SIEMENS

Industrial Controls

Load feeders SIRIUS 3RA21 / 3RA22 Load Feeders and Load Feeders for Self-assembly

Equipment Manual

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indicates that death or severe personal injury **may** result if proper precautions are not taken.

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indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

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Introduction

1

1.1 Responsibility of the user for system configuration and functionality

Fuseless load feeders are device combinations comprising a 3RV2 motor starter protector for overload and short-circuit protection and a 3RT2 contactor for normal switching.

The SIRIUS portfolio features two different configuration options for fuseless load feeders:

- 3RA2 tested pre-assembled complete devices
- Tested combinations of individual devices

Load feeders can be configured using the Digital Engineering Manual (https://imp.siemens.com/digital-engineering-manual/dem).

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Note

When designing a system, comply with all valid national installation specifications and standards.

1.2 Purpose of the manual

This manual describes the 3RA21/3RA22 fuseless load feeders and provides the following information:

- Information about the different mounting variants of the fuseless load feeders.
- Information on necessary hardware components.
- Information on installing, connecting and operating the fuseless load feeders.
- Technical information such as dimension drawings and unit wiring diagrams.

The information in this manual enables you to configure and commission the fuseless load feeders.

1.3 Change documentation

Release number	Changes
03/2026	The design of the 3RV2917-5AA00 and 3RV2927-5AA00 plug-in connectors with spring-loaded terminal for the 3RV2 motor starter protectors has been adapted.

1.4 Required basic knowledge

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

Note

Observe the minimum and maximum torques as indicated in the operating instructions or on the nameplate.

1.5 Scope of the manual

The manual is valid for these fuseless load feeders. It contains a description of the devices that is valid at the time of publication.

1.6 Siemens Industry Online Support

Information and service

At Siemens Industry Online Support you can obtain up-to-date information from our global support database:

- Product support
- Application examples
- Forum
- mySupport

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Product support

You can find information and comprehensive know-how covering all aspects of your product here:

- **FAQs**
  Answers to frequently asked questions
- **Manuals/operating instructions**
  Read online or download, available as PDF or individually configurable.
- **Certificates**
  Clearly sorted according to approving authority, type and country.
- **Characteristics**
  For support in planning and configuring your system.
- **Product announcements**
  The latest information and news concerning our products.
- **Downloads**
  Here you will find 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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  Search for request number, product or subject
- **My filters**
  With filters, you limit the content of the online support to different focal points.

- **My favorites**
  With favorites you bookmark articles and products that you need frequently.
- **My notifications**
  Your personal mailbox for exchanging information and managing your contacts. You can compile your own individual newsletter in the "Notifications" section.
- **My products**
  With product lists you can virtually map your control cabinet, your system or your entire automation project.
- **My documentation**
  Configure your individual documentation from different manuals.
- **CAx data**
  Easy access to CAx data, e.g. 3D models, 2D dimension drawings, EPLAN macros, device circuit diagrams
- **My IBase registrations**
  Register your Siemens products, systems and software.

1.7 Further documentation

To install and connect the fuseless load feeders, you require the operating instructions of the load feeders 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 157)".

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

These devices can be recycled thanks to their low pollutant content. For environmentally-friendly recycling and disposal of your electronic waste, please contact a company certified for the disposal of electronic waste.

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)

1.11 Cybersecurity information

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

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https://new.siemens.com/cert.

Standards

2

Fuseless load feeders are manufactured and tested in accordance with IEC 60947-4-1.

Types of coordination

Types of coordination are important selection criteria for fuseless load feeders. They are defined in the "Appendix" under "Types of coordination (Page 155)".

Approvals/Test reports

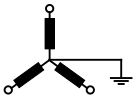
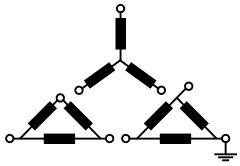
Extensive approvals and test certificates are available for 3RA2 pre-assembled complete devices. If you assemble the load feeders yourself, all approvals and test certificates of the individual devices and the certificates for type-tested combinations apply.

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)

-- not specified

Reference

The standards from Catalog IC 10 "SIRIUS Industrial Controls" in the appendix always apply. More information on the load feeders is available in our online ordering system (https://mall.industry.siemens.com/mall/en/WW/catalog/products/10047490?tree=CatalogTree)under the "Product Information" tab.

Product description

3

3.1 Overview

Fuseless load feeders

Fuseless load feeders are device combinations comprising a 3RV motor starter protector for overload and short-circuit protection and a 3RT contactor for normal switching. The SIRIUS portfolio features two different configuration options for fuseless load feeders.

- Tested pre-assembled complete devices 3RA2 (sizes S00 to S2)
- Tested combinations of individual devices

3.2 Device versions

The modular standard components in the SIRIUS modular system are ideally matched and support the simple configuration of fuseless load feeders. The load feeders are also available as 3RA2 complete devices.

Both options are characterized by the following features.

- Type of coordination 1 or 2
- Rated control supply voltage
- Mounting on busbar or DIN rail
- Screw or spring-loaded connection

A detailed overview of the fuseless load feeders product range appears below.

Description of the various sizes

Fuseless load feeders up to 38 A (discrete configuration of individual devices with connecting cables) and 32 A (pre-assembled complete devices or configuration with link module) can be assembled in sizes S00 and S0.

An assembly up to 80 A (discrete configuration of individual devices with connecting cables) and 65 A (as pre-assembled complete devices, or configuration with link module) is possible in size S2.

An assembly up to 100 A (discrete configuration of individual devices with connecting cables or assembly with link module) is possible in size S3.

The table below lists the maximum power of the three-phase motor for pre-assembled 3RA2 complete devices based on the type of coordination at a voltage of 400 V AC.

Table 3-1 Motor starter protector sizes

Size	Type of coordination	Power of three-phase motor
S00	1	0.04 ... 7.5 kW
	2	0.04 ... 5.5 kW
S0	1	0.04 ... 7.5 kW
	2	0.04 ... 15 kW
S2	1	15 kW ... 37 kW (max. 65 A)
	2	15 kW ... 37 kW (max. 65 A)

Assembly/Installation

The feeders are prepared for mounting on DIN rail, mounting on a 60 mm busbar or mounting on a base plate.

Table 3-2 Mounting options

Starter combination		Direct-on-line starter				Reversing starter			
Size		S00	S0	S2	S3	S00	S0	S2	S3
Mounting on a standard rail									
	Snap-on mounting without adapter	✓[1]	✓[1]	✓[2]	—	✓[1]	—	—	—
	With DIN rail adapter	✓[3]	✓[3]	✓[2]	✓[2]	✓[3]	✓[3]	✓[2]	✓[2]
Mounting on 8US busbar									
	With 8US busbar adapter	✓	✓	✓	—	✓	✓	✓	—
Mounting on base plate									
	Direct	✓	✓	✓	—	✓	✓	✓	—
	With DIN rail adapter	✓	✓	✓	✓	✓	✓	✓	✓

1) Mounting on 1 DIN rail

2) Mounting on 2 DIN rails

3) For high vibration and shock loads: Mounting on two DIN rails with DIN-rail adapter

3.2.1 Pre-assembled complete devices

Pre-assembled complete devices

3RA2 fuseless load feeders are pre-assembled complete devices; they are delivered ready-wired and with all mechanical connections established. The devices are available in sizes S00, S0 and S2 for direct-on-line start. Pre-assembled complete devices in size S00 and S0 are available for reversing start.

Connection systems

3RA2 fuseless load feeders are available with the following connection system options.

Table 3-3 Connection systems available for 3RA2 fuseless load feeders

Connection system	3RA2 pre-assembled complete devices	
	S00 / S0	S2
Screw terminals	✓[1] [2]	✓
Spring-loaded terminals	✓	---

1) The link module for the S00 load feeder can also be used to mount an S00 contactor on an S0 motor starter protector.

2) The link module for the S0 load feeder can also be used to mount an S0 contactor on an S00 motor starter protector.

Rated powers

3RA2 pre-assembled feeders are dimensioned for the following powers:

Powers	S00	S0	S2
Direct-on-line starter	≤ 7.5 kW (16 A)	≤ 15 kW (32 A)	≤ 37 kW (66 A)
Reversing starter	≤ 7.5 kW (16 A)	≤ 15 kW (32 A)	---

Control supply voltages of 3RA2 load feeders

3RA2 pre-assembled feeders are available for the following rated control supply voltages:

Rated control supply voltages		
S00	**S0**	**S2**
230 V AC / 50/60 Hz	230 V AC / 50 Hz	230 V AC / 50 Hz
24 V DC	24 V DC	20 ... 33 V AC/DC

3.2.2 Self-assembled load feeders

Assembly of load feeders from individual devices

Self-assembly load feeders comprising individual devices are available as an alternative to the 3RA2 complete device. In the case of a discrete configuration of individual devices without a link module, the values of the basic devices apply. The following components can be combined via the intermediary of a link module.

Combination	S00	S0	S2	S3
Motor starter protector and contactor	7.5 kW (16 A)	15 kW (32 A)	30 / 37 kW (65 A)	55 kW (100 A) [1]
Motor starter protector and soft starter	7.5 kW (16 A)	15 kW (32 A)	30 / 37 kW (65 A) [1]	55 kW (100 A) [2]
Motor starter protector and solid-state contactor	—	7.5 kW (16 A)	—	—

[1] A DIN rail adapter shall be used for this combination

[2] Mounting on base plate

The modularity of the SIRIUS system means that the standard devices are perfectly matched from both a mechanical and an electrical point of view. Wiring kits for reversing contactor assemblies and star-delta combinations are available for the simple assembly of starter combinations for size S00 / S0 with screw-type and spring-loaded connection and for size S2 / S3 with screw-type connection. Assembly kits are available for mounting self-assembled load feeders on DIN rails or busbars.

Assembly of three-part combinations with link module between the motor starter protector and the contactor

You are basically advised to refrain from setting up combinations of a motor starter protector, a contactor and an overload relay or a monitoring relay as a completely assembled three-part combination. If this should nevertheless be necessary, the following restrictions apply:

Motor starter protector + contactor + electronic overload relay / 3RR monitoring relay (size S00 / S0)

Thermal restrictions	Mechanical restrictions
No restrictions	DIN rail adapter required

Motor starter protector + contactor + electronic overload relay / 3RR monitoring relay (size S2)

Thermal restrictions	Mechanical restrictions
• At an ambient temperature of T_a = 40 °C (no restrictions) • At an ambient temperature of T_a = 60 °C (clearance between the load feeders: ≥ 10 mm)	No restrictions

Motor starter protector + contactor + solid-state overload relay (size S3)

Thermal restrictions	Mechanical restrictions
On request	On request

Motor starter protector + contactor + thermal overload relay (size S00 / S0)

Thermal restrictions:	Mechanical restrictions
Reduce permissible ambient temperature by 20 K	DIN rail adapter required
No side-by-side mounting (≥ 10 mm clearance for vertical installation, > 20 mm for horizontal installation)	
Current derating to 87 % of I_n	

Motor starter protector + contactor + thermal overload relay (size S2 / S3)

Thermal restrictions	Mechanical restrictions
Not permissible	-

Reference

More information ...	Can be found in the chapter titled ...
About assembly kits for fuseless load feeders	Accessories (Page 137)

Connection systems

Self-assembled fuseless load feeders are available with the following connection system options.

Table 3-4 Connection systems available for self-assembled fuseless load feeders

Connection system	Self-assembled fuseless load feeders		
	S00 / S0	S2	S3
Screw terminals	✓	✓	✓
Spring-loaded connection	✓	[1]	[1]

[1] With size S2 and S3 devices, spring-loaded connection system is only possible in the auxiliary circuit.

Rating data

Table 3-5 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Direct-on-line starter, screw terminal, DIN rail or base plate					
S00	≤ 14	0	H, V	60	Unrestricted
	> 14 ... 16	10	H	60	
		0	H, V	40	
S0	≤ 29	0	H, V	60	Unrestricted
	> 29 ... 32	10	H	60	
		0	H, V	40	
S2	≤ 65	0	H, V	60	Unrestricted
S3 (with DIN-rail adapter 3RA2942-1AA00 only)	≤ 87	0	H, V	60	On request
	> 87 ... 100	0	H, V	40	
Direct-on-line starter, screw terminal, busbar					
S00	≤ 14	0	H	40	Vibration and shock kit 8US1998-1CA10 required
		10	H	60	
		10	V	40	
	> 14 ... 16	10	H	60	
		10	H, V	40	
S0	≤ 29	0	H	40	Vibration and shock kit 8US1998-1CA10 required
		10	H	60	
		10	V	40	
	> 29 ... 32	10	H	60	
		10	H, V	40	

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1)]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
S2	≤ 65	10	H, V	60	Vibration and shock kit 8US1998-1DA10 required
	≤ 65	0	H, V	40	Vibration and shock kit 8US1998-1DA10 required

Table 3-6 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1)]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Reversing starter, screw terminal, DIN rail or base plate					
S00	≤ 14	0	H, V	60	Unrestricted
	> 14 ... 16	10	H	60	
		0	H, V	40	
S0	≤ 29	0	H, V	60	DIN-rail adapter required (included with 3RA22)
	> 29 ... 32	10	H	60	
		0	H, V	40	
S2	≤ 65	0	H, V	60	Unrestricted
S3 (with DIN-rail adapter 3RA2942-1AA00 only)	≤ 87	0	H, V	60	On request
	> 87 ... 100	0	H, V	40	
Reversing starter, screw terminal, busbar					
S00	≤ 14	0	H	60	Vibration and shock kit 8US1998-1CA10 required
		0	V	40	
	> 14 ... 16	10	H	60	
		10	V	40	
S0	≤ 29	0	H	60	Vibration and shock kit 8US1998-1CA10 required
		0	V	40	
	> 29 ... 32	10	H	60	
		10	V	40	

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
S2	≤ 65	10	H, V	60	Vibration and shock kit 8US1998-1DA10 required
	≤ 65	0	H, V	40	Vibration and shock kit 8US1998-1DA10 required

Table 3-7 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Direct-on-line starter, spring-loaded terminal, DIN rail or base plate					
S00	≤ 14	0	H, V	60	Unrestricted
	> 14 ... 16	10	H	60	
		0	H, V	40	
S0	≤ 29	0	H, V	60	Unrestricted
	> 29 ... 32	10	H	60	
		0	H, V	40	
Direct-on-line starter, spring-loaded terminal, busbar					
S00	≤ 14	0	H	40	Vibration and shock kit 8US1998-1CA10 required
		10	H	60	
		10	V	40	
	> 14 ... 16	10	H	60	
		10	V	40	
S0	≤ 29	0	H	40	Vibration and shock kit 8US1998-1CA10 required
		10	H	60	
		10	V	40	
	> 29 ... 32	10	H	60	
		10	V	40	

Table 3-8 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Reversing starter, spring-loaded connection system, DIN rail or base plate					
S00	≤ 14	0	H, V	60	Unrestricted
	> 14 ... 16	10	H	60	
		0	H, V	40	
S0	≤ 29	0	H, V	60	DIN-rail adapter required (included with 3RA22)
	> 29 ... 32	10	H	60	
		0	H, V	40	
Reversing starter, spring-loaded connection system, busbar					
S00	≤ 14	0	H	60	Vibration and shock kit 8US1998-1CA10 required
		0	V	40	
	> 14 ... 16	10	H	60	
		10	V	40	
S0	≤ 29	0	H	60	Vibration and shock kit 8US1998-1CA10 required
		0	V	40	
	> 29 ... 32	10	H	60	
		10	V	40	

Table 3-9 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Motor starter protector and soft starter, screw terminal, DIN rail or base plate					
S00	16	[2]	-	[2]	The feeder must be screwed tight to the top of the motor starter protector with two screws and fastened to the bottom of the soft starter with a self-locking screw. Not approved for railways, power plants, or shipbuilding.
S0	32	[2]	-	[2]	The feeder must be screwed tight to the top of the motor starter protector with two screws and fastened to the bottom of the soft starter with a self-locking screw. Not approved for railways, power plants, or shipbuilding.
S2 (only with DIN-rail adapter 3RA2932-1CA00)	65	[2]	[2]	[2]	Unrestricted
S3 (on base plate only)	On request				
Motor starter protector and soft starter, spring-loaded connection system, DIN rail or base plate					
S00	16	[2]	-	[2]	The feeder must be screwed tight to the top of the motor starter protector with two screws and fastened to the bottom of the soft starter with a self-locking screw. Not approved for railways, power plants, or shipbuilding.
S0	32	[2]	-	[2]	The feeder must be screwed tight to the top of the motor starter protector with two screws and fastened to the bottom of the soft starter with a self-locking screw. Not approved for railways, power plants, or shipbuilding.
Motor starter protector and solid-state contactor, screw terminal, DIN rail or base plate					
Direct-on-line starters (sizes S00 / S0)	16	[2]	-	[2]	Unrestricted. Not approved for railways, power plants, or shipbuilding.
Reversing starters (sizes S00 / S0)	7.4	[2]	-	[2]	Unrestricted. Not approved for railways, power plants, or shipbuilding.

[1] Vibration and shock tests are carried out in accordance with SN 31205 as well as with the relevant standards for railways, shipbuilding, and power plants.

[2] Requires consulting with Technical Support.

Control supply voltages of load feeders

The contactors can be ordered with different rated control supply voltages as appropriate for the application area of the fuseless load feeders.

See also

Mounting variants under different conditions and frequency of use (Page 47)

3.3 Applications

Fuseless load feeders can be used anywhere in industry where fuse, contactor, and overload relay combinations were previously used. Due to the higher functionality of the motor starter protector compared to fuses, many requirements can be solved more easily with a fuseless load feeder, as these can be used both for EMERGENCY OFF applications (with suitable accessories) and as disconnectors.

3.4 Application environment

3RA2 load feeders are climate-proof. They are designed for use in enclosed spaces in which no severe operating conditions prevail (e.g. dust, caustic vapors, hazardous gases).

If they are to be installed in dusty or damp rooms, suitable enclosures must be provided.

Product combinations

4

The SIRIUS modular system supports the assembly of load feeders for a whole variety of requirements. The individual devices which can be combined are matched to one another from both an electrical and a mechanical point of view.

The following fuseless device combinations have been tested according to IEC 60947-4-1:

Table 4-1 Fuseless load feeders tested according to IEC 60947-4-1

Device combination		
Motor starter protector	Contactor	
Motor starter protector	Contactor	Thermal or electronic overload relay
Motor starter protector	Contactor	SIMOCODE pro SIMOCODE M-CP
Motor starter protector	Contactor	SIRIUS 3RR monitoring relay
Motor starter protector	Reversing contactor assembly	
Motor starter protector	Star-delta (wye-delta) contactor assembly[1)]	Thermal or electronic overload relay
Motor starter protector	Star-delta (wye-delta) contactor assembly[1)]	SIMOCODE pro SIMOCODE M-CP
Motor starter protector	3RW30, 3RW40, 3RW44 soft starters	
Motor starter protector	Solid-state contactor or solid-state reversing contactor	
Motor starter protector	Solid-state contactor	SIRIUS 3RR monitoring relay

1) Also with logic modules 3RA28

For detailed information on combinations of individual devices, please refer to the Configuration Manual and the Digital Engineering Manual. The configuration manual describes fuseless and fused load feeders for various line voltages.

Functions

5

Pre-assembled load feeders

In the 3RA2 fuseless load feeder, the 3RV2 motor starter protector takes on the dual function of overload protection and short-circuit protection. Upstream protective devices such as melting fuses or limiters are superfluous, as the load feeder is capable of withstanding short circuits up to 150 kA at 400 V.

The 3RT2 contactor is suitable for extremely complex switching tasks requiring maximum endurance.

The trip class on all pre-assembled 3RA2 feeders is CLASS 10.

Self-assembled load feeders

Thanks to the flexible SIRIUS modular system, load feeders can be assembled for the most diverse requirements.
These load feeders can be fuseless or fused. Load feeders for starting motors can be assembled for the following startup types, for example:

- Direct-on-line start
- Reversing start
- Star-delta (wye-delta) start
- Soft start
- Configuration with solid-state switching devices for high switching frequencies

In a configuration with overload relay, a trip class up to CLASS 30 can be set. In the case of a configuration with SIMOCODE, a tripping class up to CLASS 40 can be set.

Reference

More information ...	Can be found ...
About the functions of motor starter protectors	In the "References" appendix under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RV motor starter protectors" manual.

Configuration

6

Application planning

You will find detailed information about configuration in the configuration manual. The configuration manual describes fuseless and fused load feeders for various line voltages.

Reference

More information ...	Can be found ...
About applications involving contactors	In the "References" appendix under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS SIRIUS 3RT Contactors/Contactor Assemblies" manual.
About applications involving motor starter protectors	In the "References" appendix under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RV motor starter protectors" manual.
Additional selection guide	Digital Engineering Manual (https://imp.siemens.com/digital-engineering-manual/dem)

6.1 SIRIUS system configurator

Reference

To assist you with configuration, the "SIRIUS System Configurator (http://www.siemens.com/sirius/configurators)" is at your disposal on the Internet.

The Digital Engineering Manual (https://imp.siemens.com/digital-engineering-manual/dem) and the"Electrical Designer" (https://www.siemens.com/global/en/industries/machinebuilding/panel-building/electrical-designer.html) tool are available to you as further selection guides.

6.2 Use of 3RA2 load feeders with highly energy-efficient motors (IE3/IE4)

6.2.1 General information on the startup characteristics of highly energy-efficient motors (IE3/IE4)

Motor starter protectors have been conceived to protect and switch motors. They assume the task of line protection in the event of an overload or short-circuit.
To this end, motor starter protectors are equipped with sensors for overload and short-circuit detection and possess an interruption point for switching motor and short-circuit currents.
Without technical adaptation to the new highly energy-efficient motors (IE3/IE4), the problems described below can arise.

6.2.1.1 Short-circuit detection

In the event of unusually high currents in the electrical installation, short-circuit detection serves to keep the thermal and dynamic load low and ensure safe shutdown. The response threshold should lie above the currents that a starting motor causes. The dimensioning of a system is influenced by the response value. The higher the response value, the higher the chosen cable cross-sections to be protected must be. This increases costs in the system and for the switching devices. This is why the response values have been adapted to the previously typical motor starting currents.

The drawback of the new, more efficient motors (IE3/IE4) is that, on average, the starting currents and magnetization currents (inrush currents) arising at the moment of switching on are considerably higher than in the case of the previous generations of motors. The spread of locked rotor and inrush currents is very wide. Motors with high values can therefore cause the motor starter protector's short-circuit detection to respond. This leads to unintentional shutdown ("early tripping") during motor starting. Early tripping can occur whenever the motor current lies in the top range of the motor starter protector's setting scale and a motor with a high inrush current is used.

6.2.1.2 Making and breaking capacity of motor starter protectors

Making and breaking capacity tests are conducted in compliance with the standard under three-phase AC loading with 10 to 8 times the rated current. In some cases, the starting and inrush currents of IE3/IE4 motors are clearly above these values. In isolated cases, current spikes that arise during switching on can cause brief lifting of the contacts without triggering a breaking operation by short-circuit detection.

Where the motor is switched on by a contactor, for example, the motor starter protector's making/breaking capacity is irrelevant. In this case, the motor current is only carried. The current that can be carried without any problems is normally higher than the switching device's making/breaking capacity.

6.2.1.3 Rated motor current/setting scale

For motor protection, the motor's rated current must be set on the motor starter protector's setting scale. The new IE3/IE4 motors generally have lower rated currents. This can lead to situations in which a motor starter protector with a lower rated current has to be chosen for the same motor rating. Thus, the short-circuit detection response value also drops and can lead to tripping during motor starting.

See also

Short-circuit detection (Page 43)

6.2.2 Optimization of 3RV2 motor starter protector for IE3/IE4 motors

The motor starter protectors have been revised in relation to the higher locked rotor currents and inrush currents as follows:

- Raising of the lower short-circuit detection response tolerances without changes to the maximum values.
  → No change to system dimensioning
- Increase in the making / breaking capacity.
  → Far-reaching avoidance of restrictions due to increased motor starting currents and inrush currents, see the chapter "Technical modifications/restrictions of 3RV2 motor starter protectors (Page 45)".
- Adaptation of some motor starter protector versions' overload releases and setting scales.
  → Avoidance of using smaller motor starter protectors due to lower rated motor currents (see chapter "Technical modifications/restrictions of 3RV2 motor starter protectors (Page 45)")

In the case of motors with very high locked rotor and inrush currents, problems can arise despite adaptations, e.g. undesired tripping on starting. It is recommended that motor starter protectors be selected such that the setting does not need to be made in the upper range of the setting scale. This reduces power loss in the device (cost saving and reduced temperature rise in the control cabinet) and increases the distance from the short-circuit releases' response limits.

Selection example

In this example, two motor starter protectors are compared with each other.

Rated motor current: 15 A
Motor starter protector A: Setting scale 10 ... 16 A
Motor starter protector B: Setting scale 14 ... 20 A

Motor starter protector B (14 ... 20 A) is recommended since its power loss is lower and it has a higher distance to the response limits.

The power loss of motor starter protector B is approximately 35 % lower than that of motor starter protector A.

The response limits of the short-circuit release always refer to the maximum setting value:

- In the case of motor starter protector A, the response value of the short-circuit release is 208 A (13 × 16 A).
  At the setting value of 15 A, the distance to the response limit of the short-circuit release is 13.86 times the current setting (208 A / 15 A =13.86).
- In the case of motor starter protector B, the response value of the short-circuit release is 260 A (13 × 20 A). With a setting value of 15 A, the distance to the response limit of the short-circuit release is 17.33 times the current setting (260 A / 15 A = 17.33).

In the present example, the distance to the response limit of 13.86 times the setting current for motor starter protector A increases to 17.33 times the current setting for motor starter protector B.

6.2.3 Technical modifications/restrictions of 3RV2 motor starter protectors

Restriction of the maximum starting current is necessary for one setting range each of sizes S0, S2 and S3.
The reason for this lies in the corresponding variants' making and breaking capacities.

You can find additional information in the Digital Engineering Manual. (https://imp.siemens.com/digital-engineering-manual/dem)

3RV2 motor starter protectors	3RV2.21-4E...	3RV2.3.-4R...	3RV2.4.-4M...
Setting range for overload release	27 to 32 A	70 to 80 A	80 ... 100 A
Reduced starting current ratio	8 times	9 times	7.8 times
Max. permissible starting current	32 A x 8 = 256 A	80 A x 9 = 720 A	100 A x 7.8 = 780 A

Only applies to AC3 current.

Starting current ratio:	Maximum permissible rated operational current [A]		
	3RV2.21-4E...	3RV2.3.-4R...	3RV2.4.-4M...
≤ 8 times	32.0	80.0	97.5 A
8.5 times	30.2	80.0	91.8 A
9 times	28.4	80.0	86.6 A
9.5 times	27.0	75.8	82.1 A
10 times	-	72.0	--

Note

For size S0, the setting range variants "-4P" (30 to 36 A) and "-4F" (34 to 40 A) are not suitable for use with IE3 and IE4 motors.

We recommend the use of size S2 for these current ranges.

Mounting

7

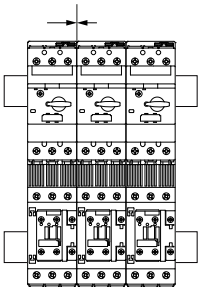
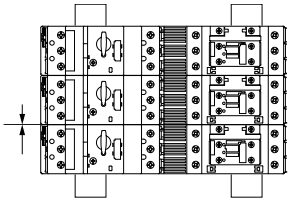
7.1 Installation guidelines

7.1.1 Minimum clearances to grounded, live and insulated parts (400 V/500 V/690 V AC)

The minimum spacing for standard installation to grounded, live and insulated parts (400/500 V / 690 V AC) and minimum spacing for installation in a limiter circuit (500 V / 690 V) can be found in the Digital Engineering Manual (https://imp.siemens.com/digital-engineering-manual/dem).

7.1.2 Mounting variants under different conditions and frequency of use

The load feeders can be mounted horizontally or vertically.

Horizontal installation	Vertical installation
	

The following table shows the installation guidelines for the fuseless load feeders:

Table 7-1 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1)]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Direct-on-line starter, screw terminal, DIN rail or base plate					
S00	≤ 14	0	H, V	60	Unrestricted
	> 14 ... 16	10	H	60	
		0	H, V	40	
S0	≤ 29	0	H, V	60	Unrestricted
	> 29 ... 32	10	H	60	
		0	H, V	40	
S2	≤ 65	0	H, V	60	Unrestricted
S3 (with DIN-rail adapter 3RA2942-1AA00 only)	≤ 87	0	H, V	60	On request
	> 87 ... 100	0	H, V	40	
Direct-on-line starter, screw terminal, busbar					
S00	≤ 14	0	H	40	Vibration and shock kit 8US1998-1CA10 required
		10	H	60	
		10	V	40	
	> 14 ... 16	10	H	60	
		10	H, V	40	
S0	≤ 29	0	H	40	Vibration and shock kit 8US1998-1CA10 required
		10	H	60	
		10	V	40	
	> 29 ... 32	10	H	60	
		10	H, V	40	
S2	≤ 65	10	H, V	60	Vibration and shock kit 8US1998-1DA10 required
	≤ 65	0	H, V	40	Vibration and shock kit 8US1998-1DA10 required

Table 7-2 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1)]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Reversing starter, screw terminal, DIN rail or base plate					
S00	≤ 14	0	H, V	60	Unrestricted
	> 14 ... 16	10	H	60	
		0	H, V	40	
S0	≤ 29	0	H, V	60	DIN-rail adapter required (included with 3RA22)
	> 29 ... 32	10	H	60	
		0	H, V	40	
S2	≤ 65	0	H, V	60	Unrestricted
S3 (with DIN-rail adapter 3RA2942-1AA00 only)	≤ 87	0	H, V	60	On request
	> 87 ... 100	0	H, V	40	
Reversing starter, screw terminal, busbar					
S00	≤ 14	0	H	60	Vibration and shock kit 8US1998-1CA10 required
		0	V	40	
	> 14 ... 16	10	H	60	
		10	V	40	
S0	≤ 29	0	H	60	Vibration and shock kit 8US1998-1CA10 required
		0	V	40	
	> 29 ... 32	10	H	60	
		10	V	40	
S2	≤ 65	10	H, V	60	Vibration and shock kit 8US1998-1DA10 required
	≤ 65	0	H, V	40	Vibration and shock kit 8US1998-1DA10 required

Table 7-3 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Direct-on-line starter, spring-loaded terminal, DIN rail or base plate					
S00	≤ 14	0	H, V	60	Unrestricted
	> 14 ... 16	10	H	60	
		0	H, V	40	
S0	≤ 29	0	H, V	60	Unrestricted
	> 29 ... 32	10	H	60	
		0	H, V	40	
Direct-on-line starter, spring-loaded terminal, busbar					
S00	≤ 14	0	H	40	Vibration and shock kit 8US1998-1CA10 required
		10	H	60	
		10	V	40	
	> 14 ... 16	10	H	60	
		10	V	40	
S0	≤ 29	0	H	40	Vibration and shock kit 8US1998-1CA10 required
		10	H	60	
		10	V	40	
	> 29 ... 32	10	H	60	
		10	V	40	

Table 7-4 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1)]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Reversing starter, spring-loaded connection system, DIN rail or base plate					
S00	≤ 14	0	H, V	60	Unrestricted
	> 14 ... 16	10	H	60	
		0	H, V	40	
S0	≤ 29	0	H, V	60	DIN-rail adapter required (included with 3RA22)
	> 29 ... 32	10	H	60	
		0	H, V	40	
Reversing starter, spring-loaded connection system, busbar					
S00	≤ 14	0	H	60	Vibration and shock kit 8US1998-1CA10 required
		0	V	40	
	> 14 ... 16	10	H	60	
		10	V	40	
S0	≤ 29	0	H	60	Vibration and shock kit 8US1998-1CA10 required
		0	V	40	
	> 29 ... 32	10	H	60	
		10	V	40	

Table 7-5 Mounting variants - fuseless load feeders with link module

Combination					
	Setting range				
		Distance between feeders			
			Permissible installation: H = horizontal, V = vertical		
				Max. ambient temperature T_a	
					Use under increased vibration and shock load [1]
Motor starter protector and contactor	**A**	**mm**	**H, V**	**°C**	
Motor starter protector and soft starter, screw terminal, DIN rail or base plate					
S00	16	[2]	-	[2]	The feeder must be screwed tight to the top of the motor starter protector with two screws and fastened to the bottom of the soft starter with a self-locking screw. Not approved for railways, power plants, or shipbuilding.
S0	32	[2]	-	[2]	The feeder must be screwed tight to the top of the motor starter protector with two screws and fastened to the bottom of the soft starter with a self-locking screw. Not approved for railways, power plants, or shipbuilding.
S2 (only with DIN-rail adapter 3RA2932-1CA00)	65	[2]	[2]	[2]	Unrestricted
S3 (on base plate only)	On request				
Motor starter protector and soft starter, spring-loaded connection system, DIN rail or base plate					
S00	16	[2]	-	[2]	The feeder must be screwed tight to the top of the motor starter protector with two screws and fastened to the bottom of the soft starter with a self-locking screw. Not approved for railways, power plants, or shipbuilding.
S0	32	[2]	-	[2]	The feeder must be screwed tight to the top of the motor starter protector with two screws and fastened to the bottom of the soft starter with a self-locking screw. Not approved for railways, power plants, or shipbuilding.
Motor starter protector and solid-state contactor, screw terminal, DIN rail or base plate					
Direct-on-line starters (sizes S00 / S0)	16	[2]	-	[2]	Unrestricted. Not approved for railways, power plants, or shipbuilding.
Reversing starters (sizes S00 / S0)	7.4	[2]	-	[2]	Unrestricted. Not approved for railways, power plants, or shipbuilding.

[1] Vibration and shock tests are carried out in accordance with SN 31205 as well as with the relevant standards for railways, shipbuilding, and power plants.

[2] Requires consulting with Technical Support.

Direct-on-line starter (motor starter protector and soft starter, size S00 to S3)

The notes on installing direct-on-line starters, consisting of motor starter protector and soft starter, can be found in the "SIRIUS 3RW30 / 3RW40 Soft Starters" Equipment Manual (https://support.industry.siemens.com/cs/ww/en/view/38752095).

Direct-on-line starter / reversing starter (motor starter protector and solid-state contactor, sizes S00 and S0)

The notes on installing direct-on-line starters and reversing starters, consisting of motor starter protector and solid-state contactor can be found in the "SIRIUS – 3RF34 Semiconductor Switching Devices" Equipment Manual (https://support.industry.siemens.com/cs/ww/en/view/60298187).

7.1.3 3RV2917 infeed system

7.1.3.1 Installation guidelines

Installation guideline – Short-circuit

When installing, the clearance in the Y direction from live, grounded or insulated parts in accordance with IEC 60947-4 is: 10 mm.

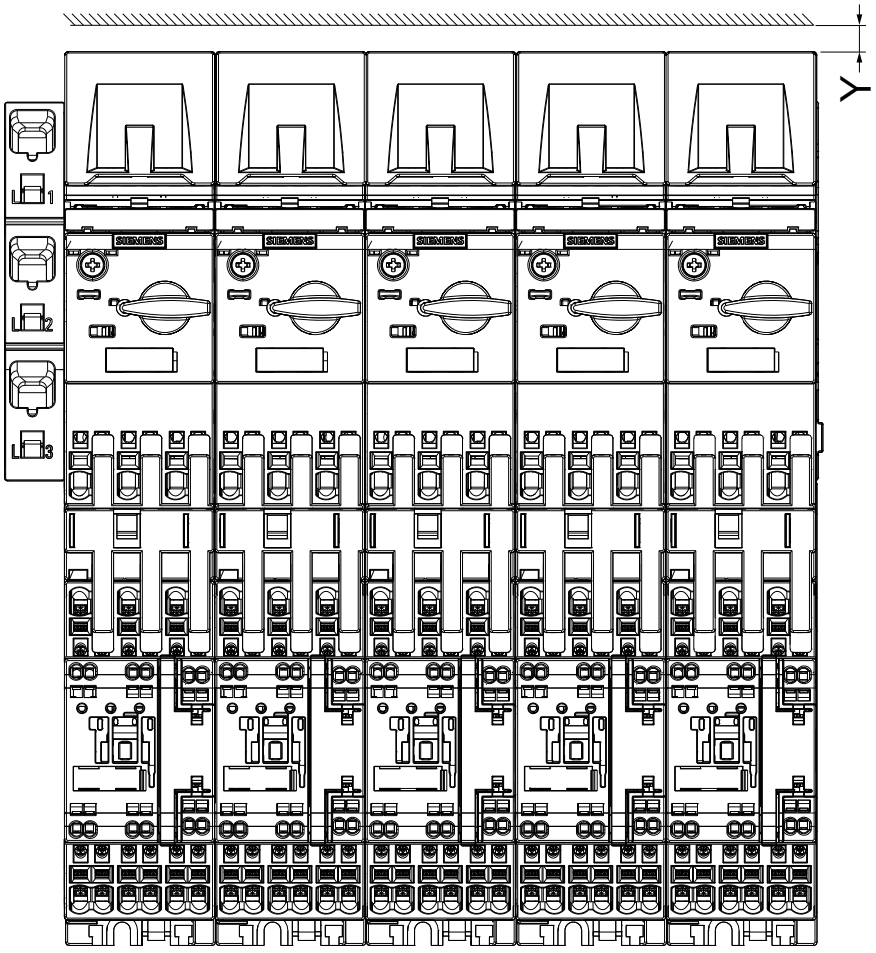


Figure 7-1 Installation guidelines

7.1.3.2 Derating

Derating for fuseless load feeders S00 / S0 in the 3RV29 (max. 63 A) infeed system

Size	Rated current I_e [A]	Max. permissible rated operating current I_e [%]	Max. ambient temperature T [°C]
S00	≤ 14	100	60
	> 14 ... 16	87	60
	> 14 ... 16	100	40
S0	≤ 16	100	60
	> 16 ... 25	87	60
	> 16 ... 25	100	40
	> 25 ... 32	87	40
	> 32	Not permissible	

7.2 Mounting and disassembling load feeders

7.2.1 Overview

Please proceed as per the mounting instructions below for self-assembly of 3RA2 load feeders.

Connection systems

Sizes S00 and S0 support three connection systems:

- Screw connection
- Spring-loaded connection
- Hybrid connection

The hybrid connection system combines screw-type and spring-loaded connection technology. Motor starter protectors with screw connection and contactors with spring-loaded connection can be installed together in the load feeder.

Sizes S2 and S3 are only available in the version with screw connection (main circuit).

The modular system has suitable link modules for each connection system.

Direct-on-line starter and reversing starter

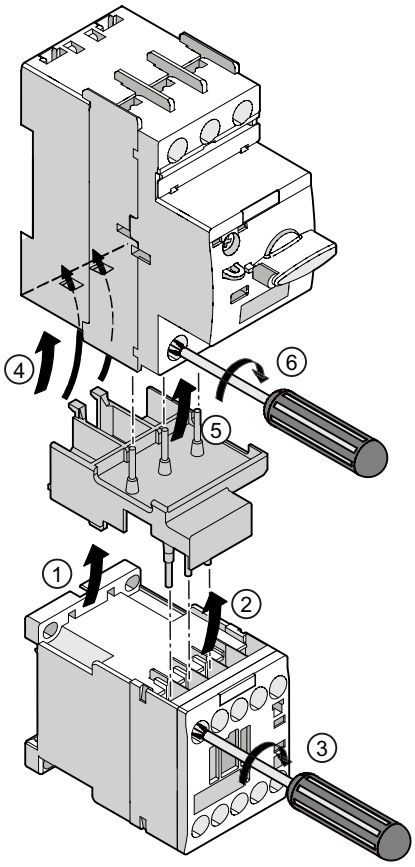
The reversing starter is mounted in the same way as the direct-on-line starter. The reversing contactor assembly is used on the link module instead of the individual contactor.

Reference

More information ...	Can be found in the chapter titled ...
About matching link modules	Link modules (Page 140).
About installing reversing contactor assemblies	"References" under "Manuals - SIRIUS Modular System (Page 158)" in the manual "SIRIUS Contactors / Contactor Assemblies SIRIUS 3RT".

7.2.2 Load feeder with screw-type connection system

Mounting an S00 load feeder with screw-type connection system



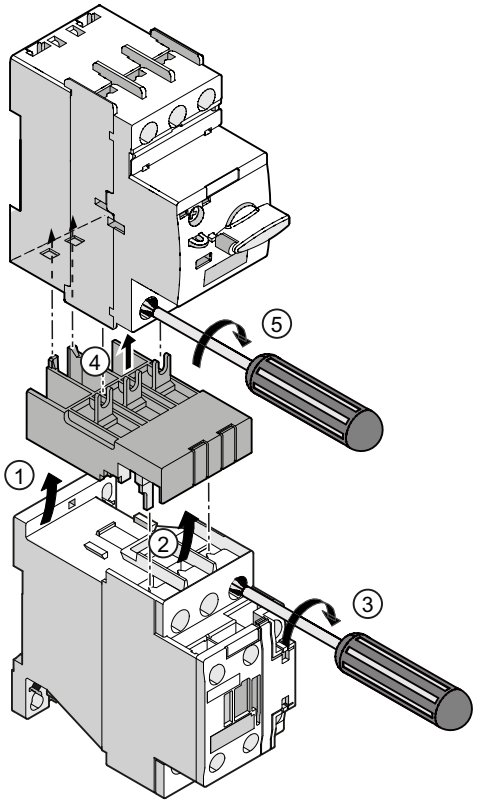
① Mount the link module on the contactor. Ensure that the guide tabs are inserted into the slots on the contactor.
② Insert the pins into the corresponding main conductor terminals.
③ Screw the main conductor terminals tight.
④ Attach the contactor and the link module to the bottom of the motor starter protector. Insert the guide tabs into the slots on the motor starter protector.
⑤ Insert the pins into the corresponding main conductor terminals.
⑥ Screw the main conductor terminals tight.

Note

Mounting the S00 motor starter protector and S0 contactor with screw-type connection system

An S0 contactor can also be connected to an S00 motor starter protector using an S0 AC/DC link module.

Mounting an S0 load feeder with screw-type connection system



① Place the link module (max. 32 A) on the contactor. Ensure that the guide tabs are inserted into the slots on the contactor.

② Insert the connectors into the corresponding main conductor terminals.

③ Screw the main conductor terminals tight.

④ Place the contactor and the link module on the bottom of the motor starter protector. Insert the guide tabs into the slots on the motor starter protector. Insert the connectors into the corresponding main conductor terminals at the same time.

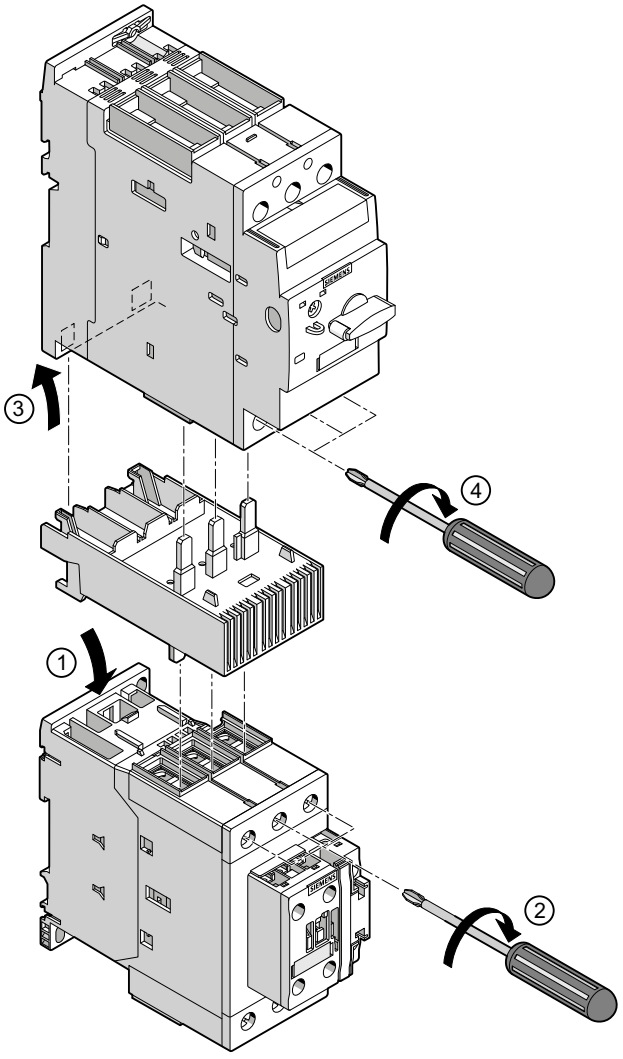
⑤ Screw the main conductor terminals tight.

Note

Mounting the S0 motor starter protector and S00 contactor with screw-type connection system

An S00 contactor can also be connected to an S0 motor starter protector using an S00 link module.

Mounting an S2 load feeder with screw-type connection system



① Insert the motor starter protector with mounted link module (max. 65 A) and hooks into the hooking openings on the contactor. Insert the connectors on the link module into the corresponding main conductor terminals on the contactor at the same time. A swivel action is required for this.

② Screw the main conductor terminals tight on the contactor.

③ Insert the hooks of the link module into the hooking openings provided on the bottom of the motor starter protector. Insert the connectors into the corresponding main conductor terminals.

④ Screw the main conductor terminals tight.

Note

Disassemble by carrying out the above steps in reverse order for all sizes.

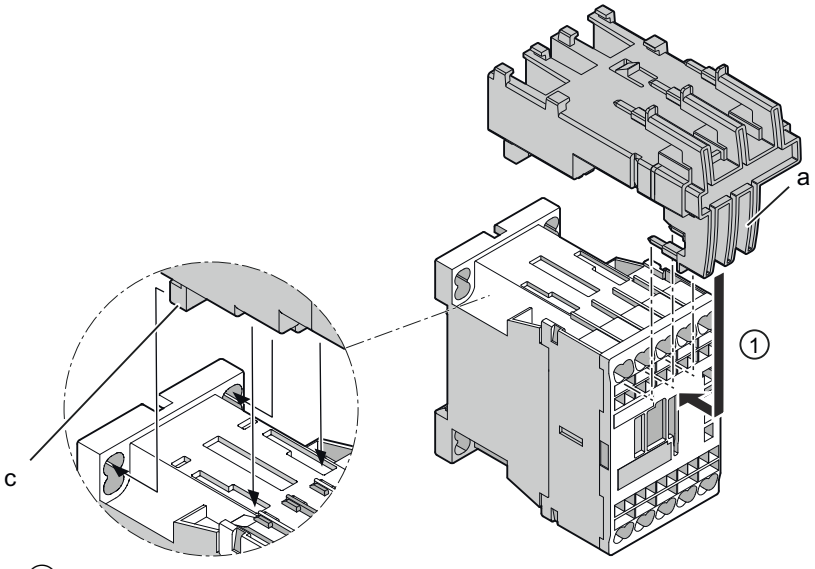
Mounting an S3 load feeder with screw-type connection system

The S3 load feeder can only be mounted in combination with a DIN-rail adapter onto two DIN rails or a base plate.

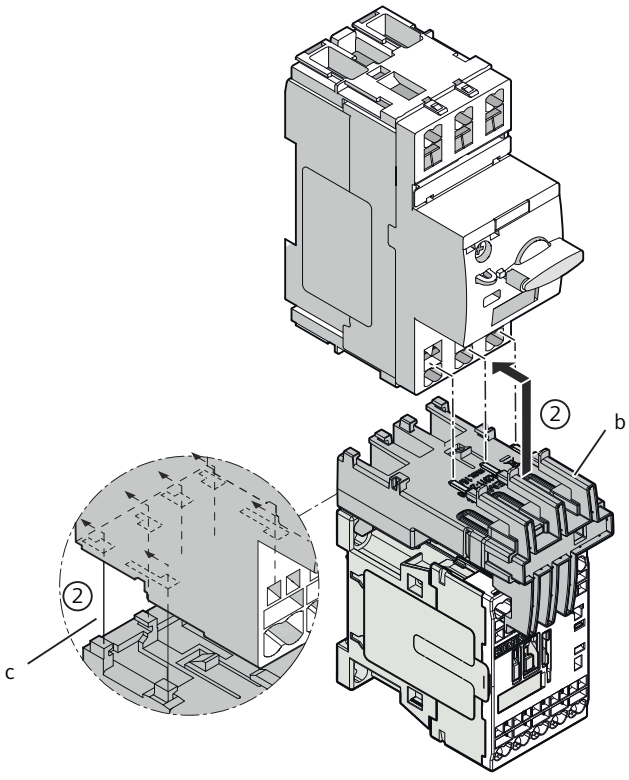
Mounting the S3 load feeder is described in the chapter titled "Mounting direct-on-line starters and reversing starters on DIN rail adapters (size S3) (Page 93)"

7.2.3 Load feeder with spring-loaded connection system

Mounting an S00 load feeder with spring-loaded connection system

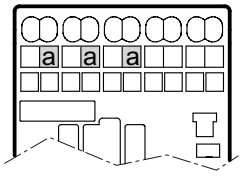
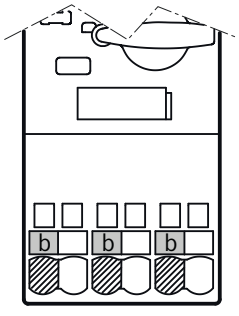


① Insert the connectors (a) on the link module into the corresponding main conductor terminals (a) on the contactor. Ensure that the guide tabs (c) are inserted into the slots on the contactor. The link module sits flush on the left and right of the contactor.

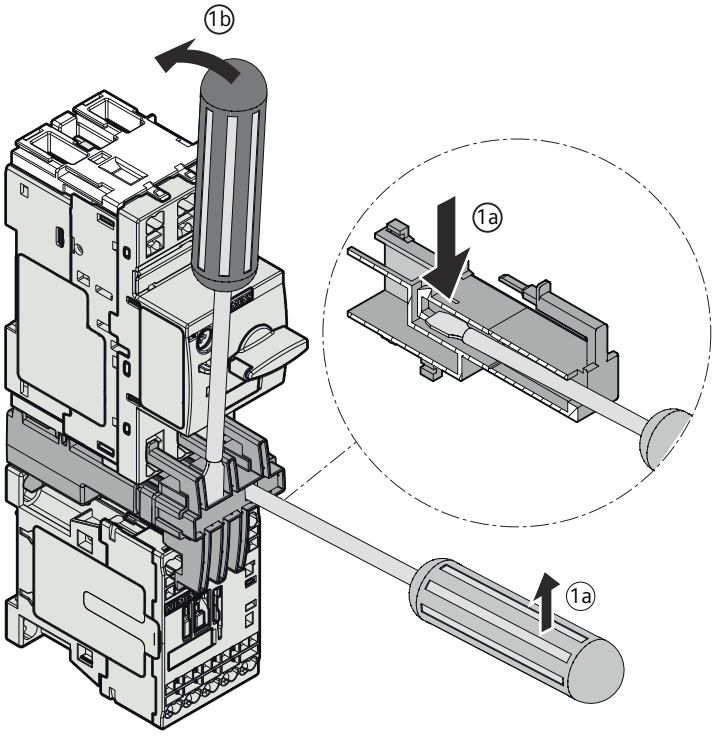


② Insert the connectors on the link module (b) into the corresponding main conductor terminals on the motor starter protector.
Insert the guide tabs (c) into the designated slots at the same time.
The link module will sit flush underneath the motor starter protector on the left- and right-hand sides.

Table 7-6 Main conductor terminals on contactor and motor starter protector (size S00)

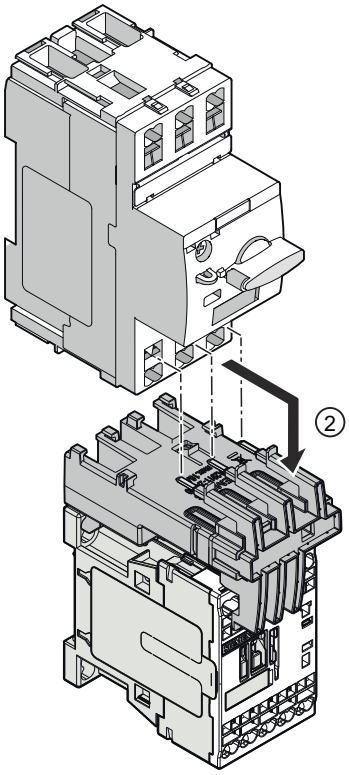
Main conductor terminals on the contactor (a) (S00):	**Main conductor terminals on the motor starter protector (b) (S00):**
	

Disassembling an S00 load feeder with spring-loaded connection system

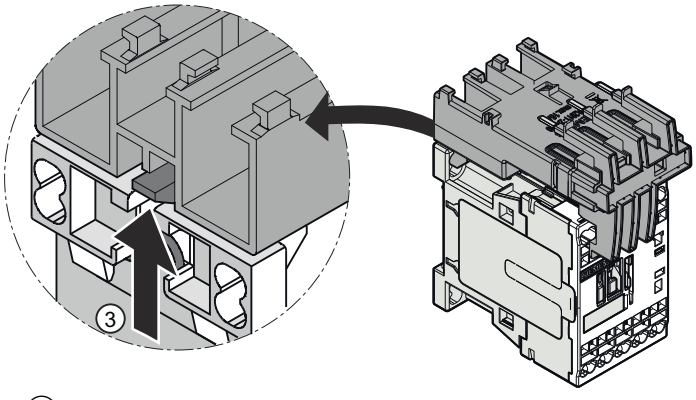


(1a) Slide the screwdriver into the opening on the link module as shown in the figure and press it down.

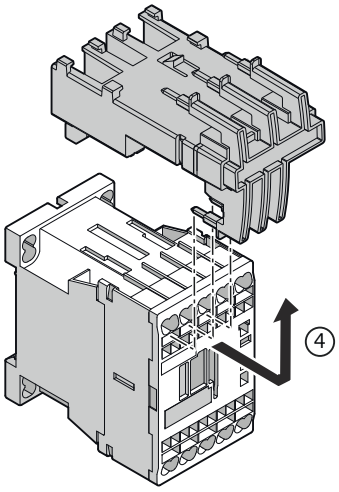
(1b) Position the screwdriver on the link module as shown in the figure and press it down to release the spring-loaded terminals.



② Pull the link module and the contactor attached to it toward you to remove it.



③ Push the release slide on the rear of the link module up.

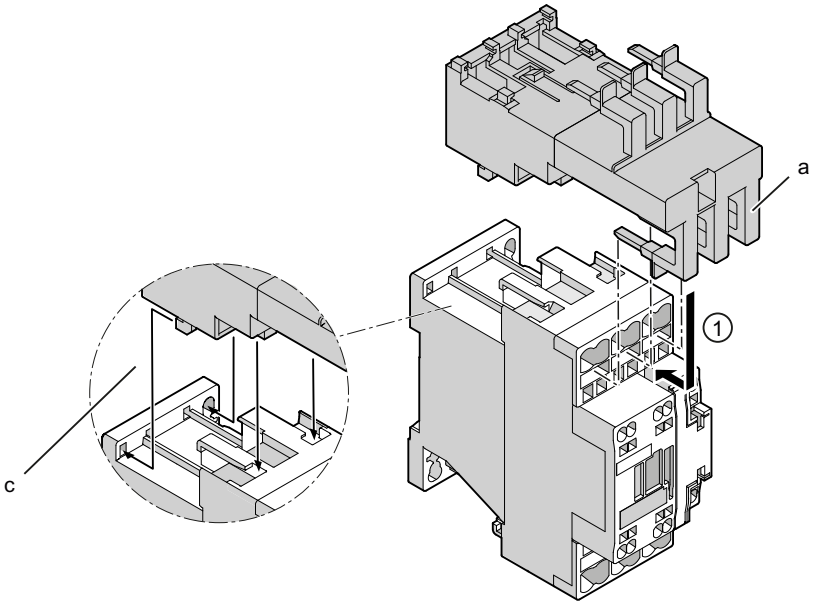


④ Take the link module off the contactor.

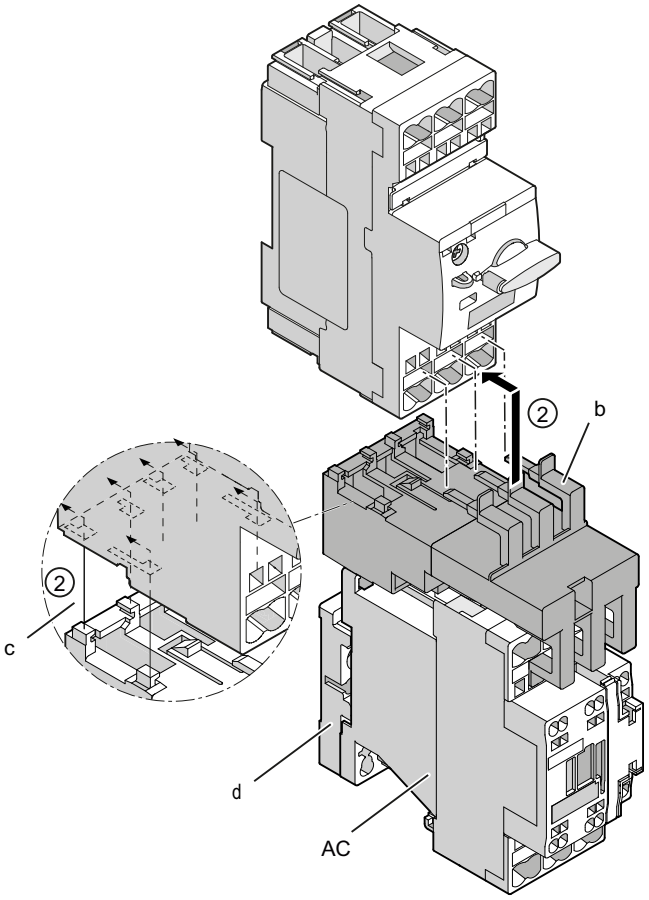
Note

Proceed in the same way to disassemble the reversing starter / reversing contactor assembly (size S00).

Mounting an S0 load feeder with spring-loaded connection system



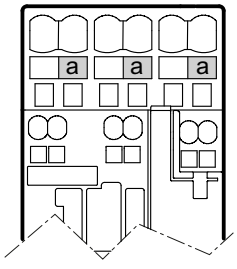
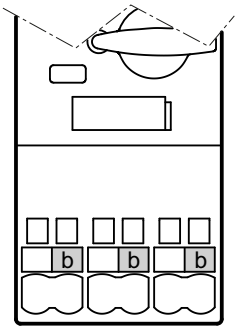
① Insert the connectors (a) on the link module into the corresponding main conductor terminals (a) on the contactor. Ensure that the guide tabs (c) are inserted into the slots on the contactor. The link module sits flush on the left and right of the contactor.



② Insert the connectors (b) on the link module into the corresponding main conductor terminals on the motor starter protector (b).
Insert the guide tabs (c) into the designated slots at the same time.

The link module will sit flush underneath the motor starter protector on the left- and right-hand sides.

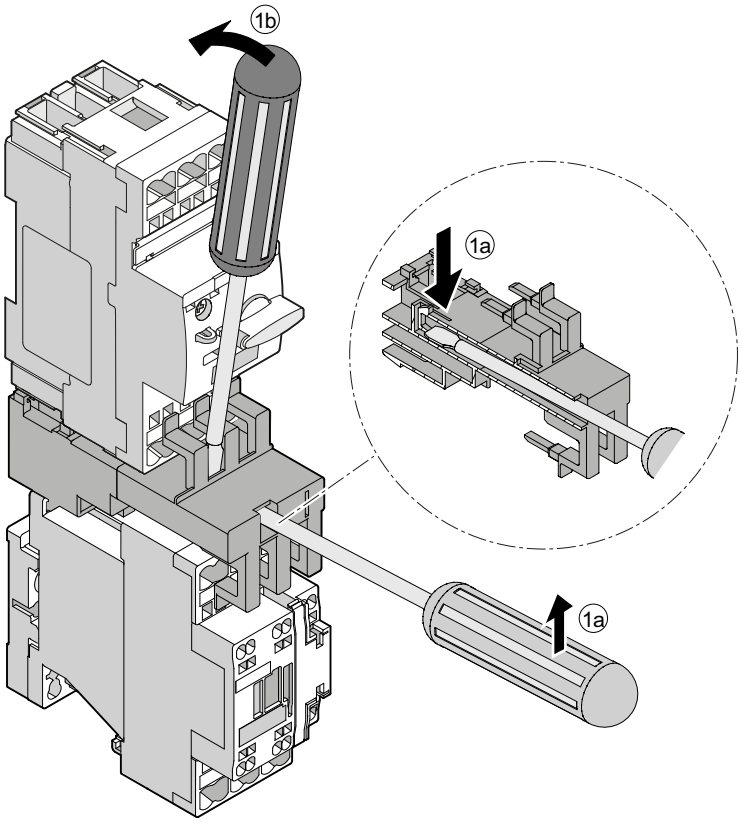
Table 7-7 Main conductor terminals on contactor and motor starter protector (size S0)

Main conductor terminals on the contactor (a) (S0):	**Main conductor terminals on the motor starter protector (b) (S0):**
	

Note

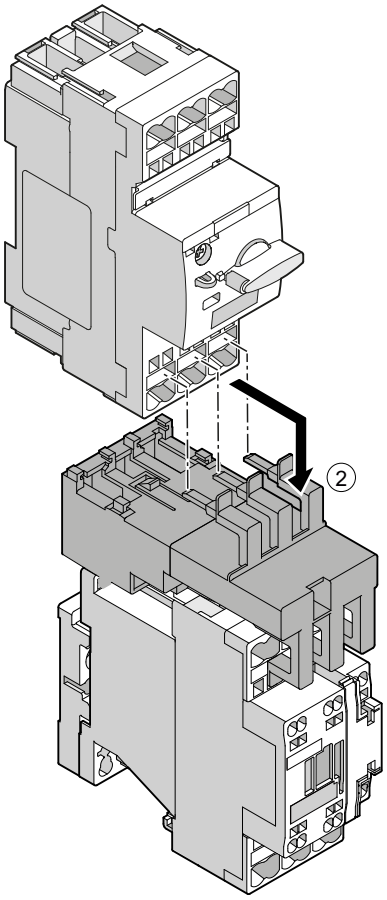
S0 contactors with AC operation and spring-loaded connection system need a spacer disk (d) for DIN rail or busbar adapter mounting.

Disassembling an S0 load feeder with spring-loaded connection system

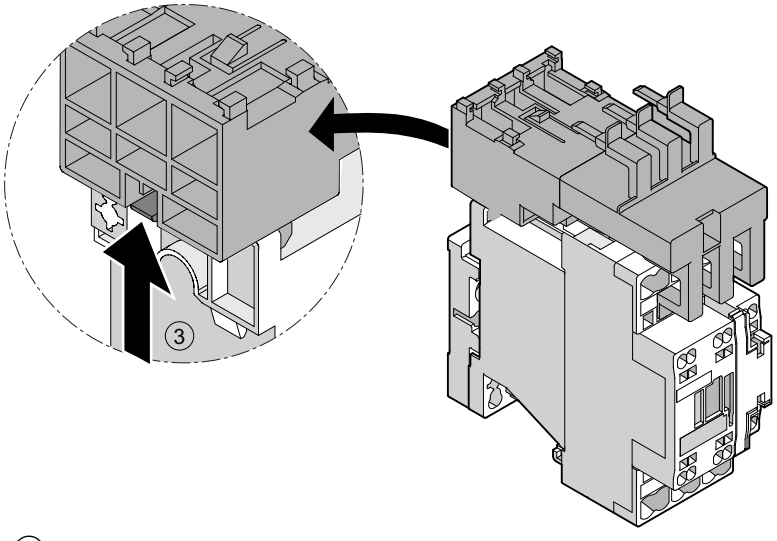


(1a) Slide the screwdriver into the opening on the link module as shown in the figure and press it down.

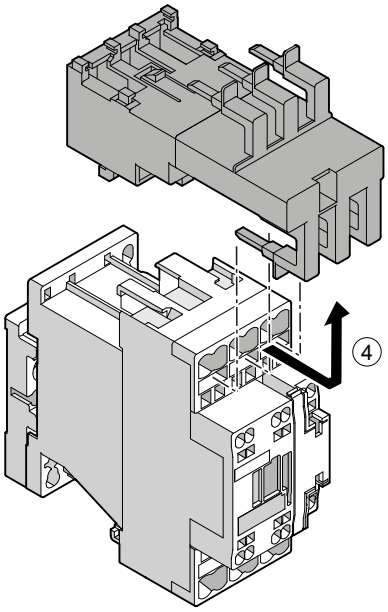
(1b) Position the screwdriver on the link module as shown in the figure and press it down to release the spring-loaded terminals.



② Pull the link module and the contactor attached to it toward you to remove it.



③ Push the release slide on the rear of the link module up.



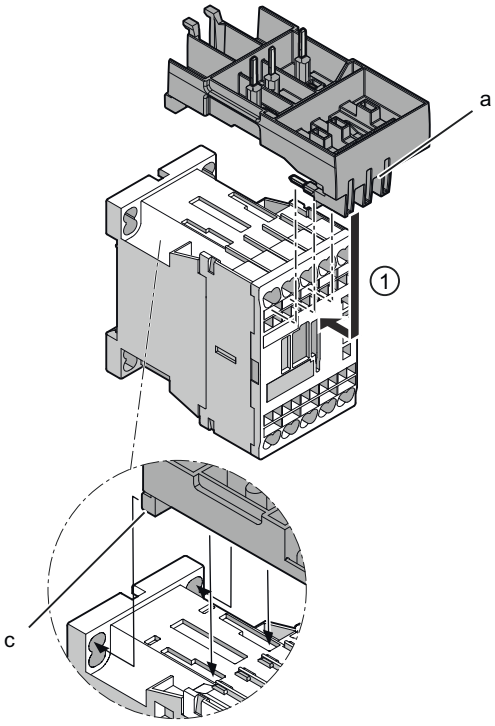
④ Take the link module off the contactor.

Note

Proceed in the same way to disassemble the reversing starter / reversing contactor assembly (size S0).

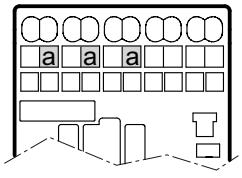
7.2.4 Load feeder with hybrid link module

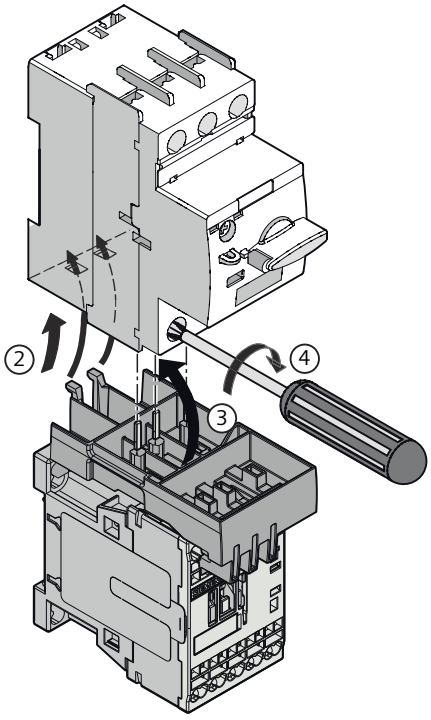
Mounting an S00 load feeder with hybrid link module



① Insert the connectors (a) on the link module into the corresponding main conductor terminals (a) on the contactor. Ensure that the guide tabs (c) are inserted into the slots on the contactor.
The link module will sit flush with the contactor on the left- and right-hand sides.

Main conductor terminals on the contactor (size S00)





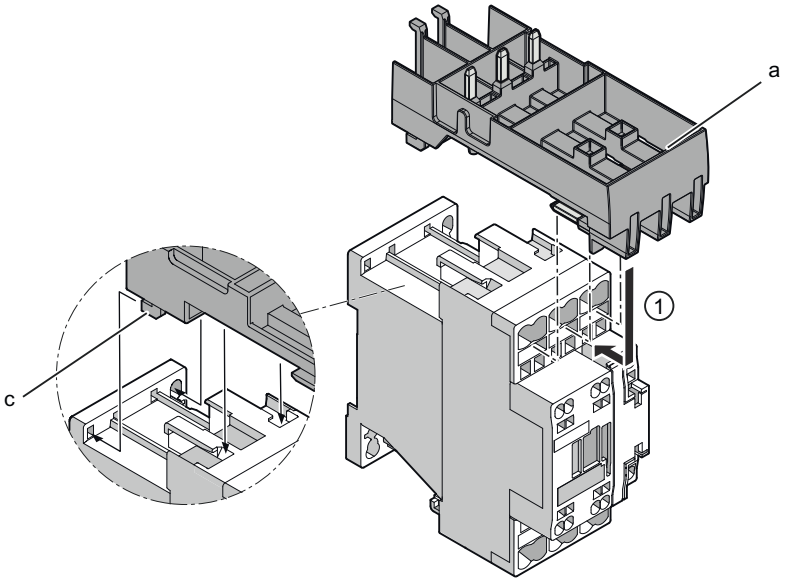
② Attach the contactor and the link module to the bottom of the motor starter protector. Check the guide tabs.
③ Insert the pins into the corresponding main conductor terminals.
④ Screw all connectors tight.

Note

Mounting the S0 motor starter protector and S00 contactor with hybrid link module

The hybrid link module for the S00 load feeder can also be used to mount an S00 contactor on an S0 motor starter protector.

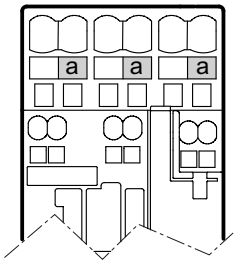
Mounting an S0 load feeder with hybrid link module

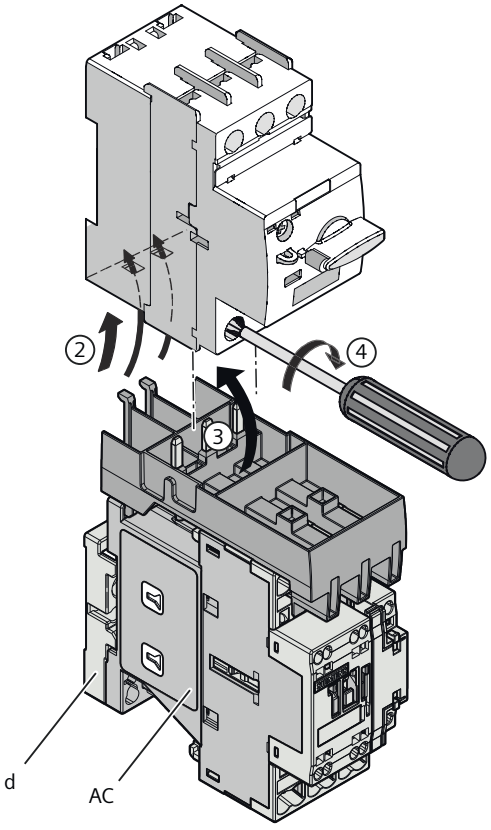


① Insert the connectors (a) on the link module into the corresponding main conductor terminals (a) on the contactor. Ensure that the guide tabs (c) are inserted into the slots on the contactor.

The link module will sit flush with the contactor on the left- and right-hand sides.

Main conductor terminals on the contactor (size S0)





② Attach the contactor and the link module to the bottom of the motor starter protector. Check the guide tabs.
③ Insert the pins into the corresponding main conductor terminal.
④ Screw all connectors tight.

Note

Contactor size S0 alternating current (AC)

S0 contactors with AC coil and spring-loaded connection system need a spacer disk (d) for DIN rail or busbar adapter mounting.

Note

Reverse the above sequence to disassemble hybrid feeders for both sizes S00 and S0.

7.3 Assembly and disassembly with different mounting systems

7.3.1 Overview

Assembly/Installation

Fuseless load feeders can be mounted on the following assembly systems:

Table 7-8 Assembly systems

	Direct-on-line starter				Reversing starter			
Size	**S00**	**S0**	**S2**	**S3**	**S00**	**S0**	**S2**	**S3**
Mounting on 35 mm DIN rail according to EN 60715								
Snap-on mounting without adapter	✓[1)]	✓[1)]	✓[2)] (DIN rail spacing 175 mm)	—	✓[1)]	—	—	—
With DIN-rail adapter 3RA2922-1BA00	✓[1) 3)] (screw-type connection system only)	✓[1) 3)] (screw-type connection system only)	—	—	✓[1) 3)] (screw-type connection system only)	✓[1) 3)] (screw-type connection system only)	—	—
With DIN-rail adapter 3RA2922-1AA00	✓[1) 3)]	✓[1) 3)]	—	—	✓[1) 3)]	✓[1) 3)]	—	—
With DIN-rail adapter 3RA2932-1AA00	—	—	✓[2)] (DIN rail spacing 125 mm)	—	—	—	✓[2)] (DIN rail spacing 125 mm)	—
With DIN-rail adapter 3RA2942-1AA00	—	—	—	✓[2)] (DIN rail spacing 125 mm)	—	—	—	✓[2)] (DIN rail spacing 125 mm)
Mounting on 8US busbar with 60 mm busbar center-to-center spacing								
With 8US busbar adapter	✓	✓	✓	—	✓	✓	✓	—

Table 7-9 Assembly systems

	Direct-on-line starter				Reversing starter			
Size	**S00**	**S0**	**S2**	**S3**	**S00**	**S0**	**S2**	**S3**
Screw mounting on base plate								
Direct screw mounting on mounting plate.	✓	✓	✓	—	✓	✓	✓	—
Mounting on DIN-rail adapter and screw mounting on the DIN rail adapter on mounting plate.	✓	✓	✓	✓	✓	✓	✓	✓

1) Mounting on 1 DIN rail

2) Mounting on 2 DIN rails

3) For high vibration and shock loads: Mounting on 2 DIN rails and DIN-rail adapter

NOTICE

Possible damage to load feeder.

- If the load feeder for sizes S00 and S0 is mounted directly on the DIN rail without a DIN-rail adapter, there is no guarantee that the mounting will be vibration-proof.
- Size S0 and S2 reversing starters have to be mounted with DIN-rail adapters or busbar adapters.
- Size S3 reversing starters have to be mounted with DIN-rail adapters.

7.3.2 Mounting on DIN rails without DIN-rail adapter

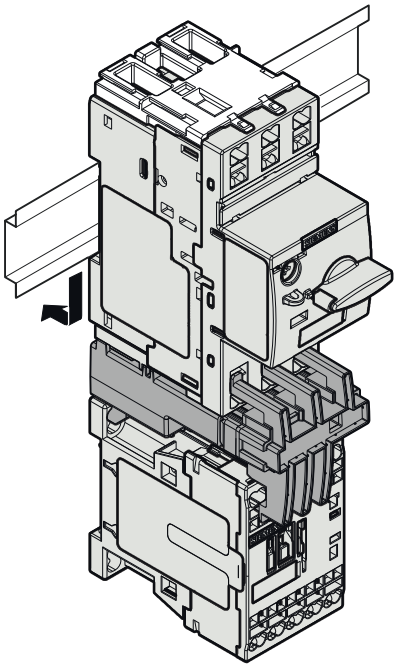
Mounting on DIN rail without DIN-rail adapter

Fuseless load feeders in the following sizes can be snapped onto DIN rails without DIN-rail adapters:

- Direct-on-line and reversing starters in size S00
- Direct-on-line starters in size S0 and S2

No tools are required for mounting and disassembling sizes S00 and S0. A screwdriver is required for mounting and disassembling size S2.

Mounting on DIN rails without DIN-rail adapter (example size S00)

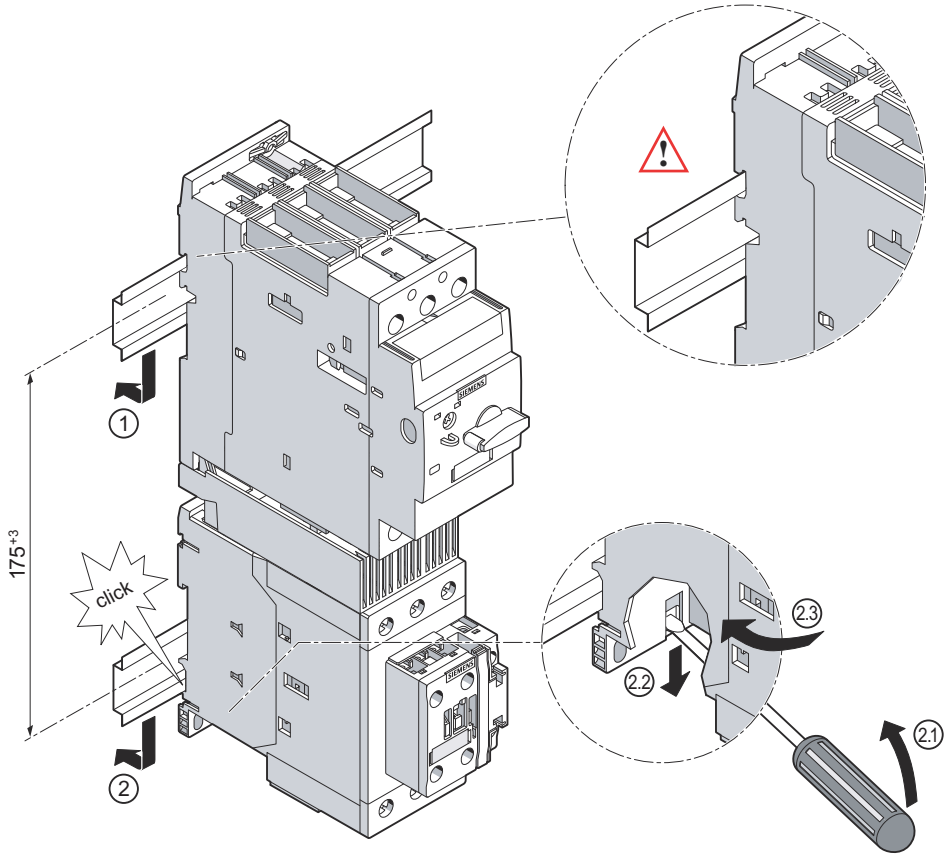


Place the feeder (upper hooking position of the motor starter protector) on the upper edge of the DIN rail, and press it down as shown in the figure.

Note

Mounting on a DIN rail without a DIN-rail adapter in size S0 is performed in the same way as for size S00.

Mounting on two DIN rails without DIN-rail adapter (size S2)



① Place the feeder (upper hooking position of the motor starter protector) on the upper edge of the DIN rail, and press it down as shown in the figure.

② Press the locking device down with a screwdriver. (2.1 / 2.2) Then push the device back with a swivel action so that it snaps onto the DIN rail. (2.3)

Note

Disassemble by carrying out the above steps in reverse order for all sizes.

7.3.3 Mounting on DIN rail with DIN-rail adapter

All feeders can be mounted on DIN rails with DIN- rail adapters.

Types of adapter

One DIN-rail adapter each is available for sizes S00 short, S00/S0, S2 and S3 A pair of adapters is required for mounting a reversing contactor assembly.

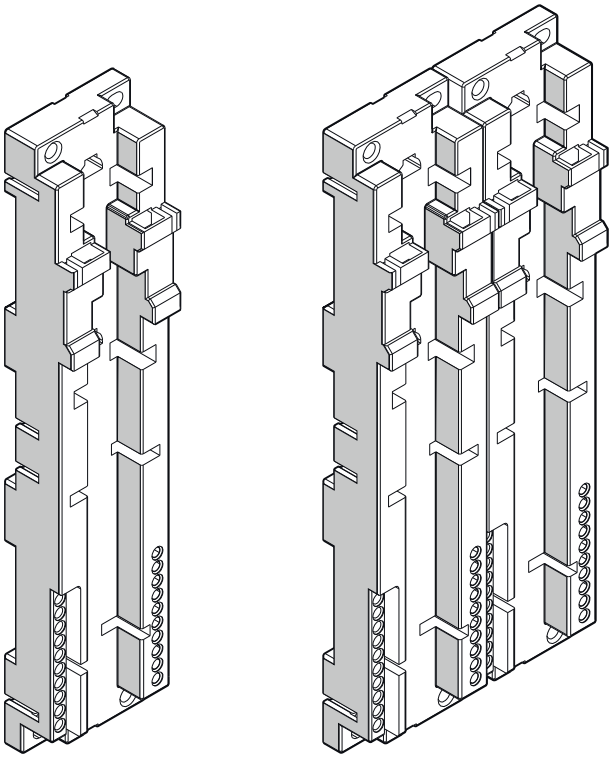


Figure 7-2 Short DIN-rail adapter 3RA2922-1BA00, individually and as an adapter pair (size S00)

Note

DIN-rail adapters can be installed on:

- one DIN rail
- two DIN rails with 125 mm spacing
- or on mounting plates.

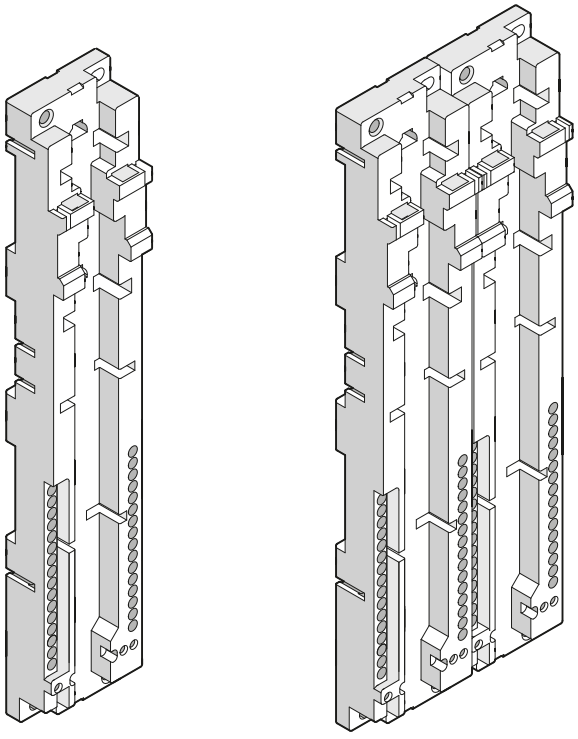


Figure 7-3 Long DIN-rail adapter 3RA2922-1AA00, individually and as an adapter pair (size S00 / S0)

Note

DIN-rail adapters can be installed on:

- one DIN rail
- two DIN rails with 125 mm spacing
- or on mounting plates.

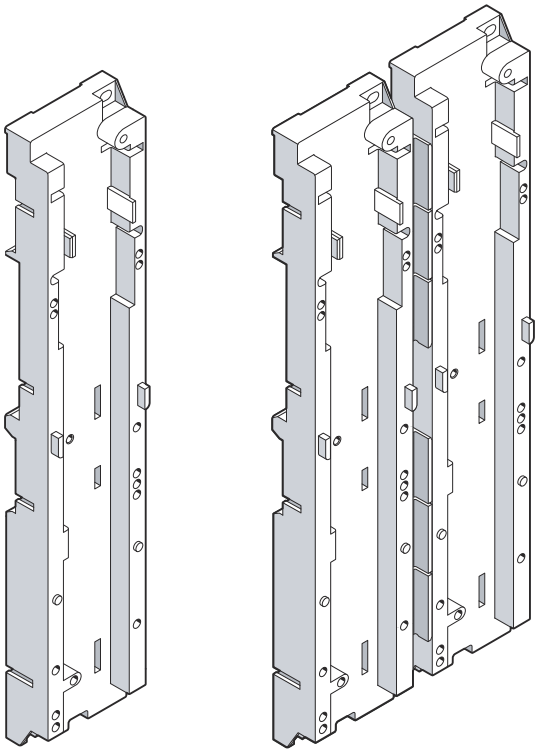


Figure 7-4 3RA2932-1AA00 DIN rail adapter, individually and as an adapter pair (size S2)

Note

Two DIN rails 125 mm apart are required to mount the DIN-rail adapter (size S2) on DIN rails.

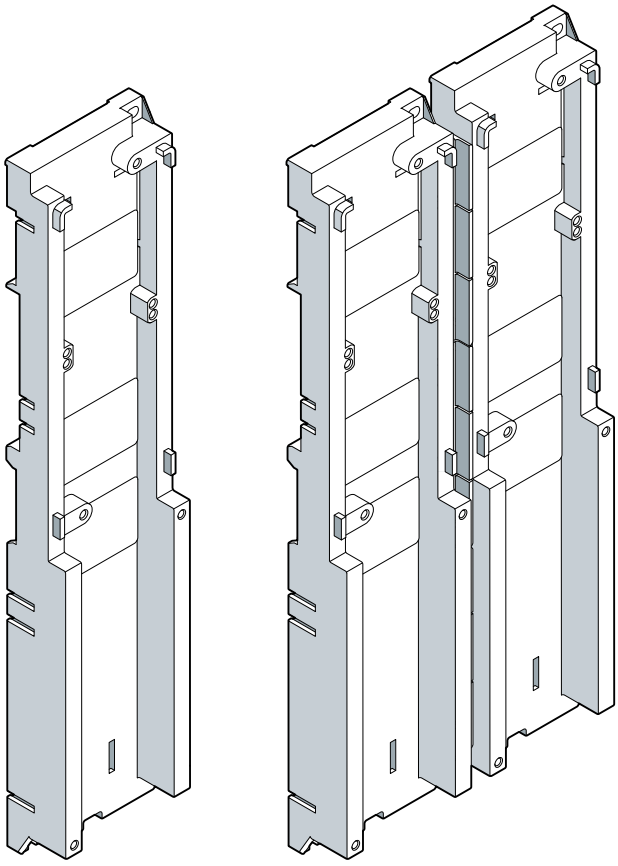


Figure 7-5 3RA2942-1AA00 DIN-rail adapter, individually and as an adapter pair (size S3)

Note

Two DIN rails 125 mm apart are required to mount the DIN-rail adapter (size S3) on DIN rails.

Design of the adapter type for reversing contactor assembly

The DIN-rail adapters can be connected without the need for tools. It is only necessary to insert link wedges and lateral modules on the rear of the adapter (depending on size).

The following are required to connect two DIN-rail adapters:

- In sizes S00 and S0: Two link wedges
- In size S2: Two lateral modules and four link wedges
- In size S3: Three side modules and six link wedges

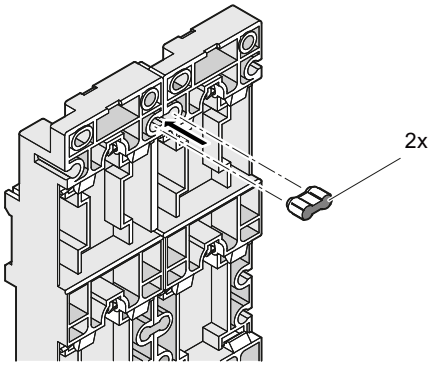


Figure 7-6 Connection of DIN-rail adapters (size S00 and S0)

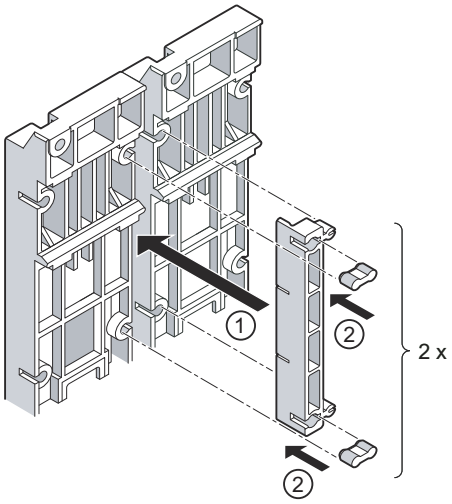


Figure 7-7 Connection of DIN-rail adapters (size S2)

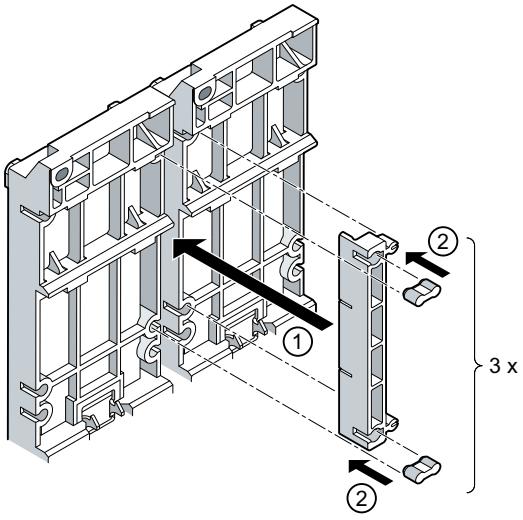


Figure 7-8 Connection of DIN-rail adapters (size S3)

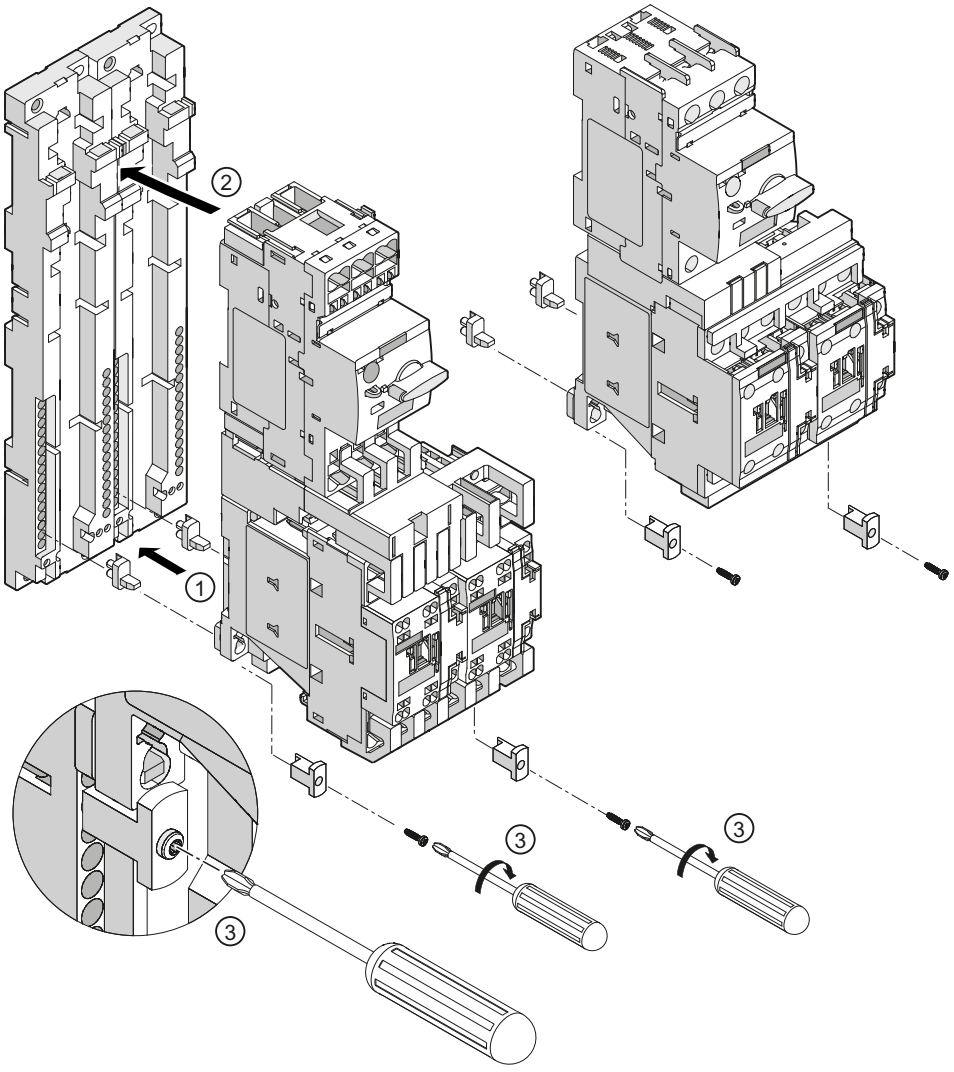
7.3.3.1 Mounting direct-on-line starters and reversing starters on DIN rail adapters (sizes S00 and S0)

Mounting the DIN rail adapter on the DIN rail

The DIN rail adapter snaps onto the DIN rail (no tools are required).

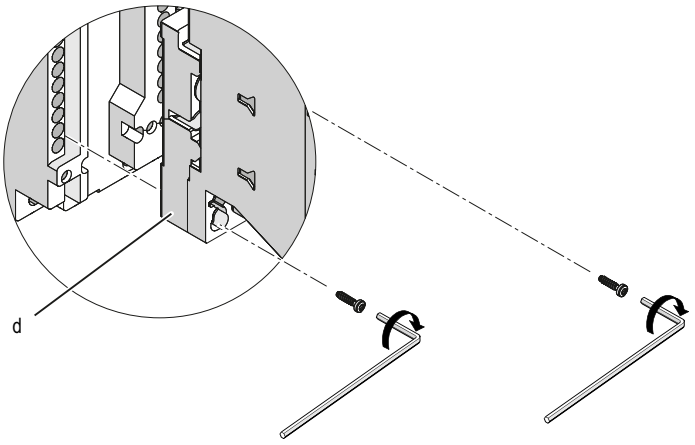
Mounting the direct-on-line starter / reversing starter on the DIN rail adapter: Size S00 and S0

The figure below illustrates DIN rail adapter mounting using the example of the size S0 reversing starter with spring-loaded connection system and screw-type connection system. The devices are snapped onto the DIN rail adapter and screwed onto the adapter.



Left	Size S0 reversing starter with DC operation and spring-loaded connection system
Right	Size S0 reversing starter with DC/AC operation and screw-type connection system
①	Attach a connecting piece to each of the two DIN rail adapters. Insert each of the connecting pieces into the left-hand line of holes.
②	Snap the feeder onto the DIN rail adapter. Insert the tabs on the connecting pieces into the fastening holes on the contactors.
③	Screw the feeder to the DIN rail adapter: • Use two screw holders for the screw mounting. • Attach a screw holder underneath each connecting piece, flush with the contactor's mounting base. • Screw the screw holder to the adapter. The feeder sits tight on the adapter.

Mounting the size S0 reversing starter with AC contactor and spring-loaded connection system on a DIN-rail adapter



① Mount the spacer disk (d) on the contactor (if this has not been done already).
② Snap the feeder onto the DIN rail adapter.
③ Screw the feeder to the DIN rail adapter:
- Use one screw to fasten the left-hand contactor and another to fasten the right-hand contactor.
- Push the screw through the lower left-hand fastening hole and the adjacent spacer disk (d).

Do not use any connecting pieces to fasten the connection.

The feeder sits tight on the adapter.

Disassembling the feeder from the DIN rail adapter

To disassemble the feeder, unscrew the screws and pull the feeder down to remove it.

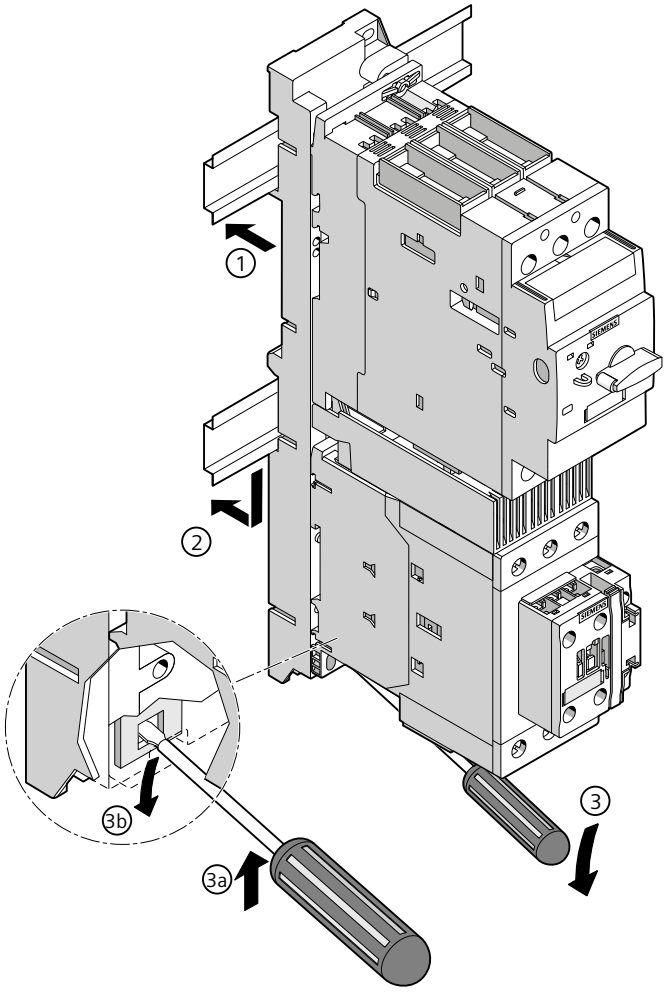
Disassembling the DIN rail adapter from the DIN rail

To disassemble the adapter, press on it then pull it down to remove it.

7.3.3.2 Mounting direct-on-line starters and reversing starters on DIN rail adapters (size S2)

Mounting the DIN rail adapter on the DIN rail

The DIN-rail adapter snaps onto two DIN rails, no tools are required.



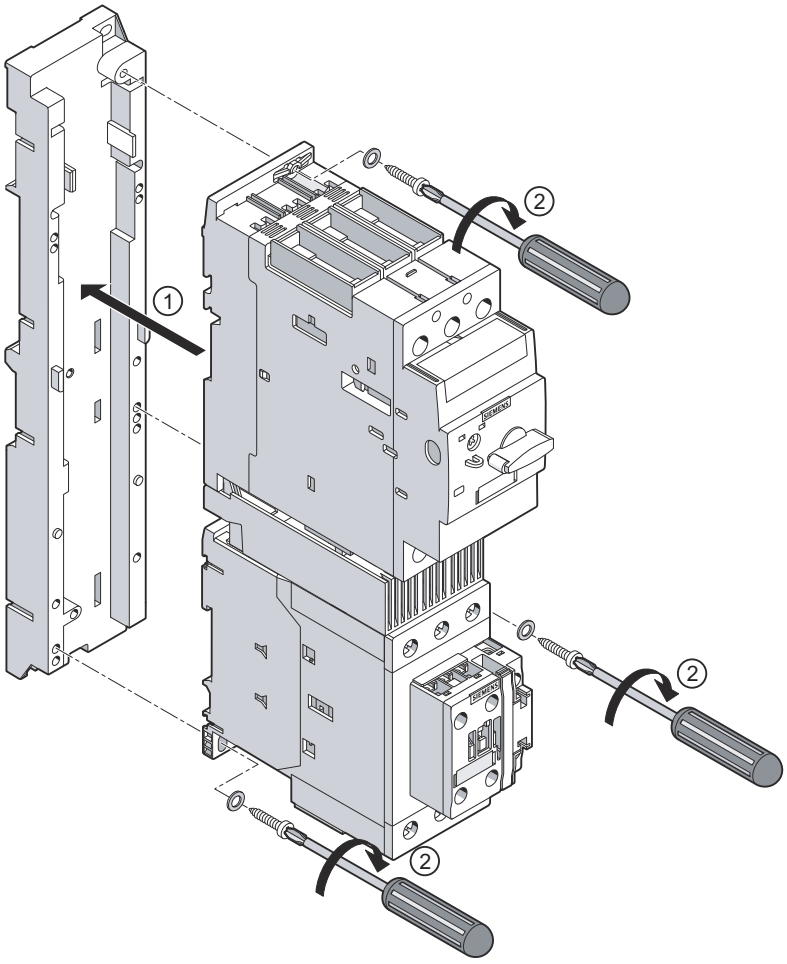
① Set the DIN-rail adapter with attached feeder on the upper edge of the upper DIN rail.

② Swivel the DIN-rail adapter with attached feeder onto the bottom DIN rail until it snaps into place.

③ Engaging can be made easier by pushing the slider downwards.

Mounting the direct-on-line starter on the DIN rail adapter: Size S2

The figure below illustrates how the size S2 direct-on-line starter with screw-type connection system is mounted on a DIN rail adapter. The devices are snapped onto the DIN rail adapter and screwed onto the adapter.



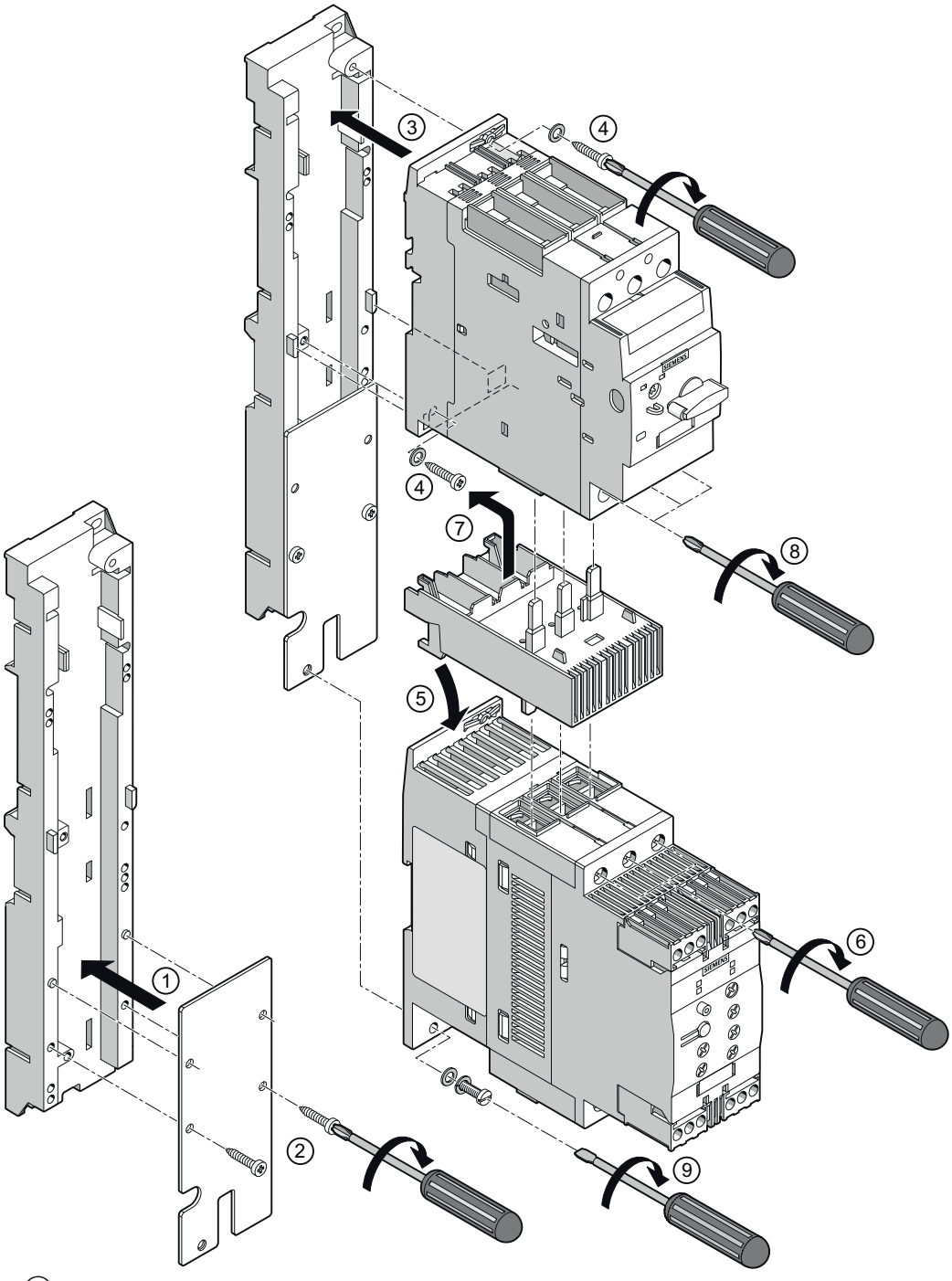
① Place the feeder on the DIN rail adapter.
② Screw the feeder to the DIN rail adapter. The feeder sits tight on the adapter.

Note

For vibration and shock requirements, the washer must be replaced with a wedge lock washer (DIN 50021-SS 4.4 x 9.0 x 1.7).

Mounting the direct-on-line starter (with soft starter) on the DIN rail adapter: Size S2

The figure below illustrates how the size S2 direct-on-line starter (with soft starter) with screw-type connection system is mounted on a DIN rail adapter. The devices are snapped onto the DIN rail adapter and screwed onto the adapter.



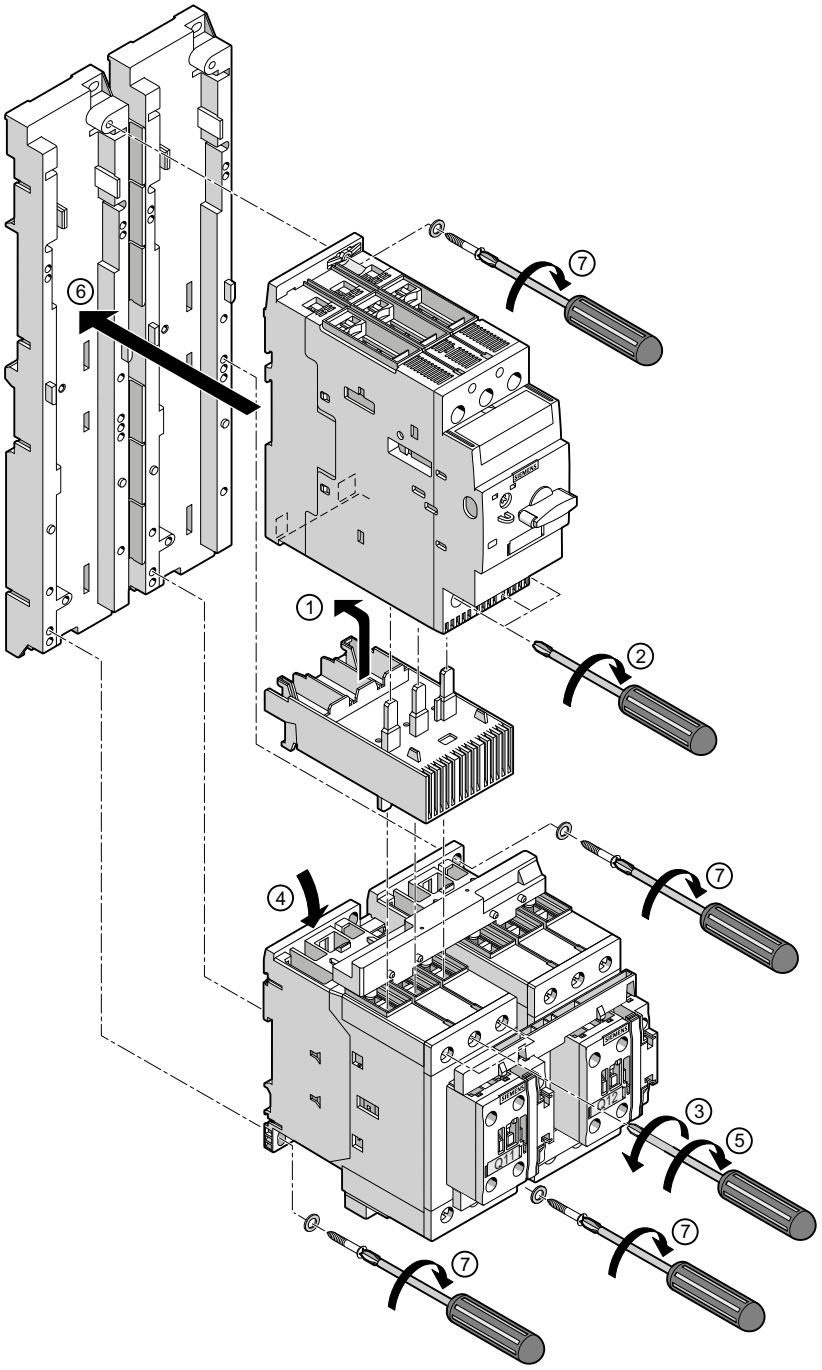
① Place the adapter plate on the DIN rail adapter.
② Screw the adapter plate to the DIN rail adapter.
Observe the min. and max. tightening torques.

③ Place the motor starter protector on the DIN rail adapter.
④ Screw the motor starter protector tight on the DIN rail adapter.
⑤ Place the link module on the soft starter from above. Insert the connectors of the connection module into the corresponding main conductor terminals on the soft starter at the same time. A swivel action is required for this.
⑥ Screw the main conductor terminals tight on the soft starter.
⑦ Place the soft starter with mounted link module on the bottom of the motor starter protector. Insert the guide tabs into the slots on the motor starter protector. Insert the connectors into the corresponding main conductor terminals.
⑧ Screw the main conductor terminals tight on the motor starter protector.
⑨ Screw the soft starter tight on the DIN rail adapter.

The feeder sits tight on the adapter.

Mounting the reversing starter on the DIN rail adapter: Size S2

The figure below illustrates how the size S2 reversing starter with screw-type connection system is mounted on a DIN rail adapter. The devices are snapped onto the DIN rail adapter and screwed onto the adapter.



① Place the link module on the bottom of the motor starter protector. Insert the hooks into the hooking openings on the motor starter protector. Insert the connectors into the corresponding main conductor terminals.

② Screw the main conductor terminals tight.

③ Unscrew the main conductor terminals of the contactor fully.
④ Insert the motor starter protector with mounted link module and hooks into the hooking openings on the contactor. Insert the connectors on the link module into the corresponding main conductor terminals on the contactor at the same time. A swivel action is required for this.
⑤ Screw the main conductor terminals tight on the contactor.
⑥ Place the feeder on the DIN rail adapter.
⑦ Screw the feeder to the DIN rail adapter. The feeder sits tight on the adapter.

Note

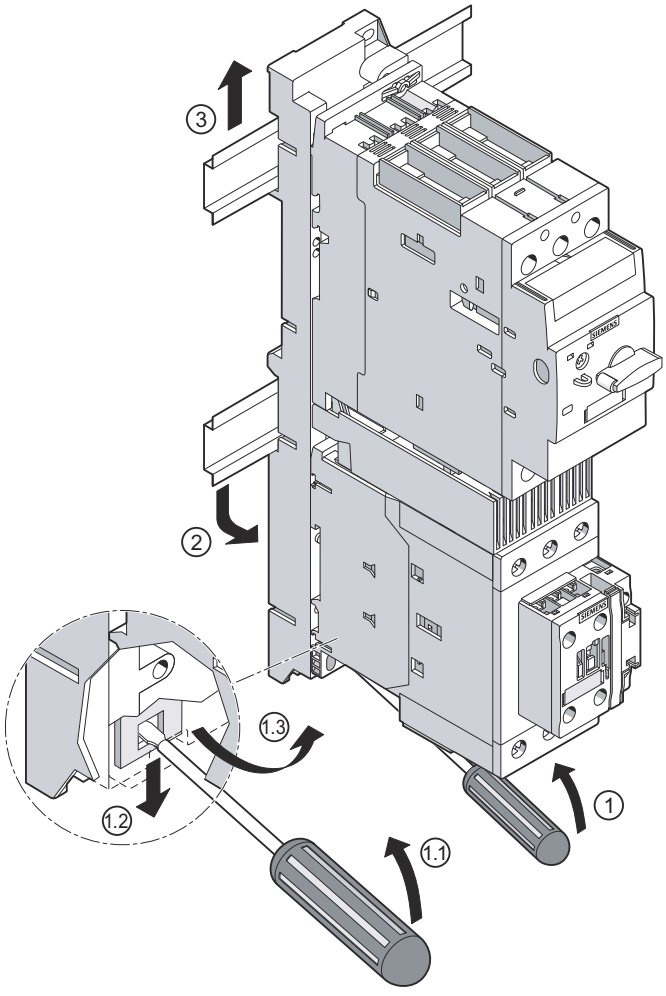
For vibration and shock requirements, the washer must be replaced with a wedge lock washer (DIN 50021-SS 4.4 x 9.0 x 1.7).

Disassembling the feeder from the DIN rail adapter

To disassemble the direct feeder / reversing feeder and the feeder with soft starter, unscrew the screws and remove the feeder.

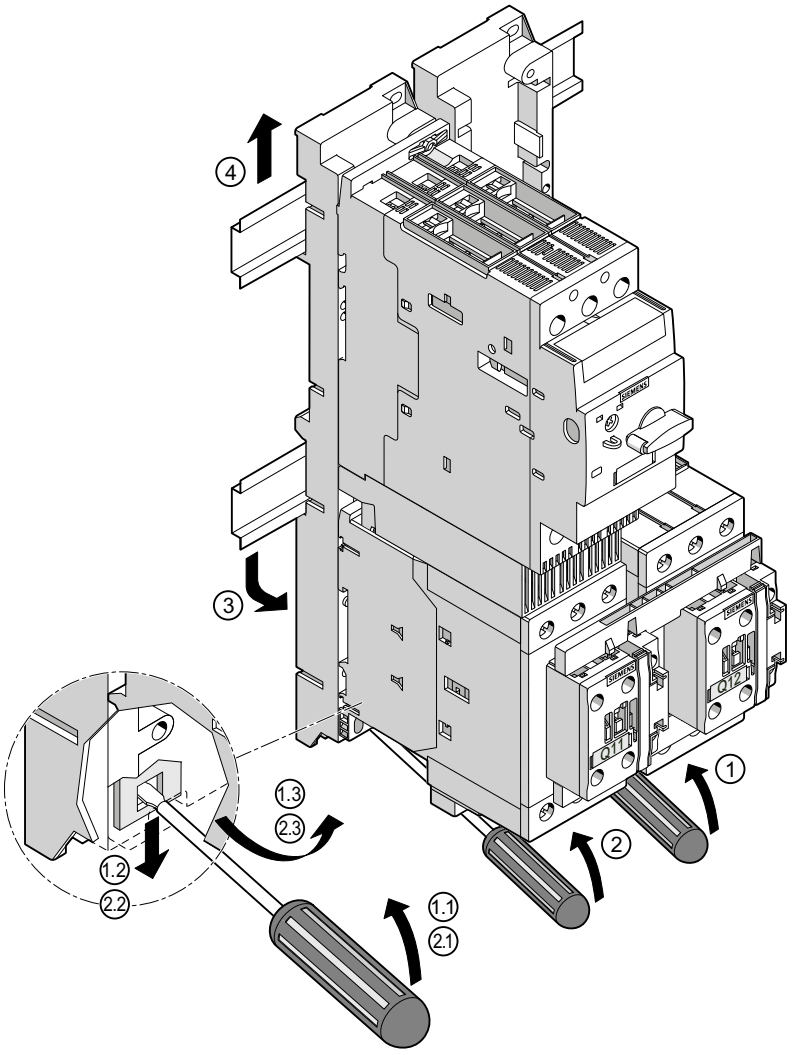
Disassembling the DIN rail adapter from the DIN rail

The procedure for disassembling the DIN rail adapter with mounted direct-on-line starter of size S2 is shown in the figure below. You require a screwdriver for disassembling.



① Press the locking device down with a screwdriver.
② Pull the DIN rail adapter with mounted feeder forwards with a swivel action.
③ Press the DIN rail adapter with mounted feeder upwards and remove the DIN rail adapter with mounted feeder from the DIN rail.

The procedure for disassembling the DIN rail adapter with mounted reversing starter of size S2 is shown in the figure below. You will need two screwdrivers for disassembly.



①/② Press the locking devices down with two screwdrivers.

③ Pull the DIN-rail adapter with attached reversing feeder forwards with a swivel movement.

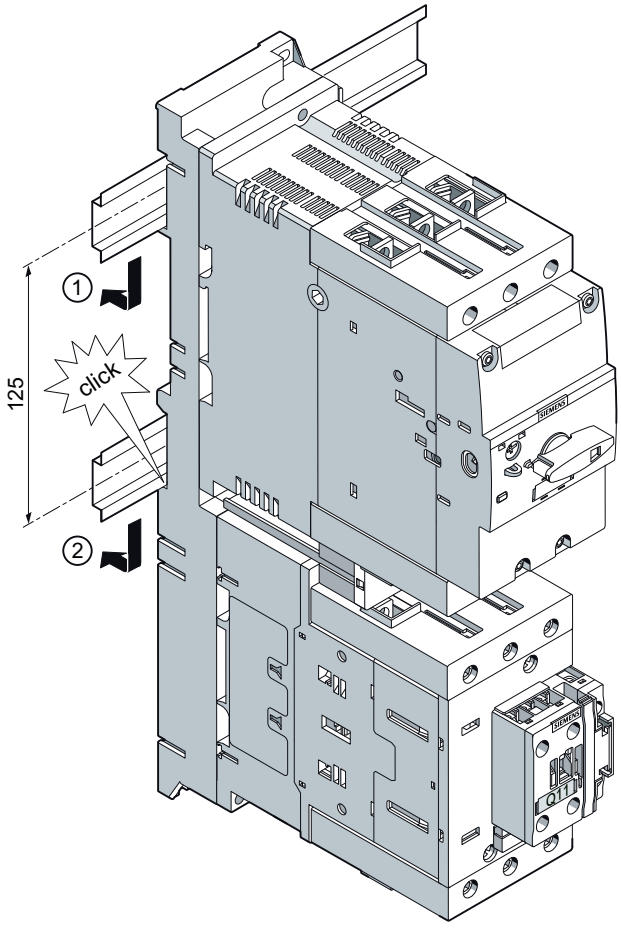
④ Press the DIN-rail adapter with attached reversing feeder upwards and remove the DIN-rail adapter with attached reversing feeder from the DIN rail.

7.3.3.3 Mounting direct-on-line starters and reversing starters on DIN rail adapters (size S3)

Mounting the DIN rail adapter on the DIN rail

The DIN-rail adapter can be snapped onto two DIN rails 125 mm apart without tools or screwed onto a mounting plate.

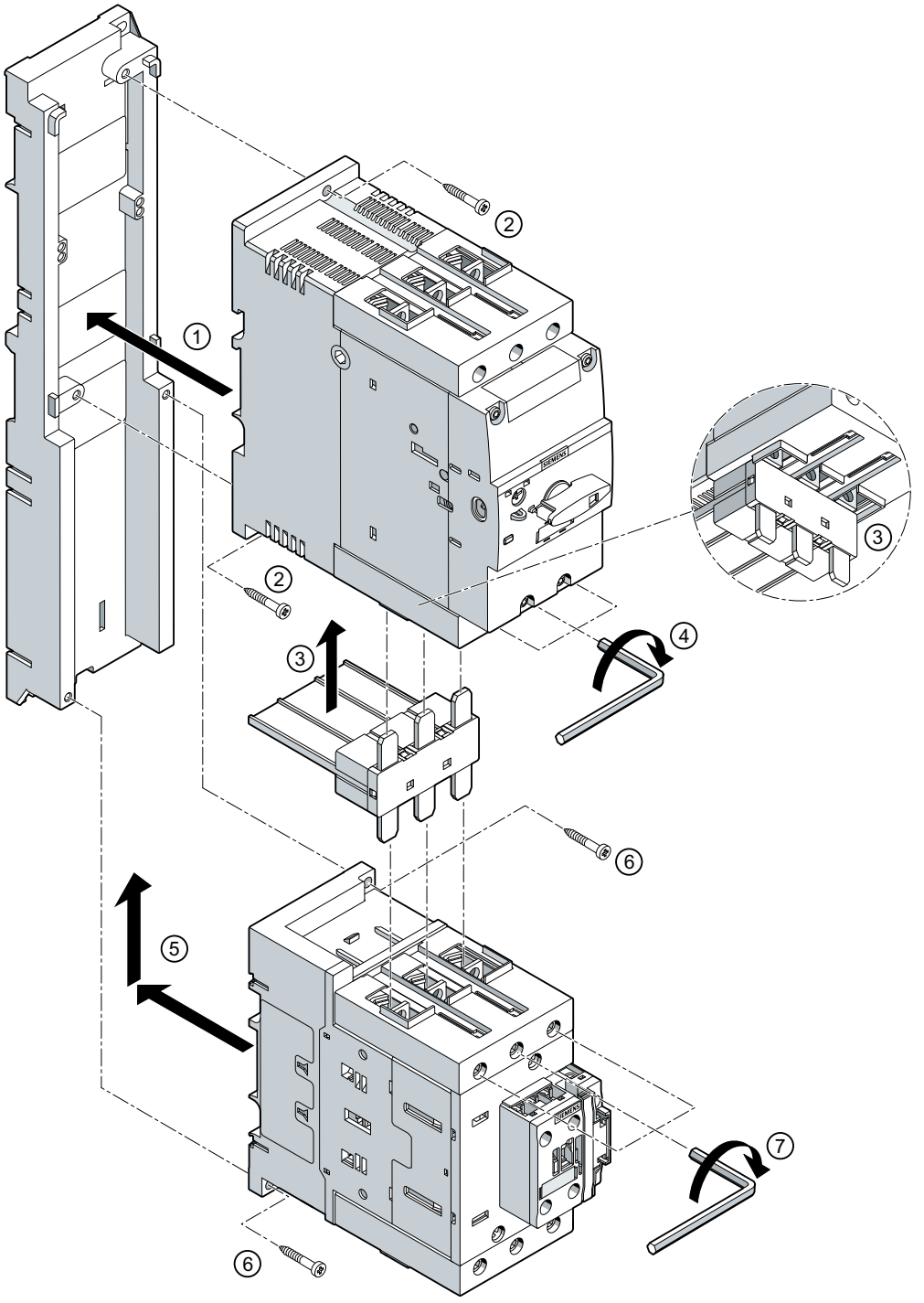
The following figure shows an example of mounting the DIN-rail adapter on the DIN rail with attached direct-on-line starter, size S3.



① / ② Place the DIN-rail adapter with the attached direct-on-line starter on the upper edge of the upper DIN rail and press it down until it snaps onto the lower edge of the lower DIN rail.

Mounting the direct-on-line starter on the DIN rail adapter: Size S3

The figure below illustrates how the size S3 direct-on-line starter with screw-type connection system is mounted on a DIN rail adapter. The devices are snapped onto the DIN rail adapter and screwed onto the adapter.

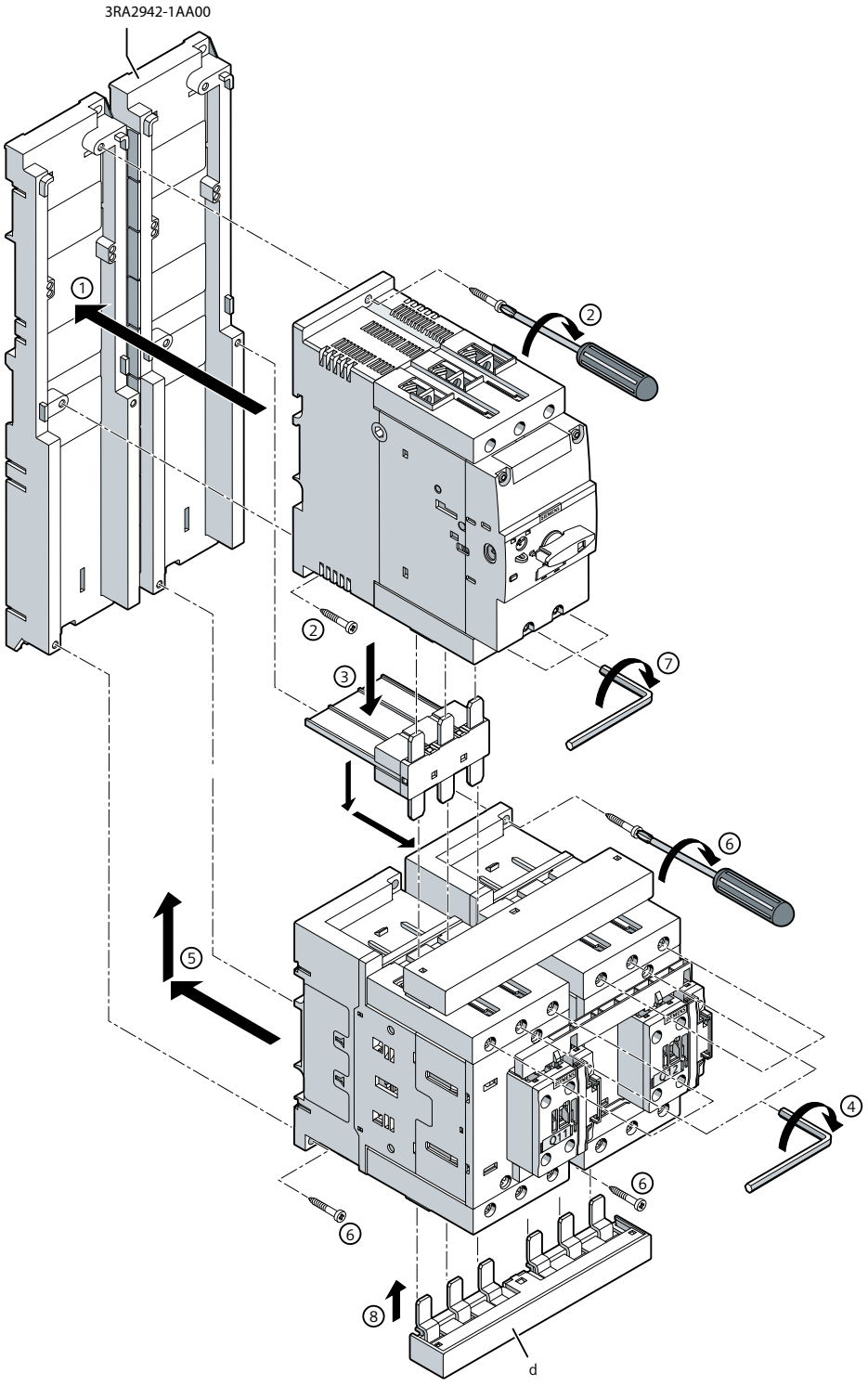


① Place the motor starter protector on the DIN rail adapter.

② Screw the motor starter protector on the DIN rail adapter. The motor starter protector sits tight on the DIN-rail adapter.
③ Insert the connectors on the link module, as shown in the figure, into the bottom main conductor terminals on the motor starter protector.
④ Screw the main conductor terminals tight.
⑤ Slide the contactor onto the link module from below. Insert the connectors on the link module into the top main conductor terminals of the contactor.
⑥ Screw the contactor to the DIN rail adapter. The contactor sits tight on the DIN-rail adapter.
⑦ Screw the main conductor terminals of the contactor tight.

Mounting the reversing starter on the DIN rail adapter: Size S3

The figure below illustrates how the size S3 reversing starter with screw-type connection system is mounted on one or two DIN-rail adapter pairs. The devices are snapped onto the DIN rail adapter and screwed onto the adapter.



① Place the motor starter protector on the DIN rail adapter.

② Screw the motor starter protector on the DIN rail adapter. The motor starter protector sits tight on the left DIN-rail adapter.

③ Place the connectors on the link module as shown in the figure, into the top main conductor terminals on the S3 reversing contactor assembly.

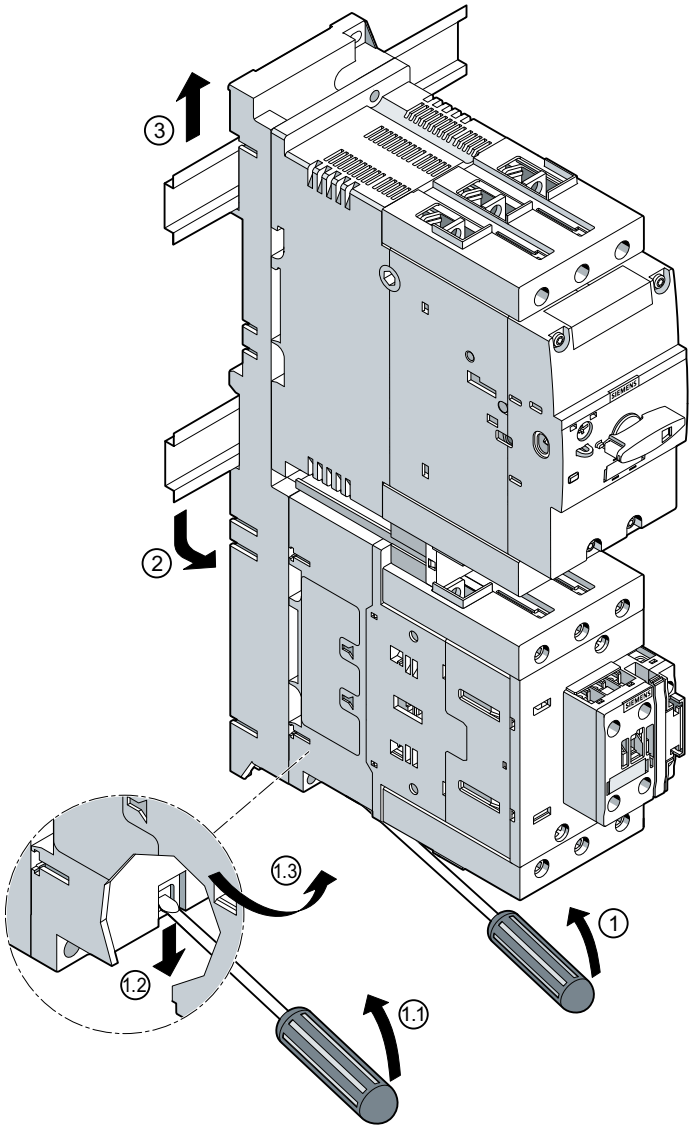
④ Screw the main conductor terminals tight on the left contactor.
⑤ Place the reversing contactor assembly with the fitted link module onto the DIN-rail adapter and guide the reversing contactor assembly onto the motor starter protector from below. Insert the connectors on the link module into the bottom main conductor terminals on the motor starter protector.
⑥ Screw the reversing contactor assembly to the DIN rail adapter. The reversing contactor assembly sits tight on the adapter.
⑦ Screw the main conductor terminals of the motor starter protector tight.

Disassembling the feeder from the DIN rail adapter

To dissemble, unscrew the screws and remove the motor starter protector and contactor / contactor assembly from the DIN-rail adapter.

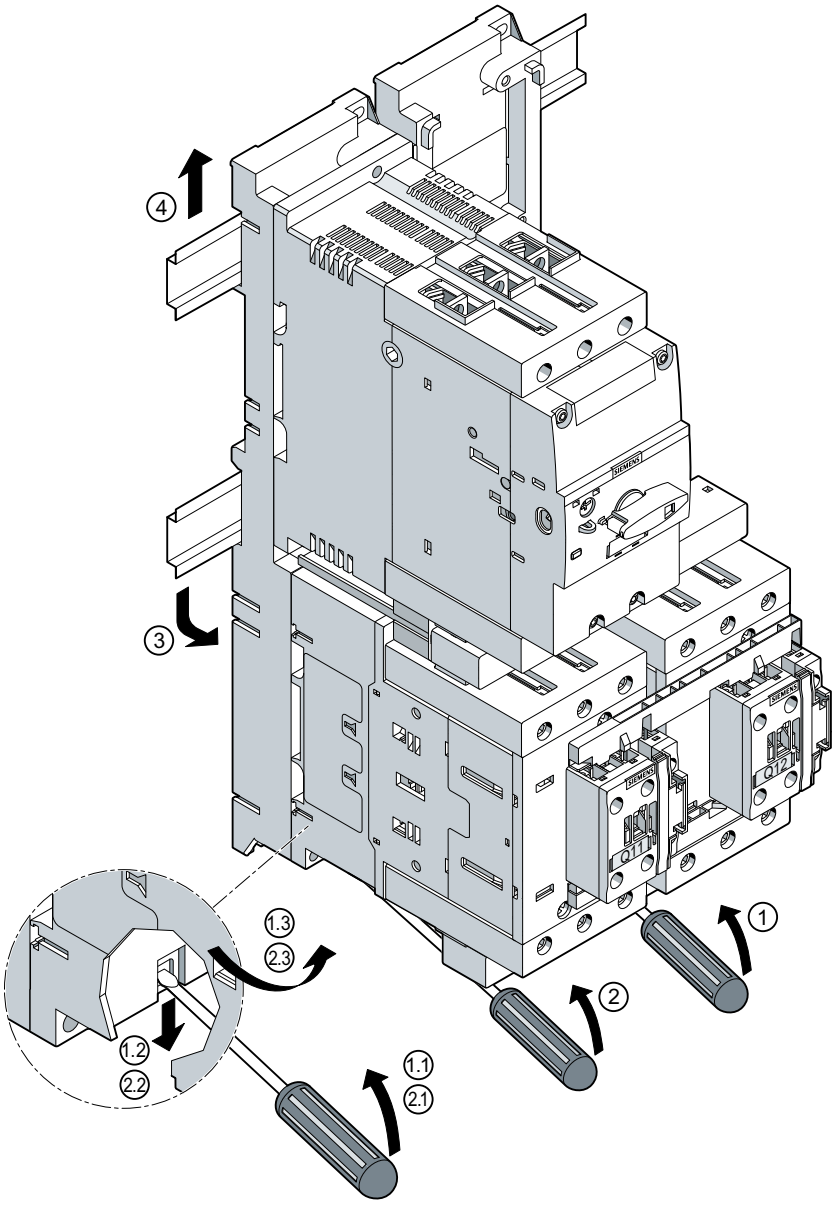
Disassembling the DIN rail adapter from the DIN rail

The procedure for disassembling the DIN rail adapter with mounted size S3 direct-on-line starter is shown in the figure below. You require a screwdriver for disassembling.



① Press the locking device down with a screwdriver.
② Pull the DIN rail adapter with mounted feeder forwards with a swivel action.
③ Press the DIN rail adapter with mounted feeder upwards and remove the DIN rail adapter with mounted feeder from the DIN rail.

The procedure for disassembling the DIN-rail adapter with mounted size S3 reversing starter is shown in the figure below. You will need two screwdrivers for disassembly.



①/②	Press the locking devices down with two screwdrivers.
③	Pull the DIN-rail adapter with attached reversing feeder forwards with a swivel movement.
④	Press the DIN-rail adapters with attached reversing feeders upwards and remove them from the DIN rails.

7.3.4 Mounting on busbar system

All device combinations can be mounted on a 60 mm busbar system. 8US busbar adapters have to be used for busbar mounting. One 8US busbar adapter is required for direct-on-line starters; a pair of adapters, consisting of a 8US busbar adapter and device holder, is required for a reversing contactor assembly.

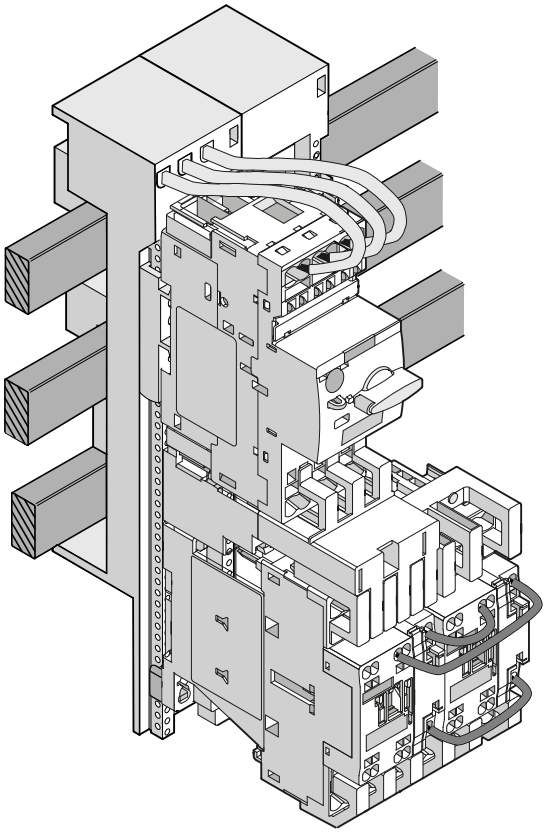


Figure 7-9 Example of size S0 reversing starter with spring-loaded connection system mounted on busbar

The busbar adapters /device holders and the associated mounting parts can be purchased as accessories.

Component parts of the different mounting variants can be determined via our Online Configurator (Page 42).

Adapter types for busbars with plug-in connectors

The following busbar adapters with plug-in connectors are available for load feeders.

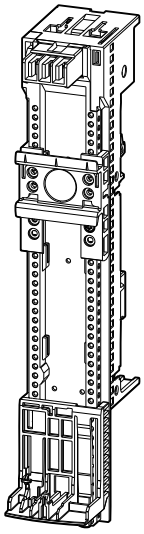


Figure 7-10 Busbar adapter with plug-in connectors 8US1216-5AS80 and 8US1216-5AT80

Table 7-10 Busbar adapters for direct-on-line starters

Article No.	Size	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage
		A	AWG	mm	mm	V
Load feeders for plug-in connectors (motor starter protectors with screw-type connection system or spring-loaded connection system)						
8US1216-5AT80	S00 / S0	32	--	260	45	690

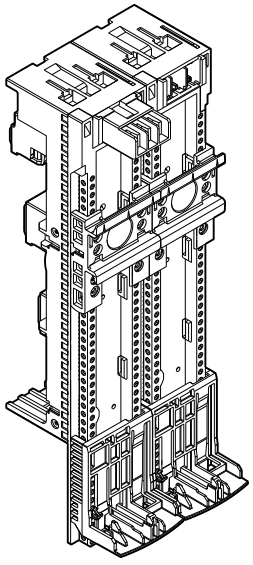


Figure 7-11 Adapter pair for reversing combinations, consisting of busbar adapter 8US1216-5AT80 and device holder 8US1250-5AT10

Table 7-11 Device holders for reversing starters

Article No.	Size	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage
		A	AWG	mm	mm	V
Device holder						
8US1250-5AT10	S0	--	--	260	45	--

The following plug-in connectors are required as accessories for connecting the busbar adapter and motor starter protector / feeder:

- Plug-in connector 3RV2917-5CA00 screw-type connection system, size S00
- Plug-in connector 3RV2917-5AA00 spring-loaded connection system, size S00
- Plug-in connector 3RV1927-5AA00 screw-type connection system, size S0

Adapter types for busbars with connecting cables

Busbar adapters and device holders: 8US busbar adapters are available with or without pre-assembled connecting cables. Busbar adapters without connecting cables are known as "device holders".

The **8US busbar adapters and device holders** are available in the adapter lengths 200 mm and 260 mm. All device combinations can be mounted on the long adapter.

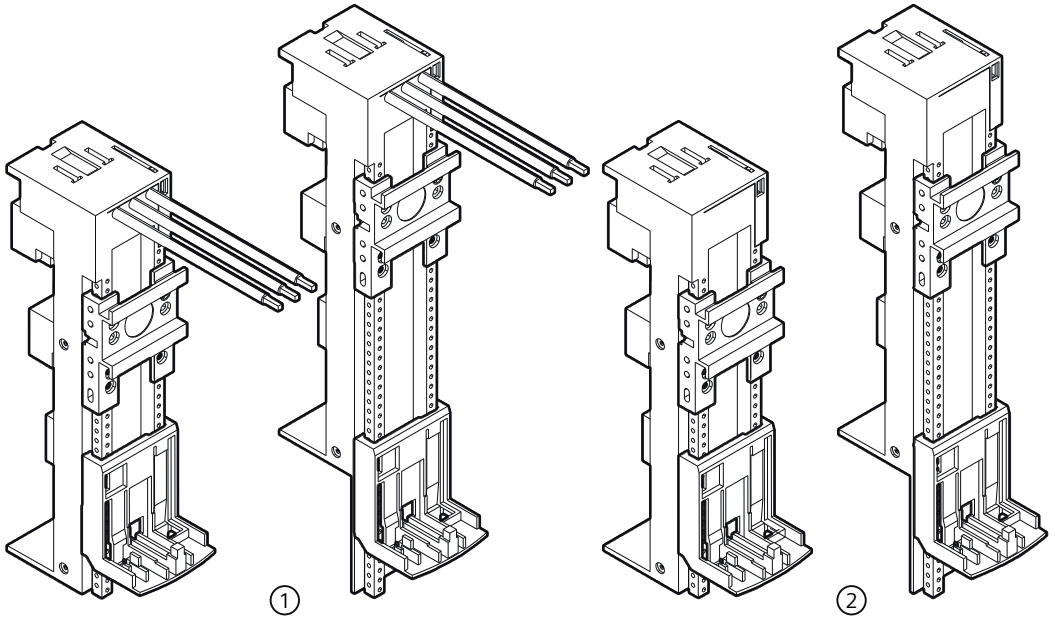
Table 7-12 8US busbar adapter for direct starters

Article No.	Size	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage
		A	AWG	mm	mm	V
For motor starter protectors with screw terminals						
8US1251-5DS10	S00 / S0	25	12	200	45	690
8US1251-5DT10	S00 / S0	25	12	260	45	690
8US1251-5NS10	S0	32	10	200	45	690
8US1251-5NT10	S0	32	10	260	45	690
8US1261-6MT10	S2	80	4	260	55	690
For motor starter protectors with spring-loaded terminals						
8US1251-5DS11	S00 / S0	25	12	200	45	690
8US1251-5DT11	S00 / S0	25	12	260	45	690
8US1251-5NS11	S0	32	10	200	45	690
8US1251-5NT11	S0	32	10	260	45	690

Table 7-13 Busbar adapters and device holders for reversing starters

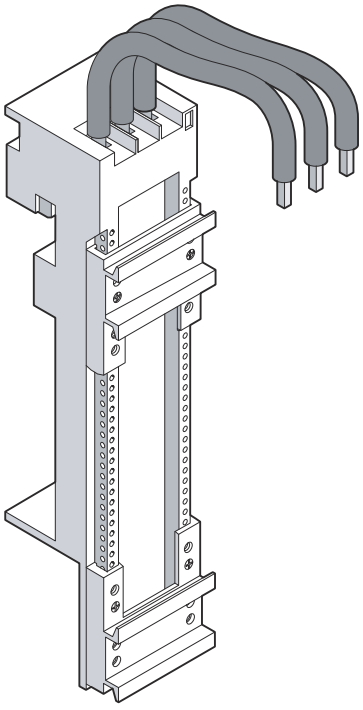
Article No.	Size	Rated current	Connecting cable	Adapter length	Adapter width	Rated voltage
		A	AWG	mm	mm	V
Device holders						
8US1250-5AS10	S00 / S0	--	--	200	45	--
8US1250-5AT10	S0	--	--	260	45	--
Busbar adapters and device holders						
8US1211-6MT10[1)]	52	80	4	260	117	690

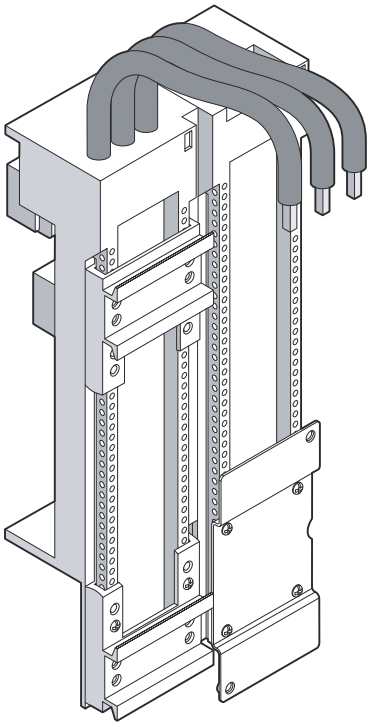
1) Kit for installing reversing starters consisting of busbar adapter and device holder



① Busbar adapters
② Device holders
Sizes S00 / S0

Busbar adapter (size S2), direct start load feeder and reversing feeder





Connecting 8US busbar adapter to the device holder for reversing contactor assemblies

One 8US busbar adapter and one device holder is required to mount a reversing contactor assembly on a busbar.

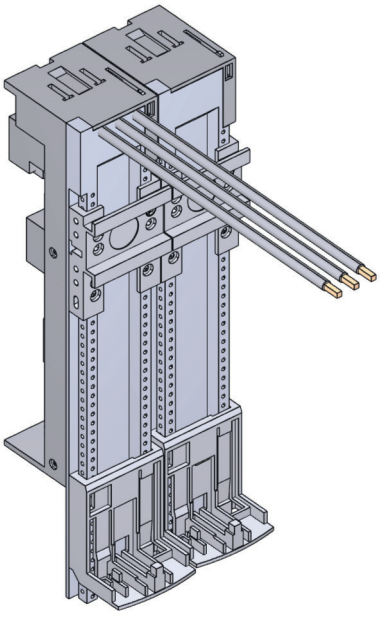


Figure 7-12 8US1251-5DT11 busbar adapter and 8US1250-5AT10 device holder for reversing contactor assemblies, size S00

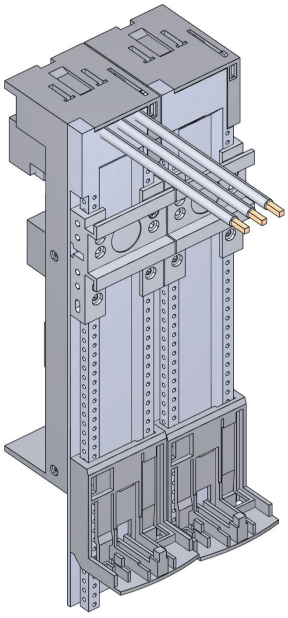


Figure 7-13 8US1251-5NT11 busbar adapter and 8US1250-5AT10 device holder for reversing contactor assemblies, size S0

Busbar adapters and device holders can be connected without tools. Link wedges simply need to be plugged in on the rear of the adapters.

The link wedges are supplied on the back of the device holder or are available separately as accessories (8US1998-1AA10).

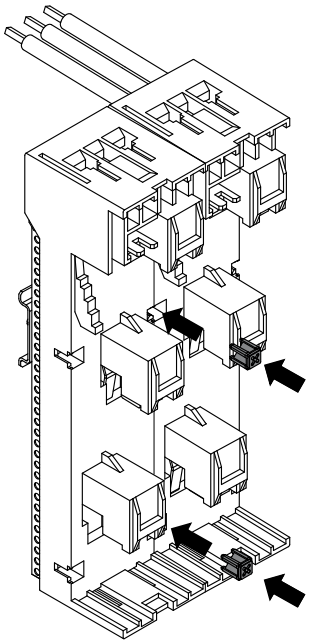


Figure 7-14 Connecting the 8US busbar adapters and device holders

Adapting the 8US busbar adapter to the busbar system



⚠ DANGER

Hazardous voltage!

Will cause death or serious injury.

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

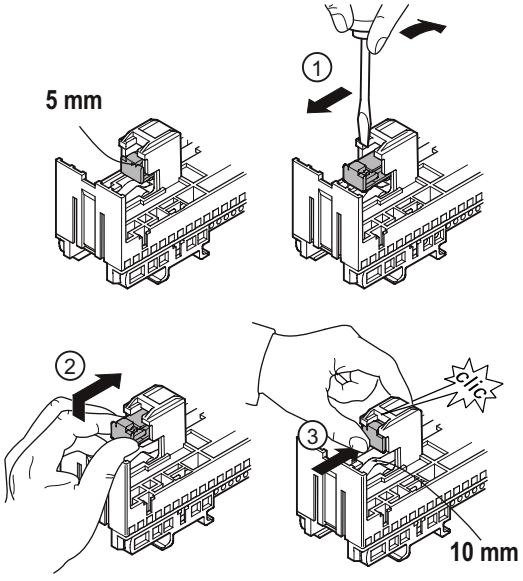
The busbar adapter and the device holder can be adjusted to suit the following busbar thicknesses:

- 5 mm (delivery condition)
- 10 mm

Busbar systems for 60 mm system

- Width: 12 mm to 30 mm
- Thickness: 5 mm or 10 mm
- And for T and I special profiles

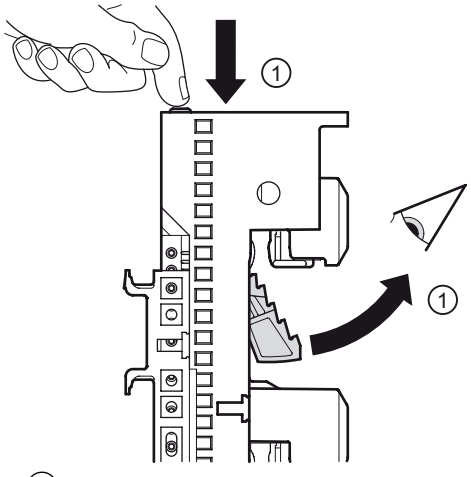
Adjusting the 8US busbar adapter to suit the busbar thickness



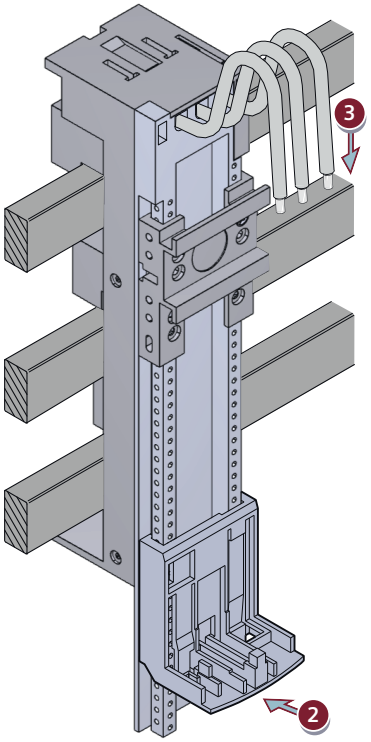
① Push the 3 fastening blocks down.
② Adjust the fastening blocks in accordance with the busbar thickness (5 mm/10 mm).
③ Push the fastening blocks up until they engage.

Mounting the 8US busbar adapter on the busbar

Attaching the 8US busbar adapter to the busbar is a very straightforward process. The busbar hooks on the rear of the adapter will hold the structure securely on the rail even under harsh ambient conditions.



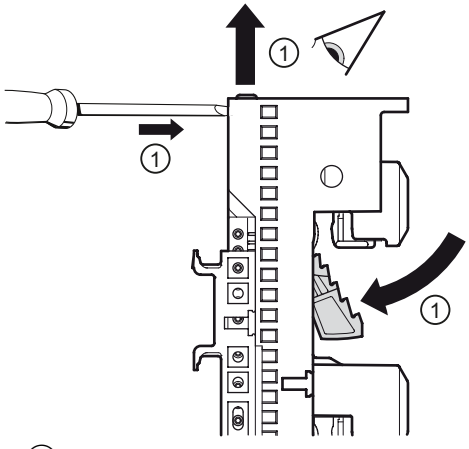
① Press the button on the top of the 8US busbar adapter to release the holder. The holder should flip out from the front of the busbar adapter.



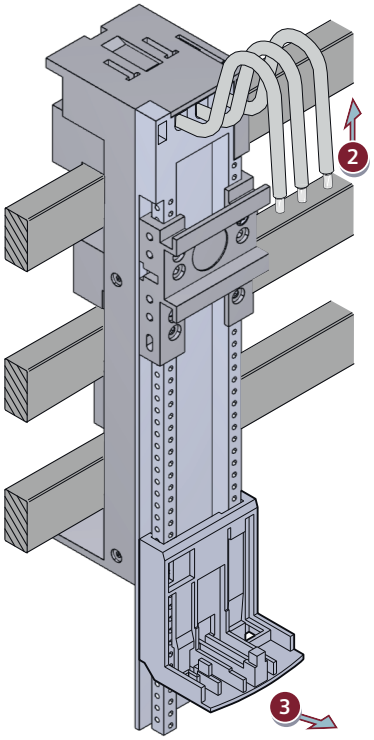
② / ③ Mount the 8US busbar adapter onto the busbars by first attaching it from the front and then pushing it down.

Disassembly of the 8US busbar adapter from the busbar system

The diagrams below illustrate how the 8US busbar adapter is disassembled from the busbar system:



① From the front, insert a screwdriver into the right-hand opening on the 8US busbar adapter and release the holder. The button on the top of the 8US busbar adapter must snap up and lock into place.



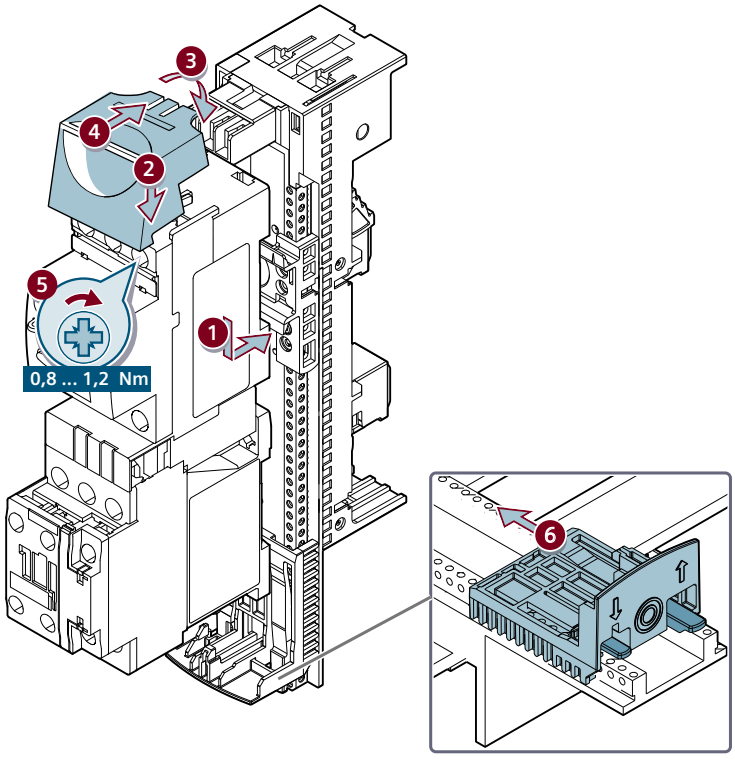
②/③ Remove the 8US busbar adapter from the busbars. To do this, you will first need to push it up slightly so that you can remove it by pulling it off toward you.

7.3.4.1 Mounting the load feeders on the busbar adapter with plug-in connector

Mounting the direct-on-line starter (sizes S00 and S0)

The load feeders can be attached to the 8US busbar adapter.

Mounting on the 8US busbar adapter with plug-in connector (direct-on-line starter, screw-type connection system, size S00)



① Set the direct-on-line starter on the 8US busbar adapter with plug-in connector.

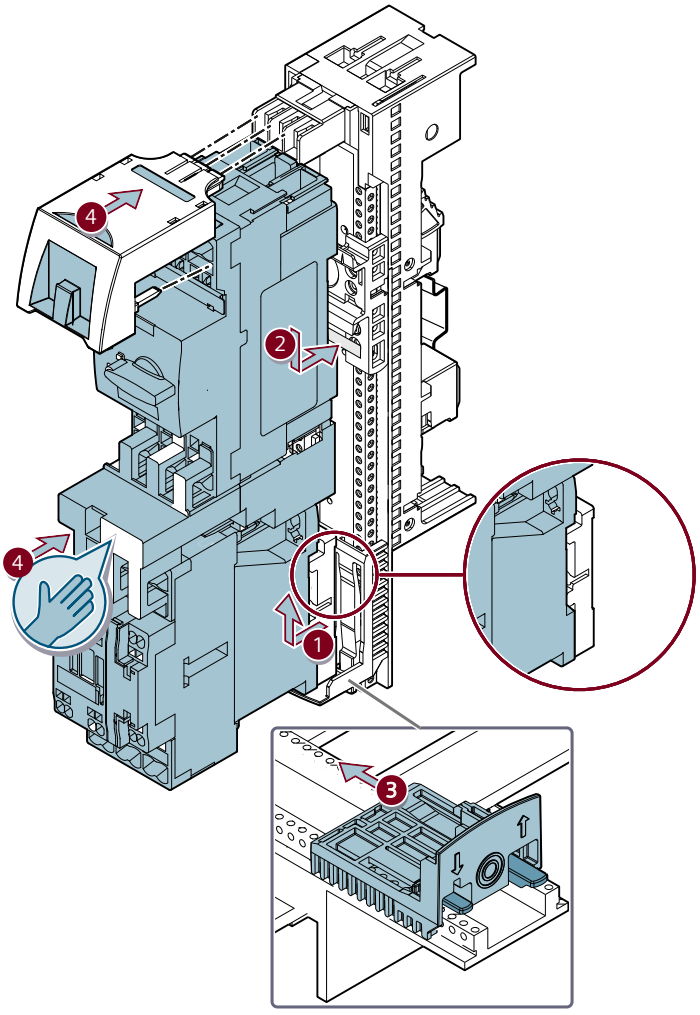
② / ③ Set the plug-in connector on the motor starter protector from above with a swivel movement.

④ Push the plug-in connector into the connection openings of the 8US busbar adapter.

⑤ Screw the plug-in connector tight by screwing the main conductor terminals of the motor starter protector tight.

⑥ Slide the positioning piece from below onto the 8US busbar adapter until it engages at the bottom on the contactor.

Mounting on the 8US busbar adapter with plug-in connector (direct-on-line starter, spring-loaded connection system, size S0)



① S0 contactors with AC operation and spring-loaded connection system need a spacer disk.
② Snap the direct-on-line starter onto the 8US busbar adapter.
③ Slide the positioning piece from below onto the 8US busbar adapter until it engages at the bottom on the contactor.
④ Push the plug-in connector into the connection openings of the 8US busbar adapter.

Note

Mounting on the 8US busbar adapter with plug-in connector (direct-on-line starter, size S0) is also possible using screw-type connection system.

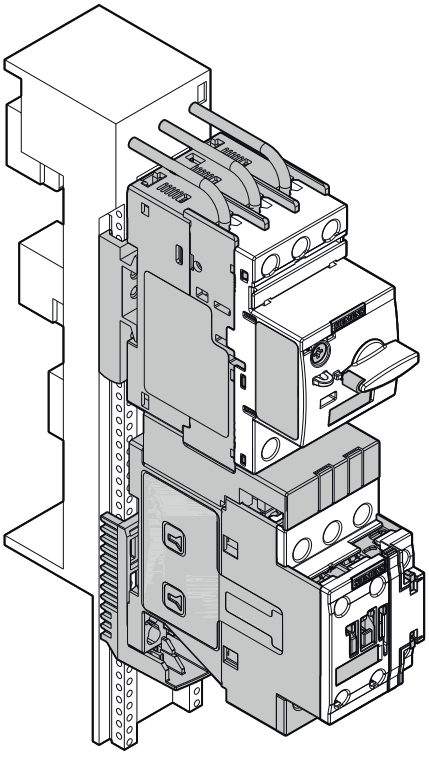
7.3.4.2 Mounting the load feeders on the busbar adapter with connecting cables

Mounting the feeders on the 8US busbar adapter

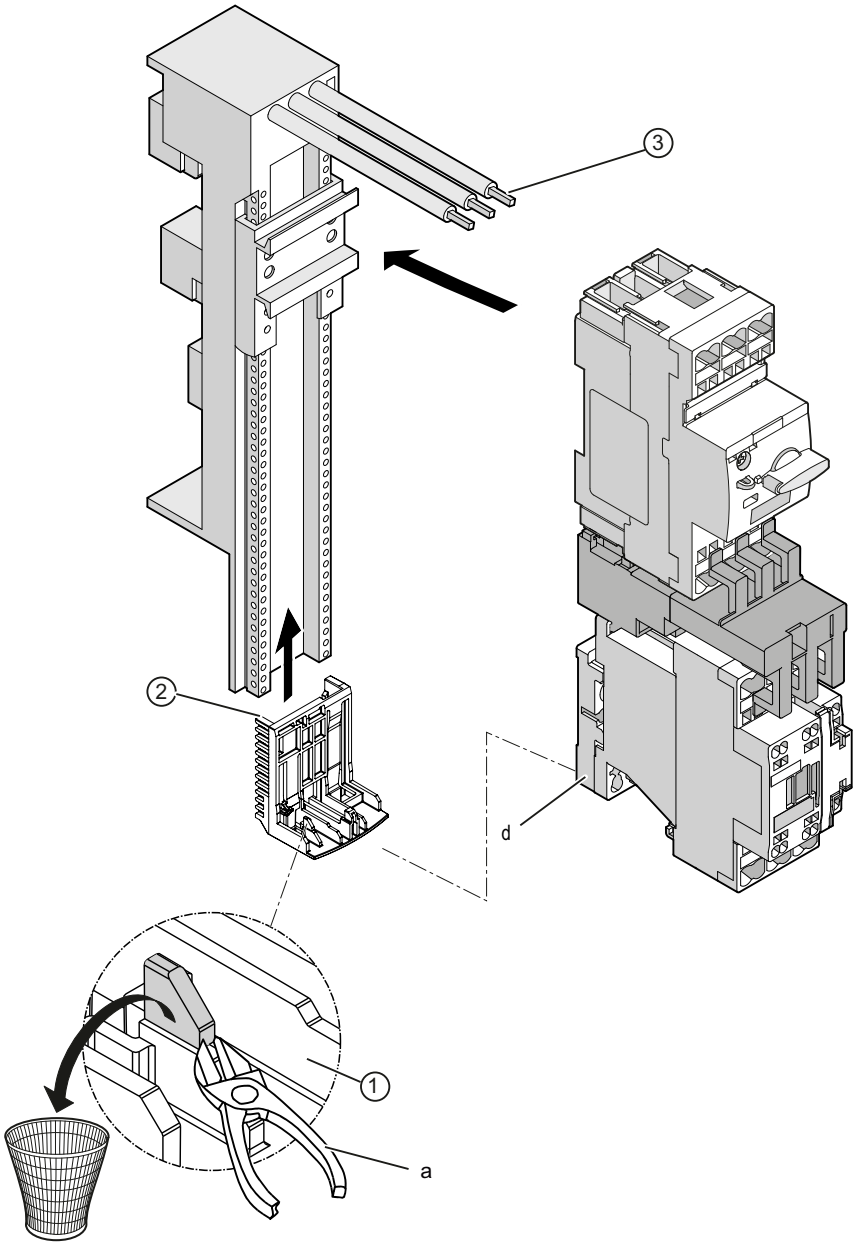
Mounting the direct-on-line starter (sizes S00 and S0)

The load feeder components can be attached to the 8US busbar adapter.

Mounting on the busbar adapter 8US (direct-on-line starter, screw-type connection system, size S0)



Mounting on the busbar adapter (direct-on-line starter, spring-loaded connection system, size S0)



① For contactors in size S0 with AC operation and spring-loaded connection system, the lug must be broken off (a).

② Slide the positioning piece from below onto the busbar adapter until it engages at the bottom on the contactor.

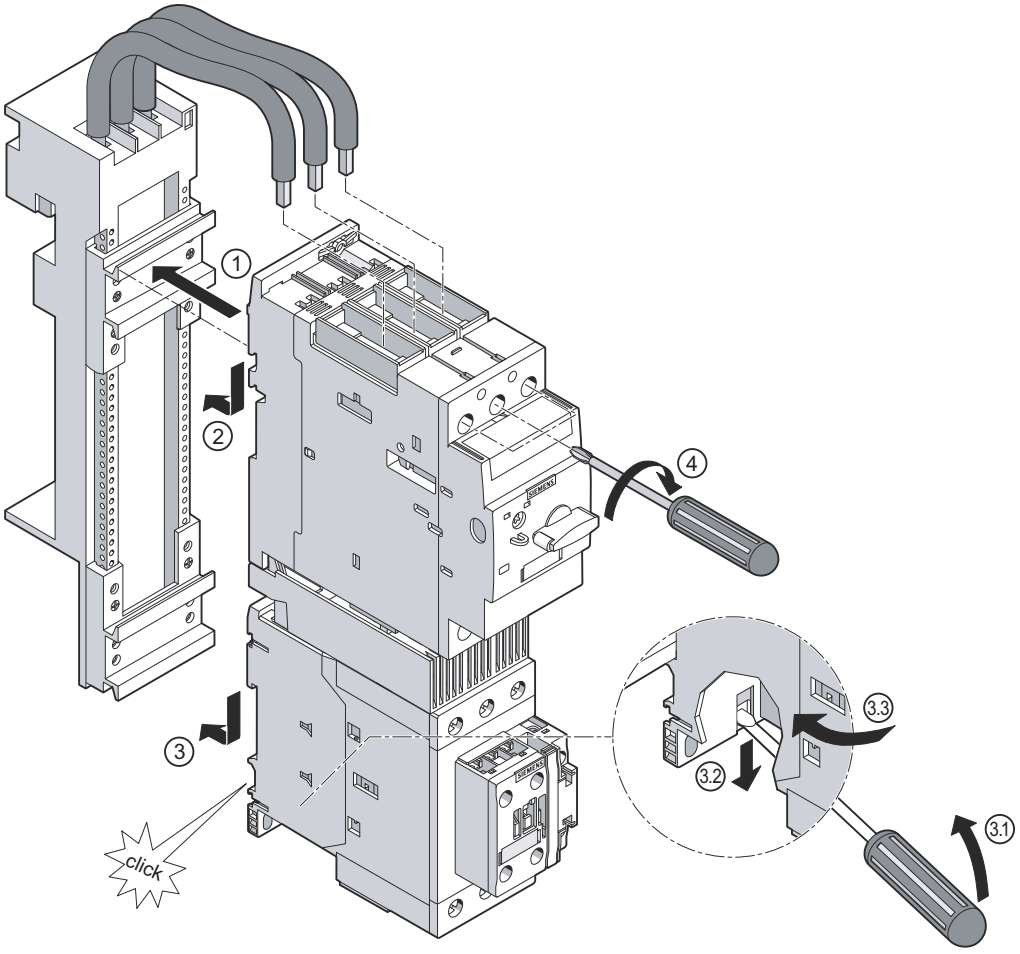
③ Connect the connection cables to the applicable main conductor terminals.

Note

A spacer disk (3RA2911-1CA00) must be used for feeders with spring-loaded connection system in size S0 with contactor in AC operation (d).

Mounting the direct-on-line starter (size S2)

The figure below shows the work steps for mounting the direct-on-line starter in size S2.



① Hang the feeder with the hooking position of the motor starter protector on the upper DIN rail of the 8US busbar adapter.

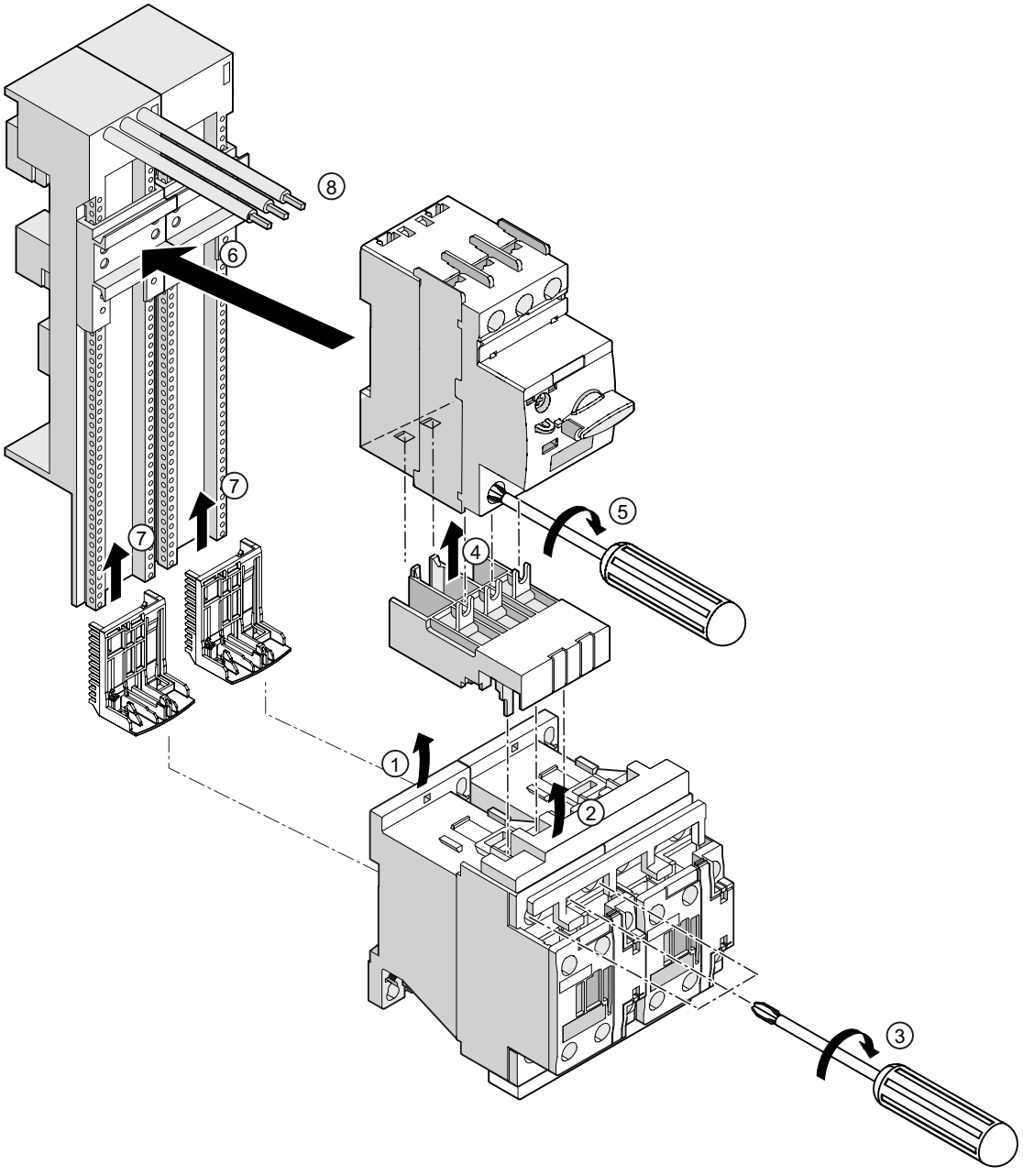
② Swivel the feeder to the 8US busbar adapter.

③ Use a screwdriver to push the interlock on the contactor downwards and lock the feeder onto the lower DIN rail of the 8US busbar adapter.

④ Insert the connecting cables into the corresponding main conductor terminals. Screw the main conductor terminals tight.

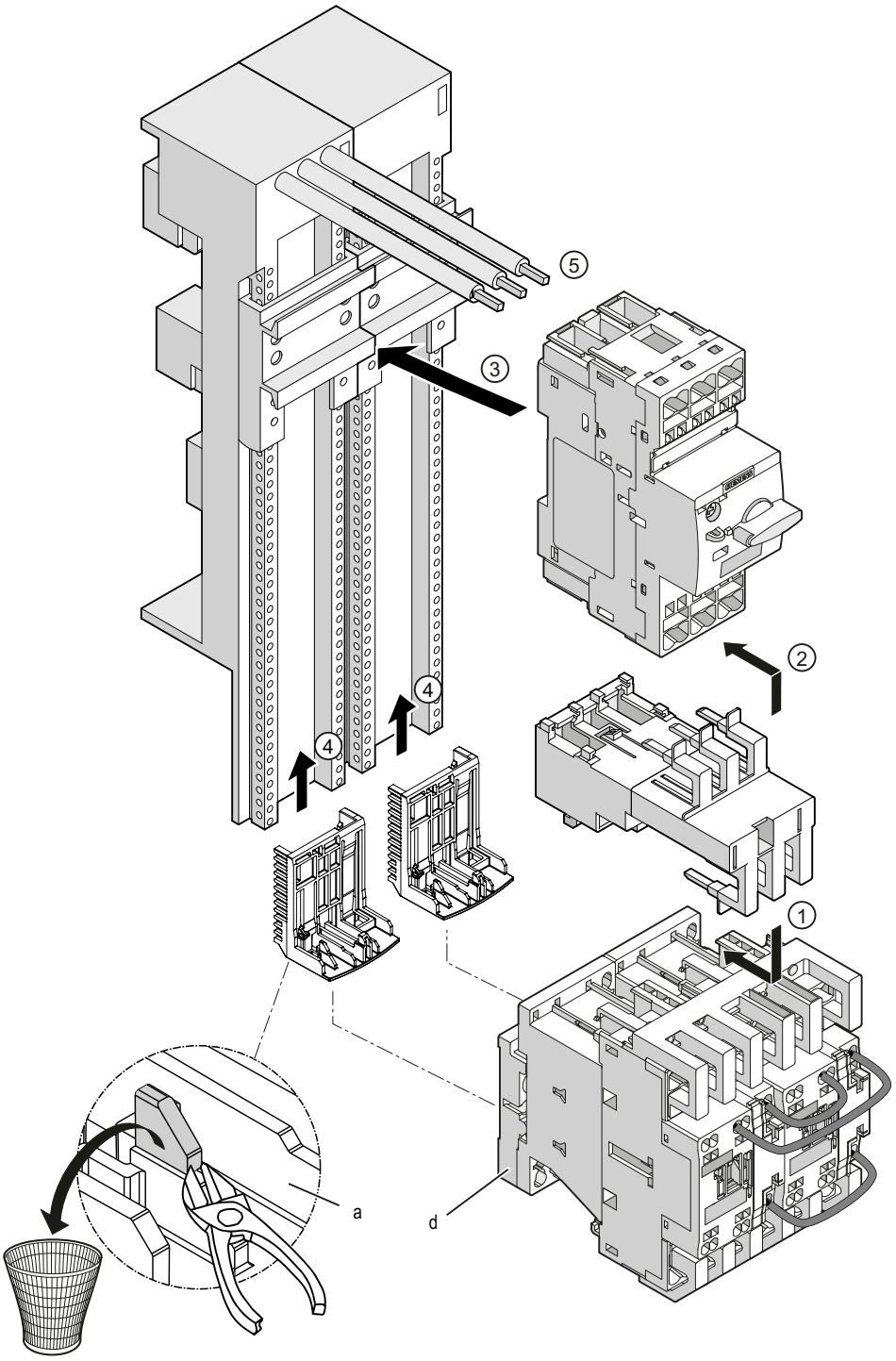
Mounting the reversing starter on the 8US busbar adapter (sizes S00 and S0)

The figure below shows an example of the work steps for mounting the reversing starter in screw-type connection system (size S0).



① Set the link module on the left contactor.
② Insert the connectors into the corresponding main conductor terminals.
③ Screw the main conductor terminals of the reversing contactor assembly tight.
④ Place the reversing contactor assembly and the link module on the bottom of the motor starter protector. Insert the guide tabs into the slots on the motor starter protector. Insert the connectors into the corresponding sockets of the motor starter protector at the same time.
⑤ Screw the main conductor terminals of the motor starter protector tight.
⑥ Set the reversing starter on the 8US busbar adapter.
⑦ Push the positioning pieces onto the 8US busbar adapter from below until the reversing contactor assembly is fixed in place.
⑧ Connect the connecting cables to the corresponding main conductor terminals of the motor starter protector.

Mounting the reversing starter on the 8US busbar adapter (size S0)



① Insert the connectors on the link module into the corresponding main conductor terminals on the reversing contactor assembly. Ensure that the guide tabs are inserted into the slots on the left contactor.
The link module sits flush on the left and right of the contactor.

② Insert the connectors on the link module into the corresponding main conductor terminals on the motor starter protector.
At the same time, insert the guide tabs into the slots provided.
The link module will sit flush underneath the motor starter protector on the left- and right-hand sides.

③ Snap the reversing starter onto the 8US busbar adapter.

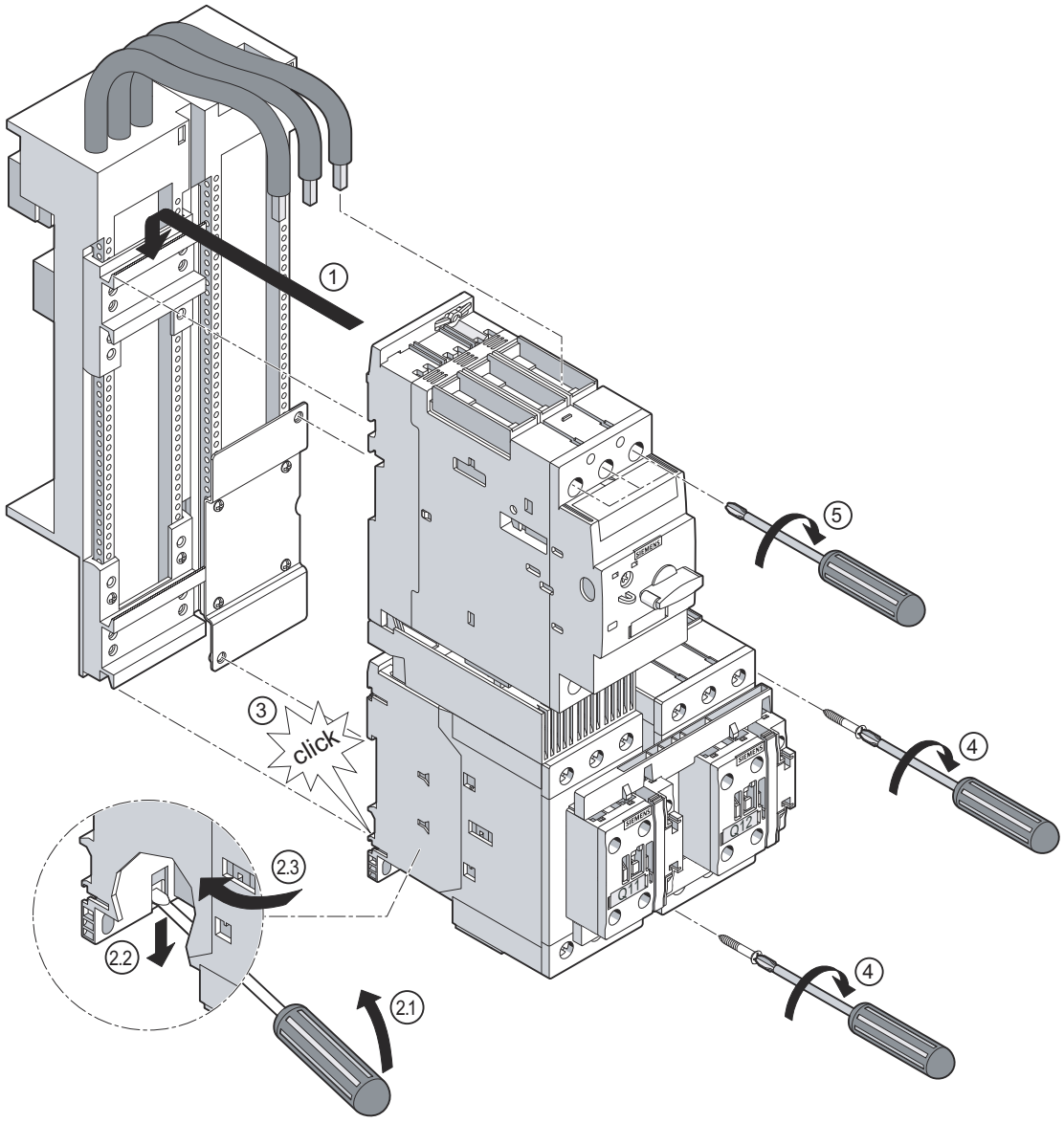
④ Slide the positioning pieces from below onto the 8US busbar adapter until they engage at the bottom on the contactors.

Note: For contactors in size S0 with AC operation and spring-loaded connection system, the lug must be broken off (a) and a spacer disk (3RA2911-1CA00) (d) is required.

⑤ Connect the connecting cables to the corresponding main conductor terminals of the motor starter protector.

Mounting the reversing starter on 8US busbar adapter (size S2)

The figure below shows the work steps for mounting the reversing starter in screw-type connection system (size S2).



① Hang the pre-assembled reversing starter with the upper hooking position of the motor starter protector on the upper DIN rail of the 8US busbar adapter and swivel the reversing starter towards the 8US busbar adapter.

② Slide the locking on the left contactor down with a screwdriver.

③ Latch the reversing starter onto the bottom DIN rail of the 8US busbar adapter.

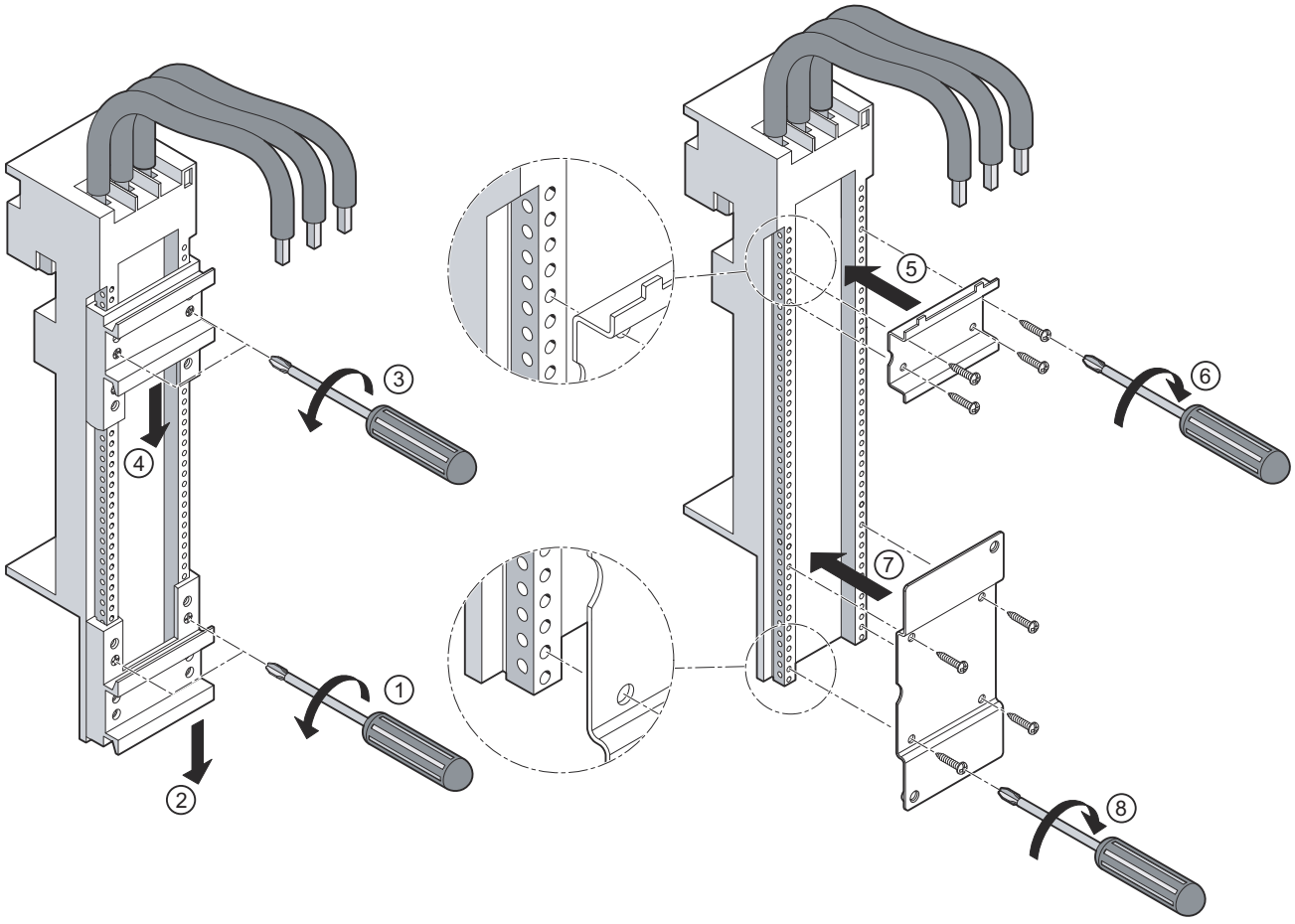
④ Screw the right contactor tight diagonally into the mounting plate openings provided using two M4 screws.

⑤ Insert the connecting cables into the corresponding main conductor terminals. Screw the main conductor terminals tight.

Installing the vibration and shock kit

Installing the vibration and shock kit for direct-on-line starters in size S2

The following figures show how to install the vibration and shock kit for direct-on-line starters in size S2.



①/② Use a screwdriver to release the screws of the lower plastic DIN rail, and remove the plastic DIN rail by pulling it down off the busbar adapter.

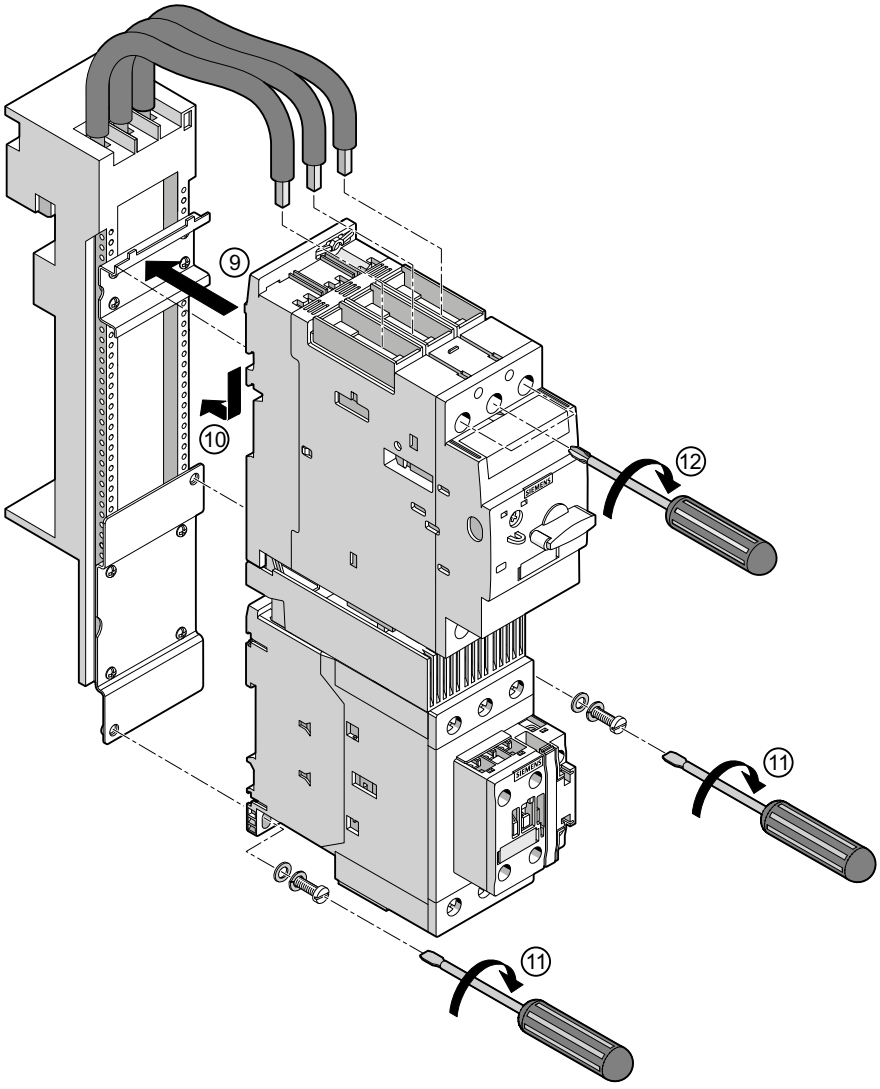
③/④ Use a screwdriver to release the screws of the upper plastic DIN rail, and remove the plastic DIN rail by pulling it down off the busbar adapter.

⑤/⑥ Screw the metal DIN rail tight on the busbar adapter.

Ensure the metal DIN rail is screwed into the busbar adapter in the 5th opening from the top as shown in the figure.

⑦/⑧ Screw the fastening plate tight to the busbar adapter.

Ensure the fastening plate is screwed into the busbar adapter in the 2nd opening from the bottom as shown in the figure.

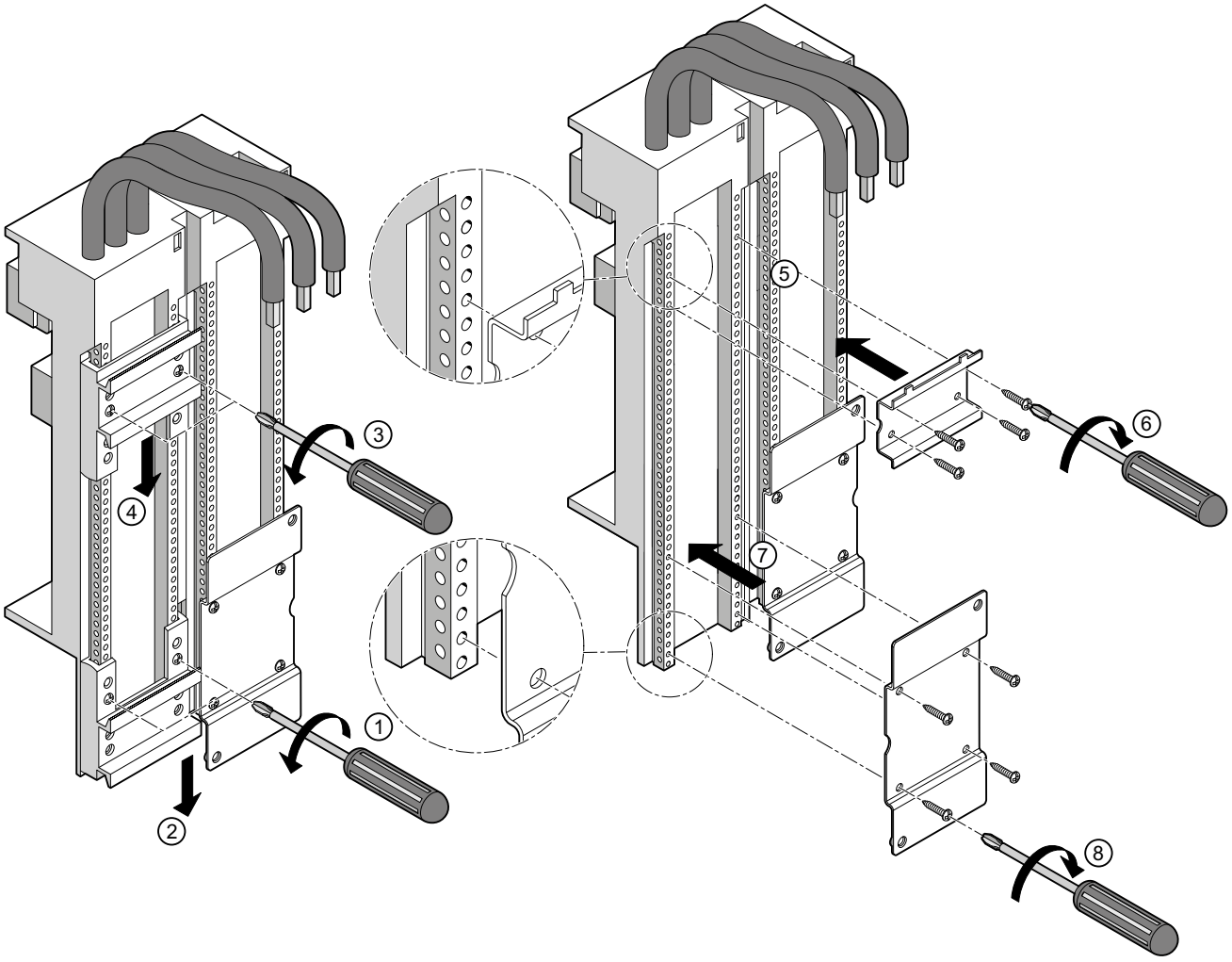


⑨/⑩ Hook the feeder into the upper hooking position of the motor starter protector, and swivel the feeder to the busbar adapter.

⑪ Screw the contactor tight diagonally into the openings provided using two M4 screws, plain washers and spring lock washers.

⑫ Insert the connecting cables into the corresponding main conductor terminals. Screw the main conductor terminals tight.

Installing the vibration and shock kit for reversing starters in size S2



①/② Use a screwdriver to release the screws of the lower plastic DIN rail, and remove the plastic DIN rail by pulling it down off the busbar adapter.

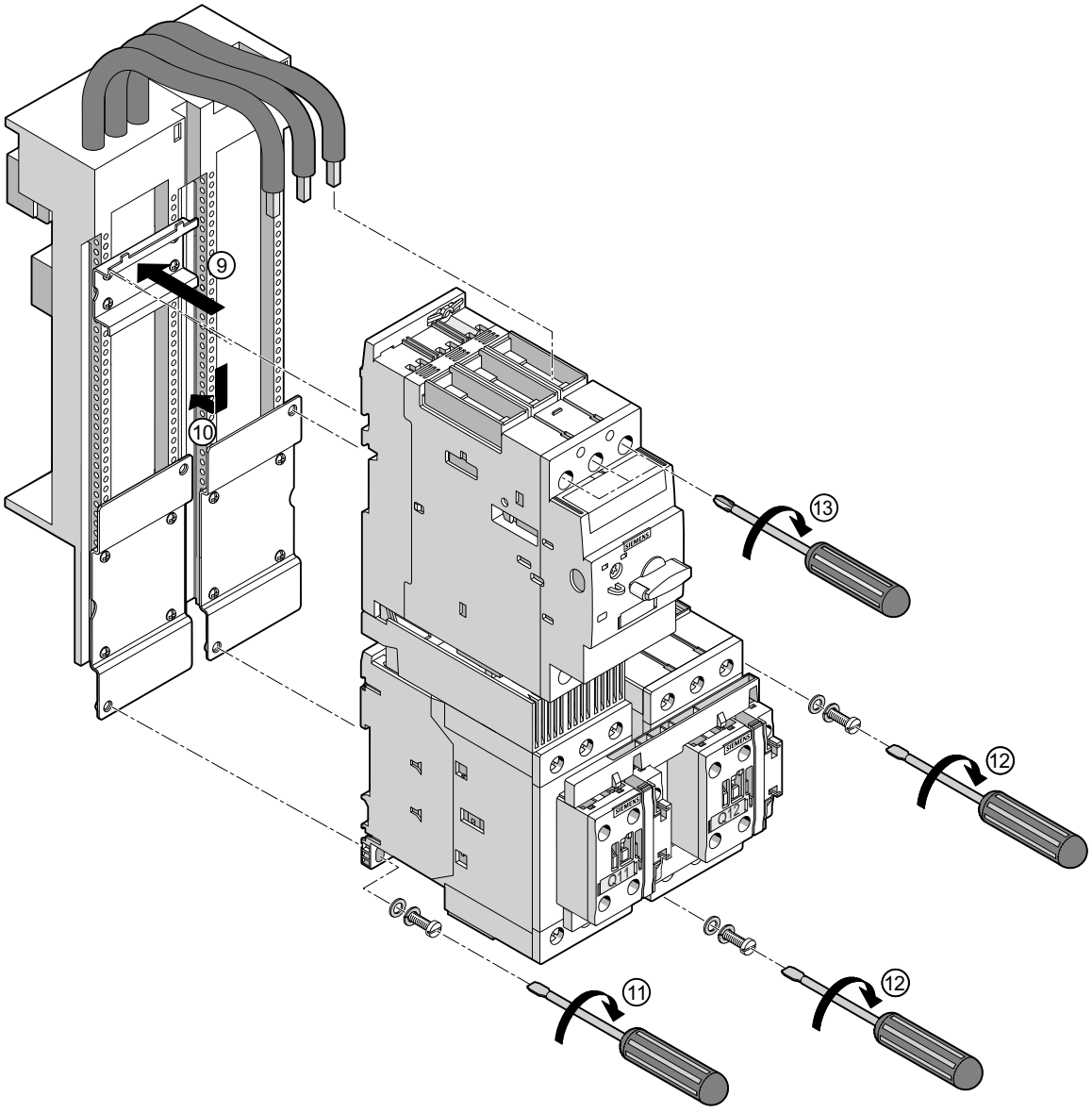
③/④ Use a screwdriver to release the screws of the upper plastic DIN rail, and remove the plastic DIN rail by pulling it down off the busbar adapter.

⑤/⑥ Screw the metal DIN rail tight on the busbar adapter.

Ensure the metal DIN rail is screwed into the busbar adapter in the 5th opening from the top as shown in the figure.

⑦/⑧ Screw the fastening plate tight to the busbar adapter.

Ensure the fastening plate is screwed into the busbar adapter in the 2nd opening from the bottom as shown in the figure.



⑨/⑩ Hook the feeder into the upper hooking position of the motor starter protector, and swivel the feeder to the busbar adapter.

⑪ Screw the left length contactor tight into the openings provided using two M4 screws, plain washers and spring lock washers.

⑫ Screw the right length contactor tight diagonally into the openings provided using two M4 screws, plain washers and spring lock washers.

⑬ Insert the connecting cables into the corresponding main conductor terminals. Screw the main conductor terminals tight.

7.3.5 Mounting on base plate

All individual parts of the load feeder are delivered ready for base plate mounting. Depending on the size, it is possible to mount on the base plate with or without a DIN-rail adapter.

Table 7-14 Mounting on a base plate with or without DIN rail adapter, depending on size

Mounting on base plate	Size	
	Direct-on-line starter	Reversing starter
Without DIN rail adapter	S00, S0, S2	S00
With DIN rail adapter	S00, S0, S2, S3	S00, S0, S2, S3

7.3.5.1 Mounting on base plate without DIN rail adapter

All size S00 to S2 direct-on-line starters and size S00 reversing starters may be mounted directly on the base plate.

The load feeder is screwed to the base plate. The device enclosures contain fastening holes, as well as openings for screw-mounted push-in lugs (3RV2928-0B).

⚠ CAUTION

Short-circuit hazard

In configurations with a limiter, insulation of the base plate is necessary to avoid a short-circuit to the base plate in the event of a short-circuit of the motor starter protector. If the limiter and the feeder are mounted on the DIN rail adapter, insulation is not required.

Sizes S00 / S0

The figure below shows an example of mounting on a base plate without DIN-rail adapter for size S00 reversing starters as well as for size S00 / S0 direct-on-line starters.

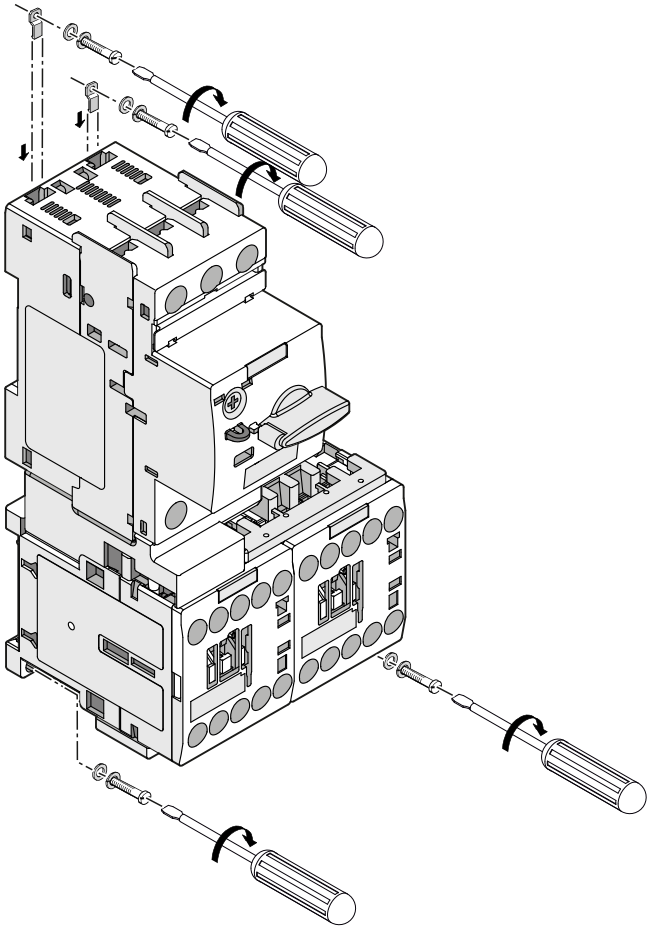


Figure 7-15 Mounting on base plate (reversing starter, screw-type connection system, size S00)

Note

To fasten the direct-on-line starter, 2 x M4 screws must be used diagonally in size S00.

To fasten the direct-on-line starter in size S0, use 2 x M4 screws at the top of the motor starter protector and 1 x M4 screw at the bottom of the contactor.

4 X M4 screws should be used to fasten the reversing starter.

Size S2

The figure below shows mounting on a base plate without DIN rail adapter for direct-on-line starters of size S2.

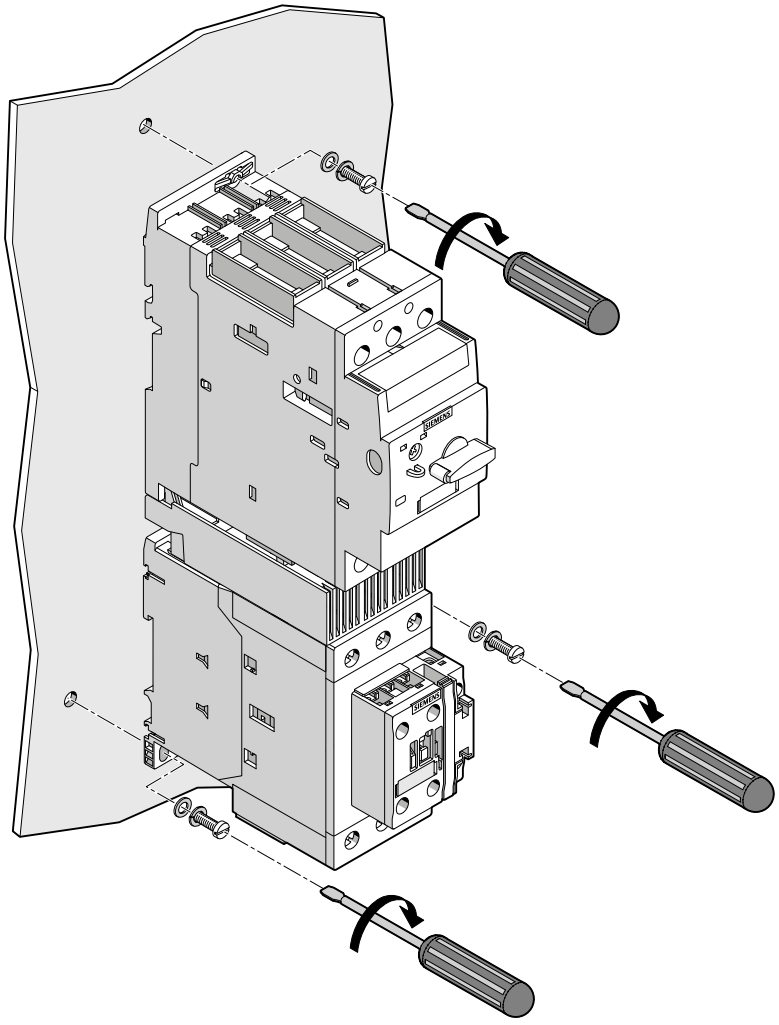


Figure 7-16 Mounting on base plate (direct-on-line starter, screw-type connection system, size S2)

Note

Use 3 x M4 screws to fasten the contactors.

Disassembling the DIN rail adapter from the base plate

To disassemble the DIN rail, unscrew the screws and remove the adapter.

7.3.5.2 Mounting on base plate with DIN rail adapter

Mounting on a base plate with DIN rail adapter is permissible for all device combinations. Size S0 reversing starters have to be mounted with DIN rail adapters.

The DIN rail adapters contain fastening holes for the screw mounting.

Sizes S00 / S0

The figure below shows an example of mounting on a base plate with DIN-rail adapter for reversing starters and direct-on-line starters of size S00 / S0.

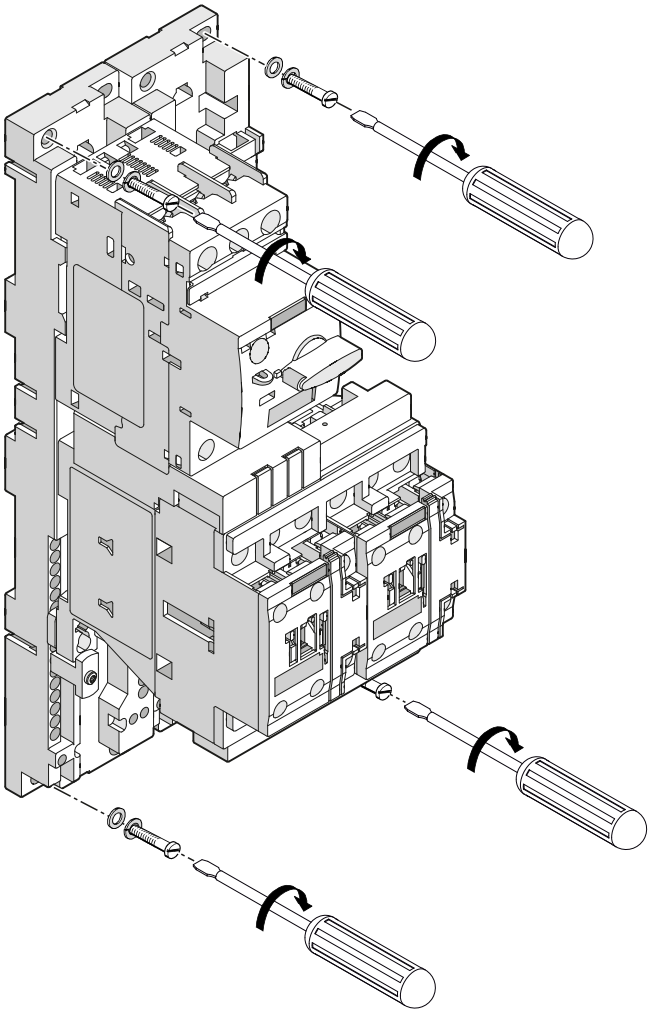


Figure 7-17 Mounting on base plate (reversing starter with DIN rail adapter, screw-type connection system, size S0)

Note

Use 4 x M4 screws to fasten the DIN-rail adapter.

Size S2

The figures below show mounting on a base plate with DIN rail adapter for size S2 direct-on-line starters and reversing starters.

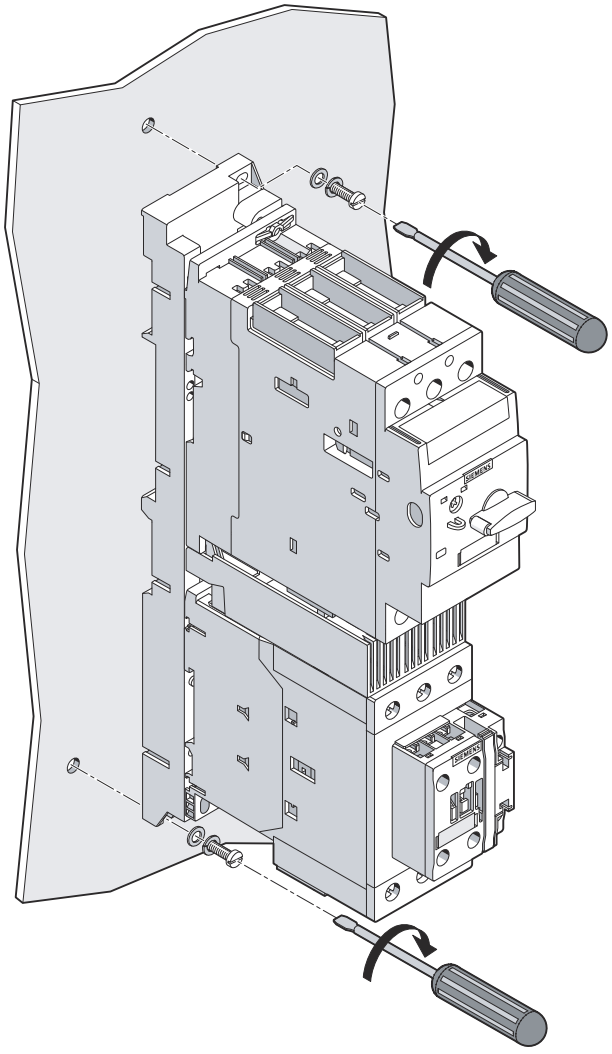


Figure 7-18 Mounting on base plate (direct-on-line starter with DIN rail adapter, screw-type connection system, size S2)

Note

Use 2 x M4 screws to fasten the DIN-rail adapter.

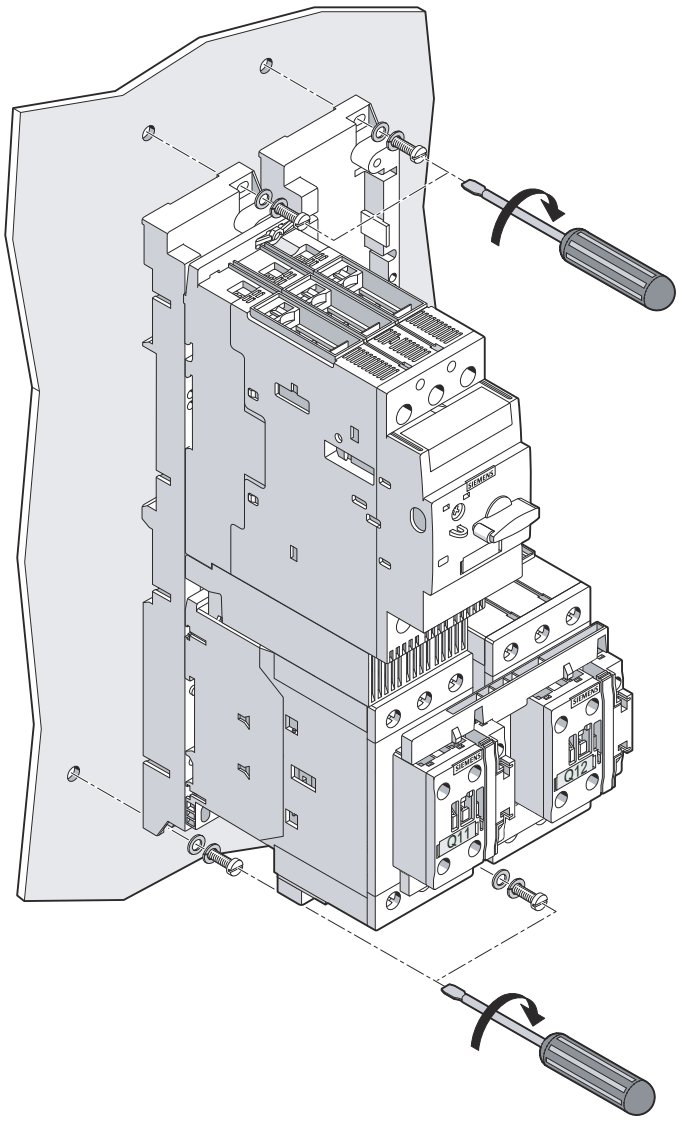


Figure 7-19 Mounting on base plate (reversing starter with DIN rail adapter, screw-type connection system, size S2)

Note

Use 4 x M4 screws to fasten the DIN-rail adapter.

Size S3

The figures below show mounting on a base plate with DIN rail adapter for size S3 direct-on-line starters and reversing starters.

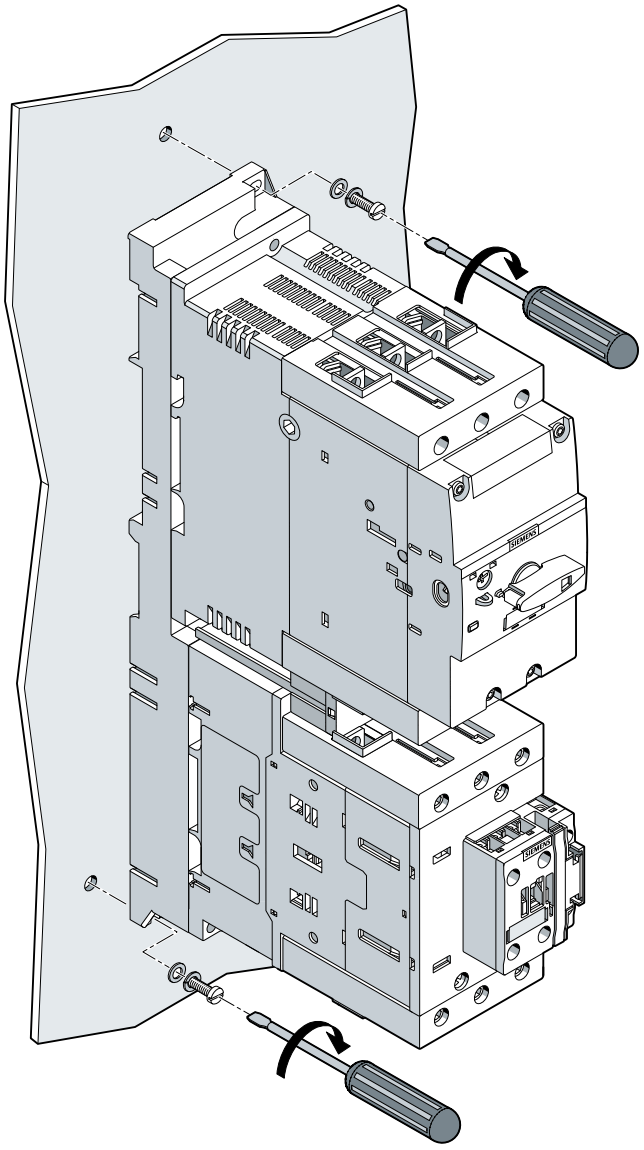


Figure 7-20 Mounting on base plate (direct-on-line starter with DIN rail adapter, screw-type connection system, size S3)

Note

2 x M4 screws (1.5 ... 1.6 Nm) should be used to fasten the DIN rail adapter.

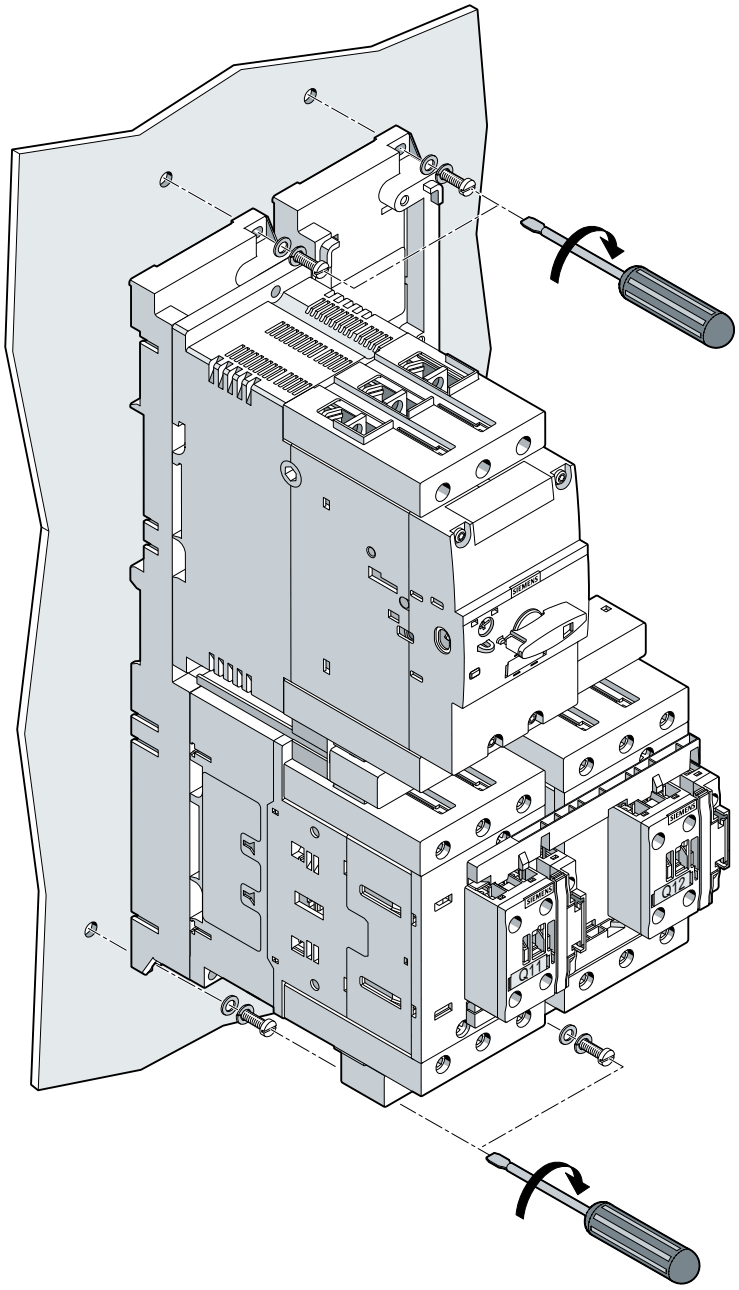


Figure 7-21 Mounting on base plate (reversing starter with DIN rail adapter, screw-type connection system, size S3)

Note

4 x M4 screws (1.5 ... 1.6 Nm) should be used to fasten the DIN rail adapter.

Disassembling the DIN rail adapter from the base plate

To disassemble the DIN rail, unscrew the screws and remove the adapter.

Connection

8

Conductor cross-sections

The conductor cross-sections are the same as those of the individual devices.

Reference

More information ...	Can be found ...
About connecting the terminals	in the appendix entitled "References" under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RT Contactors/Contactor Assemblies" manual and in the "SIRIUS - SIRIUS 3RV motor starter protector" manual.

Operation

9

Operator controls on a motor starter protector

Reference

More information ...	Can be found in the appendix ...
About motor starter protector operation	"References" under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RV motor starter protectors" manual.

Accessories

10

10.1 Overview

Accessories for individual devices

The accessories for 3RV2 motor starter protectors, as well as those for 3RT2 contactors, can be used to install fuseless load feeders.

Reference

More information ...	Can be found in the appendix ...
About accessories for contactors	"References" under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RT Contactors/Contactor Assemblies" manual
About accessories for motor starter protectors	"References" under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RV motor starter protectors" manual.

Special accessories for fuseless load feeders

Accessories are also available which have been optimized for fuseless load feeders. These include the transverse auxiliary switches with 1 CO contact or 1 NO contact + 1 NC contact, which are connected to the motor starter protector from above.

There are also special snap-on auxiliary switch blocks for the contactor, which are connected from below.

These two accessories enable the fuseless load feeders to be wired simply, without the cables having to be routed through the devices.

Reference

More information ...	Can be found in the appendix ...
About the auxiliary switch blocks for contactors	"References" under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RT Contactors/Contactor Assemblies" manual
About the auxiliary switches for motor starter protectors	"References" under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RV motor starter protectors" manual.

Accessories for the configuration of fuseless load feeders

The following optional accessories can be ordered as individual parts for the configuration of fuseless load feeders:

- Accessories for starter combinations
- Accessories for DIN rail mounting
- Accessories for busbar mounting

10.2 Accessories for constructing contactor assemblies for reversing and star-delta (wye-delta) start

The following accessories are available for starter combinations:

- Wiring kit for reversing operation
- Wiring kit for star-delta (wye-delta) starting
- Link module for the electrical and mechanical connection between motor starter protector and contactor with screw-type, spring-loaded or hybrid connection system

Reference

More information ...	Can be found in the appendix ...
About the wiring kit for reversing operation and about the wiring kit for contactor assemblies for star-delta (wye-delta) start	"References" under "Manuals - SIRIUS Modular System (Page 158)" in the "SIRIUS - SIRIUS 3RT Contactors/Contactor Assemblies" manual

10.3 Link modules

The SIRIUS modular system features link modules to facilitate combinations involving the following devices:

- Motor starter protector and contactor
- Motor starter protector and soft starter
- Motor starter protector and solid-state contactor (size S0 only)

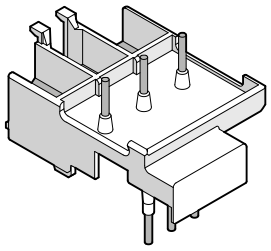
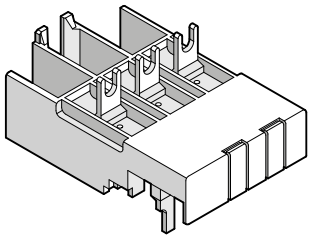
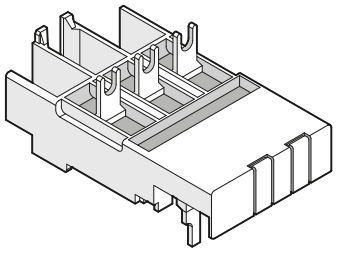
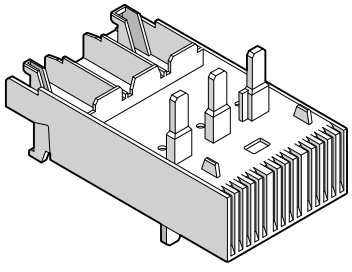
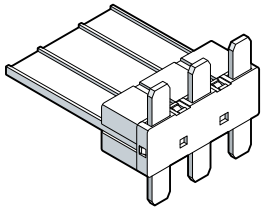
Function

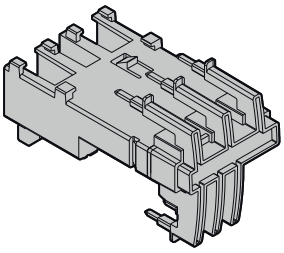
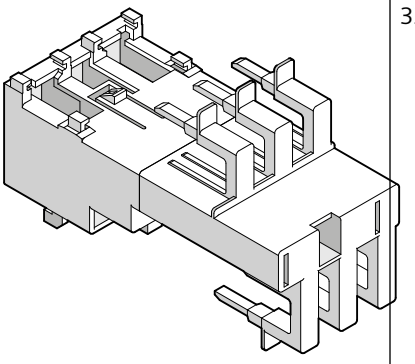
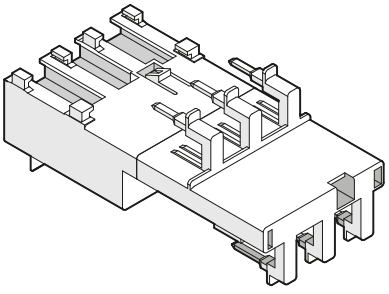
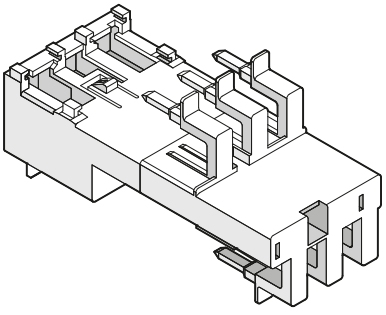
The link module establishes the electrical and mechanical connection between motor starter protector and contactor/soft starter/solid-state contactor. There are three different types according to connection system:

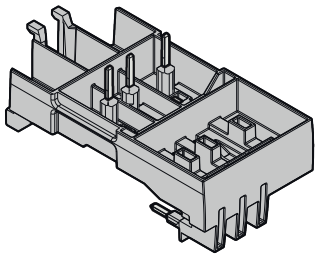
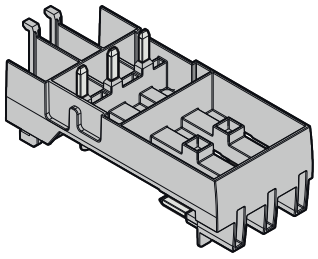
- Link module for devices with screw-type connection system
- Link module for devices with spring-loaded connection system (sizes S00 and S0 only)
- Link module for hybrid connection (sizes S00 and S0 only)

Versions

Table 10-1 Link module versions

Connection system	Link module version		Maximum rated current In max [A]	Article number
Screw-type connection system	Motor starter protector – contactor in size S00		16	3RA1921-1DA00
	Motor starter protector – contactor in size S0 AC		32	3RA2921-1AA00
	Motor starter protector – contactor in size S0 DC		32	3RA2921-1BA00
	Motor starter protector – soft starter in size S00			
	Motor starter protector – soft starter in size S0			
	Motor starter protector – solid-state contactor			
	Motor starter protector – contactor in size S2		65	3RA2931-1AA00
	Motor starter protector – soft starter in size S2			
	Motor starter protector – contactor in size S3		100	3RA1941-1AA00

Connection system	Link module version		Maximum rated current In max [A]	Article number
Spring-loaded connection system	Motor starter protector – contactor in size S00		16	3RA2911-2AA00
	Motor starter protector – contactor in size S0		32	3RA2921-2AA00
	Motor starter protector – soft starter in size S00		16	3RA2911-2GA00
	Motor starter protector – soft starter in size S0		32	3RA2921-2GA00

Connection system	Link module version		Maximum rated current In max [A]	Article number
Hybrid connection system[1)]	Motor starter protector – contactor in size S00		16	3RA2911-2FA00
	Motor starter protector – contactor in size S0		32	3RA2921-2FA00

1) The motor starter protector has a screw connection. The contactor has a spring-loaded connection.

Reference

More information ...	Can be found in the chapter titled ...
About mounting device combinations with connecting piece	Mounting and disassembling load feeders (Page 56).

10.4 Mounting kits RH for reversing operation and DIN rail mounting

As well as the DIN rail adapter which can be ordered separately, the following kits are available for DIN rail mounting?

Table 10-2 Assembly kit for reversing operation for DIN rail (size S0)

Screw connection	**Spring-loaded connection system**
3RA2923-1BB1	**3RA2923-1BB2**
Wiring modules (top and bottom)	Wiring modules (top and bottom)
Auxiliary wiring module (top and bottom)	Auxiliary wiring stranded wires
Connection clips (2 x)	Connection clips (2 x)
Mechanical interlock	Mechanical interlock
DIN rail adapter (2 x)	DIN rail adapter (2 x)
Link wedge (2 x)	Link wedge (2 x)
Screw holder (2 x)	Screw holder (2 x)
Screw (2 x)	Screw (2 x)
	Screw (2 x) for AC feeders
	Spacer (2 x)

Table 10-3 Assembly kit for reversing operation for DIN rail (size S2)

Screw connection	
3RA2933-1BB1	
DIN rail adapter (2 x)	Mechanical interlock
Wiring modules (top and bottom)	Connector for contactors (2 x)
Auxiliary wiring module (top and bottom)	Screw and plain washer for mounting devices (3 x)
Side module (2 x)	Operating instructions
Link wedge (4 x)	

Table 10-4 Assembly kit for reversing operation for DIN rail (size S3)

Screw connection	
3RA2943-1BB1	
DIN rail adapter (2 x)	Mechanical interlock
Wiring modules (top and bottom)	Connector for contactors (2 x)
Auxiliary wiring module (top and bottom)	Screw and plain washer for mounting devices (6 x)
Side module (3 x)	Operating instructions
Link wedge (6 x)	

Reference

More information ...	Can be found in the chapter titled ...
About mounting the assembly kit for the DIN rail	Mounting on DIN rail with DIN-rail adapter (Page 76).

10.5 RS mounting kits for reversing operation and 60 mm busbar system

The following kits for reversing operation are available for busbar mounting in various connection systems and sizes.

Table 10-5 Assembly kit for reversing operation for busbar (size S00)

Screw connection		**Spring-loaded connection system**
3RA2913-1DB1	**3RA2923-1EB1**	**3RA2913-1DB2**
---	Auxiliary wiring module (top and bottom)	Auxiliary wiring module (top)
Wiring modules (top and bottom)		Wiring modules (top and bottom)
Connection clips (2 x)		Connection clips (2 x)
Mechanical interlock		Mechanical interlock
Busbar adapter		Busbar adapter
Device holder		Device holder

Table 10-6 Assembly kit for reversing operation for busbar (size S0)

Screw connection	**Spring-loaded connection system**
3RA2923-1DB1	**3RA2923-1DB2**
Wiring modules (top and bottom)	Wiring modules (top and bottom)
Auxiliary wiring module (top and bottom)	Auxiliary wiring stranded wires
Connection clips (2 x)	Connection clips (2 x)
Mechanical interlock	Mechanical interlock
Busbar adapter	Busbar adapter
Device holder	Device holder
	Spacer disk (2 x)

Table 10-7 Assembly kit for reversing operation for busbar (size S2)

Screw connection	
3RA2933-1DB1	
Busbar adapters and device holders	Connector for contactors (2x)
Wiring modules (top and bottom)	Mechanical interlock
Auxiliary wiring module (top and bottom)	Screw and plain washer for mounting devices (2x)

Busbar adapter for 60 mm system						
Article number	**Size**	**Rated current (A)**	**Connecting cable (AWG)**	**Adapter length (mm)**	**Adapter width (mm)**	**Rated voltage (V)**
For 3RV2 motor starter protectors with plug-in connectors						
8US1216-5AS80	S00[1], S0	32	-	200	45	690
8US1216-5AT80	S00[1], S0	32	-	200	45	690
For 3RV2 motor starter protectors with screw-type terminals[2]						
8US1251-5DS10	S00[1], S0[3]	25	12	200	45	690
8US1251-5DT10	S00[1], S0[3]	25	12	260	45	690
8US1251-5NS10	S0	32	10	200	45	690
8US1261-5NT10	S0[3]	32	10	260	45	690
8US1261-5MS13	S2	80	4	200	55	690
8US1261-6MT10	S2	80	4	260	55	690
8US1211-6MT10	S2[4]	80	4	260	118	690
8US1211-4TR00	S3	100/70[5]	4	215	72	690/600[5]
For 3RV2 motor starter protectors with spring-loaded terminals[6]						
8US1251-5DS11	S00[1], S0[3]	25	12	200	45	690
8US1251-5DT11	S00[1], S0[3]	25	12	260	45	690
8US1251-5NS11	S0	32	10	200	45	690
8US1251-5NT11	S0[3]	32	10	260	45	690

1) Not for 3RV1011 motor starter protectors.

2) For the setup of UL feeders (Type E and F), Type E terminal blocks or phase barriers (for sizes S00 to S2) must be fitted to the infeed module on the motor starter protector.

3) Also approved for 3RV27, 3RV28 circuit breakers according to UL.

4) For assembling reversing feeders consisting of motor starter protectors and two contactors.

5) Values according to UL/CSA.

6) It is not possible to set up UL feeders (Type E and F).

Accessories for busbar adapters for 3RV20, 3RV0, 3RV24, 3RV27, 3RV28 motor starter protectors		
Version	**Article number**	**Size**
Plug-in connector for making contact with the 3RV2 motor starter protectors		
Spring-loaded terminal		
Single-unit packaging	3RV2917-5AA00	S00[1]
	3RV2927-5AA00	S0[2]
Multi-unit packaging	3RV2917-5A	S00[1]
	3RV2927-5A	S0[2]
Screw terminals		
Single-unit packaging	3RV2917-5CA00	S00[1] [3]
	3RV1927-5AA00	S0[2] [4]
Multi-unit packaging	3RV2917-5C	S00[1] [3]
	3RV1927-5A	S0[2] [4]

Accessories for busbar adapters for 3RV20, 3RV0, 3RV24, 3RV27, 3RV28 motor starter protectors		
Version	**Article number**	**Size**
Device holder for lateral mounting on busbar adapters		
Adapter length 200 mm, Adapter width 45 mm	8US1250-5AS10	-
Adapter length 260 mm, Adapter width 45 mm	8US1250-5AT10	-
Side modules for widening busbar adapters		
Adapter length 260 mm, Adapter width 9 mm	8U1998-2BJ10	S00, S0
Vibration and shock kit for high vibration and shock loads		
-	8US1998-1DA10	S2

[1] I > 14 A, note derating.

[2] I > 16 A, note derating.

[3] The plug-in connector cannot be used for the 3RV2711 and 3RV2811 motor starter protectors in size S00.

[4] The plug-in connector can be used for the 3RV2711, 3RV2811 (size S00) and 3RV2721, 3RV2821 (size S0) circuit breakers.

Reference

More information ...	**Can be found in the chapter titled ...**
About the available adapter types and mounting the assembly kit for the busbar	Mounting on busbar system (Page 101).

11 Technical data

11.1 Technical specifications in the Siemens SiePortal

Technical data sheet

You can find the technical specifications for the product in Siemens SiePortal (https://support.industry.siemens.com/cs/ww/en/ps/16289/td).

1. Enter the article number of the desired device in the "Products" field.
2. Click the "Technical specifications" link in the result.

11.2 3RA2 fuseless load feeders – Size S00 to S3 for DIN rail

Direct-on-line starter S2 with 3RW4.3 soft starter, screw-type connection system, DIN-rail adapter 3RA2932-1CA00

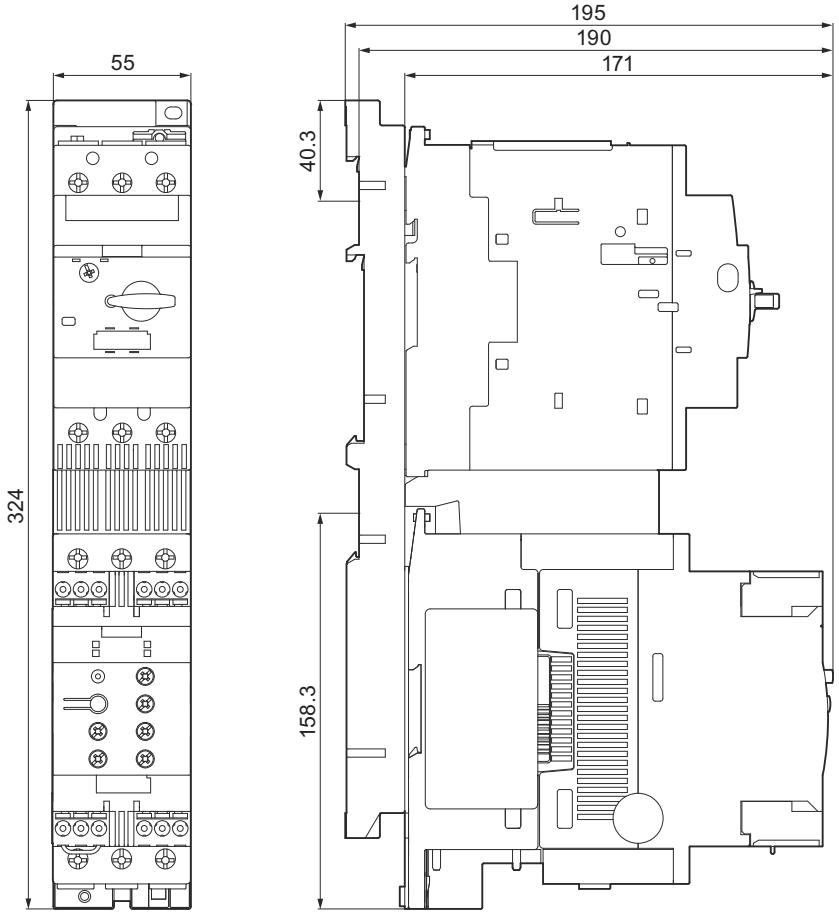


Figure 11-1 Direct-on-line starter S2 with 3RW4.3 soft starter, screw-type connection system, DIN-rail adapter 3RA2932-1CA00

11.3 Overview tables

Overview tables technical data

You will find overview tables with technical data in the "Product information" tab in our online ordering system (https://mall.industry.siemens.com/mall/en/WW/catalog/products/10047490?tree=CatalogTree).

12 CAx data in the Siemens SiePortal

You can find CAx data for the product in the SiePortal (https://support.industry.siemens.com/cs/ww/en/ps/16288/td).

1. Enter the article number of the desired device in the "Products" field.
2. Click the "CAx data" link in the result.

Types of coordination

A

Types of coordination

Standard DIN EN 60947-4-1 (VDE 0660 Part 102) or IEC 60947-4-1 distinguishes between two types of coordination (type of coordination), which are referred to as coordination type "1" and coordination type "2". In the case of both types of coordination, the short-circuit is reliably mastered. the only differences are in the extent of the damage sustained by the device following a short circuit.

Type of coordination 1

The load feeder may be non-operational after a short circuit has been cleared. Damage to the contactor and the overload release is also permissible.

Type of coordination 2

After short-circuit disconnection, there must be no damage to the overload release or to any other part. The load feeder can resume operation without needing to be renewed. Welding of the contactor contacts only is permitted if these can be separated easily without significant deformation.

References

B

B.1 References

Further references

You will find further information about the 3RA21/3RA22 load feeders on the Internet (http://support.automation.siemens.com/WW/view/en/20356384/133300).

You can find information on configuring load feeders in the Digital Engineering Manual. (https://imp.siemens.com/digital-engineering-manual/dem)

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 Fuseless Load Feeder S2 (3RA2130)	3ZX1012-0RA20-3DA1
SIRIUS link module S3 for fuseless load feeders (3RA1941-1A / 3RA1941-1AA00)	3ZX1012-0RA21-4DA1
SIRIUS Fuseless Load Feeder S00 (3RA2110)	3ZX1012-0RA20-2GA1
SIRIUS Fuseless Load Feeder S0 (3RA2120)	3ZX1012-0RA20-1DA1
SIRIUS Direct-On-Line Starter on Busbar S00 (3RA2110)	3ZX1012-0RA21-2AA1
SIRIUS Direct-On-Line Starter on Busbar S0 (3RA2120)	3ZX1012-0RA21-1AA1
SIRIUS Reversing Starter on Busbar S00 (3RA2210)	3ZX1012-0RA22-2AA1
SIRIUS Reversing Starter on Busbar S0 (3RA2220)	3ZX1012-0RA22-1AA1
SIRIUS Reversing Starter on DIN Rail S00 (3RA2210)	3ZX1012-0RA22-3AA1
SIRIUS Reversing Starter on DIN Rail S0 (3RA2220)	3ZX1012-0RA22-5AA1
SIRIUS Assembly Kit for Reversing Starters S2 on DIN Rail Adapter (3RA2933-1BB1)	3ZX1012-0RA21-3AA1
SIRIUS Assembly Kit for Reversing Starters S2 on Busbar (3RA2933-1DB1)	3ZX1012-0RA21-3BA1
SIRIUS Assembly Kit for Reversing Starters S3 on DIN Rail Adapter (3RA2943-1BB1)	3ZX1012-0RA21-4AA1

B.2 Manuals - SIRIUS Modular System

Manuals - SIRIUS Modular System

You can download the SIRIUS manuals from the Internet.

Information about ...	Is available in ...
• Contactors and contactor assemblies 3RT, 3RH and 3RA	• "SIRIUS 3RT contactors/contactor assemblies" (https://support.industry.siemens.com/cs/ww/en/view/60306557) Equipment Manual
• 3RF34 electronic switching devices	• "SIRIUS - SIRIUS 3RF34 electronic Switching Devices" (https://support.industry.siemens.com/cs/ww/en/view/60298187) manual
• 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
• 3UG4 monitoring relays / 3RR2 current monitoring relays	• "3UG4/3RR2 Monitoring Relay" (https://support.industry.siemens.com/cs/ww/en/view/54397927) manual
• SIMOCODE pro 3UF7 Motor Management and Control Devices	• Manual "Manual Collection - SIMOCODE pro 3UF7" (https://support.industry.siemens.com/cs/us/en/view/109743951)
• SIMOCODE M-CP motor management system	• Manual "SIMOCODE M-CP Motor Management System" (https://support.industry.siemens.com/cs/us/en/view/109973290)
• 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
• 3UG5 monitoring relay	• Manual "SIRIUS Monitoring Relay 3UG5" (https://support.industry.siemens.com/cs/us/en/view/109814940)
• 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
• Digital Configuration Manual for configuring the load feeders	• Manual "Digital Engineering Manual" (https://imp.siemens.com/digital-engineering-manual/dem?lang=en)

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