SIEMENS

Industrial Controls

Switchgear
SIRIUS 3RA28 function modules for mounting on 3RT2 contactors

Equipment Manual

07/2022
A5E03656507620A/RS-AE/006

Legal information

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Introduction

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1.1 Responsibility of the user for system configuration and functionality

The function modules described here have been developed to carry out different control tasks as part of a plant or machine. The function modules are available for direct-on-line start, reversing start and star-delta (wye-delta) start.

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Note

Comply in each case with the valid national assembly regulations and standards when configuring the system.

1.2 Purpose of the manual

This manual describes the SIRIUS 3RA28 function modules for mounting on SIRIUS 3RT2 contactors and provides the following information:

- Information for integrating the function modules into the system environment.
- Information on necessary hardware components.
- Information on installing, connecting and operating the function modules.
- Technical information such as dimension drawings and unit wiring diagrams.

The information in this manual enables you to configure and commission the function modules.

1.3 Required basic knowledge

To understand these operating instructions you should have a general knowledge of automation engineering and low-voltage controls.

1.4 Scope of the manual

The manual is valid for the described function modules. It contains a description of the devices that are valid at the time of publication.

1.5 Siemens Industry Online Support

Information and Service

In Siemens Industry Online Support, you can obtain up-to-date information from our global support database quickly and simply. To accompany our products and systems, we offer a wealth of information and services that provide support in every phase of the lifecycle of your machine or plant – from planning and implementation, through commissioning, up to maintenance and modernization:

- Product support
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- **Manuals/operating instructions**
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- **Certificates**
  Clearly sorted according to approving authority, type and country.
- **Characteristic curves**
  For support in planning and configuring your system.
- **Product announcements**
  The latest information and news concerning our products.
- **Downloads**
  You can find here updates, service packs, HSPs and much more for your product.
- **Application examples**
  Function blocks, background and system descriptions, performance statements, demonstration systems, and application examples, clearly explained and represented.
- **Technical data**
  Technical product data for support in planning and implementing your project.

Link: Product support (https://support.industry.siemens.com/cs/ww/en/ps)

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- **Filters**
  Simple management and re-use of your filter settings from Product Support and the Technical Forum
- **Favorites / Tags**
  Create your own knowledge database by assigning "Favorites" and "Tags" to documents – simply and efficiently
- **Entries last viewed**
  Clear presentation of your last viewed entries
- **Documentation**
  Configure your individual documentation from different manuals – quickly and without complications
- **Personal data**
  Change personal data and contact information here
- **CAx data**
  Simple access to thousands of items of CAx data such as 3D models, 2D dimension drawings, EPLAN macros and much more

1.6 Further documentation

To install and connect the function modules, you require the operating instructions of the function modules used.

You can find a list of operating instructions and an overview of the manuals pertaining to the SIRIUS modular system in the appendix "References (Page 69)".

1.7 DataMatrix code

A DataMatrix code is lasered on the front of all units of the function modules, on the left on the basic module.
In the case of basic and coupling modules, there is a further DataMatrix code behind the labeling plate.

DataMatrix codes are standardized in ISO/IEC 16022. The DataMatrix codes on Siemens devices use ECC200 coding for powerful error correction.

The following device information is encoded in the front DataMatrix code as a bit stream:

- Article number
- Serial number (abbreviated)

This information is stored in the following format in the DataMatrix code:

1P	Article number	+	S
Data identifier	Net content	Separator	Serial number

The following device information is encoded in the front DataMatrix code behind the labeling plate as a bit stream:

- Article number
- Serial number
- Where appropriate, MAC address

This information is stored in the following format in the DataMatrix code:

1P	Article number	+	S
Data identifier	Net content	Separator	Serial number (+ 23S MAC address)

The following device information is encoded in the side rating plate as a bit stream:

- Article number
- Serial number
- Where appropriate, MAC address

This information is stored in the following format in the DataMatrix code:

1P	Article number	+	S
Data identifier	Net content	Separator	Serial number (+ 23S MAC address)

Note

The information content is displayed without spaces.

This machine-readable information simplifies and accelerates handling of the respective devices. As well as fast access to the serial numbers of the respective devices for unique identification, the DataMatrix codes simplify communication with Siemens Technical Support.

1.8 Siemens Industry Online Support app

Siemens Industry Online Support app

The Siemens Industry Online Support app provides you access to all the device-specific information available on the Siemens Industry Online Support portal for a particular article number, such as operating instructions, manuals, data sheets, FAQs etc.

The Siemens Industry Online Support app is available for Android and iOS:

Android

iOS

1.9 Recycling and disposal

For environmentally-friendly recycling and disposal of your old device, contact a company certified for the disposal of used electrical and electronic equipment, and dispose of the device as specified in the regulations for your particular country.

1.10 Support Request

After you have registered, you can use the Support Request form in the online support to send your question directly to Technical Support:

Support Request:	Internet (https://support.industry.siemens.com/My/ww/en/requests)

Standards

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Applicable regulations, standards, and approvals

The following general regulations and standards apply for the 3RA28 function modules:

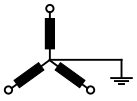
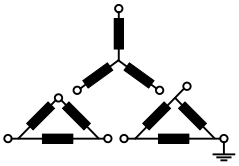
General regulations	Explanation
• IEC 61812-1 • DIN VDE 0435 Part 2021	Electrical relays, timing relays
• IEC 61000-6-2 • IEC 61000-6-4	Electromagnetic compatibility
• IEC 60947-5-1 • DIN VDE 0660 Part 200	Low-voltage switchgear and controlgear
• IEC 60721-3-1 • IEC 60721-3-3	Environmental conditions
• IEC 60529	Degree of protection
• CE • UL • CSA • CCC • C-Tick • Marine approval	The timing relays have UL and CSA approval for use all over the world. They have also been prototype-tested by the GL, LRS, and DM shipbuilding companies.

2.1 Requirements for switching high-efficiency motors

The increased requirements for protection devices and switchgear when switching high-efficiency motors are covered by the new utilization category AC-3e introduced in the IEC 60947-4-1 product standard.
The utilization category AC-3e takes into account the higher switch-on characteristic of efficiency-enhanced motors. This is reflected, for example, in a higher starting current when starting squirrel-cage motors.
All SIRIUS protection devices and switchgear that are subject to the IEC 60947-4-1 product standard meet the increased requirements in accordance with utilization category AC-3e and are suitable for use with high-efficiency motors.

2.2 Voltages

The specifications for 3-phase line supply according to IEC 60947-4-1 are valid for the following line system configurations:

Voltage specification Ue in the Equipment Manual	**Line system configurations**	
	Three-phase four-wire systems	**Three-phase three-wire systems**
		
[V]	[V]	[V]
230	--	230
400	230 / 400	400
440	260 / 440	440
500	--	500
690	400 / 690	690 (only from size S3)
1000	--	1000

-- not specified

2.3 Notes on the protection of device connections

The specifications for short-circuit protection (fuses, circuit breakers, or miniature circuit breakers) are available for the device connections of the main circuit and the auxiliary circuit. In order to ensure a holistic view for the protection of the device connections, the manufacturer is obliged to provide all relevant information for short-circuit protection and overcurrent protection.
If, for example, device connections for the control supply voltage, the supply voltage, or digital inputs/digital outputs are not connected to self-limiting current sources or energy sources, you can find the relevant information in the Equipment Manual or the technical data sheet.

Reference

SIRIUS components have been approved by a whole range of bodies for various sectors (shipbuilding, etc.). More information and certificates for download are available on the Internet (https://support.industry.siemens.com/cs/ww/en/ps/16131/cert).

Reference

You can find more information in the Catalog IC 10 - SIRIUS "Industrial Controls" (https://support.industry.siemens.com/cs/ww/en/view/109747945).

Product description

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Applications

Function modules are used to perform various control jobs on automatic production lines and for processing machines. They are suited to all time-delayed switching operations in control, starting, protection, and regulation circuits, and ensure a high degree of repeat accuracy for delay times, once they have been set.

The function modules are subdivided into function modules with communication interfacing and function modules without communication interfacing.

Function modules	
3RA28 function modules	Electronic time relays with semiconductor output
	Solid-state time-delay auxiliary switches
	Function module for star-delta (wye-delta) start
3RA27 function modules with communication connection	Function modules for AS-Interface
	Function modules for IO-Link

This chapter describes 3RA28 function modules without a communication connection. You will find information about function modules with a communication connection in the corresponding manuals.

Function

Function modules are used to delay switching functions.

System integration

The 3RA28 function modules have been matched to the contactors in the 3RT2 series and to the contactor relays in the 3RH2 series[1)] both electrically and mechanically, and can be integrated in the feeders by directly mounting them on contactors. The function modules can be used for 3RT201, 3RT202, 3RT203, and 3RT204 contactors.

The 3RA27 function modules can only be used for communication-capable contactors.

[1)] The 3RA28 function modules must not be mounted on 3RH2 coupling relays.

Connection system

Users can choose either function modules with screw-type connection system or function modules with spring-loaded connection system.

Reference

More information ...	Can be found in ...
About 3RA27 function modules for AS-Interface	"SIRIUS - SIRIUS 3RA2712 function modules for AS-Interface (http://support.automation.siemens.com/WW/view/en/39318922)" manual (3ZX1012-0RA27-0AC0)
About 3RA27 function modules for IO-Link	"SIRIUS - SIRIUS 3RA2711 function modules for IO-Link (http://support.automation.siemens.com/WW/view/en/39319600)" manual (3ZX1012-0RA27-1AC1)
About function modules for reversing start	Appendix entitled "References" under "Manuals - SIRIUS Modular System (Page 69)" in the "SIRIUS - SIRIUS 3RT Contactors/Contactor Assemblies" manual

3.1 Device versions

Device versions

- Function modules for direct-on-line start
  - Solid-state timing relays with semiconductor output
  - Solid-state time-delay auxiliary switches
- Function modules for star-delta (wye-delta) start

Characteristics

The table below provides an overview of the versions of 3RA28 function modules for mounting on 3RT2 contactors and 3RH2 contactor relays[1)].

[1)] The 3RA28 function modules must not be mounted on 3RH2 coupling relays.

Characteristic	Versions			
	Function modules for direct-on-line start			Function module for star-delta (wye-delta) start
	Electronic time relay with semiconductor output		Solid-state time-delay auxiliary switches	
Function	ON-delay and OFF-delay with control signal		ON and OFF-delay with/without control signal	Star-delta (wye-delta) function
Article numbers	3RA2811-.CW10/ 3RA2812-.DW10	3RA2831-.D.10/ 3RA2832-.D.10	3RA2813-..W10/ 3RA2814-..W10/ 3RA2815-..W10	3RA2816-0EW20 comprising: 1 basic module 2 coupling modules
Size	For the 3RT201 and 3RT202 contactors.	For 3RT203 and 3RT204 contactors.	One module for the 3RT201, 3RT202, 3RT203, and 3RT204 contactors.	

Characteristic	Versions		
	Function modules for direct-on-line start		Function module for star-delta (wye-delta) start
	Electronic time relay with semiconductor output	Solid-state time-delay auxiliary switches	
Width	45 mm		135 mm (3 x 45 mm)
Connection system	Screw-type, spring-loaded		Without terminals (can be used for contactor screw-type and spring-loaded connection systems)

3RA28 version overview

Article number	Function	Output
Screw connection		
3RA2811-1CW10	ON-delay, two-wire	Thyristor
3RA2812-1DW10	OFF-delay with control signal	PowerMos
3RA2831-1DG10	ON-delay	PowerMos
3RA2831-1DH10	ON-delay	PowerMos
3RA2832-1DG10	OFF-delay with control signal	PowerMos
3RA2832-1DH10	OFF-delay with control signal	PowerMos
3RA2813-1AW10	ON-delay	1 CO contact
3RA2813-1FW10	ON-delay	1 NO contact 1 NC contact
3RA2814-1AW10	OFF-delay with control signal	1 CO contact
3RA2814-1FW10	OFF-delay with control signal	1 NO contact 1 NC contact
3RA2815-1AW10	OFF-delay without control signal	1 CO contact
3RA2815-1FW10	OFF-delay without control signal	1 NO contact 1 NC contact
Spring-loaded connection		
3RA2811-2CW10	ON-delay, two-wire	Thyristor
3RA2812-2DW10	OFF-delay with control signal	PowerMos
3RA2831-2DG10	ON-delay	PowerMos
3RA2831-2DH10	ON-delay	PowerMos
3RA2832-2DG10	OFF-delay with control signal	PowerMos
3RA2832-2DH10	OFF-delay with control signal	PowerMos
3RA2813-2AW10	ON-delay	1 CO contact
3RA2813-2FW10	ON-delay	1 NO contact 1 NC contact
3RA2814-2AW10	OFF-delay with control signal	1 CO contact
3RA2814-2FW10	OFF-delay with control signal	1 NO contact 1 NC contact
3RA2815-2AW10	OFF-delay without control signal	1 CO contact
3RA2815-2FW10	OFF-delay without control signal	1 NO contact 1 NC contact

Article number	Function	Output
Plug-in, without terminals		
3RA2816-0EW20	Star-delta (wye-delta) function module	2 NO contacts (internal)
3RA2910-0	Sealable cover cap	—

The 8th digit of the article number designates the terminal type:

0: No terminals

1: Screw-type terminals

2: Spring-loaded terminals

3.2 Performance features

Features

The function modules have the following features:

Function module		Features
Function modules for direct-on-line start	Electronic timing relays with semiconductor output	• ON-delay (1 NO contact) • OFF-delay with control signal (1 NO contact) • Versions with screw-type and spring-loaded connection systems
	Solid-state time-delay auxiliary switches	• ON-delay (1 NO contact + 1 NC contact or 1 CO contact) • ON-delay with/without control signal (1 NO contact + 1 NC contact or 1 CO contact) • Versions with screw-type and spring-loaded connection systems
Function modules for star-delta (wye-delta) start	Star-delta (wye-delta) start	• Control exclusively via contactor A1/A2 – no further control circuit wiring required • No control current wiring thanks to plug-in technology and connecting cables • Interchange proof construction • Timing function for switching over from star to delta in basic module • Electrical interlock without additional wiring • Changeover delay time set to a non-adjustable value of ≥ 50 ms

3.3 Applications

3.3.1 Function modules for direct-on-line start

Applications

The function modules for direct-on-line start are used for the time-delayed switching of contactors. The following function modules are available:

- Electronic time relay with semiconductor output
- Solid-state time-delay auxiliary switch with 1 CO contact or 1 NC contact/1 NO contact

Features of direct-on-line starters

The function module for direct-on-line start has the following features:

- All modules with wide control voltage range
- Integrated varistor (surge suppressor)
- Applicable for size S00, S0, S2 and S3 contactors.
  The following table is an overview of which function modules you can use for which size of contactors.

	3RT201	3RT202	3RT203	3RT204
3RA2811, 3RA2812	X	X	-	-
3RA2831, 3RA2832	-	-	X	X
3RA2813, 3RA2814, 3RA2815	X	X	X	X

- Large wide voltage range (24 ... 240 V AC/DC), except for 3RA2831, 3RA2832
- Extended operating ranges (24 ... 90 V, 90 ... 240 V), for 3RA2831 and 3RA2832 only
- 3 selectable time ranges (1 s, 10 s, 100 s)
- Operating time adjustment from 5 ... 100% per time range
- Switch position indicator for the contactor below (plunger)

Reference

More information ...	Is available in ...
About application areas	Chapter entitled "Configuration (Page 33)"

3.3.2 Function modules for star-delta (wye-delta) start

Applications

The function module for star-delta (wye-delta) start is used to switch from star (wye) to delta operation.

Features

The function module for star-delta (wye-delta) start has the following features:

- All modules with wide control voltage range
- Integrated varistor (surge suppressor)
- One module kit for contactor screw-type and spring-loaded connection systems
- One module kit for the 3RT201, 3RT202, 3RT203, and 3RT204 contactors (variations only through main circuit connecting combs).
- Large wide voltage range (24 to 240 V AC/DC) and
- 3 selectable time ranges (10 s, 30 s, 60 s)
- Operating time adjustment from 5 to 100% per time range (corresponds to 0.5 s to 60 s)
- Changeover delay set to a non-adjustable value of ≥ 50 ms
- Switch position indication for the contactor below in the form of a mechanical switch position indicator (plunger)
- Control exclusively via A1/A2 on the line contactor below
- No further wiring required

The wide voltage and the wide time range ensure advanced use of the function modules.

3RA2816-0EW20 function module for contactor assemblies for star-delta (wye-delta) start

The function module for plugging into 3RA24 star-delta (wye-delta) combinations comprises the following devices:

- 1 basic module with time setting
- 2 coupling modules with corresponding connecting cable to coupling or function module

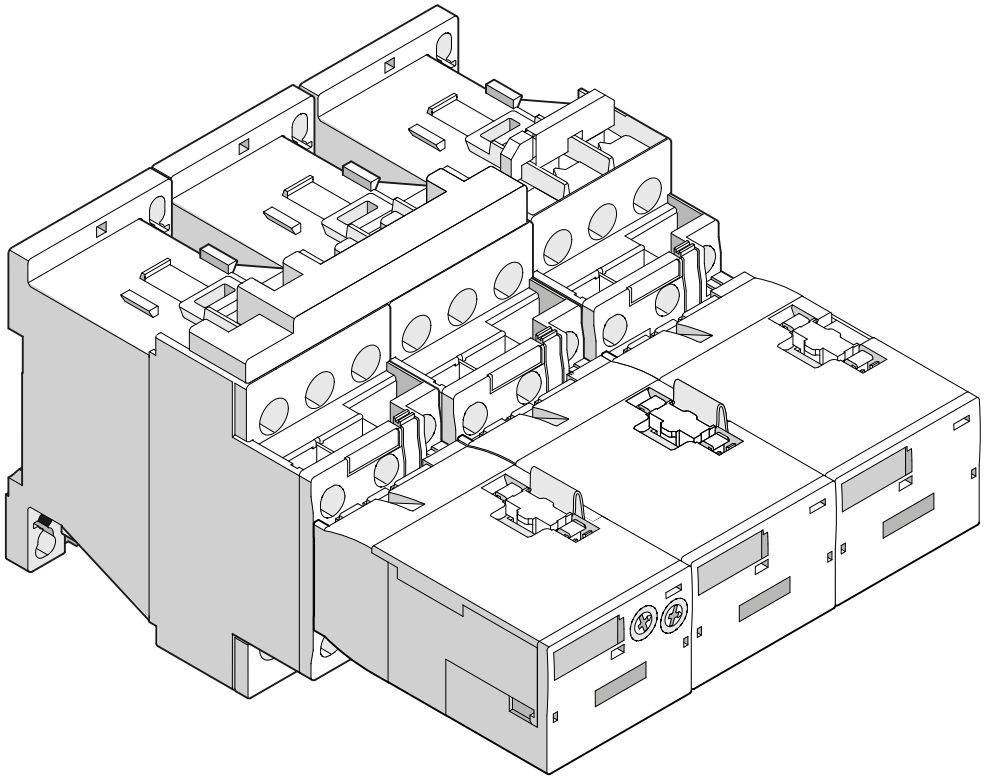


Figure 3-1 Star-delta (wye-delta) starter, completely assembled

The function module replaces the entire control circuit wiring and combines the functions of the following devices and tasks:

- Time relay star-delta (wye-delta) function
- Auxiliary switches
- Auxiliary conductor wiring
- Electrical interlock
- Switch position indicator for the contactor below (plunger)

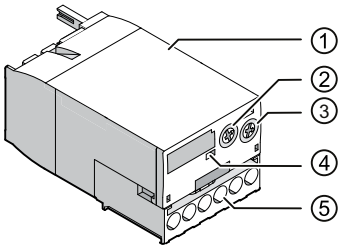
Note

Fitting of auxiliary switches

When the 3RA2816-0EW20 function module for star-delta (wye-delta) start is used, the following applies:
No more than one 3RH29 lateral auxiliary switch block (product version E03 and higher) may be mounted onto the line contactor (Q11) and onto the star (wye) contactor (Q12).

3.4 3RA28 function modules

Function module for direct-on-line start (electronic timing relays with semiconductor output/solid-state time-delay auxiliary switches)

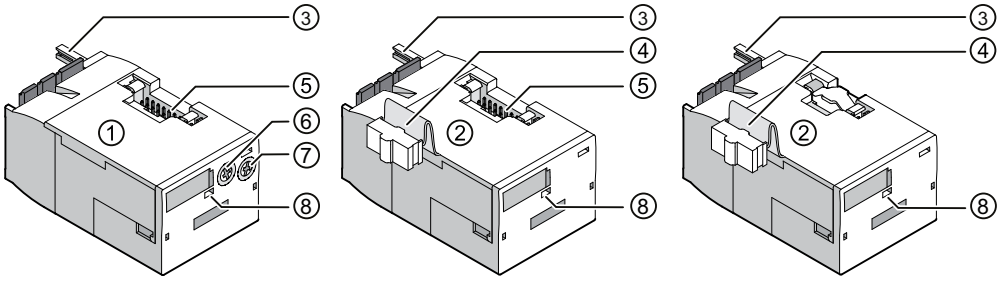


1	Timing relay attachment	
2	Time range selector switch:	Sets the time base (1 s, 10 s, 100 s)
3	Operating time adjustment switch:	Sets the relative time (5 to 100%)
4	Mechanical plunger:	Indicates the switching state of the contactor
5	Screw/spring-loaded terminals:	The terminals are available as both screw-type and spring-loaded connections.

Figure 3-2 Electronic timing relays with semiconductor output/solid-state time-delay auxiliary switches

Function module for star-delta (wye-delta) start

The function module for star-delta (wye-delta) start comprises a basic module with integrated control logic and two coupling modules of the same type.



1	Basic module with integrated control logic	
2	Coupling module	
3	Coil control:	Basic module: Voltage measurement at the line contactor Coupling module: Controls the contactor below
4	Ribbon cable:	Electrical connection of modules
5	Slot for connecting cable:	Routes the supply voltage and electrical interlock
6	Time range selector switch:	Sets the time base (10 s, 30 s, 60 s)
7	Operating time adjustment switch:	Sets the relative time (5 to 100%)
8	Mechanical plunger:	Indicates the switching state of the contactor

Figure 3-3 Basic module and coupling modules for the contactor assembly for star-delta (wye-delta) start

Safety instructions

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4.1 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit
https://www.siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
https://www.siemens.com/cert.

Product combinations

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Product combinations

Since the products from the innovative SIRIUS modular system are matched to one another both electrically and mechanically, they can be combined quickly and easily.

3RA28 function modules are designed for 3RT201, 3RT202, 3RT203, and 3RT204 contactors. The operating range of the 3RA28 function modules is 0.85 to 1.1 Us. You can mount the function modules on the front of SIRIUS 3RT2/3RH2 contactors or 3RA24 contactor assemblies.

3RA24 pre-wired assemblies are available for star-delta (wye-delta) start.

Reference

More information ...	Can be found in the appendix ...
About the possible combinations of standard products from the SIRIUS modular system	"References" under Manuals - SIRIUS Modular System (Page 69) in the "SIRIUS - System Overview" manual
About the pre-wired contactor assembly for star-delta (wye-delta) start	"References" under "Manuals - SIRIUS Modular System (Page 69)" in the "SIRIUS - SIRIUS 3RT Contactors/Contactor Assemblies" manual

Functions

6

6.1 Overvoltage protection

All function modules feature an integrated varistor which attenuates the contactor coil below.

6.2 Time-delayed switching of contactors

Electronic timing relays with semiconductor output (3RA2811-.CW10 / 3RA2812-.DW10 / 3RA2831-.D.10 / 3RA2832-.D.10) or solid-state time-delay auxiliary switches (3RA2813-...W10 / 3RA2814-...W10 / 3RA2815-...W10) are used for the time-delayed switching of contactors. The wide voltage range and the selectable time ranges ensure the advanced use of the function modules.

6.2.1 Response delay

Contacts

Function modules are available with the following contacts:

Time-delayed switching of contactors	3RA2811-.CW10	1 semiconductor output (NO contact)
	3RA2831-.DG10	1 semiconductor output (NO contact)
	3RA2831-.DH10	1 semiconductor output (NO contact)
Time-delayed switching of auxiliary contacts	3RA2813-.AW10	1 CO contact
	3RA2813-.FW10	1 NC contact and 1 NO contact

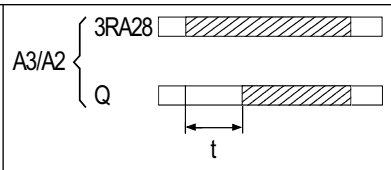
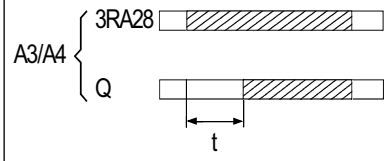
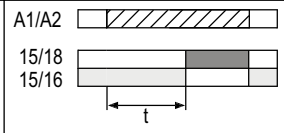
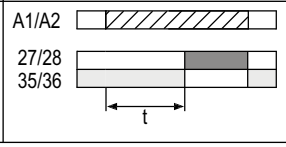
Time ranges

The function modules support time-delayed switching from 0.05 to 100 s.

Note

Rated operational current, residual current in the case of a non-switched output, and voltage drop in the case of a switched output must be taken into account.

Function charts

3RA2811-.CW10	
3RA2831-.DG10 3RA2831-.DH10	
3RA2813-.AW10	
3RA2813-.FW10	

Method of operation

The set operating time t starts when the electronic timing relay (3RA2811) with semiconductor output is connected to the supply voltage via A3 (timing relay) and A2 (contactor). Once the time has elapsed, the semiconductor switches through and controls the contactor below.

The set operating time t starts when the electronic timing relay (3RA2831) with semiconductor output is connected to the supply voltage via A3 and A4. Once the time has elapsed, the semiconductor switches through and controls the contactor below.

The supply voltage is connected to the solid-state time-delay auxiliary switch (3RA2813) via A1/A2 (contactor). The set operating time t starts when the supply voltage is connected. The output relay switches once the time has elapsed.

6.2.2 OFF-delay with control signal

Contacts

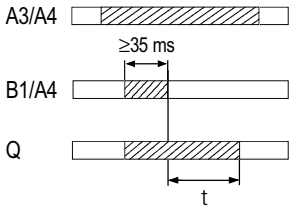
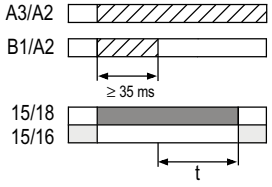
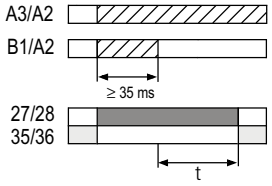
Function modules are available with the following contacts:

Time-delayed switching of contactors	3RA2812-.DW10	1 semiconductor output (NO contact)
	3RA2832-.DG10	1 semiconductor output (NO contact)
	3RA2832-.DH10	1 semiconductor output (NO contact)
Time-delayed switching of auxiliary contacts	3RA2814-.AW10	1 CO contact
	3RA2814-.FW10	1 NC contact and 1 NO contact

Time ranges

The function modules support time-delayed switching from 0.05 to 100 s.

Function charts

3RA2812-.DW10 3RA2832-.DG10 3RA2832-.DH10	
3RA2814-.AW10	
3RA2814-.FW10	

Method of operation

On the electronic timing relay (3RA2812/3RA282), the supply voltage is connected via terminals A3/A4. If the control voltage is connected to start contact B1, the semiconductor will switch through and control the contactor below. The operating time t starts when the start contact is disconnected. The minimum ON duration of 35 ms must be observed.

The supply voltage is connected to the solid-state time-delay auxiliary switch (3RA2814) via terminals A3 and A2 (contactor). The output relay switches when the control voltage is connected to the start contact B1. The operating time t starts when the start contact is disconnected. The minimum ON duration of 35 ms must be observed.

6.2.3 OFF-delay without control signal

Contacts

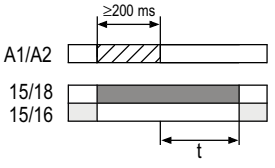
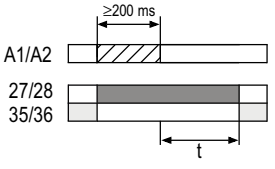
3RA2815 function modules switch time-delayed auxiliary contacts. They are available with the following contacts:

3RA2815-.AW10:	1 CO contact
3RA2815-.FW10:	1 NC contact and 1 NO contact

Time ranges

The function modules support time-delayed switching from 0.05 to 100 s.

Function charts

3RA2815-.AW10	
3RA2815-.FW10	

Method of operation

When the voltage is connected to A1/A2 (contactor), the solid-state time-delay auxiliary switch (3RA2815) switches the output relay. The operating time t starts when the voltage is disconnected. The relay switches back to the idle state at the end of the operating time t. There is an assurance that if the minimum ON duration is not observed either the time lapse will not start or, if the time lapse has started, it will always be completed in an orderly fashion. Users can rely on intermediate states of the functional sequence, such as "no relay dropout", being detected. The minimum ON duration of 200 ms must be observed.

6.2.4 Star-delta (wye-delta) function

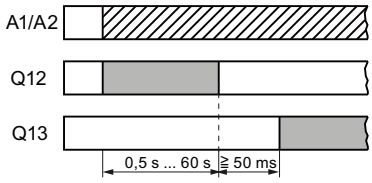
Contacts

The function module (comprising basic module with integrated control logic and 2 coupling modules) has 2 internal NO contacts.

Time ranges

The start time in star operation can be set between 0.5 and 60 s. The changeover delay is set to a non-adjustable value of ≥ 50 ms.

Function chart

3RA2816-0EW20	

Method of operation

The function module for star-delta (wye-delta) start is responsible for the electrical interlock and the timing relay function (dead interval from star (wye) operation to delta operation). Control is exclusively via A1/A2 on the line contactor below. Additional wiring is therefore not required. The supply voltage is routed via a ribbon cable, eliminating the need for control circuit wiring.

The instantaneous star contact and the time-delayed delta contact share the same contact root.

To avoid inter-phase short circuits, the changeover delay from star (wye) to delta is ≥ 50 ms.

Configuration

7

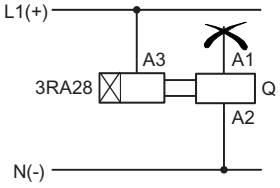
7.1 TIA Selection Tool

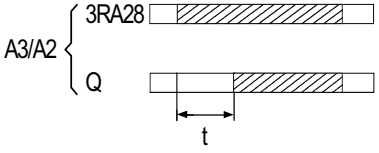
You can select, configure and order devices for Totally Integrated Automation (TIA) with the TIA Selection Tool.

You will find the TIA Selection Tool on the Internet (http://www.siemens.com/tst).

7.2 Configuration

3RA2811-.CW10



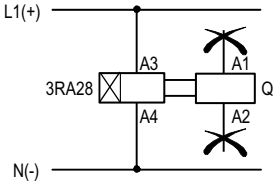


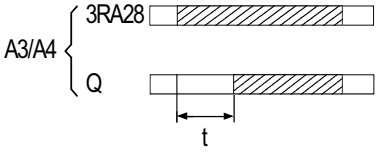
The function module is controlled via the terminal A3 and the internal contacts of the contactor A2. After expiry of the time t, the semiconductor becomes conductive and switches on the contactor Q.

Note

Contactor coil terminal A1 must not be connected.

3RA2831-.D.10



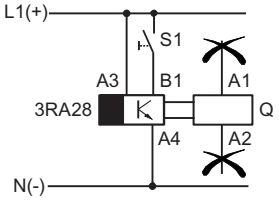


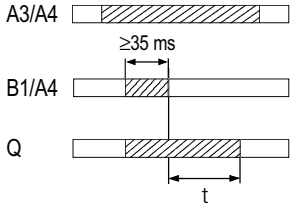
The 3RA2831 function module is connected to voltage via A3, A4. After expiry of the time t, the semiconductor becomes conductive and switches on the contactor Q.

Note

Contactor coil terminals A1 and A2 must not be connected.

3RA2812-.DW10, 3RA2832-.D.10



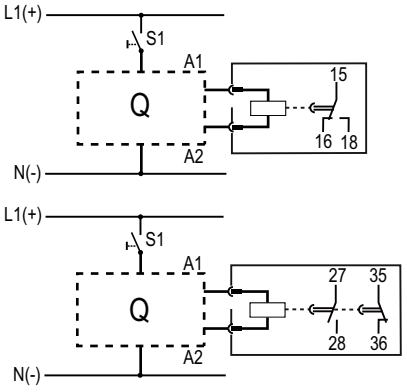


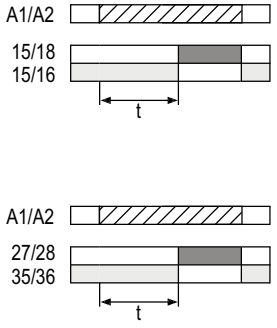
If the 3RA2812/3RA2832 electronic timing relay with semiconductor output is fitted, the contactor coil is contacted through the timing relay.

Note

Contactor coil terminals A1 and A2 must not be connected.

3RA2813

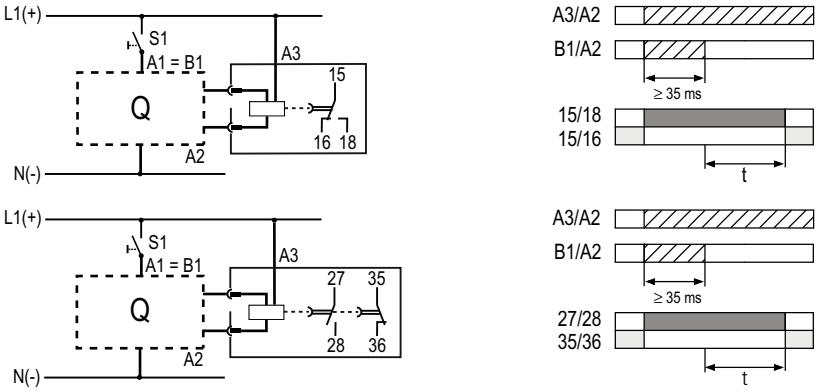




The 3RA2813 solid-state time-delay auxiliary switch has the following features:

- The voltage is supplied through the plug-in contacts directly via the contactor's coil terminals, parallel to A1/A2.
- The timing function is activated by switching on the contactor on which the solid-state time-delay auxiliary switch is mounted.
- A varistor is integrated in the solid-state time-delay auxiliary switch to attenuate contactor coil switching overvoltages.

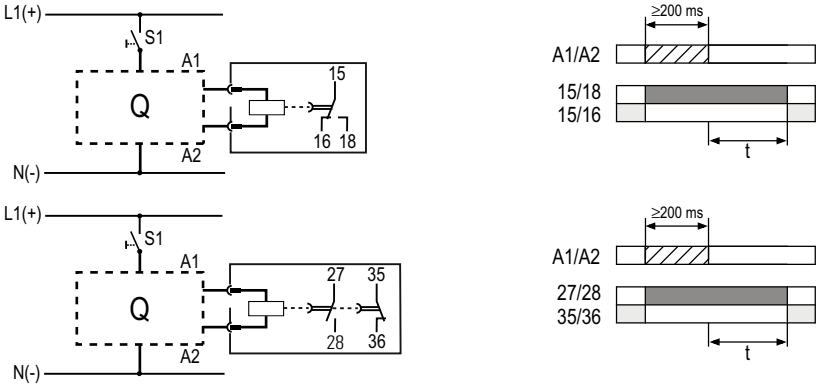
3RA2814



The 3RA2814 solid-state time-delay auxiliary switch has the following features:

- Voltage is supplied directly through plug-in contact A2 through the contactor's coil terminals and terminal A3 on the timing relay.
- The timing function is activated by switching on the contactor on which the solid-state time-delay auxiliary switch is mounted, via A1 on the contactor coil.
- The 3RA2814 operates with a control signal.
- The minimum ON duration at the start contact is 35 ms.
- A varistor is integrated in the solid-state time-delay auxiliary switch to attenuate contactor coil switching overvoltages.

3RA2815-..W10



The 3RA2815 solid-state time-delay auxiliary switch has the following features:

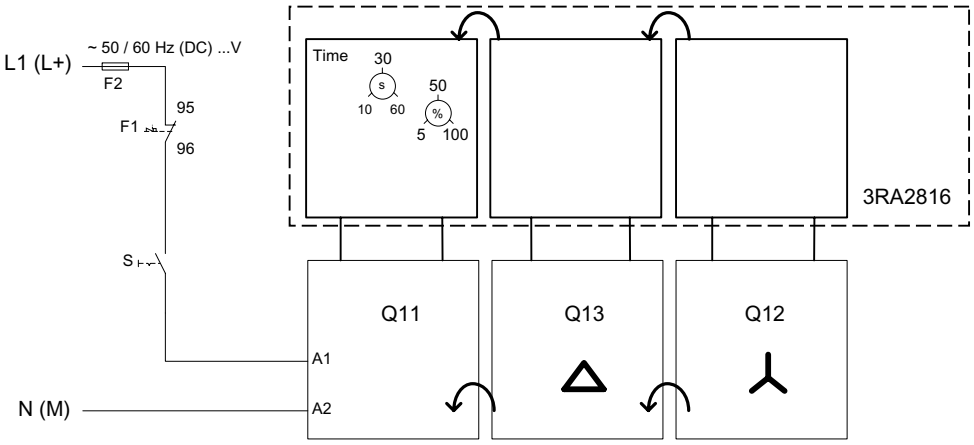
- The voltage is supplied through the plug-in contacts directly via the contactor's coil terminals, parallel to A1/A2.
- The timing function is activated by switching on the contactor on which the solid-state time-delay auxiliary switch is mounted.
- The 3RA2815 solid-state time-delay auxiliary switch operates without a control signal.

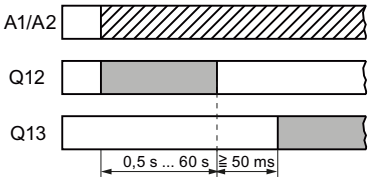
- The minimum ON duration is 200 ms.
- A varistor is integrated in the solid-state time-delay auxiliary switch to attenuate contactor coil switching overvoltages.

Note

The setting of the output contacts is not defined in as-supplied state (bistable relay). Connect the control voltage and then disconnect it again to set the contacts to the normal position.

3RA2816-0EW20





The 3RA2816 function module for star-delta (wye-delta) start has the following features:

- The voltage is supplied through the plug-in contacts directly via the contactor's coil terminals, parallel to A1/A2.
- The start time in star operation is activated by switching on the contactor.
- The changeover delay is ≥ 50 ms (this is a non-adjustable value).
- A varistor is integrated in the basic module to attenuate contactor coil switching overvoltages.

Mounting

8

8.1 Mounting instructions

Electronic timing relay with semiconductor output/solid-state time-delay auxiliary switch

Note

For the "OFF-delay without control signal" function

The setting of the output contact is not defined in as-supplied state (bistable relay). Connect the control voltage and then disconnect it again to set the contact to the normal position.

Note

The solid-state time-delay auxiliary switch cannot be attached to coupling relays.

8.2 Minimum clearances and mounting position

Minimum clearances and mounting position

The minimum clearances and the mounting position are set dependent upon the type of mounting.

You will find further information about the minimum clearances in the appendix entitled "References" under "Manuals - SIRIUS Modular System (Page 69)" in the "SIRIUS - SIRIUS 3RT Contactors/Contactor Assemblies (http://support.automation.siemens.com/WW/view/en/60306557)" manual.

8.3 Mounting

8.3.1 Function modules for direct-on-line start (electronic timing relay with semiconductor output/solid-state time-delay auxiliary switch)

Minimum clearances and mounting position

The minimum clearances and the mounting position are set dependent upon the type of mounting.

You can find more information on minimum clearances and the permissible mounting position in the "SIRIUS - SIRIUS 3RT Contactors/Contactor Assemblies" (http://support.automation.siemens.com/WW/view/en/60306557) manual.

Mounting SIRIUS 3RA28 function modules

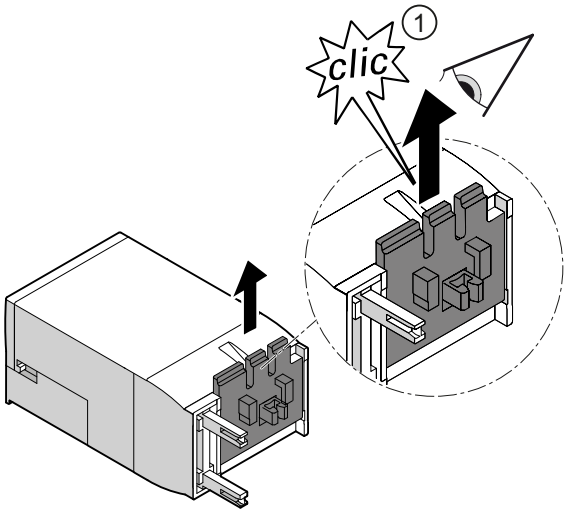
DANGER

Hazardous Voltage

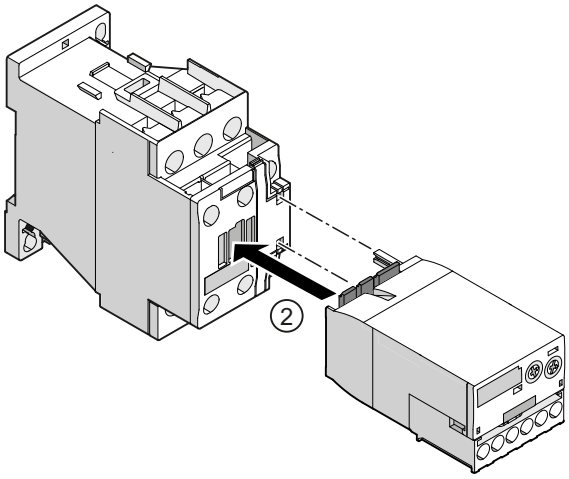
Will Cause Death, Serious Injury or Property Damage

Turn off and lock out all power supplying this device before working on this device.

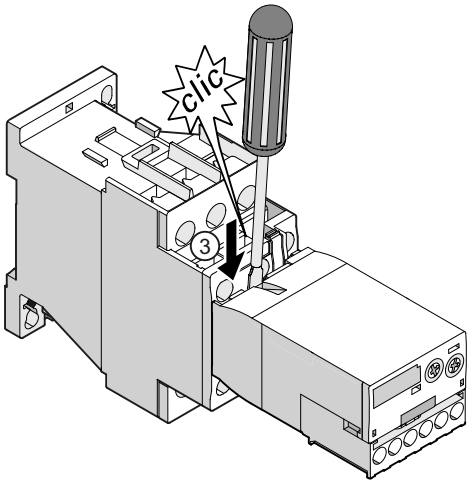
The function modules for direct-on-line start (electronic timing relay with semiconductor output/solid-state time-delay auxiliary switch) are connected to the front of the contactors.



① Check that the interlock slide is engaged in the uppermost position.



② Attach the function module to the contactor from the front.



③ Push the interlock slide down with a screwdriver (3 mm blade width) until it engages.

8.3.2 Function module for star-delta (wye-delta) start

⚠ DANGER

Hazardous Voltage
Will Cause Death, Serious Injury, or Property Damage

Turn off and lock out all power supplying this device before working on this device.

Prerequisite for mounting the function module for star-delta (wye-delta) start

Note

To mount the timing relay for star-delta (wye-delta) start you need to disassemble the link modules (which will vary depending on the connection system) used to connect the control current paths of the pre-wired contactor assembly for star-delta (wye-delta) start.

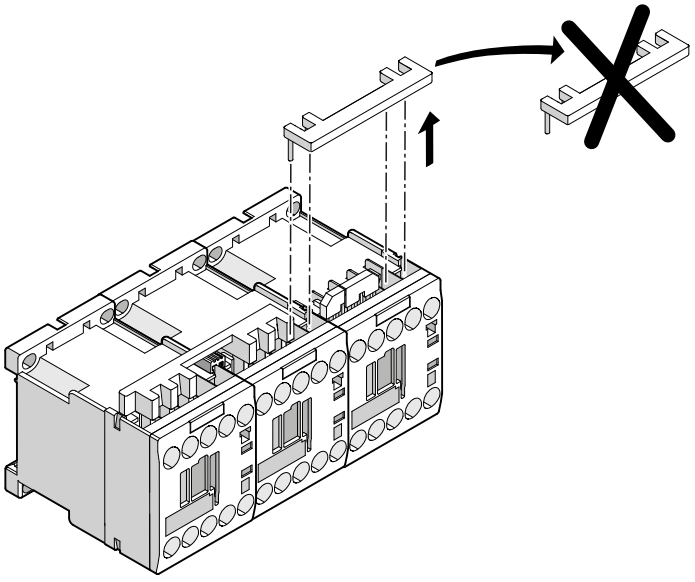


Figure 8-1 Removal of the wiring modules for connecting the control current paths on a contactor assembly for star-delta (wye-delta) start with screw-type connections of size S00

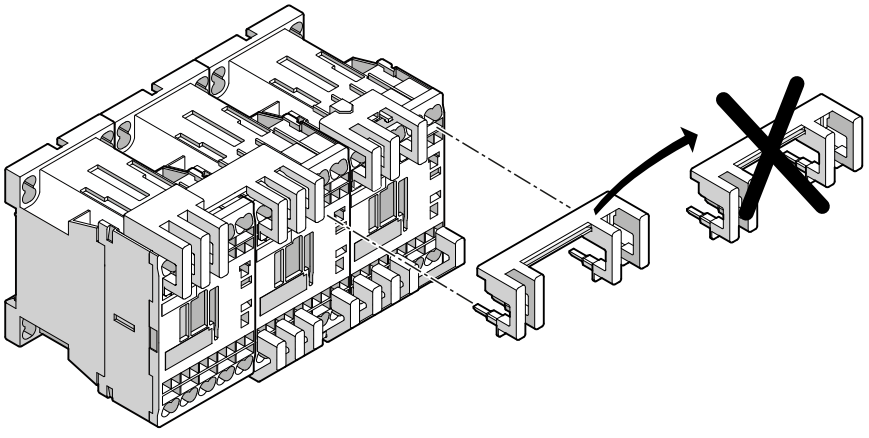


Figure 8-2 Removal of the wiring modules for connecting the control current paths on a contactor assembly for star-delta (wye-delta) start with spring-loaded connections of size S00

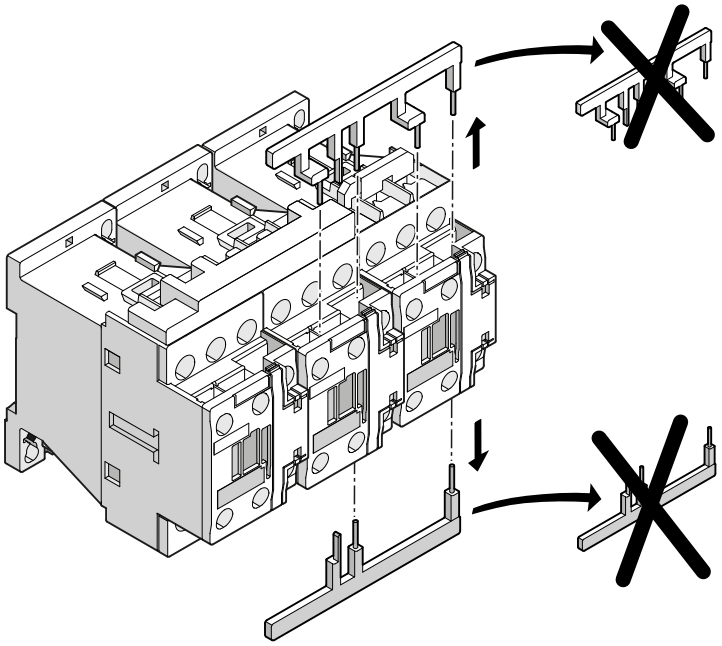


Figure 8-3 Removal of the wiring modules for connecting the control current paths on a contactor assembly for star-delta (wye-delta) start with screw-type connections of size S0

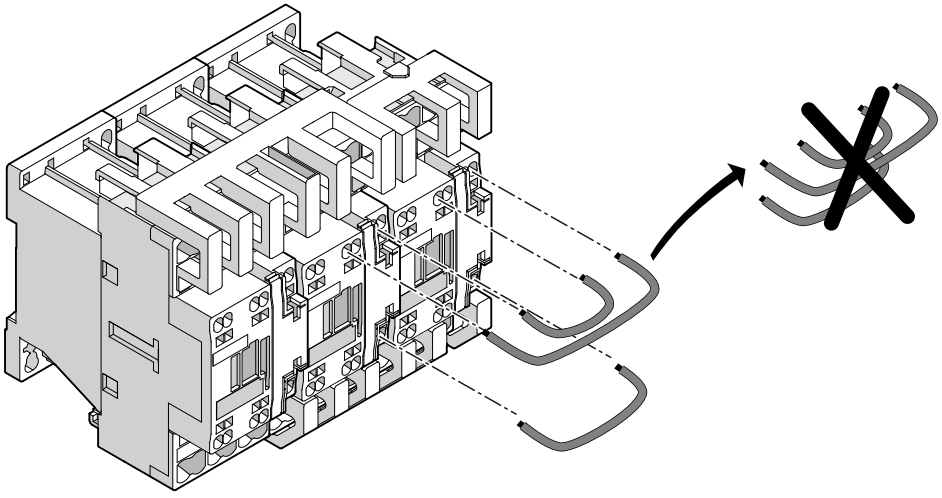


Figure 8-4 Removal of the wiring modules for connecting the control current paths on a contactor assembly for star-delta (wye-delta) start with spring-loaded connections of size S0

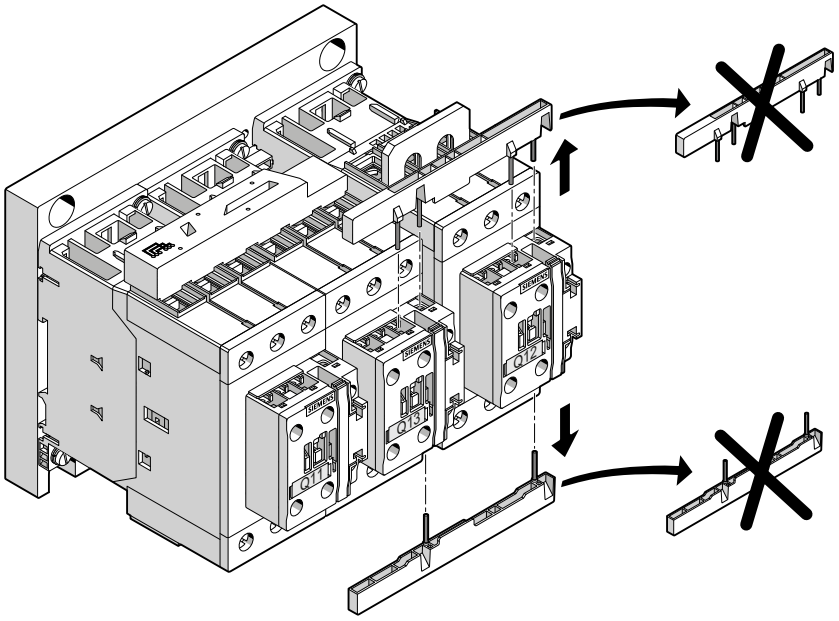


Figure 8-5 Removal of the wiring modules for connecting the control current paths on a contactor assembly for star-delta (wye-delta) start with screw-type connections of size S2

Note

Removal of the wiring modules

The procedure for removing the wiring modules on a contactor assembly for star-delta (wye-delta) start of size S3 is identical.

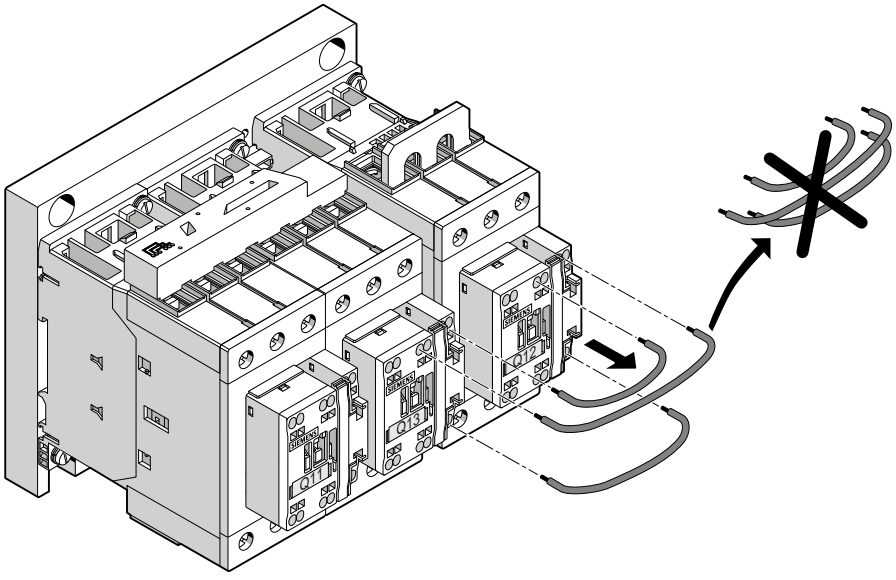
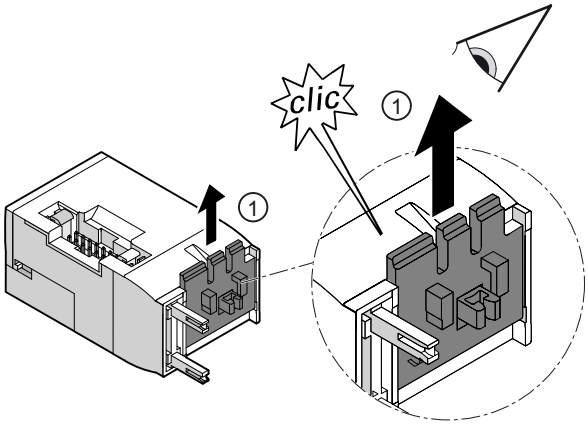
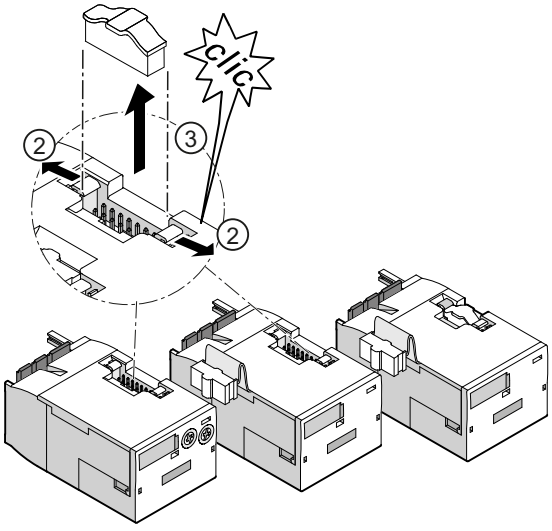


Figure 8-6 Removal of the wiring modules for connecting the control current paths on a contactor assembly for star-delta (wye-delta) start with spring-loaded connections of size S2

Mounting the function module for star-delta (wye-delta) start

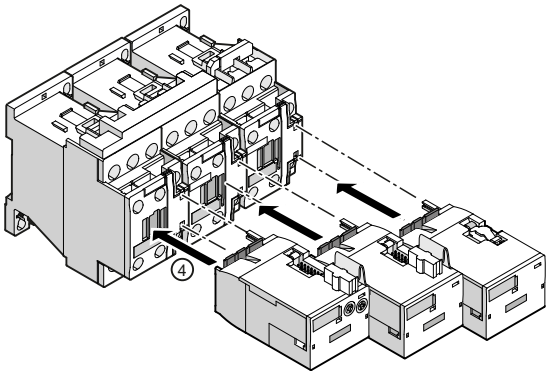


① Check that the interlock slide is engaged in the uppermost position.

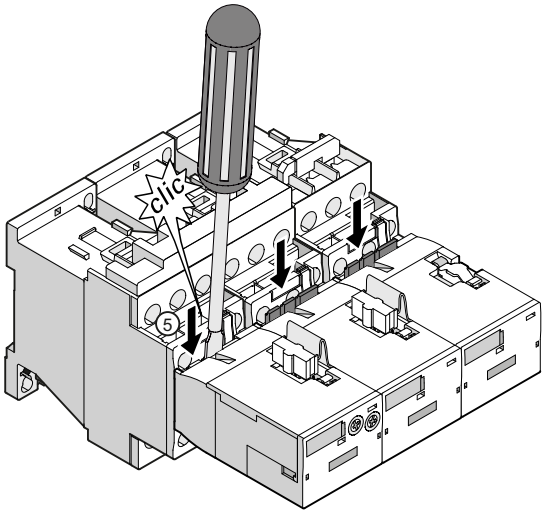


② Release the cover cap on the interface connection.

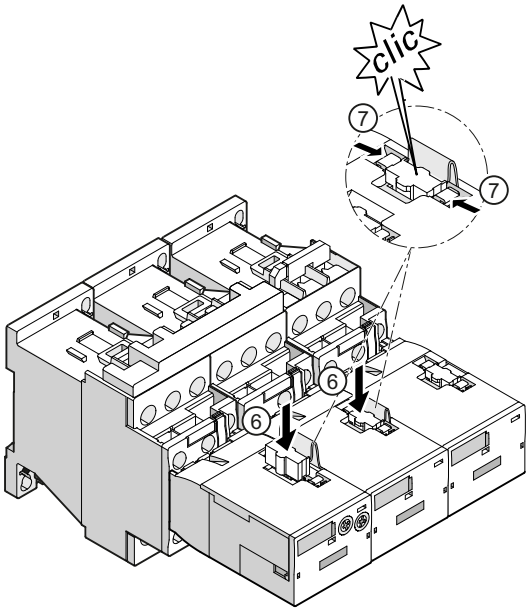
③ Remove the cover cap for the interface connection from the connector by lifting it up and out.



④ Attach the basic module/coupling module to the contactor from the front. To do this, insert the contacts into the openings on the contactor.



⑤ Push the locking slide down with a screwdriver until it engages.



⑥ Insert the coded module connector into the slot in the correct position from above until the module connector engages in the locking mechanism.

⑦ To complete the process, lock the module connector.

Note

Fitting of auxiliary switches

When the 3RA2816-0EW20 function module for star-delta (wye-delta) start is used, the following applies:
No more than one 3RH29 lateral auxiliary switch block (product version E03 and higher) may be mounted onto the line contactor (Q11) and onto the star (wye) contactor (Q12).

8.4 Disassembly

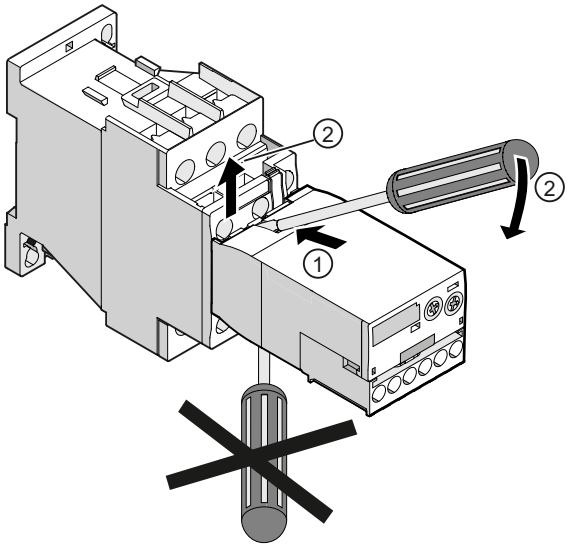
8.4.1 Function modules for direct-on-line start (solid-state timing relay with semiconductor output/solid-state time-delay auxiliary switch)

⚠ DANGER

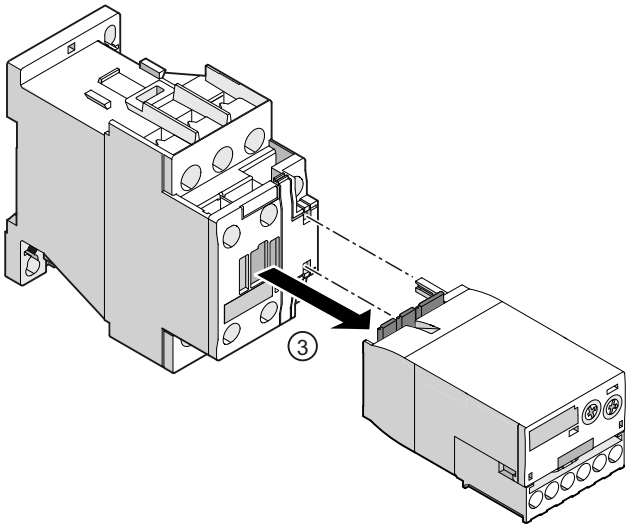
Hazardous Voltage

Will Cause Death, Serious Injury or Property Damage

Turn off and lock out all power supplying this device before working on this device.



① Press the screwdriver towards the contactor.
② Push the locking slide up with a screwdriver. It is not possible to unlock from below.



③ Pull the function module toward you and away from the contactor.

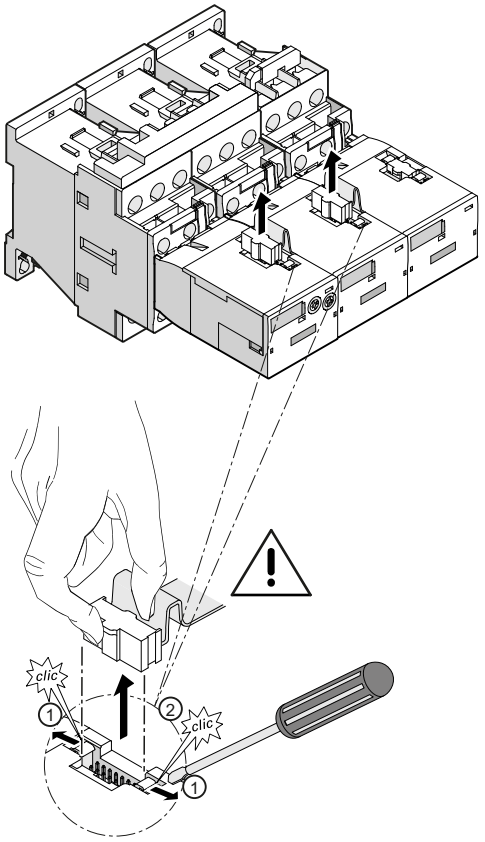
8.4.2 Function module for star-delta (wye-delta) start

⚠ DANGER

Hazardous Voltage

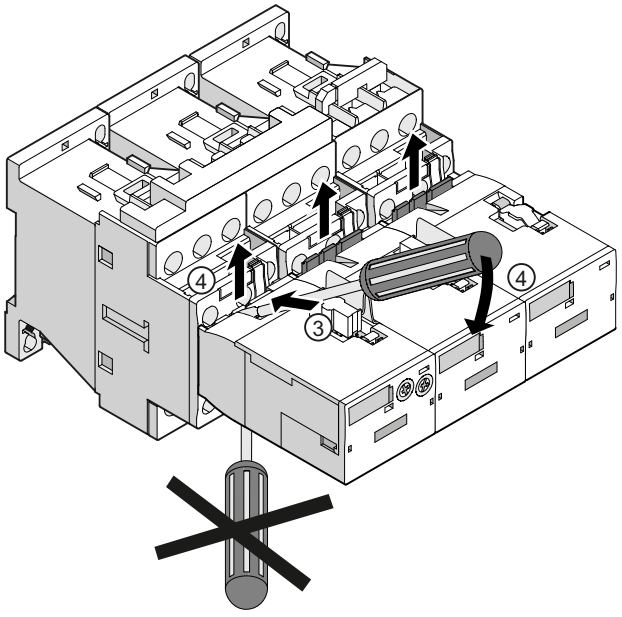
Will Cause Death, Serious Injury or Property Damage

Turn off and lock out all power supplying this device before working on this device.



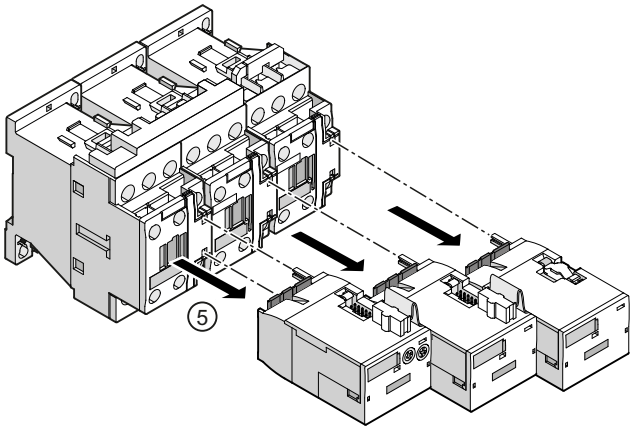
① Use a screwdriver to release the locking mechanisms.

② Remove the module connectors from the slot by lifting them up and out.



③ Press the screwdriver towards the contactor.

④ Push the interlock slide up with a screwdriver. It is not possible to unlock from below.



⑤ Pull the basic module and the two coupling modules toward you and away from the contactors.

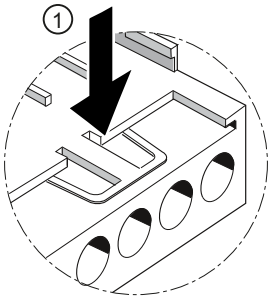
8.5 Replacing the removable terminal

DANGER

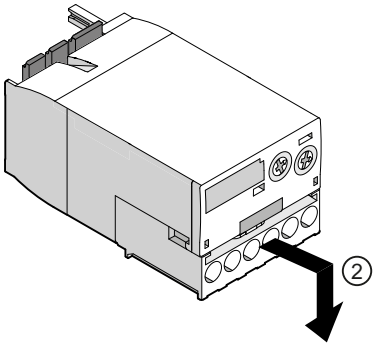
Hazardous Voltage

Will Cause Death, Serious Injury or Property Damage

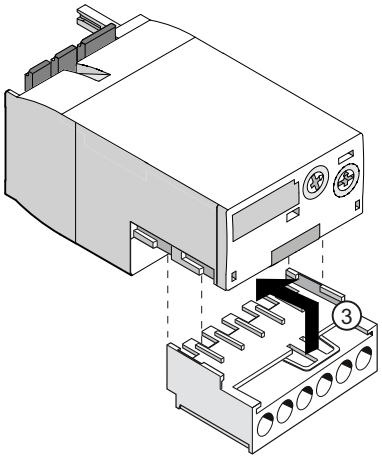
Turn off and lock out all power supplying this device before working on this device.



① Press the interlock.



② Remove the terminal.



③ Attach the new terminal and press the terminal into the device until the interlock audibly engages.

Connection

9

9.1 Connecting the function modules for direct-on-line start

9.1.1 Connecting the solid-state timing relay with semiconductor output

Connection types

The electronic time relay with semiconductor output is connected via removable terminals with the following connection options:

- Screw-type
- Spring-loaded

Connection

You will find information on connection of the screw-type and spring-loaded connection terminals in the appendix entitled "References" under "Manuals - SIRIUS Modular System (Page 69)" and in the "SIRIUS- System Overview" manual.

Note

During the mounting process, the electronic time relay is connected to the contactor coil terminals A1 and A2 at the same time by means of plug-in contacts. Contactor coil terminals which are not required are not covered by the time relay enclosure.
Avoid incorrect connection.

Note

The 3RA2811 time relay with ON delay is connected to the contactor coil in series.
Contactor coil terminal A1 must not be connected.

Note

Contactor coil terminals A1 and A2 must not be connected when using the 3RA2831 function module.

Note

Notes on the protection of auxiliary voltage (terminal A3 (+))

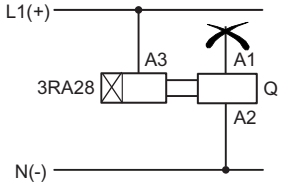
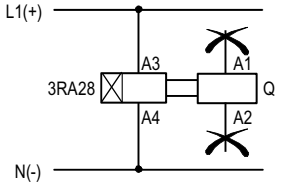
Observe the relevant standards and regulations for the configuration of control panels and the parts and components contained therein, e.g. when dimensioning the cables.
Select a current-limiting power supply for the protection of these circuits, for example.
When selecting the source and the connecting cable, observe the load characteristics of the contactor on which the function module is mounted. The same applies to the selection of suitable protection devices.
You can find the technical specifications of the product 3RA28 in the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16353/td). You can find the technical specifications of the product 3RT2 in the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16132).

Further recommendations, e.g. the use of miniature circuit breakers or equipment circuit breakers in control circuits, can be found under the following link:
Practical tip for control panels: Selecting and dimensioning suitable power supplies quickly and reliably (https://new.siemens.com/global/en/markets/panel-building/tipps/design-and-engineering-in-the-control-circuit.html).

Note

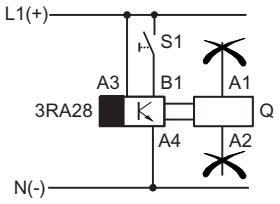
Notes on the protection of relay outputs

You can find the technical specifications of the 3RA28 product in the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16353/td).

Description	Terminal	Circuit diagram
3RA2811-.CW10 ON-delay	A3 (+)	
3RA2831-.D.10 ON-delay	A3 (+) A4 (-)	

Note

If the 3RA2812 time relay with OFF delay is fitted, the contactor coil is contacted through the time relay.
Contactor coil terminals A1 and A2 must not be connected.

Description	Terminal	Circuit diagram
3RA2812-.DW10 OFF-delay with control signal 3RA2832-.D.10 OFF-delay with control signal	B1 (+) A4 (-) A3 (+)	

Reference

You will find further information about the conductor cross-sections in the appendix entitled "References" under "SIRIUS Modular System (Page 69)" manuals and in the "SIRIUS - System Overview" manual.

9.1.2 Connecting the solid-state time-delay auxiliary switch

Connection types

The solid-state time-delay auxiliary switch is connected via removable terminals with the following connection options:

- Screw-type
- Spring-loaded

Connection

You will find information about connection of the screw-type and spring-loaded terminals in the "appendix" under "Manuals - SIRIUS Modular System (Page 69)" and in the "SIRIUS- System Overview" manual.

Note

Notes on the protection of auxiliary voltage (terminal A3 (+))

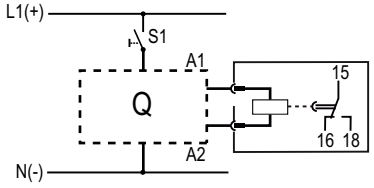
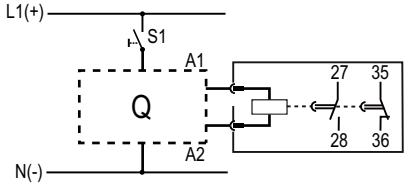
Observe the relevant standards and regulations for the configuration of control panels and the parts and components contained therein, e.g. when dimensioning the cables.
Select a current-limiting power supply for the protection of these circuits, for example.
When selecting the source and the connecting cable, observe the load characteristics of the contactor on which the function module is mounted. The same applies to the selection of suitable protection devices.
You can find the technical specifications of the product 3RA28 in the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16353/td). You can find the technical specifications of the product 3RT2 in the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16132).

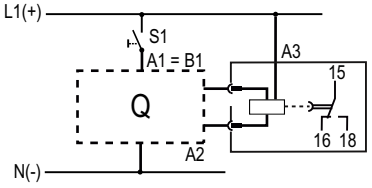
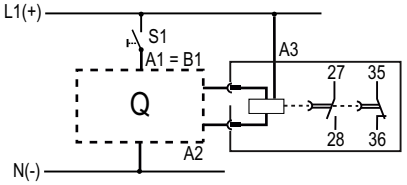
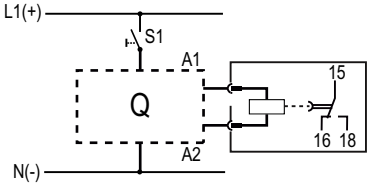
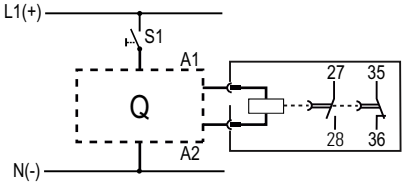
Further recommendations, e.g. the use of miniature circuit breakers or equipment circuit breakers in control circuits, can be found under the following link:
Practical tip for control panels: Selecting and dimensioning suitable power supplies quickly and reliably (https://new.siemens.com/global/en/markets/panel-building/tipps/design-and-engineering-in-the-control-circuit.html).

Note

Notes on the protection of relay outputs

You can find the technical specifications of the 3RA28 product in the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16353/td).

Description	Terminal	Circuit diagram
3RA2813-.AW10 ON-delay, 1 CO contact	18 NO 15 NC 16 NC	
3RA2813-.FW10 ON-delay, 1 NC contact/1 NO contact	27 NO 28 NO 35 NC 36 NC	

Description	Terminal	Circuit diagram
3RA2814-.AW10 OFF-delay with control signal, 1 CO contact	18 NO 15 NC 16 NC A3 (+)	
3RA2814-.FW10 OFF-delay with control signal, 1 NC contact/1 NO contact	27 NO 28 NO 35 NC 36 NC A3 (+)	
3RA2815-.AW10 OFF-delay without control signal, 1 CO contact	18 NO 15 NC 16 NC	
3RA2815-.FW10 OFF-delay without control signal, 1 NC contact/1 NO contact	27 NO 28 NO 35 NC 36 NC	

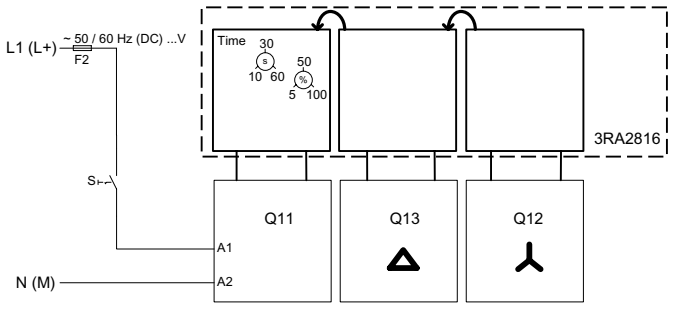
Reference

You will find further information about the conductor cross-sections in the appendix entitled "References" under "SIRIUS Modular System (Page 69)" manuals and in the "SIRIUS - System Overview" manual.

9.2 Connecting the function module for star-delta (wye-delta) start

Control

Control is exclusively via terminals A1 and A2 on the line contactor; no further control circuit wiring is required.

Designation	Terminal	Circuit diagram
3RA2816-0EW20	—	

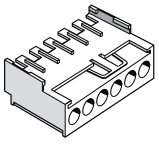
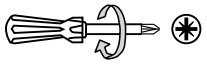
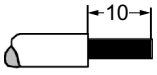
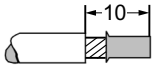
9.3 Conductor cross-sections

9.3.1 Conductor cross-sections for screw-type connection systems

Conductor cross-sections for screw-type connection systems

The tables below define the permissible conductor cross-sections for main terminals and auxiliary conductor connections in sizes S00, S0, S2 and S3 for screw-type connection systems.

Table 9-1 Conductor cross-sections for screw-type terminals

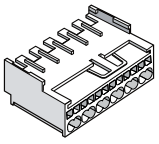
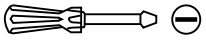
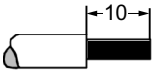
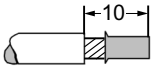
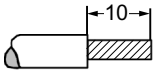
Connection type	3RA2811, 3RA2812, 3RA2813, 3RA2814, 3RA2815, 3RA2831, 3RA2832
	 Ø 5 ... 6 mm/PZ 2
	0.8 ... 1.2 Nm (7 to 10.3 lb·in)
	1 x (0.5 ... 4) mm² 2 x (0.5 ... 2.5) mm²
	1 x (0.5 ... 2.5) mm² 2 x (0.5 ... 1.5) mm²
AWG	2 x (20 to 14)

9.3.2 Conductor cross-sections for spring-loaded connection systems

Conductor cross-sections for spring-loaded connection systems

The tables below define the permissible conductor cross-sections for main terminals and auxiliary conductor connections of the 3RT201, 3RT202, 3RT203, and 3RT204 contactors for spring-loaded connection technology systems.

Table 9-2 Conductor cross-sections for spring-loaded terminals

Connection type	**3RA2811, 3RA2812, 3RA2813, 3RA2814, 3RA2815, 3RA2831, 3RA2832**
	 3RA2908-1A (3.0 x 0.5) mm
	2 x (0.25 ... 1.5) mm^2
	2 x (0.25 ... 1.5) mm^2
	2 x (0.25 ... 1.5) mm^2
AWG	2 x (24 to 16)

Operation

10

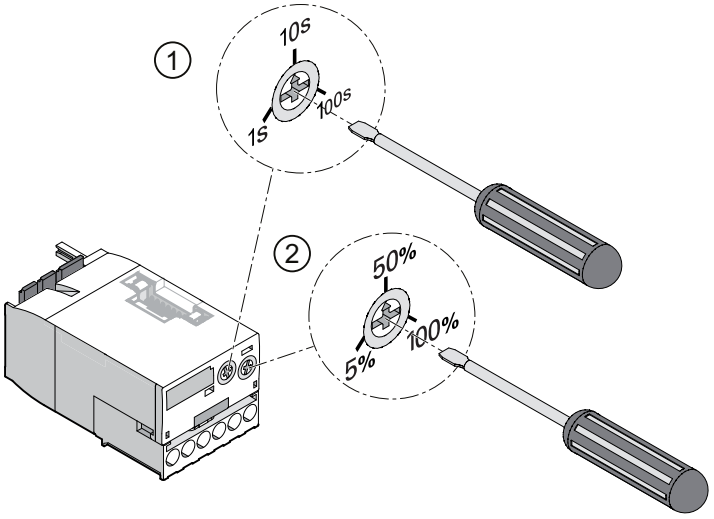
10.1 Setting the times

Setting options for function modules

On function modules for direct-on-line start (electronic timing relays with semiconductor output/solid-state time-delay auxiliary switches), use the time range selector switch to set the time base to 1 s, 10 s or 100 s. Use the operating time adjustment switch to set the relative time between 5 and 100%

(to support operating times between 0.05 s and 100 s).

On the function module for star-delta (wye-delta) start, you can preset the dead interval from star to delta operation to10 s, 30 s or 60 s and the operating time to between 0.5 s and 60 s (using the adjustment switch). The changeover delay from star (wye) to delta operation is set to a non-adjustable value of ≥ 50 ms.



1 Time range selector switch (1 s, 10 s, 100 s or 10 s, 30 s, 60 s)

2 Operating time adjustment switch (5 to 100%)

Example time setting

Time base on time range selector switch = 100 s, relative time on operating time adjustment switch = 50%:

This results in an operating time of 50 s.

Accessories

11

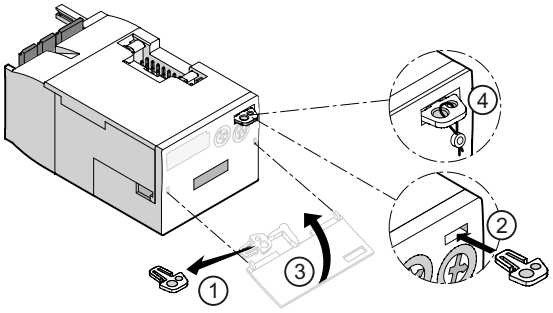
11.1 Sealable cover

Description

Sealable covers are transparent molded-plastic caps with a break-off clip (preset breaking point).

You can use a sealable cover to protect 3RA28 function modules against unauthorized operation.

Mounting the sealable cover



① Break off the clip on the sealable cover (preset breaking point).
② Insert the clip into the opening on the function module, until it engages.
③ Insert the sealable cover into the openings on the function module.
④ Seal the clip to secure it against unauthorized removal.

Technical data

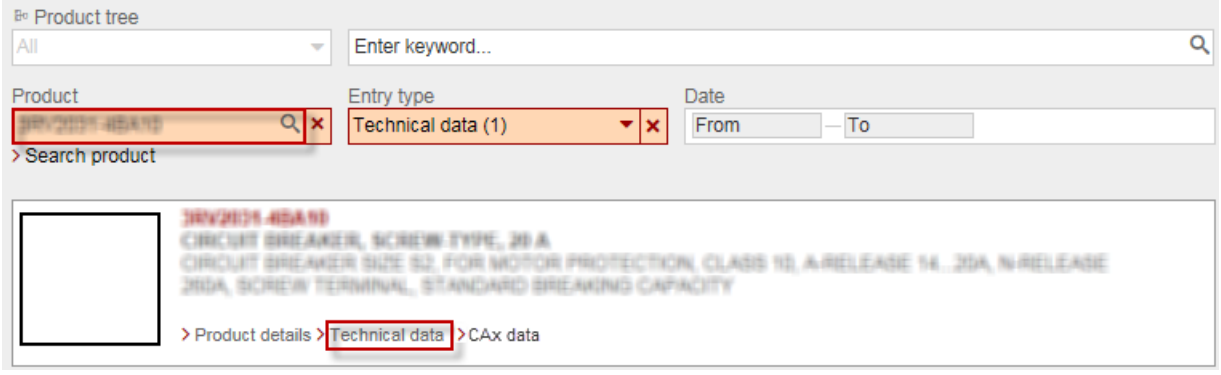
12

12.1 Technical data in Siemens Industry Online Support

Technical data sheet

You can also find the technical data of the product at Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16353/td).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "Technical data" link.



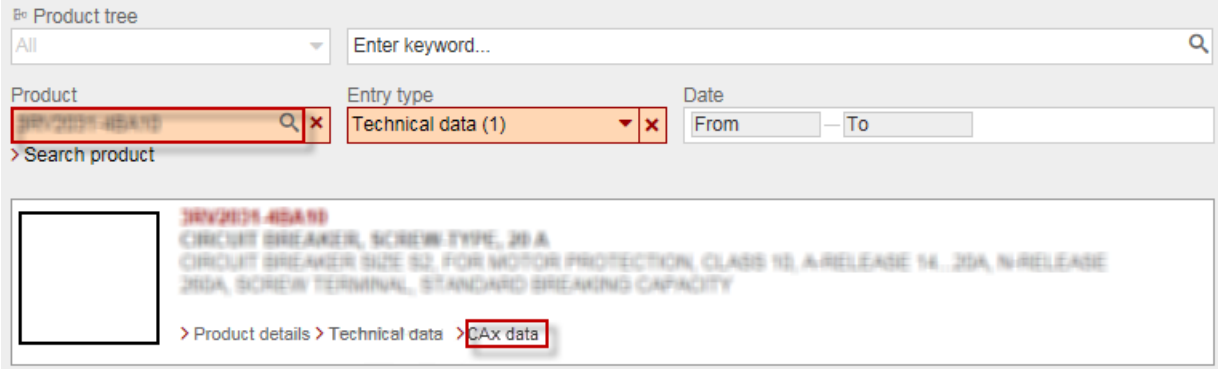
Circuit diagrams

13

13.1 CAx data

You can find the CAx data in the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16208/td).

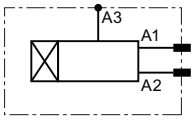
1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "CAx data link.



13.2 Internal circuit diagrams

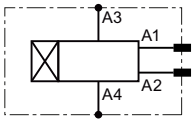
3RA28 function modules

3RA2811-.CW10



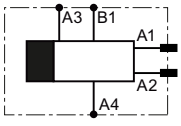
ON-delay, semiconductor output

3RA2831-.D.10



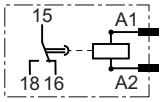
ON-delay, semiconductor output

3RA2812-.DW10, 3RA2832-.D.10



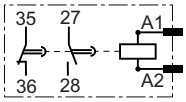
OFF-delay with control signal, semiconductor output

3RA2813-.AW10



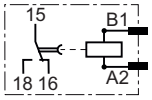
ON-delay, 1 CO contact

3RA2813-.FW10



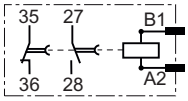
ON-delay, 1 NC contact, 1 NO contact

3RA2814-.AW10



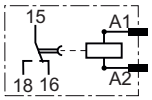
OFF-delay with control signal, 1 CO contact

3RA2814-.FW10



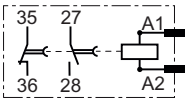
OFF-delay with control signal, 1 NC contact, 1 NO contact

3RA2815-.AW10



OFF-delay without control signal, 1 CO contact

3RA2815-.FW10



OFF-delay without control signal, 1 NC contact, 1 NO contact

13.3 Typical circuits

Momentary-contact circuit

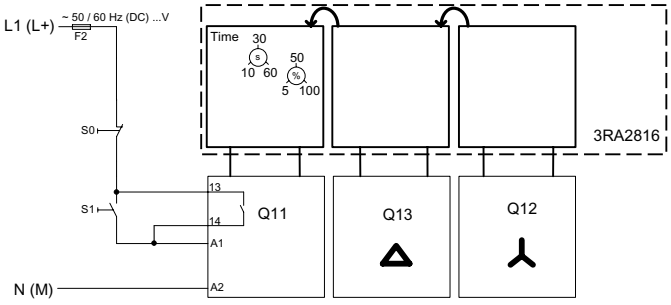


Figure 13-1 Function module (3RA28), momentary-contact circuit

Maintained-contact circuit

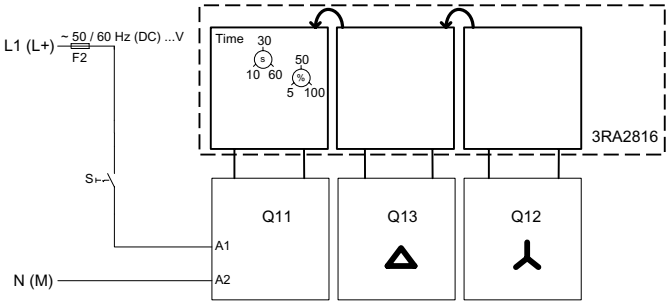


Figure 13-2 Function module (3RA28), maintained-contact circuit

Main circuit

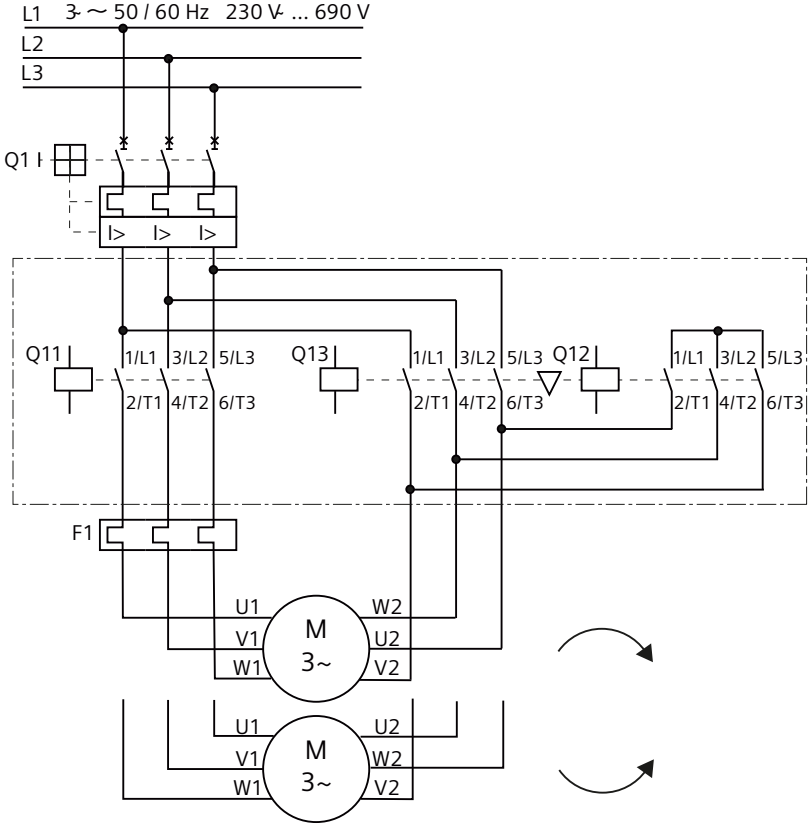


Figure 13-3 Circuit diagram, main circuit

References

A

A.1 References

Further references

You will find further information about the 3RA28 function modules on the Internet (https://support.industry.siemens.com/cs/ww/en/ps/16208/man).

In addition to this manual, please refer to the operating instructions and manuals for any accessories. You can download the relevant documentation from the Internet (http://www.siemens.com/sirius/manuals). Simply enter the article number of the relevant item into the search field.

Operating instructions

Title	Article number
SIRIUS electronic timing relay with semiconductor output S00/S0 (3RA2811 and 3RA2812)	3ZX1012-0RA11-2BA1
SIRIUS electronic timing relay with semiconductor output S2/S3 (3RA2831 and 3RA2832)	3ZX1012-0RA28-3AA1
SIRIUS solid-state delayed auxiliary switch S00/S0/S2/S3 (3RA2813, 3RA2814 and 3RA2815)	3ZX1012-0RA13-1AA1
SIRIUS function module for star-delta (wye-delta) start S00/S0/S2/S3 (3RA2816-0EW20)	3ZX1012-0RA16-1AA1

A.2 Manuals - SIRIUS Modular System

Manuals - SIRIUS Modular System

You can download the SIRIUS manuals from the Internet.

Information about ...	Is available in ...
• SIRIUS - system overview	• "SIRIUS - System Overview" (https://support.industry.siemens.com/cs/ww/en/view/60311318) manual
• Contactors and contactor assemblies 3RT, 3RH and 3RA	• "SIRIUS - SIRIUS 3RT Contactors and Contactor Assemblies" (https://support.industry.siemens.com/cs/ww/en/view/60306557) manual
• 3RF34 electronic switching devices	• "SIRIUS - SIRIUS 3RF34 electronic Switching Devices" (https://support.industry.siemens.com/cs/ww/en/view/60298187) manual

Information about ...	Is available in ...
• 3RW soft starters	• "SIRIUS 3RW30/3RW40 Soft Starter" (https://support.industry.siemens.com/cs/ww/en/view/38752095) manual • "SIRIUS 3RW44 Soft Starter" (https://support.industry.siemens.com/cs/ww/en/view/21772518) manual
• 3RV motor starter protectors	• "SIRIUS 3RV Motor Starter Protectors" (https://support.industry.siemens.com/cs/ww/en/view/60279172) manual
• 3RU, 3RB overload relays	• "SIRIUS 3RU Thermal Overload Relays / SIRIUS 3RB Electronic Overload Relays" (https://support.industry.siemens.com/cs/ww/en/view/60298164) manual
• 3RB24 electronic overload relay	• "3RB24 Electronic Overload Relay for IO-Link" (https://support.industry.siemens.com/cs/ww/en/view/46165627) manual
• 3UG4 monitoring relays / 3RR2 current monitoring relays	• "3UG4/3RR2 Monitoring Relay" (https://support.industry.siemens.com/cs/ww/en/view/54397927) manual
• 3RS1/3RS2 temperature monitoring relays	• "3RS1/3RS2 Temperature Monitoring Relays" (https://support.industry.siemens.com/cs/ww/en/view/54999309) manual
• 3UG48 monitoring relays / 3RR24 current monitoring relays for IO-Link	• "3UG48/3RR24 Monitoring Relays for IO-Link" (https://support.industry.siemens.com/cs/ww/en/view/54375430) manual
• 3RS14/3RS15 temperature monitoring relays for IO-Link	• "3RS14/3RS15 Temperature Monitoring Relays for IO-Link" (https://support.industry.siemens.com/cs/ww/en/view/54375463) manual
• 3RA load feeders	• "SIRIUS - SIRIUS 3RA Load Feeders" (https://support.industry.siemens.com/cs/ww/en/view/60284351) manual
• 3RA6 compact starters	• "SIRIUS 3RA6 Compact Starter" (https://support.industry.siemens.com/cs/ww/en/view/27865747) manual
• 3RA28 function modules for mounting on contactors	• "SIRIUS - SIRIUS 3RA28 Function Modules for Mounting on 3RT2 Contactors" (https://support.industry.siemens.com/cs/ww/en/view/60279150) manual
• 3RA27 function modules for connection to the higher-level control	• "SIRIUS - SIRIUS 3RA2712 Function Modules for AS-Interface" (https://support.industry.siemens.com/cs/ww/en/view/39318922) manual • "SIRIUS - SIRIUS 3RA2711 Function Modules for IO-Link" (https://support.industry.siemens.com/cs/ww/en/view/39319600) manual

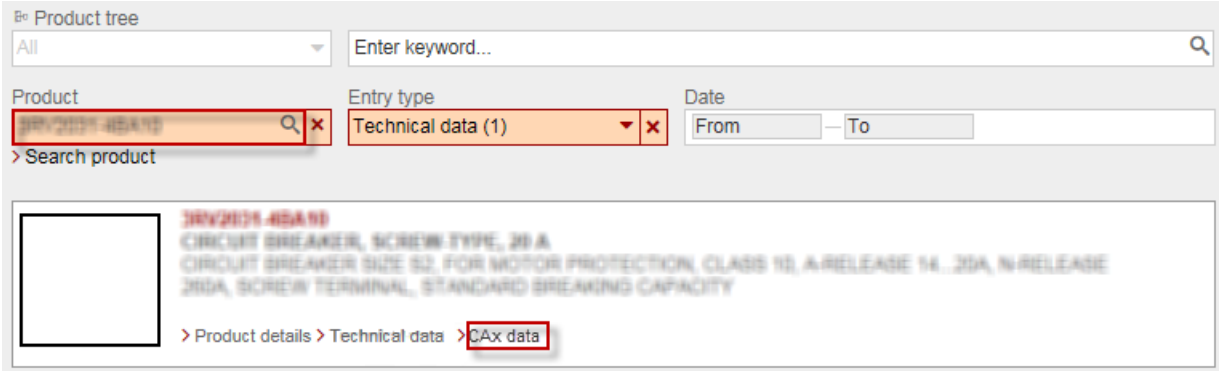
Dimension drawings

B

B.1 CAx data

You can find the CAx data in the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/16208/td).

1. Enter the full article number of the desired device in the "Product" field, and confirm with the Enter key.
2. Click the "CAx data link.

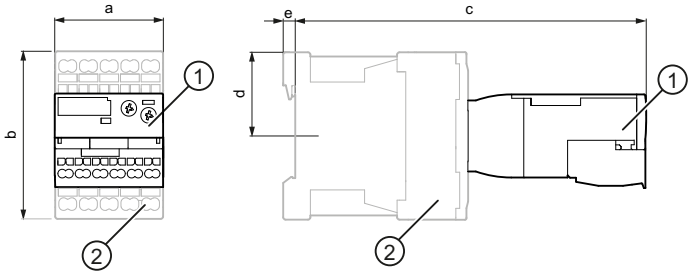


B.2 Dimensions in mm

Note

All dimensions are specified in mm.

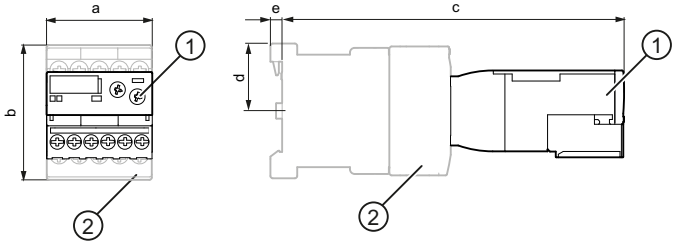
B.3 Solid-state timing relays with semiconductor output and solid-state time-delay auxiliary switches



① Timing relay (mounted)
② Contactor

Figure B-1 Electronic timing relay with spring-loaded terminal

Article number	a	b	c	d	e
3RT2.1.-2	45	70	142	35	5
3RT2.2.-2 (AC)	45	101.5	166	51	5
3RT2.2.-2 (DC)	45	101.5	176	51	5
3RT2.3.-2	55	110	199	55	5
3RT2.4.-2	70	140	221	70	5

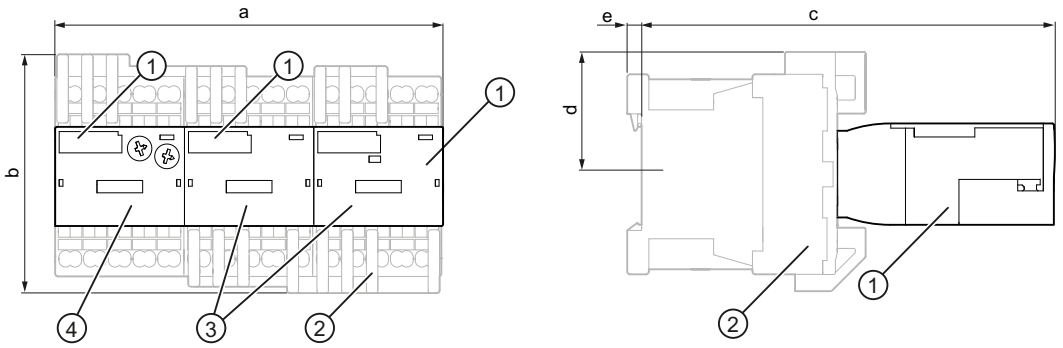


① Timing relay (mounted)
② Contactor

Figure B-2 Electronic timing relay with screw connection

Article number	a	b	c	d	e
3RT2.1.-1	45	57.5	142	28	5
3RT2.2.-1 (AC)	45	85	166	41	5
3RT2.2.-1 (DC)	45	85	176	41	5
3RT2.3.-2	55	110	199	55	5
3RT2.4.-2	70	140	221	70	8

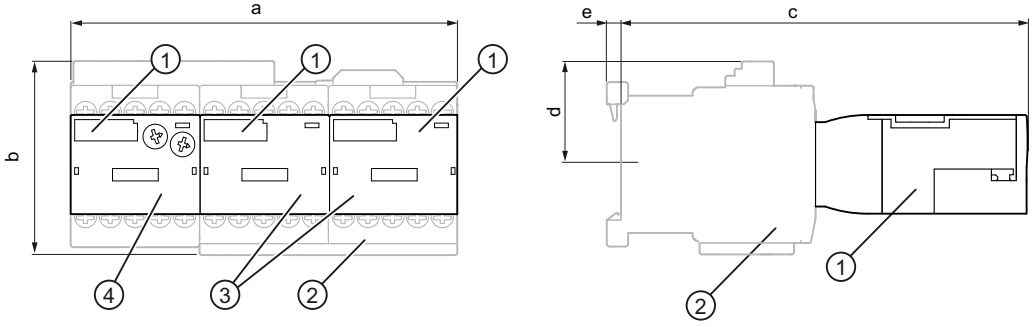
B.4 Star-delta (wye-delta) modules



① Star-delta (wye-delta) function module (mounted)
② Contactor
③ Coupling modules
④ Basic module

Figure B-3 Star-delta (wye-delta) function module with spring-loaded terminal

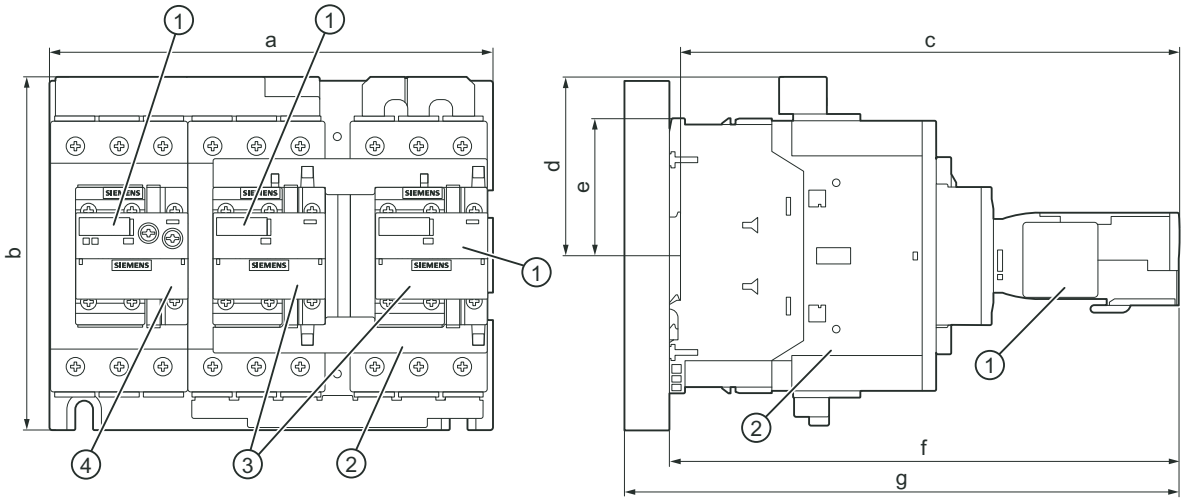
Article number	a	b	c	d	e
3RT2.1.-2	135	84	142	43	5
3RT2.2.-2 (AC)	135	114	166	59	5
3RT2.2.-2 (DC)	135	114	176	59	5



① Star-delta (wye-delta) function module (mounted)
② Contactor
③ Coupling modules
④ Basic module

Figure B-4 Star-delta (wye-delta) function module with screw connection

Article number	a	b	c	d	e
3RT2.1.-1	135	68	142	36	5
3RT2.2.-1 (AC)	135	101	166	53	5
3RT2.2.-1 (DC)	135	101	176	53	5



① Star-delta (wye-delta) function module (mounted)
② Contactor
③ Coupling modules
④ Basic module

Table B-1 Dimensions in mm

Size	a	b	c	d	e	f	g
3RT2.3.-2	177.5	141.5	199	72	55.1	204	222.3
3RT2.4.-2	220	180	221	89.5	69.5	227	240

Index

S

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