SIRIUS 3RW Soft Starters

■ Overview

		SIRIUS 3RW30 Standard applications	SIRIUS 3RW40 Standard applications	SIRIUS 3RW44 High-Feature applications
Rated current at 40 °C	*A*	*3 ... 106*	*12.5 ... 432*	*29 ... 1214*
Rated operational voltage	V	200 ... 480	200 ... 600	200 ... 690
Motor rating at 400 V • Inline circuit • Inside-delta circuit	 kW kW	 1.5 ... 55 --	 5.5 ... 250 --	 15 ... 710 22 ... 1 200
Ambient temperature	°C	-25 ... +60	-25 ... +60	0 ... +60
Soft starting/ramp-down		✓[1]	✓	✓
Voltage ramp		✓	✓	✓
Starting/stopping voltage	%	40 ... 100	40 ... 100	20 ... 100
Starting and ramp-down time	s	0 ... 20[1]	0 ... 20	1 ... 360
Torque control		--	--	✓
Starting/stopping torque	%	--	--	20 ... 100
Torque limit	%	--	--	20 ... 200
Ramp time	s	--	--	1 ... 360
Integral bypass contact system		✓	✓	✓
Intrinsic device protection		--	✓	✓
Motor overload protection		--	✓[7]	✓
Thermistor motor protection		--	✓[2]	✓
Integrated remote RESET		--	✓[3]	✓
Adjustable current limiting		--	✓	✓
Inside-delta circuit		--	--	✓
Breakaway pulse		--	--	✓
Creep speed in both directions of rotation		--	--	✓
Pump ramp-down		--	--	✓[4]
DC braking		--	--	✓[4] [5]
Combined braking		--	--	✓[4] [5]
Motor heating		--	--	✓
Communication		--	--	With PROFIBUS DP (optional)
External display and operator module		--	--	(optional)
Operating measured value display		--	--	✓
Error logbook		--	--	✓
Event list		--	--	✓
Slave pointer function		--	--	✓
Trace function		--	--	✓[6]
Programmable control inputs and outputs		--	--	✓
Number of parameter sets		1	1	3
Parameterization software (Soft Starter ES)		--	--	✓
Power semiconductors (thyristors)		2 controlled phases	2 controlled phases	3 controlled phases
Screw terminals		✓	✓	✓
Spring-type terminals		✓	✓	✓
UL/CSA		✓	✓	✓
CE marking		✓	✓	✓
Soft starting under heavy starting conditions		--	--	✓[4]
Configuring support		Win-Soft Starter, electronic selection slider ruler, Technical Assistance ++49 911 895 5900		

✓ Function is available.

-- Function not available.

[1] Only soft starting available for 3RW30.
[2] Optional up to size S3 (device variant).
[3] Available for 3RW40 2. to 3RW40 4.; optional for 3RW40 5. and 3RW40 7..

[4] Calculate soft starter and motor with size allowance where required.
[5] Not possible in inside-delta circuit.
[6] Trace function with Soft Starter ES software.
[7] When using the motor overload protection according to ATEX, an upstream contactor is required.

You can find further information on the Internet at:
www.siemens.com/softstarter

SIRIUS 3RW Soft Starters

General data

Selection aid for soft starters

Application	SIRIUS 3RW30 Standard applications	SIRIUS 3RW40 Standard applications	SIRIUS 3RW44 High-Feature applications
Normal starting (CLASS 10)			
Pumps	●	●	●
Pumps with special pump ramp-down (to prevent water hammer)			●
Heat pumps	●	●	●
Hydraulic pumps	○	●	●
Presses	○	●	●
Conveyor belts	○	●	●
Roller conveyors	○	●	●
Screw conveyors	○	●	●
Escalators		●	●
Piston compressors		●	●
Screw compressors		●	●
Small fans[1]		●	●
Centrifugal blowers		●	●
Bow thrusters		●	●
Heavy starting (CLASS 20)			
Stirrer		○	●
Extruders		○	●
Lathes		○	●
Milling machines		○	●
Very heavy starting (CLASS 30)			
Large fans[2]			●
Circular saws/bandsaws			●
Centrifuge			●
Mills			●
Breakers			●

● Recommended soft starter
○ Possible soft starter

[1] The mass inertia of the fan is <10 times the mass inertia of the motor.
[2] The mass inertia of the fan is ≥10 times the mass inertia of the motor.

Boundary conditions

Type	Maximum starting time s	Current limiting %	Starts per hour 1/h
Normal starting (CLASS 10)			
• 3RW30	3	300	20
• 3RW40/44	10	300	5
Heavy starting (CLASS 20)			
• 3RW40 2., 3RW40 3., 3RW40 4.	20	300	5
• 3RW40 5., 3RW40 7., 3RW44	40	350	1
Very heavy starting (CLASS 30)			
• 3RW44	60	350	1

The motor ratings listed in the Selection and ordering data are rough guide values. The soft starter should always be designed on the basis of the required rated operational current of the motor. The 3RW soft starters are designed for easy starting conditions. In the event of more exacting requirements, it may be necessary to choose a larger device. However, in some cases the designed-in safety reserves 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 can be found in the manuals. Siemens recommends the use of the selection and simulation program Win-Soft Starter.

Motor rating data are based on DIN 42973 (kW) and NEC 96/UL508 (hp).

SIRIUS 3RW Soft Starters

Order No. scheme

| Digit of the Order No.	1st - 3rd	4th	5th	6th	7th		8th	9th	10th	11th	12th		13th	14th	15th	16th
	☐☐☐	☐	☐	☐	☐	–	☐	☐	☐	☐	☐	–	☐	☐	☐	☐
Soft starters	3 R W															
SIRIUS soft starter generation		☐	☐													
Size				☐												
Rated operational current I_e					☐											
Connection type (screw terminals / spring-type terminals)							☐									
Soft starter functionality (bypass, thermistor, etc.)								☐	☐							
Rated control supply voltage U_s										☐						
Rated operational voltage U_e											☐					
Special versions													☐	☐	☐	☐
Example	3 R W	4	0	2	4	–	1	B	B	1	4					

Note:

The Order No. scheme is presented here merely for information purposes and for better understanding of the logic behind the order numbers.

For your orders, please use the order numbers quote in the catalog in the Selection and ordering data.

■ Benefits

The advantages of the SIRIUS soft starters at a glance:

- Soft starting and smooth ramp-down (only soft starting available for 3RW30)
- Stepless starting
- Reduction of current peaks
- Avoidance of mains voltage fluctuations during starting
- Reduced load on the power supply network
- Reduction of the mechanical load in the operating mechanism
- Considerable space savings and reduced wiring compared with conventional starters
- Maintenance-free switching
- Very easy handling
- Fits perfectly in the SIRIUS modular system

■ Technical specifications

Permissible installation altitude
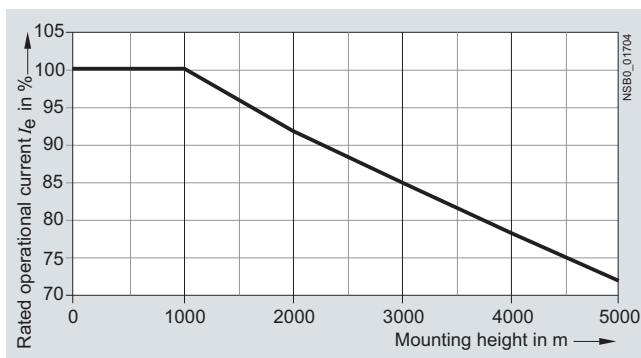
At an installation altitude above 2 000 m, the max. permissible operational voltage is reduced to 460 V.

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 is 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 4/17)

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.
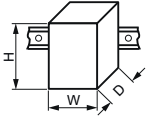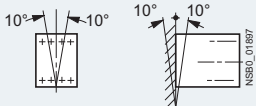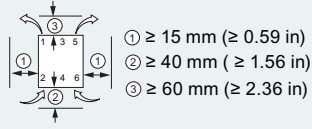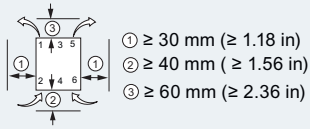
Application areas

See "Selection aid for soft starters" on page 4/6.

■ **Technical specifications**

Type			3RW30 1.	3RW30 2.	3RW30 3.	3RW30 4.
Mechanics and environment						
Mounting dimensions (WxHxD)						
• Screw terminals		mm	45 x 95 x 151	45 x 125 x 151	55 x 144 x 168	70 x 160 x 186
• Spring-type terminals		mm	45 x 117.2 x 151	45 x 150 x 151	55 x 144 x 168	70 x 160 x 186
Permissible ambient temperature						
Operation		°C	-25 ... +60; (derating from +40)			
Storage		°C	-40 ... +80			
Weight		kg	0.58	0.69	1.20	1.71
Permissible mounting position[1] (auxiliary fan not available)						
Installation type[1]	Stand-alone installation		① ≥ 15 mm (≥ 0.59 in) ② ≥ 40 mm (≥ 1.56 in) ③ ≥ 60 mm (≥ 2.36 in)		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 1000, see Characteristic curves page 4/7); higher on request			
Degree of protection			IP20		IP00	

[1] In case of deviations, please note derating (see Manual in Chapter "Configuration").
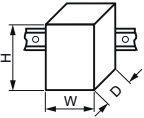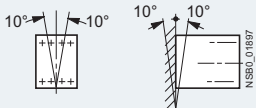
Type			3RW30 1. to 3RW30 4.	
Control electronics				
Rated values	Terminal A1/A2			
Rated control supply voltage		V	24	110 ... 230
• Tolerance		%	±20	-15/+10
Rated frequency		Hz	50/60	
• Tolerance		%	±10	

Type		3RW30 1. to 3RW30 4.
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 2 A)
Maximum cable length between soft starter and motor	m	300

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

3RW30

Type		3RW30 03-1CB54	3RW30 03-2CB54
Mechanics and environment			
Mounting dimensions (WxHxD)			
• Screw terminals	mm	22.5 x 100 x 120	--
• Spring-type terminals	mm	--	22.5 x 101.6 x 120
Permissible ambient temperature			
Operation	°C	-25 ... +60; (derating from +40)	
Storage	°C	-40 ... +80	
Weight	kg	0.207	0.188
Permissible mounting position			
Permissible installation altitude	m	5 000 (derating from 1000, see Characteristic curves page 4/7); 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	
• Tolerance	%	± 10	
Rated frequency at AC	Hz	50/60	
• 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 load[1] (% of I_e); at 40 °C	%	9	
Maximum conductor length between soft starter and motor	m	100[2]	

[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.

Motor feeders with soft starters

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

If type of coordination "2" is to be fulfilled, 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 therefore unsuitable for further use (protection of persons and equipment 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 equipment guaranteed).

The type of coordination refers to soft starters in combination with the stipulated protective device (motor starter protector/circuit breaker/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
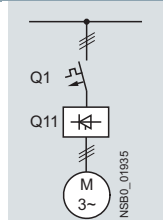
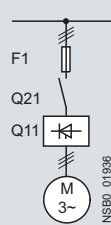| Soft starters [ToC 1]		Motor starter protectors[1]		
	Rated current	400 V +10 %		Rated current
Q11		Q1	$I_{q\,max}$	
Type	A	Type	kA	A
Type of coordination "1"				
3RW30 03	3	3RV20 11-1EA..	50	4
3RW30 13	3.6	3RV20 11-1FA..	5	5
3RW30 14	6.5	3RV20 11-1HA..	5	8
3RW30 16	9	3RV20 11-1JA..	5	10
3RW30 17	12.5	3RV20 11-1KA..	5	12.5
3RW30 18	17.6	3RV20 21-4BA..	5	20
3RW30 26	25	3RV20 21-4DA..	55	25
3RW30 27	32	3RV20 21-4EA..	55	32
3RW30 28	38	3RV20 21-4FA..	55	40
3RW30 36	45	3RV10 31-4GA10	20	45
3RW30 37	63	3RV10 41-4JA10	20	63
3RW30 38	72	3RV10 41-4KA10	20	75
3RW30 46	80	3RV10 41-4LA10	11	90
3RW30 47	106	3RV10 41-4MA10	11	100

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

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

3RW30

Fused version (line protection only)

Soft starters		Line fuses, maximum				Line contactors	
ToC 1	Rated current		Rated current	Size	(optional)	
Q11 Type	A	F1 Type	A		Q21	
Type of coordination "1"[1]: I_q = 65 kA at 480 V + 10 %							
3RW30 03[2]	3	3NA3 805[3]	20	000	3RT10 15	
3RW30 13	3.6	3NA3 803-6	10	000	3RT10 15	
3RW30 14	6.5	3NA3 805-6	16	000	3RT10 15	
3RW30 16	9	3NA3 807-6	20	000	3RT10 16	
3RW30 17	12.5	3NA3 810-6	25	000	3RT10 24	
3RW30 18	17.6	3NA3 814-6	35	000	3RT10 26	
3RW30 26	25	3NA3 822-6	63	00	3RT10 26	
3RW30 27	32	3NA3 824-6	80	00	3RT10 34	
3RW30 28	38	3NA3 824-6	80	00	3RT10 35	
3RW30 36	45	3NA3 130-6	100	1	3RT10 36	
3RW30 37	63	3NA3 132-6	125	1	3RT10 44	
3RW30 38	72	3NA3 132-6	125	1	3RT10 45	
3RW30 46	80	3NA3 136-6	160	1	3RT10 45	
3RW30 47	106	3NA3 136-6	160	1	3RT10 46	

[1] The type of coordination "1" refers to soft starters in combination with the stipulated fuse, not to any additional components in the feeder.

[2] I_q = 50 kA at 400 V.

[3] 3NA3 805-1 (NH00), 5SB2 61 (DIAZED), 5SE2 201-6 (NEOZED).

Fused version with 3NE1 SITOR fuses (semiconductor and line protection)
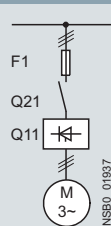
For matching fuse bases see Catalog LV 10.1
- "Switch Disconnectors"
- "Fuse Systems" --> "SITOR Semiconductor Fuses"
  or at www.siemens.com/sitor

Soft starters		All-range fuses				Line contactors	
ToC 2	Rated current		Rated current	Size	(optional)	
Q11 Type	A	F1 Type	A		Q21	
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %							
3RW30 03[2]	3	3NE1 813-0[3]	16	000	3RT10 15	
3RW30 13	3.6	3NE1 813-0	16	000	3RT10 15	
3RW30 14	6.5	3NE1 813-0	16	000	3RT10 15	
3RW30 16	9	3NE1 813-0	16	000	3RT10 16	
3RW30 17	12.5	3NE1 813-0	16	000	3RT10 24	
3RW30 18	17.6	3NE1 814-0	20	000	3RT10 26	
3RW30 26	25	3NE1 803-0	35	000	3RT10 26	
3RW30 27	32	3NE1 020-2	80	00	3RT10 34	
3RW30 28	38	3NE1 020-2	80	00	3RT10 35	
3RW30 36	45	3NE1 020-2	80	00	3RT10 36	
3RW30 37	63	3NE1 820-0	80	000	3RT10 44	
3RW30 38	72	3NE1 820-0	80	000	3RT10 45	
3RW30 46	80	3NE1 021-0	100	00	3RT10 45	
3RW30 47	106	3NE1 022-0	125	00	3RT10 46	

[1] The type of coordination "2" refers to soft starters in combination with the stipulated fuse, not to any additional components in the feeder.
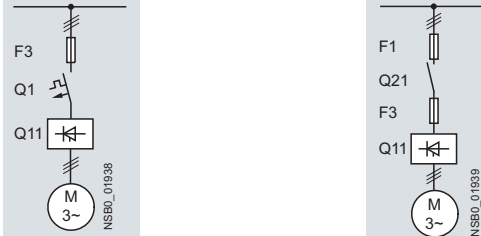
[2] I_q = 50 kA at 400 V.

[3] No SITOR fuse required!
Alternatively: 3NA3 803 (NH00), 5SB2 21 (DIAZED), 5SE2 206 (NEOZED).

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)

F3 / Q1 / Q11 — M 3~ (NSB0_01938)

F1 / Q21 / F3 / Q11 — M 3~ (NSB0_01939)

For matching fuse bases see Catalog LV 10.1
- "Switch Disconnectors"
- "Fuse Systems" --> "SITOR Semiconductor Fuses" or at www.siemens.com/sitor

Soft starters Q11 Type	Rated current A	Semiconductor fuses, minimum F3 Type	Rated current A	Size	Semiconductor fuses, maximum F3 Type	Rated current A	Size	Semiconductor fuses, minimum F3 Type	Rated current A	Size
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %										
3RW30 03[2]	3	--	--	--	--	--	--			
3RW30 13	3.6	--	--	--	--	--	--	3NE4 101	32	0
3RW30 14	6.5	--	--	--	--	--	--	3NE4 101	32	0
3RW30 16	9	--	--	--	--	--	--	3NE4 101	32	0
3RW30 17	12.5	--	--	--	--	--	--	3NE4 101	32	0
3RW30 18	17.6	--	--	--	3NE3 221	100	1	3NE4 101	32	0
3RW30 26	25	--	--	--	3NE3 221	100	1	3NE4 102	40	0
3RW30 27	32	--	--	--	3NE3 222	125	1	3NE4 118	63	0
3RW30 28	38	--	--	--	3NE3 222	125	1	3NE4 118	63	0
3RW30 36	45	--	--	--	3NE3 224	160	1	3NE4 120	80	0
3RW30 37	63	--	--	--	3NE3 225	200	1	3NE4 121	100	0
3RW30 38	72	3NE3 221	100	1	3NE3 227	250	1	--	--	--
3RW30 46	80	3NE3 222	125	1	3NE3 225	200	1	--	--	--
3RW30 47	106	3NE3 224	160	1	3NE3 231	350	1	--	--	--

Soft starters Q11 Type	Rated current A	Semiconductor fuses, max. F3 Type	Rated current A	Size	Semiconductor fuses, min. F3 Type	Rated current A	Size	Semiconductor fuses, max. F3 Type	Rated current A	Size	Cylindrical fuses F3 Type	Rated current A
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %												
3RW30 03[2]	3	--	--	--	3NE8 015-1	25	00	3NE8 015-1	25	00	3NC1 010	10
3RW30 13	3.6	--	--	--	3NE8 015-1	25	00	3NE8 015-1	25	00	3NC2 220	20
3RW30 14	6.5	--	--	--	3NE8 015-1	25	00	3NE8 015-1	25	00	3NC2 220	20
3RW30 16	9	--	--	--	3NE8 015-1	25	00	3NE8 015-1	25	00	3NC2 220	20
3RW30 17	12.5	--	--	--	3NE8 015-1	25	00	3NE8 018-1	63	00	3NC2 250	50
3RW30 18	17.6	--	--	--	3NE8 003-1	35	00	3NE8 021-1	100	00	3NC2 263	63
3RW30 26	25	3NE4 117	50	0	3NE8 017-1	50	00	3NE8 021-1	100	00	3NC2 263	63
3RW30 27	32	3NE4 118	63	0	3NE8 018-1	63	00	3NE8 022-1	125	00	3NC2 280	80
3RW30 28	38	3NE4 118	63	0	3NE8 020-1	80	00	3NE8 022-1	125	00	3NC2 280	80
3RW30 36	45	3NE4 120	80	0	3NE8 020-1	80	00	3NE8 024-1	160	00	3NC2 280	80
3RW30 37	63	3NE4 121	100	0	3NE8 021-1	100	00	3NE8 024-1	160	00	--	--
3RW30 38	72	--	--	--	3NE8 022-1	125	00	3NE8 024-1	160	00	--	--
3RW30 46	80	--	--	--	3NE8 022-1	125	00	3NE8 024-1	160	00	--	--
3RW30 47	106	--	--	--	3NE8 024-1	160	00	3NE8 024-1	160	00	--	--

Soft starters Q11 Type	Rated current A	Line contactors (optional) Q21	Motor starter protectors 400 V +10 % Q1 Type	Rated current A	Line fuses, maximum F1 Type	Rated current A	Size
Type of coordination "2"[1]: I_q = 65 kA at 480 V + 10 %							
3RW30 03[2]	3	3RT10 15	3RV20 11-1EA..	4	3NA3 805[3]	20	000
3RW30 13	3.6	3RT10 15	3RV20 11-1FA..	5	3NA3 803-6	10	000
3RW30 14	6.5	3RT10 15	3RV20 11-1HA..	8	3NA3 805-6	16	000
3RW30 16	9	3RT10 16	3RV20 11-1JA..	10	3NA3 807-6	20	000
3RW30 17	12.5	3RT10 24	3RV20 11-1KA..	12.5	3NA3 810-6	25	000
3RW30 18	17.6	3RT10 26	3RV20 21-4BA..	20	3NA3 814-6	35	000
3RW30 26	25	3RT10 26	3RV20 21-4DA..	25	3NA3 822-6	63	00
3RW30 27	32	3RT10 34	3RV20 21-4EA..	32	3NA3 824-6	80	00
3RW30 28	38	3RT10 35	3RV20 21-4FA..	40	3NA3 824-6	80	00
3RW30 36	45	3RT10 36	3RV10 31-4GA10	45	3NA3 130-6	100	1
3RW30 37	63	3RT10 44	3RV10 41-4JA10	63	3NA3 132-6	125	1
3RW30 38	72	3RT10 45	3RV10 41-4KA10	75	3NA3 132-6	125	1
3RW30 46	80	3RT10 45	3RV10 41-4LA10	90	3NA3 136-6	160	1
3RW30 47	106	3RT10 46	3RV10 41-4MA10	100	3NA3 136-6	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] 3NA3 805-1 (NH00), 5SB2 61 (DIAZED).

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

3RW30

■ **Selection and ordering data**

3RW30 1.   3RW30 2.   3RW30 3.   3RW30 4.   3RW30 03-2CB54

3RW ambient temperature 40 °C[1]				3RW ambient temperature 50 °C[1]					Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Rated values of induction motors				Rated values of induction motors											
Opera-tional current I_e	Rating at operational voltage U_e			Opera-tional current I_e	Rating at operational voltage U_e										
	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[2]															
• With screw terminals															
3.6	0.75	**1.5**	--	3	0.5	0.5	**1.5**	--	S00	▶	3RW30 13-1BB☐4		1	1 unit	131
6.5	1.5	**3**	--	4.8	1	1	**3**	--	S00	▶	3RW30 14-1BB☐4		1	1 unit	131
9	2.2	**4**	--	7.8	2	2	**5**	--	S00	▶	3RW30 16-1BB☐4		1	1 unit	131
12.5	3	**5.5**	--	11	3	3	**7.5**	--	S00	▶	3RW30 17-1BB☐4		1	1 unit	131
17.6	4	**7.5**	--	17	3	3	**10**	--	S00	▶	3RW30 18-1BB☐4		1	1 unit	131
• With spring-type terminals															
3.6	0.75	**1.5**	--	3	0.5	0.5	**1.5**	--	S00	B	3RW30 13-2BB☐4		1	1 unit	131
6.5	1.5	**3**	--	4.8	1	1	**3**	--	S00	B	3RW30 14-2BB☐4		1	1 unit	131
9	2.2	**4**	--	7.8	2	2	**5**	--	S00	B	3RW30 16-2BB☐4		1	1 unit	131
12.5	3	**5.5**	--	11	3	3	**7.5**	--	S00	B	3RW30 17-2BB☐4		1	1 unit	131
17.6	4	**7.5**	--	17	3	3	**10**	--	S00	B	3RW30 18-2BB☐4		1	1 unit	131
• With screw terminals															
25	5.5	**11**	--	23	5	5	**15**	--	S0	▶	3RW30 26-1BB☐4		1	1 unit	131
32	7.5	**15**	--	29	7.5	7.5	**20**	--	S0	▶	3RW30 27-1BB☐4		1	1 unit	131
38	11	**18.5**	--	34	10	10	**25**	--	S0	▶	3RW30 28-1BB☐4		1	1 unit	131
• With spring-type terminals															
25	5.5	**11**	--	23	5	5	**15**	--	S0	B	3RW30 26-2BB☐4		1	1 unit	131
32	7.5	**15**	--	29	7.5	7.5	**20**	--	S0	B	3RW30 27-2BB☐4		1	1 unit	131
38	11	**18.5**	--	34	10	10	**25**	--	S0	B	3RW30 28-2BB☐4		1	1 unit	131
• With screw or spring-type terminals															
45	11	**22**	--	42	10	15	**30**	--	S2	▶	3RW30 36-☐BB☐4		1	1 unit	131
63	18.5	**30**	--	58	15	20	**40**	--	S2	▶	3RW30 37-☐BB☐4		1	1 unit	131
72	22	**37**	--	62	20	20	**40**	--	S2	▶	3RW30 38-☐BB☐4		1	1 unit	131
• With screw or spring-type terminals															
80	22	**45**	--	73	20	25	**50**	--	S3	▶	3RW30 46-☐BB☐4		1	1 unit	131
106	30	**55**	--	98	30	30	**75**	--	S3	▶	3RW30 47-☐BB☐4		1	1 unit	131

Order No. supplement for connection types

• With screw terminals   **1**
• With spring-type terminals[3]   **2**

Order No. supplement for rated control supply voltage U_s

• 24 V AC/DC   **0**
• 110 ... 230 V AC/DC   **1**

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						
• With screw terminals										▶	3RW30 03-1CB54		1	1 unit	131
• With spring-type terminals										B	3RW30 03-2CB54		1	1 unit	131

[1] Stand-alone installation.
[2] Soft starter with screw terminals: delivery time class ▶ (preferred type).
[3] Main circuit connection: 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 4/6):
• 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

Accessories

	Conductor cross-section			Tightening torque	For soft starters size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded								
	mm²	mm²	AWG	Nm							
Three-phase feeder terminals											
	2.5 ... 16	2.5 ... 16	10 ... 4	3 ... 4	S00 (3RW30 1.), S0 (3RW30 2.)	A	**3RV29 25-5AB**		1	1 unit	101

3RV29 25-5AB

	For soft starters			DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	Type	Size							
Auxiliary terminals									
	Auxiliary terminals, 3-pole								
	3RW30 4.	**S3**		B	**3RT19 46-4F**		1	1 unit	101
Covers for soft starters									
	Terminal covers for box terminals Additional touch protection to be fitted at the box terminals (2 units required per device)								
	3RW30 3.	**S2**		▶	**3RT19 36-4EA2**		1	1 unit	101
	3RW30 4.	**S3**		▶	**3RT19 46-4EA2**		1	1 unit	101
	Terminal covers for cable lugs and busbar connections For complying with the phase clearances and as touch protection if box terminal is removed (2 units required per contactor)								
	3RW30 4.	**S3**		▶	**3RT19 46-4EA1**		1	1 unit	101
Manuals 3RW30/3RW40[1]									
	3RW30 1.	**S00**		C	**3ZX10 12-0RW30-1AB1**		1	1 unit	191
	3RW30 2.	**S0**							
	3RW30 3.	**S2**							
	3RW30 4.	**S3**							
Operating instructions[1]									
	3RW30 1.	**S00**			**3ZX10 12-0RW30-2DA1**				
	3RW30 2.	**S0**							
	3RW30 3.	**S2**							
	3RW30 4.	**S3**							

3RT19 46-4EA1

[1] The operating instructions are included in the scope of supply of the soft starter or are available – like the manual – as a PDF download from the Service&Support portal at www.siemens.com/industrial-controls/support --> Controls --> Soft Starters and Solid-State Switching Devices --> SIRIUS 3RW Soft Starters.
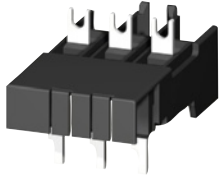
SIRIUS 3RW Soft Starters
3RW30, 3RW40 for Standard Applications

3RW30

	For soft starters Type	Size	Motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Link modules to motor starter protectors[1]									
	• With screw terminals								
	3RW30 1.	**S00**	S00	A	**3RA29 21-1BA00**		1	1 unit	101
	3RW30 2.	**S0**	S00/S0	A	**3RA29 21-1BA00**		1	1 unit	101
	3RW30 36.	**S2**	S2	▶	**3RA19 31-1AA00**		1	1 unit	101
	3RW30 46., 3RW30 47.	**S3**	S3	▶	**3RA19 41-1AA00**		1	1 unit	101
	• With spring-type terminals								
	3RW30 1.	**S00**	S00	A	**3RA29 11-2GA00**		1	1 unit	101
	3RW30 2.	**S0**	S0	A	**3RA29 21-2GA00**		1	1 unit	101

[1] Can be used in size S0 up to maximum 32 A.
Can be used in size S00/S0 only for 3RV2 motor starter protectors.

	Version	Functionality Functions	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Covers and push-in lugs (only for 3RW30 03)								
	Sealable covers	For securing against unauthorized adjustment of setting knobs	▶	**3RP1 902**		1	5 units	101
3RP1 902	**Push-in lugs** For screw fixing		▶	**3RP1 903**		1	10 units	101
3RP1 903								

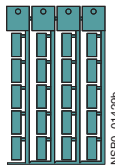|	Version		DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Tool for opening spring-type terminals for sizes S00 and S0								
				Spring-type terminals				
	Screwdrivers For all SIRIUS devices with spring-type terminals length approx. 200 mm, 3.0 mm x 0.5 mm, titanium gray/black, partially insulated		A	**3RA29 08-1A**		1	1 unit	101
3RA29 08-1A								
Blank labels								
	Unit labeling plates[1] For SIRIUS devices 20 mm x 7 mm, pastel turquoise		D	**3RT19 00-1SB20**		100	340 units	101
3RT19 00-1SB20								

■ More information

Application examples for normal starting (CLASS 10)

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

Application		Conveyor belt	Roller conveyor	Compressor	Small fan[1]	Pump	Hydraulic pump
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 sizes. 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 Win-Soft Starter software or 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. For accurate dimensioning, use the Win-Soft Starter selection and simulation program.

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 induction motors are switched on, voltage drops occur as a rule on starters of all types (direct 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
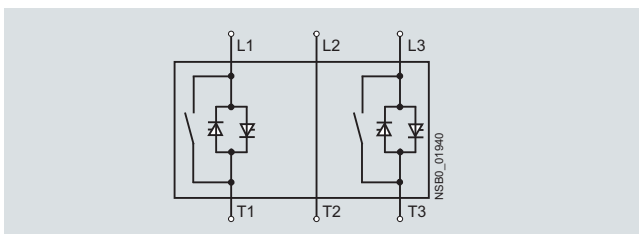
A bypass contact system is already integrated in the 3RW30 soft starter and therefore does not have to be ordered separately.

Status graphs
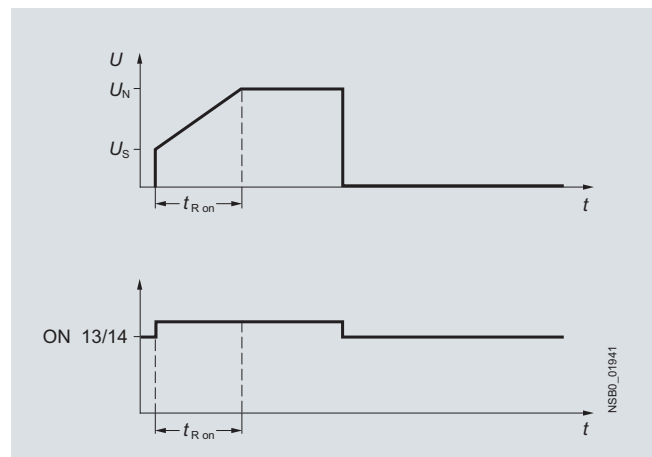
Manual for SIRIUS 3RW30/40

Besides containing all important information on configuring, commissioning and servicing, the manual also contains example circuits and the technical specifications for all devices.

Win-Soft Starter selection and simulation program

With this software, you can simulate and select all Siemens soft starters, taking into account various parameters such as mains properties, motor and load data, and special application requirements.

The software is a valuable tool, which makes complicated, lengthy manual calculations for determining the required soft starters superfluous.

The Win-Soft Starter selection and simulation program can be downloaded from:
www.siemens.com/softstarter --> Software

You can find more information about soft starters on the Internet likewise at:
www.siemens.com/softstarter

Training course for SIRIUS soft starters (SD-SIRIUSO)

Siemens offers a 2-day training course on the SIRIUS solid-state soft starters to keep customers and own personnel up-to-date on configuring, commissioning and maintenance issues.

You can find more information on our SITRAIN website:

www.siemens.com/sitrain
--> For course name select "SD-SIRIUSO"

Please direct enquiries and applications to SITRAIN Customer Support:

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