DPI SERIES | PUSH-IN DUAL CHANNEL

PANEL MOUNT SOLID STATE RELAYS

Sensata | Crydom DPI Series is a family of hockey puck style, dual channel AC output Solid State Relays with easy to wire push-in connections, offering improved mechanical and thermal design compared to similar solutions in the market. These dual output SSRs are available with ratings of 20 and 40 Amps at 24 to 600 VAC.

DPI Series Dual SSRs have two outputs controlled by two independent DC control inputs, and the input connector is compatible with different types of header connectors (not included). This connector has a pitch of 5.08 mm, allowing for greater flexibility when wiring the input connections.

Features

- Rating up to 40 Amps per channel [3]
- SCR Output for heavy industrial loads
- Output Push-in Connectors
- DBC substrate for superior thermal performance
- 4000 VAC Optical isolation [4]
- IP20 touch-safe housing
- Fast Push-in Wiring Connection without tools [5]
- cURus and TUV approved, CE and RoHS compliant

Applications

- Industrial ovens
- Professional cooking equipment
- Heat trace controls
- Packaging equipment
- Plastic injection molding equipment
- Lighting control
- HVAC&R

PRODUCT SELECTION

Control Voltage	20A	40A
4-32VDC	DPID2420	DPID2440
	DPID6020	DPID6040

SPECIFICATIONS

Output [1]

Description	DPID24XX	DPID60XX
Operating Voltage (47-63Hz) [Vrms] per UL508	24-280	48-600
Operating Voltage (47-63Hz) [Vrms] per EN 62314	280	480
Transient Overvoltage [Vpk]	600	1200
Minimum Off-State dV/dt @ Maximum Rated Voltage [V/µsec]	500	500
Maximum Off-State Leakage Current @ Rated Voltage [mArms]	1	1

Output [1]

Description	20A	40A
Maximum Load Current per Channel LC A per EN 62314 @40°C [Arms] [2]	**20**	**40** [3]
Overload Current Profile per EN 62314 [Ic/Ie]	1.5	1.5
Minimum Load Current [mArms]	150	150
Maximum 1 Cycle Surge Current (50/60Hz) [Apk]	286/300	716/750
Maximum On-State Voltage Drop @ Rated Current [Vrms]	1.25	1.3
Maximum 1/2 Cycle I^2t for Fusing (50/60Hz) [A^2 sec]	409/375	2563/2343
Thermal Resistance Junction to Case (Rjc) [°C/W]	0.73	0.42
Wiring size for maximum ratings. [AWG](mm2) /wires per terminal	12(4) /1	12(4)/2

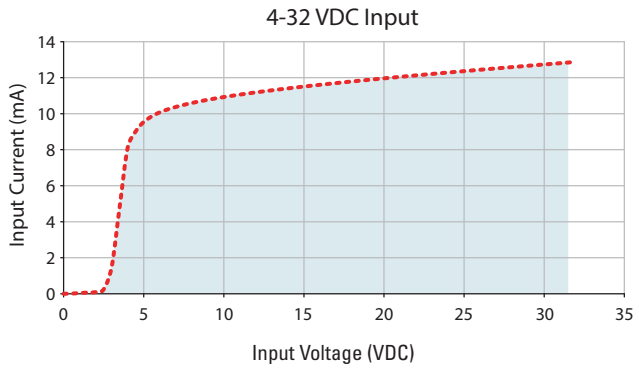
Input [1]

Description	DPIDXXXX
Control Voltage Range [VDC]	4-32
Maximum Reverse Voltage [VDC]	-32
Minimum Turn-On Voltage [VDC]	4
Must Turn-Off Voltage [VDC]	1
Minimum Input Current per channel (for on-state) [mA]	7
Maximum Input Current per channel [mA]	15
Nominal Input Impedance [Ω]	Regulated Current
Maximum Turn-On Time	1/2 Cycle [6]
Maximum Turn-Off Time	1/2 Cycle

General

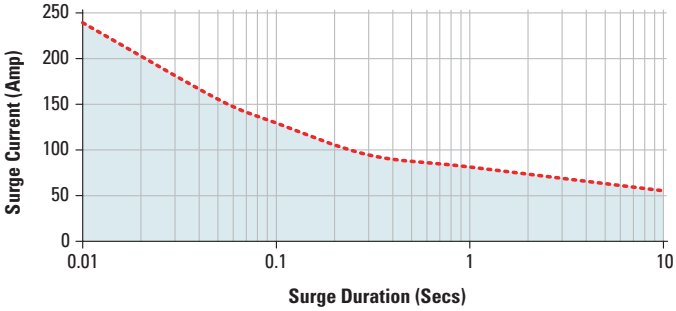
Description	Parameters
Dielectric Strength, Input to Output (50/60Hz)	4000 Vrms
Dielectric Strength, Input/Output to Baseplate (50/60Hz)	2500 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10^9 Ohms
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range (7)	-40 to 80°C
Ambient Storage Temperature Range	-40 to 125 °C
Pollution Degree	2
Weight (typical)	2.84 oz / 80.51 g
Housing Material	UL94 V-0
Baseplate Material	Aluminum
Input Connector Type	5.08 mm Locking Header Pluggable Terminal block: 1836901 (Screw Connection Method), 1902136 (Spring Connection Method)
SSR Mounting Screw Torque Range	18-20 lb-in (2.0-2.2 Nm)

INPUT CURRENT INFORMATION[(1)]

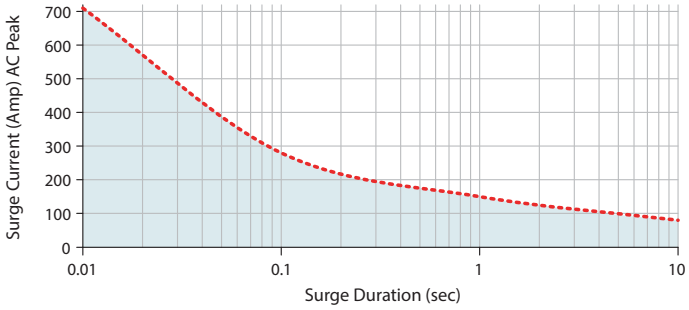


SURGE CURRENT INFORMATION

DPIDXX20X

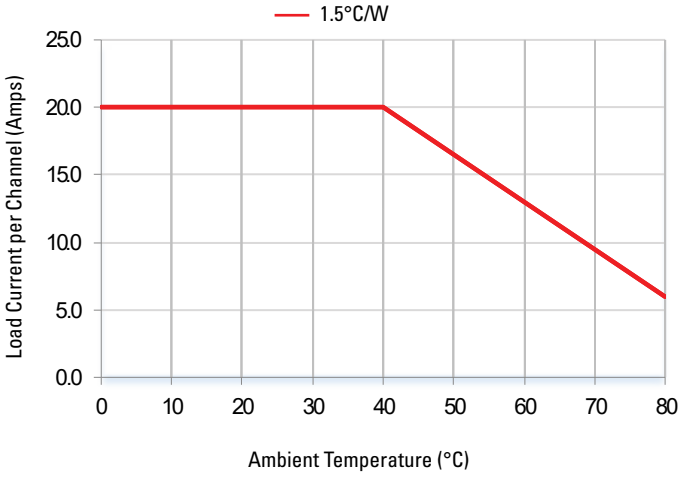


DPIDXX40X

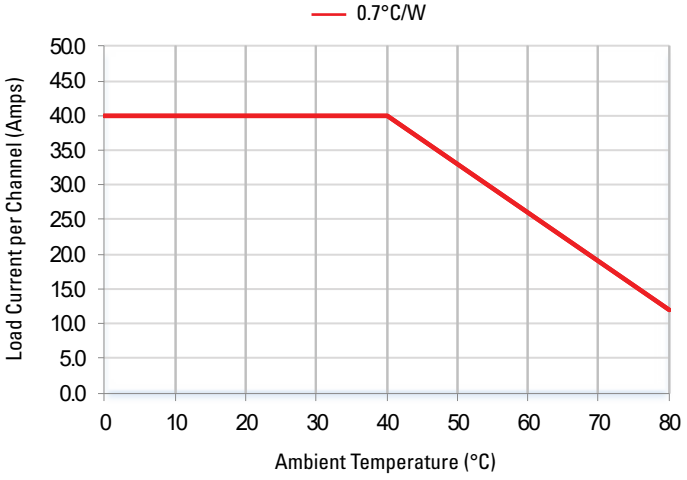


THERMAL DERATE INFORMATION[(1)]

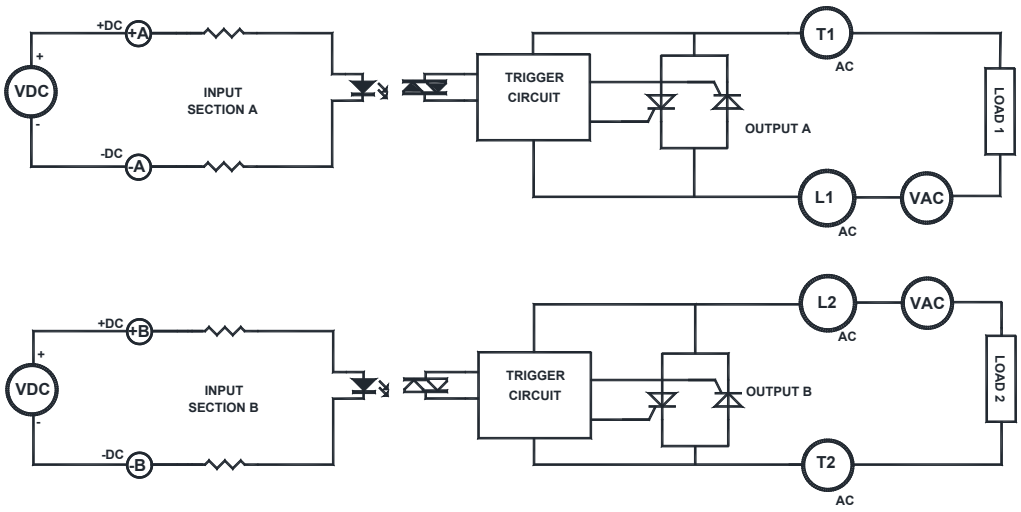
DPIDXX20X

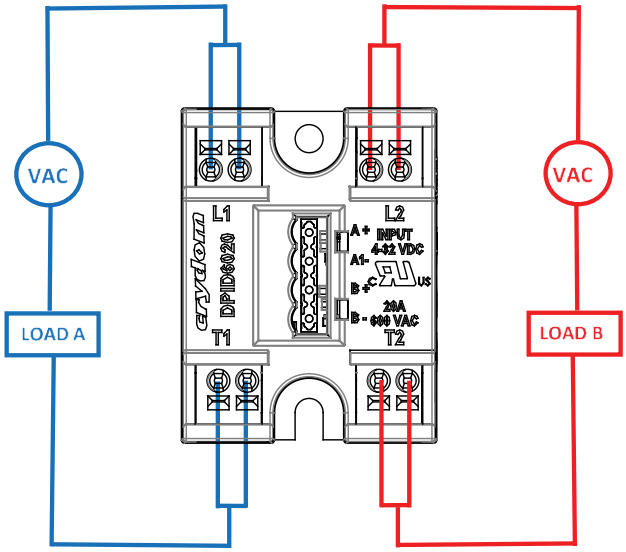


DPIDXX40X



EQUIVALENT CIRCUIT BLOCK DIAGRAMS/WIRING DIAGRAMS[1]



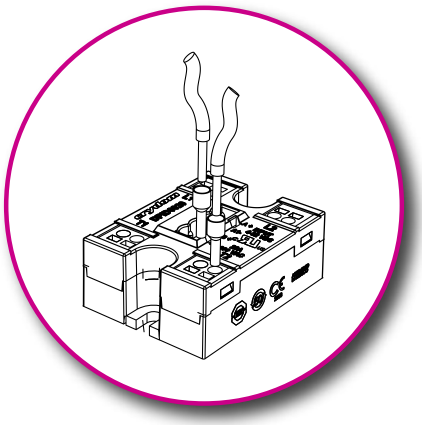


INSTALLATION INSTRUCTIONS

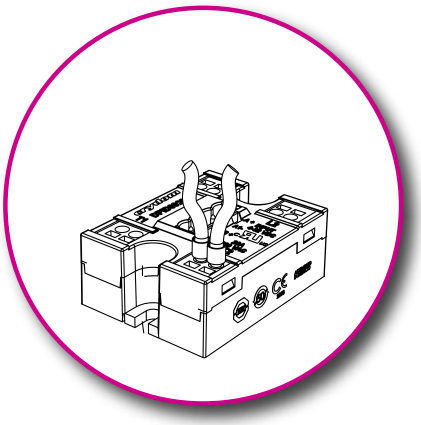
Mounting on Heat Sinks
Select adequate heat sink (see thermal derating curves in product series' datasheet).
Be sure to use a thermal pad or thermal compound (0.006 - 0.008 in layer thickness recommended) between the SSR and the selected heatisnk (see Accessories section for options).
Before applying full torque tighten down both screws until they contact the baseplate. Then, tighten them to 15 to 20 lb-in / 1.7 to 2.2 Nm
For optimal thermal performance heat sink fins should be oriented vertically to promote natural convection airflow.

Mounting on Panels
Locate the panel section on which the SSR will be mounted. Panel mount surface must provide adequate heat sinking capability, uncoated, clean, flat (0.004 in/in recommended) and preferably aluminum.
Be sure to use a thermal pad or thermal compound (0.006 - 0.008 in layer thickness recommended) between the SSR and the panel.
SSR mounting slots have a diameter of 0.2 in (5.0 mm). Two screws are needed (not included) to mount the SSR onto panel. Choose screw length considering the mounting surface hole depth and that the SSR baseplate thickness is 0.125 in (3.2 mm).
Before applying full torque tighten down both screws until they contact the baseplate. Then, tighten them to 20 lb-in (2.2 Nm).

Intallation of the insulated Ferrule
*Use a recommended tool for crimping the furrules before be installed into each connector, per Figure A.



Ferrule terminal before crimping process



Two insulated ferrule installed

Recommended Cross Section for Output connection wire

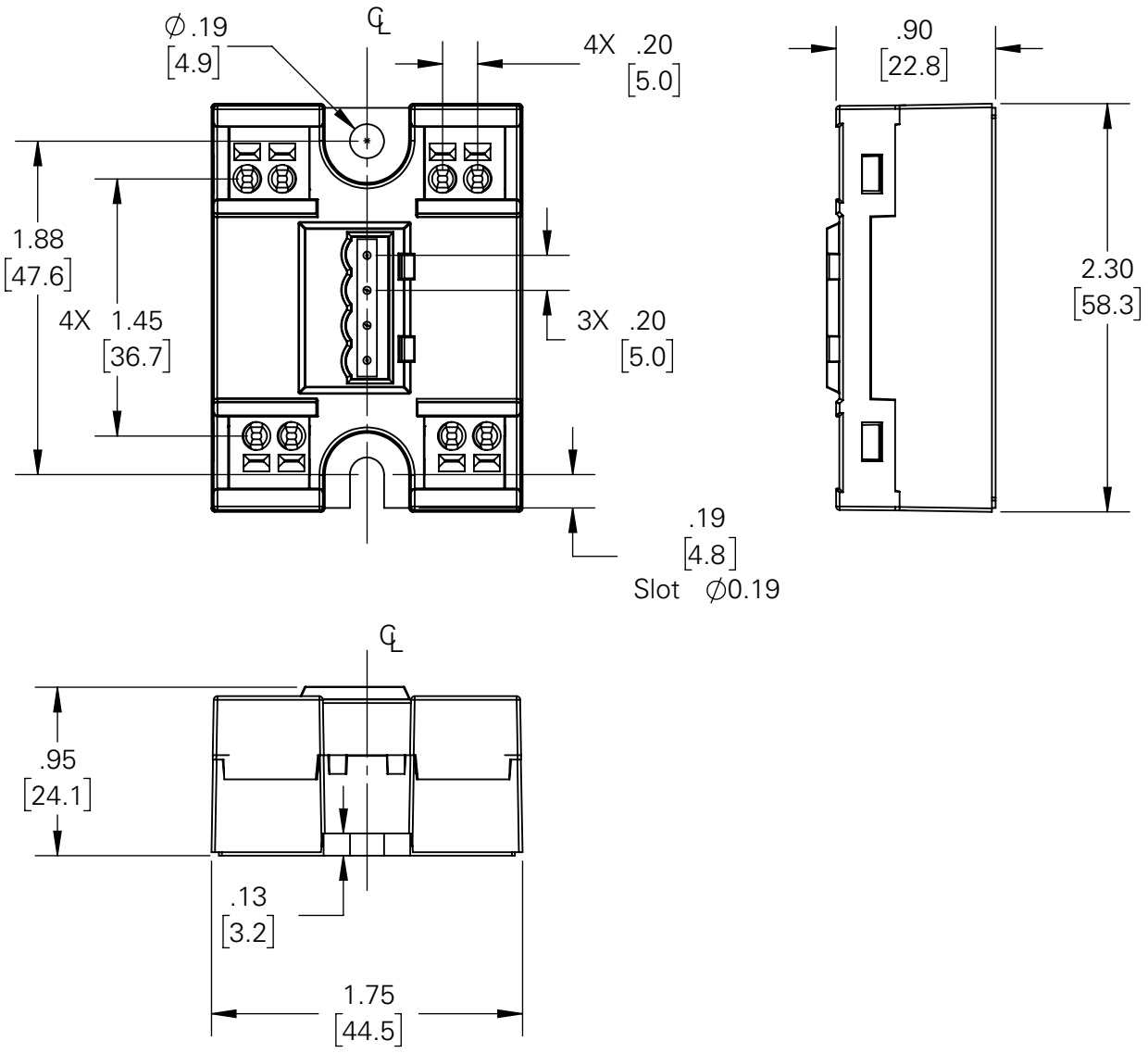
Conductor cross section solid min.	0.2 mm²
Conductor cross section solid max.	4 mm²
Conductor cross section flexible min.	0.2 mm²
Conductor cross section flexible max.	2.5 mm²
Conductor cross section flexible, with ferrule without plastic sleeve min.	0.25 mm² stripping lenght 8 mm
Conductor cross section flexible, with ferrule without plastic sleeve max.	0.25 mm² stripping lenght 8 mm
Conductor cross section flexible, with ferrule with plastic sleeve min.	0.25 mm² stripping lenght 8 mm
Conductor cross section flexible, with ferrule with plastic sleeve max.	0.25 mm² stripping lenght 8 mm
Conductor cross section AWG min.	24
Conductor cross section AWG min.	12

Recommended Wire sizes

Wire size (Solid/stranded)	Wire pull-Out Strength (lb)[N]
Solid wire 14 AWG	25 [5.6]
Solid wire 12 AWG	

MECHANICAL SPECIFICATIONS

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



ORDERING OPTIONS

Example : DPID6040RH

DPI	D	60	40	R	H

Series

DPI = Push-in Dual

Control Voltage

D = 4-32 VDC

Operating Voltage

24 = 24-280 VAC
60 = 48-600 VAC

Rated Load Current

20 = 20Amps
40 = 40Amps

Switching Type

Blank = Zero Voltage Turn-On
R = Instantaneous Turn-On

Thermal Pad

Blank = Not included
H = Included

ACCESSORIES

Recommended Accessories			
Hardware Kit	Heat Sink Part No.	Thermal Resistance [°C/W]	Thermal Pad
HK1	HS501DR HS301 / HS301DR HS251 HS201 / HS201DR HS202 / HS202DR HS172 HS151 / HS151DR HS122 / HS122DR HS103 / HS103DR HS101 HS073 HS072	5 3 2.5 2 2 1.7 1.5 1.2 1 1 0.7 0.7 0.5	HSP-1 HSP-2

Example Compatible Mating Connectors			
Part Number	Manufacturer	Description	AWG
11121025	American Electrical	Crimp Wire Ferrule, Blue	Up to 12 AWG
1836901	Phoenix Contact	Terminal Block, Screw	30-12 AWG
1902136	Phoenix Contact	Terminal Block, Spring	24-12 AWG

GENERAL NOTES

(1) All parameters at 25°C, per channel, unless otherwise specified.
(2) Heat sinking required, see derating curve.
(3) For 40 Amps rating please use two conductors per connector push-in, each pole manages up to 20 Amps.
(4) 4000 VAC between input vs output & 2500 VAC between terminals vs baseplate.
(5) Stripping length of 8 mm nominal.
(6) Turn-on time for Instantaneous turn-on versions is 0.1 msec.
(7) Per EN 62314 @ 40°C.

AGENCY APPROVALS & CERTIFICATIONS

Approvals (Tested and Certified According To)	
c UL us E116950	TÜV SÜD
UL 508 and C22.2 No.14	EN 62314

CONFORMANCE	ENVIRONMENTAL		
Resistances to heat and fire			
IEC 60335-1, Section 30	CE Directive 2006/95/EC	RoHS Directive 2011/65/EU	50 GBT 26572-2011

Electromagnetic Compatibility				
Generic Standard	**Immunity Tests**	**Test Specification Level**		**Performance**
emc IEC 61000-6-2 Immunity for Industrial Environments	Electrostatic Discharge IEC 61000-4-2	8kV air discharge 6kV contact discharge		No degradation after tests
	Fast transients (burst) IEC 61000-4-4	Output 2kV, 5kHz, 100kHz Input	2kV, 5kHz, 100kHz 1kV, 5kHz, 100kHz	Criterion A
	Surge IEC 61000-4-5	Output	1kV Line to Line 2kV Line to Earth	Criterion B
		AC Input Option	1kV Line to Line 2kV Line to Earth	

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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