

Power Contactors for Switching Motors

Accessories and Spare Parts for SIRIUS 3RT2 Contactors and SIRIUS 3RH2 Contactor Relays

General data

Overview

Extensive accessories and spare parts are available for SIRIUS 3RT2 power contactors and SIRIUS 3RH2 contactor relays.

These components are easily fitted to the contactors without the use of any tools according to requirements.

Overview graphics with mountable accessories

- For 3RT2 contactors, [see pages 3/6 to 3/8](#)
- For 3RH2 contactor relays, [see page 5/4](#)

Version	Type	Technical specifications, page	Selection and ordering data, page
Accessories for 3RT2 contactors and 3RH2 contactor relays			
Auxiliary switch blocks			
Instantaneous	3RH29.1	--	3/64 ... 3/74
Delayed			
• Solid-state time-delay auxiliary switch blocks for mounting on 3RT2 contactors and 3RH2 contactor relays	3RA2813, 3RA2814, 3RA2815	3/60	3/75
• Pneumatic time-delay auxiliary switch blocks for mounting on 3RT2 contactors	3RT2926-2P..1	--	3/76
Surge suppressors			
• Without LED	3RT29.6-1B/-1C/-1D/-1E	--	3/77
• With LED	3RT29.6-1J/-1L/-1M	--	3/78
Modules for contactor control			
Coupling links for control by PLC	3RH29.4..GP11	3/61	3/79
3RA28 function modules for mounting on 3RT2 contactors and 3RH2 contactor relays			
• For direct on-line starting: ON delay, OFF-delay	3RA281..-..W10, 3RA283..-..D.10	3/62	3/80
• For star-delta (wye-delta) starting	3RA2816-0EW20	3/62	3/80
3RA27 function modules for IO-Link or AS-Interface for mounting on 3RT2 contactors			
• For direct-on-line, reversing or star-delta (wye-delta) starting	3RA271..-..A/.B/.C	3/63	3/82
Mechanical latching blocks (no switching state change in the event of power failure)	3RT2926-3A..31	--	3/84
OFF-delay devices for contactors with DC operation	3RT2916-2B.01	--	3/84
Link modules			
Link modules from motor starter protector to contactor	3RA..9.1	--	7/41
Safety main current connectors for two contactors	3RA29.6-1A	--	3/85
Assembly kits			
• For reversing contactor assemblies	3RA29.3-2AA..	--	3/85
• For contactor assemblies for star-delta (wye-delta) starting	3RA29..-2BB.., 3RA29.3-2C	--	3/86
Single wiring modules	3RA..9.3-3..	--	3/87
Star jumpers (links for paralleling), 3-pole	3RT..9.6-4BA3..	--	3/87
Mechanical interlock kits for two contactors			
• Interlock kits for lateral interlocking for sizes S00 and S0	3RA29.2-2..	--	3/87
• Mechanical interlock for size S2	3RA2934-2B	--	3/87
Terminal modules/adapters			
Links for paralleling for main circuits	3RT..9.6-4BB..1	--	3/88
Three-phase infeed terminals	3RA2913-3K, 3RV29.5-5A..	--	3/88
• For constructing "type E starters"	3RV2935-5E	--	3/88
Three-phase busbars	3RV1915-1AB	--	3/88
Solder pin adapters for contactor assembly on printed circuit boards	3RT1916-4KA..	--	3/89
Coil connection modules for connections from top or from below	3RT2926-4R..1..	--	3/89
Motor feeder connector	3RT1900-4RE01	--	3/89
Covers			
Terminal covers for contactors	3RT2936-4EA.., 3RT29.6-4E..13	--	3/90
Sealable covers	3RT2916-4MA10	--	3/90
Miscellaneous accessories			
Base plates for contactor assemblies for star-delta (wye-delta) starting	3RA2932-2F	--	3/91
Adapters for screw fixing	3RT1926-4P	--	3/91
EMC suppression modules	3RT2916-1P..	--	3/91
Additional load modules	3RT2916-1GA00	--	3/91
LED modules for displaying contactor operation	3RT2926-1QT00	--	3/91
Control kit for manual operation	3RT29.6-4MC00	--	3/91
Insulation stop for securely holding back the conductor insulation for conductors up to 1 mm²	3RT..916-4JA02	--	3/92
Tools for opening spring-type terminals	3RA2908-1A	--	3/92
Blank labels	3RT2900-1SB	--	3/92
Spare Parts for 3RT2 Contactors			
Solenoid coils	3RT29...-5...1	--	3/93, 3/94
Contacts with fixing parts	3RT293..-6..	--	3/95
Arc chambers	3RT293..-7..	--	3/95

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Auxiliary switches

See from page 3/64 onwards

Positively driven contacts (for contactor relays)

Definition according to IEC 60947-5-1, Appendix L:



Positively-driven contact elements are a combination of "n" NO contacts and "m" NC contacts which are designed in such a way that they cannot be closed simultaneously.

Mirror contacts (for power contactors)

Definition according to IEC 60947-4-1, Appendix F:



A mirror contact is an NC contact that cannot be closed simultaneously with an NO main contact.

Solid-state time-delay auxiliary switch blocks for mounting on 3RT2 contactors and 3RH2 contactor relays

The 3RA28 solid-state time-delay auxiliary switches 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.

The time-delay auxiliary switch is supplied with power directly by two plug-in contacts through the coil terminals of the contactor, in parallel with A./A2.

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

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

Note:

Mounting more auxiliary switches to the contactor is not permitted.

Surge suppressors

- Without LED (also for spring-type terminals)
Sizes S00 to S2
- With LED (also for spring-type terminals)
Sizes S00 to S2

All 3RT2 contactors and 3RH2 contactor relays can be retrofitted with RC elements or varistors for damping opening surges in the coil. Diodes or diode assemblies (comprising noise suppression diodes and Zener diodes for short break times) can be used.

The surge suppressors are plugged onto the front of size S00 contactors. Space is provided for them next to a snap-on auxiliary switch block.

Varistors, RC elements or diode assemblies can be plugged onto the front of size S0 and S2 contactors.

Coupling contactors are supplied either without overvoltage damping or with a suppressor diode, varistor or diode connected as standard, according to the version.

Note:

The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Coupling links for control by PLC

IEC 60947 and EN 60947

The coupling links are suitable for use in any climate. They are finger-safe according to IEC 60529. The terminal designations comply with EN 50005.

System-compatible operation with 24 V DC, operating range 17 to 30 V.

Low power consumption of 0.5 W in conformity with the technical specifications of the solid-state systems. An LED indicates the switching state.

Surge suppression

The 3RH2924-1GP11 coupling link has an integrated surge suppressor (varistor) for the contactor coil being switched.

Mounting

The 3RH2924-1GP11 coupling link is mounted on the contactor coil size S0 using a coil connection module.

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3RA28 function modules for mounting on 3RT2 contactors and 3RH2 contactor relays

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

SIRIUS function modules for direct-on-line starting

The electronic timing relays which can be mounted onto the contactor are available in these versions:

- Sizes S00 and S0 for applications in the range from 24 to 240 V AC/DC (wide voltage range)
- Size S2 for applications in either the range from 24 to 90 V AC/DC or 90 to 240 V AC/DC

Both the electrical and mechanical connection are made by simple snapping on and locking.

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

The electronic timing relay with semiconductor output uses two contact legs 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.

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 use of snap-on function modules for direct-on-line starting 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 advantages of using wiring kits for the assembly of reversing starters, [see page 3/181](#).

SIRIUS function modules for star-delta (wye-delta) starting

Both interlocking and timing functions are required for the assembly of star-delta (wye-delta) starters. With the function modules for star-delta (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 star 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 all the sizes S00 to S2. To start the star-delta (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 connectors or connecting clips.

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

The function modules for star-delta (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.

The use of function modules for star-delta (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 all the contactor sizes S00 to S2
- Mechanical interlocking (with wiring kit for the main circuit)

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SIRIUS 3RA27 function modules for IO-Link or AS-Interface for mounting on 3RT2 contactors

The SIRIUS 3RA27 function modules enable the assembly of starters and contactor assemblies for direct-on-line, reversing and star-delta (wye-delta) starting without any additional, complicated wiring of the individual components. They include the key control functions required for the particular feeder, e.g. timing and interlocking, and can be connected to the control system via either IO-Link or AS-Interface.

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 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.

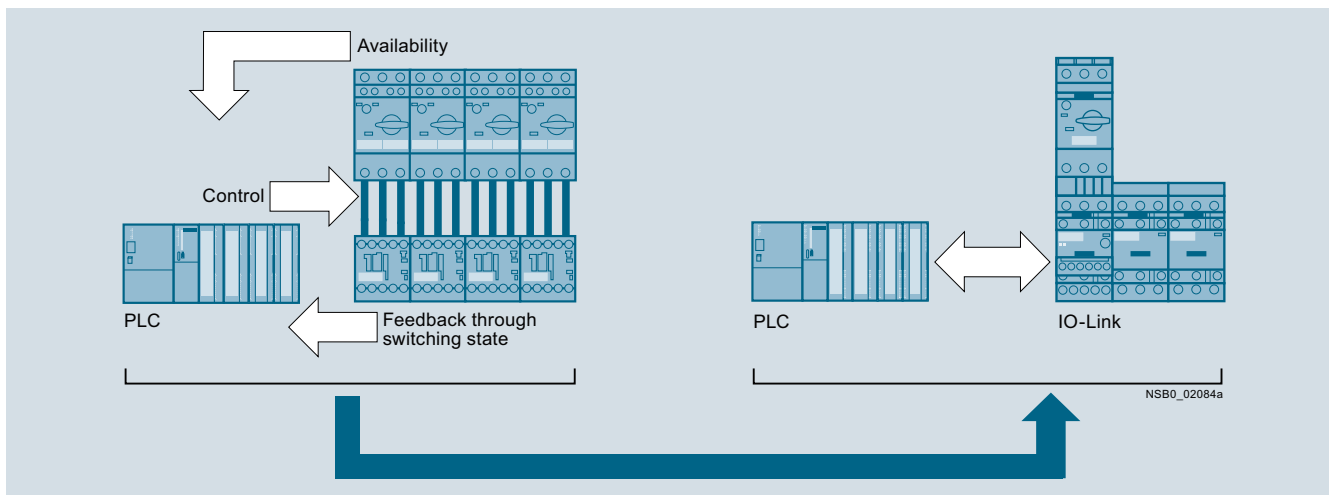
The starters are connected to the higher-level control system through IO-Link, with the possibility of connecting up to four starters as a group to one port of the IO-Link master,

or optionally via AS-Interface, Specification V2.1 or higher, in A/B technology. As a result, up to 62 starters can be connected to one master and the address is entered in the normal manner with an addressing unit.

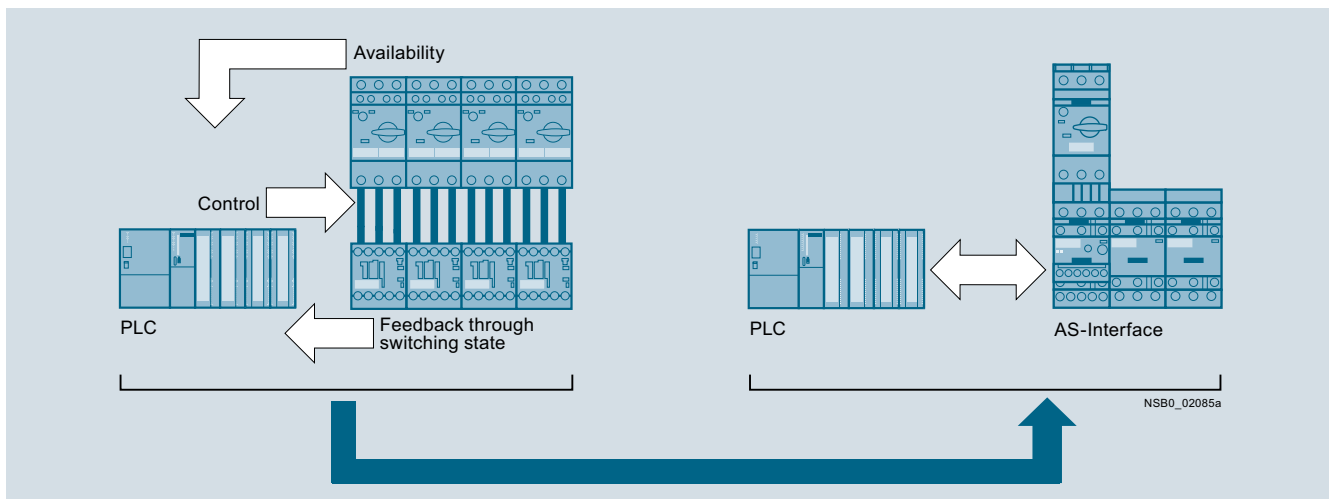
Through this type of connection to the control system, a maximum of wiring is saved. In the case of AS-Interface, the wiring amounts to the supply voltage and the two individual wires for AS-Interface.

The following essential signals are thus transmitted:

- Availability of the feeder in response to an indirect inquiry from the motor starter protector/circuit breaker
- Starter control
- Feedback concerning the switching state of the starter



Signal transmission through IO-Link



Signal transmission through AS-Interface

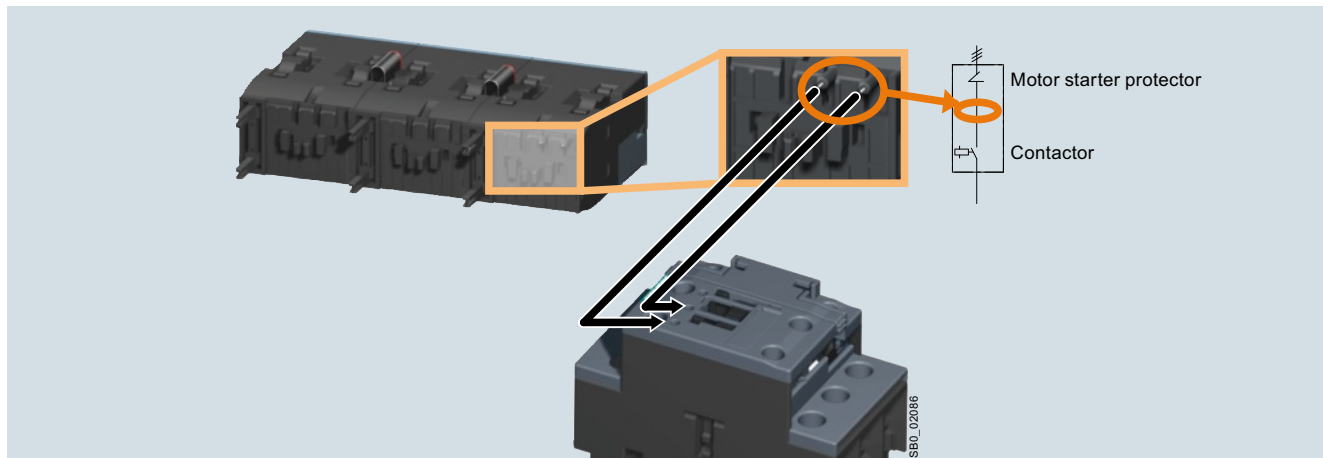
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The inquiry from the motor starter protector/circuit breaker does not take place through additive wiring between the auxiliary switch and the module but by means of a voltage inquiry at the contactor input.

This requires special versions of the contactors with voltage tap-off (see pages 3/43, 3/47 and 3/52).



Availability signal through voltage tap-off

The following benefits result from the use of SIRIUS 3RA27 function modules:

- Reduction of control current wiring. In the case of IO-Link, to no more than three cables for four feeders
- Elimination of testing costs and wiring errors
- Reduction of configuration work
- Integration in TIA means unambiguous IO-Link diagnostics if a fault occurs

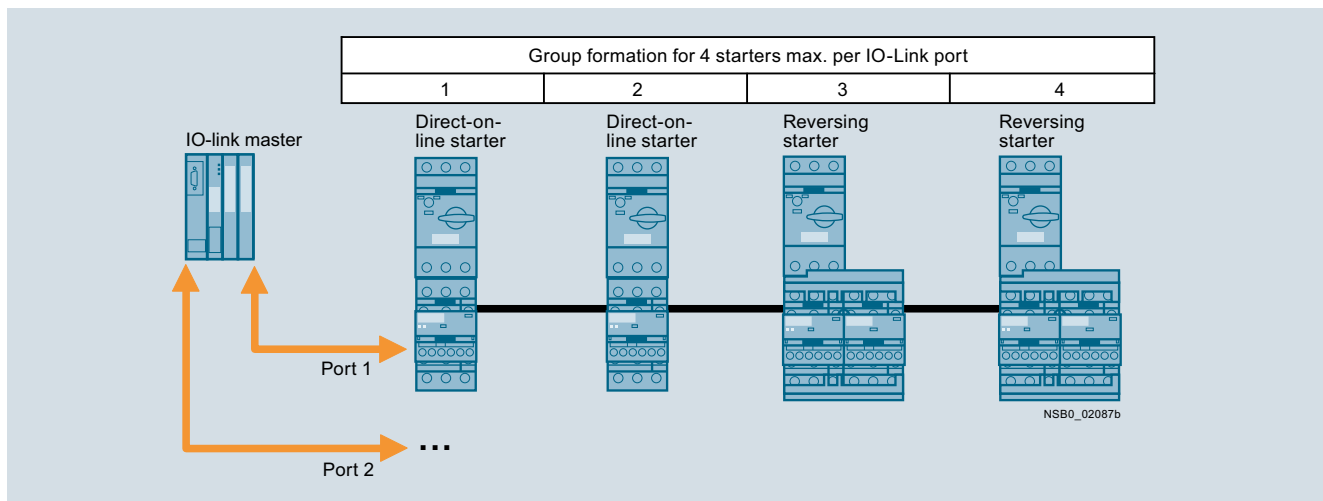
- Dispensing with IO modules saves space in the control cabinet
- All essential timing and interlocking functions for reversing duty and star-delta (wye-delta) starting are integrated
- No additive protection circuit required

For more information on IO-Link and AS-Interface see "Industrial Communication", from page 2/1 onwards.

SIRIUS 3RA2711 function modules for IO-Link for mounting on 3RT2 contactors

By grouping up to four starters it is possible to connect up to 16 starters to one master of the ET 200S. In this case all the signals of the individual controls are made available directly in the process image of the input through only three individual

wires per starter group. If the same potential is present at the ET 200S master and at the switching devices, the wiring can be reduced further by connecting the supply voltage of the contactor coils to the communication wires via jumpers.



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:

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

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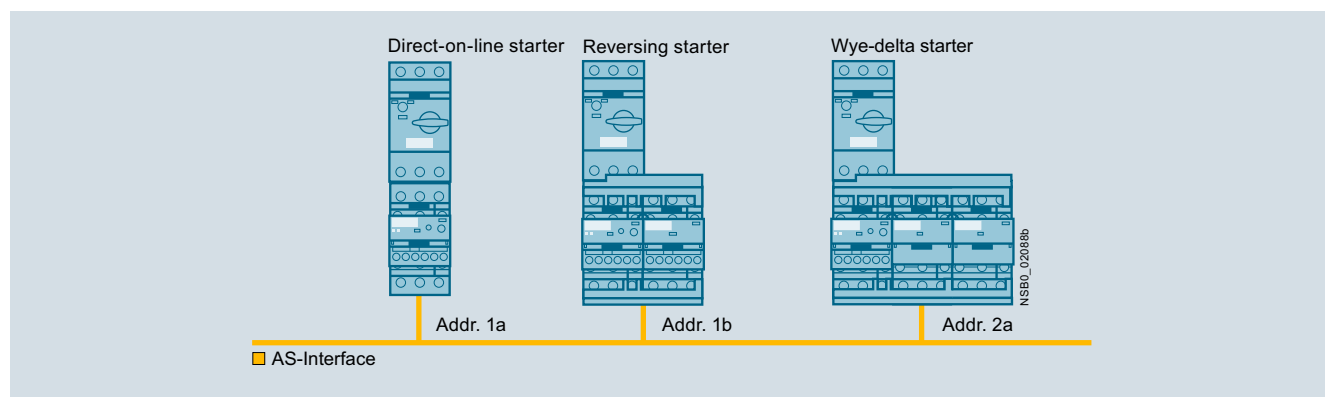
Accessories

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 straightforward using a hand-held device. 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.

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

SIRIUS 3RA2712 function modules for AS-Interface for mounting on 3RT2 contactors



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.

SIRIUS function modules with AS-Interface are 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 PLC is far smaller.