

power contactor, AC-3 80 A, 37 kW / 400 V 2 NO + 1 NC, 500 V
AC/50/60 Hz 3-pole, 3 NO, Size S3 screw terminal



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

| General technical data | |
|---|--------|
| size of contactor | S3 |
| product extension | |
| <ul style="list-style-type: none"> function module for communication | No |
| <ul style="list-style-type: none"> auxiliary switch | Yes |
| power loss [W] for rated value of the current | |
| <ul style="list-style-type: none"> at AC in hot operating state | 15.9 W |
| <ul style="list-style-type: none"> at AC in hot operating state per pole | 5.3 W |
| power loss [W] for rated value of the current without load current share typical | 25 W |
| surge voltage resistance | |
| <ul style="list-style-type: none"> of main circuit rated value | 8 kV |
| <ul style="list-style-type: none"> of auxiliary circuit rated value | 6 kV |
| maximum permissible voltage for safe isolation | |
| <ul style="list-style-type: none"> between coil and main contacts acc. to EN 60947-1 | 690 V |

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| protection class IP | |
| • on the front | IP20 |
| • of the terminal | IP00 |
| shock resistance at rectangular impulse | |
| • at AC | 6.7 g / 5 ms, 4.0 g / 10 ms |
| shock resistance with sine pulse | |
| • at AC | 10.6 g / 5 ms, 6.3 g / 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 |

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| 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 |

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| 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 | 1 000 V |
| operating current | |
| • at AC-1 at 400 V | |
| — at ambient temperature 40 °C rated value | 125 A |
| • at AC-1 | |
| — up to 690 V at ambient temperature 40 °C rated value | 125 A |
| — up to 690 V at ambient temperature 60 °C rated value | 105 A |
| — up to 1000 V at ambient temperature 40 °C rated value | 60 A |
| — up to 1000 V at ambient temperature 60 °C rated value | 50 A |
| • at AC-3 | |
| — at 400 V rated value | 80 A |
| — at 500 V rated value | 80 A |
| — at 690 V rated value | 58 A |
| • at AC-4 at 400 V rated value | 66 A |

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| <ul style="list-style-type: none"> • at AC-5a up to 690 V rated value | 110 A |
| <ul style="list-style-type: none"> • at AC-5b up to 400 V rated value | 80 A |
| <ul style="list-style-type: none"> • at AC-6a <ul style="list-style-type: none"> — up to 230 V for current peak value n=20 rated value | 80 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — up to 400 V for current peak value n=20 rated value | 80 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — up to 500 V for current peak value n=20 rated value | 80 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — up to 690 V for current peak value n=20 rated value | 58 A |
| <ul style="list-style-type: none"> • at AC-6a <ul style="list-style-type: none"> — up to 230 V for current peak value n=30 rated value | 54 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — up to 400 V for current peak value n=30 rated value | 54 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — up to 500 V for current peak value n=30 rated value | 54 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — up to 690 V for current peak value n=30 rated value | 54 A |
| minimum cross-section in main circuit | |
| <ul style="list-style-type: none"> • at maximum AC-1 rated value | 50 mm² |
| operating current for approx. 200000 operating cycles at AC-4 | |
| <ul style="list-style-type: none"> • at 400 V rated value | 34 A |
| <ul style="list-style-type: none"> • at 690 V rated value | 24 A |
| operating current | |
| <ul style="list-style-type: none"> • at 1 current path at DC-1 <ul style="list-style-type: none"> — at 24 V rated value | 100 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 110 V rated value | 9 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 220 V rated value | 2 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 440 V rated value | 0.6 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 600 V rated value | 0.4 A |
| <ul style="list-style-type: none"> • with 2 current paths in series at DC-1 <ul style="list-style-type: none"> — at 24 V rated value | 100 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 110 V rated value | 100 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 220 V rated value | 10 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 440 V rated value | 1.8 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 600 V rated value | 1 A |
| <ul style="list-style-type: none"> • with 3 current paths in series at DC-1 <ul style="list-style-type: none"> — at 24 V rated value | 100 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 110 V rated value | 100 A |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> — at 220 V rated value | 80 A |

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| — at 440 V rated value | 4.5 A |
| — at 600 V rated value | 2.6 A |
| operating current | |
| • at 1 current path at DC-3 at DC-5 | |
| — at 24 V rated value | 40 A |
| — at 110 V rated value | 2.5 A |
| — at 220 V rated value | 1 A |
| — at 440 V rated value | 0.15 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 | 100 A |
| — at 110 V rated value | 100 A |
| — at 220 V rated value | 7 A |
| — at 440 V rated value | 0.42 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 | 100 A |
| — at 110 V rated value | 100 A |
| — at 220 V rated value | 35 A |
| — at 440 V rated value | 0.8 A |
| — at 600 V rated value | 0.35 A |
| operating power | |
| • at AC-2 at 400 V rated value | 37 kW |
| • at AC-3 | |
| — at 230 V rated value | 22 kW |
| — at 400 V rated value | 37 kW |
| — at 500 V rated value | 45 kW |
| — at 690 V rated value | 55 kW |
| operating power for approx. 200000 operating cycles at AC-4 | |
| • at 400 V rated value | 17.9 kW |
| • at 690 V rated value | 21.8 kW |
| operating apparent output at AC-6a | |
| • up to 230 V for current peak value n=20 rated value | 31 kV·A |
| • up to 400 V for current peak value n=20 rated value | 55 kV·A |
| • up to 500 V for current peak value n=20 rated value | 69 kV·A |
| • up to 690 V for current peak value n=20 rated value | 69 kV·A |
| operating apparent output at AC-6a | |

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| <ul style="list-style-type: none"> • up to 230 V for current peak value n=30 rated value • up to 400 V for current peak value n=30 rated value • up to 500 V for current peak value n=30 rated value • up to 690 V for current peak value n=30 rated value | 21.5 kV·A 37.4 kV·A 46.7 kV·A 64.5 kV·A |
| short-time withstand current in cold operating state up to 40 °C <ul style="list-style-type: none"> • limited to 1 s switching at zero current maximum • limited to 5 s switching at zero current maximum • limited to 10 s switching at zero current maximum • limited to 30 s switching at zero current maximum • limited to 60 s switching at zero current maximum | 1 500 A; Use minimum cross-section acc. to AC-1 rated value 1 186 A; Use minimum cross-section acc. to AC-1 rated value 851 A; Use minimum cross-section acc. to AC-1 rated value 538 A; Use minimum cross-section acc. to AC-1 rated value 423 A; Use minimum cross-section acc. to AC-1 rated value |
| no-load switching frequency <ul style="list-style-type: none"> • at AC | 5 000 1/h |
| operating frequency <ul style="list-style-type: none"> • at AC-1 maximum • at AC-2 maximum • at AC-3 maximum • at AC-4 maximum | 900 1/h 400 1/h 1 000 1/h 300 1/h |
| Control circuit/ Control | |
| type of voltage of the control supply voltage | AC |
| control supply voltage at AC <ul style="list-style-type: none"> • at 50 Hz rated value • at 60 Hz rated value | 500 V 500 V |
| operating range factor control supply voltage rated value of magnet coil at AC <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | 0.8 ... 1.1 0.85 ... 1.1 |
| apparent pick-up power of magnet coil at AC <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | 348 V·A 296 V·A |
| inductive power factor with closing power of the coil <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | 0.62 0.55 |
| apparent holding power of magnet coil at AC | |

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| <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | 25 V·A 18 V·A |
| inductive power factor with the holding power of the coil | |
| <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | 0.35 0.41 |
| closing delay | |
| <ul style="list-style-type: none"> • at AC | 13 ... 50 ms |
| opening delay | |
| <ul style="list-style-type: none"> • at AC | 10 ... 21 ms |
| arcing time | 10 ... 20 ms |
| control version of the switch operating mechanism | Standard A1 - A2 |

Auxiliary circuit

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| number of NC contacts for auxiliary contacts | |
| <ul style="list-style-type: none"> • instantaneous contact | 1 |
| number of NO contacts for auxiliary contacts | |
| <ul style="list-style-type: none"> • instantaneous contact | 1 |
| operating current at AC-12 maximum | 10 A |
| operating current at AC-15 | |
| <ul style="list-style-type: none"> • at 230 V rated value • at 400 V rated value • at 500 V rated value • at 690 V rated value | 6 A 3 A 2 A 1 A |
| operating current at DC-12 | |
| <ul style="list-style-type: none"> • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 110 V rated value • at 125 V rated value • at 220 V rated value • at 600 V rated value | 10 A 6 A 6 A 3 A 2 A 1 A 0.15 A |
| operating current at DC-13 | |
| <ul style="list-style-type: none"> • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 110 V rated value • at 125 V rated value • at 220 V rated value • at 600 V rated value | 10 A 2 A 2 A 1 A 0.9 A 0.3 A 0.1 A |
| contact reliability of auxiliary contacts | 1 faulty switching per 100 million (17 V, 1 mA) |

UL/CSA ratings

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|---|-------------|
| full-load current (FLA) for three-phase AC motor | |
| • at 480 V rated value | 77 A |
| • at 600 V rated value | 62 A |
| yielded mechanical performance [hp] | |
| • for single-phase AC motor | |
| — at 110/120 V rated value | 7.5 hp |
| — at 230 V rated value | 15 hp |
| • for three-phase AC motor | |
| — at 200/208 V rated value | 25 hp |
| — at 220/230 V rated value | 30 hp |
| — at 460/480 V rated value | 60 hp |
| — at 575/600 V rated value | 60 hp |
| contact rating of auxiliary contacts according to UL | A600 / P600 |

Short-circuit protection

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| design of the fuse link | |
| • for short-circuit protection of the main circuit | |
| — with type of coordination 1 required | gG: 250 A (690 V, 100 kA), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA) |
| — with type of assignment 2 required | gG: 160A (690V,100kA), aM: 80A (690V,100kA), BS88: 125A (415V,80kA) |
| • for short-circuit protection of the auxiliary switch required | gG: 10 A (500 V, 1 kA) |

Installation/ mounting/ dimensions

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| 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 | 140 mm |
| width | 70 mm |
| depth | 152 mm |
| required spacing | |
| • with side-by-side mounting | |
| — forwards | 20 mm |
| — upwards | 10 mm |
| — downwards | 10 mm |
| — at the side | 0 mm |
| • for grounded parts | |
| — forwards | 20 mm |
| — upwards | 10 mm |
| — at the side | 10 mm |

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|------------------|-------|
| — downwards | 10 mm |
| • for live parts | |
| — forwards | 20 mm |
| — upwards | 10 mm |
| — downwards | 10 mm |
| — at the side | 10 mm |

Connections/ Terminals






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|---|---|
| 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 | |
| — finely stranded with core end processing | 2x (2.5 ... 35 mm ²), 1x (2.5 ... 50 mm ²) |
| • at AWG conductors for main contacts | 2x (10 ... 1/0), 1x (10 ... 2) |
| connectable conductor cross-section for main contacts | |
| • solid | 2.5 ... 16 mm ² |
| • stranded | 6 ... 70 mm ² |
| • finely stranded with core end processing | 2.5 ... 50 mm ² |
| connectable conductor cross-section for auxiliary contacts | |
| • single or multi-stranded | 0.5 ... 2.5 mm ² |
| • finely stranded with core end processing | 0.5 ... 2.5 mm ² |
| • type of connectable conductor cross-sections for auxiliary contacts | |
| — single or multi-stranded | 2x (0,5 ... 1,5 mm ²), 2x (0,75 ... 2,5 mm ²) |
| — finely stranded with core end processing | 2x (0.5 ... 1.5 mm ²), 2x (0.75 ... 2.5 mm ²) |
| • 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 | 10 ... 2 |
| • for auxiliary contacts | 20 ... 14 |




Safety related data

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| 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] | |

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| • 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 when touched vertically from front acc. to IEC 60529 |
| suitability for use safety-related switching OFF | Yes |

Certificates/ approvals

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

| Declaration of Conformity | Test Certificates | | Marine / Shipping | |
|---|-------------------------------|--|---|---|
|  | Miscellaneous | Type Test Certificates/Test Report | Special Test Certificate | |
| EG-Konf. | | |  |  |
| | | | ABS | LRS |

| Marine / Shipping | other | Railway |
|---|------------------------------|-------------------------------------|
|  | Confirmation | Vibration and Shock |
|  | | |
|  | | |
|  | | |
| PRS | | |
| RINA | | |
| RMRS | | |
| | | |

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=3RT2045-1AQ20>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2045-1AQ20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2045-1AQ20>

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

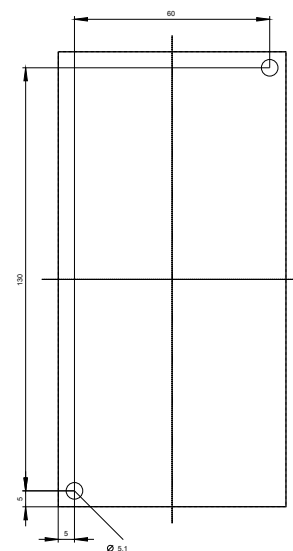
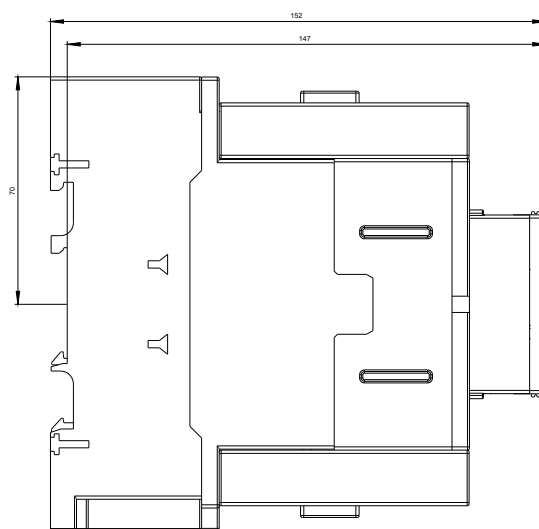
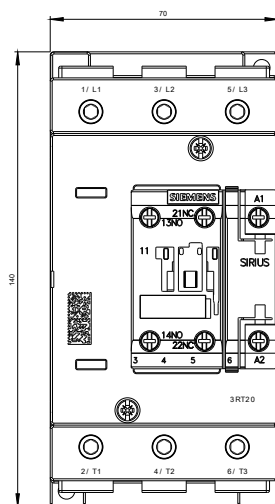
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2045-1AQ20&lang=en

Characteristic: Tripping characteristics, I²t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2045-1AQ20/char>

Further characteristics (e.g. electrical endurance, switching frequency)

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2045-1AQ20&objecttype=14&gridview=view1>





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