

ED SERIES | AC OUTPUT

PLUG-IN SOLID STATE RELAYS

Sensata | Crydom ED Series AC Output Plug-in Solid State Relays are designed to replace industry standard 12 x 29 mm plug-in Electromechanical Relays, offering substantial performance advantages over traditional EMR switching solutions in many applications. Available in SPST N.O. configuration, the ED Series offer output ratings of 1 to 5 Amps at 24 to 280 VAC, and they are UL 508 recognized, IEC rated and CE certified.



Features

- AC output Solid State Relay in an Industry standard EMR plug in package
- Ratings of 1, 3 & 5 Amps
- Load voltage range of 24-280 VAC
- Fits standard DIN rail & PCB mountable sockets
- LED input status indicator
- AC or DC control
- cUL Recognized, IEC Rated, CE & RoHS Compliant
- Horsepower Rated, Pilot Duty Rated

Applications

- Plastic injection molding equipment
- Packaging equipment
- Professional cooking equipment
- Lighting control
- HVAC&R



PRODUCT SELECTION

Control Voltage	1 A	3 A	5 A
3-15 VDC Control	ED24D1	ED24D3	ED24D5
18.5-32 VDC Control	ED24C1	ED24C3	ED24C5
48-72 VDC Control		ED24F3	ED24F5
18-36 VAC Control			ED24E5
90-140 VAC Control			ED24B5

AC Output ⁽¹⁾

Description	1 A	3 A	5 A
Operating Voltage (47-63Hz) [Vrms]	24-280	24-280	24-280
Transient Overvoltage [Vpk]	600	600	600
Maximum Resistive Load Current UL 508/ IEC 62314 LC-A [Arms, FLA] ⁽²⁾	1.5	3	5
Minimum Load Current [Arms]	0.025	0.15	0.15
Maximum Off-State Leakage Current @ Rated Voltage [mArms]	0.1	0.1	0.1
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec] ⁽³⁾	500	500	500
Maximum On-State Voltage Drop @ Rated Current [Vpk]	1.1	1.1	1.1
Maximum Surge Current (50/60 Hz, 1 cycle) [Apk]	38/40	240/250	600/625
Maximum I ² t for Fusing (50/ 60 HZ, 1/2 cycle) [A ² sec]	7/6	285/260	1780/1620
UL 508 HP/IEC 62314 LC-B Rating @ 240V, 40°C [HP/KW]	NA	0.25 / 0.37	0.5 / 0.55
Minimum Power Factor (with Maximum Load)	0.5	0.5	0.5

Input ⁽¹⁾

Description	ED24Dx	ED24Cx	ED24Fx	ED24Ex	ED24Bx
Control Voltage Range	3-15 VDC	18.5-32 VDC	48-72 VDC	18-36 VAC	90-140 VAC
Minimum Turn-On Voltage	3 VDC	18.5 VDC	48 VDC	18 VAC	90 VAC
Minimum Turn-Off Voltage	1.9 VDC	10.0 VDC	24 VDC	8 VAC	20 VAC
Maximum Reverse Voltage	6 VDC	6 VDC	6 VDC	N/A	N/A
Minimum Input Current [mA]	3.8	3.8	3.8	3.8	3.2
Maximum Input Current [mA]	33.8	6.9	5.8	8.5	4.9
Nominal Input Impedance [ohms]	500	4.8K	12.5K	4.5K	28K
Maximum Turn-On Time [msec] ⁽⁴⁾	8.33	8.33	8.33	20	20
Maximum Turn-Off Time [msec]	8.33	8.33	8.33	30	30

General ⁽¹⁾

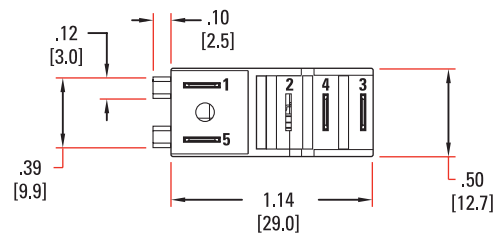
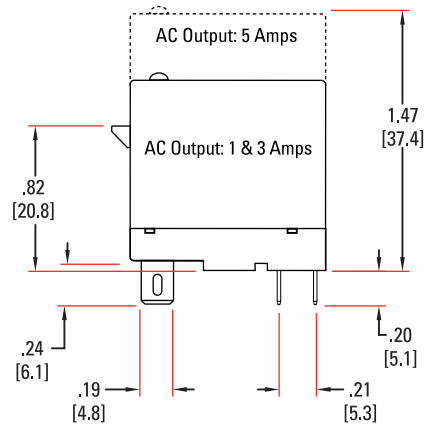
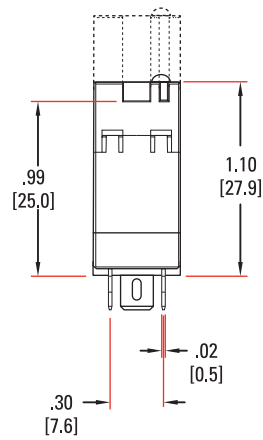
Description	Parameters
Dielectric Strength, Input to Output (50/60Hz)	3750 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10 ⁹ Ohms
Maximum Capacitance, Input/Output	10 pF
Ambient Operating Temperature Range	-30°C to 80°C
Ambient Storage Temperature Range	-40°C to 125°C
Weight (typical)	1.06 oz. (30 g)
Maximum Humidity	95% non-condensing
Housing Material	Polyamide Class V0 (UL94)
Terminals Material	Copper w/ Sulfamate Nickel finish



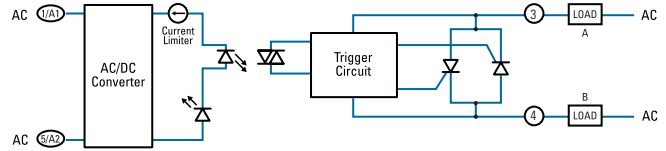
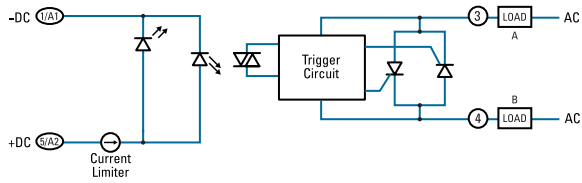
MECHANICAL SPECIFICATIONS

Tolerance: ± 0.02 in / 0.5 mm

All dimensions are in millimeters [inches]



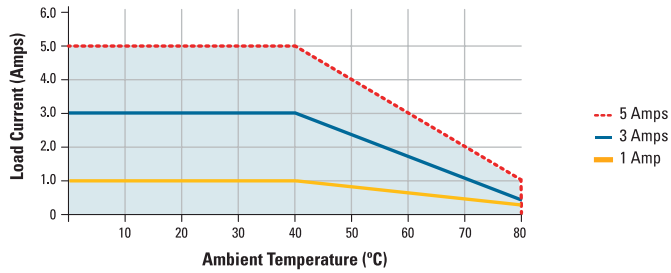
WIRING DIAGRAM



LOAD CAN BE WIRED IN POSITION A or B



THERMAL DERATE INFORMATION



Above curve is based on a minimum spacing between parts of 17mm for ED24x5 and 13mm for ED24x3.

Maximum current @ 0mm spacing is 2.7A for ED24x5 and 2.3A for ED24x3 @ 40°C.

Derating Value: ED24x5 = 0.135A per mm

ED24x3 = 0.054A per mm

Derating based on Relay air gap:

Example: 10mm spacing with a ED24D5 SSR

1.- Subtract spacing from the minimum required spacing of the part (17mm) to get the correction value.

17-10=7

2.- Multiply air gap derating value found above with correction value

$0.135 \times 7 = 0.945A$

Now using this final number we can figure out what the maximum current the relay can carry with 10mm spacing @ 60°C Ambient.

3.- using the Ambient Derating Curve above find the current for the 5A model @ 60°C. In this case that value is 3A.

4.- Subtract the value above (0.945A) from 3A. $3 - 0.945 = 2.055A$

The maximum current you can switch with the ED24D5 with a 10mm air gap between relays @ 60°C ambient is 2.055A



ACCESSORIES

ED Series Accessories

DRSED



DIN Rail Mountable Socket

Part no.: DRSED
Fingersafe IP10 DIN rail mountable socket to mount ED series relays onto standard 35 mm DIN rail. Rated at 250 V AC/DC, 12 Amps. The DRSED includes M3 Combo screws.

PCBSED



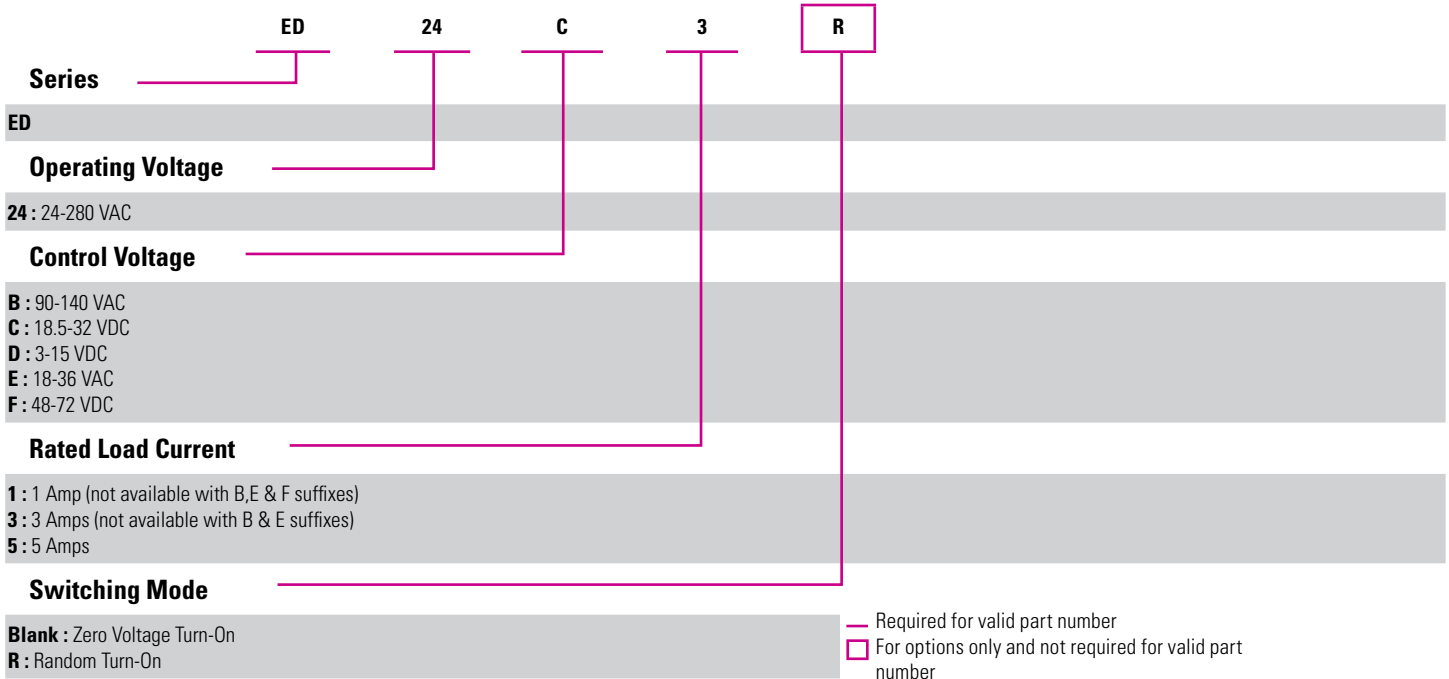
PC Board Mountable Socket

Part no.: PCBSED
PC Board mountable socket for ED series relays. Rated at 250 V AC/DC, 12 Amps. Suggested Pin-out hole diameter: 1.0 mm



ORDERING OPTIONS

Example : ED24C3R



GENERAL NOTES

- (1) All parameters at 25°C unless otherwise specified.
- (2) Based on 17mm (5A model) and 13mm (3A model) spacing minimum between parts.
- (3) Off-State dv/dt test method per EIA/NARM standard RS-443, paragraph 13.11.1
- (4) Turn-On time for Random turn-on versions is 0.1ms for DC control and 5ms for AC control.



AGENCY APPROVALS & CERTIFICATIONS



Designed in accordance with the requirements of IEC 62314
 Pilot Duty Rated C300
 IEC 61000-4-2 : Electrostatic Discharge Level 3 – Criteria A
 IEC 61000-4-4 : Electrically Fast Transients Level 3 – Criteria B
 IEC 61000-4-5 : Electrical Surges Level 3 – Criteria A



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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