

# Single-Phase / 3-Phase Slim Power Controllers

## SPR Series



### Features

- Slim and elegant design
- LED display allows real-time monitoring of control input, load voltage, load current, load power, load resistance, and heat-sink temperature
- Stable control with feedback control (constant current, constant voltage, constant power)
- Communication output models available: RS485 (Modbus RTU)
- Parameter configuration via PCs (RS485): Free device management software (DAQMaster)
- Various alarm functions (alarm output): over current, over voltage, heater disconnection, fuse break, heat-sink over heat, diode (SCR) error
- Easy installation with mounting brackets
- Easy fuse replacement and maintenance
- High performance SCR (IXYS) diode

### Specifications

#### [Single-Phase]

| Model                                          | SPR1-1                                                                                                                                                          | SPR1-2                          | SPR1-                           | SPR1-4              |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|---------------------|
| Control phase                                  | Single-phase                                                                                                                                                    |                                 |                                 |                     |
| Rated load voltage                             | 110 VAC~ 50 / 60 Hz                                                                                                                                             | 220 VAC~ 50 / 60 Hz             | 380 VAC~ 50 / 60 Hz             | 440 VAC~ 50 / 60 Hz |
| Rated load current                             | 25 / 35 / 50 / 70 / 100 /150 A                                                                                                                                  |                                 |                                 |                     |
| Display method                                 | 3-digit 7segment LED                                                                                                                                            |                                 |                                 |                     |
| Indicators                                     | Operation / manual control indicator (green)<br>Alarm / output / unit (V, A) indicator (red)                                                                    |                                 |                                 |                     |
| Auto control input                             | Current: DC 4 - 20 mA, voltage: 1 - 5 VDC=, contact (non-voltage): ON / OFF, contact (voltage): 5 - 12 VDC=, communication: RS485                               |                                 |                                 |                     |
| Manual control input                           | External adjuster (10 kΩ), output control adjuster (OUT ADJ)                                                                                                    |                                 |                                 |                     |
| Digital input (DI)                             | RUN / STOP selectable, AUTO / MAN selectable, RESET                                                                                                             |                                 |                                 |                     |
| Alarm output                                   | 250 VAC~ 3 A, 30 VDC= 3 A, 1c resistance load                                                                                                                   |                                 |                                 |                     |
| RS485 comm. output                             | Modbus RTU method                                                                                                                                               |                                 |                                 |                     |
| Cooling method                                 | Rated load current 25 / 35 / 50 A: natural cooling<br>Rated load current 70 / 100 / 150 A: forced air cooling (with cooling fan)                                |                                 |                                 |                     |
| Unit weight (packaged)                         | Rated load current 25 / 35 / 50 A: ≈ 1.3 kg (≈ 1.6 kg)<br>Rated load current 70 A: ≈ 1.35 kg (≈ 1.65 kg)<br>Rated load current 100 / 150 A: ≈ 2.8 kg (≈ 3.2 kg) |                                 |                                 |                     |
| Approval                                       | CE                                                                                                                                                              |                                 |                                 |                     |
| Control method                                 | Phase control                                                                                                                                                   | Cycle control                   | ON/OFF control                  |                     |
| Control mode                                   | Normal,<br>constant current feedback/<br>constant voltage feedback/<br>constant power feedback                                                                  | Fixed cycle /<br>variable cycle | -                               |                     |
| Applied load                                   | Resistance load, inductive load                                                                                                                                 | Resistance load                 | Resistance load, inductive load |                     |
| Output range                                   | 0 to 98 %                                                                                                                                                       | 0 to 100 %                      | 0 / 100 %                       |                     |
| Output accuracy                                | Varies by control mode                                                                                                                                          |                                 |                                 |                     |
| Normal                                         | Within ± 10 % F.S. of rated load voltage                                                                                                                        | -                               | -                               |                     |
| Constant current /<br>voltage / power feedback | Within ± 3 % F.S. of rated load current / voltage / power                                                                                                       | -                               | -                               |                     |

View product detail



Single-Phase



3-Phase

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|                                |                                                                                                       |
|--------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Power supply</b>            | 100 - 240 VAC ~ ± 10 % 50 / 60Hz                                                                      |
| <b>Min. load current</b>       | 1 A                                                                                                   |
| <b>Power consumption</b>       | Rated load current 25 / 35 / 50 A: ≤ 7 VA<br>Rated load current 70 / 100 / 150 A: ≤ 12 VA             |
| <b>Insulation resistance</b>   | ≥ 200 MΩ (500 VDC≡ megger)                                                                            |
| <b>Dielectric strength</b>     | Between input and power terminal: 2,000 VAC ~ 50 / 60 Hz for 1 min                                    |
| <b>Output leakage currents</b> | ≤ 10 mArms                                                                                            |
| <b>Noise immunity</b>          | ±2 kV square wave noise (pulse width: 1 μs) by the noise simulator                                    |
| <b>Memory retention</b>        | ≈ 10 years (when using non-volatile semiconductor memory type)                                        |
| <b>Vibration</b>               | 0.75 mm double amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours |
| <b>Vibration (malfunction)</b> | 0.5 mm double amplitude at frequency of 5 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 min   |
| <b>Ambient temp.</b>           | -10 to 55 °C, storage: -20 to 80 °C (no freezing or condensation)                                     |
| <b>Ambient humi.</b>           | 35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)                                     |
| <b>Comm. protocol</b>          | Modbus RTU                                                                                            |

### [3-Phase]

| Model                         | SPR3-1                                                                                                                                                                                                                                                                                                 | SPR3-2              | SPR3-3                          | SPR3-4              |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------|---------------------|
| Control phase                 | 3-Phase                                                                                                                                                                                                                                                                                                |                     |                                 |                     |
| Rated load voltage            | 110 VAC~ 50 / 60 Hz                                                                                                                                                                                                                                                                                    | 220 VAC~ 50 / 60 Hz | 380 VAC~ 50 / 60 Hz             | 440 VAC~ 50 / 60 Hz |
| Rated load current            | 25 / 35 / 50 / 70 / 100 / 150 A                                                                                                                                                                                                                                                                        |                     |                                 |                     |
| Display method                | 3-digit 7segment LED                                                                                                                                                                                                                                                                                   |                     |                                 |                     |
| Indicators                    | Operation / manual control indicator (green)<br>Alarm / output / unit (V, A) indicator (red)                                                                                                                                                                                                           |                     |                                 |                     |
| Auto control input            | Current: DC 4 - 20 mA, voltage: 1 - 5 VDC≡, contact (non-voltage): ON / OFF, contact (voltage): 5 - 12 VDC≡, communication: RS485                                                                                                                                                                      |                     |                                 |                     |
| Manual control input          | External adjuster (10 kΩ), output control adjuster (OUT ADJ)                                                                                                                                                                                                                                           |                     |                                 |                     |
| Digital input (DI)            | RUN / STOP selectable, AUTO / MAN selectable, RESET                                                                                                                                                                                                                                                    |                     |                                 |                     |
| Alarm output                  | 250 VAC~ 3 A, 30 VDC≡ 3 A, 1c resistance load                                                                                                                                                                                                                                                          |                     |                                 |                     |
| RS485 comm. output            | Modbus RTU method                                                                                                                                                                                                                                                                                      |                     |                                 |                     |
| Cooling method                | Rated load current 25 / 35 / 50 A: natural cooling<br>Rated load current 70 / 100 / 150 A: forced air cooling (with cooling fan)                                                                                                                                                                       |                     |                                 |                     |
| Unit weight (packaged)        | Rated load current 25 / 35 / 50 A: ≈ 4.1 kg (≈ 4.9 kg)<br>Rated load current 70 A: ≈ 4.2 kg (≈ 5 kg)<br>Rated load current 100 / 150 A: ≈ 8.7 kg (≈ 9.7 kg)                                                                                                                                            |                     |                                 |                     |
| Approval                      | CE                                                                                                                                                                                                                                                                                                     |                     |                                 |                     |
| Control method                | Phase control                                                                                                                                                                                                                                                                                          | Cycle control       | ON/OFF control                  |                     |
| Control mode                  | Normal /<br>constant current feedback /<br>constant voltage feedback /<br>constant power feedback                                                                                                                                                                                                      | Fixed cycle         | -                               |                     |
| Applied load                  | Resistance load, inductive load                                                                                                                                                                                                                                                                        | Resistance load     | Resistance load, inductive load |                     |
| Output range                  | 0 to 98 %                                                                                                                                                                                                                                                                                              | 0 to 100 %          | 0 / 100 %                       |                     |
| Phase control output accuracy | • Normal control: within ± 10 % F.S. of rated load voltage<br>• Constant current feedback control: within ± 3 % F.S. of rated load current<br>• Constant voltage feedback control: within ± 3 % F.S. of rated load voltage<br>• Constant power feedback control: within ± 3 % F.S. of rated load power |                     |                                 |                     |
| Power supply                  | 100 - 240 VAC ~ ±10 % 50 / 60 Hz                                                                                                                                                                                                                                                                       |                     |                                 |                     |
| Min. load current             | 1 A                                                                                                                                                                                                                                                                                                    |                     |                                 |                     |
| Power consumption             | Rated load current 25 / 35 / 50 A: ≤ 14 VA<br>Rated load current 70 A: ≤ 22 VA<br>Rated load current 100 / 150 A: ≤ 32 VA                                                                                                                                                                              |                     |                                 |                     |
| Insulation resistance         | ≥ 200 MΩ (500 VDC≡ megger)                                                                                                                                                                                                                                                                             |                     |                                 |                     |
| Dielectric strength           | Between input and power terminal: 2,000 VAC~ 50 / 60 Hz for 1 min                                                                                                                                                                                                                                      |                     |                                 |                     |
| Output leakage currents       | ≤ 10 mArms                                                                                                                                                                                                                                                                                             |                     |                                 |                     |
| Noise immunity                | ±2 kV square wave noise (pulse width: 1 μs) by the noise simulator                                                                                                                                                                                                                                     |                     |                                 |                     |
| Memory retention              | ≈ 10 years (when using non-volatile semiconductor memory type)                                                                                                                                                                                                                                         |                     |                                 |                     |
| Vibration                     | 0.75 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 temp.                 | -10 to 55 °C, storage: -20 to 80 °C (no freezing or condensation)                                                                                                                                                                                                                                      |                     |                                 |                     |
| Ambient humi.                 | 35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)                                                                                                                                                                                                                                      |                     |                                 |                     |
| Comm. protocol                | Modbus RTU                                                                                                                                                                                                                                                                                             |                     |                                 |                     |