

# ATOM

## SINGLE PHASE SCR POWER CONTROLLERS

FRAME SIZES: 16, 32, 50, 65A

VOLTAGE RANGE: 24-600 VAC



### Analog Control

- Standard: 0-5 VDC, 4-20 mA Setpoints
- Field Scaleable: 0-10 VDC, 0-20 mA
- On/Off Relay Mode: 0, 4-32 VDC

### Digital Fieldbus



## DESCRIPTION



ATOM is an ultra-compact low cost microprocessor-based power controller to assist with control of AC loads.

Resistive or transformer-connected loads can be controlled in Zero Cross, Fast Zero Cross, SSR Random Relay, or optionally Phase Angle and Half-wave DC firing modes. Output is controlled linearly with respect to the command setpoint and can be set to command the RMS value of the voltage or current.

ATOM Power Controllers are available in current ratings from 16 to 65A. Auto-ranging voltage circuitry enables main line voltage from 24 - 600 Vac (45 - 65 Hz) eliminating the need for hardware jumpers or stocking multiple controllers for international voltages. A separate 24 Vdc power source supplies the control electronics and maintains critical communications to your control system when the mains are absent on digital units.

Status LEDs make operation and troubleshooting simple. A plug-n-play USB interface and free Control Panel app for your Windows PC or Android device further simplifies installing and configuring the controller to its designated application. For multiple controllers, controller settings can be duplicated by simply loading a configuration file saved from a previous unit.

Depending on the ATOM model, setpoints can be controlled through either the analog or digital fieldbus interface. The factory-configured analog setpoint signal range is 0 - 5 Vdc, setpoints are field scalable from 0 - 10 Vdc or 0 - 20 mA.



## FEATURES

### Input

- Auto-Ranging Input Voltage: 24 - 600 VAC +10/-15%
- Single Phase AC

### Output

- 0 - 600 VAC or Max Line Voltage
- Up to full frame rating at 122° F / 50° C, 6,000 ft
- AC Output or Half-wave DC (current derated 50% in DC)

### Control Features

Microprocessor based control with Digital Phase Lock

#### Control Modes

- Zero Cross, Fast Zero Cross, Phase Angle, SSR On/Off Random Relay, or Half-wave DC

#### Feedback Modes

- Feed-forward Voltage, RMS Current, On/Off Relay mode, or Proportional (Open Loop)

### Indicator LEDs

- Power (24V power, AC line status, phase loss indicator)
- Status (output state, alarms, limits, Partial Load Fault)

### Analog Input (Analog and Digital models only)

#### Voltage

- 0-10V range (32VDC max in relay mode)
- 200k Ohm impedance

#### Current

- 0-20mA range
- 249 Ohm impedance

### Line Voltage Compensation (not available in Proportional or On/Off relay mode)

### Adjustable Soft Start (Phase Angle firing mode only)

### Trans-Guard™ Prevent upstream heating of feeder transformers

### Sync-Guard™ Load balance multiple controllers to prevent peak currents in feeders (available on Digital models only)

### Missing Cycle Detection Ramps from 0 to setpoint upon missing AC cycle

### Over-temperature

- Warning Alarm: Detects an abnormal operating temperature 5 degrees below limit (max operating temperature: 105 ° C)
- Shutdown: Protects controller in a critical over-temp condition

### Over current-trip Protects the controller in the event of a load fault or arc to ground

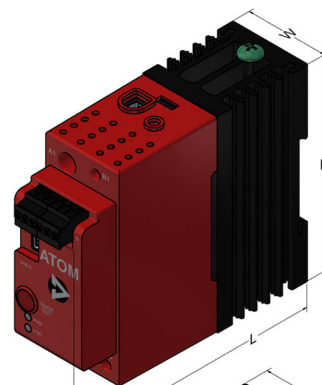
### Current Limit Fixed standard at 105% of frame rating or adjustable with buy up.

### Solid State Relay Output Rated: 60 VDC 100mA / 42 VAC 100ma RMS

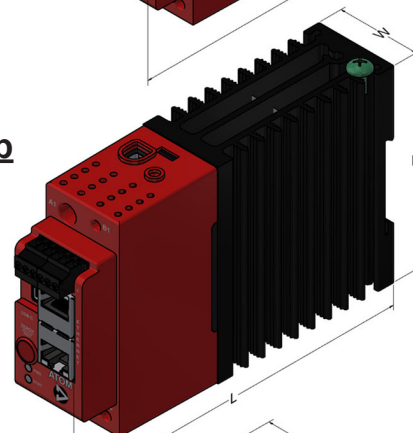
### Teach / Reset Button Learn load resistance value or reset the controller.

### USB-C interface Easy setup with the Control Panel app

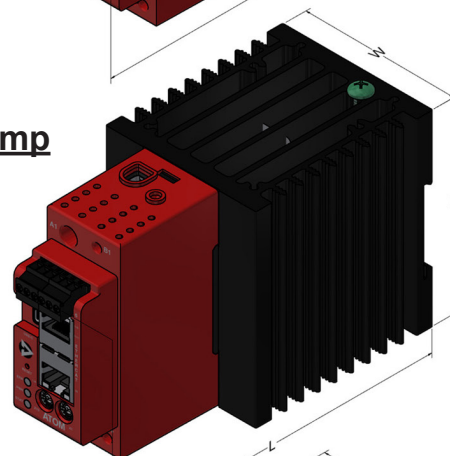
### 16 Amp



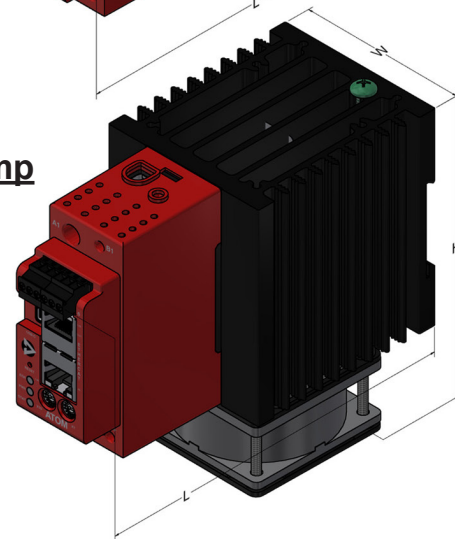
### 32 Amp



### 50 Amp



### 65 Amp



Dimensions: Inches [MM]

16 A	H: 3.50 [88.9]	W: 1.40 [35.5]	L: 4.37 [110.9]
32 A	H: 3.50 [88.9]	W: 1.40 [35.5]	L: 5.97 [151.6]
50 A	H: 3.50 [88.9]	W: 2.80 [71.1]	L: 5.97 [151.6]
65 A	H: 5.00 [127.0]	W: 2.80 [71.1]	L: 5.97 [151.6]

## OPTIONS

### Adjustable Limits

- Voltage Limit (Average over time for zero cross) and RMS Current Limit 20 - 105% (Average over time for zero cross)

### Alarms, Solid State Relay, Shorted SCR Detection

- Enables access to additional alarms options for external signaling with the built in solid state relay
- Short Detection determines if an SCR is failed ON with the option to map to alarm relay output.

### Partial Load Fault (included with Alarms package)

- Monitors changes in load resistance. An alarm will activate if the load changes by a user configurable percentage.
- One-button relearn, save live load resistance value to the controller with the touch of a button.

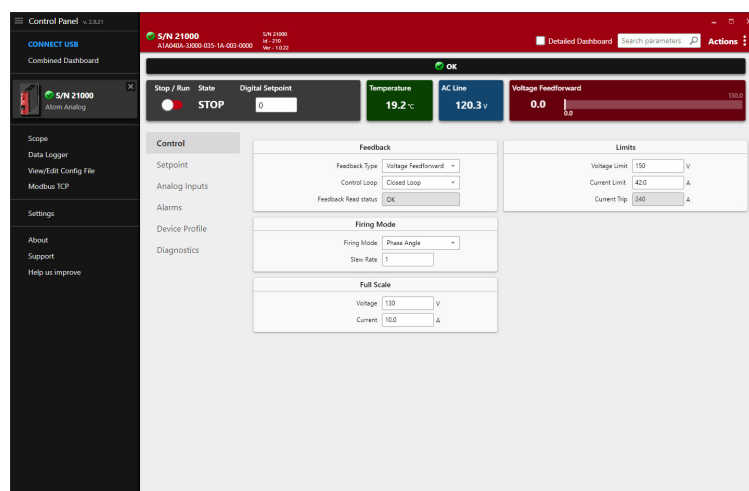
### Phase Angle Firing Mode

## CONTROL PANEL APP

### Control Panel Interface

- Microsoft Windows PC and Android device support
- USB-C interface
- View live operating parameters and diagnostics
- Load / Save / Copy controller settings

Download the free Control Panel App at  
[www.ccipower.com](http://www.ccipower.com)



## SPECIFICATIONS

### POWER

Line Frequency (Auto Ranging)	45 - 65 Hz
Frame Current Ratings (Amps)	Continuous RMS (AC) 16   32   50   65
Current Rating - Peak Surge	15x frame rating for 10 ms
Minimum Hold/Latch Current	500 mA
Max Leakage Current	1.2 mA @ 600 Vac 50/60 Hz
SCR Rating (PIV)	1600 V peak forward & reverse
Fusing	Optional external Class T, branch-rated, touch-safe fusing
Thermal	Integrated thermal sensor
Current Limit (optional)	20 - 105%
Power Dissipation	1.3 W per A of load current per phase
Controller Input Power (DC)	24 Vdc (+10 / -15%)
DC Power Consumption	2 to 6 W (Frame dependant, see User Manual for detail)

### ENVIRONMENTAL

Surrounding Air Operating Temp	32°F [0°C] to 122°F [50°C] (Deration for proximity placement may apply)
Humidity	20% to 90% RH Non-condensing
Rated Operating Altitude	Up to 6000 ft [1829 m] at full rated current
Contaminates	RoHS Compliant, CE Pollution Degree 2 (only non-conductive pollution occurs)
Storage Temperature	-4°F [-20°C] to 176°F [80°C]

### ENCLOSURE PROTECTIVE RATING

International	IP 20
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### PERFORMANCE

Setpoint Resolution	10k
Internal Control Loop Resolution	32k
Output Resolution	30k @ 50 Hz, 25k @ 60 Hz
Response Time	Adjustable from 50 ms to 2 s
Accuracy (Full Conduction)	
Voltage	5.0% of line voltage
Current	5.0% of frame rating
Output Linearity	4.0% from (5 - 100%) output range
Accuracy	(+10% / -15%) line voltage change will result in a max output change of 2% from (5 - 100%) output range
Temperature Drift	Output shall not change greater than 1% per degree C max over the operating temperature range from (5 - 100%) output range

### ISOLATION

Signal to Line/Load	3750 Vac minimum
Line/Load to Ground	2500 Vac minimum
Line to Load	1000 Vac minimum limited by MOV
Network	500 Vac minimum

### RELIABILITY

Mean Time Between Failure (MTBF)	~ 50,000 Hours
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See the ATOM User's Manual for a full list of specifications.

## MODEL NUMBERS

**A** 1 ☐ 0 ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ - ☐ ☐ ☐ - ☐ ☐ - ☐ ☐ ☐ - ☐ ☐ ☐ ☐

**Phase** \_\_\_\_\_  
**Circuit Power** \_\_\_\_\_  
 A = 24vdc Digital  
**Frame Current** \_\_\_\_\_  
 16, 32, 50, or 65  
**Comms** \_\_\_\_\_  
 A = Analog or I = Ethernet/IP C = EtherCAT  
 E = Modbus TCP N = Profinet  
**Setpoint Range** \_\_\_\_\_  
 Digital 0 Analog 4 = 4 / 20mA  
 Analog 1 = 0 / 5V Analog 5 = POT  
 Analog 2 = 1 / 5V Analog 6 = SSR (3 / 4V)  
 Analog 3 = 0 / 10V  
**Firing Mode** \_\_\_\_\_  

SSR	RMS Voltage	RMS Current	Proportional
A = Zero Cross	G = Zero Cross	K = DC Phase Angle	C = Zero Cross
B = Random	H = Fast Zero Cross	M = Zero Cross	D = Fast Zero Cross
	J = Phase Angle	N = Fast Zero Cross	E = Phase Angle
	K = DC Phase Angle	P = Phase Angle	F = DC Phase Angle

**Full Scale** \_\_\_\_\_  
 SSR or PROP 000  
 Voltage 001 - 600  
 Current 001 - 100  
**Limits** \_\_\_\_\_  
 000 = Default - fixed 105% of frame rating  
 020 - 105 = Adjustable Limit - 20-105% of frame rating  
 The Limit value is entered as volts or amps  
 If the value is zero, then limit is not purchased, current is 105%.  
 If voltage feedback, limit is in current and has no voltage limit.  
 If current feedback, limit is in voltage, current limit is 105%.  
 If SSR or proportional, limit is in current.  
**Shorted SCR Enable** \_\_\_\_\_  
 0 = Not Purchased 1 = Enabled  
**PLF/Open Load** \_\_\_\_\_  
 0 = Not Purchased B = 5% E = 20% H = 35% K = 50% N = 65% (% Tolerance)  
 A = Purchase undetermined C = 10% F = 25% I = 40% L = 55% O = 70%  
 Z = Open Load D = 15% G = 30% J = 45% M = 60% P = 75%  
**Relay Mask** \_\_\_\_\_  
 MSB 1 1 0 0 0 0 0 0 0 0 LSB  
 OCT Over Temp PLF SSCR iL VL Line Loss Comm Error Mem Error Watchdog timeout Error trap  
 Mask is binary selections represented as a hex value  
**Config Code** \_\_\_\_\_  
 Reserved for manufacturer configuration

## CONTACT & ORDERING



Tel. +1(952) 474 - 6200 or +1(800) 765 - 2799  
 8077 Century Blvd, Chanhassen, MN, 55317, USA

 [www.ccipower.com](http://www.ccipower.com)

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