Siemens □□□ Series Service Manual

3RT6015-1BB42

1. Description

3RT2015-1BB42

2. Specifications

Specification	Value
size	of contactor S00
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 0.6 W
●	at AC in hot operating state per pole 0.2 W
●	without load current share typical 4 W
type	of calculation of power loss depending on pole 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 6,7g / 5 ms, 4,2g / 10 ms
shock	resistance with sine pulse
●	at DC 10,5g / 5 ms, 6,6g / 10 ms
mechanical	service life (operating cycles)
●	of contactor typical 30 000 000
●	of the contactor with added electronically optimized
auxiliary	switch block typi

3. Product Information

3RT2015-1BB42

power contactor, AC-3e/AC-3, 7 A, 3 kW / 400 V, 3-pole, 24 V DC, auxiliary

contacts: 1 NC, screw terminal, size: S00

product brand name SIRIUS

product designation Power contactor

product type designation 3RT2

General technical data

size of contactor S00

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 0.6 W

● at AC in hot operating state per pole 0.2 W

● without load current share typical 4 W

type of calculation of power loss depending on pole quadratic

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● 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

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maximum permissible voltage for protective separation between

coil and main contacts according to EN 60947-1

400 V

shock resistance at rectangular impulse

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shock resistance with sine pulse

● at DC 10,5g / 5 ms, 6,6g / 10 ms

mechanical service life (operating cycles)

● of contactor typical 30 000 000

● 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 (Date) 10/01/2009

Weight 0.292 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 %

Environmental footprint

Environmental Product Declaration(EPD) Yes

Global Warming Potential [CO2 eq] total 153 kg

Global Warming Potential [CO2 eq] during manufacturing 1.42 kg

Global Warming Potential [CO2 eq] during operation 152 kg

Global Warming Potential [CO2 eq] after end of life -0.305 kg

Main circuit

number of poles for main current circuit 3

number of NO contacts for main contacts 3

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

18 A

● at AC-1

— up to 690 V at ambient temperature 40 °C rated

value

18 A

— up to 690 V at ambient temperature 60 °C rated

value

16 A

● at AC-3

— at 400 V rated value 7 A

— at 500 V rated value 6 A

— at 690 V rated value 4.9 A

● at AC-3e

— at 400 V rated value 7 A

— at 500 V rated value 6 A

— at 690 V rated value 4.9 A

● at AC-4 at 400 V rated value 6.5 A

● at AC-5a up to 690 V rated value 15.8 A

● at AC-5b up to 400 V rated value 5.8 A

● at AC-6a

— up to 230 V for current peak value n=20 rated value 4 A

— up to 400 V for current peak value n=20 rated value 4 A

— up to 500 V for current peak value n=20 rated value 3.8 A

— up to 690 V for current peak value n=20 rated value 3.6 A

● at AC-6a

— up to 230 V for current peak value n=30 rated value 2.7 A

— up to 400 V for current peak value n=30 rated value 2.7 A

— up to 500 V for current peak value n=30 rated value 2.5 A

— up to 690 V for current peak value n=30 rated value 2.4 A

minimum cross-section in main circuit at maximum AC-1 rated

value

2.5 mm²

operational current for approx. 200000 operating cycles at

AC-4

● at 400 V rated value 2.6 A

● at 690 V rated value 1.8 A

operational current

● at 1 current path at DC-1

— at 24 V rated value 15 A

— at 60 V rated value 15 A

— at 110 V rated value 1.5 A

— at 220 V rated value 0.6 A

— at 440 V rated value 0.42 A

— at 600 V rated value 0.42 A

● with 2 current paths in series at DC-1

— at 24 V rated value 15 A

— at 60 V rated value 15 A

— at 110 V rated value 8.4 A

— at 220 V rated value 1.2 A

— at 440 V rated value 0.6 A

— at 600 V rated value 0.5 A

● with 3 current paths in series at DC-1

— at 24 V rated value 15 A

— at 60 V rated value 15 A

— at 110 V rated value 15 A

— at 220 V rated value 15 A

— at 440 V rated value 0.9 A

— at 600 V rated value 0.7 A

● at 1 current path at DC-3 at DC-5

— at 24 V rated value 15 A

— at 60 V rated value 0.35 A

● with 2 current paths in series at DC-3 at DC-5

— at 24 V rated value 15 A

— at 60 V rated value 3.5 A

— at 110 V rated value 0.25 A

● with 3 current paths in series at DC-3 at DC-5

— at 24 V rated value 15 A

— at 60 V rated value 15 A

— at 110 V rated value 15 A

— at 220 V rated value 1.2 A

— at 440 V rated value 0.14 A

— at 600 V rated value 0.14 A

operating power

● at AC-3

— at 230 V rated value 1.5 kW

— at 400 V rated value 3 kW

— at 500 V rated value 3 kW

— at 690 V rated value 4 kW

● at AC-3e

— at 230 V rated value 1.5 kW

— at 400 V rated value 3 kW

— at 500 V rated value 3 kW

— at 690 V rated value 4 kW

operating power for approx. 200000 operating cycles at AC4

● at 400 V rated value 1.15 kW

● at 690 V rated value 1.15 kW

operating apparent power at AC-6a

● up to 230 V for current peak value n=20 rated value 1.5 kVA

● up to 400 V for current peak value n=20 rated value 2.7 kVA

● up to 500 V for current peak value n=20 rated value 3.3 kVA

● up to 690 V for current peak value n=20 rated value 4.3 kVA

operating apparent power at AC-6a

● up to 230 V for current peak value n=30 rated value 1 kVA

● up to 400 V for current peak value n=30 rated value 1.8 kVA

● up to 500 V for current peak value n=30 rated value 2.2 kVA

● up to 690 V for current peak value n=30 rated value 2.9 kVA

short-time withstand current in cold operating state up to

40 °C

● limited to 1 s switching at zero current maximum 120 A; Use minimum cross-section acc. to AC-1 rated value

● limited to 5 s switching at zero current maximum 86 A; Use minimum cross-section acc. to AC-1 rated value

● limited to 10 s switching at zero current maximum 67 A; Use minimum cross-section acc. to AC-1 rated value

● limited to 30 s switching at zero current maximum 52 A; Use minimum cross-section acc. to AC-1 rated value

● limited to 60 s switching at zero current maximum 43 A; Use minimum cross-section acc. to AC-1 rated value

no-load switching frequency

● at DC 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-3e maximum 750 1/h

● at AC-4 maximum 250 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 1.1

closing power of magnet coil at DC 4 W

holding power of magnet coil at DC 4 W

closing delay

● at DC 30 ... 100 ms

opening delay

● at DC 7 ... 13 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

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

full-load current (FLA) for 3-phase AC motor

● at 480 V rated value 4.8 A

● at 600 V rated value 6.1 A

yielded mechanical performance [hp]

● for single-phase AC motor

— at 110/120 V rated value 0.25 hp

— at 230 V rated value 0.75 hp

● for 3-phase AC motor

— at 200/208 V rated value 1.5 hp

— at 220/230 V rated value 2 hp

— at 460/480 V rated value 3 hp

— at 575/600 V rated value 5 hp

contact rating of auxiliary contacts according to UL 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: 35A (690V,100kA), aM: 20A (690V,100kA), BS88: 35A (415V,80kA)

— with type of assignment 2 required gG: 20A (690V,100kA), aM: 16A (690V, 100kA), BS88: 20A (415V, 80kA)

● 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 screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715

height 58 mm

width 45 mm

depth 73 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 screw-type terminals

● at contactor for auxiliary contacts Screw-type terminals

● of magnet coil Screw-type terminals

type of connectable conductor cross-sections

● for main contacts

— solid 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²), 2x 4 mm²

— solid or stranded 2x (0,5 ... 1,5 mm²), 2x (0,75 ... 2,5 mm²), 2x 4 mm²

— finely stranded with core end processing 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)

● for AWG cables for main contacts 2x (20 ... 16), 2x (18 ... 14), 2x 12

connectable conductor cross-section for main contacts

● solid 0.5 ... 4 mm²

● stranded 0.5 ... 4 mm²

● finely stranded with core end processing 0.5 ... 2.5 mm²

connectable conductor cross-section for auxiliary contacts

● solid or stranded 0.5 ... 4 mm²

● finely stranded with core end processing 0.5 ... 2.5 mm²

type of connectable conductor cross-sections

● for auxiliary contacts

— solid or stranded 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²), 2x 4 mm²

— finely stranded with core end processing 2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)

● for AWG cables for auxiliary contacts 2x (20 ... 16), 2x (18 ... 14), 2x 12

AWG number as coded connectable conductor cross section

● for main contacts 20 ... 12

● for auxiliary contacts 20 ... 12

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