SIEMENS

## Data sheet 3RT2016-1AP02

CONTACTOR, AC-3, 4KW/400V, 1NC, AC 230V, 50/60 HZ, 3-POLE, SZ S00 SCREW TERMINAL


| | |
|---|---|
| **product brandname** | SIRIUS |
| **Product designation** | Power contactor |
| **Product type designation** | 3RT2 |

| General technical data | |
|---|---|
| **Size of contactor** | S00 |
| **Product extension** | |
| • function module for communication | No |
| • Auxiliary switch | Yes |
| **Insulation voltage** | |
| • rated value | 690 V |
| **Surge voltage resistance rated value** | 6 kV |
| **maximum permissible voltage for safe isolation** | |
| • between coil and main contacts acc. to EN 60947-1 | 400 V |
| **Protection class IP** | |
| • on the front | IP20 |
| • of the terminal | IP20 |
| **Shock resistance at rectangular impulse** | |
| • at AC | 6,7g / 5 ms, 4,2g / 10 ms |

| | |
|---|---|
| **Shock resistance with sine pulse** | |
| • at AC | 10,5g / 5 ms, 6,6g / 10 ms |
| **Mechanical service life (switching cycles)** | |
| • of contactor typical | 30 000 000 |
| • of the contactor with added electronics-compatible auxiliary switch block typical | 5 000 000 |
| • of the contactor with added auxiliary switch block typical | 10 000 000 |

## Ambient conditions

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

## Main circuit

| | |
|---|---|
| **Number of poles for main current circuit** | 3 |
| **Number of NO contacts for main contacts** | 3 |
| **Operating voltage** | |
| • at AC-3 rated value maximum | 690 V |
| **Operating current** | |
| • at AC-1 at 400 V | |
| — at ambient temperature 40 °C rated value | 22 A |
| • at AC-1 | |
| — up to 690 V at ambient temperature 40 °C rated value | 22 A |
| — up to 690 V at ambient temperature 60 °C rated value | 20 A |
| • at AC-2 at 400 V rated value | 9 A |
| • at AC-3 | |
| — at 400 V rated value | 9 A |
| — at 500 V rated value | 7.7 A |
| — at 690 V rated value | 6.7 A |
| **Connectable conductor cross-section in main circuit at AC-1** | |
| • at 60 °C minimum permissible | 2.5 mm² |
| • at 40 °C minimum permissible | 4 mm² |
| **Operating current for approx. 200000 operating cycles at AC-4** | |
| • at 400 V rated value | 4.1 A |
| • at 690 V rated value | 3.3 A |
| **Operating current** | |
| • at 1 current path at DC-1 | |
| — at 24 V rated value | 20 A |
| — at 110 V rated value | 2.1 A |

| | |
|---|---|
| — at 220 V rated value | 0.8 A |
| — at 440 V rated value | 0.6 A |
| — at 600 V rated value | 0.6 A |
| • with 2 current paths in series at DC-1 | |
| — at 24 V rated value | 20 A |
| — at 110 V rated value | 12 A |
| — at 220 V rated value | 1.6 A |
| — at 440 V rated value | 0.8 A |
| — at 600 V rated value | 0.7 A |
| • with 3 current paths in series at DC-1 | |
| — at 24 V rated value | 20 A |
| — at 110 V rated value | 20 A |
| — at 220 V rated value | 20 A |
| — at 440 V rated value | 1.3 A |
| — at 600 V rated value | 1 A |
| **Operating current** | |
| • at 1 current path at DC-3 at DC-5 | |
| — at 24 V rated value | 20 A |
| — at 110 V rated value | 0.1 A |
| • with 2 current paths in series at DC-3 at DC-5 | |
| — at 24 V rated value | 20 A |
| — at 110 V rated value | 0.35 A |
| • with 3 current paths in series at DC-3 at DC-5 | |
| — at 24 V rated value | 20 A |
| — at 110 V rated value | 20 A |
| — at 220 V rated value | 1.5 A |
| — at 440 V rated value | 0.2 A |
| — at 600 V rated value | 0.2 A |
| **Operating power** | |
| • at AC-1 | |
| — at 230 V rated value | 7.5 kW |
| — at 230 V at 60 °C rated value | 7.5 kW |
| — at 400 V rated value | 13 kW |
| — at 400 V at 60 °C rated value | 13 kW |
| — at 690 V rated value | 22 kW |
| — at 690 V at 60 °C rated value | 22 kW |
| • at AC-2 at 400 V rated value | 4 kW |
| • **at AC-3** | |
| — at 230 V rated value | 2.2 kW |
| — at 400 V rated value | 4 kW |
| — at 690 V rated value | 5.5 kW |

| | |
|---|---|
| **Operating power for approx. 200000 operating cycles at AC-4** | |
| • at 400 V rated value | 2 kW |
| • at 690 V rated value | 2.5 kW |
| **Thermal short-time current limited to 10 s** | 72 A |
| **Power loss [W] at AC-3 at 400 V for rated value of the operating current per conductor** | 0.7 W |
| **No-load switching frequency** | |
| • at AC | 10 000 1/h |
| **Operating frequency** | |
| • at AC-1 maximum | 1 000 1/h |
| • at AC-2 maximum | 750 1/h |
| • at AC-3 maximum | 750 1/h |
| • at AC-4 maximum | 250 1/h |

## Control circuit/ Control

| | |
|---|---|
| **Type of voltage of the control supply voltage** | AC |
| **Control supply voltage at AC** | |
| • at 50 Hz rated value | 230 V |
| • at 60 Hz rated value | 230 V |
| **Operating range factor control supply voltage rated value of magnet coil at AC** | |
| • at 50 Hz | 0.8 ... 1.1 |
| • at 60 Hz | 0.85 ... 1.1 |
| **Apparent pick-up power of magnet coil at AC** | |
| • at 50 Hz | 27 V·A |
| • at 60 Hz | 31.7 V·A |
| **Inductive power factor with closing power of the coil** | |
| • at 50 Hz | 0.8 |
| • at 60 Hz | 0.81 |
| **Apparent holding power of magnet coil at AC** | |
| • at 50 Hz | 4.2 V·A |
| • at 60 Hz | 4.8 V·A |
| **Inductive power factor with the holding power of the coil** | |
| • at 50 Hz | 0.25 |
| • at 60 Hz | 0.25 |
| **Closing delay** | |
| • at AC | 9 ... 35 ms |
| **Opening delay** | |
| • at AC | 3.5 ... 14 ms |
| **Arcing time** | 10 ... 15 ms |
| **Residual current of the electronics for control with signal <0>** | |

| | |
|---|---|
| • at AC at 230 V maximum permissible | 3 mA |
| • at DC at 24 V maximum permissible | 10 mA |

## Auxiliary circuit

| | |
|---|---|
| **Number of NC contacts** | |
| • for auxiliary contacts | |
| — instantaneous contact | 1 |
| Operating current at AC-12 maximum | 10 A |
| **Operating current at AC-15** | |
| • at 230 V rated value | 10 A |
| • at 400 V rated value | 3 A |
| • at 500 V rated value | 2 A |
| • at 690 V rated value | 1 A |
| **Operating current at DC-12** | |
| • at 24 V rated value | 10 A |
| • at 48 V rated value | 6 A |
| • at 60 V rated value | 6 A |
| • at 110 V rated value | 3 A |
| • at 125 V rated value | 2 A |
| • at 220 V rated value | 1 A |
| • at 600 V rated value | 0.15 A |
| **Operating current at DC-13** | |
| • at 24 V rated value | 10 A |
| • at 48 V rated value | 2 A |
| • at 60 V rated value | 2 A |
| • at 110 V rated value | 1 A |
| • at 125 V rated value | 0.9 A |
| • at 220 V rated value | 0.3 A |
| • at 600 V rated value | 0.1 A |
| **Contact reliability of auxiliary contacts** | 1 faulty switching per 100 million (17 V, 1 mA) |

## UL/CSA ratings

| | |
|---|---|
| **Full-load current (FLA) for three-phase AC motor** | |
| • at 480 V rated value | 7.6 A |
| • at 600 V rated value | 9 A |
| **Yielded mechanical performance [hp]** | |
| • for single-phase AC motor | |
| — at 110/120 V rated value | 0.33 hp |
| — at 230 V rated value | 1 hp |
| • for three-phase AC motor | |
| — at 200/208 V rated value | 2 hp |
| — at 220/230 V rated value | 3 hp |
| — at 460/480 V rated value | 5 hp |

| | |
|---|---|
| — at 575/600 V rated value | 7.5 hp |
| **Contact rating of auxiliary contacts according to UL** | A600 / Q600 |

## Short-circuit protection

| | |
|---|---|
| **Design of the fuse link** | |
| • for short-circuit protection of the main circuit | |
| — with type of coordination 1 required | gG NH 3NA, DIAZED 5SB, NEOZED 5SE: 35 A |
| — with type of assignment 2 required | gG NH 3NA, DIAZED 5SB, NEOZED 5SE: 20 A |
| • for short-circuit protection of the auxiliary switch required | fuse gG: 10 A |

## Installation/ mounting/ dimensions

| | |
|---|---|
| **Mounting position** | +/-180° rotation possible on vertical mounting surface; can be tilted forward and backward by +/- 22.5° on vertical mounting surface |
| **Mounting type** | screw and snap-on mounting onto 35 mm standard mounting rail according to DIN EN 60715 |
| • Side-by-side mounting | Yes |
| **Height** | 58 mm |
| **Width** | 45 mm |
| **Depth** | 73 mm |
| **Required spacing** | |
| • for grounded parts | |
| — at the side | 6 mm |
| • for live parts | |
| — at the side | 6 mm |

## Connections/Terminals

| | |
|---|---|
| **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 (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²), 2x 4 mm² |
| — single or multi-stranded | 2x (0,5 ... 1,5 mm²), 2x (0,75 ... 2,5 mm²), 2x 4 mm² |
| — finely stranded with core end processing | 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²) |
| • at AWG conductors for main contacts | 2x (20 ... 16), 2x (18 ... 14), 2x 12 |
| **Type of connectable conductor cross-sections** | |
| • for auxiliary contacts | |
| — single or multi-stranded | 2x (0,5 ... 1,5 mm²), 2x (0,75 ... 2,5 mm²), 2x 4 mm² |
| — finely stranded with core end processing | 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²) |
| • at AWG conductors for auxiliary contacts | 2x (20 ... 16), 2x (18 ... 14), 2x 12 |

## Safety related data

| | |
|---|---|
| **B10 value** | |

| | |
|---|---|
| • with high demand rate acc. to SN 31920 | 1 000 000 |
| **Proportion of dangerous failures** | |
| • with low demand rate acc. to SN 31920 | 40 % |
| • with high demand rate acc. to SN 31920 | 73 % |
| **Failure rate [FIT]** | |
| • with low demand rate acc. to SN 31920 | 100 FIT |
| **Product function** | |
| • Mirror contact acc. to IEC 60947-4-1 | Yes |
| **T1 value for proof test interval or service life acc. to IEC 61508** | 20 y |
| **Protection against electrical shock** | finger-safe |

## Certificates/approvals

| General Product Approval | | | | | Functional Safety/Safety of Machinery |
|---|---|---|---|---|---|
| CCC | CSA | UL | KC | EAC | Type Examination |

| Declaration of Conformity | Test Certificates | | Shipping Approval | | |
|---|---|---|---|---|---|
| EG-Konf. | Special Test Certificate | Type Test Certificates/Test Report | ABS | BUREAU VERITAS | GL |

| Shipping Approval | | | | other | |
|---|---|---|---|---|---|
| LRS | PRS | RINA | RMRS | Confirmation | Environmental Confirmations |

| other |
|---|
| VDE |

## Further information

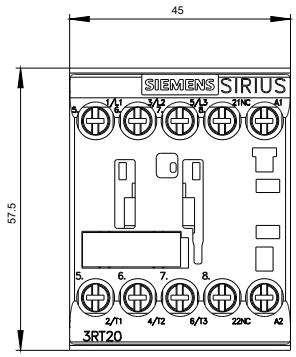
**Information- and Downloadcenter (Catalogs, Brochures,…)**
http://www.siemens.com/industrial-controls/catalogs

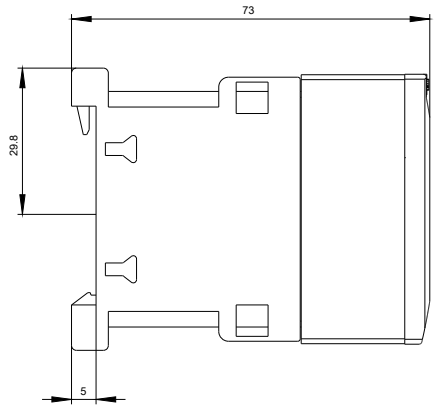
**Industry Mall (Online ordering system)**
https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RT2016-1AP02

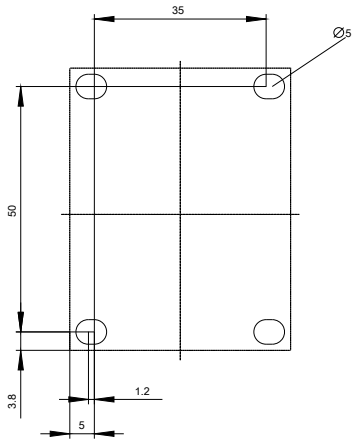
**Cax online generator**
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2016-1AP02

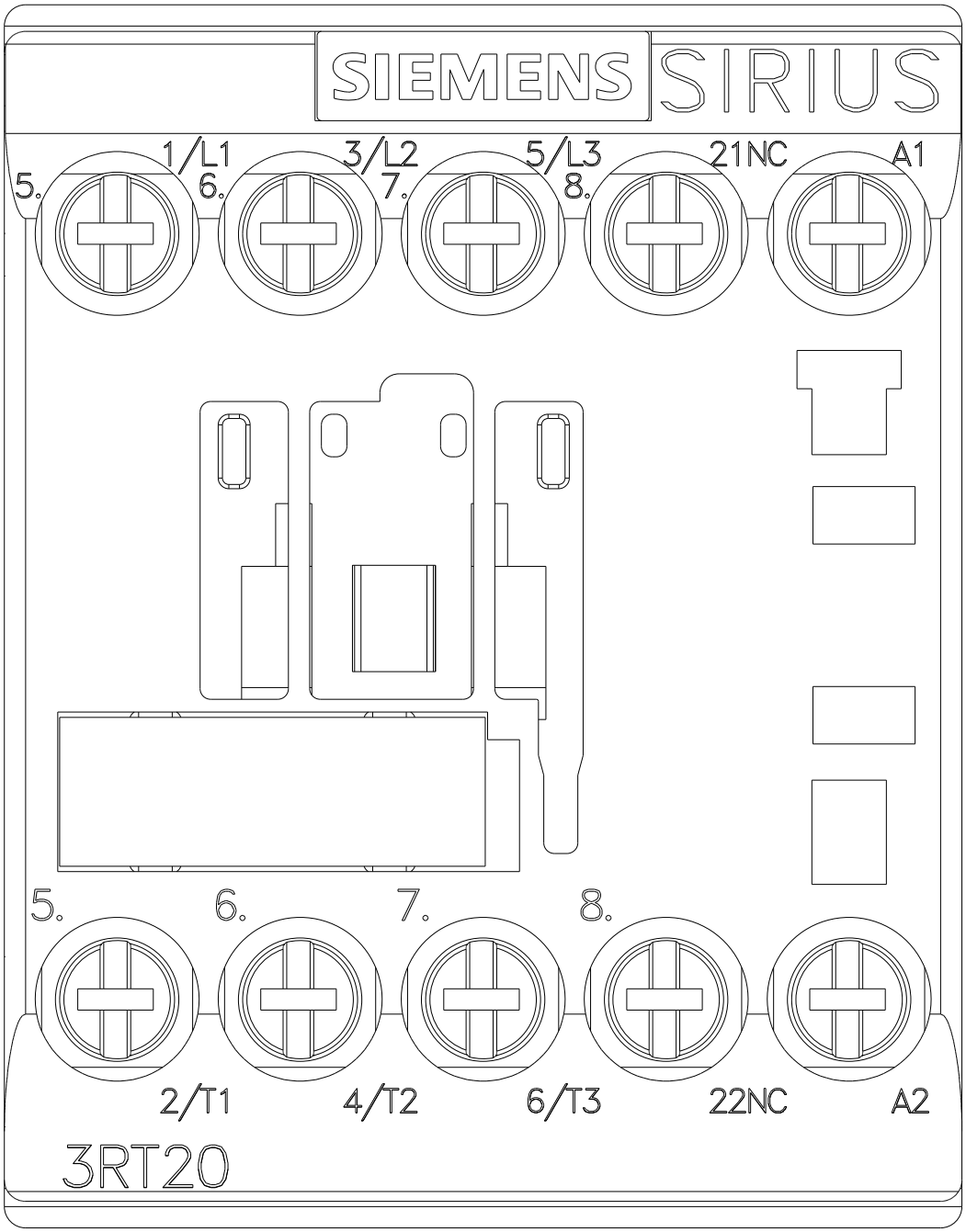
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3RT2016-1AP02

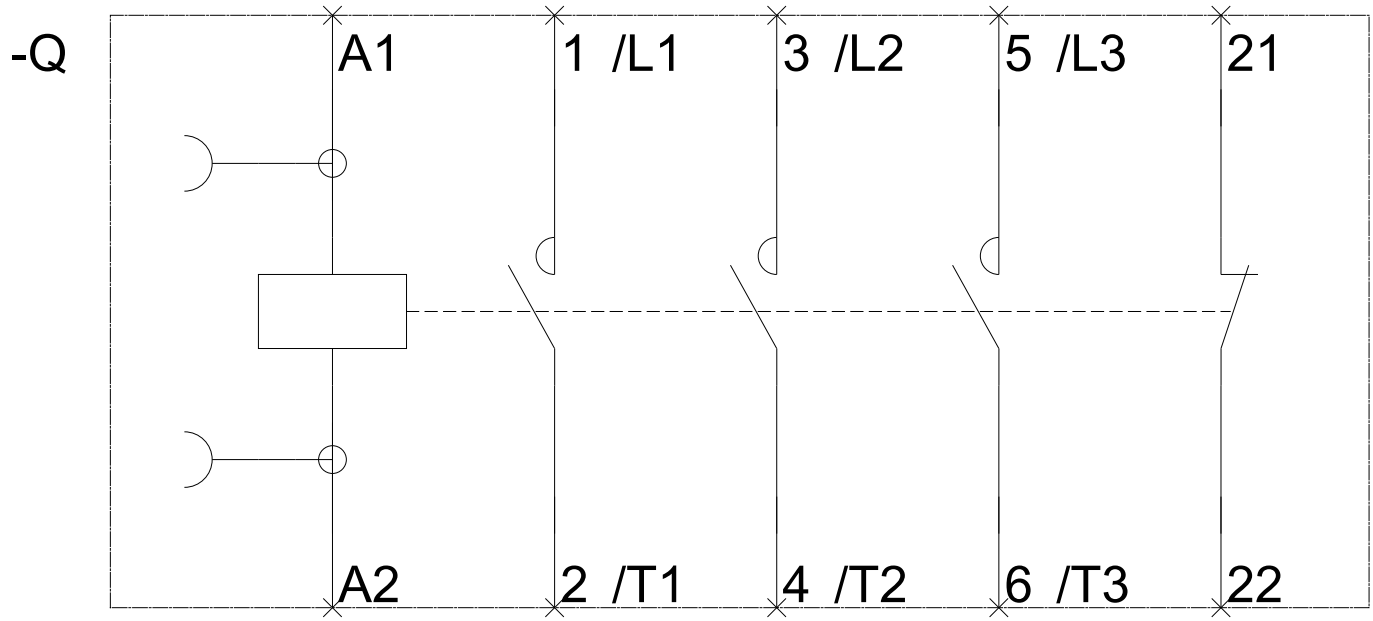
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2016-1AP02&lang=en





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