

Power contactor, AC-3 80 A, 37 kW / 400 V 1 NO + 1 NC, 500 V AC
50/60 Hz, 3-pole Size S2, screw terminals



| | |
|---|-----------------|
| Product brand name | SIRIUS |
| Product designation | Power contactor |
| Product type designation | 3RT2 |
| General technical data | |
| Size of contactor | S2 |
| 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 | 17.1 W |
| <ul style="list-style-type: none"> at AC in hot operating state per pole | 5.7 W |
| Power loss [W] for rated value of the current without load current share typical | 17.2 W |
| Surge voltage resistance | |
| <ul style="list-style-type: none"> of main circuit rated value | 6 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 | 400 V |

| | |
|---|---------------------------------------|
| Protection class IP | |
| <ul style="list-style-type: none"> • on the front • of the terminal | IP20 IP00 |
| Shock resistance at rectangular impulse | |
| <ul style="list-style-type: none"> • at AC | 11.8g / 5 ms, 7.4g / 10 ms |
| Shock resistance with sine pulse | |
| <ul style="list-style-type: none"> • at AC | 18.5g / 5 ms, 11.6g / 10 ms |
| Mechanical service life (switching cycles) | |
| <ul style="list-style-type: none"> • of contactor typical • of the contactor with added electronics-compatible auxiliary switch block typical • of the contactor with added auxiliary switch block typical | 10 000 000 5 000 000 10 000 000 |
| Reference code acc. to DIN EN 81346-2 | Q |

Ambient conditions

| | |
|--|----------------------------------|
| Installation altitude at height above sea level | |
| <ul style="list-style-type: none"> • maximum | 2 000 m |
| Ambient temperature | |
| <ul style="list-style-type: none"> • during operation • during storage | -25 ... +60 °C -55 ... +80 °C |

Main circuit

| | |
|--|--|
| Number of poles for main current circuit | 3 |
| Number of NO contacts for main contacts | 3 |
| Operating voltage | |
| <ul style="list-style-type: none"> • at AC-3 rated value maximum | 690 V |
| Operating current | |
| <ul style="list-style-type: none"> • at AC-1 at 400 V <ul style="list-style-type: none"> — at ambient temperature 40 °C rated value • at AC-1 <ul style="list-style-type: none"> — up to 690 V at ambient temperature 40 °C rated value — up to 690 V at ambient temperature 60 °C rated value • at AC-2 at 400 V rated value • at AC-3 <ul style="list-style-type: none"> — at 400 V rated value — at 500 V rated value — at 690 V rated value • at AC-4 at 400 V rated value • at AC-5a up to 690 V rated value • at AC-5b up to 400 V rated value • at AC-6a | 90 A 90 A 80 A 80 A 80 A 80 A 80 A 58 A 55 A 79.2 A 66.4 A |

| | |
|--|--------------------|
| — up to 230 V for current peak value n=20 rated value | 70 A |
| — up to 400 V for current peak value n=20 rated value | 70 A |
| — up to 500 V for current peak value n=20 rated value | 70 A |
| — up to 690 V for current peak value n=20 rated value | 58 A |
| • at AC-6a | |
| — up to 230 V for current peak value n=30 rated value | 46.7 A |
| — up to 400 V for current peak value n=30 rated value | 46.7 A |
| — up to 500 V for current peak value n=30 rated value | 46.7 A |
| — up to 690 V for current peak value n=30 rated value | 46.7 A |
| Minimum cross-section in main circuit | |
| • at maximum AC-1 rated value | 35 mm ² |
| Operating current for approx. 200000 operating cycles at AC-4 | |
| • at 400 V rated value | 30 A |
| • at 690 V rated value | 24 A |
| Operating current | |
| • at 1 current path at DC-1 | |
| — at 24 V rated value | 55 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 | 55 A |
| — at 110 V rated value | 45 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 | 55 A |
| — at 110 V rated value | 55 A |
| — at 220 V rated value | 45 A |
| — at 440 V rated value | 2.9 A |
| — at 600 V rated value | 1.4 A |
| Operating current | |

| | |
|--|--|
| <ul style="list-style-type: none"> • at 1 current path at DC-3 at DC-5 <ul style="list-style-type: none"> — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value • with 2 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value • with 3 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> — at 24 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value | <p>35 A</p> <p>2.5 A</p> <p>1 A</p> <p>0.1 A</p> <p>0.06 A</p> <p>55 A</p> <p>25 A</p> <p>5 A</p> <p>0.27 A</p> <p>0.16 A</p> <p>55 A</p> <p>55 A</p> <p>25 A</p> <p>0.6 A</p> <p>0.35 A</p> |
| Operating power <ul style="list-style-type: none"> • at AC-2 at 400 V rated value • at AC-3 <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 | <p>37 kW</p> <p>22 kW</p> <p>37 kW</p> <p>37 kW</p> <p>45 kW</p> |
| Operating power for approx. 200000 operating cycles at AC-4 <ul style="list-style-type: none"> • at 400 V rated value • at 690 V rated value | <p>15.8 kW</p> <p>21.8 kW</p> |
| Operating apparent output at AC-6a <ul style="list-style-type: none"> • up to 230 V for current peak value n=20 rated value • up to 400 V for current peak value n=20 rated value • up to 500 V for current peak value n=20 rated value • up to 690 V for current peak value n=20 rated value | <p>27 800 V·A</p> <p>48 400 V·A</p> <p>60 600 V·A</p> <p>69 300 V·A</p> |
| Operating apparent output at AC-6a <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 | <p>18 600 V·A</p> <p>32 300 V·A</p> |

| | |
|---|--|
| <ul style="list-style-type: none"> • up to 500 V for current peak value n=30 rated value • up to 690 V for current peak value n=30 rated value | <p>40 400 V·A</p> <p>55 800 V·A</p> |
| 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 | <p>1 298 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>898 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>640 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>414 A; Use minimum cross-section acc. to AC-1 rated value</p> <p>333 A; Use minimum cross-section acc. to AC-1 rated value</p> |
| No-load switching frequency <ul style="list-style-type: none"> • at AC | <p>5 000 1/h</p> |
| Operating frequency <ul style="list-style-type: none"> • at AC-1 maximum • at AC-2 maximum • at AC-3 maximum • at AC-4 maximum | <p>700 1/h</p> <p>350 1/h</p> <p>500 1/h</p> <p>150 1/h</p> |
| 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 | <p>500 V</p> <p>500 V</p> |
| 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 | <p>0.8 ... 1.1</p> <p>0.85 ... 1.1</p> |
| Apparent pick-up power of magnet coil at AC <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | <p>210 V·A</p> <p>188 V·A</p> |
| Inductive power factor with closing power of the coil <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | <p>0.69</p> <p>0.65</p> |
| Apparent holding power of magnet coil at AC <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | <p>17.2 V·A</p> <p>16.5 V·A</p> |
| Inductive power factor with the holding power of the coil | |

| | |
|--|-------------------------|
| <ul style="list-style-type: none"> • at 50 Hz • at 60 Hz | <p>0.36</p> <p>0.39</p> |
| Closing delay | |
| <ul style="list-style-type: none"> • at AC | 10 ... 80 ms |
| Opening delay | |
| <ul style="list-style-type: none"> • at AC | 10 ... 18 ms |
| Arcing time | 10 ... 20 ms |
| Control version of the switch operating mechanism | Standard A1 - A2 |

Auxiliary circuit

| | |
|---|---|
| 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 | <p>10 A</p> <p>3 A</p> <p>2 A</p> <p>1 A</p> |
| 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 | <p>10 A</p> <p>6 A</p> <p>6 A</p> <p>3 A</p> <p>2 A</p> <p>1 A</p> <p>0.15 A</p> |
| 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 | <p>10 A</p> <p>2 A</p> <p>2 A</p> <p>1 A</p> <p>0.9 A</p> <p>0.3 A</p> <p>0.1 A</p> |
| 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 | |
| <ul style="list-style-type: none"> • at 480 V rated value • at 600 V rated value | <p>65 A</p> <p>62 A</p> |
| Yielded mechanical performance [hp] | |

| | |
|---|--|
| <ul style="list-style-type: none"> • for single-phase AC motor <ul style="list-style-type: none"> — at 110/120 V rated value — at 230 V rated value • for three-phase AC motor <ul style="list-style-type: none"> — at 200/208 V rated value — at 220/230 V rated value — at 460/480 V rated value — at 575/600 V rated value | <p>5 hp</p> <p>15 hp</p> <p>20 hp</p> <p>25 hp</p> <p>50 hp</p> <p>60 hp</p> |
| Contact rating of auxiliary contacts according to UL | A600 / P600 |

Short-circuit protection

| | |
|---|--|
| Design of the fuse link | |
| <ul style="list-style-type: none"> • for short-circuit protection of the main circuit <ul style="list-style-type: none"> — with type of coordination 1 required — with type of assignment 2 required • for short-circuit protection of the auxiliary switch required | <p>gG: 250 A (690 V, 100 kA), aM: 160 A (690 V, 100 kA), BS88: 200 A (415 V, 80 kA)</p> <p>gG: 160A (690V,100kA), aM: 80A (690V,100kA), BS88: 125A (415V,80kA)</p> <p>gG: 10 A (500 V, 1 kA)</p> |

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 |
| <ul style="list-style-type: none"> • Side-by-side mounting | Yes |
| Height | 114 mm |
| Width | 55 mm |
| Depth | 130 mm |
| Required spacing | |
| <ul style="list-style-type: none"> • with side-by-side mounting <ul style="list-style-type: none"> — forwards — upwards — downwards — at the side • for grounded parts <ul style="list-style-type: none"> — forwards — upwards — at the side — downwards • for live parts <ul style="list-style-type: none"> — forwards — upwards | <p>10 mm</p> <p>10 mm</p> <p>10 mm</p> <p>0 mm</p> <p>10 mm</p> <p>10 mm</p> <p>6 mm</p> <p>10 mm</p> <p>10 mm</p> <p>10 mm</p> |

- downwards
- at the side

10 mm

6 mm

Connections/ Terminals

| | |
|--|---|
| Type of electrical connection <ul style="list-style-type: none"> • for main current circuit • for auxiliary and control current circuit • at contactor for auxiliary contacts • of magnet coil | <p>screw-type terminals</p> <p>screw-type terminals</p> <p>Screw-type terminals</p> <p>Screw-type terminals</p> |
| Type of connectable conductor cross-sections <ul style="list-style-type: none"> • for main contacts <ul style="list-style-type: none"> — single or multi-stranded — finely stranded with core end processing • at AWG conductors for main contacts | <p>2x (1 ... 35 mm²), 1x (1 ... 50 mm²)</p> <p>2x (1 ... 25 mm²), 1x (1 ... 35 mm²)</p> <p>2x (18 ... 2), 1x (18 ... 1)</p> |
| Connectable conductor cross-section for main contacts <ul style="list-style-type: none"> • finely stranded with core end processing | <p>1 ... 35 mm²</p> |
| Connectable conductor cross-section for auxiliary contacts <ul style="list-style-type: none"> • single or multi-stranded • finely stranded with core end processing | <p>0.5 ... 2.5 mm²</p> <p>0.5 ... 2.5 mm²</p> |
| Type of connectable conductor cross-sections <ul style="list-style-type: none"> • for auxiliary contacts <ul style="list-style-type: none"> — single or multi-stranded — finely stranded with core end processing • at AWG conductors for auxiliary contacts | <p>2x (0,5 ... 1,5 mm²), 2x (0,75 ... 2,5 mm²)</p> <p>2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)</p> <p>2x (20 ... 16), 2x (18 ... 14)</p> |
| AWG number as coded connectable conductor cross section <ul style="list-style-type: none"> • for main contacts • for auxiliary contacts | <p>18 ... 1</p> <p>20 ... 14</p> |




Safety related data






| | |
|---|-------------------------|
| B10 value <ul style="list-style-type: none"> • with high demand rate acc. to SN 31920 | <p>1 000 000</p> |
| Proportion of dangerous failures <ul style="list-style-type: none"> • with low demand rate acc. to SN 31920 • with high demand rate acc. to SN 31920 | <p>40 %</p> <p>73 %</p> |
| Failure rate [FIT] <ul style="list-style-type: none"> • with low demand rate acc. to SN 31920 | <p>100 FIT</p> |
| Product function <ul style="list-style-type: none"> • Mirror contact acc. to IEC 60947-4-1 • positively driven operation acc. to IEC 60947-5-1 | <p>Yes</p> <p>No</p> |

| | |
|--|--|
| 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 | Functional Safety/Safety of Machinery |
|  CCC |  CSA |  UL |
|  | | |
|  RCM | | |
| Type Examination Certificate | | |

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

| | |
|---|---|
| Marine / Shipping | other |
|  LRS |  PRS |
|  RINA |  RMRS |
|  DNV-GL DNVGL.COM/AF | Confirmation |

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=3RT2038-1AQ20>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2038-1AQ20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2038-1AQ20>

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

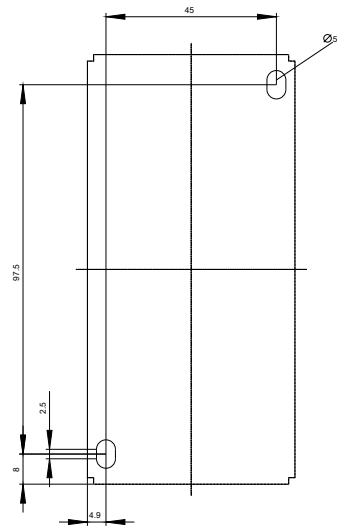
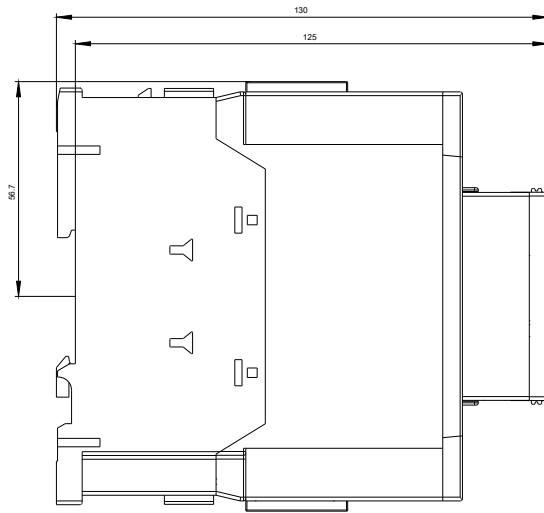
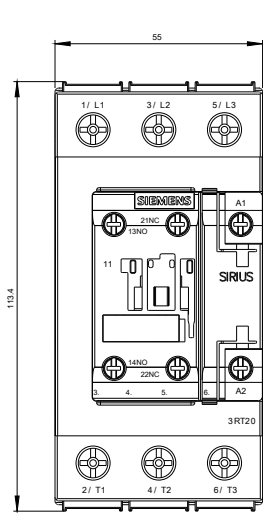
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2038-1AQ20&lang=en

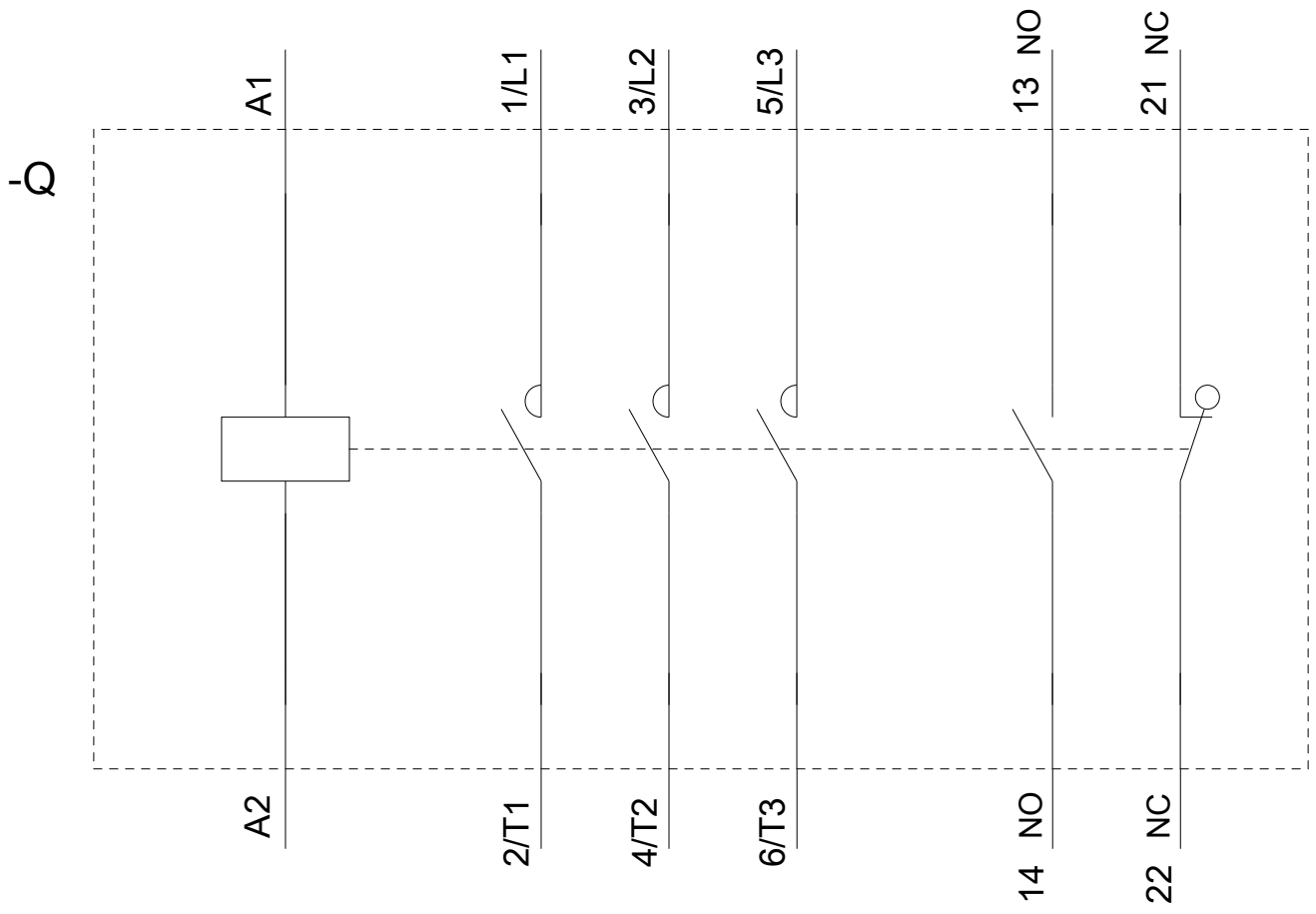
Characteristic: Tripping characteristics, I_t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2038-1AQ20/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2038-1AQ20&objecttype=14&gridview=view1>





last modified:

05/09/2020