

NOVA22

DR22 Series Solid State Relays

Crydom DR22 Series Solid State Relays were developed to offer the advantages of semiconductor switching technology in a standard 22.5 mm industrial package. Quick and easy installation is coupled with low drive power requirements and efficient, reliable power SCR output. This compact new design offers up to 35 A_{RMS} in ambient temperatures of 40°C.

Be sure to visit the product series datasheet available at the Crydom website to complement this information. If you have questions or need additional information please contact Crydom Tech Support.

Please read all instructions before using your DIN Rail Mount Solid State Relay (SSR).

MOUNTING INSTRUCTIONS

- Install the relay on the DIN Rail (as shown in **fig. 1**)
- Maximum recommended terminal screw torque input terminal:
 - Contactor configuration ("V" & "W" suffixes): 5 in-lb (0.5 Nm)
 - Relay configuration ("U" suffix): 13-15 in-lb (1.5-1.7 Nm)

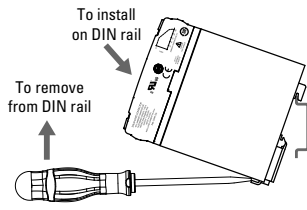


fig. 1 SSR mounted on DIN rail

- Maximum recommended terminal screw torque load terminal:
 - Contactor configuration ("V" & "W" suffixes): 18-20 in-lb (2.0-2.2 Nm)
 - Relay configuration ("U" suffix): 13-15 in-lb (1.5-1.7 Nm)
- If multiple units are installed be sure to follow derating curves
- Recommended wire sizes as shown in **TABLE 1**

WARNING! Removing product from 35 mm rail incorrectly by not using the appropriate tool would damage the latching system.

TABLE 1. Recommended Wire Sizes

Terminal Configuration	Wire Size (Solid / Stranded)	Wire Pull-Out Strength (lb)[N]*
Output Relay "U" suffix	2 x 18 AWG (1 mm ²) Stranded [minimum]	20 [88]
	2 x 10 AWG (6 mm ²) Stranded [maximum]	60 [266]
Input Relay "U" suffix	2 x 18 AWG (1 mm ²) Stranded	20 [88]
	2 x 12 AWG (4 mm ²) Stranded	40 [177]
Output Contactor "V" & "W" suffixes	2 x 20 AWG (0.75 mm ²) [minimum]	25 [111]
	2 x 10 AWG (6 mm ²)	80 [355]
	2 x 8 AWG (10 mm ²) [maximum]	90 [400]
Input Contactor "V" & "W" suffixes	Screw	
	30 AWG (0.05 mm ²) [minimum]	4.5 [20]
	12 AWG (3.3 mm ²) [maximum]	30 [133]
	Spring	
	26 AWG (0.13 mm ²) [minimum]	5 [22]
	12 AWG (3.3 mm ²) [maximum]	5 [22]

* Tests performed on Stranded wire

TABLE 2. Compatible Terminals

Terminals	Fork Lug	Ring Lug	Copper Lug	Copper Lug
Crydom Part No.			TRM0	TRM6
Width [W] in (mm)	0.45 (11.4)	0.45 (11.4)		
Stud Size Dia [D] (in)	#8 (0.168)	#8 (0.168)		
Wire Size AWG			6-0	14-6

General Notes

- (A) Load can be wired to either terminal 1 or terminal 2. Proper polarity must be observed for the DC control power supply, with terminal 3 being positive with respect to terminal 4.
- (B) DC inductive loads must be diode suppressed.
- (C) AC input models operating range is -20 to 60 °C

PART NUMBER NOMENCLATURE

Series: **DR22**

Operating Voltage: **60** (20: 1-200 VDC, 60: 48-600 VAC)

Rated Load Current: **A** (20: 20 Amps, 30: 30 Amps, 35: 35 Amps [High I²] (AC Output only))

Control Voltage: **20** (A: 90-280 VAC/VDC (AC Output only), D: 4-32 VDC)

Switching Type: **V** (Blank: Zero Voltage Turn-On, R: Instantaneous Turn-On (AC Output only))

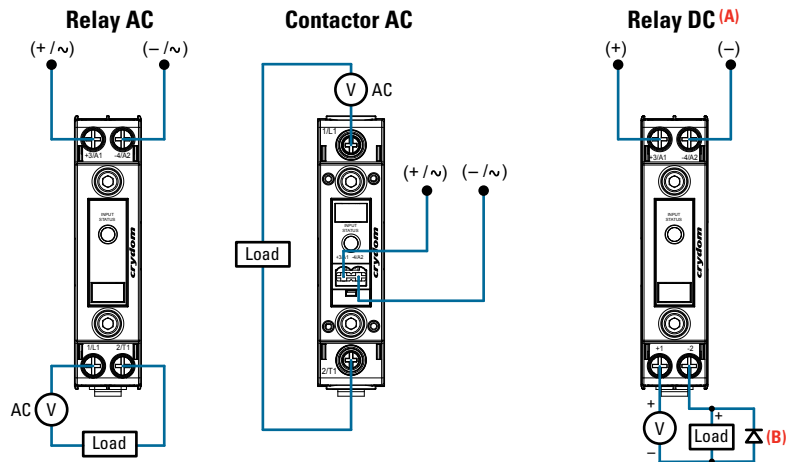
Terminal Layout: **R** (U: Relay Configuration, V: Contactor Configuration (std. screw), W: Contactor Configuration (elevator screw))

Input Connector: **J** (Blank: Screw Terminal, J: Spring Terminal (V and W suffixes only))

AC Output only

Legend: ● Required for valid part number, ● For options only and not required for valid part number

WIRING DIAGRAMS



Important Considerations

- Be sure to use input and output voltages within operating ranges.
- LED indicates only input status. It does not represent output status.
- To achieve maximum ratings, there must be a minimum spacing of 0.89 in (22.5 mm) between the devices in free air (as shown in **fig. 2**).
- Protective Earth (PE) screw type recommended is 10-32 UNC standard, not provided with SSR. Through the use of a DIN rail ground (protective conductor) terminal block, the DIN rail itself can be used as the grounding bus bar. In this case, the zinc plated steel material used for the DIN rail clip of DR22 models, permits a secure path to ground and avoid the need of a further PE connection (see **fig. 3**).

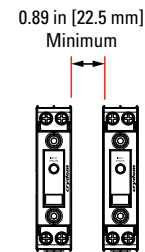


fig. 2 Multiple units mounting for maximum ratings

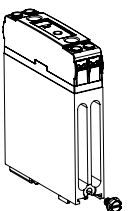


fig. 3 DR22 model with Protective Earth screw

TABLE 3. Recommended Accessories

Connectors	ID Marker	Lug Terminal
CP201	CNLB	TRM0
CP202	CNLN	TRM6
	CNL2	

ELEVATOR SCREW ("W" SUFFIX) CONSIDERATIONS

- The Elevator Screw option allows the screw and clamp to be raised out of the mating threads completely. This provides for the insertion and use of a ring or lug type wire terminal.
- A #2 Phillips head driver should be used with the Elevator Screws. If a powered driver is used, avoid speeds above 500 RPM.
- Cutting threads in the cover plastic as the screw elevates is key to the elevating feature. It has a finite life and therefore not recommended to be used more than 50 times during the product lifetime.
- Do not continue rotating the screw (in the elevating direction) once it freely rotates at the top of the plastic surface. The Elevator screw is capable of clearing 0.125 inches between the terminal and the bottom of the screw. Insertion of a terminal or lug thicker than 0.125 in is not recommended.
- When inserting the terminal ensure that the terminal hole is in line with the screw.

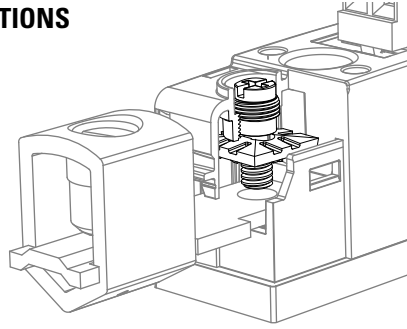


fig. 4 Elevator screw

- During tightening, be certain that the terminal is seated flat within the cavity, and that the clamping washer is secure against the upper surface of the terminal.
- If fork terminations, spade lugs, or stranded wire are used, to prevent improper contact do not raise the elevator screw out of the mating threads.

PIN TERMINAL CONSIDERATIONS

- For 35 Amp Relay configuration (suffix "U") models use Pin Terminals (L 0.410 in x Ø 0.102 in) to install 8 AWG wire.
- To install, make sure screw is completely lifted to maximum position, and insert Pin terminal (as shown in fig. 5)
- Once installed, tighten terminal screws. Maximum recommended screw torque is 14 in-lb (1.58 Nm). Be sure to apply sufficient downward pressure while tightening the terminal screws to prevent the screw assembly from lifting.

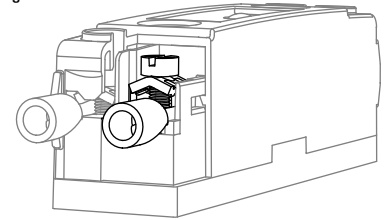
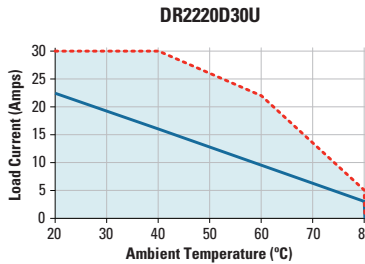
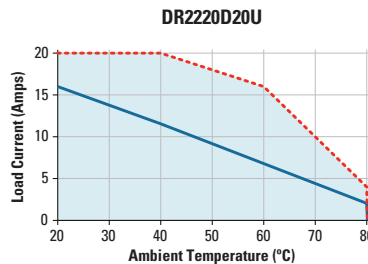
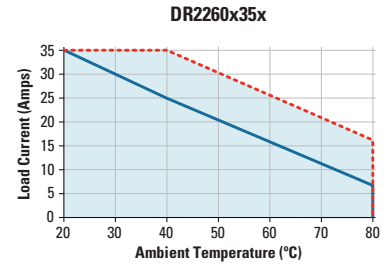
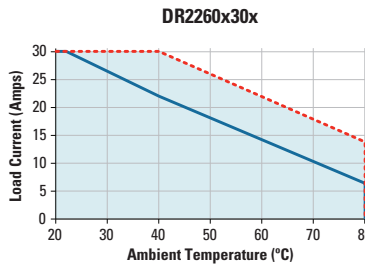
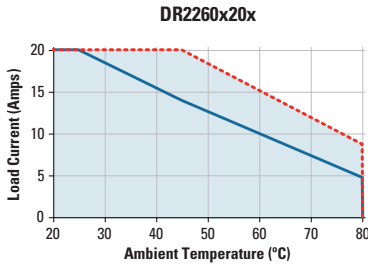


fig. 5 Pin Terminal

DERATING CURVES (C)



--- Single unit
 — Multiple units, no minimum spacing between components (see fig. 2)

⚠ DANGER / DANGER / GEFARH / PELIGRO / PERICOLO / 危險		
HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH • Turn off power supply before working on this equipment. Failure to follow these instructions will result in death or serious injury.	RISQUE D'ELECTROCUTION, D'EXPLOSION OU D'ARC ELECTRIQUE • Coupez l'alimentation avant de travailler sur cet appareil. Le non-respect de ces instructions provoquera la mort ou des blessures graves.	STROMSCHLAG-, EXPLOSIONS- ODER LICHTBOGENGEFAHR • Vor dem Arbeiten an dem Gerät dessen Stromversorgung abschalten. Die Nichtbeachtung dieser Anweisungen führt zu Tod oder schwerer Körperverletzung.
RIESGO DE ELECTROCUCIÓN, EXPLOSIÓN O ARCO ELÉCTRICO Desconecte toda alimentación antes de realizar el servicio. Si no se siguen estas instrucciones provocará lesiones graves o incluso la muerte.	RISCHIO DI SCOSSA ELETTRICA, DI ESPLOSIONE O DI OFTALMIA DA FLASH • Scollegare l'apparecchio dalla presa di corrente prima di qualsiasi intervento. Il mancato rispetto di queste istruzioni provocherà morte o gravi infortuni.	存在电击、爆炸或电弧闪烁危险 • 在操作此设备之前请先关闭电源。 若不遵守这些说明，可能会导致严重的人身伤害甚至死亡。

⚠ WARNING / AVERTISSEMENT / WARNUNG / ADVERTENCIA / AVVERTENZA / 警告		
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.	RISQUE DE DOMMAGE MATERIEL ET DE SURCHAUFFE DU BOITIER • Les panneaux latéraux du produit peuvent être chauds. Laissez le produit refroidir avant de le toucher. • Respecter les consignes de montage, et notamment les couples de serrage. • Ne pas laisser pénétrer de liquide ni de corps étrangers à l'intérieur du produit. Le non-respect de cette directive peut entraîner, des lésions corporelles graves ou des dommages matériels.	GEFAHR VON MATERIALSCHÄDEN UND GEHÄUSEERHITZUNG • Die Seitenwände können heiß sein. Lassen Sie das Produkt abkühlen, bevor Sie es berühren. • Beachten Sie die Montageanweisungen. • Führen Sie keine Flüssigkeiten oder Fremdkörper in das Produkt ein. Die Nichtbeachtung dieser Anweisung kann Körperverletzung oder Materialschäden zur Folge haben.
RIESGO DE DAÑOS MATERIALES Y DE SOBRECALENTAMIENTO DE LA UNIDAD • Los paneles laterales del producto pueden estar calientes. Esperar que el producto se enfríe antes de tocarlo. • Respetar las instrucciones de montaje, y en particular los pares de apretado. • No dejar que penetren líquidos o cuerpos extraños en el producto. Si no se respetan estas precauciones pueden producirse graves lesiones, daños materiales.	RISCHIO DI DANNI MATERIALI E D'INVOLUCRO CALDO • I pannelli laterali dell'apparecchio possono scottare; lasciar quindi raffreddare il prodotto prima di toccarlo. • Seguire le istruzioni di montaggio corrette. • Non far entrare liquidi o oggetti estranei in questo apparecchio. La mancata osservanza di questa precauzione può causare gravi rischi per l'incolumità personale o danni alle apparecchiature.	材料损坏和高温外壳的危险性 • 产品的一侧面板可能很热，在其冷却前请不要触碰。 • 遵照正确的安装说明，包括扭矩值。 • 请勿让液体及其他异物进入本产品。 如不能正确执行这些操作说明，极有可能造成严重人身伤害或者设备的损坏。