SIEMENS

Data sheet

3RF21 50-1AA04



SEMICONDUCTOR RELAY 3RF2, 1-PH. WIDTH 22.5MM, 50 A 48-460 V / 24 V DC SCREW TERMINAL

| General technical data: | |
|---|------------------------|
| product brand name | SIRIUS |
| Product designation | solid-state relay |
| Product function | zero-point switching |
| Number of poles for main current circuit | 1 |
| Protection class IP | IP20 |
| Product designation _1 of the accessories that can be ordered | terminal cover |
| Manufacturer article number _1 of the accessories that can be ordered | <u>3RF2900-3PA88</u> |
| Product designation _2 of the accessories that can be ordered | power regulator |
| Manufacturer article number _2 of the accessories that can be ordered | <u>3RF2950-0HA16</u> |
| Product designation _3 of the accessories that can be ordered | converter |
| Manufacturer article number _3 of the accessories that can be ordered | <u>3RF2900-0EA18</u> |
| Product designation _4 of the accessories that can be ordered | load monitoring |
| Manufacturer article number _4 of the accessories that can be ordered | <u>3RF2950-0GA16</u> |
| Product designation _5 of the accessories that can be ordered | load monitoring, basis |
| Manufacturer article number _5 of the accessories that can be ordered | <u>3RF2920-0FA08</u> |
| Ambient temperature | |

| • during storage *C -55 +80 Installation altitude at height above sea level maximum m 1000 Vibration resistance acc. to IEC 60068-2-6 2g Shock resistance acc. to IEC 60068-2-7 15g / 11 ms Equipment marking acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750 K Equipment marking acc. to DIN EN 61346-2 Q Number of NC contacts for auxiliary contacts 0 Number of NO contacts for auxiliary contacts 0 Number of NO contacts for main contacts 0 Operating current 1 • Rated value maximum A 50 • at AC-51 Rated value A 50 Operating outrage with AC v 48 460 • at 60 Hz Rated value V 48 460 • at 60 Hz V 40 506 Operating range relative to the operating voltage with AC 10 • at 50 Hz V 40 506 • at 60 Hz V 40 506 Operating range relative to the operating voltage with AC 100 • at 60 Hz V 40 506 Operating frequency Rated value V | during operation | °C | -25 +60 |
|---|---|------|-------------|
| maximumImage: set of the set o | • during storage | °C | -55 +80 |
| Vibration resistance acc. to IEC 60068-2-6 2g Shock resistance acc. to IEC 60068-2-7 15g / 11 ms Equipment marking acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750 K Equipment marking acc. to DIN 80 61346-2 Q Number of NC contacts for auxiliary contacts 0 Number of NC contacts for auxiliary contacts 0 Mumber of NC contacts for auxiliary contacts 0 Mumber of NC contacts for main contacts 1 Number of NC contacts for main contacts 0 Number of NC contacts for main contacts 0 Operating current A 50 • Rated value maximum A 50 • at C-51 Rated value V 48 460 • at 60 Hz Rated value V 48 460 • at 60 Hz Rated value V 48 460 • at 60 Hz V 40 506 • at 60 Hz V 40 506 • at 60 Hz V 40 506 • at 60 Hz V 600 Relative symmetrical tolerance of the operating roticals V insulation voltage Rated value V 600 Relative symmetrical tolerance of the operating maximum permissible V 600 Reverse current of the thyristor for main contacts maximum permissible | Installation altitude at height above sea level | m | 1 000 |
| Shock resistance acc. to IEC 60068-2-27 15g / 11 ms Equipment marking acc. to DIN 40719 extended according to IEC 204-2 acc. to IEC 750 K Equipment marking acc. to DIN EN 61346-2 Q Number of NC contacts for auxiliary contacts 0 Number of NC contacts for auxiliary contacts 0 Number of NC contacts for main contacts 1 Number of NC contacts for main contacts 0 Operating current 0 • Rated value maximum A 50 • at AC-51 Rated value A 50 • at 60 Hz Rated value V 48 460 Operating voltage with AC - - • at 60 Hz Rated value V 48 460 Operating range relative to the operating voltage with AC - - • at 60 Hz Rated value V 48 460 - • at 60 Hz V 40 506 - • at 60 Hz V 40 506 - • at 60 Hz V <t< th=""><th>maximum</th><th></th><th></th></t<> | maximum | | |
| Equipment marking acc. to DIN 40719 extended K according to IEC 204-2 acc. to IEC 750 Q Equipment marking acc. to DIN EN 81348-2 Q Number of NC contacts for auxiliary contacts 0 Number of CO contacts for auxiliary contacts 0 Number of CO contacts for auxiliary contacts 0 Mumber of NC contacts for main contacts 1 Number of NC contacts for main contacts 0 Operating current 0 • Rated value maximum A 50 • at 30 Hz Rated value A 50 • at 60 Hz Rated value V 48 460 • or 50 Hz V 40 506 • at 50 Hz V 40 506 • at 50 Hz V 40 506 • at 60 Hz V 40 506 Operating frequency Rated value V 40 506 • at 60 Hz V 40 506 • at 60 Hz V 40 506 Operating frequency Rated value V 40 506 Insulation voltage Rated value V 600 Relative symmetrical tolerance of the operating montacts | Vibration resistance acc. to IEC 60068-2-6 | | 2g |
| according to IEC 204-2 acc. to IEC 750QEquipment marking acc. to DIN EN 61346-2QNumber of NC contacts for auxiliary contacts0Number of NC contacts for auxiliary contacts0Mumber of NC contacts for auxiliary contacts0Mumber of NC contacts for main contacts1Number of NC contacts for main contacts0Operating current0• Rated value maximumA• Rated value maximumA• at 3C-51 Rated valueV• at 60 Hz Rated valueV• at 50 Hz Rated valueV• at 50 HzV• at 50 HzV• at 60 HzV <td< th=""><th>Shock resistance acc. to IEC 60068-2-27</th><th></th><th>15g / 11 ms</th></td<> | Shock resistance acc. to IEC 60068-2-27 | | 15g / 11 ms |
| Equipment marking acc. to DIN EN 61346-2 Q Number of NC contacts for auxiliary contacts 0 Number of NO contacts for auxiliary contacts 0 Number of CO contacts for main contacts 0 Number of NO contacts for main contacts 0 Number of NC contacts for main contacts 1 Number of NC contacts for main contacts 0 Operating current 0 • Rated value maximum A • Rated value maximum A • at AC-51 Rated value A • at 50 Hz V • at 60 Hz V Operating range relative to the operating voltage with AC - • at 50 Hz V 40 506 • at 60 Hz V 40 506 Operating frequency Rated value Hz 50 60 Relative symmetrical tolerance of the operating frequency 10 Insulation voltage fise at the thyristor for main contacts maximum permissible V 400 | | | К |
| Number of NC contacts for auxiliary contacts 0 Number of NO contacts for auxiliary contacts 0 Number of CO contacts for auxiliary contacts 0 Main circuit: 0 Number of NC contacts for main contacts 1 Number of NC contacts for main contacts 0 Operating current 0 • at AC-51 Rated value maximum A • at AC-51 Rated value A • at 60 Hz Rated value V • at 60 Hz Rated value V • at 60 Hz Rated value V • at 60 Hz V <th>-</th> <th></th> <th></th> | - | | |
| Number of NO contacts for auxiliary contacts0Number of CO contacts for auxiliary contacts0Main circuit:Number of NC contacts for main contacts1Number of NC contacts for main contacts0Operating current4• Rated value maximumA• Rated value maximumA• at AC-51 Rated valueA• or at AC-51 Rated valueV• at at O-Hz Rated valueV• at 50 HzV• at 60 Hz Rated valueV• at 60 Hz Rated valueV• at 60 HzV• at 60 HzV< | | | Q |
| Number of CO contacts for auxiliary contacts0Main circuit:1Number of NC contacts for main contacts1Number of NC contacts for main contacts0Operating current0• Rated value maximumA50• at AC-51 Rated valueA50• origina voltage with AC•• at 50 Hz Rated valueV48 460• at 60 Hz Rated valueV48 460Operating range relative to the operating voltage with AC•• at 50 HzV40 506• at 60 HzV40 506Operating frequency Rated valueV40 506Operating frequency Rated valueV600Relative symmetrical tolerance of the operating requency10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV1200Blocking voltage at the thyristor for main contacts maximum permissibleV100Blocking voltage at the thyristormA10Derating temperature°C4040Active power loss total typicalW66Apparent power loss maximumV-A66 | - | | 0 |
| Main circuit: 1 Number of NC contacts for main contacts 0 Operating current 0 • Rated value maximum A • at AC-51 Rated value A • minimum mA • operating voltage with AC 0 • at 50 Hz Rated value V 48 460 • at 60 Hz Rated value V 48 460 Operating range relative to the operating voltage with AC 0 • at 50 Hz V 48 460 Operating range relative to the operating voltage with AC 0 • at 50 Hz V 40 506 • at 60 Hz V 40 506 Operating frequency Rated value Hz 50 60 Relative symmetrical tolerance of the operating frequency 10 Insulation voltage Rated value V 600 Rate of voltage rise at the thyristor for main contacts maximum permissible V 1000 Blocking voltage at the thyristor for main contacts maximum permissible V 1200 Reverse current of the thyristor mA 10 Derating temperature °C 40 Active power los | | | |
| Number of NC contacts for main contacts 1 Number of NC contacts for main contacts 0 Operating current 0 • Rated value maximum A • Rated value maximum A • at AC-51 Rated value A • minimum mA 0 500 Operating voltage with AC | Number of CO contacts for auxiliary contacts | | 0 |
| Number of NC contacts for main contacts 1 Number of NC contacts for main contacts 0 Operating current 0 • Rated value maximum A • Rated value maximum A • at AC-51 Rated value A • minimum mA 0 500 Operating voltage with AC | Main circuit: | | |
| Operating currentA50• Rated value maximumA50• at AC-51 Rated valueA500• minimummA500Operating voltage with AC-• at 50 Hz Rated valueV48 460• at 50 Hz Rated valueV48 460• at 60 Hz Rated valueV48 460Operating range relative to the operating voltage with AC-• at 50 HzV40 506• at 50 HzV40 506• at 50 HzV40 506• at 60 HzV40 506Operating frequency Rated valueHz50 60Relative symmetrical tolerance of the operating frequency100Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV1 200Blocking voltage at the thyristor for main contactsV1 200maximum permissibleC4040Active power loss total typicalW66Apparent power loss maximumV·A66 | | | 1 |
| • Rated value maximumA50• at AC-51 Rated valueA50• minimummA500Operating voltage with AC•• at 50 Hz Rated valueV48 460• at 60 Hz Rated valueV48 460Operating range relative to the operating voltage with AC-• at 50 HzV40 506Operating frequency Rated valueV40 506Operating frequency Rated valueHz50 60Relative symmetrical tolerance of the operating requency%600Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV1 200Blocking voltage at the thyristor for main contactsV1 00maximum permissibleM10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV:A66 | Number of NC contacts for main contacts | | 0 |
| Index of instantialA50• at AC-51 Rated valuemA500Operating voltage with AC•• at 50 Hz Rated valueV48 460• at 60 Hz Rated valueV48 460Operating range relative to the operating voltage with ACV48 460• at 50 HzV40 506• at 50 HzV40 506• at 50 HzV40 506• at 50 HzV40 506Operating frequency Rated valueHz50 60Relative symmetrical tolerance of the operating frequency%10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV1 200Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature Active power loss total typicalW66Apparent power loss maximumV-A66 | Operating current | | |
| • minimummA500Operating voltage with AC-• at 50 Hz Rated valueV• at 60 Hz Rated valueV• at 60 Hz Rated valueV• at 50 HzV• at 60 HzV• at 50 HzV• at 50 HzV• at 60 HzV <th> Rated value maximum </th> <th>А</th> <th>50</th> | Rated value maximum | А | 50 |
| Immune Operating voltage with ACV48 460• at 50 Hz Rated valueV48 460• at 60 Hz Rated valueV48 460Operating range relative to the operating voltage with ACV48 460• at 50 HzV40 506• at 60 HzV40 506• at 60 HzV40 506Operating frequency Rated valueHz50 60Relative symmetrical tolerance of the operating frequency%10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/µs1 200Blocking voltage at the thyristor for main contacts maximum permissibleV66Active power loss total typicalW66Apparent power loss maximumV/A66 | ● at AC-51 Rated value | А | 50 |
| • at 50 Hz Rated valueV48 460• at 60 Hz Rated valueV48 460Operating range relative to the operating voltage with ACV40 506• at 50 HzV40 506• at 60 HzV40 506Operating frequency Rated valueHz50 60Relative symmetrical tolerance of the operating frequency%10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/µs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalV/A66Apparent power loss maximumV/A66 | • minimum | mA | 500 |
| • at 50 Hz Rated valueV48 460• at 60 Hz Rated valueV48 460Operating range relative to the operating voltage with ACV40 506• at 50 HzV40 506• at 60 HzV40 506Operating frequency Rated valueHz50 60Relative symmetrical tolerance of the operating frequency%10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/µs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalV/A66Apparent power loss maximumV/A66 | Operating voltage with AC | - | |
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| Operating range relative to the operating voltage with ACV40506• at 50 HzV40506• at 60 HzV40506Operating frequency Rated valueHz5060Relative symmetrical tolerance of the operating frequency%10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/µs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalV'A66Apparent power loss maximumV'A66 | • at 60 Hz Rated value | V | 48 460 |
| ACV40 506• at 50 HzV40 506• at 60 HzV40 506Operating frequency Rated valueHz50 60Relative symmetrical tolerance of the operating frequency%10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/µs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | | _ | |
| • at 60 HzV40 506Operating frequency Rated valueHz50 60Relative symmetrical tolerance of the operating frequency%10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/µs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | AC | | |
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| Relative symmetrical tolerance of the operating frequency%10Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/µs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalV'A66Apparent power loss maximumV'A66 | • at 60 Hz | V | 40 506 |
| frequencyInsulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/μs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | Operating frequency Rated value | Hz | 50 60 |
| Insulation voltage Rated valueV600Rate of voltage rise at the thyristor for main contacts maximum permissibleV/μs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | Relative symmetrical tolerance of the operating | % | 10 |
| Rate of voltage rise at the thyristor for main contacts maximum permissibleV/µs1 000Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | frequency | | |
| maximum permissibleImage: Constraint of the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | Insulation voltage Rated value | V | 600 |
| Blocking voltage at the thyristor for main contacts maximum permissibleV1 200Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | C F | V/µs | 1 000 |
| maximum permissiblemA10Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | | | |
| Reverse current of the thyristormA10Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | | V | 1 200 |
| Derating temperature°C40Active power loss total typicalW66Apparent power loss maximumV·A66 | | | 10 |
| Active power loss total typical W 66 Apparent power loss maximum V·A 66 | | | |
| Apparent power loss maximum V·A 66 | • | _ | |
| | | | |
| | | | |
| | - | | |
| | | A∹s | |
| Short-circuit protection, design of the fuse link | Short-circuit protection, design of the fuse link | | |
| Control circuit/ Control: | Control circuit/ Control: | | |
| Type of voltage of the control supply voltage DC | Type of voltage of the control supply voltage | | DC |

| Control supply voltage 1 | | |
|---|----|----|
| • for DC | | |
| — Initial rated value | V | 15 |
| — Final rated value | V | 24 |
| Control supply voltage | | |
| for DC Full-scale value for signal<0> recognition | V | 5 |
| Control current | | |
| at minimum control supply voltage | | |
| — for DC | mA | 2 |
| • for DC Rated value | mA | 15 |

Installation/ mounting/ dimensions:

| matanation/ mounting/ amenaiona. | | |
|--|-----|--------------|
| Mounting type | | screw fixing |
| Mounting type Side-by-side mounting | | Yes |
| Design of the thread of the screw for securing the equipment | | M4 |
| Tightening torque of the screw for securing the equipment | N∙m | 1.5 |
| Width | mm | 22.5 |
| Height | mm | 85 |
| Depth | mm | 48 |

| Connections/ Terminals: | | |
|--|--------|---|
| Type of electrical connection for main current circuit | | screw-type terminals |
| Design of the thread of the connection screw for main contacts | | M4 |
| Tightening torque for main contacts with screw-type terminals | N∙m | 2 2.5 |
| Tightening torque [lbf·in] for main contacts with screw-type terminals | lbf∙in | 7 10.3 |
| Type of connectable conductor cross-section | | |
| for main contacts | | |
| — solid | | 2x (1.5 2.5 mm²), 2x (2.5 6 mm²) |
| — finely stranded | | |
| — with core end processing | | 2x (1 2.5 mm²), 2x (2.5 6 mm²), 1x 10 mm² |
| for AWG conductors | | |
| — for main contacts | | 2x (14 10) |
| — for auxiliary and control contacts | | 1x (AWG 20 12) |
| for auxiliary and control contacts | | |
| — solid | | 1x (0.5 2.5 mm²), 2x (0.5 1.0 mm²) |
| — finely stranded | | |
| — with core end processing | | 1x (0.5 2.5 mm²), 2x (0.5 1.0 mm²) |
| — without core end processing | | 1x (0.5 2.5 mm²), 2x (0.5 1.0 mm²) |

| Connectable conductor cross-section | | |
|---|--------|----------------------|
| for main contacts | | |
| — single or multi-stranded | mm² | 1.5 6 |
| — finely stranded | | |
| — with core end processing | mm² | 1 10 |
| for auxiliary and control contacts | | |
| — solid | mm² | 0.5 2.5 |
| — finely stranded | | |
| — with core end processing | mm² | 0.5 2.5 |
| - without core end processing | mm² | 0.5 2.5 |
| AWG number as coded connectable conductor cross | | 14 10 |
| section for main contacts | | |
| Type of electrical connection for auxiliary and control current circuit | | screw-type terminals |
| Design of the thread of the connection screw of the | | МЗ |
| auxiliary and control contacts | | |
| AWG number as coded connectable conductor cross | | 20 12 |
| section for auxiliary and control contacts | | |
| Wire stripping length of the cable | | |
| for main contacts | mm | 7 |
| for auxiliary and control contacts | mm | 7 |
| Tightening torque for auxiliary and control contacts | N∙m | 0.5 0.6 |
| with screw-type terminals | | |
| Tightening torque [lbf·in] for auxiliary and control | lbf∙in | 4.5 5.3 |
| contacts with screw-type terminals | | |

Certificates/ approvals:

| 0 | ertineatee, appre | vale. | | | | |
|---|-------------------|-------------------|-----|--------|----------------|--|
| | General Produ | ct Approval | | EMC | Declaration of | Test |
| | | | | | Conformity | Certificates |
| | SP CSA | GAU® UR | EHE | С-тіск | EG-Konf. | <u>Type Test</u> Certificates/Test <u>Report</u> |

| Test Certificates | other |
|----------------------|---------------|
| Special Test | Environmental |
| Certificate | Confirmations |

Further information

Information- and Downloadcenter (Catalogs, Brochures,...) http://www.siemens.com/industrial-controls/catalogs

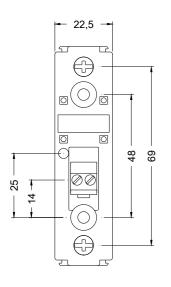
Industry Mall (Online ordering system) http://www.siemens.com/industrymall

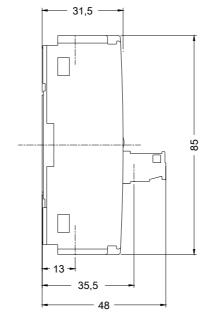
Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF21501AA04

Service&Support (Manuals, Certificates, Characteristics, FAQs,...) http://support.automation.siemens.com/WW/view/en/3RF21501AA04/all

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...) http://www.automation.siemens.com/bilddb/index.aspx?attlD9=3RF21501AA04&lang=en





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