Continental Industries International

Product Catalog 2002

An Invensys company

Whats New at Continental Industries International

SV—Superior Value, Solid State Relay Family
Works harder—Runs Cooler

The SV leads the industry by incorporating a new, multi-level approach to being factory hardened.

Superior Surge Survival™—Three Tier Approach*

Attenuate New, more rugged, internal snubber circuit to attenuate most industrial noise.

Block HIGH noise immunity circuit. By using a high dV/dT capability and a new high "blocking voltage", the SV model is more rugged. Most relays only have a 600 volt blocking voltage. Using an external MOV (at 700 volts) offers no protection to most solid state relays which will fail when subjected to a voltage spike. The SV model is 33% better (800 volts) so an external MOV is well below the range of the SSR.

Pass Fast Turn-on. By using a new, fast responding circuit, the SV can survive a high energy, non-repetitive power line surge and then continue operating normally. Other relays may fail in these installations.

**Trademark of Continental Industries International*

SV–Superior AC Activated Models
—Leakage Immunity and Linear Control

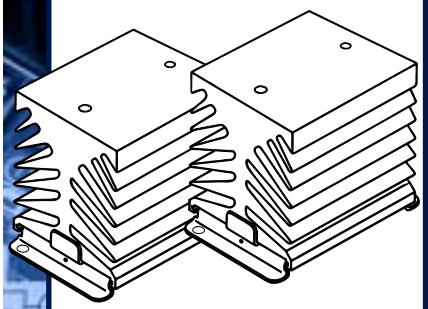
• Most "triac" sources use a .022 microfared snubber that leaks current. Therefore, AC activated solid state relays typically require a burden resistor across the input circuit, adding cost and installation time. The SV model does NOT need a burden resistor when used in these applications.

• Most AC activated relays have a turn-on and turn-off delay built-in. When used as high-speed pulsing control (such as with temperature controllers) the other SSR control response is irregular for the first 16% and last 16% of the duty cycle. This error may impact start up control, overshoot control, and other parts of the control operation. The new SV relays provide linear response so you receive predictable control from 1-100% output in your application.

SV–Superior DC Activated Models
—current limited input

• Wider range of DC logic inputs (4-32 Vdc)
• Current Limited" input to easily integrate with PLC™, PC, or other externally powered circuits.

New line of DIN rail mounted heatsinks
Performance-designed for maximum thermal efficiency



–More cooling capacity
–Less space
–Lower cost
–Universal mounting bracket

Temperature Controls
—Control Elegance
—Continental Simplicity

Thermocouple or RTD inputs
Process input, 0-5v, 4-20mA input controls
Indicatators and alarms

All 4 DiN sizes
Variety of controls for cost effective applications
INSTANT ACCURACY™ (US patent) in the LDE/LME controilers

RVMA Family of SSRs

4–20 Input, Zero Crossing, time proportioning output—Optimize your PLC, DCS or PC based control system by adding TPO without any software changes. 25-40 amps

RV and RS Family of SSRs

Economical switching of 25, 40, 50, 75 or 100 amps, 330 or 660 volts, AC or DC inputs

CII Continental

Formally known as CI Continental, has expanded to include world-wide sales and support of a variety of automation products

Selector Guide

Document No. HA136716-CII

Introduction

History

Since the early 70's, Solid State Relays have been the standard in switching technology, due to their high switching frequency, resistance to shock and vibration and superior lifetime.

Continental Industries began actively pursuing market growth in 1984. The company's Corporate Office, Research and Development, and Manufacturing facilities are located in multiple facilities throughout the USA, Canada and Europe.

Continental Industries is a part of the Invensys group of companies. Over 75% of the Group's business is in controls and automation with products ranging from advanced computer systems for industrial plant automation, to building environmental controls and to electronic devices found in many domestic and commercial appliances.

Benefits of Continental Industries' Solid State Relays

Long Life Reliability

When properly used, the Solid State Relay (SSR) provides a high degree of reliability, long life and reduced Electro-Magnetic Interference (EMI), together with fast response and high vibration resistance, as compared to the Electro-Mechanical Relay (EMR). The SSR offers all the inherent advantages of solid-state circuitry, including consistency of operation and a typically longer usable lifetime. This is possible because the SSR has no moving parts to wear out or arcing contacts to deteriorate, which are primary causes of failure of the EMR.

No Moving Parts

The absence of moving parts means that there is nothing to 'wear out'. When properly applied, an SSR will have a normal life expectancy of many millions of operations, 10–1000 times more than most electro-mechanical relays. No moving parts means SSRs are also resistant to shock & vibration. SSRs also have longer life and environmental advantages compared to "mercury contactors".

Fast Switching

Solid state relays can switch up to 120 times per second, much faster than any electro-mechanical relay. When used in heating applications, fast cycling can dramatically improve the life of the heater by reducing thermal stress.

Low Input Power Required

SSRs allow the switching of high loads via ultra-sensitive input power. A low level logic signal (TTL) can activate a switch for as much as 100 Amps.

Quiet Operation

Completely quiet switching. Beneficial in medical applications, environmental controls or other areas where quiet operations are desirable. Zero-crossing control also means low electrical noise when used near computers, PLC™s, SCADA systems, or other factory automation control systems.

Relay Packaging

Continental Industries is an industry leader in product innovation. We were the first company in the U.S. to produce and market a fully integrated DIN Rail mountable solid state relay with heatsink. We have proven that leadership again with the introduction of the SV family of SSRs that include the Superior Surge Survival™ technology.

Applications for Relays

Solid State Relays are typically used to operate devices such as motors, heaters and lights from low-power signals such as those generated by computers, microprocessors and other logic systems. Here are some examples:

Heating Controls
P.C. Drilling Machines
Industrial Process Controls
Electrostatic Precipitators
Electromagnets
Induction Furnaces
Solenoid / Valve Drivers
Solar Tacking Systems
Chemical Processing Equipment
Studio & Theatrical Lighting
High Speed Line Printers
(Heated) Ultrasonic Cleaners
Trains & Subways (Door Controls)
Maximum Security Systems (Prison Doors)
Assembly Equipment
Copy Machines (Xerography)
Semiconductor Wafer Fab Equipment
Plastic Thermoforming
Amusement Park Rides
X-Ray Developers
Commercial Cooking Appliances
Electro Mechanical replacements
Life Test Equipment
Welding Controls
Artificial Vision Systems
Blood Sample Analyzers
Laundry Equipment
Control Systems
Plastic Molding & Extrusion
Fire and Alarm Systems
Traffic controls
Production Equipment
Computer Disk Drives (Hard)
Vending Machines
Machine Tools
Aircraft Ground Support Equipment
Motor Control
Mercury Relay Replacement
Centrifuges
PCB Lamination Presses
Lubrication Systems
Pizza Ovens
Battery Chargers
Industrial Fans & Blowers
Wind Power Systems
Test Systems
Servo Systems
Navigation Equipment
Utility Control Systems
Lighting Displays
Automatic Dispensing Machines
ATM Machines
Egg Incubators
Industrial Furnaces

Benefits of Continental Industries SSR Products

- High performance
- Direct bonded copper technology
- 100% Tested
- Zero-crossing
- Output voltages to 660 VAC
- AC or DC control signals
- 4-20mA analog input signals
- AC or DC output relays
- Compact and innovative designs
- Available from factory stock and local distributors
- UL/CSA/CE

Benefits of Continental Industries Controller Products

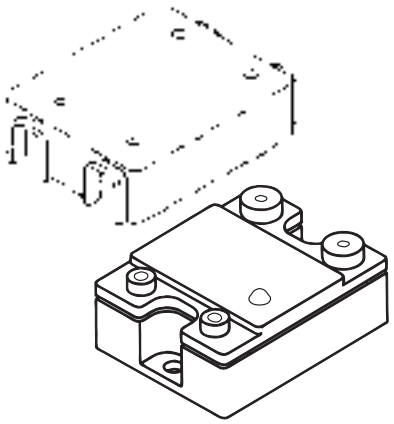
- All four DIN sizes - easy, standard replacement models
- NEMA 4 - fulfills wash-down requirements for food installations
- Built-in outputs - simplicity and low cost are built-in
- Compatibility - Continental instruments and Continental SSR products are a one-source solution for most standard installations

SV Superior Value Family of Panel Mount Solid State Relays

10-75 Amp 330 or 660 Volt AC Output

FEATURES / BENEFITS

- Superior Surge Survival™ technology
- Eliminates burden resistors on AC activated circuits
- Optically isolated
- Built-in snubber
- 4000 volt isolation
- Zero voltage turn-on
- Direct Copper Bonded SCRs
- High surge capability
- LED status indicator
- Clear safety cover included
- 800 volt peak blocking voltage (3V models)
- 1200 volt peak blocking voltage (6V models)
- 100% tested
- U.L. recognized
- C.S.A. certified
- C.E. compliance EN60947



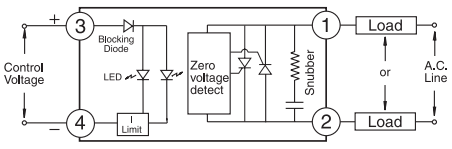
See pages 6 and 17-19 for heatsinking considerations and thermal transfer pads. See page 16 for fuse selector chart.

DC CONTROL

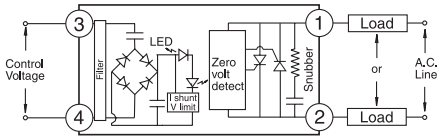
Part Number	Line Voltage Range (VAC)	Load Current Range (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage (VDC)	Fuse Code
SVDA/3V10	24-330	.05-10	4VDC/5.4mA	32VDC/10mA	1	A
SVDA/3V25	24-330	.10-25	4VDC/5.4mA	32VDC/10mA	1	B
SVDA/3V50	24-330	.10-50	4VDC/3.5mA	32VDC/8.0mA	1	E
SVDA/3V75	24-330	.10-75	4VDC/3.5mA	32VDC/8.0mA	1	G
SVDA/6V50	24-660	.10-50	4VDC/3.5mA	32VDC/8.0mA	1	E
SVDA/6V75	24-660	.10-75	4VDC/3.5mA	32VDC/8.0mA	1	G

SCHEMATICS

DC Control



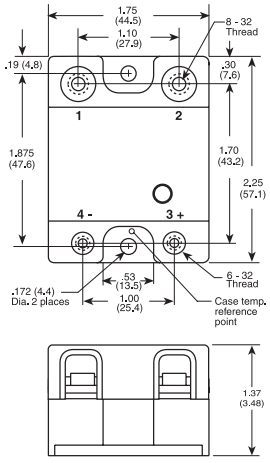
AC Control



AC CONTROL*

Part Number	Must Voltage Range (VAC)	Line Current Range (A_{RMS})	Min Load Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage & Current (VAC/IAC)	Fuse Code
SVAA/3V10	24-330	.05-10	100VAC/2mA	280VAC/19mA	20/2mA	A
SVAA/3V25	24-330	.10-25	100VAC/2mA	280VAC/19mA	20/2mA	B
SVAA/3V50	24-330	.10-50	100VAC/2mA	280VAC/19mA	20/2mA	E
SVAA/3V75	24-330	.10-75	100VAC/2mA	280VAC/19mA	20/2mA	G
SVAA/6V50	24-660	.10-50	100VAC/2mA	280VAC/19mA	20/2mA	E
SVAA/6V75	24-660	.10-75	100VAC/2mA	280VAC/19mA	20/2mA	G

**When activated by a "Triac" PLC or instrument signal, you typically do not need to add a burden resistor. This saves you installattion time and cost.*

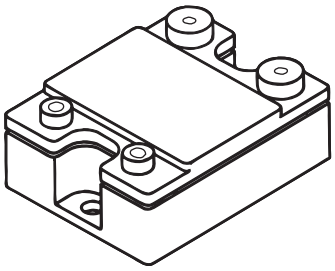


Panel Mount DC-IN, DC-OUT Relays

8-40 Amp 100 Volt DC Output

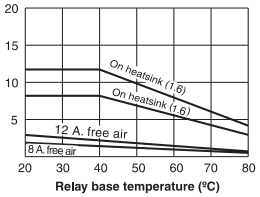
FEATURES / BENEFITS

- **Optically isolated**
- **Wide control range**
- **High surge ratings**
- **Compatible with most logic systems**
- **2500 volt isolation**
- **100% tested**
- **Fast switching times**

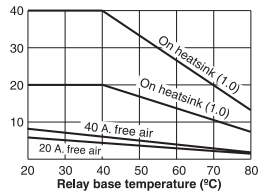


DC CONTROL							
Part Number	Line Voltage Range (VDC)	Load Current Range (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage (VDC)	Turn On Time Max µS	Turn Off Time Max µS
RSDC-DC-108-000	0-100	8	4VDC/11mA	28VDC/16mA	1	10	10
RSDC-DC-112-000	0-100	12	4VDC/11mA	28VDC/16mA	1	10	10
RSDC-DC-120-000	0-100	20	4VDC/11mA	28VDC/16mA	1	10	10
RSDC-DC-140-000	0-100	40	4VDC/11mA	28VDC/16mA	1	10	10

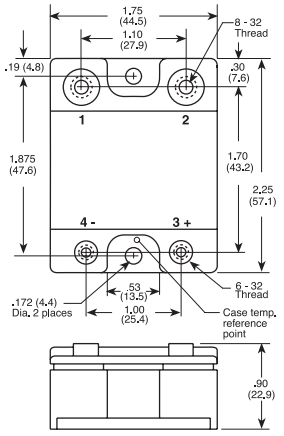
DERATING CURVES



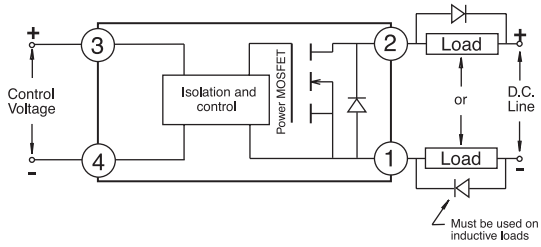
8-Amp and 12-Amp



20-Amp and 40-Amp



SCHEMATIC



See pages 6 and 17-19 for heat sinking considerations and thermal transfer pads.

DIN Rail Mountable Heat Sink

FEATURES / BENEFITS

- **DIN rail mountable**
- **Space saving design**
- **Ground screw built in**
- **Drilled and tapped to fit panel mount relays**

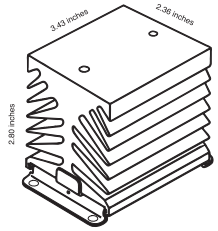
Derating Curves indicate the amount of current that can be switched by the respective solid state relay at a given ambient temperature. Ratings are given based on using Continental's Thermal Transfer Pads (pg 17). Heat Sink must be mounted in a vertical position. Heat dissipation is directly affected by relay rating, ambient temperature, and mounting position, given proper airflow. See pages 17-19 for more heatsinking information.

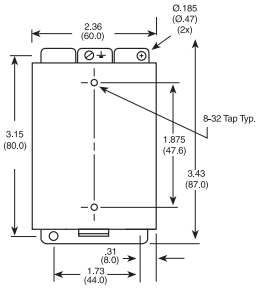
How to calculate the proper size heat sink?

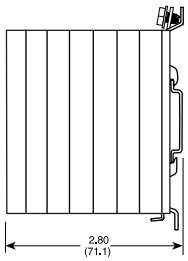
As your ambient temperature increases or as your amperage increases, the use of a properly sized heatsink is necessary. Hint: the smaller the "heat sink rating" number, the better the heatsink is at dissipating the heat. The new DIN heatsinks are the outstanding choice for most applications because: 1) they use the least amount of sub-plate mounting space, 2) they extend the heat sink forward for the best air flow, and 3) universal mounting bracket-- they can be DIN rail mounted for fast installations without the need for drilling and tapping pre-aligned hole patterns, or they can be attached with a standard bolt. Please note: our documented DIN heat ratings are based upon the conservative estimate of being installed in "still air and clipped into a DIN rail". Your actual performance will be better than our ratings if: 1) the DIN heatsinks are screwed to a metal subplate (which provides additional heatsinking capability) and/or 2) if there is any airflow in your installation

You must use a thermal conduction grease or a thermal pad in order to achieve the proper heat sinking capability between the SSR and the heatsinks shown below.

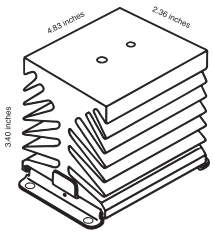
Part Number: Heatsk-Din-1.6 (for most 10-40 amp applications) 1.6° C/W capability

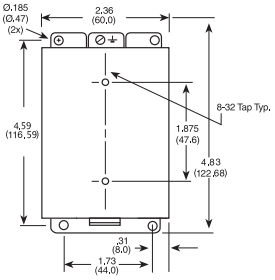


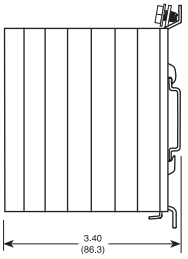




Part Number: Heatsk-Din-1.0 (for most 35-60 amp applications) 1.0° C/W capability



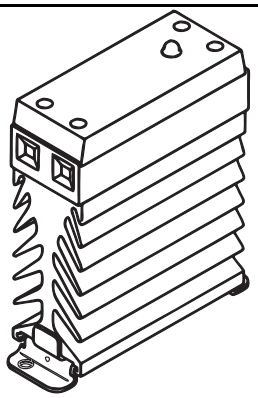




See page 18 for calculating your heatsink requirements

Single Phase DIN Rail Mount Relay

25 Amp 330 or 660 Volt AC Output



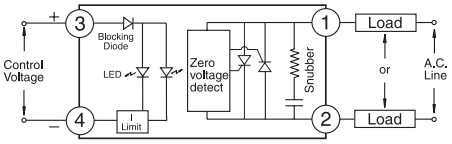
FEATURES / BENEFITS

- **Superior Surge Survival™ technology**
- **Eliminates burden resistors on AC activated circuits**
- **Integrated heatsink**
- **Mounts on DIN rail or panel**
- **Optically isolated**
- **L.E.D. indicator**
- **Built-in snubber**
- **4000 volt isolation**
- **Zero voltage turn-on**
- **Direct copper bonded SCRs**
- **Oversized SCRs with**
  1400 blocking volt (6V)
  800 blocking volt (3V)
  1000V/µs immunity
- **Super efficient, 1.0 watt dissipated per amp switched**
- **U.L. recognized**
- **C.S.A. certified**
- **C.E. compliance EN 60947**

DC CONTROL

Part Number	Line Voltage Range (VAC)	Load Current Range (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage (VDC)	Fuse Code
RVDA/3V25	24-330	.10-25	4VDC/3.5mA	32VDC/8mA	1	B or D
RVDA/6V25	24-660	.10-25	4VDC/3.5mA	32VDC/8mA	1	B or D

SCHEMATIC

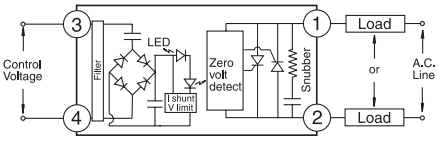


AC CONTROL*

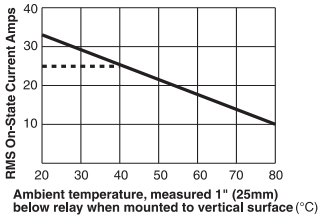
Part Number	Line Voltage Range (VAC)	Load Current Range (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage & Current (VDC/IAC)	Fuse Code
RVAA/3V25	24-330	.10-25	100VAC/9mA	280VAC/25mA	20/2mA	B or D
RVAA/6V25	24-660	.10-25	100VAC/9mA	280VAC/25mA	20/2mA	B or D

**When activated by a "Triac" PLC or instrument signal, you typically do not need to add a burden resistor. This saves you installattion time and cost.*

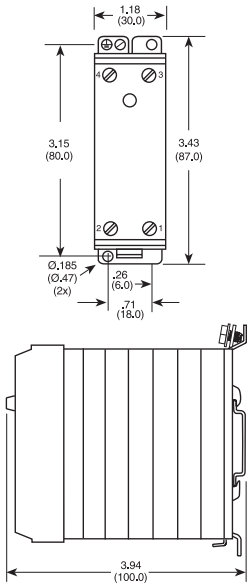
SCHEMATIC



DERATING CURVE



See pages 17-19 for heatsinking considerations. See page 16 for fuse selector chart.

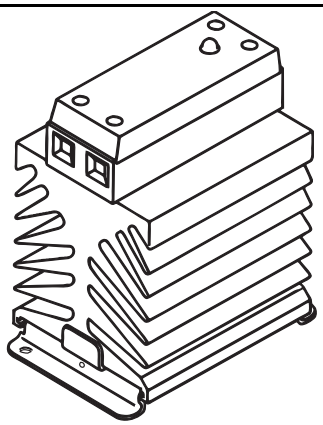


Terminals:

- Will accept #24-10 AWG wire
- Torque to 7-9 inch lbs.

Single Phase DIN Rail Mount Relay

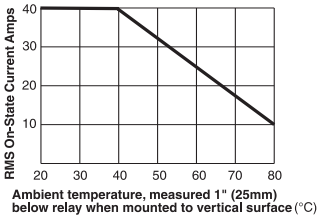
40 Amp 330 or 660 Volt AC Output



FEATURES / BENEFITS

- **Superior Surge Survival™ technology**
- **Eliminates burden resistors on AC activated circuits**
- **Integrated heatsink**
- **Mounts on DIN rail or panel**
- **Optically isolated**
- **L.E.D. indicator**
- **Built-in snubber**
- **4000 volt isolation**
- **Zero voltage turn-on**
- **Direct copper bonded SCRs**
- **Oversized SCRs with 1400 blocking volt (6V) 800 blocking volt (3V) 1000V/µs immunity**
- **Super efficient, 1.2 watt dissipated per amp switched**
- **100% tested**
- **U.L. recognized**
- **C.S.A. certified**
- **C.E. compliance EN 60947**

DERATING CURVE

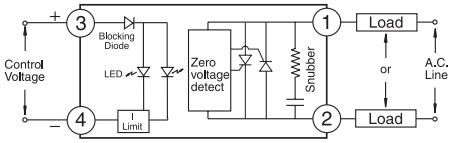


DC CONTROL

Part Number	Line Voltage Range (VAC)	Load Current Range (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage (VDC)	Fuse Code
RVDA/3V40	24-330	.10-40	4VDC/3.5mA	32VDC/8mA	1	D
RVDA/6V40	24-660	.10-40	4VDC/3.5mA	32VDC/8mA	1	D

See pages 17-19 for heatsinking considerations.
See page 16 for fuse selector chart.

SCHEMATIC

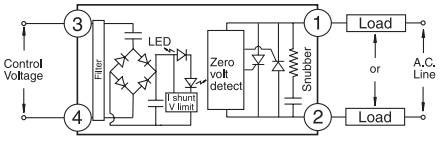


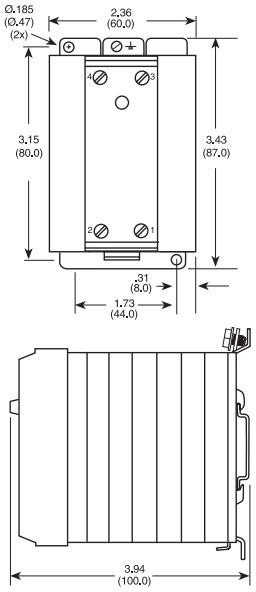
AC CONTROL*

Part Number	Line Voltage Range (VAC)	Load Current Range (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage & Current (VAC/IAC)	Fuse Code
RVAA/3V40	24-330	.10-40	100VAC/9mA	280VAC/25mA	20/2mA	D
RVAA/6V40	24-660	.10-40	100VAC/9mA	280VAC/25mA	20/2mA	D

**When activated by a "Triac" PLC or instrument signal, you typically do not need to add a burden resistor. This saves you installattion time and cost.*

SCHEMATIC





Terminals:

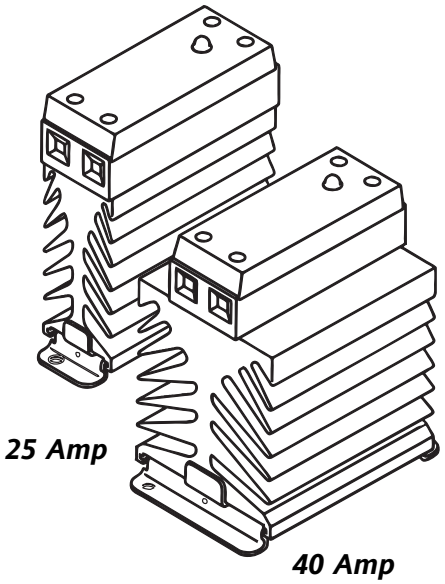
- Will accept #24-10 AWG wire
- Torque to 7-9 inch lbs.

RVMA Family of Analog Milliamp Input Single Phase DIN Rail Mount Relays 25 and 40 Amp 660 Volt AC Output

RVMA

- **Accepts a 4-20mA process input and provides a high speed, time proportioning AC output**
- **Permits a PLC™, PC based control system, DCS, or other analog output system to easily supply a time proportioning output without any software programming**
- **Output cycle time ("ON" time plus "Off" time) = 0.5 second**
- **Output resolution is one half of one sinewave (8.3 msec for 60Hz applications).**

Example: **4 mA = 0% = off**
12 mA = 50% = 250 msec on, 250 msec off, 250 msec on...
16 mA = 75% = 375 msec on, 125 msec off, 375 msec on...
20 mA = 100% = on



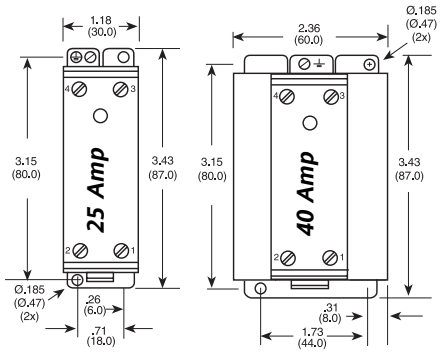
25 Amp

40 Amp

FEATURES / BENEFITS

- **Integrated heatsink**
- **Mounts on DIN rail or panel**
- **Optically isolated**
- **L.E.D. indicator**
- **Built-in snubber**
- **4000 volt isolation**
- **Zero voltage turn-on**
- **Direct copper bonded SCRs**
- **Oversized SCRs with 1400 blocking volt (6V) 1000 V/µs immunity**
- **Super efficient, 1.0 (25 amp) or <1.2 (40 amp) watt dissipated per amp switched**
- **100% tested**
- **U.L. recognized and C.S.A. certified**
- **C.E. compliance EN60947**

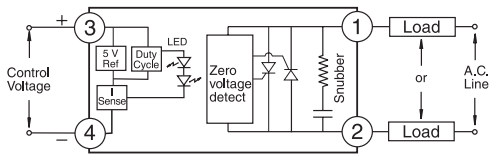
See pages 17-19 for heatsinking considerations.
See page 16 for fuse selector chart.

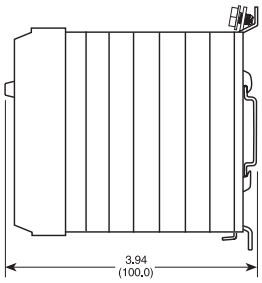


4-20mA Control Input

Part Number	Line Voltage Range (VAC)	Load Current Range (A_{RMS})	Max Voltage Drop at 20mA	Fuse Code
RVMA/6V25	24-660	.10-25	6VDC	B
RVMA/6V40	24-660	.10-40	6VDC	D

SCHEMATIC

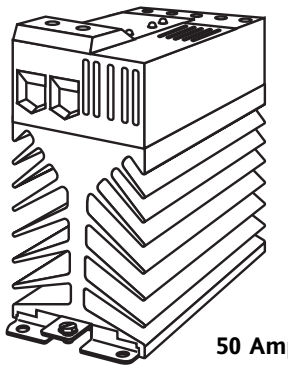




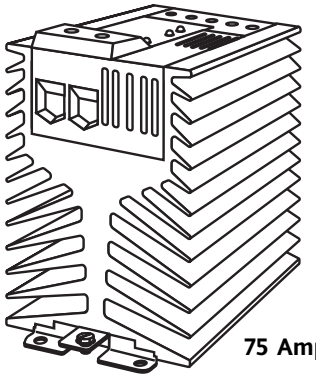
Terminals:
- Will accept #24-10 AWG wire
- Torque to 7-9 inch lbs.

PLC is a trademark of Allen Bradley

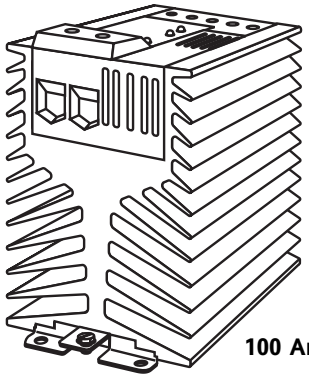
Fully Integrated "Intelligent" Solid State Relay 50, 75, and 100 Amp 660 Volt AC Output



50 Amp



75 Amp

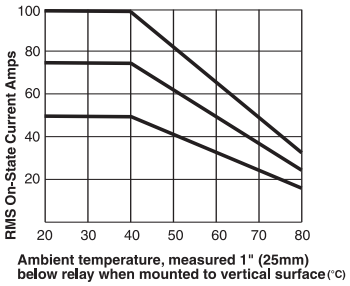


100 Amp

FEATURES / BENEFITS

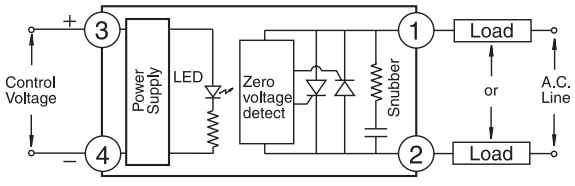
- **Automatic shutdown on overtemperature**
- **Built in, replaceable, semiconductor fuse**
- **Integrated heat sink**
- **Mounts on DIN rail or panel**
- **Optically isolated**
- **Touch safe**
- **L.E.D. indicator (function and alarm)**
- **Built-in snubber**
- **4000 volt isolation**
- **Zero voltage turn on**
- **Direct Copper Bonded SCRs**
- **1200 volt peak blocking voltage**
- **100% tested**
- **U.L. recognized**
- **C.S.A. certified**
- **C.E. compliance**

DERATING CURVES



See pages 17-19 for heatsinking considerations.

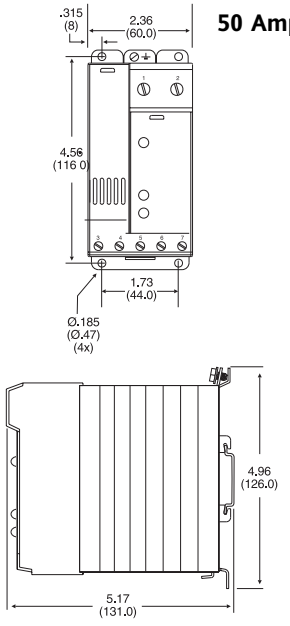
SCHEMATIC



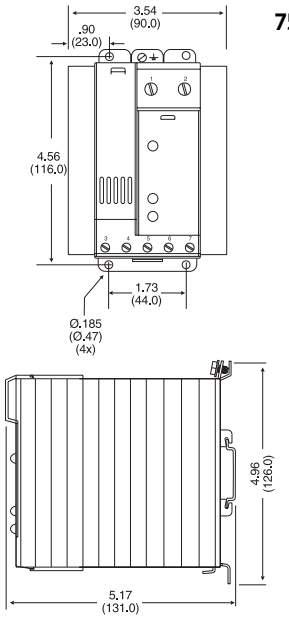
Fully Integrated "Intelligent" Solid State Relay

50, 75, and 100 Amp 660 Volt AC Output

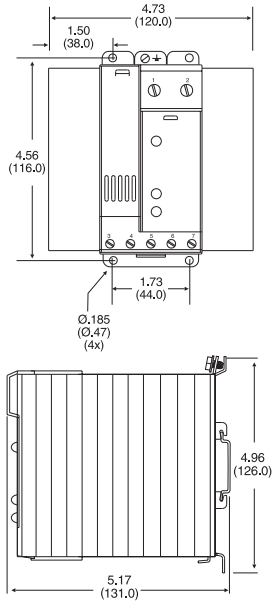
50 Amp



75 Amp



100 Amp



DC CONTROL

Part Number	Line Voltage Range (VAC)	Load Current Range (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage (VDC)	Fuse Code*
RSDA-660-50-100	48-660	.10-50	4VDC/6mA	28VDC/9mA	1	F
RSDA-660-75-100	48-660	.10-75	4VDC/6mA	28VDC/9mA	1	H
RSDA-660100-100	48-660	.10-100	4VDC/6mA	28VDC/9mA	1	H

Terminals:

Input:
- Will accept #24-10 AWG wire
- Torque to 7-9 inch lbs.

Output:
- Will accept #8-3 AWG wire
- Torque to 40 inch lbs.

See page 16 for fuse selector chart.

AC CONTROL

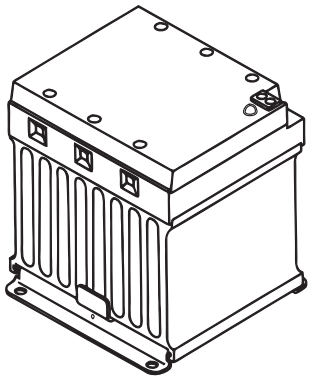
Part Number	Line Voltage Range (VAC)	Load Current Range (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage (VAC)	Fuse Code*
RSAA-660-50-100	48-660	.10-50	100VAC/5mA	280VAC/15mA	20	F
RSAA-660-75-100	48-660	.10-75	100VAC/5mA	280VAC/15mA	20	H
RSAA-660100-100	48-660	.10-100	100VAC/5mA	280VAC/15mA	20	H

** Standard product features internal fuses.*

*** The -B00 option substitutes a copper bus bar in place of the internal I^2T fuse. This permits the RSAA/RSDA to be operated on higher amperage applications without concern about fuse de-rating due to heat. Please order the external fuse and fuseblock as a separate line item. See pages 16 and 24. Consult factory regarding the -B00 option.*

Three Phase DIN Rail Mount Relay

30 Amp 660 Volt AC Output



FEATURES / BENEFITS

- **Integrated heat sink**
- **Mounts on DIN rail or panel**
- **Optically isolated**
- **Touch safe**
- **L.E.D. indicator**
- **Built-in snubber**
- **4000 volt isolation**
- **Zero voltage turn-on**
- **Direct copper bonded SCRs**
- **1200 volt peak blocking voltage**
- **100% tested**
- **U.L. recognized**
- **C.S.A. certified**
- **C.E. compliance**

DC CONTROL

Part Number	Line Voltage Range (VAC)	Load Current Range Per Phase (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage (VDC)	Fuse Code
RSDA-660-30-3D0	48-660	.10-30	4VDC/10mA	32VDC/18mA	1	C
RSDA-560-30-3D2*	48-560	.10-30	4VDC/10mA	32VDC/18mA	1	C

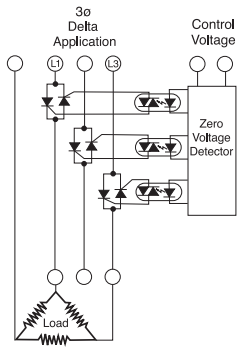
** Includes three internal MOVs for use in electrically noisy environment or inductive loads.*

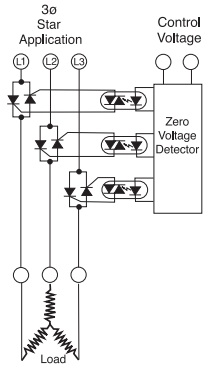
AC CONTROL

Part Number	Line Voltage Range (VAC)	Load Current Range Per Phase (A_{RMS})	Min Control Voltage & Current Draw	Max Control Voltage & Current Draw	Must Release Voltage (VAC)	Fuse Code
RSAA-660-30-3D0	48-660	.10-30	100VAC/10mA	280VAC/33mA	20	C
RSAA-560-30-3D2*	48-560	.10-30	100VAC/10mA	280VAC/33mA	20	C

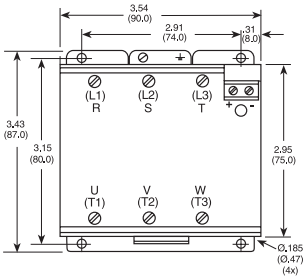
** Includes three internal MOVs for use in electrically noisy environment or inductive loads.*

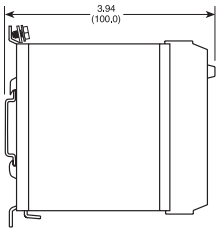
SCHEMATIC





Example of 3 phase wiring, can also be wired differently See page 20 in this catalog.

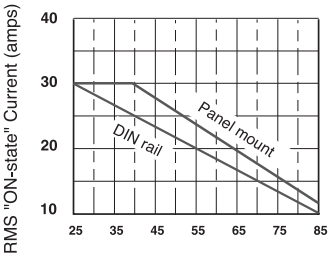




Terminals:
- Will accept #24-10 AWG wire
- Torque to 7-9 inch lbs.

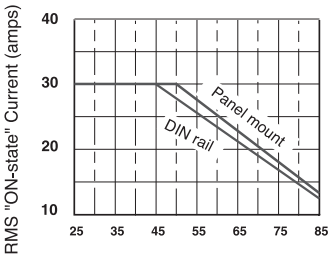
DERATING CURVES

3 Phase, 3 Leg Break



Ambient temperature (degrees C), measured 1 inch (25mm) below relay when mounted to DIN rail or a vertical, 1/8th inch thick aluminum panel surface. Airflow is unrestricted up and through the heatsink.

3 Phase, 2 Leg Break

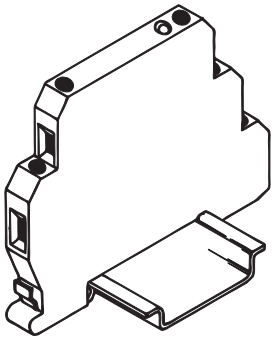


Ambient temperature (degrees C), measured 1 inch (25mm) below relay when mounted to DIN rail or a vertical, 1/8th inch thick aluminum panel surface. Airflow is unrestricted up and through the heatsink.

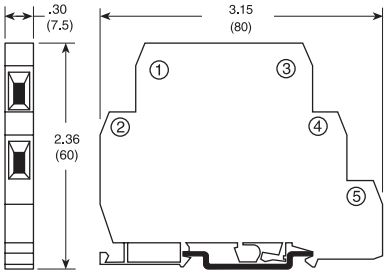
See pages 17-19 for heatsinking considerations.
See page 16 for fuse selection chart.

FEATURES / BENEFITS

- **High density design**
- **Wide logic voltage range**
- **LED logic indicator**
- **Color coded cases**
- **Positive or negative logic**
- **Optically isolated**
- **TTL compatible**
- **4000 volt isolation**
- **100% tested**
- **U.L./C.S.A./C.E. approvals**

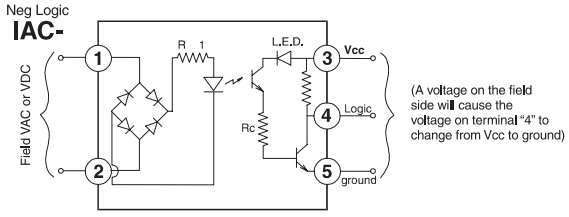


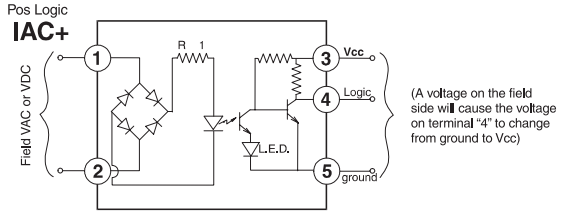
Part Number	Logic (Output) Voltage Range VDC	Max Load Current mA	Turn On Time Max ms (µs)	Turn Off Time Max ms (µs)	Field (Input) Voltage VAC (VDC)	Logic	Logic (Output) Voltage Drop @ 100mA Load VDC
Case Color: Yellow							
I.O.-IAC-R0-280	4-28	100	20	20	90-280	Neg	.5
I.O.-IAC+R0-280	4-28	100	20	20	90-280	Pos	.5
Case Color: White							
I.O.-IDC-R0-028	4-28	100	(30)	(60)	(4-28)	Neg	.5
I.O.-IDC+R0-028	4-28	100	(30)	(60)	(4-28)	Pos	.5

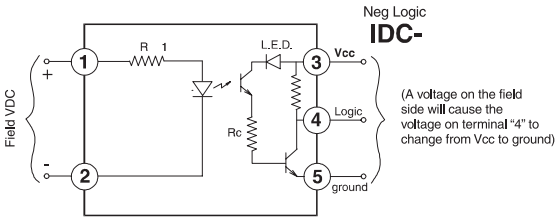


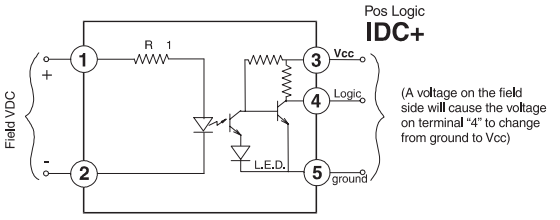
- 4000 V_{RMS} isolation field to logic on all model numbers
- Operating temperature 0-70°C

SCHEMATICS









Terminals:
- Will accept #24-10 AWG wire
- Torque to 5-7 inch lbs.

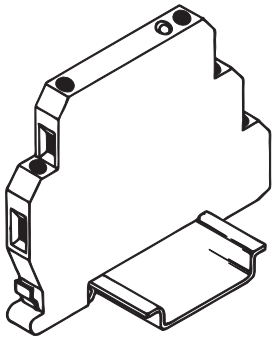
See jumper strip and marker card accessories on page 15 for easy, trouble free wiring and Identification.

Module Logic	Field Voltage?	Logic Voltage Signal (Terminal 4)
Neg	Yes	No
Neg	No	Yes
Pos	Yes	Yes
Pos	No	No

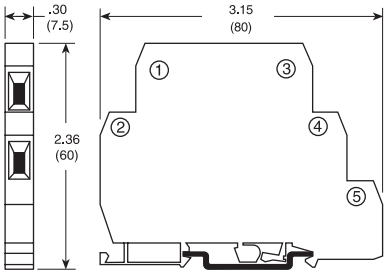
Mini Rail Mount Output Modules
AC & DC Output

FEATURES / BENEFITS

- **High density design**
- **Wide logic voltage range**
- **Fused output**
- **LED logic indicator**
- **Color coded cases**
- **Optically isolated**
- **TTL compatible**
- **4000 volt isolation**
- **600 volt peak blocking voltage**
- **100% tested**
- **U.L./C.S.A./C.E. approvals**



Part Number	Logic (Input) Voltage Range VDC (VAC)	Logic (Input) Impedance (R_C) Ohm	Field (Output) Voltage Range VAC (VDC)	Field (Output) Current Range A_{RMS} @ 45°C	Output Leakage Current @ Max Field Voltage	Field (Output) Voltage Drop @ Max I_{OUT}
Case Color: Black						
I.O.-OAC-R0-280	4-28	1,500	12-280	.10-3*	5mA	1.65
I.O.-OAC-RA-280	(90-280)	40,000	12-280	.10-3*	5mA	1.65
Case Color: Red						
I.O.-ODC-R0-060**	4-28	1,500	(5-60)	0-3*	1mA	(1)
I.O.-ODC-RL-060***	4-28	1,500	(5-60)	0-3*	100µA	(1)



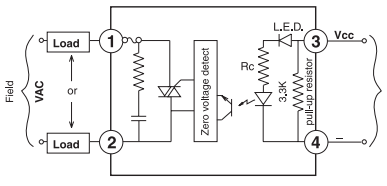
- 4000 V_{RMS} isolation field to logic on all model numbers
- Operating temperature 0-70°C
- 3 amp 5x20mm Fast Fuse, replaceable

Terminals:
- Will accept #24-10 AWG wire
- Torque to 5-7 inch lbs.

* The 3 amp output is obtained when there is <45°C ambient air surrounding all sides of the module. De-rate the modules output if the ambient temperature is higher and/or if the modules are tightly stacked together.
** Turn On Time - 40µs, Turn Off Time - 40µs
***Turn On Time - 50µs, Turn Off Time - 100µs

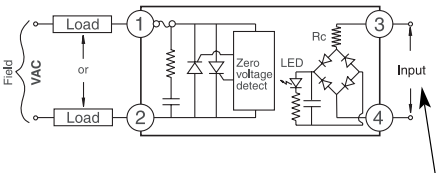
SCHEMATICS

OAC-R0



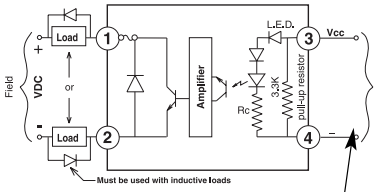
(Application of a voltage here will cause the load to turn on.)

OAC-RA



(Application of a voltage here will cause the load to turn on.)

ODC



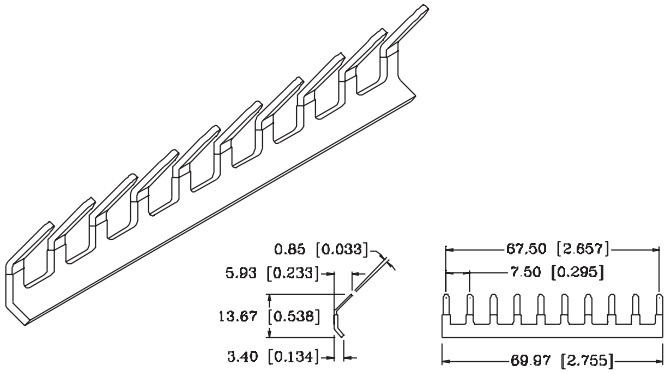
(Application of a voltage here will cause the load to turn on.)

See jumper strip and marker card accessories on page 15 for easy, trouble free wiring and Identification.

Mini I.O. Module Accessories

Jumper Strips

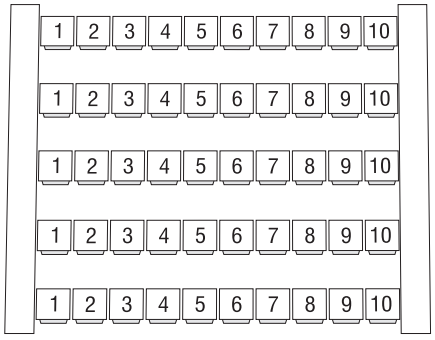
Continental Industries' 10 position jumper strips are for use with our Mini Din I/O Modules (pages 13-14). They are used to interconnect the positive and/or negative logic terminals, eliminating the need to use small jumper wires. The strips are copper, plated and insulated, and can be cut to length as desired. Part # I.O.-JUMPER-010



Marker Cards

Marker tags snap into the slots on the edge of a Mini I.O. module for easy identification. Customers benefit from easy, clear identification. Marker tags are available as cards, each with 5 sets of 10 characters (i.e. numbers 1-10, five times). Number ranges are: 1-10 or 11-20. Some customers install their I/O modules on every other number (1, 3, 5, 7, 9) in order to ensure air flow around each I/O module.

Part #'s: I.O.-MARKER-001 (Numbers 1-10)
I.O.-MARKER-011 (Numbers 11-20)



Semiconductor Fuses & Fuse Holders

FEATURES / BENEFITS

- **Touch safe design - No exposed contacts**
- **DIN rail mount (35mm)**
- **Excellent for switchboard panel, control consoles and similar applications**
- **Handle/fusepuller to install and remove fuses easily**
- **Available in single and 3 pole configurations**
- **U.L. recognized**
- **C.S.A. certified**

Use the solid-state relay fuse code to select the correct fuse and fuse holder, or replacement fuse. Protecting solid-state relays from short circuit conditions is the main job of an I^2T semiconductor fuse, not providing overload protection. Continental Industries' recommended fuses have been selected to provide the best match of short circuit protection over a wide range of operating voltages and ambient temperatures. Applying overload protection is specific to every application. Always consult applicable electrical codes for guidance in selecting an appropriate "overload protection" device, fuse, or circuit breaker. See page 24 for further fusing considerations.

FUSE SELECTOR CHART

Semiconductor Fuse Replacements & Accessories				Used with:
External:	**Fuse Code**	**Fuse and Fuse Holder**		
	A	FUSE-KIT-14-010	10 AMP	SV Series
	B	FUSE-KIT-14-025	25 AMP	SV, RV Series
	C	FUSE-KIT-14-330	30 Amp/3 phase/3pole	RS 3 Phase
	D	FUSE-KIT-14-040	40 AMP	RV25, RV40, SV50
	E	FUSE-KIT-14-050	50 AMP	SV50
	F	FUSE-KIT-22-063	63 AMP	RS50
	G	FUSE-KIT-22-075	80 AMP	SV75
	H	FUSE-KIT-22-100	100 AMP	RS75, RS100
Fuse only (I^2T fuse)				
Internal fuses [1]:	F	FUSE-SEMIBR-63A	63 AMP	RS50
	G	FUSE-SEMIBR-100	100 AMP	RS75, RS100
External fuses [2]:	A	FUSE-EXT-14-010	10 AMP	SV Series
	B	FUSE-EXT-14-025	25 AMP	SV, RV Series
	C	FUSE-EXT-14-030	30 AMP	RS 30 Amp/3Phase
	D	FUSE-EXT-14-040	40 AMP	RV40, SV50
	E	FUSE-EXT-14-050	50 AMP	SV50
	G	FUSE-EXT-22-075	80 AMP	SV75
	H	FUSE-EXT-22-100	100 AMP	RS75, RS100

Notes:

(1) The internal fuses are used in the RS family of 50, 75, and 100 Amp relays. Due to local electrical codes or due to thermal stress on the fuse, some customers may choose to use the external fuse and fuse holder #FUSE-KIT-22-063 or -100.

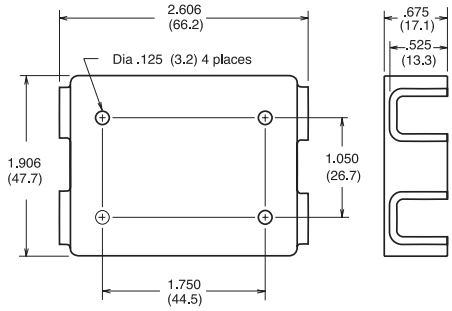
(2) The external fuses are 14mm Diameter x 51 mm long or 22mm diameter x 58mm long.

Contact Continental for the internal Bus bar, -B00 option

Fuse Holders Only			Dimensions H x W x D in (mm)
A - E	FUSE-HLDR-14-01	10-50 AMP	3.74 x 1.02 x 3.38 (95 x 26 x 86)
F - G	FUSE-HLDR-22-01	75-100 AMP	5.51 x 1.38 x 3.54 (140 x 35 x 90)
C	FUSE-HLDR-14-03	30 AMP/3 PHASE	3.74 x 3.11 x3.38 (95 x 26 x 86)
Handle (Gang3) C	FUSE-3HANDLE-00	30 AMP/3 PHASE	

Safety Cover

Continental Industries' Safety Covers meet European touch safety requirements and can be used on any of the SV, S505-, SS- series or RSDC units. The covers snap on, forming a tight fit. Holes in the lid provide easy access for probe testing. Safety covers are included with the SV-Series. Part Number: COVR-SAFETY-000

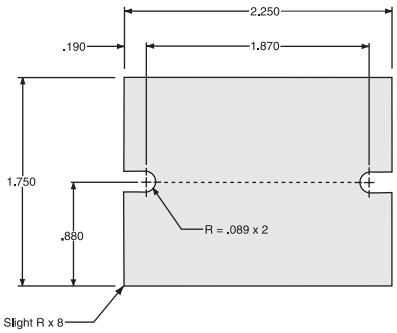


COVR-SAFETY-000

Thermal Transfer Pads

These Thermal Transfer Pads are die-cut to fit the bases of Continental's Panel Mount Relays. They are an excellent replacement for thermal greases, proven to provide the lowest thermal resistance values of any commercially practical interface material, while being more convenient and less messy. Available in sets of 5 and 25. Part Numbers: THERMAL-PAD-005 (5 pcs), THERMAL-PAD-025 (25 PCS).

- 60° C Phase Change Temperature
- Total Interface Pad Thickness = 3 mils
- Lowest Contact Thermal Impedance Available
- No "run out" in vertical mounting applications
- Heat sensitive material, store below 30° C / 85° F
- Ruggedized material that is resistant to handling damage in transit



Heatsinking *(Please also see page 6)*

Heat is generated by all Solid State Relays in direct relation to the amount of current being switched. Approximately 0.8-1.4 watts will be generated by the SSR for every Amp switched. This heat must be dissipated as fast as generated otherwise the temperature of the relay will keep on increasing until it fails. 90% of the problems with relays are directly related to heat.

Adequate heatsinking, including consideration of air temperature and flow, is essential to the proper operation of a solid state relay. Units should not be mounted in an enclosed area without proper air flow. Units should also never be mounted to a plastic base or to a painted surface. *Failure to provide adequate heatsinking will cause a solid state relay to fail.* We recommend mounting our units on the heatsinks listed on page 6 of this catalog. However, when this is not possible, and the units are to be mounted to some other heatsinking object, material heat conductivity should be kept in mind. Our heatsinks are approximately equivalent, in heat dissipation, to a sheet of aluminum 1/8" thick by the dimensions shown:

HEATSK-DIN-1.6	10" x 10"	(254 x 254mm)
HEATSK-DIN-1.0	14" x 14"	(355.6 x 355.6mm)

(Given proper ventilation and ambient temperature.)

In comparison, **twice the amount of steel and four times the amount of stainless steel** would be needed to achieve the same effect.

Any panel mount Solid State Relay must be mounted to a clean, bare (non-painted) surface that is free of oxidation.

Since even the best heatsink surfaces have some imperfections, there will be many air pockets between the base of the relay and the heatsink (or panel) surface.

Air is a very poor conductor of heat and will cause the relay to run hotter than it should. To fill these pockets, **Thermal Transfer Pads (pg 17) should be placed on the metal base of the relay before mounting to a metal surface.** We suggest torque of 10 inch-pounds on both of the SSR mounting screws.

Alternately, an evenly applied 0.002" thick layer of Dow Corning 340 (or equivalent) may be used. Note that a thicker layer of thermal compound actually decreases heat transmission.

Since airflow will affect its performance, a heatsink should be mounted in a manner that assures unrestricted airflow over its surface. Recommended mounting is on a vertical metal surface, with the fins oriented vertically so that air may flow unimpeded along the surfaces of the heatsink. Horizontal or inverted mounting is possible but not recommended, the SSR must be derated accordingly.

Care must be taken when mounting multiple SSRs in a confined area. SSRs should be mounted on individual heatsinks whenever possible. *Panel mount SSRs should never be operated without proper Heat Sinking or in Free Air as they will THERMALLY SELF DESTRUCT UNDER LOAD.*

A simple Rule-Of-Thumb for monitoring temperature is to slip a thermocouple under a mounting screw. If the base temperature does not exceed the "max heat sink temperature" (shown in column 2) under normal operating conditions, the SSR is operating in an optimal thermal environment. If this temperature is exceeded, the relays current handling ability must either be thermally improved by the use of a larger heatsink, or greater air flow must be provided over the device through the use of a fan. Some cases may require the selection of a higher current output SSR and thermally derating the device accordingly.

Remember that the heatsink removes the heat from the Solid State Relay and transfers that heat to the air in the electrical enclosure. In turn, this air must circulate and transfer its heat to the outside ambient. Providing vents and/or forced ventilation is a good way to accomplish this.

80% Power Rule

All Solid State Relays are capable of running at full rated power (with proper heatsink). However, it is strongly suggested that they be used at no more than 80% power to provide a safety margin in case of higher than expected voltage, temperature, or dust on the heatsink, etc. Additionally, voltage can vary up to +/- 10%, and a heating element up to +/- 10% over its life--two main reasons for the 80% rule.

DIN mounted single and three phase relays:

These devices are provided with an integral heatsink and should be mounted so as to provide 1" (25mm) of space between the units, for best air flow (the 80% of power rule described above still applies). They can be mounted against each other if the end units in a row are derated by 10% and the middle units are derated 10% more than the end ones.

For proper airflow, these units should also be mounted in a manner leaving space above and below the heatsink equal to or greater than the height of the heatsink.

Since airflow will affect performance, relays with integral heatsinks should be mounted in a manner providing unrestricted airflow over their surfaces. Recommended mounting is on a vertical surface, with the fins oriented vertically, so that air may flow unimpeded along the surfaces of the heatsink.

Heatsink Calculations for SV Family of Solid State Relays

Continental Industries International SV Power Dissipation

SVxA/3V10	**SVxA/3V25**
10 Amp Relays	25 Amp Relays
10A/11W	25A/31W
8A/9W	20A/23W
6A/6W	15A/16W
4A/4W	10A/10W
2A/2W	5A/5W
Max heat sink=90°C	Max heat sink=85°C
Pwr Ref: V_O=0.80V_O	Pwr Ref: V_O=0.80V_O
Rt=0.038 ohms	Rt=0.021 ohms
SVxA/3V50	**SVxA/3V75**
50 Amp Relays	75 Amp Relays
50A/59W	75A/84W
40A/44W	60A/63W
30A/30W	45A/44W
20A/18W	30A/27W
10A/9W	15A/13W
Max heat sink=105°C	Max heat sink=105°C
Pwr Ref: V_O=0.80V_O	Pwr Ref: V_O=0.85V_O
Rt=0.0092 ohms	Rt=0.0046 ohms

All calculations are in degrees C. See derating curves on next page. Continental provides you three ways to calculate the heatsink for your application.

1) Heat Sink Calculation Method

Maximum heat sink temperature minus maximum ambient temperature divided by the power dissipation (use the chart above for power dissipation at desired current).

(Max Heat Sink Temp - Max Ambient Temp) / Watts = ___

For Example, use a
- SVDA/3V25 running at 20 Amps in a 45°C ambient
- From the chart, at 20 Amps it dissipates 23 Watts
- A 25A unit can have a 85°C heat sink
- (85-45 ambient) = 40°C temp rise is allowed
- 40°C/23W = 1.74°C/W heat sink rating or less (less temperature rise per watt is better)
- Therefore, the recommended heatsink would be part number: HEATSK-DIN-1.6 (rated at 1.6°C/W) or any equivalent heat sink that is 1.74 or LESS. Remember, the lower the heatsink value, the better it dissipates the heat. The relay must be connected to the heatsink using an appropriate thermal conduction grease or thermal pad.

2) De-Rating Calculation Method

Maximum heat sink temperature minus maximum ambient temperature divided by the heat sink rating (use the previous chart for power dissipation).

(Max Heat Sink Temp - Max Ambient Temp) / Heat sink rating = ___(Max allowed Watts)

For Example, use a
- SVDA/3V10 in a 60°C ambient with a 2.0°C/W heat sink.
- 90°C - 60°C = 30°C heat sink temperature rise is allowed.
- 30°C divided by 2.0°C/W =15W.
- From the table, full load current of 10A only dissipates 11W.
- Thus, a SVDA/3V10 mounted on a 2.0°C/W heat sink can switch 10A at 60°C.

3) Power Calculation in Place of the Charts

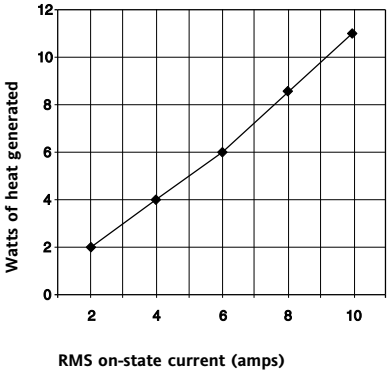
Heat rise calculation of a SV solid state relay based upon amperage switched "ON" 100% of the time. Please note, the Continental "SV" SSR uses engineering techniques that provide maximum surge survivability while generating a low temperature rise.

$(0.9 \times Irms \times V_0) + (Irms^2 \times Rt) = Power.$

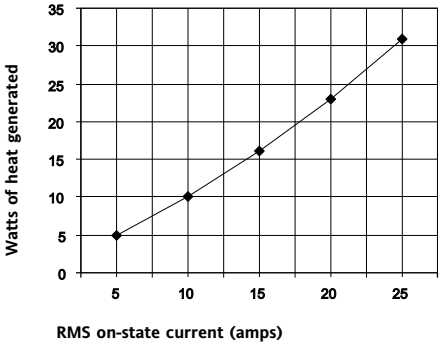
For Example, use a
- SVDA/3V25 for a 21A application.
- $(0.9 \times 21A \times 0.80V) + (21^2 \times 0.021\Omega) = 24.4$ W.

Solid State Relay Power Curves

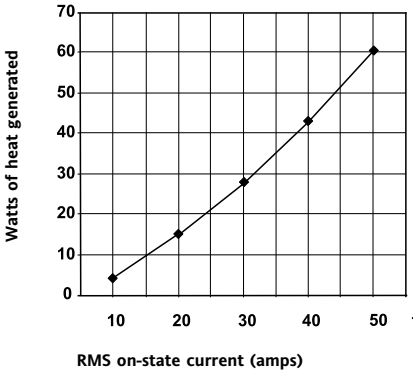
10 Amp Relay



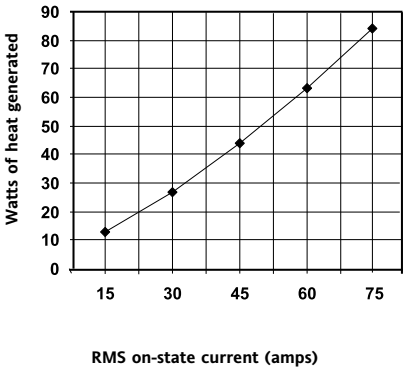
25 Amp Relay



50 Amp Relay



75 Amp Relay



Motor Applications (RS - 3 Phase Unit):

The Continental 3-Phase solid state relay is designed for switching power to 3-phased asynchronous motors and to resistive loads. For guidance in its application, refer to the following notes:

(380 Volt, 50/60 HZ Motors - Direct Start)

	Motor Size (KW)	Start Current (A_{RMS})	Operating Current (A_{RMS})
2-Pole- 3000 RPM	3	43.4	6.2
4-Pole - 1500 RPM	3	38.0	6.9
6-Pole - 1000 RPM	4	47.7	9.0
8-Pole - 750 RPM	3	36.6	8.7

(220 Volt, 50/60 HZ Motors - Direct Start

2-Pole - 3000 RPM	2.2	45.0	7.0

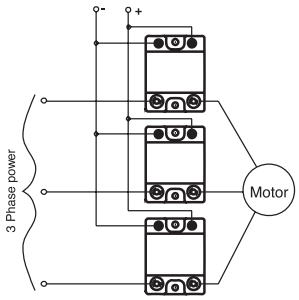
Overload Capacities:

In the event that a load completely or partially short circuits, the following table indicates the absolute maximum current that the 3 Phase RS-Unit relay can withstand for various time limits:

Time (Sec)	Current (Arms)	Time (Sec)	Current (Arms)
.2	275	8.0	80
.4	228	10.0	75
.6	188	12.0	72
.8	161	14.0	71
1.0	150	16.0	70
2.0	124	18.0	69
4.0	95	20.0	67
6.0	86	40.0	58

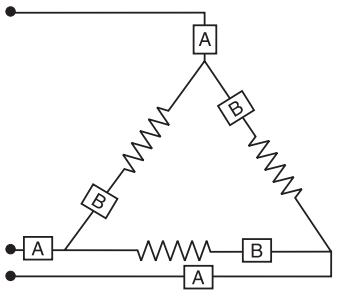
Three Phase Motor Control: (SV Series)

Three phase motors can be controlled as shown. Note that only two SSRs are required, the third is optional. The inputs are shown in a parallel arrangement, but they can also be connected in series as long as the minimum control voltage is provided to power each relay.

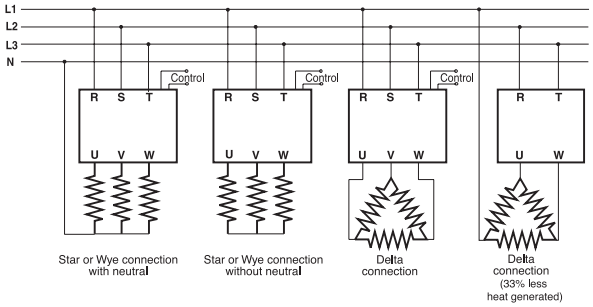


Three Phase Wiring Suggestion:

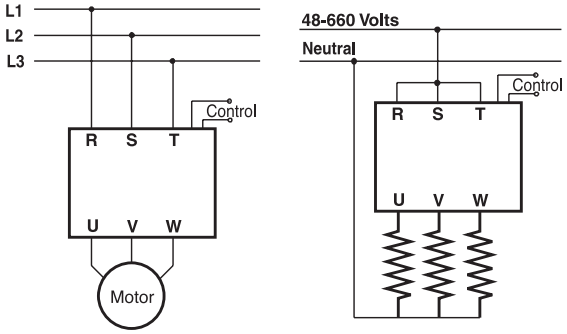
Relay positioning in a three-phase circuit impacts the current draw and therefore the amount of heat generated. When positioned in location “A”, as indicated below, a relay will draw 73.2% more current than position “B”. Using position “B” will enable you to use a smaller relay or will provide an increased safety margin. Additionally, by drawing less current, heat generation is reduced by 40%.



Example Wiring (RS-3 Phase Unit)



Maximum wattage is less with Delta configuration



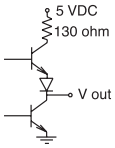
Logic Signal (TTL) Operation:

One of the primary advantages of SSRs and I/O modules is their compatibility with low-level, solid state logic. Any logic gate, buffered or not, capable of delivering the required current and voltage within its maximum power dissipation rating can be used to control an SSR or I/O module.

Many TTL gates, for example will safely dissipate 40 mW or more; and the total package will dissipate up to one watt. This gate power must not be confused with relay input power. Whereas a SSR whose input requires 6 mA at 5V DC consumes 30 mW of power, the TTL gate sinking this 6 mA may have a voltage drop of only 0.2 volt, and power consumption of just 1.2 mW!

TTL gates can only sink relay input current, not source it. This is because as shown, the sourcing transistor has a pull-up resistance in its collector circuit. Pulling 11 mA through this resistance, in this case 130 Ohms, would leave insufficient input voltage to operate the relay. For example, a SSR requiring a nominal 5VDC may not operate on less than 4 volts.

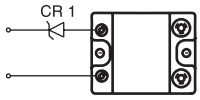
Typically, the drop across the transistor and diode at 11 mA would approximate 0.8 volt; and the drop across 130 Ohms is 1.4 volt. This 2.2 volt drop would leave only about 1.8 volts for the relay to operate, not enough for relay turn-on.



Since TTL gates can only sink current to the relay, and since current sinking is done from a “zero” logic signal, the relay can only be turned on from a “zero” signal. This is contrary to normal relay operation, which prefers that the relay be turned on as a result of a “one” signal. To obtain relay actuation from a logical “one” signal, it is necessary to use an inverting gate. With such a gate, when a “one” signal is received, the sink transistor will turn on and conduct relay input current.

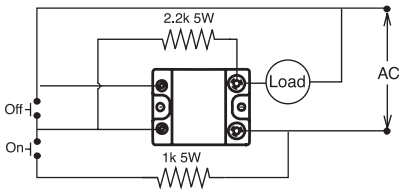
Changing pick-up and drop-out voltage:

By using a zener diode in series with the input, the pick-up and drop-out voltage of a Solid State Relay or an I/O Module can be increased by the value of the zener. For example, a typical SSR has a maximum pick-up voltage of 4 VDC and a minimum drop-out of 1 VDC. By adding a 6 volt zener as shown, the new pick-up will be 10 volts and the new drop-out 7 volts.



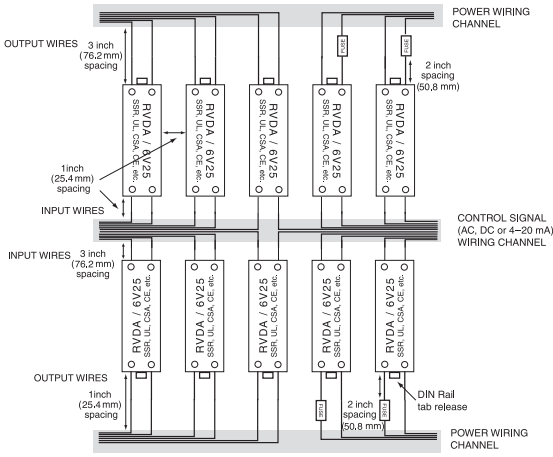
Latching SSR:

An AC SSR can be made to self latch (at the sacrifice of input-output isolation), thus permitting the use of momentary action switches for on/off or stop/start operation. It may be necessary to insert an RC filter across the relay input to prevent the relay from turning on due to switching transients upon application of system power. Note that the SSR employed here must be an AC input type.



Installation Density

To achieve maximum installation density and to provide separate wiring channels for the high voltage/high current wires vs the control signal wires. Continental’s RV family of 25 or 40 amp products can be installed as shown below. Please ensure that you observe the wire teminal numbers. The spacing shown is the minimum requirement for most industrial applications. Unrestricted airflow is needed for the Continental product to perform at its’ rated capacity.



Transformer loads:

Transformer loads can have **severe in-rush current** problems depending on the state of the transformer flux at turn-off. The in-rush current is created when the transformer saturates during the first half of the next applied voltage cycle. A relay must be selected to handle the surge current for 1/2 cycle. As a rule of thumb, the relay should have a 1/2 cycle surge current rating greater than the maximum applied line voltage divided by the transformer primary resistance. (Roughly 12 times the rated current)

Recommended Transformer Loads:

SSR Rating	at 120VAC	at 240VAC
10A	200VA	400VA
25A	400VA	800VA
50A	600VA	1.2KVA
75A	1KVA	2KVA.

Crimped-on Wire Terminals

When using either Ring or Spade crimped terminals with the SV or RSDC relays, do not use the saddle clamps that are provided. It is sufficient to secure the Ring or Spade Connectors with the enclosed screws.

When using electrical wire that is larger than #10 AWG with the RVDA, RVAA, or RVMA relays, 25-40 amp models, then use crimped lug, Amp# 790368-1 or equivalent

DIN Rail Sizes:

All DIN Rail mountable relays and modules will fit on any standard 35mm rail.

Heater loads:

Solid State Relays are well suited for driving heaters, however, in some temperature control applications the load is rapidly and almost continuously switched on and off. This is ideal for purely resistive loades (0.9-1.0 power factor). For loads of power factor 0.8-0.9 CII recommends increasing the controller cycle time to 5 sec minimum. Loads with power factor <0.8 should be derated for inductive load.

Recommended Heater Loads:

SSR Rating	at 120VAC	at 240VAC	at 480 VAC
10A	960W	1.9KW	3.8KW
25A	2.4KW	4.8KW	9.6KW
50A	4.8KW	9.6KW	19.2KW
75A	7.2KW	14.4 KW	28.8KW

Low cold resistance elements such as Tungsten or Short Wave Infra Red have special design considerations. Please consult the factory, due to high inrush currents.

Lamp loads:

Since all of our SSRs are zero voltage switched, they are the ideal device for driving incandescent lamps. An electro-mechanical relay can turn on a lamp at any point of the AC cycle, causing a large in-rush of current through the cold filament. A zero switched SSR will instead drive the lamp with a gradually increasing current, reducing the in-rush current and prolonging lamp life.

Recommended Lamp Loads:

SSR Rating	at 120VAC	at 240VAC
10A	600W	1.2KW
25A	1.5KW	3.0KW
50A	3.0KW	6.0KW
75A	4.5KW	9.0KW

CAUTION: Using SSRs for driving mercury, fluorescent, or HID lamps should be avoided. If they must be used, the SSR must be severely derated and thoroughly tested in the specific application.

Solenoid Valves and Contactors:

All of Continental's Power SSRs use high noise immunity circuitry in addition to a snubber network to handle the electrical noise generated by inductive loads.

However, the cycling of a Solenoid load will generate large current spikes which will decrease the power capability of the SSR. The power rating of the SSR will be reduced by the power rating percentage shown.

Cycle Time	Power Rating
20 sec.	80%
5 sec.	65%
1 sec.	40%

Recommended Solenoid Loads = V x I x (Power Rating)
Recommended Solenoid at 5 sec. cycle time.

SSR Rating	at 120VAC	at 240VAC
10A	780W	1.9KW
25A	2.0KW	3.9KW
50A	3.8KW	7.6KW
75A	5.8KW	14KW

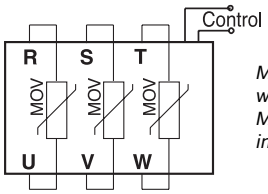
Short-Circuit Protection:

The relay can be short-circuit protected with an appropriate semiconductor fuse. The load integral of the relay (I^2t) determines which size of fuse is to be used. The fuse load integral must be below that of the relay for the appropriate protection. Be certain to analyze the fuse current/time curve to insure that the fuse can withstand the motor starting current (if applicable).

NOTE: Overload protection should be provided by another slow-acting fuse in series with the short circuit protection fuse. (An overload being an over-current condition that is not of high enough amplitude to be considered a short circuit).

Transient Voltage Protection:

When operating a relay in an electrically noisy environment, large voltage transients may damage the relay. To protect against this occurrence, it is advisable to install appropriate varistors across the respective supply and load terminals of the relay output.



Model RS_A-660-30-3D0 shown with customer-installed MOVs. Model RS_A-560-30-3D2 has 3 internal MOVs installed

If your application is located near inductive loads, or sharing power sources with large inductive loads, that are creating transients in excess of the blocking voltage of the Continental solid state relay, then you must install a metal oxide varistor (MOV) to protect the solid state relay. It is up to the installation company to properly size the MOV to the application!!!!! Ideally, the MOV protection is near the noise generating inductive load (such as a motor, drive, or other large inductive coil) or you can place MOVs directly across the output terminals of the SSR. Some “typical” MOVs include:

600 volt application - Harris V660 LA80B
480 volt application - Harris V575 LA80B
300 volt application - Harris V320 LA40B

The new SV and RV families of solid state relays include the Superior Surge Survival™ technology that dramatically reduces your need to install an external MOV except in extremely noisy environments or inductive load applications.

Single Phase Motor control:

The following table gives guidelines for selecting relays for single phase non-reversing motors. **Driving reversing motors is not recommended due to the potentially destructive voltage doubling and capacitive discharge that they create.**

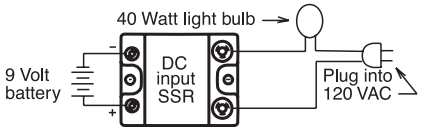
Recommended Loads:

SSR Rating	at 120VAC	at 240VAC	at 480VAC
10A	1/4 Hp	1/2 Hp	-
25A	1/3 Hp	1 Hp	2 HP
50A	3/4 Hp	2 Hp	3 HP
75A	1 1/4Hp	3 Hp	7 1/2 HP

Lamp Test:

An AC output solid state relay can be quickly and easily tested. To evaluate whether or not it is operative, connect the relay as follows using the appropriate voltages. The lamp bulb should not turn "On" until the control voltage is applied (and "Off" when control voltage is removed). If the lamp comes "On" with no control voltage, the output is shorted.

Shown is an AC output solid state relay. DC units can be checked the same way with appropriate DC voltages and load.



Safety:

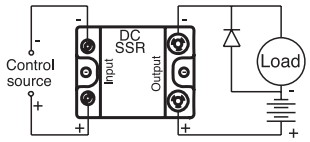
Solid State Relays are NOT open circuits, even when in the off-state, due to their leakage current. Safety can only be achieved by a mechanical disconnect between the solid state relay and the power lines.

DC Output relay - Transient protection:

Most loads are inductive, even ones that are not so labeled. An inductive load will produce harmful transient voltages when it is turned off. Power MOSFET outputs can be susceptible to the transient voltages produced by seemingly “non-inductive” loads and can be damaged if not properly protected. A protection diode across the load is recommended.

Input and output polarity must be observed. Inductive loads must be diode suppressed.

The diode used should be of the fast-recovery type with a reverse voltage rating at least equal to the supply voltage.



Examples of fast-recovery diodes that may be used for transient suppression:

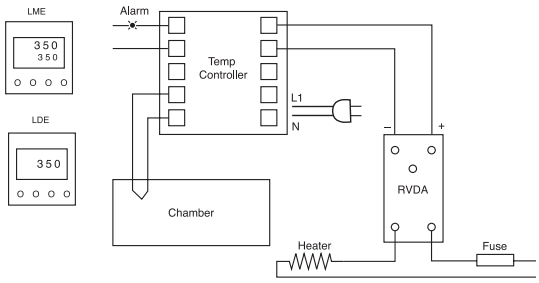
RELAY MODEL	MOTOROLA DIODES	GE DIODES
RSDC	MR851	A115A

These diodes are suitable for most applications. For fast repetition rates consult factory for further information.

Typical Temperature Control Installation

Electrically heated chamber application

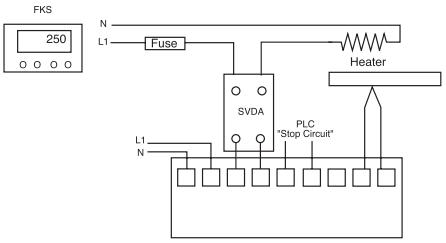
- DC activated RVDA solid state relay.
- Thermocouple input
- Alarm for operator warning



Typical Temperature Control Application

Packaging or food processing application

- SVDA solid state relay.
- Analog sensor input
- Alarm circuit to stop PLC or related equipment



Locking Screws-RS and RV Units:

Screws are prevented from self-loosening by a special design. The automatic progressive locking principle generates an increasing thread friction as the screw is tightened. Repeated tightening and loosening does not cause fatigue of the locking components. Recommended torque is 7-9 in/lbs. Care should be taken not to overtighten screws.

Fusing Considerations:

Circuit Breakers and slow blow fuses offer no protection to Solid state relays. Fast, "I^2T Semiconductor Fuses" are the only reliable way to protect SSRs.

All solid-state relays have an I^2T rating. This rating is the bench mark for their ability to handle a shorted output condition. Continental Industries advocates circuit protection through the use of a properly selected I^2T (semiconductor fuse).

Devices such as electromechanical circuit breakers and slow blow fuses cannot react quickly enough to protect the SSR in a shorted condition and are not recommended!!

For fuses I^2T is the measure of let-through energy in terms of current versus time. For solid state relays, I^2T is based directly on the output thyrsistor's single-cycle peak surge current determined by:

$$I^2T = \frac{I^2pk(surge)}{2} \times .0083 \text{ (Seconds)}$$

The procedure is to select a fuse with an I^2T let-through rating that is less than the I^2t capability of the solid state relay for the same duration.

An I^2T fuse protects the solid state relay. You still need a regular fuse or circuit breaker to protect the complete installation, in accordance with your local electrical code.

Leakage - effect on input:

Many Temperature Controllers and PLC's use Triacs as output devices and most manufacturers place a ".022 microfared snubber" across their triacs for their own protection. This snubber can produce enough leakage when the controller is "off" that it can cause the Solid State Relay connected to it to go "on" or at least to not turn "off" properly.

A solution to this problem is to place a 10K Ohm, 2 Watt resistor (for 120 Volt control), across the input (control) of the Solid State Relay.

The SVAA and RVAA family typically does NOT need the additional burden resistor. This saves you installation time and cost.

Output Leakage

Solid state relays typically have 8mA leakage current, even in their off-state. The only safe way to prevent shock is to have a mechanical disconnect between the line and the relay.

Direct Copper Bonding:

Continental Industries employs the proven reliability of direct copper bonding technology to all of its SCR chip assemblies. This direct bonding provides a more reliable mechanical connection between the SCR and the heatsink, by reducing the physical stress on the chips and also provides for better heat dissipation by reducing the layers heat must travel through to the ambient. These benefits result in a more durable relay and a longer usable relay lifetime.

Using SSRs with Electromechanical Relays:

Using a SV or RV relay to activate an electromechanical or mercury contactor is possible. Electromechanical relays produce a significant amount of electrical noise which could cause a solid state relay to mistrigger. If these two types of relays are used together, surge voltage protection may be required.

Caution:

Continental Industries International's Solid State Relays, Input/Output Modules, controls, and other Continental automation products can (as is possible with any electronic component) fail without warning. For this reason Continental Industries International cannot recommend, condone or warrant any application of our products that could cause harm or injury, in any manner, to any person, equipment, or facility upon such failure of the product.

For your safety and to protect the equipment from damage in the event of failure, it might be necessary to insert some type of upper-limit device (e.g. thermal) in series with the relay output to cause discontinuance of current to the load. Additionally, it is advisable to have a mechanical disconnect in the load circuit for service purposes.

Caution: the heatsinks shown in this catalog are capable of being over 100°C (212°F) when they are operating correctly in an installation. This could cause burns. ALWAYS completely de-energize a SSR and let it cool down before touching the unit. All heatsinks must be installed on a vertical metal surface with unrestricted airflow that flows up, through the fins, and out the top of the heatsink. Mounting the heatsinks on a horizontal surface, or limiting airflow due to other components being installed nearby, will severely decrease the ability for the heatsink to perform as specified.

Always disconnect the electrical power before touching the SSR or the load. Otherwise, an electrical shock hazard may exist. Failure to do this may result in electrocution or death.

Continental Industries International's products are intended for use where access is limited to qualified service personnel. Continental Industries International's products are not intended for use in explosive atmospheres.

CE installation catagory is Class 3 or lower.

Please contact the factory if you have any doubts or questions as to whether this caution applies to your application.

Warranty:

Continental Industries International warrants its products for a period of one year from date of manufacture to be free from defects in both workmanship and materials. Continental Industries International, however, assumes no risk or liability for results of the use in combination with any electrical or electronic components, circuits, systems, assemblies, or unsuitability of any product for use in any circuit or assembly. Purchaser's rights under this warranty shall consist solely of requiring Continental Industries International to repair, replace, free of charge, F.O.B. factory, any qualified, returned items. In no event shall Continental Industries International be liable for any express or implied warranty as to merchantability, fitness, description or for special or consequential damages or for delay in performance of this warranty.

FKS 1/32 DIN Temperature Controller

FEATURES / BENEFITS

- **Auto-Tune**
- **Includes two outputs, one Logic (for SVDA and RVDA operation) and one relay (for SVDA and RVDA operation)**
- **Thermocouple or RTD inputs, user selectable**
- **Ramped Output Power**
- **Alarms for loop break, high, low and deviation**
- **Alarm masking feature**
- **2 Setpoints**
- **IP65 NEMA 4X front protection**
- **UL, cUL, and CE**

FKS-66130000CC

The Model FKS is a miniature, 1/32 DIN size, panel mounted instrument that can be configured as a temperature controller or an alarm unit. Outputs and other features are easily configured from the front panel of the instrument. This low cost controller is easy to understand, easy to set-up and easy to use.

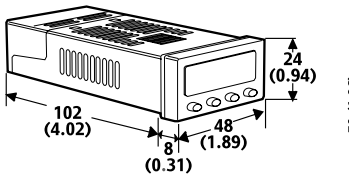
General Specifications

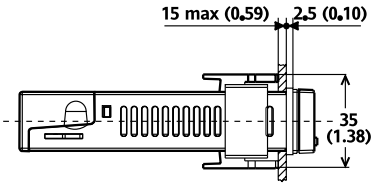
Case:	Black Polycarbonate case.
Self extinguishing degree:	V-2 according to UL 746 C.
Front protection:	Front protection - designed and tested for IP 65 and NEMA 4X for indoor locations (when panel gasket is installed). Tests were performed in accordance with IEC 529, CEI 70-1 and NEMA 250-1991 STD.
Dimensions:	24mm H x 48mm W x 102mm D (according to DIN 43700).
Weight:	90 g max.
Power supply:	(Switching mode) from 100 to 240 V AC. 50/60 Hz (+10 % to -15 % of the nominal value).
Power consumption:	2.5 VA.
Common mode rejection ratio:	120 dB @ 50/60 Hz.
Normal mode rejection ratio:	60 dB @ 50/60 Hz.
Electromagnetic compatibility and Safety requirements	This instrument is marked CE. Therefore, it conforms to council directives 89/336/EEC for industrial, residential and commercial environmental and to council directives 73/23/EEC and 93/68/EEC (standard EN 61010-1).
Sampling time:	250 ms for linear inputs. 500 ms for TC or RTD inputs.
Accuracy:	+ 0.2% of range +/– 1 digit @ 25°C (77°F).
Operative temperature:	From 0 to +50°C (32 to 122°F).
Storage temperature:	From - 20 to +70°C (-4 to 158°F).
Humidity:	From 20% to 90% RH not condensing.

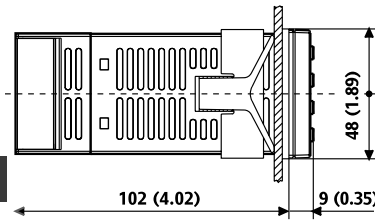
Control Action

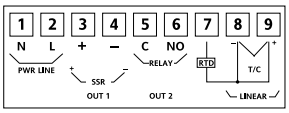
Algorithm:	Time proportioned PID.
Types:	One control output, heating.
Output types:	Relay or SSR.
Output control action:	Proportional time.
Proportional Band:	From 1.0% to 100.0% of the input span. Setting a PB equal to 0 the control action becomes ON/OFF.
Hysteresis	(for ON/OFF control action); From 0.1% to 10.0% of the input span.
Integral time:	From 1 second to 20 minutes or off.
Derivative time:	From 1 second to 10 minutes or off
Main output cycle time:	From 1 second to 200 seconds.
Output limiters:	Output high limits, Output low limits, Output max. rate of rise.

SCHEMATICS









FKS 1/32 DIN Temperature Controller

Measuring Input

Thermocouples	Burn out:	Detection of the open input circuit (wires or sensor) with overrange indication.
	Cold junction:	Automatic compensation for an ambient temperature between 0 and 50°C.
	Cold junction comp error:	0.1°C/°C.
	Calibration:	According to IEC 584-1.
RTD Input	Type:	Pt 100 3 wires.
	Calibration:	According to DIN 43760.
	Line resistance:	Max 20 W/wire with no measurable error.
	Burn out:	Detection of the sensor and of one or more wires open circuit. The instrument shows the short circuit indication when the resistance of the sensor is lower than 12 W.
Linerar Input	Type:	0-60 mV; 12-60 mV.
	Read-out:	Keypad programmable from -1999 to 9999.
	Decimal point:	Programmable in any position.

TC type	°C Range	°F Range
L	-100/900°C	-150/1650°F
L	-100.0/900.0°C	
J	-100/1000°C	-150/1830°F
J	-100.0/999.9°C	
K	-100/1370°C	-150/2500°F
K	-100.0/999.9°C	
N	-100/1400°C	-150/2550°F
R	-50/1760°C	-60/3200°F
S	-50/1760°C	-60/3200°F
T	-200/400°C	-330/750°F
T	-199.9/400.0°C	

RTD type	°C Range	°F Range
PT100	-199.9/850°C	-199.9/999.9°F
PT100	-200/850°C	-330/1560°F

Outputs 1 and 2

	Function:	Individually configurable as control output or alarm output.
Output Relay	Relay type:	SPST.
	Contact rating:	3 A @ 250 V on resistive load.
Output SSR	Type:	Not isolated outputs- Logic level “ON”: 14V DC @ 20 mA max., - Logic level “OFF”: < 0.5 V DC.

Alarms

	Alarm action:	Direct or reverse.
	Alarm functions:	Each alarm can be configured as process alarm, band alarm, deviation alarm.
	Alarm reset:	Latching or non-latching.
	Alarm masking:	An alarm setup as masking will only become active after it has first entered a safe state after being powered-up.
	Hysteresis:	Programmable in engineering units from 1 to 200.
Process Alarm	Operative mode:	Low or high programmable.
	Threshold:	Programmable in engineering unit within the input range.
Band Alarm	Operative mode:	Inside or outside programmable.
	Threshold:	Low - from 0 to -1000 units, High - from 0 to +1000 units.
Deviation Alarm	Operative mode:	High or low programmable.
	Threshold:	Programmable from - 1000 to +1000 units.
Loop Break Alarm	Operative mode:	Automatically activated when the power output reaches the programmed limits.
	Time interval:	Programmable from 1 s to 40 minutes.
	Deviation:	Programmable from 0 to 500 digits.
	Hysteresis:	From 1 to 50% of the input span.

Warranty

Warranty	Length	2 year from date of manufacture

LDE/LME 1/16 DIN Temperature Controller

FEATURES / BENEFITS

- **Auto-Tune**
- **Heat & Alarm or Heat/Cool**
- **Logic (for SSR operation) or Relay Heat Output**
- **Two Relays**
- **Thermocouple or RTD inputs, user selectable**
- **Ramped Output Power**
- **Alarms for loop break, high, low and deviation**
- **Alarm masking feature**
- **Built-in configuration port for downloading configurations, storing configurations and cloning controllers on a computer**
- **IP65 NEMA 4X front protection**
- **UL, cUL, and CE rated**

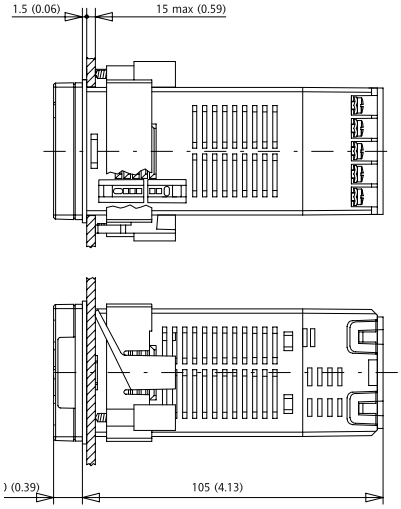
LDE4960300CC Logic Output **LM4911300CC** Relay and Relay
LDE4961300CC Logic and Relay **LME4961300CC** Logic and Relay

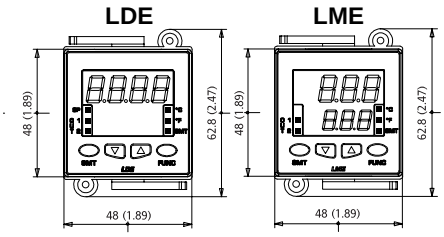
The models LDE and LME are cost-effective, compact, 1/16 DIN size, instruments that provide reliable temperature control using a field proved control algorithm. These models are available in single 4-digit display (LDE) or dual, 3-digit display (LME). The outputs can be configured from the front panel of the instrument for Heat Only or Heat/Cool operation. These foolproof controllers are easy to understand, set-up and use, and provide exceptional value in a quality instrument.

General Specifications

Case:	ABS grey color (RAL 7043); self-extinguishing degree: V-0 according to UL 94.
Front protection:	Designed and tested for IP 65 (*) and NEMA 4X (*) for indoor locations (when panel gasket is installed).
Installation:	Panel mounting by means of mounting bracket. Instrument removable from case.
Rear terminal block:	10 screw terminals (AWG 22 to AWG 14) with connection diagrams and safety rear cover.
Dimensions:	48mm W x 48mm H x 105mm D (DIN 43700).
Cut-out:	45mm x 45mm
Weight:	200 g max.
Power supply:	100V to 240V AC 50/60Hz (-15% to + 10%).
Power consumption:	6 VA max.
Common mode rejection:	120 dB at 50/60 Hz.
Normal mode rejection:	60 dB at 50/60 Hz.
Insulating voltage:	2300 V RMS according to EN 61010-1.
Electromagnetic compatibility and safety requirements	This instrument is marked CE and therefore, it conforms to council directives 89/336/EEC (standard EN-50081-2 and EN-50082-2) and to council directives 73/23/EEC and 93/68/EEC (standard EN 61010-1).
Display updating time:	500ms.
Sampling time:	500ms.
Resolution:	30000 counts.
Accuracy:	+ 0.3% of range +/– 1 digit @ 25°C ambient
Temperature drift:	< 400 ppm/°C for RTD or TC type T input.
Reference junction drift:	0.1°C/°C.
Operative temperature:	From 0 to 50°C.
Storage temperature:	-20 to +85°C
Humidity:	From 20% to 90% RH, non condensing.

SCHEMATICS





LDE/LME 1/16 DIN Temperature Controller

Measuring Input

Thermocouples	Burn-out:	Up or down scale selectable.
	Cold junction:	Automatic compensation from 0 to +50°C.
	Cold junction drift:	0.1°C/°C.
	Line resistance:	Max. 100 Ω with error <+0.1% of the input span.
	Engineering unit:	°C or °F programmable.
	Calibration:	According to IEC 584-1 and DIN 43710 - 1977 (TC L)

TC type	°C Range		°F Range	
	LDE	LME	LDE	LME
L	0/900°C	0/900°C	0/1652°F	0/999°F
J	0/1000°C	0/999°C	0/1832°F	0/999°F
K	0/1370°C	0/999°C	0/2498°F	0/999°F
N	0/1400°C	0/999°C	0/2552°F	0/999°F
T	0/400°C	0/400°C	0/752°F	0/752°F

RTD Input	Type:	Pt 100 3 wire connection.
	Calibration:	According to DIN 43760.
	Current:	135 mA.
	Line resistance:	Automatic compensation up to 20 Ω/wire with; - Error <+0.1% of the input span for range -19.9 a 99.9°C.; No measurable error for the other ranges.
	Engineering units:	°C or °F programmable.
	Burn-out:	Up scale.

RTD type	°C Range		°F Range	
	LDE	LME	LDE	LME
PT100	-200/800°C	-199/800°C	-328/1472°F	-199/999°F
PT100	-199.9/400°C	-19.9/99.9°C	—	—

Note:A special sensor test provides OVERRANGE indication when the input resistance is less than 15Ω.

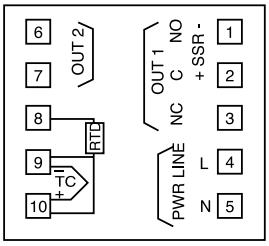
Control Actions

Control actions:	Time proportioned PID.
Proportional band:	From 1.0 % (for heating action) or 1.5 % (for heating and cooling action) to 100 % of the input span.
Hysteresis (ON/OFF control action):	From 0.1 % to 10.0 % of the input span.
Integral time:	From 1 second to 20 minutes.
Derivative time:	From 0 to 10 minutes.
Integral preload:	From 0 to 100% for one control output; From -100 to 100% for two control outputs.
Heating cycle time:	From 1 to 200s.
Cooling cycle time:	From 1 to 200s.Relative cooling gain:From 0.20 to 1.00.
Overlapping/dead band:	From - 20% to 50%.

Outputs 1 and 2

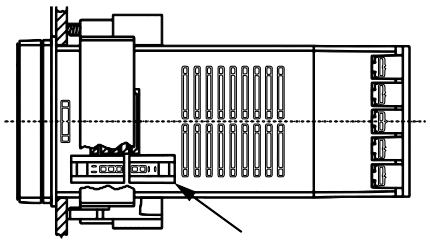
OUT 1 - heating:	a) Relay output with SPDT contact; contact rating 3A / 250 VAC on resistive load.
	b) Logic voltage for SSR drive; Logic status "ON": 14 V DC @ 20 mA max., Logic status "OFF": <0.5 V.
OUT 2 - cooling / alarm 1:	Relay output with SPST contact; contact rating 2A / 250 VAC on resistive load.

REAR TERMINAL BLOCK



CONFIGURATION PORT

The controller has a port for connection to the configuration station. The configuration station (provided separately) offers a way to connect the instrument to the RS232 port (COM1/COM2) of a PC. During the configuration process the controller keypad and display are not operational.



MKS/TKS 1/4 and 1/8 DIN Temperature Controller

FEATURES / BENEFITS

- **Auto-Tune**
- **Three outputs, two control and one alarm or one control and two alarm**
- **Universal Input (TC, RTD, Linear)**
- **Output 1 user selectable as Logic (for SSR) or Relay**
- **Ramped Output Power**
- **Alarms for loop break, high, low and deviation**
- **Alarm masking feature**
- **2 Setpoints**
- **Logic Input for Setpoint Selection**
- **IP65 NEMA 4X front protection**
- **UL, cUL, and CE**

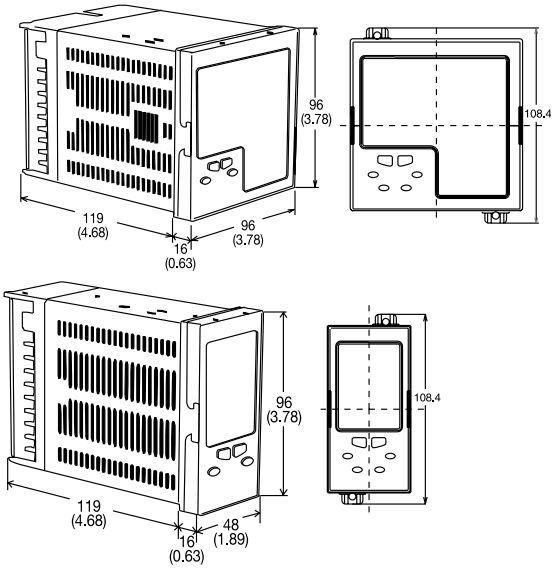
MKS9311130CC 1/4 DIN
TKS9311130CC 1/8 DIN

The models TKS and MKS are larger size (1/4 and 1/8 DIN) controllers offering the look and features normally found in much more expensive units. These economically priced temperature controllers have large (1/2"), two color, displays of four digits each. The upper (PV) display is green; the lower (setpoint) display is orange. The outputs can be configured from the front panel of the instrument as Heat Only or Heat/Cool. High quality and high functionality controllers at an exceptional price mean outstanding value.

General Specifications

Case:	Black Polycarbonate case.
Self extinguishing degree:	According to UL 746 C.
Front protection:	Designed and tested for IP 65(*) and NEMA 4X (*) for indoor locations (when panel gasket is installed).
Dimensions:	MKS: 96mm H x 96mm W x 119mm D.
and safety requirements	TKS: 96mm H x 48mm W x 119mm D.
Cut-out:	MKS: 92mm H x 92mm W.
	TKS: 92mm H x 45mm W.
Weight:	360 g max. for TKS- 490 g max. for MKS
Power supply (switching mode):	From 100 to 240 VAC. 50/60 Hz (+10 % to -15%).
Power consumption:	6 VA max.
Common mode rejection ratio:	120 dB @ 50/60 Hz.
Normal mode rejection ratio:	60 dB @ 50/60 Hz.
Electromagnetic compatibility	This instrument is marked CE. Therefore, it conforms to council directives 89/336/EEC (standard EN 50081-2 and EN 50082-2) and to council directives 73/23/EEC and 93/68/EEC (standard EN 61010-1).
Sampling time:	250 ms for linear inputs - 500 ms for TC or RTD inputs.
Accuracy:	+ 0.2% of range +/– 1 digit @ 25°C (77°F).
Operative temperature:	From 0 to +50°C.
Storage temperature:	From -20 to +70°C.
Humidity:	From 20% to 90% RH not condensing.

SCHEMATICS



MKS/TKS 1/4 and 1/8 DIN Temperature Controller

Measuring Input

Thermocouples	Burn out:	Detection of open input circuit (wires or sensor) with underrange or overrange selectable indication.
	Cold junction:	Automatic compensation for an ambient temperature between 0 and 50°C.
	Cold junction comp error:	0.1°C/°C.
	Calibration:	According to IEC 584-1.
RTD	Type:	Pt 100 3 wire connection.
	Calibration:	According to DIN 43760.
	Line resistance:	Max 20 W/wire with no measur able error.
	Burn out:	Detection of the sensor open circuit and of one or more open wires. The instrument shows the short circuit indication when the resistance of the sensor is lower than 12 W.
Linear Input	Read-out:	Keypad programmable from -1999 to 4000.
	Decimal point:	Programmable in any position.

TC type	°C Range	°F Range
L	0/900°C	0/1650°F
L	0/400.0°C	
J	-100/1000°C	-150/1830°F
J	-100/400°C	
K	-100/1370°C	-150/2500°F
K	-100.0/400°C	
N	-100/1400°C	-150/2550°F
R	-50/1760°C	0/3200°F
S	-50/1760°C	0/3200°F
T	-199.9/400°C	-330/750°F

RTD type	°C Range	°F Range
PT100	-200/800°C	-330/1470°F
PT100	-199.0/400.0°C	-199.9/400.0°F

Input	Impedance
0 - 20 mA (4 - 20 mA)	< 5 Ω
0 - 60 mV (12 - 60 mV)	> 1 M Ω
0 - 5 V (1 - 5 V)	> 200 k Ω
0 - 10 V (2 - 10 V)	> 400 k Ω

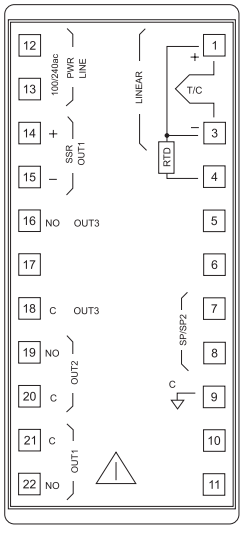
Control Actions

Algorithm:	Time proportioned PID.
Types:	One control output (heating); two control outputs (heating and cooling).
Proportional band:	For relay the proportional band is settable from 1.0% to 100.0% of the input span.
Hysteresis (ON/OFF control action):	From 0.1% to 10.0% of the input span.
Integral time:	From 1 second to 20 minutes or excluded.
Derivative time:	From 1 second to 10 minutes or excluded.
Relative cooling gain:	From 0.20 to 1.00 referred to the proportional band.
Overlap / dead band:	From -20% (dead band) to +50% (overlap) of the proportional band.
Output limiters:	For main and/or secondary control outputs it is possible to set;- output high limits, - output low limits, -output max. rate of rise.

Outputs 1 and 2

	Type:	Time proportioning.
	Action:	Direct/reverse keyboard programmable.
	Main output cycle time:	Programmable from 1s to 200s.
	Secondary output cycle time:	Programmable from 1s to 200s.
OUT 1 - Relay:	Note:	For output 1 only, the relay output and SSR output are both fitted. A jumper selects which one is used.
	Function:	Control output (heating).
	Relay type:	SPST. Selection of the NO or NC contact is made by jumper.
	Contact rating:	3 A @ 250 V AC on resistive load.
Ouput 1 SSR	Logic level "ON":	14 V DC @ 20 mA max.
	Logic level "OFF":	< 0.5 V DC.
Output 2 and 3	Type:	Relay with SPST contact.
	Contact rating:	2 A @ 250 V AC on resistive load.

REAR TERMINAL BLOCK



Instant Access Order Form

For information on products from Continental Industries International

CONTACT US OR **CONTACT YOUR LOCAL DISTRIBUTOR**

Continental Industries International

741-F Miller Drive, Leesburg, VA 20175
Telephone: +1 703-443-1306, Fax: +1 703-669-1357
email: sales@ciicontrols.com

Name: _____

Company: _____

Address: _____

_____

_____

Telephone: _____ **Fax:** _____ **Email:** _____

ADDITIONAL INFORMATION ON CATALOG PRODUCTS IS AVAILABLE:

❒ **Send Information only** ❒ **I need a quote** ❒ **Have a salesperson call**

Power Control Products

- ❒ SV SSR
- ❒ RS/RV DIN-Rail SSR
- ❒ RSDC DC Output SSR
- ❒ RVMA 4-20 Input SSR

Controllers / Indicators / Alarms

- ❒ 1/32 FKS
- ❒ 1/16 LDE Single Display
- ❒ 1/16 LME Dual Display
- ❒ 1/8 TKS
- ❒ 1/4 MKS
- ❒ Config Station

Actuators/Valve Positioners

- ❒ EAxx-A Series
- ❒ EA Series
- ❒ MF630000 Series
- ❒ Flatpack Series
- ❒ Accessories

Technical Information

- ❒ Class Schedules
- ❒ Technical Information

Products for Integrated Solutions

- ❒ I/O Blocks
- ❒ RVMA 4-20 Input SSR

Valves Assemblies

- ❒ Two-way Valves
- ❒ Three-way Valves
- ❒ Accessories

Sensors and Thermocouples

- ❒ Plastic Industry
- ❒ Industrial Processes
- ❒ Portable Calibrator
- ❒ Impressor Hardness Tester

Comments _____

_____

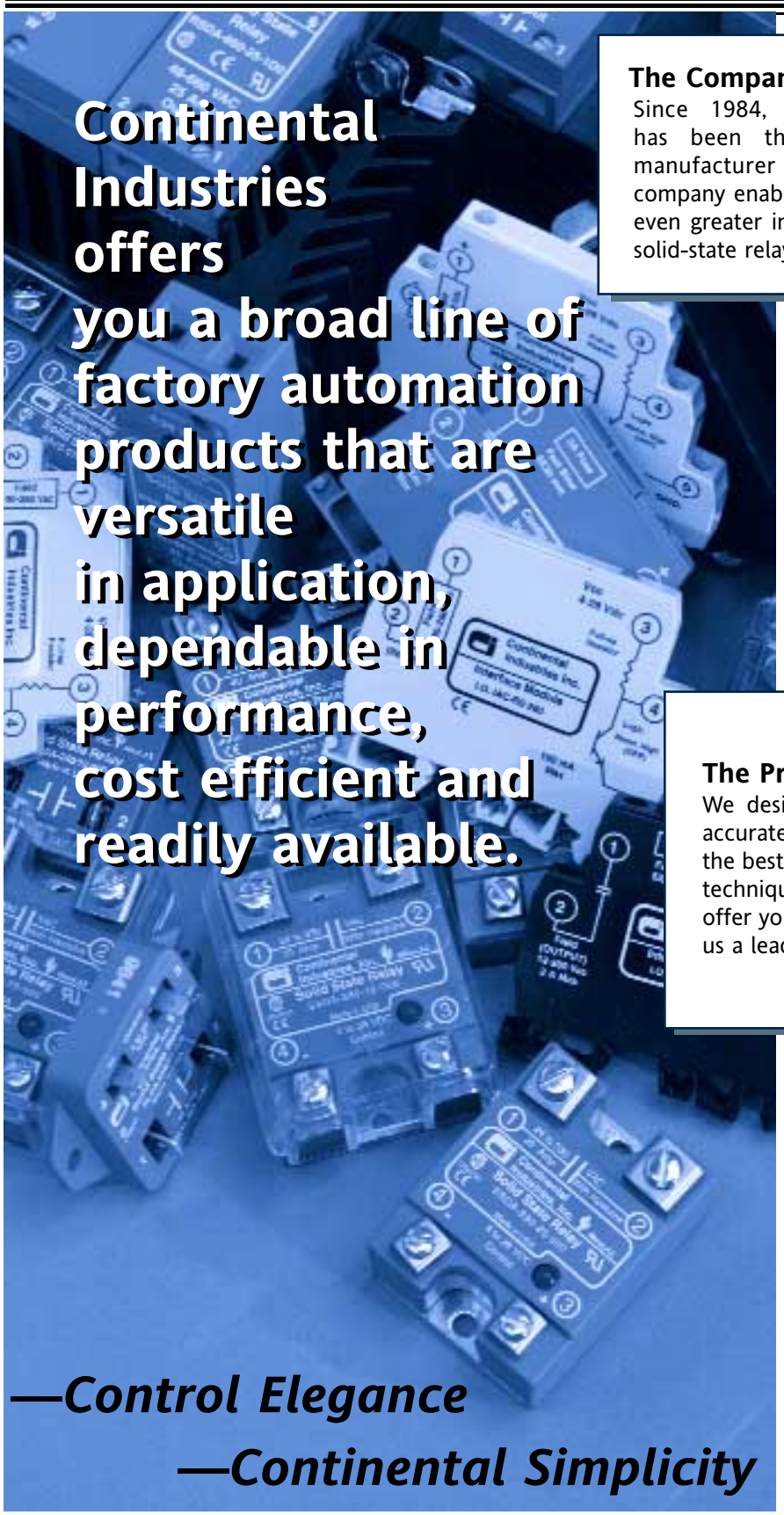
_____

_____

_____

_____

Continental Industries International



The Company

Since 1984, Continental Industries International. has been the fastest growing solid-state relay manufacturer in the world. Being an Invensys company enables Continental to serve the market with even greater innovation and technology in the field of solid-state relays and I/O modules.

The Service

Continental is known for prompt delivery and competitive prices. We also offer engineering advice and a one year warranty.

The Products

We design and build our products for long, accurate, dependable performance. By using the best components, the latest manufacturing techniques and demanding quality control, we offer you the kind of products that have made us a leader in the electronic control industry.

Continental Industries International
An Invensys company

741-F Miller Drive, Leesburg, VA 20175 USA
Tel: 703-669-1306 • FAX 703-669-1357

sales@ciicontrols.com

www.ciicontrols.com

invensys

Continental Industries International

741-F Miller Drive
Leesburg, VA 20175-8993
703 669-1306
Fax: 703 669-1357
www.ciicontrols.com

For local assistance:

invensys
An Invensys company