

R88E-AECT□, R88S-EAD□

Integrated servo motor

Motor and drive integrated for space optimization

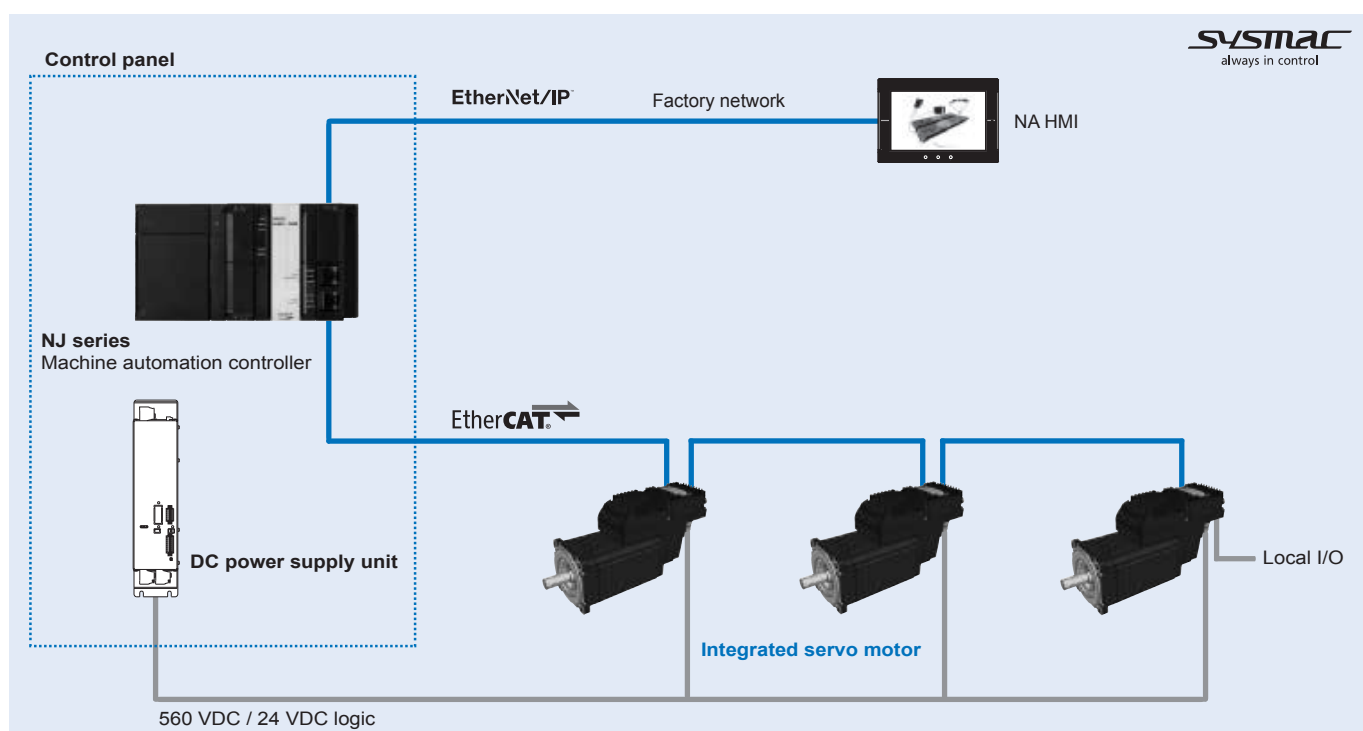
- Wide range of motors from 2.55 Nm to 25 Nm
- 3000 rpm rated speed
- Peak torque 300% of rated torque
- IP65 protection
- Space-saving. Panel reduction
- Simplified wiring compared to conventional servos
- EtherCAT connectivity. Integration in Sysmac Automation Platform
- Energy saving by sharing DC Bus
- Incremental and multiturn absolute encoder options
- Embedded I/O's for dedicated or general purpose



Ratings

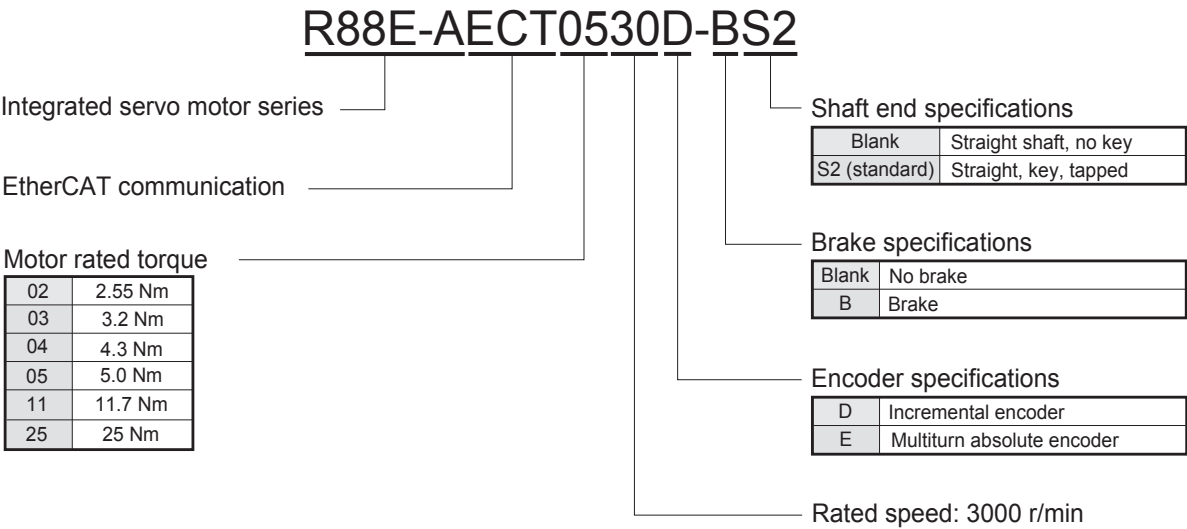
- From 880 W to 7.85 kW (rated torque from 2.55 Nm to 25 Nm)
- Power supply: Input 400 VAC (up to 40 A output)

System configuration

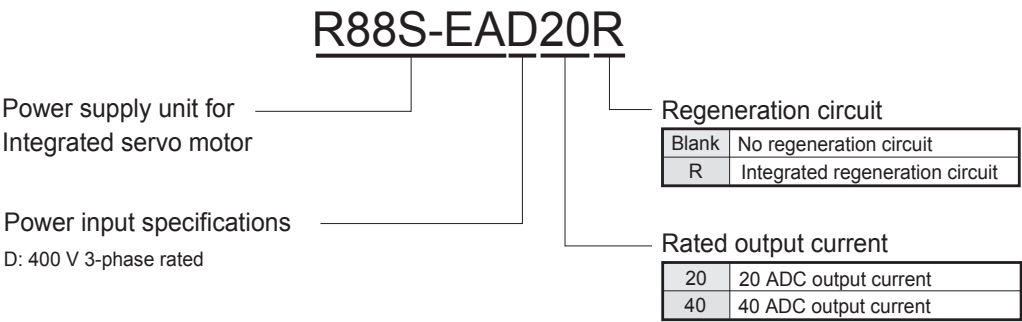


Type designation

Integrated servo motor



DC power supply unit



Integrated servo motor specifications

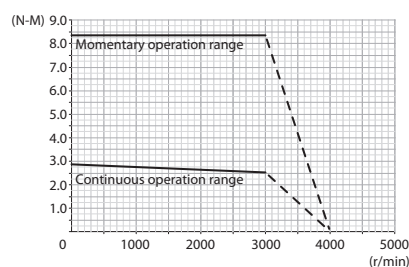
Integrated servo motor 3000 r/min, 560 VDC

Ratings and specifications

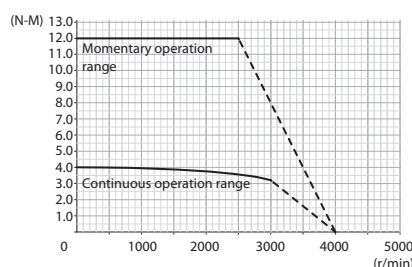
Voltage		560 VDC					
Integrated servo motor model R88E-AECT□	Incremental encoder	0230D-□	0330D-□	0430D-□	0530D-□	1130D-□	2530D-□
	Multiturn absolute encoder	0230E-□	0330E-□	0430E-□	0530E-□	1130E-□	2530E-□
Rated output	W	880	1000	1350	1570	3670	7850
Rated torque	N·m	2.55	3.2	4.3	5	11.7	25
Instantaneous peak torque	N·m	8.4	12	22	22	45	70
Rated current at rated speed	A (DC)	1.8	2.15	2.85	3.3	7.7	16.5
Instantaneous max. current	A (DC)	5.55	7.9	14.5	14.5	30	46
Rated speed	min ⁻¹	3000					
Rotor moment of inertia (JM)	kg·m ² ×10 ⁻⁴ (without brake)	1.16	1.58	2.8	4	11.5	74
	kg·m ² ×10 ⁻⁴ (with brake)	1.38	1.80	3.6	5.06	13.2	106
Max. radial load	N	350	350	626	626	700	1000
Max. axial load	N	110	110	225	225	70	100
Approx. mass	kg (without brake)	4.1	5.1	6.7	8	17	38
	kg (with brake)	4.8	5.8	7.9	9.2	18.5	43
Brake	Holding brake moment of inertia J	0.22	0.22	0.8	1.06	1.7	32
	Current consumption	0.50	0.50	0.75	0.75	1.0	0.85
Logic	Static friction torque	4.5	4.5	9	9	15	47
	Rated voltage	Without brake	24 VDC (-15%, +15%)				
Basic	With brake	24 VDC (-10%, +6%)					
	Internal protection	Fuse: 4 A-T not replaceable					
Encoder	Current consumption	Nominal 250 mA, max. 500 mA					
	IP rating	IP65					
Basic	Number of poles	8 poles					10 poles
	Insulation class	Type F					
Basic	Ambient operating/storage temperature	0 to 40°C/-20 to 70°C					
	Ambient operating/storage humidity	5% to 95% (without condensation)					
Encoder	Ventilation	Natural					Forced with integrated fans
	Shock resistance	According to IEC 60068-2-27 (3 shock per direction, 11 ms, 14g on 3 axes)					
Encoder	Vibration resistance	According to IEC 60068-2-6 (5 to 500 Hz, 2g on 3 axes)					
	Incremental	15-bit turn					
Encoder	Absolute multiturn	20-bit resolution (18-bit real accuracy)					

Torque-speed characteristics

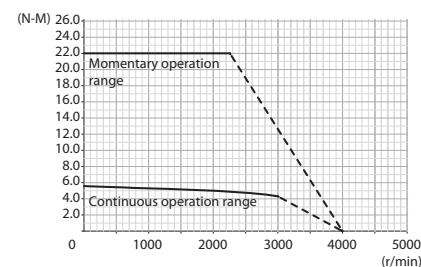
R88E-AECT0230D/E (880 W)



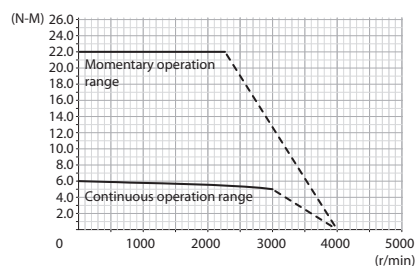
R88E-AECT0330D/E (1 kW)



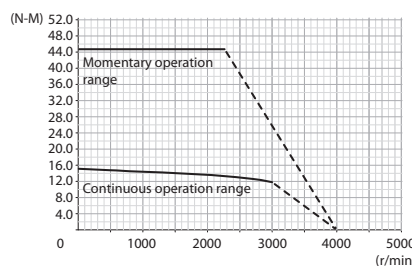
R88E-AECT0430D/E (1.35 kW)



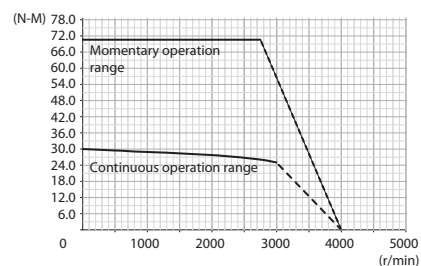
R88E-AECT0530D/E (1.57 kW)



R88E-AECT1130D/E (3.67 kW)



R88E-AECT2530D/E (7.85 kW)



Integrated servo motor nomenclature

I/O specifications



R88E-AECT0230/0330/
0430/0530 models



R88E-AECT1130/2530 models

Auxiliary - RS232 serial port (CN1)

Symbol	Signal name	Description
1	TX232	Transmit data RS232
2	RX232	Receive data RS232
3	NC	Not used. Do not connect
4	GND_COM	Ground RS232
Chassis	PE	Protection earth

Main bus - ECT (CN2-OUT/CN3-IN)

Symbol	Signal name	Description
1	TX Data+	Transmit data (+)
2	RX Data+	Receive data (+)
3	TX Data-	Transmit data (-)
4	RX Data-	Receive data (-)
Chassis	PE	Protection earth

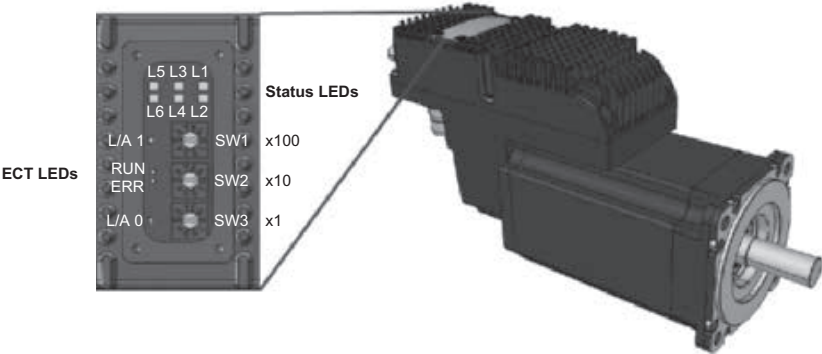
DC power supply and logic supply (CN5)

Symbol	Signal name	Description
1	HV-	DC power supply (negative pole)
3	-	Not used. Do not connect
4	HV+	DC power supply (positive pole)
T	PE	Protection earth
A	/STOP	Safety loop (the signal is at reversed logic)
B	0V	Ground logic supply
C	IN9	Digital input 9
D	+24 V	+24 VDC logic supply
Chassis	PE	Protection earth

Input/Output signals (CN4)

Symbol	Signal name	Description
1	IN/OUT1-	Differential line driver digital input/output 1 (-)
2	IN/OUT2-	Differential line driver digital input/output 2 (-)
3	AN_IN-	Analog input (-)
4	AN_IN+	Analog input (+)
5	IN/OUT2+	Differential line driver digital input/output 2 (+)
6	GND_5V	Ground of +5V
7	+5V	+5V supply (max 150mA) for auxiliary encoder
8	IN8	Digital input 8 PNP 24V
9	OUT5	Digital output 5 PNP 24V
10	IN/OUT3	Digital input/output 3 PNP 24V
11	IN7	Digital input 7 PNP 24V
12	IN/OUT0-	Differential line driver digital input/output 0 (-)
13	IN/OUT0+	Differential line driver digital input/output 0 (+)
14	IN/OUT1+	Differential line driver digital input/output 1 (+)
15	IN4	Digital input 4 PNP 24V
16	OUT4	Digital output 4 PNP 24V
17	OUT6	Digital output 6 PNP 24V
18	IN6	Digital input 6 PNP 24V
19	IN5	Digital input 5 PNP 24V (the function simulated GND is available)
Chassis	PE	Protection earth

LED and rotary switch specifications

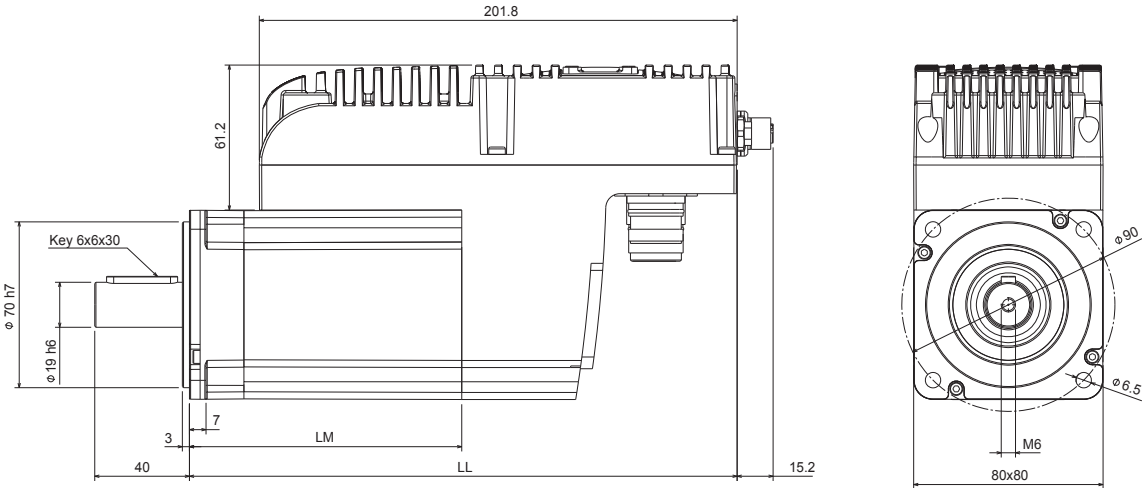


Name		Description
LED	L1, L2	Drive status (fault, warning, enabling)
	L3, L5	Reserved (LED OFF)
	L4	Overload (I2T) status
	L6	Input status /STOP
	L/A 0	Status of the physical link/activity of the EtherCAT port on the CN3 connector
	L/A 1	Status of the physical link/activity of the EtherCAT port on the CN2 connector
	ERR	EtherCAT error LED (ERR)
	RUN	EtherCAT run LED (RUN)
Rotary switch	SW1	EtherCAT user address (station alias) x100
	SW2	EtherCAT user address (station alias) x10
	SW3	EtherCAT user address (station alias) x1

Integrated servo motor dimensions

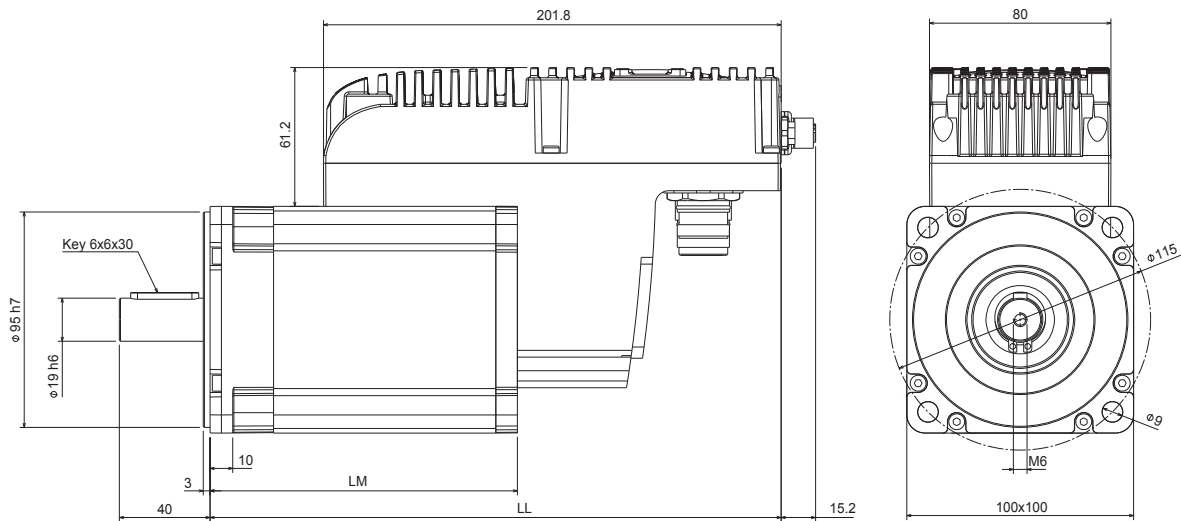
R88E-AECT0230□/0330□ (880 W to 1 kW)

Dimensions (mm)		Without brake		With brake		Flange	Approx. mass (kg)	
Voltage	Model	LM	LL	LM	LL		Without brake	With brake
560 VDC	R88E-AECT0230□	115	231.3	157	273.3	80	4.1	4.8
	R88E-AECT0330□	140	256.3	182	298.3		5.1	5.8



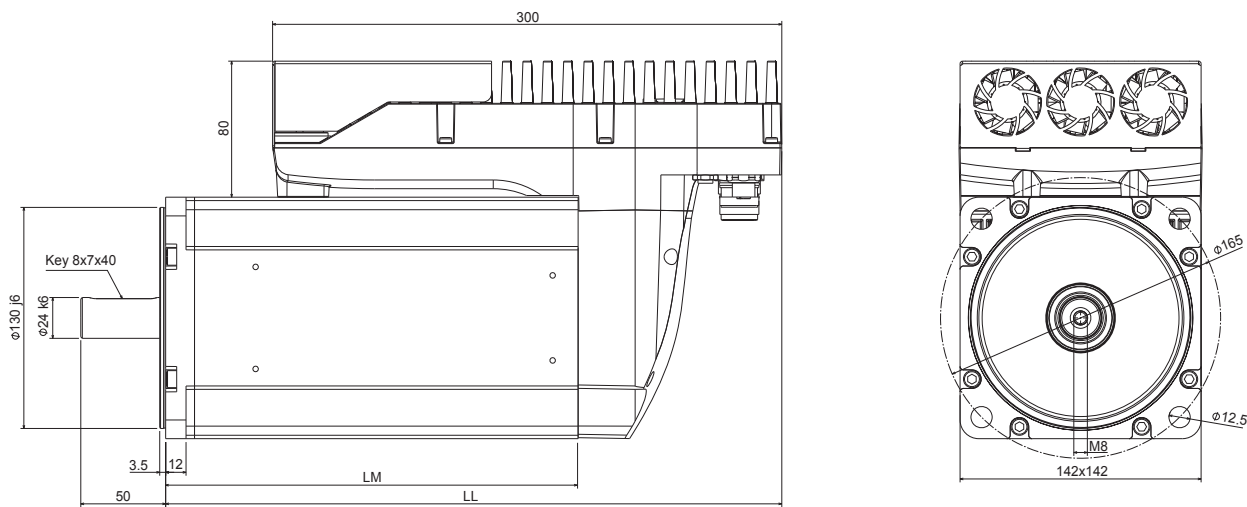
R88E-AECT0430□/0530□ (1.35 kW to 1.57 kW)

Dimensions (mm)		Without brake		With brake		Flange	Approx. mass (kg)	
Voltage	Model	LM	LL	LM	LL		Without brake	With brake
560 VDC	R88E-AECT0430□	135.5	251.8	186	302.3	100	6.7	7.9
	R88E-AECT0530□	165.5	281.8	216	332.3		8.0	9.2



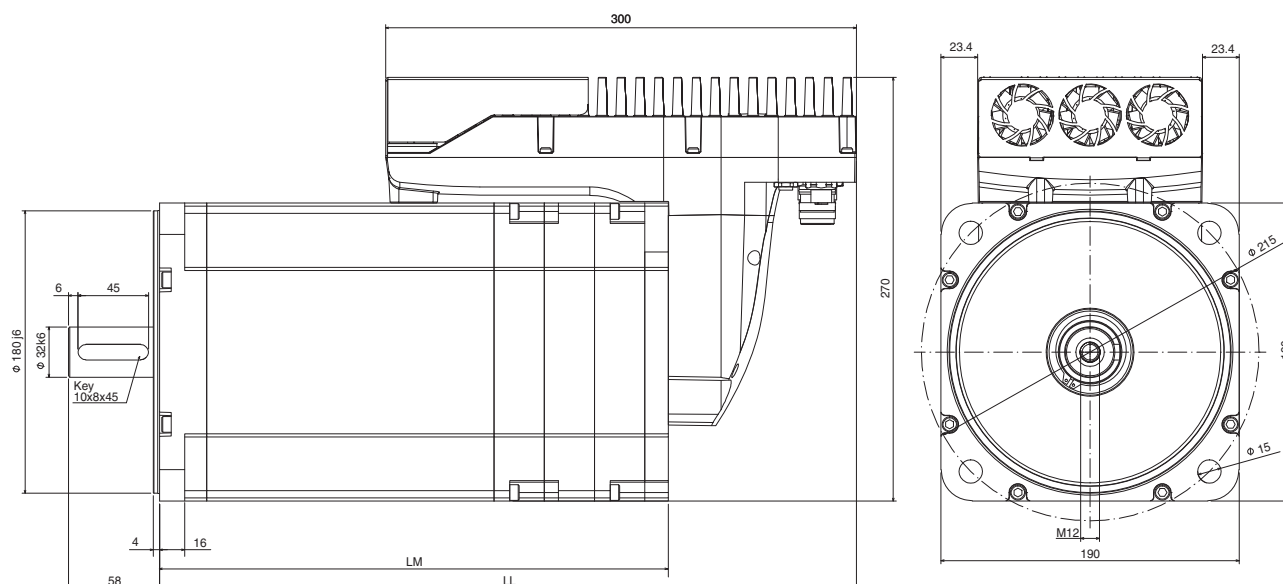
R88E-AECT1130□ (3.67 kW)

Dimensions (mm)		Without brake		With brake		Flange	Approx. mass (kg)	
Voltage	Model	LM	LL	LM	LL		Without brake	With brake
560 VDC	R88E-AECT1130□	238	363	268	388	142	17	18.5



R88E-AECT2530□ (7.85 kW)

Dimensions (mm)		Without brake		With brake		Flange	Approx. mass (kg)	
Voltage	Model	LM	LL	LM	LL		Without brake	With brake
560 VDC	R88E-AECT2530□	303.5	423.5	333.5	453.5	190	38	43



DC power supply unit specifications

DC power supply unit model R88S-EAD□		20R			40R			
Three-phase rated voltage		VAC	230	400	480	230	400	480
Absolute range voltage		180 to 520 VAC, 50/60 Hz						
Unbalance voltage		<3% of the main voltage						
Main filter		Integrated						
Line fuses: quick acting (by user)		32 A - I2T max = 700 A ² s			50 A - I2T max = 1300 A ² s			
Input current ^{*1}	Arms	22	25	23	42.5	47	42	
Input current with power chokes	Arms	-	17 ^{*2}	-	-	34 ^{*3}	-	
Rated output voltage	VDC	324	564	677	324	564	677	
Rated output current	A	20	20	16.7	40	40	33	
Max. current (≤ 5 sec)	A	40	40	33.4	80	80	66	
Rated output power	kW	6.5	11.3	11.3	13	22.5	22.5	
Pulse power (≤ 5 sec)	kW	13	22.6	22.6	26	46	46	
Internal capacitance		uF	940			1500		
Thermal dissipation (without brake dissipation)		W	100			200		
Logic	Rated voltage		24 VDC, ±10%					
	Internal protection		Fuse: 4 AT, reverse polarity					
	Current consumption		0.6 A (digital output OFF) ^{*4}					
	Digital output		Type: PNP Output voltage / current: 24 VDC / 0.3 A					
Relay	Rated voltage		30 VAC / VDC					
	Rated current		Max. 1 A					
Braking circuit			Maximum pulse current: 50 A Maximum switch on threshold: 785 VDC Hysteresis threshold: 20 VDC Pulse power rating: 20 kW (0.3 sec) Minimum braking resistor: 17 Ω					
Internal braking resistor			Resistance: 33 Ω Power rating: 120 W continuous					
Power and logic protection			Overload output current: > 2 rated output current (t = 5 sec) Short circuit brake circuit: yes Overload brake energy / Overload charge energy: yes / yes Cable current limit: > 1.3 cable current limit (t = 1 hour) Under voltage / Over voltage HVDC: < 100 VDC / > 830 VDC Over temperature: Power (> 90°C), Logic (> 85°C) Under voltage LOGIC: < 18.3 VDC					
Ambient temperature			+5 to +40°C, 90% RH or less (without condensation)					

¹ Input current without line inductance.

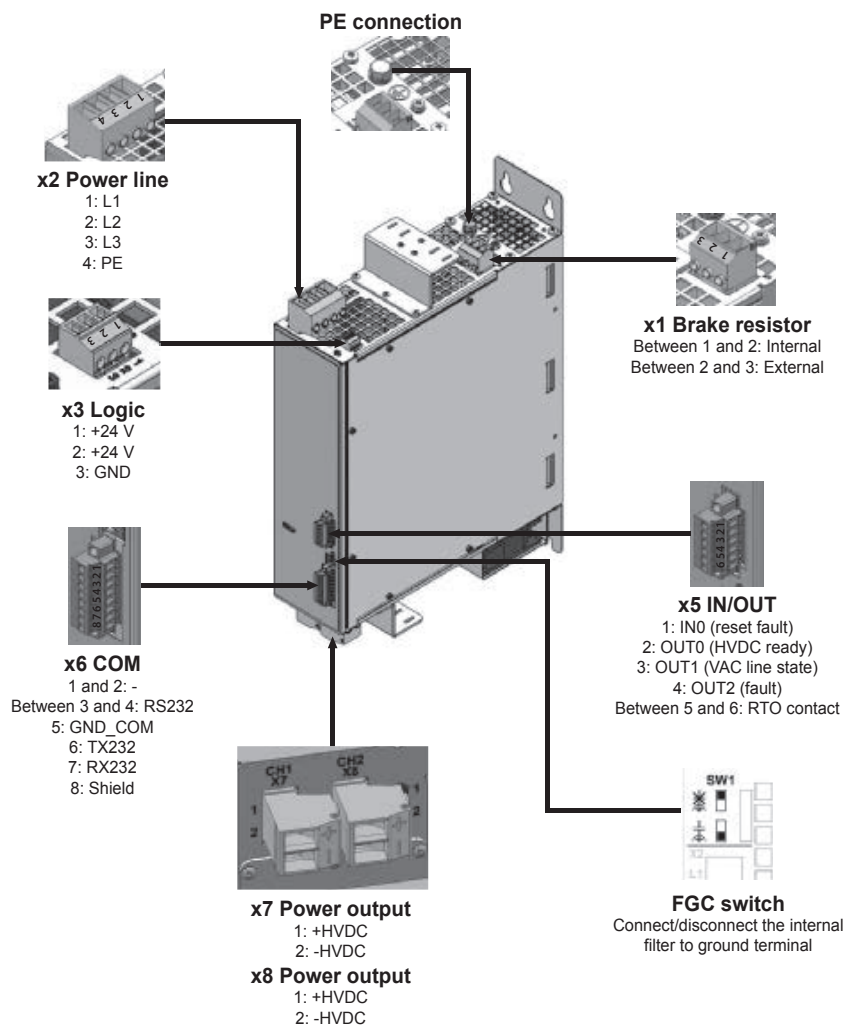
² Value with a line inductance of 1 mH.

³ Value with a line inductance of 0.5 mH.

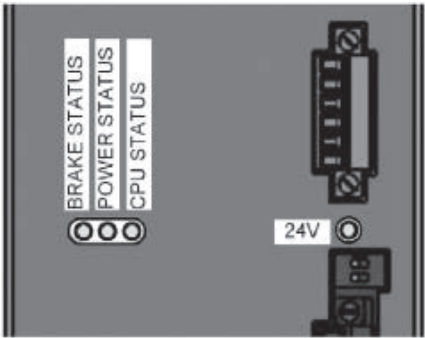
⁴ 1.4 A for 100 ms when AC line is applied to the DC power supply unit.

DC power supply unit nomenclature

Connector specifications



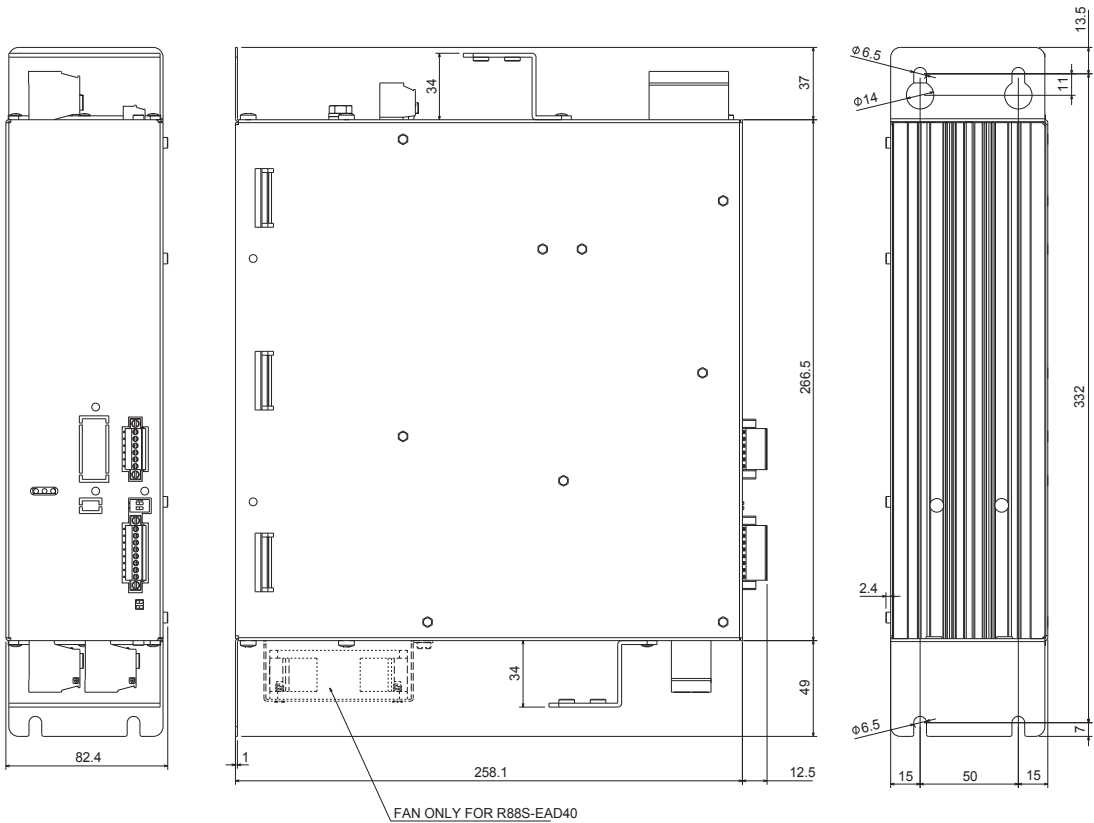
LED specifications



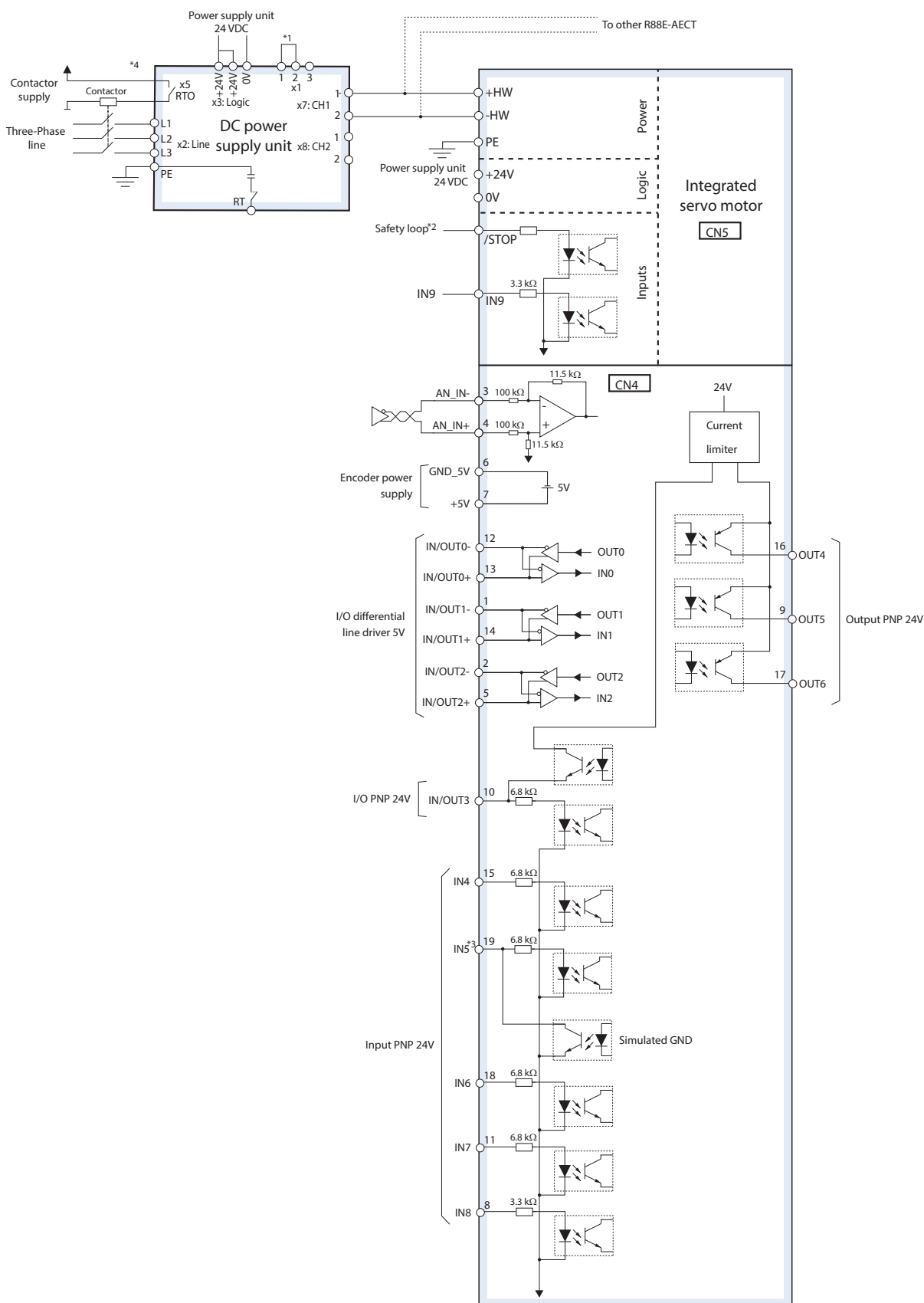
Name		Description
LED	24V	Logic voltage (with or without voltage)
	CPU status	CPU status (doesn't work, firmware mode, boot mode, in reset)
	Power status	Power status (power off, operating, warning, fault)
	Brake status	Brake status (without brake, with brake)

DC power supply unit dimensions

R88S-EAD20R/40R

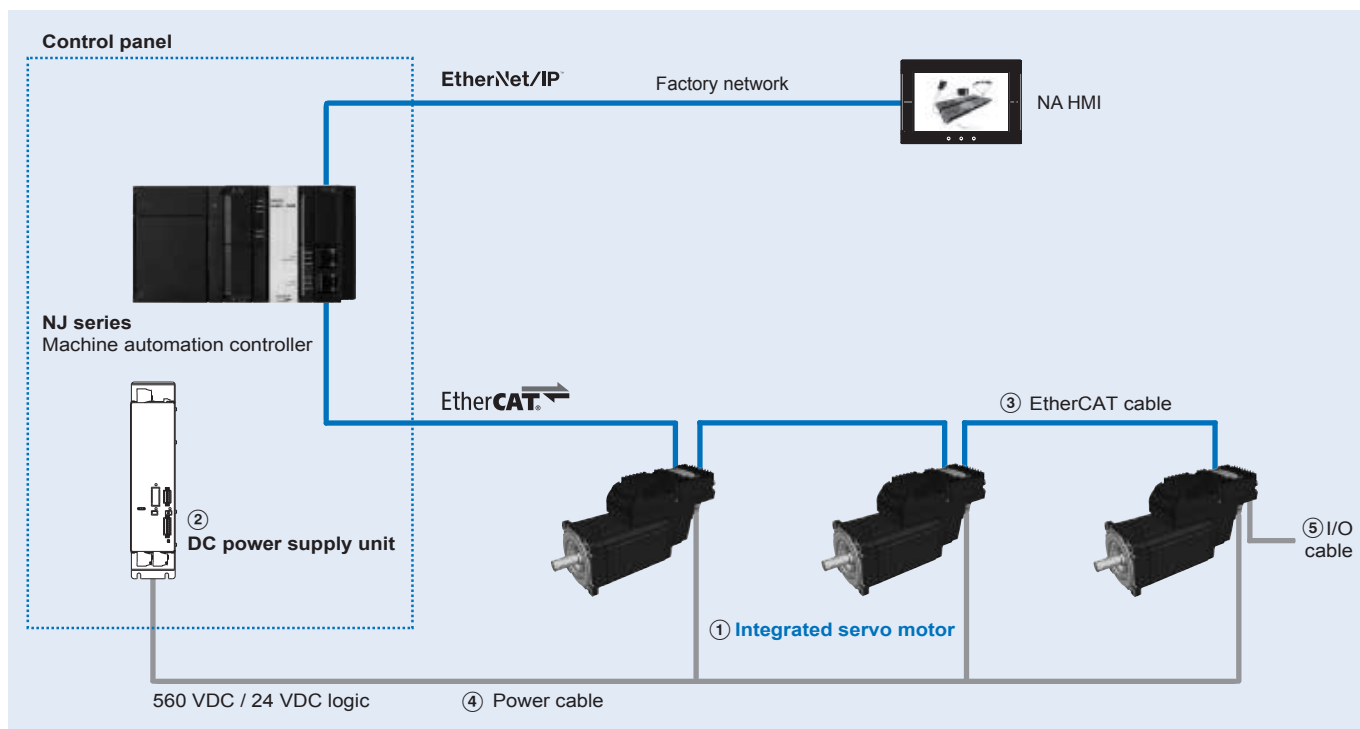


Installation



- *1 1 and 2 are short-circuited. If the internal regenerative resistor is insufficient, remove the wire between 1 and 2 and connect an external regenerative resistor between 2 and 3.
- *2 If security device is not used, connect /STOP to +24V.
- *3 IN5 can be used as GND.
- *4 Important to install a contactor that removes the supply in case of power supply unit error.

Ordering information



Integrated servo motor

Symbol	Specifications					Model	
	Voltage	Encoder and design			Rated torque		
①	560 VDC	Incremental encoder	Without brake	Straight shaft with key	2.55 Nm	880 W	R88E-AECT0230D-S2
					3.2 Nm	1000 W	R88E-AECT0330D-S2
					4.3 Nm	1350 W	R88E-AECT0430D-S2
					5.0 Nm	1570 W	R88E-AECT0530D-S2
					11.7 Nm	3670 W	R88E-AECT1130D-S2
					25 Nm	7850 W	R88E-AECT2530D-S2
			With brake		2.55 Nm	880 W	R88E-AECT0230D-BS2
					3.2 Nm	1000 W	R88E-AECT0330D-BS2
					4.3 Nm	1350 W	R88E-AECT0430D-BS2
					5.0 Nm	1570 W	R88E-AECT0530D-BS2
					11.7 Nm	3670 W	R88E-AECT1130D-BS2
					25 Nm	7850 W	R88E-AECT2530D-BS2
		Multiturn absolute encoder	Without brake		2.55 Nm	880 W	R88E-AECT0230E-S2
					3.2 Nm	1000 W	R88E-AECT0330E-S2
					4.3 Nm	1350 W	R88E-AECT0430E-S2
					5.0 Nm	1570 W	R88E-AECT0530E-S2
					11.7 Nm	3670 W	R88E-AECT1130E-S2
					25 Nm	7850 W	R88E-AECT2530E-S2
			With brake		2.55 Nm	880 W	R88E-AECT0230E-BS2
					3.2 Nm	1000 W	R88E-AECT0330E-BS2
					4.3 Nm	1350 W	R88E-AECT0430E-BS2
					5.0 Nm	1570 W	R88E-AECT0530E-BS2
					11.7 Nm	3670 W	R88E-AECT1130E-BS2
					25 Nm	7850 W	R88E-AECT2530E-BS2

DC power supply unit

Symbol	Specifications				Model
	Voltage input	Output current	Output power	Regeneration circuit	
②	400 V 3-phase	20 A	11.3 kW	Integrated	R88S-EAD20R
		40 A	22.5 kW		R88S-EAD40R

Cables

Symbol	Specifications			Model	Appearance
③	EtherCAT cables	EtherCAT RJ45 to M12 cable (M12 straight)	0.3 m	XS5W-T421-AMC-K	
			0.5 m	XS5W-T421-BMC-K	
			1 m	XS5W-T421-CMC-K	
			2 m	XS5W-T421-DMC-K	
			3 m	XS5W-T421-EMC-K	
			5 m	XS5W-T421-GMC-K	
			10 m	XS5W-T421-JMC-K	
			15 m	XS5W-T421-KMC-K	
		EtherCAT RJ45 to M12 cable (M12 L right angle)	0.3 m	XS5W-T422-AMC-K	
			0.5 m	XS5W-T422-BMC-K	
			1 m	XS5W-T422-CMC-K	
			2 m	XS5W-T422-DMC-K	
			3 m	XS5W-T422-EMC-K	
			5 m	XS5W-T422-GMC-K	
			10 m	XS5W-T422-JMC-K	
			15 m	XS5W-T422-KMC-K	
		EtherCAT M12 to M12 cable (M12 straight)	0.5 m	XS5W-T421-BM2-K	
			1 m	XS5W-T421-CM2-K	
			2 m	XS5W-T421-DM2-K	
			3 m	XS5W-T421-EM2-K	
			5 m	XS5W-T421-GM2-K	
			10 m	XS5W-T421-JM2-K	
		EtherCAT M12 to M12 cable (M12 L right angle)	15 m	XS5W-T421-KM2-K	
			0.5 m	XS5W-T422-BM2-K	
			1 m	XS5W-T422-CM2-K	
			2 m	XS5W-T422-DM2-K	
			3 m	XS5W-T422-EM2-K	
			5 m	XS5W-T422-GM2-K	
④	Power cables for Integrated servo motor with straight connector		10 m	XS5W-T422-JM2-K	
			15 m	XS5W-T422-KM2-K	
			1.5 m	R88A-CDEA001-5-E	
			3 m	R88A-CDEA003-E	
			5 m	R88A-CDEA005-E	
			10 m	R88A-CDEA010-E	
			15 m	R88A-CDEA015-E	
⑤	I/O cables with straight connector		20 m	R88A-CDEA020-E	
			1 m	R88A-CPEA001S-E	
			2 m	R88A-CPEA002S-E	
			5 m	R88A-CPEA005S-E	
-	Serial port cables	For Integrated servo motor with straight connector	2 m	R88A-CCEA002P2-E	
		For DC power supply unit with straight connector	2 m	R88A-CCSE002P2-E	

Accessories

Specifications			Model
Connectors for making power cables		M23 straight connector	R88A-CNEA01P-E
		M23 right angle 90° connector	R88A-CNEA02P-E
Connectors for making I/O cables		M23 straight connector	R88A-CNEA01C-E
		M23 right angle 90° connector	R88A-CNEA02C-E
Blind plugs	For EtherCAT connectors	IP65 blind plug for M12 socket	R88A-PCVEA01-E
	For Power and I/O connectors	IP67 blind plug for M23 socket	R88A-PCVEA02-E

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.