



WATLOW

Power Controls

Watlow Controls, 1241 Bundy Blvd.
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User's Manual



CE 96

DIN-a-mite® Style B Solid State Power Control

Congratulations on your purchase of a Watlow *DIN-a-mite*® Solid State Power Control.

This product represents the state-of-the-art in solid state power control design. Please consult this user manual when placing your new DIN-a-mite into service. It contains all the necessary information to mount and wire the product into the application. This manual also contains all user pertinent specifications and semiconductor fusing recommendations. Refer to national and local electrical code safety guidelines whenever installing electrical equipment.

This DIN-a-mite product is capable of switching up to 30 amps single phase; 20 amps three phase, 2 leg; and 15 amps three phase, 3 leg at 600V~(ac). (See output rating curve in the specifications section of this manual.) The DIN-a-mite is electrically touch safe, and includes DIN rail or standard back panel mounting. An optional "shorted SCR detector" feature is available on specific models. VDE 0160 licensed, UL508 listed, and C-UL.

The DIN-a-mite solid state power control is designed and manufactured by Watlow Controls in Winona, Minnesota.

WDIN-BUMN Rev A03 (1095)

May 1997, North American English
Supersedes WDIN-BUMN Rev A02

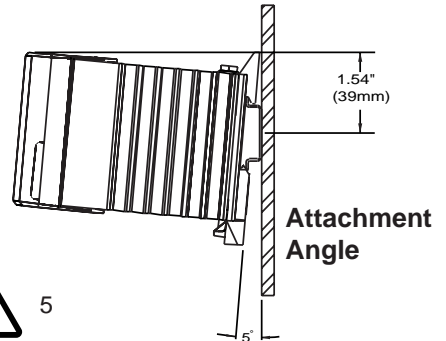
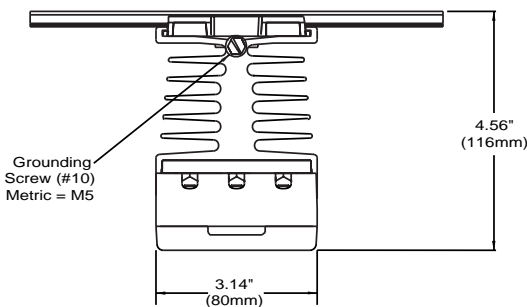
Made in the U.S.A.



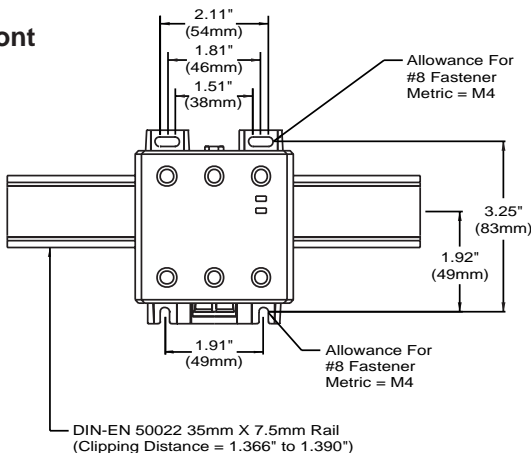
Printed on Recycled Paper
10% Postconsumer Waste

Unit Dimensions

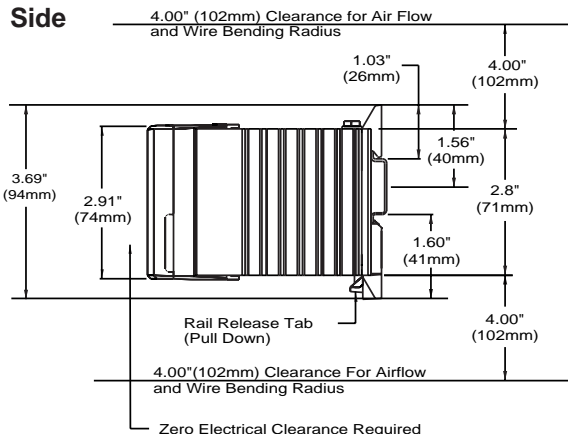
Top



Front

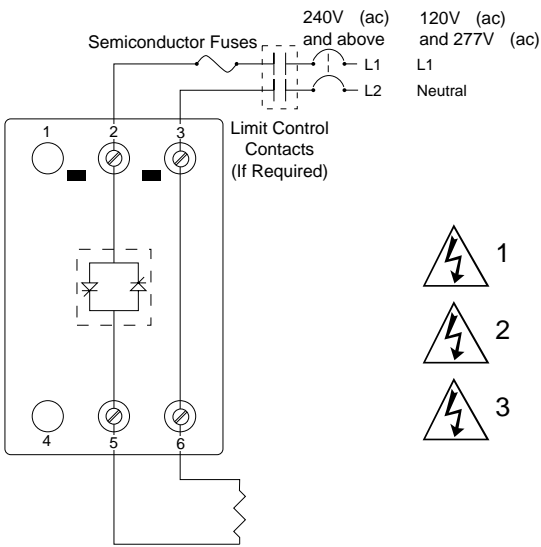


Side

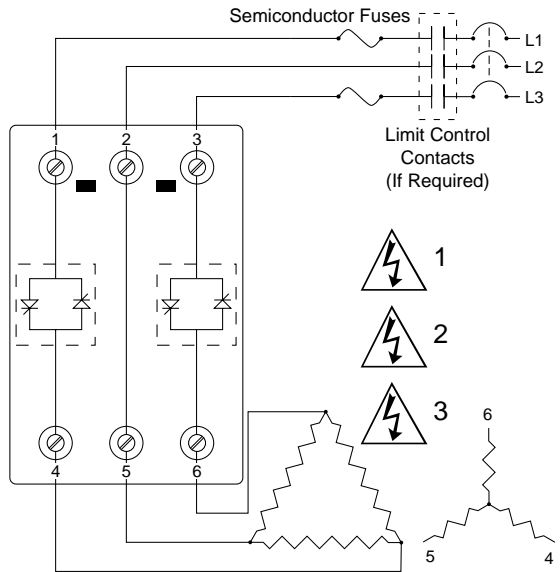


⚠ Mount cooling fins vertical ↑

1Ø Output



3Ø 2 Leg Output



WARNINGS:



1 **WARNING:** Wiring must conform to National Electric Code (NEC) safety standards, as well as locally applicable codes. Failure to do so could result in personal injury or death.



2 **WARNING:** Wiring examples show L2 in 240V~ (ac) or 480V~ (ac) configuration. In 120V~ (ac) or 277V~ (ac) applications, L2 is neutral and must not be fused or switched. Failure to follow this guideline could result in personal injury or death.



3 **WARNING:** Installation and service by qualified personnel only. Failure to do so could result in personal injury or death.

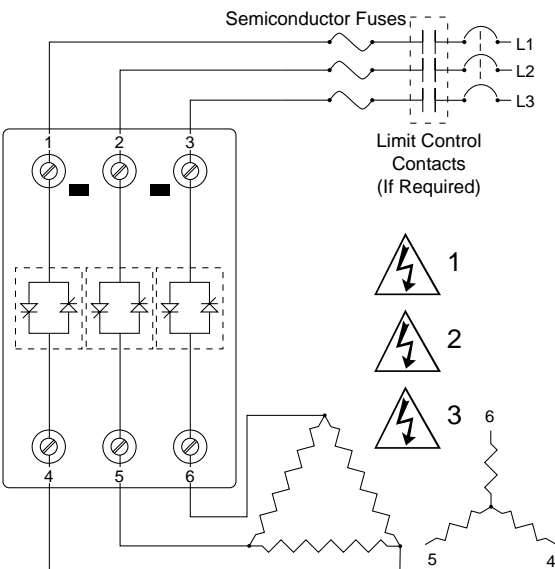


4 **WARNING:** Signal wires should have a wire tie prior to exiting the cover. Failure to follow this guideline could result in personal injury or death.

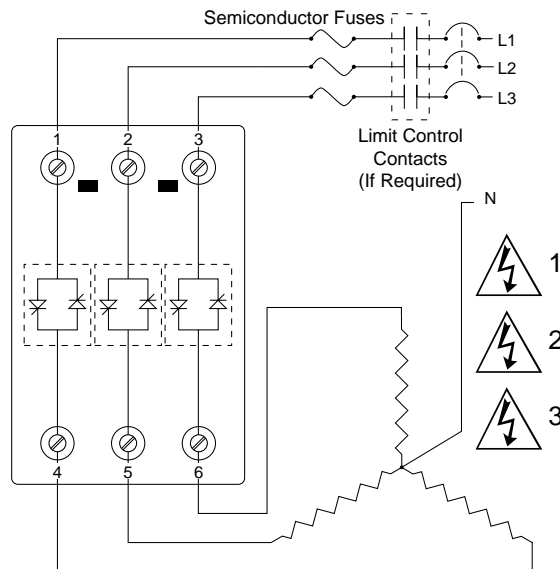


5 **WARNING:** Hot surface, do not touch heat sink. Failure to follow this guideline could result in personal injury.

3Ø 3 Leg Output

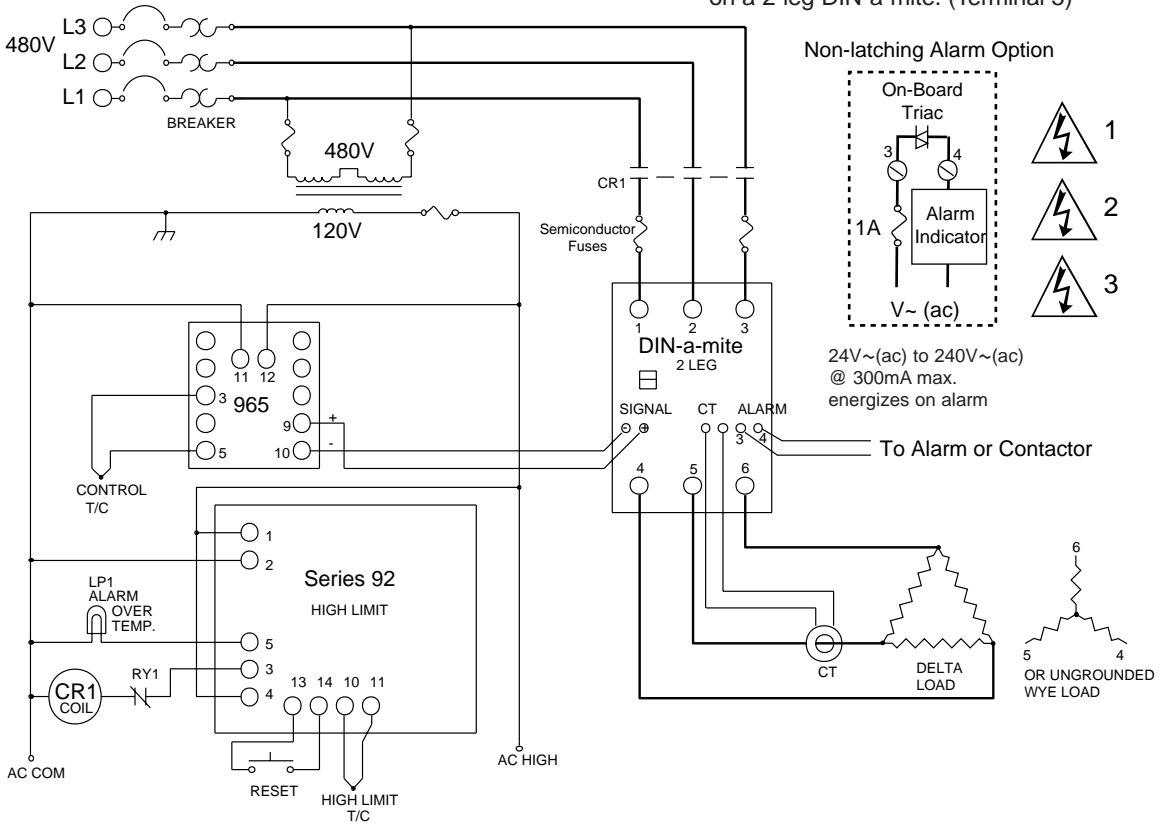


3Ø 3 Leg, 4 Wire Output



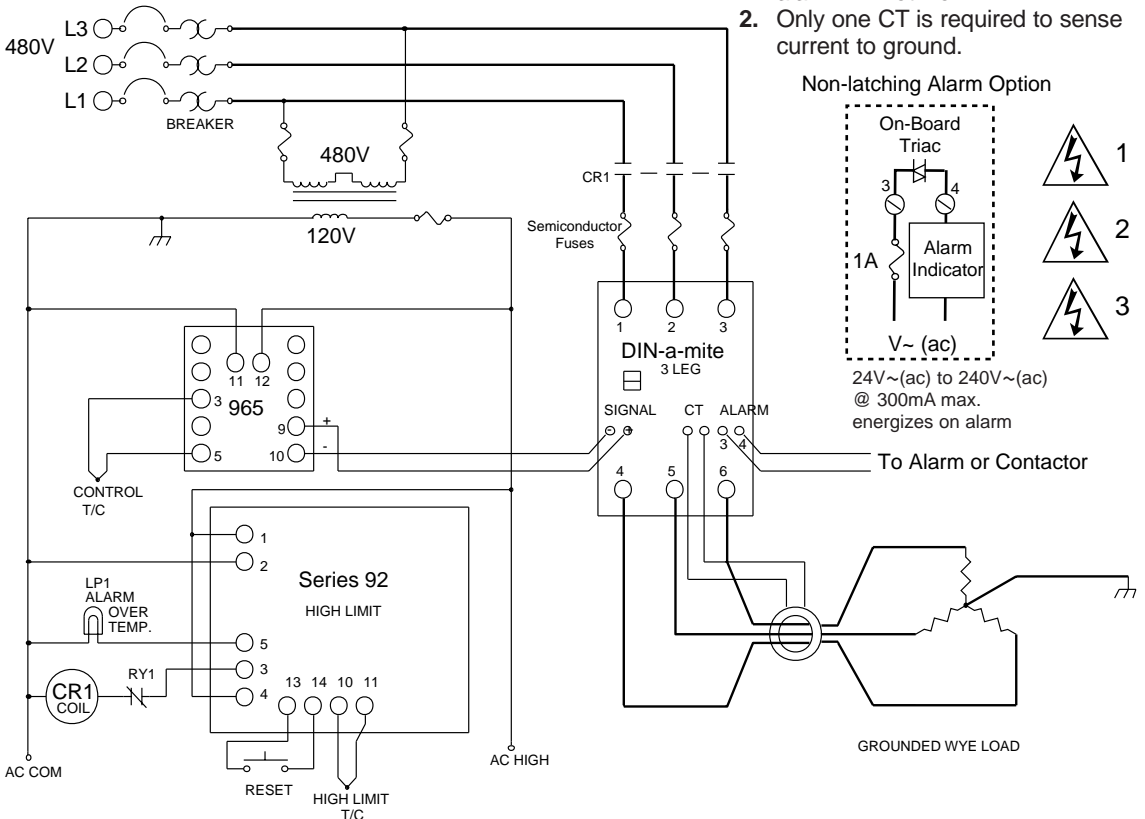
System Wiring Example Ungrounded Delta or Wye Load 3Ø 2 Leg DIN-a-mite

Note: 1. The CT must be in the uncontrolled leg on a 2-leg DIN-a-mite. (Terminal 5)

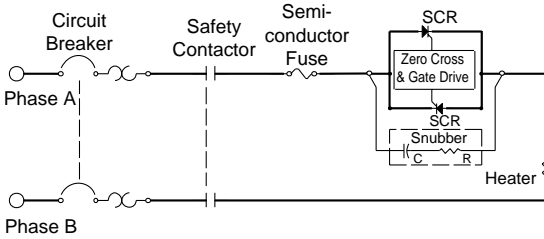


System Wiring Example Grounded Wye 3Ø 3 Leg DIN-a-mite

Notes: 1. If center of Wye is not grounded, alarm will not work.
2. Only one CT is required to sense current to ground.

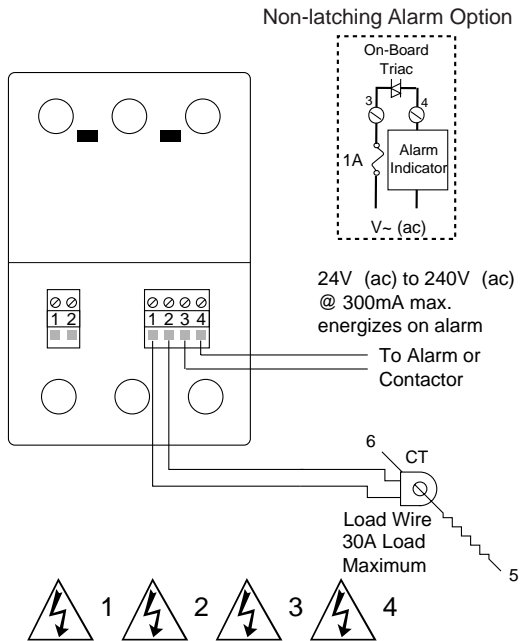


Circuit Protection



1. The circuit breaker or a fused disconnect is needed to protect all "hot" phases.
2. The circuit breaker or fused disconnect is required to protect the wiring and the load (heater). It is too slow to protect the SCRs.
3. The safety contactor should be used in conjunction with a high limit to protect the heaters and / or equipment if an over-temperature condition could occur from a shorted SCR, a bad temperature controller, or a shorted thermocouple.
4. The semiconductor fuse is used only to protect the SCR. It is classed as a specialty fuse and is not legal to protect the wiring or the heater. They are fast enough to clear before the SCR will be damaged.
5. The snubber is not included in the DIN-a-mite. It is intended to reduce the rate of rise of a voltage transient to the point where it will not damage the SCR. A snubber could be added externally, if needed, on an extremely noisy power line.

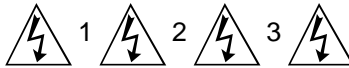
Current Transformer and Alarm



24V (ac) to 240V (ac)
@ 300mA max.
energizes on alarm

To Alarm or
Contactor

6 CT
Load Wire
30A Load
Maximum

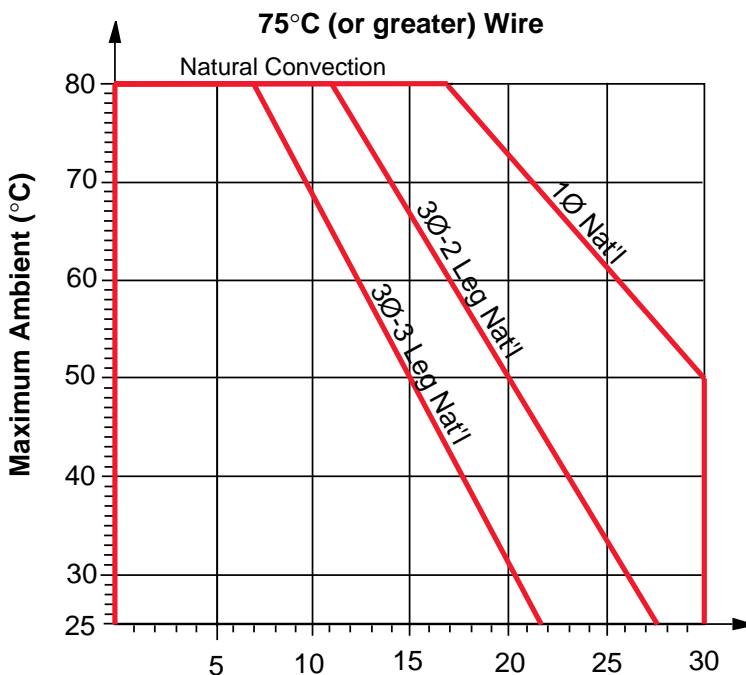


| Number of Passes of Load Wire Through Current Transformer | |
|--|---|
| Load Current | |
| 5 to 9 Amps | 2 |
| 10 to 30 Amps | 1 |

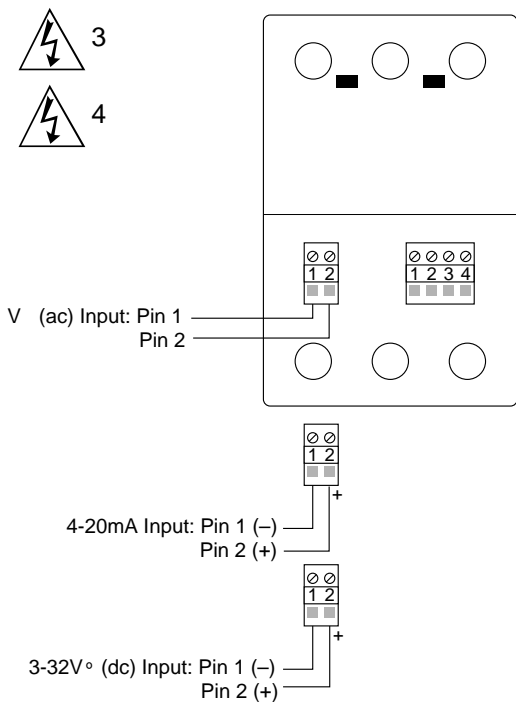
Shorted Output Protection

The Watlow DIN-a-mite alarm option provides shorted output protection. If there is output current and no input command signal, the DIN-a-mite triggers an alarm. Typical indicators such as a latching limit, light, or audible alarm (customer-supplied) are triggered by the DIN-a-mite triac, rated for 24/240V~ (ac) 300mA @ 25°C and 125mA @ 80°C.

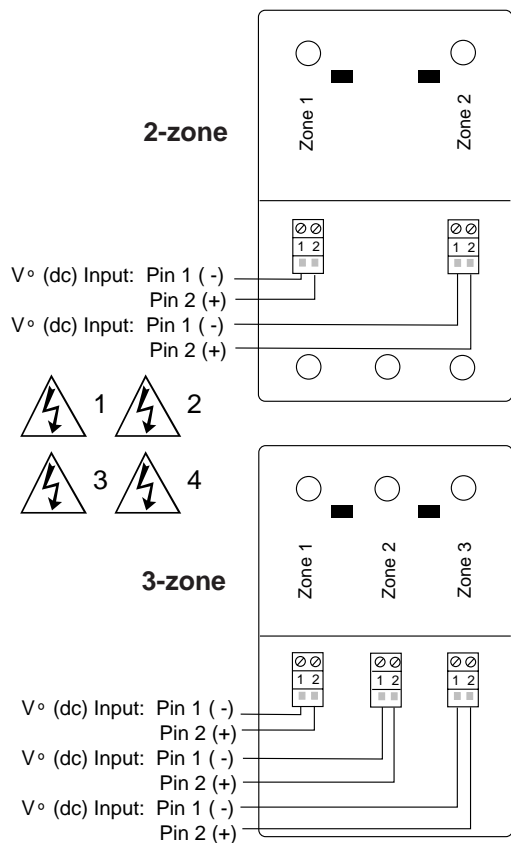
Output Rating Curves



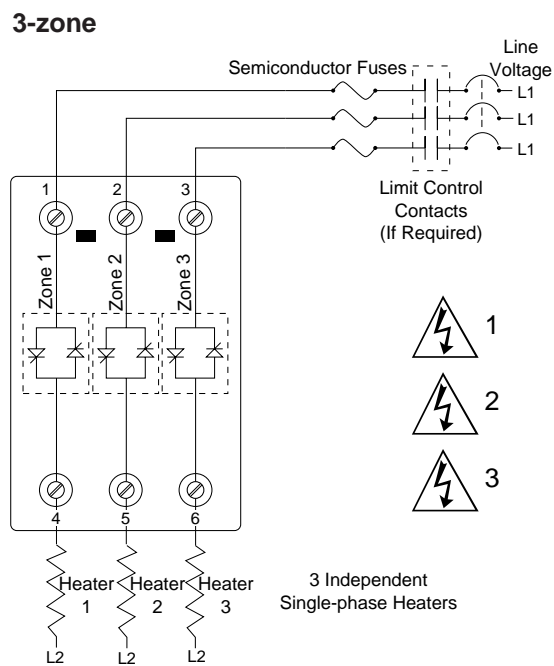
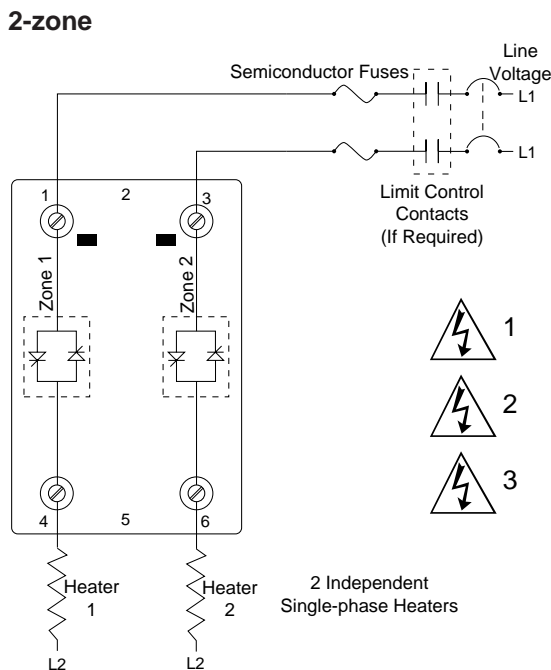
Single Input Wiring



Multi-Input Wiring (for models DB2C-20XX-C200 and DB3C-15XX-C300)



Multi-Output Wiring (for models DB2C-20XX-C200 and DB3C-15XX-C300)



Specifications

WDIN-BSPN Rev A01 (1095)

Control Mode-Zero Cross

- V~ (ac) input contactor
- V= (dc) input contactor
- 4-20mA variable time base control

Operator Interface

- Command signal input
- Input signal indication LED
- Alarm output indication

Input Command Signal

- 24, 120, 240V~ (ac) @ 13mA max.
- 4.5 - 32V= (dc): max current @ 4.5V= (dc) is 8.5mA per leg plus 1.2mA LED current
- 4-20mA (=dc): 375 ohms input impedance, loop powered. Output control Type 'V' option only.

Output Voltage

- 120-240V~(ac) unit: 48V~ (ac) min. to 280V~(ac) max.
- 277-600V~(ac) unit: 80V~ (ac) min. to 660V~(ac) max.
- Off State Leakage 1mA at 25°C max.

Amperage

- See output rating curve on page 4. Ratings are into a resistive heater load.
- Max. surge current for 16.6mSec. 570 amps peak.
- Max. I²t for fusing 1,620 A² Sec.

Shorted Output Alarm Option

- Triac output 24/240V~ (ac) 300mA @ 25°C, 125mA @ 80°C
- Energizes on alarm
- Holding current: 200µA max.
- Latching current 5mA typical

Dimensions

- Weight: 1.56 lbs. (.7kg.)
- Height: 3.7 inch (94mm)
- Width: 3.12 inch (79 mm)
- Depth: 4.7 inch (119 mm) on a DIN rail

Specification subject to change without notice.

Recommended Semiconductor Fuse for applications through 600V~ (ac):

DIN-a-mite

| Model | Fuse P/N | | Fuse Holder P/N | |
|--|----------|--------|-----------------|--------|
| | Bussmann | Watlow | Bussman | Watlow |
| 15AFWC20A10F17-8020CHM1G17-5110 | | | | |
| 20AFWC25A10F17-8025CHM1G17-5110 | | | | |
| 30AFWP40A14F17-8040CH141G17-5114 | | | | |

Note: Will fit within the width dimension of any 3 pole MDR 25A or greater.

Agency Approvals

- UL 508 listed and C-UL File #E73741
- CE with proper filter: 89/336/EEC Electromagnetic Compatibility Directive EN50081-2: 1994 Emissions EN50082-2: 1995 Immunity 73/23/EEC Low Voltage Directive
- VDE 0160, License #91623
- U.S. Patent No.5,598,322

Terminals

- Compression - will accept #10-14 AWG wire
- Torque to 10 inch lbs. max.

Operating Environment

- Up to 80°C. See output rating curves for your application.
- 0 to 90% RH, non-condensing.
- Insulation only tested to 3,000 meters.
- Units are suitable for "Pollution degree 2."
- Contactor V= (dc)/V~(ac) type input cycle time should be less than 3 seconds.

Mounting

Options include DIN rail or standard back panel mounting.

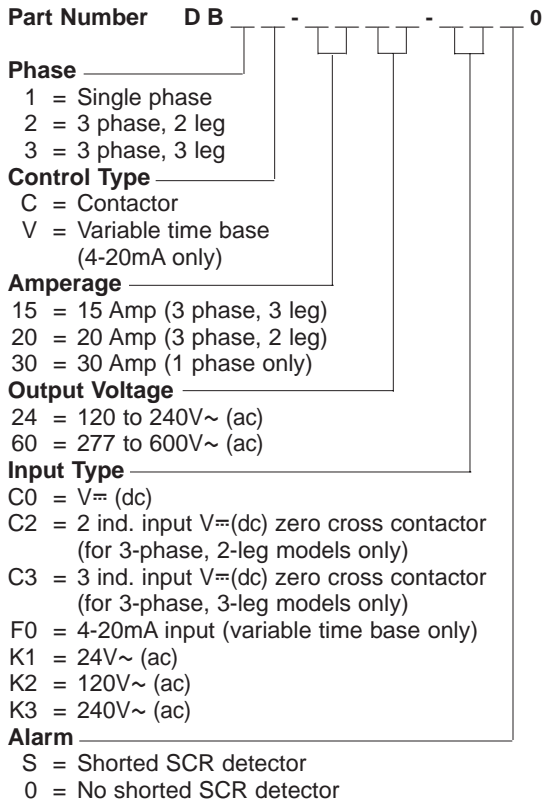
- The DIN rail specification: DIN EN 50022, 35mm x 7.5mm.
- Min. clipping distance: 1.37" (34.8mm).
- Max. clipping distance: 1.39" (35.3mm)
- Mount cooling fins vertical

Accessory

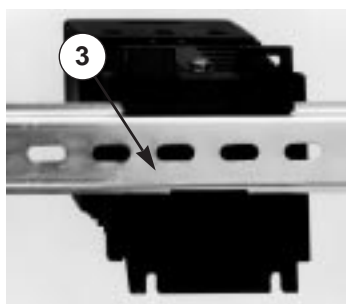
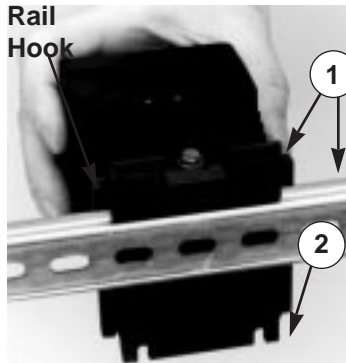
- 54-0259 MDR to DIN Rail Adapter Plate

Ordering Information

WDIN-BMNN Rev A00 (1096)



Rail Hook



Mount

1. Push unit in and down to catch rail hook on top of rail.
2. Rotate bottom of unit in toward rail.
3. Rail clasp will audibly "snap" into place. If the DIN-a-mite does not snap into place, check to see if the rail is bent.
4. Mount cooling fins vertical.

Dismount

5. Press down on release tab while rotating unit up and away from rail.

Warranty

The DIN-a-mite is warranted to be free of defects in material and workmanship for 36 months after delivery to the first purchaser for use, providing that the units have not been misapplied. Since Watlow has no control over their use, and sometimes misuse, we cannot guarantee against failure. Watlow's obligations hereunder, at Watlow's option, are limited to replacement, repair or refund of purchase price, and parts which upon examination prove to be defective within the warranty period specified. This warranty does not apply to damage resulting from transportation, alteration, misuse, abuse or improper fusing.

TOTAL
CUSTOMER
SATISFACTION

Returns

1. Call Customer Service: 507-454-5300, or fax: 507-452-4507, for a Return Material Authorization (RMA) number before returning any item for repair.
2. Make sure the RMA number is on the outside of the carton, and on all paperwork returned. Ship on a freight prepaid basis.
3. A restocking charge of 20% of the net price applies for all returned stock controls and accessories in like new condition and within 120 days after shipment. Non-stock and modified stock items are not returnable.
4. If the unit is unrepairable, it will be returned to you with a letter of explanation. Repair costs will not exceed 50% of the original cost.