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POWERPLUS DC SERIES | 200 & 400 VDC

PANEL MOUNT SOLID STATE RELAYS



Features

- Ratings from 10 A to 100 A @ 200 VDC and 10 A & 20 A @ 400 VDC
- Relays are easily paralleled for higher-current applications
- UL Approved, CE Compliant to EN60950-1
- Improved SEMS screw and washer
- Redesigned housing with anti-rotation barriers
- MOSFET Output
- LED Status Indicator
- DC control
- EMC Compliant to Level 3
- Epoxy Free Design
- Optional IP20 Cover
- PWM up to 1 kHz

PRODUCT SELECTION

Control Voltage	10 A	20 A	40 A	60 A	10 A	20 A
4-32 VDC	DC200D10	DC200D20	DC200D40	DC200D60	DC400D10	DC400D20

SPECIFICATIONS

Output Voltage [1]

Description	10 A	20 A	40 A	60 A	10 A	20 A
Recommended Operating Voltage [Vdc]	1-150	1-150	1-150	1-150	1-300	1-300
Absolute Maximum Rating [Vdc]	200	200	200	200	400	400
Maximum Off-State Leakage Current @ Rated Voltage [mA]	0.2	0.2	0.2	0.2	0.4	0.4
Maximum Load Current [Adc] [2][3]	10	20	40	60	10	20
Minimum Load Current [mA] [4]	2.5	2.5	2.5	2.5	2.5	2.5
Maximum Surge Current (10 msec) [Adc]	71	71	142	224	32	48
Maximum On-State Voltage Drop @ Rated Current [Vdc]	0.4	0.78	0.64	0.66	1.55	2.2
Maximum On-State Resistance [RDS-ON] [Ohm]	0.04	0.039	0.016	0.011	0.155	0.11
Thermal Resistance Junction to Case (Rjc) [°C/W]	0.9	0.85	0.41	0.28	0.5	0.37
Minimum Heat Sink for Rated Current @ 40°C [°C/W]	5	2.5	1	0.5	1.5	0.5
Maximum Pulse Width Modulation Frequency [Hz] [5]	1000	1000	900	700	900	700

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Input [1]

Description	DC Control
Control Voltage Range	4-32 VDC
Maximum Reverse Voltage	-32 VDC
Minimum Turn-On Voltage [6]	4 VDC
Must Turn-Off Voltage	1 VDC
Minimum Input Current (for on-state)	11 mA
Maximum Input Current	14 mA
Nominal Input Impedance	Current Regulated
Maximum Turn-On Time [µsec]	75
Maximum Turn-Off Time [µsec]	100

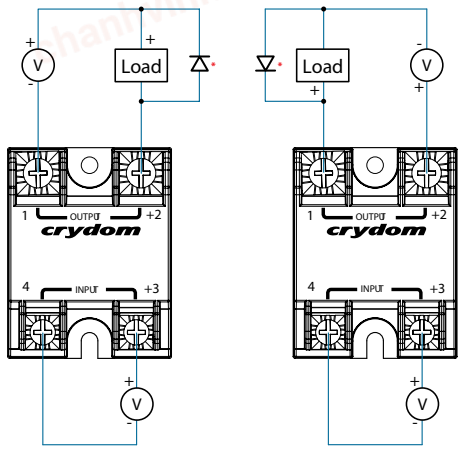
General [1]

Description	Parameters
Dielectric Strength, Input/Output/Base (50/60 Hz)	3750 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10^9 Ohms
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range [7]	-40 to 100 °C
Ambient Storage Temperature Range	-40 to 125 °C
Weight (typical)	2.53 oz (72 g)
Housing Material	UL94 V-0
Hardware Finish	Nickel Plating
Baseplate Material	Aluminum
Input Terminal Screw Torque Range (lb-in/Nm)	13-15 /1.5-1.7
Load Terminal Screw Torque Range (lb-in/Nm)	18-20 / 2-2.2
SSR Mounting Screw Torque Range (lb-in/Nm)	18-20 / 2-2.2
Input/Load Terminal Screw Torque Range (lb-in/Nm) [2]	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]	21,395,130 hours (2,441 years)
MTBF (Mean Time Between Failures) at 60°C ambient temperature [8]	11,545,504 hours (1,317 years)

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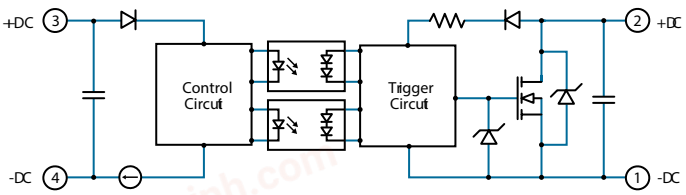
WIRING DIAGRAM

* Inductive loads must be diode suppressed.

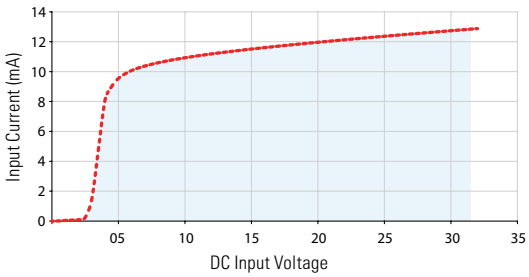


Recommended Wire Sizes		
Terminals	**Wire Size (Solid / Stranded)**	**Wire Pull-Out Strength (lb)[N]**
Input	24 AWG (0.2 mm²) / 0.2 [minimum]	10 [44.5]
	2 x 12 AWG (3.3 mm²) / 3.3 [maximum]	90 [400]
Output	20 AWG (0.5 mm²) / 0.518 [minimum]	30 [133]
	2 x 10 AWG (5.3 mm²) / 5.3	110 [490]
	2 x 8 AWG (8.4 mm²) / 8.4 [maximum]	90 [400]

EQUIVALENT CIRCUIT BLOCK DIAGRAMS



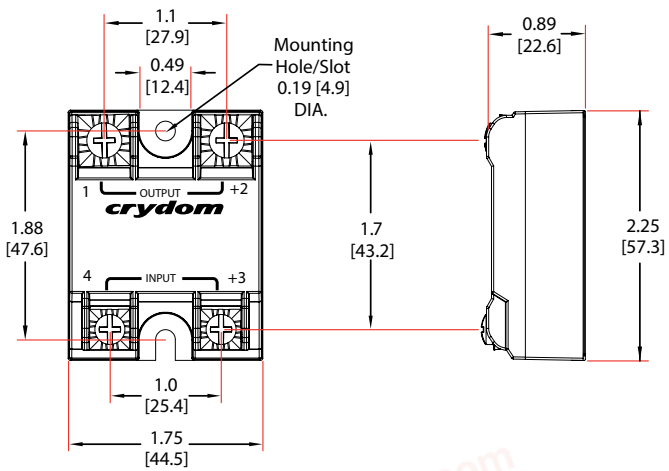
Input Current vs Input Voltage
Standard Regulated "DC" Inputs



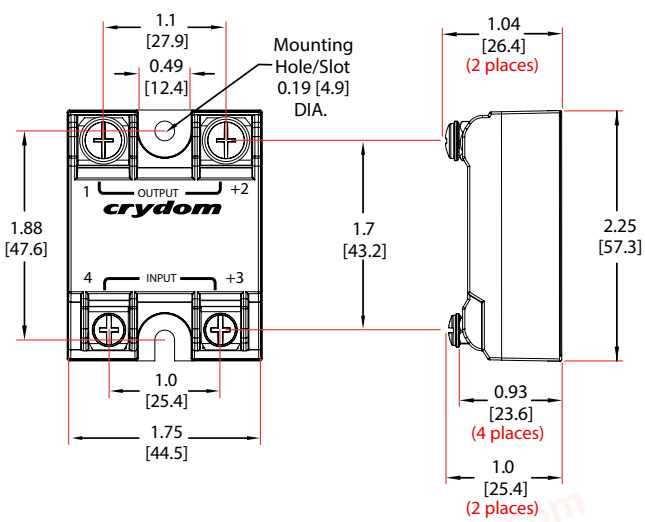
MECHANICAL SPECIFICATIONS (2)

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

Screw Termination



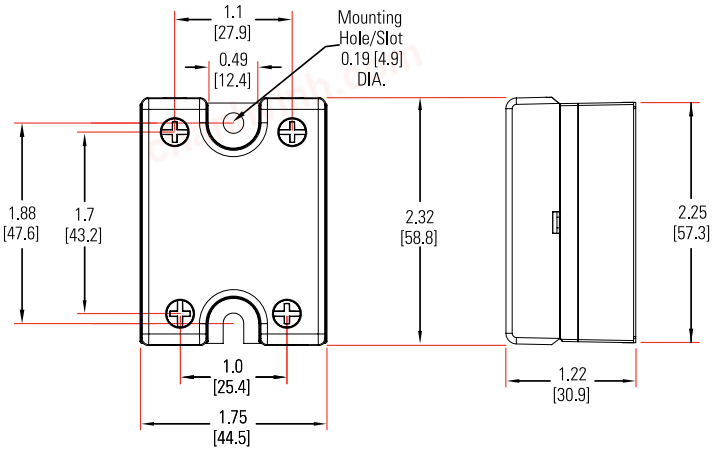
Hex Standoff Termination ("K" Option) (2)



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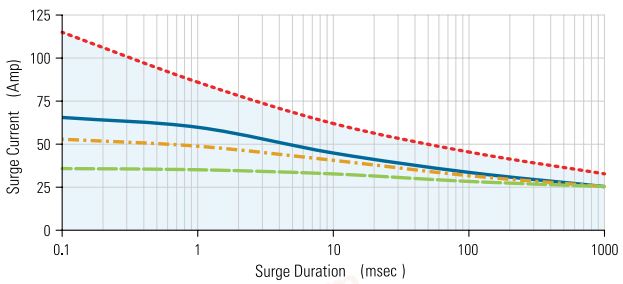
Screw Termination, IP20



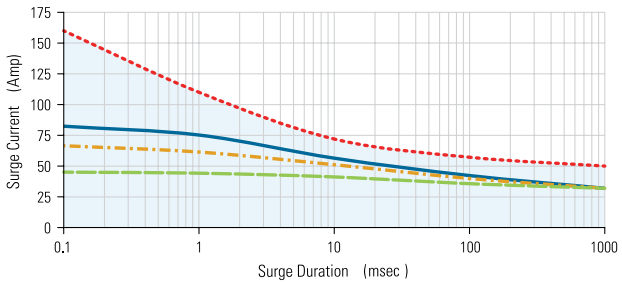
SURGE CURRENT INFORMATION

Single Pulse (i) — Duty Factor (10%) (ii) — Duty Factor (20%) (ii) — Duty Factor (50%) (ii)

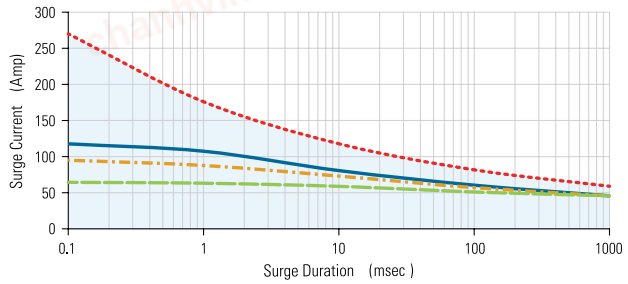
DC200D10



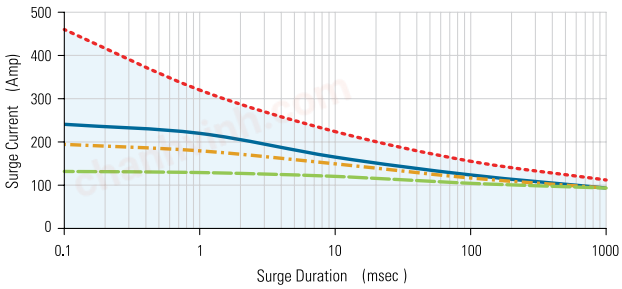
DC200D20



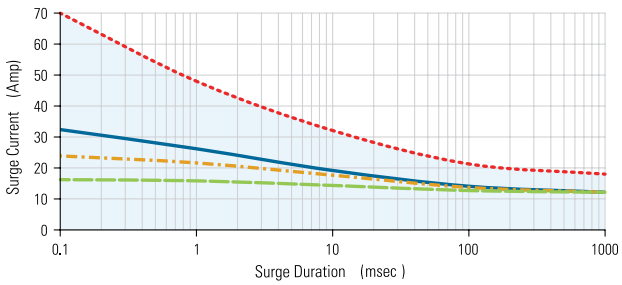
DC200D40



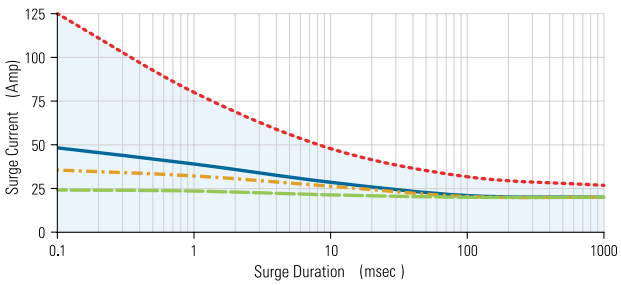
DC200D60

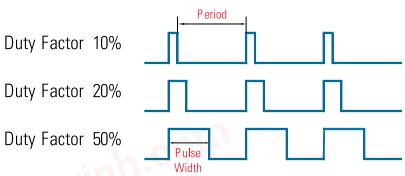


DC400D10



DC400D20





For Pulse Width Modulation applications select the curve according duty factor and pulse duration as following.

$$\text{Duty Factor} = \frac{\text{Pulse Width}}{\text{Period}} \times 100\ (\%)$$

(i) for Single Surge Pulse Tc=40°C ;Tj 175°C
(ii) for Repetitive Surge Pulse Tc=40°C ;Tj 130°C

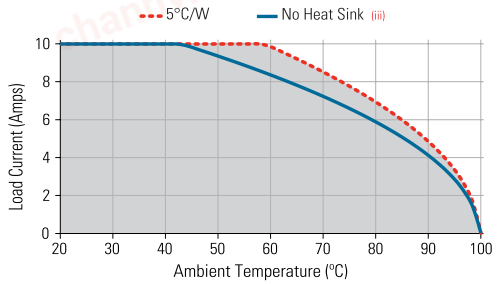
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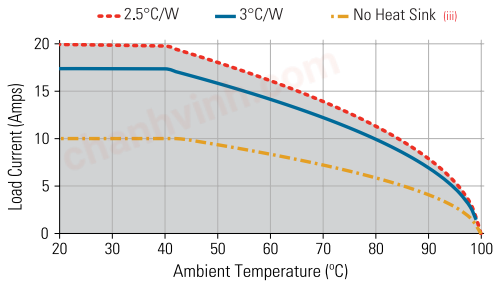
THERMAL DERATE INFORMATION

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

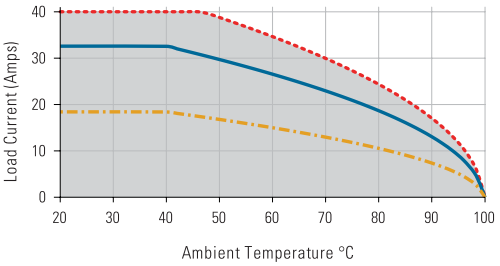
DC200D10



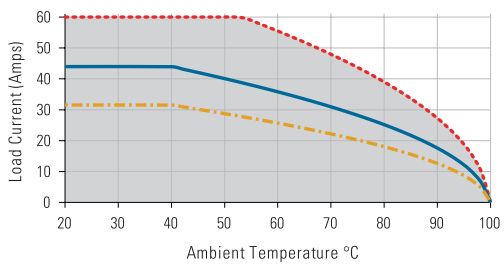
DC200D20



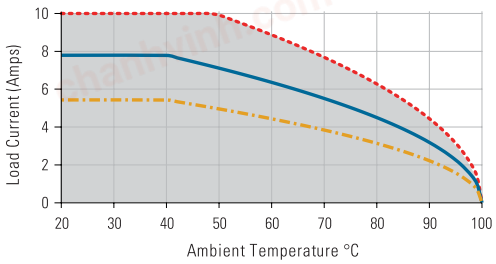
DC200D40



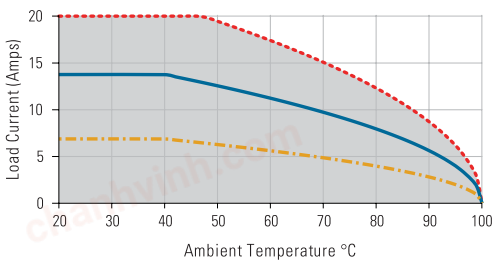
DC200D60



DC400D10



DC400D20

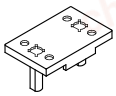
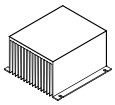
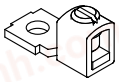
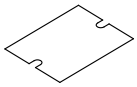


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ACCESSORIES

Recommended Accessories

 Cover	 Hardware Kit	 Heat Sink Part No.	Thermal Resistance [°C/W]	 Lug Terminal	 Thermal Pad
KS101	HK1 HK4	HS501DR HS301 / HS301DR HS251 HS201 / HS201DR HS202 / HS202DR HS172 HS151 / HS151DR HS122 / HS122DR HS103 / HS103DR HS101 HS073 HS072 HS053 HS033 HS023	5.0 3.0 2.5 2.0 2.0 1.7 1.5 1.2 1.0 1.0 0.7 0.7 0.5 0.36 0.25	TRM1 TRM6	HSP-1 HSP-2

ORDERING OPTIONS

Example : DC200D40CH

Not all part number combinations are available.
Contact Crydom Technical Support for information on the availability of a specific part number.

DC	200	D	40	K	C	H

Series

DC

Operating Voltage

200: 1-200 VDC
400: 1-400 VDC

Control Voltage

D: 4-32 VDC

Rated Load Current

10: 10 Amps
20: 20 Amps
40: 40 Amps (Not valid with 400 suffix)
60: 60 Amps (Not valid with 400 suffix)

Termination

Blank: Screws & clamps
K: Installed standoffs with [1] screws for PC Board mounting (IP00 only)

Cover

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

Thermal Pad

Blank: Not Included
H: Included

— Required for valid part number
☐ For options only and not required for valid part number

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GENERAL NOTES

(1) All parameters at Tc=25°C unless otherwise specified.
(2) 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), and loads rated up to 50 Amps.
For higher load currents, the "K" standoff temperature must not exceed 105°C. For additional application assistance please contact Technical Support.
(3) Heat sinking required, see derating curves.
(4) Low current loads and high ambient temperature can affect turn-on time.
(5) 8 VDC Minimum control voltage. Resistive loads only. Consider switching losses; at maximum frequency reduce to 75% output current.
(6) Increase minimum voltage by 1V for operations from -20 to -40°C.
(7) Decrease maximum control voltage 1.35V/°C above 80°C ambient temperature.
(8) All parameters at 50% power rating and 100% duty cycle.

For additional information or specific questions, contact Technical Support

AGENCY APPROVALS & CERTIFICATIONS

EN60950-1: Meets the requirements of sections1.5: 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

c US E116950 CE UK CA RoHS 50

WARNINGS



- 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.



- 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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