



power contactor AC-1 690 A / 690 V / 40 °C 3-pole, U_c: 72 V DC (0.7-1.25) PLC input 24-110 V DC drive: electronic auxiliary contacts 2 NO + 2 NC main circuit: busbar control and auxiliary circuit: screw terminal extended rated condition railroad IEC 60077

product brand name	SIRIUS
product designation	Power contactor
design of the product	With extended operating range
product type designation	3RT14
General technical data	
size of contactor	S12
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	165 W
• at AC in hot operating state per pole	55 W
• without load current share typical	3.6 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	500 V
surge voltage resistance	
• of main circuit rated value	8 kV
• of auxiliary circuit rated value	6 kV
maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1	690 V
shock resistance for railway applications according to EN 61373	Category 1, Class B
shock resistance at rectangular impulse	
• at DC	8,5g / 5 ms, 4,2g / 10 ms
shock resistance with sine pulse	
• at DC	13,4g / 5 ms, 6,5g / 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)	09/06/2016
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8 Perfluorobutane sulfonic acid (PFBS) and its salts - -
Weight	10.085 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	

<ul style="list-style-type: none"> during operation 	-40 ... +70 °C
<ul style="list-style-type: none"> 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
number of NO contacts for main contacts	3
number of NC contacts for main contacts	0
operating voltage	
<ul style="list-style-type: none"> at AC-3 rated value maximum 	690 V
operational current	
<ul style="list-style-type: none"> at AC-1 at 400 V at ambient temperature 40 °C rated value 	690 A
<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 	690 A
<ul style="list-style-type: none"> at AC-1 <ul style="list-style-type: none"> up to 690 V at ambient temperature 60 °C rated value 	600 A
<ul style="list-style-type: none"> at AC-2 at 400 V rated value 	170 A
<ul style="list-style-type: none"> at AC-3 <ul style="list-style-type: none"> at 400 V rated value 	170 A
<ul style="list-style-type: none"> at AC-3 <ul style="list-style-type: none"> at 500 V rated value 	170 A
<ul style="list-style-type: none"> at AC-3 <ul style="list-style-type: none"> at 690 V rated value 	170 A
minimum cross-section in main circuit	
<ul style="list-style-type: none"> at maximum AC-1 rated value 	480 mm ²
<ul style="list-style-type: none"> at maximum Ith rated value 	480 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 	500 A
<ul style="list-style-type: none"> at 1 current path at DC-1 <ul style="list-style-type: none"> at 110 V rated value 	33 A
<ul style="list-style-type: none"> at 1 current path at DC-1 <ul style="list-style-type: none"> at 220 V rated value 	3.8 A
<ul style="list-style-type: none"> at 1 current path at DC-1 <ul style="list-style-type: none"> at 440 V rated value 	0.9 A
<ul style="list-style-type: none"> at 1 current path at DC-1 <ul style="list-style-type: none"> at 600 V rated value 	0.6 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-1 <ul style="list-style-type: none"> at 24 V rated value 	500 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-1 <ul style="list-style-type: none"> at 110 V rated value 	500 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-1 <ul style="list-style-type: none"> at 220 V rated value 	500 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-1 <ul style="list-style-type: none"> at 440 V rated value 	4 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-1 <ul style="list-style-type: none"> at 600 V rated value 	2 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-1 <ul style="list-style-type: none"> at 24 V rated value 	500 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-1 <ul style="list-style-type: none"> at 110 V rated value 	500 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-1 <ul style="list-style-type: none"> at 220 V rated value 	500 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-1 <ul style="list-style-type: none"> at 440 V rated value 	11 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-1 <ul style="list-style-type: none"> at 600 V rated value 	5.2 A
<ul style="list-style-type: none"> at 1 current path at DC-3 at DC-5 <ul style="list-style-type: none"> at 24 V rated value 	500 A
<ul style="list-style-type: none"> at 1 current path at DC-3 at DC-5 <ul style="list-style-type: none"> at 110 V rated value 	3 A
<ul style="list-style-type: none"> at 1 current path at DC-3 at DC-5 <ul style="list-style-type: none"> at 220 V rated value 	0.6 A
<ul style="list-style-type: none"> at 1 current path at DC-3 at DC-5 <ul style="list-style-type: none"> at 440 V rated value 	0.18 A
<ul style="list-style-type: none"> at 1 current path at DC-3 at DC-5 <ul style="list-style-type: none"> at 600 V rated value 	0.125 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> at 24 V rated value 	500 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> at 110 V rated value 	500 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> at 220 V rated value 	2.5 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> at 440 V rated value 	0.65 A
<ul style="list-style-type: none"> with 2 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> at 600 V rated value 	0.37 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> at 24 V rated value 	500 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> at 110 V rated value 	500 A
<ul style="list-style-type: none"> with 3 current paths in series at DC-3 at DC-5 <ul style="list-style-type: none"> at 220 V rated value 	500 A

— at 440 V rated value	1.4 A
— at 600 V rated value	0.75 A
operating power	
• at AC-2 at 400 V rated value	90 kW
• at AC-3	
— at 230 V rated value	160 kW
— at 400 V rated value	90 kW
— at 500 V rated value	110 kW
— at 690 V rated value	160 kW
short-time withstand current in cold operating state up to 40 °C	
• limited to 1 s switching at zero current maximum	7 484 A; Use minimum cross-section acc. to AC-1 rated value
• limited to 5 s switching at zero current maximum	7 484 A; Use minimum cross-section acc. to AC-1 rated value
• limited to 10 s switching at zero current maximum	5 978 A; Use minimum cross-section acc. to AC-1 rated value
• limited to 30 s switching at zero current maximum	3 765 A; Use minimum cross-section acc. to AC-1 rated value
• limited to 60 s switching at zero current maximum	2 887 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
• at DC	500 1/h
operating frequency	
• at AC-1 maximum	600 1/h
operating frequency	
• at DC-1 maximum	250 1/h
Ratings for railway applications	
thermal current (I_{th}) up to 690 V	
• up to 40 °C according to IEC 60077 rated value	690 A
• up to 70 °C according to IEC 60077 rated value	520 A
Control circuit/ Control	
type of voltage	DC
type of voltage of the control supply voltage	DC
control supply voltage at DC rated value	110 V
operating range factor control supply voltage rated value of magnet coil at DC	
• initial value	0.7
• full-scale value	1.25
consumed current at PLC-control input according to IEC 60947-1 maximum	2 mA
voltage at PLC-control input	24 ... 110 V
design of the surge suppressor	with varistor
closing power of magnet coil at DC	800 W
holding power of magnet coil at DC	3.6 W
closing delay	
• at DC	60 ... 90 ms
opening delay	
• at DC	80 ... 100 ms
arcing time	10 ... 15 ms
control version of the switch operating mechanism	PLC-IN or Standard A1 - A2 (adjustable)
Auxiliary circuit	
number of NC contacts for auxiliary contacts	2
• instantaneous contact	2
number of NO contacts for auxiliary contacts	2
• instantaneous contact	2
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
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

<ul style="list-style-type: none"> • at 125 V rated value • at 220 V rated value • at 600 V rated value 	2 A 1 A 0.15 A
operational current at DC-13	
<ul style="list-style-type: none"> • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 110 V rated value • at 125 V rated value • at 220 V rated value • at 600 V rated value 	6 A 2 A 2 A 1 A 0.9 A 0.3 A 0.1 A
UL/CSA ratings	
full-load current (FLA) for 3-phase AC motor	
<ul style="list-style-type: none"> • at 480 V rated value • at 600 V rated value 	180 A 192 A
yielded mechanical performance [hp]	
<ul style="list-style-type: none"> • for 3-phase AC motor <ul style="list-style-type: none"> — at 220/230 V rated value — at 460/480 V rated value — at 575/600 V rated value 	75 hp 150 hp 200 hp
contact rating of auxiliary contacts according to UL	A600 / Q600
Short-circuit protection	
product function short circuit protection	No
design of the fuse link	
<ul style="list-style-type: none"> • for short-circuit protection of the main circuit <ul style="list-style-type: none"> — with type of coordination 1 required — with type of assignment 2 required • for short-circuit protection of the auxiliary switch required 	gG: 800 A (690 V, 50 kA) gR: 710 A (690 V, 100 kA) gG: 10 A (500 V, 1 kA)
Installation/ mounting/ dimensions	
mounting position	with vertical mounting surface +/-90° rotatable, with vertical mounting surface +/- 22.5° tiltable to the front and back
fastening method	screw fixing
height	214 mm
width	160 mm
depth	225 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 10 mm 20 mm 10 mm 10 mm 10 mm 20 mm 10 mm 10 mm 10 mm
Connections/ Terminals	
type of electrical connection	
<ul style="list-style-type: none"> • for main current circuit • for auxiliary and control circuit 	screw-type terminals screw-type terminals
width of connection bar	25 mm
thickness of connection bar	6 mm
diameter of holes	11 mm
number of holes	1
type of connectable conductor cross-sections for main contacts	
<ul style="list-style-type: none"> • solid or stranded 	2x (70 ... 240 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 	<p>2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²), max. 2x (0.75 ... 4 mm²)</p> <p>2x (0,5 ... 1,5 mm²), 2x (0,75 ... 2,5 mm²), max. 2x (0,75 ... 4 mm²)</p> <p>2x (0.5 ... 1.5 mm²), 2x (0.75 ... 2.5 mm²)</p> <p>2x (20 ... 16), 2x (18 ... 14), 1x 12</p>
AWG number as coded connectable conductor cross section	
<ul style="list-style-type: none"> • for auxiliary contacts 	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 	<p>Yes</p> <p>No</p> <p>Yes</p>
suitability for use safety-related switching OFF	Yes; safety-related disconnection via A1 A2
service life maximum	20 a
test wear-related service life necessary	Yes
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 	<p>40 %</p> <p>73 %</p>
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	IP00; IP20 with box terminal/cover
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front with box terminal/cover

Communication/ Protocol

product function bus communication	No
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Approvals Certificates

General Product Approval



[Confirmation](#)



EMV	Functional Safety	Test Certificates	other
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[Type Examination Certificate](#)

[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)

[Confirmation](#)

[Miscellaneous](#)

Railway	Environment
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[Special Test Certificate](#)

[Type Test Certificates/Test Report](#)

[Environmental Confirmations](#)

Further information

Information on the packaging

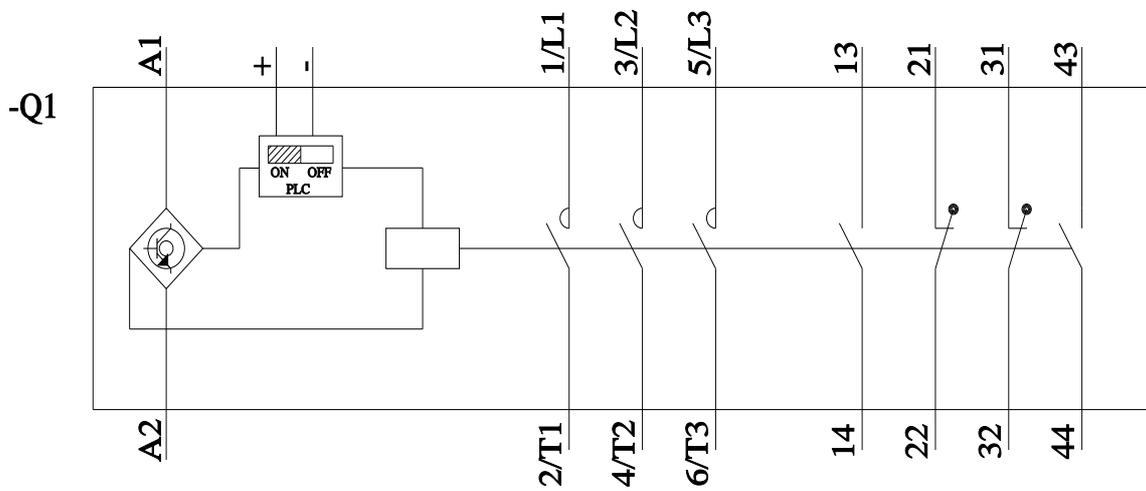
<https://support.industry.siemens.com/cs/ww/en/view/109813875>

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=3RT1476-6XF46-0LA2>



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