SIEMENS

## Data sheet 3RF3412-1BB04

Solid-state contactor 3-phase 3RF3 AC 53 / 12.5 A / 40 °C 48-480 V / 24 V DC 2-phase controlled Instantaneous switching screw terminal


| | |
|---|---|
| **Product brand name** | SIRIUS |
| **Product designation** | solid-state contactor |
| **Product type designation** | 3RF34 |
| **Manufacturer's article number** | |
| • _1 / of the accessories that can be ordered | 3RA2921-1BA00 |
| • _2 / of the accessories that can be ordered | 3RF3900-0QA88 |
| **Product designation** | |
| • _1 / of the accessories that can be ordered | Link module |
| • _2 / of the accessories that can be ordered | Connection adapter |

| General technical data | |
|---|---|
| **Product function** | instantaneous switching |
| Power loss [W] / for rated value of the current / at AC / in hot operating state | 22 W |
| **Insulation voltage** | |
| • rated value | 600 V |
| **Protection class IP** | IP20 |
| Shock resistance / acc. to IEC 60068-2-27 | 15g / 11 ms |
| Vibration resistance / acc. to IEC 60068-2-6 | 2g |

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| **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

| | |
|---|---|
| **Number of poles / for main current circuit** | 3 |
| **Number of NO contacts / for main contacts** | 2 |
| **Number of NC contacts / for main contacts** | 0 |
| Operating voltage / at AC | |
| • at 50 Hz / rated value | 48 ... 480 V |
| • at 60 Hz / rated value | 48 ... 480 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 / minimum** | 500 mA |
| **Operating current** | |
| • at AC-3 / at 400 V / rated value | 12.5 A |
| • at AC-53a / at 400 V / at ambient temperature 40 °C / rated value | 12.5 A |
| **Operating power** | |
| • at AC-3 / at 400 V / rated value | 5.5 kW |
| **Rate of voltage rise / at the thyristor / for main contacts / maximum permissible** | 1 000 V/µs |
| **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** | 1 200 A |
| **I2t value / maximum** | 7 200 A²·s |

## Control circuit/ Control

| | |
|---|---|
| **Type of voltage / of the control supply voltage** | DC |
| **Control supply voltage / 1** | |
| • at DC / rated value | 24 V |
| **Control supply voltage** | |
| • at DC / initial value for signal <1> detection | 15 V |
| • at DC / Full-scale value for signal<0> recognition | 5 V |
| **Symmetrical line frequency tolerance** | 5 Hz |

| | |
|---|---|
| **Operating range factor control supply voltage rated value / at DC** | |
| • initial value | 0.63 |
| • Full-scale value | 1.25 |
| **Control current / at minimum control supply voltage** | |
| • at DC | 2 mA |
| Control current / at DC / rated value | 15 mA |
| **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

| | |
|---|---|
| **Mounting position** | vertical |
| **Mounting type** | screw and snap-on mounting onto 35 mm standard mounting rail |
| • Side-by-side mounting | Yes |
| **Height** | 95 mm |
| **Width** | 90 mm |
| **Depth** | 100.8 mm |
| Required spacing / with side-by-side mounting | |
| • upwards | 70 mm |
| • downwards | 50 mm |
| **Installation altitude / at height above sea level / maximum** | 1 000 m |

## Connections/ Terminals

| | |
|---|---|
| Product function / removable terminal for auxiliary and control circuit | Yes |
| Type of electrical connection | |
| • for main current circuit | screw-type terminals |
| • for auxiliary and control current circuit | screw-type terminals |
| **Type of connectable conductor cross-sections** | |
| • 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 |
| • at AWG conductors / for main contacts | 2x (14 ... 10) |
| **Type of connectable conductor cross-sections** | |
| • 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) |
| — finely stranded / without core end processing | 1x (0.5 ... 2.5 mm²), 2x (0.5 ... 1.0 mm²) |
| • at AWG conductors / for auxiliary and control contacts | 1x (AWG 20 ... 12) |

| | |
|---|---|
| Tightening torque / for main contacts / with screw-type terminals | 2 ... 2.5 N·m |
| **Tightening torque / for auxiliary and control contacts / with screw-type terminals** | 0.5 ... 0.6 N·m |
| **Tightening torque [lbf·in]** | |
| • for main contacts / with screw-type terminals | 18 ... 22 lbf·in |
| • for auxiliary and control contacts / with screw-type terminals | 7.5 ... 5.3 lbf·in |
| **Design of the thread / of the connection screw** | |
| • for main contacts | M4 |
| • of the auxiliary and control contacts | M3 |
| **Wire stripping length / of the cable** | |
| • for main contacts | 7 mm |
| • for auxiliary and control contacts | 7 mm |

## UL/CSA ratings

| | |
|---|---|
| **Full-load current (FLA) / for three-phase AC motor** | |
| • at 480 V / rated value | 7.6 A |
| Yielded mechanical performance [hp] / for three-phase AC motor | |
| • at 200/208 V / rated value | 2 hp |
| • at 220/230 V / rated value | 2 hp |
| • at 460/480 V / rated value | 5 hp |

## Safety related data

| | |
|---|---|
| Proportion of dangerous failures / with high demand rate / acc. to SN 31920 | 50 % |
| **MTTF / with high demand rate** | 76 y |
| **T1 value / for proof test interval or service life / acc. to IEC 61508** | 20 y |

## Ambient conditions

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|---|---|
| **Ambient temperature** | |
| • during operation | -25 ... +60 °C |
| • during storage | -55 ... +80 °C |

## Electromagnetic compatibility

| | |
|---|---|
| **Conducted interference** | |
| • due to burst / acc. to IEC 61000-4-4 | 2 kV / 5 kHz behavior criterion 2 |
| • due to conductor-earth surge / acc. to IEC 61000-4-5 | 2 kV behavior criterion 2 |
| • due to conductor-conductor surge / acc. to IEC 61000-4-5 | 1 kV behavior criterion 2 |
| • due to high-frequency radiation / acc. to IEC 61000-4-6 | 140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1 |

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| **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 A for industrial environment |

## Further information

**Information- and Downloadcenter (Catalogs, Brochures,…)**
www.siemens.com/sirius/catalogs

**Industry Mall (Online ordering system)**
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RF3412-1BB04

**Cax online generator**
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RF3412-1BB04

**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3RF3412-1BB04

**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RF3412-1BB04&lang=en

**Short-circuit protection, design of the fuse link**
https://www.automation.siemens.com/cd-static/material/info/3RF20_eng.pdf

**Short-circuit protection, design of the fuse link**
https://www.automation.siemens.com/cd-static/material/info/3RF21_eng.pdf

**Short-circuit protection, design of the fuse link**
https://www.automation.siemens.com/cd-static/material/info/3RF22_eng.pdf

**Short-circuit protection, design of the fuse link**
https://www.automation.siemens.com/cd-static/material/info/3RF23_eng.pdf

**Short-circuit protection, design of the fuse link**
https://www.automation.siemens.com/cd-static/material/info/3RF24_eng.pdf