

Semiconductor relay, 1-phase 3RF2 Overall width 22.5 mm, 90 A 48-460 V / 110-230 V AC screw terminal



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|---|---|
| Product brand name | SIRIUS |
| Product designation | solid-state relay |
| Product type designation | 3RF21 |
| Manufacturer's article number | |
| <ul style="list-style-type: none"> • _1 / of the accessories that can be ordered • _2 / of the accessories that can be ordered • _4 / of the accessories that can be ordered | 3RF2900-3PA88 3RF2990-0HA36 3RF2990-0GA36 |
| Product designation | |
| <ul style="list-style-type: none"> • _1 / of the accessories that can be ordered • _2 / of the accessories that can be ordered • _4 / of the accessories that can be ordered | terminal cover power regulator load monitoring |

| General technical data | |
|--|----------------------|
| Product function | zero-point switching |
| Power loss [V·A] / maximum | 118 V·A |
| Power loss [W] / for rated value of the current / at AC / in hot operating state | 118 W |
| Insulation voltage | |
| <ul style="list-style-type: none"> • rated value | 600 V |
| Protection class IP | IP20 |

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| Shock resistance / acc. to IEC 60068-2-27 | 15g / 11 ms |
| Vibration resistance / acc. to IEC 60068-2-6 | 2g |
| Reference code / acc. to DIN 40719 extended according to IEC 204-2 / acc. to IEC 750 | K |
| Reference code / acc. to DIN EN 81346-2 | Q |
| Reference code / acc. to DIN EN 61346-2 | Q |

Main circuit

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| Number of poles / for main current circuit | 1 |
| Number of NO contacts / for main contacts | 1 |
| Number of NC contacts / for main contacts | 0 |
| Operating voltage / at AC | |
| • at 50 Hz / rated value | 48 ... 460 V |
| • at 60 Hz / rated value | 48 ... 460 V |
| Operating frequency / rated value | 50 ... 60 Hz |
| Relative symmetrical tolerance / of the operating frequency | 10 % |
| Operating range relative to the operating voltage / at AC | |
| • at 50 Hz | 40 ... 506 V |
| • at 60 Hz | 40 ... 506 V |
| Operating current | |
| • at AC-51 / rated value | 50 A |
| Ampacity / maximum | 90 A |
| Operating current / minimum | 500 mA |
| Rate of voltage rise / at the thyristor / for main contacts / maximum permissible | 1 000 V/ μ s |
| Blocking voltage / at the thyristor / for main contacts / maximum permissible | 1 200 V |
| Reverse current / of the thyristor | 10 mA |
| Derating temperature | 40 °C |
| Surge current resistance / rated value | 1 150 A |
| I ² t value / maximum | 6 600 A ² ·s |

Control circuit/ Control

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| Type of voltage / of the control supply voltage | AC |
| Control supply voltage / 1 / at AC | |
| • at 50 Hz | 110 ... 230 V |
| • at 60 Hz | 110 ... 230 V |
| Control supply voltage frequency | |
| • 1 / rated value | 50 Hz |
| • 2 / rated value | 60 Hz |
| Control supply voltage / at AC | |
| • at 50 Hz / Full-scale value for signal<0> recognition | 40 V |

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| <ul style="list-style-type: none"> at 60 Hz / Full-scale value for signal<0> recognition | 40 V |
| Control supply voltage | |
| <ul style="list-style-type: none"> at AC / initial value for signal <1> detection | 90 V |
| Symmetrical line frequency tolerance | 5 Hz |
| Control current / at minimum control supply voltage | |
| <ul style="list-style-type: none"> at AC | 2 mA |
| Control current / at AC / rated value | 15 mA |
| Switch-on delay time | 40 ms; additionally max. one half-wave |
| Off-delay time | 40 ms; additionally max. one half-wave |
| Number of NC contacts / for auxiliary contacts | 0 |
| Number of NO contacts / for auxiliary contacts | 0 |
| Number of CO contacts / for auxiliary contacts | 0 |

Installation/ mounting/ dimensions

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| Mounting type | screw fixing |
| <ul style="list-style-type: none"> Side-by-side mounting | Yes |
| Height | 85 mm |
| Width | 22.5 mm |
| Depth | 48 mm |
| Installation altitude / at height above sea level / maximum | 1 000 m |

Connections/ Terminals

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| Type of connectable conductor cross-sections | |
| <ul style="list-style-type: none"> for main contacts <ul style="list-style-type: none"> — solid — finely stranded / with core end processing at AWG conductors / for main contacts | <p>2x (1.5 ... 2.5 mm²), 2x (2.5 ... 6 mm²)</p> <p>2x (1 ... 2.5 mm²), 2x (2.5 ... 6 mm²), 1x 10 mm²</p> <p>2x (14 ... 10)</p> |
| Type of connectable conductor cross-sections | |
| <ul style="list-style-type: none"> for auxiliary and control contacts <ul style="list-style-type: none"> — solid — finely stranded / with core end processing — finely stranded / without core end processing at AWG conductors / for auxiliary and control contacts | <p>1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.0 mm²)</p> <p>1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.0 mm²)</p> <p>1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.0 mm²)</p> <p>1x (AWG 20 ... 12)</p> |
| Tightening torque | |
| <ul style="list-style-type: none"> for main contacts / with screw-type terminals for auxiliary and control contacts / with screw-type terminals | <p>2 ... 2.5 N·m</p> <p>0.5 ... 0.6 N·m</p> |
| Tightening torque [lbf·in] | |
| <ul style="list-style-type: none"> for main contacts / with screw-type terminals | 7 ... 10.3 lbf·in |

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| <ul style="list-style-type: none"> • for auxiliary and control contacts / with screw-type terminals | 4.5 ... 5.3 lbf-in |
| Design of the thread / of the connection screw <ul style="list-style-type: none"> • for main contacts • of the auxiliary and control contacts | M4 M3 |
| Wire stripping length / of the cable <ul style="list-style-type: none"> • for main contacts • for auxiliary and control contacts | 7 mm 7 mm |

Ambient conditions

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| Ambient temperature <ul style="list-style-type: none"> • during operation • during storage | -25 ... +60 °C -55 ... +80 °C |
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Electromagnetic compatibility

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| Conducted interference <ul style="list-style-type: none"> • due to burst / acc. to IEC 61000-4-4 • due to conductor-earth surge / acc. to IEC 61000-4-5 • due to conductor-conductor surge / acc. to IEC 61000-4-5 • due to high-frequency radiation / acc. to IEC 61000-4-6 | 2 kV / 5 kHz behavior criterion 2 2 kV behavior criterion 2 1 kV behavior criterion 2 140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1 |
| Electrostatic discharge / acc. to IEC 61000-4-2 | 4 kV contact discharging / 8 kV air discharging, behavior criterion 2 |
| Conducted HF-interference emissions / acc. to CISPR11 | Class A for industrial environment |
| Field-bound HF-interference emission / acc. to CISPR11 | Class B for the domestic, business and commercial environments |

Short-circuit protection, design of the fuse link

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| Manufacturer's article number <ul style="list-style-type: none"> • of full range R fuse link for semiconductor protection / at NH design • of back-up R fuse link for semiconductor protection / at NH design • of back-up R fuse link for semiconductor protection / at cylindrical design 22 x 58 mm | 3NE1021-2 3NE8021-1 3NC2280; These fuses have a smaller rated current than the semiconductor relays |
| Manufacturer's article number / of the gG fuse <ul style="list-style-type: none"> • at NH design • at cylindrical design 22 x 58 mm | 3NA6812; These fuses have a smaller rated current than the semiconductor relays 3NW6212-1; These fuses have a smaller rated current than the semiconductor relays |
| Manufacturer's article number <ul style="list-style-type: none"> • of DIAZED fuse | 5SB4111; These fuses have a smaller rated current than the semiconductor relays |

- of NEOZED fuse

5SE2335; These fuses have a smaller rated current than the semiconductor relays

Further information

Information- and Downloadcenter (Catalogs, Brochures,...)

<https://www.siemens.com/ic10>

Industry Mall (Online ordering system)

<https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF2190-1AA24>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF2190-1AA24>

Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

<https://support.industry.siemens.com/cs/ww/en/ps/3RF2190-1AA24>

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF2190-1AA24&lang=en





