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## Data sheet 3RT2038-3KB40



power contactor, AC-3e/AC-3, 80 A, 37 kW / 400 V, 3-pole, 24 V DC, 0.8-1.2* Uc, with integrated varistor, auxiliary contacts: 1 NO + 1 NC, main circuit: screw terminal, control and auxiliary circuit: spring-loaded terminal, frame size: S2, suitable for PLC outputs

| | |
|---|---|
| **product brand name** | SIRIUS |
| **product designation** | Power contactor |
| **product type designation** | 3RT2 |
| **General technical data** | |
| **size of contactor** | S2 |
| **product extension** | |
| ● function module for communication | No |
| ● auxiliary switch | Yes |
| **power loss [W] for rated value of the current** | |
| ● at AC in hot operating state | 17.1 W |
| ● at AC in hot operating state per pole | 5.7 W |
| ● without load current share typical | 1 W |
| **type of calculation of power loss current-dependent** | quadratic |
| **insulation voltage** | |
| ● of main circuit with degree of pollution 3 rated value | 690 V |
| ● of auxiliary circuit with degree of pollution 3 rated value | 690 V |
| **surge voltage resistance** | |
| ● of main circuit rated value | 6 kV |
| ● of auxiliary circuit rated value | 6 kV |
| maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1 | 400 V |
| **shock resistance at rectangular impulse** | |
| ● at DC | 7.7 g / 5 ms, 4.5 g / 10 ms |
| **shock resistance with sine pulse** | |
| ● at DC | 12 g / 5 ms, 7 g / 10 ms |
| **mechanical service life (operating cycles)** | |
| ● of contactor typical | 10 000 000 |
| ● of the contactor with added electronically optimized auxiliary switch block typical | 5 000 000 |
| ● of the contactor with added auxiliary switch block typical | 10 000 000 |
| **reference code according to IEC 81346-2** | Q |
| **Substance Prohibitance (day/month/year)** | 10/01/2014 |
| **SVHC substance name** | Lead CAS-No. 7439-92-1<br>Lead monoxide (lead oxide) CAS-No. 1317-36-8 |
| **Net Weight** | 1.085 kg |
| **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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|---|---|
| **relative humidity minimum** | 10 % |
| **relative humidity at 55 °C according to IEC 60068-2-30 maximum** | 95 % |
| **Main circuit** | |
| **number of poles for main current circuit** | 3 |
| **number of NO contacts for main contacts** | 3 |
| **number of NC contacts for main contacts** | 0 |
| **operating voltage** | |
| ● at AC-3 rated value maximum | 690 V |
| ● at AC-3e rated value maximum | 690 V |
| **operational current** | |
| ● at AC-1 at 400 V at ambient temperature 40 °C rated value | 90 A |
| ● at AC-1 | |
| — up to 690 V at ambient temperature 40 °C rated value | 90 A |
| — up to 690 V at ambient temperature 60 °C rated value | 80 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-3e | |
| — 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 | 55 A |
| ● at AC-5a up to 690 V rated value | 79.2 A |
| ● at AC-5b up to 400 V rated value | 66.4 A |
| ● at AC-6a | |
| — 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 mm² |
| **operational current for approx. 200000 operating cycles at AC-4** | |
| ● at 400 V rated value | 30 A |
| ● at 690 V rated value | 24 A |
| **operational current** | |
| **● at 1 current path at DC-1** | |
| — at 24 V rated value | 55 A |
| — at 60 V rated value | 23 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 60 V rated value | 45 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** | |


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|---|---|
| — at 24 V rated value | 55 A |
| — at 60 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 |
| **● at 1 current path at DC-3 at DC-5** | |
| — at 24 V rated value | 35 A |
| — at 60 V rated value | 6 A |
| — at 220 V rated value | 1 A |
| — at 440 V rated value | 0.1 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 | 55 A |
| — at 60 V rated value | 45 A |
| — at 110 V rated value | 25 A |
| — at 220 V rated value | 5 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 | 55 A |
| — at 60 V rated value | 55 A |
| — at 110 V rated value | 55 A |
| — at 220 V rated value | 25 A |
| — at 440 V rated value | 0.6 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 | 37 kW |
| — at 690 V rated value | 45 kW |
| ● at AC-3e | |
| — at 230 V rated value | 22 kW |
| — at 400 V rated value | 37 kW |
| — at 500 V rated value | 37 kW |
| — at 690 V rated value | 45 kW |
| **operating power for approx. 200000 operating cycles at AC-4** | |
| ● at 400 V rated value | 15.8 kW |
| ● at 690 V rated value | 21.8 kW |
| **operating apparent power at AC-6a** | |
| ● up to 230 V for current peak value n=20 rated value | 27.8 kVA |
| ● up to 400 V for current peak value n=20 rated value | 48.4 kVA |
| ● up to 500 V for current peak value n=20 rated value | 60.6 kVA |
| ● up to 690 V for current peak value n=20 rated value | 69.3 kVA |
| **operating apparent power at AC-6a** | |
| ● up to 230 V for current peak value n=30 rated value | 18.6 kVA |
| ● up to 400 V for current peak value n=30 rated value | 32.3 kVA |
| ● up to 500 V for current peak value n=30 rated value | 40.4 kVA |
| ● up to 690 V for current peak value n=30 rated value | 55.8 kVA |
| **short-time withstand current in cold operating state up to 40 °C** | |
| ● limited to 1 s switching at zero current maximum | 1 298 A; Use minimum cross-section acc. to AC-1 rated value |
| ● limited to 5 s switching at zero current maximum | 898 A; Use minimum cross-section acc. to AC-1 rated value |
| ● limited to 10 s switching at zero current maximum | 640 A; Use minimum cross-section acc. to AC-1 rated value |
| ● limited to 30 s switching at zero current maximum | 414 A; Use minimum cross-section acc. to AC-1 rated value |
| ● limited to 60 s switching at zero current maximum | 333 A; Use minimum cross-section acc. to AC-1 rated value |


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| **no-load switching frequency** | |
| ● at DC | 1 500 1/h |
| **operating frequency** | |
| ● at AC-1 maximum | 700 1/h |
| ● at AC-2 maximum | 350 1/h |
| ● at AC-3 maximum | 500 1/h |
| ● at AC-3e | |
| — maximum | 500 1/h |
| ● at AC-4 maximum | 150 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 | 1.2 |
| **design of the surge suppressor** | with varistor |
| **inrush current peak** | 2.6 A |
| **duration of inrush current peak** | 50 µs |
| **pickup current mean value** | 0.9 A |
| **pickup current peak** | 2.1 A |
| **duration of pickup current** | 230 ms |
| **holding current mean value** | 40 mA |
| **closing power of magnet coil at DC** | 21.5 W |
| **holding power of magnet coil at DC** | 1 W |
| **closing delay** | |
| ● at DC | 35 ... 80 ms |
| **opening delay** | |
| ● at DC | 30 ... 55 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 instantaneous contact | 1 |
| number of NO contacts for auxiliary contacts instantaneous contact | 1 |
| operational current at AC-12 maximum | 10 A |
| **operational 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 |
| **operational 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 |
| **operational 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** | |


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| **full-load current (FLA) for 3-phase AC motor** | |
| ● at 480 V rated value | 65 A |
| ● at 600 V rated value | 62 A |
| **yielded mechanical performance [hp]** | |
| ● for single-phase AC motor | |
| — at 110/120 V rated value | 5 hp |
| — at 230 V rated value | 15 hp |
| ● for 3-phase AC motor | |
| — at 200/208 V rated value | 20 hp |
| — at 220/230 V rated value | 25 hp |
| — at 460/480 V rated value | 50 hp |
| — at 575/600 V rated value | 60 hp |
| **contact rating of auxiliary contacts according to UL** | A600 / P600 |
| **Short-circuit protection** | |
| design of the miniature circuit breaker for short-circuit protection of the auxiliary circuit up to 230 V | C characteristic: 10 A; 0.4 kA |
| **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 coordination 2 required | gG: 160 A (690 V, 100 kA), aM: 80 A (690 V, 100 kA), BS88: 125 A (415 V, 80 kA) |
| ● 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 |
| fastening method side-by-side mounting | Yes |
| **fastening method** | screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715 |
| **height** | 114 mm |
| **width** | 55 mm |
| **depth** | 130 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 circuit | spring-loaded terminals |
| ● at contactor for auxiliary contacts | Spring-type terminals |
| ● of magnet coil | Spring-loaded terminal |
| **type of connectable conductor cross-sections** | |
| ● for main contacts | |
| — solid or stranded | 2x (1 ... 35 mm²), 1x (1 ... 50 mm²) |
| — finely stranded with core end processing | 2x (1 ... 25 mm²), 1x (1 ... 35 mm²) |
| ● for AWG cables for main contacts | 2x (18 ... 2), 1x (18 ... 1) |
| **connectable conductor cross-section for main contacts** | |
| ● finely stranded with core end processing | 1 ... 35 mm² |


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| **connectable conductor cross-section for auxiliary contacts** | |
| ● solid or stranded | 0.5 ... 2.5 mm² |
| ● finely stranded with core end processing | 0.5 ... 1.5 mm² |
| ● finely stranded without core end processing | 0.5 ... 2.5 mm² |
| **type of connectable conductor cross-sections** | |
| ● for auxiliary contacts | |
| — solid or stranded | 2x (0.5 ... 2.5 mm²) |
| — finely stranded with core end processing | 2x (0.5 ... 1.5 mm²) |
| — finely stranded without core end processing | 2x (0.5 ... 2.5 mm²) |
| ● for AWG cables for auxiliary contacts | 2x (20 ... 14) |
| **AWG number as coded connectable conductor cross section for main contacts** | 18 ... 1 |
| **AWG number as coded connectable conductor cross section for auxiliary contacts** | 20 ... 14 |
| **Safety related data** | |
| **product function** | |
| ● **mirror contact according to IEC 60947-4-1** | Yes |
| ● **positively driven operation according to IEC 60947-5-1** | No |
| ● **suitable for safety function** | Yes |
| **suitability for use safety-related switching OFF** | Yes |
| **service life maximum** | 20 a |
| **test wear-related service life necessary** | Yes |
| **proportion of dangerous failures** | |
| ● **with low demand rate according to SN 31920** | 40 % |
| ● **with high demand rate according to SN 31920** | 73 % |
| **B10 value with high demand rate according to SN 31920** | 1 000 000 |
| **failure rate [FIT] with low demand rate according to SN 31920** | 100 FIT |
| ISO 13849 | |
| **device type according to ISO 13849-1** | 3 |
| **overdimensioning according to ISO 13849-2 necessary** | Yes |
| IEC 61508 | |
| **safety device type according to IEC 61508-2** | Type A |
| Electrical Safety | |
| **protection class IP on the front according to IEC 60529** | IP20 |
| **touch protection on the front according to IEC 60529** | finger-safe, for vertical contact from the front |
| **Approvals Certificates** | |
| Environmental Product Declaration | |
| ● global warming potential [CO2 eq] / during manufacturing | 5.88 kg |
| ● global warming potential [CO2 eq] / during operation | 102 kg |
| ● global warming potential [CO2 eq] / after end of life | -0.988 kg |
| ● global warming potential [CO2 eq] / total | 107 kg |

| **Environment** | **General Product Approval** |
|---|---|
| Environmental Confirmations | |

| **General Product Approval** | | | **EMV** | **Test Certificates** | |
|---|---|---|---|---|---|
| | | | | Type Test Certificates/Test Report | Special Test Certificate |

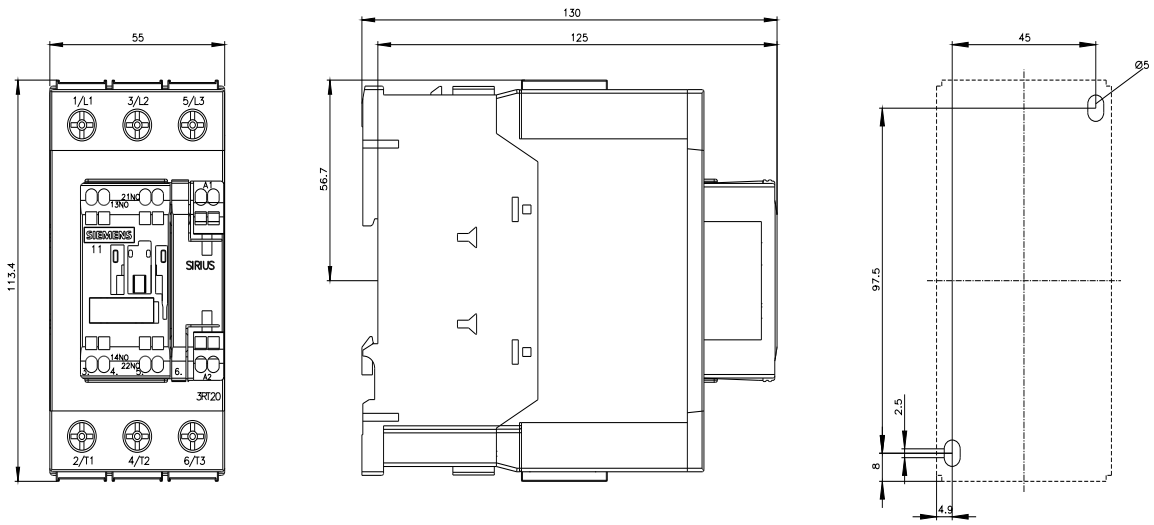
| **Maritime application** |
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| other | | | Railway |
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| Miscellaneous | Confirmation | 产品合格 QC PASS | Special Test Certific-ate |

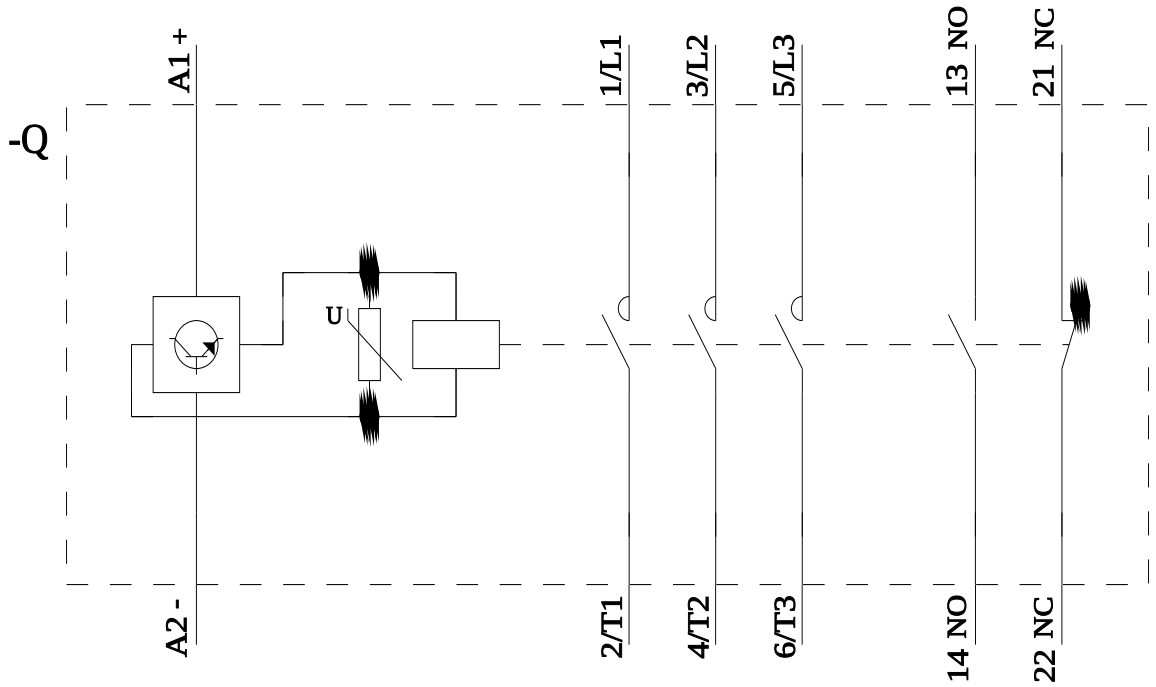
## Further information

**Information on the packaging**
https://support.industry.siemens.com/cs/ww/en/view/109813875
**Information for data generation and storage**
https://support.industry.siemens.com/cs/ww/en/view/109995012
**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=3RT2038-3KB40
**Service&Support (Manuals, Certificates, Characteristics, FAQs,...)**
https://support.industry.siemens.com/cs/ww/en/ps/3RT2038-3KB40
**Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)**
https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2038-3KB40&lang=en
**Cax online generator**
https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2038-3KB40
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