

NOVA22

DIN Rail & Panel Mount Solid State Relays



crydom[®]

The Global Expert in Solid State Switching Technology


Sensata
Technologies



NOVA22

NOVA22 Solid State Relays were developed combining technology and innovation to offer high performing solid state relays in a 22.5mm industrial package.



Highest power available in a 22.5mm wide package

The advanced design and technology used in NOVA22 products provide greater power density than any other 22.5 mm wide SSR in the market: 35 Amps in DIN Rail mount and 95 Amps in Panel Mount package.



Wide and innovative range of connections

The unique range of terminal options and configurations makes NOVA22 the most versatile solution. Relay or Contactor terminal configurations, screw or spring cage plug-in input terminals, standard or elevator screws, allowing the use of ring terminals, are all options offered within the NOVA22 family.

NOVA22 Solid state relays are built with high quality components and Crydom's technology and innovation making them the most powerful and versatile solid state relays in a 22.5mm package on the market today!

Diverse Range of Applications

NOVA22 Solid State Relays can be used in a wide range of AC and DC applications. Ideal for heating applications, NOVA22s are also suitable for motion, power and lighting applications; especially for demanding applications that require higher levels of reliability including:

Industrial OEMs: Plastic Machinery, Packaging and Material Handling Equipment, Industrial Ovens, Pumps

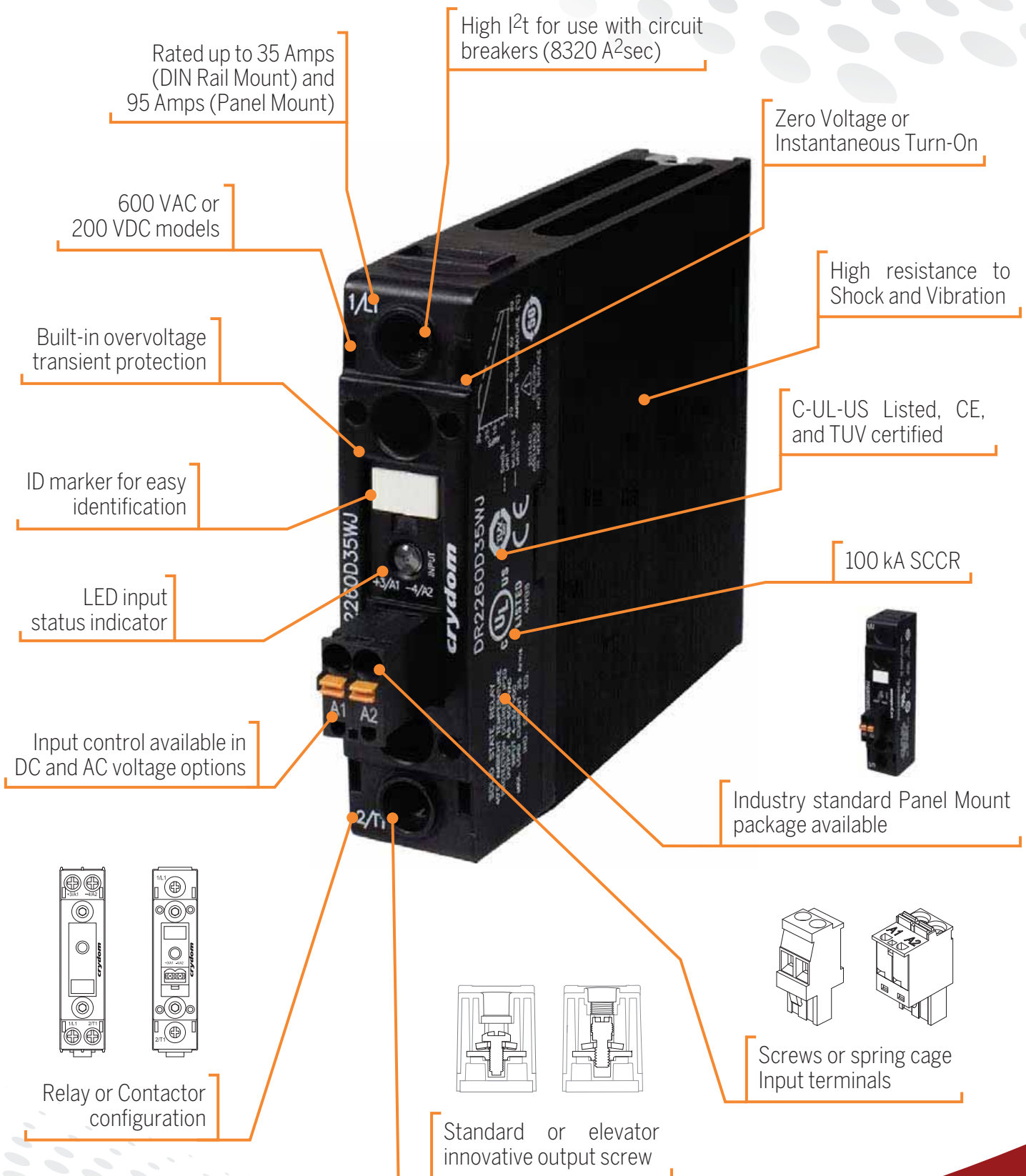
Food & Beverage: Baking Ovens, Refrigeration, Food Processing Equipment

Building Equipment: HVAC&R, Lighting, Access Control

Energy & Infrastructure: Renewable Energy, Water and Waste Water Treatments

Transportation: Agricultural Machinery, Railway Vehicles (Tested for Shock and Vibration Resistance up to 50g and 500 Hz, per IEC 60068-2)

Power & Versatility in a 22.5mm Package!





DR22 Series

AC & DC Output DIN Rail Mount Solid State Relays

- Ratings up to 35 Amps at 600 VAC and 30 Amps at 200 VDC
- Built-in overvoltage transient protection on AC models
- Relay or Contactor configuration
- Integral heat sink eliminates the need for complex thermal calculations
- DBC substrate for superior thermal performance
- Optional "Elevator" screw suffix "W" allows the use of ring or lug type terminals
- 1kHz Maximum PWM frequency
- C-UL-US Listed and TUV approved



Output Specifications (A)

	DR2260x20x	DR2260x30x	DR2260x35x	DR2220D20U	DR2220D30U
Operating Voltage (47-440 Hz)	48-600 V _{RMS}	48-600 V _{RMS}	48-600 V _{RMS}	1-150 VDC	1-150 VDC
Absolute Maximum Rating [VDC]	-	-	-	200	200
Transient Overvoltage [Vpk] (B)	1200	1200	1200	-	-
Maximum Off-State Leakage Current @ Rated Voltage [mA]	1	1	1	0.1	0.2
Minimum Off-State dV/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	-	-
Load Current, General Use UL508/LC A IEC62314 @ 40°C [A _{RMS}]	20	30	35	-	-
Load Current, Motor Starting UL508 FLA / LC B IEC62314 @ 40°C [A _{RMS}]	8.5/4.8	14/7.6	26/14	-	-
Load Current, DC General Use UL508 @ 40°C [ADC]	-	-	-	20	30
Load Current, DC Motor Starting UL508 FLA @ 40°C [ADC]	-	-	-	4.1	5.4
Maximum Load Current	20 A _{RMS}	30 A _{RMS}	35 A _{RMS}	20 ADC	30 ADC
Minimum Load Current (C)	100 mA _{RMS}	100 mA _{RMS}	150 mA _{RMS}	5 mA	5 mA
Maximum 1 Cycle Surge Current (50/60 Hz) [Apk]	286/300	716/750	1290/1350	-	-
Maximum On-State Voltage Drop @ Rated Current	1.35 Vpk	1.35 Vpk	1.30 Vpk	0.68 VDC	0.48 VDC
Maximum 1/2 Cycle I ² t for Fusing (50/60 Hz) [A ² sec]	409/375	2563/2343	8320/7593	-	-
Minimum Power Factor (at Maximum load)	0.5	0.5	0.5	-	-
Maximum Surge Current [ADC] (10 msec)	-	-	-	58	86
Maximum On-State Resistance [R _{DS-ON}] [Ohms]	-	-	-	0.034	0.016
Maximum Pulse Width Modulation Frequency [Hz] (D)	-	-	-	1000	900
Motor Rating UL 508/IEC62314 [HP (kW)]: 120 VAC	0.5 (0.37)	1 (0.74)	2 (1.5)	-	-
Motor Rating UL 508/IEC62314 [HP (kW)]: 240 VAC	1.5 (1.1)	3 (2.2)	5 (3.73)	-	-
Motor Rating UL 508/IEC62314 [HP (kW)]: 480 VAC	3 (2.24)	5 (3.7)	10 (7.4)	-	-
Motor Rating UL 508 [HP (kW)]: 120 VDC	-	-	-	1/3 (0.25)	1/2 (0.37)

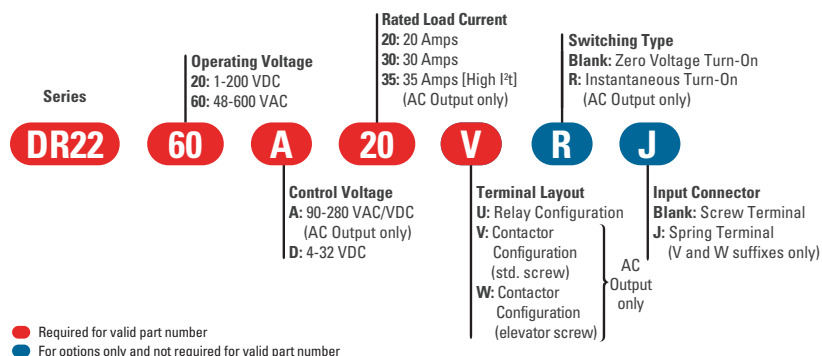
Input Specifications (A)

	DR2260Axxx	DR2260Dxxx	DR2220DxxU
Control Voltage Range	90-280 VAC/VDC (E)	4-32 VDC (F)	4-32 VDC
Maximum Reverse Voltage	-	-32 VDC	-32 VDC
Minimum Turn-On Voltage	90 VAC/VDC	4 VDC	4 VDC
Must Turn-Off Voltage	5 VAC/VDC	1 VDC	1 VDC
Minimum Input Current (for on-state) [mA]	6	10	11
Maximum Input Current [mA]	10	15	15
Nominal Input Impedance [Ohms]	Current Limited	Current Limited	Current Regulated
Maximum Turn-On time	20 msec	1/2 Cycle (G)	75 μsec
Maximum Turn-Off time	30 msec	1/2 Cycle	100 μsec

General Specifications

	DR2260xxxx	DR2220DxxU
Dielectric Strength, Input to Output (50/60 Hz) [V _{RMS}]	4000	3750
Dielectric Strength, Input/Output/Case (50/60 Hz) [V _{RMS}]	4000	2500
Minimum Insulation Resistance (@ 500 VDC) [Ohms]		10 ⁹
Maximum Capacitance, Input/Output [pF]		8
Ambient Operating Temperature Range [°C] (H)		-40 to 80
Ambient Storage Temperature Range [°C]		-40 to 100
Short Circuit Current Rating [kA] (J)	100	-
LED Input Status Indicator		Green
Weight (Typical) [oz] (g)	Suffix "U" 10.5 (298), "V" & "W" suffixes 10.6 (301)	10.5 (298)
Housing Material		UL94 V-0
Baseplate Material		Aluminum
Hardware Finish		Nickel Plating
Humidity		85% non-condensing

Part Number Nomenclature



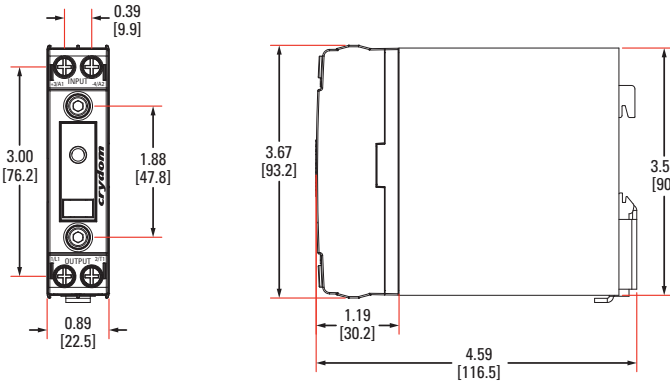
Recommended Accessories for DR22 Series

Connectors	ID Marker	Lug Terminal	Module
CP201 CP202	CNLB CNLN CNL2	TRM0 TRM6	DRML1

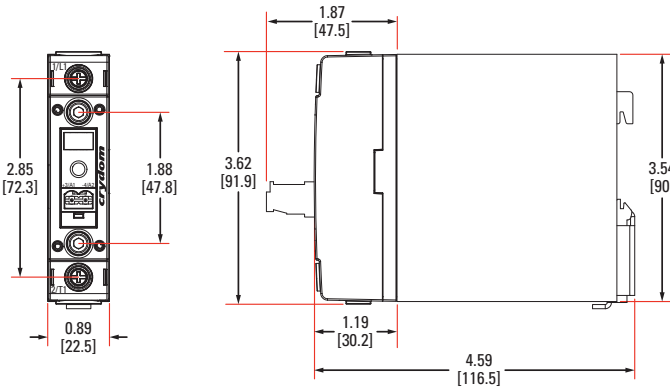
Mechanical Dimensions

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

Relay Configuration

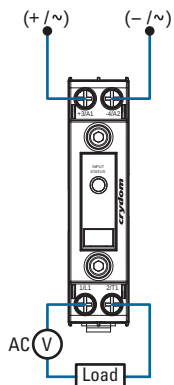


Contact Configuration

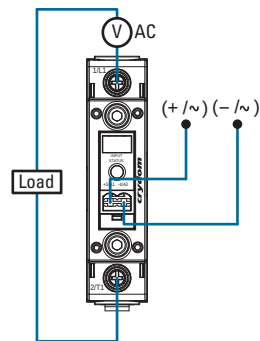


Wiring Diagrams

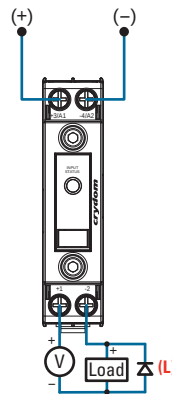
Relay Configuration AC Output



Contact Configuration AC Output

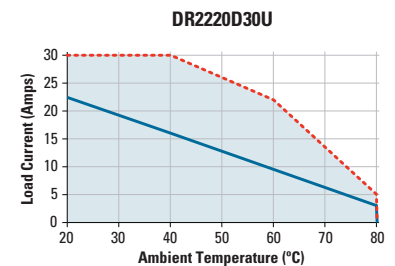
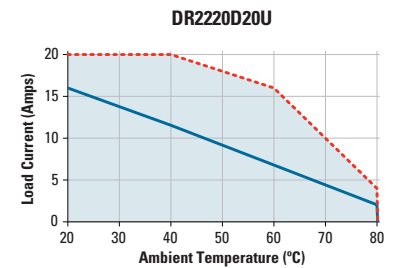
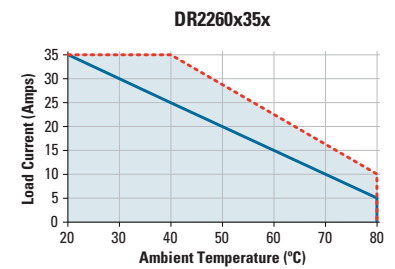
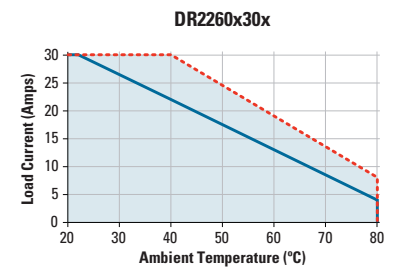
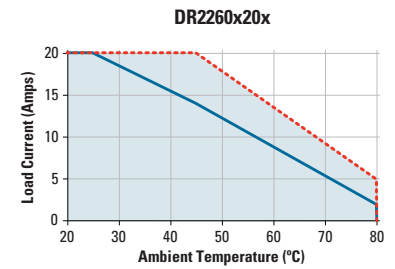


Relay Configuration DC Output (K)

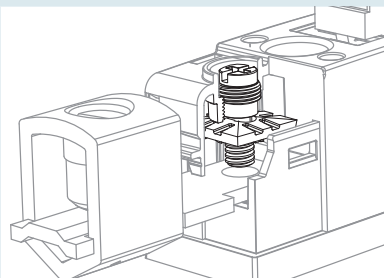


Derating Curves (H)

--- Single unit
— Multiple units, no minimum spacing between components



Elevator Screw (Suffix "W")



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. See datasheet for Compatible Terminals.

General Notes

- (A) All parameters at 25°C unless otherwise specified.
- (B) Output will self trigger between 900-1200 Vpk. Not suitable for capacitive loads.
- (C) Low current loads and high ambient temperature can affect turn-on time.
- (D) 8 VDC Minimum control voltage. Resistive loads only. Consider switching losses; at maximum frequency reduce to 75% output current. Recommended suppressor diode connected at load side, see wiring diagram.
- (E) Above 40°C ambient temperature the maximum control voltage must not exceed 250 VAC/VDC.
- (F) Increase minimum voltage by 1 V for operations from -20 to -40°C.
- (G) Turn-On Time for Instantaneous Turn-On versions is 0.1 msec.
- (H) Operating range -20 to 60°C for AC control models only.
- (J) With appropriate class and rated fuse, see product datasheet for detailed info
- (K) 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.
- (L) DC inductive loads must be diode suppressed.



PM22 Series

AC Output Panel Mount Solid State Relays

- Ratings up to 95 Amps at 600 VAC
- Built-in overvoltage transient protection
- DBC substrate for superior thermal performance
- LED input status indicator
- IP20 touch safe housing
- AC or DC control voltage options
- 4000 VAC optical isolation
- C-UL-US Recognized and TUV approved



Output Specifications (A)

	PM2260x25x	PM2260x50x	PM2260x95x
Operating Voltage (47-440 Hz) [V _{RMS}]	48-600	48-600	48-600
Transient Overvoltage [Vpk] (B)	1200	1200	1200
Maximum Off-State Leakage Current @ Rated Voltage [mA _{RMS}]	1	1	1
Minimum Off-State dV/dt @ Maximum Rated Voltage [V/μsec]	500	500	500
Load Current, General Use UL508/LC A IEC 62314 @ 40°C [A _{RMS}] (M)	25	50	95
Load Current, Motor Starting UL508 FLA /LC B IEC 62314 @ 40°C [A _{RMS}] (M)	8.5/4.8	14/7.6	26/14
Minimum Load Current [mA _{RMS}]	100	100	150
Maximum 1 Cycle Surge Current (50/60 Hz) [A _{pk}]	286/300	716/750	1290/1350
Maximum On-State Voltage Drop @ Rated Current [Vpk]	1.35	1.35	1.30
Thermal Resistance Junction to Case (R _{jc}) [°C/W]	0.49	0.27	0.2
Maximum 1/2 Cycle I ² t for Fusing (50/60 Hz) [A ² sec]	409/375	2563/2343	8320/7593
Minimum Power Factor (at Maximum load)	0.5	0.5	0.5
Minimum Heat sink for Rated Current @ 40°C	2	0.7	0.23
Motor Rating UL 508/IEC62314 [HP (kW)]: 120 VAC	0.5 (0.37)	1 (0.74)	2 (1.5)
Motor Rating UL 508/IEC62314 [HP (kW)]: 240 VAC	1.5 (1.1)	3 (2.2)	5 (3.73)
Motor Rating UL 508/IEC62314 [HP (kW)]: 480 VAC	3 (2.24)	5 (3.7)	10 (7.4)

Input Specifications (A)

	PM2260Axx	PM2260Dxx
Control Voltage Range	90-280 VAC/VDC (E)	4-32 VDC (F)
Maximum Reverse Voltage	-	-32 VDC
Minimum Turn-On Voltage	90 VAC/VDC	4 VDC
Must Turn-Off Voltage	5 VAC/VDC	1 VDC
Minimum Input Current (for on-state) [mA]	6	10
Maximum Input Current [mA]	10	15
Nominal Input Impedance [Ohms]	Current Limited	Current Limited
Maximum Turn-On time	20 msec	1/2 Cycle (G)
Maximum Turn-Off time	30 msec	1/2 cycle

General Specifications

	PM2260xxx
Dielectric Strength, Input to Output (50/60 Hz) [V _{RMS}]	4000
Dielectric Strength, Input/Output/Case (50/60 Hz) [V _{RMS}]	4000
Minimum Insulation Resistance (@ 500 VDC) [Ohms]	10 ⁹
Maximum Capacitance, Input/Output [pF]	8
Ambient Operating Temperature Range [°C] (H)	-40 to 80
Ambient Storage Temperature Range [°C]	-40 to 100
Short Circuit Current Rating [kA] (J)	100
LED Input Status Indicator	Green
Weight (Typical) [oz] (g)	2.3 (64)
Housing Material	UL94 V-0
Baseplate Material	Aluminum
Hardware Finish	Nickel Plating
Humidity	85% non-condensing

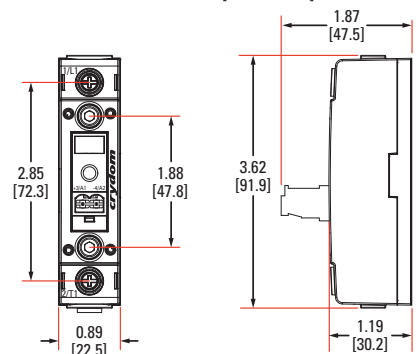
Part Number Nomenclature

Series	Operating Voltage	Rated Load Current	Switching Type	Thermal Pad
PM22	60: 48-600 VAC	25: 25 Amps 50: 50 Amps 95: 95 Amps [High I ² t]	Blank: Zero Voltage Turn-On R: Instantaneous Turn-On	Blank: Not Included H: Included
A	Control Voltage (N) A: 90-280 VAC/VDC D: 4-32 VDC		Terminal Layout V: Contactor Configuration	Input Connector Blank: Screw Terminal J: Spring Terminal

- Required for valid part number
- For options only and not required for valid part number

Mechanical Dimensions

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



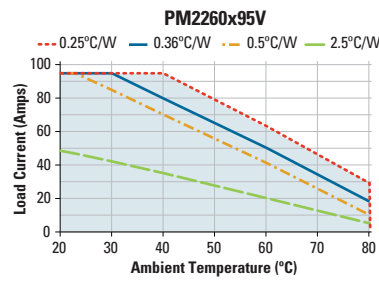
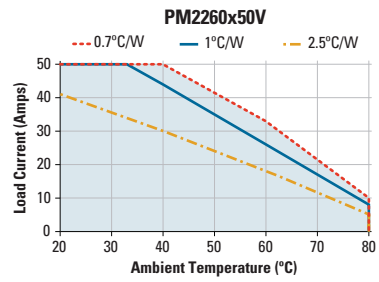
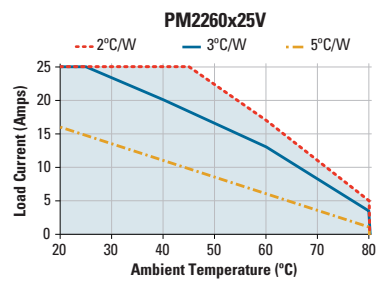
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Derating Curves (H)



General Notes

- (A) All parameters at 25°C unless otherwise specified.
- (B) Output will self trigger between 900-1200 Vpk. Not suitable for capacitive loads.
- (E) Above 40°C ambient temperature the maximum control voltage must not exceed 250 VAC/VDC.
- (F) Increase minimum voltage by 1 V for operations from -20 to -40°C.
- (G) Turn-On Time for Instantaneous Turn-On versions is 0.1 msec.
- (H) Operating range -20 to 60°C for AC control models only.
- (M) Heat sink required, see derating curves.
- (N) Control voltage 18-52 VAC/VDC is available upon request.

Recommended Accessories for PM22 Series

 Connectors	 ID Marker	 Hardware Kit			 Module	 Thermal Pad
			Heat Sink Part No.	Thermal Resistance [°C/W]		
CP201 CP202	CNLB CNLN CNL2	HK8	HS259DR	2.5	DRML1	HSP-7
			HS073	0.7		
			HS072	0.7		
			HS053	0.5		
			HS033	0.36		
			HS023	0.25		

New Accessories!

Connectors

Part number: CP201, CP202



Pluggable input connectors, 2 position, with screw terminals (CP201) or spring type terminals (CP202). Compatible with Contactor configuration NOVA22 SSRs.

Hardware Kit

Part number: HK8



Bag with 2 SSR mounting screws 8-32 x 3/8, Hex Socket Cap, compatible with PM22 Series Panel Mount SSRs. Used to mount the SSR onto any of our compatible heat sinks.

Heat Sink

Part number: HS259DR



DIN Rail mountable heat sink with 2.5°C/W thermal resistance. Heat sink material is aluminum with black anodized finish. Suitable for mounting a single PM22 Series Panel Mount SSR.

Load Monitoring Module

Part number: DRML1



Load monitoring module with a total current range from 1.2 to 50 Amps at 600 VAC. Compatible with DIN Rail and Panel Mount NOVA SSRs (DR2260DxxV/W & PM2260DxxV).

Lug Terminal

Part number: TRMO



Copper wire lug for AWG 6 (13.3 mm²) to AWG 0 (53.5 mm²) wire size. For use with "Elevator" screw option ("W" suffix) NOVA22 SSRs.

Thermal Pad

Part number: HSP-7



Non-adhesive thermal pad for half-puck package SSRs. Compatible with PM22 Series Panel Mount SSRs.



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