

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW30

Overview

The SIRIUS 3RW30 soft starters reduce the motor voltage through variable phase control and increase it in ramp-like mode from a selectable starting voltage up to mains voltage. During starting, these devices limit the torque as well as the current and prevent the shocks which arise during direct starts or wye-delta starts. In this way, mechanical loads and mains voltage dips can be reliably reduced.

Soft starting reduces the stress on the connected equipment and results in lower wear and therefore longer periods of trouble-free production. The selectable start value means that the soft starters can be adjusted individually to the requirements of the application in question and unlike wye-delta starters are not restricted to two-stage starting with fixed voltage ratios.

The SIRIUS 3RW30 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that no power loss has to be taken into the bargain at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

Various versions of the SIRIUS 3RW30 soft starters are available:

- Standard version for fixed-speed three-phase motors, sizes S00, S0, S2 and S3, with integrated bypass contact system
- Version for fixed-speed three-phase motors in a 22.5 mm enclosure without bypass

Soft starters rated up to 55 kW (at 400 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and simple commissioning are just three of the many advantages of this soft starter.

Functionality

The space required by the compact SIRIUS 3RW30 soft starter is often only about one third of that required by a contactor assembly for wye-delta starting of comparable rating. This not only saves space in the control cabinet and on the standard mounting rail but also does away completely with the wiring work needed for wye-delta starters. This is notable in particular for higher motor ratings which are only rarely available as fully wired solutions.

At the same time the number of cables from the starter to the motor is reduced from six to three. Compact dimensions, short start-up times, easy wiring and fast commissioning make themselves felt as clear-cut cost advantages.

The bypass contacts of these soft starters are protected during operation by an integrated solid-state arc quenching system. This prevents damage to the bypass contacts in the event of a fault, e.g. brief disconnection of the control voltage, mechanical shocks or life-related component defects on the coil operating mechanism or main contact spring.

The new series of devices comes with the "polarity balancing" control method, which is designed to prevent direct current components in two-phase controlled soft starters. On two-phase controlled soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. This results for physical reasons in an asymmetric distribution of the three phase currents during the motor ramp-up. This phenomenon cannot be influenced, but in most applications it is non-critical.

Controlling the power semiconductors results not only in this asymmetry, however, but also in the previously mentioned direct current components which can cause severe noise generation on the motor at starting voltages of less than 50 %. The control method used for these soft starters eliminates these direct current components during the ramp-up phase and prevents the braking torque which they can cause.

It creates a motor ramp-up that is uniform in speed, torque and current rise, thus permitting a particularly gentle, two-phase starting of the motors. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled soft starter. This is made possible by the on-going dynamic harmonizing and balancing of current half-waves of different polarity during the motor ramp-up. Hence the name "polarity balancing".

- Soft starting with voltage ramp; the starting voltage setting range U_s ranges from 40 to 100 %, and the ramp time t_R can be set from 0 to 20 s
- Integrated bypass contact system to minimize power loss
- Setting with two potentiometers
- Simple mounting and commissioning
- Mains voltages 50/60 Hz, 200 to 480 V
- Two control voltage versions 24 V AC/DC and 110 to 230 V AC/DC
- Wide temperature range from -25 to +60 °C
- The built-in auxiliary contact ensures user-friendly control and possible further processing within the system (for status graphs, [see page 6/18](#)).

Application

The 3RW30 soft starters are suitable for soft starting of three-phase asynchronous motors.

Due to two-phase control, the current is kept at minimum values in all three phases throughout the entire starting time. Due to continuous voltage influencing, the current and torque peaks which are unavoidable in the case of wye-delta starters for instance do not occur.

Application areas

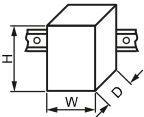
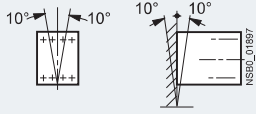
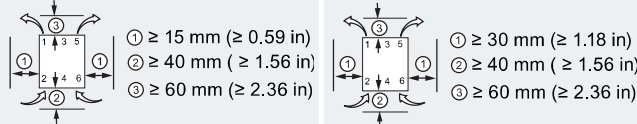
See "Selection aid for soft starters", page 6/6.

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Technical specifications

Type		3RW301.	3RW302.	3RW303.	3RW304.
Mechanics and environment					
Mounting dimensions (W x H x D) • Screw terminals • Spring-type terminals	mm	45 x 95 x 151	45 x 125 x 151	55 x 144 x 168	70 x 160 x 186
	mm	45 x 117 x 151	45 x 150 x 151	55 x 144 x 168	70 x 160 x 186
					
Permissible ambient temperature					
During operation	°C	-25 ... +60; (derating from +40)			
During storage	°C	-40 ... +80			
Weight	kg	0.58	0.69	1.20	1.71
Permissible mounting position¹⁾ (auxiliary fan not available)					
Installation type¹⁾	Stand-alone installation				
Permissible installation altitude	m	5 000 (derating from 1 000, see "Characteristic Curves", page 6/7); higher on request			
Degree of protection		IP20 for 3RW301. and 3RW302.; IP00 for 3RW303. and 3RW304.			

¹⁾ In the case of deviations, please observe derating, see manual in the chapter "Configuring":
<https://support.industry.siemens.com/cs/ww/en/view/38752095>.

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

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

Type		3RW3013	3RW3014	3RW3016	3RW3017	3RW3018
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA ¹⁾ , for individual mounting, AC-53a						
- At 40 °C	A	3.6	6.5	9	12.5	17.6
- At 50 °C	A	3.3	6	8	12	17
- At 60 °C	A	3	5.5	7	11	14
Power loss						
• In 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
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C / 50 °C						
- Rated motor current I _M ²⁾ , starting 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 ³⁾	1/h	200/150	87/60	50/50	85/70	62/46
- Rated motor current I _M ²⁾ , starting 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 ³⁾	1/h	150/100	64/46	35/35	62/47	45/32

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

²⁾ With 300 % I_M, T_u = 40 °C / 50 °C.

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

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Type		3RW3026	3RW3027	3RW3028
Power electronics				
Load rating with rated operational current I_e				
• According to IEC and UL/CSA ¹⁾ , for individual mounting, AC-53a				
- At 40 °C	A	25.3	32.2	38
- At 50 °C	A	23	29	34
- At 60 °C	A	21	26	31
Power loss				
• In 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
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C / 50 °C				
- Rated motor current I_M ²⁾ , starting time 3 s	A	25/23	32/29	38/34
- Starts per hour ³⁾	1/h	23/23	23/23	19/19
- Rated motor current I_M ²⁾ , starting time 4 s	A	25/23	32/29	38/34
- Starts per hour ³⁾	1/h	15/15	16/16	12/12

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

2) With 300 % I_M , $T_U = 40 °C / 50 °C$.

3) For intermittent duty S4 with ON period = 30 %, $T_U = 40 °C / 50 °C$, 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 manual in the chapter "Configuring":
<https://support.industry.siemens.com/cs/ww/en/view/38752095>.

Type		3RW3036	3RW3037	3RW3038	3RW3046	3RW3047
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA ¹⁾ , for individual mounting, AC-53a						
- At 40 °C	A	45	65	72	80	106
- At 50 °C	A	42	58	62.1	73	98
- At 60 °C	A	39	53	60	66	90
Power loss						
• In 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
Permissible rated motor current and starts per hour for normal starting (CLASS 10) at 40 °C / 50 °C						
- Rated motor current I_M ²⁾ , starting time 3 s	A	45/42	63/58	72/62	80/73	106/108
- Starts per hour ³⁾	1/h	38/38	23/23	22/22	22/22	15/15
- Rated motor current I_M ²⁾ , starting time 4 s	A	45/42	63/58	72/62	80/73	106/98
- Starts per hour ³⁾	1/h	26/26	15/15	15/15	15/15	10/10

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

2) With 300 % I_M , $T_U = 40 °C / 50 °C$.

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

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Type		3RW3003-1CB54	3RW3003-2CB54
Mechanics and environment			
Mounting dimensions (W x H x D)			
<ul style="list-style-type: none"> Screw terminals Spring-type terminals 		mm mm	22.5 x 100 x 120 -- 22.5 x 101.6 x 120
Permissible ambient temperature			
During operation	°C	-25 ... +60; (derating from +40)	
During storage	°C	-40 ... +80	
Weight	kg	0.207	0.188
Permissible mounting position			
Permissible installation altitude	m	5 000 (derating from 1 000, see "Characteristic Curves", page 6/7); higher on request	
Degree of protection acc. to IEC 60529		IP20 (IP00 terminal compartment)	
Control electronics			
Rated values			
Rated control supply voltage	V	24 ... 230 AC/DC	
<ul style="list-style-type: none"> Tolerance 	%	± 10	
Rated frequency at AC	Hz	50/60	
<ul style="list-style-type: none"> Tolerance 	%	± 10	
Power electronics			
Rated operational voltage	V AC	200 ... 400	
Tolerance	%	± 10	
Rated frequency	Hz	50/60	
Tolerance	%	± 10	
Uninterrupted duty (% of I_e)	%	100	
Minimum load¹⁾ (% of I_e); at 40 °C	%	9	
Maximum conductor length between soft starter and motor	m	100 ²⁾	
Load rating with rated operational current I_e			
<ul style="list-style-type: none"> According to IEC and UL/CSA for individual mounting at 40 / 50 / 60 °C, AC-53a 	A	3/2.6/2.2	
<ul style="list-style-type: none"> According to IEC and UL/CSA for side-by-side-mounting at 40 / 50 / 60 °C, AC-53a 	A	2.6/2.2 / 1.8	
Power loss			
<ul style="list-style-type: none"> In operation after completed starting with uninterrupted rated operational current (40 °C) approx. 	W	6.5	
<ul style="list-style-type: none"> At utilization of maximum switching frequency 	W	3	
Permissible starts per hour (cannot be increased by using a fan)			
<ul style="list-style-type: none"> For intermittent duty S4 $T_u = 40$ °C, stand-alone installation vertical 	1/h	1 500	
<ul style="list-style-type: none"> ON period = 70 % for 300 % I_e 	1/s	0.2	
Dead time after uninterrupted duty			
With I_e before restart	s	0	

¹⁾ The rated motor current (specified on the motor's name plate) should at least amount to the specified percentage of the SIRIUS soft starter unit's rated operational current I_e .

²⁾ If this value is exceeded, problems with line capacities may arise, which can result in false firing.

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Motor feeders with soft starters

The type of coordination according to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, then semiconductor fuses must be fitted in the motor feeder.

T_{OC} 1

Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident, the unit is defective and therefore unsuitable for further use (protection of persons and system guaranteed).

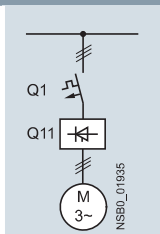
T_{OC} 2

Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Fuseless version



Soft starters T _{OC} 1	Nominal current	Motor starter protectors ¹⁾		
		Q1	$I_{q \max}$ kA	Rated current A
Q11 Type	A	Type		A
Type of coordination "1"				
3RW3003	3	3RV2011-1EA	50	4
3RW3013	3.6	3RV2011-1FA	5	5
3RW3014	6.5	3RV2011-1HA	5	8
3RW3016	9	3RV2011-1JA	5	10
3RW3017	12.5	3RV2011-1KA	5	12.5
3RW3018	17.6	3RV2021-4BA	5	20
3RW3026	25	3RV2021-4DA	55	25
3RW3027	32	3RV2021-4EA	55	32
3RW3028	38	3RV2021-4FA	55	40
3RW3036	45	3RV2031-4WA10	10	45
3RW3037	63	3RV2031-4JA10	10	63
3RW3038	72	3RV2031-4KA10	10	75
3RW3046	80	3RV1041-4LA10	11	90
3RW3047	106	3RV1041-4MA10	11	100

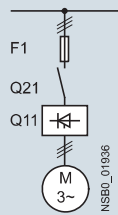
¹⁾ The rated motor current must be considered when selecting the devices.

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Fused version (line protection only)



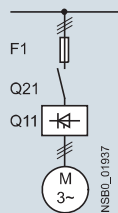
Soft starters	Nominal current	Line protection, maximum	Rated current	Size	Line contactors (optional)
ToC 1					
Q11 Type	A	F1 Type	A		Q21 Type
Type of coordination "1"¹⁾: $I_q = 65 \text{ kA at } 480 \text{ V} + 10 \%$					
3RW3003²⁾	3	3NA3805 ³⁾	20	000	3RT2015
3RW3013	3.6	3NA3803-6	10	000	3RT2015
3RW3014	6.5	3NA3805-6	16	000	3RT2015
3RW3016	9	3NA3807-6	20	000	3RT2016
3RW3017	12.5	3NA3810-6	25	000	3RT2018
3RW3018	17.6	3NA3814-6	35	000	3RT2026
3RW3026	25	3NA3822-6	63	00	3RT2026
3RW3027	32	3NA3824-6	80	00	3RT2027
3RW3028	38	3NA3824-6	80	00	3RT2028
3RW3036	45	3NA3130-6	100	1	3RT1036
3RW3037	63	3NA3132-6	125	1	3RT1044
3RW3038	72	3NA3132-6	125	1	3RT1045
3RW3046	80	3NA3136-6	160	1	3RT1045
3RW3047	106	3NA3136-6	160	1	3RT1046

¹⁾ The type of coordination "1" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

²⁾ $I_q = 50 \text{ kA at } 400 \text{ V}$.

³⁾ 3NA3805-1 (NH00), 5SB261 (DIAZED), 5SE2201-6 (NEOZED).

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)



Matching fuse bases, see
 Catalog LV 10 → "Switch Disconnectors" and
 Catalog LV 10 → "Fuse Systems"
 → "SITOR Semiconductor Fuses"
 or www.siemens.com/sitor.

Soft starters	Nominal current	All-range fuses	Rated current	Size	Line contactors (optional)
ToC 2					
Q11 Type	A	F1 Type	A		Q21 Type
Type of coordination "2"¹⁾: $I_q = 65 \text{ kA at } 480 \text{ V} + 10 \%$					
3RW3003²⁾	3	3NE1813-0 ³⁾	16	000	3RT2015
3RW3013	3.6	3NE1813-0	16	000	3RT2015
3RW3014	6.5	3NE1813-0	16	000	3RT2015
3RW3016	9	3NE1813-0	16	000	3RT2016
3RW3017	12.5	3NE1813-0	16	000	3RT2018
3RW3018	17.6	3NE1814-0	20	000	3RT2026
3RW3026	25	3NE1803-0	35	000	3RT2026
3RW3027	32	3NE1020-2	80	00	3RT2027
3RW3028	38	3NE1020-2	80	00	3RT2028
3RW3036	45	3NE1020-2	80	00	3RT1036
3RW3037	63	3NE1820-0	80	000	3RT1044
3RW3038	72	3NE1820-0	80	000	3RT1045
3RW3046	80	3NE1021-0	100	00	3RT1045
3RW3047	106	3NE1022-0	125	00	3RT1046

¹⁾ The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

²⁾ $I_q = 50 \text{ kA at } 400 \text{ V}$.

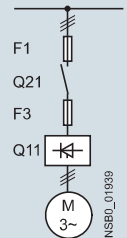
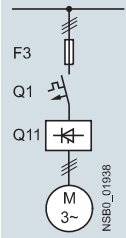
³⁾ No SITOR fuse required!
 Alternatively: 3NA3803 (NH00), 5SB221 (DIAZED), 5SE2206 (NEOZED).

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Fused version with 3NE3 SITOR fuses (semiconductor protection by fuse, line and overload protection by motor starter protector; alternatively, installation with contactor and overload relay possible)



For matching fuse bases, see
 Catalog LV 10 → "Switch Disconnectors" and
 Catalog LV 10 → "Fuse Systems"
 → "SITOR Semiconductor Fuses"
 or www.siemens.com/sitor.

Soft starters Q11 Type	Nominal current A	Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses, minimum		
		F3 Type	Rated current A	Size	F3 Type	Rated current A	Size	F3 Type	Rated current A	Size
Type of coordination "2"¹⁾: I_q = 65 kA at 480 V + 10 %										
3RW3003 ²⁾	3	--	--	--	--	--	--	--	--	--
3RW3013	3.6	--	--	--	--	--	--	3NE4101	32	0
3RW3014	6.5	--	--	--	--	--	--	3NE4101	32	0
3RW3016	9	--	--	--	--	--	--	3NE4101	32	0
3RW3017	12.5	--	--	--	--	--	--	3NE4101	32	0
3RW3018	17.6	--	--	--	3NE3221	100	1	3NE4101	32	0
3RW3026	25	--	--	--	3NE3221	100	1	3NE4102	40	0
3RW3027	32	--	--	--	3NE3222	125	1	3NE4118	63	0
3RW3028	38	--	--	--	3NE3222	125	1	3NE4118	63	0
3RW3036	45	--	--	--	3NE3224	160	1	3NE4120	80	0
3RW3037	63	--	--	--	3NE3225	200	1	3NE4121	100	0
3RW3038	72	3NE3221	100	1	3NE3227	250	1	--	--	--
3RW3046	80	3NE3222	125	1	3NE3225	200	1	--	--	--
3RW3047	106	3NE3224	160	1	3NE3231	350	1	--	--	--

Soft starters Q11 Type	Nominal current A	Semiconductor fuses max.			Semiconductor fuses min.			Semiconductor fuses max.			Cylindrical fuses	
		F3 Type	Rated current A	Size	F3 Type	Rated current A	Size	F3 Type	Rated current A	Size	F3 Type	Rated current A
Type of coordination "2"¹⁾: I_q = 65 kA at 480 V + 10 %												
3RW3003 ²⁾	3	--	--	--	3NE8015-1	25	00	3NE8015-1	25	00	3NC1010	10
3RW3013	3.6	--	--	--	3NE8015-1	25	00	3NE8015-1	25	00	3NC2220	20
3RW3014	6.5	--	--	--	3NE8015-1	25	00	3NE8015-1	25	00	3NC2220	20
3RW3016	9	--	--	--	3NE8015-1	25	00	3NE8015-1	25	00	3NC2220	20
3RW3017	12.5	--	--	--	3NE8015-1	25	00	3NE8018-1	63	00	3NC2250	50
3RW3018	17.6	--	--	--	3NE8003-1	35	00	3NE8021-1	100	00	3NC2263	63
3RW3026	25	3NE4117	50	0	3NE8017-1	50	00	3NE8021-1	100	00	3NC2263	63
3RW3027	32	3NE4118	63	0	3NE8018-1	63	00	3NE8022-1	125	00	3NC2280	80
3RW3028	38	3NE4118	63	0	3NE8020-1	80	00	3NE8022-1	125	00	3NC2280	80
3RW3036	45	3NE4120	80	0	3NE8020-1	80	00	3NE8024-1	160	00	3NC2280	80
3RW3037	63	3NE4121	100	0	3NE8021-1	100	00	3NE8024-1	160	00	--	--
3RW3038	72	--	--	--	3NE8022-1	125	00	3NE8024-1	160	00	--	--
3RW3046	80	--	--	--	3NE8022-1	125	00	3NE8024-1	160	00	--	--
3RW3047	106	--	--	--	3NE8024-1	160	00	3NE8024-1	160	00	--	--

Soft starters Q11 Type	Nominal current A	Line contactors (optional) Q21	Motor starter protectors		Line protection, maximum		
			400 V + 10 % Q1 Type	Rated current A	F1 Type	Rated current A	Size
Type of coordination "2"¹⁾: I_q = 65 kA at 480 V + 10 %							
3RW3003 ²⁾	3	3RT2015	3RV2011-1EA	4	3NA3805 ³⁾	20	000
3RW3013	3.6	3RT2015	3RV2011-1FA	5	3NA3803-6	10	000
3RW3014	6.5	3RT2015	3RV2011-1HA	8	3NA3805-6	16	000
3RW3016	9	3RT2016	3RV2011-1JA	10	3NA3807-6	20	000
3RW3017	12.5	3RT2018	3RV2011-1KA	12.5	3NA3810-6	25	000
3RW3018	17.6	3RT2026	3RV2021-4BA	20	3NA3814-6	35	000
3RW3026	25	3RT2026	3RV2021-4DA	25	3NA3822-6	63	00
3RW3027	32	3RT2027	3RV2021-4EA	32	3NA3824-6	80	00
3RW3028	38	3RT2028	3RV2021-4FA	40	3NA3824-6	80	00
3RW3036	45	3RT1036	3RV2031-4WA10	45	3NA3130-6	100	1
3RW3037	63	3RT1044	3RV2031-4JA10	63	3NA3132-6	125	1
3RW3038	72	3RT1045	3RV2031-4KA10	75	3NA3132-6	125	1
3RW3046	80	3RT1045	3RV1041-4LA10	90	3NA3136-6	160	1
3RW3047	106	3RT1046	3RV1041-4MA10	100	3NA3136-6	160	1

¹⁾ The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

²⁾ I_q = 50 kA at 400 V.

³⁾ 3NA3805-1 (NH00), 5SB261 (DIAZED).

SIRIUS 3RW Soft Starters 3RW30, 3RW40 for Standard Applications

IE3 ready 3RW30

Selection and ordering data



3RW ambient temperature 40 °C				3RW ambient temperature 50 °C				Size	DT ¹⁾	Configurator	PU (UNIT, SET, M)	PS*	PG	
Rated values of three-phase motors				Rated values of three-phase motors										
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e			Article No.	Price per PU					
	230 V	400 V	500 V		200 V	230 V	460 V						575 V	
A	kW			A	hp									
Rated operational voltage U_e 200 ... 480 V														
3.6	0.75	1.5	--	3	0.5	0.5	1.5	--	S00	A	3RW3013-□BB□4	1	1 unit	42G
6.5	1.5	3	--	6	1	1	3	--	S00	A	3RW3014-□BB□4	1	1 unit	42G
9	2.2	4	--	8	2	2	5	--	S00	A	3RW3016-□BB□4	1	1 unit	42G
12.5	3	5.5	--	12	3	3	7.5	--	S00	A	3RW3017-□BB□4	1	1 unit	42G
17.6	4	7.5	--	17	3	3	10	--	S00	A	3RW3018-□BB□4	1	1 unit	42G
25	5.5	11	--	23	5	5	15	--	S0	A	3RW3026-□BB□4	1	1 unit	42G
32	7.5	15	--	29	7.5	7.5	20	--	S0	A	3RW3027-□BB□4	1	1 unit	42G
38	11	18.5	--	34	10	10	25	--	S0	A	3RW3028-□BB□4	1	1 unit	42G
45	11	22	--	42	10	15	30	--	S2	A	3RW3036-□BB□4	1	1 unit	42G
63	18.5	30	--	58	15	20	40	--	S2	A	3RW3037-□BB□4	1	1 unit	42G
72	22	37	--	62	20	20	40	--	S2	A	3RW3038-□BB□4	1	1 unit	42G
80	22	45	--	73	20	25	50	--	S3	A	3RW3046-□BB□4	1	1 unit	42G
106	30	55	--	98	30	30	75	--	S3	A	3RW3047-□BB□4	1	1 unit	42G

Article No. supplement for connection types

- With screw terminals
- With spring-type terminals²⁾

Article No. supplement for rated control supply voltage U_s

- 24 V AC/DC
- 110 ... 230 V AC/DC

Soft starters for easy starting conditions and high switching frequency, rated operational voltage U_e 200 ... 400 V, rated control supply voltage U_s 24 ... 230 V AC/DC

3	0.55	1.1	--	2.6	0.5	0.5	--	22.5 mm						
<ul style="list-style-type: none"> • With screw terminals • With spring-type terminals 														
										▶	3RW3003-1CB54	1	1 unit	42G
										▶	3RW3003-2CB54	1	1 unit	42G

For online configurator, see www.siemens.com/sirius/configurators.

- 1) Soft starter with screw terminals: delivery time class ▶ (preferred type).
2) Main connection from size S2: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The SIRIUS 3RW30 solid-state soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 3
- Maximum starting current in % of motor current I_e : 300
- Maximum number of starts per hour in 1/h: 20
- Stand-alone installation (side-by-side see manual, <https://support.industry.siemens.com/cs/ww/en/view/38752095>)



SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW30

Accessories

Conductor cross-section		Tightening torque	For soft starters size	DT	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 ²	mm ²	AWG	Nm							
Three-phase infeed terminals										
	2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S00 (3RW301.) S0 (3RW302.)		1	1 unit	41E	
Auxiliary terminals										
	Auxiliary terminals, 3-pole			B	3RT1946-4F		1	1 unit	41B	
Covers for soft starters										
	Terminal covers for box terminals Additional touch protection to be fitted at the box terminals (2 units required per device)			B	3RT2936-4EA2		1	1 unit	41B	
3RT2936-4EA2	3RW303.	S2		▶	3RT1946-4EA2		1	1 unit	41B	
	Terminal covers for cable lugs and busbar connections For complying with the voltage clearances and as touch protection if box terminal is removed (2 units required per device)			B	3RT1946-4EA1		1	1 unit	41B	
3RT1946-4EA1	3RW304.	S3								
Mounting rails for mounting contactors for the customer assembly of 3RA21 load feeders with busbar adapters for 60 mm systems										
	--	S0	For the discrete configuration of direct-on-line starters a further mounting rail is needed for the contactor in addition to the mounting rail existing on the busbar adapter. For pushing onto the busbar adapter, including fixing screws		A	8US1998-7CB45		1	10 units	140
Standard mounting rail adapters										
	S2	S2	Single-unit packaging		▶	3RA2932-1CA00		1	1 unit	41B
Manual for SIRIUS 3RW30/3RW40 soft starters¹⁾										
The manual is available free on the Internet as a PDF download, see https://support.industry.siemens.com/cs/ww/en/view/38752095 .										

¹⁾ The Operating Instructions 3RW30 (3ZX1012-0RW30-2DA1) are included in the scope of supply of the soft starter, or are available (like the manual) as a PDF download in the Industry Online Support Portal, see <https://support.industry.siemens.com/cs/ww/en/view/26378636>.

SIRIUS 3RW Soft Starters 3RW30, 3RW40 for Standard Applications

3RW30

For soft starters		Motor starter protectors		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	Size	Size	Size						

Link modules to motor starter protectors¹⁾



3RA2921-1BA00

• With screw terminals

3RW301.	S00	S00		A	3RA2921-1BA00		1	1 unit	41B
3RW302.	S0	S00/S0		A	3RA2921-1BA00		1	1 unit	41B
3RW3036.	S2	S2		▶	3RA2931-1AA00		1	1 unit	41B
3RW3046., 3RW3047.	S3	S3		▶	3RA1941-1AA00		1	1 unit	41B



3RA2921-2GA00

• With spring-type terminals

3RW301.	S00	S00		▶	3RA2911-2GA00		1	1 unit	41B
3RW302.	S0	S0		▶	3RA2921-2GA00		1	1 unit	41B

¹⁾ 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 3RA2932-1AC00 standard mounting rail adapter (specially for soft starters). Can be used in size S3 only for 3RV1 motor starter protectors.

Version	Functionality Functions	Use	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
---------	-------------------------	-----	----	-------------	--------------	-------------------	-----	----

Covers and push-in lugs (only for 3RW30 03)



3RP1902

Sealable covers For securing against unauthorized adjustment of setting knobs
For devices with 1 or 2 CO contacts

B	3RP1902		1	5 units	41H
---	----------------	--	---	---------	-----



3RP1903

Push-in lugs For screw fixings
For devices with 1 or 2 CO contacts

B	3RP1903		1	10 units	41H
---	----------------	--	---	----------	-----

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

Tools for opening spring-type terminals in sizes S00 and S0

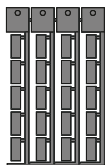


3RA2908-1A

Screwdrivers
For all SIRIUS devices with spring-type terminals length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated

A	3RA2908-1A	Spring-type terminals	1	1 unit	41B
---	-------------------	-----------------------	---	--------	-----

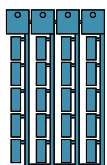
Blank labels



3RT2900-1SB20

Unit labeling plates¹⁾
For SIRIUS devices
• 20 mm x 7 mm, titanium gray

D	3RT2900-1SB20		100	340 units	41B
---	----------------------	--	-----	-----------	-----



3RT1900-1SB20

• 20 mm x 7 mm, pastel turquoise

D	3RT1900-1SB20		100	340 units	41B
---	----------------------	--	-----	-----------	-----

¹⁾ PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH see page 16/20.

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW30

More information

Application examples for normal starting (CLASS 10)

Normal starting CLASS 10 (up to 20 s with 300 % $I_{n, motor}$, one start per hour)
The soft starter rating can be selected to be as high as the rating of the motor used

Application	Conveyor belts	Roller conveyors	Compressors	Small fans ¹⁾	Pumps	Hydraulic pumps
Starting parameters						
• Voltage ramp and current limiting						
- Starting voltage	% 70	60	50	40	40	40
- Starting time	s 10	10	20	20	10	10

¹⁾ The mass inertia of the fan is <10 times the mass inertia of the motor.

Note:

These tables present sample set values and device dimensions. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning. The soft starter dimensions should be checked where necessary with the help of Technical Assistance.

Configuration

The 3RW solid-state motor controllers are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device.

If necessary, an overload relay for heavy starting must be selected where long starting times are involved. PTC sensors are recommended.

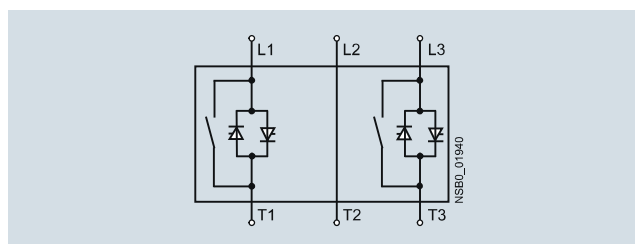
No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses, controls and overload relays) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

Note:

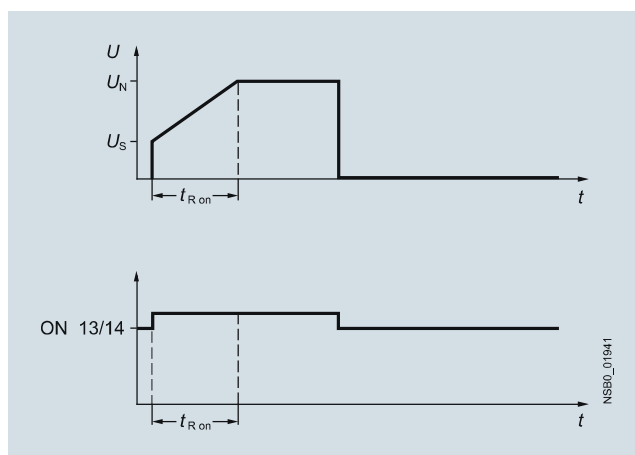
When three-phase motors are switched on, voltage drops occur as a rule on starters of all types (direct-on-line starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Schematic circuit diagram of power electronics



A bypass contact system is already integrated in the 3RW30 soft starter and therefore does not have to be ordered separately.

Status graphs



Manual for SIRIUS 3RW30/40

In addition to relevant configuration, commissioning, and service information, the manual also contains example circuits and technical specifications for all devices, see <https://support.industry.siemens.com/cs/ww/en/view/38752095>.

Overview

SIRIUS 3RW40 soft starters have all the same advantages as the 3RW30 soft starters.

The SIRIUS 3RW40 soft starters are characterized above all by their small space requirements. Integrated bypass contacts mean that no power loss has to be taken into the bargain at the power semiconductors (thyristors) after the motor has started up. This cuts down on heat losses, enabling a more compact design and making external bypass circuits superfluous.

At the same time this soft starter comes with additional integrated functions such as adjustable current limiting, motor overload and intrinsic device protection, and optional thermistor motor protection. The higher the motor rating, the more important these functions because they make it unnecessary to purchase and install protection equipment such as overload relays.

Internal intrinsic device protection prevents the thermal overloading of the thyristors and the power section defects this can cause. As an option the thyristors can also be protected by semiconductor fuses from short-circuiting.

Thanks to integrated status monitoring and fault monitoring, this compact soft starter offers many different diagnostics options. Up to four LEDs and relay outputs permit differentiated monitoring and diagnostics of the operating mechanism by indicating the operating state as well as for example mains or phase failure, missing load, non-permissible tripping time/CLASS setting, thermal overloading or device faults.

Soft starters rated up to 250 kW (at 400 V) for standard applications in three-phase networks are available. Extremely small sizes, low power losses and simple start up are just three of the many advantages of the SIRIUS 3RW40 soft starters.

"Increased safety" type of protection EEx e according to ATEX directive 94/9/EC

The 3RW40 soft starter sizes S0 to S12 are suitable for the starting of explosion-proof motors with "increased safety" type of protection EEx e.

Functionality

The space required by the compact SIRIUS 3RW40 soft starter is often only about one third of that required by a contactor assembly for wye-delta starting of comparable rating. This not only saves space in the control cabinet and on the standard mounting rail but also does away completely with the wiring work needed for wye-delta starters. This is notable in particular for higher motor ratings which are only rarely available as fully wired solutions.

At the same time the number of cables from the starter to the motor is reduced from six to three. Compact dimensions, short start-up times, easy wiring and fast commissioning make themselves felt as clear-cut cost advantages.

The bypass contacts of these soft starters are protected during operation by an integrated solid-state arc quenching system. This prevents damage to the bypass contacts in the event of a fault, e.g. brief disconnection of the control voltage, mechanical shocks or life-related component defects on the coil operating mechanism or main contact spring.

The starting current of particularly powerful operating mechanisms can place an unjustifiable load on the local supply system. Soft starters reduce this starting current by means of their voltage ramp. Thanks to the adjustable current limiting, the SIRIUS 3RW40 soft starter takes even more pressure off the supply system. It leaves the set start ramp during the ramp-up – the ramp gradient is fixed by the starting voltage and the ramp time – as soon as the selected current limit is reached.

From this moment the voltage of the soft starter is controlled so that the current supplied to the motor remains constant. This process is ended either by completion of the motor ramp-up or by tripping by the intrinsic device protection or the motor overload protection. As the result of this function the actual motor ramp-up can well take longer than the ramp time selected on the soft starter.

Thanks to the integrated motor overload protection according to IEC 60947-4-2, there is no need for an additional overload relay on the new soft starters. The rated motor current, the setting of the overload tripping time (CLASS times) and the reset of the motor overload protection function can be adjusted easily and quickly. Using a 4-step rotary potentiometer it is possible to set different overload tripping times on the soft starter. In addition to CLASS 10, 15 and 20 it is also possible to switch off the motor overload protection if a different motor management control device is to be used for this function, e.g. with connection to PROFIBUS.

Device versions with thermistor motor protection evaluation are available up to a rating of 55 kW (at 400 V). A "Thermoclick" measuring probe can be connected directly, as can a PTC of type A. Thermal overloading of the motor, open circuits and short circuits in the sensor circuit all result in the direct disconnection of the soft starter. And if ever the soft starter trips, various reset options are available the same as with intrinsic device protection and motor load protection: manually with the reset button, automatically or remotely through brief disconnection of the control voltage.

The new series of devices comes with the "polarity balancing" control method, which is designed to prevent direct current components in two-phase controlled soft starters. On two-phase controlled soft starters the current resulting from superimposition of the two controlled phases flows in the uncontrolled phase. This results for physical reasons in an asymmetric distribution of the three phase currents during the motor ramp-up. This phenomenon cannot be influenced, but in most applications it is non-critical.

Controlling the power semiconductors results not only in this asymmetry, however, but also in the previously mentioned direct current components which can cause severe noise generation on the motor at starting voltages of less than 50 %.

The control method used for these soft starters eliminates these direct current components during the ramp-up phase and prevents the braking torque which they can cause. It creates a motor ramp-up that is uniform in speed, torque and current rise, thus permitting a particularly gentle, two-phase starting of the motors. At the same time the acoustic quality of the starting operation comes close to the quality of a three-phase controlled soft starter. This is made possible by the on-going dynamic harmonizing and balancing of current half-waves of different polarity during the motor ramp-up. Hence the name "polarity balancing".

Application

The SIRIUS 3RW40 solid-state soft starters are used for the soft starting and stopping of three-phase asynchronous motors.

Due to two-phase control, the current is kept at minimum values in all three phases throughout the entire starting time and disturbing direct current components are eliminated in addition. This not only enables the two-phase starting of motors up to 250 kW (at 400 V) but also avoids the current and torque peaks which occur e.g. with wye-delta starters.

Application areas

See "Selection aid for soft starters", on page 6/6.

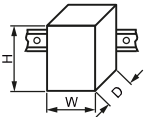
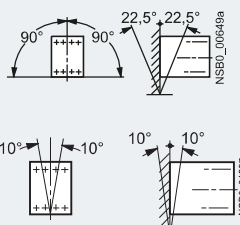
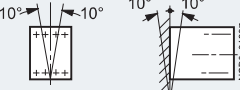
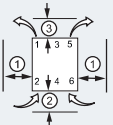
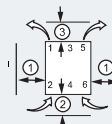
SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

General data

Technical specifications

Type		3RW402.	3RW403.	3RW404.	3RW405.	3RW407.	
Mechanics and environment							
Mounting dimensions (W x H x D) • Screw terminals • Spring-type terminals		mm	45 x 125 x 154	55 x 144 x 170	70 x 160 x 188	120 x 198 x 250	160 x 230 x 278
		mm	45 x 150 x 154	55 x 144 x 170	70 x 160 x 188	120 x 198 x 250	160 x 230 x 278
Permissible ambient temperature							
During operation		°C	-25 ... +60; (derating from +40)				
During storage		°C	-40 ... +80				
Weight		kg	0.77	1.35	1.9	4.9 (.55.) 6.9 (.56.)	8.9
Permissible mounting position¹⁾							
• With auxiliary fan (for 3RW402. ... 3RW404.)							
• Without auxiliary fan (for 3RW402. ... 3RW404.)						-- (fan integrated in the soft starter)	
Installation type¹⁾							
Stand-alone installation		3RW402.		3RW405., 3RW407.			
				① ≥ 15 mm (≥ 0.59 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)		① ≥ 5 mm (≥ 0.2 in) ② ≥ 75 mm (≥ 3 in) ③ ≥ 100 mm (≥ 4 in)	
		3RW403., 3RW404.					
				① ≥ 30 mm (≥ 1.18 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)			
Permissible installation altitude		m	5 000 (derating from 1 000, see "Characteristic Curves", page 6/7); higher on request				
Degree of protection		IP20 for 3RW402.; all others IP00					

¹⁾ In the case of deviations, please observe derating, see manual in the chapter "Configuring":
<https://support.industry.siemens.com/cs/ww/en/view/38752095>.

Type		3RW402., 3RW403., 3RW404.	3RW405., 3RW407.	
Control electronics				
Rated values				
Rated control supply voltage	Terminal A1/A2	V	24 DC/AC 110 ... 230 AC/DC ± 20 -15/+10	115 AC 230 AC
• Tolerance		%		
Rated frequency		Hz	50/60	
• Tolerance		%	± 10	

Type		3RW402.-..B.4, 3RW403.-..B.4, 3RW404.-..B.4	3RW402.-..B.5, 3RW403.-..B.5, 3RW404.-..B.5	3RW405.-..BB.4, 3RW407.-..BB.4	3RW405.-..BB.5, 3RW407.-..BB.5
Power electronics					
Rated operational voltage	V AC	200 ... 480	400 ... 600	200 ... 460	400 ... 600
Tolerance	%	-15/+10			
Maximum blocking voltage (thyristor)	V AC	1 600		1 400	1 800
Rated frequency	Hz	50/60			
Tolerance	%	± 10			
Uninterrupted duty at 40 °C (% of I_e)	%	115			
Minimum load (% of minimum selectable rated motor current I _M)	%	20 (at least 2 A)			
Maximum cable length between soft starter and motor	m	300			

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

General data

Type		3RW4024	3RW4026	3RW4027	3RW4028
Power electronics					
Load rating with rated operational current I_e					
• According to IEC and UL/CSA ¹⁾ , for individual mounting, AC-53a					
- At 40 °C	A	12.5	25.3	32.2	38
- At 50 °C	A	11	23	29	34
- At 60 °C	A	10	21	26	31
Smallest adjustable rated motor current I_M					
For the motor overload protection					
	A	5	10	17	23
Power loss					
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.					
	W	2	8	13	19
• During starting with current limit set to 300 % I_M (40 °C)					
	W	68	188	220	256
Permissible rated motor current and starts per hour at 40 °C / 50 °C					
• For normal starting (CLASS 10)					
- Rated motor current $I_M^{(2)}$, starting time 3 s	A	12.5/11	25/23	32/29	38/34
- Starts per hour ³⁾	1/h	50/50	23/23	23/23	19/19
- Rated motor current $I_M^{(2)}$, starting time 4 s	A	12.5/11	25/23	32/29	38/34
- Starts per hour ³⁾	1/h	36/36	15/15	16/16	12/12
• For heavy starting (CLASS 15)					
- Rated motor current $I_M^{(2)}$, starting time 4.5 s	A	11/10	23/21	30/27	34/31
- Starts per hour ³⁾	1/h	49/49	21/21	18/18	18/18
- Rated motor current $I_M^{(2)}$, starting time 6 s	A	11/10	23/21	30/27	34/31
- Starts per hour ³⁾	1/h	36/36	14/14	13/13	13/13
• For heavy starting (CLASS 20)					
- Rated motor current $I_M^{(2)}$, starting time 6 s	A	10/9	21/19	27/24	31/28
- Starts per hour ³⁾	1/h	47/47	21/21	20/20	18/18
- Rated motor current $I_M^{(2)}$, starting time 8 s	A	10/9	21/19	27/24	31/28
- Starts per hour ³⁾	1/h	34/34	15/15	14/14	13/13

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

²⁾ Current limit on soft starter set to 300 % I_M , $T_U = 40 °C / 50 °C$. Maximum adjustable rated motor current I_M dependent on CLASS setting.

³⁾ For intermittent duty S4 with ON period = 30 %, $T_U = 40 °C / 50 °C$, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. Factors for permissible switching frequency in other mounting position, direct mounting, side-by-side mounting, and implementation of optional auxiliary fan, see manual in the chapter "Configuring":
<https://support.industry.siemens.com/cs/ww/en/view/38752095>.

Type		3RW4036	3RW4037	3RW4038	3RW4046	3RW4047
Power electronics						
Load rating with rated operational current I_e						
• According to IEC and UL/CSA ¹⁾ , for individual mounting, AC-53a						
- At 40 °C	A	45	63	72	80	106
- At 50 °C	A	42	58	62.1	73	98
- At 60 °C	A	39	53	60	66	90
Smallest adjustable rated motor current I_M						
For the motor overload protection						
	A	23	26	35	43	46
Power loss						
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.						
	W	6	12	15	12	21
• During starting with current limit set to 300 % I_M (40 °C)						
	W	316	444	500	576	768
Permissible rated motor current and starts per hour at 40 °C / 50 °C						
• For normal starting (CLASS 10)						
- Rated motor current $I_M^{(2)}$, starting time 3 s	A	45/42	63/58	72/62	80/73	106/98
- Starts per hour ³⁾	1/h	38/38	23/23	22/22	22/22	15/15
- Rated motor current $I_M^{(2)}$, starting time 4 s	A	45/42	63/58	72/62	80/73	106/98
- Starts per hour ³⁾	1/h	26/26	15/15	15/15	15/15	10/10
• For heavy starting (CLASS 15)						
- Rated motor current $I_M^{(2)}$, starting time 4.5 s	A	42/38	50/46	56/52	70/64	84/77
- Starts per hour ³⁾	1/h	30/30	34/34	34/34	24/24	23/23
- Rated motor current $I_M^{(2)}$, starting time 6 s	A	42/38	50/46	56/52	70/64	84/77
- Starts per hour ³⁾	1/h	21/21	24/24	24/24	16/16	17/17
• For heavy starting (CLASS 20)						
- Rated motor current $I_M^{(2)}$, starting time 6 s	A	38/34	46/42	50/46	64/58	77/70
- Starts per hour ³⁾	1/h	30/30	31/31	34/34	23/23	23/23
- Rated motor current $I_M^{(2)}$, starting time 8 s	A	38/34	46/42	50/46	64/58	77/70
- Starts per hour ³⁾	1/h	21/21	22/22	24/24	16/16	16/16

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

²⁾ Current limit on soft starter set to 300 % I_M , $T_U = 40 °C / 50 °C$. Maximum adjustable rated motor current I_M dependent on CLASS setting.

³⁾ For intermittent duty S4 with ON period = 30 %, $T_U = 40 °C / 50 °C$, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode. For factors for permissible switching frequency in the case of different installation position, direct mounting, side-by-side mounting, and the use of an optional auxiliary fan, see the manual in the chapter "Configuring":
<https://support.industry.siemens.com/cs/ww/en/view/38752095>.

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

General data

Type		3RW4055	3RW4056	3RW4073	3RW4074	3RW4075	3RW4076
Power electronics							
Load rating with rated operational current I_e							
• According to IEC and UL/CSA ¹⁾ , for individual mounting, AC-53a							
- At 40 °C	A	134	162	230	280	356	432
- At 50 °C	A	117	145	205	248	315	385
- At 60 °C	A	100	125	180	215	280	335
Smallest adjustable rated motor current I_M							
For the motor overload protection							
	A	59	87	80	130	131	207
Power loss							
• In operation after completed starting with uninterrupted rated operational current (40 °C) approx.							
	W	60	75		90	125	165
• During starting with current limit set to 350 % ²⁾ I_M (40 °C)							
	W	1043	1355	2448	3257	3277	3600
Permissible rated motor current and starts per hour at 40 °C / 50 °C							
• For normal starting (CLASS 10)							
- Rated motor current $I_M^{(2)}$, starting time 10 s	A	134/117	162/145	230/205	280/248	356/315	432/385
- Starts per hour ³⁾	1/h	20/20	8/8	14/14	20/20	16/16	17/17
- Rated motor current $I_M^{(2)}$, starting time 20 s	A	134/117	162/145	230/205	280/248	356/315	432/385
- Starts per hour ³⁾	1/h	7/7	1.4/1.4	3/3	8/8	5/5	5/5
• For heavy starting (CLASS 15)							
- Rated motor current $I_M^{(2)}$, starting time 15 s	A	134/117	152/140	210/200	250/220	341/315	402/385
- Starts per hour ³⁾	1/h	11/11	8/8	11/11	13/13	11/11	12/12
- Rated motor current $I_M^{(2)}$, starting time 30 s	A	134/117	152/140	210/200	250/220	341/315	402/385
- Starts per hour ³⁾	1/h	1.2/1.2	1.7/1.7	1/1	6/6	2/2	2/2
• For heavy starting (CLASS 20)							
- Rated motor current $I_M^{(2)}$, starting time 20 s	A	124/112	142/132	200/185	230/205	311/280	372/340
- Starts per hour ³⁾	1/h	12/12	9/9	10/10	10/10	10/10	10/10
- Rated motor current $I_M^{(2)}$, starting time 40 s	A	124/112	142/132	200/185	230/205	311/280	372/340
- Starts per hour ³⁾	1/h	2/2	2/2	1/1	5/5	1/1	1/1

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

²⁾ Current limit on soft starter set to 350 % I_M , $T_u = 40 °C / 50 °C$. Maximum adjustable rated motor current I_M dependent on CLASS setting.

³⁾ For intermittent duty S4 with ON period = 70 %, $T_u = 40 °C / 50 °C$, stand-alone installation vertical. The quoted switching frequencies do not apply for automatic mode.

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

General data

Motor feeders with soft starters

The type of coordination according to which the motor feeder with soft starter is mounted depends on the application-specific requirements. Normally, fuseless mounting (combination of motor starter protector and soft starter) is sufficient.

If type of coordination "2" is to be fulfilled, then semiconductor fuses must be fitted in the motor feeder.

ToC 1

Type of coordination "1" according to IEC 60947-4-1: After a short-circuit incident, the unit is defective and therefore unsuitable for further use (protection of persons and system guaranteed).

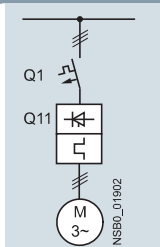
ToC 2

Type of coordination "2" according to IEC 60947-4-1: After a short-circuit incident the unit is suitable for further use (protection of persons and system guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

The types of coordination are indicated in the corresponding tables by the symbols shown on orange backgrounds.

Fuseless version



Soft starters	Nominal current	Motor starter protectors ¹⁾		Rated current		575 V + 10 %		Rated current	
		Q1	Q1	$I_{q \max}$ kA	A	Q1	$I_{q \max}$ kA	A	
Type	A	Type	Type	kA	A	Type	kA	A	
Type of coordination "1"									
3RW4024	12.5	3RV2021-4AA/ 3RV2011-4AA (in size S00)	3RV2321-4AC/ 3RV2311-4AC (in size S00)	55	16	--	--	--	--
3RW4026	25	3RV2021-4DA	3RV2321-4DC	55	25	--	--	--	--
3RW4027	32	3RV2021-4EA	3RV2321-4EC	55	32	--	--	--	--
3RW4028	38	3RV2021-4FA	3RV2321-4FC	55	40	--	--	--	--
3RW4036	45	3RV2031-4WA10	3RV2321-4WC	10	45	--	--	--	--
3RW4037	63	3RV2031-4JA10	3RV2331-4JC	10	63	--	--	--	--
3RW4038	72	3RV2031-4KA10	3RV2331-4KC	10	75	--	--	--	--
3RW4046	80	3RV1041-4LA10	3RV1341-4LC10	11	90	--	--	--	--
3RW4047	106	3RV1041-4MA10	3RV1341-4MC10	11	100	--	--	--	--
3RW4055	134	3VL3720-2DC36	--	35	200	3VL3720-1DC36	12	200	
3RW4056	162	3VL3720-2DC36	--	35	200	3VL3720-1DC36	12	200	
3RW4073	230	3VL4731-2DC36	--	65	315	3VL5731-3DC36	35	315	
3RW4074	280	3VL4731-2DC36	--	65	315	3VL5731-3DC36	35	315	
3RW4075	356	3VL4740-2DC36	--	65	400	3VL5740-3DC36	35	400	
3RW4076	432	3VL5750-2DC36	--	65	500	3VL5750-3DC36	35	500	

¹⁾ The rated motor current must be considered when selecting the devices. 3RV13/3RV23 motor starter protectors are designed for starter combinations (without motor protection). Motor protection is provided in this case by the 3RW40 soft starter.

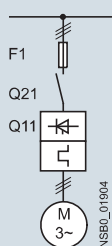
SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

General data

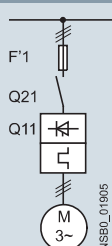
Fused version (line protection only)



Soft starters ToC 1	Nominal current A	Line protection, maximum			Line contactors (optional) Q21 Type
		F1 Type	Rated current A	Size	
Type of coordination "1"¹⁾: $I_q = 65 \text{ kA at } 600 \text{ V} + 5 \%$					
3RW4024	12.5	3NA3820-6	50	00	3RT2025/ 3RT2018 (in size S00)
3RW4026	25	3NA3822-6	63	00	3RT2026
3RW4027	32	3NA3824-6	80	00	3RT2027
3RW4028	38	3NA3824-6	80	00	3RT2028
3RW4036	45	3NA3130-6	100	1	3RT1036
3RW4037	63	3NA3132-6	125	1	3RT1044
3RW4038	72	3NA3132-6	125	1	3RT1045
3RW4046	80	3NA3136-6	160	1	3RT1045
3RW4047	106	3NA3136-6	160	1	3RT1046
3RW4055	134	3NA3244-6	250	2	3RT1055-6A.36
3RW4056	162	3NA3244-6	250	2	3RT1056-6A.36
3RW4073	230	2 x 3NA3354-6	2 x 355	3	3RT1065-6A.36
3RW4074	280	2 x 3NA3354-6	2 x 355	3	3RT1066-6A.36
3RW4075	356	2 x 3NA3365-6	2 x 500	3	3RT1075-6A.36
3RW4076	432	2 x 3NA3365-6	2 x 500	3	3RT1076-6A.36

¹⁾ The type of coordination "1" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)



Matching fuse bases, see
Catalog LV 10 → "Switch Disconnectors" and
Catalog LV 10 → "Fuse Systems"
→ "SITOR Semiconductor Fuses"
or www.siemens.com/sitor.

Soft starters ToC 2	Nominal current A	All-range fuses			Line contactors (optional) Q21 Type
		F1 Type	Rated current A	Size	
Type of coordination "2"¹⁾: $I_q = 65 \text{ kA at } 600 \text{ V} + 5 \%$					
3RW4024	12.5	3NE1814-0	20	000	3RT2025/ 3RT2018 (in size S00)
3RW4026	25	3NE1803-0	35	000	3RT2026
3RW4027	32	3NE1020-2	80	00	3RT2027
3RW4028	38	3NE1020-2	80	00	3RT2028
3RW4036	45	3NE1020-2	80	00	3RT1036
3RW4037	63	3NE1820-0	80	000	3RT1044
3RW4038	72	3NE1820-0	80	000	3RT1045
3RW4046	80	3NE1021-0	100	00	3RT1045
3RW4047	106	3NE1022-0	125	00	3RT1046
3RW4055	134	3NE1227-2	250	1	3RT1055-6A.36
3RW4056	162	3NE1227-2	250	1	3RT1056-6A.36
3RW4073	230	3NE1331-2	350	2	3RT1065-6A.36
3RW4074	280	3NE1333-2	450	2	3RT1066-6A.36
3RW4075	356	3NE1334-2	500	2	3RT1075-6A.36
3RW4076	432	3NE1435-2	560	3	3RT1076-6A.36

¹⁾ The type of coordination "2" refers to soft starters in combination with the stipulated protective device (motor starter protector/fuse), not to any additional components in the feeder.

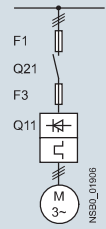
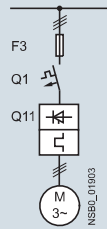
SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

General data

Fused version with 3NE3 SITOR fuses (semiconductor protection by fuse, line and overload protection by motor starter protector; alternatively, installation with contactor and overload relay possible)



Matching fuse bases, see
 Catalog LV 10 → "Switch Disconnectors" and
 Catalog LV 10 → "Fuse Systems"
 → "SITOR Semiconductor Fuses"
 or www.siemens.com/sitor.

Soft starters Q11 Type	Nominal current A	Semiconductor fuses, minimum			Semiconductor fuses, maximum			Semiconductor fuses, minimum		
		F3 Type	Rated current A	Size	F3 Type	Rated current A	Size	F3 Type	Rated current A	Size
Type of coordination "2" ¹⁾ : $I_q = 65 \text{ kA at } 600 \text{ V} + 5 \% \text{ (}^1\text{) see previous page)}$										
3RW4024	12.5	--	--	--	--	--	--	3NE4101	32	0
3RW4026	25	--	--	--	3NE3221	100	1	3NE4102	40	0
3RW4027	32	--	--	--	3NE3224	160	1	3NE4118	63	0
3RW4028	38	--	--	--	3NE3224	160	1	3NE4118	63	0
3RW4036	45	--	--	--	3NE3224	160	1	3NE4120	80	0
3RW4037	63	--	--	--	3NE3225	200	1	3NE4121	100	0
3RW4038	72	3NE3221	100	1	3NE3227	250	1	--	--	--
3RW4046	80	3NE3222	125	1	3NE3225	200	1	--	--	--
3RW4047	106	3NE3224	160	1	3NE3231	350	1	--	--	--
3RW4055	134	3NE3227	250	1	3NE3335	560	2	--	--	--
3RW4056	162	3NE3227	250	1	3NE3335	560	2	--	--	--
3RW4073	230	3NE3232-0B	400	1	3NE3333	450	2	--	--	--
3RW4074	280	3NE3233	450	1	3NE3336	630	2	--	--	--
3RW4075	356	3NE3335	560	2	3NE3336	630	2	--	--	--
3RW4076	432	3NE3337-8	710	2	3NE3340-8	900	2	--	--	--

Soft starters Q11 Type	Nominal current A	Semiconductor fuses max.			Semiconductor fuses min.			Semiconductor fuses max.			Cylindrical fuses	
		F3 Type	Rated current A	Size	F3 Type	Rated current A	Size	F3 Type	Rated current A	Size	F3 Type	Rated current A
Type of coordination "2" ¹⁾ : $I_q = 65 \text{ kA at } 600 \text{ V} + 5 \% \text{ (}^1\text{) see previous page)}$												
3RW4024	12.5	3NE4117	50	0	3NE8015-1	25	00	3NE8017-1	50	00	3NC2240	40
3RW4026	25	3NE4117	50	0	3NE8017-1	50	00	3NE8021-1	100	00	3NC2263	63
3RW4027	32	3NE4118	63	0	3NE8018-1	63	00	3NE8022-1	125	00	3NC2280	80
3RW4028	38	3NE4118	63	0	3NE8020-1	80	00	3NE8024-1	160	00	3NC2280	80
3RW4036	45	3NE4120	80	0	3NE8020-1	80	00	3NE8024-1	160	00	3NC2280	80
3RW4037	63	3NE4121	100	0	3NE8021-1	100	00	3NE8024-1	160	00	--	--
3RW4038	72	--	--	--	3NE8022-1	125	00	3NE8024-1	160	00	--	--
3RW4046	80	--	--	--	3NE8022-1	125	00	3NE8024-1	160	00	--	--
3RW4047	106	--	--	--	3NE8024-1	160	00	3NE8024-1	160	00	--	--
3RW4055	134	--	--	--	--	--	--	--	--	--	--	--
3RW4056	162	--	--	--	--	--	--	--	--	--	--	--
3RW4073	230	--	--	--	--	--	--	--	--	--	--	--
3RW4074	280	--	--	--	--	--	--	--	--	--	--	--
3RW4075	356	--	--	--	--	--	--	--	--	--	--	--
3RW4076	432	--	--	--	--	--	--	--	--	--	--	--

Soft starters Q11 Type	Nominal current A	Line contactors		Motor starter protectors		Line protection, maximum			
		(optional) Q21 Type	400 V + 10 % Q1 Type	Rated current A	575 V + 10 % Q1 Type	Rated current A	Rated current A	Size	
Type of coordination "2" ¹⁾ : $I_q = 65 \text{ kA at } 600 \text{ V} + 5 \% \text{ (}^1\text{) see previous page)}$									
3RW4024	12.5	3RT2025/ 3RT2018 (in size S00)	3RV2021-4AA/ 3RV2011-4AA (in size S00)	16	--	--	3NA3820-6	50	00
3RW4026	25	3RT2026	3RV2021-4DA	25	--	--	3NA3822-6	63	00
3RW4027	32	3RT2027	3RV2021-4EA	32	--	--	3NA3824-6	80	00
3RW4028	38	3RT2028	3RV2021-4FA	40	--	--	3NA3824-6	80	00
3RW4036	45	3RT1036	3RV2031-4WA10	45	--	--	3NA3130-6	100	1
3RW4037	63	3RT1044	3RV2031-4JA10	63	--	--	3NA3132-6	125	1
3RW4038	72	3RT1045	3RV2031-4KA10	75	--	--	3NA3132-6	125	1
3RW4046	80	3RT1045	3RV1041-4LA10	90	--	--	3NA3136-6	160	1
3RW4047	106	3RT1046	3RV1041-4MA10	100	--	--	3NA3136-6	160	1
3RW4055	134	3RT1055-6A.36	3VL3720	200	3VL3720	200	3NA3244-6	250	2
3RW4056	162	3RT1056-6A.36	3VL3720	200	3VL3720	200	3NA3244-6	250	2
3RW4073	230	3RT1065-6A.36	3VL4731	315	3VL5731	315	2 x 3NA3354-6	2 x 355	3
3RW4074	280	3RT1066-6A.36	3VL4731	315	3VL5731	315	2 x 3NA3354-6	2 x 355	3
3RW4075	356	3RT1075-6A.36	3VL4740	400	3VL5740	400	2 x 3NA3365-6	2 x 500	3
3RW4076	432	3RT1076-6A.36	3VL5750	500	3VL5750	500	2 x 3NA3365-6	2 x 500	3



SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

SIRIUS 3RW40 for normal starting (CLASS 10) **IE3 ready**

Selection and ordering data



3RW402.



3RW403.



3RW404.

3RW ambient temperature 40 °C				3RW ambient temperature 50 °C				Size	DT ¹⁾	Normal starting (CLASS 10)	PU (UNIT, SET, M)	PS*	PG	
Rated values of three-phase motors				Rated values of three-phase motors										
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e			A	A	Configurator	Article No.	Price per PU		
	230 V	400 V	500 V		200 V	230 V	460 V							575 V
A	kW	kW	kW	A	hp	hp	hp	hp	hp					
Rated operational voltage U_e 200 ... 480 V														
12.5	3	5.5	--	11	3	3	7.5	--	S0	A	3RW4024-□BB□4	1	1 unit	42G
25	5.5	11	--	23	5	5	15	--	S0	A	3RW4026-□BB□4	1	1 unit	42G
32	7.5	15	--	29	7.5	7.5	20	--	S0	A	3RW4027-□BB□4	1	1 unit	42G
38	11	18.5	--	34	10	10	25	--	S0	A	3RW4028-□BB□4	1	1 unit	42G
45	11	22	--	42	10	15	30	--	S2	A	3RW4036-□BB□4	1	1 unit	42G
63	18.5	30	--	58	15	20	40	--	S2	A	3RW4037-□BB□4	1	1 unit	42G
72	22	37	--	62	20	20	40	--	S2	A	3RW4038-□BB□4	1	1 unit	42G
80	22	45	--	73	20	25	50	--	S3	A	3RW4046-□BB□4	1	1 unit	42G
106	30	55	--	98	30	30	75	--	S3	A	3RW4047-□BB□4	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V														
12.5	--	5.5	7.5	11	--	--	7.5	10	S0	B	3RW4024-□BB□5	1	1 unit	42G
25	--	11	15	23	--	--	15	20	S0	B	3RW4026-□BB□5	1	1 unit	42G
32	--	15	18.5	29	--	--	20	25	S0	B	3RW4027-□BB□5	1	1 unit	42G
38	--	18.5	22	34	--	--	25	30	S0	B	3RW4028-□BB□5	1	1 unit	42G
45	--	22	30	42	--	--	30	40	S2	B	3RW4036-□BB□5	1	1 unit	42G
63	--	30	37	58	--	--	40	50	S2	B	3RW4037-□BB□5	1	1 unit	42G
72	--	37	45	62	--	--	40	60	S2	B	3RW4038-□BB□5	1	1 unit	42G
80	--	45	55	73	--	--	50	60	S3	B	3RW4046-□BB□5	1	1 unit	42G
106	--	55	75	98	--	--	75	75	S3	B	3RW4047-□BB□5	1	1 unit	42G

Article No. supplement for connection types

- With screw terminals
- With spring-type terminals²⁾

Article No. supplement for rated control supply voltage U_c

- 24 V AC/DC
- 110 ... 230 V AC/DC

For online configurator, see www.siemens.com/sirius/configurators.

¹⁾ Soft starter U_e 200 to 480 V with screw terminals: delivery time class ► (preferred type).

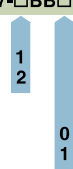
²⁾ Main connection from size S2: screw terminals.

Notes:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e : 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation without auxiliary fan (side-by-side see manual, <https://support.industry.siemens.com/cs/ww/en/view/38752095>, increased switching frequency possible using auxiliary fans)



SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

IE3 ready

SIRIUS 3RW40 for normal starting (CLASS 10)



3RW402.



3RW403.



3RW404.

3RW ambient temperature 40 °C				3RW ambient temperature 50 °C				Size	DT ¹⁾	Normal starting (CLASS 10)	PU (UNIT, SET, M)	PS*	PG	
Rated values of three-phase motors				Rated values of three-phase motors										
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e			Configurator	Article No.	Price per PU				
	230 V	400 V	500 V		200 V	230 V	460 V							575 V
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC														
12.5	3	5.5	--	11	3	3	7.5	--	S0	B	3RW4024-□TB04	1	1 unit	42G
25	5.5	11	--	23	5	5	15	--	S0	B	3RW4026-□TB04	1	1 unit	42G
32	7.5	15	--	29	7.5	7.5	20	--	S0	B	3RW4027-□TB04	1	1 unit	42G
38	11	18.5	--	34	10	10	25	--	S0	B	3RW4028-□TB04	1	1 unit	42G
45	11	22	--	42	10	15	30	--	S2	B	3RW4036-□TB04	1	1 unit	42G
63	18.5	30	--	58	15	20	40	--	S2	B	3RW4037-□TB04	1	1 unit	42G
72	22	37	--	62	20	20	40	--	S2	B	3RW4038-□TB04	1	1 unit	42G
80	22	45	--	73	20	25	50	--	S3	B	3RW4046-□TB04	1	1 unit	42G
106	30	55	--	98	30	30	75	--	S3	B	3RW4047-□TB04	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC														
12.5	--	5.5	7.5	11	--	--	7.5	10	S0	B	3RW4024-□TB05	1	1 unit	42G
25	--	11	15	23	--	--	15	20	S0	B	3RW4026-□TB05	1	1 unit	42G
32	--	15	18.5	29	--	--	20	25	S0	B	3RW4027-□TB05	1	1 unit	42G
38	--	18.5	22	34	--	--	25	30	S0	B	3RW4028-□TB05	1	1 unit	42G
45	--	22	30	42	--	--	30	40	S2	B	3RW4036-□TB05	1	1 unit	42G
63	--	30	37	58	--	--	40	50	S2	B	3RW4037-□TB05	1	1 unit	42G
72	--	37	45	62	--	--	40	60	S2	B	3RW4038-□TB05	1	1 unit	42G
80	--	45	55	73	--	--	50	60	S3	B	3RW4046-□TB05	1	1 unit	42G
106	--	55	75	98	--	--	75	75	S3	B	3RW4047-□TB05	1	1 unit	42G

Article No. supplement for connection types

- With screw terminals
- With spring-type terminals²⁾

For online configurator, see www.siemens.com/sirius/configurators.

- ¹⁾ Soft starter U_e 200 to 480 V with screw terminals: delivery time class ► (preferred type).
²⁾ Main connection from size S2: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on [page 6/6](#)):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e : 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation without auxiliary fan (side-by-side see [manual](#), <https://support.industry.siemens.com/cs/ww/en/view/38752095>, increased switching frequency possible using auxiliary fans)



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SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

SIRIUS 3RW40 for normal starting (CLASS 10) IE3 ready


3RW405.



3RW407.

3RW ambient temperature 40 °C				3RW ambient temperature 50 °C				Size	DT ¹⁾	Normal starting (CLASS 10)	PU (UNIT, SET, M)	PS*	PG	
Rated values of three-phase motors				Rated values of three-phase motors										
Opera- tional current I_e	Rating at operational voltage U_e			Opera- tional current I_e	Rating at operational voltage U_e			Configurator	Article No.	Price per PU				
	230 V	400 V	500 V		200 V	230 V	460 V						575 V	
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 460 V														
134	37	75	--	117	30	40	75	--	S6	B	3RW4055-□BB□4	1	1 unit	42G
162	45	90	--	145	40	50	100	--		B	3RW4056-□BB□4	1	1 unit	42G
230	75	132	--	205	60	75	150	--	S12	B	3RW4073-□BB□4	1	1 unit	42G
280	90	160	--	248	75	100	200	--		B	3RW4074-□BB□4	1	1 unit	42G
356	110	200	--	315	100	125	250	--		B	3RW4075-□BB□4	1	1 unit	42G
432	132	250	--	385	125	150	300	--		B	3RW4076-□BB□4	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V														
134	--	75	90	117	--	--	75	100	S6	B	3RW4055-□BB□5	1	1 unit	42G
162	--	90	110	145	--	--	100	150		B	3RW4056-□BB□5	1	1 unit	42G
230	--	132	160	205	--	--	150	200	S12	B	3RW4073-□BB□5	1	1 unit	42G
280	--	160	200	248	--	--	200	250		B	3RW4074-□BB□5	1	1 unit	42G
356	--	200	250	315	--	--	250	300		B	3RW4075-□BB□5	1	1 unit	42G
432	--	250	315	385	--	--	300	400		B	3RW4076-□BB□5	1	1 unit	42G

Article No. supplement for connection type²⁾

- With spring-type terminals
- With screw terminals

Article No. supplement for rated control supply voltage U_c ³⁾

- 115 V AC
- 230 V AC

For online configurator, see www.siemens.com/sirius/configurators.

1) Soft starter U_e 200 to 460 V with screw terminals: delivery time class ► (preferred type),
Soft starter U_e 400 to 600 V with screw terminals: delivery time class A.

2) Main circuit connection: busbar connection.

3) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on [page 6/6](#)):

- Maximum starting time in s: 10
- Maximum starting current in % of motor current I_e : 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation (side-by-side [see manual, https://support.industry.siemens.com/cs/ww/en/view/38752095](http://support.industry.siemens.com/cs/ww/en/view/38752095))

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, [see manual](#).

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

IE3 ready SIRIUS 3RW40 for heavy starting (CLASS 20)

Selection and ordering data



3RW402.



3RW403.



3RW404.

3RW ambient temperature 40 °C				3RW ambient temperature 50 °C				Size	DT ¹⁾	Heavy starting (CLASS 20)	PU (UNIT, SET, M)	PS*	PG	
Rated values of three-phase motors				Rated values of three-phase motors										
Opera- tional current I_e	Rating at operational voltage U_e			Opera- tional current I_e	Rating at operational voltage U_e			A	A	Configurator	Article No.	Price per PU		
	230 V	400 V	500 V		200 V	230 V	460 V							575 V
A	kW	kW	kW	A	hp	hp	hp	A	A					
Rated operational voltage U_e 200 ... 480 V														
12.5	3	5.5	--	11	3	3	7.5	--	S0	A	3RW4026-□BB□4	1	1 unit	42G
25	5.5	11	--	23	5	5	15	--	S0	A	3RW4027-□BB□4	1	1 unit	42G
32	7.5	15	--	29	7.5	7.5	20	--	S2	A	3RW4036-□BB□4	1	1 unit	42G
38	11	18.5	--	34	10	10	25	--	S2	A	3RW4037-□BB□4	1	1 unit	42G
45	11	22	--	42	10	15	30	--	S2	A	3RW4037-□BB□4	1	1 unit	42G
63	18.5	30	--	58	15	20	40	--	S3	A	3RW4047-□BB□4	1	1 unit	42G
72	22	37	--	62	20	20	40	--	S3	A	3RW4047-□BB□4	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V														
12.5	--	5.5	7.5	11	--	--	7.5	10	S0	B	3RW4026-□BB□5	1	1 unit	42G
25	--	11	15	23	--	--	15	20	S0	B	3RW4027-□BB□5	1	1 unit	42G
32	--	15	18.5	29	--	--	20	25	S2	B	3RW4036-□BB□5	1	1 unit	42G
38	--	18.5	22	34	--	--	25	30	S2	B	3RW4037-□BB□5	1	1 unit	42G
45	--	22	30	42	--	--	30	40	S2	B	3RW4037-□BB□5	1	1 unit	42G
63	--	30	37	58	--	--	40	50	S3	B	3RW4047-□BB□5	1	1 unit	42G
72	--	37	45	62	--	--	40	60	S3	B	3RW4047-□BB□5	1	1 unit	42G

Article No. supplement for connection types

- With screw terminals
- With spring-type terminals²⁾

Article No. supplement for rated control supply voltage U_c

- 24 V AC/DC
- 110 ... 230 V AC/DC

For online configurator, see www.siemens.com/sirius/configurators.

¹⁾ Soft starter U_e 200 to 480 V with screw terminals: delivery time class ► (preferred type).

²⁾ Main connection from size S2: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 20
- Maximum starting current in % of motor current I_e : 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation without auxiliary fan (side-by-side see manual, <https://support.industry.siemens.com/cs/ww/en/view/38752095>, increased switching frequency possible using auxiliary fans)

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual.

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

SIRIUS 3RW40 for heavy starting (CLASS 20) **IE3 ready**



3RW402.



3RW403.



3RW404.

3RW ambient temperature 40 °C				3RW ambient temperature 50 °C				Size	DT ¹⁾	Heavy starting (CLASS 20)	Configurator	PU (UNIT, SET, M)	PS*	PG
Rated values of three-phase motors				Rated values of three-phase motors										
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e			Article No.	Price per PU					
	230 V	400 V	500 V		200 V	230 V	460 V			575 V				
A	kW	kW	kW	A	hp	hp	hp	hp						
Rated operational voltage U_e 200 ... 480 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC														
12.5	3	5.5	--	11	3	3	7.5	--	S0	B	3RW4026-□TB04	1	1 unit	42G
25	5.5	11	--	23	5	5	15	--	S0	B	3RW4027-□TB04	1	1 unit	42G
32	7.5	15	--	29	7.5	7.5	20	--	S2	B	3RW4036-□TB04	1	1 unit	42G
38	11	18.5	--	34	10	10	25	--	S2	B	3RW4037-□TB04	1	1 unit	42G
45	11	22	--	42	10	15	30	--	S2	B	3RW4037-□TB04	1	1 unit	42G
63	18.5	30	--	58	15	20	40	--	S3	B	3RW4047-□TB04	1	1 unit	42G
72	22	37	--	62	20	20	40	--	S3	B	3RW4047-□TB04	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V, with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC														
12.5	--	5.5	7.5	11	--	--	7.5	10	S0	B	3RW4026-□TB05	1	1 unit	42G
25	--	11	15	23	--	--	15	20	S0	B	3RW4027-□TB05	1	1 unit	42G
32	--	15	18.5	29	--	--	20	25	S2	B	3RW4036-□TB05	1	1 unit	42G
38	--	18.5	22	34	--	--	25	30	S2	B	3RW4037-□TB05	1	1 unit	42G
45	--	22	30	42	--	--	30	40	S2	B	3RW4037-□TB05	1	1 unit	42G
63	--	30	37	58	--	--	40	50	S3	B	3RW4047-□TB05	1	1 unit	42G
72	--	37	45	62	--	--	40	60	S3	B	3RW4047-□TB05	1	1 unit	42G

Article No. supplement for connection types

- With screw terminals
- With spring-type terminals²⁾

For online configurator, see www.siemens.com/sirius/configurators.

1) Soft starter U_e 200 to 480 V with screw terminals: delivery time class ▶ (preferred type).

2) Main connection from size S2: screw terminals.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on [page 6/6](#)):

- Maximum starting time in s: 20
- Maximum starting current in % of motor current I_e : 300
- Maximum number of starts per hour in 1/h: 5
- Stand-alone installation without auxiliary fan (side-by-side see [manual](#), <https://support.industry.siemens.com/cs/ww/en/view/38752095>, increased switching frequency possible using auxiliary fans)

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see [manual](#).

1
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SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

IE3 ready SIRIUS 3RW40 for heavy starting (CLASS 20)



3RW405.



3RW407.

3RW ambient temperature 40 °C				3RW ambient temperature 50 °C				Size	DT ¹⁾	Heavy starting (CLASS 20)	PU (UNIT, SET, M)	PS*	PG	
Rated values of three-phase motors		Rated values of three-phase motors		Rated values of three-phase motors		Rated values of three-phase motors								
Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e			Operational current I_e	Rating at operational voltage U_e			Configurator	Article No.	Price per PU
	230 V	400 V	500 V		200 V	230 V	460 V		575 V	200 V	230 V			
A	kW	kW	kW	A	hp	hp	hp	hp	A	hp	hp	hp		
Rated operational voltage U_e 200 ... 460 V														
80	22	45	--	73	20	25	50	--	S6	B	3RW4055-□BB□4	1	1 unit	42G
106	30	55	--	98	25	30	60	--	S6	B	3RW4055-□BB□4	1	1 unit	42G
134	37	75	--	117	30	40	75	--	S6	B	3RW4056-□BB□4	1	1 unit	42G
162	45	90	--	145	40	50	100	--	S12	B	3RW4073-□BB□4	1	1 unit	42G
230	75	132	--	205	60	75	150	--	S12	B	3RW4074-□BB□4	1	1 unit	42G
280	90	160	--	248	75	100	200	--	S12	B	3RW4075-□BB□4	1	1 unit	42G
356	110	200	--	315	100	125	250	--	S12	B	3RW4076-□BB□4	1	1 unit	42G
Rated operational voltage U_e 400 ... 600 V														
80	--	45	55	73	--	--	50	60	S6	B	3RW4055-□BB□5	1	1 unit	42G
106	--	55	75	98	--	--	60	75	S6	B	3RW4055-□BB□5	1	1 unit	42G
134	--	75	90	117	--	--	75	100	S6	B	3RW4056-□BB□5	1	1 unit	42G
162	--	90	110	145	--	--	100	150	S12	B	3RW4073-□BB□5	1	1 unit	42G
230	--	132	160	205	--	--	150	200	S12	B	3RW4074-□BB□5	1	1 unit	42G
280	--	160	200	248	--	--	200	250	S12	B	3RW4075-□BB□5	1	1 unit	42G
356	--	200	250	315	--	--	250	300	S12	B	3RW4076-□BB□5	1	1 unit	42G

Article No. supplement for connection type²⁾

- With spring-type terminals
- With screw terminals

Article No. supplement for rated control supply voltage U_s ³⁾

- 115 V AC
- 230 V AC

For online configurator, see www.siemens.com/sirius/configurators.

- 1) Soft starter U_e 200 to 460 V with screw terminals: delivery time class ► (preferred type), Soft starter U_e 400 to 600 V with screw terminals: delivery time class A.
- 2) Main circuit connection: busbar connection.
- 3) Control by way of the internal 24 V DC supply and direct control via PLC possible.

Note:

The listed motor ratings are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor.

The 3RW40 soft starters are designed for easy starting conditions. The selection and ordering data were determined for the following boundary conditions (see also the notes on page 6/6):

- Maximum starting time in s: 40
- Maximum starting current in % of motor current I_e : 350
- Maximum number of starts per hour in 1/h: 1
- Stand-alone installation (side-by-side see manual, <https://support.industry.siemens.com/cs/ww/en/view/38752095>)

In case of additional requirements, it may be necessary to choose a larger device. In some cases, however, the safety margins taken into account in the selection also permit the listed units to be used in boundary conditions which are slightly more demanding. Detailed technical information for a configuration which is tailored exactly to the application, see manual.







SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

Accessories

Selection and ordering data


Conductor cross-section		Tightening torque	For soft starters size	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Solid or stranded	Finely stranded with end sleeve								
mm ²	mm ²	AWG	Nm						
Three-phase infeed terminals									
 3RV2925-5AB									
2.5 ... 25	2.5 ... 16	10 ... 4	3 ... 4	S0 (3RW402.)	▶ 3RV2925-5AB		1	1 unit	41E
Box terminal blocks for soft starters									
									
For round and ribbon cables (2 units required for each device)									
3RW405.	S6	• Up to 70 mm ² • Up to 120 mm ²		▶	3RT1955-4G		1	1 unit	41B
				▶	3RT1956-4G		1	1 unit	41B
		Auxiliary conductor connection for box terminals		B	3TX7500-0A		1	1 unit	41B
3RW407.	S12	• Up to 240 mm ² (with auxiliary conductor connection)		▶	3RT1966-4G		1	1 unit	41B
Auxiliary terminals									
 3RT1946-4F									
3RW404.	S3	Auxiliary terminals, 3-pole		B	3RT1946-4F		1	1 unit	41B
Covers for soft starters									
 3RT1936-4EA2									
Terminal covers for box terminals Additional touch protection to be fitted at the box terminals (2 units required per device)									
3RW403.	S2			B	3RT2936-4EA2		1	1 unit	41B
3RW404.	S3			▶	3RT1946-4EA2		1	1 unit	41B
3RW405.	S6			▶	3RT1956-4EA2		1	1 unit	41B
3RW407.	S12			▶	3RT1966-4EA2		1	1 unit	41B
Terminal covers for cable lugs and busbar connections									
3RW404.	S3	For complying with the voltage clearances and as touch protection if box terminal is removed (2 units required per device)		B	3RT1946-4EA1		1	1 unit	41B
3RW405.	S6		▶	3RT1956-4EA1		1	1 unit	41B	
3RW407.	S12		▶	3RT1966-4EA1		1	1 unit	41B	
Also fits in case of S6 and S12 on mounted box terminals									
Sealing covers									
3RW402. to 3RW404.	S0, S2, S3			▶	3RW4900-0PB10		1	1 unit	42G
3RW405. and 3RW407.	S6, S12			▶	3RW4900-0PB00		1	1 unit	42G




SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications



3RW40

Accessories

For motor starter protectors	For soft starters	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Size								
Standard mounting rail adapters								
	S2	S2		3RA2932-1CA00		1	1 unit	41B
		For mechanical fixing of motor starter protector and soft starter; for snapping onto standard mounting rail or for screw fixing						
		Single-unit packaging						
3RA2932-1CA00								

For soft starters	Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
Type	Size							
Modules for RESET¹⁾								
	Modules for remote RESET, electrical							
		Operating range 0.85 ... 1.1 x U _s , power consumption AC 80 VA, DC 70 W, ON period 0.2 ... 4 s, switching frequency 60/h						
3RW405. and 3RW407.	S6, S12	<ul style="list-style-type: none"> • 24 ... 30 V AC/DC • 110 ... 127 V AC/DC • 220 ... 250 V AC/DC 	A A A	3RU1900-2AB71 3RU1900-2AF71 3RU1900-2AM71		1 1 1	1 unit 1 unit 1 unit	41F 41F 41F
	Mechanical RESET comprising							
3RW405. and 3RW407.	S6, S12	<ul style="list-style-type: none"> • Resetting plungers, holders and formers • Matching pushbutton IP65, Ø 22 mm, 12 mm stroke • Extension plungers 	▶ B A	3RU1900-1A 3SB3000-0EA11 3SX1335		1 1 1	1 unit 1 unit 1 unit	41F 41J 41J
	Cable releases with holder for RESET							
		For Ø 6.5 mm holes in the control panel; max. control panel thickness 8 mm						
3RW405. and 3RW407.	S6, S12	<ul style="list-style-type: none"> • Length 400 mm • Length 600 mm 	▶ ▶	3RU1900-1B 3RU1900-1C		1 1	1 unit 1 unit	41F 41F

¹⁾ Remote RESET already integrated in the 3RW402.. to 3RW404.. soft starters.

For soft starters	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	
Type	Size						
Fan (to increase the switching frequency and for device mounting in positions different from the normal position)							
	3RW402.	S0	▶	3RW4928-8VB00	1	1 unit	42G
	3RW403., 3RW404.	S2, S3	▶	3RW4947-8VB00	1	1 unit	42G

Manual for SIRIUS 3RW30/3RW40 soft starters¹⁾

The manual can be downloaded free of charge in PDF format from the Internet, see <https://support.industry.siemens.com/cs/ww/en/view/38752095>.

¹⁾ The respective Operating Instructions 3RW402../3./4. (3ZX1012-0RW40-2DA1) or 3RW405../7. (3ZX1012-0RW40-1AA1) are included in the scope of supply of the soft starter, or are available (like the manual) as a PDF download in the Industry Online Support Portal, see <https://support.industry.siemens.com/cs/ww/en/ps/16131/man>.

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

Accessories

For soft starters		Motor starter protectors		DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	Size	Size	Size						

Link modules to motor starter protectors¹⁾



3RA2921-1BA00

- With screw terminals

3RW402.	S0	S00/S0	▶	3RA2921-1BA00	1	1 unit	41B
3RW4036.	S2	S2	▶	3RA2931-1AA00	1	1 unit	41B
3RW4046., 3RW4047.	S3	S3	▶	3RA1941-1AA00	1	1 unit	41B



3RA2921-2GA00

- With spring-type terminals

3RW402.	S0	S0	▶	3RA2921-2GA00	1	1 unit	41B
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¹⁾ 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 3RA2932-1AC00 standard mounting rail adapter (specially for soft starters). Can be used in size S3 only for 3RV1 motor starter protectors.

Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
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Tools for opening spring-type terminals in sizes S00 and S0



3RA2908-1A

Screwdrivers
For all SIRIUS devices with spring-type terminals length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated

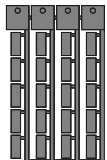
Spring-type terminals

3RA2908-1A



1 1 unit 41B

Blank labels



3RT2900-1SB20

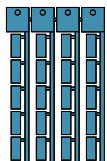
Unit labeling plates¹⁾

For SIRIUS devices

- 20 mm x 7 mm, titanium gray

D **3RT2900-1SB20**

100 340 units 41B



3RT1900-1SB20

- 20 mm x 7 mm, pastel turquoise

D **3RT1900-1SB20**

100 340 units 41B

¹⁾ PC labeling systems for individual inscription of unit labeling plates are available from: murrplastik Systemtechnik GmbH see page 16/20.

Spare parts

For soft starters		Version	DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Type	Size	Rated control supply voltage U_s						

Fans



Fans

3RW405.-.BB3.	S6	115 V AC	▶	3RW4936-8VX30	1	1 unit	42G
3RW405.-.BB4.	S6	230 V AC	▶	3RW4936-8VX40	1	1 unit	42G
3RW407.-.BB3.	S12	115 V AC	▶	3RW4947-8VX30	1	1 unit	42G
3RW407.-.BB4.	S12	230 V AC	▶	3RW4947-8VX40	1	1 unit	42G

More information

Application examples for normal starting (CLASS 10)

Normal starting CLASS 10 (up to 20 s with 350 % $I_{n\ motor}$, one start per hour)
The soft starter rating can be selected to be as high as the rating of the motor used.

Application	Conveyor belts	Roller conveyors	Compressors	Small fans ¹⁾	Pumps	Hydraulic pumps
Starting parameters						
• Voltage ramp and current limiting						
- Starting voltage	%	70	60	50	40	40
- Starting time	s	10	10	10	10	10
- Current limiting value		$5 \times I_M$	$5 \times I_M$	$4 \times I_M$	$4 \times I_M$	$4 \times I_M$
Stopping time	s	5	5	0	0	0

¹⁾ The mass inertia of the fan is <10 times the mass inertia of the motor.

Application examples for heavy starting (CLASS 20)

Heavy starting CLASS 20 (up to 40 s with 350 % $I_{n\ motor}$, one start per hour)
The soft starter has to be selected at least one performance class higher than the motor used.

Application	Stirrers	Centrifuges
Starting parameters		
• Voltage ramp and current limiting		
- Starting voltage	%	40
- Starting time	s	20
- Current limiting value		$4 \times I_M$
Stopping time		0

Note:

These tables present sample set values and device dimensions. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.

The soft starter dimensions should be checked where necessary with the help of Technical Assistance.

SIRIUS 3RW Soft Starters

3RW30, 3RW40 for Standard Applications

3RW40

Accessories

Configuration

The solid-state 3RW soft starters are designed for easy starting conditions. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device.

Where long starting times are involved, the integrated electronic overload relay for heavy starting should not be disconnected. PTC sensors are recommended. This also applies for the soft ramp-down because during the ramp down time an additional current loading applies in contrast to coasting down.

In the case of high switching frequencies in S4 mode, Siemens recommends the use of PTC sensors. For corresponding device versions with integrated thermistor motor protection or separate thermistor evaluation devices, see page 10/179.

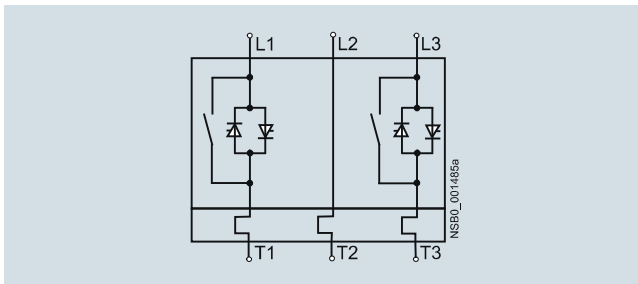
No capacitive elements are permitted in the motor feeder between the SIRIUS 3RW soft starter and the motor (e.g. no reactive-power compensation equipment). In addition, neither static systems for reactive-power compensation nor dynamic PFC (Power Factor Correction) must be operated in parallel during starting and ramp-down of the soft starter. This is important to prevent faults arising on the compensation equipment and/or the soft starter.

All elements of the main circuit (such as fuses and controls) should be dimensioned for direct starting, following the local short-circuit conditions. Fuses, controls and overload relays must be ordered separately. Please observe the maximum switching frequencies specified in the technical specifications.

Note:

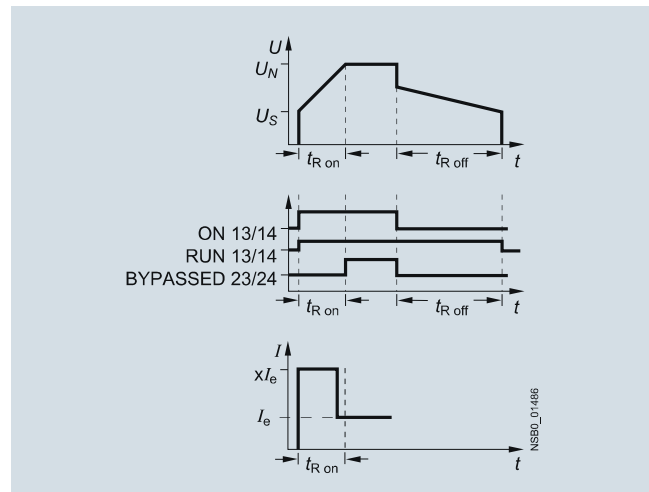
When three-phase motors are switched on, voltage drops occur as a rule on starters of all types (direct-on-line starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the infeed transformer is dimensioned with only a small margin, it is best for the control voltage to be supplied from a separate circuit (independently of the main voltage) in order to avoid the potential switching off of the soft starter.

Schematic circuit diagram of power electronics



A bypass contact system and electronic overload relay are already integrated in the 3RW40 soft starter and therefore do not have to be ordered separately.

Status graphs



Manual for SIRIUS 3RW30/40

In addition to relevant configuration, commissioning, and service information, the manual also contains example circuits and technical specifications for all devices, see <https://support.industry.siemens.com/cs/ww/en/view/38752095>.