SIEMENS

## Data sheet 3RT2023-1DB44-3MA0

Power contactor, AC-3 9 A, 4 kW / 400 V 2 NO + 2 NC, 24 V DC with inserted varistor 3-pole, Size S0 Screw terminal Captive auxiliary switch


| | |
|---|---|
| **product brand name** | SIRIUS |
| **product designation** | Power contactor |
| **product type designation** | 3RT2 |

| General technical data | |
|---|---|
| **size of contactor** | S0 |
| **product extension** | |
| • function module for communication | No |
| • auxiliary switch | No |
| **power loss [W] for rated value of the current** | |
| • at AC in hot operating state | 1.2 W |
| • at AC in hot operating state per pole | 0.4 W |
| **power loss [W] for rated value of the current without load current share typical** | 5.9 W |
| **surge voltage resistance** | |
| • of main circuit rated value | 6 kV |
| • of auxiliary circuit 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 DC | 10g / 5 ms, 7,5g / 10 ms |
| **shock resistance with sine pulse** | |
| • at DC | 15g / 5 ms, 10g / 10 ms |
| **mechanical service life (switching cycles)** | |
| • of contactor typical | 10 000 000 |
| • 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 |
| **reference code acc. to DIN EN 81346-2** | Q |

## Ambient conditions

| | |
|---|---|
| • installation altitude at height above sea level maximum | 2 000 m |
| **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 | 40 A |
| • at AC-1 | |
| — up to 690 V at ambient temperature 40 °C rated value | 40 A |
| — up to 690 V at ambient temperature 60 °C rated value | 35 A |
| • at AC-3 | |
| — at 400 V rated value | 9 A |
| — at 500 V rated value | 9 A |
| — at 690 V rated value | 9 A |
| • at AC-4 at 400 V rated value | 8.5 A |
| • at AC-5a up to 690 V rated value | 35.2 A |
| • at AC-5b up to 400 V rated value | 7.4 A |
| • at AC-6a | |

| | |
|---|---|
| — up to 230 V for current peak value n=20 rated value | 11.4 A |
| — up to 400 V for current peak value n=20 rated value | 11.4 A |
| — up to 500 V for current peak value n=20 rated value | 9.1 A |
| — up to 690 V for current peak value n=20 rated value | 9 A |
| • at AC-6a | |
| — up to 230 V for current peak value n=30 rated value | 7.6 A |
| — up to 400 V for current peak value n=30 rated value | 7.6 A |
| — up to 500 V for current peak value n=30 rated value | 6.1 A |
| — up to 690 V for current peak value n=30 rated value | 6.1 A |
| **minimum cross-section in main circuit** | |
| • at maximum AC-1 rated value | 10 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 | 35 A |
| — at 110 V rated value | 4.5 A |
| — at 220 V rated value | 1 A |
| — at 440 V rated value | 0.4 A |
| — at 600 V rated value | 0.25 A |
| • with 2 current paths in series at DC-1 | |
| — at 24 V rated value | 35 A |
| — at 110 V rated value | 35 A |
| — at 220 V rated value | 5 A |
| — at 440 V rated value | 1 A |
| — at 600 V rated value | 0.8 A |
| • with 3 current paths in series at DC-1 | |
| — at 24 V rated value | 35 A |
| — at 110 V rated value | 35 A |
| — at 220 V rated value | 35 A |
| — at 440 V rated value | 2.9 A |
| — at 600 V rated value | 1.4 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 | 2.5 A |
| — at 220 V rated value | 1 A |
| — at 440 V rated value | 0.09 A |
| — at 600 V rated value | 0.06 A |
| • with 2 current paths in series at DC-3 at DC-5 | |
| — at 24 V rated value | 35 A |
| — at 110 V rated value | 15 A |
| — at 220 V rated value | 3 A |
| — at 440 V rated value | 0.27 A |
| — at 600 V rated value | 0.16 A |
| • with 3 current paths in series at DC-3 at DC-5 | |
| — at 24 V rated value | 35 A |
| — at 110 V rated value | 35 A |
| — at 220 V rated value | 10 A |
| — at 440 V rated value | 0.6 A |
| — at 600 V rated value | 0.6 A |
| **operating power** | |
| • 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 500 V rated value | 4 kW |
| — at 690 V rated value | 7.5 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 |
| **operating apparent output at AC-6a** | |
| • up to 230 V for current peak value n=20 rated value | 4.5 kV·A |
| • up to 400 V for current peak value n=20 rated value | 7.8 kV·A |
| • up to 500 V for current peak value n=20 rated value | 7.8 kV·A |
| • up to 690 V for current peak value n=20 rated value | 10.7 kV·A |
| **operating apparent output at AC-6a** | |
| • up to 230 V for current peak value n=30 rated value | 3 kV·A |
| • up to 400 V for current peak value n=30 rated value | 5.2 kV·A |

| | |
|---|---|
| • up to 500 V for current peak value n=30 rated value | 5.2 kV·A |
| • up to 690 V for current peak value n=30 rated value | 7.2 kV·A |
| **short-time withstand current in cold operating state up to 40 °C** | |
| • limited to 1 s switching at zero current maximum | 170 A; Use minimum cross-section acc. to AC-1 rated value |
| • limited to 5 s switching at zero current maximum | 170 A; Use minimum cross-section acc. to AC-1 rated value |
| • limited to 10 s switching at zero current maximum | 122 A; Use minimum cross-section acc. to AC-1 rated value |
| • limited to 30 s switching at zero current maximum | 78 A; Use minimum cross-section acc. to AC-1 rated value |
| • limited to 60 s switching at zero current maximum | 68 A; Use minimum cross-section acc. to AC-1 rated value |
| **no-load switching frequency** | |
| • at DC | 1 500 1/h |
| **operating frequency** | |
| • at AC-1 maximum | 1 000 1/h |
| • at AC-2 maximum | 1 000 1/h |
| • at AC-3 maximum | 1 000 1/h |
| • at AC-4 maximum | 300 1/h |

## Control circuit/ Control

| | |
|---|---|
| **type of voltage of the control supply voltage** | DC |
| **control supply voltage at DC** | |
| • rated value | 24 V |
| **operating range factor control supply voltage rated value of magnet coil at DC** | |
| • initial value | 0.8 |
| • full-scale value | 1.1 |
| **design of the surge suppressor** | with varistor |
| **closing power of magnet coil at DC** | 5.9 W |
| **holding power of magnet coil at DC** | 5.9 W |
| **closing delay** | |
| • at DC | 50 ... 170 ms |
| **opening delay** | |
| • at DC | 15 ... 17.5 ms |
| **arcing time** | 10 ... 10 ms |
| **control version of the switch operating mechanism** | Standard A1 - A2 |

## Auxiliary circuit

| | |
|---|---|
| **number of NC contacts for auxiliary contacts** | |
| • instantaneous contact | 2 |

| | |
|---|---|
| **number of NO contacts for auxiliary contacts** | |
| • instantaneous contact | 2 |
| operating current at AC-12 maximum | 10 A |
| **operating current at AC-15** | |
| • at 230 V rated value | 6 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 | 6 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 | 1 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: 63A (690V,100kA), aM: 32A (690V,100kA), BS88: 63A (415V,80kA) |
| — with type of assignment 2 required | gG: 25A (690V,100kA), aM: 20A (690V,100kA), BS88: 25A (415V,80kA) |
| • for short-circuit protection of the auxiliary switch required | gG: 10 A (500 V, 1 kA) |

## 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** | 85 mm |
| **width** | 45 mm |
| **depth** | 151 mm |
| **required spacing** | |
| • with side-by-side mounting | |
| — forwards | 10 mm |
| — upwards | 10 mm |
| — downwards | 10 mm |
| — at the side | 0 mm |
| • for grounded parts | |
| — forwards | 10 mm |
| — upwards | 10 mm |
| — at the side | 6 mm |
| — downwards | 10 mm |
| • for live parts | |
| — forwards | 10 mm |
| — upwards | 10 mm |
| — downwards | 10 mm |
| — 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 |
| • at contactor for auxiliary contacts | Screw-type terminals |
| • of magnet coil | Screw-type terminals |
| **type of connectable conductor cross-sections** | |
| • for main contacts | |
| — solid | 2x (1 ... 2.5 mm²), 2x (2.5 ... 10 mm²) |

| | |
|---|---|
| — single or multi-stranded | 2x (1 ... 2,5 mm²), 2x (2,5 ... 10 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 (16 ... 12), 2x (14 ... 8) |
| **connectable conductor cross-section for main contacts** | |
| • solid | 1 ... 10 mm² |
| • stranded | 1 ... 10 mm² |
| • finely stranded with core end processing | 1 ... 10 mm² |
| **connectable conductor cross-section for auxiliary contacts** | |
| • single or multi-stranded | 0.5 ... 2.5 mm² |
| • finely stranded with core end processing | 0.5 ... 2.5 mm² |
| • 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) |
| — finely stranded with core end processing | 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²) |
| • type of connectable conductor cross-sections at AWG conductors for auxiliary contacts | 2x (20 ... 16), 2x (18 ... 14) |
| **AWG number as coded connectable conductor cross section** | |
| • for main contacts | 16 ... 8 |
| • for auxiliary contacts | 20 ... 14 |

## 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 |
| • positively driven operation acc. to IEC 60947-5-1 | No |
| **T1 value for proof test interval or service life acc. to IEC 61508** | 20 y |
| **protection against electrical shock** | finger-safe |
| suitability for use safety-related switching OFF | Yes |

## Certificates/ approvals

| General Product Approval | | | | | EMC |
|---|---|---|---|---|---|
| CCC | CSA | UL | KC | EAC | RCM |

| Functional Safety/Safety of Machinery | Declaration of Conformity | | Test Certific-ates | Marine / Shipping | |
|---|---|---|---|---|---|
| Type Examination Certificate | EG-Konf. | Miscellaneous | Type Test Certific-ates/Test Report | ABS | BUREAU VERITAS |

| Marine / Shipping | | | | other | |
|---|---|---|---|---|---|
| LRS | RINA | RMRS | DNVGL.COM/AF | Confirmation | VDE |

## 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=3RT2023-1DB44-3MA0

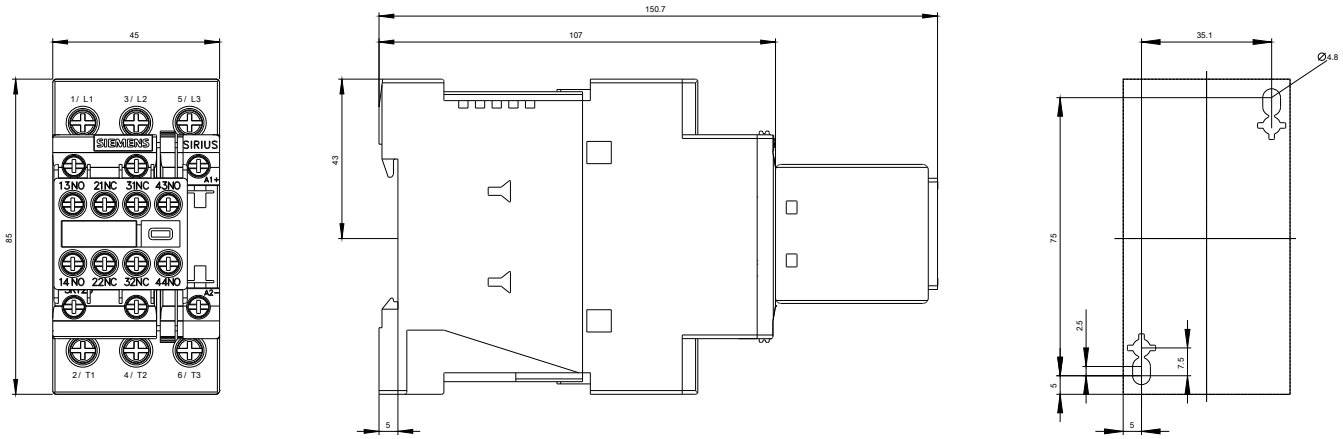
**Cax online generator**
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2023-1DB44-3MA0

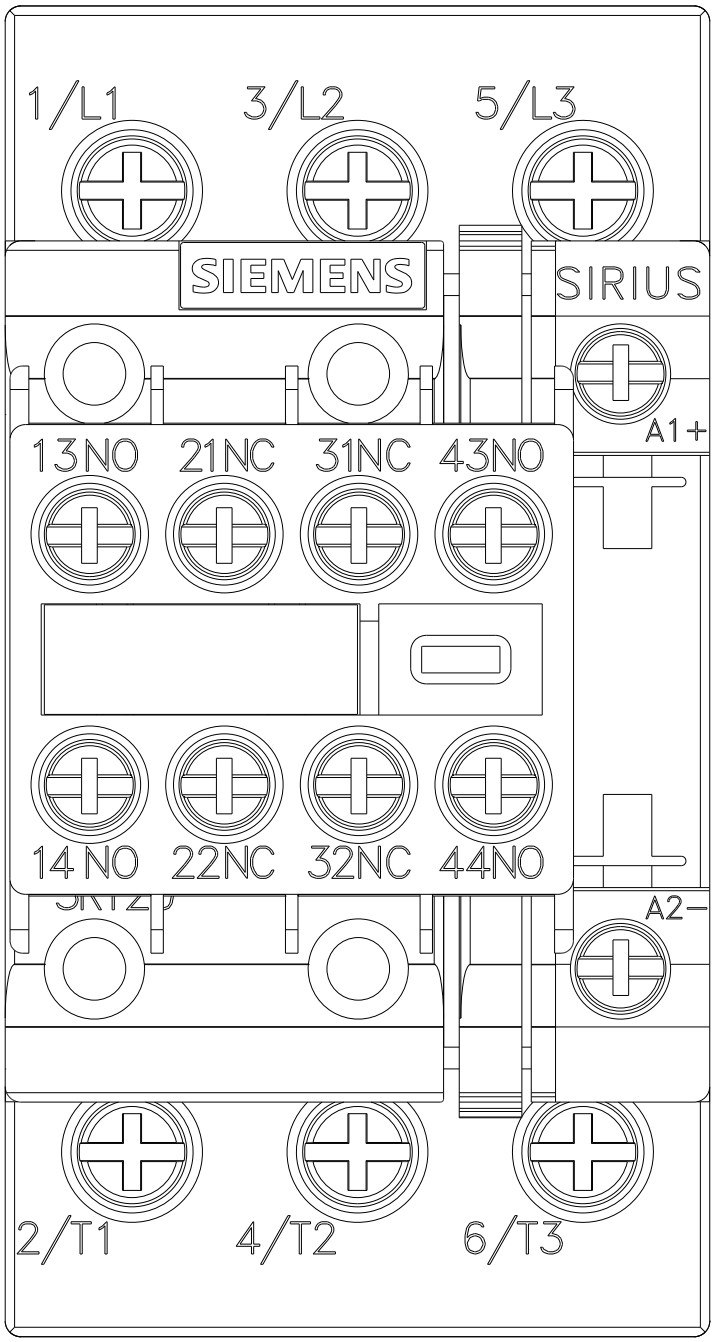
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3RT2023-1DB44-3MA0

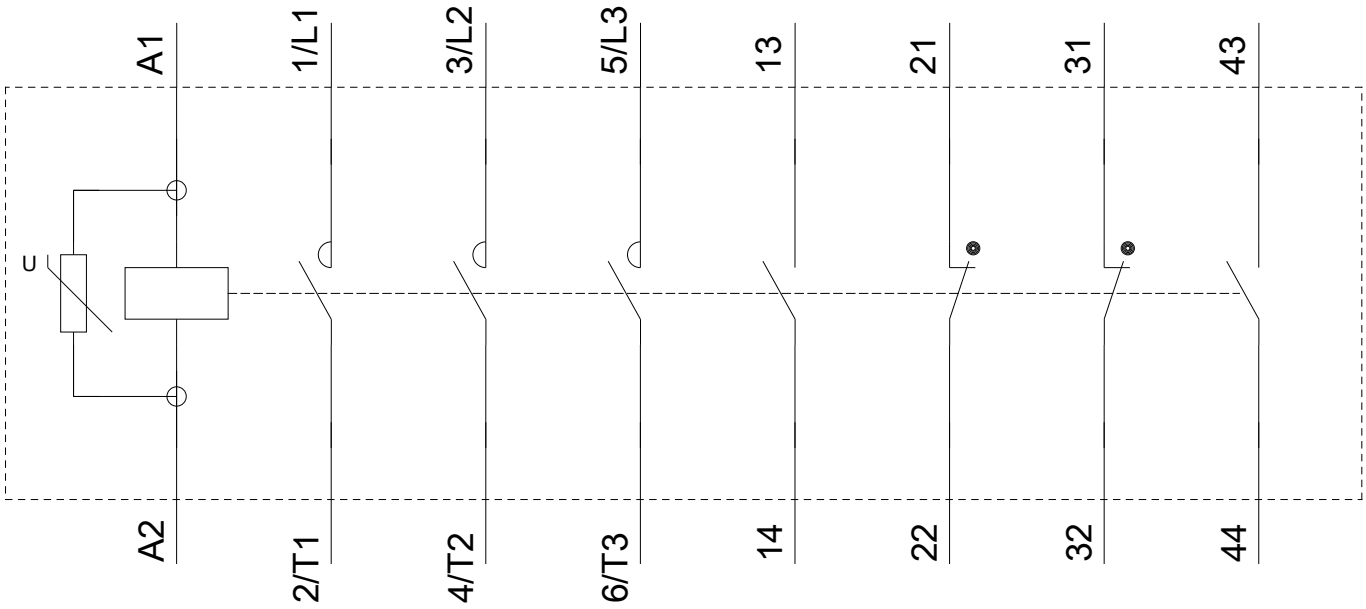
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2023-1DB44-3MA0&lang=en

**Characteristic: Tripping characteristics, $I^2t$, Let-through current**
https://support.industry.siemens.com/cs/ww/en/ps/3RT2023-1DB44-3MA0/char

**Further characteristics (e.g. electrical endurance, switching frequency)**
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2023-1DB44-3MA0&objecttype=14&gridview=view1





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