



**CL SERIES**  
PANEL MOUNT



**Features**

- Ratings from 5A to 10A @ 24-280 VAC
- Triac Output
- LED Status Indicator
- UL Approved, CE Compliant to EN60950-1
- Improved SEMS screw and washer
- Redesigned housing with anti-rotation barriers
- AC or DC control
- EMC Compliant to Level 3
- Epoxy free design

**PRODUCT SELECTION**

| Control Voltage | 5A       | 10A      |
|-----------------|----------|----------|
| 3-32 VDC        | CL240D05 | CL240D10 |
| 90-250 VAC      | CL240A05 | CL240A10 |

**ORDERING OPTIONS**

CL - 240 - A - 10 - K - R - C - H

Series **CL**

Load Voltage **240**: 24-280 VAC

Control Voltage **A**: 90-250 VAC  
**D**: 3-32 VDC

Rated Load Current **10**: 10 Amps  
**05**: 5 Amps

Termination **K**: Installed standoffs with screws for PC Board mounting (IP00 only) (1)

Switching Type **R**: Instantaneous Turn-On  
**Blank**: Zero Voltage Turn-On

Cover **C**: Included (IP20)  
**Blank**: Not Included (IP00)

Thermal Pad **H**: Included  
**Blank**: Not Included

Legend:  
 — Required for valid part number  
 □ For options only and not required for valid part number

**Note:** Not all part number combinations are available. Contact Crydom Technical support for information on the availability of a specific part number.

## OUTPUT SPECIFICATIONS (2)

| Description   | 5 A    | 10 A    |
|---|--------|---------|
| Operating Voltage (47-63Hz) [Vrms]  | 24-280 | 24-280  |
| Transient Overvoltage [Vpk] (3)   | 600    | 600     |
| Maximum Off-State Leakage Current @ Rated Voltage [mA <sub>rms</sub> ]      | 7      | 7       |
| Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]                    | 500    | 500     |
| Maximum Load Current [A <sub>rms</sub> ] (4)                                | 5      | 10      |
| Minimum Load Current [mA <sub>rms</sub> ]                                   | 150    | 150     |
| Maximum 1 Cycle Surge Current (50/60Hz)[Apk]                                | 84/100 | 120/126 |
| Maximum On-State Voltage Drop @ Rated Current [Vpk]                         | 1.6    | 1.5     |
| Thermal Resistance Junction to Case [Rjc] [°C/W]                            | 2.3    | 2.3     |
| Maximum 1/2 Cycle I <sup>2</sup> t for Fusing (50/60Hz)[A <sup>2</sup> sec] | 35/42  | 72/66   |
| Minimum Power Factor (with Maximum Load)                                    | 0.5    | 0.5     |
| Minimum Heat Sink for Rated Current @ 40°C [°C/W]                           | 3      | 1.5     |

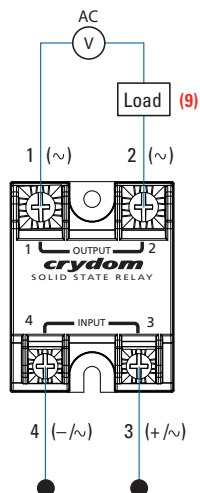
## INPUT SPECIFICATIONS (2)

| Description                          | DC Control      | AC Control      |
|--------------------------------------|-----------------|-----------------|
| Control Voltage Range                | 3-32 VDC (5)    | 90-250 VAC      |
| Maximum Reverse Voltage              | -32 VDC         | -               |
| Minimum Turn-On Voltage              | 3 VDC           | 90 VAC          |
| Must Turn-Off Voltage                | 1 VDC           | 10 VAC          |
| Minimum Input Current (for on-state) | 10 mA           | 6 mA            |
| Maximum Input Current                | 14 mA           | 10 mA           |
| Nominal Input Impedance              | Current Limited | Current Limited |
| Maximum Turn-On Time [msec]          | 1/2 Cycle (6)   | 20              |
| Maximum Turn-Off Time [msec]         | 1/2 Cycle       | 30              |

## GENERAL SPECIFICATIONS (2)

| Description   | Parameters                     |
|---|--------------------------------|
| Dielectric Strength, Input to Output (50/60Hz)                    | 4000 Vrms                      |
| Dielectric Strength, Input/Output to Ground (50/60Hz)             | 2500 Vrms                      |
| Minimum Insulation Resistance (@ 500 VDC)                         | 10 <sup>9</sup> Ohms           |
| Maximum Capacitance, Input/Output                                 | 8 pF                           |
| Ambient Operating Temperature Range (7)                           | -40 to 80 °C                   |
| Ambient Storage Temperature Range                                 | -40 to 125 °C                  |
| Weight (typical)  | 2.88 oz (81.53 g)              |
| Housing Material  | UL94 V-0                       |
| Baseplate Material  | Aluminum                       |
| Input Terminal Screw Torque Range (in-lb/Nm)                      | 13-15 / 1.5-1.7                |
| Load Terminal Screw Torque Range (in-lb/Nm)                       | 18-20 / 2-2.2                  |
| SSR Mounting Screw Torque Range (in-lb/Nm)                        | 18-20 / 2-2.2                  |
| Input/Load Terminal Screw Torque Range (in-lb/Nm) (1)             | w/“K” option 8-10 / 0.9-1.13   |
| Input/Output Terminal Screw Thread Size                           | #6-32 UNC / #8-32 UNC          |
| Humidity per IEC60068-2-78  | 93% non-condensing             |
| LED Input Status Indicator  | Green                          |
| MTBF (Mean Time Between Failures) at 40°C ambient temperature (8) | 11,641,553 hours (1,328 years) |
| MTBF (Mean Time Between Failures) at 60°C ambient temperature (8) | 7,210,376 hours (823 years)    |

## WIRING DIAGRAM

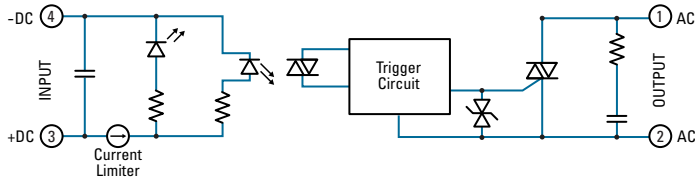


### Recommended Wire Sizes

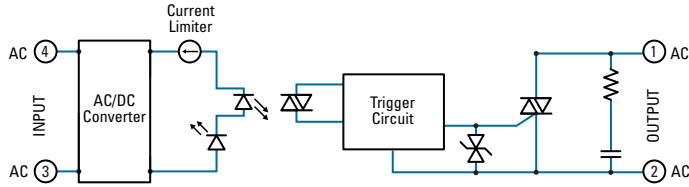
| Terminals | Wire Size (Solid / Stranded)                      | Wire Pull-Out Strength (lbs)[N] |
|-----------|---|---------------------------------|
| Input     | 24 AWG (0.2 mm <sup>2</sup> ) / 0.2 [minimum]     | 10 [44.5]                       |
|           | 2 x 12 AWG (3.3 mm <sup>2</sup> ) / 3.3 [maximum] | 90 [400]                        |
| Output    | 20 AWG (0.5 mm <sup>2</sup> ) / 0.518 [minimum]   | 30 [133]                        |
|           | 2 x 10 AWG (5.3 mm <sup>2</sup> ) / 5.3 [maximum] | 110 [490]                       |
|           | 2 x 8 AWG (8.4 mm <sup>2</sup> ) / 8.4 [maximum]  | 90 [400]                        |

# EQUIVALENT CIRCUIT BLOCK DIAGRAMS

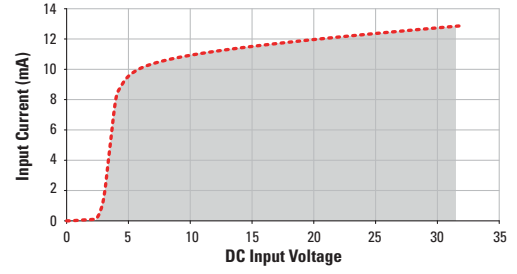
**CL Series DC Control**



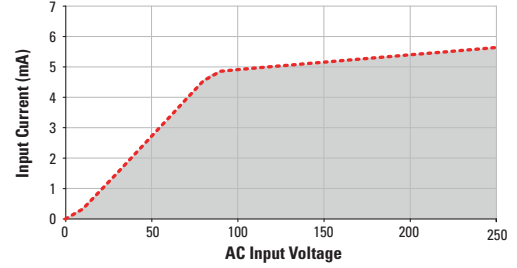
**CL Series AC Control**



**Standard Regulated "DC" Inputs**



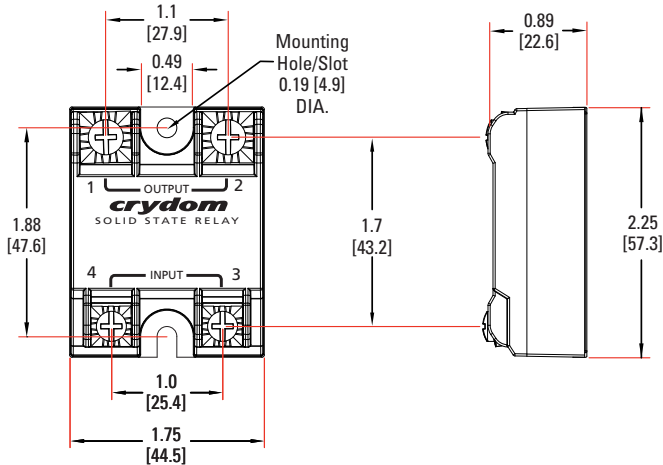
**Standard Regulated "AC" Inputs**



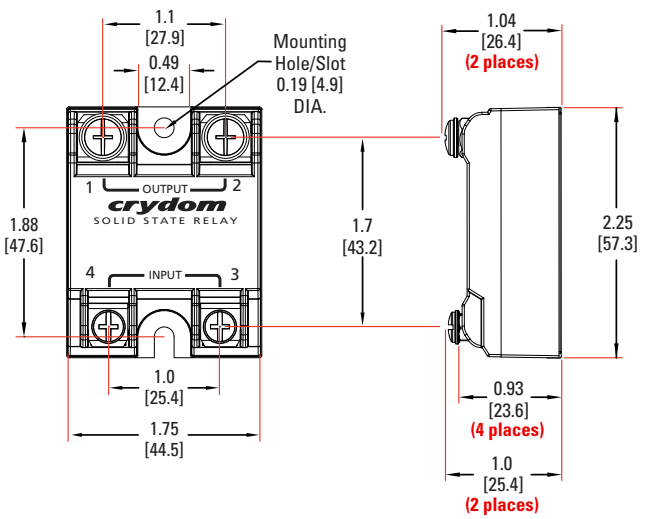
# MECHANICAL SPECIFICATIONS (2)

Tolerances: ±0.02 in / 0.5 mm  
All dimensions are in: inches [millimeters]

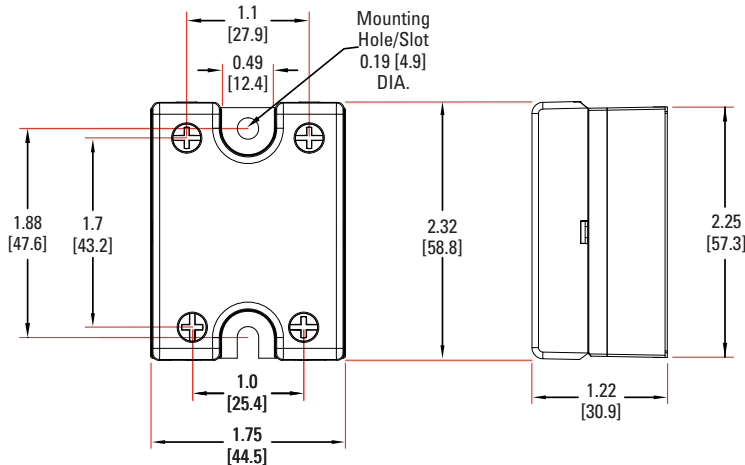
**Screw Termination**



**Hex Standoff Termination ("K" Option)(1)**

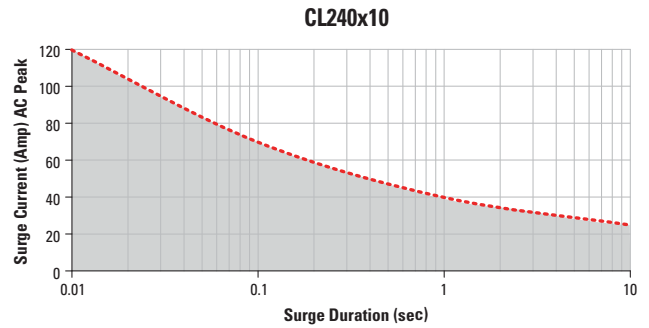
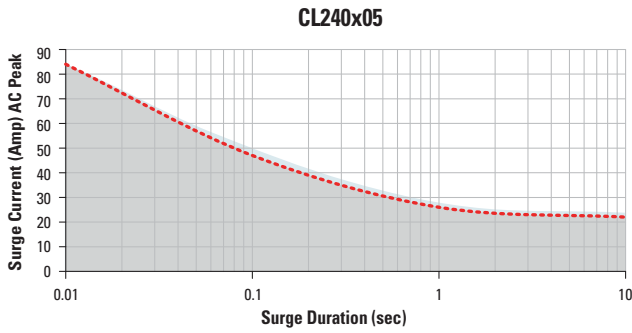


**Screw Termination, IP20**



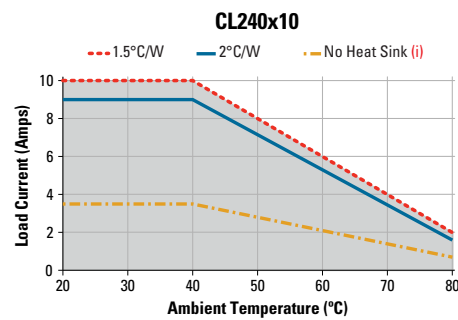
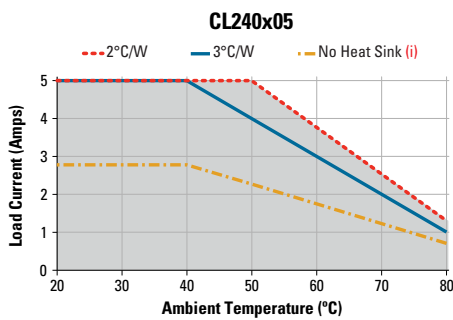
# SURGE CURRENT INFORMATION

--- Single Pulse (10)



# THERMAL DERATE INFORMATION

(i) SSR metal base plate acting as heat sink, it must be exposed to free ambient air.

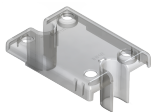


# ACCESSORIES

## Protective Cover & Hardware Kits

### Protective Cover

Part number: KS101



Clear plastic cover compatible with all new S1 designs. Safety covers provide added protection from electric shock when installing or checking equipment.

### Hardware Kit

Part number: HK4



Bag with 2 square brass accessories and 2 screw 8-32 x 5/8 for output. Used to mount TMR1 lug terminals.

## Recommended Accessories

| Cover | Hardware Kit    | Heat Sink       |                           | Lug Terminal | Thermal Pad |
|-------|-----------------|-----------------|---------------------------|--------------|-------------|
|       |                 | Part No.        | Thermal Resistance [°C/W] |              |             |
| KS101 | HK1             | HS501DR         | 5.0                       | TRM1         | HSP-1       |
|       |                 | HS301 / HS301DR | 3.0                       |              |             |
|       | HS251           | 2.5             |                           |              |             |
|       | HS201 / HS201DR | 2.0             |                           |              |             |
|       | HS202 / HS202DR | 2.0             |                           |              |             |
|       | HS172           | 1.7             |                           |              |             |
|       | HS151 / HS151DR | 1.5             |                           |              |             |
|       | HS122 / HS122DR | 1.2             |                           |              |             |
|       | HS103 / HS103DR | 1.0             |                           |              |             |
|       | HS101           | 1.0             |                           |              |             |
|       | HS073           | 0.7             |                           |              |             |
|       | HS072           | 0.7             |                           |              |             |
|       | HS053           | 0.5             |                           |              |             |
|       | HS033           | 0.36            |                           |              |             |
|       | HS023           | 0.25            |                           |              |             |

## AGENCY APPROVALS AND CERTIFICATIONS

EN60950-1: Meets the requirements of sections 1.5: 1.7: 2.9: 2.10.5.3: 4.2: 4.5: 4.7:

IEC 61000-4-2 Electrostatic Discharge Level 3

IEC 61000-4-4 Electrically Fast Transients Level 3

IEC 61000-4-5 Electrical Surges Level 3



## GENERAL NOTES

- (1) Option "K" is designed and tested for use with printed circuit boards or ring/fork terminals having a thickness between 0.031 and 0.093 inches (0.79 to 2.36 mm).
- (2) All parameters at 25°C unless otherwise specified.
- (3) Output will self trigger between 450-600Vpk, not suitable for capacitive loads.
- (4) Heat sinking required, see derating curves.
- (5) Increase minimum voltage by 1V for operations from -20 to -40°C.
- (6) Turn-on time for instantaneous turn-on versions is 0.1 msec.
- (7) AC models operating range is -20 to 80 °C.
- (8) All parameters at 50% power rating and 100% duty cycle (contact Crydom tech support for detailed report).
- (9) Load can be wired to either SSR output terminal 1 or 2.
- (10) For single surge pulse  $T_c=25^\circ\text{C}$ ;  $T_j=125^\circ\text{C}$ . For AC Output SSRs, AC Rms value of surge current equals the peak value divided by  $\sqrt{2}$  (1.414).

For additional information or specific questions, contact Crydom Technical Support.

## WARNINGS



### RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching.
- Follow proper mounting instructions including torque values.
- Do not allow liquids or foreign objects to enter this product.

**Failure to follow these instructions can result in serious injury, or equipment damage.**



### HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before installing or working with this equipment.
- Verify all connections and replace all covers before turning on power.

**Failure to follow these instructions will result in death or serious injury.**

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