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IO-Link



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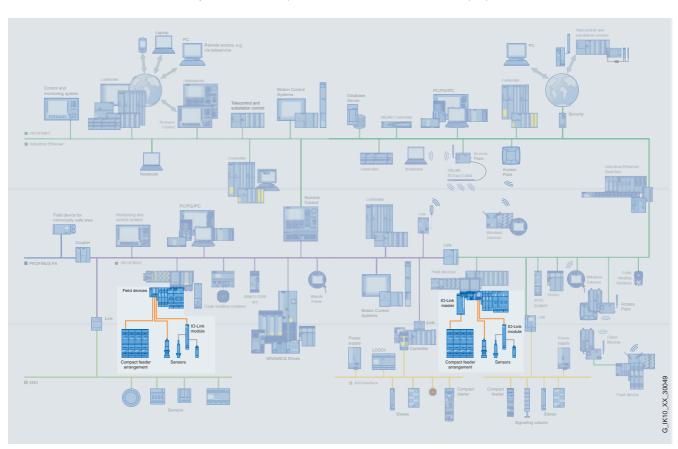


System overview

Overview

IO-Link is a new communication standard for sensors and actuators – defined by the Profibus User Organization (PNO). IO-Link technology is based on the point-to-point connection of sensors and actuators to the control system. Extensive para-

meter and diagnostics data are transmitted in addition to the cyclic operating data for the connected sensor/actuators. The simple, unshielded three-wire cable customary for standard sensors is used for this purpose.



Compatibility of IO-Link

IO-Link guarantees compatibility between IO-Link-capable modules and standard modules as follows:

- IO-Link sensors can be operated as a rule on IO-Link modules (masters) as well as on standard I/O modules.
- IO-Link sensors/actuators as well as today's standard sensors/ actuators can be used on IO-Link masters.
- If conventional components are used in the IO-Link system, then of course only the standard functions are available at this point.

Expansion through IO-Link I/O modules

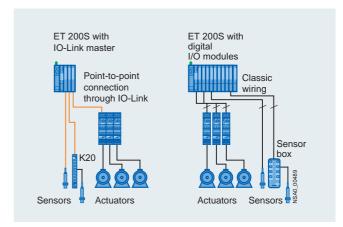
IO-Link compatibility also permits connection of standard sensors/actuators, i.e. conventional sensors/actuators can also be connected to IO-Link. This is done particularly economically with IO-Link I/O modules which enable several sensors/actuators to be connected to the control system simultaneously over one cable.

Analog signals

Another advantage of IO-Link technology is that analog signals are digitized already in the IO-Link sensor itself and are digitally transmitted by the IO-Link communication. As the result, faults are prevented and there is no extra cost for cable shielding.

Load Feeders and Motor Starters

Through IO-Link it is possible control not only sensors, but also actuators in the form of load feeders and motor starters.



Possibilities for connecting load feeders and motor starters to IO-Link or in the conventional way

System overview

Overview (continued)

Components of an IO-Link system



IO-Link is comprised of 2 components: IO-Link masters and IO-Link devices.

IO-Link master

IO-Link master modules for ET 200S

- 4SI IO-Link electronic module
- 4SI SIRIUS IO-Link electronic module

IO-Link master modules for ET 200eco PN

IO-Link devices

I/O modules

• IO-Link K20 module

Industrial controls

Switching devices

Power contactors for switching motors

• SIRIUS 3RT2 contactors, 3-pole, up to 18.5 kW

See Catalog news LV 1 N SIRIUS Innovations \cdot 11/2009, Chapter 3

Contactor assemblies

- SIRIUS 3RA23 reversing contactor assemblies
- SIRIUS 3RA24 contactor assemblies for wye-delta starting

See Catalog news LV 1 N SIRIUS Innovations · 11/2009, Chapter 3

SIRIUS 3RA27 function modules for IO-Link

- · For direct-on-line starters
- · For reversing starters
- For wye-delta starters

Load Feeders and Motor Starters

SIRIUS 3RA6 compact feeders for IO-Link

- 3RA64 direct-on-line starters
- 3RA65 reversing starters
- Infeed Systems for 3RA6

See Catalog news LV 1 N SIRIUS Innovations · 11/2009, Chapter 6

Sensors

IO-Link sensors, e.g.

- SIMATIC PXS310C M18
- SIMATIC PXO560C C50

Benefits

The IO-Link system offers decisive advantages for connecting complex (intelligent) sensors/actuators:

- Dynamic changing of sensor/actuator parameters directly by the PLC
- Consistent storage of parameters enables devices to be exchanged during operation, without a PC or programming device, through re-parameterization from the PLC
- Fast commissioning thanks to central data storage
- Consistent diagnostic information as far as the sensor/actuator level
- Uniform and greatly reduced wiring of different sensors/actuators/controls
- Integrated communication: Transmission of process data and service data between sensors/actuators and the control system
- Uniform and transparent configuring and programming through use of a parameterization tool integrated in SIMATIC STEP 7 (Port Configurator Tool, PCT)
- Transparent representation of all parameter and diagnostics data

Application

IO-Link can be used in the following main applications:

- Easy connection of complex IO-Link sensors/actuators with a large number of parameters and diagnostics data to the control system
- Wiring-optimized replacement of sensor boxes for the connection of binary sensors through IO-Link I/O modules
- Wiring-optimized connection of controls to the control system

In these cases, all the diagnostics data are transmitted to the higher-level control system through IO-Link. The parameter settings can be changed during operation. Central data storage means that it is possible to exchange an IO-Link sensor/actuator without a PC or programming device.

Integration in STEP 7

Integration of the device configuration in the STEP 7 environment guarantees:

- · Easy and quick engineering
- · Consistent data storage
- · Speedy locating and rectifying of faults

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Master

IO-link master module for ET 200S **4SI IO-Link electronic module**

Overview



The 4SI IO-Link electronic module is an IO-Link master and supports the easy integration of sensors and actuators from different manufacturers in the multifunctional, distributed I/O system SIMATIC ET 200S on a total of four ports.

- Up to 4 IO-Link devices can be connected to each IO-Link master module (3-wire connection)
- Up to 4 standard actuators or sensors (2-wire/3-wire connection) can be connected.
- The electronic module 4SI IO-Link is 15 mm in width and can be used with the following universal terminal modules:

 - TM-E15S26-A1 (screw-type terminal) TM-E15C26-A1 (spring-loaded terminal)
 - TM-E15N26-A1 (FastConnect)
- Supports firmware update (STEP 7 V5.4 SP4 and higher)

Ordering data

Order No.

Electronic module 4SI IO-Link

IO-Link master Connection method: Screw terminal, spring-loaded terminal or FastConnect

6ES7 138-4GA50-0AB0

More information

Further information and technical data can be found in the Industry Mall under: "Automation technology"

- --> "Industrial Communication"
- --> "IO-Link"
- --> "Master"
- --> "IO-Link master module for ET 200S"

IO-Link master module SIRIUS for ET 200S 4SI SIRIUS electronic module

Overview



The 4SI SIRIUS electronic module supports easy, cost-effective connection of SIRIUS switching devices with IO-Link to the multifunctional, distributed I/O system SIMATIC ET 200S on a total of four ports.

Features

- Up to 4 SIRIUS switching devices (max. 16 for groups of four) can be connected to each IO-Link SIRIUS module using IO-Link (3-wire connection)
- The electronic module 4SI SIRIUS is 15 mm in width and can be used with the following universal terminal modules:
 - TM-E15S26-A1 (screw-type terminal)
 - TM-E15C26-A1 (spring-loaded terminal) TM-E15N26-A1 (FastConnect)
- Supports firmware update (STEP 7 V5.4 SP5 and higher).

Ordering data

Order No.

4SI SIRIUS electronic module

IO-Link master Connection method: Screw-type terminal, spring-loaded terminal or FastConnect

3RK1 005-0LB00-0AA0

More information

Further information and technical data can be found in the Industry Mall under:

- "Automation technology"
 ---> "Industrial Communication"
- --> "IO-Link" --> "Master"
- --> "I/O-Link master module SIRIUS for ET 200S"

Master

IO-Link master module for ET 200eco PN

Overview



The IO-Link master module ET 200eco PN is part of the compact block I/O range ET 200eco PN. It is characterized by:

- Compact block I/O for processing digital and IO-Link signals for connection to the PROFINET bus system
- Cabinet-free installation to the IP67 degree of protection with M12 connection system
- Extremely rugged and resistant metal housing and casting
- Compact module in housing size 60 mm x 175 mm x 37 mm (W x H x D, short and wide) with 8 x M12 for digital signals and IO-Link
- PROFINET connection: 2 x M12 and automatic PROFINET address assignment
- 100 Mbit/s data transmission rate
- LLDP neighbor detection without the need for a programming
- Supply and load voltage connection: 2 x M12
- Channel-specific diagnostics

Ordering data

Order No.

IO-Link Master ET 200eco PN

• 4 IO-L + 8 DE + 4 DA DC 24 V/1.3 A; 8 X M12, IP67 degree of protection

6ES7 148-6JA00-0AB0

More information

Further information and technical data can be found in chapter 5 and in the Industry Mall under: "Automation technology"

- --> "Industrial Communication"
- --> "IO-Link" --> "Master"
- --> "IO-Link master module for ET 200eco PN"



General data

Overview



IO-Link I/O modules

Using IO-Link technology, it is basically possible to connect standard sensors to IO-Link masters. However, connecting standard sensors directly to the IO-Link master does not exploit the full potential of IO-Link. The solution lies in the technology of the Application IO-Link modules. The use of this technology represents a more attractive solution in terms of cost than the direct connection of sensors/actuators

IO-Link I/O modules are a useful addition to ET 200S distributed peripherals. The technology of the IO-Link I/O modules expands IO-Link from a pure point-to-point wiring method in the direction of distributed structures. The maximum cable length of an IO-Link connection between an IO-Link module and an IO-Link master is 20 m. The use of sensor boxes with accordingly complex and error-prone wiring is no longer necessary.

Transmission of parameter and diagnostic signals

With IO-Link I/O modules, it is possible in addition to transmit parameter and diagnostic signals. This enables, for example, the inputs of modules to be parameterized as NC contacts or NO contacts through IO-Link. An overload or short-circuit in the sensor supply is signaled to the control system through the IO-Link master.

M8 and M12 terminals

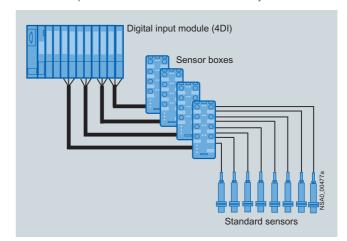
M8 and M12 terminals are available for connecting the sensors. Connection to the IO-Link master is made using a standard M12 connecting cable.

Benefits

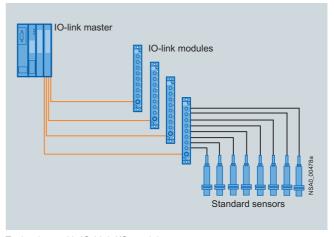
The use of IO-Link I/O modules offers the following advantages:

- Economical use of innovative IO-Link technology also for binary sensors
- · Optimum use of all ports of the IO-Link master
- Connection of several binary sensors/actuators to one port of the IO-Link master, hence low-cost connection of also binary sensors/actuators to the control system through IO-Link
- Reduction of digital input modules in the peripheral station
- Use of parameters also for binary sensors (e.g. NC contacts, NO contacts and input delay can be parameterized)
- Reduction of cabling and hence less risk of wiring errors by dispensing with sensor boxes
- Expansion toward distributed structures using pure point-topoint wiring
- Easy and elegant integration of sensors within a radius of 20 m around an ET 200S station
- Possibility of transmitting parameter and diagnostic signals (e.g. sensor supply overload)
- Can also be used in harsh conditions thanks to the very compact design and degree of protection IP67

IO-Link I/O modules are used, in particular, where sensor boxes were used up to now for the connection of binary sensors.



Former technology with sensor boxes



Technology with IO-Link I/O modules

IO-Link K20 modules

Selection and ordering data

Version			Order No.
IO-Link K20 module			
Туре	Pin assignment	Connection methods	
4 inputs	Υ	M12	3RK5 010-0BA10-0AA0
8 inputs	Standard	M8	3RK5 010-0CA00-0AA0
A10-0AA0			
	Type 4 inputs 8 inputs	Type Pin assignment 4 inputs Y 8 inputs Standard	Type Pin assignment Connection methods 4 inputs Y M12 8 inputs Standard M8

Accessories

	Version	Order No.
	M12 sealing caps For free M12 sockets	3RK1 901-1KA00
3RK1 901-1KA00		
3RK1 901-1PN00	M8 sealing caps For free M8 sockets	3RK1 901-1PN00

Other accessories:

- See Catalog FS 10, section "Proximity Switches"
 --> "Accessories" --> "Plug-in Connectors"
- See Industry Mall, section "Sensors, Measurement and Testing Systems"
 --> "Proximity Switches"
 --> "Accessories" --> "Plug-in Connectors"

IO-Link Industrial controls

Controls SIRIUS function modules for IO-Link

Overview



SIRIUS 3RA27 function modules for IO-Link

A motor feeder which is configured with 3RT2 contactors can be connected with the help of 3RA27 function modules to a higher-level control system. The SIRIUS function modules for connection to the control system are available in an AS-i version and in an IO-Link version.

The SIRIUS 3RA27 function modules for IO-Link for connecting to the control system are available for direct-on-line, reversing and wye-delta starters. They are plugged directly into the front interface of the 3RT2 contactors and therefore require one contactor with communication interface per feeder (see Catalog news "LV 1 N SIRIUS Innovations · 11/2009, Chapter 3).

The function modules perform the following tasks:

- Communication, e.g. contactor operation and feedback, ready signal
- Electrical interlocking, e.g. for the reversing and wye-delta starter
- Timing relay function, e.g. wye-delta reversing time

Communication information and control supply voltage are passed on through module connectors so that the complete control current wiring on the starter is no longer needed.

The function modules are equipped with removable terminals with screw or spring-type connections. They also have an input for local disconnection, which can be connected, for example, to a limit switch.

Up to four feeders (direct-on-line, reversing or wye-delta starters) can be brought together and conveniently connected to a control system through a standardized IO-Link connection. This results in a significant reduction of wiring compared to the conventional parallel wiring method. The electrical connection is made using standard cables.

The process image corresponds to that of the compact feeder (see Chapter 6 of the Catalog news "LV 1 N SIRIUS Innovations 11/2009), and to that of all motor starters. Easy, duplicatable programming of the control system is thus possible.

The IO-Link connection enables a high density of information in the local range.

Thanks to the optionally available operator panel, which can be installed in the control cabinet door, it is easy for control feeders equipped with function modules to be controlled from the control cabinet door.

Benefits

The SIRIUS 3RA27 function modules for connecting to the control system offer many different advantages. The most important are:

- Reduction of control current wiring through plug-in technology, feeder groups and integrated monitoring of circuit breaker and contactor
- Reduced space requirement in the control cabinet through fewer digital inputs and outputs in the control system
- Easy configuring through operation of feeders instead of individual contactors
- Enhanced operational reliability and quick wiring thanks to spring-type connections
- Can be flexibly combined with many automation solutions using the open, standardized IO-Link wiring system
- Small number of variants by using identical modules for size S00 and S0 contactors

This means that the SIRIUS feeder is fully integrated in the automation landscape and can use all the advantages of TIA (e.g. integration in the TIA Maintenance Station).

Application

The SIRIUS 3RA27 function modules for IO-Link for connecting to the control system can be used wherever standard induction motors up to 38 A (approx. 18.5 kW/400 V) with 3RT2 contactors are started. The IO-Link solution is recommended for control cabinet applications in which a high density of information is required.

Approvals according to IEC, UL and CSA standards have been issued for the function modules.

Selection and ordering data

For selection and ordering data, see the Catalog news "LV 1 N SIRIUS Innovations · 11/2009", Chapter 3 (Accessories for 3RT2 contactors) and Chapter 6 (Accessories for 3RA2 Load Feeders).

Accessories

In addition to the 3RA6 935-0A operator panel, there is a selection of different module connectors for the SIRIUS 3RA27 function modules that can be used if configurations are to be for multiple sizes or non-side-by-side arrangements.

More information

More information can be found in the Catalog news "LV 1 N SIRIUS Innovations · 11/2009" or in the Industry Mall.

For example:

- Details of power contactors for switching motors and contactor assemblies can be found in in the aforementioned Catalog news, Chapter 3 or in the
 - Industry Mall under "Automation" --> "Industrial Communication" --> "IO-Link" --> "Industrial Controls" --> "Contactors and Contactor Assemblies".
- Details of function modules for IO-Link can be found in the aforementioned Catalog news, Chapter 3 or in the Industry Mall under "Automation" --> "Industrial Communication" --> "IO-Link" --> "Industrial Controls" "Contactor and Contactor Assemblies" --> "SIRIUS Function Modules for IO-Link".
- Details of motor starters for operation in the control cabinet can be found in the aforementioned Catalog news, Chapter 6 or in the

Industry Mall under "Automation" --> "Industrial Communication" --> "IO-Link" --> "Industrial Controls" --> "Motor Starters for Operation in the Control Cabinet".

SIRIUS 3RA6 compact feeders General data

Overview

3RA6 fuseless compact feeders and infeed system for 3RA6



3RA62 reversing starters

Integrated functionality

The SIRIUS 3RA6 compact feeders are a generation of innovative load feeders with the integrated functionality of a motor starter protector, contactor and solid-state overload relay. In addition, various functions of otherwise optional mountable accessories (e.g. auxiliary switches, surge suppressors) are already integrated in the SIRIUS compact feeder.

Application

The SIRIUS compact feeders can be used wherever standard induction motors up to 32 A (approx. 15 kW/400 V) are directly started

Approvals according to IEC, UL and CSA standards have been issued for the compact feeders.

Low equipment variance

Thanks to wide setting ranges for the rated current and wide voltage ranges, the equipment variance is greatly reduced compared to conventional load feeders.

Very high operational reliability

Through the high short-circuit breaking capacity and defined shut-down when the end of service life is reached means that the SIRIUS compact feeder achieves a very high level of operational reliability that would otherwise have only been possible with considerable additional outlay. This sets it apart from devices with similar functionality.

Safe disconnection

The auxiliary switches of the 3RA6 compact feeders are designed as mirror contacts. It is thus possible to use the devices for safe disconnection, e.g. emergency-stops, up to Category 2 (EN 954-1) and together with other redundancy switching devices up to Category 3 or 4.

Communications integration using IO-Link

Up to 4 compact feeders in IO-Link version (reversing and direct-on-line starters) can be connected together and conveniently linked to the IO-Link master through a standardized IO-Link connection. For example, the 4SI SIRIUS solid-state module serves as IO-Link master for the connection to the SIMATIC ET 200S distributed I/O system.

The IO-Link connection enables a high density of information in the local range.

The diagnostics data of the process collected by the 3RA6 compact feeder, e.g. short-circuit, end of service life, limit position etc., are not only indicated on the compact feeder itself, but also transmitted to the higher-level control system through IO-Link.

Thanks to the optionally available operator panel, which can be installed in the control cabinet door, it is easy to control the 3RA6 compact feeder with IO-Link from the control cabinet door.

Permanent wiring / easy replacement

Using the SIRIUS infeed system for 3RA6 (see Catalog LV 1), it is possible to carry out the wiring in advance without a compact feeder needing to be connected.

A compact feeder is very easily replaced simply by pulling it out of the device without disconnecting the wiring.

Even with screw connections or mounting on a standard mounting rail, there is no need to disconnect any wiring (on account of the removable main and control circuit terminals) in order to replace a compact feeder.

Consistent solution from the infeed to the motor feeder

The SIRIUS infeed system for 3RA6 with integrated PE bar is offered as a user-friendly possibility of feeding in summation currents up to 100 A with a maximum conductor cross-section of 70 mm² and connecting the motor cable directly without additional intermediate terminals.

Screw and spring-type connections

The SIRIUS compact feeders and the SIRIUS infeed system for 3RA6 are available with screw and spring-type connections.

Screw connection

 \mathfrak{P}

Spring-type connection

System configurator for engineering

A free system configurator is available to reduce further the amount of engineering work for selecting the required compact feeders and matching infeed.

Types of infeed for the 3RA6 fuseless compact feeders

On the whole, four different infeed possibilities are available:

- · Parallel wiring
- Use of three-phase busbars (combination with SIRIUS motor starter protectors and SIRIUS contactors possible)
- 8US busbar adapters
- SIRIUS infeed system for 3RA6

SIRIUS 3RA6 compact feeders General data

Overview (continued)

To comply with the clearance and creepage distances demanded according to UL508, there are the following infeed possibilities:

Type of infeed	Feeder terminal (according to UL 508, type E)	Order No.
Parallel wiring	Terminal for "Self-Protected Combi- nation Motor Controller (Type E)"	3RV19 28-1H
Three-phase busbars	Three-phase infeed terminal for constructing "Type E Starters", UL 508	3RV19 25-5EB
Infeed Systems for 3RA6	Infeed on left, 50/70 mm ² , screw terminal with 3 sockets, outgoing terminal with screw/spring-type connections, including PE bar	3RA68 13-8AB (screw terminals), 3RA68 13-8AC (spring-type terminals)

SIRIUS 3RA6 compact feeders

The SIRIUS 3RA6 compact feeders are universal motor feeders according to IEC/EN 60947-6-2. As control and protective switching devices (CPS), they can connect, convey and disconnect the thermal, dynamic and electrical loads from short-circuit currents up to $I_{\rm q} = 53$ kA, i.e. they are practically weld-free. They combine the functions of a circuit breaker, a contactor and a solid-state overload relay in a single enclosure and can be used wherever standard induction motors up to 32 A (up to approx. 15 kW at 400 V AC) are started directly. Direct-on-line and reversing starters are available as variants.

The reversing starter version comes with not only an internal electrical interlock, but also with a mechanical interlock to prevent simultaneous actuation of both directions of rotation.

3RA6 fuseless compact feeders are available with 5 current setting ranges and 3 control voltage ranges:

Overall width of direct-on-line starter	Width of reversing starter	Current setting range	At 400 V AC for induction motors up to
mm	mm	Α	kW
45	90	0.1 0.4	0.09
45	90	0.32 1.25	0.37
45	90	1 4	1.5
45	90	3 12	5.5
45	90	8 32	15

The 3 control voltage ranges are:

- 24 V AC/DC
- 42 ... 70 V AC/DC
- 110 ... 240 V AC/DC

The 3RA1 load feeders can be used for fuseless load feeders > 32 A up to 100 A.

The SENTRON 3VL circuit breakers and the SIRIUS 3RT contactors can be used for fuseless load feeders > 100 A.

Operating conditions

The SIRIUS 3RA6 compact feeders are suitable for use in any climate. They are intended for use in enclosed rooms in which no severe operating conditions (such as dust, caustic vapors, hazardous gases) prevail. Suitable covers must be provided for installation in dusty and damp locations.

The SIRIUS compact feeders are generally designed to degree of protection IP20. The permissible ambient temperature during operation is -20 ... +60° C.

The limited short-circuit current based on IEC/EN 60947-6-2 is 53 kA at 400 V.

Further technical specifications can be found in the system manual, stored at www.siemens.de/kompaktabzweig

Overload tripping times

The overload tripping time can be set on the device to less than 10 s (CLASS 10) and less than 20 s (CLASS 20 for heavy starting). As the breaker mechanism still remains closed after an overload, resetting is possible by either local manual reset or auto reset after 3 minutes cooling time.

With autoreset, there is no need to open the control cabinet.

Diagnostics options

The compact feeder provides the following diagnostics options:

- With LEDs:
 - Connection to the control voltage
 - Position of the main contacts
- With mechanical indication:
 - Tripping due to overload
 - Tripping due to short-circuit
 - Tripping due to malfunction (end of service life reached because of worn switching contacts or a worn switching mechanism or faults in the control electronics)

These states can also be evaluated in the higher-level control

- With parallel wiring using the integrated auxiliary and signaling switches of the compact feeder
- With AS-Interface or IO-Link in even greater detail using the respective communication interface

Four complement variants for 3RA6 compact feeders

- For standard mounting rail or screw fixing: basic version including 1 pair of main circuit terminals and 1 pair of control circuit terminals
- For standard mounting rail or screw fixing when using the AS-i add-on module: without control circuit terminals because the AS-i add-on
 - module is plugged on instead
- For use with the infeed system for 3RA6: without main circuit terminals because they are supplied with the infeed system and the expansion modules
- · For use with the infeed system for 3RA6 and AS-i add-on module: without terminal complement (also for reordering when replacing the compact feeder)
- The control circuit terminals are always required by the compact feeders for IO-Link; the main circuit terminals depend on the use of the infeed system.

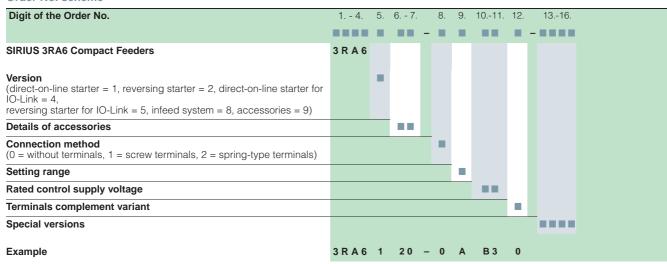
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Industrial Controls — Motor starters for operation in the control cabinet

SIRIUS 3RA6 compact feeders General data

Overview (continued)

Order No. scheme



Note:

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

For your orders, please use the order numbers quote in the catalog in the Selection and Ordering Data.

Benefits

The SIRIUS 3RA6 compact feeders offer a number of advantages, the most important being:

- Compact design saves space in the control cabinet
- Little planning and assembly work and far less wiring thanks to a single complete unit with one order number
- Little variance through 3 wide voltage ranges and 5 wide setting ranges for the rated current mean low stock levels
- High plant availability through integrated functionalities such as prevention of main contact welding and shut-down at end of service life
- Greater productivity through automatic device reset in case of overload and differentiated detection of overload and shortcircuit
- Easy checking of the wiring and testing of the motor direction prior to start-up thanks to optional "control kits"

- Speedy replacement of devices thanks to removable terminals with spring-type and screw connections in the main and control circuit
- Efficient power distribution through the related SIRIUS infeed system for 3RA6
- Direct connection of the motor feeder cable to the SIRIUS infeed system for 3RA6 thanks to integrated PE bar
- Connecting and looping through incoming feeders up to a cross-section of 70 mm²
- When using the infeed system for 3RA6, possibility of directly connecting the motor cable without intermediate terminals
- Integration in Totally Integrated Automation thanks to the optional connection to AS-Interface or IO-Link

The SIRIUS 3RA6 compact feeders create the basis for high-availability and future-proof machine concepts.

10

Industrial Controls — Motor starters for operation in the control cabinet SIRIUS 3RA6 compact feeders General data

More information			
Туре			3RA64 3RA65
Size			S0
Number of poles			3
General data			
Device standard			IEC/EN 60947-6-2
Max. rated current $I_{\text{n max}}$ = max. rated operational current I_{e})	0.1 0.4 A	A	0.4
or the respective setting range	0.321.25 A	A	1.25
	1 4 A	A	4
	4 12 A 8 32 A	A A	12 32
Permissible ambient temperature	8 32 A	А	32
•	A +- IFO/FN 00704 0 0	00	00 00 with a state to 70
 During operation For installation in SIRIUS infeed evetom for 3RA 	Acc. to IEC/EN 60721-3-3	°C	-20 +60, with restriction up to +70
 For installation in SIRIUS infeed system for 3RA6 During storage 	IEC/EN 60732-3-1	°C	-20 +40 -55 +80
During storageDuring transport	IEC/EN 60732-3-1	°C	-55 +80
Permissible rated current of the compact	120/214 007 21-3-2		-55 +60
eeder,			
when several compact feeders are mounted side-by-side			
on a vertical standard mounting rail or			
n the infeed system for 3RA6			
For a control cabinet inside temperature of	+40	%	100
For a control cabinet inside temperature of	+60	%	80
Relative air humidity		%	10 90
nstallation altitude		m	Up to 2000 above sea level without restriction
Rated frequency		Hz	50/60
Rated insulation voltage <i>U</i> _i pollution degree 3)		V	690
Rated impulse withstand voltage <i>U</i> _{imp}		kV	6
Trip class (CLASS)	according to IEC 60947-4-1,		10/20
	EN 60947-4-1 (VDE 0660 Part 102)		
Rated short-circuit current I _C	,	kA	53 kA
at AC 50/60 Hz 400 V	according to IEC 60947-4-1, EN 60947-4-1 (VDE 0660 Part 102)	10.1	00101
Types of coordination	according to IEC 60947-6-2, EN 60947-6-2 (VDE 0660 Part 102)		Continuously
Power loss P _{v max} of all main current paths	Up to 0.4 A	mW	2
Dependent on the rated current I _n (upper setting range)	0.32 1.25 A	mW	19.1
apper setting range)	1 4 A	W	0.2
	3 12 A	W	0.7
	8 32 A	W	2.3
Electrical endurance in operating cycles	at $I_{\rm e} = 0.9 I_{\rm n}$		1,520,000
Max. switching frequency	AC-41	1/h	750
	AC-43	1/h	
	AC-44	1/h	15
Orive losses	-+ 04 \/		
Active power	at 24 V	١٨/	0.7
	• Up to 12 A • 8 32 A	W	2.7 2.95
	at 42 70 V	VV	2.93
	• Up to 12 A	W	2.5
	• 8 32 A	W	3.0
	at 110 240 V	* *	5.5
	• Up to 12 A	W	3.4
	• 8 32 A	W	3.8
Overload function Ratio of lower to upper current mark			1:4
Shock resistance (sine-wave pulse)			$a = 60 \text{ m/s}^2 = 6g \text{ with } 10 \text{ ms};$
Planata will and			for every 3 shocks in all axes
Vibratory load			$f = 4 \dots 5.8 \text{ Hz}$; $d = 15 \text{ mm}$; $f = 5.8 \dots 500 \text{ Hz}$; $a = 20 \text{ m/s}^2$;10 cycles
Degree of protection	Acc. to IEC 60947-1		IP20
Touch protection	Acc. to DIN VDE 0106, Part 100		Finger-safe
solating features of the compact feeder	Acc. to IEC/EN 60947-3		Yes
Main and EMERGENCY-STOP	Acc. to IEC/EN 60204		Yes
switch characteristics of the compact feeder and accessories			

Industrial Controls — Motor starters for operation in the control cabinet

SIRIUS 3RA6 compact feeders General data

More inforu	nation (cor	ntinued)
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Type Size			3RA64 3RA65 S0
Number of poles			3
General data			·
Protective separation	Acc. to IEC 60947-2		
Control circuit to auxiliary circuit	Acc. to 120 00347-2		
Horizontal standard mounting rail		V	Up to 400
Other mounting position		V	Up to 250
Auxiliary circuit to auxiliary circuit		V	Op 10 200
Horizontal standard mounting rail		V	Up to 400
Other mounting position		V	Up to 250
Main circuit to auxiliary circuit		V	Op 10 200
• Any mounting position		V	Up to 400
EMC interference immunity	Acc. to IEC 60947-1	•	Corresponds to degree of severity 3
Conductor-related interference	BURST acc. to IEC 61000-4-4	kV	4
Conductor-related interference	SURGE acc. to IEC 61000-4-5	1 (V	7
Conductor – Ground	3011GE acc. to 120 01000-4-3	kV	4
• Conductor – Conductor		kV	1
Electrostatic discharge	Acc. to IEC 61000-4-2	kV	8
ESD	7.00. 10 120 0 1000 4-2	kV	6
Field-related interference	Acc. to IEC 61000-4-3	V/m	10
Auxiliary switches		• / 1111	
• Integrated			
- Position of the main contacts			1 NO + 1 NC 2 NO
- Overload/short-circuit signal			1 CO/1 NO
• Expandable			
- Position of the main contacts			2 NO, 2 NC, 1 NO, 1 NC
Surge suppressor			Integrated (Varistor)
Pollution degree			3
Depth from standard mounting rail		mm	160
Electromagnetic operating mechanism			.00
Control voltage		V	24 AC/DC
Control voltage		V	42 70 AC/DC
		V	
	at A.C.		110 240 AC/DC
Frequency	at AC	Hz	50/60 (±5%)
Primary operating range		4 /1-	0.7 1.25 <i>U</i> _S
No-load switching frequency Make-time		1/h	3600
Nake-time Break-time		ms	max. 70 max. 120
Max. pick-up current at 24 V DC	at 12 A	ms mA	250
viax. pick-up current at 24 v DC	at 32 A	mA	350
Max. hold current at 24 V DC			
wax. hold current at 24 v DC	at 12 A	mA	100
May pick up power at 24 V DC	at 32 A	mA W	150 6.0
Max. pick-up power at 24 V DC	at 12 A		
May hold naver at 24 V DC	at 32 A	W	8.4
Max. hold power at 24 V DC	at 12 A	W	2.4
Hold current and hold power valid for 24 V o	at 32 A	٧٧	3.6
Told current and hold power valid for 24 v c	24 V, AC operation		
	•		
Hold ourront	• Up to 12 A	m ^	122
Hold current Active power		mA W	132
active power		W	2.7
•		VA	3.15
Apparent power	- 0 00 4	• , ,	
Apparent power	• 8 32 A		444
Apparent power Hold current	• 8 32 A	mA	144
Apparent power Hold current Active power	• 8 32 A	mA W	3.0
Apparent power Hold current Active power		mA	
Apparent power Hold current Active power	24 V, DC operation ¹⁾	mA W	3.0
Apparent power Hold current Active power Apparent power		mA W VA	3.0 3.45
Apparent power Hold current Active power Apparent power Hold current	24 V, DC operation ¹⁾	mA W VA	3.0 3.45
Apparent power Hold current Active power Apparent power Hold current	24 V, DC operation ¹⁾	mA W VA	3.0 3.45
Apparent power Hold current Active power Apparent power Hold current Active power	24 V, DC operation ¹⁾	mA W VA	3.0 3.45
Apparent power Hold current Apparent power Apparent power Hold current Active power	24 V, DC operation ¹⁾	mA W VA mA W	3.0 3.45 100 2.45
Apparent power Hold current Apparent power Hold current Active power Apparent power Apparent power Apparent power	24 V, DC operation ¹⁾ • Up to 12 A	mA W VA mA W	3.0 3.45 100 2.45
Apparent power Hold current Active power	24 V, DC operation ¹⁾ • Up to 12 A	mA W VA mA W VA	3.0 3.45 100 2.45 2.75

¹⁾ Differences between active power and apparent power result from the clocked coil excitation (displacement reactive work).

SIRIUS 3RA6 compact feeders General data

More information (continued)				
Туре	3RA64	3RA65		
Size	S0			

туре			3KA04	SKA05
Size			S0	
Number of poles			3	
Electromagnetic operating mechanism				
Hold current and hold power valid for o				
	42 V, AC operation			
	• Up to 12 A			
Hold current		mA	75	
Active power		W	2.35	
Apparent power		VA	3.2	
	• 8 32 A			
Hold current		mA	84	
Active power		W	2.7	
Apparent power		VA	3.6	
	42 V, DC operation ¹⁾			
	• Up to 12 A			
Hold current		mA	55	
Active power		W	2.3	
Apparent power		VA	2.7	
	• 8 32 A			
Hold current		mA	63	
Active power		W	2.7	
Apparent power		VA	3.35	
	70 V, AC operation			
	 Up to 12 A 			
Hold current		mA	54	
Active power		W	2.5	
Apparent power		VA	3.8	
	• 8 32 A			
Hold current		mA	58.5	
Active power		W	2.7	
Apparent power		VA	4	
	70 V, DC operation ¹⁾			
	• Up to 12 A			
Hold current		mA	33	
Active power		W	2.35	
Apparent power		VA	2.9	
	• 8 32 A			
Hold current		mA	37	
A '		W	2.6	
Active power				

¹⁾ Differences between active power and apparent power result from the clocked coil excitation (displacement reactive work).

SIRIUS 3RA6 compact feeders General data

More information (continued)

Туре			3RA64	3RA65
Size			S0	
Number of poles			3	
Hold current and hold power v	alid for operating range 110V 240 V			
	110 V, AC operation			
	• Up to 12 A			
Hold current		mA	38	
Active power		W	2.8	
Apparent power		VA	4.2	
	• 8 32 A			
Hold current		mA	42.5	
Active power		W	3.2	
Apparent power		VA	4.7	
	110 V, DC operation ¹⁾			
	• Up to 12 A			
Hold current		mA	22.5	
Active power		W	2.5	
Apparent power		VA	3.75	
	• 8 32 A			
Hold current		mA	25.5	
Active power		W	2.9	
Apparent power		VA	4.65	
	240 V, AC operation			
	• Up to 12 A			
Hold current		mA	36	
Active power		W	3.6	
Apparent power		VA	8.8	
	• 8 32 A			
Hold current		mA	39	
Active power		W	3.9	
Apparent power		VA	9.3	
	240 V, DC operation ¹⁾			
	• Up to 12 A			
Hold current		mA	12.5	
Active power		W	3.0	
Apparent power		VA	6.35	
	• 8 32 A			
Hold current		mA	14	
Active power		W	3.35	
Apparent power		VA	6.55	

¹⁾ Differences between active power and apparent power result from the clocked coil excitation (displacement reactive work).

Industrial Controls — Motor starters for operation in the control cabinet

SIRIUS 3RA6 compact feeders General data

Туре			3RA64	3RA65
Size			S0	
Number of poles			3	
Electromagnetic operating mechanism				
Switching capacity at 400 V		kA	53	
Switching capacity at 690 V		kA	3	
Line protection	at 10 kA	m	2.5	
	-+ FO I.A	m ²	4	
	at 50 kA	mm ²	4	
Shock resistance • Breaker mechanism OFF		~	25	
Breaker mechanism ON		g	15	
		g	15	
Normal switching duty			10 7	
Making capacity			12 x I _n	
Breaking capacity Switching capacity dependent on	Up to 12 A	kW	10 x I _n	
rated current	Up to 32 A	kW	15	
Endurance in operating cycles	OP 10 02 A	IV V V	10	
Mechanical endurance			3,000,000	2 x 3,000,000
Electrical endurance	at $I_{e} = 0.9 \times I_{n}$		1,520,000	2 x 1,520,000
Control circuit	о · · п		, , , , , , , , , , , , , , , , , , , ,	, , 2
Rated operational voltage				
External auxiliary switch block		V	400/690	
Internal auxiliary switch		V	400/690	
Short-circuit signaling switch		V	400	
Overload signaling switch		V	400	
Switching capacity				
External auxiliary switch block	AC-15			
	• at <i>U</i> _e = 230 V	А	6	
	• at <i>U</i> _e = 400 V	Α	3	
	• at <i>U</i> _e = 289/500 V	Α	2	
	• at <i>U</i> _e = 400/690 V	Α	1	
	DC-13			
	 at U_e = 24 V 	Α	6	
	 at U_e = 60 ∨ 	Α	0.9	
	• at <i>U</i> _e = 125 V	Α	0.55	
	• at <i>U</i> _e = 250 V	Α	0.27	
Internal auxiliary switch	AC-15			
	• at <i>U</i> _e = 230 V	A	6	
	• at $U_e = 400 \text{ V}$	A	3	
	• at $U_e = 289/500 \text{ V}$	A	2	
	• at $U_e = 400/690 \text{ V}$	А	1	
	DC-13	٨	10	
	• at $U_e = 24 \text{ V}$	A	10	
	• at $U_e = 60 \text{ V}$	A A	1	
	 at U_e = 125 V at U_e = 250 V 	A	0.27	
	• at $U_e = 250 \text{ V}$ • at $U_e = 480 \text{ V}$	A	0.27	
Signaling switch	AC-15	\wedge	0.1	
Signating officer	• at $U_{\rm e}$ = 230 V	А	3	
	• at $U_e = 400 \text{ V}$	A	1	
	DC-13	, ,		
	• at $U_e = 24 \text{ V}$	А	2	
	• at $U_e = 250 \text{ V}$	Α	0.11	

SIRIUS 3RA6 compact feeders General data

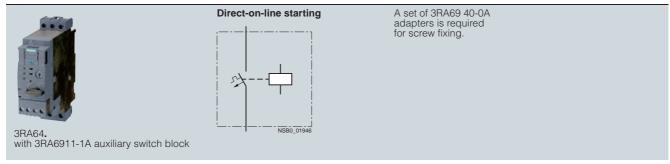
More information (continued)

More Information (continued)				
Туре			3RA64	3RA65
Size			S0	
Number of poles			3	
External auxiliary switch block, internal auxil	liary switch			
Endurance in operating cycles	,			
Mechanical endurance			3,000,000	
Electrical endurance	AC-15, 230 V		3,000,000	
- Electrical criddrance	• at 6 A		200,000	
	• at 3 A		500,000	
	• at 1A		2,000,000	
	• at 0.3 A		10,000,000	
	DC-13, 24 V		10,000,000	
	• at 6 A		30,000	
	• at 3 A			
			100,000 2,000,000	
	• at 0.5A			
	• at 0.2 A		10,000,000	
	DC-13, 110 V		40,000	
	• at 1 A		40,000	
	• at 0.55 A		100,000	
	• at 0.3 A		300,000	
	• at 0.1 A		2,000,000	
	• at 0.04 A		10,000,000	
	DC-13, 220 V		110,000	
	• at 0.3 A		110,000	
	• at 0.1 A		650,000	
	• at 0.05 A		2,000,000	
-	• at 0.018 A		10,000,000	
Contact stability	at 17 V and 5 mA	Oper- ating cycles	1 incorrect switching op	peration per 100,000,000
Short-circuit protection				
• Short-circuit current $I_{\text{K}} \le 1.1 \text{ kA}$	Fuse links gL/gG NEOZED 5SE, DIAZED 5SB, LV HRC 3NA	Α	10	
• Short-circuit current $I_{\rm K} < 400~{\rm A}$	Miniature circuit breaker up to 230 V with C characteristic	Α	10	
Signaling switch				
Endurance in operating cycles				
Mechanical endurance			20,000	
Electrical endurance AC-15	at 230 V and 3 A		6050	
Contact stability	at 17 V and 5 mA	Oper- ating	1 incorrect switching op	peration per 100,000,000
Short-circuit protection		cycles		
• Short-circuit protection • Short-circuit current $I_K \le 1.1 \text{ kA}$	Fuse links at IaG	Δ	6	
• Short-circuit current I _K ≤ 1.1 kA	Fuse links gL/gG NEOZED 5SE, DIAZED 5SB, LV HRC 3NA	А	O	
• Short-circuit current $I_{\text{K}} < 400 \text{ A}$	Miniature circuit breaker up to 230 V with C characteristic	Α	6	
Overload (short-circuit current $I_{K} \le 1.1 \text{ kA}$)	Fuse links gL/gG NEOZED 5SE, DIAZED 5SB, LV HRC 3NA	А	4	

10

3RA64, 3RA65 compact feeders for IO-Link 3RA64 direct-on-line starters

Selection and ordering data



Standard induction motor 4-pole at 400 V AC¹⁾

Setting range for solid-state overload release

Standard output P

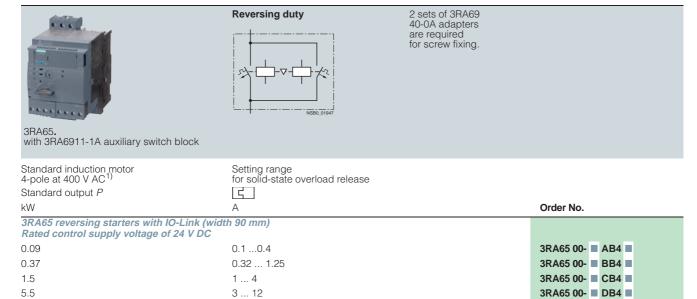
Order No

kW	A	Order No.
3RA64 direct-on-line starter Rated control supply voltag	s with IO-Link (width 45 mm) e of 24 V DC	
0.09	0.10.4	3RA64 00- ■ AB4 ■
0.37	0.32 1.25	3RA64 00- ■ BB4 ■
1.5	1 4	3RA64 00- ■ CB4 ■
5.5	3 12	3RA64 00- ■ DB4 ■
15	8 32	3RA64 00- ■ EB4 ■
Order No. supplement for co	onnection type	
 With screw terminals 		1
With spring-type terminals		2
Order No. supplement for co	omplement variant	
 For standard mounting rail of Basic version including 1 pages 	or screw mounting: air of main circuit terminals and 1 pair of control circuit term	ninals 2
 For use with the infeed syste without main circuit terminal 	em for 3RA6 s (with control circuit terminals)	3

¹⁾ Selection depends on the concrete startup and rated data of the protected motor.

3RA64, 3RA65 compact feeders for IO-Link 3RA65 reversing starters

Selection and ordering data



3RA65 00- ■ EB4 ■

2

3

Order No. supplement for connection type		
With screw terminals	1	
With spring-type terminals	2	
Order No. supplement for complement variant		

15

• For standard mounting rail or screw mounting: Basic version including 1 pair of main circuit terminals and 1 pair of control circuit terminals

8 ... 32

• For use with the infeed system for 3RA6 without main circuit terminals (with control circuit terminals)

Selection depends on the concrete startup and rated data of the protected motor.

SIRIUS 3RA6 compact feeders Accessories

Overview

Accessories for SIRIUS 3RA6 compact feeders

The following accessories are available specially for the 3RA6 compact feeders:

- AS-i add-on module: see AS-Interface add-on modules for 3RA6 in Chapter 6
 --> AS-Interface Slaves
- External auxiliary switch blocks:
 Snap-on auxiliary switch as versions 2 NO, 2 NC and 1 NO
 +1 NC with screw or spring-type connections; the contacts of
 the auxiliary switch block open and close jointly with the main
 contacts of the compact feeder. The NC contacts are designed as mirror contacts.
- Control kit: aid for manually closing the main contacts in order to check the wiring and motor direction under conditions of short-circuit protection
- Adapter for screw fixing the compact feeder, including pushin lugs
- Main circuit terminals: Available with screw and spring-loaded terminals

Accessories for UL applications

The terminal block for "Self-Protected Combination Motor Controller", type E is available for complying with the clearance and creepage distances demanded according to UL 508.

Accessories for infeed using three-phase busbar systems

The three-phase busbars can be used as an easy, time-saving and clearly arranged means of feeding SIRIUS 3RA6 compact feeders with screw connection. Motor starter protectors size S00 and S0 can also be integrated.

The busbars are suitable for between 2 and 5 devices. However, any kind of extension up to a maximum summation current of 63 A is possible by clamping the tags of an additional busbar (rotated by 180°) underneath the terminals of the respective last motor circuit protector.

A connecting piece is required for the combination with motor starter protector size S00. The motor starter protectors are supplied by appropriate feeder terminals. Special feeder terminals are required for constructing "Type E Starters" according to UL/CSA.

The three-phase busbar systems are finger-safe, but empty connection tags must be fitted with covers. They are designed for any short-circuit stress which can occur at the output side of connected SIRIUS 3RA6 compact feeders or motor starter protectors.

Busbar adapters for 60 mm systems

The compact feeders are mounted directly with the aid of busbar adapters on busbar systems with 60 mm center-to-center clearance in order to save space and to reduce infeed times and costs. These feeders are suitable for copper busbars with a width from 12 to 30 mm. The busbars thickness can be 4 to 5 mm or 10 mm thick.

The 8US busbar system can be loaded with a maximum summation current of $630\ A.$

The "reversing starter" version requires a device holder along side the busbar adapter for lateral mounting.

The compact feeders are snapped onto the adapter and connected on the line side. This prepared unit is then plugged directly onto the busbar system, and is thus connected both mechanically and electrically at the same time.

For more accessories such as incoming and outgoing terminals, flat copper profiles etc., see Catalog LV 1, Chapter 17, "8US Busbar Systems --> 60 mm Busbar System".

Accessories for operation with closed control cabinet doors

Door-coupling rotary operating mechanisms for standard and emergency-stop applications are available for operating the compact feeder with closed control cabinet doors.

Accessories for SIRIUS 3RA6 compact feeders in IO-Link version

The following accessories are available specially for the 3RA64, 3RA65 compact feeders:

- The 4SI SIRIUS solid-state module as IO-Link master allows for the simple and economical connection of SIRIUS controls with IO-Link (e.g. up to four groups of 4 compact feeders) to the multifunctional SIMATIC ET 200S distributed I/O system.
- Additional connection cables for side-by-side mounting of up to 4 compact feeders
- Operator panel for local control and diagnostics of up to 4 compact feeders coupled to each other

SIRIUS 3RA6 compact feeders Accessories

Selection and orderi	ng data			
	Туре		Order No.	
Accessories specially	for 3RA6 compact feeders			
O	Control kits For mechanical actuation of the compact feeder		3RA69 50-0A	
3RA69 50-0A				
3RA69 40-0A	Adapters for screw fixing the compact feeder (set including push-in lugs Direct-on-line starters require 1 set, reversing starters 2 sets.		3RA69 40-0A	
<u> </u>			Screw connection	+
	Auxiliary switch blocks for compact feeders			₩
Division I	• 2 NO		3RA69 11-1A	
0000	• 2 NC		3RA69 12-1A	
3RA6911-1A	• 1 NO +1 NC		3RA69 13-1A	
	Main circuit terminals (incoming and outgoing side) Control circuit terminals		3RA69 20-1A	
A STATE OF THE STA	• For 3BA61		3RA69 20-1B	
THE	• For 3RA62		3RA69 20-1C	
000	• For 3RA64		3RA69 20-1D	
3RA6920-1A	• For 3RA65		3RA69 20-1E	
-	- 1 01 011/100		Spring-type connection	
	Auxiliary switch blocks for compact feeders		opining type definication	
Service Servic		2 NO	3RA69 11-2A	
60 60 60 EX		2 NC	3RA69 12-2A	
3RA6911-2A		1 NO + 1 NC	3RA69 13-2A	
330	Main circuit terminals (incoming and outgoing side)		3RA69 20-2A	
V wal	Control circuit terminals			
an	• For 3RA61		3RA69 20-2B	
	• For 3RA62		3RA69 20-2C	
en en en	• For 3RA64		3RA69 20-2D	
3RA6920-2A	• For 3RA65		3RA69 20-2E	
3RA6920-3A	Main circuit terminals mixed connection method 1 set contains 1 joint block on the incoming side with screw connect 1 joint block on the outgoing side with spring-type co	otion and onnection	3RA69 20-3A	

10

SIRIUS 3RA6 compact feeders Accessories

Selection and ordering data (continued)

Order No. Accessories especially for 3RA64, 3RA65 Compact Feeders with IO-Link



3RA69 31-0A

Additional connection cable (flat) for side-by-side mounting of up to 4 compact feeders (5 units each per pack)

10-pole, 8 mm²

• 14-pole, 200 mm





3RA69 35-0A

(incl. enabling module and blanking cover)

Enabling module	3RA69 36-0A
Blanking covers (5 units each per pack)	3RA69 36-0B
Connection cable (round) for connecting the operator panel 10-pole, 2000 mm	3RA69 33-0A
4SI SIRIUS solid-state module	3RK1 005-0LB00-0AA0



3RK1 005-0LB00-0AA0

4SI SIRIUS solid-state module

IO-Link master for connection of up to 4 SIRIUS controls (max. 16 in groups of 4) with IO-Link (3-conductor connection) to SIMATIC ET 200S, width 15 mm, supports firmware update (STEP 7 V5.4 SP5 and higher)

Can be used with the following terminal modules:

- TM-E15S26-A1 (screw terminal) TM-E15C26-A1 (spring-type terminal) TM-E15N26-A1 (fast connect)

Terminals for "Self-Protected Combination Motor Controllers (Type E)" acc. to UL 508 for infeed through parallel wiring with compact feeders



UL 508 demands 1-inch clearance and 2-inch creepage distance at line side for "Combination Motor Controller Type E".

Terminal blocks are not required for use according to CSA.

With size S0, these joint blocks cannot be used in combination with 3RV19.5

Terminal block type E

For extended clearance and creepage distances (1 and 2 inch)

For feeding several compact feeders and/or motor starter protectors

with screw terminals, mounted side by side on standard mounting rails, insulated,

45

- 1) Is included in the scope of supply of the SIRIUS 3RA6 compact feeder in IO-Link version.
- 2) 10-pole connection cables are required for EMERGENCY-STOP group concepts.

with touch protection.

Number of compact feeders and motor starter protectors that can be connected without lateral accessories	Modular spacing	Rated current In at 690 V	For motor starter protec- tors size	Order No.
	mm	Α		

Three-phase busbars for infeed with 3RA6

2











3RV19 15-1DB

63

S0¹⁾

3RV19 28-1H

3RV19 15-1AB

S0¹⁾ 3 3RV19 15-1BB 45 63 S01) 63 3RV19 15-1CB 4 45 5 45 S01) 3RV19 15-1DB

¹⁾ Not suitable for 3RV11 motor starter protectors with overload relay function. Common clamping of S00 and S0 motor starter protectors is not possible, due to the different modular spacings

and terminal heights.

The 3RV19 15-5DB connecting piece is available for connecting the compact feeders to circuit breakers size S00.

Industrial Controls — Motor starters for operation in the control cabinet

SIRIUS 3RA6 compact feeders Accessories

Selection and ordering	data	(continued)
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	Version	Modular spacing	For motor starter protectors size	Order No.
		mm	protectors size	
Connecting pieces t	or three-phase busbars			
3RV19 15-5DB	For connecting compact feeders (left) and motor starter protectors size S00 (right)	45	S00	3RV19 15-5DB

Covers for connection tags of the three-phase busbars



Touch protection for empty positions

3RV19 15-6AB S00, S0

Conductor cross-se	ction		For compact	Order No.
Solid or stranded	Finely stranded with end sleeve	AWG cables, solid or stranded	feeders and motor starter protectors size	
mm²	mm ²	AWG		

Three-phase feeder terminals for three-phase busbars



Connection from top 2.5 ... 25 4 ... 16 12-4

3RV19 25-5AB



Connection from below¹⁾

2.5 ... 25 4 ... 16 12-4 S00, S0 3RV19 15-5B

Three-phase feeder terminals for constructing "Type E Starters" according to UL 508 for three-phase busbars

Connection from top

2.5 ... 25

4 ... 16

10-4

SO

S0

3RV19 25-5EB

¹⁾ This terminal is connected in place of a switch, please take the space requirement into account.

version Cities No.	Version	Order No.
--------------------	---------	-----------

Busbar adapters for 60 mm systems



For flat copper profiles according to DIN 46433 Width: 12 ... 30 mm Thickness: 4 ... 5 mm or 10 mm

8US12 11-1NS10



Device holders for lateral mounting along side the busbar adapter for 60 mm systems



Required in addition to the busbar adapter for mounting a reversing starter

8US12 50-1AA10

8US12 50-1AA10

Industrial Controls – Motor starters for operation in the control cabinet

SIRIUS 3RA6 compact feeders Accessories

Selection and ordering data (continued)

Version	Color of handle	Version of extension shaft	Order No.
		mm	

Door-coupling rotary operating mechanisms for operating the compact feeder with closed control cabinet doors



3RV29 26-0B

The door-coupling rotary operating mechanisms consist of a knob, a coupling driver and a 130/330 mm long extension shaft (6 mm x 6 mm). The door-coupling rotary operating mechanisms are designed to degree of protection IP65. The door interlocking prevents accidental opening of the control cabinet door in the ON position of the motor starter protector. The OFF position can be locked with up to 3 padlocks.

Door-coupling rotary operating mechanisms	Black	130	3RV29 26-0B
EMERGENCY-STOP door-coupling rotary operating mechanisms	Red/Yellow	130	3RV29 26-0C

Version	Order No.

Tools for opening spring-type terminals



Screwdrivers

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

Spring-type connection

3RA29 08-1A

Blank labels



3RT19 00-1SB20

Unit labeling plates 1)

for SIRIUS devices 20 mm x 7 mm, pastel turquoise 3RT19 00-1SB20

Documentation ²⁾

System manual

- German: SIRIUS Kompaktabzweig und Zubehör
- English: SIRIUS compact starter and accessories

3RA69 91-0A

3RA69 92-0A

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH www.murrplastik.com

These manuals and other language versions are currently available from the download center of the Service & Support portal at support.automation.siemens.com/WW/view/en/27136554/133300

Sensors

SIMATIC PXS310C M18

Overview



SIMATIC PXS310C ultrasonic proximity switch

The SIMATIC PXS310C ultrasonic proximity switch can detect many different objects and signal their distance with millimeter precision. Material and color play no role.

Due to the bidirectional IO-Link interface, the distance data is provided direct as numerical value without complex analog conversion. The sensor can then be easily parameterized from the controller. The IO-Link interface also transfers diagnostic nformation from the sensor to the controller.

The proximity switch is connected to the IO-Link master via a standard M12 connecting cable. If the proximity switch is connected to a standard I/O module, it operates as proximity switch with switching output.

Characteristics

- M18 compact design
- · Small blind zone
- Large sensing range up to 100 cm
- Simple connection method: M12 connector, 4-pole, type F
- Supports COM and SIO mode according to the IO-Link specification
- Transfer of measured value and switching state
- Faster transfer of measured values to the controller
- Dynamic change of the parameters

Design

The devices of the M18 IO-Link compact range are always supplied with permanently installed sensors.

Technical specifications

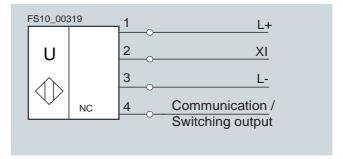
Туре		6GR6333-3KS00
Sensing range	cm	10 100
Standard target	cm	2 x 2
Operational voltage (DC)	V	20 30 (including 10% residual ripple)
Rated operating current $I_{\rm e}$	mA	200
No-load supply current I ₀	mA	Max. 50
Ultrasonic frequency	kHz	200
Switching frequency f	Hz	5
ON-delay	ms	100
Time delay before availability $t_{\rm V}$	ms	120
Path resolution	mm	1
Switching status display		Yellow/green LED
Enclosure material		Nickel-plated brass; CRASTIN converter cover; epoxy resin converter surface
Degree of protection		IP67
Ambient temperature		
 During operation 	°C	-25 +70
During storage	°C	-40 +85

IO-Link Sensors

SIMATIC PXS310C M18

Ordering data	Order No.
PXS310C ultrasonic proximity switch	6GR6 333-3KS00
Sensing range 10 to 100 cm Rated operating current 200 mA	
Accessories	
M12 cable outlet	
For screw fixing, degree of protection IP67, 3-pole, Type E, unshielded, PUR (suitable for railing)	
● 5 m	3RX8 000-0CB32-1AF0
• 10 m	3RX8 000-0CB32-1AL0
M12 cable outlet (PUR)	
For screw fixing, degree of protection IP67, 4-pole, Type F, unshielded, PUR (suitable for trailing), NO + NC	
• 5 m	3RX8 000-0CB42-1AF0
• 10 m	3RX8 000-0CB42-1AL0
Angled M12 cable outlet (PUR)	
For screw fixing, degree of protection IP67, 3-pole, Type E, unshielded, PUR (suitable for trailing)	
• 5 m	3RX8 000-0CC32-1AF0
• 10 m	3RX8 000-0CC32-1AL0
Angled M12 cable outlet (PVC)	
For screw fixing, degree of protection IP67, 3-pole, Type E, unshielded, PVC	
• 5 m	3RX8 000-0CC32-1BF0
• 10 m	3RX8 000-0CC32-1BL0
Angled M12 cable outlet (PUR)	
For screw fixing, degree of protection IP67, 4-pole, Type F, unshielded, PUR (suitable for trailing), NO + NC	
• 5 m	3RX8 000-0CC42-1AF0
• 10 m	3RX8 000-0CC42-1AL0

Schematics



Rear view of the device

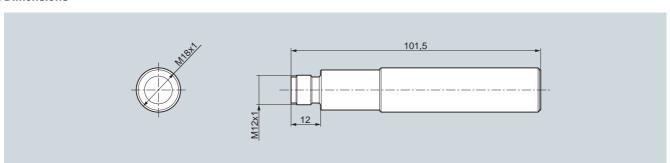


More information

The IODD (IO-Link Device Description) can be found via our Global Support database:

http://support.automation.siemens.com/WW/view/en/33273359

Dimensions



Sensors

SIMATIC PXO560C C50

Overview



PXO560C C50 color sensor

The PX0560C C50 color sensor can distinguish between many different objects based on their color and up to 5 colors can be taught.

The number of the recognized object is transferred to the user via the bi-directional IO-Link interface. Furthermore, the information is made available via color values. The sensor can be easily parameterized from the controller. The IO-Link interface transfers additional diagnostic information from the sensor to the controller

The color sensor is connected to the IO-Link master by means of a 5-pole standard M12 connecting cable. If the color sensor is connected to a standard IO module, it operates as color sensor with one switching output.

Features

- Compact design (50 x 50 x 17 mm)
- Small, compact sensor with IO-Link
- Large sensing range: 12 mm to 32 mm
- Up to 5 reference colors can be trained
- Color scan function for teach-in of up to 5 color gradients
- Not susceptible to light from external sources
- Simple connection system: M12 connector, 5-pole, type G

Technical specifications

Туре		6GR1566-3PP38
Number of colors that can be trained	cm	5
Sensing range	mm	12 32
Sensing range tolerance	mm	+/- 6
Size of light spot	mm	4 with 22 sensing range
Ambient light limit		EN 60947-5-2
Operating voltage	V DC	18 30
Max. residual ripple		10 %
Reverse polarity protection, short-circuit protection		Yes
Current consumption in idle mode	mA	40
Switching output		Q / IO-Link, differential mode
Data format		IO-Link Type 2.1 Frame
Supported IO-Link modes		SIO and COM
Max. output current	mA	100
Max. voltage drop	V	2,4
Switching frequency	Hz	500 in SIO mode
Enclosure material		ABS
Degree of protection		IP67
Ambient temperature		
• In operation	°C	-10 +55
 During storage 	°C	-20 +80
Type of connection		M12 connector, 5-pole, type G
Max. permissible cable length	n m	100
Weight	G	40

Ordering data	Order No.
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SIMATIC PXO560C C50	6GR1566-3PP38
color sensor	

Accessories

Mounting bracket for C50 design	3RX7302
Cable box 5 x 0.34 mm ² , 5 m	3RX8000-0CB52-1AF0
Reflective foil for detecting transparent objects	3RX7307-0AB00

More information

The IODD (IO-Link Device Description) is available via our global support database:

http://support.automation.siemens.com/WW/view/en/33273359

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