

# › GNR Series

## Classic Solid State Relays

### DIN Rail - AC Output Single Phase

- › Output current of 20 and 30 Amps
- › Output voltage of 24-280 V~, 25-500 V~ and 48-660 V~
- › Control voltage of 4-32 V $\overline{\text{DC}}$ , 80-140 V~ and 180-280 V~
- › Zero cross or instantaneous (resistive or inductive loads)
- › Integrated IP20 touch-safe removable covers
- › Built-in overvoltage protection
- › LED input status indicator



Zero Cross  
Version 22.5 mm

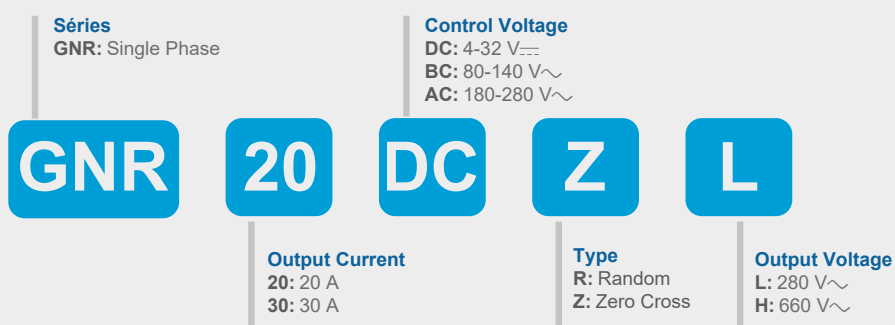


Instantaneous  
Version 22.5 mm

| Product Selection - Zero Cross (Resistive loads) |                  |                  |                  |
|--------------------------------------------------|------------------|------------------|------------------|
| Rated Load Current                               | 20A              |                  | 30A              |
| Operating Voltage                                | 24-280 V~        | 48-660 V~        | 48-660 V~        |
| Control Voltage                                  |                  |                  |                  |
| 4-32 V $\overline{\text{DC}}$                    | <b>GNR20DCZL</b> | <b>GNR20DCZH</b> | <b>GNR30DCZH</b> |
| 80-140 V~                                        |                  | <b>GNR20BCZH</b> | <b>GNR30BCZH</b> |
| 180-280 V~                                       |                  | <b>GNR20ACZH</b> | <b>GNR30ACZH</b> |

| Product Selection - Instantaneous (Inductive Loads) |                  |
|-----------------------------------------------------|------------------|
| Rated Load Current                                  | 30A              |
| Operating Voltage                                   | 24-500 V~        |
| Control Voltage                                     |                  |
| 4-32 V $\overline{\text{DC}}$                       | <b>GNR25DCRH</b> |

## PART NUMBERING SYSTEM



Do you need an adapted or customized solution? Contact us on [www.crouzet.com](http://www.crouzet.com)

#### Description:

Crouzet Solid State Relays are designed to be used in almost any application, offering very long life expectancy and are easy to install, easy to use, robust and multipurpose.

For more information about Crouzet's Solid State relays, please visit [www.crouzet.com](http://www.crouzet.com).

| Accessories |                              |             |
|-------------|------------------------------|-------------|
| Type        | Description                  | Part-Number |
| Label       | Label for SSR identification | 26532004    |

| Output Specifications <sup>(1)</sup>                                |                            |                          |                          |             |
|---------------------------------------------------------------------|----------------------------|--------------------------|--------------------------|-------------|
| Description                                                         | 20A                        |                          | 30A                      | 30A         |
| Maximum Load Current [Arms]                                         | 20                         |                          | 30                       |             |
| Minimum Load Current [mArms]                                        | 5                          |                          |                          |             |
| Operating Voltage                                                   | 24-280 V~                  | 48-660 V~                | 24-500 V~                | 48-660 V~   |
| Transient Voltage [Vpk] <sup>(2)</sup>                              | 600 (550)                  | 1200 (1100)              | 1200 (950)               | 1200 (1100) |
| Maximum Off-State Leakage Current @ Rated Voltage [mArms]           | 1                          |                          |                          |             |
| Minimum Off-State dV/dt @ Maximum Rated Voltage [V/μsec]            | 500                        |                          |                          |             |
| 1 Second Surge Current (Apk. Ta=25 °C) 50/60 Hz                     | 95                         | 96                       | 165                      |             |
| Maximum 1 Cycle Surge Current (50/60 Hz) [Apeak]<br>Typ @ 50 Hz     | 270/284 (min)<br>340 (typ) | 320/_ (min)<br>420 (typ) | 530/_ (min)<br>580 (typ) |             |
| Maximum On-State Voltage Drop @ Rated Current [Vpeak]               | 1.17                       | 1.04                     | 1.07                     |             |
| Thermal Resistance Junction to Case (Rjc) [°C/W]                    | 1.8                        | 0.7                      | 0.55                     |             |
| Maximum 1/2 Cycle I² t for Fusing @ 50 Hz (min. / typical) [A² sec] | 340/600                    | 512/882                  | 1404/1680                |             |
| Minimum Heat Sink for Rated Current @ 40 °C [°C/W]                  | N/A (SSR with heatsink)    |                          |                          |             |

| Input Specifications                 |                                            |           |            |
|--------------------------------------|--------------------------------------------|-----------|------------|
| Description                          | 4-32 V---                                  | 80-140 V~ | 180-280 V~ |
| Control Voltage Range                | 4-32 V--- <sup>(4)</sup>                   | 80-140 V~ | 180-280 V~ |
| Maximum Reverse Voltage              | -32 V VDC                                  | N/A       |            |
| Minimum Turn-On Voltage              | 3 V---                                     | 80 V~     | 180 V~     |
| Must Turn-Off Voltage                | 1 V---                                     | 5 V~      |            |
| Minimum Input Current (for on-state) | 10 mA                                      | 4 mA      |            |
| Maximum Input Current [mA]           | 14 mA                                      | 10 mA     | 8 mA       |
| Nominal Input Impedance [Ohms]       | Current Limited                            | 15 KΩ     | 47 KΩ      |
| Maximum Turn-On Time [msec]          | 1/2 Cycle <sup>(5)</sup> (<0.1 for Random) |           |            |
| Maximum Turn-Off Time [msec]         | 1/2 Cycle <sup>(5)</sup>                   |           |            |

| General Specifications                                 |                   |           |     |
|--------------------------------------------------------|-------------------|-----------|-----|
| Description                                            | 20A               |           | 30A |
| Dielectric Strength, Input to Output (50/60 Hz)        | 4000 Vrms         |           |     |
| Dielectric Strength, Input/Output to Ground (50/60 Hz) | 2500 Vrms         | 4000 Vrms |     |
| Minimum Insulation Resistance (@ 500 V---              | 10 <sup>9</sup> Ω |           |     |
| Maximum Capacitance, Input/Output                      | 0.8 pF            |           |     |
| Ambient Operating Temperature Range <sup>(7)</sup>     | -40 to 80 °C      |           |     |
| Ambient Storage Temperature Range                      | -40 to 100 °C     |           |     |
| Weight (typical)                                       | 250 g             |           |     |
| Housing Material                                       | UL94 V-0          |           |     |
| Baseplate Material                                     | Aluminum          |           |     |
| Input Terminal Screw Torque Range (in-lb/Nm)           | 3.5-4.4 / 0.4-0.5 |           |     |
| Load Terminal Screw Torque Range (in-lb/Nm)            | 18-26 / 2-3       |           |     |
| SSR Mounting Screw Torque Range (in-lb/Nm)             | 11-16 / 1.2-1.8   |           |     |
| Humidity per IEC60068-2-78                             | 40-85 %           |           |     |
| LED Input Status Indicator                             | Yellow            |           |     |

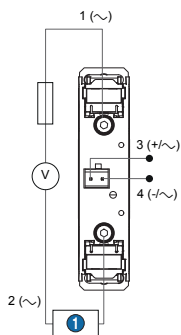
| General Specifications                                                                |     |     |     |
|---------------------------------------------------------------------------------------|-----|-----|-----|
| Description                                                                           | 20A | 30A | 30A |
| MTBF (Mean Time Between Failures) at 40 °C ambient temperature (years) <sup>(5)</sup> | 85  |     |     |
| MTBF (Mean Time Between Failures) at 60 °C ambient temperature (years) <sup>(5)</sup> | 56  |     |     |

| General Notes                                                                                                      |  |
|--------------------------------------------------------------------------------------------------------------------|--|
| <sup>(1)</sup> All parameters at 25 °C unless otherwise specified                                                  |  |
| <sup>(2)</sup> Output will self trigger between 450-600 Vpk not suitable for capacitive loads                      |  |
| <sup>(3)</sup> Heat sinking required, see derating curves                                                          |  |
| <sup>(4)</sup> Increase minimum voltage by 1V for operations from -20 to -40 °C                                    |  |
| <sup>(5)</sup> All parameters at 50 % power rating and 100 % duty cycle (contact tech support for detailed report) |  |

## Diagrams

### Wiring

GNR



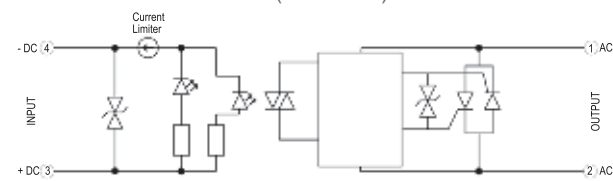
| TERMINALS | WIRE SIZE                                                    |                                                            | Terminal Screw Torque (N.m) |
|-----------|--------------------------------------------------------------|------------------------------------------------------------|-----------------------------|
|           | SOLID                                                        | STRANDED                                                   |                             |
| Input     | 18..14 AWG (0.75..2.5 mm²)<br>2 x 18..14 AWG (0.75..2.5 mm²) | 26..12 AWG (0.2..2.5 mm²)<br>2 x 26..12 AWG (0.2..2.5 mm²) | 0.4 - 0.5                   |
| Output    | 16..8 AWG (1.5..10 mm²)<br>2 x 16..8 AWG (1.5..10 mm²)       | 16..8 AWG (1.5..6 mm²)<br>2 x 16..10 AWG (1.5..6 mm²)      | 2 - 3                       |

GNR

① Load

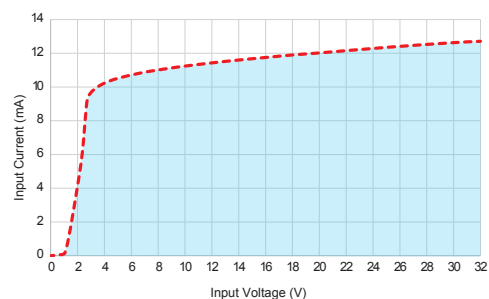
## Diagrams

### Equivalent Circuit Block

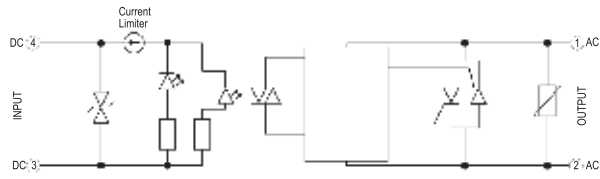
GNR series 4-32 V<sub>AC</sub> control (Zero Cross)

Input current vs Input Voltage

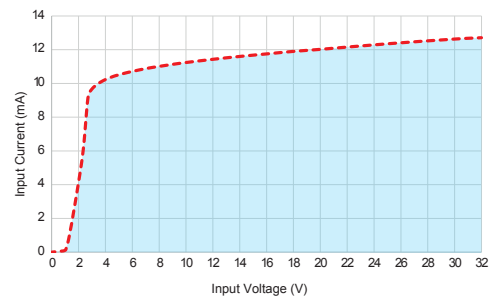
Standard Regulated AC inputs



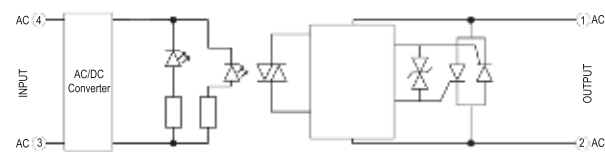
### GNR series 4-32 V $\overline{\text{DC}}$ control (Random)



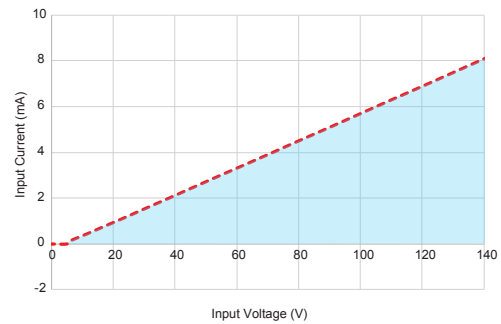
### Input current vs Input Voltage Standard Regulated AC inputs



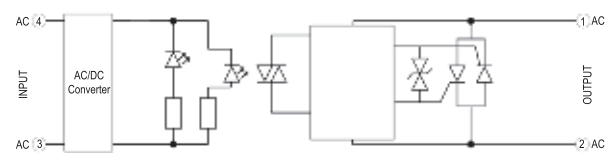
### GNR series 80-140 V $\sim$ control



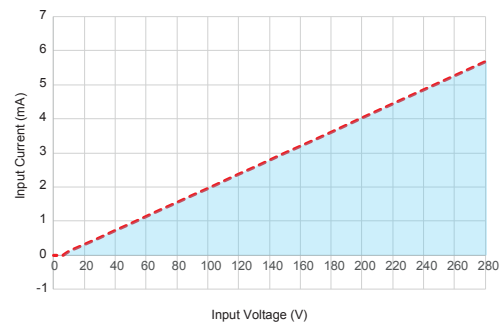
### Input current vs Input Voltage Standard Regulated DC inputs



### GNR series 180-280 V $\sim$ control



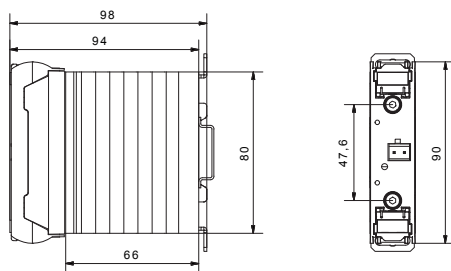
### Input current vs Input Voltage Standard Regulated DC inputs



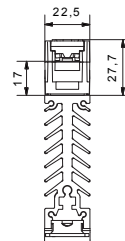
## Diagrams

### Dimensions (mm)

#### GNR front view



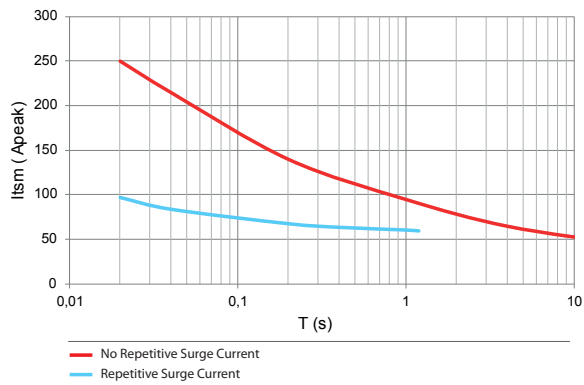
#### GNR Side view



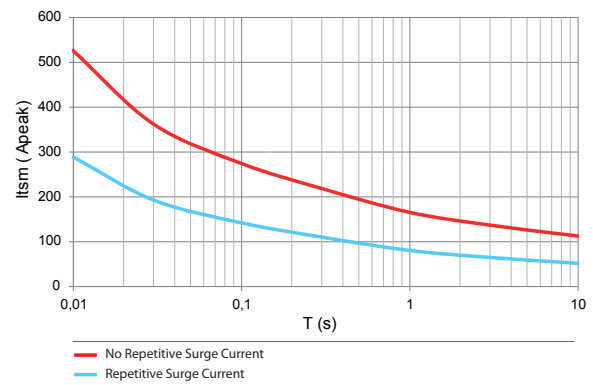
## Curves

### Surge Current Information

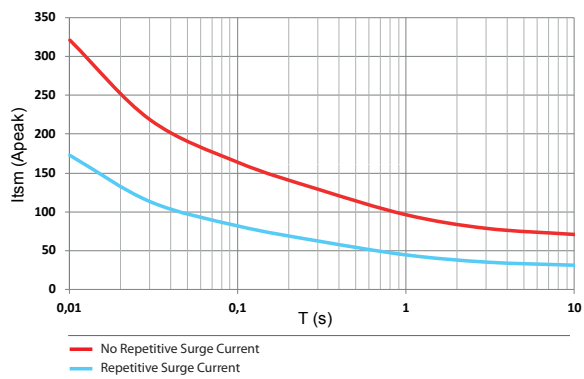
GNR - 20 A - 280 V~



GNR - 30 A



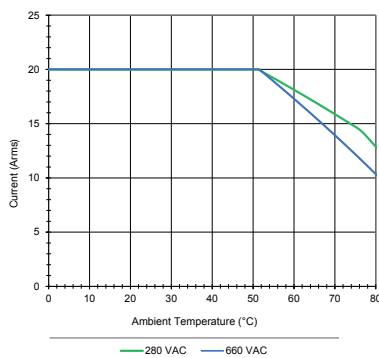
GNR - 20 A - 660 V~



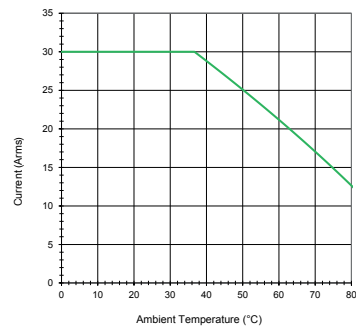
## Curves

### Thermal Derating Curves

GNR - 20 A



GNR - 30 A



### Legende

- ② Current (Arms)
- ③ Ambient temperature (°C)

**Standards Specifications**ZERO CROSS

|                                    |              |
|------------------------------------|--------------|
| IEC/EN61000-4-4 (bursts)           | 2 kv crit B  |
| IEC/EN61000-4-5 (surge)            | 2 kv crit B  |
| VIBRATION resistance IEC 60068-2-6 | 10 g         |
| SHOCK resistance IEC 60068-2-27    | 50 G (11 ms) |

RANDOM

|                                    |              |
|------------------------------------|--------------|
| IEC/EN61000-4-4 (bursts)           | 2 kv crit A  |
| IEC/EN61000-4-5 (surge)            | 2 kv crit A  |
| VIBRATION resistance IEC 60068-2-6 | 10 g         |
| SHOCK resistance IEC 60068-2-27    | 50 G (11 ms) |



\* VDE ONLY GNR25DCRH

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