Controls – Soft Starters and Solid-State Switching Devices

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Technical Information

can be found at
www.siemens.com/industrial-controls/support

under Product List
- Technical Specifications

under Entry List
- Updates
- Downloads
- FAQ
- Manuals/Operating instructions
- Characteristic curves
- Certificates

and at
www.siemens.com/industrial-controls/configurators

- Configurators

Introduction

Overview

3RW30

3RW40

3RW44

		Order No.	Page
3RW Soft Starters			
3RW soft starters for standard applications			
3RW30 soft starters	• SIRIUS 3RW30 soft starters for soft starting of three-phase asynchronous motors • Performance range of up to 55 kW (at 400V)	3RW30	4/8
3RW40 soft starters	• SIRIUS 3RW40 soft starters with the integral functions - Solid-state motor overload and intrinsic device protection and - adjustable current limiting for the soft starting and stopping of three-phase asynchronous motors • Performance range of up to 250 kW (at 400 V)	3RW40	4/13
3RW soft starters for high-feature applications			
3RW44 soft starters	• In addition to soft starting and soft ramp-down, the solid-state SIRIUS 3RW44 soft starters provide numerous functions for higher-level requirements • Performance range - Up to 710 kW (at 400 V) in inline circuit and - up to 1200 kW (at 400 V) in inside-delta circuit	3RW44	4/24


3RF21


3RF20


3RF22


3RF23


3RF24


3RF24 (Motor)


3RF29

		Order No.	Page
SIRIUS solid-state switching devices for switching resistive loads			
Solid-State Relays			
22.5 mm solid-state relays, 45 mm solid-state relays	• Widths of 22.5 mm and 45 mm • Compact and space-saving design • "Zero-point switching" version • Mounting onto existing heat sinks	3RF21, 3RF20 3RF22	4/49 4/52 4/53
Solid-State Contactors			
Solid-state contactors	• Complete units comprising a solid-state relay and an optimized heat sink, "ready to use" • Compact and space-saving design • Versions for resistive loads "zero-point switching" and inductive loads "instantaneous switching" • Special versions "Low Noise" and "Short-Circuit Proof"	3RF23 3RF24	4/55 4/61
Function modules	For extending the functionality of the 3RF21 solid-state relays and the 3RF23 solid-state contactors for many different applications:		
Converters	• For converting an analog input signal into an on/off ratio; can also be used on 3RF22 and 3RF24 three-phase switching devices	3RF29 00-0EA18	4/68
Load monitoring	• For load monitoring of one or more loads (partial loads)	3RF29 ..-0FA08, 3RF29 .0-0GA..	4/69
Heating current monitoring	• For load monitoring of one or more loads (partial loads); remote teach	3RF29 ..-0JA..	4/70
Power controllers	• For supplying the current by means of a solid-state switching device depending on a setpoint value. There is a choice of full-wave control and generalized phase control.	3RF29 ..-0KA.	4/71
Power regulators	• For supplying the current by means of a solid-state switching device depending on a setpoint value. Closed-loop control: full-wave control or generalized phase control	3RF29 .0-0HA..	4/72
SIRIUS solid-state switching devices for switching motors			
Solid-State Contactors			
Solid-state contactors, solid-state reversing contactors	• Complete units in the insulated enclosure with integrated heat sink, "ready to use" • Compact and space-saving design • Version for motors, "instantaneous switching"	3RF24	4/76

General data

Overview

SIRIUS 3RW Soft Starters

SIRIUS 3RW soft starters permit soft starting and smooth ramp-down of three-phase asynchronous motors. Depending on the scope of functions required it is possible to choose between:

- Soft starters for Standard applications
- Soft starters for high-feature applications

SIRIUS 3RW – Service-proven in many applications

Functions of the SIRIUS soft starters include:

- Soft starting and smooth ramp-down
- Stepless starting
- Torque control and limitation

Cost-efficient operation

The advantages of SIRIUS soft starters at a glance:

- 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

SIRIUS 3RF2 solid-state switching devices

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

Solid-state switching devices for resistive loads

- Solid-State Relays
- Solid-State Contactors
- Function modules

Solid-state switching devices for switching motors

- Solid-State Contactors
- Solid-state reversing contactors

SIRIUS 3RF2 – for almost unending activity

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

Proved time and again in service

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

The most reliable solution for any application

Compared to mechanical controlgear, our SIRIUS 3RF2 solid-state switching devices stand out due to their considerably longer service life. Thanks to the high product quality, their switching is extremely precise, reliable and, above all, insusceptible to faults. With its variable connection methods and a wide spread of control voltages, the SIRIUS 3RF2 family is universally applicable. Depending on the individual requirements of the application, our modular controlgear can also be quite easily expanded by the addition of standardized function modules.

Ideal for operation with heating control systems

The 3RF2 solid-state switching devices can be used for example in the SIPLUS HCS300I heating control system. They are optimally connected to the digital output module of the HCS300I by means of preassembled cables. This saves considerable wiring outlay in the control circuit and shortens mounting time.

The HCS300I is a modular heating control system for the optimization of plastic processing machines. It enables individual solutions for many different heating control applications. With each basic unit it is possible to use up to four 6-channel digital outputs to control solid-state switching devices and four 4-channel temperature measuring modules. Current or current-and-voltage measuring modules can be used to monitor the loads. Communication with the higher-level control system is through Profibus DP.

See also www.siemens.de/heizungssteuerung

Also for switching motors

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

Always on the sunny side with SIRIUS

Because SIRIUS 3RF2 offers even more:

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

Connection methods

The devices are available with screw terminals (box terminals), spring-type terminals or ring terminal lugs.

Screw terminals

Spring-type terminals

Ring terminal lug connections

The terminals are indicated in the selection and ordering data by orange backgrounds.

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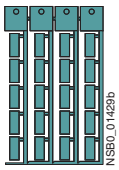
Selection and ordering data

Inscription labels for all series

Designation	Labeling area (W x H)	Color	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	mm x mm								kg
Blank labels									
Unit labeling plates for "SIRIUS" [1]	10 x 7	Pastel turquoise	D	**3RT19 00-1SB10**		100	816 units	101	0.100
	20 x 7	Pastel turquoise	C	**3RT19 00-1SB20**		100	340 units	101	0,200
Labels for sticking for SIRIUS	19 x 6	Pastel turquoise	D	**3RT19 00-1SB60**		100	3060 units	101	0.100
	19 x 6	Zinc yellow	C	**3RT19 00-1SD60**		100	3060 units	101	0.100



Unit labeling plates
(1 frame = 20 units)

[1] Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH, D-71570 Oppenweiler, Germany
www.murrplastik.de

*** You can order this quantity or a multiple thereof.**

General data

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 ... 1200
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	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		--	✔	✔
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		✔	✔	✔
ATEX explosion protection		--	✔[7]	--
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 is 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) Use upstream disconnect mechanism

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

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			●
Centrifuges			●
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 quoted motor ratings are only approximate values.The soft starter should always be designed on the basis of the motor current (rated operational current). In the event of deviating conditions, it may be necessary to choose a larger device.

Motor rating data are based on DIN 42973 (kW) and NEC 96/UL 508 (hp).

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

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 s 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 °C to +60 °C
- The built-in auxiliary contact ensures user-friendly control and possible further processing within the system (for status graphs see Page 4/12)

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 4/7.


3RW30 18-1BB14


3RW30 28-1BB14


3RW30 38-1BB14


3RW30 47-1BB14


3RW30 03-2CB54

Ambient temperature 40 °C				Ambient temperature 50 °C					Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e			Rated operational current I_e [1]	Rated power of induction motors for rated 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	0.580
6.5	1.5	**3**	--	4.8	1	1	**3**	--	**S00**	▶	**3RW30 14-1BB□4**		1	1 unit	131	0.580
9	2.2	**4**	--	7.8	2	2	**5**	--	**S00**	▶	**3RW30 16-1BB□4**		1	1 unit	131	0.580
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S00**	▶	**3RW30 17-1BB□4**		1	1 unit	131	0.580
17.6	4	**7.5**	--	17	3	3	**10**	--	**S00**	▶	**3RW30 18-1BB□4**		1	1 unit	131	0.580
• 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	0.580
6.5	1.5	**3**	--	4.8	1	1	**3**	--	**S00**	B	**3RW30 14-2BB□4**		1	1 unit	131	0.580
9	2.2	**4**	--	7.8	2	2	**5**	--	**S00**	B	**3RW30 16-2BB□4**		1	1 unit	131	0.580
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S00**	B	**3RW30 17-2BB□4**		1	1 unit	131	0.580
17.6	4	**7.5**	--	17	3	3	**10**	--	**S00**	B	**3RW30 18-2BB□4**		1	1 unit	131	0.580
• With screw terminals																
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	▶	**3RW30 26-1BB□4**		1	1 unit	131	0.690
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	▶	**3RW30 27-1BB□4**		1	1 unit	131	0.690
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	▶	**3RW30 28-1BB□4**		1	1 unit	131	0.690
• With spring-type terminals																
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW30 26-2BB□4**		1	1 unit	131	0.690
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	B	**3RW30 27-2BB□4**		1	1 unit	131	0.690
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	B	**3RW30 28-2BB□4**		1	1 unit	131	0.690
• With screw or spring-type terminals																
45	11	**22**	--	42	10	15	**30**	--	**S2**	▶	**3RW30 36-□BB□4**		1	1 unit	131	1.200
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	▶	**3RW30 37-□BB□4**		1	1 unit	131	1.200
72	22	**37**	--	62	20	20	**40**	--	**S2**	▶	**3RW30 38-□BB□4**		1	1 unit	131	1.200
• With screw or spring-type terminals																
80	22	**45**	--	73	20	25	**50**	--	**S3**	▶	**3RW30 46-□BB□4**		1	1 unit	131	1.710
106	30	**55**	--	98	30	30	**75**	--	**S3**	▶	**3RW30 47-□BB□4**		1	1 unit	131	1.710
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	0.207
• With spring-type terminals										A	**3RW30 03-2CB54**		1	1 unit	131	0.188

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

Note:

Selection of the soft starter depends on the rated motor current.

Please observe the notes for the selection of soft starters on Page 4/7.

The SIRIUS 3RW30 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device.

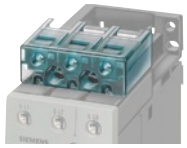
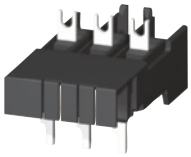
Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40 °C, see "Technical specifications".

*** You can order this quantity or a multiple thereof.**

3RW30

Accessories

	Conductor cross-section			Tighten-ing torque	For motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded									
	mm²	mm²	AWG	Nm								kg
Three-phase feeder terminals												
 3RV19 25-5AB	2.5 ... 25	4 ... 16	12-4	4	S00 (3RW30 1.) S0 (3RW30 2.)	X	**3RV29 25-5AB**		1	1 unit	101	0.043

	For soft starters Type	Size	Circuit breakers Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
										kg
Auxiliary terminals										
	Auxiliary terminals, 3-pole									
	3RW30 4.	**S3**		B	**3RT19 46-4F**		1	1 unit	101	0.035
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	0.020
	3RW30 4.	**S3**		►	**3RT19 46-4EA2**		1	1 unit	101	0.025
	**Terminal cover 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	0.040
Link modules to motor starter protectors[1]										
	• With screw terminals									
	3RW30 1.	**S00**	**S00**	A	**3RA29 21-1BA00**		1	1 unit	101	0.001
	3RW30 2.	**S0**	**S0**	A	**3RA29 21-1BA00**		1	1 unit	101	0.001
	3RW30 36.	**S2**	**S2**	►	**3RA19 31-1AA00**		1	1 unit	101	0.042
	3RW30 46., 3RW30 47.	**S3**	**S3**	►	**3RA19 41-1AA00**		1	1 unit	101	0.090
	• With spring-type terminals									
	3RW30 1.	**S00**	**S00**	A	**3RA29 11-2GA00**		1	1 unit	101	0.038
	3RW30 2.	**S0**	**S0**	A	**3RA29 21-2GA00**		1	1 unit	101	0.072
Operating instructions[2]										
	For soft starters									
	3RW30 1.	**S00**			**3ZX10 12-0RW30-2DA1**					
	3RW30 2.	**S0**								
	3RW30 3.	**S2**								
	3RW30 4.	**S3**								

[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.
[2] The operating instructions are included in the scope of supply.

* You can order this quantity or a multiple thereof.

	Version	Functionality Functions	Use	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
										kg
Covers and push-in lugs (only for 3RW30 03)										
 3RP1 902	**Sealable covers**	For securing against unauthorized adjustment of setting knobs	For devices with 1 or 2 CO contacts	►	**3RP1 902**		1	5 units	101	0.004
 3RP1 903	**Push-in lugs** for screw fixing		For devices with 1 or 2 CO contacts	►	**3RP1 903**		1	10 units	101	0.002

	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg
Operating device for spring-type terminals for size S00 and S0								
			Spring-type terminals					
	Screwdrivers Also suitable for the TE terminals	A	**3RA29 08-1A**		1	1 unit	101	0.045

4

* You can order this quantity or a multiple thereof.

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 fans[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.

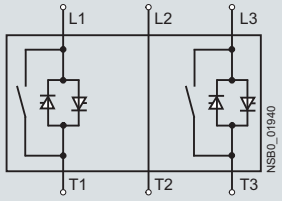
If necessary, an overload relay for heavy starting must be selected where long starting times are involved. PTC sensors are recommended.

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.

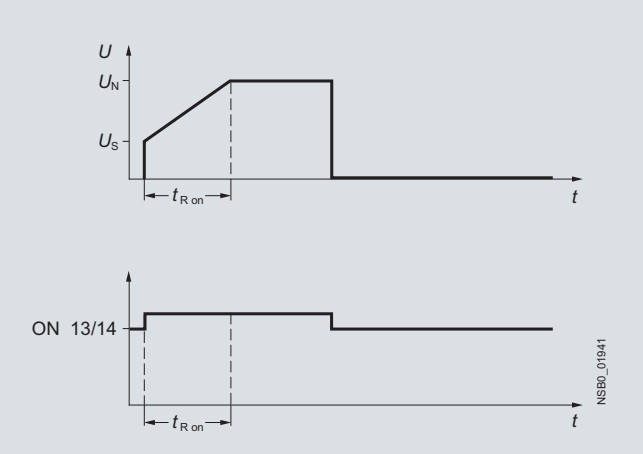
Note:
When induction motors are switched on, voltage drops occur as a rule on starters of all types (direct starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the 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.

Power electronics schematic circuit diagram



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.

Please direct enquiries and applications to:

Training Center for Automation and Industrial Solution
Gleiwitzer Strasse 555
D-90475 Nürnberg
Telephone: +49 911 895 3202
Telefax: +49 911 895 3275
E-mail: ingeborg.hoier@siemens.com
www.siemens.com/sitrain-cd

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.
See "Appendix" –> "Standards and approvals"–> "Type overview of approved devices for potentially explosive areas (ATEX explosion protection)".

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 of 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 4/7.

Selection and ordering data

SIRIUS 3RW40 for normal starting (CLASS 10)


3RW40 28-1BB14


3RW40 38-1BB14


3RW40 47-1BB14

Ambient temperature 40 °C				Ambient temperature 50 °C					Size	DT	Normal starting (CLASS 10)	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e 230 V	400 V	500 V	Rated operational current I_e [1]	200 V	230 V	460 V	575 V			Order No. / Price per PU				
A	kW	kW	kW	A	hp	hp	hp	hp							kg
Rated operational voltage U_e 200 ... 480 V [2]															
• With screw terminals															
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	▶	**3RW40 24-1BB□4**	1	1 unit	131	0.770
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	▶	**3RW40 26-1BB□4**	1	1 unit	131	0.770
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	▶	**3RW40 27-1BB□4**	1	1 unit	131	0.770
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	▶	**3RW40 28-1BB□4**	1	1 unit	131	0.770
• With spring-type terminals															
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	B	**3RW40 24-2BB□4**	1	1 unit	131	0.770
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW40 26-2BB□4**	1	1 unit	131	0.770
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	B	**3RW40 27-2BB□4**	1	1 unit	131	0.770
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	B	**3RW40 28-2BB□4**	1	1 unit	131	0.770
• With screw or spring-type terminals															
45	11	**22**	--	42	10	15	**30**	--	**S2**	▶	**3RW40 36-□BB□4**	1	1 unit	131	1.350
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	▶	**3RW40 37-□BB□4**	1	1 unit	131	1.350
72	22	**37**	--	62	20	20	**40**	--	**S2**	▶	**3RW40 38-□BB□4**	1	1 unit	131	1.350
• With screw or spring-type terminals															
80	22	**45**	--	73	20	25	**50**	--	**S3**	▶	**3RW40 46-□BB□4**	1	1 unit	131	1.900
106	30	**55**	--	98	30	30	**75**	--	**S3**	▶	**3RW40 47-□BB□4**	1	1 unit	131	1.900
Rated operational voltage U_e 400 ... 600 V															
• With screw terminals															
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 24-1BB□5**	1	1 unit	131	0.770
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 26-1BB□5**	1	1 unit	131	0.770
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW40 27-1BB□5**	1	1 unit	131	0.770
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW40 28-1BB□5**	1	1 unit	131	0.770
• With spring-type terminals															
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 24-2BB□5**	1	1 unit	131	0.770
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 26-2BB□5**	1	1 unit	131	0.770
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW40 27-2BB□5**	1	1 unit	131	0.770
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW40 28-2BB□5**	1	1 unit	131	0.770
• With screw or spring-type terminals															
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW40 36-□BB□5**	1	1 unit	131	1.350
63	--	30	**37**	58	--	--	40	**50**	**S2**	B	**3RW40 37-□BB□5**	1	1 unit	131	1.350
72	--	37	**45**	62	--	--	40	**60**	**S2**	B	**3RW40 38-□BB□5**	1	1 unit	131	1.350
• With screw or spring-type terminals															
80	--	45	**55**	73	--	--	50	**60**	**S3**	B	**3RW40 46-□BB□5**	1	1 unit	131	1.900
106	--	55	**75**	98	--	--	75	**75**	**S3**	B	**3RW40 47-□BB□5**	1	1 unit	131	1.900

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**

[1] Stand-alone installation without auxiliary fan.

[2] Soft starter with screw terminals: delivery time class ▶ (preferred type).

[3] Main circuit connection: screw terminals.

Note:

Selection of the soft starter depends on the rated motor current.

Please observe the notes for the selection of soft starters on Page 4/7.

The SIRIUS 3RW40 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40 °C, see "Technical specifications".

* You can order this quantity or a multiple thereof.


3RW40 28-1TB04


3RW40 38-1TB04


3RW40 47-1TB04

Ambient temperature 40 °C				Ambient temperature 50 °C					Size	DT	Normal starting (CLASS 10)		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e			Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e						Order 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								kg
Rated operational voltage U_e 200 ... 480 V[2], with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC																
• With screw terminals																
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	▶	**3RW40 24-1TB04**		1	1 unit	131	0.770
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	▶	**3RW40 26-1TB04**		1	1 unit	131	0.770
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	▶	**3RW40 27-1TB04**		1	1 unit	131	0.770
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	▶	**3RW40 28-1TB04**		1	1 unit	131	0.770
• With spring-type terminals																
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**	B	**3RW40 24-2TB04**		1	1 unit	131	0.770
25	5.5	**11**	--	23	5	5	**15**	--	**S0**	B	**3RW40 26-2TB04**		1	1 unit	131	0.770
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S0**	B	**3RW40 27-2TB04**		1	1 unit	131	0.770
38	11	**18.5**	--	34	10	10	**25**	--	**S0**	B	**3RW40 28-2TB04**		1	1 unit	131	0.770
• With screw or spring-type terminals																
45	11	**22**	--	42	10	15	**30**	--	**S2**	▶	**3RW40 36-☐TB04**		1	1 unit	131	1.350
63	18.5	**30**	--	58	15	20	**40**	--	**S2**	▶	**3RW40 37-☐TB04**		1	1 unit	131	1.350
72	22	**37**	--	62	20	20	**40**	--	**S2**	▶	**3RW40 38-☐TB04**		1	1 unit	131	1.350
• With screw or spring-type terminals																
80	22	**45**	--	73	20	25	**50**	--	**S3**	▶	**3RW40 46-☐TB04**		1	1 unit	131	1.900
106	30	**55**	--	98	30	30	**75**	--	**S3**	▶	**3RW40 47-☐TB04**		1	1 unit	131	1.900
Rated operational voltage U_e 400 ... 600 V with thermistor motor protection, rated control supply voltage U_s 24 V AC/DC																
• With screw terminals																
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 24-1TB05**		1	1 unit	131	0.770
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 26-1TB05**		1	1 unit	131	0.770
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW40 27-1TB05**		1	1 unit	131	0.770
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW40 28-1TB05**		1	1 unit	131	0.770
• With spring-type terminals																
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**	B	**3RW40 24-2TB05**		1	1 unit	131	0.770
25	--	11	**15**	23	--	--	15	**20**	**S0**	B	**3RW40 26-2TB05**		1	1 unit	131	0.770
32	--	15	**18.5**	29	--	--	20	**25**	**S0**	B	**3RW40 27-2TB05**		1	1 unit	131	0.770
38	--	18.5	**22**	34	--	--	25	**30**	**S0**	B	**3RW40 28-2TB05**		1	1 unit	131	0.770
• With screw or spring-type terminals																
45	--	22	**30**	42	--	--	30	**40**	**S2**	B	**3RW40 36-☐TB05**		1	1 unit	131	1.350
63	--	30	**37**	58	--	--	40	**50**	**S2**	B	**3RW40 37-☐TB05**		1	1 unit	131	1.350
72	--	37	**45**	62	--	--	40	**60**	**S2**	B	**3RW40 38-☐TB05**		1	1 unit	131	1.350
• With screw or spring-type terminals																
80	--	45	**55**	73	--	--	50	**60**	**S3**	B	**3RW40 46-☐TB05**		1	1 unit	131	1.900
106	--	55	**75**	98	--	--	75	**75**	**S3**	B	**3RW40 47-☐TB05**		1	1 unit	131	1.900

Order No. supplement for connection types

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

[1] Stand-alone installation without auxiliary fan.

[2] Soft starter with screw terminals: delivery time class ▶ (preferred type).

[3] Main circuit connection: screw terminals.

Note:

Selection of the soft starter depends on the rated motor current.

Please observe the notes for the selection of soft starters on Page 4/7.

The SIRIUS 3RW40 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40 °C, see "Technical specifications".

*** You can order this quantity or a multiple thereof.**

3RW40

3RW40 56-6BB44

3RW40 76-6BB44

Ambient temperature 40 °C				Ambient temperature 50 °C					Size	DT	Normal starting (CLASS 10)	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e 1)	Rated power of induction motors for rated operational voltage U_e			Rated operational current I_e 1)	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V		200 V	230 V	460 V	575 V			Order No. Price per PU				
A	kW	kW	kW	A	hp	hp	hp	hp							kg
Rated operational voltage U_e 200 ... 460 V 2)															
• With screw or spring-type terminals															
134	37	**75**	--	117	30	40	**75**	--	**S6**	B	**3RW40 55-□BB□4**	1	1 unit	131	4.900
162	45	**90**	--	145	40	50	**100**	--		B	**3RW40 56-□BB□4**	1	1 unit	131	6.900
• With screw or spring-type terminals															
230	75	**132**	--	205	60	75	**150**	--	**S12**	B	**3RW40 73-□BB□4**	1	1 unit	131	8.900
280	90	**160**	--	248	75	100	**200**	--		B	**3RW40 74-□BB□4**	1	1 unit	131	8.900
356	110	**200**	--	315	100	125	**250**	--		B	**3RW40 75-□BB□4**	1	1 unit	131	8.900
432	132	**250**	--	385	125	150	**300**	--		B	**3RW40 76-□BB□4**	1	1 unit	131	8.900
Rated operational voltage U_e 400 ... 600 V 3)															
• With screw or spring-type terminals															
134	--	75	**90**	117	--	--	75	**100**	**S6**	B	**3RW40 55-□BB□5**	1	1 unit	131	4.900
162	--	90	**110**	145	--	--	100	**150**		B	**3RW40 56-□BB□5**	1	1 unit	131	6.900
• With screw or spring-type terminals															
230	--	132	**160**	205	--	--	150	**200**	**S12**	B	**3RW40 73-□BB□5**	1	1 unit	131	8.900
280	--	160	**200**	248	--	--	200	**250**		B	**3RW40 74-□BB□5**	1	1 unit	131	8.900
356	--	200	**250**	315	--	--	250	**300**		B	**3RW40 75-□BB□5**	1	1 unit	131	8.900
432	--	250	**315**	385	--	--	300	**400**		B	**3RW40 76-□BB□5**	1	1 unit	131	8.900

Order No. supplement for connection types 4)

• With spring-type terminals	**2**
• With screw terminals	**6**

Order No. supplement for the rated control supply voltage U_s 5)

• 115 V AC	**3**
• 230 V AC	**4**

1) Stand-alone installation.

2) Soft starter with screw terminals: delivery time class ▶ (preferred type).

3) Soft starter with screw terminals: delivery time class A.

4) Main circuit connection: busbar connection.

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

Note:
Selection of the soft starter depends on the rated motor current.

Please observe the notes for the selection of soft starters on Page 4/7.

The SIRIUS 3RW40 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40 °C, see "Technical specifications".

* You can order this quantity or a multiple thereof.

SIRIUS 3RW40 for heavy starting (CLASS 20)


3RW40 28-1BB14


3RW40 28-1TB04


3RW40 38-1BB14


3RW40 38-1TB04


3RW40 47-1BB14


3RW40 47-1TB04

Ambient temperature 40 °C				Ambient temperature 50 °C					Size	DT	Heavy starting (CLASS 20)		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e			Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e						Order 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								kg
Rated operational voltage U_e 200 ... 480 V [2]																
• With screw or spring-type terminals																
12.5	3	**5.5**	--	11	3	3	**7.5**	--	**S0**		**3RW40 26-□□B□4**		For DT etc. for the corresponding Order No. see Selection and ordering data for normal starting			
25	5.5	**11**	--	23	5	5	**15**	--	**S0**		**3RW40 27-□□B□4**					
32	7.5	**15**	--	29	7.5	7.5	**20**	--	**S2**		**3RW40 36-□□B□4**					
38	11	**18.5**	--	34	10	10	**25**	--	**S2**		**3RW40 37-□□B□4**					
45	11	**22**	--	42	10	15	**30**	--	**S2**		**3RW40 37-□□B□4**					
63	18.5	**30**	--	58	15	20	**40**	--	**S3**		**3RW40 47-□□B□4**					
72	22	**37**	--	62	20	20	**40**	--	**S3**		**3RW40 47-□□B□4**					
Rated operational voltage U_e 400 ... 600 V																
• With screw or spring-type terminals																
12.5	--	5.5	**7.5**	11	--	--	7.5	**10**	**S0**		**3RW40 26-□□B□5**					
25	--	11	**15**	23	--	--	15	**20**	**S0**		**3RW40 27-□□B□5**					
32	--	15	**18.5**	29	--	--	20	**25**	**S2**		**3RW40 36-□□B□5**					
38	--	18.5	**22**	34	--	--	25	**30**	**S2**		**3RW40 37-□□B□5**					
45	--	22	**30**	42	--	--	30	**40**	**S2**		**3RW40 37-□□B□5**					
63	--	30	**37**	58	--	--	40	**50**	**S3**		**3RW40 47-□□B□5**					
72	--	37	**45**	62	--	--	40	**60**	**S3**		**3RW40 47-□□B□5**					

Order No. supplement for connection types

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

Order No. supplement for thermistor motor protection

- Standard function **B**
- Thermistor motor protection only with rated control supply voltage U_s 24 V AC/DC **T**

Order No. supplement for rated control supply voltage U_s

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

1) Stand-alone installation without auxiliary fan.

2) Soft starter with screw terminals: delivery time class ▶ (preferred type).

3) Main circuit connection: screw terminals.

Note:
Selection of the soft starter depends on the rated motor current.

Please observe the notes for the selection of soft starters on Page 4/7.

The SIRIUS 3RW40 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40 °C, see "Technical specifications".

*** You can order this quantity or a multiple thereof.**

3RW30, 3RW40 for Standard Applications

3RW40

3RW40 56-6BB44

3RW40 76-6BB44

Ambient temperature 40 °C				Ambient temperature 50 °C					Size	DT	Heavy starting (CLASS 20)		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e			Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e						Order 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								kg
Rated operational voltage U_e 200 ... 460 V [2]																
• With screw or spring-type terminals																
80	22	**45**	--	73	20	25	**50**	--	**S6**		**3RW40 55-□BB□4**					
106	30	**55**	--	98	25	30	**60**	--	**S6**		**3RW40 55-□BB□4**					
134	37	**75**	--	117	30	40	**75**	--	**S6**		**3RW40 56-□BB□4**					
162	45	**90**	--	145	40	50	**100**	--	**S12**		**3RW40 73-□BB□4**					
230	75	**132**	--	205	60	75	**150**	--	**S12**		**3RW40 74-□BB□4**					
280	90	**160**	--	248	75	100	**200**	--	**S12**		**3RW40 75-□BB□4**					
356	110	**200**	--	315	100	125	**250**	--	**S12**		**3RW40 76-□BB□4**					
Rated operational voltage U_e 400 ... 600 V [3]																
• With screw or spring-type terminals																
80	--	45	**55**	73	--	--	50	**60**	**S6**		**3RW40 55-□BB□5**					
106	--	55	**75**	98	--	--	60	**75**	**S6**		**3RW40 55-□BB□5**					
134	--	75	**90**	117	--	--	75	**100**	**S6**		**3RW40 56-□BB□5**					
162	--	90	**110**	145	--	--	100	**150**	**S12**		**3RW40 73-□BB□5**					
230	--	132	**160**	205	--	--	150	**200**	**S12**		**3RW40 74-□BB□5**					
280	--	160	**200**	248	--	--	200	**250**	**S12**		**3RW40 75-□BB□5**					
356	--	200	**250**	315	--	--	250	**300**	**S12**		**3RW40 76-□BB□5**					

For DT etc. for the corresponding Order No. see Selection and ordering data for normal starting

Order No. supplement for connection types [4]

• With spring-type terminals	**2**
• With screw terminals	**6**

Order No. supplement for the rated control supply voltage U_s [5]

• 115 V AC	**3**
• 230 V AC	**4**

1) Stand-alone installation.

2) Soft starter with screw terminals: delivery time class ▶ (preferred type).

3) Soft starter with screw terminals: delivery time class A.

4) Main circuit connection: busbar connection.

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

Note:
Selection of the soft starter depends on the rated motor current.

Please observe the notes for the selection of soft starters on Page 4/7.

The SIRIUS 3RW40 solid-state soft starters are designed for easy starting conditions. $J_{Load} < 10 \times J_{Motor}$. In the event of deviating conditions or increased switching frequency, it may be necessary to choose a larger device. Siemens recommends the use of the selection and simulation program Win-Soft Starter. For information about rated currents for ambient temperatures > 40 °C, see "Technical specifications".

* You can order this quantity or a multiple thereof.

Accessories

Three-phase feeder terminals


3RV19 25-5AB

Conductor cross-section: Solid or stranded	Conductor cross-section: Finely stranded with end sleeve	Conductor cross-section: AWG cables, solid or stranded	Tightening torque	For motor starter protectors Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
mm²	mm²	AWG	Nm								kg
2.5 ... 25	4 ... 16	12-4	4	S00 (3RW30 1.) S0 (3RW30 2.)	X	**3RV29 25-5AB**		1	1 unit	101	0.043

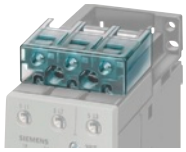
Box terminal blocks for soft starters

For soft starters: Type	Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
									kg
For round and ribbon cables									
3RW40 5.	**S6**	• Up to 70 mm² • Up to 120 mm²	▶ ▶	**3RT19 55-4G** **3RT19 56-4G**		1 1	1 unit 1 unit	101 101	0.230 0.260
3RW40 7.	**S12**	• Up to 240 mm²	▶	**3RT19 66-4G**		1	1 unit	101	0.676

Auxiliary terminals

Auxiliary terminals, 3-pole									
3RW40 4.	**S3**		B	**3RT19 46-4F**		1	1 unit	101	0.035

Covers for soft starters



Terminal covers for box terminals

Additional touch protection to be fitted at the box terminals (2 units required per device)

3RW40 3.	**S2**	▶	**3RT19 36-4EA2**	1	1 unit	101	0.020
3RW40 4.	**S3**	▶	**3RT19 46-4EA2**	1	1 unit	101	0.025
3RW40 5.	**S6**	▶	**3RT19 56-4EA2**	1	1 unit	101	0.030
3RW40 7.	**S12**	▶	**3RT19 66-4EA2**	1	1 unit	101	0.040

Terminal cover for cable lugs and busbar connections

3RW40 4.	**S3**	For complying with the phase clearances and as touch protection if box terminal is removed (2 units required per contactor)	▶	**3RT19 46-4EA1**	1	1 unit	101	0.040
3RW40 5.	**S6**		▶	**3RT19 56-4EA1**	1	1 unit	101	0.070
3RW40 7.	**S12**		▶	**3RT19 66-4EA1**	1	1 unit	101	0.130

Sealing covers

3RW40 2. to 3RW40 4.	**S0, S2, S3**	▶	**3RW49 00-0PB10**	1	1 unit	131	0.005
3RW40 5. and 3RW40 7.	**S6, S12**	▶	**3RW49 00-0PB00**	1	1 unit	131	0.010

* You can order this quantity or a multiple thereof.

3RW40

Modules for RESET[1)]

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 s ... 4 s,
switching frequency 60/h

For soft starters Type	Size	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
3RW40 5. and 3RW40 7.	**S6, S12**	• 24 ... 30 V AC/DC	►	**3RU19 00-2AB71**		1	1 unit	101	0.066
		• 110 V ... 127 V AC/DC	►	**3RU19 00-2AF71**		1	1 unit	101	0.067
		• 220 ... 250 V AC/DC	►	**3RU19 00-2AM71**		1	1 unit	101	0.066

Mechanical RESET comprising

3RW40 5. and 3RW40 7.	**S6, S12**	• Resetting plungers, holders and formers	►	**3RU19 00-1A**		1	1 unit	101	0.038
		• Suitable pushbutton IP65, Ø 22 mm, 12 mm stroke	B	**3SB30 00-0EA11**		1	1 unit	102	0.020
		• Extension plungers	A	**3SX13 35**		1	1 unit	102	0.004

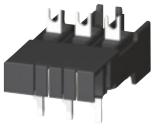
Cable releases with holder for RESET

For Ø 6.5 mm holes in the control panel;
max. control panel thickness 8 mm

3RW40 5. and 3RW40 7.	**S6, S12**	• Length 400 mm	►	**3RU19 00-1B**		1	1 unit	101	0.063
		• Length 600 mm	►	**3RU19 00-1C**		1	1 unit	101	0.073

1) Remote RESET already integrated in the 3RW40 2. to 3RW40 4. soft starters.

Link modules to motor starter protectors[1)]



For soft starters Type	Size	Circuit breakers Size	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
• With screw terminals									
3RW40 2.	**S0**	**S0**	A	**3RA29 21-1BA00**		1	1 unit	101	0.001
3RW40 36.	**S2**	**S2**	►	**3RA19 31-1AA00**		1	1 unit	101	0.042
3RW40 46., 3RW40 47.	**S3**	**S3**	►	**3RA19 41-1AA00**		1	1 unit	101	0.090
• With spring-type terminals									
3RW40 2.	**S0**	**S0**	A	**3RA29 21-2GA00**		1	1 unit	101	0.072

Fans (to increase switching frequency and for device mounting in positions different from the normal position)

3RW40 2.	**S0**	►	**3RW49 28-8VB00**		1	1 unit	131	0.010
3RW40 3., 3RW40 4.	**S2, S3**	►	**3RW49 47-8VB00**		1	1 unit	131	0.020

Operating instructions[2)]

For soft starters		
3RW40 2. 3RW40 3. 3RW40 4.	**S0 S2 S3**	**3ZX10 12-0RW40-1AA1**
3RW40 5. 3RW40 7.	**S6 S12**	**3ZX10 12-0RW40-2DA1**

1) Can be used in size S0 up to maximum 32 A.
Can be used in size S0 only for 3RV2 motor starter protectors.
2) The operating instructions are included in the scope of supply.

* You can order this quantity or a multiple thereof.

Spare parts

Fans

For soft starters Type	Size	Version Rated control supply voltage U_s	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Fans									
3RW40 5.-.BB3.	**S6**	115 V AC	►	**3RW49 36-8VX30**		1	1 unit	131	0.300
3RW40 5.-.BB4.	**S6**	230 V AC	►	**3RW49 36-8VX40**		1	1 unit	131	0.300
3RW40 7.-.BB3.	**S12**	115 V AC	►	**3RW49 47-8VX30**		1	1 unit	131	0.500
3RW40 7.-.BB4.	**S12**	230 V AC	►	**3RW49 47-8VX40**		1	1 unit	131	0.500

Operating device for spring-type terminals for size S00 and S0

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
		Spring-type terminals					
Screwdrivers Also suitable for the TE terminals	A	**3RA29 08-1A**		1	1 unit	101	0.045

4

* You can order this quantity or a multiple thereof.

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 fans[1)]	Pump	Hydraulic pump
Starting parameters							
• Voltage ramp and current limiting							
- Starting voltage	%	70	60	50	40	40	40
- Starting time	s	10	10	10	10	10	10
- Current limit value		5 x I_M	5 x I_M	4 x I_M	4 x I_M	4 x I_M	4 x I_M
Ramp-down time	s	5	5	0	0	10	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 % $I_{n\ motor}$),
The soft starter has to be selected at least one performance class higher than the motor used.

Application		Stirrer	Centrifuge
Starting parameters			
• Voltage ramp and current limiting			
- Starting voltage	%	40	40
- Starting time	s	20	20
- Current limit value		4 x I_M	4 x I_M
Ramp-down time		0	0

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 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. For accurate dimensioning, use the Win-Soft Starter selection and simulation program.

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

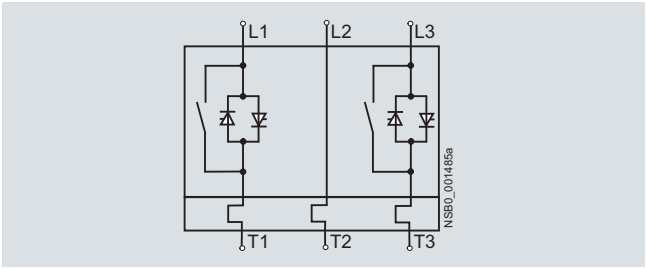
In the case of high switching frequencies in S4 mode, Siemens recommends the use of PTC sensors. For corresponding device versions with integrated thermistor motor protection or separate thermistor evaluation devices see Catalog LV 1.

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.

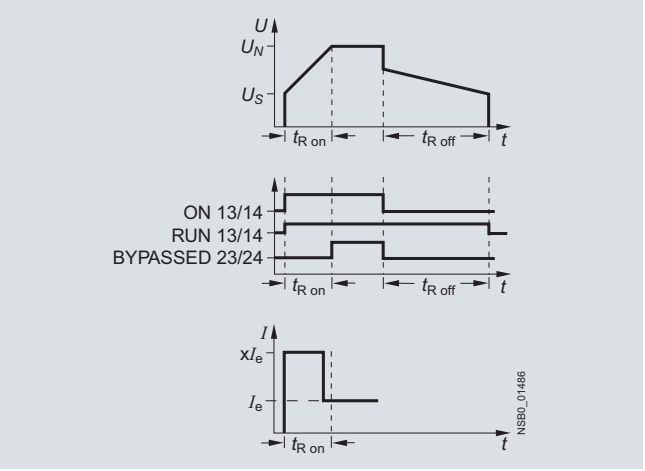
Note:
When induction motors are switched on, voltage drops occur as a rule on starters of all types (direct starters, wye-delta starters, soft starters). The infeed transformer must always be dimensioned such that the voltage dip when starting the motor remains within the permissible tolerance. If the 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.

Power electronics schematic circuit diagram



A bypass contact system and solid-state 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

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:
http://www.siemens.com/softstarter > *Software*

More information can be found on the Internet at:
http://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.

Please direct enquiries and applications to:

Training Center for Automation and Industrial Solution
Gleiwitzer Strasse 555
D-90475 Nürnberg
Telephone: +49 911 895 3202
Telefax: +49 911 895 3275
E-mail: ingeborg.hoier@siemens.com
www.siemens.com/sitrain-cd

3RW44

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 710 kW (at 400 V) in the inline circuit and up to 1200 kW (at 400 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. Be it 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 great reduction in the heat loss occuring during operation of the soft starter at rated value.

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 graphic 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

Functionality

Equipped with modern, ergonomic user prompting the SIRIUS 3RW44 soft starters can be commissioned quickly and easily using a keypad and a menu-prompted, multi-line grafic 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 selectable language. Four-key operation and plain-text displays for each menu point guarantee full clarity at every moment of the parameterization and operation. During operation and when control voltage is applied, the display field continuously presents measured values and operating values as well as warnings and fault messages. An external display and operator module can be connected by means of a connection cable to the soft starter, thus enabling active indications and the like to be read directly from the control cabinet door.

The SIRIUS 3RW44 soft starters are equipped with optimum functionality. An integral bypass contact system reduces the power loss of the soft starter during operation.
This reliably prevents heating of the switchgear environment. The SIRIUS 3RW44 soft starters have internal intrinsic device protection. This prevents thermal overloading of the power section's thyristors, e. g. due to unacceptably high closing operations.

Wiring outlay for installing an additional motor overload relay is no longer needed as the SIRIUS 3RW44 soft starters perform this function too. In addition they offer adjustable trip classes and a thermistor motor protection function. As an option the thyristors can also be protected by SITOR semiconductor fuses from short-circuiting so that the soft starter is still functional after a short-circuit (coordination type 2). And even inrush current peaks are reliably avoided thanks to adjustable current limiting.

As a further option the SIRIUS 3RW44 soft starters can be upgraded with a PROFIBUS DP module. Thanks to their communication capability and their programmable control inputs and relay outputs the SIRIUS 3RW44 soft starters can be very easily and quickly integrated in higher-level controllers.

In addition a creep speed function is available for positioning and setting jobs. With this function the motor can be controlled in both directions of rotation with reduced torque and an adjustable, low speed.

On the other hand the SIRIUS 3RW44 soft starters offer a new, combined DC braking function for the fast stopping of driving loads.

Highlights

- Soft starting with breakaway pulse, torque control or voltage ramp, adjustable torque or current limiting as well as any combination of these, depending on load type
- Integrated bypass contact system to minimize power loss
- Various setting options for the starting parameters such as starting torque, starting voltage, ramp-up and ramp-down time, and much more in three separate parameter sets
- Start-up detection
- Inside-delta circuit for savings in terms of size and equipment costs
- Various ramp-down modes selectable: free ramp-down, torque-controlled pump ramp-down, combined DC braking
- Solid-state motor overload and intrinsic device protection
- Thermistor motor protection
- Keypad with a menu-prompted, multi-line graphic display with background lighting
- Interface for communication with the PC for more accurate setting of the parameters as well as for control and monitoring
- Simple adaptation to the motor feeder
- Simple mounting and commissioning
- Display of operating states and fault messages
- Connection to PROFIBUS with optional PROFIBUS DP module
- External display and operator module
- Mains voltages from 200 to 690 V, 50 to 60 Hz
- Can be used up to 60 °C (derating from 40 °C).

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.
See Chapter "Planning and Configuration with SIRIUS".

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

See "Selection aid for soft starters" on Page 4/7.

Selection and ordering data

SIRIUS 3RW44 for normal starting (CLASS 10) in inline circuit


3RW44 27-1BC44


3RW44 36-6BC44


3RW44 47-6BC44


3RW44 58-6BC44


3RW44 66-6BC44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Normal starting (CLASS 10) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Order No.	Price per PU				
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V							
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 200 ... 460 V[1]																	
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	▶	**3RW44 22-□BC□4**		1	1 unit	131	6.500
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	▶	**3RW44 23-□BC□4**		1	1 unit	131	6.500
47	11	**22**	--	--	--	42	10	15	**25**	--	▶	**3RW44 24-□BC□4**		1	1 unit	131	6.500
57	15	**30**	--	--	--	51	15	15	**30**	--	▶	**3RW44 25-□BC□4**		1	1 unit	131	6.500
77	18.5	**37**	--	--	--	68	20	20	**50**	--	▶	**3RW44 26-□BC□4**		1	1 unit	131	6.500
93	22	**45**	--	--	--	82	25	25	**60**	--	▶	**3RW44 27-□BC□4**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals													**1**				
• With spring-type terminals													**3**				
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW44 34-□BC□4**		1	1 unit	131	7.900
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW44 35-□BC□4**		1	1 unit	131	7.900
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW44 36-□BC□4**		1	1 unit	131	7.900
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW44 43-□BC□4**		1	1 unit	131	11.500
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW44 44-□BC□4**		1	1 unit	131	11.500
313	90	**160**	--	--	--	280	75	100	**200**	--	B	**3RW44 45-□BC□4**		1	1 unit	131	11.500
356	110	**200**	--	--	--	315	100	125	**250**	--	B	**3RW44 46-□BC□4**		1	1 unit	131	11.500
432	132	**250**	--	--	--	385	125	150	**300**	--	B	**3RW44 47-□BC□4**		1	1 unit	131	11.500
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW44 53-□BC□4**		1	1 unit	131	50.000
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW44 54-□BC□4**		1	1 unit	131	50.000
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW44 55-□BC□4**		1	1 unit	131	50.000
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW44 56-□BC□4**		1	1 unit	131	50.000
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW44 57-□BC□4**		1	1 unit	131	50.000
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW44 58-□BC□4**		1	1 unit	131	50.000
1076	355	**630**	--	--	--	970	350	400	**850**	--	C	**3RW44 65-□BC□4**		1	1 unit	131	78.000
1214	400	**710**	--	--	--	1076	350	450	**950**	--	C	**3RW44 66-□BC□4**		1	1 unit	131	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[2]																	
• 115 V AC													**3**				
• 230 V AC													**4**				

[1] 3RW44 2 soft starters. ... 3RW44 4. with screw terminals: delivery time class ▶ (preferred type).

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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 or similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. For information about rated currents for ambient temperatures > 40 °C and switching frequency, see "Technical specifications".

*** You can order this quantity or a multiple thereof.**

3RW44 Soft Starters for High-Feature Applications

3RW44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Normal starting (CLASS 10) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 400 ... 600 V[1]																	
29	--	15	**18.5**	--	--	26	--	--	15	**20**	A	**3RW44 22-□BC□5**		1	1 unit	131	6.500
36	--	18.5	**22**	--	--	32	--	--	20	**25**	A	**3RW44 23-□BC□5**		1	1 unit	131	6.500
47	--	22	**30**	--	--	42	--	--	25	**30**	A	**3RW44 24-□BC□5**		1	1 unit	131	6.500
57	--	30	**37**	--	--	51	--	--	30	**40**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
77	--	37	**45**	--	--	68	--	--	50	**50**	A	**3RW44 26-□BC□5**		1	1 unit	131	6.500
93	--	45	**55**	--	--	82	--	--	60	**75**	A	**3RW44 27-□BC□5**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals													**1**				
• With spring-type terminals													**3**				
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW44 34-□BC□5**		1	1 unit	131	7.900
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW44 35-□BC□5**		1	1 unit	131	7.900
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW44 36-□BC□5**		1	1 unit	131	7.900
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW44 44-□BC□5**		1	1 unit	131	11.500
313	--	160	**200**	--	--	280	--	--	200	**250**	B	**3RW44 45-□BC□5**		1	1 unit	131	11.500
356	--	200	**250**	--	--	315	--	--	250	**300**	B	**3RW44 46-□BC□5**		1	1 unit	131	11.500
432	--	250	**315**	--	--	385	--	--	300	**400**	B	**3RW44 47-□BC□5**		1	1 unit	131	11.500
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW44 54-□BC□5**		1	1 unit	131	50.000
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW44 55-□BC□5**		1	1 unit	131	50.000
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW44 56-□BC□5**		1	1 unit	131	50.000
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW44 57-□BC□5**		1	1 unit	131	50.000
970	--	560	**710**	--	--	850	--	--	750	**900**	C	**3RW44 58-□BC□5**		1	1 unit	131	50.000
1076	--	630	**800**	--	--	970	--	--	850	**1100**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
1214	--	710	**900**	--	--	1076	--	--	950	**1200**	C	**3RW44 66-□BC□5**		1	1 unit	131	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[2]																	
• 115 V AC														**3**			
• 230 V AC														**4**			

[1] Soft starter with screw terminals:
3RW44 2. ... 3RW44 4. Delivery time class A,
3RW44 5. ... 3RW44 6. Delivery time class B.

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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 or similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. For information about rated currents for ambient temperatures > 40 °C and switching frequency, see "Technical specifications".

4

* You can order this quantity or a multiple thereof.

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Normal starting (CLASS 10) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 400 ... 690 V																	
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW44 22-□BC□6**		1	1 unit	131	6.500
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW44 23-□BC□6**		1	1 unit	131	6.500
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW44 24-□BC□6**		1	1 unit	131	6.500
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW44 25-□BC□6**		1	1 unit	131	6.500
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW44 26-□BC□6**		1	1 unit	131	6.500
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW44 27-□BC□6**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW44 34-□BC□6**		1	1 unit	131	7.900
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW44 35-□BC□6**		1	1 unit	131	7.900
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW44 36-□BC□6**		1	1 unit	131	7.900
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW44 43-□BC□6**		1	1 unit	131	11.500
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW44 44-□BC□6**		1	1 unit	131	11.500
313	--	160	200	**315**	--	280	--	--	200	**250**	B	**3RW44 45-□BC□6**		1	1 unit	131	11.500
356	--	200	250	**355**	--	315	--	--	250	**300**	B	**3RW44 46-□BC□6**		1	1 unit	131	11.500
432	--	250	315	**400**	--	385	--	--	300	**400**	B	**3RW44 47-□BC□6**		1	1 unit	131	11.500
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW44 53-□BC□6**		1	1 unit	131	50.000
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW44 54-□BC□6**		1	1 unit	131	50.000
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW44 55-□BC□6**		1	1 unit	131	50.000
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW44 56-□BC□6**		1	1 unit	131	50.000
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW44 57-□BC□6**		1	1 unit	131	50.000
970	--	560	710	**1000**	--	850	--	--	750	**900**	C	**3RW44 58-□BC□6**		1	1 unit	131	50.000
1076	--	630	800	**1100**	--	970	--	--	850	**1100**	C	**3RW44 65-□BC□6**		1	1 unit	131	78.000
1214	--	710	900	**1200**	--	1076	--	--	950	**1200**	C	**3RW44 66-□BC□6**		1	1 unit	131	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.

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

Please observe the notes for the selection of soft starters on Page 4/7.

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 or similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. For information about rated currents for ambient temperatures > 40 °C and switching frequency, see "Technical specifications".

*** You can order this quantity or a multiple thereof.**

3RW44 Soft Starters for High-Feature Applications

3RW44

SIRIUS 3RW44 for heavy starting (CLASS 20) in inline circuit

3RW44 27-1BC44

3RW44 36-6BC44

3RW44 47-6BC44

3RW44 58-6BC44

3RW44 66-6BC44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Heavy starting (CLASS 20) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 200 ... 460 V[1]																	
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	▶	**3RW44 22-□BC□4**		1	1 unit	131	6.500
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	▶	**3RW44 23-□BC□4**		1	1 unit	131	6.500
47	11	**22**	--	--	--	42	10	15	**25**	--	▶	**3RW44 24-□BC□4**		1	1 unit	131	6.500
57	15	**30**	--	--	--	51	15	15	**30**	--	▶	**3RW44 25-□BC□4**		1	1 unit	131	6.500
77	18.5	**37**	--	--	--	68	20	20	**50**	--	▶	**3RW44 27-□BC□4**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals													**1**				
• With spring-type terminals													**3**				
93	22	**45**	--	--		82	25	25	**60**	--	B	**3RW44 34-□BC□4**		1	1 unit	131	7.900
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW44 35-□BC□4**		1	1 unit	131	7.900
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW44 36-□BC□4**		1	1 unit	131	7.900
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW44 43-□BC□4**		1	1 unit	131	11.500
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW44 45-□BC□4**		1	1 unit	131	11.500
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW44 46-□BC□4**		1	1 unit	131	11.500
313	90	**160**	--	--	--	280	75	100	**200**	--	B	**3RW44 47-□BC□4**		1	1 unit	131	11.500
356	110	**200**	--	--	--	315	100	125	**250**	--	B	**3RW44 47-□BC□4**		1	1 unit	131	11.500
432	132	**250**	--	--	--	385	125	150	**300**	--	C	**3RW44 53-□BC□4**		1	1 unit	131	50.000
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW44 53-□BC□4**		1	1 unit	131	50.000
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW44 55-□BC□4**		1	1 unit	131	50.000
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW44 57-□BC□4**		1	1 unit	131	50.000
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW44 65-□BC□4**		1	1 unit	131	78.000
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW44 65-□BC□4**		1	1 unit	131	78.000
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW44 65-□BC□4**		1	1 unit	131	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[2]																	
• 115 V AC													**3**				
• 230 V AC													**4**				

[1] 3RW44 2 soft starters. ... 3RW44 4. with screw terminals: delivery time class ▶ (preferred type).

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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

* You can order this quantity or a multiple thereof.

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Heavy starting (CLASS 20) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 400 ... 600 V[1]																	
29	--	15	**18.5**	--	--	26	--	--	15	**20**	A	**3RW44 22-□BC□5**		1	1 unit	131	6.500
36	--	18.5	**22**	--	--	32	--	--	20	**25**	A	**3RW44 23-□BC□5**		1	1 unit	131	6.500
47	--	22	**30**	--	--	42	--	--	25	**30**	A	**3RW44 24-□BC□5**		1	1 unit	131	6.500
57	--	30	**37**	--	--	51	--	--	30	**40**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
77	--	37	**45**	--	--	68	--	--	50	**50**	A	**3RW44 27-□BC□5**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
93	--	45	**55**	--	--	82	--	--	60	**75**	B	**3RW44 34-□BC□5**		1	1 unit	131	7.900
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW44 35-□BC□5**		1	1 unit	131	7.900
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW44 36-□BC□5**		1	1 unit	131	7.900
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW44 45-□BC□5**		1	1 unit	131	11.500
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW44 46-□BC□5**		1	1 unit	131	11.500
313	--	160	**200**	--	--	280	--	--	200	**250**	B	**3RW44 47-□BC□5**		1	1 unit	131	11.500
356	--	200	**250**	--	--	315	--	--	250	**300**	B	**3RW44 47-□BC□5**		1	1 unit	131	11.500
432	--	250	**315**	--	--	385	--	--	300	**400**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW44 54-□BC□5**		1	1 unit	131	50.000
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW44 57-□BC□5**		1	1 unit	131	50.000
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
970	--	560	**710**	--	--	850	--	--	750	**900**	C	**3RW44 65-□BC□5**		1	1 unit	131	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[2]																	
• 115 V AC													**3**				
• 230 V AC													**4**				

[1] Soft starter with screw terminals:
3RW44 2. ... 3RW44 4. Delivery time class A,
3RW44 5. ... 3RW44 6. Delivery time class B.

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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

4

*** You can order this quantity or a multiple thereof.**

3RW44 Soft Starters for High-Feature Applications

3RW44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Heavy starting (CLASS 20) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 400 ... 690 V																	
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW44 22-□BC□6**		1	1 unit	131	6.500
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW44 23-□BC□6**		1	1 unit	131	6.500
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW44 24-□BC□6**		1	1 unit	131	6.500
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW44 25-□BC□6**		1	1 unit	131	6.500
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW44 27-□BC□6**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW44 34-□BC□6**		1	1 unit	131	7.900
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW44 35-□BC□6**		1	1 unit	131	7.900
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW44 36-□BC□6**		1	1 unit	131	7.900
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW44 43-□BC□6**		1	1 unit	131	11.500
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW44 45-□BC□6**		1	1 unit	131	11.500
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW44 46-□BC□6**		1	1 unit	131	11.500
313	--	160	200	**315**	--	280	--	--	200	**250**	B	**3RW44 47-□BC□6**		1	1 unit	131	11.500
356	--	200	250	**355**	--	315	--	--	250	**300**	B	**3RW44 47-□BC□6**		1	1 unit	131	11.500
432	--	250	315	**400**	--	385	--	--	300	**400**	C	**3RW44 53-□BC□6**		1	1 unit	131	50.000
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW44 53-□BC□6**		1	1 unit	131	50.000
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW44 55-□BC□6**		1	1 unit	131	50.000
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW44 57-□BC□6**		1	1 unit	131	50.000
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW44 65-□BC□6**		1	1 unit	131	78.000
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW44 65-□BC□6**		1	1 unit	131	78.000
970	--	560	710	**1000**	--	850	--	--	750	**900**	C	**3RW44 65-□BC□6**		1	1 unit	131	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.

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

Please observe the notes for the selection of soft starters on Page 4/7.

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 or similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. For information about rated currents for ambient temperatures > 40 °C and switching frequency, see "Technical specifications".

* You can order this quantity or a multiple thereof.

SIRIUS 3RW44 for very heavy starting (CLASS 30) in inline circuit


3RW44 27-1BC44


3RW44 36-6BC44


3RW44 47-6BC44


3RW44 58-6BC44


3RW44 66-6BC44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Very heavy starting (CLASS 30) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Order No.	Price per PU				
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V							
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 200 ... 460 V[1)]																	
29	5.5	**15**	--	--	--	26	7.5	7.5	**15**	--	▶	**3RW44 22-□BC□4**		1	1 unit	131	6.500
36	7.5	**18.5**	--	--	--	32	10	10	**20**	--	▶	**3RW44 24-□BC□4**		1	1 unit	131	6.500
47	11	**22**	--	--	--	42	10	15	**25**	--	▶	**3RW44 25-□BC□4**		1	1 unit	131	6.500
57	15	**30**	--	--	--	51	15	15	**30**	--	▶	**3RW44 25-□BC□4**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
77	18.5	**37**	--	--	--	68	20	20	**50**	--	B	**3RW44 34-□BC□4**		1	1 unit	131	7.900
93	22	**45**	--	--	--	82	25	25	**60**	--	B	**3RW44 35-□BC□4**		1	1 unit	131	7.900
113	30	**55**	--	--	--	100	30	30	**75**	--	B	**3RW44 43-□BC□4**		1	1 unit	131	11.500
134	37	**75**	--	--	--	117	30	40	**75**	--	B	**3RW44 43-□BC□4**		1	1 unit	131	11.500
162	45	**90**	--	--	--	145	40	50	**100**	--	B	**3RW44 43-□BC□4**		1	1 unit	131	11.500
203	55	**110**	--	--	--	180	50	60	**125**	--	B	**3RW44 46-□BC□4**		1	1 unit	131	11.500
250	75	**132**	--	--	--	215	60	75	**150**	--	B	**3RW44 47-□BC□4**		1	1 unit	131	11.500
313	90	**160**	--	--	--	280	75	100	**200**	--	C	**3RW44 53-□BC□4**		1	1 unit	131	50.000
356	110	**200**	--	--	--	315	100	125	**250**	--	C	**3RW44 53-□BC□4**		1	1 unit	131	50.000
432	132	**250**	--	--	--	385	125	150	**300**	--	C	**3RW44 53-□BC□4**		1	1 unit	131	50.000
551	160	**315**	--	--	--	494	150	200	**400**	--	C	**3RW44 55-□BC□4**		1	1 unit	131	50.000
615	200	**355**	--	--	--	551	150	200	**450**	--	C	**3RW44 58-□BC□4**		1	1 unit	131	50.000
693	200	**400**	--	--	--	615	200	250	**500**	--	C	**3RW44 65-□BC□4**		1	1 unit	131	78.000
780	250	**450**	--	--	--	693	200	250	**600**	--	C	**3RW44 65-□BC□4**		1	1 unit	131	78.000
880	250	**500**	--	--	--	780	250	300	**700**	--	C	**3RW44 65-□BC□4**		1	1 unit	131	78.000
970	315	**560**	--	--	--	850	300	350	**750**	--	C	**3RW44 66-□BC□4**		1	1 unit	131	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[2)]																	
• 115 V AC												**3**					
• 230 V AC												**4**					

1) 3RW44 2 soft starters. ... 3RW44 4. with screw terminals: delivery time class ▶ (preferred type).

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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

*** You can order this quantity or a multiple thereof.**

3RW44 Soft Starters for High-Feature Applications

3RW44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Very heavy starting (CLASS 30) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 400 ... 600 V[1]																	
29	--	15	**18.5**	--	--	26	--	--	15	**20**	A	**3RW44 22-□BC□5**		1	1 unit	131	6.500
36	--	18.5	**22**	--	--	32	--	--	20	**25**	A	**3RW44 24-□BC□5**		1	1 unit	131	6.500
47	--	22	**30**	--	--	42	--	--	25	**30**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
57	--	30	**37**	--	--	51	--	--	30	**40**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
77	--	37	**45**	--	--	68	--	--	50	**50**	B	**3RW44 34-□BC□5**		1	1 unit	131	7.900
93	--	45	**55**	--	--	82	--	--	60	**75**	B	**3RW44 35-□BC□5**		1	1 unit	131	7.900
113	--	55	**75**	--	--	100	--	--	75	**75**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
134	--	75	**90**	--	--	117	--	--	75	**100**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
162	--	90	**110**	--	--	145	--	--	100	**125**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
203	--	110	**132**	--	--	180	--	--	125	**150**	B	**3RW44 46-□BC□5**		1	1 unit	131	11.500
250	--	132	**160**	--	--	215	--	--	150	**200**	B	**3RW44 47-□BC□5**		1	1 unit	131	11.500
313	--	160	**200**	--	--	280	--	--	200	**250**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
356	--	200	**250**	--	--	315	--	--	250	**300**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
432	--	250	**315**	--	--	385	--	--	300	**400**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
551	--	315	**355**	--	--	494	--	--	400	**500**	C	**3RW44 55-□BC□5**		1	1 unit	131	50.000
615	--	355	**400**	--	--	551	--	--	450	**600**	C	**3RW44 58-□BC□5**		1	1 unit	131	50.000
693	--	400	**500**	--	--	615	--	--	500	**700**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
780	--	450	**560**	--	--	693	--	--	600	**750**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
880	--	500	**630**	--	--	780	--	--	700	**850**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
--	--	--	--	--	--	850	--	--	750	**900**	C	**3RW44 66-□BC□5**		1	1 unit	131	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[2]																	
• 115 V AC													**3**				
• 230 V AC													**4**				

[1] Soft starter with screw terminals:
3RW44 2. ... 3RW44 4. Delivery time class A,
3RW44 5. ... 3RW44 6. Delivery time class B.

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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

* You can order this quantity or a multiple thereof.

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Very heavy starting (CLASS 30) in inline circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e					Order No.	Price per PU				
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V							
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inline circuit, rated operational voltage 400 ... 690 V																	
29	--	15	18.5	**30**	--	26	--	--	15	**20**	B	**3RW44 22-□BC□6**		1	1 unit	131	6.500
36	--	18.5	22	**37**	--	32	--	--	20	**25**	B	**3RW44 24-□BC□6**		1	1 unit	131	6.500
47	--	22	30	**45**	--	42	--	--	25	**30**	B	**3RW44 25-□BC□6**		1	1 unit	131	6.500
57	--	30	37	**55**	--	51	--	--	30	**40**	B	**3RW44 25-□BC□6**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
77	--	37	45	**75**	--	68	--	--	50	**50**	B	**3RW44 34-□BC□6**		1	1 unit	131	7.900
93	--	45	55	**90**	--	82	--	--	60	**75**	B	**3RW44 35-□BC□6**		1	1 unit	131	7.900
113	--	55	75	**110**	--	100	--	--	75	**75**	B	**3RW44 43-□BC□6**		1	1 unit	131	11.500
134	--	75	90	**132**	--	117	--	--	75	**100**	B	**3RW44 43-□BC□6**		1	1 unit	131	11.500
162	--	90	110	**160**	--	145	--	--	100	**125**	B	**3RW44 43-□BC□6**		1	1 unit	131	11.500
203	--	110	132	**200**	--	180	--	--	125	**150**	B	**3RW44 46-□BC□6**		1	1 unit	131	11.500
250	--	132	160	**250**	--	215	--	--	150	**200**	B	**3RW44 47-□BC□6**		1	1 unit	131	11.500
313	--	160	200	**315**	--	280	--	--	200	**250**	C	**3RW44 53-□BC□6**		1	1 unit	131	50.000
356	--	200	250	**355**	--	315	--	--	250	**300**	C	**3RW44 53-□BC□6**		1	1 unit	131	50.000
432	--	250	315	**400**	--	385	--	--	300	**400**	C	**3RW44 53-□BC□6**		1	1 unit	131	50.000
551	--	315	355	**560**	--	494	--	--	400	**500**	C	**3RW44 55-□BC□6**		1	1 unit	131	50.000
615	--	355	400	**630**	--	551	--	--	450	**600**	C	**3RW44 58-□BC□6**		1	1 unit	131	50.000
693	--	400	500	**710**	--	615	--	--	500	**700**	C	**3RW44 65-□BC□6**		1	1 unit	131	78.000
780	--	450	560	**800**	--	693	--	--	600	**750**	C	**3RW44 65-□BC□6**		1	1 unit	131	78.000
880	--	500	630	**900**	--	780	--	--	700	**850**	C	**3RW44 65-□BC□6**		1	1 unit	131	78.000
--	--	--	--	--	--	850	--	--	750	**900**	C	**3RW44 66-□BC□6**		1	1 unit	131	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.

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

Please observe the notes for the selection of soft starters on Page 4/7.

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

*** You can order this quantity or a multiple thereof.**

3RW44 Soft Starters for High-Feature Applications

3RW44

SIRIUS 3RW44 for normal starting (CLASS 10) in inside-delta circuit

3RW44 27-1BC44

3RW44 36-6BC44

3RW44 47-6BC44

3RW44 58-6BC44

3RW44 66-6BC44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Normal starting (CLASS 10) in inside-delta circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inside-delta circuit, rated operational voltage 200 ... 460 V [2]																	
50	15	**22**	--	--	--	45	10	15	**30**	--	▶	**3RW44 22-□BC□4**		1	1 unit	131	6.500
62	18.5	**30**	--	--	--	55	15	20	**40**	--	▶	**3RW44 23-□BC□4**		1	1 unit	131	6.500
81	22	**45**	--	--	--	73	20	25	**50**	--	▶	**3RW44 24-□BC□4**		1	1 unit	131	6.500
99	30	**55**	--	--	--	88	25	30	**60**	--	▶	**3RW44 25-□BC□4**		1	1 unit	131	6.500
133	37	**75**	--	--	--	118	30	40	**75**	--	▶	**3RW44 26-□BC□4**		1	1 unit	131	6.500
161	45	**90**	--	--	--	142	40	50	**100**	--	▶	**3RW44 27-□BC□4**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW44 34-□BC□4**		1	1 unit	131	7.900
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW44 35-□BC□4**		1	1 unit	131	7.900
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW44 36-□BC□4**		1	1 unit	131	7.900
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW44 43-□BC□4**		1	1 unit	131	11.500
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW44 44-□BC□4**		1	1 unit	131	11.500
542	160	**315**	--	--	--	485	150	200	**400**	--	B	**3RW44 45-□BC□4**		1	1 unit	131	11.500
617	200	**355**	--	--	--	546	150	200	**450**	--	B	**3RW44 46-□BC□4**		1	1 unit	131	11.500
748	250	**400**	--	--	--	667	200	250	**600**	--	B	**3RW44 47-□BC□4**		1	1 unit	131	11.500
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW44 53-□BC□4**		1	1 unit	131	50.000
1065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW44 54-□BC□4**		1	1 unit	131	50.000
1200	400	**710**	--	--	--	1065	350	450	**950**	--	C	**3RW44 55-□BC□4**		1	1 unit	131	50.000
1351	450	**800**	--	--	--	1200	450	500	**1050**	--	C	**3RW44 56-□BC□4**		1	1 unit	131	50.000
1524	500	**900**	--	--	--	1351	450	600	**1200**	--	C	**3RW44 57-□BC□4**		1	1 unit	131	50.000
1680	560	**1000**	--	--	--	1472	550	650	**1300**	--	C	**3RW44 58-□BC□4**		1	1 unit	131	50.000
1864	630	**1100**	--	--	--	1680	650	750	**1500**	--	C	**3RW44 65-□BC□4**		1	1 unit	131	78.000
2103	710	**1200**	--	--	--	1864	700	850	**1700**	--	C	**3RW44 66-□BC□4**		1	1 unit	131	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 [3]																	
• 115 V AC												**3**					
• 230 V AC												**4**					

[1] In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

[2] 3RW44 2 soft starters. ... 3RW44 4. with screw terminals: delivery time class ▶ (preferred type).

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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

* You can order this quantity or a multiple thereof.

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Normal starting (CLASS 10) in inside-delta circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inside-delta circuit, rated operational voltage 400 ... 600 V [2]																	
50	--	22	**30**	--	--	45	--	--	30	**40**	A	**3RW44 22-□BC□5**		1	1 unit	131	6.500
62	--	30	**37**	--	--	55	--	--	40	**50**	A	**3RW44 23-□BC□5**		1	1 unit	131	6.500
81	--	45	**45**	--	--	73	--	--	50	**60**	A	**3RW44 24-□BC□5**		1	1 unit	131	6.500
99	--	55	**55**	--	--	88	--	--	60	**75**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
133	--	75	**90**	--	--	118	--	--	75	**100**	A	**3RW44 26-□BC□5**		1	1 unit	131	6.500
161	--	90	**110**	--	--	142	--	--	100	**125**	A	**3RW44 27-□BC□5**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW44 34-□BC□5**		1	1 unit	131	7.900
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW44 35-□BC□5**		1	1 unit	131	7.900
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW44 36-□BC□5**		1	1 unit	131	7.900
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW44 44-□BC□5**		1	1 unit	131	11.500
542	--	315	**355**	--	--	485	--	--	400	**500**	B	**3RW44 45-□BC□5**		1	1 unit	131	11.500
617	--	355	**450**	--	--	546	--	--	450	**600**	B	**3RW44 46-□BC□5**		1	1 unit	131	11.500
748	--	400	**500**	--	--	667	--	--	600	**750**	B	**3RW44 47-□BC□5**		1	1 unit	131	11.500
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
1065	--	630	**710**	--	--	954	--	--	850	**1050**	C	**3RW44 54-□BC□5**		1	1 unit	131	50.000
1200	--	710	**800**	--	--	1065	--	--	950	**1200**	C	**3RW44 55-□BC□5**		1	1 unit	131	50.000
1351	--	800	**900**	--	--	1200	--	--	1050	**1350**	C	**3RW44 56-□BC□5**		1	1 unit	131	50.000
1524	--	900	**1000**	--	--	1351	--	--	1200	**1500**	C	**3RW44 57-□BC□5**		1	1 unit	131	50.000
1680	--	1000	**1200**	--	--	1472	--	--	1300	**1650**	C	**3RW44 58-□BC□5**		1	1 unit	131	50.000
1864	--	1100	**1350**	--	--	1680	--	--	1500	**1900**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
2103	--	1200	**1500**	--	--	1864	--	--	1700	**2100**	C	**3RW44 66-□BC□5**		1	1 unit	131	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 [3]																	
• 115 V AC													**3**				
• 230 V AC													**4**				

[1] In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

[2] Soft starter with screw terminals:
3RW44 2. ... 3RW44 4. Delivery time class A
3RW44 5. ... 3RW44 6. Delivery time class B.

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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

*** You can order this quantity or a multiple thereof.**

3RW44 Soft Starters for High-Feature Applications

3RW44

SIRIUS 3RW44 for heavy starting (CLASS 20) in inside-delta circuit

3RW44 27-1BC44

3RW44 36-6BC44

3RW44 47-6BC44

3RW44 58-6BC44

3RW44 66-6BC44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Heavy starting (CLASS 20) in inside-delta circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inside-delta circuit, rated operational voltage 200 ... 460 V [2]																	
50	15	**22**	--	--	--	45	10	15	**30**	--	▶	**3RW44 23-☐BC☐4**		1	1 unit	131	6.500
62	18.5	**30**	--	--	--	55	15	20	**40**	--	▶	**3RW44 24-☐BC☐4**		1	1 unit	131	6.500
81	22	**45**	--	--	--	73	20	25	**50**	--	▶	**3RW44 25-☐BC☐4**		1	1 unit	131	6.500
99	30	**55**	--	--	--	88	25	30	**60**	--	▶	**3RW44 25-☐BC☐4**		1	1 unit	131	6.500
133	37	**75**	--	--	--	118	30	40	**75**	--	▶	**3RW44 27-☐BC☐4**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals													**1**				
• With spring-type terminals													**3**				
161	45	**90**	--	--	--	142	40	50	**100**	--	B	**3RW44 34-☐BC☐4**		1	1 unit	131	7.900
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW44 35-☐BC☐4**		1	1 unit	131	7.900
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW44 36-☐BC☐4**		1	1 unit	131	7.900
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW44 43-☐BC☐4**		1	1 unit	131	11.500
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW44 44-☐BC☐4**		1	1 unit	131	11.500
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW44 45-☐BC☐4**		1	1 unit	131	11.500
542	160	**315**	--	--	--	485	150	200	**400**	--	B	**3RW44 47-☐BC☐4**		1	1 unit	131	11.500
617	200	**355**	--	--	--	546	150	200	**450**	--	B	**3RW44 47-☐BC☐4**		1	1 unit	131	11.500
748	250	**400**	--	--	--	667	200	250	**600**	--	C	**3RW44 53-☐BC☐4**		1	1 unit	131	50.000
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW44 53-☐BC☐4**		1	1 unit	131	50.000
1065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW44 55-☐BC☐4**		1	1 unit	131	50.000
1200	400	**710**	--	--	--	1065	350	450	**950**	--	C	**3RW44 57-☐BC☐4**		1	1 unit	131	50.000
1351	450	**800**	--	--	--	1200	450	500	**1050**	--	C	**3RW44 65-☐BC☐4**		1	1 unit	131	78.000
1524	500	**900**	--	--	--	1351	450	600	**1200**	--	C	**3RW44 65-☐BC☐4**		1	1 unit	131	78.000
1680	560	**1000**	--	--	--	1472	550	650	**1300**	--	C	**3RW44 65-☐BC☐4**		1	1 unit	131	78.000
--	--	--	--	--	--	1680	650	750	**1500**	--	C	**3RW44 66-☐BC☐4**		1	1 unit	131	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 [3]																	
• 115 V AC													**3**				
• 230 V AC													**4**				

[1] In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

[2] 3RW44 2 soft starters. ... 3RW44 4. with screw terminals: delivery time class ▶ (preferred type).

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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 or similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. For information about rated currents for ambient temperatures > 40 °C and switching frequency, see "Technical specifications".

* You can order this quantity or a multiple thereof.

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Heavy starting (CLASS 20) in inside-delta circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inside-delta circuit, rated operational voltage 400 ... 600 V [2]																	
50	--	22	**30**	--	--	45	--	--	30	**40**	A	**3RW44 23-□BC□5**		1	1 unit	131	6.500
62	--	30	**37**	--	--	55	--	--	40	**50**	A	**3RW44 24-□BC□5**		1	1 unit	131	6.500
81	--	45	**45**	--	--	73	--	--	50	**60**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
99	--	55	**55**	--	--	88	--	--	60	**75**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
133	--	75	**90**	--	--	118	--	--	75	**100**	A	**3RW44 27-□BC□5**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals													**1**				
• With spring-type terminals													**3**				
161	--	90	**110**	--	--	142	--	--	100	**125**	B	**3RW44 34-□BC□5**		1	1 unit	131	7.900
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW44 35-□BC□5**		1	1 unit	131	7.900
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW44 36-□BC□5**		1	1 unit	131	7.900
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW44 44-□BC□5**		1	1 unit	131	11.500
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW44 45-□BC□5**		1	1 unit	131	11.500
542	--	315	**355**	--	--	485	--	--	400	**500**	B	**3RW44 47-□BC□5**		1	1 unit	131	11.500
617	--	355	**450**	--	--	546	--	--	450	**600**	B	**3RW44 47-□BC□5**		1	1 unit	131	11.500
748	--	400	**500**	--	--	667	--	--	600	**750**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
1065	--	630	**710**	--	--	954	--	--	850	**1050**	C	**3RW44 55-□BC□5**		1	1 unit	131	50.000
1200	--	710	**800**	--	--	1065	--	--	950	**1200**	C	**3RW44 57-□BC□5**		1	1 unit	131	50.000
1351	--	800	**900**	--	--	1200	--	--	1050	**1350**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
1524	--	900	**1000**	--	--	1351	--	--	1200	**1500**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
1680	--	1000	**1200**	--	--	1472	--	--	1300	**1650**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
--	--	--	--	--	--	1680	--	--	1500	**1900**	C	**3RW44 66-□BC□5**		1	1 unit	131	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 [3]																	
• 115 V AC														**3**			
• 230 V AC														**4**			

[1] In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

[2] Soft starter with screw terminals:
3RW44 2. ... 3RW44 4. Delivery time class A
3RW44 5. ... 3RW44 6. Delivery time class B.

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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 or similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. For information about rated currents for ambient temperatures > 40 °C and switching frequency, see "Technical specifications".

*** You can order this quantity or a multiple thereof.**

3RW44 Soft Starters for High-Feature Applications

3RW44

SIRIUS 3RW44 for very heavy starting (CLASS 30) in inside-delta circuit

3RW44 27-1BC44

3RW44 36-6BC44

3RW44 47-6BC44

3RW44 58-6BC44

3RW44 66-6BC44

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Very heavy starting (CLASS 30) in inside-delta circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inside-delta circuit, rated operational voltage 200 ... 460 V[2]																	
50	15	**22**	--	--	--	45	10	15	**30**	--	▶	**3RW44 23-☐BC☐4**		1	1 unit	131	6.500
62	18.5	**30**	--	--	--	55	15	20	**40**	--	▶	**3RW44 24-☐BC☐4**		1	1 unit	131	6.500
81	22	**45**	--	--	--	73	20	25	**50**	--	▶	**3RW44 25-☐BC☐4**		1	1 unit	131	6.500
99	30	**55**	--	--	--	88	25	30	**60**	--	▶	**3RW44 25-☐BC☐4**		1	1 unit	131	6.500
133	37	**75**	--	--	--	118	30	40	**75**	--	▶	**3RW44 27-☐BC☐4**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
161	45	**90**	--	--	--	142	40	50	**100**	--	B	**3RW44 35-☐BC☐4**		1	1 unit	131	7.900
196	55	**110**	--	--	--	173	50	60	**125**	--	B	**3RW44 36-☐BC☐4**		1	1 unit	131	7.900
232	75	**132**	--	--	--	203	60	75	**150**	--	B	**3RW44 43-☐BC☐4**		1	1 unit	131	11.500
281	90	**160**	--	--	--	251	75	100	**200**	--	B	**3RW44 43-☐BC☐4**		1	1 unit	131	11.500
352	110	**200**	--	--	--	312	100	125	**250**	--	B	**3RW44 45-☐BC☐4**		1	1 unit	131	11.500
433	132	**250**	--	--	--	372	125	150	**300**	--	B	**3RW44 47-☐BC☐4**		1	1 unit	131	11.500
542	160	**315**	--	--	--	485	150	200	**400**	--	C	**3RW44 53-☐BC☐4**		1	1 unit	131	50.000
617	200	**355**	--	--	--	546	150	200	**450**	--	C	**3RW44 53-☐BC☐4**		1	1 unit	131	50.000
748	250	**400**	--	--	--	667	200	250	**600**	--	C	**3RW44 53-☐BC☐4**		1	1 unit	131	50.000
954	315	**560**	--	--	--	856	300	350	**750**	--	C	**3RW44 55-☐BC☐4**		1	1 unit	131	50.000
1065	355	**630**	--	--	--	954	350	400	**850**	--	C	**3RW44 58-☐BC☐4**		1	1 unit	131	50.000
1200	400	**710**	--	--	--	1065	350	450	**950**	--	C	**3RW44 65-☐BC☐4**		1	1 unit	131	78.000
1351	450	**800**	--	--	--	1200	450	500	**1050**	--	C	**3RW44 65-☐BC☐4**		1	1 unit	131	78.000
1524	500	**900**	--	--	--	1351	450	600	**1200**	--	C	**3RW44 65-☐BC☐4**		1	1 unit	131	78.000
--	--	--	--	--	--	1472	550	650	**1300**	--	C	**3RW44 66-☐BC☐4**		1	1 unit	131	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[3]																	
• 115 V AC												**3**					
• 230 V AC												**4**					

[1] In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

[2] 3RW44 2 soft starters. ... 3RW44 4. with screw terminals: delivery time class ▶ (preferred type).

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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 or similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. For information about rated currents for ambient temperatures > 40 °C and switching frequency, see "Technical specifications".

* You can order this quantity or a multiple thereof.

Ambient temperature 40 °C						Ambient temperature 50 °C					DT	Very heavy starting (CLASS 30) in inside-delta circuit		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
Rated operational current I_e [1]	Rated power of induction motors for rated operational voltage U_e					Rated operational current I_e	Rated power of induction motors for rated operational voltage U_e										
	230 V	400 V	500 V	690 V	1000 V		200 V	230 V	460 V	575 V		Order No.	Price per PU				
A	kW	kW	kW	kW	kW	A	hp	hp	hp	hp							kg
Inside-delta circuit, rated operational voltage 400 ... 600 V [2]																	
50	--	22	**30**	--	--	45	--	--	30	**40**	A	**3RW44 23-□BC□5**		1	1 unit	131	6.500
62	--	30	**37**	--	--	55	--	--	40	**50**	A	**3RW44 24-□BC□5**		1	1 unit	131	6.500
81	--	45	**45**	--	--	73	--	--	50	**60**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
99	--	55	**55**	--	--	88	--	--	60	**75**	A	**3RW44 25-□BC□5**		1	1 unit	131	6.500
133	--	75	**90**	--	--	118	--	--	75	**100**	A	**3RW44 27-□BC□5**		1	1 unit	131	6.500
Order No. supplement for connection types																	
• With screw terminals												**1**					
• With spring-type terminals												**3**					
161	--	90	**110**	--	--	142	--	--	100	**125**	B	**3RW44 35-□BC□5**		1	1 unit	131	7.900
196	--	110	**132**	--	--	173	--	--	125	**150**	B	**3RW44 36-□BC□5**		1	1 unit	131	7.900
232	--	132	**160**	--	--	203	--	--	150	**200**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
281	--	160	**200**	--	--	251	--	--	200	**250**	B	**3RW44 43-□BC□5**		1	1 unit	131	11.500
352	--	200	**250**	--	--	312	--	--	250	**300**	B	**3RW44 45-□BC□5**		1	1 unit	131	11.500
433	--	250	**315**	--	--	372	--	--	300	**350**	B	**3RW44 47-□BC□5**		1	1 unit	131	11.500
542	--	315	**355**	--	--	485	--	--	400	**500**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
617	--	355	**450**	--	--	546	--	--	450	**600**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
748	--	400	**500**	--	--	667	--	--	600	**750**	C	**3RW44 53-□BC□5**		1	1 unit	131	50.000
954	--	560	**630**	--	--	856	--	--	750	**950**	C	**3RW44 55-□BC□5**		1	1 unit	131	50.000
1065	--	630	**710**	--	--	954	--	--	850	**1050**	C	**3RW44 58-□BC□5**		1	1 unit	131	50.000
1200	--	710	**800**	--	--	1065	--	--	950	**1200**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
1351	--	800	**900**	--	--	1200	--	--	1050	**1350**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
1524	--	900	**1000**	--	--	1351	--	--	1200	**1500**	C	**3RW44 65-□BC□5**		1	1 unit	131	78.000
--	--	--	--	--	--	1472	--	--	1300	**1650**	C	**3RW44 66-□BC□5**		1	1 unit	131	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 [3]																	
• 115 V AC													**3**				
• 230 V AC													**4**				

[1] In the selection table, the unit rated current I_e refers to the induction motor's rated operational current in the inside-delta circuit. The actual current of the device is approx. 58 % of this value.

[2] Soft starter with screw terminals:
3RW44 2. ... 3RW44 4. Delivery time class A
3RW44 5. ... 3RW44 6. Delivery time class B.

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

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

Please observe the notes for the selection of soft starters on Page 4/7.

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 or similar load). For any other conditions of use, the devices should be selected using the Win-Soft Starter selection and simulation program. For information about rated currents for ambient temperatures > 40 °C and switching frequency, see "Technical specifications".

*** You can order this quantity or a multiple thereof.**

Accessories

	For soft starters / Type	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Soft Starter ES 2007 PC communication program[2)]									
		**Soft Starter ES 2007 Basic** Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface							
		• License key on USB stick, Class A, including CD	B	**3ZS1 313-4CC10-0YA5**		1	1 unit	131	0.230
		Soft Starter ES 2007 Standard Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface							
		• License key on USB stick, Class A, including CD	B	**3ZS1 313-5CC10-0YA5**		1	1 unit	131	0.230
		Soft Starter ES 2007 Premium Floating license for one user E-SW, software and documentation on CD, 3 languages (German/English/French), communication through system interface or PROFIBUS							
		• License key on USB stick, Class A, including CD	B	**3ZS1 313-6CC10-0YA5**		1	1 unit	131	0.230
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	A	**3UF7 940-0AA00-0**		1	1 unit	131	0.150
USB/serial adapters									
		For connecting the 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	B	**3UF7 946-0AA00-0**		1	1 unit	131	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.	A	**3RW49 00-0KC00**		1	1 unit	131	0.320
External display and operator module									
 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 (e. g. in the control cabinet door)	►	**3RW49 00-0AC00**		1	1 unit	131	0.320
		Connection cable From the device interface (serial) of the 3RW44 soft starter to the external display and operator module							
		• Length 0.5 m, flat	A	**3UF7 932-0AA00-0**		1	1 unit	131	0.020
		• Length 0.5 m, round	A	**3UF7 932-0BA00-0**		1	1 unit	131	0.050
		• Length 1.0 m, round	A	**3UF7 937-0BA00-0**		1	1 unit	131	0.100
		• Length 2.5 m, round	A	**3UF7 933-0BA00-0**		1	1 unit	131	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 mm²	►	**3RT19 55-4G**		1	1 unit	101	0.230
		• Up to 120 mm²	►	**3RT19 56-4G**		1	1 unit	101	0.260
	3RW44 4.	• Up to 240 mm²	►	**3RT19 66-4G**		1	1 unit	101	0.676

* You can order this quantity or a multiple thereof.

	For soft starters	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Type								kg
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	1 unit	101	0.030
	3RW44 4.		►	**3RT19 66-4EA2**		1	1 unit	101	0.040
 3RT19.6-4EA1	**Terminal covers for cable lugs and busbar connections**								
	3RW44 2. and 3RW44 3.		►	**3RT19 56-4EA1**		1	1 unit	101	0.070
	3RW44 4.		►	**3RT19 66-4EA1**		1	1 unit	101	0.130
Operating instructions[1]									
	for 3RW44 soft starters			**3ZX10 12-0RW44-1AA1**					

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

[2] For more information on the Soft Starter ES software see Chapter "Planning and Configuration with SIRIUS"

Spare parts

	For soft starters	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	Type								kg
Fans									
 3RW49	**Fans**								
	3RW44 2. and 3RW44 3.	115 V AC	►	**3RW49 36-8VX30**		1	1 unit	131	0.300
		230 V AC	►	**3RW49 36-8VX40**		1	1 unit	131	0.300
	3RW44 4.	115 V AC	►	**3RW49 47-8VX30**		1	1 unit	131	0.500
		230 V AC	►	**3RW49 47-8VX40**		1	1 unit	131	0.500
	3RW44 5. and 3RW44 6 1)	115 V AC	►	**3RW49 57-8VX30**		1	1 unit	131	0.800
		230 V AC	►	**3RW49 57-8VX40**		1	1 unit	131	0.800
	3RW44 6.[2]	115 V AC	►	**3RW49 66-8VX30**		1	1 unit	131	0.300
		230 V AC	►	**3RW49 66-8VX40**		1	1 unit	131	0.300

[1] 3RW44 6. mounting on output side.

[2] For mounting on front side.

* You can order this quantity or a multiple thereof.

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 fans[1]	Pump	Hydraulic pump
Starting parameters							
• 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 performance class higher than the motor used

Application		Stirrer	Centrifuge	Milling machine
Starting parameters				
• 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 performance classes higher than the motor used

Application		Large fans[2]	Mill	Breakers	Circular saw/bandsaw
Starting parameters					
• 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

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

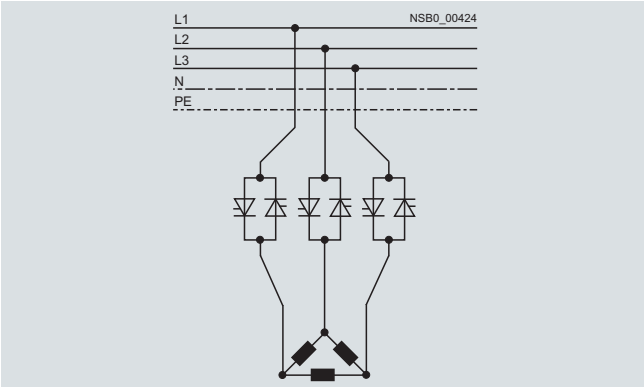
Note:
These tables present sample set values and device sizes. They are intended only for the purposes of information and are not binding. The set values depend on the application in question and must be optimized during commissioning.
The soft starter dimensions should be checked where necessary with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

Circuit concept

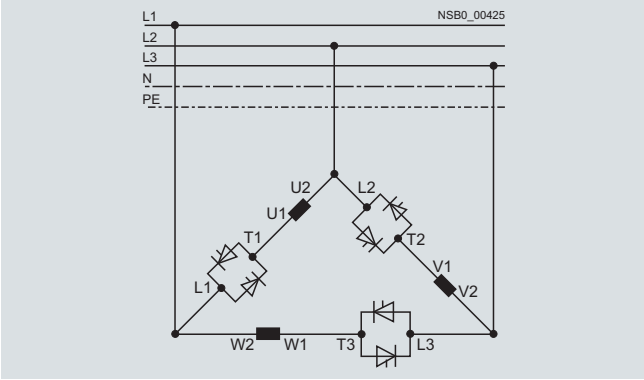
The SIRIUS 3RW44 soft starters can be operated in two different types of circuit.

- Inline circuit
  The controls for isolating and protecting the motor are simply connected in series with the soft starter. The motor is connected to the soft starter with three cables.
- Inside-delta circuit
  The wiring is similar to that of wye-delta starters. The phases of the soft starter are connected in series with the individual motor windings. The soft starter then only has to carry the phase current, amounting to about 58 % of the rated motor current (conductor current).

Comparison of the types of circuit



Inline circuit:
Rated current I_e corresponds to the rated motor current I_n,
3 cables to the motor



Inside-delta circuit:
Rated current I_e corresponds to approx. 58 % of the rated motor current I_n, 6 cables to the motor (as with wye-delta starters)

Which circuit?

Using the inline circuit involves the lowest wiring outlay. If the soft starter to motor connections are long, this circuit is preferable. With the inside-delta circuit there is double the wiring complexity but a smaller size of device can be used at the same rating.

Thanks to the choice of operating mode between the inline circuit and inside-delta circuit, it is always possible to select the most favorable solution.

The braking function is possible only in the inline circuit.

Configuration

The 3RW44 solid-state soft starters are designed for normal starting. In case of heavy starting or increased starting frequency, a larger device must be selected.

For long starting times it is recommended to have a PTC sensor in the motor. This also applies for the ramp-down modes smooth ramp-down, pump ramp-down and DC braking, because during the ramp-down time in these modes, an additional current loading applies in contrast to free ramp-down.

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.

A bypass contact system and solid-state overload relay are already integrated in the 3RW44 soft starter and therefore do not have to be ordered separately.

The harmonic component load for starting currents must be taken into consideration for the selection of motor starter protectors (selection of release).

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.

Device interface, PROFIBUS DP communication module, Soft Starter ES parameterizing and operating software

The 3RW44 electronic soft starters have a PC interface for communicating with the Soft Starter ES software or for connecting the external display and operator module. If the optional PROFIBUS communication module is used, the 3RW44 soft starter can be integrated in the PROFIBUS network and communicate using the GSD file or Soft Starter ES Premium software.

3RW44

Manual for SIRIUS 3RW44

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.

Please direct enquiries and applications to:

Training Center for Automation and Industrial Solution
Gleiwitzer Strasse 555
D-90475 Nürnberg
Telephone: +49 911 895 3202
Telefax: +49 911 895 3275
E-mail: ingeborg.hoier@siemens.com
www.siemens.com/sitrain-cd

Overview

Type	Solid-State Relays			Solid-State Contactors		Function modules					
	Single-phase		Three-phase	Single-phase	Three-phase	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
	22.5 mm	45 mm	45 mm				Basic	Extended			
Usage											
Simple use of existing solid-state relays	❑	✓	❑	❑	❑	--	--	--	--	--	--
Complete unit "Ready to use"	❑	❑	❑	✓	✓	--	--	--	--	--	--
Space-saving	✓	--	✓	✓	✓	✓	✓	--	--	--	--
Can be extended with modular function modules	✓	--	1)	✓	1)	--	--	--	--	--	--
Frequent switching and monitoring of loads and solid-state relays/solid-state contactors	--	--	--	--	--	--	✓	✓	✓	✓	✓
Monitoring of up to 6 partial loads	--	--	--	--	--	--	✓	--	✓	✓	--
Monitoring of more than 6 partial loads	--	--	--	--	--	--	--	✓	--	--	--
Control of the heating power through an analog input	--	--	--	--	--	✓	--	--	--	✓	✓
Power control	--	--	--	--	--	--	--	--	--	--	✓
Startup											
Easy setting of setpoint values with "Teach" button	--	--	--	--	--	--	✓	✓	--	✓	✓
"Remote Teach" input for setting setpoints	--	--	--	--	--	--	--	--	✓	--	--
Mounting											
Mounting onto mounting rails or mounting plates	--	--	--	✓	✓	--	--	--	--	--	--
Can be snapped directly onto a solid-state relay or contactor	--	--	--	--	--	✓	✓	✓	✓	✓	✓
For use with "Coolplate" heat sink	✓	✓	✓	--	--	--	--	--	--	--	--
Wiring											
Connection of load circuit as for controlgear	✓	--	✓	✓	✓	--	✓	✓	✓	✓	✓
Connection of load circuit from above	--	✓	--	--	--	--	--	--	--	--	--

✓ Function is available

❑ Function is possible

-- Function not available.

1) The converter can also be used with three-phase devices.

Benefits

Characteristics

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

Advantages

- Saves time and costs with fast mounting and commissioning, short start-up times and easy wiring
- Extremely long life, low maintenance, rugged and reliable
- Space-saving and safe thanks to side-by-side mounting up to an ambient temperature of +60 °C
- Modular design: Standardized function modules and heat sinks can be used in conjunction with solid-state relays to satisfy individual requirements
- Safety due to lifelong, vibration-resistant and shock-resistant spring-type terminal connection method even under tough conditions

General data

Application

Applications

Example: Plastics processing industry

Thanks to their high switching endurance, SIRIUS solid-state switching devices are ideally suited for use in the control of electrical heat. This is because the more precise the temperature regulation process has to be, the higher the switching frequency. The accurate regulation of electrical heat is used for example in many processes in the plastics processing industry:

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

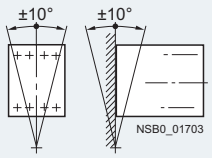
The powerful SIRIUS solid-state relays and contactors can be used to control several heating loads at the same time. By using a load monitoring module the individual partial loads can easily be monitored, and in the event of a failure a signal is generated to be sent to the controller.

Use in fuseless load feeders

Short-circuit protection and line protection with miniature circuit breakers is easy to achieve with SIRIUS solid-state relays and solid-state contactors in comparison with designing load feeders with fuses. A special version of the solid-state contactors can be protected against damage in the case of a short-circuit with a miniature circuit breaker with type B tripping characteristic. This allows the low-cost and simple design of fuseless load feeders with full protection of the switchgear.

More information

Specification

Type		3RF20, 3RF21, 3RF23 ..-.A..., -.B..., -.D...	3RF23 ..-.C...	3RF22, 3RF24
General data				
Ambient temperature				
• During operation, derating from 40 °C	°C	-25 ... + 60		
• During storage	°C	-55 ... + 80		
Installation altitude	m	0 ... 1000; derating from 1000[1]		
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11		
Vibration resistance acc. to IEC 60068-2-6	*g*	2		
Degree of protection		IP20		
Insulation strength at 50/60 Hz (main/control circuit to floor)	V rms	4000		
Electromagnetic compatibility (EMC)				
• Emitted interference				
- Conducted interference voltage acc. to IEC 60947-4-3		Class A for industrial applications	Class A for industrial applications Class B for residential applications[2]	Class A for industrial applications[3]
- Emitted, high-frequency interference voltage acc. to IEC 60947-4-3		Class A for industrial applications	Class A for industrial applications	Class A for industrial applications
• Interference immunity				
- Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge: 4; Air discharge: 8; Behavior criterion 2		
- induced RF fields acc. to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; behavior criterion 1		
- Burst acc. to IEC 61000-4-4	kV	2/5.0 kHz; behavior criterion 1		
- Surge acc. to IEC 61000-4-5	kV	Conductor - Ground: 2; Conductor - Conductor: 1; Behavior criterion 2		
Permissible mounting positions				

1) Please contact Technical Assistance.

2) "Low Noise" version for residential, business and commercial applications up to 16 A, AC-51.

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

Notes on integration in the load feeders

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

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance of the solid-state switching devices is largely dependent on these. Depending on the version, certain restrictions must be observed. Detailed information, for example in relation to solid-state contactors about the minimum spacing and to solid-state relays about the choice of heat sink, is given in the technical specifications (see manual) and the product data sheets.

For applications with a very large power requirement it is possible to use SIVOLT AC power controller. More information on the product range can be found in the Catalog DA 68 or in our Mall.

support.automation.siemens.com/WW/view/de/10862346

See ID: 10752358

Short-circuit and overload protection

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

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

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

Electromagnetic compatibility (EMC)

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

This does not include the solid-state contactors for resistive loads of the special type 3RF23..-.CA.. "Low Noise". These comply with the class B limit values up to a rated current of 16 A. If other versions are used, and at currents of over 16 A, standard filters can be used in order to comply with the limit values. The decisive factors when it comes to selecting the filters are essentially the current loading and the other parameters (operational voltage, design type, etc.) in the load feeder.

Suitable filters can be ordered from EPCOS AG. You can find more information on the Internet at:

www.epcos.com

Overview

Solid-State Relays

SIRIUS solid-state relays are suitable for surface mounting on existing cooling surfaces. Mounting is quick and easy, involving just two screws. The special technology of the power semiconductor ensures there is excellent thermal contact with the heat sink. Depending on the nature of the heat sink, the capacity reaches up to 88 A on resistive loads.

The solid-state relays are available in three different versions:

- 3RF21 single-phase solid-state relay with a width of 22.5 mm
- 3RF20 single-phase solid-state relay with a width of 45 mm
- 3RF22 three-phase solid-state relay with a width of 45 mm

The 3RF21 and 3RF22 solid-state relays can be expanded with various function modules to adapt them to individual applications.

Version for resistive loads, "zero-point switching"

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

Version for inductive loads, "instantaneous switching"

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

Special "Low noise" version

Thanks to a special control circuit, this special version can be used in public networks up to 16 A without any additional measures, such as interference suppressor filters. As a result, in terms of emitted interference, it conforms to limit value curve class B according to EN 60947-4-3.

Single-phase solid-state relays with a width of 22.5 mm

With its compact design and a width of just 22.5 mm, which stays the same even at currents of up to 88 A, the 3RF21 solid-state relay offers an ultra small footprint. The logical connection method, with the power infeed from above and load connection from below, ensures tidy installation in the control cabinet.

Single-phase solid-state relays with a width of 45 mm

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

Three-phase solid-state relays with a width of 45 mm

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

The three-phase solid-state relays are available with

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

Selection notes

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

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select the relay design and choose a solid-state relay with higher rated current than the load
- Determine the thermal resistance of the proposed heat sink
- Check the correct relay size with the aid of the diagrams

You can find more information on the Internet at:

www.siemens.com/solid-state-switching-devices

Selection and ordering data

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Zero-point switching Rated operational voltage U_e 24 ... 230 V								
20	24 DC	A	**3RF21 20-1AA02**		1	1 unit	101	0.075
30	acc. to EN 61131-2	A	**3RF21 30-1AA02**		1	1 unit	101	0.075
50		A	**3RF21 50-1AA02**		1	1 unit	101	0.075
70		A	**3RF21 70-1AA02**		1	1 unit	101	0.075
90		A	**3RF21 90-1AA02**		1	1 unit	101	0.075
20	110 ... 230 AC	A	**3RF21 20-1AA22**		1	1 unit	101	0.075
30		A	**3RF21 30-1AA22**		1	1 unit	101	0.075
50		A	**3RF21 50-1AA22**		1	1 unit	101	0.075
70		A	**3RF21 70-1AA22**		1	1 unit	101	0.075
90		B	**3RF21 90-1AA22**		1	1 unit	101	0.075
20	4 ... 30 DC	B	**3RF21 20-1AA42**		1	1 unit	101	0.075
30		B	**3RF21 30-1AA42**		1	1 unit	101	0.075
Zero-point switching Rated operational voltage U_e 48 ... 460 V								
20	24 DC	A	**3RF21 20-1AA04**		1	1 unit	101	0.075
30	acc. to EN 61131-2	A	**3RF21 30-1AA04**		1	1 unit	101	0.075
50		A	**3RF21 50-1AA04**		1	1 unit	101	0.075
70		A	**3RF21 70-1AA04**		1	1 unit	101	0.075
90		A	**3RF21 90-1AA04**		1	1 unit	101	0.075
20	110 ... 230 AC	A	**3RF21 20-1AA24**		1	1 unit	101	0.075
30		A	**3RF21 30-1AA24**		1	1 unit	101	0.075
50		A	**3RF21 50-1AA24**		1	1 unit	101	0.075
70		A	**3RF21 70-1AA24**		1	1 unit	101	0.075
90		A	**3RF21 90-1AA24**		1	1 unit	101	0.075
Zero-point switching Rated operational voltage U_e 48 ... 600 V								
70	24 DC Low Power	B	**3RF21 70-1AA05-0KN0**		1	1 unit	101	0.075
20	4 ... 30 DC	B	**3RF21 20-1AA45**		1	1 unit	101	0.075
30		B	**3RF21 30-1AA45**		1	1 unit	101	0.075
50		B	**3RF21 50-1AA45**		1	1 unit	101	0.075
70		B	**3RF21 70-1AA45**		1	1 unit	101	0.075
90		B	**3RF21 90-1AA45**		1	1 unit	101	0.075
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V								
30	24 DC	A	**3RF21 30-1AA06**		1	1 unit	101	0.075
50	acc. to EN 61131-2	A	**3RF21 50-1AA06**		1	1 unit	101	0.075
70		B	**3RF21 70-1AA06**		1	1 unit	101	0.075
90		B	**3RF21 90-1AA06**		1	1 unit	101	0.075
30	110 ... 230 AC	B	**3RF21 30-1AA26**		1	1 unit	101	0.075
50		B	**3RF21 50-1AA26**		1	1 unit	101	0.075
70		B	**3RF21 70-1AA26**		1	1 unit	101	0.075
90		B	**3RF21 90-1AA26**		1	1 unit	101	0.075
Instantaneous switching Rated operational voltage U_e 24 ... 230 V								
50	110 ... 230 AC	A	**3RF21 50-1BA22**		1	1 unit	101	0.075
Instantaneous switching Rated operational voltage U_e 48 ... 460 V								
20	24 DC	B	**3RF21 20-1BA04**		1	1 unit	101	0.075
30	acc. to EN 61131-2	B	**3RF21 30-1BA04**		1	1 unit	101	0.075
50		B	**3RF21 50-1BA04**		1	1 unit	101	0.075
70		A	**3RF21 70-1BA04**		1	1 unit	101	0.075
90		B	**3RF21 90-1BA04**		1	1 unit	101	0.075
Instantaneous switching · Blocking voltage 1600 V Rated operational voltage U_e 48 ... 600 V								
50	24 DC acc. to EN 61131-2	B	**3RF21 50-1BA06**		1	1 unit	101	0.075
Low noise[3] · Zero-point switching Rated operational voltage U_e 48 ... 460 V								
70	24 DC acc. to EN 61131-2	B	**3RF21 70-1CA04**		1	1 unit	101	0.075

3RF21 20-1AA02

Other rated control supply voltages on request.

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

2) Please note that this version can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

3) See page 4/48.

* You can order this quantity or a multiple thereof.

Solid-State Relays

SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type current[1]	Rated control supply voltage U_s	DT	Spring-type terminals[2] Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Zero-point switching Rated operational voltage U_e 24 ... 230 V								
20	24 DC	A	**3RF21 20-2AA02**		1	1 unit	101	0.075
50	acc. to EN 61131-2	B	**3RF21 50-2AA02**		1	1 unit	101	0.075
90		B	**3RF21 90-2AA02**		1	1 unit	101	0.075
20	110 ... 230 AC	B	**3RF21 20-2AA22**		1	1 unit	101	0.075
50		B	**3RF21 50-2AA22**		1	1 unit	101	0.075
90		B	**3RF21 90-2AA22**		1	1 unit	101	0.075
20	4 ... 30 DC	B	**3RF21 20-2AA42**		1	1 unit	101	0.075
Zero-point switching Rated operational voltage U_e 48 ... 460 V								
20	24 DC	B	**3RF21 20-2AA04**		1	1 unit	101	0.075
50	acc. to EN 61131-2	B	**3RF21 50-2AA04**		1	1 unit	101	0.075
90		B	**3RF21 90-2AA04**		1	1 unit	101	0.075
50	24 AC/DC	B	**3RF21 50-2AA14**		1	1 unit	101	0.075
20	110 ... 230 AC	B	**3RF21 20-2AA24**		1	1 unit	101	0.075
50		B	**3RF21 50-2AA24**		1	1 unit	101	0.075
90		B	**3RF21 90-2AA24**		1	1 unit	101	0.075
Zero-point switching Rated operational voltage U_e 48 ... 600 V								
20	4 ... 30 DC	B	**3RF21 20-2AA45**		1	1 unit	101	0.075
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V								
50	24 DC	B	**3RF21 50-2AA06**		1	1 unit	101	0.075
90	acc. to EN 61131-2	B	**3RF21 90-2AA06**		1	1 unit	101	0.075
50	110 ... 230 AC	B	**3RF21 50-2AA26**		1	1 unit	101	0.075
90		B	**3RF21 90-2AA26**		1	1 unit	101	0.075

3RF21 20-2AA02

Other rated control supply voltages on request.

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

2) Please note that the version with spring-type terminals can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm^2. Higher currents are possible by connecting two conductors per terminal.

* You can order this quantity or a multiple thereof.

SIRIUS 3RF21 solid-state relays, single-phase, 22.5 mm

Type current[1] A	Rated control supply voltage U_s V	DT	Ring terminal lug connection Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Zero-point switching Rated operational voltage U_e 24 ... 230 V								
20	24 DC acc. to EN 61131-2	A	**3RF21 20-3AA02**		1	1 unit	101	0.075
50		B	**3RF21 50-3AA02**		1	1 unit	101	0.075
90		B	**3RF21 90-3AA02**		1	1 unit	101	0.075
20	110 ... 230 AC	B	**3RF21 20-3AA22**		1	1 unit	101	0.075
50		B	**3RF21 50-3AA22**		1	1 unit	101	0.075
90		B	**3RF21 90-3AA22**		1	1 unit	101	0.075
Zero-point switching Rated operational voltage U_e 48 ... 460 V								
20	24 DC acc. to EN 61131-2	B	**3RF21 20-3AA04**		1	1 unit	101	0.075
50		B	**3RF21 50-3AA04**		1	1 unit	101	0.075
90		B	**3RF21 90-3AA04**		1	1 unit	101	0.075
20	110 ... 230 AC	B	**3RF21 20-3AA24**		1	1 unit	101	0.075
50		B	**3RF21 50-3AA24**		1	1 unit	101	0.075
90		B	**3RF21 90-3AA24**		1	1 unit	101	0.075
90	4 ... 30 DC	B	**3RF21 90-3AA44**		1	1 unit	101	0.075
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V								
50	24 DC acc. to EN 61131-2	B	**3RF21 50-3AA06**		1	1 unit	101	0.075
90		B	**3RF21 90-3AA06**		1	1 unit	101	0.075
50	110 ... 230 AC	B	**3RF21 50-3AA26**		1	1 unit	101	0.075
90		B	**3RF21 90-3AA26**		1	1 unit	101	0.075

3RF21 20-3AA02

Other rated control supply voltages on request.

[1] The type current provides information about the performance capacity of the solid-state relay.
The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Optional accessories							
Screwdrivers for opening spring-type terminals	C	**8WA2 880**		1	1 unit	041	0.034
Terminal covers for 3RF21 solid-state relays and 3RF23 solid-state contactors in ring terminal lug connection (After simple adaptation, this terminal cover can also be used for screw connection).	A	**3RF29 00-3PA88**		1	10 units	101	0.004

3RF29 00-3PA88

* You can order this quantity or a multiple thereof.

Solid-State Relays

SIRIUS 3RF20 solid-state relays, single-phase, 45 mm

Selection and ordering data

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Zero-point switching · Rated operational voltage U_e 24 ... 230 V								
20	24 DC acc. to EN 61131-2	A	**3RF20 20-1AA02**		1	1 unit	101	0.085
30		A	**3RF20 30-1AA02**		1	1 unit	101	0.085
50		A	**3RF20 50-1AA02**		1	1 unit	101	0.085
70		A	**3RF20 70-1AA02**		1	1 unit	101	0.085
90		A	**3RF20 90-1AA02**		1	1 unit	101	0.085
20	110 ... 230 AC	A	**3RF20 20-1AA22**		1	1 unit	101	0.085
30		A	**3RF20 30-1AA22**		1	1 unit	101	0.085
50		A	**3RF20 50-1AA22**		1	1 unit	101	0.085
70		A	**3RF20 70-1AA22**		1	1 unit	101	0.085
90		A	**3RF20 90-1AA22**		1	1 unit	101	0.085
20	4 ... 30 DC	B	**3RF20 20-1AA42**		1	1 unit	101	0.085
30		B	**3RF20 30-1AA42**		1	1 unit	101	0.085
Zero-point switching · Rated operational voltage U_e 48 ... 460 V								
20	24 DC acc. to EN 61131-2	A	**3RF20 20-1AA04**		1	1 unit	101	0.085
30		A	**3RF20 30-1AA04**		1	1 unit	101	0.085
50		A	**3RF20 50-1AA04**		1	1 unit	101	0.085
70		A	**3RF20 70-1AA04**		1	1 unit	101	0.085
90		A	**3RF20 90-1AA04**		1	1 unit	101	0.085
20	110 ... 230 AC	A	**3RF20 20-1AA24**		1	1 unit	101	0.085
30		A	**3RF20 30-1AA24**		1	1 unit	101	0.085
50		A	**3RF20 50-1AA24**		1	1 unit	101	0.085
70		A	**3RF20 70-1AA24**		1	1 unit	101	0.085
90		A	**3RF20 90-1AA24**		1	1 unit	101	0.085
50	4 ... 30 DC	A	**3RF20 50-1AA44**		1	1 unit	101	0.085
Zero-point switching · Rated operational voltage U_e 48 ... 600 V								
20	4 ... 30 DC	B	**3RF20 20-1AA45**		1	1 unit	101	0.085
50		B	**3RF20 50-1AA45**		1	1 unit	101	0.085
70		B	**3RF20 70-1AA45**		1	1 unit	101	0.085
90		B	**3RF20 90-1AA45**		1	1 unit	101	0.085
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V								
30	24 DC acc. to EN 61131-2	B	**3RF20 30-1AA06**		1	1 unit	101	0.085
50		B	**3RF20 50-1AA06**		1	1 unit	101	0.085
70		B	**3RF20 70-1AA06**		1	1 unit	101	0.085
90		B	**3RF20 90-1AA06**		1	1 unit	101	0.085
30	110 ... 230 AC	B	**3RF20 30-1AA26**		1	1 unit	101	0.085
50		B	**3RF20 50-1AA26**		1	1 unit	101	0.085
70		B	**3RF20 70-1AA26**		1	1 unit	101	0.085
90		B	**3RF20 90-1AA26**		1	1 unit	101	0.085
Instantaneous switching · Rated operational voltage U_e 48 ... 460 V								
30	24 DC acc. to EN 61131-2	B	**3RF20 30-1BA04**		1	1 unit	101	0.085

3RF20 20-1AA02

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals + spring-type terminals (control current side) Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Zero-point switching · Rated operational voltage U_e 24 ... 230 V								
50	24 DC acc. to EN 61131-2	A	**3RF20 50-4AA02**		1	1 unit	101	0.085

3RF20 50-4AA02

[1] The type current provides information about the performance capacity of the solid-state relay. The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

[2] Please note that this version can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

* You can order this quantity or a multiple thereof.

Selection and ordering data

Type current[1]	Rated control supply voltage U_s	DT	Screw terminals[2] Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Zero-point switching Rated operational voltage U_e 48 ... 600 V								
Two-phase controlled								
30	110 AC	B	**3RF22 30-1AB35**		1	1 unit	101	0.150
55		B	**3RF22 55-1AB35**		1	1 unit	101	0.150
30	4 ... 30 DC	B	**3RF22 30-1AB45**		1	1 unit	101	0.150
55		B	**3RF22 55-1AB45**		1	1 unit	101	0.150
Three-phase controlled								
30	110 AC	B	**3RF22 30-1AC35**		1	1 unit	101	0.150
55		B	**3RF22 55-1AC35**		1	1 unit	101	0.150
30	4 ... 30 DC	A	**3RF22 30-1AC45**		1	1 unit	101	0.150
55		B	**3RF22 55-1AC45**		1	1 unit	101	0.150


3RF22 30-1AB45

Type current[1]	Rated control supply voltage U_s	DT	Spring-type terminals[3] Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Zero-point switching Rated operational voltage U_e 48 ... 600 V								
Two-phase controlled								
30	4 ... 30 DC	B	**3RF22 30-2AB45**		1	1 unit	101	0.150
55		B	**3RF22 55-2AB45**		1	1 unit	101	0.150
Three-phase controlled								
30	4 ... 30 DC	B	**3RF22 30-2AC45**		1	1 unit	101	0.150
55		B	**3RF22 55-2AC45**		1	1 unit	101	0.150


3RF22 30-2AB45

Type current[1]	Rated control supply voltage U_s	DT	Ring terminal lug connection Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Zero-point switching Rated operational voltage U_e 48 ... 600 V								
Two-phase controlled								
30	4 ... 30 DC	B	**3RF22 30-3AB45**		1	1 unit	101	0.150
55		B	**3RF22 55-3AB45**		1	1 unit	101	0.150
Three-phase controlled								
30	4 ... 30 DC	B	**3RF22 30-3AC45**		1	1 unit	101	0.150
55		B	**3RF22 55-3AC45**		1	1 unit	101	0.150


3RF22 30-3AB45

[1] The type current provides information about the performance capacity of the solid-state relay.
The actual permitted rated operational current I_e can be smaller depending on the connection method and cooling conditions.

[2] Please note that the version with an M4 screw connection can only be used for a rated current of up to approx. 50 A and a conductor cross-section of 10 mm^2.

[3] Please note that the version with spring-type terminals can only be used for a rated current of up to approx. 20 A and a conductor cross-section of 2.5 mm^2. Higher currents are possible by connecting two conductors per terminal.

* You can order this quantity or a multiple thereof.

General data

Overview

Solid-State Contactors

The complete units consist of a solid-state relay plus optimized heat sink, and are therefore ready to use. They offer defined rated currents to make selection as easy as possible. Depending on the version, current strengths of up to 88 A are achieved. Like all of our solid-state switching devices, one of their particular advantages is their compact and space-saving design.

With their insulated mounting foot they can easily be snapped onto a standard mounting rail, or they can be mounted on support plates with fixing screws. This insulation enables them to be used in circuits with protective extra-low voltage (PELV) or safety extra-low voltage (SELV) in building management systems. For other applications, such as for extended personal safety, the heat sink can be grounded through a screw terminal.

The solid-state contactors are available in 2 different versions:

- 3RF23 single-phase solid-state contactors,
- 3RF24 three-phase solid-state contactors

Single-phase versions

The 3RF23 solid-state contactors can be expanded with various function modules to adapt them to individual applications.

Version for resistive loads, "zero-point switching"

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

Version for inductive loads, "instantaneous switching"

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

Special "Low noise" version

Thanks to a special control circuit, this special version can be used in public networks up to 16 A without any additional measures, such as interference suppressor filters. As a result, in terms of emitted interference, it conforms to limit value curve class B according to EN 60947-4-3.

Special "Short-circuit proof" version

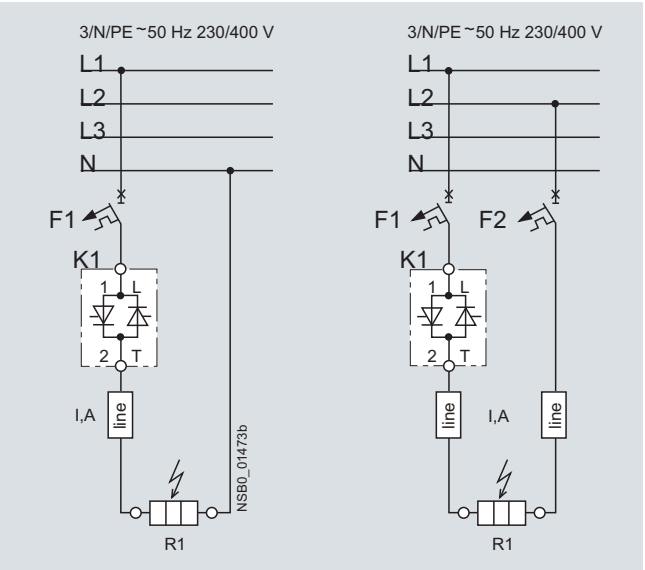
Skillful matching of the power semiconductor with the performance capacity of the solid-state contactor means that "short-circuit strength" can be achieved with a standard miniature circuit breaker. In combination with a B-type MCB or a conventional line protection fuse, the result is a short-circuit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

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

The following miniature circuit breakers with a B characteristic and 10 kA or 6 kA breaking capacity protect the 3RF23..-.DA.. solid-state contactors in the event of short-circuits on the load and the specified conductor cross-sections and lengths:

Rated current of the miniature circuit breaker	Example of type[1)]	Max. conductor cross-section	Minimum cable length from contactor to load
6 A	5SY4 106-6, 5SX2 106-6	1 mm^2	5 m
10 A	5SY4 110-6, 5SX2 110-6	1.5 mm^2	8 m
16 A	5SY4 116-6, 5SX2 116-6	1.5 mm^2	12 m
16 A	5SY4 116-6, 5SX2 116-6	2.5 mm^2	20 m
20 A	5SY4 120-6, 5SX2 120-6	2.5 mm^2	20 m
25 A	5SY4 125-6, 5SX2 125-6	2.5 mm^2	26 m

[1)] The miniature circuit breakers can be used up to a maximum rated voltage of 480 V!



The setup and installation above can also be used for the solid-state relays with a I^2t value of at least 6600 A^{2}s.

Three-phase versions

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

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

The converter function module can be snapped onto both versions for the simple power control of AC loads by means of analog signals.

- Check the correct contactor size with the aid of the rated current diagram, taking account of the installation conditions

Selection and ordering data

Selection notes

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

The following procedure is recommended:

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

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals ⊕ Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Zero-point switching Rated operational voltage U_e 24 ... 230 V								
10.5	24 DC	A	**3RF23 10-1AA02**		1	1 unit	101	0.165
20	acc. to EN 61131-2	A	**3RF23 20-1AA02**		1	1 unit	101	0.240
30		A	**3RF23 30-1AA02**		1	1 unit	101	0.400
40		A	**3RF23 40-1AA02**		1	1 unit	101	0.550
50		A	**3RF23 50-1AA02**		1	1 unit	101	0.550
20	24 DC Low Power	A	**3RF23 20-1AA02-0KN0**		1	1 unit	101	0.240
10.5	24 AC/DC	A	**3RF23 10-1AA12**		1	1 unit	101	0.165
10.5	110 ... 230 AC	A	**3RF23 10-1AA22**		1	1 unit	101	0.165
20		A	**3RF23 20-1AA22**		1	1 unit	101	0.240
30		A	**3RF23 30-1AA22**		1	1 unit	101	0.400
40		A	**3RF23 40-1AA22**		1	1 unit	101	0.550
50		A	**3RF23 50-1AA22**		1	1 unit	101	0.550
Zero-point switching Rated operational voltage U_e 48 ... 460 V								
10.5	24 DC	A	**3RF23 10-1AA04**		1	1 unit	101	0.165
20	acc. to EN 61131-2	A	**3RF23 20-1AA04**		1	1 unit	101	0.240
30		A	**3RF23 30-1AA04**		1	1 unit	101	0.400
40		A	**3RF23 40-1AA04**		1	1 unit	101	0.550
50		A	**3RF23 50-1AA04**		1	1 unit	101	0.550
10.5	24 DC Low Power	A	**3RF23 10-1AA04-0KN0**		1	1 unit	101	0.165
10.5	24 AC/DC	A	**3RF23 10-1AA14**		1	1 unit	101	0.165
20		B	**3RF23 20-1AA14**		1	1 unit	101	0.240
30		A	**3RF23 30-1AA14**		1	1 unit	101	0.400
40		B	**3RF23 40-1AA14**		1	1 unit	101	0.550
50		B	**3RF23 50-1AA14**		1	1 unit	101	0.550
10.5	110 ... 230 AC	A	**3RF23 10-1AA24**		1	1 unit	101	0.165
20		A	**3RF23 20-1AA24**		1	1 unit	101	0.240
30		A	**3RF23 30-1AA24**		1	1 unit	101	0.400
40		A	**3RF23 40-1AA24**		1	1 unit	101	0.550
50		A	**3RF23 50-1AA24**		1	1 unit	101	0.550
10.5	4 ... 30 DC	B	**3RF23 10-1AA44**		1	1 unit	101	0.165
20		A	**3RF23 20-1AA44**		1	1 unit	101	0.240
30		A	**3RF23 30-1AA44**		1	1 unit	101	0.400
Zero-point switching Rated operational voltage U_e 48 ... 600 V								
30	110 ... 230 AC	B	**3RF23 30-1AA25**		1	1 unit	101	0.400
10.5	4 ... 30 DC	B	**3RF23 10-1AA45**		1	1 unit	101	0.165
20		A	**3RF23 20-1AA45**		1	1 unit	101	0.240
30		A	**3RF23 30-1AA45**		1	1 unit	101	0.400
40		A	**3RF23 40-1AA45**		1	1 unit	101	0.550
50		A	**3RF23 50-1AA45**		1	1 unit	101	0.550
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V								
10.5	24 DC	B	**3RF23 10-1AA06**		1	1 unit	101	0.165
20	acc. to EN 61131-2	A	**3RF23 20-1AA06**		1	1 unit	101	0.240
30		A	**3RF23 30-1AA06**		1	1 unit	101	0.400
40		B	**3RF23 40-1AA06**		1	1 unit	101	0.550
50		B	**3RF23 50-1AA06**		1	1 unit	101	0.550
10.5	110 ... 230 AC	B	**3RF23 10-1AA26**		1	1 unit	101	0.165
20		B	**3RF23 20-1AA26**		1	1 unit	101	0.240
30		B	**3RF23 30-1AA26**		1	1 unit	101	0.400
40		B	**3RF23 40-1AA26**		1	1 unit	101	0.550
50		B	**3RF23 50-1AA26**		1	1 unit	101	0.550


3RF23 10-1


3RF23 20-1


3RF23 40-1

Other rated control supply voltages on request.

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

* You can order this quantity or a multiple thereof.

Solid-State Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

	Type current[1] I_{max}	Operational current I_e/AC-15[2]	Rated control supply voltage U_s	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	A	A	V							kg
Instantaneous switching Rated operational voltage U_e 24 ... 230 V										
 3RF23 10-1	10.5	6	24 DC	A	**3RF23 10-1BA02**		1	1 unit	101	0.165
	20	12	acc. to EN 61131-2	A	**3RF23 20-1BA02**		1	1 unit	101	0.240
	30	15		B	**3RF23 30-1BA02**		1	1 unit	101	0.400
	40	20		B	**3RF23 40-1BA02**		1	1 unit	101	0.550
	50	25		B	**3RF23 50-1BA02**		1	1 unit	101	0.550
	50	27.5		B	**3RF23 70-1BA02**		1	1 unit	101	1.200
	50	30		B	**3RF23 90-1BA02**		1	1 unit	101	2.900
	10.5	6	110 ... 230 AC	B	**3RF23 10-1BA22**		1	1 unit	101	0.165
	20	12		B	**3RF23 20-1BA22**		1	1 unit	101	0.240
	30	15		B	**3RF23 30-1BA22**		1	1 unit	101	0.400
	40	20		B	**3RF23 40-1BA22**		1	1 unit	101	0.550
	50	25		B	**3RF23 50-1BA22**		1	1 unit	101	0.550
	50	27.5		B	**3RF23 70-1BA22**		1	1 unit	101	1.200
	50	30		B	**3RF23 90-1BA22**		1	1 unit	101	2.900
Instantaneous switching Rated operational voltage U_e 48 ... 460 V										
 3RF23 20-1	10.5	6	24 DC	A	**3RF23 10-1BA04**		1	1 unit	101	0.165
	20	12	acc. to EN 61131-2	A	**3RF23 20-1BA04**		1	1 unit	101	0.240
	30	15		A	**3RF23 30-1BA04**		1	1 unit	101	0.400
	40	20		B	**3RF23 40-1BA04**		1	1 unit	101	0.550
	50	25		B	**3RF23 50-1BA04**		1	1 unit	101	0.550
	50	27.5		B	**3RF23 70-1BA04**		1	1 unit	101	1.200
	50	30		B	**3RF23 90-1BA04**		1	1 unit	101	2.900
	10.5	6	110 ... 230 AC	B	**3RF23 10-1BA24**		1	1 unit	101	0.165
	20	12		B	**3RF23 20-1BA24**		1	1 unit	101	0.240
	30	15		B	**3RF23 30-1BA24**		1	1 unit	101	0.400
	40	20		B	**3RF23 40-1BA24**		1	1 unit	101	0.550
	50	25		B	**3RF23 50-1BA24**		1	1 unit	101	0.550
	50	27.5		B	**3RF23 70-1BA24**		1	1 unit	101	1.200
	50	30		B	**3RF23 90-1BA24**		1	1 unit	101	2.900
	20	12	4 ... 30 DC	B	**3RF23 20-1BA44**		1	1 unit	101	0.240
	30	15		B	**3RF23 30-1BA44**		1	1 unit	101	0.400
	50	25		B	**3RF23 50-1BA44**		1	1 unit	101	0.550
Instantaneous switching · Blocking voltage 1600 V Rated operational voltage U_e 48 ... 600 V										
 3RF23 40-1	10.5	6	24 DC	B	**3RF23 10-1BA06**		1	1 unit	101	0.165
	20	12	acc. to EN 61131-2	A	**3RF23 20-1BA06**		1	1 unit	101	0.240
	30	15		B	**3RF23 30-1BA06**		1	1 unit	101	0.400
	40	20		B	**3RF23 40-1BA06**		1	1 unit	101	0.550
	50	25		B	**3RF23 50-1BA06**		1	1 unit	101	0.550
	50	27.5		B	**3RF23 70-1BA06**		1	1 unit	101	1.200
	50	30		B	**3RF23 90-1BA06**		1	1 unit	101	2.900
	10.5	6	110 ... 230 AC	B	**3RF23 10-1BA26**		1	1 unit	101	0.165
	20	12		B	**3RF23 20-1BA26**		1	1 unit	101	0.240
	30	15		B	**3RF23 30-1BA26**		1	1 unit	101	0.400
	40	20		B	**3RF23 40-1BA26**		1	1 unit	101	0.550
	50	25		B	**3RF23 50-1BA26**		1	1 unit	101	0.550
	50	27.5		B	**3RF23 70-1BA26**		1	1 unit	101	1.200
	50	30		B	**3RF23 90-1BA26**		1	1 unit	101	2.900

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

2) Utilization category AC-15:
Electromagnetic loads, e. g. valves according to EN 60947-5.
Parameters: max. 1200 1/h, 50 % ON Period, 10-times inrush current for 60 ms.

* You can order this quantity or a multiple thereof.

SIRIUS 3RF23 solid-state contactors, single-phase

	Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No.	Price per PU				
	A	V							kg
Low noise[2] · Zero-point switching Rated operational voltage U_e 24 ... 230 V									
 3RF23 20-1	20	24 DC acc. to EN 61131-2	B	**3RF23 20-1CA02**		1	1 unit	101	0.240
	30		B	**3RF23 30-1CA02**		1	1 unit	101	0.400
	20	110 ... 230 AC	B	**3RF23 20-1CA22**		1	1 unit	101	0.240
Low noise[2] · Zero-point switching Rated operational voltage U_e 48 ... 460 V									
	20	24 DC acc. to EN 61131-2	B	**3RF23 20-1CA04**		1	1 unit	101	0.240
	20	110 ... 230 AC	B	**3RF23 20-1CA24**		1	1 unit	101	0.240
	20	4 ... 30 DC	A	**3RF23 20-1CA44**		1	1 unit	101	0.240
Short-circuit proof with B-type MCB · Zero-point switching, rated operational voltage U_e 24 ... 230 V									
	20	24 DC acc. to EN 61131-2	A	**3RF23 20-1DA02**		1	1 unit	101	0.240
	20	110 ... 230 AC	B	**3RF23 20-1DA22**		1	1 unit	101	0.240
Short-circuit proof with B-type MCB · Zero-point switching, rated operational voltage U_e 48 ... 460 V									
	20	24 DC acc. to EN 61131-2	A	**3RF23 20-1DA04**		1	1 unit	101	0.240
	20	110 ... 230 AC	B	**3RF23 20-1DA24**		1	1 unit	101	0.240
	20	4 ... 30 DC	A	**3RF23 20-1DA44**		1	1 unit	101	0.240
	30		A	**3RF23 30-1DA44**		1	1 unit	101	0.240

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

2) See page 4/54.

* You can order this quantity or a multiple thereof.

Solid-State Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

	Type current[1] I_{max}	Rated control supply voltage U_s	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No. / Price per PU				
	A	V						kg
Zero-point switching, Rated operational voltage U_e 24 ... 230 V								
 3RF23 20-2	10.5	24 DC	B	**3RF23 10-2AA02**	1	1 unit	101	0.166
	20	acc. to EN 61131-2	A	**3RF23 20-2AA02**	1	1 unit	101	0.240
	10.5	110 ... 230 AC	B	**3RF23 10-2AA22**	1	1 unit	101	0.166
	20		B	**3RF23 20-2AA22**	1	1 unit	101	0.240
Zero-point switching, Rated operational voltage U_e 48 ... 460 V								
	10.5	24 DC	A	**3RF23 10-2AA04**	1	1 unit	101	0.166
	20	acc. to EN 61131-2	A	**3RF23 20-2AA04**	1	1 unit	101	0.240
	10.5	110 ... 230 AC	B	**3RF23 10-2AA24**	1	1 unit	101	0.166
	20		B	**3RF23 20-2AA24**	1	1 unit	101	0.240
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V								
	10.5	24 DC	B	**3RF23 10-2AA06**	1	1 unit	101	0.166
	20	acc. to EN 61131-2	A	**3RF23 20-2AA06**	1	1 unit	101	0.240
	10.5	110 ... 230 AC	B	**3RF23 10-2AA26**	1	1 unit	101	0.166
	20		B	**3RF23 20-2AA26**	1	1 unit	101	0.240
Low noise[2] · Zero-point switching, Rated operational voltage U_e 24 ... 230 V								
	20	24 DC acc. to EN 61131-2	B	**3RF23 20-2CA02**	1	1 unit	101	0.240
	20	110 ... 230 AC	B	**3RF23 20-2CA22**	1	1 unit	101	0.240
Low noise[2] · Zero-point switching, Rated operational voltage U_e 48 ... 460 V								
	20	24 DC acc. to EN 61131-2	B	**3RF23 20-2CA04**	1	1 unit	101	0.240
	20	110 ... 230 AC	B	**3RF23 20-2CA24**	1	1 unit	101	0.240
Short-circuit proof with B-type MCB · Zero-point switching, rated operational voltage U_e 24 ... 230 V								
	20	110 ... 230 AC	B	**3RF23 20-2DA22**	1	1 unit	101	0.240
Short-circuit proof with B-type MCB · Zero-point switching, rated operational voltage U_e 48 ... 460 V								
	20	110 ... 230 AC	B	**3RF23 20-2DA24**	1	1 unit	101	0.240

Other rated control supply voltages on request.

1) The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

2) See page 4/54.

* You can order this quantity or a multiple thereof.

SIRIUS 3RF23 solid-state contactors, single-phase


3RF23 30-3

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Ring terminal lug connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V		Order No. / Price per PU				kg
Zero-point switching · Rated operational voltage U_e 24 ... 230 V							
10.5	24 DC	B	**3RF23 10-3AA02**	1	1 unit	101	0.166
20	acc. to EN 61131-2	B	**3RF23 20-3AA02**	1	1 unit	101	0.200
30		B	**3RF23 30-3AA02**	1	1 unit	101	0.435
40		B	**3RF23 40-3AA02**	1	1 unit	101	0.550
50		B	**3RF23 50-3AA02**	1	1 unit	101	0.550
70		A	**3RF23 70-3AA02**	1	1 unit	101	1.200
88		B	**3RF23 90-3AA02**	1	1 unit	101	2.900
10.5	110 ... 230 AC	B	**3RF23 10-3AA22**	1	1 unit	101	0.166
20		B	**3RF23 20-3AA22**	1	1 unit	101	0.200
30		B	**3RF23 30-3AA22**	1	1 unit	101	0.435
40		B	**3RF23 40-3AA22**	1	1 unit	101	0.550
50		B	**3RF23 50-3AA22**	1	1 unit	101	0.550
70		B	**3RF23 70-3AA22**	1	1 unit	101	1.200
88		B	**3RF23 90-3AA22**	1	1 unit	101	2.900
Zero-point switching · Rated operational voltage U_e 48 ... 460 V							
10.5	24 DC	B	**3RF23 10-3AA04**	1	1 unit	101	0.166
20	acc. to EN 61131-2	B	**3RF23 20-3AA04**	1	1 unit	101	0.200
30		A	**3RF23 30-3AA04**	1	1 unit	101	0.435
40		B	**3RF23 40-3AA04**	1	1 unit	101	0.550
50		B	**3RF23 50-3AA04**	1	1 unit	101	0.550
70		A	**3RF23 70-3AA04**	1	1 unit	101	1.200
88		A	**3RF23 90-3AA04**	1	1 unit	101	2.900
10.5	110 ... 230 AC	B	**3RF23 10-3AA24**	1	1 unit	101	0.166
20		B	**3RF23 20-3AA24**	1	1 unit	101	0.200
30		B	**3RF23 30-3AA24**	1	1 unit	101	0.435
40		B	**3RF23 40-3AA24**	1	1 unit	101	0.550
50		B	**3RF23 50-3AA24**	1	1 unit	101	0.550
70		B	**3RF23 70-3AA24**	1	1 unit	101	1.200
88		B	**3RF23 90-3AA24**	1	1 unit	101	2.900
20	4 ... 30 DC	B	**3RF23 20-3AA44**	1	1 unit	101	0.200
30		B	**3RF23 30-3AA44**	1	1 unit	101	0.435
50		B	**3RF23 50-3AA44**	1	1 unit	101	0.550
Zero-point switching · Rated operational voltage U_e 48 ... 600 V							
40	4 ... 30 DC	B	**3RF23 40-3AA45**	1	1 unit	101	0.550
70		A	**3RF23 70-3AA45**	1	1 unit	101	1.200
88		B	**3RF23 90-3AA45**	1	1 unit	101	2.900
Zero-point switching · Blocking voltage 1600 V, rated operational voltage U_e 48 ... 600 V							
10.5	24 DC	B	**3RF23 10-3AA06**	1	1 unit	101	0.166
20	acc. to EN 61131-2	B	**3RF23 20-3AA06**	1	1 unit	101	0.200
30		B	**3RF23 30-3AA06**	1	1 unit	101	0.435
40		B	**3RF23 40-3AA06**	1	1 unit	101	0.550
50		B	**3RF23 50-3AA06**	1	1 unit	101	0.550
70		B	**3RF23 70-3AA06**	1	1 unit	101	1.200
88		B	**3RF23 90-3AA06**	1	1 unit	101	2.900
10.5	110 ... 230 AC	B	**3RF23 10-3AA26**	1	1 unit	101	0.166
20		B	**3RF23 20-3AA26**	1	1 unit	101	0.200
30		B	**3RF23 30-3AA26**	1	1 unit	101	0.435
40		B	**3RF23 40-3AA26**	1	1 unit	101	0.550
50		B	**3RF23 50-3AA26**	1	1 unit	101	0.550
70		A	**3RF23 70-3AA26**	1	1 unit	101	1.200
88		B	**3RF23 90-3AA26**	1	1 unit	101	2.900

Other rated control supply voltages on request.

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

* You can order this quantity or a multiple thereof.

Solid-State Contactors

SIRIUS 3RF23 solid-state contactors, single-phase

Type current[1] I_{max}	Operational current I_e/AC-15[2]	Rated control supply voltage U_s	DT	Ring terminal lug connection Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	A	V							kg
Instantaneous switching Rated operational voltage U_e 24 ... 230 V									
70	27.5	24 DC	B	**3RF23 70-3BA02**		1	1 unit	101	1.200
88	30	acc. to EN 61131-2	B	**3RF23 90-3BA02**		1	1 unit	101	2.900
70	27.5	110 ... 230 AC	B	**3RF23 70-3BA22**		1	1 unit	101	1.200
88	30		B	**3RF23 90-3BA22**		1	1 unit	101	2.900
Instantaneous switching Rated operational voltage U_e 48 ... 460 V									
70	27.5	24 DC	B	**3RF23 70-3BA04**		1	1 unit	101	1.200
88	30	acc. to EN 61131-2	B	**3RF23 90-3BA04**		1	1 unit	101	2.900
70	27.5	110 ... 230 AC	B	**3RF23 70-3BA24**		1	1 unit	101	1.200
88	30		B	**3RF23 90-3BA24**		1	1 unit	101	2.900
Instantaneous switching · Blocking voltage 1600 V Rated operational voltage U_e 48 ... 600 V									
70	27.5	24 DC	B	**3RF23 70-3BA06**		1	1 unit	101	1.200
88	30	acc. to EN 61131-2	B	**3RF23 90-3BA06**		1	1 unit	101	2.900
70	27.5	110 ... 230 AC	B	**3RF23 70-3BA26**		1	1 unit	101	1.200
88	30		B	**3RF23 90-3BA26**		1	1 unit	101	2.900
Short-circuit proof with B-type MCB · Zero-point switching, rated operational voltage U_e 24 ... 230 V									
20	--	24 DC acc. to EN 61131-2	B	**3RF23 20-3DA02**		1	1 unit	101	0.200
20	--	110 ... 230 AC	B	**3RF23 20-3DA22**		1	1 unit	101	0.200
Short-circuit proof with B-type MCB · Zero-point switching, rated operational voltage U_e 48 ... 460 V									
20	--	24 DC acc. to EN 61131-2	B	**3RF23 20-3DA04**		1	1 unit	101	0.200
20	--	110 ... 230 AC	B	**3RF23 20-3DA24**		1	1 unit	101	0.200

Other rated control supply voltages on request.

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

[2] Utilization category AC-15:
Electromagnetic loads, e. g. valves according to EN 60947-5.
Parameters: max. 1200 1/h, 50 % ON Period, 10-times inrush current for 60 ms.

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg
Optional accessories							
Screwdrivers for opening spring-type terminals	C	**8WA2 880**		1	1 unit	041	0.034
Terminal covers for 3RF21 solid-state relays and 3RF23 solid-state contactors in ring terminal lug connection (after simple adaptation, this terminal cover can also be used for screw connection)	A	**3RF29 00-3PA88**		1	10 units	101	0.004

3RF29 00-3PA88

* You can order this quantity or a multiple thereof.

Selection and ordering data

Type current[1] I_{max}	Rated control supply voltage U_s	DT	Screw terminals	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V								kg
Zero-point switching Rated operational voltage U_e 48 ... 600 V									
Two-phase controlled									
10.5	4 ... 30 DC	A	**3RF24 10-1AB45**			1	1 unit	101	0.320
20		A	**3RF24 20-1AB45**			1	1 unit	101	0.400
30		A	**3RF24 30-1AB45**			1	1 unit	101	0.540
40		B	**3RF24 40-1AB45**			1	1 unit	101	0.800
50		A	**3RF24 50-1AB45**			1	1 unit	101	1.100
10.5	110 AC	B	**3RF24 10-1AB35**			1	1 unit	101	0.320
20		B	**3RF24 20-1AB35**			1	1 unit	101	0.400
30		B	**3RF24 30-1AB35**			1	1 unit	101	0.540
40		B	**3RF24 40-1AB35**			1	1 unit	101	0.800
50		B	**3RF24 50-1AB35**			1	1 unit	101	1.100
10.5	230 AC	B	**3RF24 10-1AB55**			1	1 unit	101	0.320
20		B	**3RF24 20-1AB55**			1	1 unit	101	0.400
30		B	**3RF24 30-1AB55**			1	1 unit	101	0.540
40		B	**3RF24 40-1AB55**			1	1 unit	101	0.800
50		B	**3RF24 50-1AB55**			1	1 unit	101	1.100
Three-phase controlled									
10.5	4 ... 30 DC	A	**3RF24 10-1AC45**			1	1 unit	101	0.320
20		A	**3RF24 20-1AC45**			1	1 unit	101	0.540
30		A	**3RF24 30-1AC45**			1	1 unit	101	0.800
40		A	**3RF24 40-1AC45**			1	1 unit	101	1.100
50		A	**3RF24 50-1AC45**			1	1 unit	101	1.850
10.5	110 AC	B	**3RF24 10-1AC35**			1	1 unit	101	0.320
20		B	**3RF24 20-1AC35**			1	1 unit	101	0.540
30		B	**3RF24 30-1AC35**			1	1 unit	101	0.800
40		B	**3RF24 40-1AC35**			1	1 unit	101	1.100
50		B	**3RF24 50-1AC35**			1	1 unit	101	1.850
10.5	230 AC	B	**3RF24 10-1AC55**			1	1 unit	101	0.320
20		B	**3RF24 20-1AC55**			1	1 unit	101	0.540
30		B	**3RF24 30-1AC55**			1	1 unit	101	0.800
40		B	**3RF24 40-1AC55**			1	1 unit	101	1.100
50		B	**3RF24 50-1AC55**			1	1 unit	101	1.850

3RF24 20-1AB45

3RF24 10-1AC45

[1] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

* You can order this quantity or a multiple thereof.

Solid-State Contactors

SIRIUS 3RF24 solid-state contactors, three-phase

3RF24 10-2AB45

Type current[1)] I_{max}	Rated control supply voltage U_s	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V		Order No.				kg
Zero-point switching Rated operational voltage U_e 48 ... 600 V							
Two-phase controlled							
10	4 ... 30 DC	B	**3RF24 10-2AB45**	1	1 unit	101	0.320
20		B	**3RF24 20-2AB45**	1	1 unit	101	0.400
10	230 AC	B	**3RF24 10-2AB55**	1	1 unit	101	0.320
20		B	**3RF24 20-2AB55**	1	1 unit	101	0.400
Three-phase controlled							
10	4 ... 30 DC	B	**3RF24 10-2AC45**	1	1 unit	101	0.320
20		B	**3RF24 20-2AC45**	1	1 unit	101	0.540
10	230 AC	B	**3RF24 10-2AC55**	1	1 unit	101	0.320
20		B	**3RF24 20-2AC55**	1	1 unit	101	0.540

Type current[1)] I_{max}	Rated control supply voltage U_s	DT	Ring terminal lug connection	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V		Order No.				kg
Zero-point switching Rated operational voltage U_e 48 ... 600 V							
Two-phase controlled							
50	4 ... 30 DC	B	**3RF24 50-3AB45**	1	1 unit	101	1.100
50	230 AC	B	**3RF24 50-3AB55**	1	1 unit	101	1.100
Three-phase controlled							
50	4 ... 30 DC	B	**3RF24 50-3AC45**	1	1 unit	101	1.850
50	230 AC	B	**3RF24 50-3AC55**	1	1 unit	101	1.850

[1)] The type current provides information about the performance of the solid-state contactor. The actual permitted rated operational current I_e can be smaller depending on the connection method and start-up conditions. For derating see the manual, "Characteristic curves".

* You can order this quantity or a multiple thereof.

Overview

Function modules for SIRIUS 3RF2 solid-state switching devices

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

The following function modules are available:

- Converters
- Load monitoring
- Heating current monitoring
- Power controllers
- Power regulators

With the exception of the converter, the function modules can be used only with single-phase solid-state switching devices.

Recommended assignment of the function modules to the 3RF21 single-phase solid-state relays

Order No.	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers[1]	Power regulators[1]
		Basic	Extended			
Type current = 20 A						
3RF21 20-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF21 20-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF21 20-1A.22	--	--	3RF29 20-0GA33	--	--	--
3RF21 20-1A.24	--	--	3RF29 20-0GA36	--	--	--
3RF21 20-1A.42	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF21 20-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF21 20-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF21 20-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF21 20-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF21 20-2A.22	--	--	--	--	--	--
3RF21 20-2A.24	--	--	--	--	--	--
3RF21 20-2A.42	3RF29 00-0EA18	--	--	--	--	--
3RF21 20-2A.45	3RF29 00-0EA18	--	--	--	--	--
3RF21 20-3A.02	3RF29 00-0EA18	--	3RF29 20-0GA13	--	--	3RF29 20-0HA13
3RF21 20-3A.04	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF21 20-3A.22	--	--	3RF29 20-0GA33	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF21 20-3A.24	--	--	3RF29 20-0GA36	--	3RF29 20-0KA16	3RF29 20-0HA16
Type current = 30 A						
3RF21 30-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF21 30-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 30-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 30-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 30-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 30-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 30-1A.42	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF21 30-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 30-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
Type current = 50 A						
3RF21 50-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF21 50-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 50-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 50-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 50-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 50-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF21 50-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF21 50-2A.06	3RF29 00-0EA18	--	--	--	--	--
3RF21 50-2A.14	3RF29 00-0EA18	--	--	--	--	--
3RF21 50-2A.22	--	--	--	--	--	--
3RF21 50-2A.24	--	--	--	--	--	--
3RF21 50-2A.26	--	--	--	--	--	--
3RF21 50-3A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF21 50-3A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-3A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 50-3A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 50-3A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 50-3A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36

[1] The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

3RF29 Function Modules

General data

Order No.	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers[1]	Power regulators[1]
		Basic	Extended			
Type current = 70 A						
3RF21 70-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF21 70-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1A.05	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 70-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 70-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 70-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 70-1C.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
Type current = 90 A						
3RF21 90-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF21 90-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF21 90-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 90-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF21 90-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF21 90-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF21 90-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF21 90-2A.06	3RF29 00-0EA18	--	--	--	--	--
3RF21 90-2A.22	--	--	--	--	--	--
3RF21 90-2A.24	--	--	--	--	--	--
3RF21 90-2A.26	--	--	--	--	--	--
3RF21 90-3A.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--	--	3RF29 90-0HA13
3RF21 90-3A.04	3RF29 00-0EA18	--	3RF29 90-0GA16	3RF29 32-0JA16	3RF29 90-0KA16	3RF29 90-0HA16
3RF21 90-3A.06	3RF29 00-0EA18	--	3RF29 90-0GA16	3RF29 32-0JA16	3RF29 90-0KA16	3RF29 90-0HA16
3RF21 90-3A.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF21 90-3A.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF21 90-3A.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF21 90-3A.44	3RF29 00-0EA18	--	3RF29 90-0GA16	3RF29 32-0JA16	3RF29 90-0KA16	3RF29 90-0HA16

[1] The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Recommended assignment of the function modules to the 3RF22 three-phase solid-state relays

Order No.	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
		Basic	Extended			
Type current up to 55 A						
3RF22 ..-1A...	3RF29 00-0EA18	--	--	--	--	--
3RF22 ..-2A...	3RF29 00-0EA18	--	--	--	--	--
3RF22 ..-3A...	3RF29 00-0EA18	--	--	--	--	--

Recommended assignment of the function modules to the 3RF23 single-phase solid-state contactors

Order No.	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers[1]	Power regulators[1]
		Basic	Extended			
Type current I_e = 10.5 A						
3RF23 10-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1A.12	3RF29 00-0EA18	--	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-1A.14	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1A.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 10-1A.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-1A.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-1A.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16

Order No.	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers[1]	Power regulators[1]
		Basic	Extended			
Type current I_e = 10.5 A						
3RF23 10-1B.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-1B.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 10-1B.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-1B.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF23 10-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF23 10-2A.06	3RF29 00-0EA18	--	--	--	--	--
3RF23 10-2A.22	--	--	--	--	--	--
3RF23 10-2A.24	--	--	--	--	--	--
3RF23 10-2A.26	--	--	--	--	--	--
3RF23 10-3A.02	3RF29 00-0EA18	--	3RF29 20-0GA13	3RF29 16-0JA13	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 10-3A.04	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-3A.06	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 10-3A.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 10-3A.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 10-3A.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
Type current I_e = 20 A						
3RF23 20-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.14	3RF29 00-0EA18	--	3RF29 20-0GA16	--	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-1A.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1A.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1A.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1A.45	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1B.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-1B.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1B.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1B.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1C.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1C.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1C.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-1C.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1C.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1D.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-1D.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-1D.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-1D.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-1D.44	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-2A.02	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2A.04	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2A.06	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2A.22	--	--	--	--	--	--
3RF23 20-2A.24	--	--	--	--	--	--
3RF23 20-2A.26	--	--	--	--	--	--
3RF23 20-2C.02	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2C.04	3RF29 00-0EA18	--	--	--	--	--
3RF23 20-2C.22	--	--	--	--	--	--
3RF23 20-2C.24	--	--	--	--	--	--
3RF23 20-2D.22	--	--	--	--	--	--
3RF23 20-2D.24	--	--	--	--	--	--
3RF23 20-3A.02	3RF29 00-0EA18	--	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-3A.04	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-3A.06	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-3A.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-3A.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-3A.26	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
3RF23 20-3A.44	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16

[1] The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

3RF29 Function Modules

General data

Order No.	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers[1]	Power regulators[1]
		Basic	Extended			
Type current I_e = 20 A						
3RF23 20-3D.02	3RF29 00-0EA18	--	3RF29 20-0GA13	--	3RF29 20-0KA13	3RF29 20-0HA13
3RF23 20-3D.04	3RF29 00-0EA18	--	3RF29 20-0GA16	3RF29 32-0JA16	3RF29 20-0KA16	3RF29 20-0HA16
3RF23 20-3D.22	--	--	3RF29 20-0GA33	--	--	3RF29 20-0HA33
3RF23 20-3D.24	--	--	3RF29 20-0GA36	--	--	3RF29 20-0HA36
Type current I_e = 30 A						
3RF23 30-1A.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 30-1A.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1A.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1A.14	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 30-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1A.25	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1A.44	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1A.45	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1B.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 30-1B.04	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1B.06	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 30-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-1B.44	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-1C.02	3RF29 00-0EA18	3RF29 20-0FA08	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 30-1D.44	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-3A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 30-3A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-3A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 30-3A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 30-3A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-3A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 30-3A.44	3RF29 00-0EA18	--	3RF29 50-0GA16	3RF29 32-0JA16	3RF29 50-0KA16	3RF29 50-0HA16
Type current I_e = 40 A						
3RF23 40-1A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 40-1A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1A.14	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 40-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-1A.45	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 40-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA13	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 40-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-3A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 40-3A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-3A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 40-3A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 40-3A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-3A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 40-3A.45	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
Type current I_e = 50 A						
3RF23 50-1A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 50-1A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1A.14	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 50-1A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-1A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-1A.45	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16

[1] The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Order No.	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers[1]	Power regulators[1]
		Basic	Extended			
Type current I_e = 50 A						
3RF23 50-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 50-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 50-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-1B.44	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 50-3A.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 50-3A.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 50-3A.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-3A.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 50-3A.44	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
Type current I_e = 70 A						
3RF23 70-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 70-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 70-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 70-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 70-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 70-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 70-3A.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--		3RF29 90-0HA13
3RF23 70-3A.04	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3A.06	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3A.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF23 70-3A.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 70-3A.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 70-3A.45	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--		3RF29 90-0HA13
3RF23 70-3B.04	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.06	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 70-3B.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF23 70-3B.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 70-3B.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
Type current I_e = 90 A						
3RF23 90-1B.02	3RF29 00-0EA18	--	3RF29 50-0GA13	--	--	3RF29 50-0HA13
3RF23 90-1B.04	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 90-1B.06	3RF29 00-0EA18	--	3RF29 50-0GA16	--	3RF29 50-0KA16	3RF29 50-0HA16
3RF23 90-1B.22	--	--	3RF29 50-0GA33	--	--	3RF29 50-0HA33
3RF23 90-1B.24	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 90-1B.26	--	--	3RF29 50-0GA36	--	--	3RF29 50-0HA36
3RF23 90-3A.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--	--	3RF29 90-0HA13
3RF23 90-3A.04	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3A.06	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3A.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF23 90-3A.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 90-3A.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 90-3A.45	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3B.02	3RF29 00-0EA18	--	3RF29 90-0GA13	--	--	3RF29 90-0HA13
3RF23 90-3B.04	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3B.06	3RF29 00-0EA18	--	3RF29 90-0GA16	--	3RF29 90-0KA16	3RF29 90-0HA16
3RF23 90-3B.22	--	--	3RF29 90-0GA33	--	--	3RF29 90-0HA33
3RF23 90-3B.24	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36
3RF23 90-3B.26	--	--	3RF29 90-0GA36	--	--	3RF29 90-0HA36

[1] The use of power controllers/regulators is also possible on zero-point switching versions for full-wave control mode. The generalized phase control mode is recommended only for the combination with instantaneous switching versions.

Recommended assignment of the function modules to the 3RF24 three-phase solid-state contactors

Order No.	Accessories					
	Converters	Load monitoring		Heating current monitoring	Power controllers	Power regulators
		Basic	Extended			
Type current up to 50 A						
3RF24 ..-1..4.	3RF29 00-0EA18	--	--	--	--	--
3RF24 ..-2..4.	--	--	--	--	--	--
3RF24 ..-3..4.	3RF29 00-0EA18	--	--	--	--	--
3RF24 ..-...5.	--	--	--	--	--	--

3RF29 Function Modules

SIRIUS converters for 3RF

Overview

Converters for 3RF2 solid-state switching devices

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

Application

This function module is used for conversion from an analog input signal to an on/off ratio. The module can only be used in conjunction with 3RF21 and 3RF23 single-phase solid-state switching devices or 3RF22 and 3RF24 three-phase devices. It can be used on versions with 24 V DC and 24 V AC/DC control supply voltage.

Selection and ordering data

	Rated operational current I_e	Rated operational voltage U_e	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
	A	V							kg
Converters									
	Rated control supply voltage 24 V AC/DC								
	--	--	A	**3RF29 00-0EA18**		1	1 unit	101	0.041

* You can order this quantity or a multiple thereof.

Overview

Load monitoring for 3RF2 single-phase solid-state switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of load elements (up to 6 in the basic version or up to 12 in the extended version), alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by one or more LEDs and reported to the controller by way of a PLC-compatible output.

The principle of operation is based on permanent monitoring of the current intensity. This figure is continuously compared with the reference value stored once during start-up by the simple press of a button. In order to detect the failure of one of several loads, the current difference must be 1/6 (in the basic version) or 1/12 (in the extended version) of the reference value. In the event of a fault, an output is actuated and one or more LEDs indicate the fault.

Application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 solid-state relay or a 3RF23 solid-state contactor. The devices with spring-type connections in the load circuit are not suitable.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Basic load monitoring								
								
Rated control supply voltage 24 V DC								
6	--	A	**3RF29 06-0FA08**		1	1 unit	101	0.068
20	--	A	**3RF29 20-0FA08**		1	1 unit	101	0.068
• With mounted 3RF29 00-0RA88 cover								
6	--	A	**3RF29 06-0FA08-0KH0**		1	1 unit	101	0.068
20	--	A	**3RF29 20-0FA08-0KH0**		1	1 unit	101	0.068
Extended load monitoring								
								
Rated control supply voltage 24 V AC/DC								
20	110 … 230	A	**3RF29 20-0GA13**		1	1 unit	101	0.175
20	400 … 600	A	**3RF29 20-0GA16**		1	1 unit	101	0.175
50	110 … 230	A	**3RF29 50-0GA13**		1	1 unit	101	0.175
50	400 … 600	A	**3RF29 50-0GA16**		1	1 unit	101	0.175
90	110 … 230	A	**3RF29 90-0GA13**		1	1 unit	101	0.175
90	400 … 600	A	**3RF29 90-0GA16**		1	1 unit	101	0.175
Rated control supply voltage 110 V AC								
20	110 … 230	A	**3RF29 20-0GA33**		1	1 unit	101	0.175
20	400 … 600	A	**3RF29 20-0GA36**		1	1 unit	101	0.175
50	110 … 230	A	**3RF29 50-0GA33**		1	1 unit	101	0.175
50	400 … 600	A	**3RF29 50-0GA36**		1	1 unit	101	0.175
90	110 … 230	A	**3RF29 90-0GA33**		1	1 unit	101	0.175
90	400 … 600	A	**3RF29 90-0GA36**		1	1 unit	101	0.175

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg
Optional accessories							
							
Sealable covers for function modules (not for converters)	B	**3RF29 00-0RA88**		1	10 units	101	0.001

3RF29 00-0RA88

* You can order this quantity or a multiple thereof.

SIRIUS heating current monitoring for 3RF

Overview

Heating current monitoring for 3RF2 single-phase solid-state switching devices

Many faults can be quickly detected by monitoring a load circuit connected to the solid-state switching device, as made possible with this module. Examples include the failure of up to 6 load elements, alloyed power semiconductors, a lack of voltage or a break in a load circuit. A fault is indicated by LEDs and reported to the controller by way of a relay output (NC contact).

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

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

Special versions: deviations from the standard version

3RF29 ..-0JA1.-1KK0

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

Application

The device is used for monitoring one or more loads (partial loads). The function module can only be used in conjunction with a 3RF21 solid-state relay or a 3RF23 solid-state contactor. The devices with spring-type connections in the load circuit are not suitable.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Heating current monitoring[1]								
Rated control supply voltage 24 V AC/DC								
16	110 … 230	A	**3RF29 16-0JA13**		1	1 unit	101	0.175
16	110 … 230	A	**3RF29 16-0JA13-1KK0**		1	1 unit	101	0.175
16	400 … 600	A	**3RF29 16-0JA16-1KK0**		1	1 unit	101	0.175
32	110 … 230	A	**3RF29 32-0JA13-1KK0**		1	1 unit	101	0.175
32	400 … 600	A	**3RF29 32-0JA16**		1	1 unit	101	0.175
32	400 … 600	A	**3RF29 32-0JA16-1KK0**		1	1 unit	101	0.175

[1] Supplied without control connector. The control connector can be purchased from Phoenix Contact by quoting Order No. 1982 790 (2.5 HC/6-ST-5.08).

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg
Optional accessories							
Sealable covers for function modules (not for converters)	B	**3RF29 00-0RA88**		1	10 units	101	0.001

3RF29 00-0RA88

* You can order this quantity or a multiple thereof.

Overview

Power controllers for 3RF2 single-phase solid-state switching devices

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

The following functions have been integrated:

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

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

Special versions: deviations from the standard version

3RF29 04-0KA13-0KC0

During the teaching process the connected solid-state relay or contactor is not activated; i. e. no current flow takes place. No current reference value is stored. No part-load monitoring!

3RF29 ..-0KA1.-0KT0

No part-load monitoring!

Application

The power controller can be used for:

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

The power controller can be used on the instantaneously switching 3RF21 and 3RF23 solid-state switching devices (single-phase). If only the full-wave operating mode is used, the power controller can also be used on the "zero-point switching" solid-state relays and contactors.

Power control

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

Full-wave control

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

Generalized phase control

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial networks, the load circuit must include a reactor with a rating of at least 200 µH.

Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Power controllers								
	Rated control supply voltage 24 V AC/DC							
4	110 … 230	A	**3RF29 04-0KA13-0KC0**		1	1 unit	101	0.175
4		A	**3RF29 04-0KA13-0KT0**		1	1 unit	101	0.175
20		A	**3RF29 20-0KA13**		1	1 unit	101	0.175
50		A	**3RF29 50-0KA13**		1	1 unit	101	0.175
90		A	**3RF29 90-0KA13**		1	1 unit	101	0.175
20	400 … 600	A	**3RF29 20-0KA16**		1	1 unit	101	0.175
50		A	**3RF29 50-0KA16**		1	1 unit	101	0.175
50		A	**3RF29 50-0KA16-0KT0**		1	1 unit	101	0.175
90		A	**3RF29 90-0KA16**		1	1 unit	101	0.175

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg
Optional accessories							
 3RF29 00-0RA88	B	**3RF29 00-0RA88**		1	10 units	101	0.001
Sealable covers for function modules (not for converters)							

* You can order this quantity or a multiple thereof.

SIRIUS power regulators for 3RF

Overview

Power regulators for 3RF2 single-phase solid-state switching devices

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

The following functions have been integrated:

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

Application

The power regulator can be used for:

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

The power regulator can be used on the instantaneously switching 3RF21 and 3RF23 solid-state switching devices (single-phase). If only the full-wave operating mode is used, the power regulator can also be used on the zero-point switching solid-state relays and contactors.

Power control

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

Full-wave control

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

Generalized phase control

In this operating mode the output is adjusted to the required setpoint value by changing the current flow angle. In order to observe the limit values of the conducted interference voltage for industrial networks, the load circuit must include a reactor with a rating of at least 200 µH.

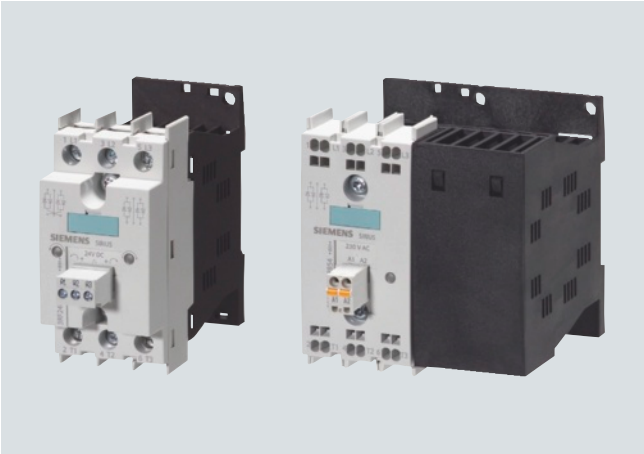
Selection and ordering data

Rated operational current I_e	Rated operational voltage U_e	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	V							kg
Power regulators								
								
Rated control supply voltage 24 V AC/DC								
20	110 … 230	A	**3RF29 20-0HA13**		1	1 unit	101	0.175
20	400 … 600	A	**3RF29 20-0HA16**		1	1 unit	101	0.175
50	110 … 230	A	**3RF29 50-0HA13**		1	1 unit	101	0.175
50	400 … 600	A	**3RF29 50-0HA16**		1	1 unit	101	0.175
90	110 … 230	A	**3RF29 90-0HA13**		1	1 unit	101	0.175
90	400 … 600	A	**3RF29 90-0HA16**		1	1 unit	101	0.175
Rated control supply voltage 110 V AC								
20	110 … 230	A	**3RF29 20-0HA33**		1	1 unit	101	0.175
20	400 … 600	A	**3RF29 20-0HA36**		1	1 unit	101	0.175
50	110 … 230	A	**3RF29 50-0HA33**		1	1 unit	101	0.175
50	400 … 600	A	**3RF29 50-0HA36**		1	1 unit	101	0.175
90	110 … 230	A	**3RF29 90-0HA33**		1	1 unit	101	0.175
90	400 … 600	A	**3RF29 90-0HA36**		1	1 unit	101	0.175

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg
Optional accessories							
 3RF29 00-0RA88							
Sealable covers for function modules (not for converters)	B	**3RF29 00-0RA88**		1	10 units	101	0.001

* You can order this quantity or a multiple thereof.

Overview



Solid-state contactors for switching motors

The solid-state contactors for switching motors are intended for frequently switching on and off three-phase current operating mechanisms up to 7.5 kW and reversing up to 3.0 kW. The devices are constructed with complete insulation and can be mounted directly on circuit breakers and SIRIUS overload relays, resulting in a very simple integration into motor feeders.

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

Important features

- Insulated enclosure with integrated heat sink
- Degree of protection IP20
- Integrated mounting foot to snap on a standard mounting rail or for assembly onto a support plate
- Variety of connection methods
- Plug-in control connection
- Display via LEDs

Switching functions

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

Selecting solid-state contactors

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

The following procedure is recommended:

- Determine the rated current of the load and the mains voltage
- Select a solid-state contactor with the same or higher rated current than the load
- Testing the maximum permissible switching frequency based on the characteristic curves (see manual). To do this, the starting current, the starting time and the motor loaded in in the operating phase must be known.
- If the permissible switching frequency is under the desired frequency, it is possible to achieve an increase by overdimensioning the motor!

Alternatively the correct device size can be determined on the Internet by entering the network and motor data along with the application and ambient conditions in the tool for the selection of solid-state contactors for switching motors. You will find the tool at:

www.siemens.com/solid-state-switching-devices

Benefits

- Units with integrated heat sink, "ready to use"
- Compact and space-saving design
- Reversing contactors with integrated interlocking

Application

There is no typical design of a load feeder with solid-state relays or solid-state contactors; instead, the great variety of connection methods and control voltages offers universal application opportunities. SIRIUS solid-state relays and solid-state contactors can be installed in fuseless or fused feeders, as required. There are special versions with which it is even possible to achieve short-circuit strength in a fuseless design.

Standards and approvals

- IEC 60947-4-3
- UL 508, CSA for North America[1)]
- CE marking for Europe
- C-Tick approval for Australia

[1)] Please note: Use overvoltage protection device;
max. cut-off-voltage 6000 V;
min. energy handling capability 100 J.

General data

More information

Connection methods

You can choose between the following connection methods for the solid-state contactors for switching motors:

Screw connection

The screw connection system is the standard among industrial controls. Open terminals and a plus-minus screw are just two features of this technology. Two conductors of up to 6 mm² can be connected in just one terminal. As a result, loads of up to 50 A can be connected.

Spring-type terminal connection system

This innovative technology manages without any screw connection. This means that very high vibration resistance is achieved. Two conductors of up to 2.5 mm² can be connected to each terminal. As a result, loads of up to 20 A can be dealt with.

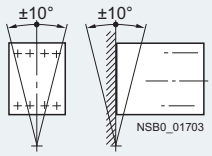
Short-circuit protection

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

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

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

Specification

Order No.		**3RF24 ..-.BB.., 3RF24 ..-.BD..**
General data		
Ambient temperature		
• During operation, derating from 40 °C	°C	-25 ... +60
• During storage	°C	-55 ... +80
Installation altitude	m	0 ... 1000; derating over 1000 m upon request
Shock resistance acc. to IEC 60068-2-27	*g*/ms	15/11
Vibration resistance acc. to IEC 60068-2-6	*g*	2
Degree of protection		IP20
Insulation strength at 50/60 Hz (main/control circuit to floor)	V rms	4000
Electromagnetic compatibility (EMC)		
• Emitted interference acc. to IEC 60947-4-3		
- Conducted interference voltage		Class A for industrial applications[1)]
- Emitted, high-frequency interference voltage		Class A for industrial applications
• Interference immunity		
- Electrostatic discharge acc. to IEC 61000-4-2 (corresponds to degree of severity 3)	kV	Contact discharge: 4; Air discharge: 8; Behavior criterion 2
- Induced RF fields acc. to IEC 61000-4-6	MHz	0.15 ... 80; 140 dBµV; Behavior criterion 1
- Burst acc. to IEC 61000-4-4	kV	2/5 kHz; behavior criterion 1
- Surge acc. to IEC 61000-4-5	kV	Conductor - Ground: 2; Conductor - Conductor: 1; Behavior criterion 2
Permissible mounting positions		

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

Notes on integration in the load feeders

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

Particular attention must however be paid to the circumstances of the installation and ambient conditions, as the performance of the solid-state switching devices is largely dependent on these. Depending on the version, certain restrictions must be observed. Detailed information, for example in relation to solid-state contactors about the minimum spacing and to solid-state relays about the choice of heat sink, is given in the technical specifications (see manual) and the product data sheets.

For applications with a very large power requirement it is possible to use SIVOLT AC power controller. More information on the product range can be found in the Catalog DA 68 or in our Mall.

support.automation.siemens.com/WW/view/de/10862346

See ID: 10752358

Short-circuit and overload protection

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

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

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

Semiconductor motor and reversing contactors can be easily combined with the 3RV motor starter protectors and 3RB2 overload relay from the SIRIUS modular system. Thus, fuseless and fuse motor feeders can be designed easily and in a space-saving manner.

Electromagnetic compatibility (EMC)

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

Suitable filters can be ordered from EPCOS AG. You can find more information on the Internet at:

www.epcos.com

Solid-State Contactors

SIRIUS 3RF24 solid-state contactors, three-phase

Overview

These two-phase controlled, instantaneous switching solid-state contactors in the insulting enclosure are offered in 45 mm width to 5.2 A – and in 90 mm width to 16 A. This means that it is possible to operate motors up to 7.5 kW.

The devices with screw connection can use a link module[1] to directly connect to a circuit breaker. Direct mounting on a 3RB20 electronic overload relay[2] is possible. Rapid-switching fuseless and fuse motor feeders can thereby be implemented in a time-saving manner.

Selection and ordering data

Motor contactors · Instantaneous switching · Two-phase controlled

Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	400 V kW	V		Order No. / Price per PU				kg
Rated operational voltage U_e 48 ... 460 V								
5.2	**2.2**	24 DC	A	**3RF24 05-1BB04**	1	1 unit	101	0.250
9.2	**4.0**	acc. to EN 61131-2	B	**3RF24 10-1BB04**	1	1 unit	101	0.380
12.5	**5.5**		B	**3RF24 12-1BB04**	1	1 unit	101	0.380
16	**7.5**		B	**3RF24 16-1BB04**	1	1 unit	101	0.380
5.2	**2.2**	110 ... 230 AC	B	**3RF24 05-1BB24**	1	1 unit	101	0.250
9.2	**4.0**		B	**3RF24 10-1BB24**	1	1 unit	101	0.380
12.5	**5.5**		B	**3RF24 12-1BB24**	1	1 unit	101	0.380
16	**7.5**		B	**3RF24 16-1BB24**	1	1 unit	101	0.380

3RF24 05-1BB

Rated operational voltage U_e 48 ... 600 V, blocking voltage 1600 V								
5.2	**2.2**	24 DC	B	**3RF24 05-1BB06**	1	1 unit	101	0.250
9.2	**4.0**	acc. to EN 61131-2	B	**3RF24 10-1BB06**	1	1 unit	101	0.380
12.5	**5.5**		B	**3RF24 12-1BB06**	1	1 unit	101	0.380
16	**7.5**		B	**3RF24 16-1BB06**	1	1 unit	101	0.380
5.2	**2.2**	110 ... 230 AC	B	**3RF24 05-1BB26**	1	1 unit	101	0.250
9.2	**4.0**		B	**3RF24 10-1BB26**	1	1 unit	101	0.380
12.5	**5.5**		B	**3RF24 12-1BB26**	1	1 unit	101	0.380
16	**7.5**		B	**3RF24 16-1BB26**	1	1 unit	101	0.380

3RF24 10-1BB

Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Spring-type terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	400 V kW	V		Order No. / Price per PU				kg
Rated operational voltage U_e 48 ... 460 V								
5.2	**2.2**	24 DC	B	**3RF24 05-2BB04**	1	1 unit	101	0.250
9.2	**4.0**	acc. to EN 61131-2	B	**3RF24 10-2BB04**	1	1 unit	101	0.380
12.5	**5.5**		B	**3RF24 12-2BB04**	1	1 unit	101	0.380
16	**7.5**		B	**3RF24 16-2BB04**	1	1 unit	101	0.380
5.2	**2.2**	110 ... 230 AC	B	**3RF24 05-2BB24**	1	1 unit	101	0.250
9.2	**4.0**		B	**3RF24 10-2BB24**	1	1 unit	101	0.380
12.5	**5.5**		B	**3RF24 12-2BB24**	1	1 unit	101	0.380
16	**7.5**		B	**3RF24 16-2BB24**	1	1 unit	101	0.380

3RF24 10-2BB

Rated operational voltage U_e 48 ... 600 V, blocking voltage 1600 V								
5.2	**2.2**	24 DC	B	**3RF24 05-2BB06**	1	1 unit	101	0.250
9.2	**4.0**	acc. to EN 61131-2	B	**3RF24 10-2BB06**	1	1 unit	101	0.380
12.5	**5.5**		B	**3RF24 12-2BB06**	1	1 unit	101	0.380
16	**7.5**		B	**3RF24 16-2BB06**	1	1 unit	101	0.380
5.2	**2.2**	110 ... 230 AC	B	**3RF24 05-2BB26**	1	1 unit	101	0.250
9.2	**4.0**		B	**3RF24 10-2BB26**	1	1 unit	101	0.380
12.5	**5.5**		B	**3RF24 12-2BB26**	1	1 unit	101	0.380
16	**7.5**		B	**3RF24 16-2BB26**	1	1 unit	101	0.380

[1] For 3RA19 21-1AA00 link modules see next page.

[2] For 3RB20 overload relays see Chapter 5.

* You can order this quantity or a multiple thereof.

SIRIUS 3RF24 solid-state reversing contactors, three-phase

Overview

The integration of four conducting paths to a reverse switch, combined in one enclosure makes this device a particularly compact solution. Compared to conventional systems, for which two contactors are required, it is possible to save up to 50 % width with the three-phase reversing contactors. Devices with 45 mm width cover motors up to 2.2 kW – and those with 90 mm width up to 3 kW.

Due to the integration into the SIRIUS modular system, it is possible to make a connection to a SIRIUS motor starter protector using a link module or with a 3RB20[1] solid-state overload relay without additional steps. It is possible to mount fuseless or fused motor feeders easily and quickly.

Selection and ordering data

Reversing contactors · Instantaneous switching · Two-phase controlled

Rated operational current I_e	Rated power at I_e and U_e	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	400 V kW	V		Order No. / Price per PU				kg
Rated operational voltage U_e 48 ... 460 V								
3.8	**1.5**	24 DC	B	**3RF24 03-1BD04**	1	1 unit	101	0.280
5.4	**2.2**	acc. to EN 61131-2	B	**3RF24 05-1BD04**	1	1 unit	101	0.280
7.4	**3.0**		B	**3RF24 10-1BD04**	1	1 unit	101	0.410
3.8	**1.5**	110 ... 230 AC	B	**3RF24 03-1BD24**	1	1 unit	101	0.280
5.4	**2.2**		B	**3RF24 05-1BD24**	1	1 unit	101	0.280
7.4	**3.0**		B	**3RF24 10-1BD24**	1	1 unit	101	0.410

3RF24 03-1BD

3RF24 10-1BD

[1] For 3RB20 overload relays see Chapter 5.

Accessories

Version	Packing material	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			Order No. / Price per PU				kg
Link modules							
For mechanical and electrical connection between contactor and motor starter protector with screw terminals	Single-unit packaging	►	**3RA19 21-1AA00**	1	1 unit	101	0.037
	Multi-unit packaging	►	**3RA19 21-1A**	1	10 units	101	0.028

3RA19 21-1AA00

* You can order this quantity or a multiple thereof.

Notes