## **SIEMENS**

Data sheet 3RT2028-1AC24



power contactor, AC-3e/AC-3, 38 A, 18.5 kW / 400 V, 3-pole, 24 V AC, 50/60 Hz, auxiliary contacts: 2 NO + 2 NC, screw terminal, size: S0, removable auxiliary switch

product brand name	SIRIUS
product designation	Power contactor
product type designation	3RT2
General technical data	
size of contactor	S0
product extension	
<ul> <li>function module for communication</li> </ul>	No
auxiliary switch	No
power loss [W] for rated value of the current	
<ul> <li>at AC in hot operating state</li> </ul>	9.6 W
<ul> <li>at AC in hot operating state per pole</li> </ul>	3.2 W
<ul> <li>without load current share typical</li> </ul>	2.7 W
type of calculation of power loss depending on pole	quadratic
insulation voltage	
<ul> <li>of main circuit with degree of pollution 3 rated value</li> </ul>	690 V
<ul> <li>of auxiliary circuit with degree of pollution 3 rated value</li> </ul>	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 AC	8,3g / 5 ms, 5,3g / 10 ms
shock resistance with sine pulse	
• at AC	13,5g / 5 ms, 8,3g / 10 ms
mechanical service life (operating cycles)	
<ul> <li>of contactor typical</li> </ul>	10 000 000
<ul> <li>of the contactor with added electronically optimized auxiliary switch block typical</li> </ul>	5 000 000
<ul> <li>of the contactor with added auxiliary switch block typical</li> </ul>	10 000 000
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	10/01/2009
Ambient conditions	
installation altitude at height above sea level maximum	2 000 m
ambient temperature	
<ul> <li>during operation</li> </ul>	-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	74.2 kg
Global Warming Potential [CO2 eq] total  Global Warming Potential [CO2 eq] during manufacturing	1.9 kg
Global Warming Potential [CO2 eq] during mandiacturing  Global Warming Potential [CO2 eq] during operation	72.4 kg
Global Warming Potential [CO2 eq] after end of life	-0.117 kg
Main circuit	-0.117 kg
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	090 V
at AC-1 at 400 V at ambient temperature 40 °C rated value	50 A
• at AC-1	
— up to 690 V at ambient temperature 40 $^{\circ}\text{C}$ rated value	50 A
— up to 690 V at ambient temperature 60 °C rated value	42 A
• at AC-3	
— at 400 V rated value	38 A
— at 500 V rated value	32 A
— at 690 V rated value	21 A
• at AC-3e	
— at 400 V rated value	38 A
— at 500 V rated value	32 A
— at 690 V rated value	21 A
• at AC-4 at 400 V rated value	22 A
at AC-5a up to 690 V rated value	44 A
• at AC-5b up to 400 V rated value	31.5 A
• at AC-6a	00.0 A
— up to 230 V for current peak value n=20 rated value	30.8 A 30.8 A
<ul> <li>up to 400 V for current peak value n=20 rated value</li> <li>up to 500 V for current peak value n=20 rated value</li> </ul>	30.8 A
— up to 690 V for current peak value n=20 rated value  — up to 690 V for current peak value n=20 rated value	21 A
• at AC-6a	LIN
— up to 230 V for current peak value n=30 rated value	20.5 A
— up to 400 V for current peak value n=30 rated value	20.5 A
— up to 500 V for current peak value n=30 rated value	21.4 A
— up to 690 V for current peak value n=30 rated value	21 A
minimum cross-section in main circuit at maximum AC-1 rated value	10 mm²
operational current for approx. 200000 operating cycles at AC-4	
• at 400 V rated value	12 A
at 690 V rated value	12 A
operational current	
at 1 current path at DC-1	
— at 24 V rated value	35 A
— at 60 V rated value	20 A
— at 110 V rated value	4.5 A
— at 220 V rated value	1 A
— at 440 V rated value	0.4 A
— at 600 V rated value	0.25 A
<ul><li>with 2 current paths in series at DC-1</li></ul>	
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	5 A
— at 440 V rated value	1 A
— at 600 V rated value	0.8 A
<ul> <li>with 3 current paths in series at DC-1</li> </ul>	

at 24 V rated value	25 A
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	35 A
— at 440 V rated value	2.9 A
— at 600 V rated value	1.4 A
• at 1 current path at DC-3 at DC-5	
— at 24 V rated value	20 A
— at 60 V rated value	5 A
— at 220 V rated value	1.4
— at 440 V rated value	0.09 A
— at 600 V rated value	0.06 A
with 2 current paths in series at DC-3 at DC-5	
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	15 A
— at 220 V rated value	3 A
— at 440 V rated value	0.27 A
— at 600 V rated value	0.16 A
with 3 current paths in series at DC-3 at DC-5	
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	10 A
— at 440 V rated value	0.6 A
— at 600 V rated value	0.6 A
operating power	
<ul> <li>at AC-2 at 400 V rated value</li> </ul>	18.5 kW
• at AC-3	
— at 230 V rated value	11 kW
— at 400 V rated value	18.5 kW
— at 500 V rated value	18.5 kW
— at 690 V rated value	18.5 kW
• at AC-3e	
— at 230 V rated value	11 kW
— at 400 V rated value	18.5 kW
— at 500 V rated value	18.5 kW
— at 690 V rated value	18.5 kW
operating power for approx. 200000 operating cycles at AC-	
	6 PW
<ul> <li>at 400 V rated value</li> <li>at 690 V rated value</li> </ul>	6 kW 10.3 kW
	10.0 KVV
<ul> <li>operating apparent power at AC-6a</li> <li>up to 230 V for current peak value n=20 rated value</li> </ul>	12.2 kVA
<ul> <li>up to 230 V for current peak value n=20 rated value</li> <li>up to 400 V for current peak value n=20 rated value</li> </ul>	21.3 kVA
	26.6 kVA
up to 500 V for current peak value n=20 rated value      up to 600 V for current peak value n=20 rated value	25 kVA
up to 690 V for current peak value n=20 rated value	20 NVA
operating apparent power at AC-6a	8.1 kVA
up to 230 V for current peak value n=30 rated value	14.2 kVA
up to 400 V for current peak value n=30 rated value	18.5 kVA
up to 500 V for current peak value n=30 rated value	
up to 690 V for current peak value n=30 rated value  Short time withstand current in cold operating state up to	25 kVA
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>	593 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 5 s switching at zero current maximum</li> </ul>	341 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 10 s switching at zero current maximum</li> </ul>	260 A; Use minimum cross-section acc. to AC-1 rated value
<ul> <li>limited to 30 s switching at zero current maximum</li> </ul>	199 A; Use minimum cross-section acc. to AC-1 rated value
limited to 60 s switching at zero current maximum	162 A; Use minimum cross-section acc. to AC-1 rated value
no-load switching frequency	
• at AC	5 000 1/h

operating frequency  ** at AC-2 maximum  ** at AC-3 maximum  ** at BC Hz rated value  ** at BC Hz rat		
* al AC-3 maximum		
# at AC-3e maximum		1 000 1/h
** ALC-3e maximum	at AC-2 maximum	750 1/h
A STAC-4 maximum   Stype of voltage at AC   AC   AC   AC   AC   AC   AC   AC	at AC-3 maximum	750 1/h
Control Large On Vintage of the control supply voltage at AC	• at AC-3e maximum	750 1/h
type of voltage of the control supply voltage at AC         AC           at 50 Hz rated value         24 V           at 50 Hz rated value         24 V           cant 50 Hz rated value         24 V           cat 50 Hz         0.8 1.1           at 50 Hz         0.8 1.1           a t 50 Hz         0.8 1.1           a t 50 Hz         15 VA           a t 50 Hz         15 VA           a t 50 Hz         0.72           a t 50 Hz         0.74           a t 50 Hz         0.75           a t 50 Vz         0.75           a t 50 Vz	at AC-4 maximum	250 1/h
Section   Supply voltage at AC   at 36 D Hz rated value   24 V	ontrol circuit/ Control	
* at 60 Hz rated value         24 V           oporating range factor control supply voltage rated value of magnet coil at AC         0.8 1.1           * at 50 Hz         0.8 1.1           * at 60 Hz         0.8 1.1           * at 50 Hz         8 IVA           * at 60 Hz         79 VA           inductive power factor with closing power of the coil         1.0 TZ           * at 80 Hz         0.72           * at 80 Hz         0.74           * apparent bolding power of magnet coil at AC         1.05 VA           * at 80 Hz         0.74           * at 80 Hz         0.25           * at 80 Hz         0.25           * at 60 Hz         0.25           * at 60 Hz         0.28           * closing delay         * * * * * * * * * * * * * * * * * * *	type of voltage of the control supply voltage	AC
• al 100 Hz rated value         24 V           operating range factor control supply voltage rated value of segment coil at AC         8.8 ± 1.1           • al 150 Hz         0.85 ± 1.1           • alt 50 Hz         18 VA           • alt 50 Hz         19 VA           • alt 50 Hz         79 VA           • alt 60 Hz         0.72           • alt 60 Hz         0.74           • apparent holding power of magnet coil at AC         4.15 OHz           • alt 60 Hz         0.74           • apparent holding power factor with the holding power of the coil         4.15 OHz           • alt 60 Hz         0.25           • alt 60 Hz         0.25           • alt 60 Hz         0.25           • alt 60 Hz         0.26           • alt 60 Hz         0.26           • alt 60 Hz         0.28           closing delay         4.16 ms           • alt 60 Hz         4.16 ms           • arcing time         10 10 ms           control version of the switch operating mechanism         2           control version of the switch operating mechanism         4.16 ms           • arcing time         10 10 ms           control version of the switch operating alcurent alcurent at AC-12 maxim         10.A	control supply voltage at AC	
Spent col at A C C C C C C C C C C C C C C C C C C	at 50 Hz rated value	24 V
magnet coil at AC	at 60 Hz rated value	24 V
• at 80 Hz • at 60 Hz apparent pick-up power of magnet coil at AC at 50 Hz at 60 Hz billouctive power factor with closing power of the coil at 50 Hz at 60 Hz corporate holding power of magnet coil at AC at 50 Hz at 60 Hz billouctive power factor with closing power of the coil at 50 Hz at 60 Hz billouctive power factor with the holding power of the coil at 50 Hz at 60 Hz billouctive power factor with the holding power of the coil at 50 Hz at 60 Hz billouctive power factor with the holding power of the coil at 50 Hz at 60 Hz billouctive power factor with the holding power of the coil at 50 Hz billouctive power factor with the holding power of the coil at 50 Hz billouctive power factor with the holding power of the coil at 50 Hz billouctive power factor with the holding power of the coil billouctive power factor with the holding power of		
* at 60 Hz		0.0 1.1
### 100 Hz		
		0.65 1.1
• at 60 Hz		04 \/A
Inductive power factor with closing power of the coil		
• at 50 Hz • at 60 Hz apparent holding power of magnet coil at AC at 50 Hz • at 60 Hz at 50 Hz • at 60 Hz at 60 Hz at 60 Hz at 60 Hz but 6		19 VA
		0.72
a   150 Hz		
• at 50 Hz • at 60 Hz • at 60 Hz • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at 60 Hz  • at AC  • at AC  opening delay  • at AC  arcing time  control version of the switch operating mechanism  Standard A1 - A2   **Cutilitary circuit  number of NO contacts for auxiliary contacts instantaneous contact  operational current at AC-15 maximum  operational current at AC-15 maximum  operational current at AC-15 maximum  operational current at AC-12 maximum  operational current at AC-14 maximum  operational current at AC-15 maximum  operational current at AC-15 maximum  operational current at AC-12 maximum  operational current at AC-14 maximum  operational current at AC-15 maximum  operational current at AC-12 maximum  operational current at AC-15 maximum  operational current at AC-15 maximum  operational current at AC-12 maximum  operational current at AC-12 maximum  operational current at AC-12 maximum  operational current at AC-15 maximum  operational current at AC-15 maximum  operational current at AC-15 maximum  operational current at AC-12 maximum  operational current at AC-12 maximum  operational current at AC-15 maximum  operational current at AC-12 maximum  operational current at AC-13 maximum  operational current at AC-14 maximum  operational current at AC-15 maximum  operational current		U.14
• at 60 Hz   10 Hz		10.5.1/4
a ti 50 Hz		
		6.5 VA
		0.25
e at AC 840 ms  opening delay		
● at AC		0.20
e at AC 416 ms control version of the switch operating mechanism  Auxiliary circuit  number of NC contacts for auxiliary contacts instantaneous contact number of NC contacts for auxiliary contacts instantaneous contact number of NC contacts for auxiliary contacts instantaneous contact number of NO contacts for auxiliary contacts instantaneous contact 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 2 A • at 690 V rated value 1 A • at 49 V rated value 1 A  operational current at DC-12  • at 24 V rated value 6 A • at 40 V rated value 6 A • at 40 V rated value 6 A • at 40 V rated value 7 A • at 23 V rated value 7 A • at 24 V rated value 8 A • at 110 V rated value 9 A • at 60 V rated value 1 A • at 125 V rated value 1 A • at 125 V rated value 1 A • at 220 V rated value 1 A • at 420 V rated value 1 A • at 440 V rated value 2 A • at 600 V rated value 2 A • at 600 V rated value 1 A • at 100 V rated value 1 A • at 24 V rated value 1 A • at 24 V rated value 1 A • at 25 V rated value 1 A • at 24 V rated value 1 A • at 25 V rated value 1 A • at 27 V rated value 1 A • at 170		8 40 ms
• at AC         4 16 ms           arcing time         10 10 ms           control version of the switch operating mechanism         Standard A1 - A2           Auxiliary circuit         10 ms           number of NC contacts for auxiliary contacts instantaneous contact         2           number of NO contacts for auxiliary contacts instantaneous contact         2           operational current at AC-15         10 ms           operational current at AC-15         12 ms/mmm           • at 230 V rated value         6 A           • at 500 V rated value         3 A           • at 500 V rated value         1 A           • at 48 V rated value         6 A           • at 48 V rated value         6 A           • at 110 V rated value         3 A           • at 125 V rated value         6 A           • at 125 V rated value         2 A           • at 220 V rated value         1 A           • at 220 V rated value         2 A           • at 48 V rated value         6 A           • at 220 V rated value         1 A           • at 48 V rated value         2 A           • at 48 V rated value         6 A           • at 48 V rated value         9 A           • at 24 V rated value         1 A </td <td></td> <td>5 40 III</td>		5 40 III
10 10 ms   Standard A1 - A2		4 16 ms
control version of the switch operating mechanism         Standard A1 - A2           Auxiliary circuit         Image: Contact of the switch operating mechanism of NC contacts for auxiliary contacts instantaneous contact on unumber of NO contacts for auxiliary contacts instantaneous contact operational current at AC-12 maximum operational current at AC-15         10 A           operational current at AC-15         6 A           • at 230 V rated value         3 A           • at 500 V rated value         1 A           • at 690 V rated value         1 A           • at 24 V rated value         6 A           • at 24 V rated value         6 A           • at 24 V rated value         6 A           • at 110 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 220 V rated value         6 A           • at 24 V rated value         6 A           • at 24 V rated value         2 A           • at 600 V rated value         6 A           • at 27 V rated value         6 A           • at 28 V rated value         6 A           • at 28 V rated value         6 A           • at 29 V rated value         6 A           • at 100 V rated value         9 A <td></td> <td></td>		
Auxiliary circuit  number of NC contacts for auxiliary contacts instantaneous contact number of NO contacts for auxiliary contacts instantaneous contact  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 550 V rated value 1 A  operational current at DC-12  at 24 V rated value 6 A at 40 V rated value 6 A at 110 V rated value 6 A at 110 V rated value 7 A at 125 V rated value 7 A at 220 V rated value 8 A 6 A 6 A 6 A 6 A 6 A 6 A 6 A 7 A 7 A 7 A 7 A 7 A 7 A 7 A 7 A 7 A 7		Standard A1 - A2
contact           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         1 A           Operational current at DC-12         ***           • at 24 V rated value         6 A           • at 48 V rated value         6 A           • at 110 V rated value         6 A           • at 125 V rated value         1 A           • at 220 V rated value         1 A           • at 600 V rated value         1 A           • at 600 V rated value         6 A           • at 48 V rated value         6 A           • at 60 V rated value         2 A           • at 48 V rated value         2 A           • at 48 V rated value         2 A           • at 60 V rated value         2 A           • at 110 V rated value         1 A           • at 22 V rated value         1 A           • at 22 V rated value         1 A           • at 125 V rated value         0.9 A           • at 220 V rated value         0.9 A	Auxiliary circuit	
contact         coperational current at AC-12 maximum         10 A           operational current at AC-15         6 A           • at 230 V rated value         3 A           • at 500 V rated value         2 A           • at 690 V rated value         1 A           Operational current at DC-12         To A           • at 24 V rated value         6 A           • at 48 V rated value         6 A           • at 110 V rated value         6 A           • at 110 V rated value         2 A           • at 125 V rated value         1 A           • at 220 V rated value         1 A           • at 600 V rated value         6 A           • at 24 V rated value         6 A           • at 24 V rated value         6 A           • at 24 V rated value         2 A           • at 48 V rated value         2 A           • at 60 V rated value         2 A           • at 110 V rated value         1 A           • at 25 V rated value         1 A           • at 25 V rated value         1 A           • at 25 V rated value         0.9 A           • at 25 V rated value         0.9 A           • at 25 V rated value         0.3 A           • at 25 V rated value         0.1 A     <	•	2
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         6 A           • at 48 V rated value         6 A           • at 60 V rated value         3 A           • at 110 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         6 A           • at 48 V rated value         2 A           • at 48 V rated value         2 A           • at 60 V rated value         2 A           • at 60 V rated value         2 A           • at 110 V rated value         1 A           • at 25 V rated value         0.9 A           • at 220 V rated value         0.3 A           • at 600 V rated value         0.3 A           • at 600 V rated value         0.3 A           • at 600 V rated value         0.3 A	•	2
<ul> <li>at 230 V rated value</li> <li>at 400 V rated value</li> <li>at 500 V rated value</li> <li>at 690 V rated value</li> <li>1 A</li> </ul> Operational current at DC-12 <ul> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 24 V rated value</li> <li>at 24 V rated value</li> <li>at 24 V rated value</li> <li>at 60 V rated value</li> <li>at 60 V rated value</li> <li>at 10 V rated value</li> <li>at 110 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 200 V rated value</li> <li>at 600 V</li></ul>	operational current at AC-12 maximum	10 A
<ul> <li>at 400 V rated value</li> <li>at 500 V rated value</li> <li>at 690 V rated value</li> <li>1A</li> </ul> Operational current at DC-12 <ul> <li>at 24 V rated value</li> <li>6 A</li> <li>at 60 V rated value</li> <li>6 A</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 60 V rated value</li> <li>at 10 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 120 V rated value</li> </ul>	operational current at AC-15	
<ul> <li>at 500 V rated value</li> <li>at 690 V rated value</li> <li>1 A</li> <li>operational current at DC-12</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 10 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 24 V rated value</li> <li>at 600 V rated value</li> <li>at 100 V rated value</li> <li>at 100 V rated value</li> <li>at 100 V rated value</li> <li>at 125 V rated value</li> <li>at 125 V rated value</li> <li>at 120 V rated</li></ul>	• at 230 V rated value	
• at 690 V rated value 1 A  operational current at DC-12  • at 24 V rated value 5 A 6 A • at 48 V rated value 6 A 6 A • at 110 V rated value 3 A 6 A 6 A 6 A 7 A 7 A 7 A 7 A 7 A 7 A 7	• at 400 V rated value	3 A
operational current at DC-12         ● at 24 V rated value       10 A         ● at 48 V rated value       6 A         ● at 10 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       6 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	<ul> <li>at 500 V rated value</li> </ul>	
<ul> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>6 A</li> <li>at 60 V rated value</li> <li>6 A</li> <li>at 110 V rated value</li> <li>3 A</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> <li>at 24 V rated value</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 125 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 220 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> </ul>		
<ul> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> </ul>		
<ul> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>ot 600 V rated value</li> <li>operational current at DC-13</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> </ul>	operational current at DC-12	1 A
<ul> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>operational current at DC-13</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 125 V rated value</li> <li>at 200 V rated value</li> <li>at 200 V rated value</li> <li>at 600 V rated value</li> </ul>	operational current at DC-12  • at 24 V rated value	1 A 10 A
<ul> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>0.15 A</li> <li>operational current at DC-13</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> </ul>	<ul> <li>operational current at DC-12</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> </ul>	1 A 10 A 6 A
<ul> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>0.15 A</li> <li>operational current at DC-13</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 250 V rated value</li> <li>at 200 V rated value</li> <li>at 600 V rated value</li> </ul>	<ul> <li>operational current at DC-12</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> </ul>	1 A 10 A 6 A 6 A
<ul> <li>◆ at 600 V rated value</li> <li>Operational current at DC-13</li> <li>◆ at 24 V rated value</li> <li>◆ at 48 V rated value</li> <li>◆ at 60 V rated value</li> <li>◆ at 110 V rated value</li> <li>◆ at 125 V rated value</li> <li>◆ at 220 V rated value</li> <li>◆ at 600 V rated value</li> <li>◆ at 600 V rated value</li> <li>◆ at 220 V rated value</li> <li>◆ at 600 V rated value</li> <li>◆ at 600 V rated value</li> </ul>	<ul> <li>operational current at DC-12</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> </ul>	1 A  10 A  6 A  6 A  3 A
operational current at DC-13         • at 24 V rated value       6 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	<ul> <li>operational current at DC-12</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> </ul>	1 A  10 A 6 A 6 A 3 A 2 A
<ul> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> </ul>	<ul> <li>operational current at DC-12</li> <li>at 24 V rated value</li> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> </ul>	1 A  10 A 6 A 6 A 3 A 2 A 1 A
<ul> <li>at 48 V rated value</li> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> <li>at 600 V rated value</li> </ul>	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	1 A  10 A 6 A 6 A 3 A 2 A 1 A
<ul> <li>at 60 V rated value</li> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>1 A</li> <li>3 A</li> <li>1 A</li> </ul>	operational current at DC-12  • 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  operational current at DC-13	1 A  10 A 6 A 6 A 3 A 2 A 1 A 0.15 A
<ul> <li>at 110 V rated value</li> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>0.1 A</li> </ul>	operational current at DC-12  • 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  • at 600 V rated value  • at 600 V rated value	1 A  10 A 6 A 6 A 3 A 2 A 1 A 0.15 A
<ul> <li>at 125 V rated value</li> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>0.1 A</li> </ul>	operational current at DC-12  • 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 • at 600 V rated value • at 64 V rated value  operational current at DC-13 • at 24 V rated value • at 48 V rated value	1 A  10 A 6 A 6 A 3 A 2 A 1 A 0.15 A
<ul> <li>at 220 V rated value</li> <li>at 600 V rated value</li> <li>0.3 A</li> <li>0.1 A</li> </ul>	operational current at DC-12  • 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 • at 600 V rated value • at 600 V rated value  operational current at DC-13 • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 60 V rated value	1 A  10 A 6 A 6 A 3 A 2 A 1 A 0.15 A
at 600 V rated value     0.1 A	operational current at DC-12  • 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 • at 600 V rated value  operational current at DC-13 • at 24 V rated value • at 48 V rated value • at 60 V rated value • at 110 V rated value • at 110 V rated value	1 A  10 A  6 A  6 A  3 A  2 A  1 A  0.15 A
	operational current at DC-12         • 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         • at 600 V rated value          • at 600 V rated value  operational current at DC-13         • 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	1 A  10 A  6 A  6 A  3 A  2 A  1 A  0.15 A  6 A  2 A  2 A  1 A  0.9 A
contact reliability of auxiliary contacts 1 faulty switching per 100 million (17 V, 1 mA)	operational current at DC-12         • 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         • at 600 V rated value  Operational current at DC-13         • 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 125 V rated value         • at 125 V rated value         • at 220 V rated value	1 A  10 A 6 A 6 A 3 A 2 A 1 A 0.15 A  6 A 2 A 2 A 1 A 0.9 A 0.3 A
	operational current at DC-12         • 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         • at 600 V rated value         • at 24 V rated value         • 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 125 V rated value         • at 125 V rated value         • at 220 V rated value         • at 200 V rated value         • at 600 V rated value         • at 600 V rated value         • at 600 V rated value	1 A  10 A  6 A  6 A  3 A  2 A  1 A  0.15 A  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	
• at 480 V rated value	34 A
at 600 V rated value	27 A
yielded mechanical performance [hp]	
• for single-phase AC motor	
— at 110/120 V rated value	3 hp
— at 230 V rated value	5 hp
• for 3-phase AC motor	
— at 200/208 V rated value	10 hp
— at 220/230 V rated value	10 hp
— at 460/480 V rated value	25 hp
— at 575/600 V rated value	25 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: 125A (690V,100kA), aM: 50A (690V,100kA), BS88: 125A (415V,80kA)
with type of assignment 2 required	gG: 50A (690V,100kA), aM: 25A (690V, 100kA), BS88: 50A (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	85 mm
width	45 mm
depth	141 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
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	0.44 0.5 mans?) 0.40 5 40 mins?)
— solid	2x (1 2.5 mm²), 2x (2.5 10 mm²)
— solid or stranded	2x (1 2.5 mm²), 2x (2.5 10 mm²)
— finely stranded with core end processing	2x (1 2.5 mm²), 2x (2.5 6 mm²), 1x 10 mm²
for AWG cables for main contacts	2x (16 12), 2x (14 8)
connectable conductor cross-section for main contacts	4 40 mm²
• solid	1 10 mm²
stranded     finely stranded with core and processing	1 10 mm <sup>2</sup>
finely stranded with core end processing	1 10 mm²
connectable conductor cross-section for auxiliary contacts	0.5 2.5 mm²
solid or stranded	0.5 2.5 mm²

finely stranded with core end processing	0.5 2.5 mm <sup>2</sup>
type of connectable conductor cross-sections	
for auxiliary contacts	
— solid or stranded	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)
<ul> <li>finely stranded with core end processing</li> </ul>	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)
<ul> <li>for AWG cables for auxiliary contacts</li> </ul>	2x (20 16), 2x (18 14)
AWG number as coded connectable conductor cross section	
• for main contacts	16 8
for auxiliary contacts	20 14
Safety related data	
product function	
<ul> <li>mirror contact according to IEC 60947-4-1</li> </ul>	Yes
<ul> <li>positively driven operation according to IEC 60947-5-1</li> </ul>	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	
<ul> <li>with low demand rate according to SN 31920</li> </ul>	40 %
<ul> <li>with high demand rate according to SN 31920</li> </ul>	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
T1 value	
<ul> <li>for proof test interval or service life according to IEC 61508</li> </ul>	20 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
Approvals Certificates	

**General Product Approval** 







Confirmation



<u>KC</u>

General Product Approval

EMV

**Functional Saftey** 

**Test Certificates** 

Marine / Shipping

EAC



Type Examination Certificate Special Test Certificate

Type Test Certificates/Test Report



Marine / Shipping









Miscellaneous

Confirmation

Confirmation

Railway

Environment



## 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=3RT2028-1AC24

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2028-1AC24

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

https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AC24

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

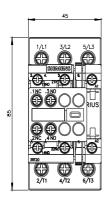
http://www.automation.siemens.com/bilddb/cax\_de.aspx?mlfb=3RT2028-1AC24&lang=en

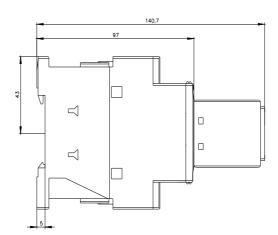
Characteristic: Tripping characteristics, I²t, Let-through current

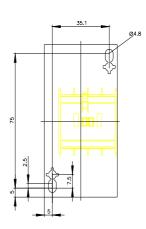
https://support.industry.siemens.com/cs/ww/en/ps/3RT2028-1AC24/char

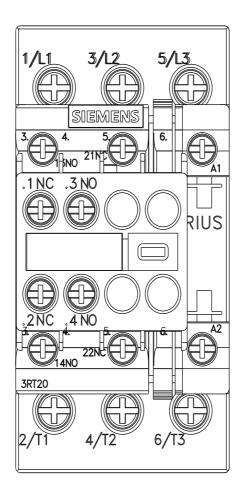
Further characteristics (e.g. electrical endurance, switching frequency)

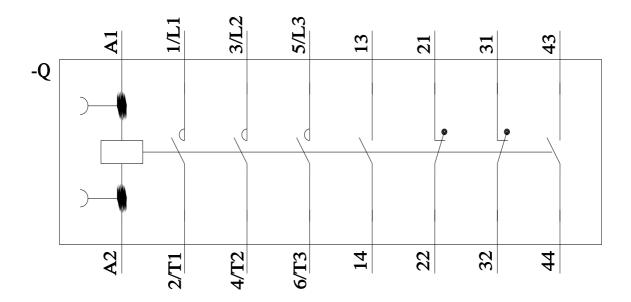
http://www.automation.siemens.com/bilddb/index.aspx?view=Search&mlfb=3RT2028-1AC24&objecttype=14&gridview=view1











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