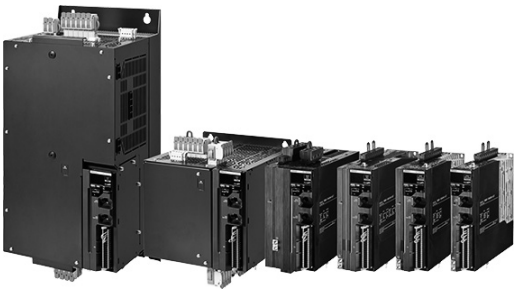
R88D-1SN□-ECT

Contents



Ordering Information

Refer to the Ordering Information.

Specifications

General Specifications

Item			Specifications
Operating ambient temperature and humidity			0 to 55°C, 90% max. (with no condensation)
Storage ambient temperature and humidity			-20 to 65°C, 90% max. (with no condensation)
Operating and storage atmosphere			No corrosive gases
Operating altitude			1,000 m max.
Vibration resistance			10 to 60 Hz and at an acceleration of 5.88 m/s^2 or less (Not to be run continuously at the resonance frequency)
Insulation resistance			Between power supply terminals/power terminals and PE terminals: 0.5 MΩ min. (at 500 VDC)
Dielectric strength			Between power supply terminals/power terminals and PE terminals: 1,500 VAC for 1 min (at 50/60 Hz)
Protective structure			IP20 (Built into IP54 panel)
International standard	**EU Directives**	**EMC Directive**	EN 61800-3 second environment, C3 category (EN61326-3-1 *1; Functional Safety)
		Low Voltage Directive	EN 61800-5-1
		Machinery Directive	EN ISO 13849-1 (Cat.3), EN 61508, EN 62061, EN 61800-5-2
	UL standards		UL 61800-5-1
	CSA standards		CSA C22.2 No. 274
	Korean Radio Regulations (KC)		Compliant
	Australian EMC Labelling Requirements (RCM)		Compliant
	EAC requirements		Compliant
	SEMI standards		Can conform to the standard for momentary power interruptions (for no-load operation).
	Ship standards (NK/LR)		Not compliant

✻ The following product models are applicable to EN61000-6-7.
Applicable models: R88D-1SN55□-ECT, R88D-1SN75□-ECT, R88D-1SN150□-ECT

Note: The above items reflect individual evaluation testing. The results may differ under compound conditions.

The detail of Machinery Directive is as follows:
The STO function via safety input signals: EN ISO 13849-1 (Cat3 PLe), EN 61508 (SIL3), EN 62061 (SIL3), EN 61800-5-2 (STO)
The STO function via EtherCAT communications: EN ISO 13849-1 (Cat.3 PLd), EN 61508 (SIL2), EN 62061 (SIL2), EN 61800-5-2 (STO)

Precautions for Correct Use

Disconnect all connections to the Servo Drive before attempting a megger test (insulation resistance measurement) on a Servo Drive. Not doing so may result in the Servo Drive failure.
Do not perform a dielectric strength test on the Servo Drive. Internal elements may be damaged.

Characteristics

100-VAC Input Models

Servo Drive model (R88D-)			1SN01L-ECT	1SN02L-ECT	1SN04L-ECT
Item			100 W	200 W	400 W
Input	Main circuit	Power supply voltage	Single-phase 100 to 120 VAC (85 to 132 V) ✻1 Rise time 500 ms max. ✻2		
		Frequency	50/60 Hz (47.5 to 63 Hz) ✻1		
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)		
		Current consumption ✻3	600 mA		
	Rated input current [A (rms)] (Main circuit power supply voltage: 120 VAC)	Single-phase	2.9	4.9	8.4
		3-phase	---	---	---
Output	Rated current [A (rms)]		1.5	2.5	4.8
	Maximum current [A (rms)]		4.7	8.4	14.7
Heat value [W]		Main circuit ✻4	14.8	23.4	33.1
		Control circuit	11	11	13.2
Applicable Servomotor rated output [W]			100	200	400
3,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1M05030S 1M10030S	1M20030S	1M40030S
Hold time at momentary power interruption (Main circuit power supply voltage: 100 VAC)			10 ms (Load condition: rated output) ✻5		
SCCR [A (rms)]			5000		
Weight [kg]			1.2	1.5	1.9

✻1. The values outside parentheses indicate the rated value, and the values inside parentheses indicate the range of acceptable variation.
✻2. If the power supply is turned ON slowly, a Regeneration Circuit Error Detected during Power ON (Error No. 14.02) may occur. Check that the power supply has a capacity sufficiently greater than the total capacity of the Servo Drive and the peripheral devices.
✻3. Select a DC power supply in consideration of the current values that are specified in the current consumption.
The rated current value that is printed on the product nameplate is a condition to apply the 1S-series product for the UL/Low Voltage Directive. Therefore, you do not need to consider it when you select a DC power supply for each model.
✻4. This is the maximum heating value in applicable Servomotors.
Refer to the table on the page 14 for the Heating Values of Applicable Servomotors.
✻5. This hold time at momentary power interruption is that of the main circuit. In order to maintain power supply to the control circuit at momentary power interruption, use a DC power supply, which meets the following conditions, for the control power supply:
Reinforced insulation or double insulation, and the output hold time of 10 ms or more.

200-VAC Input Models

Servo Drive model (R88D-)			1SN01H-ECT	1SN02H-ECT	1SN04H-ECT	1SN08H-ECT
Item			100 W	200 W	400 W	750 W
Input	Main circuit	Power supply voltage	Single-phase and 3-phase 200 to 240 VAC (170 to 252 V) ✻1 Rise time 500 ms max. ✻2			
		Frequency	50/60 Hz (47.5 to 63 Hz) ✻1			
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)			
		Current consumption ✻3	600 mA			
	Rated current [A (rms)] (Main circuit power supply voltage: 240 VAC)	Single-phase	1.8	2.7	4.6	7.3
		3-phase	1.0	1.5	2.7	4.0
Output	Rated current [A (rms)]		0.8	1.5	2.5	4.6
	Maximum current [A (rms)]		3.1	5.6	9.1	16.9
Heat value [W]		Main circuit ✻4	15.7/15.3 ✻5	15.2/14.6 ✻5	22.4/22.4 ✻5	40/39.7 ✻5
		Control circuit	11	11	11	13.2
Applicable Servomotor rated output [W]			100	200	400	750
3,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1M05030T 1M10030T	1M20030T	1M40030T	1M75030T
2,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	---	---	---	---
1,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	---	---	---	---
Hold time at momentary power interruption (Main circuit power supply voltage: 200 VAC)			10 ms (Load condition: rated output) ✻6			
SCCR [A (rms)]			5000			
Weight [kg]			1.2	1.2	1.5	2.0

Servo Drive model (R88D-)			1SN10H-ECT	1SN15H-ECT	1SN20H-ECT	1SN30H-ECT
Item			1 kW	1.5 kW	2 kW	3 kW
Input	Main circuit	Power supply voltage	3-phase 200 to 240 VAC (170 to 252 V) ✻1	Single-phase and 3-phase 200 to 240 VAC (170 to 252 V) ✻1	3-phase 200 to 240 VAC (170 to 252 V) ✻1	
			Rise time 500 ms max. ✻2			
		Frequency	50/60 Hz (47.5 to 63 Hz) ✻1			
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)			
		Current consumption ✻3	600 mA	900 mA		
	Rated current [A (rms)] (Main circuit power supply voltage: 240 VAC)	Single-phase	---	15.7	---	---
		3-phase	5.8	9.0	13.0	15.9
Output	Rated current [A (rms)]		7.7	9.7	16.2	22.3
	Maximum current [A (rms)]		16.9	28.4	41.0	54.7
Heat value [W]		Main circuit ✻4	46.5	85.5/85.5 ✻5	128.9	167.5
		Control circuit	13.2	20.4	20.4	20.4
Applicable Servomotor rated output [W]			1,000	1,500	2,000	3,000
3,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1L1K030T	1L1K530T	1L2K030T	1L3K030T
2,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1M1K020T	1M1K520T	1M2K020T	1M3K020T
1,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1M90010T	---	1M2K010T	1M3K010T
Hold time at momentary power interruption (Main circuit power supply voltage: 200 VAC)			10 ms (Load condition: rated output) ✻6			
SCCR [A (rms)]			5000			
Weight [kg]			2.0	3.4	3.4	3.4

Servo Drive model (R88D-)			1SN55H-ECT	1SN75H-ECT	1SN150H-ECT
Item			5.5 kW	7.5 kW	15 kW
Input	Main circuit	Power supply voltage	3-phase 200 to 240 VAC (170 to 252 V) ✻1 Rise time 500 ms max. ✻2		
		Frequency	50/60 Hz (47.5 to 63 Hz) ✻1		
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)		
		Current consumption ✻3	900 mA		1,200 mA
	Rated current [A (rms)] (Main circuit power supply voltage: 240 VAC)	3-phase	27.0	38.0	77.0
Output	Rated current [A (rms)]		28.6	42.0	70.0
	Maximum current [A (rms)]		84.8	113	169.7
Heat value [W]		Main circuit ✻4	290	360	610
		Control circuit	19.9		29.7
Applicable Servomotor rated output [W]			5,500	7,500	15,000
3,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1L4K030T 1L4K730T	---	---
2,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	---	---	---
1,500-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1M4K015T 1M5K015T	1M7K515T	1M11K015T 1M15K015T
1,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	---	---	---
Hold time at momentary power interruption (Main circuit power supply voltage: 200 VAC)			10 ms (Load condition: rated output) ✻6		
SCCR [A (rms)]			5000		
Weight [kg]			9.4	9.4	21

✻1. The values outside parentheses indicate the rated value, and the values inside parentheses indicate the range of acceptable variation.
✻2. If the power supply is turned ON slowly, a Regeneration Circuit Error Detected during Power ON (Error No. 14.02) may occur. Check that the power supply has a capacity sufficiently greater than the total capacity of the Servo Drive and the peripheral devices.
✻3. Select a DC power supply in consideration of the current values that are specified in the current consumption.
The rated current value that is printed on the product nameplate is a condition to apply the 1S-series product for the UL/Low Voltage Directive. Therefore, you do not need to consider it when you select a DC power supply for each model.
✻4. This is the maximum heating value in applicable Servomotors.
Refer to the table on the next page for the heating value of each applicable Servomotor.
✻5. The first value is for single-phase input power and the second value is for 3-phase input power.
✻6. This hold time at momentary power interruption is that of the main circuit. In order to maintain power supply to the control circuit at momentary power interruption, use a DC power supply, which meets the following conditions, for the control power supply:
Reinforced insulation or double insulation, and the output hold time of 10 ms or more.

400-VAC Input Models

Use a neutral grounded 400 VAC 3-phase power supply for the 400 VAC input models.

Servo Drive model (R88D-)			1SN06F-ECT	1SN10F-ECT	1SN15F-ECT	1SN20F-ECT
Item			600 W	1 kW	1.5 kW	2 kW
Input	Main circuit	Power supply voltage	3-phase 380 to 480 VAC (323 to 504 V) ✻1 Rise time 500 ms max. ✻2			
		Frequency	50/60 Hz (47.5 to 63 Hz) ✻1			
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)			
		Current consumption ✻3	900 mA			
	Rated current [A (rms)] (Main circuit power supply voltage: 480 VAC)	3-phase	2.4	3.1	4.3	6.5
Output	Rated current [A (rms)]		1.8	4.1	4.7	7.8
	Maximum current [A (rms)]		5.5	9.6	14.1	19.8
Heat value [W]		Main circuit ✻4	20.2	52.1	77.5	106.8
		Control circuit	20.4	20.4	20.4	20.4
Applicable Servomotor rated output [W]			600	1,000	1,500	2,000
3,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	---	1L75030C 1L1K030C	1L1K530C	1L2K030C
2,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1M40020C 1M60020C	1M1K020C	1M1K520C	1M2K020C
1,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	---	1M90010C	---	1M2K010C
Hold time at momentary power interruption (Main circuit power supply voltage: 400 VAC)			10 ms (Load condition: rated output) ✻5			
SCCR [A (rms)]			5000			
Weight [kg]			3.4	3.4	3.4	3.4

Servo Drive model (R88D-)			1SN30F-ECT	1SN55F-ECT	1SN75F-ECT	1SN150F-ECT
Item			3kW	5.5kW	7.5kW	15kW
Input	Main circuit	Power supply voltage	3-phase 380 to 480 VAC (323 to 504 V) ✻1 Rise time 500 ms max. ✻2			
		Frequency	50/60 Hz (47.5 to 63 Hz) ✻1			
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)			
		Current consumption ✻3	900 mA			1,200 mA
	Rated current [A (rms)] (Main circuit power supply voltage: 480 VAC)	3-phase	8.4	16.0	23.0	40.0
Output	Rated current [A (rms)]		11.3	14.5	22.6	33.9
	Maximum current [A (rms)]		28.3	42.4	56.5	84.8
Heat value [W]		Main circuit ✻4	143.3	280.0	280.0	440.0
		Control circuit	20.4	19.9		29.7
Applicable Servomotor rated output [W]			3,000	5,500	7,500	15,000
3,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1L3K030C	1L4K030C 1L5K030C	---	---
2,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1M3K020C	---	---	---
1,500-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	---	1M4K015C 1M5K515C	1M7K515C	1M11K015C 1M15K015C
1,000-r/min Servomotor (R88M-)		Batteryless 23-bit ABS	1M3K010C	---	---	---
Hold time at momentary power interruption (Main circuit power supply voltage: 400 VAC)			10 ms (Load condition: rated output) ✻5			
SCCR [A (rms)]			5000			
Weight [kg]			3.4	9.4	9.4	21

✻1. The values outside parentheses indicate the rated value, and the values inside parentheses indicate the range of acceptable variation.
✻2. If the power supply is turned ON slowly, a Regeneration Circuit Error Detected during Power ON (Error No. 14.02) may occur. Check that the power supply has a capacity sufficiently greater than the total capacity of the Servo Drive and the peripheral devices.
✻3. Select a DC power supply in consideration of the current values that are specified in the current consumption.
The rated current value that is printed on the product nameplate is a condition to apply the 1S-series product for the UL/Low Voltage Directive. Therefore, you do not need to consider it when you select a DC power supply for each model.
✻4. This is the maximum heating value in applicable Servomotors.
Refer to the table below for the heating value of each applicable Servomotor.
✻5. This hold time at momentary power interruption is that of the main circuit. In order to maintain power supply to the control circuit at momentary power interruption, use a DC power supply, which meets the following conditions, for the control power supply:
Reinforced insulation or double insulation, and the output hold time of 10 ms or more.

Relationship between Servo Drive, Servomotors and the Main Circuit Heating Value

Servo Drive model	Servomotor model	Main circuit heat value [W]
R88D-1SN01L-ECT	R88M-1M05030S-☐	11.2
	R88M-1M10030S-☐	14.8
R88D-1SN01H-ECT	R88M-1M05030T-☐	13.2/13.2 ✻
	R88M-1M10030T-☐	15.7/15.3 ✻
R88D-1SN10H-ECT	R88M-1L1K030T-☐	46.5
	R88M-1M1K020T-☐	37.7
	R88M-1M90010T-☐	42.9
R88D-1SN15H-ECT	R88M-1L1K530T-☐	85.5/85.5 ✻
	R88M-1M1K520T-☐	84/84 ✻
R88D-1SN20H-ECT	R88M-1L2K030T-☐	128.9
	R88M-1M2K020T-☐	91.3
	R88M-1M2K010T-☐	109.1
R88D-1SN30H-ECT	R88M-1L3K030T-☐	167.5
	R88M-1M3K020T-☐	125.5
	R88M-1M3K010T-☐	156.7
R88D-1SN55H-ECT	R88M-1L4K030T-☐	250
	R88M-1M4K015T-☐	270
	R88M-1L4K730T-☐	290
	R88M-1M5K015T-☐	290
R88D-1SN75H-ECT	R88M-1M7K515T-☐	360
R88D-1SN150H-ECT	R88M-1M11K015T-☐	490
	R88M-1M15K015T-☐	610
R88D-1SN06F-ECT	R88M-1M40020C-☐	14.4
	R88M-1M60020C-☐	20.2
R88D-1SN10F-ECT	R88M-1L75030C-☐	51.1
	R88M-1L1K030C-☐	52.1
	R88M-1M1K020C-☐	33.4
	R88M-1M90010C-☐	40.2
R88D-1SN15F-ECT	R88M-1L1K530C-☐	77.5
	R88M-1M1K520C-☐	47.9
R88D-1SN20F-ECT	R88M-1L2K030C-☐	106.8
	R88M-1M2K020C-☐	65.7
	R88M-1M2K010C-☐	79.6
R88D-1SN30F-ECT	R88M-1L3K030C-☐	143.3
	R88M-1M3K020C-☐	96.5
	R88M-1M3K010C-☐	115.5
R88D-1SN55F-ECT	R88M-1L4K030C-☐	250
	R88M-1M4K015C-☐	280
	R88M-1L5K030C-☐	250
	R88M-1M5K515C-☐	280
R88D-1SN75F-ECT	R88M-1M7K515C-☐	280
R88D-1SN150F-ECT	R88M-1M11K015C-☐	390
	R88M-1M15K015C-☐	440

✻ The first value is for single-phase input power and the second value is for 3-phase input power.

EtherCAT Communications Specifications

Item	Specifications
Communications standard	IEC 61158 Type 12, IEC 61800-7 CiA 402 Drive Profile
Physical layer	100BASE-TX (IEEE802.3)
Connectors	RJ45 × 2 (shielded) ECAT IN: EtherCAT input ECAT OUT: EtherCAT output
Communications media	Recommended media: Twisted-pair cable, which is doubly shielded by the aluminum tape and braid, with Ethernet Category 5 (100BASE-TX) or higher
Communications distance	Distance between nodes: 100 m max.
Process data	Fixed PDO mapping Variable PDO mapping
Mailbox (CoE)	Emergency messages, SDO requests, SDO responses, and SDO information
Synchronization mode and communications cycle	DC Mode (Synchronous with Sync0 Event) Communications cycle: 125 µs, 250 µs, 500 µs, 750 µs, 1 to 10 ms (in 0.25 ms increments) Free Run Mode
Indicators	ECAT-L/A IN (Link/Activity IN) × 1 ECAT-L/A OUT (Link/Activity OUT) × 1 ECAT-RUN × 1 ECAT-ERR × 1
CiA 402 Drive Profile	• Cyclic synchronous position mode • Cyclic synchronous velocity mode • Cyclic synchronous torque mode • Profile position mode • Profile velocity mode • Homing mode • Touch probe function • Torque limit function

Version Information

1S-series Servo Drive		Corresponding version
Model	Unit version	Sysmac Studio
R88D-1SN□-ECT	Version 1.0	Version 1.16 or higher
	Version 1.1	Version 1.18 or higher
	Version 1.2	Version 1.22 or higher
	Version 1.3 ∗1	Version 1.27 or higher
	Version 1.4 ∗1	Version 1.43 or higher

∗1. Sysmac Studio version 1.44 or higher enables you to use the cable redundancy function and configure a ring topology.

Functions That Were Added or Changed for Each Unit Version

Functions That Were Added or Changed

Function		Addition/change	Unit version
EtherCAT Communications	Cable Redundancy Function	Addition	Ver.1.3
Adjustment Function	Multiple Drives Tuning Function	Addition	Ver.1.1
Object	Basic Functions - Control Method Selection (3000-03 hex)	Change	Ver.1.4
	Machine - Inertia Ratio (3001-01 hex)	Change	Ver.1.1
	Position Command - Following Error After Interpolation (3010-92 hex)	Addition	Ver.1.4
	Command Dividing Function - Interpolation Method Selection in csp (3041-10 hex)	Addition	Ver.1.2
	TDF Position Control - Command Following Gain Selection (3120-10 hex)	Addition	Ver.1.1
	TDF Position Control - Command Following Gain 2 (3120-11 hex)	Addition	Ver.1.1
	TDF Velocity Control - Command Following Gain Selection (3121-10 hex)	Addition	Ver.1.1
	TDF Velocity Control - Command Following Gain 2 (3121-11 hex)	Addition	Ver.1.1
	Runaway Detection (3B71 hex)	Addition	Ver.1.1
	Motor Advanced Setting (4412 hex)	Addition	Ver.1.4
	Function Output - Bit Mask (4602-01 hex)	Change	Ver.1.4
	Function Output - Physical Outputs (4602-F1 hex)	Change	Ver.1.2
		Change	Ver.1.4
	Brake Interlock Output - Threshold Speed at Servo OFF (4610-03 hex) ∗1	Change	Ver.1.4
	External Brake Interlock Output (4663 hex)	Addition	Ver.1.2
	Digital outputs - Physical Outputs (60FE - 01 hex)	Change	Ver.1.2
		Change	Ver.1.4
	Digital outputs - Bit mask (60FE-02 hex)	Change	Ver.1.4
Error detection function	Runaway Detection	Addition	Ver.1.1
	Synchronization Error	Change	Ver.1.1
	Regeneration Circuit Error Detected during Power ON	Addition	Ver.1.2
		Delete	Ver.1.3
	Inrush Current Prevention Circuit Error	Addition	Ver.1.3
	Regeneration Circuit Error	Addition	Ver.1.3
Applied Functions	Brake Interlock	Addition	Ver.1.2
		Change	Ver.1.4

∗1. With the unit version Ver.1.4 or later, the default setting is changed. Refer to the *AC Servomotors/Servo Drives 1S-series with Built-in EtherCAT® Communications User's Manual* (Cat.No.I586) for details.

Combinations of Unit Versions and Motor Power Cables

Motor power cables have two cable versions (version 1.0 and version 1.1) and are available in the following lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, and 50 m. Use a Servo Drive unit version 1.2 or earlier with 20 m or less of motor power cable.

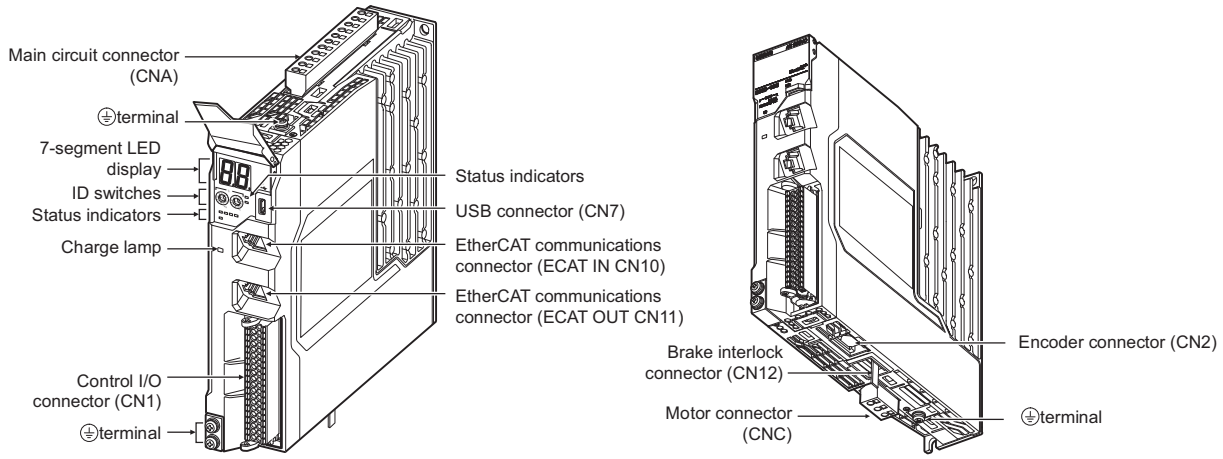
Power Cables				Combination table			
				Unit version 1.2 or earlier		Unit version 1.3 or later	
Power Cable model (R88A-)	Cable length	Cable version		Cable version		Cable version	
		Ver.1.0	Ver.1.1	Ver.1.0	Ver.1.1	Ver.1.0	Ver.1.1
CA1A□□□S CA1A□□□SF CA1A□□□SFR CA1A□□□B CA1A□□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	Yes	Available	Available	Available	Available
	30 m, 40 m, 50 m	---	Yes	---	Unavailable	---	Available
CA1B□□□S CA1B□□□SF CA1B□□□B CA1B□□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	Yes	Available	Available	Available	Available
	30 m, 40 m, 50 m	---	Yes	---	Unavailable	---	Available
CA1C□□□S CA1C□□□SF CA1C□□□B CA1C□□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	Yes	Available	Available	Available	Available
	30 m, 40 m, 50 m	---	Yes	---	Unavailable	---	Available
CA1D□□□B CA1D□□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	---	Available	---	Available	---
	30 m, 40 m, 50 m	Yes	---	Unavailable	---	Available	---
CA1E□□□S CA1E□□□SF CA1E□□□B CA1E□□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	Yes	Available	Available	Available	Available
	30 m, 40 m, 50 m	---	Yes	---	Unavailable	---	Available
CA1F□□□S CA1F□□□SF CA1F□□□B CA1F□□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	---	Available	---	Available	---
	30 m, 40 m, 50 m	Yes	---	Unavailable	---	Available	---
CA1H0□□SF CA1H0□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	---	Available	---	Available	---
CA1HE□□BF	10 m, 20 m	Yes	---	Unavailable ✻1	---	Available ✻2	---
CA1J0□□SF CA1J0□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	---	Available	---	Available	---
CA1JE□□BF	10 m, 20 m	Yes	---	Unavailable ✻1	---	Available ✻2	---
CA1K0□□SF CA1K0□□BF	3 m, 5 m, 10 m, 15 m, 20 m	Yes	---	Available	---	Available	---
CA1KE□□BF	10 m, 20 m	Yes	---	Unavailable ✻1	---	Available ✻2	---

✻1. The Servo Drive unit version 1.2 or earlier cannot be used with extension cables.
✻2. The total length of motor power cables for a Servo Drive must not exceed 50 m. See *Combinations of Motor Power Cables and Extension Power Cables* on page 120 for details.

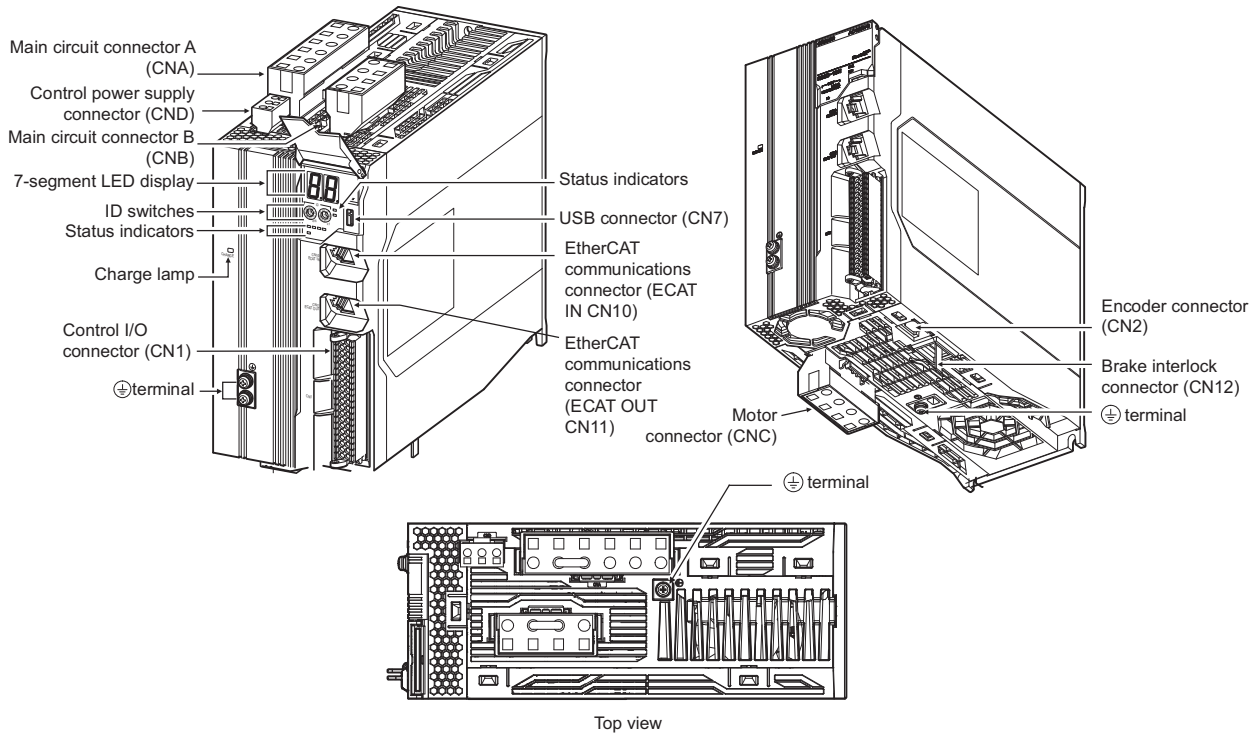
Part Names

Servo Drive Part Names

R88D-1SN01L-ECT/-1SN02L-ECT/-1SN04L-ECT/-1SN01H-ECT/ -1SN02H-ECT/-1SN04H-ECT/-1SN08H-ECT/-1SN10H-ECT

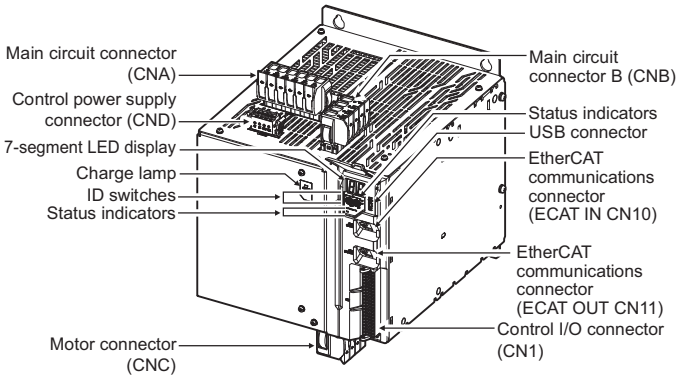


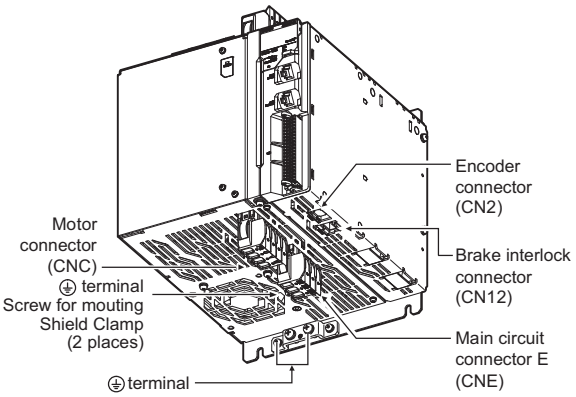
R88D-1SN15H-ECT/-1SN20H-ECT/-1SN30H-ECT/-1SN06F-ECT/ -1SN10F-ECT/-1SN15F-ECT/-1SN20F-ECT/-1SN30F-ECT



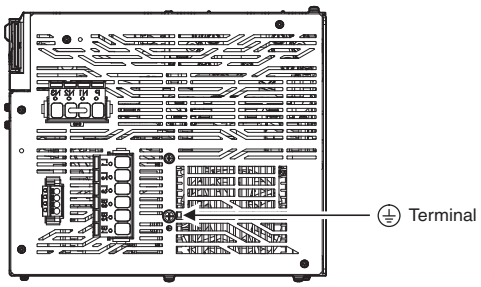
Top view

R88D-1SN55H-ECT/-1SN75H-ECT/-1SN55F-ECT/-1SN75F-ECT

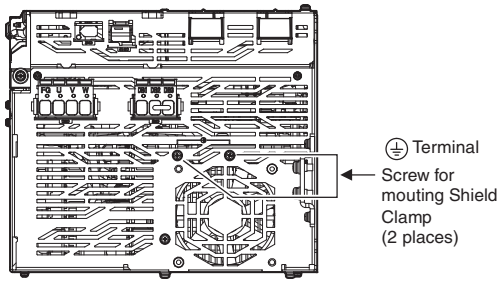




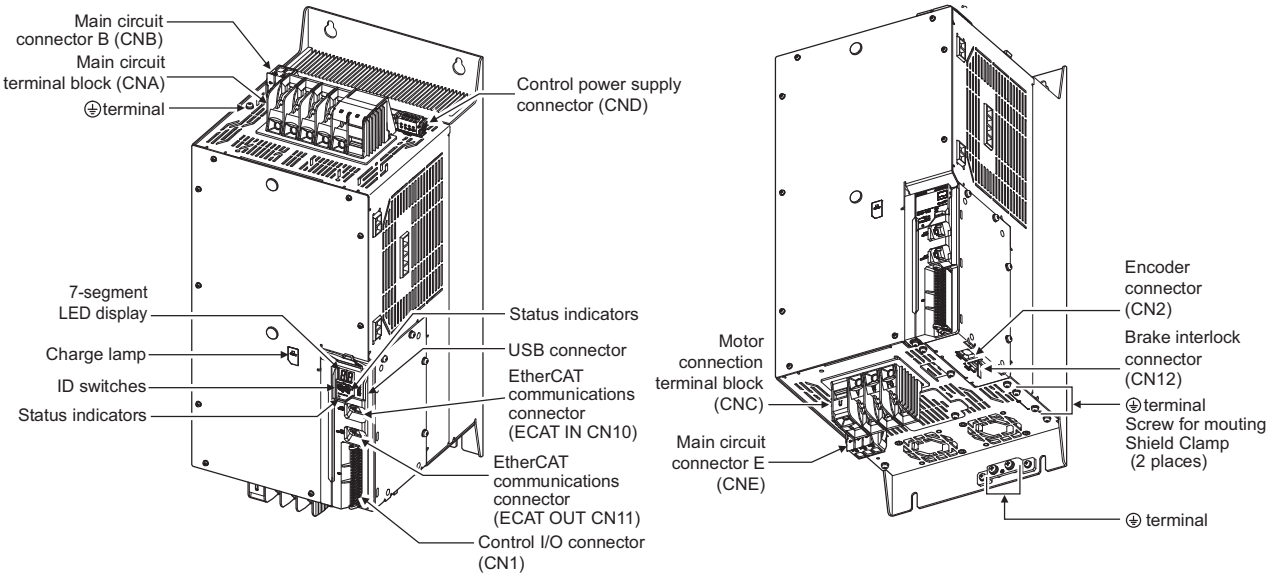
Top view



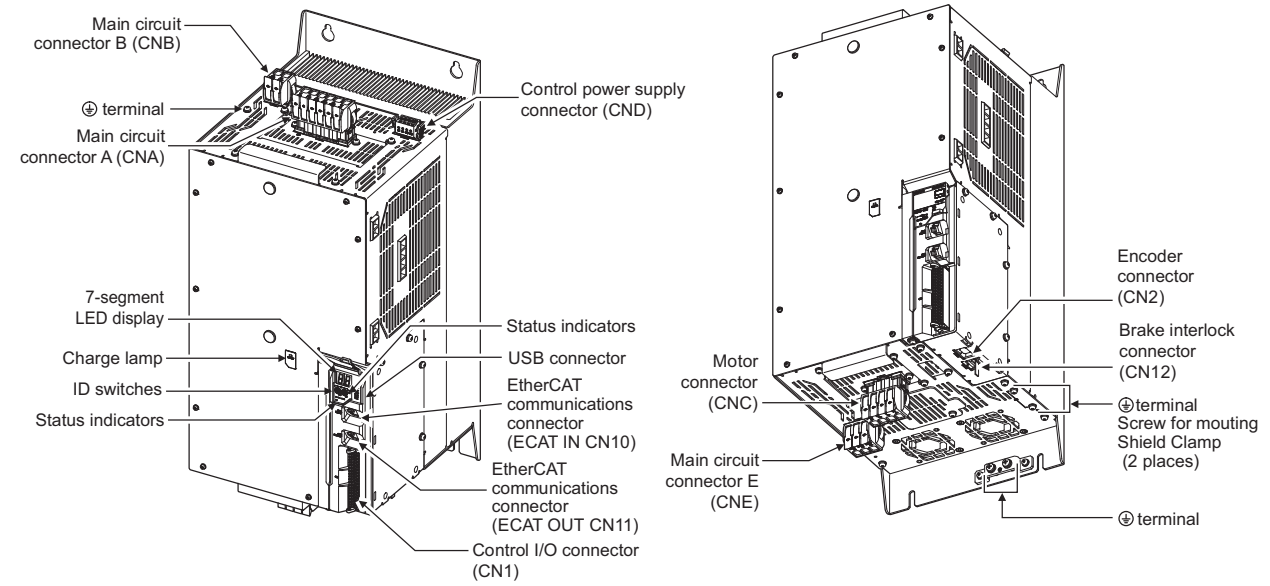
Bottom view



R88D-1SN150H-ECT



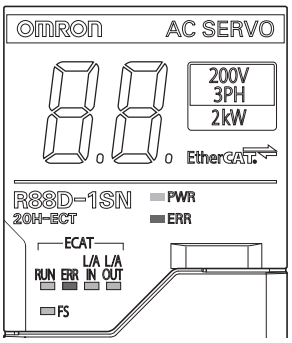
R88D-1SN150F-ECT



Servo Drive Functions

Status Indicators

The following seven indicators are mounted.



Name	Color	Description
PWR	Green	Displays the status of control power supply.
ERR	Red	Gives the Servo Drive error status.
ECAT-RUN	Green	Displays the EtherCAT communications status.
ECAT-ERR	Red	
ECAT-L/A IN, ECAT-L/A OUT	Green	Lights or flashes according to the status of a link in the EtherCAT physical layer.
FS	Red/green	Displays the safety communications status.

7-segment LED Display

A 2-digit 7-segment LED display shows error numbers, the Servo Drive status, and other information.

ID Switches

Two rotary switches (0 to F hex) are used to set the EtherCAT node address.

Charge Lamp

Lights when the main circuit power supply carries electric charge.

Control I/O Connector (CN1)

Used for command input signals, I/O signals, and as the safety device connector. The short-circuit wire is installed on the safety signals before shipment.

Encoder Connector (CN2)

Connector for the encoder installed in the Servomotor.

EtherCAT Communications Connectors (ECAT IN CN10, ECAT OUT CN11)

These connectors are for EtherCAT communications.

USB Connector (CN7)

USB-Micro B Communications connector for the computer. This connector enables USB 2.0 Full Speed (12 Mbps) communications.

Brake Interlock Connector (CN12)

Used for brake interlock signals.

Main Circuit Connector (CNA)

Connector for the main circuit power supply input, control power supply input, external regeneration resistor, and DC reactor.
Applicable models: R88D-1SN01L-ECT/-1SN02L-ECT/-1SN04L-ECT/-1SN01H-ECT/-1SN02H-ECT/-1SN04H-ECT/-1SN08H-ECT/-1SN10H-ECT

Main Circuit Connector A (CNA)

Connector for the main circuit power supply input and external regeneration resistor. The connector differs depending on the model.
Applicable models: R88D-1SN15H-ECT/-1SN20H-ECT/-1SN30H-ECT/-1SN55H-ECT/-1SN75H-ECT/-1SN06F-ECT/-1SN10F-ECT/
-1SN15F-ECT/ -1SN20F-ECT/-1SN30F-ECT/-1SN55F-ECT/-1SN75F-ECT

Main Circuit Terminal Block (CNA)

Connector for the main circuit power supply input.
Applicable models: R88D-1SN150H-ECT

Main Circuit Connector A (CNA)

Connector for the main circuit power supply input and AC reactor.
Applicable models: R88D-1SN150F-ECT

Main Circuit Connector B (CNB)

Connector for a DC reactor. The connector differs depending on the model.
Applicable models: R88D-1SN15H-ECT/-1SN20H-ECT/-1SN30H-ECT/-1SN55H-ECT/-1SN75H-ECT/-1SN06F-ECT/-1SN10F-ECT/ -1SN15F-ECT/ -1SN20F-ECT/-1SN30F-ECT/-1SN55F-ECT/-1SN75F-ECT

Main Circuit Connector B (CNB)

Connector for a external regeneration resistor.
Applicable models: R88D-1SN150H-ECT/ -1SN150F-ECT

Control Power Supply Connector (CND)

Connector for control power supply input. The connector differs depending on the model.
Applicable models: R88D-1SN15H-ECT/-1SN20H-ECT/-1SN30H-ECT/-1SN55H-ECT/-1SN75H-ECT/-1SN150H-ECT/-1SN06F-ECT/ -1SN10F-ECT/-1SN15F-ECT/-1SN20F-ECT/-1SN30F-ECT/-1SN55F-ECT/-1SN75F-ECT/-1SN150F-ECT

Motor Connector (CNC)

Connector for the power line to the phase U, V, and W of the Servomotor. The connector differs depending on the model.

Motor Connection Terminal Block (CNC)

Connector for the power line to the phase U, V, and W of the Servomotor.
Applicable models: R88D-1SN150H-ECT

Main Circuit Connector E (CNE)

Connector for a External Dynamic Brake Resistor.
Applicable models: R88D-1SN55H-ECT/-1SN75H-ECT/-1SN150H-ECT/-1SN55F-ECT/-1SN75F-ECT/-1SN150F-ECT

⏚ Terminal

The number of ⏚ terminals of the Servo Drives and their connection targets are as follows.

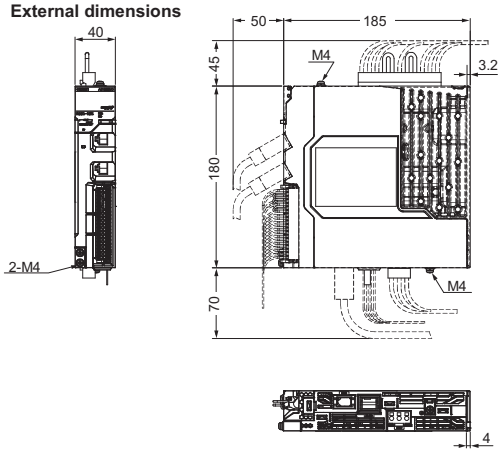
Model	Number of ⏚ terminals	Connection to
R88D-1SN01L-ECT/-1SN02L-ECT/-1SN04L-ECT/ -1SN01H-ECT/-1SN02H-ECT/-1SN04H-ECT/ -1SN08H-ECT/-1SN10H-ECT	1 on top	PE wire of the main circuit power supply cable. FG wire inside the control panel, and FG wire for the motor cable and shielded wire.
	2 on front	
	1 on bottom	
R88D-1SN15H-ECT/-1SN20H-ECT/-1SN30H-ECT/ -1SN06F-ECT/-1SN10F-ECT/-1SN15F-ECT/ -1SN20F-ECT/-1SN30F-ECT	1 on top	PE wire of the main circuit power supply cable. FG wire inside the control panel and the motor cable shielded wire.
	2 on front	
	1 on bottom	
R88D-1SN55H-ECT/-1SN75H-ECT/ -1SN150H-ECT/ -1SN55F-ECT/ -1SN75F-ECT/-1SN150F-ECT	1 on top	PE wire of the main circuit power supply cable. FG wire inside the control panel and the motor cable shielded wire.
	2 on front	
	2 on bottom	

Dimensions

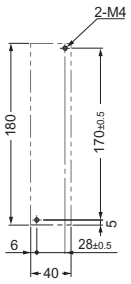
(Unit: mm)

Single-phase 100 VAC: R88D-1SN01L-ECT (100 W)
Single-phase/3-phase 200 VAC: R88D-1SN01H-ECT/-1SN02H-ECT (100 to 200 W)

External dimensions

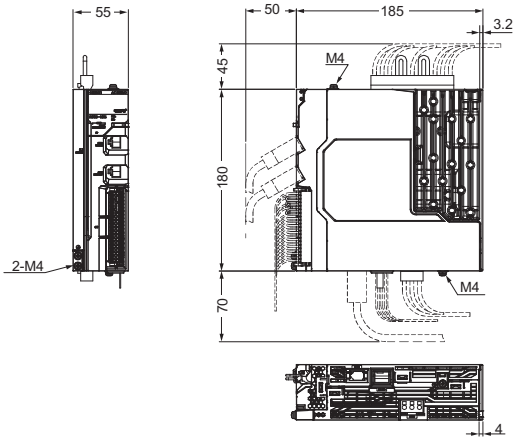


Mounting dimensions

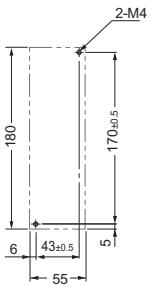


Single-phase 100 VAC: R88D-1SN02L-ECT (200 W)
Single-phase/3-phase 200 VAC: R88D-1SN04H-ECT (400 W)

External dimensions

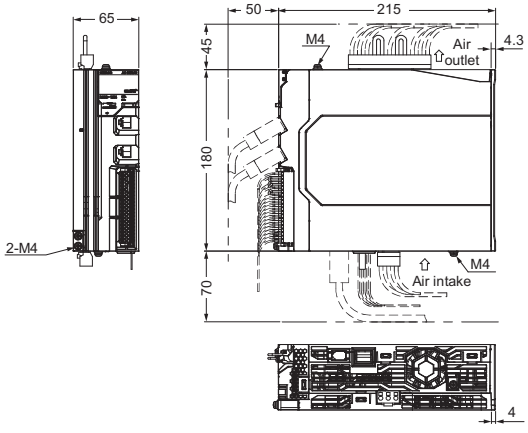


Mounting dimensions

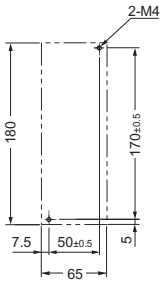


Single-phase 100 VAC: R88D-1SN04L-ECT (400 W)
Single-phase/3-phase 200 VAC: R88D-1SN08H-ECT (750 W)
3-phase 200 VAC: R88D-1SN10H-ECT (1 kW)

External dimensions

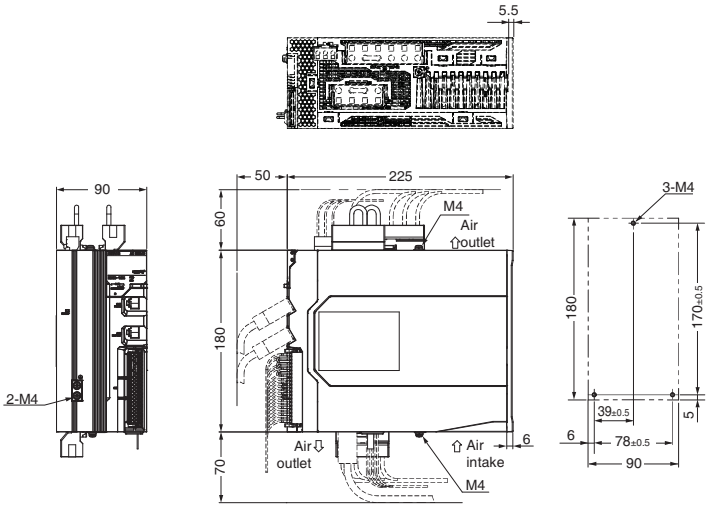


Mounting dimensions



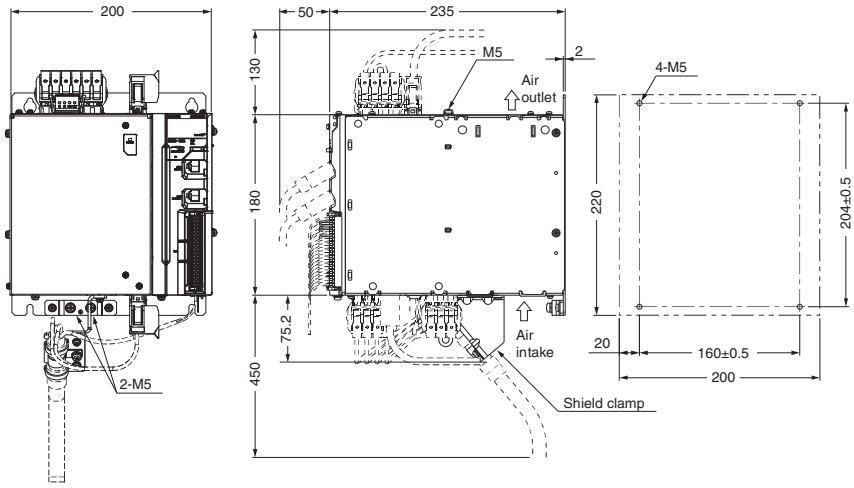
Single-phase/3-phase 200 VAC: R88D-1SN15H-ECT (1.5 kW)
3-phase 200 VAC: R88D-1SN20H-ECT/-1SN30H-ECT (2 to 3 kW)
3-phase 400 VAC: R88D-1SN06F-ECT/-1SN10F-ECT/-1SN15F-ECT/-1SN20F-ECT/-1SN30F-ECT (600 W to 3 kW)

External dimensions **Mounting dimensions**



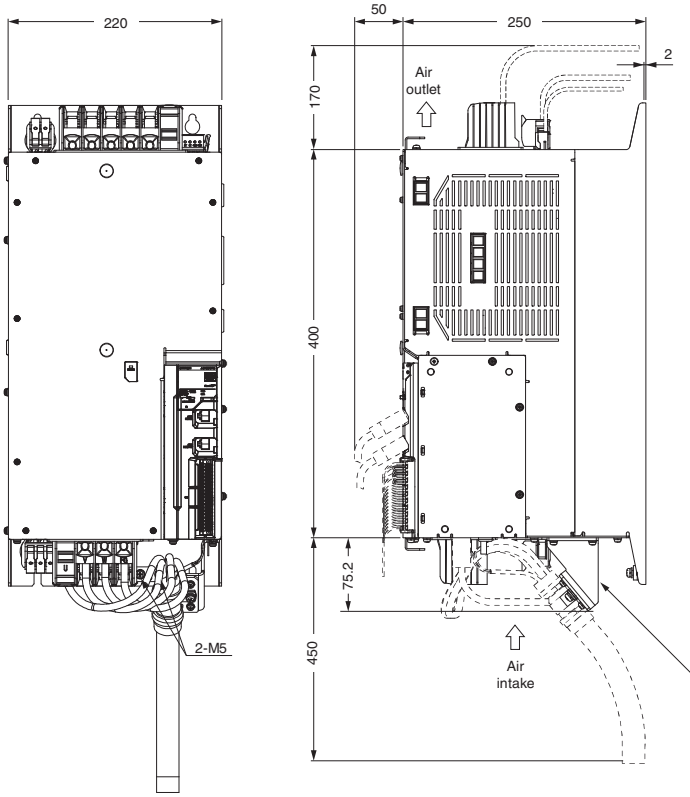
3-phase 200 VAC: R88D-1SN55H-ECT/-1SN75H-ECT (5.5 to 7.5 kW)
3-phase 400 VAC: R88D-1SN55F-ECT/-1SN75F-ECT (5.5 to 7.5kW)

External dimensions **Mounting dimensions**

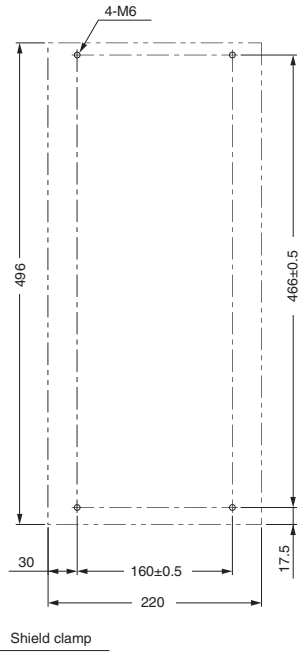


3-phase 200 VAC: R88D-1SN150H-ECT (15 kW)

External dimensions

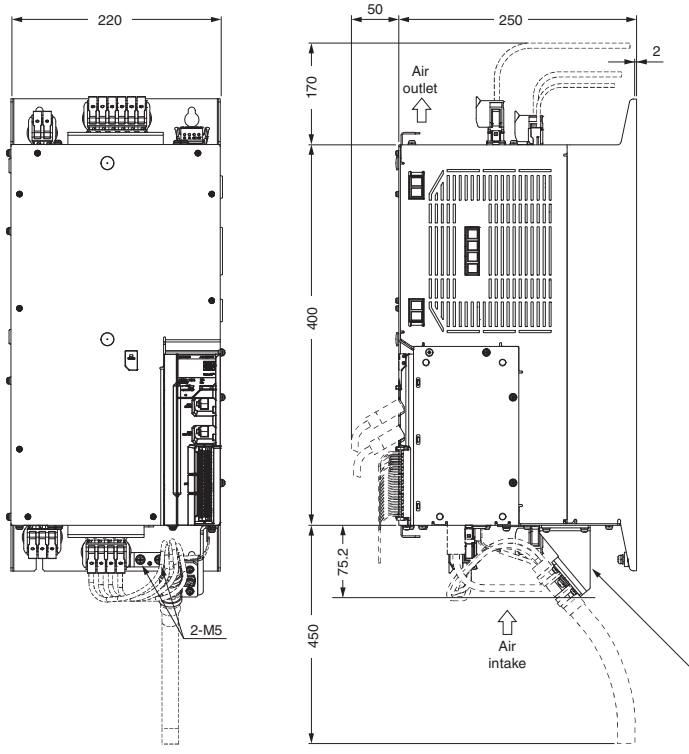


Mounting dimensions



3-phase 400 VAC: R88D-1SN150F-ECT (15 kW)

External dimensions



Mounting dimensions