

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters  
Basic Performance soft starters

## 3RW30 soft starters &gt; General data

Type	Terminal	3RW301., 3RW302.		3RW303., 3RW304.		
<b>Control circuit/control</b>						
<b>Rated values</b>						
Rated control supply voltage	A1/A2	V	24 AC/DC	110 ... 230 AC/DC	24 AC/DC	110 ... 230 AC/DC
• Tolerance		%	± 20	-15/+10	± 20	-15/+10
Rated frequency		Hz	50/60			
• Tolerance		%	± 10			

Type		3RW301.	3RW302.	3RW303.	3RW304.
<b>Power electronics</b>					
<b>Rated operational voltage</b>		V AC	200 ... 480		
Tolerance		%	-15/+10		
<b>Rated frequency</b>		Hz	50/60		
Tolerance		%	± 10		
<b>Uninterrupted duty at 40 °C (% of <math>I_e</math>)</b>		%	115		
<b>Minimum load (% of <math>I_e</math>)</b>		%	10 (at least 1 A)		
<b>Maximum cable length</b> between soft starter and motor		m	300		

Type		3RW3013	3RW3014	3RW3016	3RW3017	3RW3018
<b>Power electronics</b>						
<b>Load rating with rated operational current <math>I_e</math></b>						
• According to IEC and UL/CSA <sup>1)</sup> , individual mounting at 40/50/60 °C, AC-53a	A	3.6/3.3/3	6.5/6/5.5	9/8/7	12.5/12/11	17.6/17/14
<b>Power loss</b>						
• During operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	0.25	0.5	1	2	4
• During starting with 300% $I_M$ (40 °C)	W	24	52	80	80	116
<b>Permissible rated motor current and starts per hour</b>						
• For normal starting (Class 10) at 40/50 °C						
- Rated motor current $I_M$ <sup>2)</sup> , startup time 3 s	A	3.6/3.3	6.5/6.0	9/8	12.5/12.0	17.6/17.0
- Starts per hour <sup>3)</sup>	1/h	200/150	87/60	50/50	85/70	62/46
- Rated motor current $I_M$ <sup>2)</sup> , startup time 4 s	A	3.6/3.3	6.5/6.0	9/8	12.5/12.0	17.6/17.0
- Starts per hour <sup>3)</sup>	1/h	150/100	64/46	35/35	62/47	45/32
<b>Blocking voltage of thyristor, maximum</b>	A	1 200			1 600	1 200

<sup>1)</sup> Measurement at 60 °C according to UL/CSA not required.

<sup>2)</sup> At 300%  $I_M$ ,  $T_u = 40/50$  °C.

<sup>3)</sup> For intermittent operation S4 with ON period = 30%,  $T_u = 40/50$  °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

Type		3RW3026	3RW3027	3RW3028
<b>Power electronics</b>				
<b>Load rating with rated operational current <math>I_e</math></b>				
• According to IEC and UL/CSA <sup>1)</sup> , individual mounting at 40/50/60 °C, AC-53a	A	25.3/23/21	32.2/29/26	38/34/31
<b>Power loss</b>				
• During operation after completed starting with uninterrupted rated operational current (40 °C) approx.	W	8	13	19
• During starting with 300% $I_M$ (40 °C)	W	188	220	256
<b>Permissible rated motor current and starts per hour</b>				
• For normal starting (Class 10) at 40/50 °C				
- Rated motor current $I_M$ <sup>2)</sup> , startup time 3 s	A	25/23	32/29	38/34
- Starts per hour <sup>3)</sup>	1/h	23/23	23/23	19/19
- Rated motor current $I_M$ <sup>2)</sup> , startup time 4 s	A	25/23	32/29	38/34
- Starts per hour <sup>3)</sup>	1/h	15/15	16/16	12/12
<b>Blocking voltage of thyristor, maximum</b>	A	1 600		

<sup>1)</sup> Measurement at 60 °C according to UL/CSA not required.

<sup>2)</sup> At 300%  $I_M$ ,  $T_u = 40/50$  °C.

<sup>3)</sup> For intermittent operation S4 with ON period = 30%,  $T_u = 40/50$  °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency with deviating mounting position, direct mounting, side-by-side mounting, see Equipment Manual in the chapter Configuration.

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Type		3RW3036	3RW3037	3RW3038	3RW3046	3RW3047	
<b>Power electronics</b>							
<b>Load rating with rated operational current <math>I_e</math></b>							
• According to IEC and UL/CSA <sup>1)</sup> , individual mounting at 40/50/60 °C, AC-53a		A	45/42/39	65/58/53	72/62.1/60	80/73/66	106/98/90
<b>Power loss</b>							
• During operation after completed starting with uninterrupted rated operational current (40 °C) approx.		W	6	12	15	12	21
• During starting with 300% $I_M$ (40 °C)		W	316	444	500	576	768
<b>Permissible rated motor current and starts per hour</b>							
• For normal starting (Class 10) at 40/50 °C							
- Rated motor current $I_M$ <sup>2)</sup> , startup time 3 s		A	45/42	63/58	72/62	80/73	106/108
- Starts per hour <sup>3)</sup>		1/h	38/38	23/23	22/22	22/22	15/15
- Rated motor current $I_M$ <sup>2)</sup> , startup time 4 s		A	45/42	63/58	72/62	80/73	106/98
- Starts per hour <sup>3)</sup>		1/h	26/26	15/15	15/15	15/15	10/10
<b>Blocking voltage of thyristor, maximum</b>		A	1 600				

<sup>1)</sup> Measurement at 60 °C according to UL/CSA not required.

<sup>2)</sup> At 300%  $I_M$ ,  $T_u = 40/50$  °C.

<sup>3)</sup> For intermittent operation S4 with ON period = 30%,  $T_u = 40/50$  °C, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

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3RW30 soft starters &gt; General data

**Motor feeders according to IEC with 3RV2 motor starter protectors (without semiconductor protection)**

Type of coordination "1", Class 10,  
short-circuit breaking capacity  $I_q$  in kA, [see table](#)

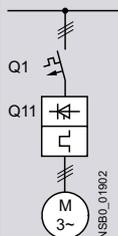
Note:

For general recommendations for constructing motor feeders  
with soft starters, [see page 6/12](#).

Soft starters	Motor starter protectors	
Q11	for 400 V systems	
Type	Q1	$I_q$ kA
Type of coordination "1"	Standard (inline) circuit	
<b>3RW3013</b>	3RV2011-1FA10	5
<b>3RW3014</b>	3RV2011-1HA10	5
<b>3RW3016</b>	3RV2011-1JA10	5
<b>3RW3017</b>	3RV2011-1KA10	5
<b>3RW3018</b>	3RV2021-4BA10	5
<b>3RW3026</b>	3RV2021-4DA10	55
<b>3RW3027</b>	3RV2021-4EA10	55
<b>3RW3028</b>	3RV2021-4FA10	55
<b>3RW3036</b>	3RV2031-4WA10	10
<b>3RW3037</b>	3RV2031-4JA10	10
<b>3RW3038</b>	3RV2031-4KA10	10
<b>3RW3046</b>	3RV2041-4RA10	11
<b>3RW3047</b>	3RV2041-4MA10	11

Note:

The specified short-circuit breaking capacities  $I_q$  in kA are covered by combination tests. Smaller motor starter protectors/circuit breakers from the same series can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must match the connected three-phase motor, the short-circuit and overload requirements of the application, and the line protection for the cables used.



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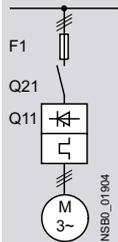
##### Motor feeders according to IEC with 3NA3 fuses

gG class full-range fuses for cable and line protection according to IEC 60269-2, without semiconductor protection

Type of coordination "1",  
short-circuit breaking capacity  $I_q = 65$  kA

##### Note:

For general recommendations for constructing motor feeders with soft starters, [see page 6/12](#).



Soft starters	gG class fuse	Line contactor (optional)	
Q11 Type	for systems up to 480 V F1 Type	for systems up to 400 V Q21 Type	for systems up to 480 V Q21 Type
Type of coordination "1"	Standard (inline) circuit		
<b>3RW3013</b>	3NA3803-6	3RT2015	3RT2015
<b>3RW3014</b>	3NA3805-6	3RT2015	3RT2016
<b>3RW3016</b>	3NA3807-6	3RT2016	3RT2017
<b>3RW3017</b>	3NA3810-6	3RT2018	3RT2025
<b>3RW3018</b>	3NA3814-6	3RT2026	3RT2026
<b>3RW3026</b>	3NA3822-6	3RT2026	3RT2027
<b>3RW3027</b>	3NA3824-6	3RT2027	3RT2028
<b>3RW3028</b>	3NA3824-6	3RT2028	3RT2035
<b>3RW3036</b>	3NA3130-6	3RT2036	3RT2036
<b>3RW3037</b>	3NA3132-6	3RT2037	3RT2037
<b>3RW3038</b>	3NA3132-6	3RT2038	3RT2038
<b>3RW3046</b>	3NA3136-6	3RT2045	3RT2045
<b>3RW3047</b>	3NA3136-6	3RT2047	3RT2047

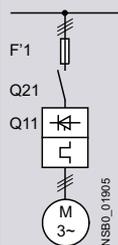
##### Note:

The specified short-circuit breaking capacities  $I_q$  in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

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**Motor feeders according to IEC with 3NE1 SITOR fuses**gR/gS class full-range fuses for semiconductor protection,  
cable and line protection (gS)Type of coordination "2",  
short-circuit breaking capacity  $I_{q} = 65 \text{ kA}$ **Note:**For general recommendations for constructing motor feeders  
with soft starters, [see page 6/12](#).

Soft starters	gR/gS class fuse	Line contactor (optional)	
	for systems up to 480 V	for systems up to 400 V	for systems up to 480 V
Q11	F'1	Q21	Q21
Type	Type	Type	Type
Type of coordination "2"	Standard (inline) circuit <span style="float: right;">TOC 2</span>		
<b>3RW3013</b>	3NE1813-0	3RT2015	3RT2015
<b>3RW3014</b>	3NE1813-0	3RT2015	3RT2016
<b>3RW3016</b>	3NE1813-0	3RT2016	3RT2017
<b>3RW3017</b>	3NE1813-0	3RT2018	3RT2025
<b>3RW3018</b>	3NE1814-0	3RT2026	3RT2026
<b>3RW3026</b>	3NE1803-0	3RT2026	3RT2027
<b>3RW3027</b>	3NE1020-2	3RT2027	3RT2028
<b>3RW3028</b>	3NE1020-2	3RT2028	3RT2035
<b>3RW3036</b>	3NE1020-2	3RT2036	3RT2036
<b>3RW3037</b>	3NE1820-0	3RT2037	3RT2037
<b>3RW3038</b>	3NE1820-0	3RT2038	3RT2038
<b>3RW3046</b>	3NE1021-0	3RT2045	3RT2045
<b>3RW3047</b>	3NE1022-0	3RT2047	3RT2047

**Note:**

The specified short-circuit breaking capacities  $I_{q}$  in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

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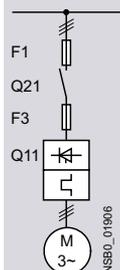
##### Motor feeders according to IEC with 3NE8/3NE4/3NE3/3NC fuses

aR class partial-range fuses for semiconductor protection

Type of coordination "2",  
short-circuit breaking capacity  $I_{q1} = 65 \text{ kA}$

##### Note:

For general recommendations for constructing motor feeders with soft starters, [see page 6/12](#).



Soft starters	gG class fuse		aR class fuse		Cylindrical fuse	Line contactor (optional)	
	for systems up to 480 V	for systems up to 480 V	for systems up to 480 V	for systems up to 480 V		for systems up to 400 V	for systems up to 480 V
Q11	F1	F3	F3	F3	F3	Q21	Q21
Type	Type	Type	Type	Type	Type	Type	Type
Type of coordination "2"	Standard (inline) circuit						
<b>3RW3013</b>	3NA3803-6	--	3NE4101	3NE8015-1	3NC2220	3RT2015	3RT2015
<b>3RW3014</b>	3NA3805-6	--	3NE4101	3NE8015-1	3NC2220	3RT2015	3RT2016
<b>3RW3016</b>	3NA3807-6	--	3NE4101	3NE8015-1	3NC2220	3RT2016	3RT2017
<b>3RW3017</b>	3NA3810-6	--	3NE4101	3NE8015-1	3NC2250	3RT2018	3RT2025
<b>3RW3018</b>	3NA3814-6	--	3NE4101	3NE8003-1	3NC2263	3RT2026	3RT2026
<b>3RW3026</b>	3NA3822-6	--	3NE4102	3NE8017-1	3NC2263	3RT2026	3RT2027
<b>3RW3027</b>	3NA3824-6	--	3NE4118	3NE8018-1	3NC2280	3RT2027	3RT2028
<b>3RW3028</b>	3NA3824-6	--	3NE4118	3NE8020-1	3NC2280	3RT2028	3RT2035
<b>3RW3036</b>	3NA3130-6	--	3NE4120	3NE8020-1	3NC2280	3RT2036	3RT2036
<b>3RW3037</b>	3NA3132-6	--	3NE4121	3NE8021-1	--	3RT2037	3RT2037
<b>3RW3038</b>	3NA3132-6	3NE3221	--	3NE8022-1	--	3RT2038	3RT2038
<b>3RW3046</b>	3NA3136-6	3NE3222	--	3NE8022-1	--	3RT2045	3RT2045
<b>3RW3047</b>	3NA3136-6	3NE3224	--	3NE8024-1	--	3RT2047	3RT2047

##### Note:

The specified short-circuit breaking capacities  $I_{q1}$  in kA are covered by combination tests. Smaller fuses than those specified can be used at any time as smaller ones trip more quickly in the event of a short circuit (unchanged short-circuit breaking capacity) and thus protect the soft starter in any case. The dimensioning of the short-circuit components must, however, be suitable for the connected three-phase motor and the line protection for the cables used.

For Class 10 applications, as an alternative to the 3NA3 gG class full-range fuses for cable and line protection (F1), 3RV2 motor starter protectors can also be used, possibly with reduced short-circuit breaking capacity ([see page 6/105](#)). In these cases, optional line contactors can be dispensed with.

## Selection and ordering data

## For simple starting conditions

PU (UNIT, SET, M) = 1  
PS\* = 1 unit  
PG = 42G



3RW301.-1BB.4



3RW302.-2BB.4



3RW303.-1BB.4



3RW304.-2BB.4

At 40 °C				At 50 °C				Size	Screw terminals		Spring-loaded terminals (Size S2 or larger only available for control circuit)	
Operational current A	Operating power for three-phase motors			Operational current A	Operating power [hp] for three-phase motors				Article No.	Price per PU	Article No.	Price per PU
	at 230 V	at 400 V	at 500 V		at 200/208 V	at 220/230 V	at 460/480 V	at 575/600 V				
<b>Operational voltage 200 ... 480 V</b>												
<b>Control supply voltage 24 V AC/DC</b>												
3.6	0.75	1.5	--	3	0.5	0.5	1.5	--	S00	3RW3013-1BB04	3RW3013-2BB04	
6.5	1.5	3	--	6	1	1	3	--	S00	3RW3014-1BB04	3RW3014-2BB04	
9	2.2	4	--	8	2	2	5	--	S00	3RW3016-1BB04	3RW3016-2BB04	
12.5	3	5.5	--	12	3	3	7.5	--	S00	3RW3017-1BB04	3RW3017-2BB04	
17.6	4	7.5	--	17	3	3	10	--	S00	3RW3018-1BB04	3RW3018-2BB04	
25	5.5	11	--	23	5	5	15	--	S0	3RW3026-1BB04	3RW3026-2BB04	
32	7.5	15	--	29	7.5	7.5	20	--	S0	3RW3027-1BB04	3RW3027-2BB04	
38	11	18.5	--	34	10	10	25	--	S0	3RW3028-1BB04	3RW3028-2BB04	
45	11	22	--	42	10	15	30	--	S2	3RW3036-1BB04	3RW3036-2BB04	
63	18.5	30	--	58	15	20	40	--	S2	3RW3037-1BB04	3RW3037-2BB04	
72	22	37	--	62	20	20	40	--	S2	3RW3038-1BB04	3RW3038-2BB04	
80	22	45	--	73	20	25	50	--	S3	3RW3046-1BB04	3RW3046-2BB04	
106	30	55	--	98	30	30	75	--	S3	3RW3047-1BB04	3RW3047-2BB04	
<b>Control supply voltage 110 ... 230 V AC/DC</b>												
3.6	0.75	1.5	--	3	0.5	0.5	1.5	--	S00	3RW3013-1BB14	3RW3013-2BB14	
6.5	1.5	3	--	6	1	1	3	--	S00	3RW3014-1BB14	3RW3014-2BB14	
9	2.2	4	--	8	2	2	5	--	S00	3RW3016-1BB14	3RW3016-2BB14	
12.5	3	5.5	--	12	3	3	7.5	--	S00	3RW3017-1BB14	3RW3017-2BB14	
17.6	4	7.5	--	17	3	3	10	--	S00	3RW3018-1BB14	3RW3018-2BB14	
25	5.5	11	--	23	5	5	15	--	S0	3RW3026-1BB14	3RW3026-2BB14	
32	7.5	15	--	29	7.5	7.5	20	--	S0	3RW3027-1BB14	3RW3027-2BB14	
38	11	18.5	--	34	10	10	25	--	S0	3RW3028-1BB14	3RW3028-2BB14	
45	11	22	--	42	10	15	30	--	S2	3RW3036-1BB14	3RW3036-2BB14	
63	18.5	30	--	58	15	20	40	--	S2	3RW3037-1BB14	3RW3037-2BB14	
72	22	37	--	62	20	20	40	--	S2	3RW3038-1BB14	3RW3038-2BB14	
80	22	45	--	73	20	25	50	--	S3	3RW3046-1BB14	3RW3046-2BB14	
106	30	55	--	98	30	30	75	--	S3	3RW3047-1BB14	3RW3047-2BB14	

## Note:

For the constraints for the motor outputs specified here, see [page 6/8](#).

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### 3RW30 soft starters > Accessories

#### Selection and ordering data

##### More information

Equipment Manual, see <https://support.industry.siemens.com/cs/ww/en/view/38752095>

Conductor cross-section		Tightening torque	For soft starters	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
solid or stranded	finely stranded with end sleeve								AWG cables, solid or stranded
mm <sup>2</sup>	mm <sup>2</sup>	AWG	Nm						
<b>3-phase infeed terminals</b>									
	2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00 (3RW301.), S0 (3RW302.)	<b>3RV2925-5AB</b>	1	1 unit	41E
For soft starters				Article No.		Price per PU	PU (UNIT, SET, M)	PS*	PG
Type		Size							
<b>Auxiliary conductor terminals</b>									
	<b>Auxiliary conductor terminal, 3-pole</b>								
3RT2946-4F	3RW304.	S3				<b>3RT2946-4F</b>	1	1 unit	41B
<b>Covers for soft starters</b>									
	<b>Terminal covers for box terminals</b>			Additional touch protection to be fitted at the box terminals (two units required per device)					
3RT2936-4EA2	3RW303.	S2				<b>3RT2936-4EA2</b>	1	1 unit	41B
	3RW304.	S3				<b>3RT2946-4EA2</b>	1	1 unit	41B
	<b>Terminal cover for cable lugs and busbar connections</b>			For complying with the voltage clearances and as touch protection if box terminal is removed (two units required per device)					
3RT1946-4EA1	3RW304.	S3				<b>3RT1946-4EA1</b>	1	1 unit	41B
For motor starter protectors		For soft starters	Version	Article No.		Price per PU	PU (UNIT, SET, M)	PS*	PG
Size		Size							
<b>Mounting rails for mounting contactors for the customer assembly of 3RA21 load feeders with busbar adapters for 60 mm systems</b>									
	--	S0	For the discrete configuration of direct-on-line starters, an additional mounting rail is needed for the contactor in addition to the existing mounting rail on the busbar adapter for the motor starter protector.						
8US1998-7CB45			For pushing onto the device adapter, including fixing screws		<b>8US1998-7CB45</b>		1	10 units	53W
<b>DIN-rail adapters</b>									
	S2	S2	For mechanical fixing of motor starter protector and soft starter; for snapping onto DIN rail or for screw fixing						
3RA2932-1CA00			<b>Single-unit packaging</b>		<b>3RA2932-1CA00</b>		1	1 unit	41B

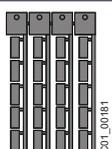
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For soft starters		Motor starter protectors		Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	Size	Size	Size					
<b>Link modules to motor starter protectors<sup>1)</sup></b>								
• Screw terminals				<b>Screw terminals</b> 				
	3RW301.	<b>S00</b>	<b>S00</b>	<b>3RA2921-1BA00</b>		1	1 unit	41B
	3RW302.	<b>S0</b>	<b>S00/S0</b>	<b>3RA2921-1BA00</b>		1	1 unit	41B
	3RW3036	<b>S2</b>	<b>S2</b>	<b>3RA2931-1AA00</b>		1	1 unit	41B
	3RW304.	<b>S3</b>	<b>S3</b>	<b>3RA1941-1AA00</b>		1	1 unit	41B
• Spring-loaded terminals				<b>Spring-loaded terminals</b> 				
	3RW301.	<b>S00</b>	<b>S00</b>	<b>3RA2911-2GA00</b>		1	1 unit	41B
	3RW302.	<b>S0</b>	<b>S0</b>	<b>3RA2921-2GA00</b>		1	1 unit	41B

- <sup>1)</sup> Can be used in size S0 up to maximum 32 A.  
Can be used in size S2 up to maximum 65 A in combination with 3RA2932-1CA00 DIN-rail adapter (specially for soft starters).  
Can be used in size S3 up to maximum 64 A and only on a mounting plate.

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Tools for opening spring-loaded terminals in sizes S00 and S0</b>					
	<b>Screwdriver</b> For all SIRIUS devices with spring-loaded terminals Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated				
3RA2908-1A					
<b>Blank labels</b>					
	<b>Unit labeling plates<sup>1)</sup></b> For SIRIUS devices 20 mm x 7 mm, titanium gray				
3RT2900-1SB20					

- <sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW55

### Overview

#### More information

Homepage, see [www.siemens.com/sirius-soft-starter](http://www.siemens.com/sirius-soft-starter)SiePortal, see [www.siemens.com/product\\_catalog\\_siep?3RW](http://www.siemens.com/product_catalog_siep?3RW)

SiePortal topic page, see

<https://support.industry.siemens.com/cs/ww/en/view/109747404>

### Selection and ordering data

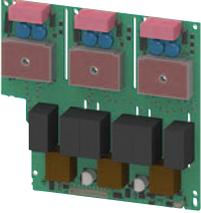
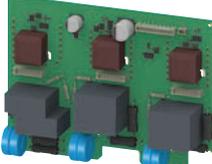
Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG		
<b>Power semiconductor modules</b>									
 3RW5952-0SF04	<b>Power semiconductor modules</b>	3RW5524-.HA.4 (3x)	480 V, 47 A	<b>3RW5952-0SF04</b>	1	1 unit	42S		
		3RW5525-.HA.4 (3x), 3RW5526-.HA.4 (3x)	480 V, 77 A	<b>3RW5952-0SH04</b>	1	1 unit	42S		
		3RW5527-.HA.4 (3x)	480 V, 93 A	<b>3RW5952-0SJ04</b>	1	1 unit	42S		
		3RW5534-.HA.4 (3x), 3RW5535-.HA.4 (3x)	480 V, 143 A	<b>3RW5953-0SL04</b>	1	1 unit	42S		
		3RW5536-.HA.4 (3x)	480 V, 171 A	<b>3RW5953-0SM04</b>	1	1 unit	42S		
		3RW5543-.HA.4 (3x)	480 V, 210 A	<b>3RW5954-0SN04</b>	1	1 unit	42S		
		3RW5544-.HA.4 (3x)	480 V, 250 A	<b>3RW5954-0SP04</b>	1	1 unit	42S		
		3RW5545-.HA.4 (3x), 3RW5546-.HA.4 (3x)	480 V, 370 A	<b>3RW5954-0SR04</b>	1	1 unit	42S		
		3RW5547-.HA.4 (3x), 3RW5548-.HA.4 (3x)	480 V, 570 A	<b>3RW5954-0ST04</b>	1	1 unit	42S		
		3RW5552-.HA.4 (3x)	480 V, 630 A	<b>3RW5955-0SU04</b>	1	1 unit	42S		
 3RW5953-0SM06		3RW5553-.HA.4 (3x)	480 V, 720 A	<b>3RW5955-0SV04</b>	1	1 unit	42S		
		3RW5554-.HA.4 (3x)	480 V, 840 A	<b>3RW5955-0SW04</b>	1	1 unit	42S		
		3RW5556-.HA.4 (3x)	480 V, 1 100 A	<b>3RW5955-0SX04</b>	1	1 unit	42S		
		3RW5558-.HA.4 (3x)	480 V, 1 280 A	<b>3RW5955-0SY04</b>	1	1 unit	42S		
		3RW5521-.HA.6 (3x), 3RW5524-.HA.6 (3x)	690 V, 47 A	<b>3RW5952-0SF06</b>	1	1 unit	42S		
		3RW5525-.HA.6 (3x), 3RW5526-.HA.6 (3x)	690 V, 77 A	<b>3RW5952-0SH06</b>	1	1 unit	42S		
		3RW5527-.HA.6 (3x)	690 V, 93 A	<b>3RW5952-0SJ06</b>	1	1 unit	42S		
		3RW5534-.HA.6 (3x), 3RW5535-.HA.6 (3x)	690 V, 143 A	<b>3RW5953-0SL06</b>	1	1 unit	42S		
		3RW5536-.HA.6 (3x)	690 V, 171 A	<b>3RW5953-0SM06</b>	1	1 unit	42S		
		3RW5543-.HA.6 (3x)	690 V, 210 A	<b>3RW5954-0SN06</b>	1	1 unit	42S		
 3RW5954-0ST06		3RW5544-.HA.6 (3x)	690 V, 250 A	<b>3RW5954-0SP06</b>	1	1 unit	42S		
		3RW5545-.HA.6 (3x), 3RW5546-.HA.6 (3x)	690 V, 370 A	<b>3RW5954-0SR06</b>	1	1 unit	42S		
		3RW5547-.HA.6 (3x), 3RW5548-.HA.6 (3x)	690 V, 570 A	<b>3RW5954-0ST06</b>	1	1 unit	42S		
		3RW5552-.HA.6 (3x)	690 V, 630 A	<b>3RW5955-0SU06</b>	1	1 unit	42S		
		3RW5553-.HA.6 (3x)	690 V, 720 A	<b>3RW5955-0SV06</b>	1	1 unit	42S		
		3RW5554-.HA.6 (3x)	690 V, 840 A	<b>3RW5955-0SW06</b>	1	1 unit	42S		
		3RW5556-.HA.6 (3x)	690 V, 1 100 A	<b>3RW5955-0SX06</b>	1	1 unit	42S		
		3RW5558-.HA.6 (3x)	690 V, 1 280 A	<b>3RW5955-0SY06</b>	1	1 unit	42S		
		<b>Bypass units</b>							
		 3RW5953-0BY00	<b>Bypass units</b>	3RW552-.HA..., 3RW553-.HA..	--	<b>3RW5953-0BY00</b>	1	1 unit	42S
3RW5543-.HA..., 3RW5544-.HA..., 3RW5545-.HA..	210 ... 315 A			<b>3RW5954-0BP00</b>	1	1 unit	42S		
3RW5546-.HA..., 3RW5547-.HA..., 3RW5548-.HA..	370 ... 570 A			<b>3RW5954-0BT00</b>	1	1 unit	42S		
3RW5552, 3RW5553, 3RW5554	630 ... 840 A			<b>3RW5955-0BW00</b>	1	1 unit	42S		
3RW5556, 3RW5558	1 100 A, 1 280 A			<b>3RW5955-0BY00</b>	1	1 unit	42S		

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW55

Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG		
<b>Control units</b>									
	<b>Control units</b>	3RW551...-HA0., 3RW552...-HA0., 3RW553...-HA0., 3RW554...-HA0.	24 V	<b>3RW5950-1UY00</b>	1	1 unit	42S		
		3RW555...-HA0.		<b>3RW5955-1UY00</b>	1	1 unit	42S		
		3RW551...-HA1., 3RW552...-HA1., 3RW553...-HA1., 3RW554...-HA1.	110 ... 250 V	<b>3RW5950-1UY10</b>	1	1 unit	42S		
		3RW555...-HA1.		<b>3RW5955-1UY10</b>	1	1 unit	42S		
3RW5950-1UY00	3RW555...-HA1.		<b>3RW5955-1UY10</b>						
<b>Printed circuit boards</b>									
	<b>Printed circuit boards</b>	3RW5513-.HA.4	480 V, 13 A	<b>3RW5951-0PA04</b>	1	1 unit	42S		
		3RW5514-.HA.4	480 V, 18 A	<b>3RW5951-0PB04</b>	1	1 unit	42S		
		3RW5515-.HA.4	480 V, 25 A	<b>3RW5951-0PC04</b>	1	1 unit	42S		
		3RW5516-.HA.4	480 V, 32 A	<b>3RW5951-0PD04</b>	1	1 unit	42S		
		3RW5517-.HA.4	480 V, 38 A	<b>3RW5951-0PE04</b>	1	1 unit	42S		
		3RW552...-HA.4, 3RW553...-HA.4	480 V	<b>3RW5953-0PY04</b>	1	1 unit	42S		
		3RW554...-HA.4	480 V	<b>3RW5954-0PY04</b>	1	1 unit	42S		
		3RW5513-.HA.5	600 V, 13 A	<b>3RW5951-0PA05</b>	1	1 unit	42S		
		3RW5514-.HA.5	600 V, 18 A	<b>3RW5951-0PB05</b>	1	1 unit	42S		
		3RW5515-.HA.5	600 V, 25 A	<b>3RW5951-0PC05</b>	1	1 unit	42S		
	<b>Printed circuit boards</b>	3RW5516-.HA.5	600 V, 32 A	<b>3RW5951-0PD05</b>	1	1 unit	42S		
		3RW5517-.HA.5	600 V, 38 A	<b>3RW5951-0PE05</b>	1	1 unit	42S		
		3RW552...-HA.6, 3RW553...-HA.6	690 V	<b>3RW5953-0PY06</b>	1	1 unit	42S		
		3RW554...-HA.6	690 V	<b>3RW5954-0PY06</b>	1	1 unit	42S		
		<b>Firing printed circuit boards</b>	3RW555...-HA.4	480 V	<b>3RW5955-0PY14</b>	1	1 unit	42S	
			3RW555...-HA.6	690 V	<b>3RW5955-0PY16</b>	1	1 unit	42S	
		<b>TSE printed circuit boards</b>	3RW555...-HA.4	480 V	<b>3RW5955-0PY24</b>	1	1 unit	42S	
			3RW555...-HA.6	690 V	<b>3RW5955-0PY26</b>	1	1 unit	42S	
		<b>Fans</b>							
			<b>Fans</b>	3RW551 (1x), 3RW552 (2x), 3RW553 (2x)	--	<b>3RW5983-0FF00</b>	1	1 unit	42S
3RW554 (1x)	--			<b>3RW5984-0FF00</b>	1	1 unit	42S		
3RW555 (3x)	--			<b>3RW5985-0FF00</b>	1	1 unit	42S		
3RW5983-0FF00									
<b>Terminals and terminal covers</b>									
	<b>Box terminal block</b>	3RW552 (2x)	--	<b>3RW5982-0TB00</b>	1	1 unit	42S		
		3RW5982-0TB00							
	<b>Removable control terminals</b>	• Screw terminals		<b>Screw terminals</b>					
		3RW551.-1H... (2x), 3RW552.-1H... (2x), 3RW553.-6H... (2x), 3RW554.-6H... (2x), 3RW555.-6H... (2x)	Contains 2 blocks each with 6 terminals	<b>3RW5980-1TR00</b>	1	1 unit	42S		
		• Spring-loaded terminals		<b>Spring-loaded terminals</b>					
		3RW551.-3H... (2x), 3RW552.-3H... (2x), 3RW553.-2H... (2x), 3RW554.-2H... (2x), 3RW555.-2H... (2x)	Contains 2 blocks each with 6 terminals	<b>3RW5980-2TR00</b>	1	1 unit	42S		
3RW5980-1TR00									
	<b>Terminal cover</b>	3RW555	--	<b>3RW5955-0TC20</b>	1	1 unit	42S		
		3RW5955-0TC20							

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW55

Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Enclosure components</b>							
 3RW5953-0GB00	<b>Lower part of enclosures</b>	3RW552.-.HA..	--	<b>3RW5953-0GB00</b>	1	1 unit	42S
		3RW553.-.HA..	--	<b>3RW5954-0GB00</b>	1	1 unit	42S
		3RW554.-.HA..	--				
 3RW5955-0GC00	<b>Ventilation cover</b>	3RW555 (3x)	--	<b>3RW5955-0GC00</b>	1	1 unit	42S
 3RW5950-0GD20	<b>Cover for control cable duct</b>	3RW55.-.HA..	Titanium gray	<b>3RW5950-0GD20</b>	1	1 unit	42S
 3RW5954-0GF00	<b>Front cover</b>	3RW554.-.HA..	--	<b>3RW5954-0GF00</b>	1	1 unit	42S
		3RW555	--	<b>3RW5955-0GF00</b>	1	1 unit	42S
 3RW5950-0GL30	<b>Hinged cover</b>	3RW55	With cutout for High-Feature HMI module	<b>3RW5950-0GL30</b>	1	1 unit	42S

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW55

Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>HMI modules</b>							
	<b>HMI module</b>	3RW55	High-Feature	<b>3RW5980-0HF00</b>	1	1 unit	42S
3RW5980-0HF00							
	<b>Interface cover</b>	3RW55	--	<b>3RW5980-0HL00</b>	1	1 unit	42S
3RW5980-0HL00							
<b>Connecting cables for installing the HMI module in the soft starter</b>							
	<b>Connecting cable</b>	--	Length 0.1 m, flat	<b>3UF7931-0AA00-0</b>	1	1 unit	42J
3UF7931-0AA00-0							
<b>Transport packaging</b>							
	<b>Transport packaging</b>	3RW551	--	<b>3RW5951-0VY00</b>	1	1 unit	42S
		3RW552, 3RW553	--	<b>3RW5953-0VY00</b>	1	1 unit	42S
		3RW554	--	<b>3RW5954-0VY00</b>	1	1 unit	42S
		3RW555	--	<b>3RW5955-0VY00</b>	1	1 unit	42S
3RW5953-0VY00							

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## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW55 Failsafe

### Overview

#### More information

Homepage, see [www.siemens.com/sirius-soft-starter](http://www.siemens.com/sirius-soft-starter)SiePortal, see [www.siemens.com/product\\_catalog\\_siep?3RW](http://www.siemens.com/product_catalog_siep?3RW)

SiePortal topic page, see

<https://support.industry.siemens.com/cs/ww/en/view/109747404>

### Selection and ordering data

Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Fans</b>							
	<b>Fans</b>	3RW551 (1x), 3RW552 (2x), 3RW553 (2x)	--	<b>3RW5983-0FF00</b>	1	1 unit	42S
		3RW554 (1x)	--	<b>3RW5984-0FF00</b>	1	1 unit	42S
3RW5983-0FF00							
<b>Terminals and terminal covers</b>							
	<b>Box terminal block</b>	3RW552 (2x)	--	<b>3RW5982-0TB00</b>	1	1 unit	42S
	3RW5982-0TB00						
	<b>Removable control terminals</b>	• Screw terminals		<b>Screw terminals</b> 			
		3RW551.-1H... (2x), 3RW552.-1H... (2x), 3RW553.-6H... (2x), 3RW554.-6H... (2x)	Contains 2 blocks each with 6 terminals	<b>3RW5980-1TR00</b>	1	1 unit	42S
	<b>Removable control terminals</b>	• Spring-loaded terminals		<b>Spring-loaded terminals</b> 			
		3RW551.-3H... (2x), 3RW552.-3H... (2x), 3RW553.-2H... (2x), 3RW554.-2H... (2x)	Contains 2 blocks each with 6 terminals	<b>3RW5980-2TR00</b>	1	1 unit	42S
3RW5980-1TR00							
<b>Enclosure components</b>							
	<b>Cover for control cable duct</b>	3RW55.-.HF..	Yellow	<b>3RW5950-0GD30</b>	1	1 unit	42S
	3RW5950-0GD30						
	<b>Hinged cover</b>	3RW55	With cutout for High-Feature HMI module	<b>3RW5950-0GL30</b>	1	1 unit	42S
	3RW5950-0GL30						

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

## For 3RW55 Failsafe

Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>HMI modules</b>							
	<b>HMI module</b>	3RW55	High-Feature	<b>3RW5980-0HF00</b>	1	1 unit	42S
3RW5980-0HF00							
	<b>Interface cover</b>	3RW55	--	<b>3RW5980-0HL00</b>	1	1 unit	42S
3RW5980-0HL00							
<b>Connecting cables for installing the HMI module in the soft starter</b>							
	<b>Connecting cable</b>	--	Length 0.1 m, flat	<b>3UF7931-0AA00-0</b>	1	1 unit	42J
3UF7931-0AA00-0							
<b>Transport packaging</b>							
	<b>Transport packaging</b>	3RW551	--	<b>3RW5951-0VY00</b>	1	1 unit	42S
		3RW552, 3RW553	--	<b>3RW5953-0VY00</b>	1	1 unit	42S
		3RW554	--	<b>3RW5954-0VY00</b>	1	1 unit	42S
3RW5953-0VY00							

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## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW52

### Overview

#### More information

Homepage, see [www.siemens.com/sirius-soft-starter](http://www.siemens.com/sirius-soft-starter)SiePortal, see [www.siemens.com/product\\_catalog\\_siep?3RW](http://www.siemens.com/product_catalog_siep?3RW)

SiePortal topic page, see

<https://support.industry.siemens.com/cs/ww/en/view/109747404>

### Selection and ordering data

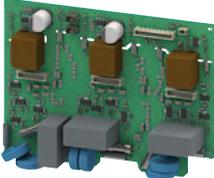
Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Power semiconductor modules</b>							
 3RW5952-0SF04	<b>Power semiconductor modules</b>	3RW5224-..C.4 (3x)	480 V, 47 A	<b>3RW5952-0SF04</b>	1	1 unit	42S
		3RW5225-..C.4 (3x), 3RW5226-..C.4 (3x)	480 V, 77 A	<b>3RW5952-0SH04</b>	1	1 unit	42S
		3RW5227-..C.4 (3x)	480 V, 93 A	<b>3RW5952-0SJ04</b>	1	1 unit	42S
		3RW5234-..C.4 (3x), 3RW5235-..C.4 (3x)	480 V, 143 A	<b>3RW5953-0SL04</b>	1	1 unit	42S
		3RW5236-..C.4 (3x)	480 V, 171 A	<b>3RW5953-0SM04</b>	1	1 unit	42S
		3RW5224-..C.5 (3x)	600 V, 47 A	<b>3RW5952-0SF05</b>	1	1 unit	42S
		3RW5225-..C.5 (3x), 3RW5226-..C.5 (3x)	600 V, 77 A	<b>3RW5952-0SH05</b>	1	1 unit	42S
		3RW5227-..C.5 (3x)	600 V, 93 A	<b>3RW5952-0SJ05</b>	1	1 unit	42S
		3RW5234-..C.5 (3x), 3RW5235-..C.5 (3x)	600 V, 143 A	<b>3RW5953-0SL05</b>	1	1 unit	42S
		3RW5236-..C.5 (3x)	600 V, 171 A	<b>3RW5953-0SM05</b>	1	1 unit	42S
 3RW5953-0SM05		3RW5243 (3x)	600 V, 210 A	<b>3RW5924-0SN05</b>	1	1 unit	42S
		3RW5244 (3x), 3RW5245 (3x)	600 V, 315 A	<b>3RW5924-0SQ05</b>	1	1 unit	42S
		3RW5246 (3x), 3RW5247 (3x)	600 V, 470 A	<b>3RW5924-0SS05</b>	1	1 unit	42S
		3RW5248 (3x)	600 V, 570 A	<b>3RW5924-0ST05</b>	1	1 unit	42S
 3RW5924-0ST05							
<b>Bypass units</b>							
 3RW5953-0BY00	<b>Bypass units</b>	3RW522, 3RW523	--	<b>3RW5953-0BY00</b>	1	1 unit	42S
		3RW5243, 3RW5244, 3RW5245	210 ... 315 A	<b>3RW5954-0BP00</b>	1	1 unit	42S
		3RW5246, 3RW5247, 3RW5248	370 ... 570 A	<b>3RW5954-0BT00</b>	1	1 unit	42S
<b>Control units</b>							
 3RW5920-1UA00	<b>Control units</b>	3RW52-..AC0.	24 V analog output	<b>3RW5920-1UA00</b>	1	1 unit	42S
		3RW52-..AC1.	110 ... 250 V analog output	<b>3RW5920-1UA10</b>	1	1 unit	42S
		3RW52-..TC0.	24 V thermistor input	<b>3RW5920-1UT00</b>	1	1 unit	42S
		3RW52-..TC1.	110 ... 250 V thermistor input	<b>3RW5920-1UT10</b>	1	1 unit	42S

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW52

Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Printed circuit boards</b>							
	<b>Printed circuit boards</b>	3RW5213-..C.4	480 V, 13 A	<b>3RW5921-0PA04</b>	1	1 unit	42S
		3RW5214-..C.4	480 V, 18 A	<b>3RW5921-0PB04</b>	1	1 unit	42S
		3RW5215-..C.4	480 V, 25 A	<b>3RW5921-0PC04</b>	1	1 unit	42S
		3RW5216-..C.4	480 V, 32 A	<b>3RW5921-0PD04</b>	1	1 unit	42S
		3RW5217-..C.4	480 V, 38 A	<b>3RW5921-0PE04</b>	1	1 unit	42S
		3RW522-..C.4, 3RW523-..C.4	480 V	<b>3RW5923-0PY04</b>	1	1 unit	42S
		3RW524-..C.4	480 V	<b>3RW5924-0PY04</b>	1	1 unit	42S
		3RW5213-..C.5	600 V, 13 A	<b>3RW5921-0PA05</b>	1	1 unit	42S
		3RW5214-..C.5	600 V, 18 A	<b>3RW5921-0PB05</b>	1	1 unit	42S
		3RW5215-..C.5	600 V, 25 A	<b>3RW5921-0PC05</b>	1	1 unit	42S
	3RW5216-..C.5	600 V, 32 A	<b>3RW5921-0PD05</b>	1	1 unit	42S	
	3RW5217-..C.5	600 V, 38 A	<b>3RW5921-0PE05</b>	1	1 unit	42S	
	3RW522-..C.5, 3RW523-..C.5	600 V	<b>3RW5923-0PY05</b>	1	1 unit	42S	
	3RW524-..C.5	600 V	<b>3RW5924-0PY05</b>	1	1 unit	42S	
<b>Fans</b>							
	<b>Fan</b>	3RW5216/17 (1x), 3RW5226/27 (2x), 3RW523 (2x)	--	<b>3RW5983-0FF00</b>	1	1 unit	42S
		3RW524 (1x)	--	<b>3RW5984-0FF00</b>	1	1 unit	42S
<b>Terminals</b>							
	<b>Box terminal block</b>	3RW522 (2x)	--	<b>3RW5982-0TB00</b>	1	1 unit	42S
	<b>Removable control terminals</b>	• Screw terminals		<b>Screw terminals</b>			
		3RW521-..1.C.., 3RW522-..1.C.., 3RW523-..6.C.., 3RW524-..6.C..	Contains 2 blocks each with 6 terminals	<b>3RW5980-1TR00</b>	1	1 unit	42S
		• Spring-loaded terminals		<b>Spring-loaded terminals</b>			
		3RW521-..3.C.., 3RW522-..3.C.., 3RW523-..2.C.., 3RW524-..2.C..	Contains 2 blocks each with 6 terminals	<b>3RW5980-2TR00</b>	1	1 unit	42S
<b>Enclosure components</b>							
	<b>Lower part of enclosures</b>	3RW522, 3RW523	--	<b>3RW5953-0GB00</b>	1	1 unit	42S
		3RW524	--	<b>3RW5954-0GB00</b>	1	1 unit	42S
	<b>Cover for control cable duct</b>	3RW52	Titanium gray	<b>3RW5950-0GD20</b>	1	1 unit	42S

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW52

Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Enclosure components</b>							
 3RW5954-0GF00	<b>Front cover</b>	3RW524	--	<b>3RW5954-0GF00</b>	1	1 unit	42S
 3RW5950-0GL20	<b>Hinged cover</b>	3RW52	Without cutout	<b>3RW5950-0GL20</b>	1	1 unit	42S
<b>Transport packaging</b>							
 3RW5953-0VY00	<b>Transport packaging</b>	3RW521 3RW522, 3RW523 3RW524	-- -- --	<b>3RW5951-0VY00</b> <b>3RW5953-0VY00</b> <b>3RW5954-0VY00</b>	1 1 1	1 unit 1 unit 1 unit	42S 42S 42S

## Overview

## More information

Homepage, see [www.siemens.com/sirius-soft-starter](http://www.siemens.com/sirius-soft-starter)SiePortal, see [www.siemens.com/product\\_catalog\\_siep?3RW](http://www.siemens.com/product_catalog_siep?3RW)

SiePortal topic page, see

<https://support.industry.siemens.com/cs/ww/en/view/109747404>

## Selection and ordering data

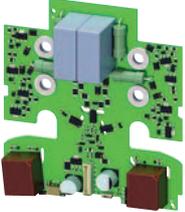
	Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Power semiconductor modules</b>								
	<b>Power semiconductor modules</b>	3RW505-...B.4 (2x)	480 V, 171 A	<b>3RW5953-0SL04</b>		1	1 unit	42S
		3RW505-...B.5 (2x)	600 V, 171 A	<b>3RW5953-0SL05</b>		1	1 unit	42S
		3RW5072 (2x)	600 V, 210 A	<b>3RW5924-0SN05</b>		1	1 unit	42S
		3RW5073 (2x), 3RW5074 (2x)	600 V, 315 A	<b>3RW5924-0SQ05</b>		1	1 unit	42S
		3RW5075 (2x), 3RW5076 (2x)	600 V, 470 A	<b>3RW5924-0SS05</b>		1	1 unit	42S
		3RW5077 (2x)	600 V, 570 A	<b>3RW5924-0ST05</b>		1	1 unit	42S
<b>Bypass units</b>								
	<b>Bypass units</b>	3RW505	--	<b>3RW5905-0BY00</b>		1	1 unit	42S
		3RW5072, 3RW5073, 3RW5074	210 ... 315 A	<b>3RW5907-0BQ00</b>		1	1 unit	42S
		3RW5075, 3RW5076, 3RW5077	370 ... 570 A	<b>3RW5907-0BY00</b>		1	1 unit	42S
<b>Control units</b>								
	<b>Control units</b>	Analog output	3RW505-..AB0.	24 V	<b>3RW5905-1UA00</b>	1	1 unit	42S
			3RW505-..AB1.	110 ... 250 V	<b>3RW5905-1UA10</b>	1	1 unit	42S
		Thermistor input	3RW507-..AB0.	24 V	<b>3RW5907-1UA00</b>	1	1 unit	42S
			3RW507-..AB1.	110 ... 250 V	<b>3RW5907-1UA10</b>	1	1 unit	42S
			3RW505-..TB0.	24 V	<b>3RW5905-1UT00</b>	1	1 unit	42S
			3RW505-..TB1.	110 ... 250 V	<b>3RW5905-1UT10</b>	1	1 unit	42S
			3RW507-..TB0.	24 V	<b>3RW5907-1UT00</b>	1	1 unit	42S
3RW507-..TB1.	110 ... 250 V	<b>3RW5907-1UT10</b>	1	1 unit	42S			

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RW soft starters

Spare parts

For 3RW50

Product designation	Manufacturer's article number of the soft starter	Product version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Printed circuit boards</b>							
 3RW5905-0PY04	<b>Printed circuit boards</b>	3RW505...B.4	480 V	<b>3RW5905-0PY04</b>	1	1 unit	42S
		3RW507...B.4	480 V	<b>3RW5907-0PY04</b>	1	1 unit	42S
		3RW505...B.5	600 V	<b>3RW5905-0PY05</b>	1	1 unit	42S
		3RW507...B.5	600 V	<b>3RW5907-0PY05</b>	1	1 unit	42S
<b>Fans</b>							
 3RW5905-0FF00	<b>Fans</b>	3RW505 (1x)	--	<b>3RW5905-0FF00</b>	1	1 unit	42S
		3RW507 (1x)	--	<b>3RW5907-0FF00</b>	1	1 unit	42S
<b>Terminals</b>							
 3RW5980-1TR00	<b>Removable control terminals</b>	• Screw terminals		<b>Screw terminals</b> 	1	1 unit	42S
		3RW50...-6.B..	Contains 2 blocks each with 6 terminals	<b>3RW5980-1TR00</b>			
		• Spring-loaded terminals		<b>Spring-loaded terminals</b> 	1	1 unit	42S
	3RW50...-2.B..	Contains 2 blocks each with 6 terminals	<b>3RW5980-2TR00</b>				
<b>Enclosure components</b>							
 3RW5905-0GB00	<b>Lower part of enclosures</b>	3RW505	--	<b>3RW5905-0GB00</b>	1	1 unit	42S
		3RW507	--	<b>3RW5907-0GB00</b>	1	1 unit	42S
 3RW5900-0GL00	<b>Hinged cover</b>	3RW50	--	<b>3RW5900-0GL00</b>	1	1 unit	42S
<b>Transport packaging</b>							
 3RW5905-0VY00	<b>Transport packaging</b>	3RW505	--	<b>3RW5905-0VY00</b>	1	1 unit	42S
		3RW507	--	<b>3RW5907-0VY00</b>	1	1 unit	42S

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** General data

### Overview

#### More information

SiePortal, see [www.siemens.com/product\\_catalog\\_siep?3RF](http://www.siemens.com/product_catalog_siep?3RF)

Online configurator, see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators)

Conversion tool, see [www.siemens.com/conversion-tool](http://www.siemens.com/conversion-tool)

### SIRIUS 3RF3 solid-state switching devices



3RF31 solid-state relay, 1-pole, and 3RF33 solid-state contactor, 1-pole

The SIRIUS 3RF3 1-pole solid-state switching devices reliably switch a wide range of different loads with alternating voltages in 50 and 60 Hz systems.

- 3RF30 and 3RF31 solid-state relays
- 3RF33 solid-state contactors
- 3RF39 function modules

#### SIRIUS 3RF3 – For virtually infinite activity

Conventional electromechanical switchgear is often overtaxed by the rise in the number of switching operations. A high switching frequency results in frequent failure and short replacement cycles. However, this does not have to be the case, because with the latest generation of our SIRIUS 3RF3 solid-state switching devices we offer solid-state relays and contactors with a particularly long service life – for virtually infinite activity even under the toughest conditions and under high mechanical loading, but also in noise-sensitive areas.

#### Proven time and again in service

SIRIUS 3RF solid-state switching devices have firmly established themselves in industrial applications. They are used above all in applications where loads are switched frequently – mainly with resistive load controllers, with the control of electrical heat or the control of valves and motors in conveyor systems. In addition to its use in areas with high switching frequencies, their silent switching means that solid-state switching devices are also ideally suited for use in noise-sensitive areas, such as offices or hospitals.

#### The most reliable solution for any application

Compared to mechanical switchgear, our SIRIUS 3RF3 solid-state switching devices stand out due to their considerably longer service life. Thanks to the high product quality, their switching is extremely precise, reliable and, above all, unsusceptible to faults. With its variable connection methods and a wide range of control voltages, the 3RF3 family is universally applicable. Depending on the individual requirements of the application, our modular switchgear can also be easily expanded by the addition of standardized 3RF39 function modules, see page 6/159 onwards.

#### Always on the sunny side with SIRIUS

Because SIRIUS 3RF3 offers even more:

- The space-saving and compact side-by-side mounting ensures reliable operation up to an ambient temperature of +60 °C.
- Thanks to fast configuration and the ease of mounting and commissioning, not only time but also expenses are saved.

#### Also for switching motors (see page 6/175 onwards)

In order to achieve higher productivity, the switching frequency is continuously increased in drive technology. This is no problem for our SIRIUS 3RF34...-B... solid-state contactors for switching motors. With three-phase motors up to 7.5 kW, they can reliably withstand even the highest switching frequencies. Even a continuous change in the direction of rotation is possible with the solid-state reversing contactors. Both versions can be perfectly combined with components from the SIRIUS modular system. Connecting with SIRIUS motor starter protectors/circuit breakers or SIRIUS overload relays can be implemented without any further steps.

Solid-state switching devices for switching motors:

- 3RF34...-BB.. solid-state contactors
- 3RF34...-BD.. solid-state reversing contactors

#### **Connection methods**

The solid-state switching devices are available with screw terminals, spring-loaded terminals or ring cable lug connection.

-  Screw terminals
-  Spring-loaded terminals
-  Ring cable lug connection

The connection method is indicated in the corresponding tables by the symbols shown on orange backgrounds.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

### General data **NEW**

#### Article number scheme

Product versions		Article number				
Device type	<b>Solid-state relays</b>	<b>3RF30</b>	□ □ - □ □ □ □ □ □ - □ □ □ □			1-pole, 45 mm width
		<b>3RF31</b>	□ □ - □ □ □ □ □ □ - □ □ □ □			1-pole, 22.5 mm width
	<b>Solid-state contactors</b>	<b>3RF33</b>	□ □ - □ □ □ □ □ □ - □ □ □ □			1-pole
Maximum current-carrying capacity	e.g. 20 = 20 A	□ □				
Connection type	Screw terminals			<b>1</b>		
	Spring-loaded terminals			<b>2</b>		
	Ring cable lug connection			<b>3</b>		
Product function	Zero-point switching				<b>A</b>	
	Instantaneous switching				<b>B</b>	
	Zero-point switching				<b>D</b>	Short-circuit-proof with B MCB
Version	1-pole controlled				<b>A</b>	
Control supply voltage	24 V DC				<b>0</b>	
	24 V AC/DC				<b>1</b>	
	110 ... 230 V AC				<b>2</b>	
	4 ... 30 V DC				<b>4</b>	
	110 V DC				<b>6</b>	
Operational voltage	24 ... 230 V AC				<b>2</b>	
	48 ... 460 V AC				<b>4</b>	
	48 ... 600 V AC				<b>5</b>	Blocking voltage 1 200 V
	48 ... 600 V AC				<b>6</b>	Blocking voltage 1 600 V
Special versions	Low power					<b>0 K N 0</b>
Example		<b>3RF31</b>	<b>2 0 - 1 A A 0 6</b>			

#### Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** General data

### Overview of the SIRIUS 3RF3 solid-state switching devices

Type	Solid-state relays		Solid-state contactors	Function modules					
	1-pole 22.5 mm	45 mm	1-pole	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
	3RF31	3RF30	3RF33	3RF3900-0EA18	3RF39...0FA	3RF39...0GA	3RF39...0JA	3RF39...0KA	3RF39...0HA
<b>Usage</b>									
Simple replacement of existing solid-state relays	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	--	--	--	--	--	--
Complete unit "Ready to use"	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	--	--	--	--	--	--
Space-saving	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	--	--	--	--
Can be extended with modular function modules	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	--	--	--	--	--	--
Frequent switching and monitoring of the load and the solid-state relay or contactor	--	--	--	--	<input checked="" type="checkbox"/>				
Monitoring of up to six partial loads	--	--	--	--	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	--
Monitoring of more than six partial loads	--	--	--	--	--	<input checked="" type="checkbox"/>	--	--	--
Control of the heating power through an analog input	--	--	--	<input checked="" type="checkbox"/>	--	--	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Power control	--	--	--	--	--	--	--	--	<input checked="" type="checkbox"/>
<b>Commissioning</b>									
Easy setting of setpoint values with "Teach" button	--	--	--	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
"Remote Teach" input for setting setpoints	--	--	--	--	--	--	<input checked="" type="checkbox"/>	--	--
<b>Mounting</b>									
Mounting on mounting rails or mounting plates	--	--	<input checked="" type="checkbox"/>	--	--	--	--	--	--
Can be snapped directly onto a solid-state relay or contactor	--	--	--	<input checked="" type="checkbox"/>					
Use on heat sink	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	--	--	--	--	--	--	--
<b>Cable routing</b>									
Connection of load circuit as for switchgear	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>	--	<input checked="" type="checkbox"/>				
Connection of load circuit from above	--	<input checked="" type="checkbox"/>	--	--	--	--	--	--	--

Function available

Function possible

-- Function not possible

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

### General data **NEW**

#### Benefits

##### Main features

- Compact and space-saving design
- LED display
- Variety of connection methods, also with high degree of protection
- Plug-in control connection
- Sustainable product design (EcoTech-certified)

##### Features

- Considerable space savings due to versions with a width of only 22.5 mm
- Variety of connection methods: Screw terminal, spring-loaded terminal or ring cable lug, there is no problem – they are all finger-safe
- Flexible for all applications with function modules for retrofitting
- Possibility of fuseless short-circuit-proof design

##### Benefits

- Saves time and costs with fast mounting and commissioning, short startup times and easy wiring
- Extremely long life, low maintenance, rugged and reliable
- Space-saving and safe thanks to side-by-side mounting up to an ambient temperature of +60 °C
- Modular design: Standardized function modules and heat sinks can be used in conjunction with solid-state switching devices to satisfy individual requirements.
- Safety due to lifelong, vibration-resistant and shock-resistant spring-loaded terminals even under tough conditions
- Optimum heat transfer allows small, space-saving heat sinks to be used

#### Application

##### Applications

Example: Plastics processing industry

Thanks to their high switching service life, SIRIUS 3RF3 solid-state switching devices are ideal for controlling electrical heat. This is because the more precise the temperature regulation process has to be, the higher the switching frequency. The accurate regulation of electrical heat is used for example in many processes in the plastics processing industry:

- Band heaters heat the extrudate to the correct temperature in plastic extruders
- Heat emitters heat plastic blanks to the correct temperature
- Heat drums dry plastic granules
- Heating channels keep molds at the correct temperature in order to manufacture different plastic parts without defects.

The powerful 3RF3 solid-state relays and contactors can be used for the simultaneous control of several heating loads. By using a load monitoring module the individual partial loads can easily be monitored, and in the event of a failure a signal is generated to the controller.

##### Use in fuseless load feeders

Compared with the fused configuration of load feeders, short-circuit and line protection using miniature circuit breakers is easy to achieve with 3RF3 solid-state relays and contactors.

A special version of the 3RF33 solid-state contactors can be protected against damage in the case of a short circuit with a miniature circuit breaker with type B tripping characteristic. This allows the low-cost and simple design of fuseless load feeders with full protection of the switchgear.

#### More information

##### Notes on integration in the load feeders

The SIRIUS solid-state switching devices are very easy to integrate into the load feeders thanks to their industrial connection method and design.

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance capacity of the solid-state switching devices is largely dependent on these. Depending on the version, certain restrictions must be observed. For detailed information, for example in relation to 3RF33 solid-state contactors about the minimum spacing and to 3RF30 and 3RF31 solid-state relays about the choice of heat sink, [see technical product data sheets, https://support.industry.siemens.com/cs/ww/en/ps/30002/td](https://support.industry.siemens.com/cs/ww/en/ps/30002/td).

##### Short-circuit and overload protection

Despite the rugged power semiconductors that are used, solid-state switching devices respond more sensitively to short circuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor protection fuses. These fuses also provide protection against destruction in the event of a short circuit even when the solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly. The technical product data sheets contain details both about the solid-state fuse protection

itself and about use of the devices with conventional protection equipment.

##### Electromagnetic compatibility (EMC)

The solid-state switching devices are suitable for interference-free operation in industrial networks without further measures. If they are used in public networks, it may be necessary for the conducted disturbance voltage to be reduced by means of filters.

Standard filters can be used to comply with the limit values. The decisive factors when it comes to selecting the filters are essentially the current loading and the other parameters (operational voltage, design type, etc.) in the load feeder.

Suitable filters can be purchased from TDK Europe GmbH, [see page 16/18](https://www.tdk.com).

##### **Product information and technical specifications**

For product data sheets with detailed technical specifications, dimensional drawings and characteristic curves, [see https://support.industry.siemens.com/cs/ww/en/ps/30002/td](https://support.industry.siemens.com/cs/ww/en/ps/30002/td).

For more information, please enter the article number of the required device under the tab "Product List".

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** Solid-state relays > General data

### Overview

#### **3RF3 solid-state relays (without heat sink)**

Solid-state relays are suitable for mounting on existing cooling surfaces. Mounting is quick and easy, involving just two screws. The special technology of the power semiconductor ensures that there is excellent thermal contact with the heat sink. Depending on the nature of the heat sink, the performance capacity reaches up to 80 A on resistive loads.

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see [More information, page 6/126](#)).

The solid-state relays are available in two versions:

- 3RF31 solid-state relay with a width of 22.5 mm
- 3RF30 solid-state relay with a width of 45 mm

#### Version for resistive loads "zero-point switching"

This standard version is often used for switching heaters on and off.

#### Version for inductive loads "instantaneous switching"

The version is specially adapted to inductive loads. Whether it is a matter of frequent actuation of the valves in a filling plant or starting and stopping small operating mechanisms in packet distribution systems, operation is carried out safely and noiselessly.

#### Special "low power" version

This special version for the 3RF31 solid-state relays is optimized for minimal current consumption in the control input. This allows, for example, a very large number of 3RF3 devices to be operated simultaneously from one control output.

#### Function modules

The 3RF31 solid-state relays can be expanded with various function modules to adapt them to individual applications, see [page 6/159 onwards](#).

#### **3RF31 1-pole solid-state relays (without heat sink) with a width of 22.5 mm**

With its compact design, which stays the same even at currents of up to 80 A, the 3RF31 solid-state relay with a width of just 22.5 mm offers an ultra-small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

#### **3RF30 1-pole solid-state relays (without heat sink) with a width of 45 mm**

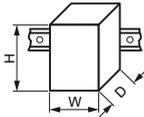
The solid-state relays with a width of 45 mm provide for connection of the power supply lead and the load from above. This makes it easy to replace existing solid-state relays in existing arrangements. The connection of the control cable is as space-saving as the 22.5 mm design, as it is simply plugged on.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

### Solid-state relays > SIRIUS 3RF31 solid-state relays, 1-pole, 22.5 mm **NEW**

#### Technical specifications

More information	
Manuals, see <a href="https://support.industry.siemens.com/cs/ww/en/ps/30002/man">https://support.industry.siemens.com/cs/ww/en/ps/30002/man</a>	FAQs, see <a href="https://support.industry.siemens.com/cs/ww/en/ps/30002/faq">https://support.industry.siemens.com/cs/ww/en/ps/30002/faq</a>
Article number	<b>3RF31...-1...., 3RF31...-2....</b>   <b>3RF31...-3....</b>
General technical specifications	
<b>Dimensions (W x H x D)</b>	mm 22.5 x 85 x 48
	
<b>Ambient temperature</b>	
• During operation	°C -25 ... +60
• During storage	°C -55 ... +80
<b>Derating temperature</b>	°C 40
<b>Installation altitude at height above sea level, maximum</b>	m 1 000
<b>Shock resistance according to IEC 60068-2-27</b>	15 g/11 ms
<b>Vibration resistance according to IEC 60068-2-6</b>	2 g
<b>Degree of protection IP on the front according to IEC 60529</b>	IP20   IP00; IP20 with cover
<b>Touch protection on the front according to IEC 60529</b>	Finger-safe for vertical touching from the front   Finger-safe for vertical touching from the front with cover
<b>Conducted RF interference emission according to CISPR11</b>	Class A for industrial applications
<b>Radiated RF interference emission according to CISPR11</b>	Class B for residential, business and commercial applications
<b>Electrostatic discharge according to IEC 61000-4-2</b>	4 kV contact-mode discharge/8 kV air discharge, behavior criterion 2
<b>Conducted interference</b>	
• Due to radio frequency radiation according to IEC 61000-4-6	140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1
• Due to burst according to IEC 61000-4-4	2 kV/5 kHz, behavior criterion 2
• Due to conductor-ground surge according to IEC 61000-4-5	2 kV, behavior criterion 2
• Due to conductor-conductor surge according to IEC 61000-4-5	1 kV, behavior criterion 2
Article number	<b>3RF3125-...2, 3RF3150-...2, 3RF3190-...2</b>   <b>3RF3125-...4, 3RF3150-...4, 3RF3190-...4</b>   <b>3RF3125-...5, 3RF3150-...5, 3RF3190-...5</b>   <b>3RF3150-...6, 3RF3190-...6</b>
Main circuit	
<b>Operational voltage at AC</b>	V 24 ... 230   48 ... 460   48 ... 600
<b>Operating frequency</b>	Hz 50 ... 60
<b>Blocking voltage at thyristor for main contacts, maximum permissible</b>	V 800   1 200   1 600
Article number	<b>3RF3125-2....</b>   <b>3RF3125-1...., 3RF3125-3....</b>   <b>3RF3150-2...., 3RF3190-2....</b>   <b>3RF3150-1...., 3RF3150-3...., 3RF3190-1....</b>   <b>3RF3190-3....</b>
Main circuit	
<b>Operational current</b>	
• At AC-1 at 400 V	A 20   25   20   50   80
• According to UL 508	A 20   25   20   50   80
• Minimum	mA 100     500
Article number	<b>3RF31...-A0.</b>   <b>3RF31...-A4.</b>   <b>3RF3150...-A1.</b>   <b>3RF31...-A2.</b>
Control circuit	
<b>Type of voltage of the control supply voltage</b>	DC   AC/DC   AC
<b>Control supply voltage</b>	
• At AC	V --     14 ... 27   110 ... 230
• At DC	V 15 ... 24   4 ... 30   15 ... 24   --
<b>Frequency of the control supply voltage</b>	Hz --     50 ... 60

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** Solid-state relays > SIRIUS 3RF31 solid-state relays, 1-pole, 22.5 mm

Article number		3RF31...1....	3RF31...2....	3RF31...3....
<b>Main circuit</b>				
<b>Type of electrical connection</b>		 Screw terminals	 Spring-loaded terminals	 Ring cable lug connection
<b>Connectable conductor cross-section</b>				
• Solid or stranded	mm <sup>2</sup>	1.5 ... 6	0.5 ... 2.5	--
• Finely stranded				
- With end sleeve	mm <sup>2</sup>	1 ... 10	0.5 ... 1.5	--
- Without end sleeve	mm <sup>2</sup>	--	0.5 ... 2.5	--
<b>Type of connectable conductor cross-sections</b>				
• Solid		2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )	2x (0.5 ... 2.5 mm <sup>2</sup> )	--
• Finely stranded				
- With end sleeve		2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1 x 10 mm <sup>2</sup>	2x (0.5 ... 1.5 mm <sup>2</sup> )	--
- Without end sleeve		--	2x (0.5 ... 2.5 mm <sup>2</sup> )	--
• For AWG cables		2x (14 ... 10)	2x (18 ... 14)	1x (12 ... 4)
• For DIN cable lugs		--	--	DIN 46234-5-2.5, -5-6, -5-10, -5-16, -5-25
• For JIS cable lugs		--	--	JIS C 2805 R 2-5, 5.5-5, 8-5, 14-5
<b>AWG number as coded connectable conductor cross-section</b>		14 ... 8	18 ... 14	12 ... 4
<b>Design of thread of terminal screw</b>		M4	--	M5
<b>Tightening torque for screw terminals</b>		Nm	2 ... 2.5	2 ... 2.5
<b>Control circuit</b>				
<b>Type of electrical connection</b>		 Screw terminals	 Spring-loaded terminals	 Ring cable lug connection
<b>Connectable conductor cross-section</b>				
• Solid	mm <sup>2</sup>	0.5 ... 2.5	0.5 ... 1.5	0.5 ... 2.5
• Finely stranded				
- With end sleeve	mm <sup>2</sup>	0.5 ... 2.5		
- Without end sleeve	mm <sup>2</sup>	0.5 ... 2.5		
<b>Type of connectable conductor cross-sections</b>				
• Solid		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )	0.5 ... 1.5 mm <sup>2</sup>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2 x (0.5 ... 1 mm <sup>2</sup> )
• Finely stranded				
- With end sleeve		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )	0.5 ... 2.5 mm <sup>2</sup>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
- Without end sleeve		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )	0.5 ... 2.5 mm <sup>2</sup>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• For AWG cables		1x (20 ... 12)		
<b>AWG number as coded connectable conductor cross-section</b>		20 ... 12		
<b>Design of thread of terminal screw</b>		M3	--	M3
<b>Tightening torque for screw terminals</b>		Nm	0.5 ... 0.6	0.5 ... 0.6

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors



### Solid-state relays > SIRIUS 3RF31 solid-state relays, 1-pole, 22.5 mm **NEW**

#### Selection and ordering data

##### Selection notes

When selecting solid-state relays, in addition to information about the network, the load and the ambient conditions, it is also necessary to know details of the planned design. The solid-state relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink.

Mounting solid-state relays directly on a mounting plate made of sheet steel is inadequate in terms of heat dissipation.

The following procedure is recommended:

- Determine the rated current of the load and the line voltage

- Select the relay design and choose a solid-state relay with higher rated current than the load
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the characteristic curves (see the [technical product data sheets of the relevant solid-state relay](#)) taking into account the thermal resistance of the heat sink
- In systems that have high voltage peaks or at voltages of 575 V and higher, use of versions with a high blocking voltage of 1 600 V is recommended.

##### Solid-state relays (without heat sink)

Maximum current-carrying capacity	Control supply voltage	Screw terminals	PU (UNIT, SET, M)	PS*	PG
A	V	Article No.	Price per PU		
<b>Operational voltage 24 ... 230 V AC</b>					
<b>Zero-point switching</b>					
25	24 DC	<b>3RF3125-1AA02</b>	1	1 unit	41C
	4 ... 30 DC	<b>3RF3125-1AA42</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3125-1AA22</b>	1	1 unit	41C
50	24 DC	<b>3RF3150-1AA02</b>	1	1 unit	41C
	4 ... 30 DC	<b>3RF3150-1AA42</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3150-1AA22</b>	1	1 unit	41C
90	24 DC	<b>3RF3190-1AA02</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3190-1AA22</b>	1	1 unit	41C
<b>Instantaneous switching</b>					
50	110 ... 230 AC	<b>3RF3150-1BA22</b>	1	1 unit	41C
<b>Operational voltage 48 ... 460 V AC</b>					
<b>Zero-point switching</b>					
25	24 DC	<b>3RF3125-1AA04</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3125-1AA24</b>	1	1 unit	41C
50	24 DC	<b>3RF3150-1AA04</b>	1	1 unit	41C
	24 AC/DC	<b>3RF3150-1AA14</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3150-1AA24</b>	1	1 unit	41C
90	24 DC	<b>3RF3190-1AA04</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3190-1AA24</b>	1	1 unit	41C
<b>Instantaneous switching</b>					
25	24 DC	<b>3RF3125-1BA04</b>	1	1 unit	41C
50	24 DC	<b>3RF3150-1BA04</b>	1	1 unit	41C
90	24 DC	<b>3RF3190-1BA04</b>	1	1 unit	41C
<b>Operational voltage 48 ... 600 V AC</b>					
<b>Zero-point switching</b>					
25	4 ... 30 DC	<b>3RF3125-1AA45</b>	1	1 unit	41C
50	4 ... 30 DC	<b>3RF3150-1AA45</b>	1	1 unit	41C
90	4 ... 30 DC	<b>3RF3190-1AA45</b>	1	1 unit	41C
<b>Zero-point switching, low power</b>					
90	24 DC	<b>3RF3190-1AA05-0KN0</b>	1	1 unit	41C
<b>Zero-point switching, high blocking voltage</b>					
50	24 DC	<b>3RF3150-1AA06</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3150-1AA26</b>	1	1 unit	41C
90	24 DC	<b>3RF3190-1AA06</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3190-1AA26</b>	1	1 unit	41C
<b>Instantaneous switching, high blocking voltage</b>					
50	24 DC	<b>3RF3150-1BA06</b>	1	1 unit	41C

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state relay. The actual permissible current-carrying capacity may be smaller depending on the connection system and cooling conditions, please observe the selection notes (see above).

Versions with screw terminals can only be used for a maximum current-carrying capacity of approx. 50 A and a conductor cross-section of 10 mm<sup>2</sup>. Please use the 3RF31 solid-state relay with ring cable lug connection for these currents, see page 6/132.

Other control supply voltages on request.

Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** Solid-state relays > SIRIUS 3RF31 solid-state relays, 1-pole, 22.5 mm

### Solid-state relays (without heat sink)

Maximum current-carrying capacity	Control supply voltage	Spring-loaded terminals 	PU (UNIT, SET, M)	PS*	PG
A	V				
<b>Operational voltage 24 ... 230 V AC</b>					
<b>Zero-point switching</b>					
25	24 DC	<b>3RF3125-2AA02</b>	1	1 unit	41C
	4 ... 30 DC		1	1 unit	41C
	110 ... 230 AC		1	1 unit	41C
50	24 DC	<b>3RF3150-2AA02</b>	1	1 unit	41C
	110 ... 230 AC		1	1 unit	41C
90	24 DC	<b>3RF3190-2AA02</b>	1	1 unit	41C
	110 ... 230 AC		1	1 unit	41C
<b>Operational voltage 48 ... 460 V AC</b>					
<b>Zero-point switching</b>					
25	24 DC	<b>3RF3125-2AA04</b>	1	1 unit	41C
	110 ... 230 AC		1	1 unit	41C
50	24 DC	<b>3RF3150-2AA04</b>	1	1 unit	41C
	24 AC/DC		1	1 unit	41C
	110 ... 230 AC		1	1 unit	41C
90	24 DC	<b>3RF3190-2AA04</b>	1	1 unit	41C
	110 ... 230 AC		1	1 unit	41C
<b>Operational voltage 48 ... 600 V AC</b>					
<b>Zero-point switching</b>					
25	4 ... 30 DC	<b>3RF3125-2AA45</b>	1	1 unit	41C
<b>Zero-point switching, high blocking voltage</b>					
50	24 DC	<b>3RF3150-2AA06</b>	1	1 unit	41C
	110 ... 230 AC		1	1 unit	41C
90	24 DC	<b>3RF3190-2AA06</b>	1	1 unit	41C
	110 ... 230 AC		1	1 unit	41C



3RF3125-2AA02



3RF3125-2AA04



3RF3125-2AA45

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state relay. The actual permissible current-carrying capacity may be smaller depending on the connection system and cooling conditions, please observe the selection notes (see page 6/130).

Versions with spring-loaded terminals can only be used for a maximum current-carrying capacity of approx. 20 A and a conductor cross-section of 2.5 mm<sup>2</sup>. Higher currents can be achieved by connecting two conductors per terminal, or 3RF31 solid-state relays with screw terminals (see page 6/130) or ring cable lug connections (see page 6/132) are used.

Other control supply voltages on request.

Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors



### Solid-state relays > SIRIUS 3RF31 solid-state relays, 1-pole, 22.5 mm **NEW**

#### Solid-state relays (without heat sink)

Maximum current-carrying capacity	Control supply voltage	Ring cable lug connection 	PU (UNIT, SET, M)	PS*	PG
A	V	Article No.	Price per PU		
<b>Operational voltage 24 ... 230 V AC</b>					
<b>Zero-point switching</b>					
25	24 DC	<b>3RF3125-3AA02</b>	1	1 unit	41C
90	110 ... 230 AC	<b>3RF3190-3AA22</b>	1	1 unit	41C
<b>Operational voltage 48 ... 460 V AC</b>					
<b>Zero-point switching</b>					
50	110 ... 230 AC	<b>3RF3150-3AA24</b>	1	1 unit	41C
90	24 DC	<b>3RF3190-3AA04</b>	1	1 unit	41C
	4 ... 30 DC	<b>3RF3190-3AA44</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3190-3AA24</b>	1	1 unit	41C
<b>Operational voltage 48 ... 600 V AC</b>					
<b>Zero-point switching, high blocking voltage</b>					
50	24 DC	<b>3RF3150-3AA06</b>	1	1 unit	41C
90	24 DC	<b>3RF3190-3AA06</b>	1	1 unit	41C

3RF3125-3AA02

3RF3150-3AA24

3RF3150-3AA06

#### Note:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state relay. The actual permissible current-carrying capacity may be smaller depending on the connection system and cooling conditions, please observe the selection notes ([see page 6/130](#)).

Other control supply voltages on request.

Accessories, [see page 6/145](#).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

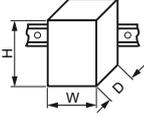
**NEW**

Solid-state relays > SIRIUS 3RF30 solid-state relays, 1-pole, 45 mm

### Technical specifications

#### More information

Manuals, see <https://support.industry.siemens.com/cs/ww/en/ps/30002/man> FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/30002/faq>

Article number	<b>3RF30..-1AA..</b>		
<b>General data</b>			
<b>Dimensions (W x H x D)</b>		mm	45 x 58 x 48
<b>Ambient temperature</b>			
• During operation	°C	-25 ... +60	
• During storage	°C	-55 ... +80	
<b>Derating temperature</b>	°C	40	
<b>Installation altitude at height above sea level, maximum</b>	m	1 000	
<b>Shock resistance according to IEC 60068-2-27</b>		15 g/11 ms	
<b>Vibration resistance according to IEC 60068-2-6</b>		2 g	
<b>Degree of protection IP on the front according to IEC 60529</b>		IP20	
<b>Touch protection on the front according to IEC 60529</b>		Finger-safe for vertical touching from the front	
<b>Conducted RF interference emission according to CISPR11</b>		Class A for industrial applications	
<b>Radiated RF interference emission according to CISPR11</b>		Class B for residential, business and commercial applications	
<b>Electrostatic discharge according to IEC 61000-4-2</b>		4 kV contact-mode discharge/8 kV air discharge, behavior criterion 2	
<b>Conducted interference</b>			
• Due to radio frequency radiation according to IEC 61000-4-6		140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1	
• Due to burst according to IEC 61000-4-4		2 kV/5 kHz, behavior criterion 2	
• Due to conductor-ground surge according to IEC 61000-4-5		2 kV, behavior criterion 2	
• Due to conductor-conductor surge according to IEC 61000-4-5		1 kV, behavior criterion 2	

Article number	<b>3RF30..-1AA.2</b>	<b>3RF30..-1AA.4</b>	<b>3RF30..-1AA.5</b>
<b>Main circuit</b>			
<b>Operational voltage at AC</b>	V	24 ... 230	48 ... 460
<b>Operating frequency</b>	Hz	50 ... 60	
<b>Blocking voltage at thyristor for main contacts, maximum permissible</b>	V	800	1 200

Article number	<b>3RF3025-1AA..</b>	<b>3RF3050-1AA..</b> <b>3RF3090-1AA..</b>
<b>Main circuit</b>		
<b>Operational current</b>		
• At AC-1 at 400 V	A	25
• According to UL 508	A	25
• Minimum	mA	100

Article number	<b>3RF30..-1AA0.</b>	<b>3RF30..-1AA4.</b>	<b>3RF3025-1AA22</b>
<b>Control circuit</b>			
<b>Type of voltage of the control supply voltage</b>		DC	AC
<b>Control supply voltage</b>			
• At AC	V	--	110 ... 230
• At DC	V	15 ... 24	4 ... 30
<b>Frequency of the control supply voltage</b>	Hz	--	50 ... 60

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF3 solid-state relays and solid-state contactors

Solid-state relays > SIRIUS 3RF30 solid-state relays, 1-pole, 45 mm

**NEW**

Article number	3RF30..-1AA..	
<b>Main circuit</b>		
Type of electrical connection	 Screw terminals	
<b>Connectable conductor cross-section</b>		
• Solid or stranded	mm <sup>2</sup>	1.5 ... 6
• Finely stranded with end sleeve	mm <sup>2</sup>	1 ... 10
<b>Type of connectable conductor cross-sections</b>		
• Solid		2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )
• Finely stranded with end sleeve		2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup>
• For AWG cables		2x (14 ... 10)
<b>AWG number as coded connectable conductor cross-section</b>		14 ... 8
<b>Design of thread of terminal screw</b>		M4
<b>Tightening torque</b>	Nm	2 ... 2.5
<b>Control circuit</b>		
Type of electrical connection	 Screw terminals	
<b>Connectable conductor cross-section</b>		
• Solid	mm <sup>2</sup>	0.5 ... 2.5
• Finely stranded		
- With end sleeve	mm <sup>2</sup>	0.5 ... 2.5
- Without end sleeve	mm <sup>2</sup>	0.5 ... 2.5
<b>Type of connectable conductor cross-sections</b>		
• Solid		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• Finely stranded		
- With end sleeve		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
- Without end sleeve		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• For AWG cables		1x (20 ... 12)
<b>AWG number as coded connectable conductor cross-section</b>		20 ... 12
<b>Design of thread of terminal screw</b>		M3
<b>Tightening torque</b>	Nm	0.5 ... 0.6

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** Solid-state relays > SIRIUS 3RF30 solid-state relays, 1-pole, 45 mm

### Selection and ordering data

#### Selection notes

When selecting solid-state relays, in addition to information about the network, the load and the ambient conditions, it is also necessary to know details of the planned design. The solid-state relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink.

Mounting solid-state relays directly on a mounting plate made of sheet steel is inadequate in terms of heat dissipation.

The following procedure is recommended:

- Determine the rated current of the load and the line voltage

#### Solid-state relays (without heat sink)

- Select the relay design and choose a solid-state relay with higher rated current than the load
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the characteristic curves (see the technical product data sheets of the relevant solid-state relay) taking into account the thermal resistance of the heat sink
- In systems that have high voltage peaks or at voltages of 575 V and higher, use of versions with a high blocking voltage of 1 600 V is recommended.

Maximum current-carrying capacity	Control supply voltage	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
A	V	Article No.	Price per PU		
<b>Operational voltage 24 ... 230 V AC</b>					
<b>Zero-point switching</b>					
25	24 DC	<b>3RF3025-1AA02</b>	1	1 unit	41C
	4 ... 30 DC	<b>3RF3025-1AA42</b>	1	1 unit	41C
	110 ... 230 AC	<b>3RF3025-1AA22</b>	1	1 unit	41C
50	24 DC	<b>3RF3050-1AA02</b>	1	1 unit	41C
	4 ... 30 DC	<b>3RF3050-1AA42</b>	1	1 unit	41C
90	24 DC	<b>3RF3090-1AA02</b>	1	1 unit	41C
<b>Operational voltage 48 ... 460 V AC</b>					
<b>Zero-point switching</b>					
25	24 DC	<b>3RF3025-1AA04</b>	1	1 unit	41C
	24 DC	<b>3RF3050-1AA04</b>	1	1 unit	41C
	4 ... 30 DC	<b>3RF3050-1AA44</b>	1	1 unit	41C
90	24 DC	<b>3RF3090-1AA04</b>	1	1 unit	41C
<b>Operational voltage 48 ... 600 V AC</b>					
<b>Zero-point switching</b>					
25	4 ... 30 DC	<b>3RF3025-1AA45</b>	1	1 unit	41C
	4 ... 30 DC	<b>3RF3050-1AA45</b>	1	1 unit	41C
	4 ... 30 DC	<b>3RF3090-1AA45</b>	1	1 unit	41C



3RF3025-1AA02



3RF3025-1AA04



3RF3025-1AA45

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state relay. The actual permissible current-carrying capacity may be smaller depending on the connection system and cooling conditions, please observe the selection notes (see above).

Versions with screw terminals can only be used for a maximum current-carrying capacity of approx. 50 A and a conductor cross-section of 10 mm<sup>2</sup>.

Other control supply voltages on request.

Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

Solid-state contactors > General data **NEW**

### Overview

#### 3RF3 solid-state contactors (with integrated heat sink)

The compact design of the 3RF33 solid-state contactor with optimized heat sink enables small complete units with currents up to 80 A.

These complete units consist of a solid-state relay with optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

Thanks to optimized power electronics, versions of 3RF3306 to 3RF3320 solid-state contactors can be mounted side-by-side without derating, [see technical product data sheets for the individual products](#).

#### Notes:

Checking the correct solid-state contactor size with the aid of the rated current characteristic curve, taking account of the ambient conditions, is recommended.

Due to a special mounting foot for versions 3RF3310 to 3RF3330, snapping onto grounded DIN rails or mounting on a grounded mounting plate simultaneously provides safe grounding of the heat sink. Additional grounding is no longer necessary in this case.

With other mounting types, an additional ground connection to the heat sink can be established by means of screw terminals.

#### 3RF33 1-pole solid-state contactors with heat sink

Version for resistive loads "zero-point switching"

This standard version is often used for switching heaters on and off.

Version for inductive loads "instantaneous switching"

In this version, the solid-state contactor is specifically matched to inductive loads. Whether it is a matter of frequent actuation of the valves in a filling plant or starting and stopping small operating mechanisms in packet distribution systems, operation is carried out safely and noiselessly.

Special "low power" version

This special version is optimized for minimal current consumption in the control input. This allows, for example, a very large number of 3RF3 devices to be operated simultaneously from one control output.

Special version "short-circuit-proof with B MCB"

Skillful matching of the power semiconductor with the performance capacity of the 3RF33.0-1DA.. solid-state contactor means that "short-circuit strength" can be achieved with a standard miniature circuit breaker. In combination with a B MCB or a conventional line protection fuse, the result is a short-circuit-proof feeder.

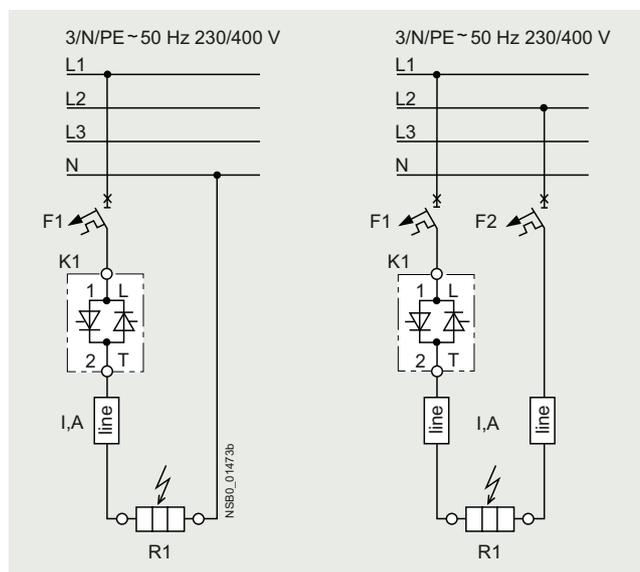
In order to achieve problem-free short-circuit protection by means of miniature circuit breakers, however, certain constraints must be observed. As the magnitude and duration of the short-circuit current are determined not only by the short-circuit breaking response of the miniature circuit breaker but also the properties of the wiring system, such as the internal resistance of the input to the network and damping by switching devices and cables, particular attention must also be paid to these parameters. The necessary cable lengths are therefore shown for the main factor, the line resistance, in the following table.

In systems that have high voltage peaks or at voltages of 575 V and higher, use of versions with a high blocking voltage of 1 600 V is recommended.

The following miniature circuit breakers with a B characteristic and 10 kA or 6 kA breaking capacity protect the 3RF33.0-1DA.. solid-state contactors in the event of short circuits on the load and the specified conductor cross-sections and lengths:

Rated current of the miniature circuit breaker	Example of type <sup>1)</sup>	Max. conductor cross-section	Minimum cable length from contactor to load
6 A	5SY4106-6	1 mm <sup>2</sup>	5 m
10 A	5SY4110-6	1.5 mm <sup>2</sup>	8 m
16 A	5SY4116-6	1.5 mm <sup>2</sup>	12 m
		2.5 mm <sup>2</sup>	20 m
20 A	5SY4120-6	2.5 mm <sup>2</sup>	20 m
25 A	5SY4125-6	2.5 mm <sup>2</sup>	26 m

<sup>1)</sup> The miniature circuit breakers can be used up to a maximum rated voltage of 480 V!



Solid-state contactor protection

The setup and installation above can also be used for the solid-state relays with an  $I^2t$  value of at least 8 000 A<sup>2</sup>s.

#### Function modules

The 3RF33 solid-state contactors can be expanded with various function modules for individual adaptation to applications, [see page 6/159 onwards](#).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW**

Solid-state contactors &gt; SIRIUS 3RF33 solid-state contactors, 1-pole

## Technical specifications

## More information

Manuals, see <https://support.industry.siemens.com/cs/ww/en/ps/30002/man> FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/30002/faq>

Article number	3RF3306- ..A..	3RF3310- ..A..	3RF3320-..A.. 3RF3330-..A..	3RF3340- ..A..	3RF3350- ..A..	3RF3365- ..A..	3RF3380- ..A..
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## Dimensions

Width	mm	22.5		45	50	70	80	
<b>Height</b>	mm	95			100			
<b>Depth</b>	mm	82	89	121	114	133	144	160

Article number	3RF33...-1.A.. 3RF33...-2.A..	3RF33...-3.A..
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## General data

<b>Ambient temperature</b>			
• During operation	°C	-25 ... +60	
• During storage	°C	-55 ... +80	
<b>Derating temperature</b>	°C	40	
<b>Installation altitude at height above sea level, maximum</b>	m	1 000	
<b>Shock resistance according to IEC 60068-2-27</b>		15 g/11 ms	
<b>Vibration resistance according to IEC 60068-2-6</b>		2 g	
<b>Degree of protection IP on the front according to IEC 60529</b>		IP20	IP00; IP20 with cover
<b>Touch protection on the front according to IEC 60529</b>		Finger-safe for vertical touching from the front	Finger-safe for vertical touching from the front with cover
<b>Conducted RF interference emission according to CISPR11</b>		Class A for industrial applications	
<b>Radiated RF interference emission according to CISPR11</b>		Class B for residential, business and commercial applications	
<b>Electrostatic discharge according to IEC 61000-4-2</b>		4 kV contact-mode discharge/8 kV air discharge, behavior criterion 2	
<b>Conducted interference</b>		140 dBµV in the frequency range 0.15 ... 80 MHz, behavior criterion 1	
• Due to radio frequency radiation according to IEC 61000-4-6		2 kV/5 kHz, behavior criterion 2	
• Due to burst according to IEC 61000-4-4		2 kV, behavior criterion 2	
• Due to conductor-ground surge according to IEC 61000-4-5		1 kV, behavior criterion 2	
• Due to conductor-conductor surge according to IEC 61000-4-5			

Article number	3RF33...-A.2	3RF33...-A.4	3RF33...-A.5	3RF33...-A.6
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## Main circuit

<b>Operational voltage at AC</b>	V	24 ... 230	48 ... 460	48 ... 600
<b>Operating frequency</b>	Hz	50 ... 60		
<b>Blocking voltage at thyristor for main contacts, V maximum permissible</b>		800	1 200	1 600

Article number	3RF3306- 1AA45	3RF3310- ..AA..	3RF3320- ..AA.. 3RF3320- ..DA..	3RF3330- ..AA.. 3RF3330- ..DA..	3RF3340- ..AA.. 3RF3340- ..DA..	3RF3350- ..AA..	3RF3365- ..AA..	3RF3380- ..AA..
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## Main circuit

<b>Operational current</b>									
• At AC-1 at 400 V	A	6	10	20	30	40	50	65	80
• According to UL 508	A	5	8	16	24	34	43	56	69
• Minimum	mA	100		500					
<b>Power loss, maximum</b>	VA	5.7	9.4	18.6	25	39	47	65	79
<b>Off-state current of thyristor</b>	mA	10							

Article number	3RF3310- 1BA..	3RF3320- 1BA..	3RF3330- 1BA..	3RF3340- 1BA..	3RF3350- 1BA..	3RF3365- 1BA..	3RF3365- 3BA..	3RF3380- 1BA..	3RF3380- 3BA..
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## Main circuit

<b>Operational current</b>									
• At AC-1 at 400 V	A	10	20	30	40	50	65	50	80
• According to UL 508	A	6	12	15	20	25	27.5	30	
• At AC-15	A	6	12	15	20	25	27.5		
• Minimum	mA	100	500						
<b>Power loss, maximum</b>	VA	9.4	18.6	25	39	47	65	79	
<b>Off-state current of thyristor</b>	mA	10							

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF3 solid-state relays and solid-state contactors

### Solid-state contactors > SIRIUS 3RF33 solid-state contactors, 1-pole **NEW**

Article number	3RF33...A0.	3RF33...A4.	3RF3320-1AA65	3RF33...A1.	3RF33...A2.
<b>Control circuit</b>					
Type of voltage of the control supply voltage	DC			AC/DC	AC
Frequency of the control supply voltage Hz	--			50 ... 60	
<b>Control supply voltage</b>					
• At AC	V	--	--	14 ... 27	110 ... 230
• At DC	V	15 ... 24	4 ... 30	77 ... 110	15 ... 24

Article number	3RF33...-1.A..	3RF33...-2.A..	3RF33...-3.A..
<b>Main circuit</b>			
Type of electrical connection	 Screw terminals	 Spring-loaded terminals	 Ring cable lug connection
<b>Connectable conductor cross-section</b>			
• Solid	mm <sup>2</sup> 1.5 ... 6	0.5 ... 2.5	--
• Finely stranded	mm <sup>2</sup> 1 ... 10	0.5 ... 1.5	--
- With end sleeve	mm <sup>2</sup> --	0.5 ... 2.5	--
- Without end sleeve	mm <sup>2</sup> --	--	--
<b>Type of connectable conductor cross-sections</b>			
• Solid	2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )	2x (0.5 ... 2.5 mm <sup>2</sup> )	--
• Finely stranded	2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1 x 10 mm <sup>2</sup>	2x (0.5 ... 1.5 mm <sup>2</sup> )	--
- With end sleeve	--	2x (0.5 ... 2.5 mm <sup>2</sup> )	--
- Without end sleeve	--	2x (18 ... 14)	--
• For AWG cables	2x (14 ... 10)	2x (18 ... 14)	1x (12 ... 4)
• For DIN cable lugs	--	--	DIN 46234-5-2.5, -5-6, -5-10, -5-16, -5-25
• For JIS cable lugs	--	--	JIS C 2805 R 2-5, 5.5-5, 8-5, 14-5
<b>AWG number as coded connectable conductor cross-section</b>	14 ... 8	18 ... 14	12 ... 4
<b>Design of thread of terminal screw for main contacts</b>	M4	--	M5
<b>Tightening torque for screw terminals</b>	Nm 2 ... 2.5	--	2 ... 2.5
<b>Control circuit</b>			
Type of electrical connection	 Screw terminals	 Spring-loaded terminals	 Ring cable lug connection
<b>Connectable conductor cross-section</b>			
• Solid	mm <sup>2</sup> 0.5 ... 2.5	0.5 ... 1.5	0.5 ... 2.5
• Finely stranded	mm <sup>2</sup> 0.5 ... 2.5	--	--
- With end sleeve	mm <sup>2</sup> 0.5 ... 2.5	--	--
- Without end sleeve	mm <sup>2</sup> 0.5 ... 2.5	--	--
<b>Type of connectable conductor cross-sections</b>			
• Solid	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )	0.5 ... 1.5 mm <sup>2</sup>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• Finely stranded	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )	0.5 ... 2.5 mm <sup>2</sup>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
- With end sleeve	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )	0.5 ... 2.5 mm <sup>2</sup>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
- Without end sleeve	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )	0.5 ... 2.5 mm <sup>2</sup>	1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• For AWG cables	1x (20 ... 12)	--	--
<b>AWG number as coded connectable conductor cross-section</b>	20 ... 12	--	--
<b>Design of thread of terminal screw of auxiliary and control contacts</b>	M3	--	M3
<b>Tightening torque for screw terminals</b>	Nm 0.5 ... 0.6	--	0.5 ... 0.6

### Selection and ordering data

#### Selection notes

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions. As the solid-state contactors are already equipped with an optimally matched heat sink, the selection process is considerably simpler than that for solid-state relays.

The following procedure is recommended:

- Determine the rated current of the load and the line voltage
- Select a solid-state contactor with the same or higher rated current than the load

#### Solid-state contactors (with integrated heat sink)

Operational current at AC-1 at 400 V	Control supply voltage	Grounding	Screw terminals	PU (UNIT, SET, M)	PS*	PG
A	V		Article No.	Price per PU		

#### Operational voltage 24 ... 230 V AC



3RF3310-1AA02



3RF3350-1AA22

#### Zero-point switching

10	24 DC	✓	3RF3310-1AA02	1	1 unit	41C
	24 AC/DC	✓	3RF3310-1AA12	1	1 unit	41C
	110 ... 230 AC	✓	3RF3310-1AA22	1	1 unit	41C
20	24 DC	✓	3RF3320-1AA02	1	1 unit	41C
	110 ... 230 AC	✓	3RF3320-1AA22	1	1 unit	41C
30	24 DC	✓	3RF3330-1AA02	1	1 unit	41C
	110 ... 230 AC	✓	3RF3330-1AA22	1	1 unit	41C
40	24 DC	○	3RF3340-1AA02	1	1 unit	41C
	110 ... 230 AC	○	3RF3340-1AA22	1	1 unit	41C
50	24 DC	○	3RF3350-1AA02	1	1 unit	41C
	110 ... 230 AC	○	3RF3350-1AA22	1	1 unit	41C

#### Zero-point switching, low power

20	24 DC	✓	3RF3320-1AA02-0KN0	1	1 unit	41C
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#### Operational voltage 48 ... 460 V AC



3RF3310-1AA04



3RF3350-1AA24

#### Zero-point switching

10	24 DC	✓	3RF3310-1AA04	1	1 unit	41C
	4 ... 30 DC	✓	3RF3310-1AA44	1	1 unit	41C
	24 AC/DC	✓	3RF3310-1AA14	1	1 unit	41C
	110 ... 230 AC	✓	3RF3310-1AA24	1	1 unit	41C
20	24 DC	✓	3RF3320-1AA04	1	1 unit	41C
	4 ... 30 DC	✓	3RF3320-1AA44	1	1 unit	41C
	24 AC/DC	✓	3RF3320-1AA14	1	1 unit	41C
	110 ... 230 AC	✓	3RF3320-1AA24	1	1 unit	41C
30	24 DC	✓	3RF3330-1AA04	1	1 unit	41C
	4 ... 30 DC	✓	3RF3330-1AA44	1	1 unit	41C
	24 AC/DC	✓	3RF3330-1AA14	1	1 unit	41C
	110 ... 230 AC	✓	3RF3330-1AA24	1	1 unit	41C
40	24 DC	○	3RF3340-1AA04	1	1 unit	41C
	24 AC/DC	○	3RF3340-1AA14	1	1 unit	41C
	110 ... 230 AC	○	3RF3340-1AA24	1	1 unit	41C
50	24 DC	○	3RF3350-1AA04	1	1 unit	41C
	24 AC/DC	○	3RF3350-1AA14	1	1 unit	41C
	110 ... 230 AC	○	3RF3350-1AA24	1	1 unit	41C

#### Zero-point switching, low power

10	24 DC	✓	3RF3310-1AA04-0KN0	1	1 unit	41C
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✓ Grounding by snapping onto grounded DIN rails

○ Heat sink grounding by means of screw terminal connection

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state contactor. The actual permissible current-carrying capacity may be smaller depending on the ambient conditions, please observe the selection notes (see above).

For derating characteristics, see technical product data sheets. For more information, see page 6/126.

Versions 3RF3310 to 3RF3330 are equipped with a special mounting foot, see also note on page 6/136.

Other control supply voltages on request.

Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors



Solid-state contactors > SIRIUS 3RF33 solid-state contactors, 1-pole

**NEW**

### Solid-state contactors (with integrated heat sink)

Operational current at AC-1 at 400 V	Control supply voltage	Grounding	Screw terminals	PU (UNIT, SET, M)	PS*	PG
A	V					
<b>Operational voltage 24 ... 230 V AC</b>						
<b>Zero-point switching, short-circuit-proof with B MCB</b>						
20	24 DC	✓	3RF3320-1DA02 3RF3320-1DA22	1	1 unit	41C
	110 ... 230 AC	✓		1	1 unit	41C
<b>Operational voltage 48 ... 460 V AC</b>						
<b>Zero-point switching, short-circuit-proof with B MCB</b>						
20	24 DC	✓	3RF3320-1DA04	1	1 unit	41C
	4 ... 30 DC	✓	3RF3320-1DA44	1	1 unit	41C
	110 ... 230 AC	✓	3RF3320-1DA24	1	1 unit	41C
30	4 ... 30 DC	✓	3RF3330-1DA44	1	1 unit	41C
	<b>Zero-point switching, short-circuit-proof with B MCB, low power</b>					
30	24 DC	✓	3RF3330-1DA04-0KN0	1	1 unit	41C
40	24 DC	○	3RF3340-1DA04-0KN0	1	1 unit	41C
<b>Operational voltage 48 ... 600 V AC</b>						
<b>Zero-point switching</b>						
6	4 ... 30 DC	□	3RF3306-1AA45	1	1 unit	41C
10	4 ... 30 DC	✓	3RF3310-1AA45	1	1 unit	41C
20	4 ... 30 DC	✓	3RF3320-1AA45	1	1 unit	41C
	110 DC	✓	3RF3320-1AA65	1	1 unit	41C
30	4 ... 30 DC	✓	3RF3330-1AA45	1	1 unit	41C
	110 ... 230 AC	✓	3RF3330-1AA25	1	1 unit	41C
40	4 ... 30 DC	○	3RF3340-1AA45	1	1 unit	41C
50	4 ... 30 DC	○	3RF3350-1AA45	1	1 unit	41C
<b>Zero-point switching, high blocking voltage</b>						
10	24 DC	✓	3RF3310-1AA06	1	1 unit	41C
	110 ... 230 AC	✓	3RF3310-1AA26	1	1 unit	41C
20	24 DC	✓	3RF3320-1AA06	1	1 unit	41C
	110 ... 230 AC	✓	3RF3320-1AA26	1	1 unit	41C
30	24 DC	✓	3RF3330-1AA06	1	1 unit	41C
	110 ... 230 AC	✓	3RF3330-1AA26	1	1 unit	41C
40	24 DC	○	3RF3340-1AA06	1	1 unit	41C
	110 ... 230 AC	○	3RF3340-1AA26	1	1 unit	41C
50	24 DC	○	3RF3350-1AA06	1	1 unit	41C
	110 ... 230 AC	○	3RF3350-1AA26	1	1 unit	41C
<b>Zero-point switching, short-circuit-proof with B MCB, high blocking voltage</b>						
30	24 DC	✓	3RF3330-1DA06	1	1 unit	41C

✓ Grounding by snapping onto grounded DIN rails

○ Heat sink grounding by means of screw terminal connection

□ Plastic heat sink, no grounding required

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state contactor. The actual permissible current-carrying capacity may be

smaller depending on the ambient conditions, please observe the selection notes (see page 6/139).

For derating characteristics, see technical product data sheets. For more information, see page 6/126.

Versions 3RF3310 to 3RF3330 are equipped with a special mounting foot, see also note on page 6/136.

Other control supply voltages on request.

Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** Solid-state contactors > SIRIUS 3RF33 solid-state contactors, 1-pole

### Solid-state contactors (with integrated heat sink)

Utilization category AC-15:

Electromagnetic loads, e.g. valves according to IEC 60947-5-1.

Parameters: Switching cycles max. 1 200 1/h,

50% ON period, 10-times inrush current for 60 ms.

Operational current at AC-1 at 400 V	Operational current at AC-15	Control supply voltage	Grounding	Screw terminals		PU (UNIT, SET, M)	PS*	PG
				Article No.	Price per PU			
A	A	V						
<b>Operational voltage 24 ... 230 V AC</b>								
<i>Instantaneous switching</i>								
	10	6	24 DC	✓	3RF3310-1BA02	1	1 unit	41C
			110 ... 230 AC	✓	3RF3310-1BA22	1	1 unit	41C
	20	12	24 DC	✓	3RF3320-1BA02	1	1 unit	41C
			110 ... 230 AC	✓	3RF3320-1BA22	1	1 unit	41C
	30	15	24 DC	✓	3RF3330-1BA02	1	1 unit	41C
			110 ... 230 AC	✓	3RF3330-1BA22	1	1 unit	41C
	40	20	24 DC	○	3RF3340-1BA02	1	1 unit	41C
			110 ... 230 AC	○	3RF3340-1BA22	1	1 unit	41C
	50	25	24 DC	○	3RF3350-1BA02	1	1 unit	41C
			110 ... 230 AC	○	3RF3350-1BA22	1	1 unit	41C
27.5		24 DC	○	3RF3365-1BA02	1	1 unit	41C	
		24 DC	○	3RF3380-1BA02	1	1 unit	41C	
		110 ... 230 AC	○	3RF3380-1BA22	1	1 unit	41C	
<b>Operational voltage 48 ... 460 V AC</b>								
<i>Instantaneous switching</i>								
	10	6	24 DC	✓	3RF3310-1BA04	1	1 unit	41C
			110 ... 230 AC	✓	3RF3310-1BA24	1	1 unit	41C
	20	12	24 DC	✓	3RF3320-1BA04	1	1 unit	41C
			110 ... 230 AC	✓	3RF3320-1BA24	1	1 unit	41C
			4 ... 30 DC	✓	3RF3320-1BA44	1	1 unit	41C
	30	15	24 DC	✓	3RF3330-1BA04	1	1 unit	41C
			110 ... 230 AC	✓	3RF3330-1BA24	1	1 unit	41C
			4 ... 30 DC	✓	3RF3330-1BA44	1	1 unit	41C
	40	20	24 DC	○	3RF3340-1BA04	1	1 unit	41C
			110 ... 230 AC	○	3RF3340-1BA24	1	1 unit	41C
50	25	24 DC	○	3RF3350-1BA04	1	1 unit	41C	
		110 ... 230 AC	○	3RF3350-1BA24	1	1 unit	41C	
	27.5	4 ... 30 DC	○	3RF3350-1BA44	1	1 unit	41C	
		24 DC	○	3RF3365-1BA04	1	1 unit	41C	
		110 ... 230 AC	○	3RF3365-1BA24	1	1 unit	41C	
		24 DC	○	3RF3380-1BA04	1	1 unit	41C	
		110 ... 230 AC	○	3RF3380-1BA24	1	1 unit	41C	
<b>Operational voltage 48 ... 600 V AC</b>								
<i>Instantaneous switching, high blocking voltage</i>								
 	10	6	24 DC	✓	3RF3310-1BA06	1	1 unit	41C
			110 ... 230 AC	✓	3RF3310-1BA26	1	1 unit	41C
	20	12	24 DC	✓	3RF3320-1BA06	1	1 unit	41C
			110 ... 230 AC	✓	3RF3320-1BA26	1	1 unit	41C
	30	15	24 DC	✓	3RF3330-1BA06	1	1 unit	41C
			110 ... 230 AC	✓	3RF3330-1BA26	1	1 unit	41C
	40	20	24 DC	○	3RF3340-1BA06	1	1 unit	41C
			110 ... 230 AC	○	3RF3340-1BA26	1	1 unit	41C
	50	25	24 DC	○	3RF3350-1BA06	1	1 unit	41C
			27.5	24 DC	○	3RF3365-1BA06	1	1 unit
			24 DC	○	3RF3380-1BA06	1	1 unit	41C
		110 ... 230 AC	○	3RF3380-1BA26	1	1 unit	41C	

✓ Grounding by snapping onto grounded DIN rails

○ Heat sink grounding by means of screw terminal connection

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state contactor. The actual permissible current-carrying capacity may be smaller depending on the ambient conditions, please observe the selection notes (see page 6/139).

For derating characteristics, see technical product data sheets. For more information, see page 6/126.

Versions 3RF3310 to 3RF3330 are equipped with a special mounting foot, see also note on page 6/136.

Other control supply voltages on request.

Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors



Solid-state contactors > SIRIUS 3RF33 solid-state contactors, 1-pole

**NEW**

### Solid-state contactors (with integrated heat sink)

Operational current at AC-1 at 400 V	Control supply voltage	Grounding	Spring-loaded terminals 	PU (UNIT, SET, M)	PS*	PG
A	V					
<b>Operational voltage 24 ... 230 V AC</b>						
<b>Zero-point switching</b>						
10	24 DC	✓	<b>3RF3310-2AA02</b>	1	1 unit	41C
	110 ... 230 AC	✓		<b>3RF3310-2AA22</b>	1	1 unit
20	24 DC	✓	<b>3RF3320-2AA02</b>	1	1 unit	41C
	110 ... 230 AC	✓		<b>3RF3320-2AA22</b>	1	1 unit
<b>Zero-point switching, short-circuit-proof with B MCB</b>						
20	110 ... 230 AC	✓	<b>3RF3320-2DA22</b>	1	1 unit	41C
<b>Operational voltage 48 ... 460 V AC</b>						
<b>Zero-point switching</b>						
10	24 DC	✓	<b>3RF3310-2AA04</b>	1	1 unit	41C
	110 ... 230 AC	✓		<b>3RF3310-2AA24</b>	1	1 unit
20	24 DC	✓	<b>3RF3320-2AA04</b>	1	1 unit	41C
	110 ... 230 AC	✓		<b>3RF3320-2AA24</b>	1	1 unit
<b>Zero-point switching, short-circuit-proof with B MCB</b>						
20	24 DC	✓	<b>3RF3320-2DA04</b>	1	1 unit	41C
	110 ... 230 AC	✓	<b>3RF3320-2DA24</b>	1	1 unit	41C
<b>Operational voltage 48 ... 600 V AC</b>						
<b>Zero-point switching, high blocking voltage</b>						
10	24 DC	✓	<b>3RF3310-2AA06</b>	1	1 unit	41C
	110 ... 230 AC	✓		<b>3RF3310-2AA26</b>	1	1 unit
20	24 DC	✓	<b>3RF3320-2AA06</b>	1	1 unit	41C
	110 ... 230 AC	✓		<b>3RF3320-2AA26</b>	1	1 unit

3RF3310-2AA02

**Operational voltage 48 ... 460 V AC**



3RF3310-2AA04

**Operational voltage 48 ... 600 V AC**



3RF3320-2AA26

✓ Grounding by snapping onto grounded DIN rails

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state contactor. The actual permissible current-carrying capacity may be smaller depending on the ambient conditions, please observe the selection notes (see page 6/139).

For derating characteristics, see technical product data sheets. For more information, see page 6/126.

Versions 3RF3310 and 3RF3320 are equipped with a special mounting foot, see also note on page 6/136.

Other control supply voltages on request.

Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** Solid-state contactors > SIRIUS 3RF33 solid-state contactors, 1-pole

### Solid-state contactors (with integrated heat sink)

	Operational current at AC-1 at 400 V	Control supply voltage	Grounding	Ring cable lug connection 	PU (UNIT, SET, M)	PS*	PG
	A	V		Article No.			
<b>Operational voltage 24 ... 230 V AC</b>							
 3RF3310-3AA02	<b>Zero-point switching</b>						
	10	24 DC	✓	3RF3310-3AA02	1	1 unit	41C
	20	24 DC	✓	3RF3320-3AA02	1	1 unit	41C
	30	24 DC	✓	3RF3330-3AA02	1	1 unit	41C
	40	24 DC	○	3RF3340-3AA02	1	1 unit	41C
	50	24 DC	○	3RF3350-3AA02	1	1 unit	41C
		110 ... 230 AC	○	3RF3350-3AA22	1	1 unit	41C
	65	24 DC	○	3RF3365-3AA02	1	1 unit	41C
		110 ... 230 AC	○	3RF3365-3AA22	1	1 unit	41C
	80	24 DC	○	3RF3380-3AA02	1	1 unit	41C
	110 ... 230 AC	○	3RF3380-3AA22	1	1 unit	41C	
<b>Operational voltage 48 ... 460 V AC</b>							
 3RF3310-3AA04	<b>Zero-point switching</b>						
	10	24 DC	✓	3RF3310-3AA04	1	1 unit	41C
	20	24 DC	✓	3RF3320-3AA04	1	1 unit	41C
		4 ... 30 DC	✓	3RF3320-3AA44	1	1 unit	41C
	30	24 DC	✓	3RF3330-3AA04	1	1 unit	41C
		4 ... 30 DC	✓	3RF3330-3AA44	1	1 unit	41C
		110 ... 230 AC	✓	3RF3330-3AA24	1	1 unit	41C
	40	24 DC	○	3RF3340-3AA04	1	1 unit	41C
	50	24 DC	○	3RF3350-3AA04	1	1 unit	41C
		4 ... 30 DC	○	3RF3350-3AA44	1	1 unit	41C
	110 ... 230 AC	○	3RF3350-3AA24	1	1 unit	41C	
65	24 DC	○	3RF3365-3AA04	1	1 unit	41C	
	110 ... 230 AC	○	3RF3365-3AA24	1	1 unit	41C	
80	24 DC	○	3RF3380-3AA04	1	1 unit	41C	
	110 ... 230 AC	○	3RF3380-3AA24	1	1 unit	41C	
<b>Operational voltage 48 ... 600 V AC</b>							
 3RF3340-3AA45	<b>Zero-point switching</b>						
	40	4 ... 30 DC	○	3RF3340-3AA45	1	1 unit	41C
	65	4 ... 30 DC	○	3RF3365-3AA45	1	1 unit	41C
	80	4 ... 30 DC	○	3RF3380-3AA45	1	1 unit	41C
	<b>Zero-point switching, high blocking voltage</b>						
	20	24 DC	✓	3RF3320-3AA06	1	1 unit	41C
	30	24 DC	✓	3RF3330-3AA06	1	1 unit	41C
	40	24 DC	○	3RF3340-3AA06	1	1 unit	41C
	50	24 DC	○	3RF3350-3AA06	1	1 unit	41C
		110 ... 230 AC	○	3RF3350-3AA26	1	1 unit	41C
65	24 DC	○	3RF3365-3AA06	1	1 unit	41C	
	110 ... 230 AC	○	3RF3365-3AA26	1	1 unit	41C	
80	24 DC	○	3RF3380-3AA06	1	1 unit	41C	
	110 ... 230 AC	○	3RF3380-3AA26	1	1 unit	41C	

- ✓ Grounding by snapping onto grounded DIN rails
- Heat sink grounding by means of screw terminal connection

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state contactor. The actual permissible current-carrying capacity may be smaller depending on the ambient conditions, please observe the selection notes (see page 6/139).

For derating characteristics, see technical product data sheets. For more information, see page 6/126.

Versions 3RF3310 to 3RF3330 are equipped with a special mounting foot, see also note on page 6/136.

Other control supply voltages on request.

Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors



### Solid-state contactors > SIRIUS 3RF33 solid-state contactors, 1-pole **NEW**

#### Solid-state contactors (with integrated heat sink)

Utilization category AC-15:

Electromagnetic loads, e.g. valves according to IEC 60947-5-1.

Parameters: Switching cycles max. 1 200 1/h,

50% ON period, 10-times inrush current for 60 ms.

Operational current at AC-1 at 400 V	Operational current at AC-15	Control supply voltage	Grounding	Ring cable lug connection 	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
A		V							
<b>Operational voltage 24 ... 230 V AC</b>									
<i>Instantaneous switching</i>									
65	27.5	24 DC	○	3RF3365-3BA02			1	1 unit	41C
		110 ... 230 AC	○						
80	27.5	24 DC	○	3RF3380-3BA02			1	1 unit	41C
		110 ... 230 AC	○						
<b>Operational voltage 48 ... 460 V AC</b>									
<i>Instantaneous switching</i>									
65	27.5	24 DC	○	3RF3365-3BA04			1	1 unit	41C
		110 ... 230 AC	○						
80	27.5	24 DC	○	3RF3380-3BA04			1	1 unit	41C
		110 ... 230 AC	○						
<b>Operational voltage 48 ... 600 V AC</b>									
<i>Instantaneous switching, high blocking voltage</i>									
65	27.5	24 DC	○	3RF3365-3BA06			1	1 unit	41C
		110 ... 230 AC	○						
80	27.5	24 DC	○	3RF3380-3BA06			1	1 unit	41C
		110 ... 230 AC	○						

3RF3365-3BA02

#### Operational voltage 48 ... 460 V AC



3RF3365-3BA04

#### Operational voltage 48 ... 600 V AC



3RF3380-3BA26

○ Heat sink grounding by means of screw terminal connection

#### Notes:

The maximum current-carrying capacity provides information about the performance capacity of the solid-state contactor. The actual permissible current-carrying capacity may be smaller depending on the ambient conditions, please observe the selection notes (see page 6/139).

For derating characteristics, see technical product data sheets. For more information, see page 6/126.

Other control supply voltages on request.

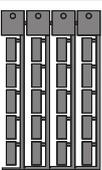
Accessories, see page 6/145.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF3 solid-state relays and solid-state contactors

**NEW** Accessories

### Selection and ordering data

Version	For solid-state switching devices	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Terminal covers</b>						
	<b>Terminal covers</b> For solid-state relays and solid-state contactors in ring cable lug connection technology  With this terminal cover, degree of protection IP20 can be achieved on the front with a ring cable lug connection. It can also be used for screw terminals after simple adaptation.	3RF31, 3RF33	<b>Ring cable lug connection</b> 	<b>3RF2900-3PA88</b>	1 10 units	41C
3RF2900-3PA88						
<b>Control connectors</b>						
	<b>Replacement control connector</b> For solid-state relays and solid-state contactors with screw terminals	3RF30, 3RF31, 3RF33	<b>Screw terminals</b> 	<b>3RF3900-1TA88</b>	1 50 units	41C
3RF3900-1TA88						
	<b>Replacement control connector</b> For solid-state relays and solid-state contactors with spring-loaded terminals, with two clamping points per contact	3RF30, 3RF31, 3RF33	<b>Spring-loaded terminals</b> 	<b>3RF3900-2TB88</b>	1 10 units	41C
3RF3900-2TB88						
<b>Tools for opening spring-loaded terminals</b>						
	<b>Screwdrivers</b> For all SIRIUS devices with spring-loaded terminals  Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	3RF31, 3RF33		<b>3RA2908-1A</b>	1 1 unit	41B
3RA2908-1A						
<b>Heat conducting foils</b>						
	<b>Heat conducting foils</b> For solid-state relays	3RF30, 3RF31		<b>3RF3900-0WA88</b>	1 20 units	41C
3RF3900-0WA88						
<b>DIN-rail adapters</b>						
	<b>Spare part DIN-rail adapter</b> 45 mm wide, for solid-state contactors	3RF33		<b>3RF3900-0BA88</b>	1 1 unit	41C
3RF3900-0BA88						
<b>Blank labels</b>						
	<b>Unit labeling plates</b> For SIRIUS devices <sup>1)</sup>  • 10 mm x 7 mm, titanium gray • 20 mm x 7 mm, titanium gray	3RF30, 3RF31, 3RF33		<b>3RT2900-1SB10</b> <b>3RT2900-1SB20</b>	100 816 units 100 340 units	41B 41B
3RT2900-1SB20	<b>Self-adhesive labels</b> For SIRIUS devices  19 mm x 6 mm, titanium gray	3RF30, 3RF31, 3RF33		<b>3RT2900-1SB60</b>	100 3060 units	41B

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### General data

#### Overview

##### More information

SiePortal, see [www.siemens.com/product\\_catalog\\_siep?3RF](http://www.siemens.com/product_catalog_siep?3RF)

Online configurator, see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators)

Conversion tool, see [www.siemens.com/conversion-tool](http://www.siemens.com/conversion-tool)

#### SIRIUS 3RF2 solid-state switching devices



3RF22 solid-state relay, 3-phase, and 3RF24 solid-state contactor, 3-phase

The SIRIUS 3RF2 3-phase solid-state switching devices reliably switch a wide range of different loads with alternating voltages in 50 and 60 Hz systems.

- 3RF22 solid-state relays
- 3RF24 solid-state contactors
- 3RF3900-0EA18 converter function modules

#### SIRIUS 3RF2 – for almost unending activity

Conventional electromechanical switchgear is often overtaxed by the rise in the number of switching operations. A high switching frequency results in frequent failure and short replacement cycles. However, this does not have to be the case, because with our SIRIUS 3RF2 solid-state switching devices we offer solid-state relays and contactors with a particularly long service life – for almost unending activity even under the toughest conditions and under high mechanical loading, but also in noise-sensitive areas.

#### Proven time and again in service

SIRIUS 3RF2 solid-state switching devices have firmly established themselves in industrial applications. They are used above all in applications where loads are switched frequently – mainly with resistive load controllers, with the control of electrical heat or the control of valves and motors in conveyor systems. In addition to its use in areas with high switching frequencies, their silent switching means that solid-state switching devices are also ideally suited for use in noise-sensitive areas, such as offices or hospitals.

#### The most reliable solution for any application

Compared to mechanical switchgear, our SIRIUS 3RF2 solid-state switching devices stand out due to their considerably longer service life. Thanks to the high product quality, their switching is extremely precise, reliable and, above all, unsusceptible to faults. With its variable connection methods and a wide range of control voltages, the 3RF2 family is universally applicable. Depending on the individual requirements of the application, our modular switchgear can also be quite easily expanded by the addition of the 3RF3900-0EA18 converter function module (see page 6/162).

#### Always on the sunny side with SIRIUS

Because SIRIUS 3RF2 offers even more:

- The space-saving and compact side-by-side mounting ensures reliable operation up to an ambient temperature of +60 °C.
- Thanks to fast configuration and the ease of mounting and startup, not only time but also expenses are saved.

#### Also for switching motors (see page 6/175 onwards)

In order to achieve higher productivity, the switching frequency is continuously increased in drive technology. This is no problem for our SIRIUS 3RF34..-B.. solid-state contactors for switching motors. With three-phase motors up to 7.5 kW, they can reliably withstand even the highest switching frequencies. Even a continuous change in the direction of rotation is possible with the solid-state reversing contactors. Both versions can be perfectly combined with components from the SIRIUS modular system. Connecting with SIRIUS motor starter protectors/circuit breakers or SIRIUS overload relays can be implemented without any further steps.

Solid-state switching devices for switching motors:

- 3RF34..-BB.. solid-state contactors
- 3RF34..-BD.. solid-state reversing contactors

#### **Connection methods**

The solid-state switching devices are available with screw terminals, spring-loaded terminals or ring cable lug connection.

-  Screw terminals
-  Spring-loaded terminals
-  Ring cable lug connection

The connection method is indicated in the corresponding tables by the symbols shown on orange backgrounds.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### General data

#### Article number scheme

Product versions		Article number								
Device type	<b>Solid-state relays</b>	<b>3RF22</b>	<input type="checkbox"/>	3-phase, 45 mm width						
	<b>Solid-state contactors</b>	<b>3RF24</b>	<input type="checkbox"/>	3-phase						
Type current	e.g. 30 = 30 A	<input type="checkbox"/>	<input type="checkbox"/>							
Connection type	Screw terminals							<b>1</b>		
	Spring-loaded terminals							<b>2</b>		
	Ring cable lug connection							<b>3</b>		
Product function	Zero-point switching								<b>A</b>	
Version	2-phase controlled								<b>B</b>	
	3-phase controlled								<b>C</b>	
Rated control supply voltage $U_s$	110 V AC								<b>3</b>	
	4 ... 30 V DC								<b>4</b>	
	230 V AC								<b>5</b>	
Rated operational voltage $U_e$	48 ... 600 V AC								<b>5</b> Blocking voltage 1 200 V	
Example		<b>3RF22</b>	<b>3</b>	<b>0</b>	<b>-</b>	<b>1</b>	<b>A</b>	<b>B</b>	<b>3</b>	<b>5</b>

#### Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

#### Overview of the SIRIUS 3RF22 and 3RF24 solid-state switching devices

Type	Solid-state relays	Solid-state contactors	Function module
	3-phase, 45 mm 3RF22	3-phase 3RF24	Converters 3RF3900-0EA18
<b>Usage</b>			
Simple replacement of existing solid-state relays	<input type="checkbox"/>	<input type="checkbox"/>	--
Complete unit "Ready to use"	<input type="checkbox"/>	✓	--
Space-saving	✓	✓	✓
Modular extension possible with converters	✓	✓	--
Control of the heating power through an analog input	--	--	✓
<b>Mounting</b>			
Mounting on mounting rails or mounting plates	--	✓	--
Can be snapped directly onto a solid-state relay or contactor	--	--	✓
Use on heat sink	✓	--	--
<b>Cable routing</b>			
Connection of load circuit as for switchgear	✓	✓	--
Connection of load circuit from above	--	--	--

- ✓ Function available
- Function possible
- Function not possible

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### General data

#### Benefits

##### Main features

- Compact and space-saving design
- LED display
- Variety of connection methods, also with high degree of protection
- Plug-in control connection
- Zero-point switching, 2-phase or 3-phase controlled

##### Features

- Variety of connection methods: Screw terminal, spring-loaded terminal or ring cable lug, there is no problem – they are all finger-safe
- Flexible for all applications with function modules for retrofitting

##### Benefits

- Saves time and costs with fast mounting and commissioning, short startup times and easy wiring
- Extremely long life, low maintenance, rugged and reliable
- Space-saving and safe thanks to side-by-side mounting up to an ambient temperature of +60 °C
- Modular design: Combined with the 3RF3900-0EA18 converter function module, more demanding applications can be supported.
- Safety due to lifelong, vibration-resistant and shock-resistant spring-loaded terminals even under tough conditions
- Optimum heat transfer allows small, space-saving heat sinks to be used

#### Application

##### Applications

Example: Plastics processing industry

Thanks to their high switching service life SIRIUS 3RF2 solid-state switching devices are ideal for controlling electrical heat. This is because the more precise the temperature regulation process has to be, the higher the switching frequency. The accurate regulation of electrical heat is used for example in many processes in the plastics processing industry:

- Band heaters heat the extrudate to the correct temperature in plastic extruders
- Heat emitters heat plastic blanks to the correct temperature
- Heat drums dry plastic granules
- Heating channels keep molds at the correct temperature in order to manufacture different plastic parts without defects

The powerful 3RF2 solid-state relays and contactors can be used for the simultaneous control of several heating loads. By using a load monitoring module the individual partial loads can easily be monitored, and in the event of a failure a signal is generated to be sent to the controller.

##### Use in fuseless load feeders

Compared with the fused configuration of load feeders, short-circuit and line protection using miniature circuit breakers is easy to achieve with 3RF2 solid-state relays and contactors.

#### More information

##### Notes on integration in the load feeders

The SIRIUS solid-state switching devices are very easy to integrate into the load feeders thanks to their industrial connection method and design.

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance capacity of the solid-state switching devices is largely dependent on these. Depending on the version, certain restrictions must be observed. For detailed information, for example in relation to 3RF24 solid-state contactors about the minimum spacing and to 3RF22 solid-state relays about the choice of heat sink, see [technical product data sheets, https://support.industry.siemens.com/cs/ww/en/ps/16223/td](https://support.industry.siemens.com/cs/ww/en/ps/16223/td).

##### Short-circuit and overload protection

Despite the rugged power semiconductors that are used, solid-state switching devices respond more sensitively to short circuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor protection fuses. These fuses also provide protection against destruction in the event of a short circuit even when the 3RF22 solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly. The technical product data sheets contain details both about the solid-state fuse protection itself and about use of the devices with conventional protection equipment.

##### Electromagnetic compatibility (EMC)

The solid-state switching devices are suitable for interference-free operation in industrial networks without further measures. If they are used in public networks, it may be necessary for the conducted disturbance voltage to be reduced by means of filters.

##### **Product information and technical specifications**

For product data sheets with detailed technical specifications, dimensional drawings and characteristic curves, see <https://support.industry.siemens.com/cs/ww/en/ps/16223/td>.

For more information, please enter the article number of the required device under the tab "Product List".

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### SIRIUS 3RF22 solid-state relays, 3-phase, 45 mm

#### Overview

##### **3RF22 solid-state relays (without heat sink)**

Solid-state relays are suitable for mounting on existing cooling surfaces. Mounting is quick and easy, involving just two screws. The special technology of the power semiconductor ensures that there is excellent thermal contact with the heat sink. Depending on the nature of the heat sink, the performance capacity reaches up to 55 A on resistive loads.

With its compact design, which stays the same even at currents of up to 55 A, the 3RF22 solid-state relay with a width of just 45 mm offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

The 3-phase solid-state relays are available with

- 2-phase control (suitable in particular for circuits without connection to the neutral conductor) and
- 3-phase control (suitable for star circuits with connection to the neutral conductor or for applications in which the system requires all phases to be switched)

##### Version for resistive loads "zero-point switching"

This standard version is often used for 3RF22 solid-state relays for switching heaters on and off.

##### Function module

The 3RF22 solid-state relays can be expanded with the 3RF3900-0EA18 converter function module to adapt them to individual applications, [see page 6/162](#).

##### **Selection notes**

When selecting solid-state relays, in addition to information about the network, the load and the ambient conditions, it is also necessary to know details of the planned design. The solid-state relays can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink.

Mounting solid-state relays directly on a mounting plate made of sheet steel is inadequate in terms of heat dissipation.

The following procedure is recommended:

- Determine the rated current of the load and the line voltage
- Select the relay design and choose a solid-state relay with higher rated current than the load
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the characteristic curves ([see the technical product data sheets of the relevant solid-state relay](#)) taking into account the thermal resistance of the heat sink

## Switching devices – Soft starters and solid-state switching devices

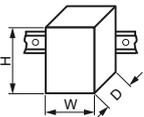
Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### SIRIUS 3RF22 solid-state relays, 3-phase, 45 mm

#### Technical specifications

##### More information

Manuals, see <https://support.industry.siemens.com/cs/ww/en/ps/16223/man> FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16223/faq>

Type		3RF22..-1....	3RF22..-2....	3RF22..-3....
Dimensions (W x H x D)	 mm	45 x 95 x 47	45 x 95 x 47	45 x 95 x 47
<b>General data</b>				
<b>Ambient temperature</b>				
• During operation, derating from 40 °C	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
<b>Installation altitude</b>	m	0 ... 1 000; > 1 000 ask Technical Support		
<b>Shock resistance</b> according to IEC 60068-2-27	g/ms	15/11		
<b>Vibration resistance</b> according to IEC 60068-2-6	g	2		
<b>Degree of protection IP on the front</b> according to IEC 60529		IP20		IP00
<b>Touch protection on the front</b> according to IEC 60529		Finger-safe for vertical touching from the front		--
<b>Insulation strength</b> at 50/60 Hz (main/control circuit to floor)	V rms	4 000		
<b>Electromagnetic compatibility (EMC)</b>				
• Emitted interference		Class A for industrial applications <sup>1)</sup>		
- Conducted disturbance voltage according to IEC 60947-4-3				
• Interference immunity		Contact-mode discharge 4; air discharge 8, behavior criterion 2		
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to test level 3)	kV	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Induced RF fields according to IEC 61000-4-6	MHz	2/5.0 kHz, behavior criterion 2		
- Burst according to IEC 61000-4-4	kV	Conductor-ground 2; conductor-conductor 1, behavior criterion 2		
- Surge according to IEC 61000-4-5	kV			
<b>Mounting</b>				
• Screws (not included in the scope of supply)		2 x M4		
• Tightening torque	Nm	1.5		
<b>Connection type</b>		 <b>Screw terminals</b>	 <b>Spring-loaded terminals</b>	 <b>Ring cable lug connection</b>
<b>Connection, main contacts</b>				
• Conductor cross-sections				
- Solid	mm <sup>2</sup>	2 x (1.5 ... 2.5) <sup>2)</sup> , 2 x (2.5 ... 6) <sup>2)</sup>	2 x (0.5 ... 2.5)	--
- Finely stranded with end sleeve	mm <sup>2</sup>	2 x (1 ... 2.5) <sup>2)</sup> , 2 x (2.5 ... 6) <sup>2)</sup> , 1 x 10	2 x (0.5 ... 1.5)	--
- Finely stranded without end sleeve	mm <sup>2</sup>	--	2 x (0.5 ... 2.5)	--
- Solid or stranded, AWG cables	AWG	2 x (14 ... 10)	2 x (18 ... 14)	--
• Stripped length	mm	10	10	--
• Terminal screws		M4	--	M5
- Tightening torque, Ø 5 ... 6 mm, PZ 2	Nm	2 ... 2.5	--	2 ... 2.5
	lb.in	18 ... 22	--	18 ... 22
• Cable lugs				
- According to DIN 46234		--	--	5-2.5 ... 5-25
- According to JIS C 2805		--	--	R 2-5 ... R 14-5
- Width, maximum	mm	--	--	12
<b>Connection, auxiliary/control contacts</b>				
• Conductor cross-sections, with or without end sleeve	mm	1 x (0.5 ... 2.5), 2 x (0.5 ... 1)	0.5 ... 2.5	1 x (0.5 ... 2.5), 2 x (0.5 ... 1)
	AWG	20 ... 12	20 ... 12	20 ... 12
• Stripped length	mm	7	10	7
• Terminal screw		M3	--	M3
- Tightening torque, Ø 3.5 mm, PZ 1	Nm	0.5 ... 0.6	--	0.5 ... 0.6
	lb.in	4.5 ... 5.3	--	4.5 ... 5.3

<sup>1)</sup> These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case it may be required to introduce additional interference suppression measures.

<sup>2)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### SIRIUS 3RF22 solid-state relays, 3-phase, 45 mm

Type	$I_{\max}^{1)}$ at $R_{\text{thha}}/T_U = 40\text{ °C}$		$I_e$ according to IEC 60947-4-3 at $R_{\text{thha}}/T_U = 40\text{ °C}$		$I_e$ according to UL/CSA at $R_{\text{thha}}/T_U = 50\text{ °C}$		Power loss at $I_{\max}$ W	Minimum load current A	Max. off-state current mA
	A	K/W	A	K/W	A	K/W			
<b>Main circuit</b>									
3RF2230-1AB..	30	0.80	30	0.80	30	0.65	81	0.5	10
3RF2230-2AB..			20	1.36	20	1.15			
3RF2230-3AB..			30	0.80	30	0.65			
3RF2255-1AB..	55	0.25	50	0.35	50	0.15	151	0.5	10
3RF2255-2AB..			20	1.83	20	1.58			
3RF2255-3AB..			55	0.25	55	0.15			
3RF2230-1AC..	30	0.45	30	0.45	30	0.35	122	0.5	10
3RF2230-2AC..			20	0.86	20	0.72			
3RF2230-3AC..			30	0.45	30	0.35			
3RF2255-1AC..	55	0.14	50	0.20	50	0.12	226	0.5	10
3RF2255-2AC..			20	1.19	20	1.02			
3RF2255-3AC..			55	0.14	55	0.12			

<sup>1)</sup> The current  $I_{\max}$  provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current  $I_e$  can be smaller depending on the connection method and cooling conditions.

#### Note:

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see [More information, page 6/148](#)). The minimum thickness values for the mounting surface must be observed.

Type	3RF22...-AB.5		3RF22...-AC.5	
<b>Main circuit</b>				
Controlled phases	2-phase		3-phase	
Rated operational voltage $U_e$	V AC	48 ... 600		
• Operating range	V AC	40 ... 660		
• Rated frequency	Hz	50/60 ± 10%		
Rated insulation voltage $U_i$	V	600		
Rated impulse withstand voltage $U_{\text{imp}}$	kV	6		
Blocking voltage	V	1 200		
Rate of voltage rise	V/μs	1 000		

Type	3RF22...-A.3.		3RF22...-A.4.	
<b>Control circuit</b>				
Method of operation	AC operation		DC operation	
Control supply voltage $U_s$	V	110	4 ... 30	
Rated frequency of the control supply voltage	Hz	50/60 ± 10%	--	
Control supply voltage, max.	V	121	30	
Typical actuating current	mA	15	30	
Response voltage	V	90	4	
Drop-out voltage	V	< 40	1	
Operating times				
• ON-delay	ms	40 + max. one half-wave	1 + max. one half-wave	
• OFF-delay	ms	40 + max. one half-wave	1 + max. one half-wave	

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### SIRIUS 3RF22 solid-state relays, 3-phase, 45 mm

#### Selection and ordering data

Type current/ performance capacity <sup>1)</sup>	Rated control supply voltage $U_s$	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
A	V	Article No.	Price per PU		

#### Zero-point switching, rated operational voltage $U_e$ 48 ... 600 V AC



3RF2230-1AB35

##### 2-phase controlled

30	110 AC	3RF2230-1AB35	1	1 unit	41C
55 <sup>2)</sup>		3RF2255-1AB35	1	1 unit	41C
30	4 ... 30 DC	3RF2230-1AB45	1	1 unit	41C
55 <sup>2)</sup>		3RF2255-1AB45	1	1 unit	41C

##### 3-phase controlled

30	110 AC	3RF2230-1AC35	1	1 unit	41C
55 <sup>2)</sup>		3RF2255-1AC35	1	1 unit	41C
30	4 ... 30 DC	3RF2230-1AC45	1	1 unit	41C
55 <sup>2)</sup>		3RF2255-1AC45	1	1 unit	41C

- <sup>1)</sup> The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current  $I_e$  can be smaller depending on the connection method and cooling conditions.
- <sup>2)</sup> Please note that the version with an M4 screw terminal can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm<sup>2</sup>. Please use the 3RF22 solid-state relays with ring cable lug connections for these currents.

Accessories, see page 6/158.

Type current/ performance capacity <sup>1)</sup>	Rated control supply voltage $U_s$	Spring-loaded terminals 	PU (UNIT, SET, M)	PS*	PG
A	V	Article No.	Price per PU		

#### Zero-point switching, rated operational voltage $U_e$ 48 ... 600 V AC



3RF2230-2AB45

##### 2-phase controlled

30 <sup>2)</sup>	4 ... 30 DC	3RF2230-2AB45	1	1 unit	41C
55 <sup>2)</sup>		3RF2255-2AB45	1	1 unit	41C

##### 3-phase controlled

30 <sup>2)</sup>	4 ... 30 DC	3RF2230-2AC45	1	1 unit	41C
55 <sup>2)</sup>		3RF2255-2AC45	1	1 unit	41C

- <sup>1)</sup> The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current  $I_e$  can be smaller depending on the connection method and cooling conditions.
- <sup>2)</sup> Please note that the version with spring-loaded terminals can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm<sup>2</sup>. Higher currents can be achieved by connecting two conductors per terminal.

Accessories, see page 6/158.

Type current/ performance capacity <sup>1)</sup>	Rated control supply voltage $U_s$	Ring cable lug connection 	PU (UNIT, SET, M)	PS*	PG
A	V	Article No.	Price per PU		

#### Zero-point switching, rated operational voltage $U_e$ 48 ... 600 V AC



3RF2230-3AB45

##### 2-phase controlled

30	4 ... 30 DC	3RF2230-3AB45	1	1 unit	41C
55		3RF2255-3AB45	1	1 unit	41C

##### 3-phase controlled

30	4 ... 30 DC	3RF2230-3AC45	1	1 unit	41C
55		3RF2255-3AC45	1	1 unit	41C

- <sup>1)</sup> The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current  $I_e$  can be smaller depending on the connection method and cooling conditions.

Accessories, see page 6/158.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### SIRIUS 3RF24 solid-state contactors, 3-phase

#### Overview

##### **3RF24 solid-state contactors (with integrated heat sink)**

The compact design of the 3RF24 solid-state contactor with optimized heat sink enables small complete units with currents up to 50 A.

The complete units consist of a solid-state relay with optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

The 3-phase solid-state contactors for resistive loads up to 50 A are available with

- 2-phase control (suitable in particular for circuits without connection to the neutral conductor) and
- 3-phase control (suitable for star circuits with connection to the neutral conductor or for applications in which the system requires all phases to be switched)

The 3RF3900-0EA18 converter function module (see page 6/162) can be snapped on for the simple power control of loads in a three-phase network by means of analog signals.

##### Notes:

Checking the correct solid-state contactor size with the aid of the rated current characteristic curve, taking account of the installation conditions, is recommended, please observe the selection notes (see page 6/149).

Due to a special mounting foot for version 3RF2410, snapping onto grounded DIN rails or mounting on a grounded mounting plate simultaneously provides safe grounding of the heat sink. Additional grounding is no longer necessary in this case. With other mounting types, an additional ground connection to the heat sink can be established by means of a screw terminal connection.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

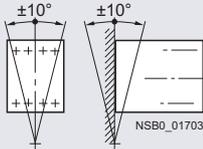
### SIRIUS 3RF24 solid-state contactors, 3-phase

#### Technical specifications

##### More information

Manuals, see <https://support.industry.siemens.com/cs/ww/en/ps/16223/man>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16223/faq>

Type	3RF24..-1....	3RF24..-2....	3RF24..-3....
Dimensions (W x H x D)	See page 6/155		
<b>General data</b>			
<b>Ambient temperature</b>			
• During operation, derating from 40 °C	°C	-25 ... +60	
• During storage	°C	-55 ... +80	
<b>Installation altitude</b>	m	0 ... 1 000; derating from 1 000	
<b>Shock resistance</b> according to IEC 60068-2-27	g/ms	15/11	
<b>Vibration resistance</b> according to IEC 60068-2-6	g	2	
<b>Degree of protection IP on the front</b> according to IEC 60529	IP20		IP00
<b>Touch protection on the front</b> according to IEC 60529	Finger-safe for vertical touching from the front		--
<b>Insulation strength</b> at 50/60 Hz (main/control circuit to floor)	V rms	4 000	
<b>Electromagnetic compatibility (EMC)</b>			
• Emitted interference according to IEC 60947-4-3 - Conducted disturbance voltage	Class A for industrial applications <sup>1)</sup>		
• Interference immunity - Electrostatic discharge according to IEC 61000-4-2 (corresponds to test level 3)	kV	Contact-mode discharge 4; air discharge 8, behavior criterion 2	
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1	
- Burst according to IEC 61000-4-4	kV	2/5.0 kHz, behavior criterion 2	
- Surge according to IEC 61000-4-5	kV	Conductor-ground 2; conductor-conductor 1, behavior criterion 2	
<b>Connection type</b>	 <b>Screw terminals</b>	 <b>Spring-loaded terminals</b>	 <b>Ring cable lug connection</b>
<b>Connection, main contacts</b>			
• Conductor cross-section	mm <sup>2</sup>	2 x (1.5 ... 2.5) <sup>2)</sup> , 2 x (2.5 ... 6) <sup>2)</sup>	2 x (0.5 ... 2.5)
- Solid	mm <sup>2</sup>	2 x (1 ... 2.5) <sup>2)</sup> , 2 x (2.5 ... 6) <sup>2)</sup> , 1 x 10	2 x (0.5 ... 1.5)
- Finely stranded with end sleeve	mm <sup>2</sup>	--	--
- Finely stranded without end sleeve	mm <sup>2</sup>	--	2 x (0.5 ... 2.5)
- Solid or stranded, AWG cables	AWG	2 x (14 ... 10)	2 x (18 ... 14)
• Stripped length	mm	10	10
• Terminal screws		M4	--
- Tightening torque	Nm	2 ... 2.5	--
	lb.in	18 ... 22	M5 2 ... 2.5 18 ... 22
• Cable lugs		--	--
- According to DIN 46234		--	5-2.5 ... 5-25
- According to JIS C 2805		--	R 2-5 ... R 14-5
- Width, maximum	mm	--	12
<b>Connection, auxiliary/control contacts</b>			
• Conductor cross-section	mm	1 x (0.5 ... 2.5), 2 x (0.5 ... 1)	0.5 ... 2.5
	AWG	20 ... 12	20 ... 12
• Stripped length	mm	7	10
• Terminal screw		M3	--
- Tightening torque,	Nm	0.5 ... 0.6	--
∅ 3.5 mm, PZ 1	lb.in	4.5 ... 5.3	0.5 ... 0.6 4.5 ... 5.3
<b>Grounding screws</b>			
	Optional, see also note on page 6/153 about the special mounting foot for safe grounding on DIN rails for version 3RF2410		
• Size (standard screw)	M5		
<b>Permissible mounting position</b>			
			

<sup>1)</sup> These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case it may be required to introduce additional interference suppression measures. The versions 3RF24..-1AC55 comply with Class B for residential, business and commercial applications.

<sup>2)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

## Switching devices – Soft starters and solid-state switching devices

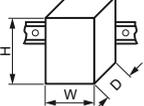
Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### SIRIUS 3RF24 solid-state contactors, 3-phase

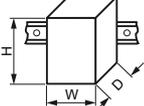
Type	Type current/ performance capacity <sup>1)</sup> $I_{AC-51}$ at 40 °C	Rated operational current $I_e$		Power loss at $I_{AC-51}$	Minimum load current	Max. off-state current
	A	according to IEC 60947-4-3 at 40 °C	according to UL/CSA at 50 °C	W	A	mA
<b>Main circuit</b>						
3RF2410-AB.5	10.5	7	7	23	0.1	10
3RF2420-AB.5	22	15	15	44	0.5	10
3RF2430-AB.5	30	22	22	61	0.5	10
3RF2440-AB.5	40	30	30	80	0.5	10
3RF2450-AB.5	50	38	38	107	0.5	10
3RF2410-AC.5	10.5	7	7	31	0.5	10
3RF2420-AC.5	22	15	15	66	0.5	10
3RF2430-AC.5	30	22	22	91	0.5	10
3RF2440-AC.5	40	30	30	121	0.5	10
3RF2450-AC.5	50	38	38	160	0.5	10

<sup>1)</sup> The type current provides information about the performance capacity of the solid-state contactor. The actual permitted rated operational current  $I_e$  can be smaller depending on the connection method and installation conditions.

Type	Type current $I_{AC-51}$	Dimensions (W x H x D) (including heat sink)
	A	mm



Type	Type current $I_{AC-51}$	Dimensions (W x H x D) (including heat sink)
	A	mm



<b>Main circuit</b>		
3RF2410-AB..	10.5	45 x 95 x 92.5
3RF2410-AC..		
3RF2420-AB..	22	45 x 100 x 112
3RF2420-AC..	22	74.5 x 100 x 114.5
3RF2430-AB..	30	

<b>Main circuit</b>		
3RF2430-AC..	30	89.5 x 100 x 123
3RF2440-AB..	40	
3RF2440-AC..	40	120 x 95 x 130
3RF2450-AB..	50	
3RF2450-AC..	50	120 x 150 x 130

Type	3RF24...-AB.5	3RF24...-AC.5
<b>Main circuit</b>		
Controlled phases	2-phase	3-phase
Rated operational voltage $U_e$	V AC 48 ... 600	
• Operating range	V AC 40 ... 660	
• Rated frequency	Hz 50/60 ± 10%	
Rated insulation voltage $U_i$	V 600	
Rated impulse withstand voltage $U_{imp}$	kV 6	
Blocking voltage	V 1 200	
Rate of voltage rise	V/μs 1 000	

Type	3RF24...-3.	3RF24...-4.	3RF24...-5.
<b>Control circuit</b>			
Method of operation	AC operation	DC operation	AC operation
Rated control supply voltage $U_s$	V 110	4 ... 30	190 ... 230
Rated frequency of the control supply voltage	Hz 50/60 ± 10%	--	50/60 ± 10%
Actuating voltage, max.	V 121	30	253
Typical actuating current	mA 15	30	15
Response voltage	V 90	4	180
Drop-out voltage	V < 40	< 1	< 40
<b>Operating times</b>			
• ON-delay	ms 40 + max. one half-wave	1 + max. one half-wave	40 + max. one half-wave
• OFF-delay	ms 40 + max. one half-wave	1 + max. one half-wave	40 + max. one half-wave

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### SIRIUS 3RF24 solid-state contactors, 3-phase

#### Selection and ordering data

Type current/ performance capacity <sup>1)</sup> $I_{max}$	Rated control supply voltage $U_s$	Grounding	Screw terminals	⊕	PU (UNIT, SET, M)	PS*	PG
A	V		Article No.		Price per PU		
<b>Zero-point switching · Integrated heat sink, rated operational voltage <math>U_e</math> 48 ... 600 V AC</b>							
<b>2-phase controlled</b>							
	10.5	4 ... 30 DC	✓	3RF2410-1AB45	1	1 unit	41C
	20		--	3RF2420-1AB45	1	1 unit	41C
	30		--	3RF2430-1AB45	1	1 unit	41C
	40		--	3RF2440-1AB45	1	1 unit	41C
	50		--	3RF2450-1AB45	1	1 unit	41C
3RF2410-1AB45	10.5	110 AC	✓	3RF2410-1AB35	1	1 unit	41C
	20		--	3RF2420-1AB35	1	1 unit	41C
	30		--	3RF2430-1AB35	1	1 unit	41C
	40		--	3RF2440-1AB35	1	1 unit	41C
	50		--	3RF2450-1AB35	1	1 unit	41C
	10.5	230 AC	✓	3RF2410-1AB55	1	1 unit	41C
	20		--	3RF2420-1AB55	1	1 unit	41C
	30		--	3RF2430-1AB55	1	1 unit	41C
	40		--	3RF2440-1AB55	1	1 unit	41C
	50		--	3RF2450-1AB55	1	1 unit	41C
<b>3-phase controlled</b>							
	10.5	4 ... 30 DC	✓	3RF2410-1AC45	1	1 unit	41C
	20		--	3RF2420-1AC45	1	1 unit	41C
	30		--	3RF2430-1AC45	1	1 unit	41C
	40		--	3RF2440-1AC45	1	1 unit	41C
	50		--	3RF2450-1AC45	1	1 unit	41C
3RF2410-1AC45	10.5	110 AC	✓	3RF2410-1AC35	1	1 unit	41C
	20		--	3RF2420-1AC35	1	1 unit	41C
	30		--	3RF2430-1AC35	1	1 unit	41C
	40		--	3RF2440-1AC35	1	1 unit	41C
	50		--	3RF2450-1AC35	1	1 unit	41C
	10.5	230 AC	✓	3RF2410-1AC55	1	1 unit	41C
	20		--	3RF2420-1AC55	1	1 unit	41C
	30		--	3RF2430-1AC55	1	1 unit	41C
	40		--	3RF2440-1AC55	1	1 unit	41C
	50		--	3RF2450-1AC55	1	1 unit	41C

✓ These versions are equipped with a special mounting foot. Snapping them onto grounded DIN rails or mounting them on a grounded mounting plate simultaneously provides safe grounding of the heat sink. Additional grounding is no longer necessary in this case.

-- With these versions, the ground connection to the heat sink can be established by means of a screw terminal connection.

<sup>1)</sup> The type current provides information about the performance capacity of the solid-state contactor. The actual permitted rated operational current  $I_e$  can be smaller depending on the connection method and installation conditions. For derating characteristic curves, see [More information](#), page 6/148.

Accessories, see page 6/158.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### SIRIUS 3RF24 solid-state contactors, 3-phase

Type current/ performance capacity <sup>1)</sup> $I_{max}$	Rated control supply voltage $U_s$	Grounding	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG
A	V		Article No.	Price per PU		

#### Zero-point switching · Integrated heat sink, rated operational voltage $U_e$ 48 ... 600 V AC



3RF2410-2AB.5

#### 2-phase controlled

10	4 ... 30 DC	✓	3RF2410-2AB45	1	1 unit	41C
20	230 AC	--	3RF2420-2AB45	1	1 unit	41C
10	230 AC	✓	3RF2410-2AB55	1	1 unit	41C
20	230 AC	--	3RF2420-2AB55	1	1 unit	41C

#### 3-phase controlled

10	4 ... 30 DC	✓	3RF2410-2AC45	1	1 unit	41C
20	230 AC	--	3RF2420-2AC45	1	1 unit	41C
10	230 AC	✓	3RF2410-2AC55	1	1 unit	41C
20	230 AC	--	3RF2420-2AC55	1	1 unit	41C

✓ These versions are equipped with a special mounting foot. Snapping them onto grounded DIN rails or mounting them on a grounded mounting plate simultaneously provides safe grounding of the heat sink. Additional grounding is no longer necessary in this case.

-- With these versions, the ground connection to the heat sink can be established by means of a screw terminal connection.

<sup>1)</sup> The type current provides information about the performance capacity of the solid-state contactor. The actual permitted rated operational current  $I_e$  can be smaller depending on the connection method and installation conditions. For derating characteristic curves, see [More information, page 6/148](#).

Accessories, see [page 6/158](#).

Type current/ performance capacity <sup>1)</sup> $I_{max}$	Rated control supply voltage $U_s$	Grounding	Ring cable lug connection	PU (UNIT, SET, M)	PS*	PG
A	V		Article No.	Price per PU		

#### Zero-point switching · Integrated heat sink, rated operational voltage $U_e$ 48 ... 600 V AC



3RF2450-3AB.5

#### 2-phase controlled

50	4 ... 30 DC	--	3RF2450-3AB45	1	1 unit	41C
50	230 AC	--	3RF2450-3AB55	1	1 unit	41C

#### 3-phase controlled

50	4 ... 30 DC	--	3RF2450-3AC45	1	1 unit	41C
50	230 AC	--	3RF2450-3AC55	1	1 unit	41C

-- With these versions, the ground connection to the heat sink can be established by means of a screw terminal connection.

<sup>1)</sup> The type current provides information about the performance capacity of the solid-state contactor. The actual permitted rated operational current  $I_e$  can be smaller depending on the connection method and installation conditions. For derating characteristic curves, see [More information, page 6/148](#).

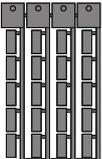
Accessories, see [page 6/158](#).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF2 solid-state relays and solid-state contactors

### Accessories

#### Selection and ordering data

Version	For solid-state switching devices	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Control connectors</b> <span style="color: orange;">NEW</span>						
	<b>Replacement control connector</b> For solid-state relays and solid-state contactors with screw terminals	3RF22, 3RF24	<b>Screw terminals</b> 	<b>3RF3900-1TA88</b>	1 50 units	41C
3RF3900-1TA88						
	<b>Replacement control connector</b> For solid-state relays and solid-state contactors with spring-loaded terminals, with two clamping points per contact	3RF22, 3RF24	<b>Spring-loaded terminals</b> 	<b>3RF3900-2TB88</b>	1 10 units	41C
3RF3900-2TB88						
<b>Tools for opening spring-loaded terminals</b>						
	<b>Screwdriver</b> For all SIRIUS devices with spring-loaded terminals Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	3RF22, 3RF24	<b>3RA2908-1A</b>		1 1 unit	41B
3RA2908-1A						
<b>DIN-rail adapters</b>						
	<b>Spare part DIN-rail adapter</b> 45 mm wide, for solid-state contactors	3RF24	<b>3RF3900-0BA88</b>		1 1 unit	41C
3RF3900-0BA88						
<b>Blank labels</b>						
	<b>Unit labeling plates</b> For SIRIUS devices <sup>1)</sup> 10 mm x 7 mm, titanium gray 20 mm x 7 mm, titanium gray	3RF22, 3RF24	<b>3RT2900-1SB10</b> <b>3RT2900-1SB20</b>		100 816 units 100 340 units	41B 41B
3RT2900-1SB20	<b>Self-adhesive labels</b> For SIRIUS devices 19 mm x 6 mm, titanium gray	3RF22, 3RF24	<b>3RT2900-1SB60</b>		100 3060 units	41B

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

NEW General data

### Overview

#### Function modules for SIRIUS 3RF3 and 3RF2 solid-state switching devices

A great variety of applications demand an expanded range of functionality. With our function modules, these requirements can be met really easily. The modules are mounted simply by clicking them into place; straight away the necessary connections are made with the solid-state relay or contactor.

The plug-in connection to control the solid-state switching devices can simply remain in use. The external connections have screw terminals.

For function modules with current measurement, the load cable must be inserted through the straight-through transformer and reconnected to the solid-state switching device.

The following function modules are available:

- Converters (without current measurement)
- Load monitoring
- Heating current monitoring
- Power controllers
- Power regulators

#### Note:

With the exception of the converter, the function modules can be used only with 3RF31 and 3RF33 1-phase solid-state switching devices.

Recommended assignment of the function modules to the solid-state switching devices:

- 3RF2, see [SiePortal](#)
- 3RF3, see [SiePortal](#)

### Technical specifications

More information							
SiePortal, see <a href="http://www.siemens.com/product_catalog_siep?3RF">www.siemens.com/product_catalog_siep?3RF</a>		FAQs, see <a href="https://support.industry.siemens.com/cs/ww/en/ps/30003/faq">https://support.industry.siemens.com/cs/ww/en/ps/30003/faq</a>					
Online configurator, see <a href="http://www.siemens.com/sirius/configurators">www.siemens.com/sirius/configurators</a>		Conversion tool, see <a href="http://www.siemens.com/conversion-tool">www.siemens.com/conversion-tool</a>					
Manuals, see <a href="https://support.industry.siemens.com/cs/ww/en/ps/30003/man">https://support.industry.siemens.com/cs/ww/en/ps/30003/man</a>							
Article number		<b>3RF3900-0EA18</b>	<b>3RF39..-0FA..</b>	<b>3RF39..-0GA..</b>	<b>3RF39..-0JA..</b>	<b>3RF39..-0KA..</b>	<b>3RF39..-0HA..</b>
Product designation		<b>Converters</b>	<b>Load monitoring</b>		<b>Heating current monitoring</b>	<b>Power controllers</b>	<b>Power regulators</b>
			<b>Basic</b>	<b>Extended</b>			
General data							
<b>Dimensions (W x H x D)</b>	mm	22.5 x 83.5 x 38	22.5 x 101.5 x 67	45 x 111.5 x 69.5			
<b>Ambient temperature</b>							
• During operation	°C	-25 ... +60					
• During storage	°C	-55 ... +80					
<b>Derating temperature</b>	°C	40					
<b>Installation altitude at height above sea level, maximum</b>	m	1 000					
<b>Shock resistance according to IEC 60068-2-27</b>		15 g/11 ms					
<b>Vibration resistance according to IEC 60068-2-6</b>		2 g					
<b>Degree of protection IP on the front according to IEC 60529</b>		IP20					
<b>Touch protection on the front according to IEC 60529</b>		Finger-safe for vertical touching from the front					
<b>Conducted RF interference emission according to CISPR11</b>		Class A for industrial applications					
<b>Radiated RF interference emission according to CISPR11</b>		Class B for residential, business and commercial applications					
<b>Electrostatic discharge according to IEC 61000-4-2</b>		4 kV contact-mode discharge/8 kV air discharge, behavior criterion 2					
<b>Conducted interference suppression</b>							
• Due to radio frequency radiation according to IEC 61000-4-6		140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1					
• Due to burst according to IEC 61000-4-4		2 kV/5 kHz, behavior criterion 2					
• Due to conductor-ground surge according to IEC 61000-4-5		2 kV, behavior criterion 2					
• Due to conductor-conductor surge according to IEC 61000-4-5		1 kV, behavior criterion 2					

#### Note:

Note limitations for power controller and power regulator function modules. These modules were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case it may be required to introduce additional interference suppression measures.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

### General data **NEW**

Article number	3RF3900-0EA18	3RF39..-0.A08	3RF39..-0.A13	3RF39..-0.A16
Product designation	Converters	Load monitoring Basic	Extended	
<b>Main circuit</b>				
Operational voltage at AC at 50/60 Hz	V	--	110 ... 230	400 ... 600
Operating range relative to operational voltage at AC at 50/60 Hz	V	--	93.5 ... 253	340 ... 660
Operating frequency	Hz	50 ... 60		
Insulation voltage	V	--	600	
Compensation of line voltage fluctuations	%	--		20
<b>Control circuit</b>				
Article number	3RF3900-0EA18	3RF39..-0FA0.	3RF39..-0GA1.	
Product designation	Converters	Load monitoring Basic	Extended	
<b>Control circuit</b>				
Voltage type	AC/DC	DC	AC/DC	
Control supply voltage				
• At AC at 50/60 Hz	V	24	--	24
• At DC	V	24		
Control current				
• At AC/DC	mA	25	--	40
• At minimum control supply voltage				
- At AC	mA	--		2
- At DC	mA	--	2	
Supply voltage frequency for auxiliary and control circuit	Hz	50 ... 60	--	50 ... 60
<b>Control circuit</b>				
Article number	3RF39..-0JA1.	3RF39.0-0HA1.	3RF39..-0KA1.	
Product designation	Heating current monitoring	Power regulators	Power controllers	
<b>Control circuit</b>				
Voltage type	AC/DC			
Control supply voltage				
• At AC at 50/60 Hz	V	24		
• At DC	V	24		
Control current				
• At AC/DC	mA	40		
• At minimum control supply voltage at AC/DC	mA	2		
Supply voltage frequency for auxiliary and control circuit	Hz	50 ... 60		

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

**NEW** General data

Article number		<b>3RF3906-0FA08</b>	<b>3RF3920-0FA08</b>	<b>3RF3920-0GA..</b>	<b>3RF3950-0GA..</b>	<b>3RF3990-0GA..</b>
Product designation		<b>Load monitoring</b>		<b>Extended</b>		
<b>Current measurement</b>						
<b>Operational current at AC-1 at 400 V</b>	A	6	20	50	90	
<b>Teach range current</b>	A	0.25 ... 6	0.65 ... 20	0.56 ... 20	1.62 ... 50	2.93 ... 90
<b>Current measuring range</b>	A	0 ... 6.6	0 ... 22		0 ... 55	0 ... 99
<b>Number of partial loads for load monitoring</b>		6		12		
Article number		<b>3RF3916-0JA1.</b>	<b>3RF3932-0JA1.</b>	<b>3RF3920-0HA1.</b>	<b>3RF3950-0HA1.</b>	<b>3RF3990-0HA1.</b>
Product designation		<b>Heating current monitoring</b>		<b>Power regulators</b>		
<b>Current measurement</b>						
<b>Operational current at AC-1 at 400 V</b>	A	16	32	20	50	90
<b>Teach range current</b>	A	0.42 ... 16	0.8 ... 32	4 ... 20	10 ... 50	18 ... 90
<b>Current measuring range</b>	A	0 ... 16	0 ... 32	0 ... 22	0 ... 55	0 ... 99
<b>Number of partial loads for load monitoring</b>		6		--		
Article number		<b>3RF3904-0KA1.-0K.0</b>	<b>3RF3920-0KA1.</b>	<b>3RF3950-0KA1.</b>	<b>3RF3990-0KA1.</b>	
Product designation		<b>Power controllers</b>				
<b>Current measurement</b>						
<b>Operational current at AC-1 at 400 V</b>	A	4	20	50	90	
<b>Teach range current</b>	A	0.15 ... 4	4 ... 20	1.6 ... 50	2.9 ... 90	
<b>Current measuring range</b>	A	0 ... 4	0 ... 22	0 ... 55	0 ... 99	
<b>Number of partial loads for load monitoring</b>		6				
Article number		<b>3RF39..-0.A..</b>				
<b>Control circuit</b>						
<b>Type of electrical connection</b>		 Screw terminals				
<b>Connectable conductor cross-section</b>						
• Solid	mm <sup>2</sup>	0.5 ... 2.5				
• Finely stranded						
- Without end sleeve	mm <sup>2</sup>	0.5 ... 2.5				
- With end sleeve	mm <sup>2</sup>	0.5 ... 2.5				
<b>Type of connectable conductor cross-sections</b>						
• Solid		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )				
• Finely stranded						
- Without end sleeve		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )				
- With end sleeve		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )				
• For AWG cables		1x (20 ... 12)				
<b>AWG number as coded connectable conductor cross-section</b>		12 ... 20				
<b>Design of thread of terminal screw</b>		M3				
<b>Tightening torque</b>	Nm	0.5 ... 0.6				

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

### SIRIUS converters for 3RF3 and 3RF2 **NEW**

#### Overview

##### Converters for 3RF3 and 3RF2 solid-state switching devices

These modules are used to convert analog control signals, such as those output from many temperature controllers for example, into a pulse-width-modulated digital signal. The connected solid-state contactors and relays can therefore regulate the output of a load as a percentage.

#### Application

The function module is used for converting an analog input signal to an on/off ratio with the time base 1 s. The module can only be used in conjunction with 3RF31 and 3RF33 1-pole solid-state switching devices or 3RF22 and 3RF24 3-phase devices. It can be clicked onto versions with control supply voltages of 24 V DC, 4 to 30 V DC, and 24 V AC/DC.

##### Note:

The use of 3RF31 or 3RF33 1-pole solid-state switching devices with converters, power controllers or power regulators of loads in a three-phase network in full-wave control mode is not recommended.

As mutual synchronization of the function modules is not possible, fluctuations in the heating power are possible; there is no optimum settling in particular with setpoint values < 50%.

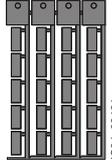
#### Selection and ordering data

Control supply voltage at AC at 50/60 Hz	at DC	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
V	V	Article No.	Price per PU		
<b>Converters</b>					
<b>For 3RF3 and 3RF2 solid-state relays/contactors</b>					
24	24	<b>3RF3900-0EA18</b>		1	1 unit 41C



3RF3900-0EA18

#### Accessories

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Blank labels</b>					
	<b>Unit labeling plates</b> For SIRIUS devices <sup>1)</sup> <ul style="list-style-type: none"> <li>• 10 mm × 7 mm, titanium gray</li> <li>• 20 mm × 7 mm, titanium gray</li> </ul>		100	816 units	41B
	<b>Adhesive labels</b> For SIRIUS devices 19 mm × 6 mm, titanium gray		100	340 units	41B
3RT2900-1SB20	<b>3RT2900-1SB60</b>		100	3060 units	41B

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

**NEW** SIRIUS load monitoring for 3RF3

### Overview

#### Load monitoring for 3RF3 1-pole solid-state switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of load elements (up to six in the basic version or up to twelve in the extended version), alloyed power semiconductors, a lack of voltage or a break in the load circuit. A fault is indicated by one or more LEDs and reported to the controller by way of a PLC-compatible output.

The principle of operation is based on permanent monitoring of the current intensity. This figure is continuously compared with the reference value stored once during commissioning by the simple press of a button.

In order to detect the failure of one of several loads, the current difference must be 1/6 (in the basic version) or 1/12 (in the extended version) of the reference value. In the event of a fault, an output is actuated and one or more LEDs indicate the fault.

### Application

The device is used for monitoring one or more loads (partial loads).

#### Notes:

The function module can only be used in conjunction with a 3RF31 solid-state relay or a 3RF33 solid-state contactor.

The solid-state switching devices with spring-loaded terminals in the load circuit are not suitable for load monitoring!

### Selection and ordering data

Operational current at AC-1 at 400 V	Operational voltage at AC at 50/60 Hz	Control supply voltage		Screw terminals 	PU (UNIT, SET, M)	PS*	PG
		at AC at 50/60 Hz	at DC				
A	V	V	V	Article No.	Price per PU		

#### Load monitoring

##### For 3RF31 and 3RF33 solid-state relays/contactors

##### Basic

6	--	--	24
20	--	--	24
• With mounted 3RF2900-ORA88 cover			
6	--	--	24
20	--	--	24

##### Extended

20	110 ... 230 400 ... 600	24	24
50	110 ... 230 400 ... 600	24	24
90	110 ... 230 400 ... 600	24	24



3RF3920-0FA08



3RF3920-0GA13

<b>3RF3906-0FA08</b>	1	1 unit	41C
<b>3RF3920-0FA08</b>	1	1 unit	41C
<b>3RF3906-0FA08-0KH0</b>	1	1 unit	41C
<b>3RF3920-0FA08-0KH0</b>	1	1 unit	41C
<b>3RF3920-0GA13</b>	1	1 unit	41C
<b>3RF3920-0GA16</b>	1	1 unit	41C
<b>3RF3950-0GA13</b>	1	1 unit	41C
<b>3RF3950-0GA16</b>	1	1 unit	41C
<b>3RF3990-0GA13</b>	1	1 unit	41C
<b>3RF3990-0GA16</b>	1	1 unit	41C

### Accessories

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
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#### Covers



3RF2900-ORA88

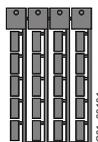
##### Sealable covers for function modules

(not for converters)

For securing against unauthorized adjustment of setting knobs

<b>3RF2900-ORA88</b>	1	10 units	41C
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#### Blank labels



3RT2900-1SB20

##### Unit labeling plates

For SIRIUS devices<sup>1)</sup>

- 10 mm × 7 mm, titanium gray
- 20 mm × 7 mm, titanium gray

##### Adhesive labels

For SIRIUS devices

19 mm × 6 mm, titanium gray

<b>3RT2900-1SB10</b>	100	816 units	41B
<b>3RT2900-1SB20</b>	100	340 units	41B
<b>3RT2900-1SB60</b>	100	3060 units	41B

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads  
SIRIUS 3RF39 function modules

### SIRIUS heating current monitoring for 3RF3 **NEW**

#### Overview

##### Heating current monitoring for 3RF3 1-pole solid-state switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of up to six load elements, alloyed power semiconductors, a lack of voltage, or a break in the load circuit. A fault is indicated by LEDs and reported to the controller via relay output (NC).

The principle of operation is based on permanent monitoring of the current intensity. This figure is continuously compared with the reference value stored once during commissioning. In order to detect the failure of one of several loads, the current difference must be 1/6 of the reference value. In the event of a fault, an output is actuated and the LEDs indicate the fault.

The heating current monitoring has a teach input and therefore differs from the load monitoring. This remote teaching function enables simple adjustment to changing loads without manual intervention.

##### Special version with "Standby" mode: Deviations from the standard version

3RF39...-0JA1.-1KK0

If the current is below 50% of the lower teach current during the teach routine, the device will go into "Standby" mode; the LOAD LED will flicker. The device thus detects a non-connected load, e.g. channels not required for tool heaters, and does not signal a fault. This mode can be reset by re-teaching.

#### Application

The device is used for monitoring one or more loads (partial loads).

##### Notes:

The function module can only be used in conjunction with a 3RF31 solid-state relay or a 3RF33 solid-state contactor.

The solid-state switching devices with spring-loaded terminals in the load circuit are not suitable!

#### Selection and ordering data

Operational current at AC-1 at 400 V	Operational voltage at AC at 50/60 Hz	Control supply voltage		Screw terminals	PU (UNIT, SET, M)	PS*	PG
		at AC at 50/60 Hz	at DC				
A	V	V	V	Article No.	Price per PU		

#### Heating current monitoring

##### For 3RF31 and 3RF33 solid-state relays/contactors

16	110 ... 230	24	24	<b>3RF3916-0JA13</b>	1	1 unit	41C
32	400 ... 600	24	24	<b>3RF3932-0JA16</b>	1	1 unit	41C

##### With standby

16	110 ... 230	24	24	<b>3RF3916-0JA13-1KK0</b>	1	1 unit	41C
	400 ... 600			<b>3RF3916-0JA16-1KK0</b>	1	1 unit	41C
32	110 ... 230	24	24	<b>3RF3932-0JA13-1KK0</b>	1	1 unit	41C
	400 ... 600			<b>3RF3932-0JA16-1KK0</b>	1	1 unit	41C



3RF3916-0JA13

#### Accessories

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
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#### Covers



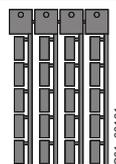
3RF2900-ORA88

##### Sealable covers for function modules (not for converters)

For securing against unauthorized adjustment of setting knobs

<b>3RF2900-ORA88</b>	1	10 units	41C
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#### Blank labels



3RT2900-1SB20

##### Unit labeling plates For SIRIUS devices<sup>1)</sup>

- 10 mm × 7 mm, titanium gray
- 20 mm × 7 mm, titanium gray

##### Adhesive labels For SIRIUS devices

19 mm × 6 mm, titanium gray

<b>3RT2900-1SB10</b>	100	816 units	41B
<b>3RT2900-1SB20</b>	100	340 units	41B

<b>3RT2900-1SB60</b>	100	3060 units	41B
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<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

**NEW** SIRIUS power controllers for 3RF3

### Overview

#### **Power controllers for 3RF3 1-pole solid-state switching devices**

The power controller is a function module for the autonomous power control of complex heating systems and inductive loads.

The following functions have been integrated:

- **Power controller**  
For adjusting the power of the connected load. The setpoint value is selected via a rotary knob on the module as a percentage of the 100% power value stored as a setpoint.
- **Inrush current limiting**  
With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps or infrared sources which have an inrush transient current.
- **Load circuit monitoring**  
For detecting load failure, partial load faults, alloyed power semiconductors, lack of voltage or a break in the load circuit

#### Note:

With the phase control operating mode, a partial load fault is detected by cyclic "scanning" of the load; the exact mode of operation is described in the technical product data sheets!

#### **Special versions:**

##### **Deviations from the standard version**

##### 3RF3904-0KA13-0KC0 (zero teach)

During the teach routine, the connected solid-state relay or contactor is not activated; i.e. no current will flow. No current reference value is stored. No partial load monitoring!

##### 3RF39..-0KA1.-0KT0 (without partial load monitoring)

No partial load monitoring!

### Application

The power controller can be used for:

- Complex heating systems
- Inductive loads
- Loads with temperature-dependent resistor
- Loads with ageing after long-time service
- Simple indirect control of temperature

#### Notes:

The function module can only be used in conjunction with a 3RF31 solid-state relay or a 3RF33 solid-state contactor.

The solid-state switching devices with spring-loaded terminals in the load circuit are not suitable!

#### **Power control**

The power controller adjusts the power in the connected load by means of a solid-state switching device depending on the setpoint selection. It does not compensate for changes in the line voltage or load resistance. The setpoint value can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer ( $t_R$ ), the control is carried out according to the principle of full-wave control or generalized phase control.

#### Note:

In the case of resistive loads, the power is set linear to the setpoint value. During operation of inductive loads, the power control is no longer proportional and linear due to the phase offset between current and voltage.

#### **Full-wave control**

In this operating mode the output is adjusted to the required setpoint value by changing the on-to-off period. The period duration is predefined at 1 s.

#### Notes:

The use of 3RF31 or 3RF33 1-pole solid-state switching devices with converters, power controllers or power regulators of loads in a three-phase network in full-wave control mode is not recommended. As mutual synchronization of the function modules is not possible, fluctuations in the heating power are possible; there is no optimum settling in particular with setpoint values < 50%.

#### **Generalized phase control**

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted disturbance voltage for industrial networks, at loads up to 20 kVA, the load circuit must include an additional filter, and for loads above 20 kVA, a reactor with a rating of at least 200  $\mu$ H must be used. You will find details about the filters in the FAQ "Filters for 3RF39 power regulators and power controllers to comply with the limits for electromagnetic emitted interference", see <https://support.industry.siemens.com/cs/ww/en/view/109994074>.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

### SIRIUS power controllers for 3RF3 **NEW**

#### Selection and ordering data

Operational current at AC-1 at 400 V	Operational voltage at AC at 50/60 Hz	Control supply voltage		Current measuring range	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
		at AC at 50/60 Hz	at DC					
A	V	V	V	A	Article No.	Price per PU		
<b>Power controllers</b>								
<b>For 3RF31 and 3RF33 solid-state relays/contactors</b>								
20	110 ... 230	24	24	0 ... 22	<b>3RF3920-0KA13</b>	1	1 unit	41C
	400 ... 600	24	24	0 ... 22	<b>3RF3920-0KA16</b>	1	1 unit	41C
50	110 ... 230	24	24	0 ... 55	<b>3RF3950-0KA13</b>	1	1 unit	41C
	400 ... 600	24	24	0 ... 55	<b>3RF3950-0KA16</b>	1	1 unit	41C
90	110 ... 230	24	24	0 ... 99	<b>3RF3990-0KA13</b>	1	1 unit	41C
	400 ... 600	24	24	0 ... 99	<b>3RF3990-0KA16</b>	1	1 unit	41C
<b>Zero teach</b>								
4	110 ... 230	24	24	0 ... 4	<b>3RF3904-0KA13-0KC0</b>	1	1 unit	41C
<b>Without partial load monitoring</b>								
4	110 ... 230	24	24	0 ... 4	<b>3RF3904-0KA13-0KT0</b>	1	1 unit	41C
50	400 ... 600	24	24	0 ... 55	<b>3RF3950-0KA16-0KT0</b>	1	1 unit	41C

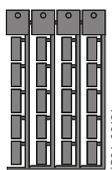


3RF3904-0KA13

#### Note:

For a description of the special design versions, see page 6/165.

#### Accessories

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Covers</b>					
 <b>Sealable covers for function modules</b> (not for converters) For securing against unauthorized adjustment of setting knobs	<b>3RF2900-ORA88</b>		1	10 units	41C
<b>Blank labels</b>					
 <b>Unit labeling plates</b> For SIRIUS devices <sup>1)</sup> <ul style="list-style-type: none"> <li>• 10 mm × 7 mm, titanium gray</li> <li>• 20 mm × 7 mm, titanium gray</li> </ul>	<b>3RT2900-1SB10</b> <b>3RT2900-1SB20</b>		100	816 units	41B
<b>Adhesive labels</b> For SIRIUS devices 19 mm × 6 mm, titanium gray	<b>3RT2900-1SB60</b>		100	3060 units	41B

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

**NEW** SIRIUS power regulators for 3RF3

### Overview

#### **Power regulators for 3RF3 1-pole solid-state switching devices**

The power regulator is a function module for the autonomous power control of complex heating systems.

The following functions have been integrated:

- **Power controller with proportional-action control**  
For adjusting the power of the connected load. The setpoint value is selected via a rotary knob on the module as a percentage of the 100% power value stored as a setpoint. Changes in the line voltage or in the load resistance are compensated in this case.
- **Inrush current limitation**  
With the aid of an adjustable voltage ramp, the inrush current is limited by means of phase control. This is useful above all with loads such as lamps which have an inrush transient current.
- **Load circuit monitoring**  
For detecting load failure, alloyed power semiconductors, lack of voltage or a break in the load circuit. Partial load monitoring is not possible. Load fluctuations are compensated.

### Application

The power regulator can be used for:

- Complex heating systems
- Heating elements with temperature-dependent resistor
- Heating elements with ageing after long-time service
- Simple indirect control of temperature

#### Notes:

The function module can only be used in conjunction with a 3RF31 solid-state relay or a 3RF33 solid-state contactor.

The solid-state switching devices with spring-loaded terminals in the load circuit are not suitable!

#### **Power control**

The power regulator adjusts the power in the connected load by means of a solid-state switching device depending on the taught power and the selected setpoint. Changes in the line voltage or in the load resistance are thus compensated by the power regulator. The setpoint value can be predefined externally as a 0 to 10 V signal or internally by means of a potentiometer. Depending on the setting of the potentiometer ( $t_R$ ), the adjustment is carried out according to the principle of full-wave control or generalized phase control.

#### Note:

In the case of resistive loads, the power is set linear to the setpoint value. During operation of inductive loads, the power control is no longer proportional and linear due to the phase offset between current and voltage.

#### **Full-wave control**

In this operating mode the output is adjusted to the required setpoint value by changing the on-to-off period. The period duration is predefined at 1 s.

#### Notes:

The use of 3RF31 or 3RF33 1-pole solid-state switching devices with converters, power controllers or power regulators of loads in a three-phase network in full-wave control mode is not recommended. As mutual synchronization of the function modules is not possible, fluctuations in the heating power are possible; there is no optimum settling in particular with setpoint values < 50%.

#### **Generalized phase control**

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted disturbance voltage for industrial networks, at loads up to 20 kVA, the load circuit must include an additional filter, and for loads above 20 kVA, a reactor with a rating of at least 200  $\mu$ H must be used. You will find details about the filters in the FAQ "Filters for 3RF39 power regulators and power controllers to comply with the limits for electromagnetic emitted interference", see <https://support.industry.siemens.com/cs/ww/en/view/109994074>.

## Switching devices – Soft starters and solid-state switching devices

Solid-state switching devices for resistive/inductive loads

SIRIUS 3RF39 function modules

### SIRIUS power regulators for 3RF3 **NEW**

#### Selection and ordering data

Operational current at AC-1 at 400 V	Operational voltage at AC at 50/60 Hz	Control supply voltage		Screw terminals 	PU (UNIT, SET, M)	PS*	PG
		at AC at 50/60 Hz	at DC				
A	V	V	V	Article No.	Price per PU		

#### Power regulators



3RF3920-0HA13

#### For 3RF31 and 3RF33 solid-state relays/contactors

20	110 ... 230	24	24	3RF3920-0HA13	1	1 unit	41C
	400 ... 600			3RF3920-0HA16	1	1 unit	41C
50	110 ... 230	24	24	3RF3950-0HA13	1	1 unit	41C
	400 ... 600			3RF3950-0HA16	1	1 unit	41C
90	110 ... 230	24	24	3RF3990-0HA13	1	1 unit	41C
	400 ... 600			3RF3990-0HA16	1	1 unit	41C

#### Accessories

Version	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
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#### Covers



3RF2900-ORA88

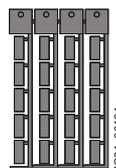
#### Sealable covers for function modules

(not for converters)

For securing against unauthorized adjustment of setting knobs

3RF2900-ORA88 1 10 units 41C

#### Blank labels



3RT2900-1SB20

#### Unit labeling plates

For SIRIUS devices<sup>1)</sup>

- 10 mm × 7 mm, titanium gray
- 20 mm × 7 mm, titanium gray

3RT2900-1SB10 100 816 units 41B  
3RT2900-1SB20 100 340 units 41B

#### Adhesive labels

For SIRIUS devices

19 mm × 6 mm, titanium gray

3RT2900-1SB60 100 3060 units 41B

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).

## Switching devices – Soft starters and solid-state switching devices

### SIRIUS 3RF5 solid-state switching devices for switching resistive DC loads

**NEW** SIRIUS 3RF5 DC solid-state switching devices, 1-pole, 22.5 mm

#### Overview

##### More information

SiePortal, see [www.siemens.com/product\\_catalog\\_siep?3RF](http://www.siemens.com/product_catalog_siep?3RF)

Online configurator, see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators)

Conversion tool, see [www.siemens.com/conversion-tool](http://www.siemens.com/conversion-tool)

#### SIRIUS 3RF5 DC solid-state switching devices



3RF51 solid-state relay, 1-pole, and 3RF53 solid-state contactor, 1-pole

The SIRIUS 3RF5 DC solid-state switching devices reliably switch a wide variety of resistive loads at DC voltages from 24 to 1 350 V.

The following 1-pole versions are available:

- 3RF51 solid-state relays (without heat sink)
- 3RF53 solid-state contactors (integrated heat sink)

The 3RF53 solid-state contactors consist of a solid-state relay with optimized heat sink, and are therefore ready to use. They offer defined operational currents to make selection as easy as possible. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

#### SIRIUS 3RF5 – For virtually infinite activity

Conventional electromechanical switchgear is often overtaxed by the rise in the number of switching operations. A high switching frequency results in frequent failure and short replacement cycles.

However, this does not have to be the case, because with the latest generation of our SIRIUS 3RF5 solid-state switching devices we provide you with solid-state relays and contactors with a particularly long service life – for virtually infinite activity even under the toughest conditions and under high mechanical loading, but also in noise-sensitive areas.

#### Proven time and again in service

SIRIUS 3RF5 solid-state switching devices are primarily used where loads are switched frequently – mainly with resistive loads, e.g. for controlling electric heat.

In addition to its use in areas with high switching frequencies, their silent switching means that solid-state switching devices are also ideally suited for use in noise-sensitive areas, such as offices or hospitals.

#### The most reliable solution for any application

Compared to mechanical switchgear, our SIRIUS 3RF5 solid-state switching devices stand out due to their considerably longer service life. Thanks to the high product quality, their switching is extremely precise, reliable and, above all, unsusceptible to faults.

Due to several versions with different control supply and operational voltages, the 3RF5 solid-state switching devices are universally applicable.

#### Always on the sunny side with SIRIUS

Because SIRIUS 3RF5 offers even more:

- The space-saving and compact side-by-side mounting ensures reliable operation up to an ambient temperature of +60 °C.
- Thanks to fast configuration and the ease of mounting and startup, not only time but also expenses are saved.
- The high permissible operational voltages facilitate use in DC industrial networks, and the versions up to 1 350 V are well equipped for future requirements, e.g. for use in PV systems.

#### **3RF51 solid-state relays (without heat sink) and 3RF53 solid-state contactors (integrated heat sink)**

With its compact design, which stays the same even at currents of up to 23 A, the solid-state relays and contactors with a width of just 22.5 mm offer an ultra-small footprint.

The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet. The control cable can be connected in a space-saving manner by simply plugging it on.

The solid-state relays and contactors are suitable for mounting on existing cooling surfaces. Mounting is quick and easy, involving just two screws. The special technology of the power semiconductor ensures that there is excellent thermal contact with the heat sink. Depending on the nature of the heat sink, the performance capacity reaches up to 23 A on resistive DC loads.

The required heat sinks for the corresponding load currents can be determined from the characteristic curves (see [More information, page 6/170](#)).

Two operational voltages are available:

- 24 to 1 100 V DC
- 24 to 1 350 V DC

#### **Connection methods**

The solid-state switching devices are available with screw terminals.



Screw terminals

The connection method is indicated in the corresponding tables by the symbols shown on orange backgrounds.

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF5 solid-state switching devices for switching resistive DC loads

SIRIUS 3RF5 DC solid-state switching devices, 1-pole, 22.5 mm **NEW**

### Article number scheme

Product versions		Article number									
Device type	<b>Solid-state relays</b>	<b>3RF51</b>	□	□	–	□	□	□	□	□	1-pole, 22.5 mm width
	<b>Solid-state contactors</b>	<b>3RF53</b>	□	□	–	□	□	□	□	□	1-pole, 22.5 mm width
Operational current at DC	e.g. 25 = 23 A	□	□								
Connection type	Screw terminals									<b>1</b>	
Product function	Instantaneous switching										<b>B</b>
Version	1-pole										<b>A</b>
Control supply voltage	24 V DC										<b>4</b>
	110 V DC										<b>6</b>
Operational voltage	24 ... 1 100 V DC										<b>5</b>
	24 ... 1 350 V DC										<b>7</b>
Example		<b>3RF51</b>	<b>2</b>	<b>5</b>	<b>–</b>	<b>1</b>	<b>B</b>	<b>A</b>	<b>4</b>	<b>5</b>	

#### Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

### Benefits

#### Main features

- Compact and space-saving design
- LED display
- Screw terminals with high degree of protection
- Plug-in control connection
- Sustainable product design (EcoTech-certified)

#### Features

- Considerable space savings thanks to a width of only 22.5 mm
- Designed for use at very high line voltages

#### Benefits

- Saves time and costs with fast mounting and commissioning, short startup times and easy wiring
- Extremely long life, low maintenance, rugged and reliable
- Space-saving and safe thanks to side-by-side mounting up to an ambient temperature of +60 °C
- Optimum heat transfer allows small, space-saving heat sinks to be used

### Application

#### Applications

Example: Plastics processing industry

Thanks to their high switching service life, SIRIUS 3RF5 DC solid-state switching devices are ideal for controlling electrical heat. This is because the more precise the temperature regulation process has to be, the higher the switching frequency. The accurate regulation of electrical heat is used for example in many processes in the plastics processing industry:

- Band heaters heat the extrudate to the correct temperature in plastic extruders
- Heat emitters heat plastic blanks to the correct temperature
- Heat drums dry plastic granules
- Heating channels keep molds at the correct temperature in order to manufacture different plastic parts without defects

The powerful 3RF5 solid-state relays and contactors can be used for the simultaneous control of several heating loads.

### More information

#### Notes on integration in the load feeders

The solid-state switching devices for switching resistive DC loads are very easy to integrate into the load feeders thanks to their industrial connection method and design.

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance capacity of the solid-state switching devices is largely dependent on these.

Depending on the version, certain restrictions must be observed. For detailed information, for example in relation to 3RF53 solid-state contactors about the minimum spacing and to 3RF51 solid-state relays about the choice of heat sink, see [technical product data sheets](#), <https://support.industry.siemens.com/cs/ww/en/ps/30004/td>.

#### Short-circuit and overload protection

Despite the rugged power semiconductors that are used, DC solid-state switching devices respond sensitively to short circuits and overload currents in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor protection fuses. These fuses also provide protection against destruction in the event of a short circuit even when the solid-state contactors and solid-state relays are fully utilized.

Additional overload protection may be necessary depending on the class of the fuse. Further details can be found in the technical product data sheets and FAQs, in the knowledge base, see <https://support.industry.siemens.com/cs/ww/en/ps/30004/faq>.

#### Electromagnetic compatibility (EMC)

The solid-state switching devices are suitable for interference-free operation in industrial networks without further measures.

#### Product information and technical specifications

For product data sheets with detailed technical specifications, dimensional drawings and characteristic curves, see <https://support.industry.siemens.com/cs/ww/en/ps/30004/td>.

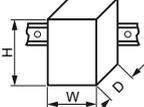
For more information, please enter the article number of the required device under the tab "Product List".

## Switching devices – Soft starters and solid-state switching devices

### SIRIUS 3RF5 solid-state switching devices for switching resistive DC loads

**NEW** SIRIUS 3RF5 DC solid-state switching devices, 1-pole, 22.5 mm

#### Technical specifications

More information					
Manuals, see <a href="https://support.industry.siemens.com/cs/ww/en/ps/30004/man">https://support.industry.siemens.com/cs/ww/en/ps/30004/man</a>		FAQs, see <a href="https://support.industry.siemens.com/cs/ww/en/ps/30004/faq">https://support.industry.siemens.com/cs/ww/en/ps/30004/faq</a>			
Article number		<b>3RF5125-1BA..</b>	<b>3RF5315-1BA..</b>	<b>3RF5325-1BA..</b>	
General technical specifications					
<b>Dimensions (W x H x D)</b>		mm	22.5 x 95 x 51	22.5 x 95 x 92	22.5 x 95 x 124
					
<b>Ambient temperature</b>					
• During operation	°C	-25 ... +60			
• During storage	°C	-55 ... +80			
<b>Derating temperature</b>	°C	40			
<b>Installation altitude at height above sea level, maximum</b>	m	1 000			
<b>Shock resistance according to IEC 60068-2-27</b>		15 g/11 ms			
<b>Vibration resistance according to IEC 60068-2-6</b>		2 g			
<b>Degree of protection IP on the front according to IEC 60529</b>		IP20			
<b>Touch protection on the front according to IEC 60529</b>		Finger-safe for vertical touching from the front			
<b>Conducted RF interference emission according to CISPR11</b>		Class A for industrial applications			
<b>Radiated RF interference emission according to CISPR11</b>		Class B for residential, business and commercial applications			
<b>Electrostatic discharge according to IEC 61000-4-2</b>		4 kV contact-mode discharge/8 kV air discharge, behavior criterion 2			
<b>Conducted interference</b>					
• Due to radio frequency radiation according to IEC 61000-4-6		140 dBuV in the frequency range 0.15 ... 80 MHz, behavior criterion 1			
• Due to burst according to IEC 61000-4-4		2 kV/5 kHz, behavior criterion 2			
• Due to conductor-ground surge according to IEC 61000-4-5		2 kV, behavior criterion 2			
• Due to conductor-conductor surge according to IEC 61000-4-5		1 kV, behavior criterion 2			
Article number		<b>3RF5.15-1BA.5</b>	<b>3RF5.25-1BA.5</b>	<b>3RF5125-1BA47</b>	<b>3RF5315-1BA47</b>
Main circuit					
<b>Operational voltage at DC</b>	V	24 ... 1 100		24 ... 1 350	
<b>Voltage peak, maximum</b>	V	1 270		1 500	
<b>Duration of voltage peak</b>	ms	20			
<b>Operational current</b>					
• Minimum	mA	1			
• At 40 °C	A	16	23	17	15
• According to UL 508	A	15	17.5	10.5	
• At DC					
- At 600 V	A	16	23	17	15
- At 1 100 V	A	16	18.5	17	15
- At 1 350 V	A	--	--	11	
Article number		<b>3RF5..5-1BA4.</b>		<b>3RF5..5-1BA6.</b>	
Control circuit					
<b>Type of voltage of the control supply voltage</b>		DC			
<b>Control supply voltage at DC</b>	V	24		110	

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF5 solid-state switching devices for switching resistive DC loads

### SIRIUS 3RF5 DC solid-state switching devices, 1-pole, 22.5 mm **NEW**

Article number	3RF5..5-1BA..	
<b>Main circuit</b>		
Type of electrical connection	 Screw terminals	
<b>Connectable conductor cross-section</b>		
• Solid or stranded	mm <sup>2</sup>	1.5 ... 6
• Finely stranded with end sleeve	mm <sup>2</sup>	1 ... 10
<b>Type of connectable conductor cross-sections</b>		
• Solid		2x (1.5 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> )
• Finely stranded with end sleeve		2x (1 ... 2.5 mm <sup>2</sup> ), 2x (2.5 ... 6 mm <sup>2</sup> ), 1x 10 mm <sup>2</sup>
• For AWG cables		2x (14 ... 10)
<b>AWG number as coded connectable conductor cross-section</b>		14 ... 10
<b>Tightening torque</b>	Nm	2 ... 2.5
<b>Control circuit</b>		
Type of electrical connection	 Screw terminals	
<b>Type of connectable conductor cross-sections</b>		
• Solid		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• Finely stranded		
- With end sleeve		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
- Without end sleeve		1x (0.5 ... 2.5 mm <sup>2</sup> ), 2x (0.5 ... 1 mm <sup>2</sup> )
• For AWG cables		1x (20 ... 12)
<b>AWG number as coded maximum connectable conductor cross-section</b>		12
<b>Tightening torque</b>	Nm	0.5 ... 0.6

### Selection and ordering data

#### Selection notes

In order to select the 3RF5 solid-state switching devices for switching resistive DC loads, knowledge of the planned design is required in addition to information about the network, load, control and ambient conditions.

#### 3RF51 solid-state relays

They can only conform to their specific technical specifications if they are mounted with appropriate care on an adequately dimensioned heat sink.

Mounting solid-state relays directly on a mounting plate made of sheet steel is inadequate in terms of heat dissipation.

The following procedure is recommended:

- Determine the rated current of the load and the line voltage
- Select a solid-state relay with a higher rated current than the load and with a higher rated voltage than the load and the mains
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the characteristic curves (see the technical product data sheets of the relevant solid-state relay) taking into account the thermal resistance of the heat sink
- Select the desired control supply voltage

#### DC solid-state switching devices (without heat sink)

#### 3RF53 solid-state contactors

These complete units consist of a solid-state contactor with optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible.

Solid-state contactors are designed for easy use on mounting plates or DIN rails. The selection is much easier.

The following procedure is recommended:

- Determine the operational current of the load and the line voltage
- Select a solid-state contactor with a higher operational current than the load and with a higher rated voltage than the load and the mains
- Select the desired control supply voltage

Operational current at DC		Control supply voltage at DC		Screw terminals 		PU (UNIT, SET, M)	PS*	PG
A	V	Article No.	Price per PU					
<b>Operational voltage 24 ... 1 100 V DC</b>								
<b>3RF51 solid-state relay, instantaneous switching</b>								
	23	24	3RF5125-1BA45	1	1 unit	42N		
		110		3RF5125-1BA65	1		1 unit	42N
<b>3RF53 solid-state contactors, instantaneous switching</b>								
	16	24	3RF5315-1BA45	1	1 unit	42N		
		110		3RF5315-1BA65	1		1 unit	42N
	23	24	3RF5325-1BA45	1	1 unit	42N		
		110		3RF5325-1BA65	1		1 unit	42N
<b>Operational voltage 24 ... 1 350 V DC</b>								
<b>3RF51 solid-state relay, instantaneous switching</b>								
	17	24	3RF5125-1BA47	1	1 unit	42N		
<b>3RF53 solid-state contactors, instantaneous switching</b>								
	15	24	3RF5315-1BA47	1	1 unit	42N		

#### Notes:

Please observe the ambient conditions (see selection notes above).  
For derating characteristics, see technical product data sheets.  
For more information, see page 6/170.

Other control supply voltages on request.

Accessories, see next page.

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF5 solid-state switching devices for switching resistive DC loads



### SIRIUS 3RF5 DC solid-state switching devices, 1-pole, 22.5 mm **NEW**

#### Accessories

Version	For solid-state switching devices	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
<b>Control connectors</b>							
 3RF3900-1TA88	<b>Replacement control connectors</b> For solid-state relays and solid-state contactors With screw terminals	3RF51, 3RF53	<b>Screw terminals</b> 		1	50 units	41C
			<b>3RF3900-1TA88</b>				
 3RF3900-2TB88	<b>Replacement control connector</b> For solid-state relays and solid-state contactors With spring-loaded terminals, With two clamping points per contact	3RF51, 3RF53	<b>Spring-loaded terminals</b> 		1	10 units	41C
			<b>3RF3900-2TB88</b>				

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF34 solid-state switching devices for switching motors

Solid-state contactors

General data

### Overview

#### More information

SiePortal, see [www.siemens.com/product\\_catalog\\_siep?3RF](http://www.siemens.com/product_catalog_siep?3RF)

Online configurator, see [www.siemens.com/sirius/configurators](http://www.siemens.com/sirius/configurators)

Conversion tool, see [www.siemens.com/conversion-tool](http://www.siemens.com/conversion-tool)

#### SIRIUS 3RF34 solid-state contactors for switching motors



3RF34 solid-state contactors, 3-pole for direct-on-line starting

The solid-state contactors for switching motors are intended for frequently switching on and off three-phase current operating mechanisms up to 7.5 kW and reversing up to 3 kW. The devices are constructed with complete insulation and can be mounted directly on SIRIUS motor starter protectors, overload relays and current monitoring relays, resulting in a very simple integration into motor feeders.

These complete units consist of a solid-state contactor with optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

These 3-pole solid-state contactors are equipped with a 2-pole control which is particularly suitable for typical motor current circuits without connecting to the neutral conductor.

Solid-state contactors for switching motors are available in two versions:

- SIRIUS 3RF34..-BB.. solid-state contactors, 3-pole: These 2-pole controlled, instantaneous switching solid-state contactors in the insulating enclosure are offered in width 45 mm up to 5.2 A – and in width 90 mm up to 16 A. They allow the operation of motors up to 7.5 kW.
- SIRIUS 3RF34..-BD.. solid-state reversing contactors, 3-pole: The integration of four conducting paths to a reverse switch, combined in one enclosure, makes this device a particularly compact solution. Compared to conventional systems, for which two contactors are required, it is possible to save up to 50% in width with the 3-pole solid-state reversing contactors. Devices with a width of 45 mm cover motors up to 2.2 kW – and those with a width of 90 mm cover motors up to 3 kW.

#### Note:

In accordance with the product standard IEC 60947-4-2, the motor contactors are designed for motors with maximum starting current conditions of  $I/I_e \leq 8$ . For configuring motors with higher starting current conditions (typically  $I/I_e > 8$ ), the data in the Equipment Manual must be taken into account, see <https://support.industry.siemens.com/cs/ww/en/view/60298187>.

#### Switching functions

The solid-state contactors for switching motors are "instantaneous switching", because this method is particularly suited for inductive loads. By distributing the ON point over the entire sine curve of the line voltage, disturbances are reduced to a minimum.

#### Connection methods

The solid-state contactors are available with screw or spring-loaded terminals.



Screw terminals



Spring-loaded terminals

The connection method is indicated in the corresponding tables by the symbols shown on orange backgrounds.

#### Motor feeders

The devices can use a link module to directly connect to a motor starter protector. Also possible is the mounting of a 3RB30/3RB31 electronic overload relay (see page 7/90 onwards) or a 3RR2 current monitoring relay (see pages 10/57 and 10/65) using a link adapter. The simultaneous mounting of a motor starter protector and an overload or current monitoring relay is not recommended for space and heat development reasons.

Rapid-switching fuseless and fused motor feeders can thereby be implemented in a time-saving manner.

#### Short-circuit protection

Despite the rugged power semiconductors that are used, solid-state switching devices respond more sensitively to short circuits in the load feeder. Consequently, special precautions have to be taken against destruction, depending on the type of design.

Siemens generally recommends using SITOR semiconductor fuses. These fuses also provide protection against destruction in the event of a short circuit even when the solid-state contactors and solid-state relays are fully utilized.

Alternatively, if there is lower loading, protection can also be provided by standard fuses or miniature circuit breakers. This protection is achieved by overdimensioning the solid-state switching devices accordingly.

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF34 solid-state switching devices for switching motors

Solid-state contactors

### General data

#### Article number scheme

Product versions	Article number		
Device type	<b>Solid-state contactors</b>	<b>3RF34</b> □ □ – □ □ <b>B</b> □ □	3-pole, 2-pole controlled
	<b>Solid-state reversing contactors</b>	<b>3RF34</b> □ □ – □ □ <b>D</b> □ □	3-pole, 2-pole controlled
Rated operational current	3.8 A	<b>0 3</b>	Only for solid-state reversing contactor
	5.2 A (5.4 A for solid-state reversing contactor)	<b>0 5</b>	
	9.2 A (7.4 A for solid-state reversing contactor)	<b>1 0</b>	
	12.5 A	<b>1 2</b>	
	16 A	<b>1 6</b>	
Connection type	Screw terminals	<b>1</b>	
	Spring-loaded terminals	<b>2</b>	
Product function	Instantaneous switching	<b>B</b>	
Rated control supply voltage $U_s$	24 V DC	<b>0</b>	
	110 ... 230 V AC	<b>2</b>	
Rated operational voltage $U_e$	48 ... 480 V AC	<b>4</b>	Blocking voltage 1 200 V
	48 ... 600 V AC	<b>6</b>	Blocking voltage 1 600 V, solid-state contactor only
Example	<b>3RF34 1 6 – 1 B B 0 6</b>		

#### Note:

The article number scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

### Benefits

- Insulated enclosure with integrated heat sink, "ready to use"
- Compact and space-saving design
- Solid-state reversing contactors with integrated interlock
- High degree of protection
- Integrated mounting foot for snapping onto a DIN rail or for mounting on a support plate
- Variety of connection methods
- Plug-in control connection
- Display via LEDs
- Wide voltage range for AC rated control supply voltage

### Application

#### Use in load feeders

There is no typical design of a load feeder with solid-state relays or solid-state contactors; instead, the great variety of connection methods and control voltages offers universal application opportunities.

SIRIUS solid-state relays and solid-state contactors can be installed in fuseless or fused feeders, as required.

#### See

- Digital Configuration Manual for load feeders
- Configuration Manual for load feeders

#### Standards and approvals

- IEC 60947-4-2
  - UL 508, CSA for North America<sup>1)</sup>
  - CE marking for Europe
  - C-Tick licensing for Australia
  - CCC approval for China
- <sup>1)</sup> Please note: Use overvoltage protection device; max. cut-off-voltage 6 000 V; min. energy handling capability 100 J.

# Switching devices – Soft starters and solid-state switching devices

## SIRIUS 3RF34 solid-state switching devices for switching motors

### Solid-state contactors

#### General data

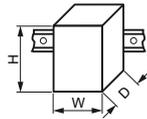
#### Technical specifications

##### More information

Equipment Manual, see <https://support.industry.siemens.com/cs/ww/en/view/60298187>

FAQs, see <https://support.industry.siemens.com/cs/ww/en/ps/16237/faq>

Type	3RF3405-1BB... 3RF3403-1BD... 3RF3405-1BD..	3RF3410-1BB... 3RF3412-1BB... 3RF3416-1BB... 3RF3410-1BD..	3RF3405-2BB..	3RF3410-2BB... 3RF3412-2BB... 3RF3416-2BB..
Dimensions (W x H x D)				
• 3RF34..-1BB..	mm	mm	mm	mm
• 3RF34..-1BD..	45 x 95 x 96.5	90 x 95 x 96.5	45 x 95 x 96.5	90 x 95 x 96.5
	45 x 95 x 108.5	90 x 95 x 108.5	--	--



##### General technical specifications

<b>Ambient temperature</b>				
• During operation, derating from 40 °C	°C	-25 ... +60		
• During storage	°C	-55 ... +80		
<b>Installation altitude</b>	m	0 ... 1 000; derating over 1 000 m on request		
<b>Shock resistance</b> according to IEC 60068-2-27	g/ms	15/11		
<b>Vibration resistance</b> according to IEC 60068-2-6	g	2		
<b>Degree of protection IP on the front</b> according to IEC 60529		IP20		
<b>Touch protection on the front</b> according to IEC 60529		Finger-safe for vertical touching from the front		
<b>Insulation strength</b> at 50/60 Hz (main/control circuit to floor)	V rms	4 000		
<b>Electromagnetic compatibility (EMC)</b>				
• Emitted interference according to IEC 60947-4-2				
- Conducted disturbance voltage				Class A for industrial applications <sup>1)</sup>
- Radiated radio frequency disturbance voltage				Class A for industrial applications
• Interference immunity				
- Electrostatic discharge according to IEC 61000-4-2 (corresponds to test level 3)	kV	Contact-mode discharge: 4; air discharge: 8; Behavior criterion 2		
- Induced RF fields according to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst according to IEC 61000-4-4	kV	2; at 5 kHz, behavior criterion 2		
- Surge according to IEC 61000-4-5 <sup>2)</sup>	kV	Conductor-ground 2; conductor-conductor 1, behavior criterion 2		
<b>Connection type</b>		<b>Screw terminals</b>	<b>Spring-loaded terminals</b>	
<b>Operating device</b>		Standard screwdriver size 2 and Pozidriv 2	3.0 x 0.5 and 3.5 x 0.5	
<b>Conductor cross-sections, main contacts</b>				
• Solid	mm <sup>2</sup>	2 x (1.5 ... 2.5) <sup>3)</sup> , 2 x (2.5 ... 6) <sup>3)</sup>	2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm <sup>2</sup>	2 x (1 ... 2.5) <sup>3)</sup> , 2 x (2.5 ... 6) <sup>3)</sup> , 1 x 10	2 x (0.5 ... 1.5)	
• Finely stranded without end sleeve	mm <sup>2</sup>	--	2 x (0.5 ... 2.5)	
• AWG cables, solid or stranded	AWG	2 x (14 ... 10)	2 x (18 ... 14)	
<b>Conductor cross-sections, auxiliary/control contacts</b>				
• With/without end sleeve	mm <sup>2</sup>	1 x (0.5 ... 2.5), 2 x (0.5 ... 1)	0.5 ... 2.5	
• AWG cables, solid or stranded	AWG	20 ... 12	20 ... 12	
<b>Permissible mounting position</b>				

<sup>1)</sup> These products were built as Class A devices. The use of these devices in residential areas could result in radio interference. In this case it may be required to introduce additional interference suppression measures.

<sup>2)</sup> For solid-state reversing contactors: To maintain the values, a 3TX7462-3L surge suppressor should be used between phases L1 and L3 as close as possible to the solid-state reversing contactor.

<sup>3)</sup> If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

##### More information

For more detailed information, see [Equipment Manual, https://support.industry.siemens.com/cs/ww/en/view/60298187](https://support.industry.siemens.com/cs/ww/en/view/60298187).

##### Product information and technical specifications

For product data sheets with detailed technical specifications and dimensional drawings, see <https://support.industry.siemens.com/cs/ww/en/ps/16237/td>.

For more information, please enter the article number of the required device under the tab "Product List".

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF34 solid-state switching devices for switching motors

Solid-state contactors

### SIRIUS 3RF34 solid-state contactors, 3-pole

#### Technical specifications

More information							
Equipment Manual, see <a href="https://support.industry.siemens.com/cs/ww/en/view/60298187">https://support.industry.siemens.com/cs/ww/en/view/60298187</a>				FAQs, see <a href="https://support.industry.siemens.com/cs/ww/en/ps/16237/faq">https://support.industry.siemens.com/cs/ww/en/ps/16237/faq</a>			
Type		3RF3405-.BB..	3RF3410-.BB..	3RF3412-.BB..	3RF3416-.BB..		
<b>Fuseless design with 3RV2 motor starter protector, Class 10</b>							
<b>Rated operational current <math>I_{AC-53a}</math><sup>1)</sup></b> according to IEC 60947-4-2							
• At 40 °C	A	5.2 (4.5)	9.2	12.5	16		
• UL/CSA, at 50 °C	A	4.6 (4.0)	8.4	11.5	14		
• At 60 °C	A	4.2 (3.5)	7.6	10.5	12.5		
<b>Power loss at <math>I_{AC-53a}</math></b>							
• At 40 °C	W	10 (8)	16	22	28		
<b>Short-circuit protection with type of coordination "1"</b> At operational voltage $U_e$ up to 440 V							
• Motor starter protectors/circuit breakers	Type	3RV2011-1GA10	3RV2011-1JA10	3RV2011-1KA10	3RV2011-4AA10		
• Current $I_q$	kA	50	5		3		
<sup>1)</sup> The reduced values in brackets apply to a directly mounted motor starter protector and simultaneous side-by-side mounting.							
Type		3RF3405-.BB.4	3RF3405-.BB.6	3RF3410-.BB..	3RF3412-.BB.4	3RF3412-.BB.6	3RF3416-.BB..
<b>Fused design with directly connected 3RB3 overload relay</b>							
<b>Rated operational current <math>I_{AC-53a}</math></b> according to IEC 60947-4-2							
• At 40 °C	A	4		7.8	9.5		11
• UL/CSA, at 50 °C	A	3.6		7	8.5		10
• At 60 °C	A	3.2		6.2	7.6		9
<b>Power loss at <math>I_{AC-53a}</math></b>							
• At 40 °C	W	7		13	16		18
<b>Minimum load current</b>	A	0.1	0.5				
<b>Max. off-state current</b>	mA	10					
Type		3RF34...-BB.4			3RF34...-BB.6		
<b>Main circuit</b>							
<b>Controlled phases</b>							
2-pole							
<b>Rated operational voltage <math>U_e</math></b>							
V AC		48 ... 480			48 ... 600		
• Operating range	V AC	40 ... 506			40 ... 660		
• Rated frequency	Hz	50/60 ± 10%			50/60 ± 10%		
<b>Rated insulation voltage <math>U_i</math></b>	V	600			600		
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>	kV	6			6		
<b>Blocking voltage</b>	V	1 200			1 600		
<b>Rate of voltage rise</b>	V/μs	1 000			1 000		
Type		3RF34...-BB0.			3RF34...-BB2.		
<b>Control circuit</b>							
<b>Method of operation</b>							
DC operation							
AC operation							
<b>Rated control supply voltage <math>U_s</math></b>	V	24			110 ... 230		
<b>Rated frequency of the control supply voltage</b>	Hz	--			50/60 ± 10%		
<b>Control supply voltage, max.</b>	V	30			253		
<b>Typical actuating current</b>	mA	20			15		
<b>Response voltage</b>	V	15			90		
<b>Drop-out voltage</b>	V	5			< 40		
<b>Operating times</b>							
• ON-delay	ms	1			5		
• OFF-delay	ms	1 + max. one half-wave			30 + max. one half-wave		

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF34 solid-state switching devices for switching motors

Solid-state contactors

IE3/IE4 ready

SIRIUS 3RF34 solid-state contactors, 3-pole

## Selection and ordering data

## Selection notes

The solid-state contactors are selected on the basis of details of the network, the load and the ambient conditions.

The following procedure is recommended:

- Determine the rated current of the load and the line voltage
- Select a solid-state contactor with the same or higher rated current than the load

- Test the maximum permissible switching frequency based on the characteristic curves (see [Equipment Manual](#)). To do this, the starting current, the starting time and the motor load in the operating phase must be known.
- If the permissible switching frequency is under the desired frequency, it is possible to achieve an increase only by overdimensioning the motor and the solid-state contactor!

The correct device size can be determined by entering the network and motor data along with the application and ambient conditions.

## Solid-state contactors

Rated operational current $I_e$	Rated power at $I_e$ and $U_e$	Rated control supply voltage $U_s$	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
A	400 V kW	V	Article No.	Price per PU		
<b>Rated operational voltage <math>U_e</math> 48 ... 480 V AC</b>						
<b>Instantaneous switching, 2-pole controlled</b>						
5.2	2.2	24 DC	3RF3405-1BB04	1	1 unit	41C
9.2	4.0		3RF3410-1BB04	1	1 unit	41C
12.5	5.5		3RF3412-1BB04	1	1 unit	41C
16	7.5		3RF3416-1BB04	1	1 unit	41C
5.2	2.2	110 ... 230 AC	3RF3405-1BB24	1	1 unit	41C
9.2	4.0		3RF3410-1BB24	1	1 unit	41C
12.5	5.5		3RF3412-1BB24	1	1 unit	41C
16	7.5		3RF3416-1BB24	1	1 unit	41C



3RF3405-1BB..

Rated operational current $I_e$	Rated power at $I_e$ and $U_e$	Rated control supply voltage $U_s$	Spring-loaded terminals 	PU (UNIT, SET, M)	PS*	PG
A	400 V kW	V	Article No.	Price per PU		
<b>Rated operational voltage <math>U_e</math> 48 ... 600 V AC</b>						
<b>Instantaneous switching, 2-pole controlled, high blocking voltage</b>						
5.2	2.2	24 DC	3RF3405-1BB06	1	1 unit	41C
9.2	4.0		3RF3410-1BB06	1	1 unit	41C
12.5	5.5		3RF3412-1BB06	1	1 unit	41C
16	7.5		3RF3416-1BB06	1	1 unit	41C
5.2	2.2	110 ... 230 AC	3RF3405-1BB26	1	1 unit	41C
9.2	4.0		3RF3410-1BB26	1	1 unit	41C
12.5	5.5		3RF3412-1BB26	1	1 unit	41C
16	7.5		3RF3416-1BB26	1	1 unit	41C



3RF341.-1BB..

Other rated control supply voltages on request.

Accessories, see page 6/182.

Rated operational current $I_e$	Rated power at $I_e$ and $U_e$	Rated control supply voltage $U_s$	Spring-loaded terminals 	PU (UNIT, SET, M)	PS*	PG
A	400 V kW	V	Article No.	Price per PU		
<b>Rated operational voltage <math>U_e</math> 48 ... 480 V AC</b>						
<b>Instantaneous switching, 2-pole controlled</b>						
5.2	2.2	24 DC	3RF3405-2BB04	1	1 unit	41C
9.2	4.0		3RF3410-2BB04	1	1 unit	41C
12.5	5.5		3RF3412-2BB04	1	1 unit	41C
16	7.5		3RF3416-2BB04	1	1 unit	41C
5.2	2.2	110 ... 230 AC	3RF3405-2BB24	1	1 unit	41C
9.2	4.0		3RF3410-2BB24	1	1 unit	41C
12.5	5.5		3RF3412-2BB24	1	1 unit	41C
16	7.5		3RF3416-2BB24	1	1 unit	41C



3RF3405-2BB..

Rated operational current $I_e$	Rated power at $I_e$ and $U_e$	Rated control supply voltage $U_s$	Spring-loaded terminals 	PU (UNIT, SET, M)	PS*	PG
A	400 V kW	V	Article No.	Price per PU		
<b>Rated operational voltage <math>U_e</math> 48 ... 600 V AC</b>						
<b>Instantaneous switching, 2-pole controlled, high blocking voltage</b>						
5.2	2.2	24 DC	3RF3405-2BB06	1	1 unit	41C
9.2	4.0		3RF3410-2BB06	1	1 unit	41C
12.5	5.5		3RF3412-2BB06	1	1 unit	41C
16	7.5		3RF3416-2BB06	1	1 unit	41C
5.2	2.2	110 ... 230 AC	3RF3405-2BB26	1	1 unit	41C
9.2	4.0		3RF3410-2BB26	1	1 unit	41C
12.5	5.5		3RF3412-2BB26	1	1 unit	41C
16	7.5		3RF3416-2BB26	1	1 unit	41C



3RF341.-2BB..

Other rated control supply voltages on request.

Accessories, see page 6/182.

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF34 solid-state switching devices for switching motors

Solid-state contactors

### SIRIUS 3RF34 solid-state reversing contactors, 3-pole

#### Technical specifications

More information				
Equipment Manual, see <a href="https://support.industry.siemens.com/cs/ww/en/view/60298187">https://support.industry.siemens.com/cs/ww/en/view/60298187</a>		FAQs, see <a href="https://support.industry.siemens.com/cs/ww/en/ps/16237/faq">https://support.industry.siemens.com/cs/ww/en/ps/16237/faq</a>		
Type		3RF3403-.BD.4	3RF3405-.BD.4	3RF3410-.BD.4
<b>Fuseless design with 3RV2 motor starter protector, Class 10</b>				
<b>Rated operational current <math>I_{AC-53a}</math><sup>1)</sup></b> according to IEC 60947-4-2				
	A	3.8 (3.4)	5.4 (4.8)	7.4
• At 40 °C	A	3.5 (3.1)	5 (4.3)	6.8
• UL/CSA, at 50 °C	A	3.2 (2.8)	4.6 (3.8)	6.2
• At 60 °C				
<b>Power loss at <math>I_{AC-53a}</math></b>				
• At 40 °C	W	7 (6)	9 (8)	13
<b>Short-circuit protection with type of coordination "1"</b> At operational voltage $U_e$ up to 440 V				
• Motor starter protectors/circuit breakers	Type	3RV2011-1FA10	3RV2011-1GA10	3RV2011-1JA10
• Current $I_q$	kA	50		10
1) The reduced values in brackets apply to a directly mounted motor starter protector and simultaneous side-by-side mounting.				
Type		3RF3403-.BD.4	3RF3405-.BD.4	3RF3410-.BD.4
<b>Fused design with directly connected 3RB3 overload relay</b>				
<b>Rated operational current <math>I_{AC-53a}</math></b> according to IEC 60947-4-2				
	A	3.8	5.4	7.4
• At 40 °C	A	3.5	5	6.8
• UL/CSA, at 50 °C	A	3.2	4.6	6.2
• At 60 °C				
<b>Power loss at <math>I_{AC-53a}</math></b>				
• At 40 °C	W	6	8	16
<b>Minimum load current</b>				
	A	0.5		
<b>Max. off-state current</b>				
	mA	10		
Type		3RF34...-BD.4		
<b>Main circuit</b>				
<b>Controlled phases</b>				
		2-pole		
<b>Rated operational voltage <math>U_e</math><sup>1)</sup></b>				
	V AC	48 ... 480		
• Operating range	V AC	40 ... 506		
• Rated frequency	Hz	50/60 ± 10%		
<b>Rated insulation voltage <math>U_i</math></b>				
	V	600		
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>				
	kV	6		
<b>Blocking voltage</b>				
	V	1 200		
<b>Rate of voltage rise</b>				
	V/μs	1 000		
1) To reduce the risk of a phase short circuit due to overvoltage, we recommend using a varistor type 3TX7462-3L between the phases L1 and L3 as close as possible to the switchgear. We recommend a design with semiconductor protection as short-circuit protection.				
Type		3RF34...-BD0.	3RF34...-BD2.	
<b>Control circuit</b>				
<b>Method of operation</b>				
		DC operation	AC operation	
<b>Rated control supply voltage <math>U_e</math></b>				
	V	24	110 ... 230	
<b>Rated frequency</b> of the rated control supply voltage				
	Hz	--	50/60 ± 10%	
<b>Control supply voltage, maximum</b>				
	V	30	253	
<b>Typical actuating current</b>				
	mA	15	10	
<b>Response voltage</b>				
	V	15	90	
<b>Drop-out voltage</b>				
	V	5	< 40	
<b>Operating times<sup>1)</sup></b>				
• ON-delay	ms	5	20	
• OFF-delay	ms	5 + max. one half-wave	10 + max. one half-wave	
• Interlock time	ms	60 ... 100	50 ... 100	
1) Notice! Risk of phase short circuit in automatic mode. The control inputs must not be actuated until a delay of 40 ms has expired after the main voltage is applied.				

## Switching devices – Soft starters and solid-state switching devices

SIRIUS 3RF34 solid-state switching devices for switching motors

Solid-state contactors

IE3/IE4 ready

SIRIUS 3RF34 solid-state reversing contactors, 3-pole

### Selection and ordering data

#### Selection notes

The solid-state reversing contactors are selected based on the details provided regarding network, load and ambient conditions.

The following procedure is recommended:

- Determine the rated current of the load and the line voltage
- Select a solid-state contactor with the same or higher rated current than the load

- Test the maximum permissible switching frequency based on the characteristic curves (see [More information, page 6/177](#)). To do this, the starting current, the starting time and the motor load in the operating phase must be known.
- If the permissible switching frequency is under the desired frequency, it is possible to achieve an increase only by overdimensioning the motor and the solid-state contactor!

The correct device size can be determined by entering the network and motor data along with the application and ambient conditions.

#### Solid-state reversing contactors

Rated operational current $I_e$	Rated power at $I_e$ and $U_e$	Rated control supply voltage $U_s$	Screw terminals 	PU (UNIT, SET, M)	PS*	PG
A	400 V kW	V	Article No.	Price per PU		
<b>Rated operational voltage <math>U_e</math> 48 ... 480 V AC</b>						
<b>Instantaneous switching, 2-pole controlled</b>						
3.8	1.5	24 DC	<b>3RF3403-1BD04</b>	1	1 unit	41C
5.4	2.2		<b>3RF3405-1BD04</b>	1	1 unit	41C
7.4	3		<b>3RF3410-1BD04</b>	1	1 unit	41C
3.8	1.5	110 ... 230 AC	<b>3RF3403-1BD24</b>	1	1 unit	41C
5.4	2.2		<b>3RF3405-1BD24</b>	1	1 unit	41C
7.4	3		<b>3RF3410-1BD24</b>	1	1 unit	41C



3RF340.-1BD.4



3RF3410-1BD.4

Other rated control supply voltages on request.

Accessories, see [page 6/182](#).

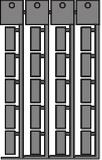
## Switching devices – Soft starters and solid-state switching devices

### SIRIUS 3RF34 solid-state switching devices for switching motors

#### Solid-state contactors

#### Accessories

#### Selection and ordering data

Version	For solid-state switching devices	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
<b>Control connectors <span style="color: orange;">NEW</span></b>						
	<b>Replacement control connectors</b> For solid-state contactors with screw terminals	3RF34..-1B...	<b>Screw terminals</b> <b>3RF3900-1TA88</b>	1	50 units	41C
3RF3900-1TA88						
<b>Link modules between solid-state contactor and motor starter protector</b>						
	<b>Link module</b> Between solid-state contactor and motor starter protector with screw terminals For 3RV2 motor starter protectors, size S00/S0	3RF34..-1B...	<b>3RA2921-1BA00</b>	1	1 unit	41B
3RA2921-1BA00						
<b>Link adapters between solid-state contactor and overload relay</b>						
	<b>Link adapter</b> For direct mounting of 3RB3 overload relays or 3RR2 current monitoring relays onto the solid-state contactor with screw terminals The adapter is snapped onto the enclosure of the 3RF34 solid-state contactor and accommodates the fastening hooks of the 3RB3 overload relays or the 3RR2 current monitoring relays for direct mounting.	3RF34..-1B...	<b>3RF3900-0QA88</b>	1	1 unit	41C
3RF3900-0QA88						
<b>Control connectors <span style="color: orange;">NEW</span></b>						
	<b>Replacement control connector</b> For solid-state contactors with spring-loaded terminals, with two clamping points per contact	3RF34..-2BB..	<b>Spring-loaded terminals</b> <b>3RF3900-2TB88</b>	10	1 unit	41C
3RF3900-2TB88						
<b>Insulation stops for securely holding back the conductor insulation, on conductors up to 1 mm<sup>2</sup></b>						
	<b>Insulation stop strips</b> For all SIRIUS devices with spring-loaded terminals Can be inserted in the cable entry of the spring-loaded terminal (no more than two strips per solid-state contactor required; removable in pairs) for terminals with a conductor cross-section up to 2.5 mm <sup>2</sup>	3RF34..-2BB..	<b>3RT2916-4JA02</b>	1	20 units	41B
3RT2916-4JA02						
<b>Tools for opening spring-loaded terminals</b>						
	<b>Screwdriver</b> For all SIRIUS devices with spring-loaded terminals Length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated	3RF34..-2BB..	<b>3RA2908-1A</b>	1	1 unit	41B
3RA2908-1A						
<b>Blank labels</b>						
	<b>Unit labeling plates</b> For SIRIUS devices <sup>1)</sup> 10 mm x 7 mm, titanium gray 20 mm x 7 mm, titanium gray	3RF34..-B..	<b>3RT2900-1SB10</b> <b>3RT2900-1SB20</b>	100	816 units	41B
3RT2900-1SB20				100	340 units	41B
	<b>Adhesive labels</b> For SIRIUS devices 19 mm x 6 mm, titanium gray	3RF34..-B..	<b>3RT2900-1SB60</b>	100	3060 units	41B

<sup>1)</sup> PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH (see page 16/18).