# **SIEMENS**

Data sheet 3RT2018-2AH02

Power contactor, AC-3 16 A, 7.5 kW / 400 V 1 NC, 48 V AC, 50/60 Hz 3-pole, Size S00 Spring-type terminals



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

General technical data	
size of contactor	S00
product extension	
<ul> <li>function module for communication</li> </ul>	No
auxiliary switch	Yes
power loss [W] for rated value of the current	
<ul> <li>at AC in hot operating state</li> </ul>	6.6 W
<ul> <li>at AC in hot operating state per pole</li> </ul>	2.2 W
power loss [W] for rated value of the current without	5.7 W
load current share typical	
surge voltage resistance	
<ul> <li>of main circuit rated value</li> </ul>	6 kV
<ul> <li>of auxiliary circuit rated value</li> </ul>	6 kV
maximum permissible voltage for safe isolation	
<ul> <li>between coil and main contacts acc. to EN</li> </ul>	400 V
60947-1	

protection class IP	
• on the front	IP20
of the terminal	IP20
shock resistance at rectangular impulse	
• at AC	7,3g / 5 ms, 4,7g / 10 ms
shock resistance with sine pulse	
• at AC	11,4g / 5 ms, 7,3g / 10 ms
mechanical service life (switching cycles)	
of contactor typical	30 000 000
<ul> <li>of the contactor with added electronics-</li> </ul>	5 000 000
compatible auxiliary switch block typical	
of the contactor with added auxiliary switch	10 000 000
block typical	0
reference code acc. to DIN EN 81346-2	Q
Ambient conditions	
<ul> <li>installation altitude at height above sea level</li> </ul>	2 000 m
maximum	
ambient temperature	05
<ul><li>during operation</li></ul>	-25 +60 °C
during storage	-55 +80 °C
Main circuit	
number of poles for main current circuit	3
number of NO contacts for main contacts	3
operating voltage	
<ul> <li>at AC-3 rated value maximum</li> </ul>	690 V
operating current	
● at AC-1 at 400 V	
— at ambient temperature 40 °C rated value	22 A
<ul><li>— at ambient temperature 40 °C rated value</li><li>• at AC-1</li></ul>	22 A
·	22 A 22 A
<ul><li>at AC-1</li><li>— up to 690 V at ambient temperature 40 °C</li></ul>	
<ul> <li>at AC-1</li> <li>up to 690 V at ambient temperature 40 °C rated value</li> <li>up to 690 V at ambient temperature 60 °C</li> </ul>	22 A
<ul> <li>at AC-1</li> <li>up to 690 V at ambient temperature 40 °C rated value</li> <li>up to 690 V at ambient temperature 60 °C rated value</li> </ul>	22 A
<ul> <li>at AC-1</li> <li>up to 690 V at ambient temperature 40 °C rated value</li> <li>up to 690 V at ambient temperature 60 °C rated value</li> <li>at AC-3</li> </ul>	22 A 20 A
<ul> <li>at AC-1         <ul> <li>up to 690 V at ambient temperature 40 °C rated value</li> <li>up to 690 V at ambient temperature 60 °C rated value</li> </ul> </li> <li>at AC-3         <ul> <li>at 400 V rated value</li> </ul> </li> </ul>	22 A 20 A 16 A
<ul> <li>at AC-1         <ul> <li>up to 690 V at ambient temperature 40 °C rated value</li> <li>up to 690 V at ambient temperature 60 °C rated value</li> </ul> </li> <li>at AC-3         <ul> <li>at 400 V rated value</li> <li>at 500 V rated value</li> </ul> </li> </ul>	22 A 20 A 16 A 12.4 A
<ul> <li>at AC-1         <ul> <li>up to 690 V at ambient temperature 40 °C rated value</li> <li>up to 690 V at ambient temperature 60 °C rated value</li> </ul> </li> <li>at AC-3         <ul> <li>at 400 V rated value</li> <li>at 500 V rated value</li> <li>at 690 V rated value</li> </ul> </li> </ul>	22 A 20 A 16 A 12.4 A 8.9 A
<ul> <li>at AC-1         <ul> <li>up to 690 V at ambient temperature 40 °C rated value</li> <li>up to 690 V at ambient temperature 60 °C rated value</li> </ul> </li> <li>at AC-3         <ul> <li>at 400 V rated value</li> <li>at 500 V rated value</li> <li>at 690 V rated value</li> </ul> </li> <li>at AC-4 at 400 V rated value</li> </ul>	22 A 20 A 16 A 12.4 A 8.9 A 11.5 A

<ul> <li>up to 230 V for current peak value n=20 rated value</li> </ul>	9.6 A
<ul> <li>up to 400 V for current peak value n=20 rated value</li> </ul>	9.6 A
<ul> <li>up to 500 V for current peak value n=20 rated value</li> </ul>	9.6 A
<ul> <li>up to 690 V for current peak value n=20 rated value</li> </ul>	8.9 A
• at AC-6a	
<ul> <li>up to 230 V for current peak value n=30 rated value</li> </ul>	6.6 A
<ul> <li>up to 400 V for current peak value n=30 rated value</li> </ul>	6.4 A
<ul> <li>up to 500 V for current peak value n=30 rated value</li> </ul>	6.4 A
<ul> <li>up to 690 V for current peak value n=30 rated value</li> </ul>	6.4 A
minimum cross-section in main circuit	
<ul> <li>at maximum AC-1 rated value</li> </ul>	4 mm²
operating current for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	5.5 A
• at 690 V rated value	4.4 A
operating current	
• at 1 current path at DC-1	
— at 24 V rated value	20 A
— at 110 V rated value	2.1 A
— at 220 V rated value	0.8 A
— at 440 V rated value	0.6 A
— at 600 V rated value	0.6 A
<ul><li>with 2 current paths in series at DC-1</li></ul>	
— at 24 V rated value	20 A
— at 110 V rated value	12 A
— at 220 V rated value	1.6 A
— at 440 V rated value	0.8 A
— at 600 V rated value	0.7 A
<ul> <li>with 3 current paths in series at DC-1</li> </ul>	
— at 24 V rated value	20 A
— at 110 V rated value	20 A
— at 220 V rated value	20 A
— at 440 V rated value	1.3 A
— at 600 V rated value	1 A
operating current	

• at 1 current path at DC-3 at DC-5	
— at 24 V rated value	20 A
— at 110 V rated value	0.1 A
• with 2 current paths in series at DC-3 at DC-5	
— at 24 V rated value	20 A
— at 110 V rated value	0.35 A
• with 3 current paths in series at DC-3 at DC-5	
— at 24 V rated value	20 A
— at 110 V rated value	20 A
— at 220 V rated value	1.5 A
— at 440 V rated value	0.2 A
— at 600 V rated value	0.2 A
operating power	
• at AC-3	
— at 230 V rated value	4 kW
— at 400 V rated value	7.5 kW
— at 500 V rated value	7.5 kW
— at 690 V rated value	7.5 kW
operating power for approx. 200000 operating cycles	
at AC-4	
• at 400 V rated value	2.5 kW
• at 690 V rated value	3.5 kW
operating apparent output at AC-6a	
<ul> <li>up to 230 V for current peak value n=20 rated value</li> </ul>	3.8 kV·A
<ul> <li>up to 400 V for current peak value n=20 rated value</li> </ul>	6.6 kV·A
<ul> <li>up to 500 V for current peak value n=20 rated value</li> </ul>	8.3 kV·A
<ul> <li>up to 690 V for current peak value n=20 rated value</li> </ul>	10.6 kV·A
operating apparent output at AC-6a	
<ul> <li>up to 230 V for current peak value n=30 rated value</li> </ul>	2.5 kV·A
<ul> <li>up to 400 V for current peak value n=30 rated value</li> </ul>	4.4 kV·A
• up to 500 V for current peak value n=30 rated value	5.5 kV·A
• up to 690 V for current peak value n=30 rated value	7.6 kV·A
short-time withstand current in cold operating state up to 40 °C	

<ul> <li>limited to 1 s switching at zero current maximum</li> </ul>	300 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 5 s switching at zero current maximum</li> </ul>	169 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 10 s switching at zero current maximum</li> </ul>	128 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 30 s switching at zero current maximum</li> </ul>	92 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 60 s switching at zero current maximum</li> </ul>	74 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
• at AC	10 000 1/h
operating frequency	
• at AC-1 maximum	1 000 1/h
• at AC-2 maximum	750 1/h
• at AC-3 maximum	750 1/h
• at AC-4 maximum	250 1/h

Control circuit/ Control	
type of voltage of the control supply voltage	AC
control supply voltage at AC	
● at 50 Hz rated value	48 V
● at 60 Hz rated value	48 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	37 V·A
● at 60 Hz	33 V·A
inductive power factor with closing power of the coil	
● at 50 Hz	0.8
● at 60 Hz	0.75
apparent holding power of magnet coil at AC	
● at 50 Hz	5.7 V·A
● at 60 Hz	4.4 V·A
inductive power factor with the holding power of the coil	
● at 50 Hz	0.25
● at 60 Hz	0.25
closing delay	
• at AC	8 33 ms
opening delay	
• at AC	4 15 ms

arcing time	10 15 ms
control version of the switch operating mechanism	Standard A1 - A2
Auxiliary circuit	
number of NC contacts for auxiliary contacts	
• instantaneous contact	1
operating current at AC-12 maximum	10 A
operating 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
operating 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
operating 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	
full-load current (FLA) for three-phase AC motor	
• at 480 V rated value	14 A
• at 600 V rated value	11 A
yielded mechanical performance [hp]	
<ul><li>for single-phase AC motor</li></ul>	
— at 110/120 V rated value	1 hp
— at 230 V rated value	2 hp
• for three-phase AC motor	
— at 200/208 V rated value	3 hp
— at 220/230 V rated value	5 hp
— at 460/480 V rated value	10 hp
— at 575/600 V rated value	10 hp

contact rating of auxiliary contacts according to
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A600 / Q600

### Short-circuit protection

### design of the fuse link

- for short-circuit protection of the main circuit
  - with type of coordination 1 required

gG: 50A (690V,100kA), aM: 25A (690V,100kA), BS88: 50A

(415V,80kA)

— with type of assignment 2 required

gG: 25A (690V,100kA), aM: 20A (690V,100kA), BS88: 25A

(415V,80kA)

• for short-circuit protection of the auxiliary switch

required

gG: 10 A (500 V, 1 kA)

nstallation/ mounting/ dimensions mounting position	+/-180° rotation possible on vertical mounting surface; can be
mounting position	tilted forward and backward by +/- 22.5° on vertical mounting
	surface
mounting type	screw and snap-on mounting onto 35 mm standard mounting rai
	according to DIN EN 60715
<ul><li>side-by-side mounting</li></ul>	Yes
height	70 mm
width	45 mm
depth	73 mm
required spacing	
<ul><li>with side-by-side mounting</li></ul>	
— forwards	10 mm
— upwards	10 mm
— downwards	10 mm
— at the side	0 mm
<ul><li>for grounded parts</li></ul>	
— 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

## type of electrical connection

• for main current circuit

• for auxiliary and control current circuit

spring-loaded terminals

spring-loaded terminals

• at contactor for auxiliary contacts

Spring-type terminals

• of magnet coil

Spring-type terminals

type of connectable conductor cross-sections	
• for main contacts	
— solid	2x (0.5 4 mm²)
<ul><li>— single or multi-stranded</li></ul>	2x (0,5 4 mm²)
<ul> <li>finely stranded with core end processing</li> </ul>	2x (0.5 2.5 mm²)
<ul> <li>finely stranded without core end processing</li> </ul>	2x (0.5 2.5 mm²)
<ul> <li>at AWG conductors for main contacts</li> </ul>	2x (20 12)
connectable conductor cross-section for main contacts	
• solid	0.5 4 mm²
• stranded	0.5 4 mm²
<ul> <li>finely stranded with core end processing</li> </ul>	0.5 2.5 mm²
<ul> <li>finely stranded without core end processing</li> </ul>	0.5 2.5 mm²
connectable conductor cross-section for auxiliary contacts	
• single or multi-stranded	0.5 4 mm²
<ul> <li>finely stranded with core end processing</li> </ul>	0.5 2.5 mm²
<ul> <li>finely stranded without core end processing</li> </ul>	0.5 2.5 mm²
<ul> <li>type of connectable conductor cross-sections for auxiliary contacts</li> </ul>	
<ul> <li>single or multi-stranded</li> </ul>	2x (0,5 4 mm²)
— finely stranded with core end processing	2x (0.5 2.5 mm²)
<ul> <li>finely stranded without core end processing</li> </ul>	2x (0.5 2.5 mm²)
<ul> <li>type of connectable conductor cross-sections at AWG conductors for auxiliary contacts</li> </ul>	2x (20 12)
AWG number as coded connectable conductor cross	
section	
• for main contacts	20 12
• for auxiliary contacts	20 12
Safety related data	
B10 value	
<ul> <li>with high demand rate acc. to SN 31920</li> </ul>	1 000 000
proportion of dangerous failures	
<ul> <li>with low demand rate acc. to SN 31920</li> </ul>	40 %
<ul> <li>with high demand rate acc. to SN 31920</li> </ul>	73 %
failure rate [FIT]	
• with low demand rate acc. to SN 31920	100 FIT
product function	
• mirror contact acc. to IEC 60947-4-1	Yes
T1 value for proof test interval or service life acc. to IEC 61508	20 y

#### protection against electrical shock

finger-safe

suitability for use safety-related switching OFF

Yes

### Certificates/ approvals

#### **General Product Approval**

**EMC** 











Functional Safety/Safety of Machinery	Declaration of Conformity	Test Certificates	Marine / Ship- ping
Type Examination Certificate	Miscellaneous  EG-Konf.	Type Test Certificates/Test Report Special Test Certificate	ABS

### Marine / Shipping













#### other

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=3RT2018-2AH02

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2018-2AH02

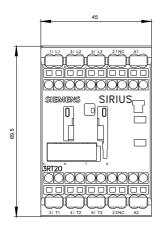
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)

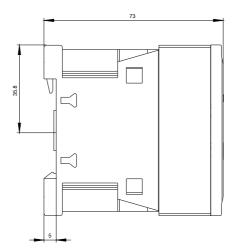
https://support.industry.siemens.com/cs/ww/en/ps/3RT2018-2AH02

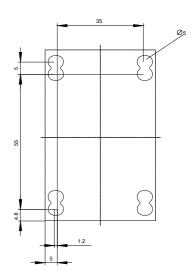
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...) http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RT2018-2AH02&lang=en

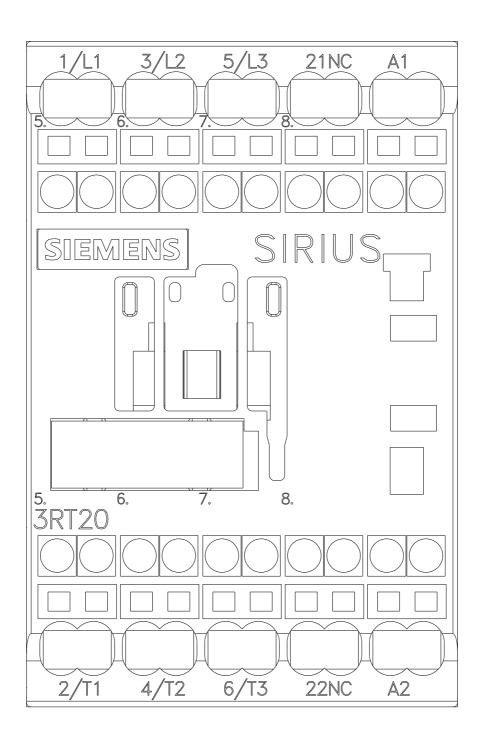
Characteristic: Tripping characteristics, I²t, Let-through current https://support.industry.siemens.com/cs/ww/en/ps/3RT2018-2AH02/char

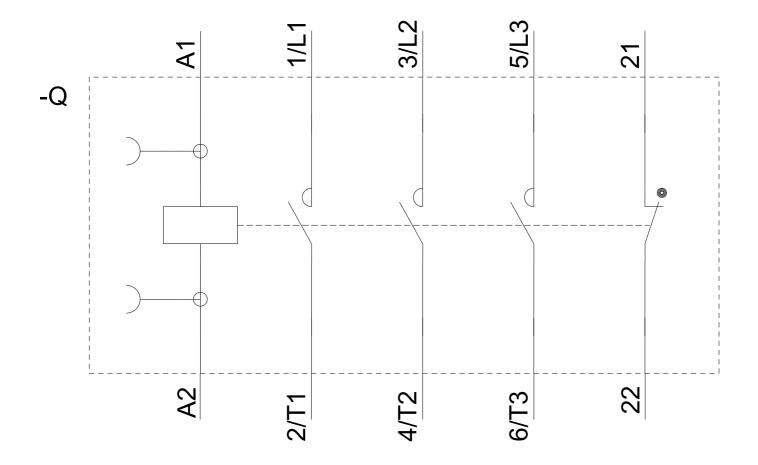
Further characteristics (e.g. electrical endurance, switching frequency)











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