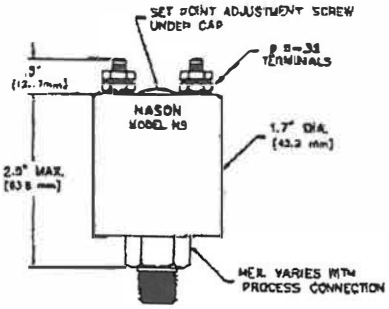
NASON

MODEL NS
(formerly NSM)

- SNAP ACTION SWITCH
- FACTORY PRESET/FIELD ADJUSTABLE
- NEMA 4, 13

OPTIONS

- 10 AMP CONTACT
- GOLD CONTACT FOR LOW CURRENT APPLICATIONS
- WIDE RANGE OF DIAPHRAGM MATERIALS



STANDARD SPECIFICATIONS		
Set Point Range:	2 - 100 PSI	(.13 - 6.9 BAR)
Set Point Tolerance:	±1 PSI OR 5%	(.07 BAR)
Maximum Operating Pressure:	250 PSI	(17 BAR)
Proof Pressure:	750 PSI	(51 BAR)
Differential:	8-16%	
Current Rating:	5 AMP	
Media Connection:	1/4" NPT MALE ZINC	
Circuit Form:	SPST-NO or SPST-NC	
Electrical Connection:	8-32 SCREW TERMINALS	
Diaphragm Material:	BUNA N	

OPTIONAL SPECIFICATIONS

Example - how to order: NS- 1 A - 3 5 R / WL / ADJ

NS- □□ - □□□□ / □□□ / □□□

MEDIA CONNECTION
1- ¼" NPT MALE ZINC
2- ⅛" NPT MALE ZINC
6- 7/16"-20 SAE O-RING (-4) BRASS
14- ½" NPT MALE-⅛"NPT FEMALE BRASS
17- ¼"BSPP MALE (G ¼") BRASS
25- ¼"NPT MALE NYLON

ADJUSTMENT RANGES
1.5 - 5 PSI
6 - 15 PSI
16 - 40 PSI
41 - 100 PSI

CIRCUIT FORM
A - SPST-NO
B - SP ST-NC
C - SPDT

SETTING DIRECTION
R - RISING
F - FALLING

ADJ - adjustable

ELECTRICAL CONNECTION
WL- WIRE LEADS
QC- ¼" SPADE CONNECTION
WP- WEATHER PACK
HR- DIN43650A CONNECTOR
MP- METRI-PACK
EL- ½" CONDUIT CONNECTION
(SUFFIX GG DENOTES INTERNAL GROUND)

6/97

For custom designs and technical assistance call 1-800-229-4955

NASON
Application Information

Snap Action Switches
Nason uses only the highest quality snap action electrical switches which insures a positive, instantaneous electrical contact under all operating conditions. Nason electrical switches are UL, CSA and military listed.

Diaphragms
Nason pressure switches incorporate elastomeric diaphragms to provide a positive media seal. Nitrile is the material of choice for most applications. Ethylene propylene, fluorocarbon, fluorosilicon, and neoprene are readily available for specific applications.

Differential
A distinct change in pressure (or temperature for temperature switches) is necessary to reset a Nason snap action switch to its original electrical state. This feature prevents "searching" and maximizes switch and system life. Nason can vary switch differentials for specific applications.

Electrical Connections
A wide variety of electrical connectors are readily available for most applications. Screw terminals, wire leads, blades, studs, conduit, DIN and military connectors are stock items.

Media Connections
Nason's offering of media connections is unmatched in the industry. NPT, BSP, SAE, JIS, DIN and MS are available.

Electrical Circuits
A unique variety of electrical contact arrangements allows the system designer to achieve complex logic at minimal cost. Contact arrangements up to form ZZ and isolated dual set points are available.

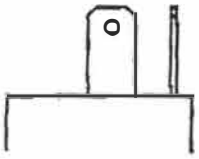
Electrical Rating
Most Nason switches are available in a nominal 5 or 10 AMP rating. Gold plated contacts for low current and 25 AMP ratings are also available.

Life
The operational life of a Nason switch is normally in excess of one million cycles. Operating life depends on many variables, and specific tests should be run if marginal conditions exist.

Application
Nason switches are used successfully in many pneumatic and hydraulic applications. Military vehicles and equipment, aviation, marine, machine tools, farm and construction equipment, process equipment and industrial machinery are typical applications.

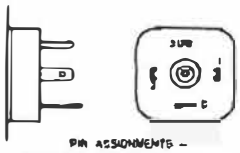
Customization
Nason has the experience and willingness to customize any switch to meet specific application requirements. Special media connections, electrical connections, circuitry and construction materials can be designed and produced as needed.

ELECTRICAL CONNECTION OPTIONS



QUICK CONNECTS - OPTION "QC"
- 1/4" MALE SPADES

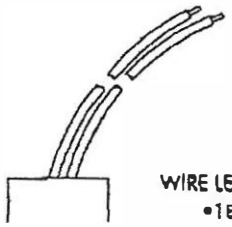
QC



PIN ASSIGNMENTS –
#1 COMMON, #2 NORMALLY CLOSED
#3 NORMALLY OPEN, #4 NOT USED

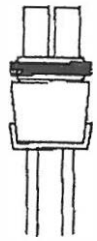
MALE DIN - OPTION "HH"
- DIN 43650-A TYPE
- PLUG ONLY

HH



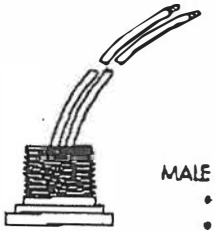
WIRE LEADS - OPTION "WL"
- 18 AWG WIRE, 18" LONG
- COLOR CODE: BLACK - COMMON, RED - NORMALLY OPEN, BLUE - (formerly GREEN) - NORMALLY CLOSED

WL



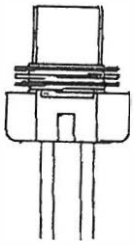
WEATHER PACK - OPTION "WP"
- FEMALE "TOWER" TYPE
- 18 AWG WIRE
- 6" COMPLETE LENGTH

WP



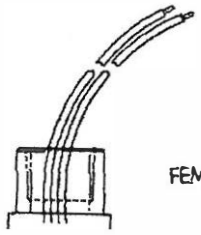
MALE CONDUIT - OPTION "EL"
- ½" - 14 NPT MALE CONNECTION
- INCLUDES "WL" OPTION

EL



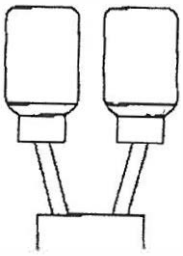
METRI-PACK - OPTION "MP"
- FEMALE 280 SERIES
- 18 AWG WIRE
- 6" COMPLETE LENGTH

MP



FEMALE CONDUIT - OPTION "EF"
- ½" - 14 NPT FEMALE CONNECTION
- INCLUDES "WL" OPTION

EF



WATERPROOF MIL CONNECTOR - OPTION "PP"
- MS 27412 STYLE
- 16 AWG WIRE

PP

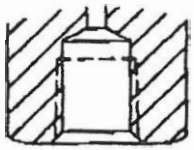
COMPLETE DIN - OPTION "HR"
- DIN 43650-A TYPE
- PLUG AND RECEPTACLE INCLUDED

HR

MEDIA CONNECTION OPTIONS

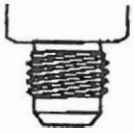
NPT MALE
•NATIONAL PIPE TAPERED MALE THREAD

NPT MALE



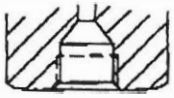
NPT FEMALE
•NATIONAL PIPE TAPERED FEMALE THREAD

NPT FEMALE



SAE 37° FLARE MALE
•SAE J514 STANDARD

SAE 37°



SAE 37° FLARE FEMALE
•SAE J514 STANDARD

SAE 37°

SAE O-RING MALE
•SAE J514 STANDARD

SAE O-RING

SAE O-RING FEMALE
•SAE J514 STANDARD

SAE O-RING

BSPP (G) MALE
•BRITISH STANDARD PIPE PARALLEL THREAD

BSPP

BSPT (R) MALE
•BRITISH STANDARD PIPE TAPERED THREAD

BSPT

TEMPERATURE SWITCH MEDIA CONNECTION DESIGNATIONS

CONNECTION #	DESCRIPTION	TM	TT	T
#1	½" - NPT Male	•	•	•
#2	⅜" - NPT Male	•	•	•
#3	¼"- NPT Male			•
#4	⅜" - NPT Male (1 piece for 5000 psi)	•	•	
#5	¾" - 16 SAE J514 O-Ring Male (-8)			•
#6	M - 16x1.5 MALE	•	•	•
#7	½" - BSPP MALE (G ½")	•	•	
#8	½" - NPT Male (1 piece for 5000 psi)	•	•	
#10	M - 14x1.5 Male (Nickel Plated Brass)			•
#11	M - 14x1.5 Male			•
#12	½" - NPT Male (Nickel Plated Brass)			•
#13	¼"- NPT Male (316SS)			•

NOTE: All materials brass unless noted otherwise. Consult factory for stock.

CIRCUITRY

Form A - SPST-NO
Single Pole - Single Throw
Normally Open

Form AA - DPST-NO
Double Pole - Single Throw
Normally Open

Form B - SPST-NC
Single Pole - Single Throw
Normally Closed

Form BB - DPST-NC
Double Pole - Single Throw
Normally Closed

Form C - SPDT
Single Pole - Double Throw

Form CC - DPDT
Double Pole - Double Throw

Form X - SPST-DB-NO
Single Pole - Single Throw
Double Break - Normally Open

Form XX - DPST-DB-NO
Double Pole - Single Throw
Double Break - Normally Open

Form Y - SPST-DB-NC
Single Pole - Single Throw
Double Break - Normally Closed

Form YY - DPST-DB-NC
Double Pole - Single Throw
Double Break - Normally Closed

Form Z - SPDT-DB
Single Pole - Double Throw
Double Break

Form ZZ - DPDT-DB
Double Pole - Double Throw
Double Break

Adjustable Pressure Switch Symbol

Fixed Pressure Switch Symbol

DIAPHRAGM COMPATIBILITY CHART

MEDIA	Buna-N	EP	Viton
Acetic Acid		•	
Acetone		•	
Acetylene		•	
Air	•		
Ammonia, anhydrous		•	
Asphalt			•
Beer	•		
Benzene			•
Boric Acid	•		
Brake Fluid		•	
Bunker Oil	•		
Butane	•		
Carbon Dioxide	•		
Carbon Monoxide	•		
Cellube		•	
Chlorobenzene			•
Citric Acid	•		
Coke Oven Gas			•
Coolanol	•		
Diesel	•		
Di-Estor Lube (MIL-L-7808)			•
Dowtherm A&E		•	
Ethanol	•		
Ethylene	•		
Ethylene Glycol	•		
Freon 11, 12, 112, 114	•		
Freon 22		•	
Fyrquel		•	
Fuel Oil	•		
Gasoline	•		
Helium	•		
Hydraulic Oil (PET Base)	•		
Hydrocarbons	•		
Hydrogen	•		

MEDIA	Buna-N	EP	Viton
Hydrogen Sulphide		•	
Isopropanol		•	
JP-3-6	•		
Kerosene	•		
LPG	•		
Lube Oil (PET base)	•		
Methanol	•		
MEK		•	
Mineral Oil	•		
Naptha		•	
Natural Gas	•		
Nitric Acid			•
Nitrogen	•		
Oleum Spirits			•
Oxygen	•		
Ozone		•	
Crude Oil	•		
Phosphoric Acid			•
Propane	•		
Propanol	•		
Pydral (135,150,A200,312,AC,F-9&625)			
Shell Iris 902	•		
Silicone Greases	•		
Silicone Oils	•		
Skydrol 500 & 7000		•	
Soap Solutions	•		
Steam below 320°F		•	
Stoddard Solvent	•		
Sulfuric Acid			•
Toluene			•
Transmission Fluid A	•		
Trisodium Phosphate	•		
Turpentine	•	•	
Water		•	

NOTE: Other Diaphragm materials are available.
Consult factory for stock.

PRESSURE/VACUUM SWITCH MEDIA CONNECTION DESIGNATIONS

OPTION #	BASE PER OPTION	SM	MM	IM	NS	SP	XM	WS	VM	NV	VP	IS
#1	¼" - 18 NPT Male	•	•	•	•	•	•	•	•	•	•	•
#2	⅛" - 27 NPT Male	•	•	•	•	•	•	•	•			•
#3	⅜" - 16 SAE J514 O-Ring Male (-8)				•		•	•		•		•
#4	7/16" - 20 SAE J514 37° Flare Male (-4)						•	•				•
#5	¼" - 18 NPT Female					•	•	•				•
#6	7/16" - 20 SAE J514 O-Ring Male (-4)	•	•	•	•	•	•	•				•
#8	¼" - 18 NPT Female						•	•				•
#9	⅜" - 18 NPT Male					•						
#11	9/16" - 18 SAE J514 O-Ring Male (-6)	•	•			•	•	•	•		•	•
#13	½" - 20 SAE J514 O-Ring Male (-5)					•	•	•			•	•
#14	½" NPT Male/⅛" NPT Female	•	•		•							
#15	7/16" - 20 SAE J514 O-Ring Female (-4)						•	•				•
#17	¼" -19 BSPP (G ⅛") Male	•	•		•	•	•	•	•	•	•	•
#18	7/16" - 20 SAE J514 O-Ring Male ADJ (-4)						•	•				•
#19	⅛" - 28 BSPT (R⅛") Male	•	•			•	•	•				•
#20	1-½" Pipe Sanitary Connection				•		•	•				•
#24	3/8"- 24 UNF Male/10-32 UNF Female	•	•									
#25	⅛" - 18 NPT Male Nylon				•					•		
#26	9/16" - 18 SAE J514 37° Flare Female (-6)						•	•				•
#27	½" - 14 BSPT (R ½") Male	•	•						•			
#28	⅛" - 28 BSPP (G ⅛") Male	•	•									
#29	⅜" - 24 SAE J514 O-Ring Male (-3)	•	•									
#30	¼" - 19 BSPT (R ¼) Male	•	•						•			
#34	7/16" - 20 MS33649 Female (-4)				•							
#35	½" - 14 NPT Male				•					•		
#36	9/16" -18 SAE J514 Extended Boss O-Ring Male (-6)			•								
#39	¼" -18 NPT SAE J516 Hose Male (-4)						•	•				•
#40	M 10x1 SAE J2244-3 O-Ring Male	•	•									

Note: Consult factory for materials and stock

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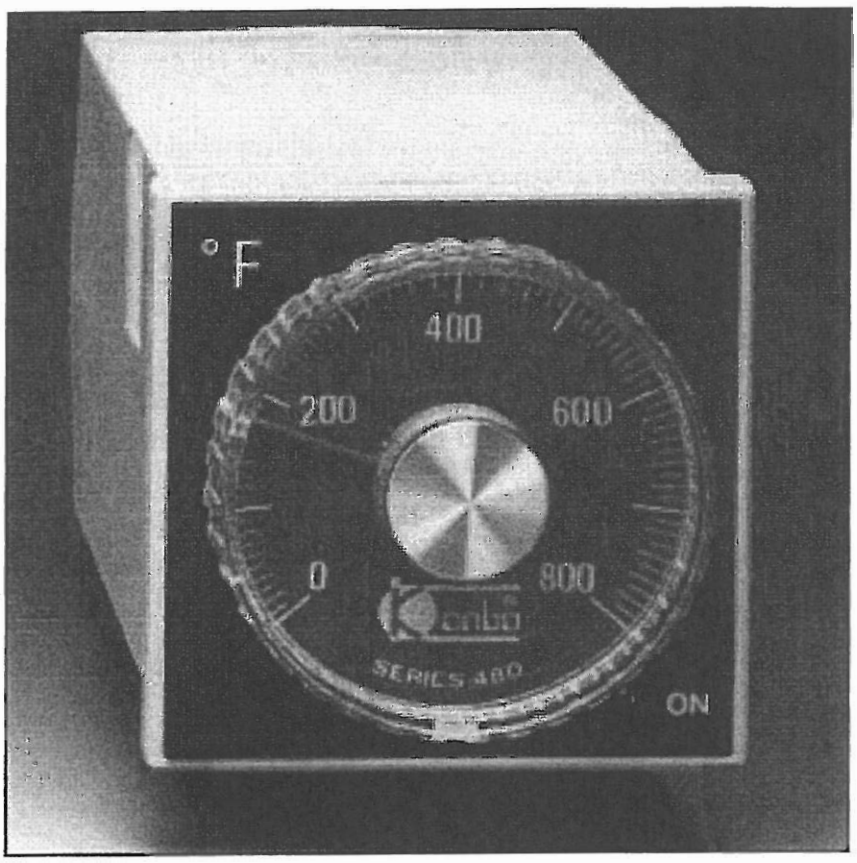


The economical Konbo 480 is a great choice when expensive, advanced features aren't necessary. The controller has widespread use in a variety of industrial applications.

The Low Cost, Easy-to-Use Controller

480

The Konbo 480 1/16 DIN temperature controller

The Konbo 480 is our most economical, general purpose controller. It offers a simple-to-operate dial indicator and features both on/off and time-proportional controls. The 480 is perfect for applications where more expensive advanced features aren't needed and for OEM applications which call for easy installation. Industrial control applications for the 480 include plastics and rubber molding, textile processing, food baking, hot stamping, and control of flow ordering machinery.

A number of features make this controller an excellent choice. The 480 offers automatic thermocouple cold junction compensation to provide accurate control regardless of ambient conditions. Open sensor protection prevents your system from overheating in the event of sensor failure. The controller operates at either 110 or 220V AC, and can be ordered in either Fahrenheit or Celsius configurations. The 480 accepts input from thermocouple (J or K) or RTD sensors.

And what else? There's more! A list of some of the key features and how they'll benefit you is shown on the following page.

480 SPECIFICATIONS

Input:
Thermocouple: J (IC) or K (CA)
RTD: Pt100 (DIN)

Cold Junction Compensation:
Automatic

Input Break Protection:
Output OFF on open sensor

Contact Output:
SPDT relay, 5A at 120V AC or 3A at 240V AC, resistive load

Service Life:
Mechanical: 10,000,000 operations min
Electrical: 100,000 operations min

Voltage Output:
SSR Drive Voltage 12V DC

Control Mode:
Jumper selectable at connector between ON-OFF and time proportioning or ON-OFF and PD control

ON-OFF Differential:
0.5% FS, symmetrical around setpoint

Proportional Band:
2.5% FS, symmetrical around setpoint

Proportional Cycle:
Approx. 20 sec (relay output) or
2 sec (SSR drive output)

Setting Mode:
Analog via single-turn, wire-wound, precision potentiometer

Setting Accuracy:
Within ±2% of FS

Setting Scale length:
Approx. 90mm

Output Indicator:
Red LED

Power Supply Voltage:
110/220V AC, 50/60Hz, user-selectable at connector

Supply Voltage Variation:
90–110% of rated voltage

Power consumption:
Less than 2V A

Ambient Operating Temperature:
0°C–+50°C

Ambient Operating Humidity:
45–85% RH

Insulation:
20MΩ Min (500V DC)

Dielectric Strength:
1.500V AC, 50/60Hz for 1 min

Vibration:
10–55Hz, amplitude 0.5mm

Net Weight:
Approx. 200g including panel mount bracket

Mounting:
Panel mount. Requires 11-pin socket

MODEL CONFIGURATION

4 8 0 – □ □ – □ – □

INPUT & RANGE			
Set Ranges	Code Number For Range		
	J	K	Pt100
-100 to +100°C	01		16
0 to 100°C	02		18
0 to 400°C	04	09	20
0 to 1000°C		11	
0 to 1200°C		12	
0 to 200°F	05		22
0 to 600°F	06	13	24
0 to 800°F	07		
0 to 1000°F	08	14	
600 to 1600°F		15	

CONTROL OUTPUT	
Relay	1
SSR Drive voltage	2

CONTROL MODE	
ON-OFF/P	4
ON-OFF/PD	5

J: Iron Constantan, K: Chromel Alumel, Pt100: α=0.00385 Ω/Ω/°C
11-pin socket required.

ACCESSORIES:	Part #
11-Pin Socket	
Screw-down type (terminals on back)	PG-11
Screw-down type (UL) (terminals on back)	TP311SB
Screw-down type (UL) (terminals on front)	TP311S

KONBO 480 BENEFITS:

Inputs—J, K, or RTD

Outputs—relay or DC voltage pulse

Choice of °F or °C temperature scale

Cold junction compensation—ensures accuracy over a wide range of ambient temperatures

Open sensor protection—prevents overheating in the event of sensor failure

On/Off and time proportioning control—allows you to choose the mode of control operation

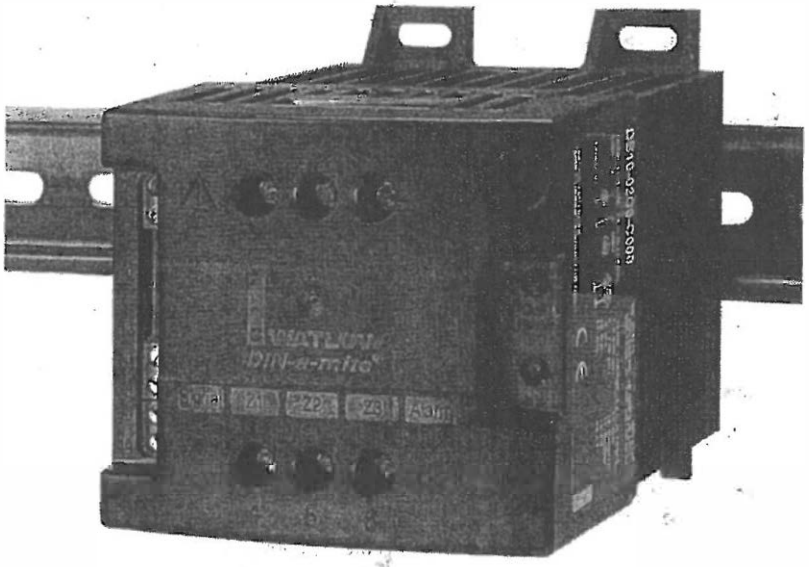
Solid-state electronics—provides reliable and accurate performance

Plug-in or panel-mounted installation—choose the method of installation

DIN-A-MITE® Style B

Solid-State Power Controller

User's Manual



DIN-A-MITE Solid-State Power Controller

Please consult this user's manual when you place 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 you install electrical equipment.

This DIN-A-MITE product is capable of switching up to 40 amps single-phase; 33 amps 3-phase, 2-leg; and 22 amps 3-phase, 3-leg at 600V~ (ac). (See the 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 (silicon controlled rectifier) alarm feature is available on specific models. UL® 508-listed, C-UL® and CE with filter.

The DIN-A-MITE solid-state power controller is designed and manufactured by Watlow in Winona, Minnesota.

WATLOW

1241 Bundy Boulevard, Winona, Minnesota USA 55987
Phone: +1 (507) 454-5300, Fax: +1 (507) 452-4507 http://www.watlow.com

0600-0025-0005 Rev D
Supersedes 0600-0025-0005 Rev C
March 2002

General Specifications (2175)

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

Amperage Rating
- See the output rating curve chart for the natural convection models.
- Ratings are into a resistive heater load.
- Maximum surge current for 16.6 milliseconds, 380 A peak
- Maximum I^2t for fusing is 720 A^2s
- Latching current: 300 mA minimum
- Holding current: 150 mA minimum
- Off-state leakage 1 mA at 25°C (77°F) maximum

Line Voltage
- 24 to 48 V~ (ac) units: 20.4 V~ minimum to 53 V~ maximum
- 100 to 240 V~ (ac) units: 48 V~ minimum to 265 V~ maximum
- 277 to 600 V~ (ac) units: 85 V~ minimum to 660 V~ maximum

Control Mode, Zero-Cross
- Input Control Signal Type C: V⎓ (dc) input contactor. To increase service life, the cycle time should be less than 3 seconds.
- Input Control Signal Type K: V~ (ac) input contactor. To increase service life, the cycle time should be less than 3 seconds.
- Input Control Signal Type F: 4 to 20 mA⎓ (dc) proportional variable time base control.

Input Command Signal
- AC contactor
  24 V~ ±10%, 120 V~ +10%/-25%, 240 V~ (ac) +10%/-25% @ 25 mA maximum per controlled leg
- DC Contactor
  4.5 V⎓ to 32 V⎓ (dc): maximum current @ 4.5 V⎓ (dc) is 6 mA per leg. Add 3 mA if alarm option is included
- Loop powered linear current
  4 mA⎓ to 20 mA⎓ (dc): loop-powered. Input Type F0 and F1 options only. (Requires current source with 6.2 V⎓ (dc) available. No more than three DIN-A-MITE inputs connected in series)

Linearity (Input Control Signal Type F)
- Full on point 19.5 to 19.9 mA⎓ (dc), maximum voltage of 6.2 V peak.
- ±5% input to output power accuracy, 0% to 100% of span (4.3 to 19.7 mA or 12.3 to 19.7 mA).
- Temperature stability is less than 0.15%/°C change.

Alarm

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

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

Agency Approvals
- CE with proper filter:
  89/336/EEC Electromagnetic Compatibility Directive
  EN 61326: Industrial Immunity Class A emissions
  73/23/EEC Low Voltage Directive
  EN 50178 Safety Requirements
  Installation category III, pollution degree 2
- c(UL)us LISTED UL® 508 listed and C-UL®, File E73741

Input Terminals
- Compression: Will accept 0.2. to 2.5 mm^2 (24 to 14 AWG) wire
- Torque to 0.5 Nm (4.4 in-lb) maximum with a 3.5 mm (1/8 in) blade screwdriver
- Wire strip length 5.5 mm (0.22 in)

Line and Load Terminals
- Compression: Will accept 0.8 to 8 mm^2 (18 to 8 AWG) wire
- Torque to 1.4 Nm (12 in-lb) maximum with a 6.4 mm (1/4 in) blade screwdriver, or a No. 2 Phillips screwdriver
- Wire strip length 6.35 mm (1/4 in)
- Ground terminal use spade terminal for No. 8 screw, with upturned lugs.

Operating Environment
- See the output rating curve.
- 0 to 90% 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
- Minimum clipping distance: 34.8 mm (1.37 in)
- Maximum clipping distance: 35.3 mm (1.39 in)

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

Weight
- 0.7 kg (1.6 lb)

Specifications are subject to change without notice.

DIN-A-MITE B Ordering Information (2176)

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

D B _ _ - _ _ _ - _ _ _

Style B = solid-state power controller

Phase
1 = single-phase, 1 controlled leg
2 = 3-phase, 2 controlled legs
3 = 3-phase, 3 controlled legs (for 4-wire wye)
8 = 2 independent zones (input control C or K)
9 = 3 independent zones (input control C or K)

Cooling and Current Rating Per Pole
0 = Natural convection standard DIN rail or panel heatsink

Line and Load Voltage
02 = 24 to 48 V~ (ac)
24 = 120 to 240 V~ (ac)
60 = 277 to 600 V~ (ac)

Input Control Signal
C0 = 4.5 to 32 V⎓ (dc) contactor
K1 = 22 to 26 V~ contactor
K2 = 100 to 120 V~ contactor
K3 = 200 to 240 V~ contactor
F[ ] = Proportional
0 = 4 to 20 mA
1 = 12 to 20 mA

Alarm
0 = No alarm
S = Shorted SCR Alarm

User Manual Language
0 = English
1 = German
2 = Spanish
3 = French

Custom Part Numbers
00 = Standard part
XX = Any letter or number, custom options, labeling, etc.

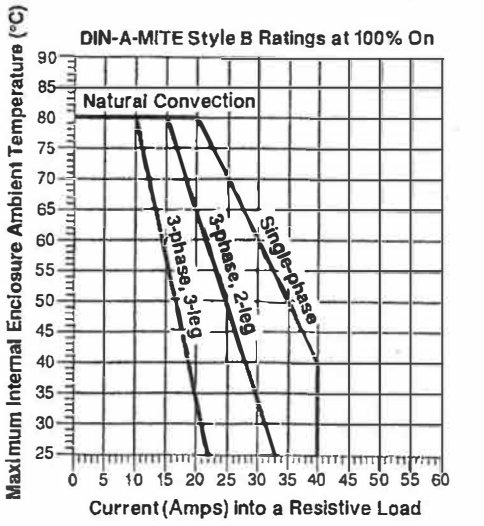
Current Rating Table

Phase	Cooling	Current at 50°C
1	0	35 A
2, 8	0	25 A
3, 9	0	17 A

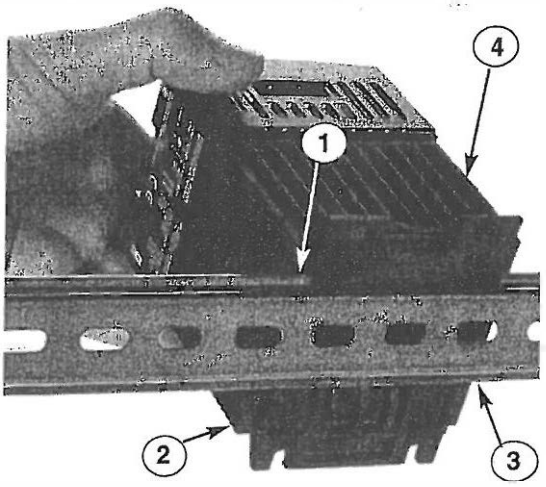
Recommended Semiconductor Fuse and Fuse Holders

	Fuse Part Number		
DIN-A-MITE Model	Watlow	Bussmann	Ferraz
15A	17-8020	FWC20A10F	PFZ-K330013
20A	17-8025	FWC25A10F	PFZ-L330014
30A	17-8040	FWC40A14F	PFZ-A93909
40A	17-8050	FWC50A14F	PFZ-B93910
	Fuse Holder Part Number		
DIN-A-MITE Model	Watlow	Bussmann	Ferraz
15A	17-5110	CHM1G	PFZ-G81219
20A	17-5110	CHM1G	PFZ-G81219
30A	17-5114	CH141G	PFZ-J081221
40A	17-5114	CH141G	PFZ-J081221

Output Rating Curves

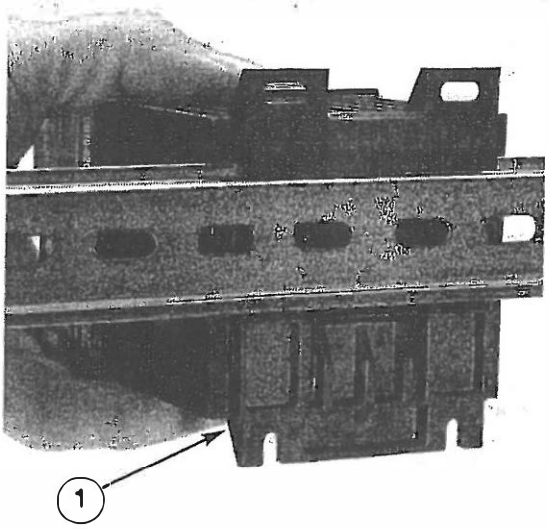


Mount



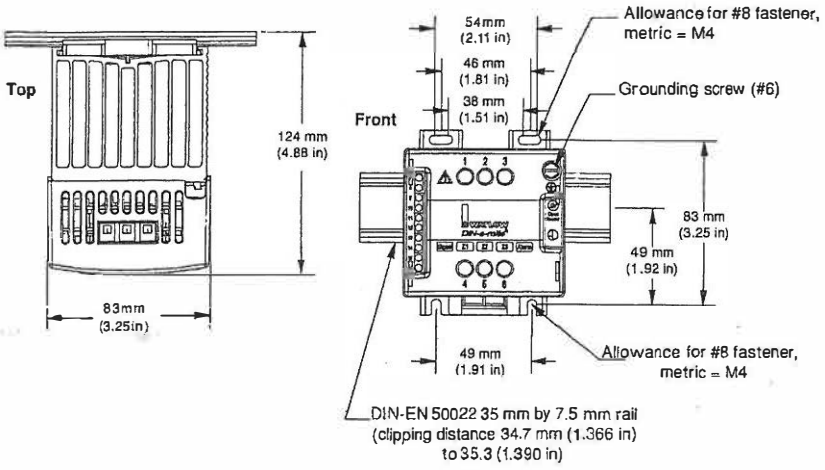
1. Push the unit in and down to catch the rail hook on top of the rail.
2. Rotate the bottom of the unit in toward the rail.
3. The rail clasp will audibly "snap" into place. If the DIN-A-MITE does not snap into place, check to see if the rail is bent.
4. Mount the cooling fins vertically.

Dismount



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

Unit Dimensions - Rail-Mounted



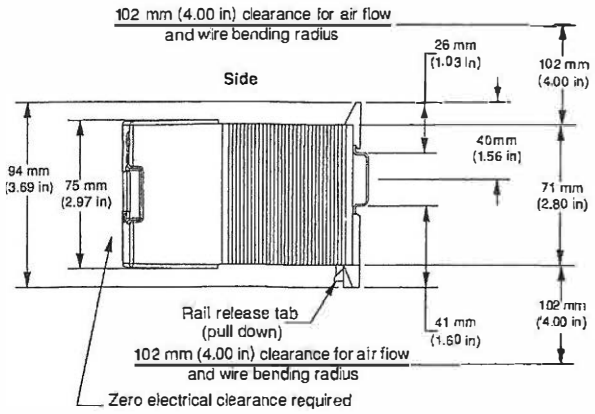
3

WARNING:
Only authorized and qualified personnel should be allowed to install and perform preventive and corrective maintenance on this unit. Failure to follow this guideline could result in damage to equipment, and personal injury or death.

5

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

Mount the cooling fins vertically.



1

WARNING:
Use National Electric (NEC) or other country-specific standard wiring practices to install and operate the DIN-A-MITE. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

2

WARNING:
Wiring examples show L2 in phase-to-phase, 200 V~ (ac) and above configuration. In phase-to-neutral, 100 V~ (ac) and above applications, L2 is neutral and must not be fused or switched. Failure to follow this guideline could result in personal injury or death.

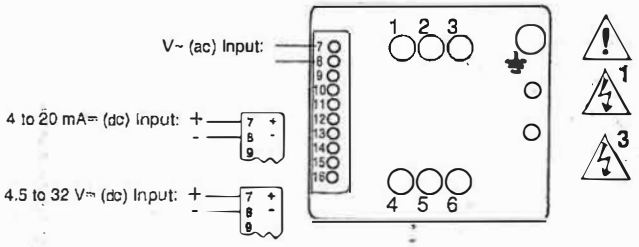
3

WARNING:
Only authorized and qualified personnel should be allowed to install and perform preventive and corrective maintenance on this unit. Failure to follow this guideline could result in damage to equipment, and personal injury or death.

NOTE:
Shorted SCR (silicon- controlled rectifier) alarm option not available with multizone input option.

Input Wiring

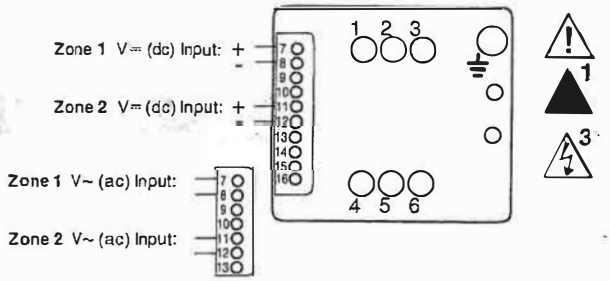
(For models DB [1, 2, 3] _ - _ _ [C, F, K] _ - _ _ _ _)



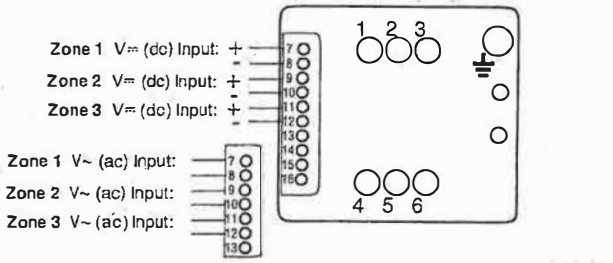
Multizone Input Wiring

(For models DB [8, 9] _ - _ _ C0 - _ _ _ _)

2-zone



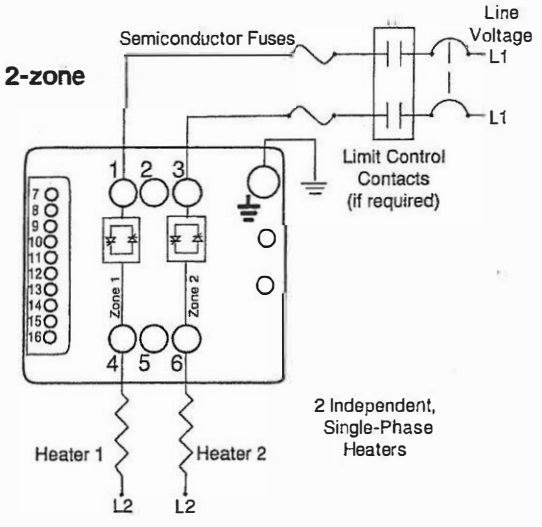
3-zone



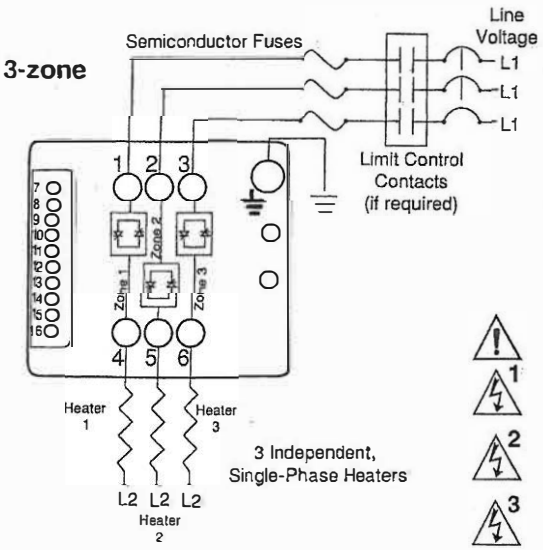
Multizone Output Wiring

(For models DB [8, 9] _ - _ _ [C, K] _ - _ _ _ _

2-zone



3-zone



NOTE:
Independent loads do not have to be on the same phase.

NOTE:
Use a grounding conductor terminal plate (fork terminal) having upturned lugs or the equivalent to hold the wire in position. Maximum 6 mm² (10 AWG) wire.

1

WARNING:
Use National Electric (NEC) or other country-specific standard wiring practices to install and operate the DIN-A-MITE. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

2

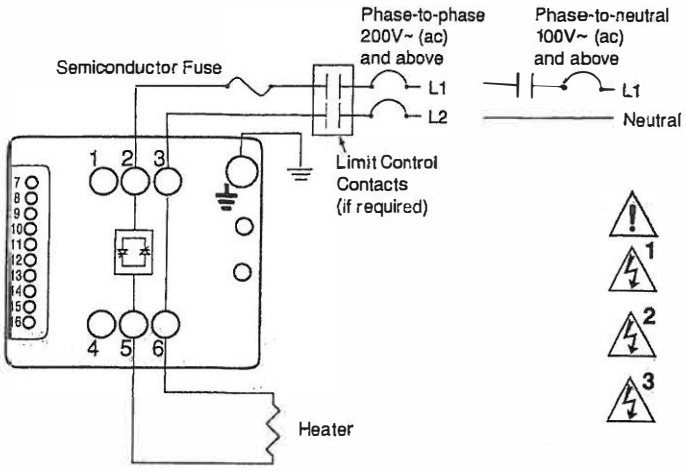
WARNING:
Wiring examples show L2 in phase-to-phase, 200 V~ (ac) and above configuration. In phase-to-neutral, 100 V~ (ac) and above applications, L2 is neutral and must not be fused or switched. Failure to follow this guideline could result in personal injury or death.

3

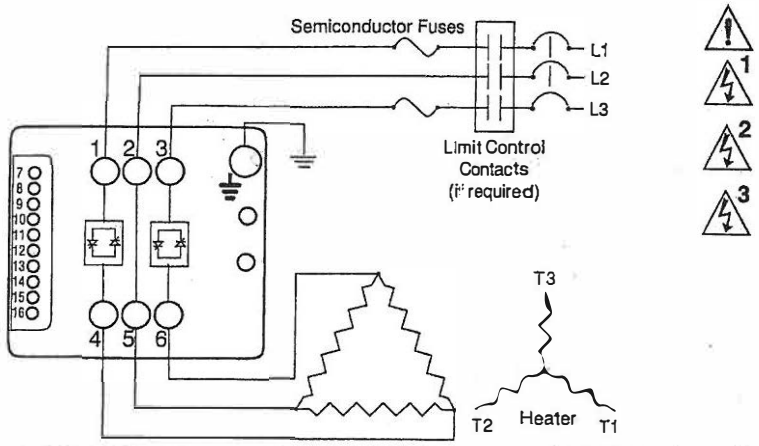
WARNING:
Only authorized and qualified personnel should be allowed to install and perform preventive and corrective maintenance on this unit. Failure to follow this guideline could result in damage to equipment, and personal injury or death.

NOTE:
Use a grounding conductor terminal plate (fork terminal) having upturned lugs or the equivalent to hold the wire in position. Maximum 6 mm² (10 AWG) wire.

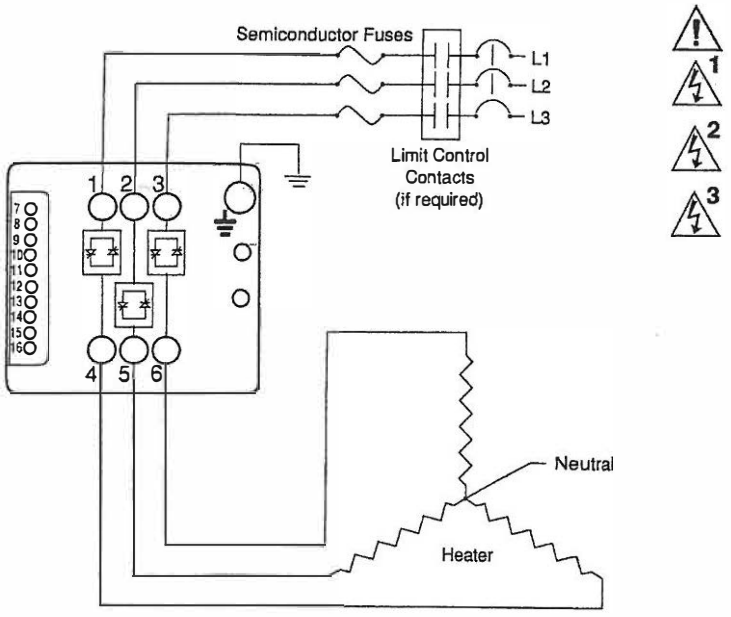
Single-phase Output



3-phase, 2-leg Output



3-phase, 3-leg Output



1

WARNING:
Use National Electric (NEC) or other country-specific standard wiring practices to install and operate the DIN-A-MITE. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

2

WARNING:
Wiring examples show L2 in phase-to-phase, 200 V~ (ac) and above configuration. In phase-to-neutral, 100 V~ (ac) and above applications, L2 is neutral and must not be fused or switched. Failure to follow this guideline could result in personal injury or death.

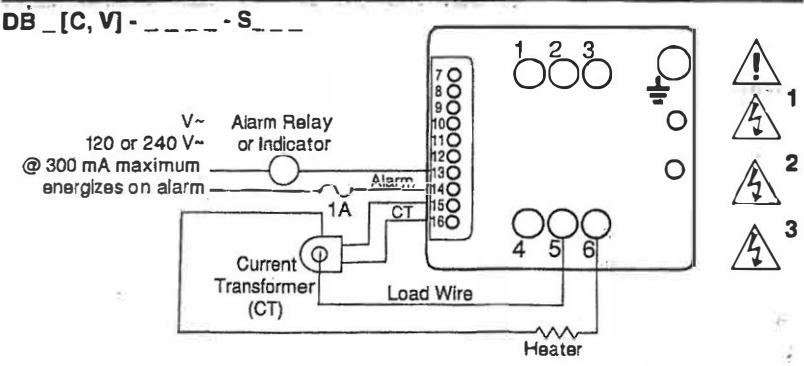
3

WARNING:
Only authorized and qualified personnel should be allowed to install and perform preventive and corrective maintenance on this unit. Failure to follow this guideline could result in damage to equipment, and personal injury or death.

NOTE: If you plan to wire multiple DIN-A-MITE alarm outputs, you need to include an intermediate relay for each DIN-A-MITE used.

Current Transformer and Alarm Wiring

DB _[C, V] - _ _ _ _ - S_ _ _

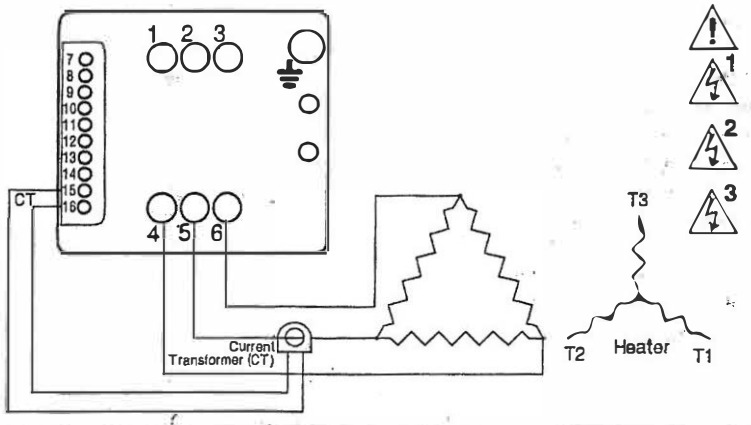


The Watlow DIN-A-MITE alarm option provides a common alarm output for shorted SCR conditions. **This is a non-latching alarm.**

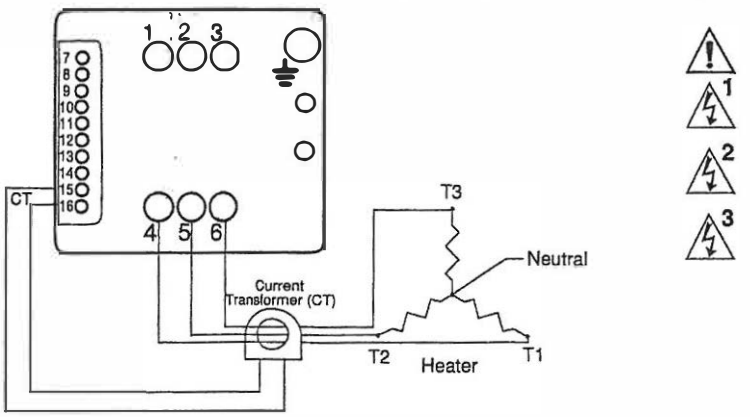
A shorted SCR alarm is detected when there is no command signal and a load current is detected. The alarm output is then energized.

Load Current	Passes of Load Wire Through the Current Transformer
5 to 9 A	2
10 to 30 A	1

3-phase, 2-leg Current Transformer Wiring



3-phase, 3-leg Current Transformer Wiring



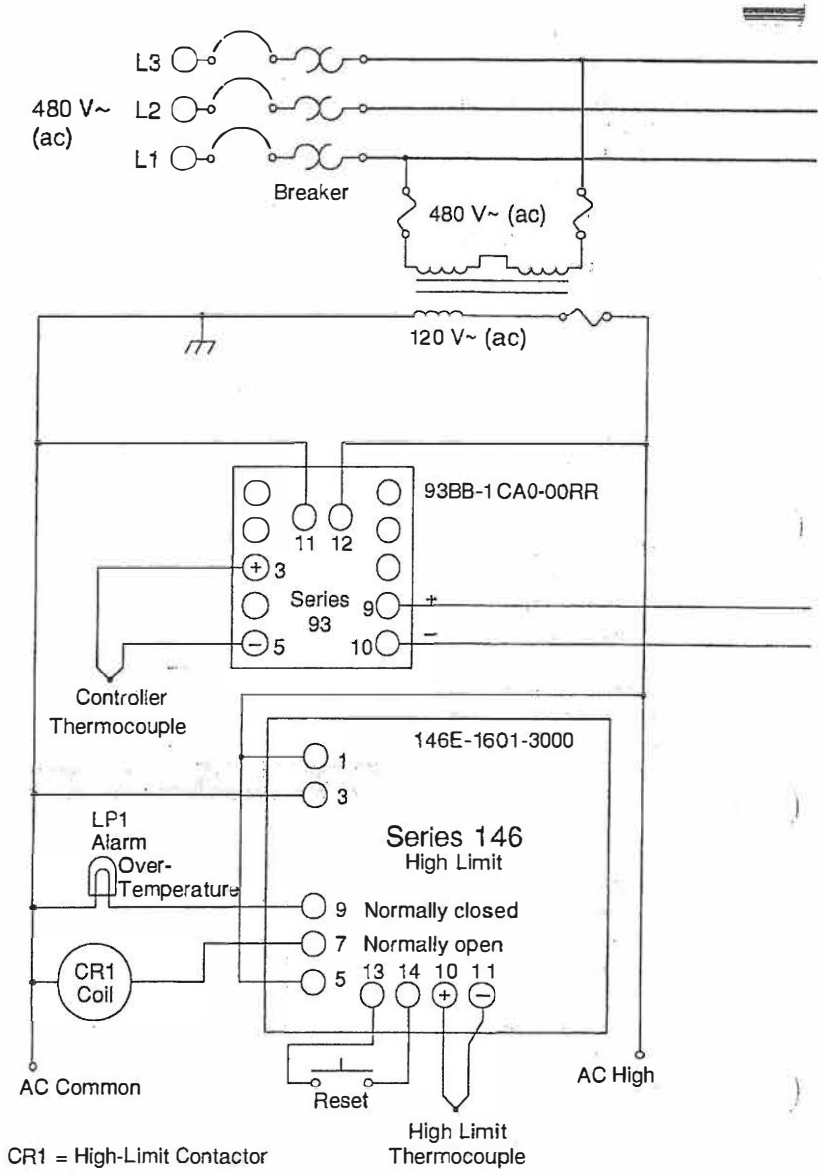
System Wiring Example

WARNING:
Use National Electric (NEC) or other country-specific standard wiring practices to install and operate the DIN-A-MITE. Failure to do so may result in damage to equipment and property, and/or injury or loss of life.

WARNING:
Wiring examples show L2 in phase-to-phase, 200 V~ (ac) and above configuration. In phase-to-neutral, 100 V~ (ac) and above applications, L2 is neutral and must not be fused or switched. Failure to follow this guideline could result in personal injury or death.

WARNING:
Only authorized and qualified personnel should be allowed to install and perform preventive and corrective maintenance on this unit. Failure to follow this guideline could result in damage to equipment, and personal injury or death.

NOTE: If you plan to wire multiple DIN-A-MITE alarm outputs, you need to include an intermediate relay for each DIN-A-MITE used.



Latching Alarm Option
(models DB _ _ - _ _ _ _ - S _ _ _)

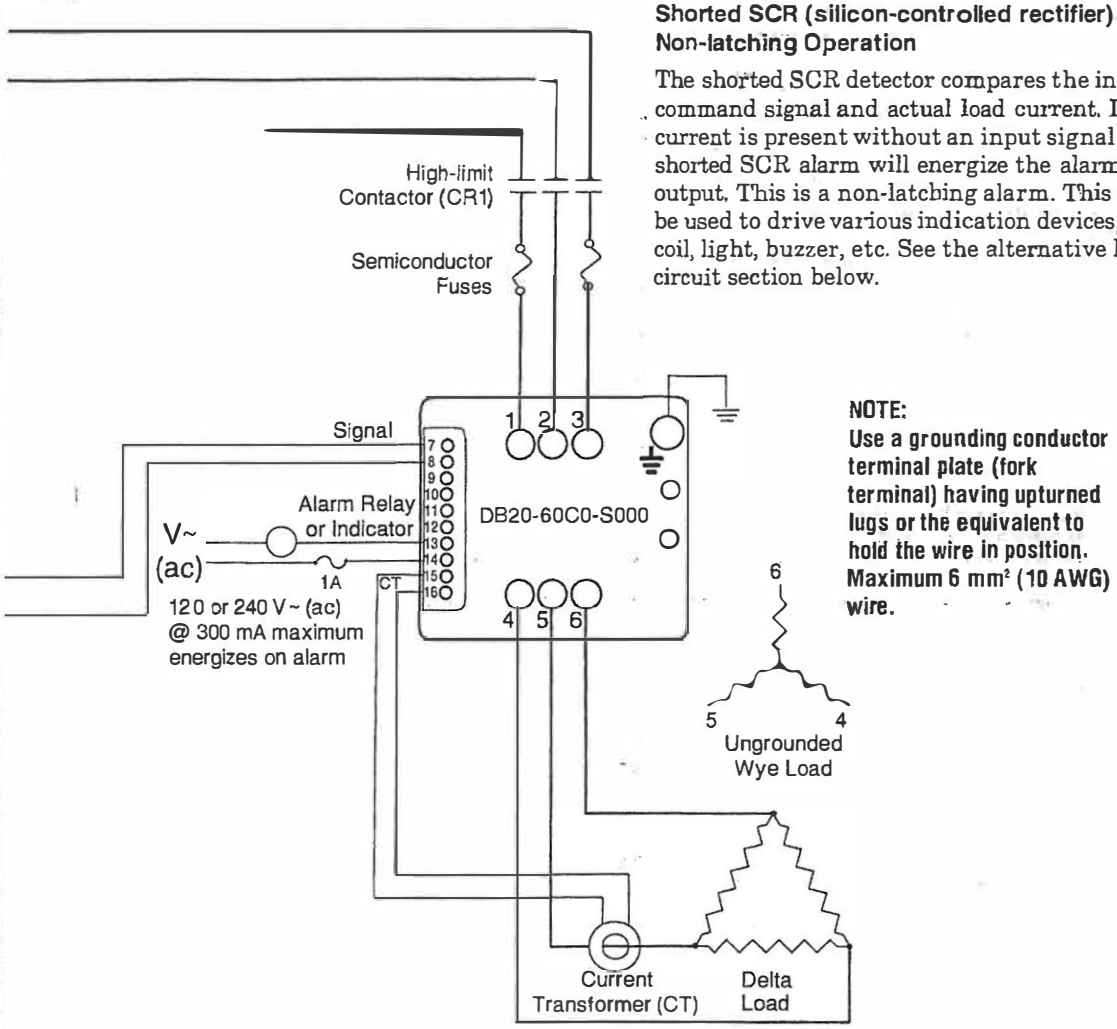
Alternative Latching Alarm Circuit

If there is a need for a latching alarm, the DIN-A-MITE alarm circuit could be used as shown at right in the latching alarm example. If the DIN-A-MITE triac alarm output energizes, it will energize the RY1 (external alarm relay) mechanical relay coil. Once the RY1 coil is energized it will latch on (via the RY1A normally open contact) until the power to the relay is removed. You could cycle the power via a reset switch. The RY1B contact can be used for alarm signaling.

Non-latching Alarm Option
(models DB__-____-S___)

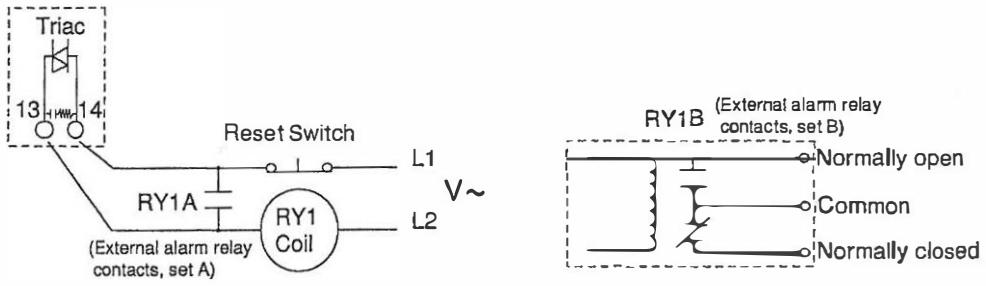
Shorted SCR (silicon-controlled rectifier) Alarm Non-latching Operation

The shorted SCR detector compares the input command signal and actual load current. If load current is present without an input signal then the shorted SCR alarm will energize the alarm triac output. This is a non-latching alarm. This output can be used to drive various indication devices, such as a coil, light, buzzer, etc. See the alternative latching circuit section below.



NOTE:
Use a grounding conductor terminal plate (fork terminal) having upturned lugs or the equivalent to hold the wire in position. Maximum 6 mm² (10 AWG) wire.

NOTE: The current transformer must be in the center uncontrolled leg on a 2-leg DIN-A-MITE.



Latching Alarm Relay Circuit

Declaration of Conformity

DIN-A-MITE® "B" Power Controller

Watlow Winona, Inc.
1241 Bundy Blvd
Winona, MN 55987 USA

Declares that the following product:

Designation:	DIN-A-MITE® "B" Power Control
Model Numbers:	DB (1, 2, 3, 8 or 9) 0 – (02, 24 or 60)(C0, C1, C2, K1, K2, K3, F0, F1) – (0, C or S)(followed by any 3 numbers or letters.)
Classification:	Power Control, Installation Category III, Pollution degree 2
Rated Voltage:	24 to 600 V~ (ac)
Rated Frequency:	50 or 60 Hz

Meets the essential requirements of the following European Union Directives by using the relevant standards show below to indicate compliance.

89/336/EEC Electromagnetic Compatibility Directive

EN 61326:	**1997**	**With A1:1998 – Electrical equipment for measurement, control and laboratory use – EMC requirements (industrial immunity, Class A Emissions)**
EN 61000-4-2	1996, With A1, 1998	Electrostatic Discharge Immunity
EN 61000-4-3	1997	Radiated Field Immunity
EN 61000-4-4	1995	Electrical Fast-Transient / Burst Immunity
EN 61000-4-5	1995, With A1, 1996	Surge Immunity
EN 61000-4-6	1996	Conducted Immunity
EN 61000-4-11	1994	Voltage Dips, Short Interruptions and Voltage Variations Immunity
EN 61000-3-2	1995, With A1-3, 1999	Harmonic Current Emission
EN 61000-3-3:	1995, With A1, 1998	Voltage Fluctuations and Flicker. **See note 3.**
NOTE 1:	**Use of an external filter is required to comply with conducted emissions limits. See page 15 for information and instructions.**	
NOTE 2:	**A Line Impedance Stabilization Network (LISN) was used for conducted emissions measurements.**	
NOTE 3:	**To comply with flicker requirements, command signal models F0 and F1 may not be used, and cycle time must be set greater than 4 seconds on C0, C1, C2 and K1, K2, K3 models.**	
EN 61000-3-2:	1995	Limits for harmonic current emissions
EN 61000-3-3:	1995	Limitations of voltage fluctuations and flicker

73/23/EEC Low-Voltage Directive

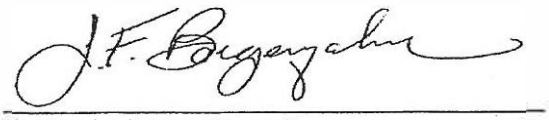
EN 50178	1997	Electronic equipment for use in power installations.

Jim Boigenzahn
Name of Authorized Representative

Winona, Minnesota, USA
Place of Issue

General Manager
Title of Authorized Representative

December 2001
Date of Issue



Signature of Authorized Representative

(2182)

Required External EMI Filters for DIN-A-MITE with More than 6 A Loads

An external EMI filter must be used in conjunction with the DIN-A-MITE for loads in excess of six amperes (6 A) at 150 to 250 kHz. Without a filter applied, the DIN-A-MITE does not comply with the conducted emissions standard for loads above 6 A at 150 to 250 KHz.

Watlow has verified that two types of filters will suppress electromagnetic interference (EMI) created by the DIN-A-MITE power controller to within the CE requirements.

A tank filter supplied by Crydom or Watlow, installed across the power lines, suppresses EMI on the power lines. See Figures 1 and 2.

See Table 1 for the correct filter.

⚠ WARNING:

The isolating and tank filters specified may suppress desirable communications carried on power lines in the 150 to 250 kHz region. The filters may suppress carrier current such as that used for infant monitors and medical alert systems. Verify that suppressed carrier current or other desirable communications on power lines creates no hazard to people or property. Failure to observe this warning could result in damage to property, and injury or death for personnel.

⚠ WARNING:

All filter installation and wiring must be performed by qualified personnel, and conform to local and national electrical codes. Failure to observe this warning could result in damage to property, and injury or death for personnel.

Description	Crydom Filter	Watlow Filter
Single-phase, 230 V~ (ac)	1F25	14-0019
Three-phase, 440 V~ (ac)	3F20	14-0020

Table 1— DIN-A-MITE EMI Filters.

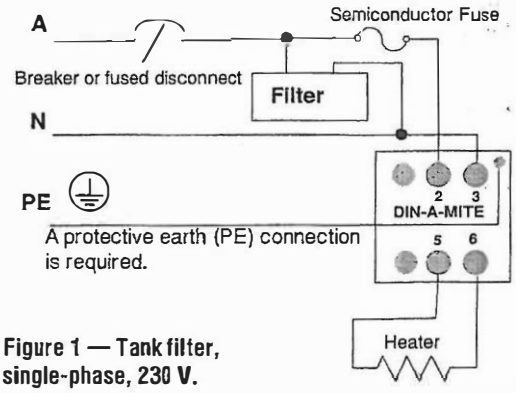


Figure 1 — Tank filter, single-phase, 230 V.

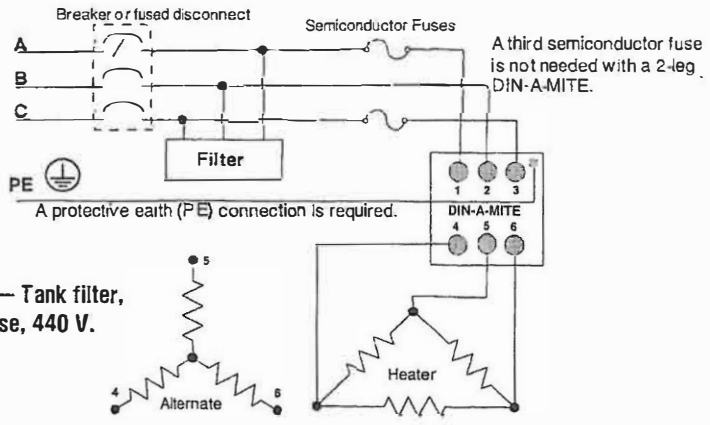


Figure 2 — Tank filter, three-phase, 440 V.

Warranty

The Watlow 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, or abuse.

Returns

- Call or fax your distributor or the nearest Watlow sales office for best information about returns.
- To return directly to Watlow Winona in the U.S., first call or fax Customer Service for a Return Material Authorization (RMA) number (telephone: +1 (507) 454-5300; fax: +1 (507) 452-4507).
- Put the RMA number on the shipping label, along with a written description of the problem.
- A restocking charge of 20% of the net price is charged for all standard units returned to stock.

Technical Assistance

If you encounter a problem with your Watlow controller, review your configuration information to verify that your selections are consistent with your application: inputs; outputs; alarms; limits; etc. If the problem persists after checking the configuration of the controller, you can get technical assistance from your local Watlow representative, or in the U.S., dial +1 (507) 454-5300.

For technical support, ask for for an Applications Engineer.

Please have the following information available when calling:

- Complete model number
- All configuration information
- User's Manual

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Watlow DIN-A-MITE Style B User's Manual
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