



The SCR Power Control Delivers Up To 80 Amps In Compact Package

Features and Benefits

DIN rail and standard panel mount thru-wall mounting

- Versatile, quick and low-cost installation

Compact Size

- Reduced panel space; less cost

Touch-safe terminals

- Increased safety for installer/user

One-and three-phase power

- Can be used in a variety of applications

Open heater/shorted output alarm

- Notifies you in case of an open heater or shorted output

No mercury

- Environmentally safe

Faster switching with solid state

- Saves energy and extends heater life

UL® 508 listed and C-UL®, and CE with filter

- For applications requiring agency approval

System solution component

- Thermal loop single source

Back-to-back SCR design

- Rugged design

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The Watlow DIN-A-MITE® power controller provides you with a low cost, compact and versatile solid state option for controlling electric heat. You also get all the quality you expect from a Watlow designed and manufactured product. DIN rail and standard panel mounting plus a cabinet thru-wall mount version is available.

Basic features include single-phase, three-phase/two leg, and three-phase/three leg, 24-600V~(ac) operation. Current switching capabilities range from 30 to 80A depending on the model ordered.

Variable time base, linear voltage and current process control or $V \approx (ac/dc)$ input contactor versions are available. Also single phase, phase angle firing and current limiting are available.

All configurations are model number dependent and factory selectable.

The DIN-A-MITE power controller is made in the USA.



WIN-DMC-0502
ISO 9001



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Specifications—2141

Operator Interface

- Command signal input and indication light
- Alarm output and indication light
- Current limit indication LED

Amperage Rating

- See output rating curves on page 3
- Maximum surge current for 16.6 milliseconds, 1,350A peak
- Maximum I²t for fusing is 9100A²s
- Latching current: 500mA minimum
- Holding current: 200mA minimum
- Fan current: 0.14A for 24V \approx (dc); 0.12A for 120V \sim (ac); 0.06A for 240V \sim (ac)
- Off-state leakage 1mA at 25°C (77°F) maximum

Line Voltage

- 24 to 48V \sim (ac) units: 20.4V \sim (ac) minimum to 53V \sim (ac) maximum
- 100 to 240V \sim (ac) units: 48V \sim (ac) minimum to 265V \sim (ac) maximum
- 277 to 600V \sim (ac) units: 85V \sim (ac) minimum to 660V \sim (ac) maximum
- 100 to 120V \sim (ac), 200 to 208V \sim (ac), 230 to 240V \sim (ac), 277V \sim (ac), 400V \sim (ac), 480V \sim (ac), 600V \sim (ac), -15 percent/+10 percent, 50 to 60Hz independent +/-5 percent (Input Control Signal Type L, P and S)

Alarms (zero cross models only)

Shorted SCR Alarm Option (Input control signal type S only)

- Alarm state when the input command signal is off and a 10A or more load current is detected by the current transformer (two turns required for 5A or three turns for 2.5A).


Open Heater Alarm Option

- Alarm state when the input command signal is on and the load current detected by the current transformer is less than 5A \sim (ac)

Alarm output

- Energizes on alarm, non-latching
- Triac 24 to 240V \sim (ac), external supply with a current rating of 300mA @ 25°C (77°F), 200mA @ 50°C (122°F), 100mA @ 80°C (176°F) and a holding current of 200 μ A with a latching current of 5mA typical.

Agency Approvals

- CE with proper filter:
89/336/EEC Electromagnetic Compatibility Directive
EN 61326: Industrial Immunity Class A emissions not suitable for Class B environments
73/23/EEC Low Voltage Directive EN 50178 Safety Requirements Installation category III, Pollution degree 2
Phase angle and phase angle with current limit Input Control Signal Types (P and L) are not CE approved.
- UL[®] 50 Type 4X Enclosure and UL[®] 1604 File E184390 (Thru-wall heatsink mounting only)
-  UL[®] 508 listed and C-UL[®], File E73741

Input Terminals

- Compression: Will accept 0.2 to 1.5 mm² (24 to 16 AWG) wire
- Torque to 0.5 Nm (4.4 in. lb) maximum with a 3.5 mm ($\frac{1}{8}$ in.) blade screwdriver

Line and Load Terminals

- Compression: Will accept 2.5 to 27 mm² (14 to 4 AWG) wire
- Torque to 1.8 Nm (16 in. lb) maximum with a 6.4 mm ($\frac{1}{4}$ in.) blade screwdriver, or a No. 2 Phillips screwdriver

Operating Environment

- See the output rating curve chart on page 3
- 0 to 90 percent RH (relative humidity), non-condensing
- Storage temperature: -40 to +85°C (-40 to 185°F)
- Insulation only tested to 3,000 meters

DIN Rail Mount

- DIN EN 50022, 35 mm by 7.5 mm

Back Panel Mount

- Four mounting holes M3 to M4 (No. 6 to No. 8) fastener

Through-Wall Mount

- See page 4 for thru-wall cutout

Additional Specifications for Contactors and Proportional Controllers

Control Mode, Zero-Cross

- Input Control Signal Type C: V \approx (dc) input contactor.
- Input Control Signal Type K: V \sim (ac) input contactor.
- To increase service life on contactor input models the cycle time should be less than three seconds.
- Input Control Signal Type F: 4 to 20mA \approx (dc) proportional variable time base control.

Input Command Signal

- AC contactor
24V \sim (ac) \pm 10 percent, 120V \sim (ac) +10/-25 percent, 240V \sim (ac) +10/-25 percent @ 25mA maximum per controlled leg
- DC Contactor
4.5V \approx to 32V \approx (dc): maximum current @ 4.5V \approx (dc) is 6mA per leg. Add 3mA if alarm option is included
- Loop powered linear current
4mA \approx to 20mA \approx (dc): loop-powered. Input Type F0 and F1 options only. No more than three inputs connected in series

Additional Specifications: Phase Angle; Phase Angle Current Limit; & Single Cycle VTB

Operation

- Burst firing (zero-cross) control, single-cycle variable time base, Type S single phase and 3 phase. Unit is not on for more than one full cycle under 50 percent power and not off for more than one full cycle above 50 percent power.
- Phase angle control, single-phase only

Input Command Signal

- 0 to 20mA, 4 to 20mA, 12 to 20mA, = (dc), 0 to 5V=(dc), 1 to 5V=(dc), and 0 to 10V=(dc)
- Input impedance 250Ω for 4mA to 20mA, 5kΩ for linear voltage input

Output Voltage

- 100 to 120V~(ac), 200 to 208V~(ac), 230 to 240V~(ac), 277V~(ac), 400V~(ac), 480V~(ac) and 600V~(ac), ±10 percent

Linearity (Input Control Signal Type S)

- ±5 percent input to output power over 0 to 100 percent of span between calibration points

Linearity (Phase Angle Input Control Type P and L)

- ±5 percent input to output power, as referenced to a sinusoidal power curve, between calibration points

Resolution

- Better than 0.1 percent of input span with respect to output change

Soft Start

(Phase Angle Input Control Signal Type P and L)

Typically:

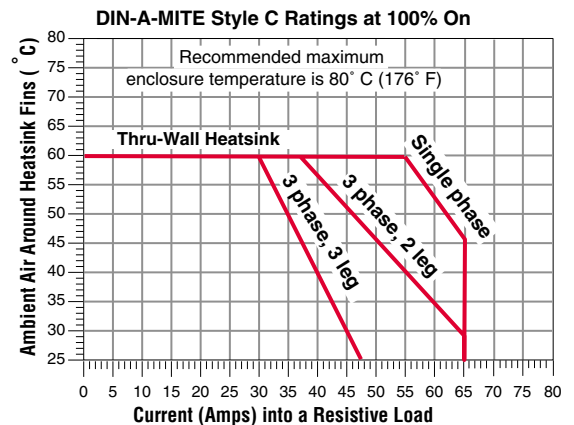
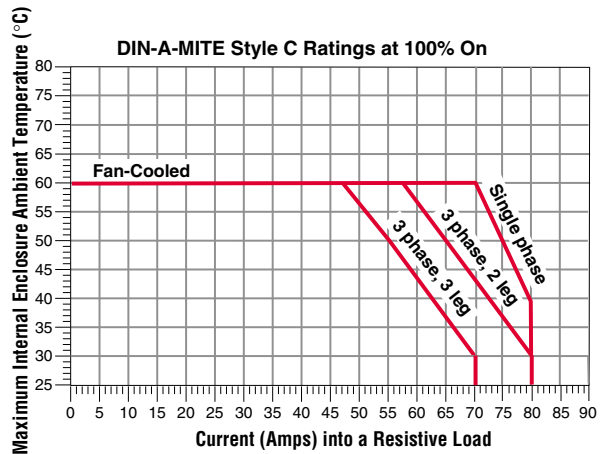
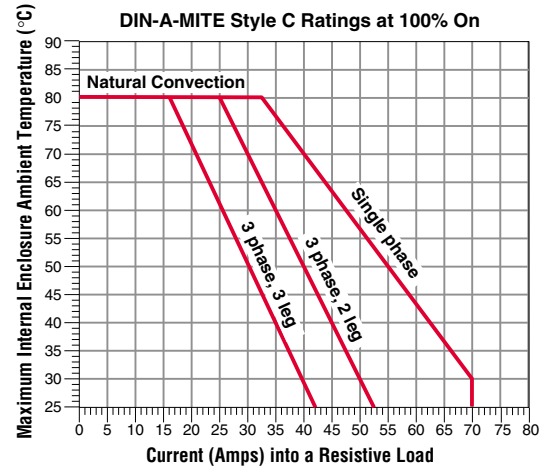
- 5 seconds soft start on power up
- Soft start on thermostat overtemperature
- Soft start on ½ cycle drop out detection
- 1 second soft start on set point change

Options

- Manual Control Kit (1kΩ potentiometer) 08-5362
- Alarm option is **not** available on phase angle Type P or L

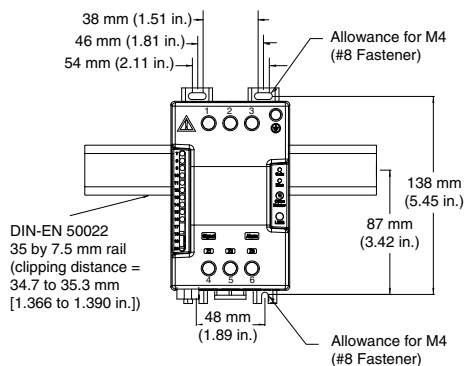
Specifications are subject to change without notice.

Output Rating Curves

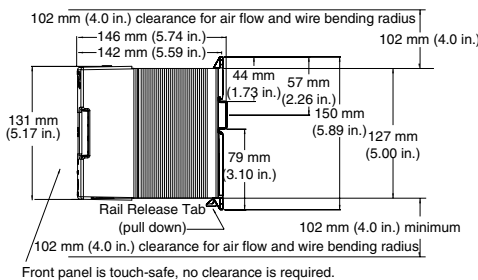


Style C Dimensions Without Cooling Fan

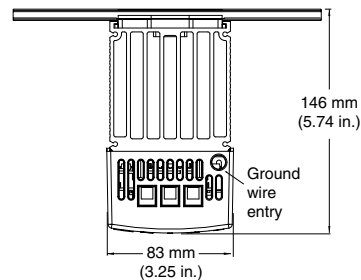
Front



Side

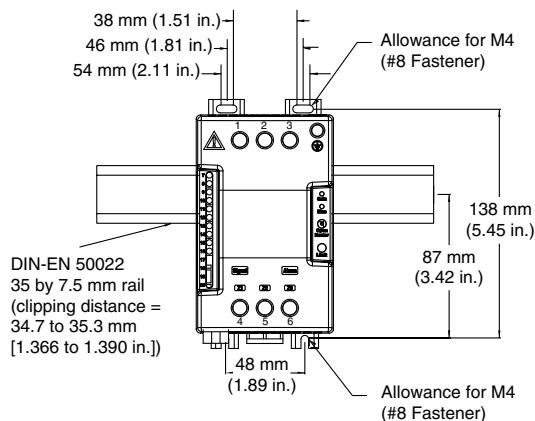


Top

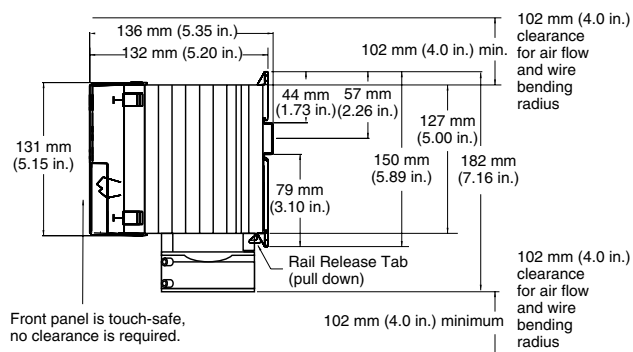


With Cooling Fan

Front

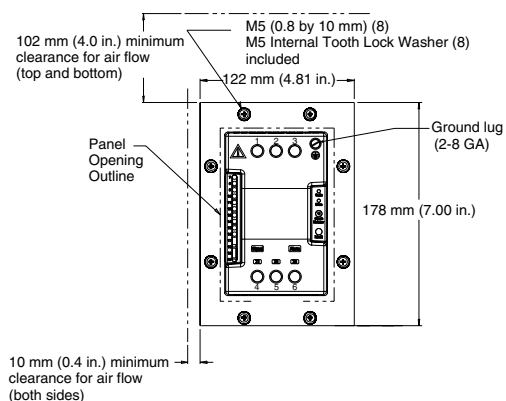


Side

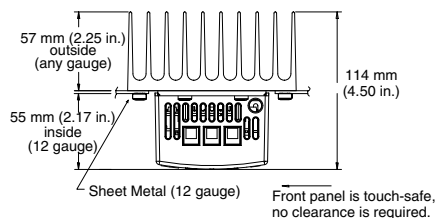


Thru-Wall Style C^①

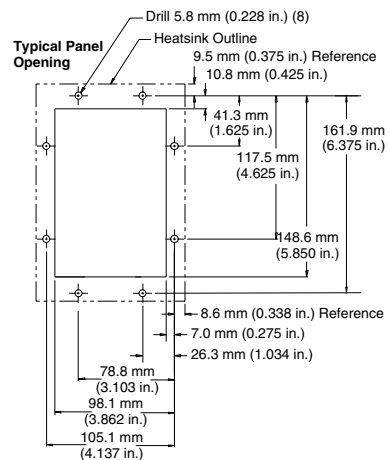
Front



Top



Panel Cutout



^① With the potential for high thru-wall heatsink temperatures, application may require a touch-safe shield.

Extended Heater And Power Controller Life With Variable Time Base

With variable time base control, the power controller automatically adjusts the time base and output power with respect to process input. Accelerated life testing verified that variable time base control significantly reduces expansion and contraction of the heater element. This extends heater and power controller life while improving process temperature control. You save money on heaters, downtime and maintenance.

Loop Powered or Transformer Powered

Loop Powered

By using a temperature control 4-20mA process output signal as the power supply for the DIN-A-MITE input the cost of the power control can be reduced. With zero cross (burst fired) the 4-20mA input signal simultaneously performs the tasks of providing a power supply and an input command signal. The DIN-A-MITE "V" output type is a loop powered option and will work as single phase or three phase. It works only with a 4-20mA input.

Transformer Powered

Some DIN-A-MITE models require that an on board power supply be used to power the internal electronics. Phase angle options require that we detect the zero cross of the AC sine wave and thus a transformer is required also. The DIN-A-MITE input control signal types "L", "P" and "S" are transformer powered and can be controlled manually (open loop) with a potentiometer input or in the auto mode (close loop) with a temperature control using any of the 4-20mA, linear voltage (0-5, 1-5 and 0-10V=(dc)) input types.

Loop Powered 4-20mA Variable Time Base

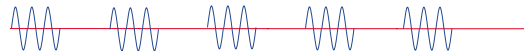
Models: DC__-[02, 24, 60] [F0, F1]-_____

20 Percent Power Output



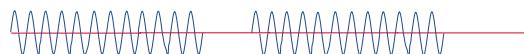
3~ cycles on, 12~ cycles off

50 Percent Power Output



3~ cycles on, 3~ cycles off

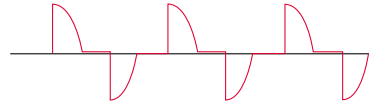
80 Percent Power Output



12~ cycles on, 3~ cycles off

Phase Angle

Models: DC1_ - _ _ [L, P] 0 - 0_ _ _



Phase Angle (input control type "P") Phase control is infinitely variable inside the sine wave. This provides a variable voltage and/or current output. This option includes soft start and line voltage compensation. This is transformer powered and therefore will work with a linear voltage, current input, or a potentiometer input. This is single-phase only.

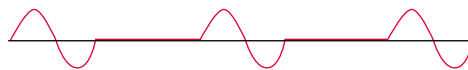
Single Cycle Variable Time Base

Models: DC_ _ - _ _ S_ - _ _ _ _

40 percent Variable Time Base, 2~ Line Cycles On, 3 Cycles Off



50 percent Variable time Base, 1~ Line Cycle On, 1 Cycle Off



Variable Time Base (input control type "S") single cycle variable. At 50 percent power, it is on one cycle, and off one cycle. At 40 percent it is on for two cycles and off for three. This is transformer powered and therefore will work with a linear voltage, current input, or a potentiometer input.

Recommended Semiconductor Fuse for Applications Through 600V~(ac):

DIN-A-MITE Model	Fuse Part Number	
	Watlow	Bussman
30 A	17-8040	FWP-40A14F
35 to 40 A	17-8050	FWP-50A14F
45 to 50 A	17-8063	FWP-63A22F
56 to 65 A	17-8080	FWP-80A22F
75 A	17-8100	FWP-100A22F

DIN-A-MITE Model	Fuse Holder Part Number	
	Watlow	Ferraz
30A	17-5114	A93909 or ST-14
35 to 40 A	17-5114	B93910 or ST-14
45 to 50 A	17-5122	T94823 or ST-22
56 to 65 A	17-5122	A94829 or ST-22
75A	17-5122	Y94827 or ST-22

Ordering Information—(2169)

To order, complete the code number on the right with the information below:

Style C = Solid-State Power Controller

DC - - - - -

Phase _____

- 1 = 1 phase, 1 controlled leg
- 2 = 3 phase, 2 controlled legs
- 3 = 3 phase, 3 controlled legs, (use with four wire wye)
- 8 = 2 independent zones (Input Type C, K)
- 9 = 3 independent zones (Input Type C, K)

Cooling and Current Rating Per Leg* (see chart below) _____

- 0 = Natural convection standard DIN rail or panel heatsink
- 1 = Fan cooled 120V~(ac) standard DIN rail or panel heatsink
- 2 = Fan cooled 240V~(ac) standard DIN rail or panel heatsink.
- 3 = Fan cooled 24V~(dc) standard DIN rail or panel heatsink
- T = Natural convection through wall or cabinet heatsink (NEMA 4X)

Line and Load Voltage _____

- 02 = 24 to 48V~(ac) (Control C, F, K)
- 12 = 100 to 120V~(ac) (Control L, P, S)
- 20 = 200 to 208V~(ac) (Control L, P, S)
- 24 = 100 to 240V~(ac) (Control C, F, K): 230 to 240V~(ac) (Control L, P, S)
- 27 = 277V~(ac) (Control L, P, S)
- 40 = 400V~(ac) (Control L, P, S)
- 48 = 480V~(ac) (Control L, P, S)
- 60 = 277 to 600V~(ac) (Control C, F, K): 600V~(ac) (Control L, P, S)

Input Control Signal _____

- C0 = 4.5 to 32V~(dc) contactor
- F0 = 4 to 20mA~(dc) proportional
- F1 = 12 to 20mA~(dc) proportional
- K1 = 22 to 26V~(ac) contactor
- K2 = 100 to 120V~(ac) contactor
- K3 = 200 to 240V~(ac) contactor
- L (0 to 5) = Phase angle with current limiting^①
- P (0 to 5) = Phase angle^①
- S (0 to 5) = Single cycle variable time base
 - 0 = 4 to 20mA
 - 1 = 12 to 20mA
 - 2 = 0 to 20mA
 - 3 = 0 to 5V~(dc) proportional
 - 4 = 1 to 5V~(dc) proportional
 - 5 = 0 to 10V~(dc) proportional

Alarm _____

- 0 = No alarm
- S = Shorted SCR alarm
- H = Open-heater and shorted-SCR alarm (for input Control Signal option S)

Language _____

- 0 = English
- 1 = German
- 2 = Spanish
- 3 = French

Custom Part Numbers _____

- 00 = Standard part
- 1X = 1-second soft start (control option P, L)
- XX = Any letter or number, custom options, labeling, etc.

^① Not CE Approved

*DIN-A-MITE C Current Rating Table

Phase	Cooling	Current at 50°C (122°F)
1	0	55A
1	T	60A
1	(1, 2, 3)	75A
2, 8	0	40A
2, 8	T	45A
2, 8	(1, 2, 3)	65A
3, 9	0	30A
3, 9	T	35A
3, 9	(1, 2, 3)	55A