5	19.5	19.5	19.5
Static friction torque (Nm)	2.5	17	17	17	17	17
Armature release time (ms)	40	80	80	80	80	80
Armature pull-in time (ms)	60	120	120	120	120	120

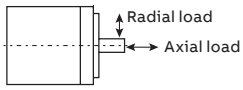
[1] Radial force applied at the end of motor shaft.
[2] The brake is prohibited to be used as a braking device during motor running.
[3] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



Technical data (400 V)

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)	6000	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)	503	503	503	503	686
Max. axial load (N)	196	196	196	196	196
Environmental					
Insulation class			F		
Operating temperature (°C)			-10 ... 40		
Operating humidity (%)			20 ... 80		
Storage temperature (°C)			-20 ... 60		
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

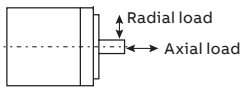
[1)] Radial force applied at the end of motor shaft.
[2)] The brake is prohibited to be used as a braking device during motor running.
[3)] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



Technical data (400 V)

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	1149	1149	1149
Max. axial load (N)	196	196	392	392	392
Environmental					
Insulation class			F		
Operating temperature (°C)			-10 ... 40		
Operating humidity (%)			20 ... 80		
Storage temperature (°C)			-20 ... 60		
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

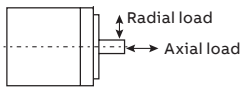
[1)] Radial force applied at the end of motor shaft.
[2)] The brake is prohibited to be used as a braking device during motor running.
[3)] The permissible load on the shaft is as below. When the motor is running, the radial load and axial load are not allowed to exceed the values in the table.



Technical data (400 V)

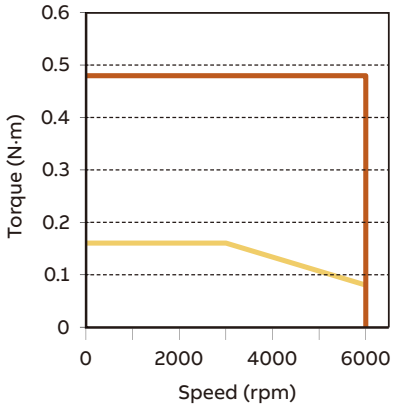
Flange size	180	180	180	180
Motor model (DSM...)	**18H-2KW9-154**	**18H-4KW4-154**	**18H-5KW5-154**	**18H-7KW5-154**
Rated power P (kW)	**2.9**	**4.4**	**5.5**	**7.5**
General				
Rated voltage (V AC)		380		
Rated torque T_N (Nm)	18.6	28.4	35	48
Peak torque T_p (Nm)	46.5	71	87.5	120
Continuous stall 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)	1486	1486	1625	1625
Max. axial load (N)	490	490	588	588
Environmental				
Insulation class		F		
Operating temperature (°C)		-10 ... 40		
Operating humidity (%)		20 ... 80		
Storage temperature (°C)		-20 ... 60		
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.

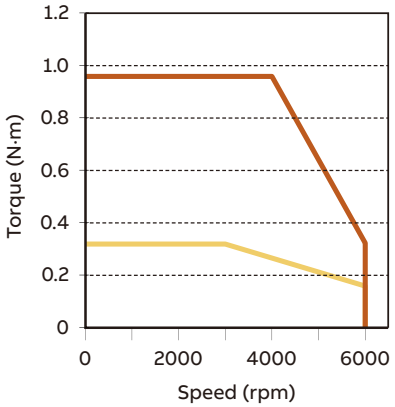


T-N curves of the 220 V DSM motors

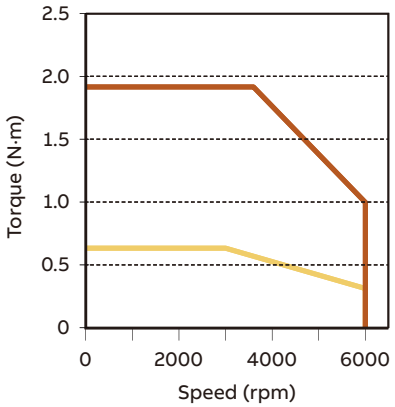
DSM04L-0KWA-302
0.05 kW



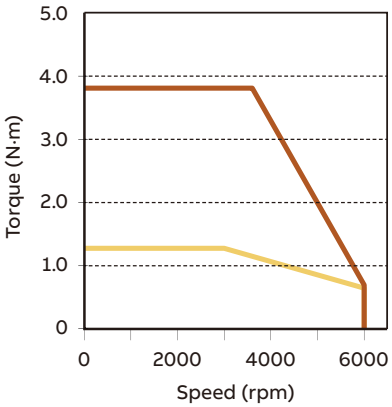
DSM04L-0KW1-302
0.1 kW



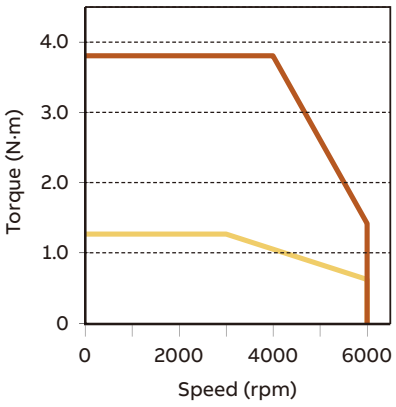
DSM06L-0KW2-302
0.2 kW



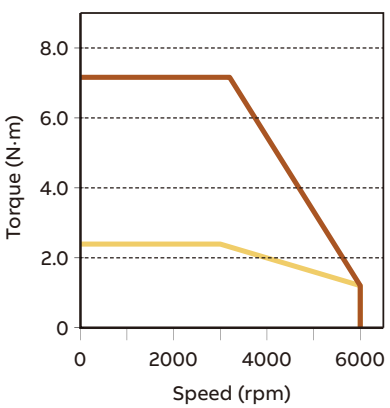
DSM06L-0KW4-302
0.4 kW



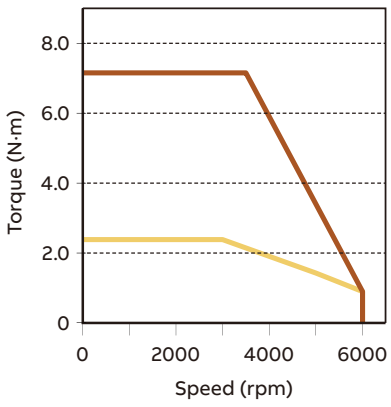
DSM06M-0KW4-302
0.4 kW



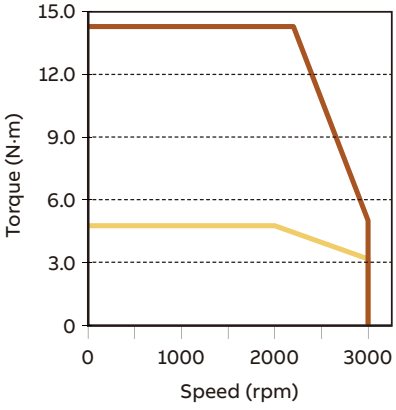
DSM08L-0KW8-302
0.75 kW



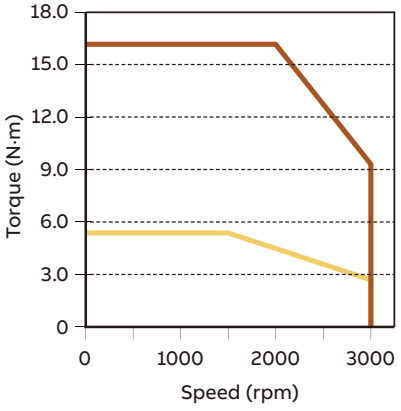
DSM08M-0KW8-302
0.75 kW



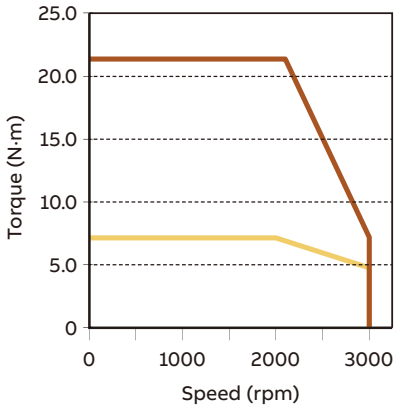
DSM13M-1KW0-202
1.0 kW



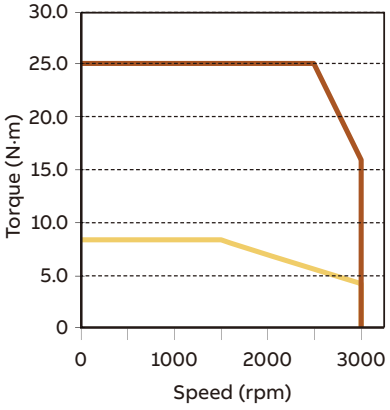
DSM13H-0KW9-152
0.85 kW



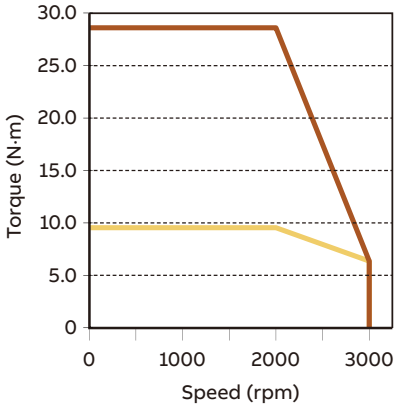
DSM13M-1KW5-202
1.5 kW



DSM13H-1KW3-152
1.3 kW



DSM13M-2KW0-202
2.0 kW

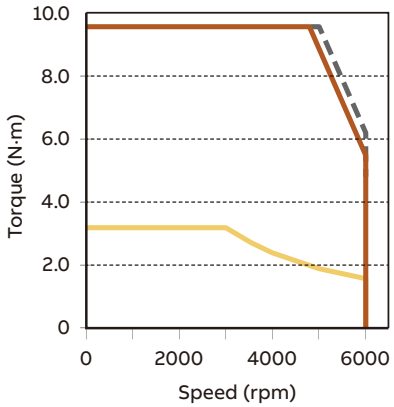


Continuous torque - speed curve (220 V)

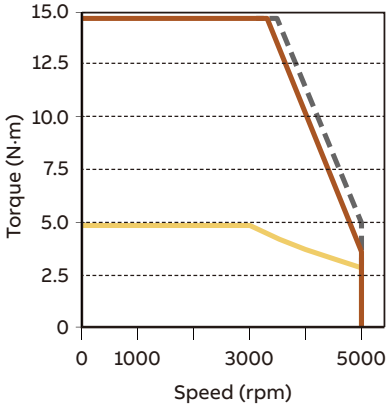
Max. torque - speed curve (220 V)

T-N curves of the 400 V DSM motors

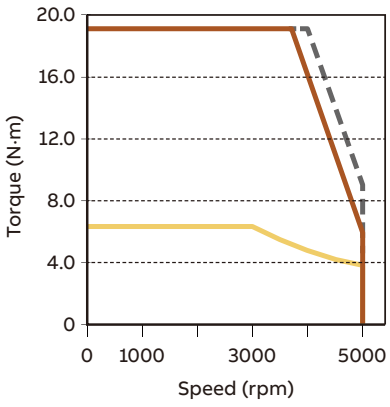
DSM10L-1KW0-304
1.0 kW



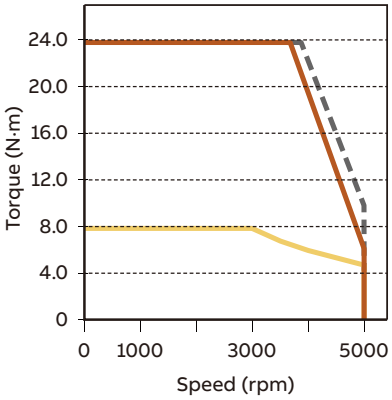
DSM10L-1KW5-304
1.5 kW



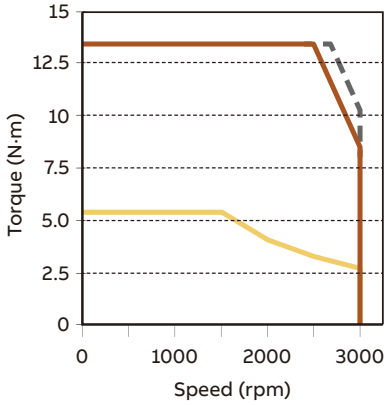
DSM10L-2KW0-304
2.0 kW



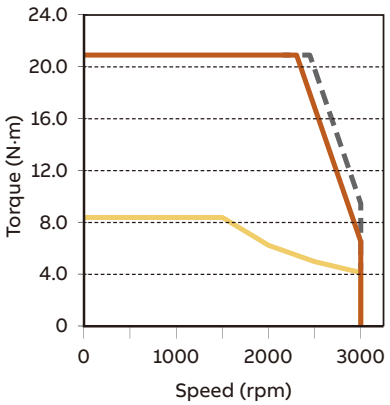
DSM10L-2KW5-304
2.5 kW



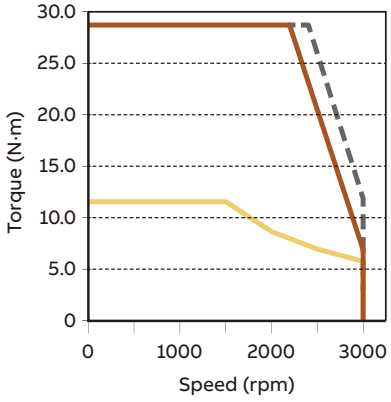
DSM13H-0KW9-154
0.85 kW



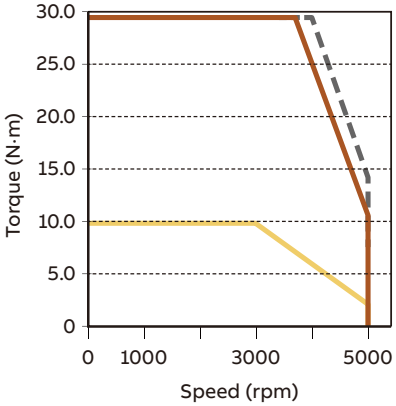
DSM13H-1KW3-154
1.3 kW



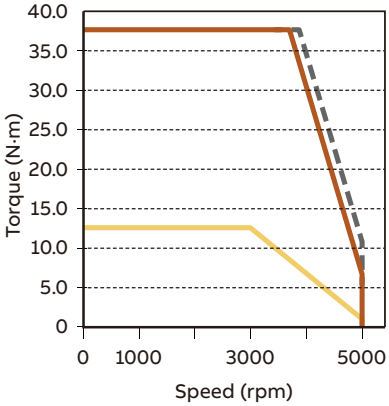
DSM13H-1KW8-154
1.8 kW



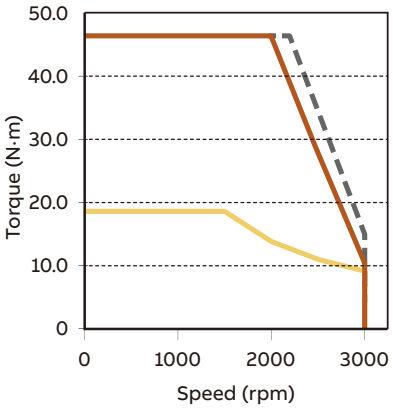
DSM13L-3KW0-304
3.0 kW



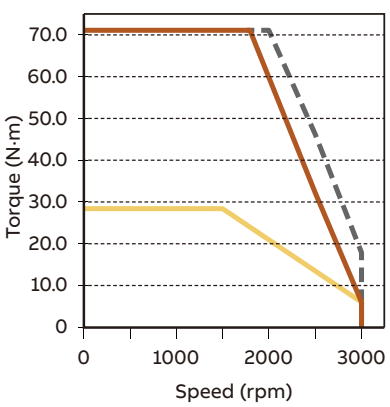
DSM13L-4KW0-304
4.0 kW



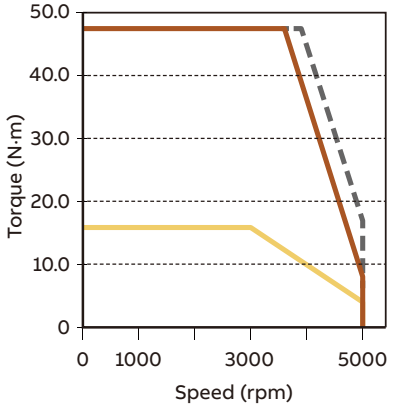
DSM18H-2KW9-154
2.9 kW



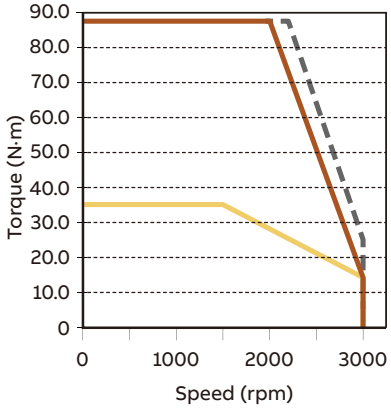
DSM18H-4KW4-154
4.4 kW



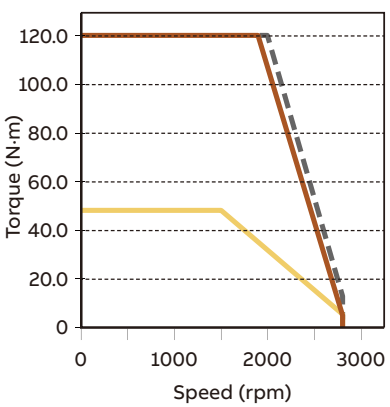
DSM13L-5KW0-304
5.0 kW



DSM18H-5KW5-154
5.5 kW



DSM18H-7KW5-154
7.5 kW



Continuous torque - speed curve (380 V)

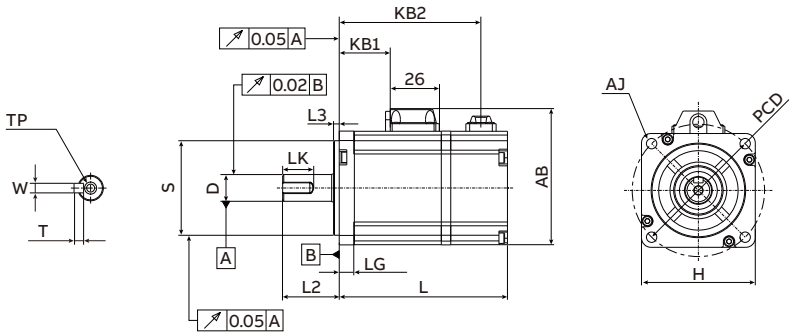
Max. torque - speed curve (380 V)

Max. torque - speed curve (400 V)

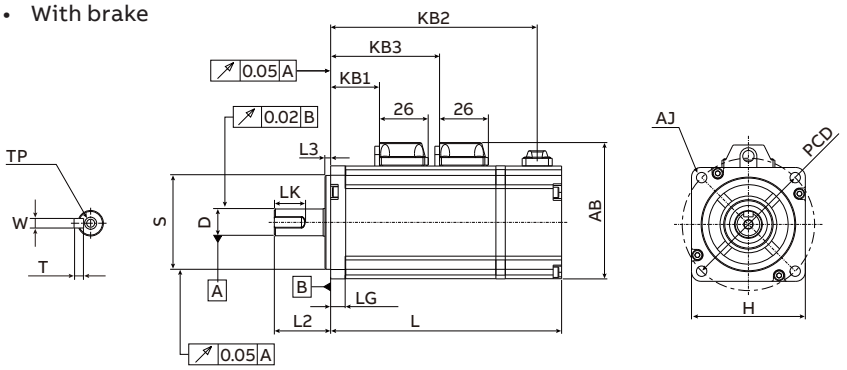
Outline dimensions (220 V)

Flange size 40 ~ 80

- Without brake



- With brake



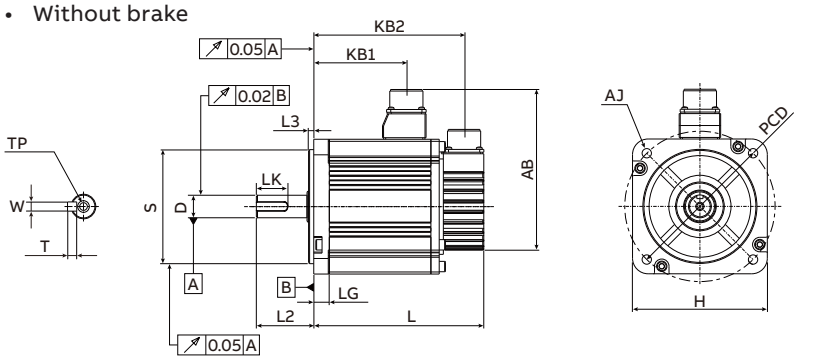
Unit: mm

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) [1]	78.5	95	89/86	109/106	122/120	114/112	124/122
KB1 (without brake)	17	33.5	27	47	60	48	58
KB2 (without brake) [1]	70	86.5	79/74	99/96	112/110	103/101	113/111
L (with brake) [1]	107	123.5	123/120	143/140	156/145	147.5/145.5	157/155
KB1 (with brake)	17	33.5	26	47	61	51	58
KB2 (with brake) [1]	98.5	115	113/110	133/130	146/144	136/134	144
KB3 (with brake) [2]	46	62.5	58	78	92	80	87
L2	25	25	30	30	30	35	35
D	$8\,^{0}_{-0.009}$	$8\,^{0}_{-0.009}$	$14\,^{0}_{-0.011}$	$14\,^{0}_{-0.011}$	$14\,^{0}_{-0.011}$	$19\,^{0}_{-0.013}$	$19\,^{0}_{-0.013}$
LG	5	5	6.2	6.2	6.2	8.3	9
LK	16	16	16.5	16.5	16.5	25	25
T	3	3	5	5	5	6	6
W	3	3	5	5	5	6	6
TP	M3 × 8	M3 × 8	M5 × 12	M5 × 12	M5 × 12	M6 × 15	M6 × 12
H [3]	40	40	60	60	60	80	80
AB	32	32	42	42	42	52	52.5
L3	2.5	2.5	3	3	3	3	3
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 -Φ7	4 -Φ7
PCD	Φ46	Φ46	Φ70	Φ70	Φ70	Φ90	Φ90

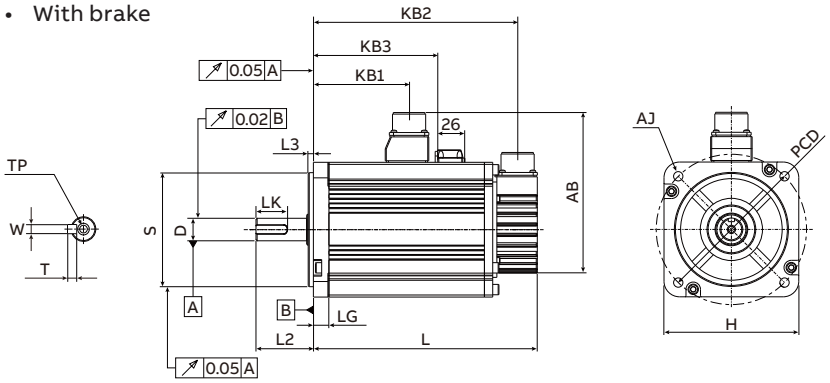
[1] For different motor types with the same rated power, the dimension may different because of the encoder configuration (20 bits or 23 bits). For the different ones, the data before "/" is the dimension of the motor with a 20 bits encoder, and the data after "/" is the dimension of the motor with a 23 bits encoder.
[2] The data is available for the motor with brake only.
[3] 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.

Fange size 130

- Without brake



- With brake



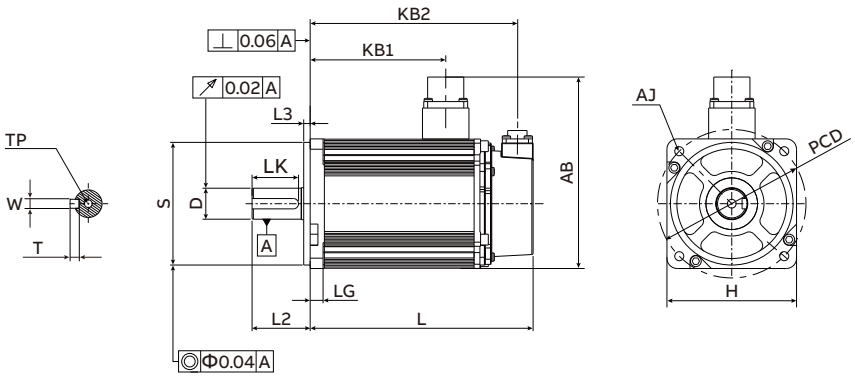
Unit: mm

DSM...	13M-1KW0-202	13H-0KW9-152	13M-1KW5-202	13H-1KW3-152	13M-2KW0-202
L (without brake)	164	140	186	160	186
KB1 (without brake)	93.5	66	110	84	110
KB2 (without brake)	145	121	167	141	167
L (with brake)	216	191	236	209	236
KB1 (with brake)	92	67	112	85	112
KB2 (with brake)	197	172	217	190	217
KB3 (with brake) [1]	120	95	140	95	140
L2	55	55	55	55	55
D	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$	$22\ ^{0}_{-0.013}$
LG	14	14	14	14	14
LK	36	36	36	36	36
T	7	7	7	7	7
W	8	8	8	8	8
TP	M6 × 15	M6 × 15	M6 × 15	M6 × 15	M6 × 15
H [2]	130	130	130	130	130
AB	114	114	114	114	114
L3	5	5	5	5	5
S	$110\ ^{0}_{-0.035}$	$110\ ^{0}_{-0.035}$	$110\ ^{0}_{-0.035}$	$110\ ^{0}_{-0.035}$	$110\ ^{0}_{-0.035}$
AJ	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9	4 -Φ9
PCD	Φ145	Φ145	Φ145	Φ145	Φ145

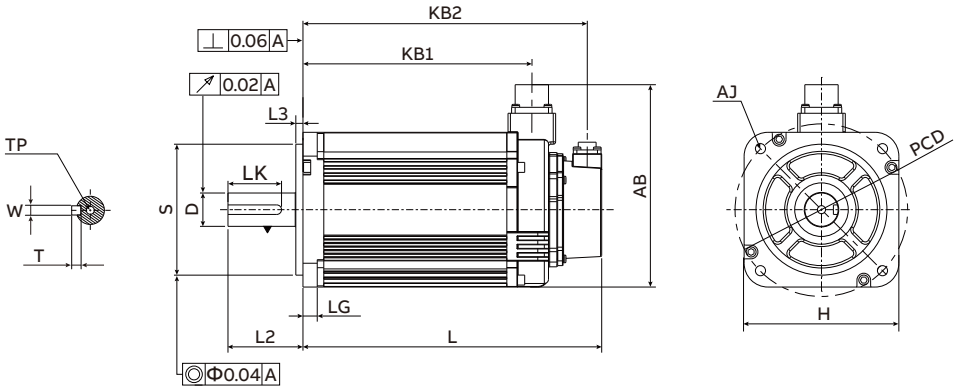
[1] The data is available for the motor with brake only.
[2] There are tolerances in the motor outline dimensions. Do not mount the motors side by side. To ensure the hot dissipation, you are recommended to reserve at least 100 mm between two motors, otherwise, the motors must be derated. Contact ABB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

Outline dimensions (400 V)

Flange size 100



Flange size 130 (low inertia)

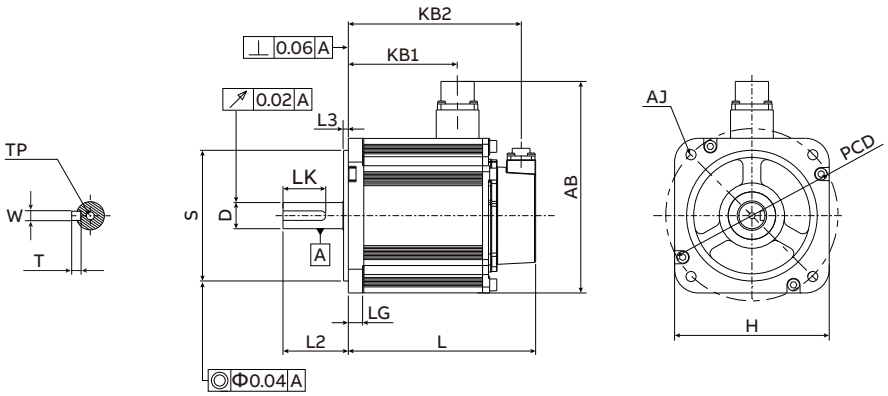


Unit: mm

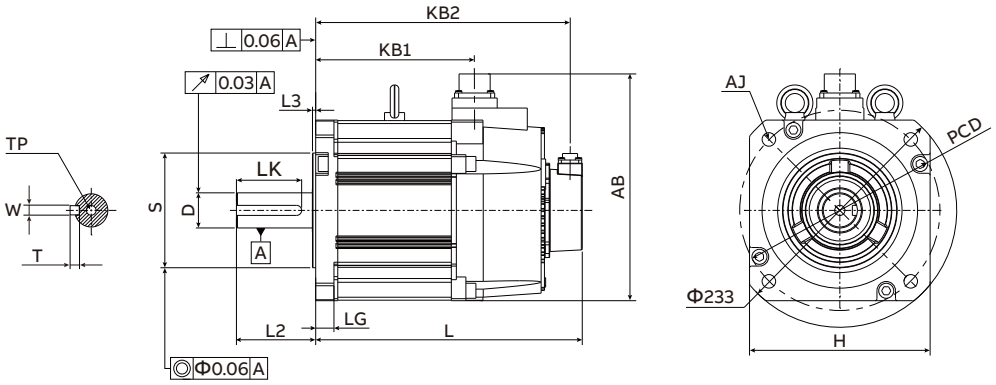
DSM...	10L-1KW0-304	10L-1KW5-304	10L-2KW0-304	10L-2KW5-304	13L-3KW0-304	13L-4KW0-304	13L-5KW0-304
L (without brake)	148.7	172.7	202.7	228.7	209	251	281
KB1 (without brake)	81	105	135	161	150.3	192.3	222.3
KB2 (without brake)	136.5	160.5	190.5	216.5	196.8	238.8	268.8
L (with brake)	188.7	212.7	242.7	268.7	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.

Flange size 130 (high inertia)



Flange size 180



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.

Cable overview

Technical data

Cable type	Model	Fitted motor	Number of core wires × AWG	Cable outer diameter D (mm)	Min. bending radius	Screening factor	Drive side connector	Motor side connector
For 220 V servo motors								
Power cable (without brake)	CBL-PxxA-07-1S0	0.05 kW ~ 0.75 kW	4 × 18 AWG	Φ(6.7±0.2)	10D	-	-	CBL-POW-AMP-PW08
	CBL-PxxM-13-1S0	1.0 kW	4 × 16 AWG	Φ(8.6±0.2)		-	-	CBL-POW-MLC-PB13
	CBL-PxxM-20-2S0	0.85 kW 1.3 kW ~ 2.0 kW	4 × 14 AWG	Φ(8.9±0.2)		-	-	
Power cable (with brake)	CBL-CxxA-73-1S0	0.05 kW ~ 0.75 kW	4 × 18 AWG + 2 × 20 AWG	Φ(8.5±0.2)	10D	-	-	CBL-POW-AMP-PB08
	CBL-CxxM-35-1S0	1.0 kW	4 × 16 AWG + 2 × 18 AWG	Φ(9.8±0.2)		-	-	CBL-POW-MLC-PB13
	CBL-CxxM-25-2S0	0.85 kW 1.3 kW ~ 2.0 kW	4 × 14 AWG + 2 × 18 AWG	Φ(11.4±0.3)		-	-	
Encoder cable	CBL-FxxA-S1-3S0	0.05 kW ~ 0.75 kW	6 × 24 AWG + 2 × 22 AWG	Φ(7.1±0.2)	7D	85%	CNS-ENC-10	CBL-ENC-AMP-08
	CBL-FxxA-S2-3S0							
	CBL-FxxM-S1-3S0	0.85 kW ~ 2.0 kW						CBL-ENC-MLC-13
	CBL-FxxM-S2-3S0							
For 400 V servo motors								
Power cable (without brake)	CBL-PxxM-15-1S0	0.85 kW ~ 2.0 kW	4 × 16 AWG	Φ(7.5±0.3)	7.5D	-	-	CBL-POW-MLC-PB10
	CBL-PxxM-B5-1S0	2.5 kW 3.0 kW ~ 4.0 kW	4 × 14 AWG	Φ(8.6±0.3)		-	-	CBL-POW-MLC-PB10
	CBL-PxxM-85-1S0	2.9 kW	4 × 14 AWG	Φ(8.6±0.3)		-	-	CBL-POW-MLC-PB18
	CBL-PxxM-44-2S0	5.0 kW	4 × 12 AWG	Φ(11.7±0.5)		-	-	CBL-POW-MLC-PB10
	CBL-PxxM-84-2S0	4.4 kW 5.5 kW ~ 7.5 kW	4 × 12 AWG	Φ(11.7±0.5)		-	-	CBL-POW-MLC-PB18
Power cable (with brake)	CBL-CxxM-55-1S0	0.85 kW ~ 2.0 kW	4 × 16 AWG + 2 × 21 AWG	Φ(9±0.4)	7.5D	-	-	CBL-POW-MLC-PB10
	CBL-CxxM-5B-1S0	2.5 kW 3.0 kW ~ 4.0 kW	4 × 14 AWG + 2 × 21 AWG	Φ(10±0.4)		-	-	CBL-POW-MLC-PB10
	CBL-CxxM-58-1S0	2.9 kW	4 × 14 AWG + 2 × 21 AWG	Φ(10±0.4)		-	-	CBL-POW-MLC-PB18
	CBL-CxxM-54-2S0	5.0 kW	4 × 12 AWG + 2 × 21 AWG	Φ(12.6±0.5)		-	-	CBL-POW-MLC-PB10
	CBL-CxxM-48-2S0	4.4 kW 5.5 kW ~ 7.5 kW	4 × 12 AWG + 2 × 21 AWG	Φ(12.6±0.5)		-	-	CBL-POW-MLC-PB18
Encoder cable	CBL-FxxM-M1-3S0	0.85 kW ~ 7.5 kW	4 × 24 AWG + 2 × 22 AWG	Φ(6.95±0.3)	7.5D	85%	CNS-ENC-10	CBL-ENC-MLC-10
	CBL-FxxM-M2-3S0							

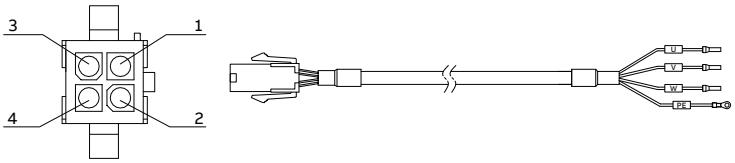
[1] The sign "xx" in the cable model represents the length of the preassembled cable: 03 = 3 m, 05 = 5 m, 10 = 10 m, 15 = 15 m, 20 = 20 m, 30 = 30 m. Please note that, the cable with the length of 30 m is not a standard part. Please contact ABB if required.

[2] If you want to make a muti-turn absolute encoder cable by yourself, besides the connectors, you need to order a battery case (CBL-MTB-CAS-01) and prepare an appropriate battery (recommended specifications: ER14505 AA 3.6 V 2700 mAh).

Signal definition

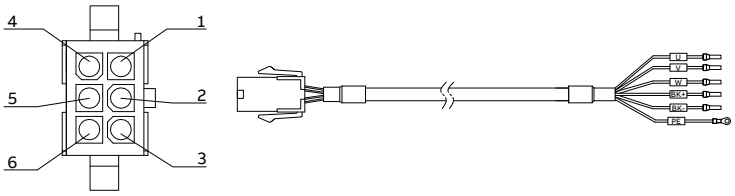
Power cable, CBL-PxxA-07-1S0
For 220 V DSM motors of 0.05 kW to 0.75 kW, without brake

Motor side	Wire color	Signal	Drive side
1	Red	U	Pin type
2	White	V	Pin type
3	Black	W	Pin type
4	Yellow-green	PE	Ring type



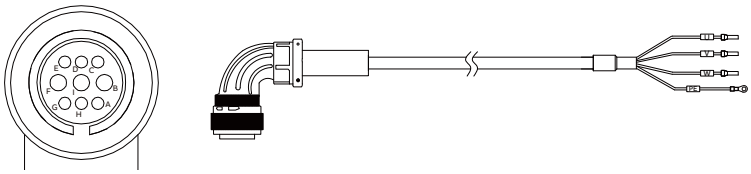
Power cable, CBL-CxxA-73-1S0
For 220 V DSM motors of 0.05 kW to 0.75 kW, with brake

Motor side	Wire color	Signal	Drive side
1	Red	U	Pin type
2	White	V	Pin type
4	Black	W	Pin type
5	Yellow-green	PE	Ring type
3	Blue	BR+	Pin type
6	Brown	BR-	Pin type



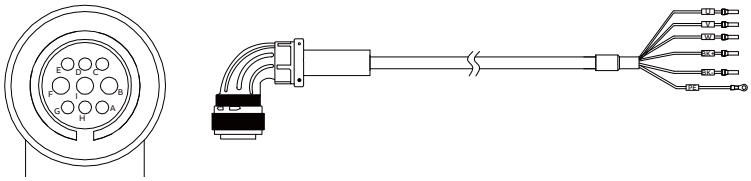
Power cable, CBL-PxxM-13-1S0
For 220 V DSM motors of 1.0 kW, without brake

Motor side	Wire color	Signal	Drive side
F	Red	U	Pin type
I	White	V	Pin type
B	Black	W	Pin type
E	Yellow-green	PE	Ring type



Power cable, CBL-CxxM-35-1S0
For 220 V DSM motors of 1.0 kW, with brake

Motor side	Wire color	Signal	Drive side
F	Red	U	Pin type
I	White	V	Pin type
B	Black	W	Pin type
E	Yellow-green	PE	Ring type
C	Blue	BR+	Pin type
D	Brown	BR-	Pin type

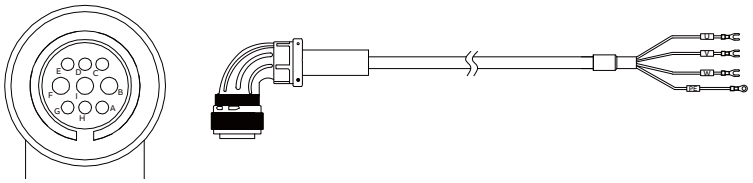


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Power cable, CBL-PxxM-20-2S0

For 220 V DSM motors of 0.85 kW, 1.3 kW to 2.0 kW, without brake

Motor side	Wire color	Signal	Drive side
F	Red	U	U type
I	White	V	U type
B	Black	W	U type
E	Yellow-green	PE	Ring type

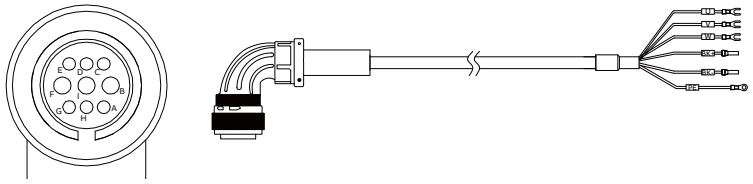


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Power cable, CBL-CxxM-25-2S0

For 220 V DSM motors of 0.85 kW, 1.3 kW to 2.0 kW, with brake

Motor side	Wire color	Signal	Drive side
F	Red	U	U type
I	White	V	U type
B	Black	W	U type
E	Yellow-green	PE	Ring type
C	Blue	BR+	Pin type
D	Brown	BR-	Pin type

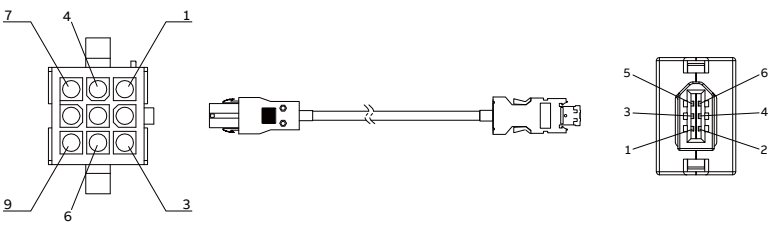


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Encoder cable, single-turn, CBL-FxxA-S1-3S0

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

Motor side	Wire color	Signal	Drive side
1	Blue	SD+	5
2	Blue-black	SD-	6
6	Red	VCC	1
7	Black	GND	2
8	Shield	SHIELD	Shell

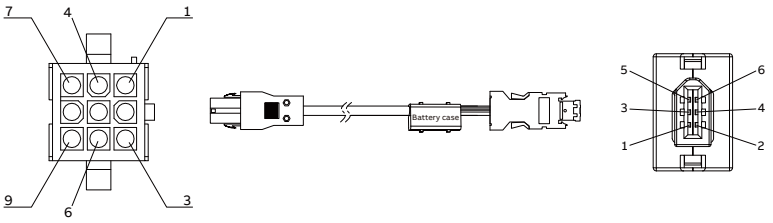


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Encoder cable, multi-turn, CBL-FxxA-S2-3S0

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
1	Blue	PD+	5
2	Blue-black	PD-	6
6	Red	+5V	1
7	Black + battery black	0V	2
4	Green + battery red	BAT+	NA
8	Shield	SHIELD	Shell

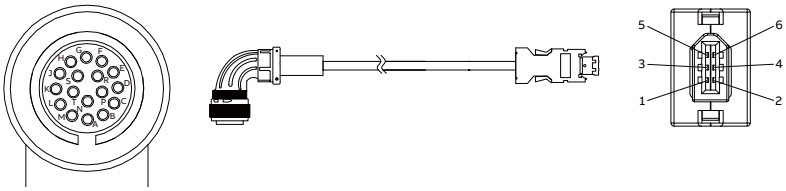


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Encoder cable, CBL-FxxM-S1-3S0

For 220 V DSM motors of 0.85 kW to 2.0 kW, with the single-turn absolute encoder

Motor side	Wire color	Signal	Drive side
E	Blue	SD+	5
F	Blue-black	SD-	6
H	Red	VCC	1
G	Black	GND	2
J	Shield	SHIELD	Shell

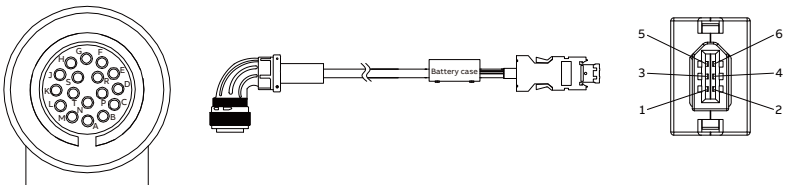


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Encoder cable, CBL-FxxM-S2-3S0

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

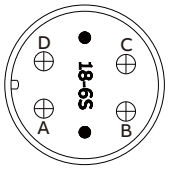
Motor side	Wire color	Signal	Drive side
E	Blue	PD+	5
F	Blue-black	PD-	6
H	Red	+5V	1
G	Black + battery black	0V	2
T	Green + battery red	BAT+	NA
J	Shield	SHIELD	Shell

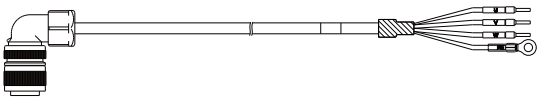


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Power cable, CBL-PxxM-15-1S0
For 400 V DSM motors of 0.85 kW to 2.0 kW, without brake

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

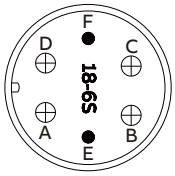


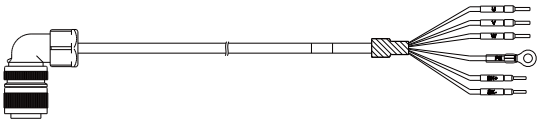


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Power cable, CBL-CxxM-55-1S0
For 400 V DSM motors of 0.85 kW to 2.0 kW, with brake

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
E	Black	BR+	Pin type
F	Black	BR-	Pin type

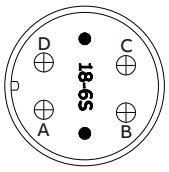


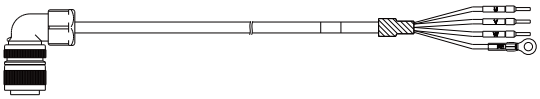


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Power cable, CBL-PxxM-B5-1S0
For 400 V DSM motors of 2.5 kW, 3.0 kW to 4.0 kW, without brake

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

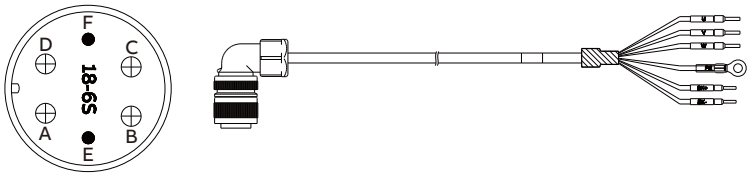




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Power cable, CBL-CxxM-5B-1S0
For 400 V DSM motors of 2.5 kW, 3.0 kW to 4.0 kW, with brake

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
E	Black	BR+	Pin type
F	Black	BR-	Pin type



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Power cable, CBL-PxxM-85-1S0
For 400 V DSM motors of 2.9 kW, without brake

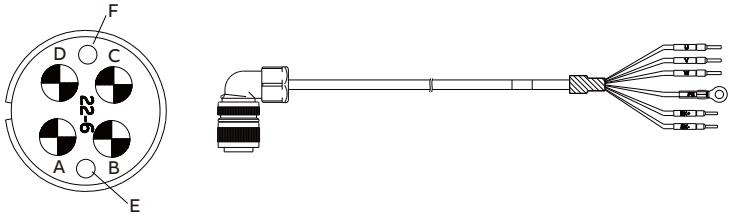
Motor side	Wire color	Signal	Drive side
A	Black	U	Pin type
B	Black	V	Pin type
C	Black	W	Pin type
D	Yellow-green	PE	Ring type



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Power cable, CBL-CxxM-58-1S0
For 400 V DSM motors of 2.9 kW, with 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
E	Black	BR+	Pin type
F	Black	BR-	Pin type

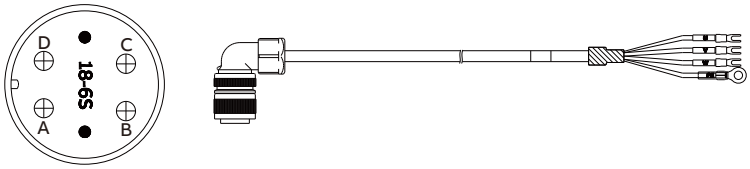


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Power cable, CBL-PxxM-44-2S0

For 400 V DSM motors of 5.0 kW, without brake

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

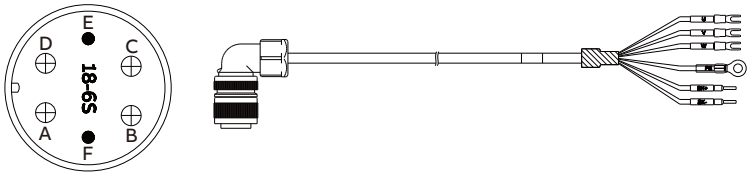


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Power cable, CBL-CxxM-54-2S0

For 400 V DSM motors of 5.0 kW, with brake

Motor side	Wire color	Signal	Drive side
A	Black	U	U type
B	Black	V	U type
C	Black	W	U type
D	Yellow-green	PE	Ring type
E	Black	BR+	Pin type
F	Black	BR-	Pin type

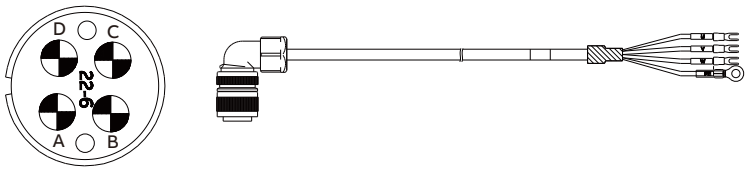


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Power cable, CBL-PxxM-84-2S0

For 400 V DSM motors of 4.4 kW, 5.5 kW to 7.5 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

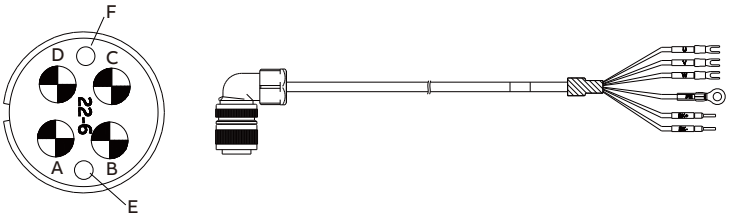


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Power cable, CBL-CxxM-48-2S0

For 400 V DSM motors of 4.4 kW, 5.5 kW to 7.5 kW, with 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
E	Black	BR+	Pin type
F	Black	BR-	Pin type

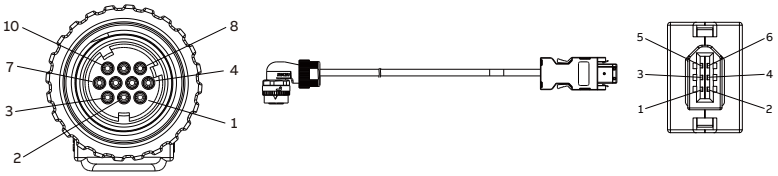


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Encoder cable, CBL-FxxM-M1-3S0

For 400 V DSM motors of 0.85 kW to 7.5 kW, with the single-turn absolute encoder

Motor side	Wire color	Signal	Drive side
6	Green	SD+	5
4	Yellow	SD-	6
7	Red	VCC	1
5	Black	GND	2
10	Shield	SHIELD	Shell

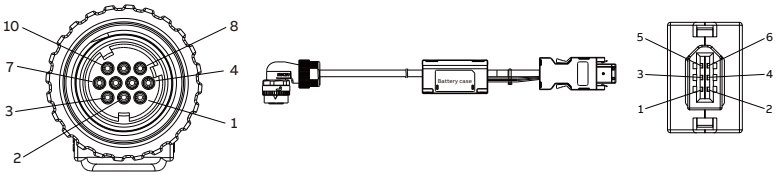


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Encoder cable, CBL-FxxM-M2-3S0

For 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
6	Green	SD+	5
4	Yellow	SD-	6
7	Red	VCC	1
5	Black	GND	2
3	Pink	BAT+	-
2	Blue	BAT-	-
10	Shield	SHIELD	Shell



Accessories

Cables and connectors

Item	Description	Packing specification	Model
IO cable (for E530-PT)			
	IO cable, preassembled, 0.5 m	1 piece per pack	OPT-IO44C-05
	IO cable, preassembled, 1 m	1 piece per pack	OPT-IO44C-10
IO adapter (for E530-PT)			
	IO signal terminal block	1 piece per pack	OPT-IO44A
IO cable connector (for E530-PT)			
	44-pin connector of the IO cable	10 pieces per pack	OPT-IO44N-10
Communication cable			
	Ethernet communication cable, CAT5e, shielded twisted pair, 0.3 m	1 piece per pack	OPT-RJ45-03
	Ethernet communication cable, CAT5e, shielded twisted pair, 0.5 m	1 piece per pack	OPT-RJ45-05
	Ethernet communication cable, CAT5e, shielded twisted pair, 1 m	1 piece per pack	OPT-RJ45-10
	Ethernet communication cable, CAT5e, shielded twisted pair, 2 m	1 piece per pack	OPT-RJ45-20
Power cable connector (motor side)			
	Power cable connector of the motor side, 4-pin plastic connector, fits for the 220 V DSM motors of 0.05 kW ~ 0.75 kW without brake	10 pieces per pack	CBL-POW-AMP-PW08
	Power cable connector of the motor side, 6-pin plastic connector, fits for the 220 V DSM motors of 0.05 kW ~ 0.75 kW with brake	10 pieces per pack	CBL-POW-AMP-PB08
	Power cable connector of the motor side, military connector, fits for the 220 V DSM motors of 0.85 kW ~ 2.0 kW with or without brake	1 piece per pack	CBL-POW-MLC-PB13
	Power cable connector of the motor side, military connector, fits for the 400 V DSM motors of 0.85 kW ~ 2.5 kW, 3.0 kW ~ 4.0 kW and 5.0 kW with or without brake	1 piece per pack	CBL-POW-MLC-PB10
	Power cable connector of the motor side, military connector, fits for the 400 V DSM motors of 2.9 kW, 4.4 kW and 5.5 kW ~ 7.5 kW with or without brake	1 piece per pack	CBL-POW-MLC-PB18

Item	Description	Packing specification	Model
Encoder cable connector (drive side)			
	Encoder cable connector of the drive side, 6-pin 1394 connector	10 pieces per pack	CNS-ENC-10
Encoder cable connector (motor side)			
	Encoder cable connector of the motor side, 9-pin plastic connector, fits for the 220 V DSM motors of 0.05 kW ~ 0.75 kW with single-turn absolute encoder	10 pieces per pack	CBL-ENC-AMP-08
	Encoder cable connector of the motor side, military connector, fits for the 220 V DSM motors of 0.85 kW ~ 2.0 kW motors with single-turn or multi-turn absolute encoder	1 piece per pack	CBL-ENC-MLC-13
	Encoder cable connector of the motor side, military connector, fits for the 400 V DSM motors of 0.85 kW ~ 7.5 kW motors with single-turn or multi-turn absolute encoder	1 piece per pack	CBL-ENC-MLC-10
Battery case			
	The battery case (without battery) fits for the multi-turn absolute cable of 220 V DSM motors	1 set per pack	CBL-MTB-CAS-01
	The battery case (without battery) fits for the multi-turn absolute cable of 400 V DSM motors	1 set per pack	CBL-MTB-CAS-02

Circuit breakers

Breaker type	Fits for E530-PT0S-/E530-EC0S-						Fits for E530-EC0S-				
	0KW2-1	0KW4-1	0KW8-1	1KW0-1	1KW5-2	2KW0-2	1KW5-4	2KW0-4	4KW0-4	5KW0-4	7KW5-4
S201M-B6NA	•	•									
S201M-B10NA			•	•							
S201M-B16NA					• (1-phase)	• (1-phase)					
S203M-B10					• (3-phase)	• (3-phase)					
S803S-B10							•	•			
S803S-B16									•		
S803S-B20										•	
S803S-B32											•

The recommended circuit breakers are ABB circuit breakers.

EMC line filters

Filter type	Fits for E530-PT0S-/E530-EC0S-						Fits for E530-EC0S-				
	0KW2-1	0KW4-1	0KW8-1	1KW0-1	1KW5-2	2KW0-2	1KW5-4	2KW0-4	4KW0-4	5KW0-4	7KW5-4
FS43849-6-06	•	•									
FN2070-10-06			•	•							
FS43849-16-06-1					• (1-phase)	• (1-phase)					
FS43849-16-44					• (3-phase)	• (3-phase)					
FN3287-10-44-C28-R65							•	•			
FN3287-16-44-C33-R65									•		
FN3287-25-33-C33-R65										•	•

The recommended line filters are SCHAFFNER line filters.

External braking resistors

When the energy regenerated by the motor is higher than the energy consumed by the built-in braking resistor, an external braking resistor is needed. The recommended minimum external braking resistors are as follows. Please choose the appropriate external braking resistor based on your actual requirements and set the relevant parameters correctly.

Drive model	Built-in braking resistor			External braking resistor	Bus capacitor storage capacity (J)
	Resistance (Ω)	Power (W)	Processable power (W)	Min. resistance (Ω)	
220 V servo drives					
E530-xx0S-0KW2-1	-	-	-	50	12
E530-xx0S-0KW4-1	-	-	-	50	12
E530-xx0S-0KW8-1	40	50	15	40	24
E530-xx0S-1KW0-1	40	50	15	40	24
E530-xx0S-1KW5-2	12	60	18	12	30
E530-xx0S-2KW0-2	12	60	18	12	30
400 V servo drives					
E530-EC0S-1KW5-4	100	80	24	80	10
E530-EC0S-2KW0-4	100	80	24	80	12
E530-EC0S-4KW0-4	50	100	30	40	23
E530-EC0S-5KW0-4	35	150	45	35	28
E530-EC0S-7KW5-4	35	150	45	35	41

The "xx" sign in the drive model stands for the drive type: PT = pulse train input variant, EC = EtherCAT variant. The 400 V drives support the EtherCAT variant only

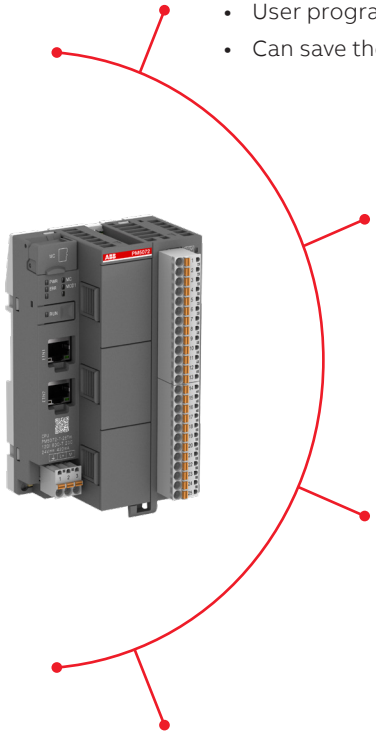
When using the external braking resistor, keep the circuit between terminals R and C open (remove the short-circuit stick between terminals R and C), and connect the braking resistor to terminals P and C.



The high-quality choice
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)

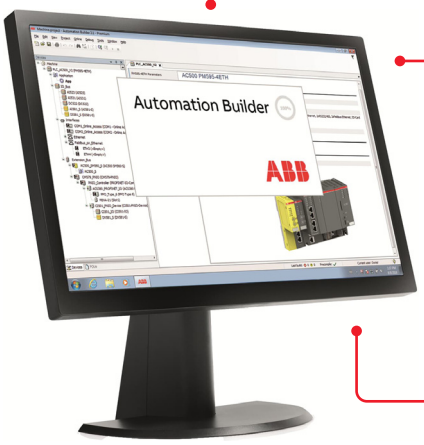
ABB Ability™ Automation builder

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.

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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 (PTO variant) technical data

Product kit	PM5032 MC-KIT	PM5052 MC-KIT	PM5072 MC-KIT
CPU	PM5032	PM5052	PM5072
Terminal block	TA5212-TSPF	TA5212-TSPF	TA5212-TSPF
Motion library (PS5611) license	Paper document	Paper document	Paper document
Voltage			
Supply voltage	24 V DC	24 V DC	24 V DC
CPU performance			
Total program memory	2 MB	4 MB	8 MB
User program memory	512 KB	768 KB	1 MB
VAR retain persistent	16 KB	16 KB	36 KB
Register variable	16 KB	16 KB	64 KB
Web Server program memory	1.5 MB	3 MB	7 MB
Cycle time for one instruction			
Binary/Word/Floating-point	0.02 µs/0.02 µs/0.6 µs		
Program execution			
Min. cycle time configurable for cyclical task	5 ms	2 ms	1 ms
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	2 high-speed 200 kHz		
Communication and commissioning			
Ethernet interface	1	1	2
EtherCAT	no	no	no
OPC UA	yes	yes	yes
Number of free tags	125	250	1000
Number of connections	5	5	10
Min. sampling rate (limit)	1000 ms	1000 ms	1000 ms
Web Server	yes	yes	yes
EtherNet/IP	no	no	no
Communication methods	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	2	3	3
Motion function			
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		

AC500-eCo Motion PLC (EtherCAT variant) technical data

Product kit	PM5072 MC-KIT-E	PM5082 MC-KIT-E	PM5072 MC-KIT-EIP	PM5082 MC-KIT-EIP
CPU	PM5072	PM5082	PM5072	PM5082
Terminal block	TA5212-TSPF	TA5212-TSPF	TA5212-TSPF	TA5212-TSPF
Motion library (PS5611) license	Paper document	Paper document	Paper document	Paper document
Voltage				
Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
CPU performance				
Total program memory	8 MB	8 MB	8 MB	8 MB
User program memory	1 MB	1 MB	1 MB	1 MB
VAR retain persistent	36 KB	36 KB	36 KB	36 KB
Register variable	64 KB	64 KB	64 KB	64 KB
Web Server program memory	7 MB	7 MB	7 MB	7 MB
Cycle time for one instruction				
Binary/Word/Floating-point	0.02 µs/0.02 µs/0.6 µs			
Program execution				
Min. cycle time configurable for cyclical task	1 ms	1 ms	1 ms	1 ms
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	2
EtherCAT (by ETH1)	yes	yes	yes	yes
EtherCAT performance[1)]	4 axes@2ms 8 axes@4ms	8 axes@2ms 16 axes@4ms	4 axes@2ms 8 axes@4ms	8 axes@2ms 16 axes@4ms
OPC UA	yes	yes	yes	yes
Number of free tags	1000	1000	1000	1000
Number of connections	10	10	10	10
Min. sampling rate (limit)	1000 ms	1000 ms	1000 ms	1000 ms
Web Server	yes	yes	yes	yes
EtherNet/IP	no	no	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	3
Motion function				
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			

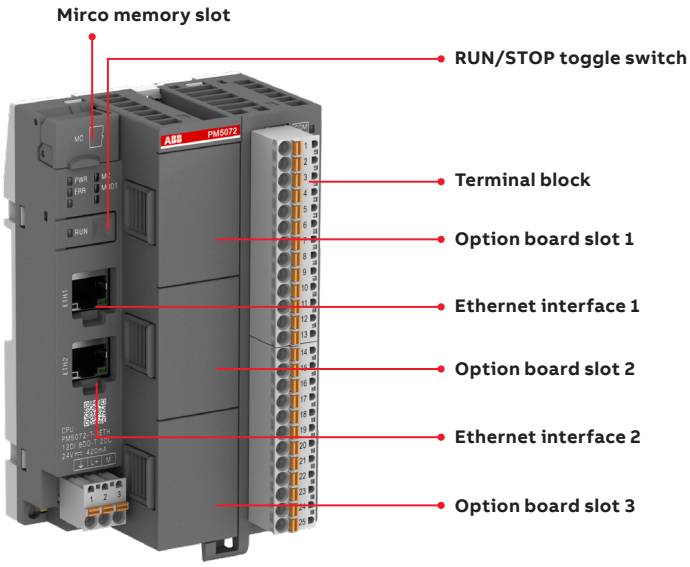
[1)] Test method: The data is calculated according to the PLC Load when execute the CAM function with one virtual axis and a different number of real axes without the user program. The PLC supports the mixed interpolation of pulse train output axis and EtherCAT axis at the same time. The supported axis 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	PM5670	PM5650	PM5670
CPU terminal base	TB-5610	TB-5610	TB-5610	TB-5610
EtherCAT communication module	CM579	CM579	CM579	CM579
Motion library (PS5611) license	Paper document	Paper document	Paper document	Paper document
Voltage				
Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
CPU performance				
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

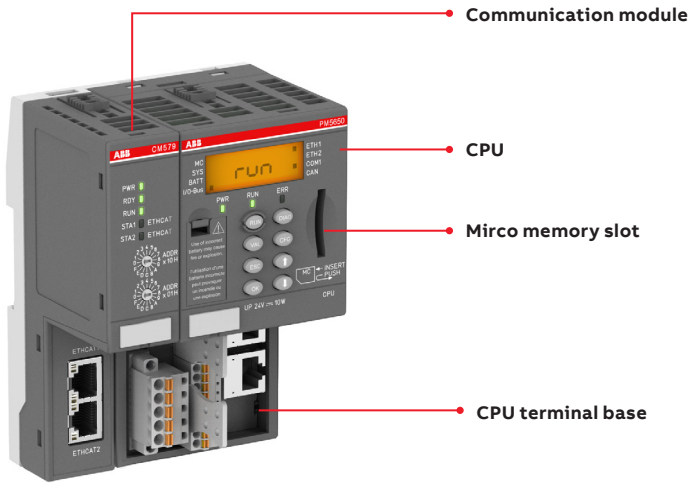
AC500-eCo Motion PLC



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	•	•	•	•	•
PM5072 MC-KIT-EIP	•	•	•	•	•
PM5082 MC-KIT-EIP	•	•	•	•	•

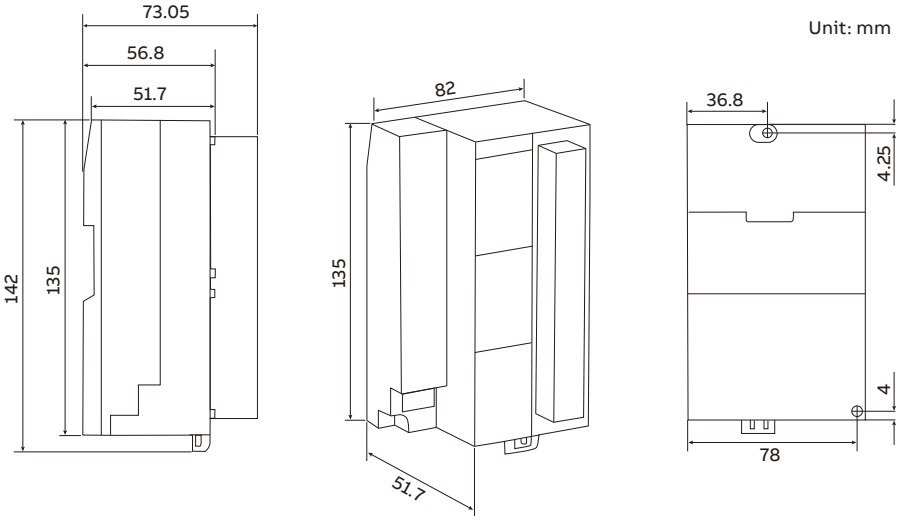
AC500 Motion PLC



Dimensions

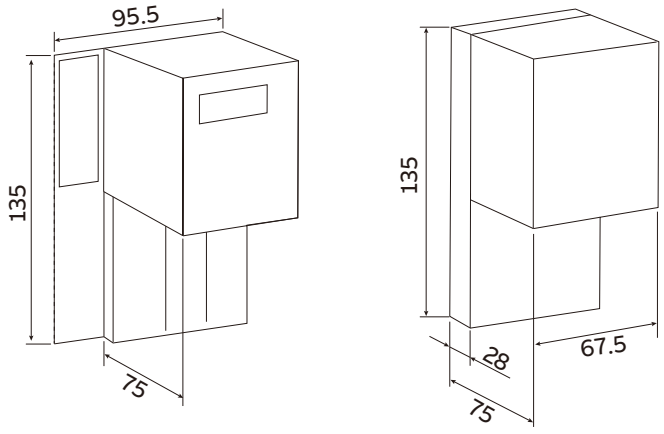
AC500-eCo Motion PLC

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

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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

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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

E530 servo system is compatible with the wide ABB product offering



CP600

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.



AC500

ABB’s powerful 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.



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, power plants, cement, pulp and paper, material handling, 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.



ACS180

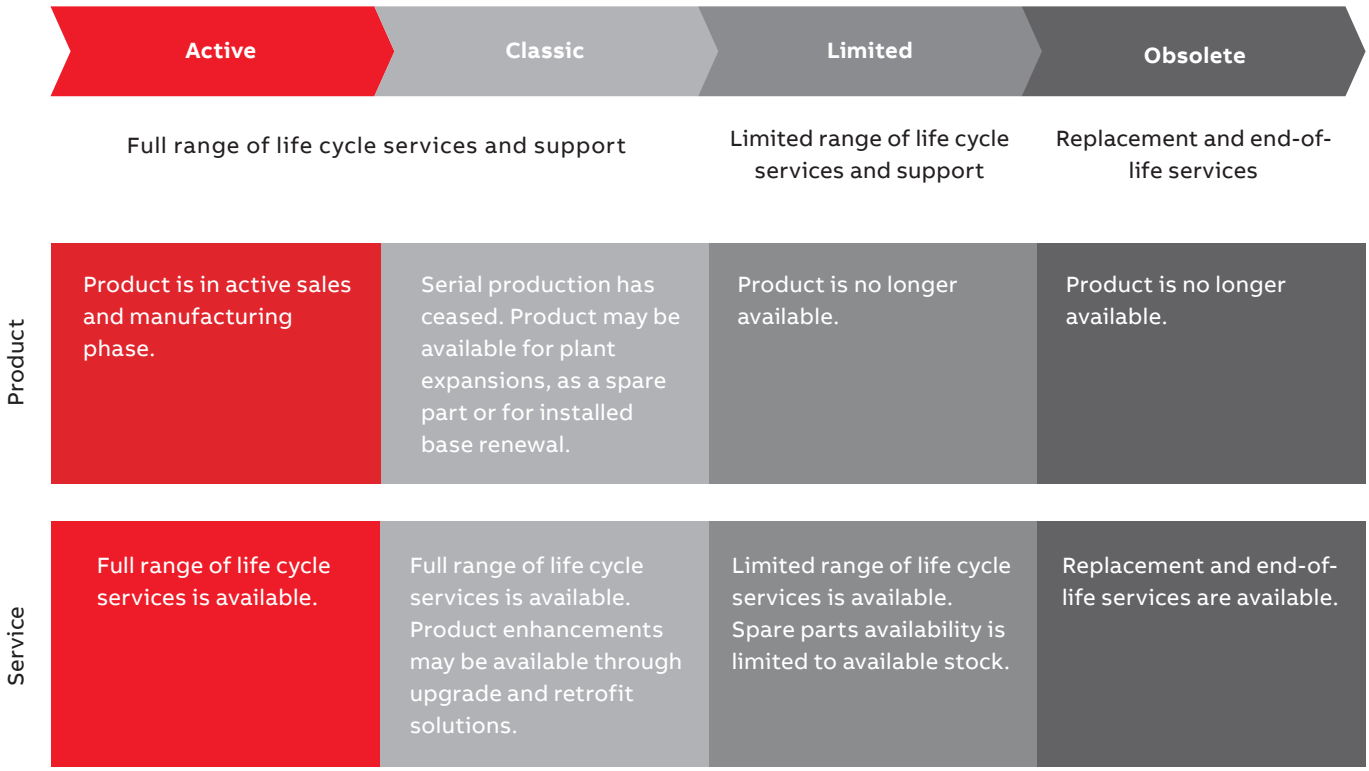
The ACS180 machinery drive is part of ABB’s all compatible drives portfolio. This cost-effective and compact drive is optimized for machine builders requiring ease of use and reliable machine performance.
Typical applications including Fans and water pumps, Logistics, Material mixers, Automatic doors.

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



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.

Note

Additional information
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