3RW44
for high-feature applications

Overview

In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements. They cover a performance range up to 900 Hp (at 460 V) in the inline circuit and up to 1600Hp (at 460 V) in the inside-delta circuit.

The SIRIUS 3RW44 soft starters are characterized by a compact design for space-saving and clearly arranged control cabinet layouts. For optimized motor starting and stopping the innovative SIRIUS 3RW44 soft starters are an attractive alternative with considerable savings potential compared to applications with a frequency converter. The new torque control and adjustable current limiting enable the High-Feature soft starters to be used in nearly every conceivable task. They guarantee the reliable avoidance of sudden torque applications and current peaks during motor starting and stopping. This creates savings potential when calculating the size of the switchgear and when servicing the machinery installed. Whether it's for inline circuits or inside-delta circuits – the SIRIUS 3RW44 soft starter offers savings especially in terms of size and equipment costs.

The bypass contacts already integrated in the soft starter bypass the thyristors after a motor ramp-up is detected. This results in a further reduction in the heat loss occuring during operation of the soft starter.

Combinations of various starting, operating and ramp-down possibilities ensure an optimum adaptation to the application-specific requirements. Operation and commissioning can be performed with the menu-controlled keypad and a menu-prompted, multi-line graphical display with background lighting. The optimized motor ramp-up and ramp-down can be effected quickly, easily and reliably by means of just a few settings with a previously selected language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation.

Applicable standards

- IEC 60947-4-2
- UL/CSA

Soft Starter ES parameterization software

Soft Starter ES software is used for the parameterization, monitoring and service diagnostics of SIRIUS 3RW44 High Feature soft starters.

Application

The SIRIUS 3RW44 solid-state soft starters are suitable for the torque-controlled soft starting and smooth ramp-down as well as braking of three-phase asynchronous motors.

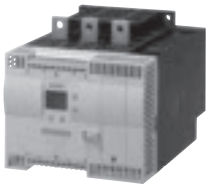
Application areas, e. g.

- Pumps
- Fans
- Compressors
- Water transport
- Conveying systems and lifts
- Hydraulics
- Machine tools
- Mills
- Saws
- Crushers
- Mixers
- Centrifuges
- Industrial cooling and refrigerating systems

Selection and ordering data


3RW44 27-1BC44


3RW44 36-6BC44


3RW44 47-6BC44


3RW44 58-6BC44


3RW44 66-6BC44

Ambient temperature 50 °C							
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e				Order No.	List Price $ per PU	PS*	Weight per PU approx.
	200 V	230 V	460 V	575 V				
A	hp	hp	hp	hp				kg
Inline circuits[2], rated operational voltage 200 ... 460 V								
26	7.5	7.5	**15**	--	**3RW44 22-□BC□4**		1 unit	6.500
32	10	10	**20**	--	**3RW44 23-□BC□4**		1 unit	6.500
42	10	15	**25**	--	**3RW44 24-□BC□4**		1 unit	6.500
51	15	15	**30**	--	**3RW44 25-□BC□4**		1 unit	6.500
68	20	20	**50**	--	**3RW44 26-□BC□4**		1 unit	6.500
82	25	25	**60**	--	**3RW44 27-□BC□4**		1 unit	6.500
Order No. supplement for connection types								
• With spring-type terminals					**3**			
• With screw terminals					**1**			
100	30	30	**75**	--	**3RW44 34-□BC□4**		1 unit	7.900
117	30	40	**75**	--	**3RW44 35-□BC□4**		1 unit	7.900
145	40	50	**100**	--	**3RW44 36-□BC□4**		1 unit	7.900
180	50	60	**125**	--	**3RW44 43-□BC□4**		1 unit	11.500
215	60	75	**150**	--	**3RW44 44-□BC□4**		1 unit	11.500
280	75	100	**200**	--	**3RW44 45-□BC□4**		1 unit	11.500
315	100	125	**250**	--	**3RW44 46-□BC□4**		1 unit	11.500
385	125	150	**300**	--	**3RW44 47-□BC□4**		1 unit	11.500
494	150	200	**400**	--	**3RW44 53-□BC□4**		1 unit	50.000
551	150	200	**450**	--	**3RW44 54-□BC□4**		1 unit	50.000
615	200	250	**500**	--	**3RW44 55-□BC□4**		1 unit	50.000
693	200	250	**550**	--	**3RW44 56-□BC□4**		1 unit	50.000
780	250	300	**600**	--	**3RW44 57-□BC□4**		1 unit	50.000
850	300	350	**700**	--	**3RW44 58-□BC□4**		1 unit	50.000
970	350	400	**800**	--	**3RW44 65-□BC□4**		1 unit	78.000
1076	350	400	**900**	--	**3RW44 66-□BC□4**		1 unit	78.000
Order No. supplement for connection types								
• With spring-type terminals					**2**			
• With screw terminals					**6**			
Order No. supplement for the rated control supply voltage U_s[1]								
• 115 V AC						**3**		
• 230 V AC						**4**		

[1] Control by way of the internal 24 V DC supply and direct control by means of PLC possible.

[2] For inside delta selection, see page 6/73.

Note:
Soft starter selection depends on the rated motor current.

The 3RW44 solid-state soft starters are designed for normal starting (Class 10). (Inertia load of the overall operating mechanism $J_{Load} < 10 \times J_{Motor}$; starting current 350 % x I_e for 20 s similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. See Technical specifications for information about rated currents for ambient temperatures > 40 °C and switching frequency.

Introduction

Overview

SIRIUS ES engineering software (E-SW)

The programs of the SIRIUS ES software family enable:

- Clearly arranged configuring of device functions and their parameters – online and offline
- Efficient diagnostics functions and display of the most important measured values
- Time savings through shorter startup times.

The SIRIUS ES programs such as Motor Starter ES, Soft Starter ES and SIMOCODE ES are available in three versions which differ in user-friendliness, scope of functions and price (for details see the descriptions of the individual products).

SIRIUS ES	Basic	Standard	Premium
Local interface on the device (system interface)	✔	✔	✔
Basic functions for parameterizing the devices			
• Parameter assignment	✔	✔	✔
• Operating	✔	✔	✔
• Diagnostics	✔	✔	✔
• Test	✔	✔	✔
Standard functionality			
• Parameterizing with the integrated graphics editor[1)]	--	✔	✔
• Creating typicals	--	✔	✔
• Exporting parameters	--	✔	✔
Complete functionality			
• Group functions	--	--	✔
• S7 Routing	--	--	✔
• Teleservice through MPI	--	--	✔
• STEP7 Object Manager	--	--	✔
PROFIBUS interface	--	--	✔

1) Depending on SIRIUS ES program.

Application

In addition to device-specific parameterization, the programs of the SIRIUS ES software family also provide the following functionality in a uniform look and feel. These functions are available in many SIRIUS ES programs.

- Standards-conform printouts
  The programs of the SIRIUS ES software family greatly simplify machine documentation. Parameterization printouts according to EN ISO 7200 are possible. The elements to be printed are easy to select and compile as required.
- Easy creation of parameter templates
  Parameter templates can be created for devices and applications with only minimum differences in their parameters. These templates contain all the parameters which are needed for the parameterization. In addition it is possible to specify which of these parameters are fixed and which can be customized, e. g. by the startup engineer.
- Group function
  For the user-friendly parameterization of numerous devices or applications of the same type, the programs of the SIRIUS ES software family offer a group function which enables the parameterization of several devices to be read out or written through PROFIBUS. In conjunction with templates it is even possible to selectively adapt the same parameters in any number of parameterizations.
- Teleservice through MPI
  The premium versions of the SIRIUS ES software families support the use of MPI Teleservice (comprising the Teleservice software and various Teleservice adapters) for remote diagnostics of the devices. This facilitates diagnostics and maintenance and it shortens response times for service purposes.

Accessories

	For soft starters / Version / Type	Order No.	List Price $ per PU	PS*	Weight per PU approx. kg
PC cables					
 3UF7 940-0AA00-0	**For PC/PG communication with SIRIUS 3RW44 soft starters** Through the system interface, for connecting to the serial interface of the PC/PG	**3UF7 940-0AA00-0**		1 unit	0.150
Serial/USB					
	For connecting the serial interface PC cable to the USB interface of a PC We recommend, in conjunction with 3RW44 soft starter, using SIMOCODE pro 3UF7, 3RK3 modular safety system, ET 200S/ECOFAST/ET 200pro motor starters, AS-i safety monitor, AS-i analyzer	**3UF7 946-0AA00-0**		1 unit	0.150
PROFIBUS communication modules					
 3RW49 00-0KC00	Modules can be plugged into the soft starters for integrating the starters in the PROFIBUS network with DPV1 slave functionality. On Y-link the soft starter has only DPV0 slave functionality.	**3RW49 00-0KC00**		1 unit	0.320
External display and operator modules					
 3RW49 00-0AC00	For indicating and operating the functions provided by the soft starter using an externally mounted display and operator module in degree of protection IP54, N1, N12 (e. g. in the control cabinet door)	**3RW49 00-0AC00**		1 unit	0.320
	Connection cables From the device interface (serial) of the 3RW44 soft starter to the external display and operator module				
	• Length 0.5 m, flat	**3UF7 932-0AA00-0**		1 unit	0.020
	• Length 0.5 m, round	**3UF7 932-0BA00-0**		1 unit	0.050
	• Length 1.0 m, round	**3UF7 937-0BA00-0**		1 unit	0.100
	• Length 2.5 m, round	**3UF7 933-0BA00-0**		1 unit	0.150
Box terminal blocks for soft starters					
 3RT19	**Box terminal blocks**				
	3RW44 2. Included in the scope of supply				
	3RW44 3. • Up to 70 mm^2	**3RT19 55-4G**		1 unit	0.230
	3RW44 3. • Up to 120 mm^2	**3RT19 56-4G**		1 unit	0.260
	3RW44 4. • Up to 240 mm^2	**3RT19 66-4G**		1 unit	0.676
Covers for soft starters					
	Terminal covers for box terminals Additional touch protection to be fitted at the box terminals (2 units required per device)				
	3RW44 2. and 3RW44 3.	**3RT19 56-4EA2**		1 unit	0.030
	3RW44 4.	**3RT19 66-4EA2**		1 unit	0.040
 3RT19 .6-4EA1	**Terminal covers for cable lugs and busbar connections**				
	3RW44 2. and 3RW44 3.	**3RT19 56-4EA1**		1 unit	0.070
	3RW44 4.	**3RT19 66-4EA1**		1 unit	0.130
Operating instructions[1)]					
	For 3RW44 soft starters	**3ZX10 12-0RW44-1AA1**			

1) The operating instructions are included in the scope of supply.

More information

Application examples for normal starting (Class 10)

Normal starting Class 10 (up to 20 s with 350 % $I_{n\ motor}$),
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	Pump	Hydraulic pump
Starting parameters[1]							
• Voltage ramp and current limiting							
- Starting voltage	%	70	60	50	30	30	30
- Starting time	s	10	10	10	10	10	10
- Current limit value		Deactivated	Deactivated	4 x I_M	4 x I_M	Deactivated	Deactivated
• Torque ramp							
- Starting torque		60	50	40	20	10	10
- End torque		150	150	150	150	150	150
- Starting time		10	10	10	10	10	10
• Breakaway pulse		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)
Ramp-down mode		Smooth ramp-down	Smooth ramp-down	Free ramp-down	Free ramp-down	Pump ramp-down	Free ramp-down

Application examples for heavy starting (Class 20)

Heavy starting Class 20 (up to 40 s with 350 % $I_{n\ motor}$),
The soft starter has to be selected one rating class higher than the motor used.

Application		Mixer	Centrifuge	Milling machine
Starting parameters[1]				
• Voltage ramp and current limiting				
- Starting voltage	%	30	30	30
- Starting time	s	30	30	30
- Current limit value		4 x I_M	4 x I_M	4 x I_M
• Torque ramp				
- Starting torque		30	30	30
- End torque		150	150	150
- Starting time		30	30	30
• Breakaway pulse		Deactivated (0 ms)	Deactivated (0 ms)	Deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down or DC braking

Application examples for very heavy starting (Class 30)

Very heavy starting Class 30 (up to 60 s with 350 % $I_{n\ motor}$),
The soft starter has to be selected two rating classes higher than the motor used.

Application		Large fan	Mill	Crushers	Circular saw/bandsaw
Starting parameters[1]					
• Voltage ramp and current limiting					
- Starting voltage	%	30	50	50	30
- Starting time	s	60	60	60	60
- Current limit value		4 x I_M	4 x I_M	4 x I_M	4 x I_M
• Torque ramp					
- Starting torque		20	50	50	20
- End torque		150	150	150	150
- Starting time		60	60	60	60
• Breakaway pulse		Deactivated (0 ms)	80 %, 300 ms	80 %, 300 ms	Deactivated (0 ms)
Ramp-down mode		Free ramp-down	Free ramp-down	Free ramp-down	Free ramp-down

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 start-up.
The soft starter dimensions should be checked where necessary with the Win-Soft Starter software or with the help of Technical Assistance.

[1] Actual motor starting times are load dependent.