

Siemens  
EcoTech



Circuit breaker size S2 for starter combination Rated current 45 A N-release 650 A screw terminal Standard switching capacity

|                                                                                                |                          |
|------------------------------------------------------------------------------------------------|--------------------------|
| product brand name                                                                             | SIRIUS                   |
| product designation                                                                            | Circuit breaker          |
| design of the product                                                                          | For starter combinations |
| product type designation                                                                       | 3RV2                     |
| <b>General technical data</b>                                                                  |                          |
| Product equipment of circuit breaker for motor protection complete unit with protection device | Yes                      |
| size of the circuit-breaker                                                                    | S2                       |
| size of contactor can be combined company-specific                                             | S2                       |
| product function disconnecter functionality                                                    | Yes                      |
| product extension auxiliary switch                                                             | Yes                      |
| power loss [W] for rated value of the current                                                  |                          |
| • at AC in hot operating state                                                                 | 24.5 W                   |
| • at AC in hot operating state per pole                                                        | 8.2 W                    |
| type of calculation of power loss current-dependent                                            | quadratic                |
| insulation voltage with degree of pollution 3 at AC rated value                                | 690 V                    |
| surge voltage resistance rated value                                                           | 6 kV                     |
| maximum permissible voltage for protective separation                                          |                          |
| • in networks with ungrounded star point between main and auxiliary circuit                    | 400 V                    |
| • in networks with grounded star point between main and auxiliary circuit                      | 400 V                    |
| protection class IP                                                                            |                          |
| • on the front according to IEC 60529                                                          | IP20                     |
| • on the front                                                                                 | IP20                     |
| • of the terminal                                                                              | IP00                     |
| shock resistance according to IEC 60068-2-27                                                   | 25 g / 11 ms Sinus       |
| mechanical service life (operating cycles)                                                     |                          |
| • of the main contacts typical                                                                 | 50 000                   |
| • of auxiliary contacts typical                                                                | 50 000                   |
| electrical endurance (operating cycles) typical                                                | 50 000                   |
| reference code according to IEC 81346-2                                                        | Q                        |
| continuous current rated value                                                                 | 45 A                     |
| Substance Prohibitance (day/month/year)                                                        | 10/15/2014               |
| SVHC substance name                                                                            | Lead CAS-No. 7439-92-1   |
| Net Weight                                                                                     | 1.05 kg                  |
| <b>Ambient conditions</b>                                                                      |                          |

|                                                                      |                |
|----------------------------------------------------------------------|----------------|
| installation altitude at height above sea level maximum              | 2 000 m        |
| <b>ambient temperature</b>                                           |                |
| • during operation                                                   | -20 ... +60 °C |
| • during storage                                                     | -50 ... +80 °C |
| • during transport                                                   | -50 ... +80 °C |
| relative humidity during operation                                   | 10 ... 95 %    |
| <b>Main circuit</b>                                                  |                |
| <b>number of poles for main current circuit</b>                      | 3              |
| <b>type of voltage for main current circuit</b>                      | AC             |
| <b>operating voltage</b>                                             |                |
| • rated value                                                        | 690 V          |
| • rated value                                                        | 20 ... 690 V   |
| • at AC-3 rated value maximum                                        | 690 V          |
| • at AC-3e rated value maximum                                       | 690 V          |
| <b>operating frequency rated value</b>                               | 50 ... 60 Hz   |
| <b>operational current rated value</b>                               | 45 A           |
| <b>operational current</b>                                           |                |
| • at AC-3 at 400 V rated value                                       | 45 A           |
| • at AC-3e at 400 V rated value                                      | 45 A           |
| <b>operating power</b>                                               |                |
| • at AC-3                                                            |                |
| — at 230 V rated value                                               | 11 kW          |
| — at 400 V rated value                                               | 22 kW          |
| — at 500 V rated value                                               | 30 kW          |
| — at 690 V rated value                                               | 37 kW          |
| • at AC-3e                                                           |                |
| — at 230 V rated value                                               | 11 kW          |
| — at 400 V rated value                                               | 22 kW          |
| — at 500 V rated value                                               | 30 kW          |
| — at 690 V rated value                                               | 37 kW          |
| <b>operating frequency</b>                                           |                |
| • at AC-3 maximum                                                    | 15 1/h         |
| • at AC-3e maximum                                                   | 15 1/h         |
| <b>Auxiliary circuit</b>                                             |                |
| <b>type of voltage for auxiliary and control circuit</b>             | AC/DC          |
| <b>number of NC contacts for auxiliary contacts</b>                  | 0              |
| <b>number of NO contacts for auxiliary contacts</b>                  | 0              |
| number of CO contacts for auxiliary contacts                         | 0              |
| <b>Protective and monitoring functions</b>                           |                |
| <b>product function</b>                                              |                |
| • ground fault detection                                             | No             |
| • phase failure detection                                            | No             |
| <b>trip class</b>                                                    | CLASS 10       |
| <b>protection function thermal overload protection (ANSI 49)</b>     | No             |
| <b>maximum short-circuit current breaking capacity (Icu)</b>         |                |
| • at AC at 240 V rated value                                         | 100 kA         |
| • at AC at 400 V rated value                                         | 65 kA          |
| • at AC at 500 V rated value                                         | 10 kA          |
| • at AC at 690 V rated value                                         | 4 kA           |
| <b>operating short-circuit current breaking capacity (Ics) at AC</b> |                |
| • at 240 V rated value                                               | 100 kA         |
| • at 400 V rated value                                               | 30 kA          |
| • at 500 V rated value                                               | 5 kA           |
| • at 690 V rated value                                               | 2 kA           |
| response value current of instantaneous short-circuit trip unit      | 650 A          |
| <b>UL/CSA ratings</b>                                                |                |
| <b>full-load current (FLA) for 3-phase AC motor</b>                  |                |
| • at 480 V rated value                                               | 45 A           |
| • at 600 V rated value                                               | 45 A           |

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>yielded mechanical performance [hp]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>• for single-phase AC motor <ul style="list-style-type: none"> <li>— at 110/120 V rated value</li> <li>— at 230 V rated value</li> </ul> </li> <li>• for 3-phase AC motor <ul style="list-style-type: none"> <li>— at 200/208 V rated value</li> <li>— at 220/230 V rated value</li> <li>— at 460/480 V rated value</li> <li>— at 575/600 V rated value</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3 hp<br>10 hp<br><br>15 hp<br>15 hp<br>40 hp<br>50 hp                                                                                                                                                           |
| <b>Short-circuit protection</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                 |
| <b>product function short circuit protection</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Yes                                                                                                                                                                                                             |
| <b>design of the short-circuit trip</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | magnetic                                                                                                                                                                                                        |
| <b>design of the fuse link for IT network for short-circuit protection of the main circuit</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>• at 240 V</li> <li>• at 400 V</li> <li>• at 500 V</li> <li>• at 690 V</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | none required<br>125<br>100<br>80                                                                                                                                                                               |
| <b>Installation/ mounting/ dimensions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                 |
| <b>mounting position</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | any                                                                                                                                                                                                             |
| <b>fastening method</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715                                                                                                                                        |
| <b>Mounting method of circuit breaker for Transformer protection, Generator protection and system protection optional standard bar mounting</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Yes                                                                                                                                                                                                             |
| <b>height</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 140 mm                                                                                                                                                                                                          |
| <b>width</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 55 mm                                                                                                                                                                                                           |
| <b>depth</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 149 mm                                                                                                                                                                                                          |
| <b>required spacing</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>• with side-by-side mounting <ul style="list-style-type: none"> <li>— forwards</li> <li>— backwards</li> <li>— upwards</li> <li>— downwards</li> <li>— at the side</li> </ul> </li> <li>• for grounded parts <ul style="list-style-type: none"> <li>— forwards</li> <li>— backwards</li> <li>— upwards</li> <li>— at the side</li> <li>— downwards</li> </ul> </li> <li>• for live parts <ul style="list-style-type: none"> <li>— forwards</li> <li>— backwards</li> <li>— upwards</li> <li>— downwards</li> <li>— at the side</li> </ul> </li> <li>• for grounded parts at 400 V <ul style="list-style-type: none"> <li>— downwards</li> <li>— upwards</li> <li>— at the side</li> </ul> </li> <li>• for live parts at 400 V <ul style="list-style-type: none"> <li>— downwards</li> <li>— upwards</li> <li>— at the side</li> </ul> </li> <li>• for grounded parts at 500 V <ul style="list-style-type: none"> <li>— downwards</li> <li>— upwards</li> <li>— at the side</li> </ul> </li> <li>• for live parts at 500 V <ul style="list-style-type: none"> <li>— downwards</li> </ul> </li> </ul> | 0 mm<br>0 mm<br>50 mm<br>50 mm<br>0 mm<br><br>0 mm<br>0 mm<br>50 mm<br>10 mm<br>50 mm<br><br>0 mm<br>0 mm<br>50 mm<br>50 mm<br>10 mm<br><br>50 mm<br>50 mm<br>10 mm<br><br>50 mm<br>50 mm<br>10 mm<br><br>50 mm |

|                                                                                  |                                                                |
|----------------------------------------------------------------------------------|----------------------------------------------------------------|
| — upwards                                                                        | 50 mm                                                          |
| — at the side                                                                    | 10 mm                                                          |
| • for grounded parts at 690 V                                                    |                                                                |
| — downwards                                                                      | 50 mm                                                          |
| — upwards                                                                        | 50 mm                                                          |
| — backwards                                                                      | 0 mm                                                           |
| — at the side                                                                    | 10 mm                                                          |
| — forwards                                                                       | 0 mm                                                           |
| • for live parts at 690 V                                                        |                                                                |
| — downwards                                                                      | 50 mm                                                          |
| — upwards                                                                        | 50 mm                                                          |
| — backwards                                                                      | 0 mm                                                           |
| — at the side                                                                    | 10 mm                                                          |
| — forwards                                                                       | 0 mm                                                           |
| <b>Connections/ Terminals</b>                                                    |                                                                |
| <b>product component removable terminal for auxiliary and control circuit</b>    | No                                                             |
| <b>type of electrical connection</b>                                             |                                                                |
| • for main current circuit                                                       | screw-type terminals                                           |
| <b>arrangement of electrical connectors for main current circuit</b>             | Top and bottom                                                 |
| <b>type of connectable conductor cross-sections</b>                              |                                                                |
| • for main contacts                                                              |                                                                |
| — solid or stranded                                                              | 2x (1 ... 25 mm <sup>2</sup> ), 1x (1 ... 35 mm <sup>2</sup> ) |
| — finely stranded with core end processing                                       | 2x (1 ... 16 mm <sup>2</sup> ), 1x (1 ... 25 mm <sup>2</sup> ) |
| • for AWG cables for main contacts                                               | 2x (18 ... 3), 1x (18 ... 2)                                   |
| <b>connectable conductor cross-section for main contacts</b>                     |                                                                |
| • solid or stranded                                                              | 1 ... 35 mm <sup>2</sup>                                       |
| • finely stranded with core end processing                                       | 1 ... 25 mm <sup>2</sup>                                       |
| <b>AWG number as coded connectable conductor cross section for main contacts</b> | 18 ... 2                                                       |
| <b>tightening torque</b>                                                         |                                                                |
| • for main contacts with screw-type terminals                                    | 3 ... 4.5 N·m                                                  |
| <b>design of screwdriver shaft</b>                                               | Diameter 5 to 6 mm                                             |
| <b>size of the screwdriver tip</b>                                               | Pozidriv size 2                                                |
| <b>design of the thread of the connection screw</b>                              |                                                                |
| • for main contacts                                                              | M6                                                             |
| <b>Safety related data</b>                                                       |                                                                |
| product function suitable for safety function                                    | Yes                                                            |
| <b>suitability for use</b>                                                       |                                                                |
| • safety-related switching on                                                    | No                                                             |
| • safety-related switching OFF                                                   | Yes                                                            |
| <b>service life maximum</b>                                                      | 10 a                                                           |
| <b>test wear-related service life necessary</b>                                  | Yes                                                            |
| <b>proportion of dangerous failures</b>                                          |                                                                |
| • with low demand rate according to SN 31920                                     | 40 %                                                           |
| • with high demand rate according to SN 31920                                    | 50 %                                                           |
| <b>B10 value with high demand rate according to SN 31920</b>                     | 5 000                                                          |
| <b>failure rate [FIT] with low demand rate according to SN 31920</b>             | 50 FIT                                                         |
| <b>ISO 13849</b>                                                                 |                                                                |
| <b>device type according to ISO 13849-1</b>                                      | 3                                                              |
| <b>overdimensioning according to ISO 13849-2 necessary</b>                       | Yes                                                            |
| <b>IEC 61508</b>                                                                 |                                                                |
| <b>safety device type according to IEC 61508-2</b>                               | Type A                                                         |
| <b>T1 value</b>                                                                  |                                                                |
| • for proof test interval or service life according to IEC 61508                 | 10 a                                                           |
| <b>Electrical Safety</b>                                                         |                                                                |
| <b>protection class IP on the front according to IEC 60529</b>                   | IP20                                                           |

|                                                      |                                                  |
|------------------------------------------------------|--------------------------------------------------|
| touch protection on the front according to IEC 60529 | finger-safe, for vertical contact from the front |
|------------------------------------------------------|--------------------------------------------------|

## Display

|                                      |        |
|--------------------------------------|--------|
| display version for switching status | Handle |
|--------------------------------------|--------|

## Approvals Certificates

### Environmental Product Declaration

|                                                            |            |
|------------------------------------------------------------|------------|
| • global warming potential [CO2 eq] / during manufacturing | 12.8 kg    |
| • global warming potential [CO2 eq] / during sales         | 0.477 kg   |
| • global warming potential [CO2 eq] / during operation     | 230 kg     |
| • global warming potential [CO2 eq] / after end of life    | -3.4 kg    |
| • global warming potential [CO2 eq] / total                | 239.877 kg |

### Environment

[Environmental Confirmations](#)



### General Product Approval

### Test Certificates



[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)

### Maritime application



### other

### Railway

[Miscellaneous](#)

[Confirmation](#)

[Miscellaneous](#)



[Special Test Certificate](#)

[Confirmation](#)

### 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=3RV2331-4VC10>

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

<https://support.industry.siemens.com/cs/ww/en/ps/3RV2331-4VC10>

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

[https://www.automation.siemens.com/bilddb/cax\\_de.aspx?mlfb=3RV2331-4VC10&lang=en](https://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RV2331-4VC10&lang=en)

Cax online generator

<https://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RV2331-4VC10>

Characteristic curves

[https://curves.simaris.siemens.com/curves/<mmp\\_prod\\_noCOMP='HAUPT'></mmp\\_prod\\_no>](https://curves.simaris.siemens.com/curves/<mmp_prod_noCOMP='HAUPT'></mmp_prod_no>)



