













Function Modules for Mounting onto SIRIUS 3RT2 Contactors

Introduction

Overview

The function modules for mounting onto contactors enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking, and can be connected to the control system by either parallel wiring or through IO-Link or AS-Interface.

Version	SIRIUS function modules for parallel wiring	SIRIUS function modules for IO-Link ¹⁾	SIRIUS function modules for AS-Interface ¹⁾
For direct-on-line starting	Timing relays: ON or OFF-delay with semiconductor output With screw or spring-type terminals 	With screw or spring-type terminals 	With screw or spring-type terminals 
For reversing starting	Wiring modules for sizes S00 and S0 With screw or spring-type terminals · (with screw terminals for main and control circuit) 	1 function module for size S00 and S0, screw and spring-type connection, plus the respective wiring modules ¹⁾ 	1 function module for size S00 and S0, screw and spring-type connection, plus the respective wiring modules ¹⁾ 
For wye-delta starting	1 function module for size S00 and S0, screw and spring-type connection of the contactors, plus the respective wiring modules ²⁾ 	For wye-delta starting: 1 function module for size S00 and S0, plus screw and spring-type connection, plus the respective wiring modules ²⁾ 	For wye-delta starting: 1 function module for size S00 and S0, plus screw and spring-type connection, plus the respective wiring modules ²⁾ 
Accessories	Sealable covers 	Operator panel for autonomous controlling of up to 4 starters Module connector for the grouping of starters Connection cable between the operator panel and the starter group Sealable covers 	AS-Interface addressing units Sealable covers 

¹⁾ Use of the communication-capable function modules for IO-Link or AS-Interface requires contactors with communication interface (see pages 3/13 and 3/15).

²⁾ The modules for the control current wiring, which are included in the wiring kit, are not required.

Note:

When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.

Overview

Simply by being plugged in place, the SIRIUS function modules enable different functionalities required for the assembly of starters to be realized in the starter. The function modules and wiring kits help to reduce the wiring work within the starter practically to zero.

SIRIUS function modules for direct-on-line starting

All solid-state timing relays which can be mounted onto the contactor are designed for applications in the range from 24 to 240 V AC/DC (wide voltage range). Both the electrical and mechanical connection are made by simple snapping on and locking.

A protection circuit (varistor) is integrated in each module.

The solid-state timing relay with semiconductor output uses two contact limbs to actuate the contactor underneath by means of a semiconductor after the set time t has elapsed.

The switching state feedback is performed by a mechanical switching state indicator (plunger). In addition, the auxiliary switches in the contactors are freely accessible and can be used for feedbacks to the control system or for signal lamps.

A sealable cover is available to protect against careless adjustment of the set times.

SIRIUS function modules for reversing starting

The wiring kits for reversing starters enable the cost-effective assembly of contactor assemblies. They can be used for all applications with reversing duty up to 25 HP.

For a detailed description see page 3/28.

SIRIUS function modules for wye-delta starting

Both interlocking and timing functions are required for the assembly of wye-delta starters. With the function modules for wye-delta starting and the matching link modules for the main circuit, these starters can be assembled easily and with absolutely no errors.

The entire sequence in the control circuit is integrated in the snap-on modules. This covers:

- An adjustable wye time t from 0.5 to 60 s
- A non-adjustable dead interval of 50 ms
- Electrical contacting to the contactors by means of coil pick-off (contact legs)
- Feedback of the switching state at the contactor using a mechanical switch position indicator (plunger)
- Electrical interlocking between the contactors

These modules do not require their own terminals and can therefore be used for contactors with both screw and spring-type terminals in the two sizes S00 and S0. To start the wye-delta starter, only the first of the three contactors (line contactor) is actuated. All other functions then take place inside the individual modules.

This also offers advantages if the timing function was previously implemented in a controller, as it again results in a significant reduction in the number of PLC outputs, the programming work and the wiring outlay.

The kits for the main circuit include the mechanical interlock, the star jumper, the wiring modules at the top and at the bottom, and the required connecting clips.

A protection circuit (varistor) is integrated in the basic module.

Application

The snap-on function modules for direct-on-line starting are used above all for realizing timing functions independently of the control system.

With the OFF-delay variant of the timing relay it is possible for example for the fan motor for cooling a main drive to be switched off with a delay so that sufficient cooling after operation is guaranteed even if the plant and its control system have already been switched off.

The ON-delay timing relays enable for example the time-delayed starting of several drives so that the summation starting current does not rise too high, which could result in voltage failure.

The function modules for wye-delta starting are mostly used where current-limiting measures for starting a drive are required, e.g. for large fans and ventilators, and a high level of availability is essential at the same time. This technology has been used with success for several decades and has the additional advantage of requiring relatively little know-how. Through the use of function modules, the assembly work with simple standard components is even easier and error-free.

Benefits

The use of snap-on function modules for direct-on-line starting (timing relays) results in the following advantages:

- Reduction of control current wiring
- Prevention of wiring errors
- Reduction of testing costs
- Implementation of timing functions independently of the control system
- Less space required in the control cabinet compared to a separate timing relay
- No additive protection circuit required (varistor integrated)

For the advantages of using wiring kits for the assembly of reversing starters see page 3/29.

The use of function modules for wye-delta starting results in the following advantages:

- Operation solely through the line contactor A1/A2 – no further wiring needed
- Reduction of the control current wiring inside the contactor assembly and to the higher-level control system where applicable
- Prevention of wiring errors
- Reduction of testing costs
- Integrated electrical interlocking saves costs and prevents errors
- Less space needed in the control cabinet compared to using a separate timing relay
- Adjustable starting in star mode from 0.5 to 60 s
- Independent of the contactor's control supply voltage (24 to 240 V AC/DC)
- Varistor integrated – no additive protection circuit required
- No control current wiring thanks to plug-in technology and connecting cables
- Mechanically coded assembly enables easy configuration and reliable wiring
- Fewer versions – one module kit for screw and spring-type connection and for the two sizes S00 and S0
- Mechanical interlocking (with wiring kit for the main circuit)

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for direct-on-line starting via parallel wiring

Selection and ordering data



3RA28 11-1...



3RA28 12-2...

For contactors	Rated control supply voltage $U_s^{1)}$	Time setting range t	Screw terminals	Weight approx.	Spring-type terminals	Weight approx.
Type	V	s	Order No.	kg	Order No.	kg

Solid-state timing relays with semiconductor output, for snapping onto the front

The electrical connection between the timing relay and the contactor underneath is established automatically when it is snapped on and locked in place.

With ON-delay, two-wire version
Varistor integrated

3RT20 1., 3RT20 2., 3RH21 ²⁾ , 3RH24	24 ... 240 AC/DC	0.05 ... 100 (1, 10, 100, selectable)	3RA28 11-1CW10	0.070	3RA28 11-2CW10	0.070
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With OFF-delay with auxiliary voltage
Varistor integrated

3RT20 1., 3RT20 2., 3RH21 ²⁾ , 3RH24	24 ... 240 AC/DC	0.05 ... 100 (1, 10, 100, selectable)	3RA28 12-1DW10	0.070	3RA28 12-2DW10	0.070
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Accessories

Sealable covers
for 3RA27, 3RA28, 3RA29

3RA29 10-0	0.002	3RA29 10-0	0.002
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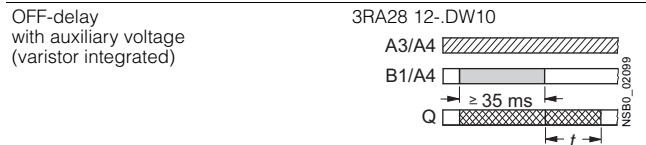
1) AC voltage values apply for 50 Hz and 60 Hz.

2) Cannot be fitted onto coupling relays.

Note:
When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.

Function	Function charts

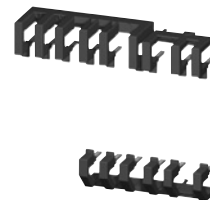
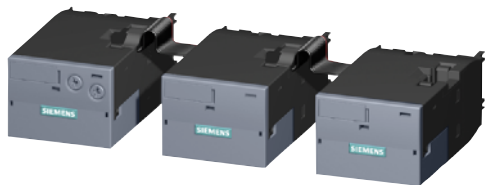
1 NO contact (semiconductor output)



Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules
for reversing starting / wye-delta starting

Selection and ordering data



3RA28 16-0EW20

3RA29 13-2AA1

3RA29 13-2BB2

For contactors	Rated control supply voltage U_s ¹⁾	Time setting range t	Screw terminals	Weight approx.	Spring-type terminals	Weight approx.
Type	V	s	Order No.	kg	Order No.	kg

Assembly kits for reversing starting

Assembly kits for making 3-pole contactor assemblies

The assembly kit contains:
Mechanical interlock;
2 connecting clips for 2 contactors,
wiring modules on the top and bottom

3RT20 1.	• For size S00	3RA29 13-2AA1	0.001	3RA29 13-2AA2	0.001
3RT20 2.	• For size S0	3RA29 23-2AA1	0.001	3RA29 23-2AA2	0.001

Assembly kits for wye-delta starting

Assembly kits for making 3-pole contactor assemblies

The assembly kit contains:
Mechanical interlock,
4 connecting clips for 3 contactors;
star jumper,
wiring modules on the top and bottom

3RT20 1.	• For size S00	3RA29 13-2BB1	0.001	3RA29 13-2BB2	0.001
3RT20 2.	• For size S0 (only main current for version with spring-type terminals)	3RA29 23-2BB1	0.001	3RA29 23-2BB2	0.001

Function modules for wye-delta starting

The electrical connection between the function module and the contactor assembly is established automatically by snapping on and plugging in the connecting cables.

Wye-delta function (varistor integrated)

3RT20 1., 3RT20 2. ²⁾	24 ... 240 AC/DC	0.5 ... 60 (10, 30, 60 selectable)	3RA28 16-0EW20	0.170	3RA28 16-0EW20	0.170
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Individual modules

24 ... 240 AC/DC Basic modules for wye-delta starting
-- Coupling modules for wye-delta starting

			3RA29 12-0	0.085	3RA29 12-0	0.085
			3RA29 11-0	0.095	3RA29 11-0	0.095

Accessories

Sealable covers

for 3RA27, 3RA28, 3RA29

			3RA29 10-0	0.002	3RA29 10-0	0.002
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¹⁾ AC voltage values apply for 50 Hz and 60 Hz.

²⁾ Cannot be fitted onto coupling relays.

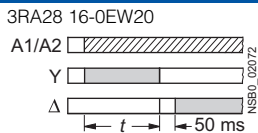
Note:
When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.

Function	Function charts
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- Timing relay energized
- Contact closed
- Contact open

2 NO contacts (internally connected)



Wye-delta function (varistor integrated)
• 1 NO contact, delayed
• 1 NO contact, instantaneous



Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules

More information

Type			3RA28 11 With ON-delay	3RA28 12 OFF-delay with auxiliary voltage	3RA28 16 Wye-delta function
General data					
Rated insulation voltage U_i	V AC		300		
Pollution degree 3 Overvoltage category III					
Operating range of excitation			0.85 ... 1.1 x U_N , 0.95 ... 1.05 times the rated frequency		
Overvoltage protection			Varistor integrated		
Rated power	W		1		1
• Power consumption at 230 V AC, 50 Hz	VA		1		2
Rated operational currents I_e					
• AC-140	At 24 ... 240 V, 50 Hz	A	0.4		--
• DC-13	At 24 ... 240 V	A	0.4		--
• AC-15	At 24 ... 240 V, 50 Hz	A	--		3
• DC-13	- At 24 V	A	--		1
	- At 125 V	A	--		0.2
	- At 250 V	A	--		0.1
DIAZED fuse	Operational class gG	A	--		4
Switching frequency for load					
• With I_e at 230 V AC		h ⁻¹	2500		--
• With 3RT2 contactor at 230 V AC		h ⁻¹	2500		--
Recovery time		ms	50		150
Minimum ON period		ms	--	35	--
Residual current	Max.	mA	5		--
Voltage drop	Max.	VA	3.5		--
With conducting output					
Short-time loading capacity	Up to 10 ms	A	10		--
Setting accuracy	Typ.		±15 %		
With reference to upper limit of scale					
Repeat accuracy	Max.		±1 %		
Mechanical endurance		Operat- ing cy- cles	100 x 10 ⁶		10 x 10 ⁶
Permissible ambient temperature					
• During operation		°C	-25 ... +60		
• During storage		°C	-40 ... +80		
Degree of protection acc. to EN 60947-1, Appendix C			IP20		
Shock resistance		g/ms	15/11		
Half-sine acc. to IEC 60068-2-27					
Vibration resistance		Hz/mm	10 ... 55/0.35		
Acc. to IEC 60068-2-6					
Electromagnetic compatibility (EMC)			IEC 61000-6-2, IEC 61000-6-4, IEC 61812-1		IEC 60947-4-1
Permissible mounting position			Any		
Conductor cross-sections					
Connection type			 Screw terminals		
• Solid	mm ²		1 x (0.5 ... 4), 2 x (0.5 ... 2.5)		--
• Finely stranded with end sleeve	mm ²		1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)		--
• AWG cables, solid or stranded	AWG		2 x (20 ... 14)		--
• Terminal screws			M3 (for standard screw driver size 2 or Pozidriv 2)		--
• Tightening torque	Nm		0.8 ... 1.2		--
Connection type			 Spring-type terminals		
• Operating devices	mm		3.0 x 0.5		--
• Solid	mm ²		2 x (0.25 ... 1.5)		--
• Finely stranded with end sleeve	mm ²		2 x (0.25 ... 1.5)		--
• Finely stranded	mm ²		2 x (0.25 ... 1.5)		--
• AWG cables, solid or stranded	AWG		2 x (24 ... 16)		--

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for IO-Link

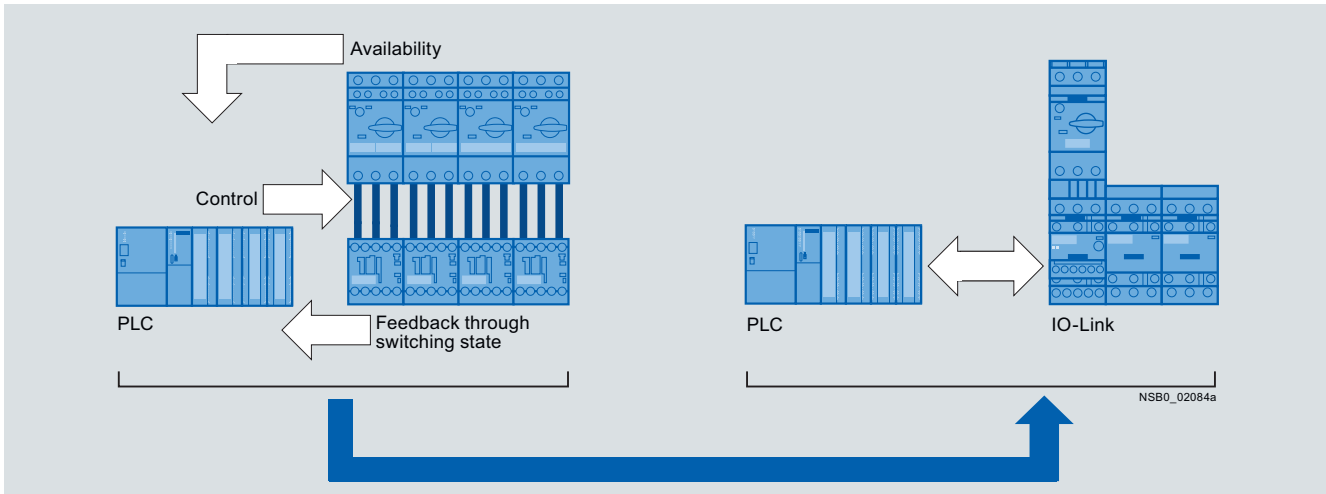
Overview

The SIRIUS function modules for IO-Link enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking. The electrical and mechanical connection to the contactor is established by snapping on and locking. An additive protection circuit for the individual contactors can be dispensed with completely, and feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely difficult conditions. The starters are connected to the higher-level

control system through IO-Link, with the possibility of connecting up to four starters as a group to one port of the IO-Link master.

Through this type of connection to the control system, a maximum of wiring is saved. The following essential signals are transmitted:

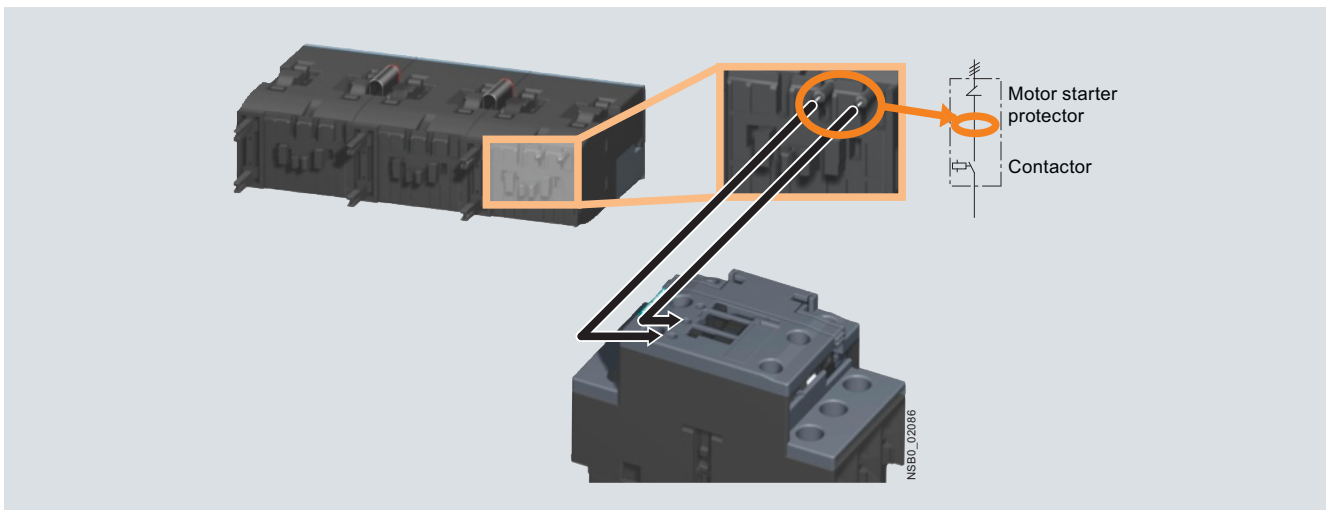
- Availability of the starter in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



Signal transmission through IO-Link

The inquiry from the motor starter protector does not take place through additional wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires the use of communication versions of the contactors with communication interface (see pages 3/13 and 3/15).



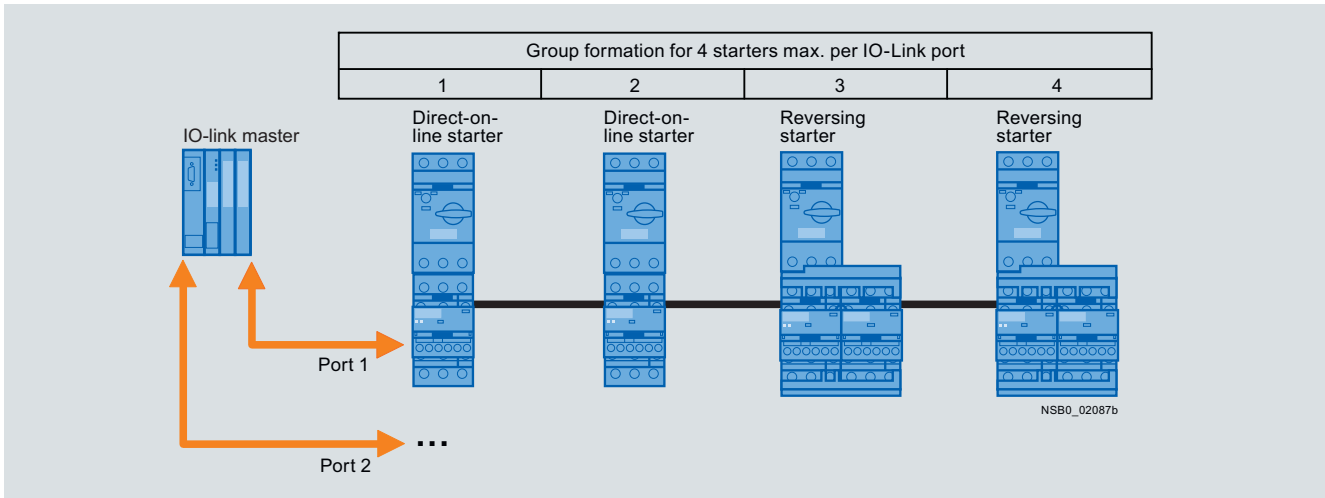
Availability signal through voltage pick-off

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for IO-Link

By grouping up to four starters it is possible to connect up to 16 starters to one master of the ET200S. All the signals of the individual controls are made available through only 3 individual wires per starter group directly in the process image. If the

potential at the master of the ET200S is the same as that of the controls, a further reduction in wiring is possible by providing the control supply voltage to the contactors by jumpering the corresponding communication wires.



Group formation with IO-Link

In case of a malfunction, the corresponding error signals are also sent directly to the PLC in acyclic mode. This is in addition to transmission of the switching signals and status signals.

Possible error signals:

- Device defect
- No main voltage (motor starter protector tripped)
- No control supply voltage
- Limit position on the right / on the left
- Manual mode
- Process image fault

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example to a position switch. The input interrupts the voltage supply to the contactor coil directly, i. e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Local manual operation of the complete starter group is also straight-forward using an operator panel. The latter is easily connected to the last starter and can be built into the front panel of the control cabinet if required. This offers significant advantages particularly for commissioning. [See page 3/84.](#)

Application

The use of SIRIUS function modules with IO-Link is recommended above all in machines and plants in which there are several motor starters in one control cabinet. Using IO-Link, the connection of these starters to the automation level is easy, quick and error-free. And with IO modules no longer needed, the width of the ET200S becomes far smaller.

Benefits

- Reduction of the control current wiring to no more than one cable having three conductors for four starters
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA for clear diagnostics if a fault occurs
- Fewer IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additional control circuit required

Further information on the application and benefits of the SIRIUS function modules for connection to the control system through IO-Link can be found in Chapter 2 "Industrial Communication".

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for IO-Link

Selection and ordering data

Version	Screw terminals 	Weight approx.	Spring-type terminals 	Weight approx.	
	Order No.	kg	Order No.	kg	
Function modules for direct-on-line starting					
 3RA27 11-1AA00  3RA27 11-2AA00	IO-Link connection Includes one module connector for assembling an IO-Link group	3RA27 11-1AA00	0.080	3RA27 11-2AA00	0.075
	Function modules for reversing starting¹⁾				
 3RA27 11-1BA00  3RA29 23-2AA1	IO-Link connection, comprising one basic and one coupling module and an additional module connector for assembling an IO-Link group	3RA27 11-1BA00	0.155	3RA27 11-2BA00	0.145
	Assembly kits for making 3-pole contactor assemblies³⁾ The assembly kit contains: mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom				
	<ul style="list-style-type: none"> • For size S00 	3RA29 13-2AA1	0.001	3RA29 13-2AA2	0.001
	<ul style="list-style-type: none"> • For size S0 - For main, auxiliary and control circuit - Only for main current⁴⁾ 	3RA29 23-2AA1	0.001	--	
		--		3RA29 23-2AA2	0.001
Function modules for wye-delta starting²⁾					
 3RA27 11-1CA00  3RA29 23-2BB1	IO-Link connection, comprising one basic module and two coupling modules, plus an additional module connector for assembling an IO-Link group	3RA27 11-1CA00	0.190	3RA27 11-2CA00	0.185
	Assembly kits for making 3-pole contactor assemblies³⁾ The assembly kit contains: Mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom				
	<ul style="list-style-type: none"> • For size S00 	3RA29 13-2BB1	0.001	3RA29 13-2BB2	0.001
	<ul style="list-style-type: none"> • For size S0 - For main, auxiliary and control circuit - Only for main current⁴⁾ 	3RA29 23-2BB1	0.001	--	
		--		3RA29 23-2BB2	0.001

Matching contactors with communication interface required (see pages 3/13 and 3/15).

For matching IO-Link masters, routers and power supply units see Chapter 2 "Industrial Communication".

Note:

When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.

¹⁾ For prewired contactor assemblies for reversing starting with communication interface see pages 3/31 and 3/33. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

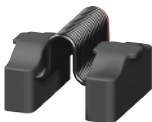


²⁾ For complete contactor assemblies for wye-delta starting including function modules see pages 3/39 and 3/41.

³⁾ When using the function modules for wye-delta starting, the wiring modules for the auxiliary current are not required.

⁴⁾ Version in size S0 with spring-type terminals:
Only the wiring modules for the main circuit are included.
No connectors are included for the auxiliary and control circuit.



Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for IO-Link

Version	Order No.	PU (UNIT, SET, M)	PS*	Weight approx. kg
Accessories				
 3RA27 11-0EE0.	Module connector sets , comprising: • 2 module connectors, 14-pole, short + 2 interface covers	3RA27 11-0EE01	1 1 unit	0.001
	Module connectors , 14-pole, 8 cm • For size jump S00-S0 + 1 space	3RA27 11-0EE02	1 1 unit	0.001
	Module connectors , 14-pole, 21 cm • For diverse space combinations	3RA27 11-0EE03	1 1 unit	0.001
	Module connectors , 10-pole, 8 cm • For separate auxiliary voltage supply within an IO-Link group	3RA27 11-0EE04	1 1 unit	0.001
 3RA29 10-0	Sealable covers for 3RA27, 3RA28, 3RA29	3RA29 10-0	1 5 units	0.002
Operator panels¹⁾				
 3RA69 35-0A	Operator panels (set) • 1 x operator panel • 1 x enabling module • 1 x interface cover • 1 x fixing terminal	3RA69 35-0A	1 1 unit	0.052
	Connection cables , length 2 m, 10- to 14-pole For connecting the operator panel to the communication module	3RA27 11-0EE11	1 1 unit	0.001
	Enabling modules (replacement)	3RA69 36-0A	1 1 unit	0.002
	Interface covers (replacement)	3RA69 36-0B	1 5 units	0.001

¹⁾ Suitable only for communication through IO-Link.

More information

Type	3RA27 11		
General data			
Suitable for IO-Link masters acc. to Specification			1.0
Permissible ambient temperature			
• During operation	Acc. to EN 60947-1	°C	-25 ... +60
• During storage	Acc. to EN 60721-3-1	°C	-40 ... +80
• During transport	Acc. to EN 60721-3-2	°C	-40 ... +80
Degree of protection			IP20
Operational voltage U_{HI}			V DC 24 ± 20 %
Power consumption, max. at U_{HI}			A 2
Max. length of the cables for the input Y1–Y2			Acc. to EN 50295 m 30
EMC interference immunity			
• Electrostatic discharge	Acc. to EN 61000-4-2	kV	6/8
• Field-related interference	Acc. to EN 61000-4-3	V/m	10 (80 MHz ... 3 GHz)
• Burst	Acc. to EN 61000-4-4	kV	2/1
• Conductor-related interference	Acc. to EN 61000-4-5	kV	0.5/1
• High-frequency, asymmetric	Acc. to EN 61000-4-6	V rms	10 (150 kHz ... 80 MHz)
Conductor cross-sections			
Connection type		 Screw terminals	
• Solid	mm ²	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm ²	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)	
• AWG cables	AWG	2 x (20 ... 14)	
• Terminal screws		M3 (for standard screwdriver Ø 6 mm or Pozidriv 2)	
• Tightening torque of the terminal screws	Nm	0.8 ... 1.2	
Connection type		 Spring-type terminals	
• Operating devices	mm	3.0 x 0.5	
• Solid	mm ²	2 x (0.25 ... 1.5)	
• Finely stranded with end sleeve	mm ²	2 x (0.25 ... 1.5)	
• Finely stranded	mm ²	2 x (0.25 ... 1.5)	
• AWG cables	AWG	2 x (24 ... 16)	

* You can order this quantity or a multiple thereof.
Illustrations are approximate

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for AS-Interface

Overview

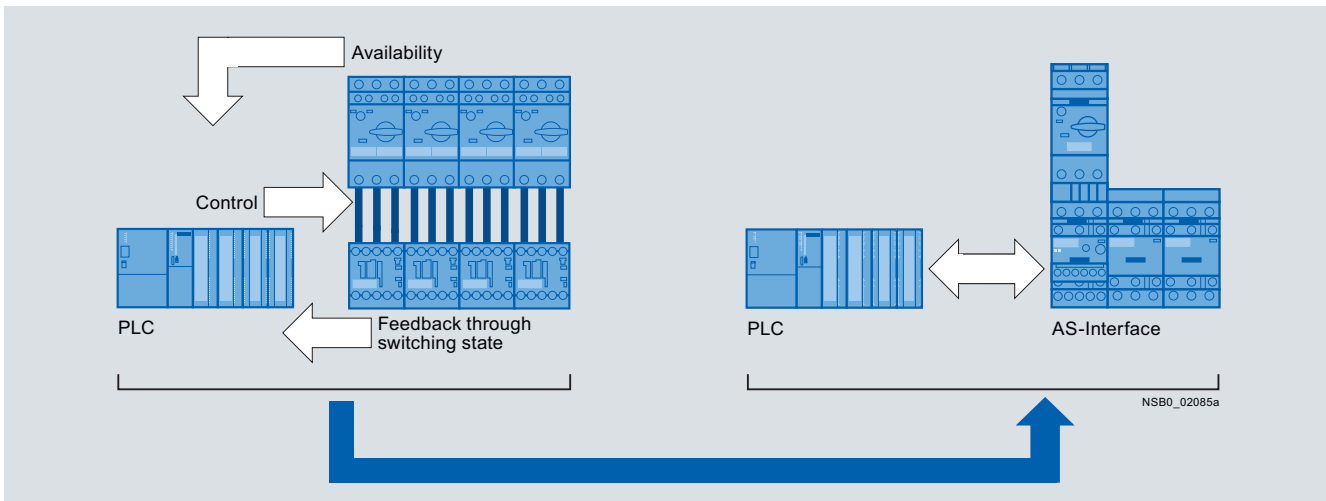
The SIRIUS function modules for AS-Interface enable the assembly of starters and contactor assemblies for direct-on-line, reversing and wye-delta starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular starter, e. g. timing and interlocking. The electrical and mechanical connection to the contactor is established by snapping on and locking. An additional control circuit for the individual contactors can be eliminated with completely because a varistor is integrated in the modules. Feedback from the contactor contacts is performed with Hall sensors which provide reliable feedback concerning the switching state even under extremely dusty conditions. Connection of the starters to the higher-level control system takes place through AS-Interface with the Specification V2.1 in A/B technology. As the result, up to 62 starters can be con-

nected to one master and the address is entered in normal manner with an addressing unit.

Through the AS-Interface connection to the control system, a maximum of wiring is saved. The wiring outlay is reduced to the control supply voltage and the two individual wires for AS-Interface.

The following essential signals are transmitted:

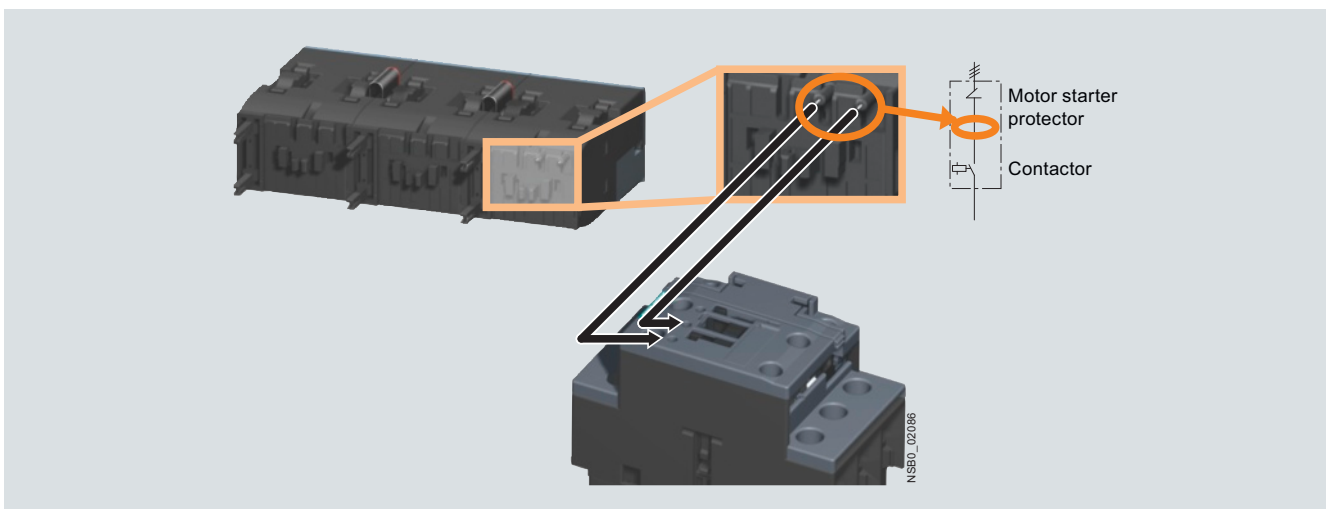
- Availability of the starter in response to an indirect inquiry from the motor starter protector
- Starter operation
- Feedback concerning the switching state of the starter



Signal transmission through AS-Interface

The inquiry from the motor starter protector does not take place through additional wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

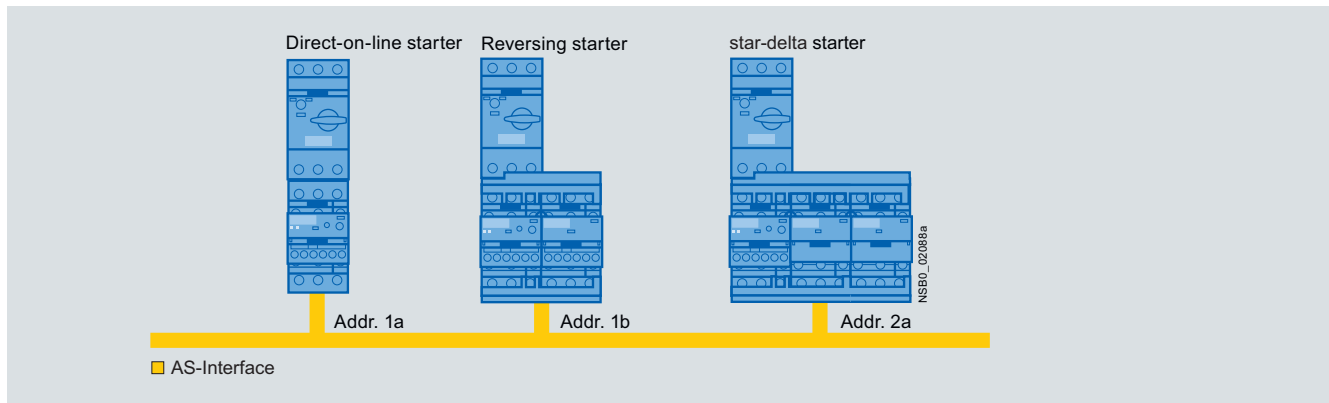
This requires use of communication versions of the contactors with communication interface (see pages 3/13 and 3/15).



Availability signal through voltage pick-off

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for AS-Interface



Topology with AS-Interface

This easy integration of the starters in the TIA world does not limit the flexibility in the field in the least. For example, all function modules have special terminals in order to enable direct local disconnection. These terminals can be connected for example,

to a position switch. The input interrupts the voltage supply to the contactor coil directly, i. e. without going through the PLC. These terminals are jumpered in the as-delivered state.

Application

The use of SIRIUS function modules with AS-Interface is recommended above all in machines and plants requiring easy connection of several different sensors and actuators both inside and outside the control cabinet to the higher-level control system. And with IO modules no longer needed, the width of the ET200S is far smaller.

Benefits

- Reduction of control current wiring
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Elimination of IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and wye-delta starting are integrated
- No additional control circuit required

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for AS-Interface

Selection and ordering data

Version	Screw terminals 	Weight approx.	Spring-type terminals 	Weight approx.
	Order No.	kg	Order No.	kg
Function modules for direct-on-line starting				
 3RA27 12-1AA00  3RA27 12-2AA00	AS-Interface connection 3RA27 12-1AA00	0.075	3RA27 12-2AA00	0.075
	AS-Interface connection 3RA27 12-2AA00			
Function modules for reversing starting¹⁾				
 3RA27 12-1BA00  3RA29 23-2AA1	AS-Interface connection, comprising one basic and one coupling module 3RA27 12-1BA00	0.150	3RA27 12-2BA00	0.145
	Assembly kits for making 3-pole contactor assemblies The assembly kit contains: mechanical interlock; 2 connecting clips for 2 contactors, wiring modules on the top and bottom • For size S00 • For size S0 - For main, auxiliary and control circuit - Only for main current	3RA29 13-2AA1 0.001 3RA29 23-2AA1 0.001 -- 0.001	3RA29 13-2AA2 0.001 -- 3RA29 23-2AA2 0.001	
Function modules for wye-delta starting²⁾				
 3RA27 12-1CA00  3RA29 23-2BB1	AS-Interface connection, comprising one basic module and two coupling modules 3RA27 12-1CA00	0.185	3RA27 12-2CA00	0.185
	Assembly kits for making 3-pole contactor assemblies The assembly kit contains: Mechanical interlock, 4 connecting clips for 3 contactors; star jumper, wiring modules on the top and bottom • For size S00 • For size S0 - For main, auxiliary and control circuit - Only for main current	3RA29 13-2BB1 0.001 3RA29 23-2BB1 0.001 --	3RA29 13-2BB2 0.001 -- 3RA29 23-2BB2 0.001	

Matching contactors with communication interface required (see pages 3/13 and 3/15).

For matching AS-Interface masters, routers and power supply units see Chapter 2 "Industrial Communication".

Note:

When the function modules are used, no other auxiliary switches are allowed to be mounted on the basic units.

¹⁾ For prewired contactor assemblies for reversing starting with communication interface see pages 3/31 and 3/33. When these contactor assemblies are used, the assembly kit for the wiring is already integrated.

²⁾ For complete contactor assemblies for wye-delta starting including function modules see pages 3/39 and 3/41.

Function Modules for Mounting onto SIRIUS 3RT2 Contactors

SIRIUS function modules for AS-Interface

Version	Order No.	PU (UNIT, SET, M)	PS*	Weight approx. kg
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Accessories



3RA29 10-0

Sealable covers
for 3RA27, 3RA28, 3RA29

3RA29 10-0

1 5 units

0.002

More information

Type	3RA27 12		
General data			
Slave type	A/B slave		
Suitable for AS-i masters acc. to Spec.	2.1 or higher		
AS-i Slave Profile IO.ID.ID2	7.A.E		
ID1 Code (factory setting)	7		
Permissible ambient temperature			
• During operation	Acc. to EN 60947-1	°C	-25 ... +60
• During storage	Acc. to EN 60721-3-1	°C	-40 ... +80
• During transport	Acc. to EN 60721-3-2	°C	-40 ... +80
Degree of protection			
IP20			
Operational voltage			
• AS-Interface	V	26.5 ... 31.6	
• AUX PWR 24 V DC	V	24 ± 20 %	
Power consumption, max.			
• AS-Interface	mA	30	
• AUX PWR			
- Maximum pick-up/hold current	Size S00	mA	200
	Size S0	mA	300
Max. length of the cables for the input Y1–Y2	Acc. to EN 50295	m	30
EMC interference immunity			
• Electrostatic discharge	Acc. to EN 61000-4-2	kV	6/8
• Field-related interference	Acc. to EN 61000-4-3	V/m	10 (80 MHz ... 3 GHz)
• Burst	Acc. to EN 61000-4-4	kV	1/2
• Conductor-related interference	Acc. to EN 61000-4-5	kV	0.5/1
• High-frequency, asymmetric	Acc. to EN 61000-4-6	V rms	10 (150 kHz ... 80 MHz)
Conductor cross-sections			
Connection type		Screw terminals	
• Solid	mm ²	1 x (0.5 ... 4), 2 x (0.5 ... 2.5)	
• Finely stranded with end sleeve	mm ²	1 x (0.5 ... 2.5), 2 x (0.5 ... 1.5)	
• AWG cables	AWG	2 x (20 ... 14)	
• Terminal screws		M3 (for standard screwdriver Ø 6 mm or Pozidriv 2)	
• Tightening torque of the terminal screws	Nm	0.8 ... 1.2	
Connection type		Spring-type terminals	
• Operating devices	mm	3.0 x 0.5	
• Solid	mm ²	2 x (0.25 ... 1.5)	
• Finely stranded with end sleeve	mm ²	2 x (0.25 ... 1.5)	
• Finely stranded	mm ²	2 x (0.25 ... 1.5)	
• AWG cables	AWG	2 x (24 ... 16)	