TCD210002AD

Autonics

Multi-channel
Power Controllers

SPRM Series
CATALOG

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.
The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Features

- Single-phase control / three-phase control
- Supports a wide range of rated voltages from 220 to 440 VAC∼
- Various rated current models of 25 / 40 / 55 / 70 / 90 / 110 / 160 A
- Improved visibility with 4-line LCD display
- Monitoring load current / voltage / output / resistance / heatsink temperature / power
- Detachable display module can be installed on a separate panel
- Supports various alarms, heater brake, partial heater brake, fuse break, heatsink over heat, overcurrent, FAN error, etc. and saving alarm history
- Improved fuse replacement convenience with open/close structure
- Supports RS485, EtherCAT communication

CE c UL us LISTED KC

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

SPRM 3 - F ❶ ❷

❶ Rated load current
Number: Rated load current (unit: A)

❷ Communication
R: RS485
EC: EtherCAT

Product Components

- Product
- Instruction manual
- Display blank panel × 1
- RS485 communication connector × 1
- Control input connector × 1
- Power input / Alarm output connector × 1
- Feedback control connector × 1

Software

Download the installation file and the manuals from the Autonics website.

■ DAQMaster

It is the comprehensive device management program for Autonics' products, providing parameter setting, monitoring and data management.

Specifications

Model	SPRM3-F□R	SPRM3-F□EC
Control phases	Single phase 3 Ch or 3-phase	
Rated load voltage	Free voltage 220 - 440 VAC～ 50 / 60 Hz	
Rated load current [01]	25 / 40 / 55 / 70 / 90 / 110 / 160 A	
Display method	5 digit 11 segment LCD (white) × 4, Output BAR	
Auto control input	DC 4 - 20 mA × 3 Ch, 0 - 5 / 1 - 5 / 0 - 10 VDC⎓, External adjuster (10 kΩ), RS485, EtherCAT	
Manual control input	Parameter setting	
Digital input (DI)	RUN / STOP selectable, AUTO / MANU selectable, RESET	
Alarm output	250 VAC～ 2 A, 30 VDC⎓ 2 A, 1c resistance load	
Comm. output	RS485	RS485, EtherCAT
Cooling method	Rated load current 25 / 40 / 55 A: natural cooling Rated load current 70 / 90 / 110 / 160 A: forced air cooling (with cooling fan)	
Unit weight (packaged)	Rated load current 25 / 40 / 55 A: ≈ 4.75 kg (≈ 5.75 kg) Rated load current 70 A: ≈ 4.8 kg (≈ 5.8 kg) Rated load current 90 / 110 / 160 A: ≈ 9.42 kg (≈ 10.55 kg)	
Approval	CE, cULus LISTED, KC	

01) It is the rated load current of each channel in single-phase operation.

Control method	Phase control	Cycle control
Control mode	Normal / Constant current feedback / Constant voltage feedback / Constant power feedback	Fixed cycle / Variable cycle
Applied load	Resistance load, inductive load	Resistance load
Output range	0 to 98 %	0 to 100 %
Output accuracy	Varies by control mode	
Normal	Within ± 10 % F.S. of rated load voltage	-
Constant current / voltage / power feedback	Within ± 3 % F.S. of rated load current / voltage / power	-

Power supply	24 VDC⎓ ± 10 %
Min. load current	1 A
Power consumption	≤ 15 W
Insulation resistance	≥ 200 MΩ (500 VDC⎓ megger)
Dielectric strength	Between load input and power terminal: 3,000 VAC～ 50 / 60 Hz for 1 min
Output leakage current	≤ 10 mArms
Noise immunity	± 500 V square wave noise (pulse width: 1 μs) by the noise simulator
Memory retention	≈ 10 years (when using non-volatile semiconductor memory type)
Vibration	0.5 mm double amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours
Vibration (malfunction)	0.5 mm double amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 min
Ambient temperature	-10 to 40 °C, storage: -20 to 80 °C (no freezing or condensation)
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)

Communication Interface

RS485

Comm. protocol	Modbus RTU (16 bit CRC), Modbus ASCII
Application standard	Compliance with EIA RS485
Max. connection	31-unit (address: 1 to 99)
Comm. synchronous method	Asynchronous
Comm. method	2-wire half duplex
Comm. distance	≤ 800 m
Comm. speed	2,400 / 4,800 / 9,600 (default) / 14,400 / 19,200 / 38,400 / 57,600 / 115,200 bps
Comm. response time	0 to 9999 ms (default: 0 ms)
Start bit	-
Data bit	8 bit (fixed)
Parity bit	None (default), Even, Odd
Stop bit	1 bit (default), 2 bit
EEPROM life cycle	≈ 50,000 operations (Erase / Write)

EtherCAT

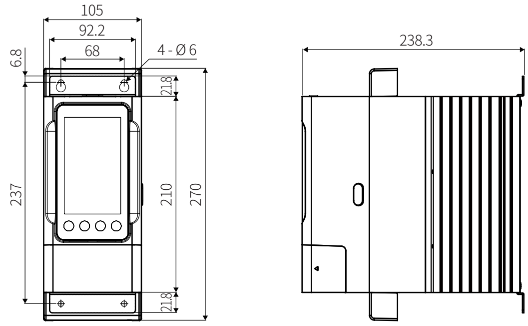
Comm. specifications	EtherCAT
Association approval [01]	EtherCAT Conformance tested
Connection cable	CAT5e class or over (Shield type: SF/FTP, S/FTP, SF/UTP)
Max. comm. distance	Within 100 m distance between nodes
Max. baud rate	10 / 100 Mbps
Topology	Star, Line, Tree

01) EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

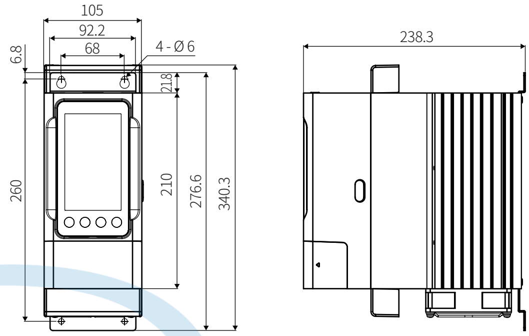
Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.

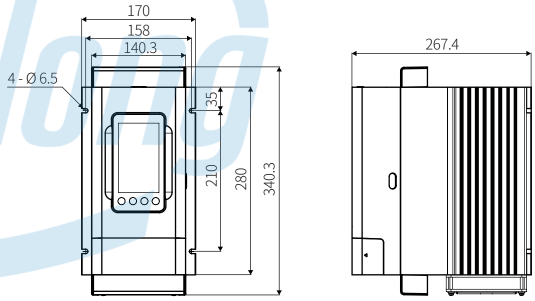
■ Rated load current 25 / 40 / 55 A



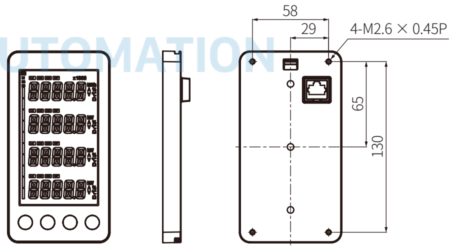
■ Rated load current 70 A



■ Rated load current 90 / 110 / 160 A

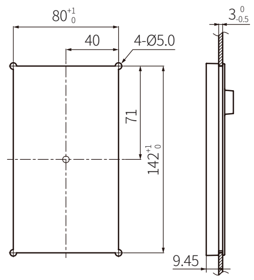


■ Display module

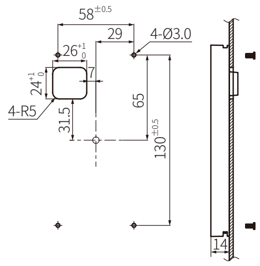


■ Panel cut-out of display module

- Panel flushing mounting

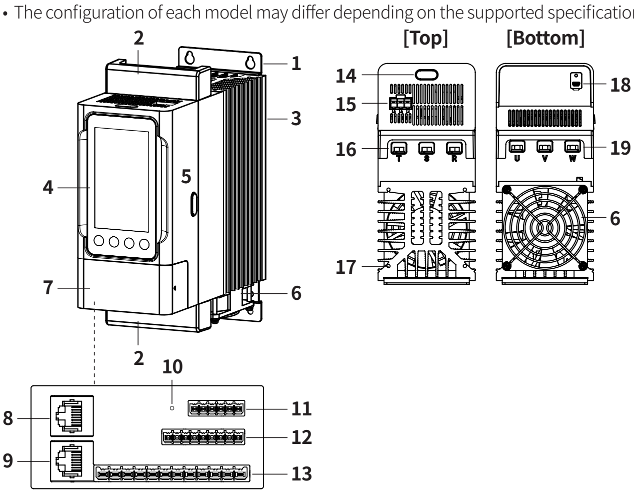


- Bolts fastening



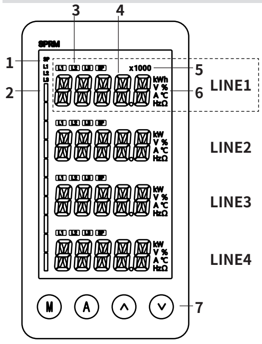
Unit Descriptions

• The configuration of each model may differ depending on the supported specifications.



1. Bracket [Rated load current: 25 / 40 / 55 / 70 A model]
2. Load power terminal protection cover
3. Heatsink: Rated load current 90 / 110 / 160 A models have left / right mounting holes.
4. Display module: For more information, refer to Display Module.
5. Case open button
6. Cooling fan [Rated load current: 70 / 90 / 110 / 160 A model]
7. I / O terminal cover
8. EtherCAT communication connector (IN) [Communication: EtherCAT model]
9. EtherCAT communication connector (OUT) [Communication: EtherCAT model]
10. RESET switch: Reset for operation / alarm
11. RS485 communication connector
12. Control input connector
13. Power input / Alarm output connector
14. Display module remove button
15. Feedback control connector
16. R, S, T load input terminal
17. Bolt for grounding (M4)
18. USB connector
: Do not use this connector. It may cause product failure. This connector is used for firmware upgrade, operation mode change, and A/S.
19. U, V, W load output terminal

Display Module



1. BAR output phase (orange)
: Turns ON L1, L2, L3, or 3P phase of output BAR display.
2. Output BAR (orange)
: 10 bars for output percentage.
Turns ON from the bottom bar. About 10 % of output displays per one bar.
3. Control / Monitor phase (green)
: Turns ON L1, L2, L3, or 3P phase of control or monitor phase.
4. PV / SV display part (white)
: 0000.0 to 9999.9 (fixed decimal point)
LINE 1 to 4 are available to set the desired monitoring value for each line at the setting check mode.
5. × 1000 indicator (green) (only LINE1)
: Turns ON for over 6 digit accumulated power.
Multiply 1000 times for PV / SV display part value.
E.g.) PV/SV display part is 1, Unit indicator is kWh and ×1000 indicator turns ON, it means 1,000 kWh.

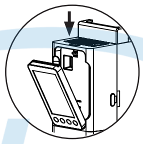
6. Unit indicator (green)

Unit	**kWh** [01]	**kW** [02]	**V**	**%**
Load	Accumulated power	Power	Load voltage	Output
Unit	**A**	**°C**	**Hz**	**Ω**
Load	Load current	Heatsink temp.	Input power freq.	Load resistance

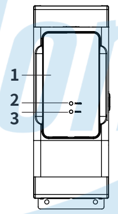
01) Only LINE1
02) For LINE2 to 4

7. Setting keys (M, A, ▲, ▼)

■ Separate display module



• Press the display module removal button on the top of the unit.
• The separated display module is available to install on a remote panel for convenient load monitoring.
• Connect the RJ45 cable between the display module and main body. This cable should be within 5 m length for prevent noise.



[Main body]

1. Display blank panel
: Attach this for prevent dust from entering the product.
2. Power indicator (POWER, green)
: Turns ON for stable operation after power input
3. Alarm indicator (ERROR, red)
: Flashes for alarm occur