

ASPYRE. AT Power Controllers

Modular and Scalable Power Controllers Enable Increased Throughput and Yield While Reducing System Complexity

The ASPYRE® AT is a family of flexible, compact and scalable smart SCR power controllers. It features multiple advanced firing and control mode algorithms combined with sophisticated diagnostics. The ASPYRE AT integrates easily with EZ-ZONE® RM, PM PLUS® and RMA PLUS™ controllers as part of a Watlow® ecosystem solution.

Features and Benefits

Key component of a Watlow ecosystem solution

- Integrates with EZ-ZONE® RM, RMA PLUS™ and PM PLUS® controllers for a complete solution including Modbus® TCP, EtherNet/IP™, or EtherCAT® communication
- Eliminates discrete wiring between temperature controllers and power controllers for each heater through the highspeed backplane interface with Watlow controllers
- Enables data collection and diagnostics from the power controllers
- Customizes for your application with programmable function blocks including logic, math, compare and more

High accuracy current and voltage measurement

- Characterizes process performance
- Supports comparing (fingerprinting) equipment operation

Integrated, scalable solution

- Allows connection from the temperature control system at one point communicating with up to 16 power controllers
- Offers greater than 60% reduction in wiring footprint and costs compared to other multi-zone systems
- Eliminates need for current transformer and associated wiring with integrated current measurement

Industry-leading design and serviceability

- Offers a robust SCR design to meet a rugged industrial environment's high quality and reliability needs
- Enables fast troubleshooting by providing helpful thermal system diagnostics

100KA short circuit current rating (SCCR)

· Enables greater protection in the event of a short circuit



c-UL® 508 Listed

Shortens project schedules, agency testing and expenses

Closed-loop control on: Voltage, current or power

 Compensates for line voltage variations and thermal component tolerances (e.g. heater wattage, insulation variation, etc.)

Load firing modes: Zero-cross, burst fire, phase angle, soft start

- Handles a wide range of load types
- Protects and extends the life of connected loads

Open heater and shorted SCR indication

 Minimizes production downtime with easy to understand, intelligent, troubleshooting diagnostics

Integrated USB for configuration

- Easily and safely program configuration settings with electronics powered through USB connection
- Eliminates a user from having to work in a high voltage, hazardous environment. High voltage to controller or system panel can be turned off while setting controller configuration

Heater bakeout

- · Protects heater on startup
- Eliminates labor and time associated with checking for wet heaters

Cooling options

- Integrates DIN-rail mountable heat sink option for simplifying implementation
- Offers base plate option for flexibility in removing heat from the electrical box





Specifications

Power Bases

· Single-phase, 1 controlled leg

Load Amp Range

• 12A, 24A and 48A options (see derating curves)

SCR and Amperage Rating

- SCCR rating 100,000A up to 480VAC with coordinated fusing
- SCCR rating 10,000A up to 240VAC with recommended circuit breaker
- Power dissipation: Approximately 1 to 1.2 watts per amp
- Leakage current: 1mA at 25°C

Line and Load Voltage Range

• 100 to 480V

Voltage Frequency

• Automatically compensates for 47 to 63Hz

Controller Operating Supply Voltage

- 24VDC, 6W 6VA per ASPYRE AT unit
- Maximum 10 units powered via terminal screw and backplane connector
- Use split-rail configuration when more units are required

Voltage and Current Measurement Accuracy

• ±2% of range

Control Modes

· Voltage, voltage squared, current, current squared, power

Output Control Firing Types

- Fixed time-base zero crossing
- Variable time-base zero crossing (burst firing)
- Phase angle

Digital Inputs and Outputs

- Independently user-configurable as input or switched DC output
- Update rate: 10Hz
- Input type: User-selectable, dc voltage or dry contact
- Input logic: On ≥ 4VDC, off ≤ 1VDC, 30VDC max
- Output voltage: 24V (based on the supply voltage)
- Output: 100mADC max. per channel

Analog Input

- Voltage: 0-10VDC, $15k\Omega$ impedance
- Current: 4 to 20mA, 0 to 20mADC, 100Ω impedance

Analog Output

- 0 to 20mADC $\pm 120\mu A$ or 4 to 20mADC into 500 Ω max. load with 30 μA nominal resolution
- 0 to 10VDC ± 60 mV into a 500Ω min. load with 15mV nominal resolution

Electromechanical Relay Output

- Form C, 5A resistive load
- 100,000 cycles at 24VDC, 120/240 VAC
- 125VA pilot duty 120/240VAC
- 25VA 24VAC/DC

Connectivity

- EIA 485, Modbus® RTU (option)
- USB device
- EtherCAT® ETG (future option)
- Modbus® TCP (future option)
- EtherNet/IP™ (future option)
- ProfiNet (future option)

Diagnostics

 Open load circuit (including heater break) partial load failure, SCR short circuit, current limit, thermal alarm, line voltage loss

Operator Interface

· 4 discrete LED indicators for status monitoring

COMPOSER® PC Configuration Software

- Connects via USB port
- Easy-to-use test drive screen
- · Function block diagram programming

Cooling Options

- DIN-rail heat sink for convection cooling
- Base plate for use with customer supplied heat sink

Control Terminals

 Terminal blocks are touch safe, removable, 22 to 12 AWG, 5 in.-lb. (0.6 Nm) torque, 1/8 in. (3.5 mm) flat blade screw driver

Line and Load Terminals

• Compatible with crimp lug terminals or bare wire, 12 to 6 AWG, 24 in.-lb. (2.7 Nm) torque, 1/8 in. hex driver

Ground Terminal

• Recommended 14 to 10 AWG with UL® Listed (ZMVV) #8 ring or spade crimp lug, 15 to 17 in.-lb (1.7 to 1.9 Nm) torque, , 1/4 in. (6.5 mm) flat blade screw driver

Mounting

- Panel mounting with screws or DIN rail
- · No. 8 (M4) fastener
- DIN rail: 35mm x 7.5mm

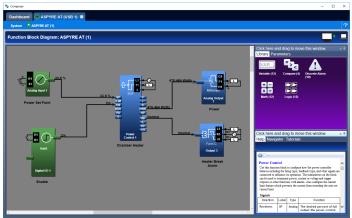
Environment

- 0 to 60°C (single unit) or 55°C (multiple units) see derating curves
- 5 to 90% RH (relative humidity), non-condensing

Agency Approval and Regulatory

- UL® 508 Listed
- c-UI ® Listed
- CE EMC Directive Class A Emissions
- CE Safety Directive EN 60947-4-3
- IP20
- RoHS 2015-863-EU
- W.E.E.E 2012-19-EU
- Enclosure Flammability Rating: 94-V0



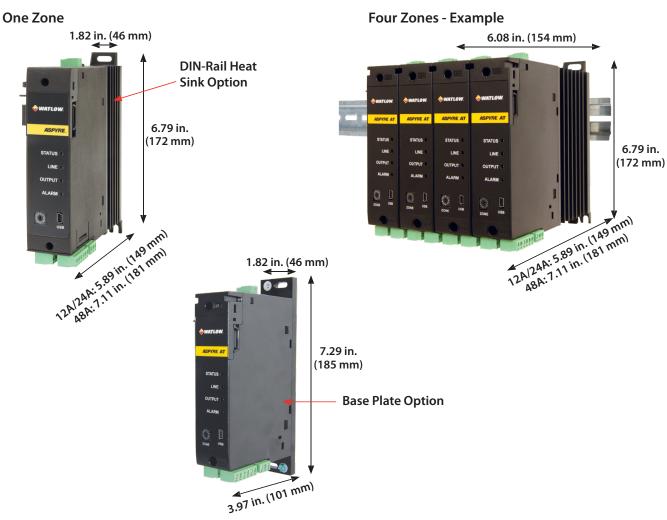






Use the Test view to set up the power controller and run it through its paces

Dimensions

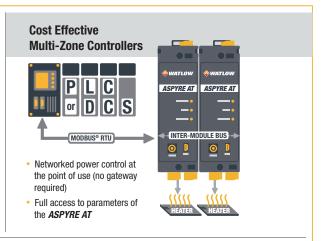




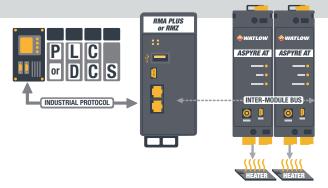
I/O Functional Block Diagram

Compatible with any way you want to integrate into your system

- Simplify wiring and reduce cost with all-communication interface between temperature control and power control
- More data-rich solution: measure load voltage, current, heater resistance and more
- From PLC or DCS via EtherCAT®, EtherNet/IP, Modbus RTU or Modbus TCP
- Can be configured for compatibility with legacy analog interface design

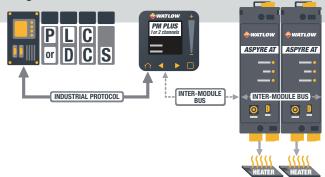


Flexible Solutions with Fieldbus

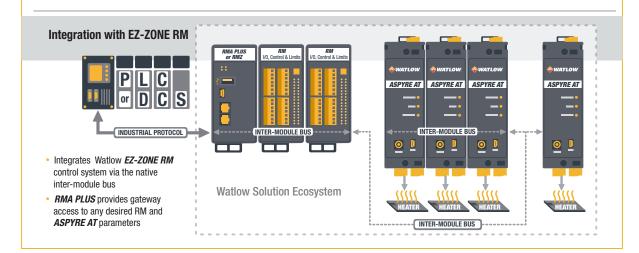


- · Build cost-effective multizone solutions
- Full access to parameters of the ASPYRE AT
- Up to 16 zones

Integration with PM PLUS



- · Networked power control at the point of use
- PM PLUS provides access to operation parameters
- Configuration performed via USB connection on ASPYRE AT





Ordering Information

Instructions: Choose one option for each feature.

| ✓ | Switched Legs |
|----------|---------------|
| | Single-phase |

| V | Maximum Load Current |
|----------|----------------------|
| | 12A |
| | 24A |
| | 48A |

| V | Cooling |
|----------|---|
| | Base plate (customer supplied heat sink) |
| | Up to 24A convection cooled, DIN-rail mounted heat sink |
| | Up to 48A convection cooled, DIN-rail mounted heat sink |

| √ | Control and Measurement |
|----------|---|
| | Standard precision closed-loop power control with current limit |

| ✓ | Serial Communications |
|----------|---|
| | High-speed inter-module bus via backplane and screw |
| | terminal connection |
| | Modbus® RTU via screw terminal connection, high-speed |
| | inter-module bus via backplane only |

| ✓ | Analog Input |
|----------|---------------------------------------|
| | None |
| | 1 process input (volts and milliamps) |

| V | Digital Inputs/Outputs |
|----------|------------------------|
| | None |
| | 2 digital I/O points |

| V | Mechanical Relay Output |
|----------|-----------------------------|
| | None |
| | Mechanical relay 5A, Form C |

| V | Universal Process/Retransmit Output |
|----------|-------------------------------------|
| | None |
| | 1 universal process output |

| V | Firmware |
|----------|-----------------------------|
| | Standard (current revision) |
| | Locked revisions |

| V | Defaults | |
|----------|--------------------------|--|
| | Standard | |
| | Custom - consult factory | |

Accessories

COMPOSER Configuration Software

 Download at: https://www.watlow.com/products/ controllers/software/composer-software

USB Cable

 5 ft USB 2.0 type A to mini device cable (p/n 0219-0382-0000), PC to ASPYRE AT for COMPOSER PC software

24VDC Power Supply

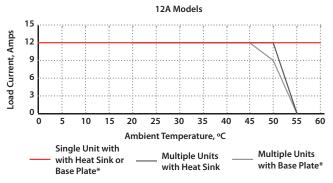
 Watlow power supply (p/n 0847-0299-0000) UL® Class 2, 90-263VAC input, 24VDC output, 1.30A, 31W

Combination Branch Circuit Protection and Semiconductor Fuses and Fuse Holders

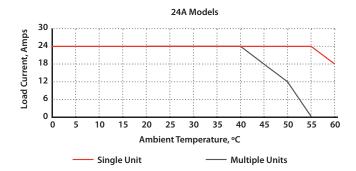
- 15A Fuse: 1471-8116, Fuse Holder: 0808-0326-1530
- 30A Fuse: 0808-0325-0030, Fuse Holder: 0808-0326-1530
- 60A Fuse: 0808-0325-0060, Fuse Holder: 0808-0326-3560 For other fuse options search for "SCCR" on www.watlow.com

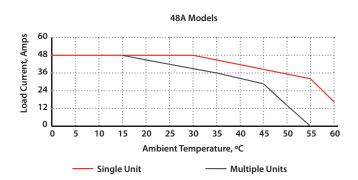


Ambient Temperature Derating



^{*}No heat sink, bolted to Type 1 enclosure wall





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