



contactor AC-1, 140 A, 690 V / 40 °C, 3-pole, 230 V AC, 50/60 Hz, auxiliary contacts: 1 NO + 1 NC, main circuit: box terminal, control and auxiliary circuit: screw terminal, size: S3

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|---|----------------------------|
| product brand name | SIRIUS |
| product designation | Contactor |
| product type designation | 3RT24 |
| General technical data | |
| size of contactor | S3 |
| 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 | 29.4 W |
| • at AC in hot operating state per pole | 9.8 W |
| • without load current share typical | 8.8 W |
| type of calculation of power loss depending on pole | quadratic |
| insulation voltage | |
| • of main circuit with degree of pollution 3 rated value | 1 000 V |
| • of auxiliary circuit with degree of pollution 3 rated value | 690 V |
| surge voltage resistance | |
| • of main circuit rated value | 8 kV |
| • of auxiliary circuit rated value | 6 kV |
| shock resistance at rectangular impulse | |
| • at AC | 10.3g / 5 ms, 6.g / 10 ms |
| shock resistance with sine pulse | |
| • at AC | 16.3g / 5 ms, 10.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 Prohibition (Date) | 03/01/2017 |
| Weight | 1.722 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 |
| 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 |

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| number of NO contacts for main contacts | 3 |
| number of NC contacts for main contacts | 0 |
| type of voltage for main current circuit | AC |
| operational current | |
| <ul style="list-style-type: none"> 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 55 °C rated value — up to 690 V at ambient temperature 60 °C rated value — up to 1000 V at ambient temperature 40 °C rated value — up to 1000 V at ambient temperature 60 °C rated value at AC-3 <ul style="list-style-type: none"> — at 400 V rated value — at 690 V rated value | 140 A 130 A 130 A 60 A 60 A 44 A 44 A |
| minimum cross-section in main circuit at maximum AC-1 rated value | 50 mm ² |
| operational 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 — at 60 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-1 <ul style="list-style-type: none"> — at 24 V rated value — at 60 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-1 <ul style="list-style-type: none"> — at 24 V rated value — at 60 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value — at 600 V rated value at 1 current path at DC-3 at DC-5 <ul style="list-style-type: none"> — at 24 V rated value — at 60 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 60 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 60 V rated value — at 110 V rated value — at 220 V rated value — at 440 V rated value | 130 A 80 A 12 A 2.5 A 0.8 A 0.48 A 130 A 130 A 130 A 13 A 2.4 A 1.3 A 130 A 130 A 130 A 130 A 6 A 3.4 A 6 A 3 A 1.25 A 0.35 A 0.15 A 0.1 A 130 A 130 A 130 A 1.75 A 0.42 A 0.27 A 130 A 130 A 130 A 4 A 0.8 A |

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|---|---|
| — at 600 V rated value | 0.45 A |
| no-load switching frequency | |
| • at AC | 5 000 1/h |
| operating frequency at AC-1 maximum | 650 1/h |
| Control circuit/ Control | |
| type of voltage | AC |
| 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 | 348 VA |
| • at 60 Hz | 296 VA |
| inductive power factor with closing power of the coil | |
| • at 50 Hz | 0.62 |
| • at 60 Hz | 0.55 |
| apparent holding power of magnet coil at AC | |
| • at 50 Hz | 25 VA |
| • at 60 Hz | 18 VA |
| inductive power factor with the holding power of the coil | |
| • at 50 Hz | 0.35 |
| • at 60 Hz | 0.41 |
| closing delay | |
| • at AC | 13 ... 50 ms |
| opening delay | |
| • at AC | 10 ... 21 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 | 1 |
| • attachable | 2 |
| • instantaneous contact | 1 |
| number of NO contacts for auxiliary contacts | 1 |
| • attachable | 2 |
| • instantaneous contact | 1 |
| operational current at AC-12 maximum | 10 A |
| operational 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 |
| 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) |
| Short-circuit protection | |
| product function short circuit protection | No |
| design of the miniature circuit breaker for short-circuit protection of the auxiliary switch required | gG: 10 A (230 V, 400 A) |
| 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) |

- with type of assignment 2 required
- for short-circuit protection of the auxiliary switch required

gR: 250 A (690 V, 100 kA)

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 |
| 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 | 140 mm |
| width | 70 mm |
| depth | 152 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 — downwards — at the side | 20 mm 10 mm 10 mm 0 mm 20 mm 10 mm 10 mm 10 mm 20 mm 10 mm 10 mm 10 mm |

Connections/ Terminals

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|---|---|
| type of electrical connection | |
| <ul style="list-style-type: none"> • for main current circuit • for auxiliary and control circuit • at contactor for auxiliary contacts • of magnet coil | box terminal screw-type terminals Screw-type terminals Screw-type terminals |
| type of connectable conductor cross-sections for main contacts | |
| <ul style="list-style-type: none"> • solid • stranded • solid or stranded • finely stranded with core end processing | 2x (2.5 ... 16 mm²) 2x (2.5 ... 16 mm²), 2x (10 ... 50 mm²), 1x (10 ... 70 mm²) 2x (2.5 ... 16 mm²), 2x (10 ... 50 mm²), 1x (10 ... 70 mm²) 2x (2.5 ... 35 mm²), 1x (2.5 ... 50 mm²) |
| connectable conductor cross-section for main contacts | |
| <ul style="list-style-type: none"> • solid • solid or stranded • stranded • finely stranded with core end processing | 2.5 ... 16 mm² 4 ... 70 mm² 6 ... 70 mm² 2.5 ... 50 mm² |
| connectable conductor cross-section for auxiliary contacts | |
| <ul style="list-style-type: none"> • solid or stranded • finely stranded with core end processing | 0.5 ... 2.5 mm² 0.5 ... 2.5 mm² |
| type of connectable conductor cross-sections | |
| <ul style="list-style-type: none"> • for auxiliary contacts <ul style="list-style-type: none"> — solid — solid or stranded — finely stranded with core end processing • for AWG cables for auxiliary contacts | 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²) 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²) 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²) 2x (20 ... 16), 2x (18 ... 14) |

Safety related data

| | |
|---|------------------|
| product function | |
| <ul style="list-style-type: none"> • mirror contact according to IEC 60947-4-1 • positively driven operation according to IEC 60947-5-1 • suitable for safety function | Yes No Yes |
| suitability for use safety-related switching OFF | Yes |
| service life maximum | 20 a |
| proportion of dangerous failures | |
| <ul style="list-style-type: none"> • with low demand rate according to SN 31920 • with high demand rate according to SN 31920 | 40 % 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 | |
| General Product Approval | |



[Confirmation](#)



[KC](#)

| | | | |
|--------------------------|-----|-------------------|-------------------|
| General Product Approval | EMV | Test Certificates | Marine / Shipping |
|--------------------------|-----|-------------------|-------------------|



[Type Test Certificates/Test Report](#)

[Special Test Certificate](#)



| | | |
|-------------------|-------|---------|
| Marine / Shipping | other | Railway |
|-------------------|-------|---------|



[Confirmation](#)

[Special Test Certificate](#)

| | |
|-----------------|-------------|
| Dangerous goods | Environment |
|-----------------|-------------|

[Transport Information](#)

[Environmental Confirmations](#)

Further information

Information on the packaging

<https://support.industry.siemens.com/cs/ww/en/view/109813875>

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=3RT2446-1AL20>

Cax online generator

<http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2446-1AL20>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2446-1AL20>

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

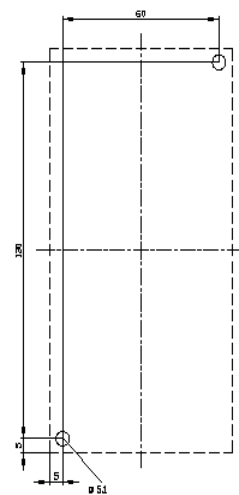
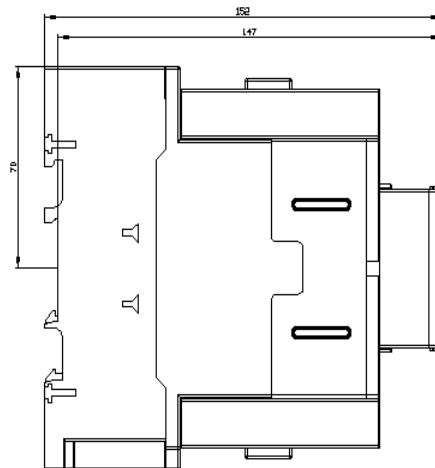
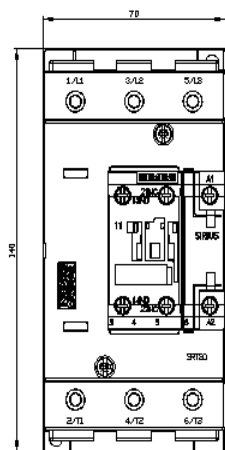
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2446-1AL20&lang=en

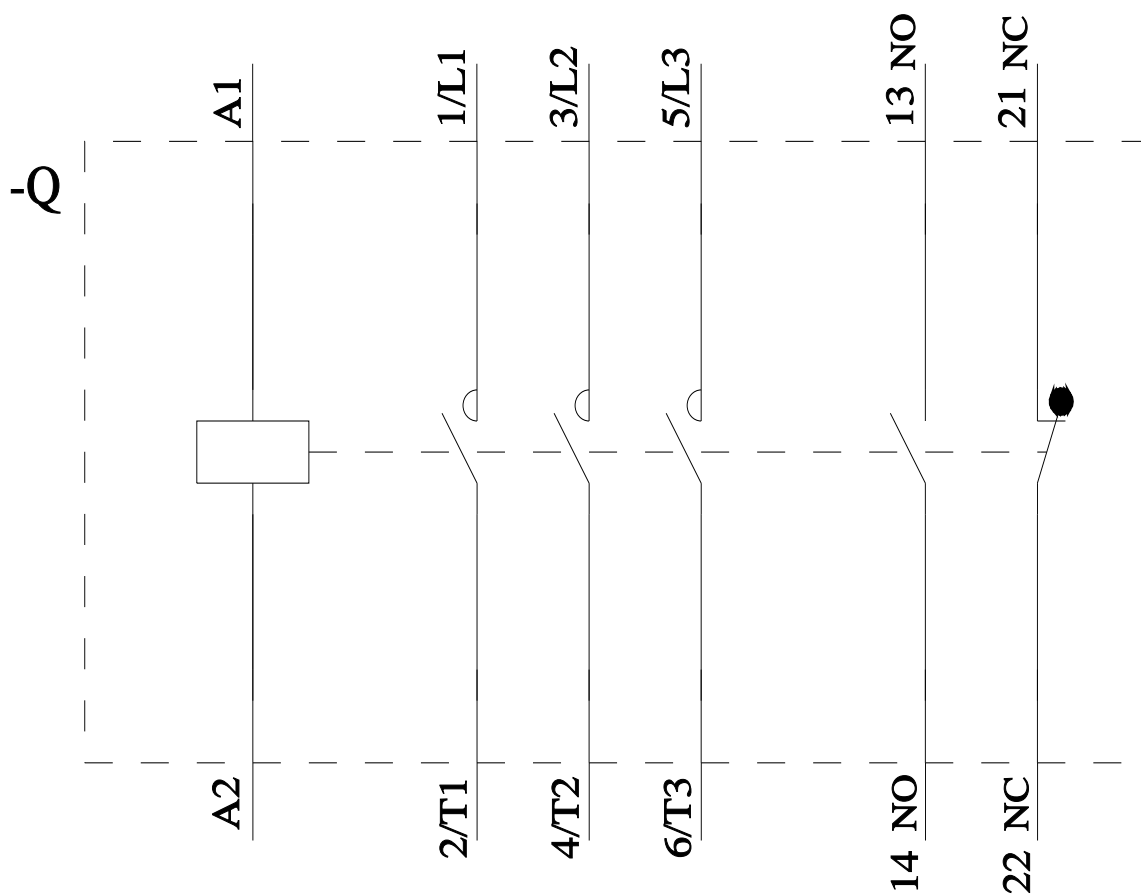
Characteristic: Tripping characteristics, I²t, Let-through current

<https://support.industry.siemens.com/cs/ww/en/ps/3RT2446-1AL20/char>

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

<http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2446-1AL20&objecttype=14&gridview=view1>





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