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Data sheet 3RT1066-2AV36

Siemens EcoTech

power contactor, AC-3e/AC-3 300 A, 160 kW / 400 V, AC (50-60 Hz) / DC Uc: 380-420 V 3-pole, auxiliary contacts 2 NO + 2 NC drive: conventional main circuit: busbar control and auxiliary circuit: spring-loaded terminal

product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT1
General technical data	
size of contactor	S10
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	66 W
● at AC in hot operating state per pole	22 W
● without load current share typical	7.4 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 at rectangular impulse	
● at AC	8,5g / 5 ms, 4,2g / 10 ms
● at DC	8,5g / 5 ms, 4,2g / 10 ms
shock resistance with sine pulse	
● at AC	13,4g / 5 ms, 6,5g / 10 ms
● 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 Prohibitance (Date)	
SVHC substance name	Lead - 7439-92-1
Weight	6.621 kg
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m

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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	580 kg
Global Warming Potential [CO2 eq] during manufacturing	26.3 kg
Global Warming Potential [CO2 eq] during operation	559 kg
Global Warming Potential [CO2 eq] after end of life	-4.89 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	1 000 V
● at AC-3e rated value maximum	1 000 V
operational current	
● at AC-1 at 400 V at ambient temperature 40 °C rated value	330 A
● at AC-1	
— up to 690 V at ambient temperature 40 °C rated value	330 A
— up to 690 V at ambient temperature 60 °C rated value	300 A
— up to 1000 V at ambient temperature 40 °C rated value	150 A
— up to 1000 V at ambient temperature 60 °C rated value	150 A
● at AC-3	
— at 400 V rated value	300 A
— at 500 V rated value	300 A
— at 690 V rated value	280 A
— at 1000 V rated value	95 A
● at AC-3e	
— at 400 V rated value	300 A
— at 500 V rated value	300 A
— at 690 V rated value	280 A
— at 1000 V rated value	95 A
● at AC-4 at 400 V rated value	280 A
● at AC-5a up to 690 V rated value	290 A
● at AC-5b up to 400 V rated value	249 A
● at AC-6a	
— up to 230 V for current peak value n=20 rated value	292 A
— up to 400 V for current peak value n=20 rated value	292 A
— up to 500 V for current peak value n=20 rated value	292 A
— up to 690 V for current peak value n=20 rated value	280 A
— up to 1000 V for current peak value n=20 rated value	95 A
● at AC-6a	
— up to 230 V for current peak value n=30 rated value	195 A
— up to 400 V for current peak value n=30 rated value	195 A
— up to 500 V for current peak value n=30 rated value	195 A
— up to 690 V for current peak value n=30 rated value	195 A
— up to 1000 V for current peak value n=30 rated value	95 A
minimum cross-section in main circuit at maximum AC-1 rated value	185 mm²
operational current for approx. 200000 operating cycles at AC-4	
● at 400 V rated value	125 A
● at 690 V rated value	115 A
operational current	

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● **at 1 current path at DC-1**	
— at 24 V rated value	300 A
— at 60 V rated value	300 A
— at 110 V rated value	33 A
— at 220 V rated value	3.8 A
— at 440 V rated value	0.9 A
— at 600 V rated value	0.6 A
● **with 2 current paths in series at DC-1**	
— at 24 V rated value	300 A
— at 60 V rated value	300 A
— at 110 V rated value	300 A
— at 220 V rated value	300 A
— at 440 V rated value	4 A
— at 600 V rated value	2 A
● **with 3 current paths in series at DC-1**	
— at 24 V rated value	300 A
— at 60 V rated value	300 A
— at 110 V rated value	300 A
— at 220 V rated value	300 A
— at 440 V rated value	11 A
— at 600 V rated value	5.2 A
● **at 1 current path at DC-3 at DC-5**	
— at 24 V rated value	300 A
— at 60 V rated value	11 A
— at 220 V rated value	0.6 A
— at 440 V rated value	0.18 A
— at 600 V rated value	0.125 A
● **with 2 current paths in series at DC-3 at DC-5**	
— at 24 V rated value	300 A
— at 60 V rated value	300 A
— at 110 V rated value	300 A
— at 220 V rated value	2.5 A
— at 440 V rated value	0.65 A
— at 600 V rated value	0.37 A
● **with 3 current paths in series at DC-3 at DC-5**	
— at 24 V rated value	300 A
— at 60 V rated value	300 A
— at 110 V rated value	300 A
— at 220 V rated value	300 A
— at 440 V rated value	1.4 A
— at 600 V rated value	0.75 A
operating power	
● at AC-3	
— at 230 V rated value	90 kW
— at 400 V rated value	160 kW
— at 500 V rated value	200 kW
— at 690 V rated value	250 kW
— at 1000 V rated value	132 kW
● at AC-3e	
— at 230 V rated value	90 kW
— at 400 V rated value	160 kW
— at 500 V rated value	200 kW
— at 690 V rated value	250 kW
— at 1000 V rated value	132 kW
operating power for approx. 200000 operating cycles at AC-4	
● at 400 V rated value	71 kW
● at 690 V rated value	112 kW
operating apparent power at AC-6a	
● up to 230 V for current peak value n=20 rated value	110 000 kVA
● up to 400 V for current peak value n=20 rated value	200 000 VA

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● up to 500 V for current peak value n=20 rated value	250 000 VA
● up to 690 V for current peak value n=20 rated value	330 000 VA
● up to 1000 V for current peak value n=20 rated value	160 000 VA
operating apparent power at AC-6a	
● up to 230 V for current peak value n=30 rated value	70 000 VA
● up to 400 V for current peak value n=30 rated value	130 000 VA
● up to 500 V for current peak value n=30 rated value	160 000 VA
● up to 690 V for current peak value n=30 rated value	230 000 VA
● up to 1000 V for current peak value n=30 rated value	160 000 VA
short-time withstand current in cold operating state up to 40 °C	
● limited to 1 s switching at zero current maximum	5 524 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 5 s switching at zero current maximum	4 579 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 10 s switching at zero current maximum	3 153 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 30 s switching at zero current maximum	1 883 A; Use minimum cross-section acc. to AC-1 rated value
● limited to 60 s switching at zero current maximum	1 445 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
● at AC	2 000 1/h
● at DC	2 000 1/h
operating frequency	
● at AC-1 maximum	750 1/h
● at AC-2 maximum	250 1/h
● at AC-3 maximum	500 1/h
● at AC-3e maximum	500 1/h
● at AC-4 maximum	130 1/h
Control circuit/ Control	
type of voltage of the control supply voltage	AC/DC
control supply voltage at AC	
● at 50 Hz rated value	380 ... 420 V
● at 60 Hz rated value	380 ... 420 V
control supply voltage at DC rated value	380 ... 420 V
operating range factor control supply voltage rated value of magnet coil at DC	
● initial value	0.8
● full-scale value	1.1
operating range factor control supply voltage rated value of magnet coil at AC	
● at 50 Hz	0.8 ... 1.1
● at 60 Hz	0.8 ... 1.1
design of the surge suppressor	with varistor
apparent pick-up power	
● **at minimum rated control supply voltage at AC**	
— at 50 Hz	490 VA
— at 60 Hz	490 VA
● **at maximum rated control supply voltage at AC**	
— at 60 Hz	590 VA
— at 50 Hz	590 VA
apparent pick-up power of magnet coil at AC	
● at 50 Hz	590 VA
● at 60 Hz	590 VA
inductive power factor with closing power of the coil	
● at 50 Hz	0.9
● at 60 Hz	0.9
apparent holding power	
● at minimum rated control supply voltage at DC	6.1 VA
● at maximum rated control supply voltage at DC	7.4 VA
apparent holding power	
● **at minimum rated control supply voltage at AC**	
— at 50 Hz	5.6 VA
— at 60 Hz	5.6 VA
● **at maximum rated control supply voltage at AC**	
— at 50 Hz	6.7 VA

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— at 60 Hz	6.7 VA
inductive power factor with the holding power of the coil	
● at 50 Hz	0.9
● at 60 Hz	0.9
closing power of magnet coil at DC	650 W
holding power of magnet coil at DC	7.4 W
closing delay	
● at AC	30 ... 95 ms
● at DC	30 ... 95 ms
opening delay	
● at AC	40 ... 80 ms
● at DC	40 ... 80 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	2
number of NO contacts for auxiliary contacts 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
● 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	302 A
● at 600 V rated value	289 A
yielded mechanical performance [hp]	
● for 3-phase AC motor	
— at 200/208 V rated value	100 hp
— at 220/230 V rated value	125 hp
— at 460/480 V rated value	250 hp
— at 575/600 V rated value	300 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: 500 A (690 V, 100 kA)
— with type of assignment 2 required	gG: 400 A (690 V, 100 kA), aM: 315 A (690 V, 50 kA), BS88: 400 A (415 V, 50 kA)
● for short-circuit protection of the auxiliary switch required	gG: 10 A (500 V, 1 kA)
Installation/ mounting/ dimensions	

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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	210 mm
width	145 mm
depth	202 mm
required spacing	
● with side-by-side mounting	
— forwards	20 mm
— upwards	10 mm
— downwards	10 mm
— at the side	0 mm
● for grounded parts	
— forwards	20 mm
— upwards	10 mm
— at the side	10 mm
— downwards	10 mm
● for live parts	
— forwards	20 mm
— upwards	10 mm
— downwards	10 mm
— at the side	10 mm
Connections/ Terminals	
type of electrical connection	
● for main current circuit	Connection bar
● for auxiliary and control circuit	spring-loaded terminals
● at contactor for auxiliary contacts	Spring-type terminals
● of magnet coil	Spring-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 AWG cables for main contacts	2/0 ... 500 kcmil
connectable conductor cross-section for main contacts	
● stranded	70 ... 240 mm²
connectable conductor cross-section for auxiliary contacts	
● solid or stranded	0.25 ... 2.5 mm²
● finely stranded with core end processing	0.25 ... 1.5 mm²
● finely stranded without core end processing	0.25 ... 2.5 mm²
type of connectable conductor cross-sections	
● for auxiliary contacts	
— solid	2x (0.25 ... 2.5 mm²)
— solid or stranded	2x (0,25 ... 2,5 mm²)
— finely stranded with core end processing	2x (0.25 ... 1.5 mm²)
— finely stranded without core end processing	2x (0.25 ... 2.5 mm²)
● for AWG cables for auxiliary contacts	2x (24 ... 14)
AWG number as coded connectable conductor cross section	
● for auxiliary contacts	24 ... 14
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 %

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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

Approvals Certificates

General Product Approval

EG-Konf.		CCC	Confirmation	KC

General Product Approval	EMV	Functional Saftey	Test Certificates		Marine / Shipping
	RCM	Type Examination Certificate	Type Test Certificates/Test Report	Special Test Certificate	ABS

Marine / Shipping				other	
DNV	LRS	PRS	RMRS	Confirmation	Miscellaneous

other	Railway	Environment		
Confirmation	Special Test Certificate			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=3RT1066-2AV36
Cax online generator
http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT1066-2AV36
Service&Support (Manuals, Certificates, Characteristics, FAQs,...)
https://support.industry.siemens.com/cs/ww/en/ps/3RT1066-2AV36
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT1066-2AV36&lang=en
Characteristic: Tripping characteristics, I²t, Let-through current
https://support.industry.siemens.com/cs/ww/en/ps/3RT1066-2AV36/char
Further characteristics (e.g. electrical endurance, switching frequency)
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT1066-2AV36&objecttype=14&gridview=view1

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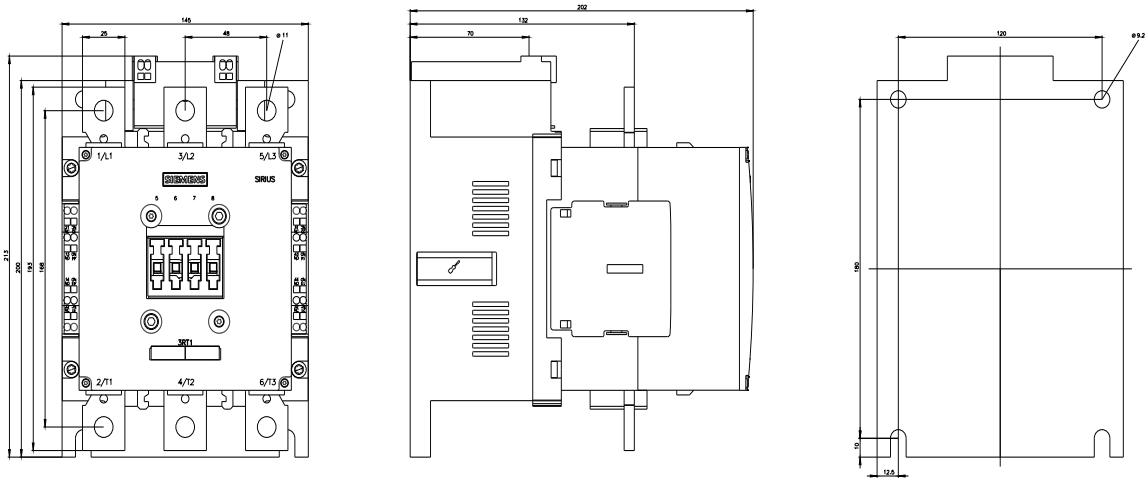

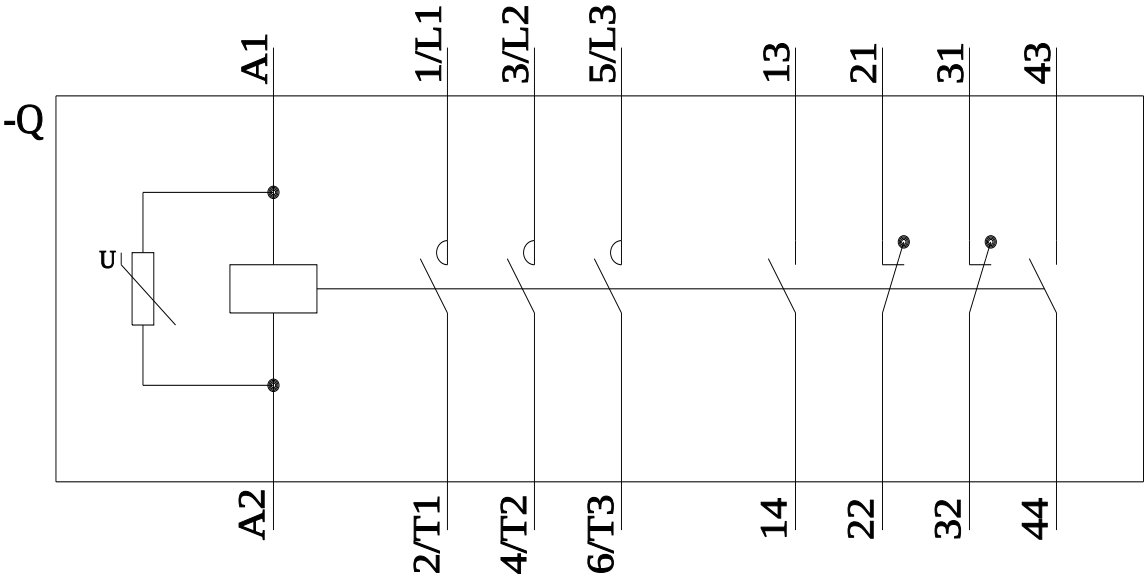

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