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Control Products

SIRIUS 3RT, 3RH and 3RA contactors and contactor assemblies

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Versions of contactor relays and motor contactors

Overview

Contactor relays S00	Power contactors S00 to S3 as well as 3RT10 and 3RT12 S6-S12	
4- and 8-pole	AC-3 Version for switching motor loads up to 250kW / 400V	
		
<p>3RH2</p> <ul style="list-style-type: none"> • Contactor relays with 4 or 8 integrated auxiliary switches 	<p>3RT20</p> <ul style="list-style-type: none"> • 3-pole contactors for switching motors up to 55kW • Special version: Contactors with voltage tap-off • Operation mechanism: AC, DC or AC/DC electronic 	<p>3RT10 air-break contactors / 3RT12 vacuum contactors</p> <ul style="list-style-type: none"> • 3-pole contactors for switching motors up to 250kW • Operation mechanism: classic AC/DC, electronic AC/DC with PLC or fail-safe PLC input

Contactors for special applications

Overview

Contactors 3RT24 S3 3RT14 S6-S12	Contactors 3RT23 S00 - S3	Contactors 3RT25 S00 - S3	Contactors 3RT26 S00-S3
3-pole contactors AC-1 for resistive loads up to 690A	4-pole contactors AC-1 for resistive loads 110A	4-pole contactors AC-3 for changing polarity	3-pole contactors AC-6b for capacitive loads
			
S3: 3RT244 up to 160 A S6: 3RT145 up to 275 A S10: 3RT146 up to 400 A S12: 3RT147 up to 690 A	S00: 3RT231 up to 22 A S0: 3RT232 up to 50 A S2: 3RT233 up to 110 A S3: 3RT234 up to 160 A	S00: 3RT251 up to 16 A S0: 3RT252 up to 25 A S2: 3RT253 up to 41 A S3: 3RT254 up to 80 A	S00: 3RT261 up to 12,5 kVAr S0: 3RT262 up to 33 kVAr S2: 3RT263 up to 75 kVAr S3: 3RT264 up to 100 kVAr

Contactors for arduous conditions and railway applications

Overview

Contactors 3RH2..- ...-0LA2	Contactors 3RT20...-X...-0LA2 S00 – S3 3RT10...-X...-0LA2 S6 – S12	 Electrical components for the railway industry
Auxiliary contactors	Contactors for motor loads S00 - S12 up to 250kW / 400V	<ul style="list-style-type: none"> • Operating range: 0,7 – 1,25 U_s • Temperature range: - 40°C – 70°C • Additionally tested according to IEC 60077 
		
<ul style="list-style-type: none"> • Auxiliary contactors with 4 or 8 integrated auxiliary switches 	<ul style="list-style-type: none"> • DC operating mechanism, electronic • S6-S12 additionally optional with PLC-IN 2 operation modes: direct control by A1 / A2 or via PLC-IN 24 ... 110V DC 	

Contactors assemblies

Assemblies pre-mounted at factory		Self-assembly components	
Reversing contactor assembly S00 – S3	Contactor assembly for star-delta start S00 – S3	Reversing contactor assembly S00 – S12	Contactor assembly for star-delta start S00 – S12
			
<ul style="list-style-type: none"> • 3RA23 • mechanical and electrical interlock for use in reversing operations 	<ul style="list-style-type: none"> • 3RA24 • completely wired, with electrical and mechanical interlock and function modules in the control circuit 	<ul style="list-style-type: none"> • Self-assembly components available for all sizes: includes wiring kits, mechanical interlocks, mounting plates, function modules, and much more 	

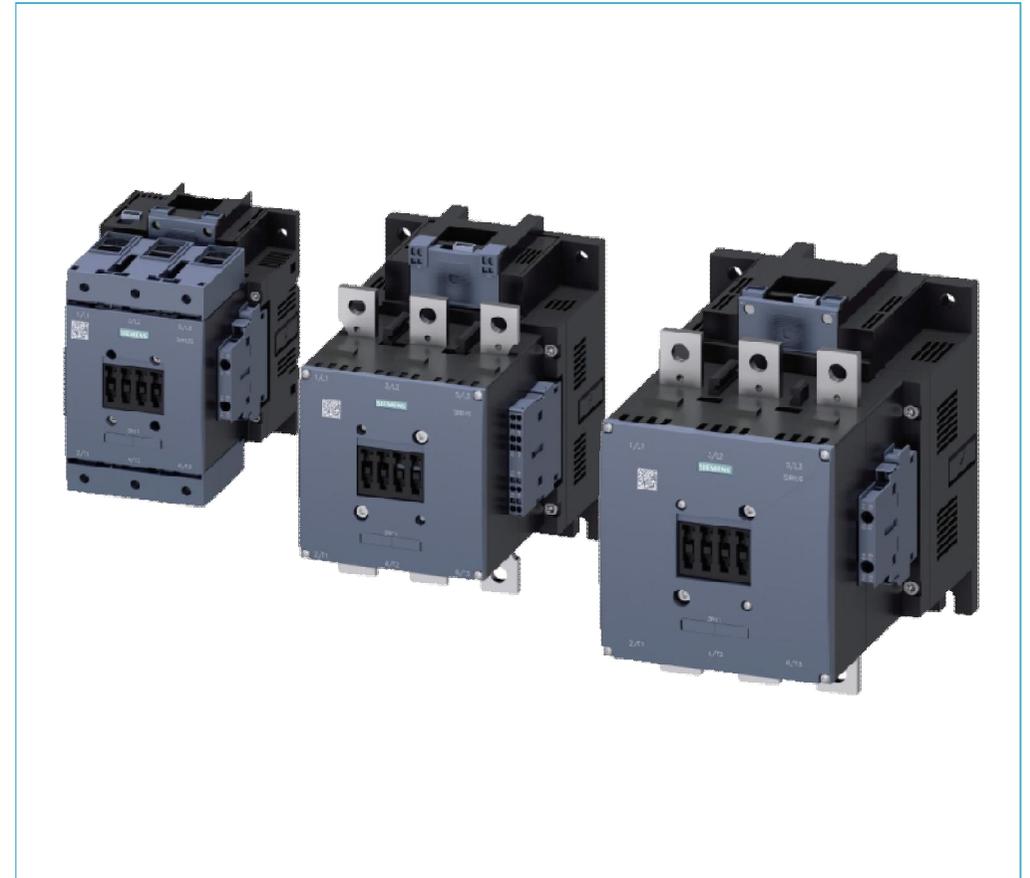
Most important advantages of 3RT S00-S3 over the predecessor 3RT1

- Increased performance
 - S00 up to 7.5 kW (16 A)
 - S0 up to 18.5 kW (up to 38 A)
 - S2 up to 37 kW (up to 80 A)
 - S3 up to 55 kW (up to 110 A)
- Simplified control current wiring and connection to the automation level by function modules
- Spring-type terminals consistently up to 18.5 kW in the main and control circuits
- Electronic AC/DC operating mechanism for S0 to S3 contactors
- Two integrated auxiliary switches for S0 to S3 contactors
- Practically-oriented link modules with spring-type terminals up to 18.5 kW (38 A)



Advantages of the facelift S6-S12

- Design revision of the basic unit S6-S12 and the accessories, color change to titan grey while remaining the same MLFB
- Expansion and renewal of the provision of product data (e.g. data sheets, product graphics)
- Integration into electronical selection support as TIA Selection Tool
- Expansion and renewal of short circuit combination tests with new Circuit Breakers 3VA or tests with fuses up to 100kA
- Expansion of the contactors portfolio S00-S12 for special applications and railway certification according to IEC 60077 as well as contactors S6-S12 from 55kW with failsafe control (F-PLC-IN)



SIRIUS 3RT2 / 3RH2 contactors

Top customer benefits (1)



Technical highlights

- Spring-type terminals, also with plug-in technology and up to 10 mm²
- All common connectors from motor starter protector to switching device/starter
- Increased performance up to 38 A (18.5 kW) in 45 mm width or 80 A (37 kW) in 55 mm and 110 A (55 kW) in 70 mm
- Factory-fitted integrated auxiliary switches
- Clearly improved contact reliability of the auxiliary switches
- Joint series of accessories for S00-S3
- Plug-on function modules for connection without tools
- Connection to AS-Interface or IO-Link

Customer benefits

- Operational reliability (vibration-proof, temperature-independent, etc.) and reduction of wiring thanks to plug-in technology
- Fast, error-free installation for screw-type and spring-type terminals
- Space and cost savings
- Reduced installation complexity
- Enhanced operational reliability (reduction of fault signals)
- Easy configuration
- Fault avoidance and reduced wiring
- Reduced wiring and integration in TIA

SIRIUS 3RT2 / 3RH2 contactors

Top customer benefits (2)



Technical highlights

- MSP in combination with undervoltage release and contactor applicable as Cat. 3 feeder
- Link modules for Safety contactor assemblies (S00-S2)
- Coil connection at front with integrated cable duct
- Versions with electronic operating mechanism
- Optional control kit for S00-S3
- Data sheets in 10 languages
- Extensive CAx data provision
- Integrated in the Industry Mall **and the TIA Selection Tool**

Customer benefits

- Safety solution can be implemented with just one switching device
- Reduced wiring in safety solutions
- Simple wiring (practically-oriented sequence and structure)
- Energy saving thanks to low holding power during starting and operation
- Main and control circuits tested before commissioning
- Technical data available for easy business worldwide
- Easy and fault-free configuration
- Quick and easy configuration

SIRIUS 3RT2+3RH2 contactors and 3RA23/24 assemblies

Summary

Functions

- Power contactors (switching of motor and resistive loads) as well as contactor relays (switching in the control circuit)
- Rugged conventional (S00 – S3) and energy-saving electronic operating mechanism options (S0 – S3)
- Reduction in wiring thanks to link modules and function modules, as well as optimum connection to the automation level for every application (parallel / ASi / IO-Link)
- Expanded range of functions (e.g. integrated auxiliary switches)

Dimensioning and design

- Space-saving for every performance class:
 - 45 mm size S00 up to 7.5 kW/16 A @ 400 V
 - 45 mm size S0 up to 18.5 kW/38 A @ 400 V
 - 55 mm size S2 up to 37 kW/80 A @ 400 V
 - 70 mm size S3 up to 55 kW/110 A @ 400 V
- Integrated auxiliary switches
- Standardized accessories (e.g. auxiliary switches for S00 – S3)
- Screw and spring-type terminals, solder pin connection (S00 only)



Contactors and contactor assemblies with maximum flexibility in terms of dimensioning, handling, and functions.

SIRIUS 3RT2+3RH2 contactors and 3RA23/24 assemblies

Summary

Mounting advantages

- Reduced wiring effort in the main circuit and the control circuit thanks to link modules, function modules, and pre-assembled contactor assemblies
- Star-delta (wye-delta): up to 90 kW, control circuit wiring including timing relays integrated into function modules
- Easy assembly of contactor assemblies and feeders by means of link modules with screw and spring-type connections
- Integrated cable duct for control panel assembly without visually obtrusive cable routing

Application areas/customer benefits

- The best connection to the automation level for every application: Conventional parallel wiring or connection of the feeders via AS-Interface or IO-Link
- Increased performance up to 18.5 kW in 45 mm width, or 37 kW in 55 mm width and 110 A (55 kW) in 70 mm width
- Comprehensive approvals for global applicability



Contactors and contactor assemblies with maximum flexibility in terms of dimensioning, handling, and functions.

Functions and applications – contactor relays

Product description

- Switching device for operational switching in auxiliary circuits (controlling, signaling and interlocking)
- 4 integrated auxiliary contacts, expandable to 8 contacts by means of auxiliary switch blocks that can be fitted on the front
- Terminal designations according to IEC 60947-5-1 and EN 50011
- Highest contact reliability by means of press-on optimization, optimized contact faces and double contact bridges
- Positively driven contact elements in accordance with EN 60947-5-1, Annex L
- Consistent connection systems: Screw terminals, spring-type terminals and solder pin connection

S00 auxiliary contactor with screw terminal



Technical details – accessories for SIRIUS 3RT2 contactors

Product description

Standardized accessories for S00 – S3 contactors

- Side and front auxiliary switches
- Function modules (with timer function; Y/D, ASi, IO-Link) for contactor mounting
- Sealable cover
- OFF-delay device, ...

Size-specific accessories

- Surge suppressors (with and without LED)
- Solder pin adapter (for S00 only)
- Control kit
- Pneumatic timer (S0 only)
- Mechanical latching blocks (S0 only)
- Coil terminal module (S0/S2 only)

Accessories for contactor assemblies

- Link modules; parallel switching connectors

Integrated accessories



Size-specific accessories



Perfectly matched accessories for individual requirements

Snap-on modules for mounting on 3RT2 contactors

Setting up in the control cabinet

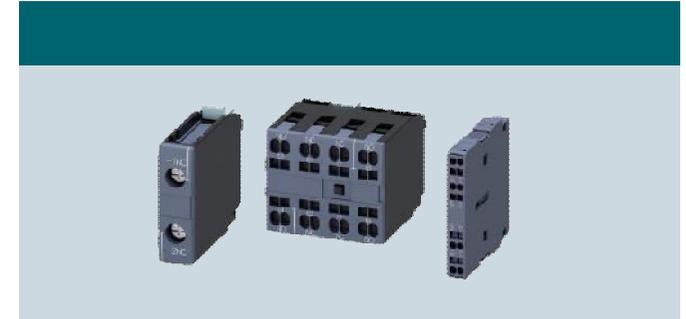
Auxiliary switches			Snap-on modules for contactor control					
Instantaneous	Time-delayed		Conventional control circuit wiring			Communication connection via AS-i / IO-Link		
Mechanical	Electrical	Pneumatic	Coupling link for direct-on-line start	Snap-on timing relay for direct-on-line start	Star-delta (wye-delta) start	Direct-on-line start	Reversing start	Star-delta (wye-delta) start
3RH29.1	3RA2813 3RA2814 3RA2815	3RT2926-2P	3RH2914-.GP11	3RA2811 3RA2812 3RA2831 3RA2832	3RA2816	3RA271.-A	3RA271.-B	3RA271.-C
								

Technical details – accessories for SIRIUS 3RT1 contactors

Product description

Standardized accessories for S6 – S12 contactors:

- Side and front auxiliary switches
- Sealable cover
- OFF-delay device, ...



Size-specific accessories :

- Subplate
- Assembly kit for reversing and star-delta (wye-delta) contactors
- Replacement contacts
- Operating mechanisms
- Mechanical interlocking and adapters
- Surge suppressors



Perfectly matched accessories for individual requirements

Auxiliary switch blocks for 3RT2 S00 to S3 contactors

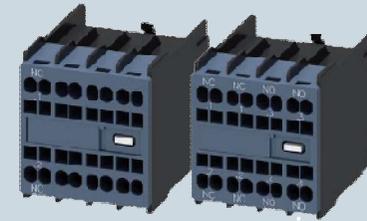
Front auxiliary contact blocks with screw-type terminals

1 to 4 pole:



Front auxiliary contact blocks with spring-type terminals

1 to 4 pole:



Lateral auxiliary contact blocks with screw-type terminals

2 pole:



Lateral auxiliary contact blocks with spring-type terminals

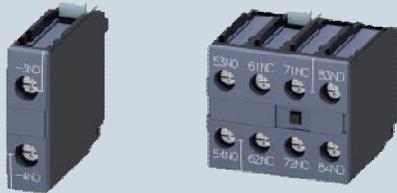
2 pole:



Auxiliary switch blocks for 3RT1 S6 to S12 contactors

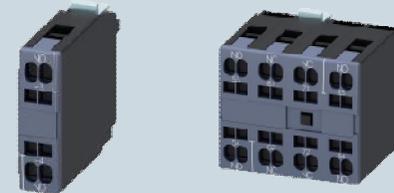
Front auxiliary contact blocks with screw-type terminals

1 & 4 pole:



Front auxiliary contact blocks with spring-type terminals

1 & 4 pole:



Lateral auxiliary contact blocks with screw-type terminals

2 pole:



Lateral auxiliary contact blocks with spring-type terminals

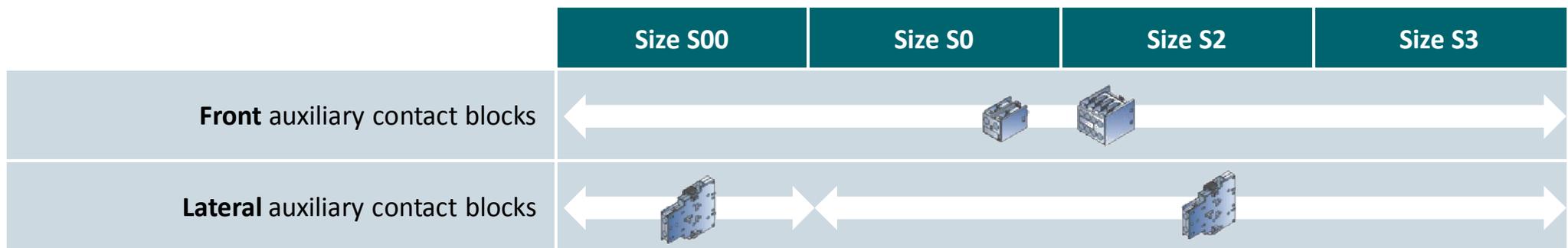
2 pole:



Technical details – requirements for auxiliary switch labeling in international standards

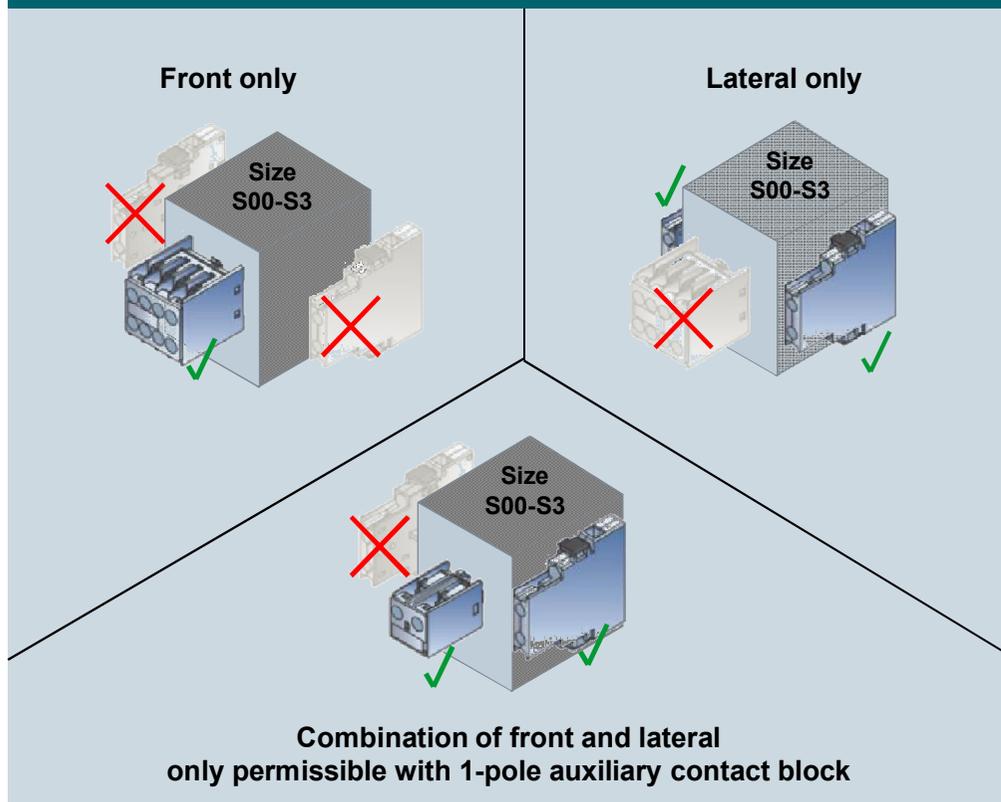
IEC standard requirement		Labeling rules for Europe	Gen. rules incl. labeling for Europe	Gen. rules incl. labeling worldwide
Gen. requirements	Contactors Contactor relays	EN 50005	↔ EN 60947-1	↔ IEC 60947-1
Spec. requirements	Contactors Contactor relays	EN 50012 EN 50011	↔ EN 60947-5-1	↔ IEC 60947-5-1

Result: Different lateral auxiliary switch versions for size S00 and sizes S0 to S3



Technical details – possible auxiliary switch combinations based on general technical conditions

Permissible combination of auxiliary contact blocks



Selection matrix for auxiliary switches in the IC10 Catalog

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Power Contactors for Switching Motors

Accessories for 3RT2 Contactors

Auxiliary switch blocks

Selection and ordering data

Additional auxiliary switch blocks	3-pole contactors	4-pole contactors	Contact relays
Art. No.	S00	S01	S02
Auxiliary contacts	3RT201	3RT201	3RT201
Version	3RT201	3RT201	3RT201
NO/NC	30/1	11	11
According to EN 60912 ¹⁾			
According to EN 60912 ¹⁾			
According to EN 60912 ¹⁾			

Actual auxiliary switches

Without NO contact	11	02	12	01	01	12	12	41X	30X	20X
3RT201-CHA01 - 1										
3RT201-CHA02 - 2	12	03	13	02	02	13		42E	33X	34
3RT201-CHA03 - 3	13	04	14	03				43	34	
3RT201-CHA04 - 4	14							44E		
With 1 NO contact										
3RT201-CHA10 - 1	21	11	21	10	10	21	21	46E	41E	32E
3RT201-CHA11 - 1	21	12	22	11	11	22	22	41X	42X	33X
3RT201-CHA12 - 2	22	13	23	12	12	23		42	43	34
3RT201-CHA13 - 3	23	14	24	13				43X	44X	

All rules and restrictions considered:

- Standards
- Technical reasons
- Maximum NC contacts

31X 40X
32 43
33 44X
34 44X
41 53
42X 33X
43X 44X

Siemens IC 10 - 2014



IECEX
=E05-GND
GNYE
CE
UL
=E05-GND
GNYE
ND
4G2,5 n
=E05-GND
GNYE
-F3 H
SP
GND

Industry Automation Controls and Distribution

SIRIUS 3RV2 motor starter protectors

SIRIUS 3RV2 motor starter protectors



Positioning in SIRIUS Industrial Controls

				3 kW / 400 V				Size				250 kW / 400 V	
Function		Products		S00	S0	S2	S3	S6	S10	S12			
Main circuit	Switching	Contactors, contactors for capacitive loads,...											
		Solid-state contactors											
		Soft starters											
	Starting	Load feeders											
		Compact starter, Motor starters											
	Protecting	Motor starter protectors, Circuit breakers											
		Monitoring	Overload relays										
	Current monitoring relays												
Control circuit	Function and communication modules												

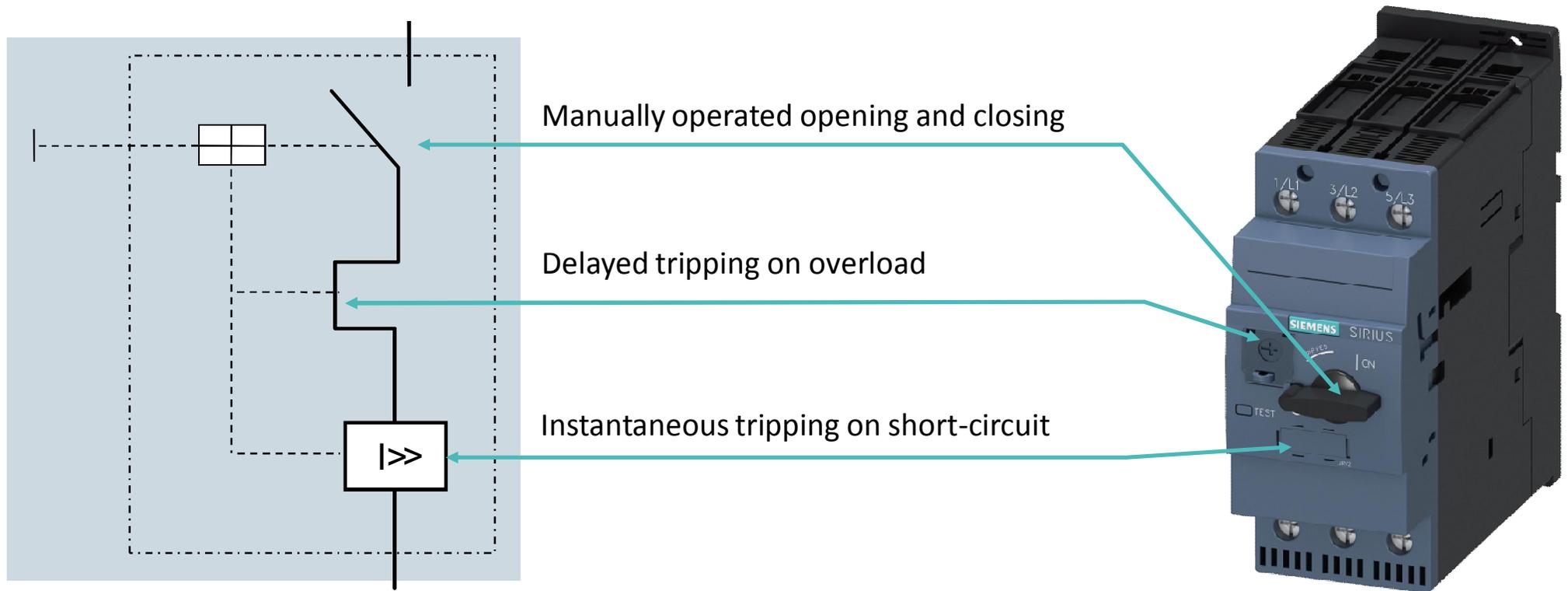
Basic versions - motor starter protectors

Product description

Motor starter protectors/Circuit breakers

SIRIUS 3RV20	SIRIUS 3RV21	SIRIUS 3RV23	SIRIUS 3RV24	SIRIUS 3RV27/28
				
Motor starter protector for motor protection	Motor starter protector for motor protection with relay function	MSP for starter combinations	MSP for transformer protection	UL489 circuit breaker
<ul style="list-style-type: none">• The standard solution for motors	<ul style="list-style-type: none">• Short-circuit protection and automatic reset on overload in a device	<ul style="list-style-type: none">• Combined with overload relay, large setting ranges and remote reset	<ul style="list-style-type: none">• The standard solution for transformers (S00/S0/S2)	<ul style="list-style-type: none">• The specialist for UL 489 applications (S00/S0/S3)

Operating principle – SIRIUS 3RV20 MSPs for motor protection Product description



The only one with long term-stable bimetals

Distinction between motor and starter protection

Product description

SIRIUS 3RV20 motor protection

Motor starter protector provides overload and short-circuit protection
Lower-cost solution



SIRIUS 3RV23 starter protection

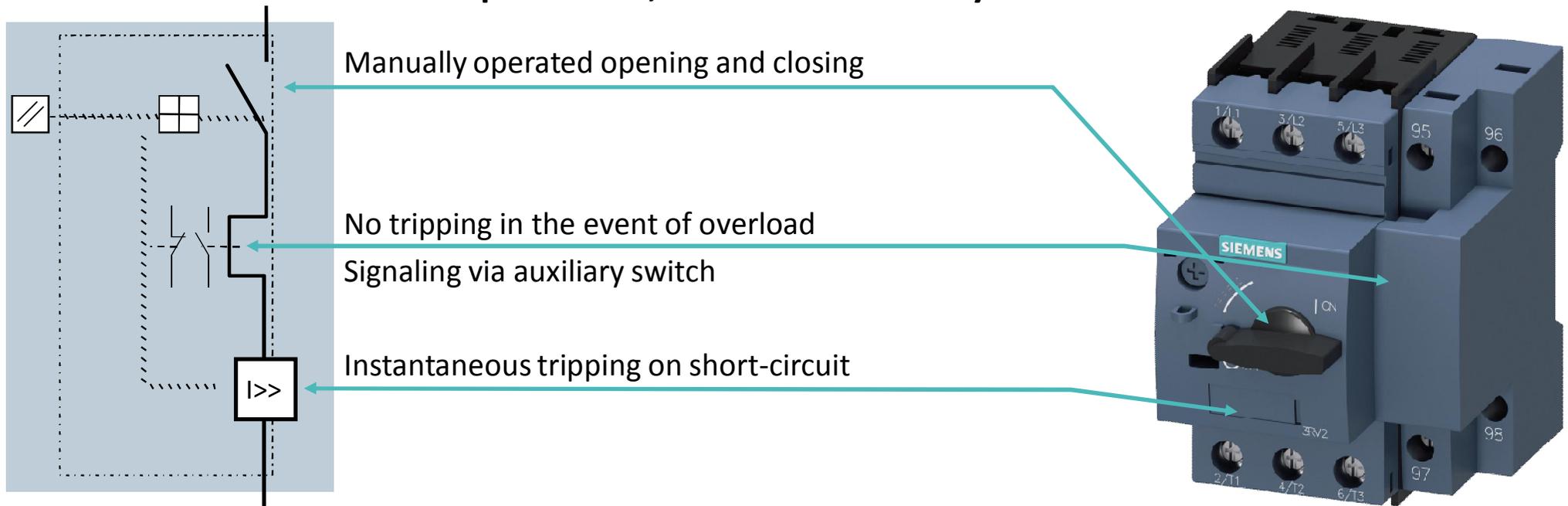
Motor starter protector provides short-circuit protection only
Overload and short-circuit protection are carried out separately and can also be signaled separately
Electronic overload relays offer a wide setting range with a 4 times larger increased current range
→ configuration advantage
Overload relay can be set to "automatic reset", which eliminates the need to open the control cabinet



Operating principle - SIRIUS 3RV21 motor starter protectors

Product description

SIRIUS 3RV21 motor starter protectors, with overload relay function



The motor starter protector with option of automatic reset in the event of overload

Operating principle - SIRIUS 3RV21 motor starter protectors

Product description

SIRIUS 3RV21 motor starter protectors, with overload relay function

- Available in sizes S00, S0, S2 and S3 from 0.11 - 100 A
- Motor starter protector does not shut down in the event of an overload
- Overload is signaled by laterally mounted 1NO+1NC auxiliary contacts
- The load feeder must be shut down via a downstream contactor
- Automatic reset (reset of the auxiliary contacts)



Operating principle - SIRIUS 3RV motor starter protectors

Product description

Automatic reset (on overload) in the case of SIRIUS 3RV motor starter protectors

- Auto-reset by SIRIUS 3RV21 motor starter protector only
- One overload relay saved
- SIRIUS 3RV21 motor starter protector with overload relay function (1 device)
- Attractive price compared with the conventional solution (approx. 5-10% lower cost)
- Fewer devices and less wiring overhead
- More space in the control cabinet
- Reduced power loss in the control cabinet because one thermal overload relay per feeder is eliminated



Operating principle - SIRIUS 3RV24 motor starter protectors

Product description

SIRIUS 3RV24 motor starter protectors for transformer protection

- Available in sizes S00, S0 and S2 from 0.11 - 65 A
- Optimized for the protection of transformers
- Response value of the short-circuit release $20 \times I_n$



SIRIUS 3RV27/28 - circuit breaker acc. to UL 489 (S00/S0/S3)

Product description

For fuseless protection

Highlights at a glance:

- Circuit breaker with approval acc. to UL 489 or CSA 22.2 No. 5-02
- Use as "branch circuit protection device" (BCPD) acc. to UL/CSA
- For fuseless protection of systems, motors and non-motor loads (e.g. transformers)
- In sizes S00 and S0 up to 22A, switching capacity 65kA or 50kA at 480Y/277V
- In size S3 up to 70A, switching capacity 65kA at 480Y/277V, or up to 30A 65kA at 480V
- Type testing in accordance with IEC 60947-2
- Standardized configuration of control cabinets in accordance with IEC and UL/CSA



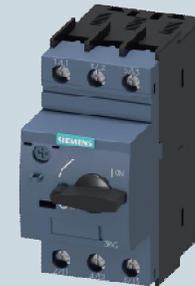
The circuit breaker for use in UL markets

S00 and S0 motor starter protectors

Product description

- Performance increase: S00 16 A (7.5 kW)
S0 40 A (18.5 kW)
- S00 and S0 with rotary operating mechanism
- 40 A version in 45 mm width
- Uniform connection system 0.11 – 32 A:
 - Screw terminals (up to 40 A)
 - Spring-type terminals
 - Ring terminal lug connections
- Uniform accessories S00, S0, S2 and S3
- Suitable for SIRIUS and 3RA6 infeed system

S00 with screw terminal



S0 with ring terminal lug connection



The overlapping of S00 and S0 at 11 - 16 A enables use of practice-oriented conductor cross-sections (depending on the application and conditions of use): S00: max. 4 mm² / S0: max. 10 mm²

S2 and S3 motor starter protectors

Product description

- Performance increase: S2 80 A (37 kW)
S3 100 A (45 kW / 55 kW)
- Size S2: 80 A version in 55 mm width
- Two switching capacity classes: 65kA and 100kA
- Screw terminals
- Uniform accessories S00, S0, S2 and S3
- Motor protection with Class 10 and Class 20 trip classes
- Optimized for energy-efficient IE3/IE4 motors

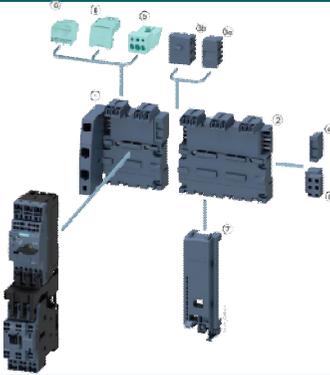
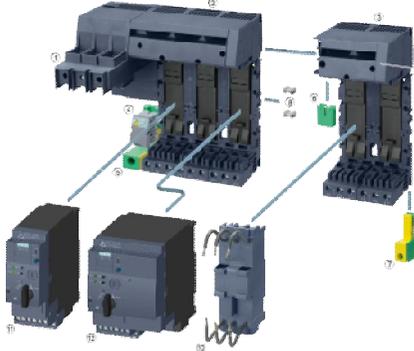


S2/S3: 65kA and 100kA short-circuit breaking capacity in 55mm and 70mm width

Technical details - infeed systems

Product description

Infeed systems for power distribution

3RV2917	3RV1915	3RA68	8US
			
<p>SIRIUS infeed system for size S00/S0</p>	<p>3-phase busbar system for sizes S00, S0 and S2 ("feeding combs")</p>	<p>Infeed system for 3RA6 compact starter and S00/S0 motor starter protectors</p>	<p>Busbar system</p>

The right infeed for every requirement

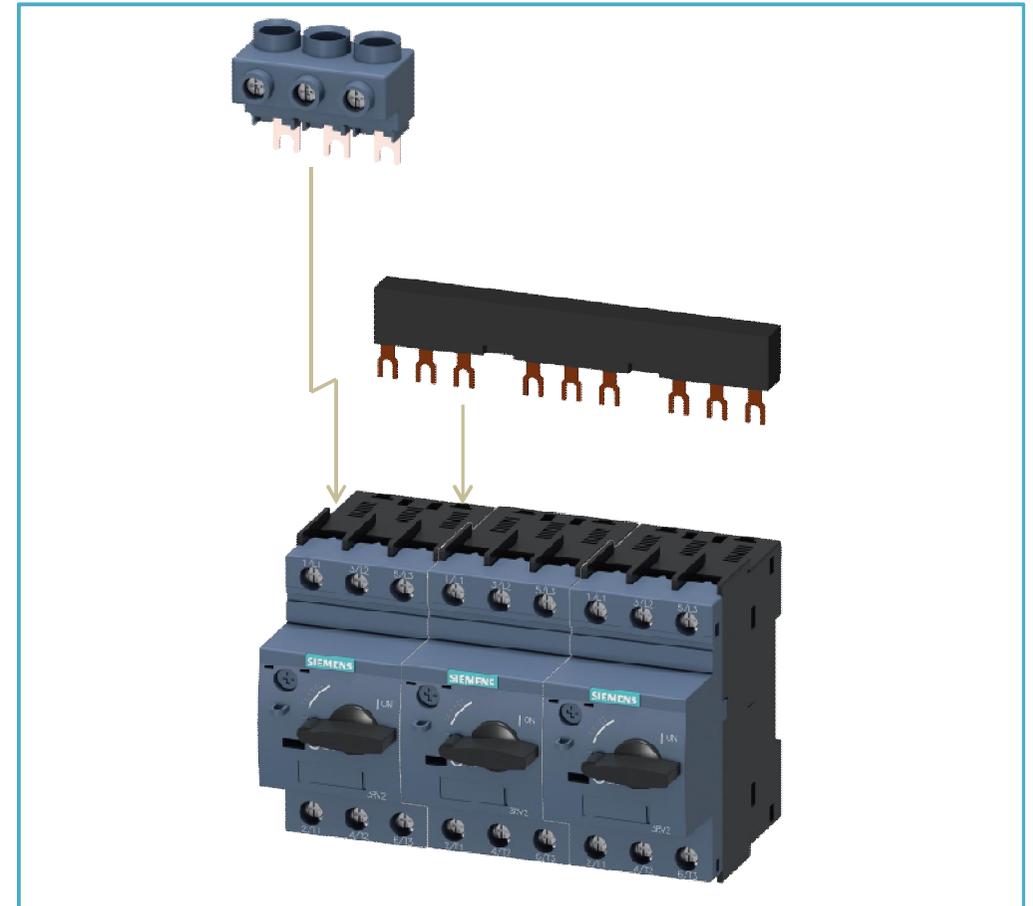
Technical details - busbar system

Product description

Assembly and mounting

3-phase busbar system

SIRIUS 3RV1915 and 3RV1935



Technical details - busbar system

Product description

3-phase busbars

- Identical for sizes S00, S0
- Special versions for S2
 - Versions for
 - 2 motor starter protectors, 45, 55, 63 or 75 mm
 - 3 motor starter protectors, 45, 55, 63 or 75 mm
 - 4 motor starter protectors, 45, 55 or 75 mm
 - 5 motor starter protectors, 45 or 55 mm



Covers for connection tags

Touch protection for empty positions



Accessories for SIRIUS 3RV2 motor starter protectors

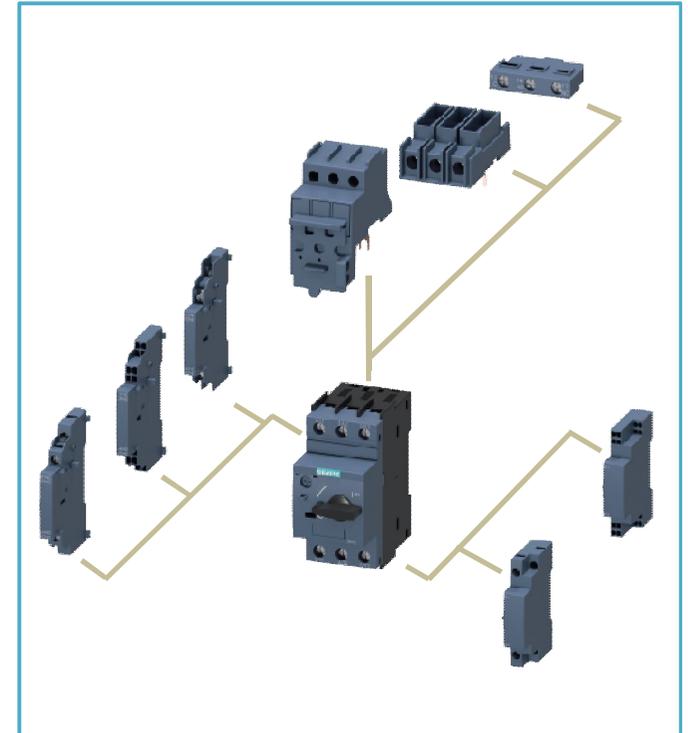
Product description

Identical for S00, S0, S2 and S3

- Transverse auxiliary switches 1CO, 1NO+1NC, 2NO
- Lateral auxiliary switches 1NO+1NC, 2NO, 2NC, 2NO+2NC
- Signaling switch for short-circuit and overload, 1NO+1NC each
- Undervoltage release
- Shunt release

Size-specific

- Link modules for direct mounting of switching devices
- Surface-mounting enclosures, front plates
- Isolator modules



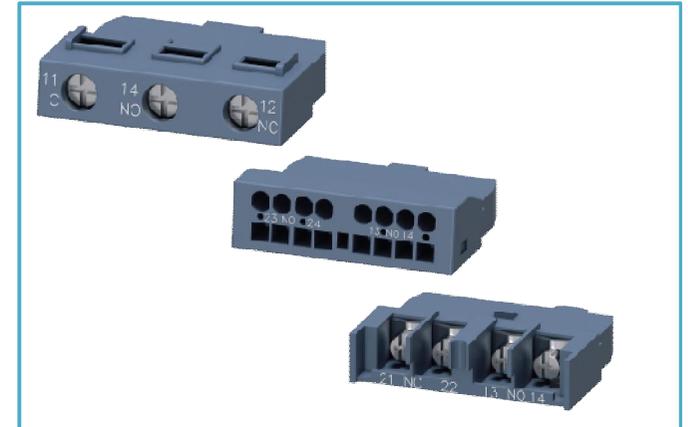
Perfectly matched accessories for individual requirements

Mountable accessories for SIRIUS 3RV2 motor starter protectors Product description

Auxiliary switches

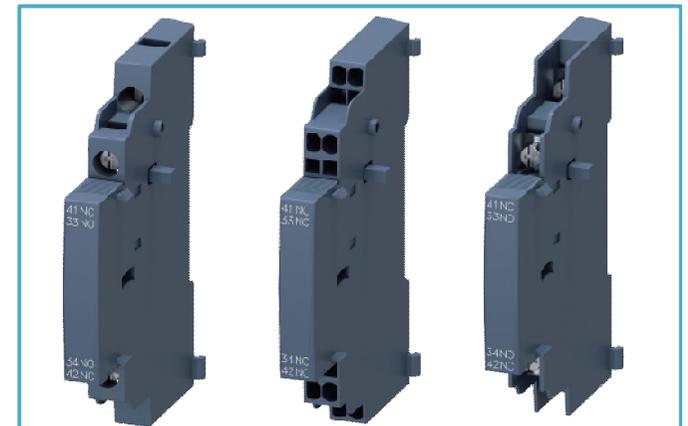
Transverse auxiliary switches

- 1CO Screw connection system
 - 1NO + 1NC Screw and spring-type connection system, ring terminal lug
 - 2NO Screw and spring-type connection system
 - 1CO Solid-state-compatible auxiliary switch (screw)
- Front installation, requires no extra space



Lateral auxiliary switches

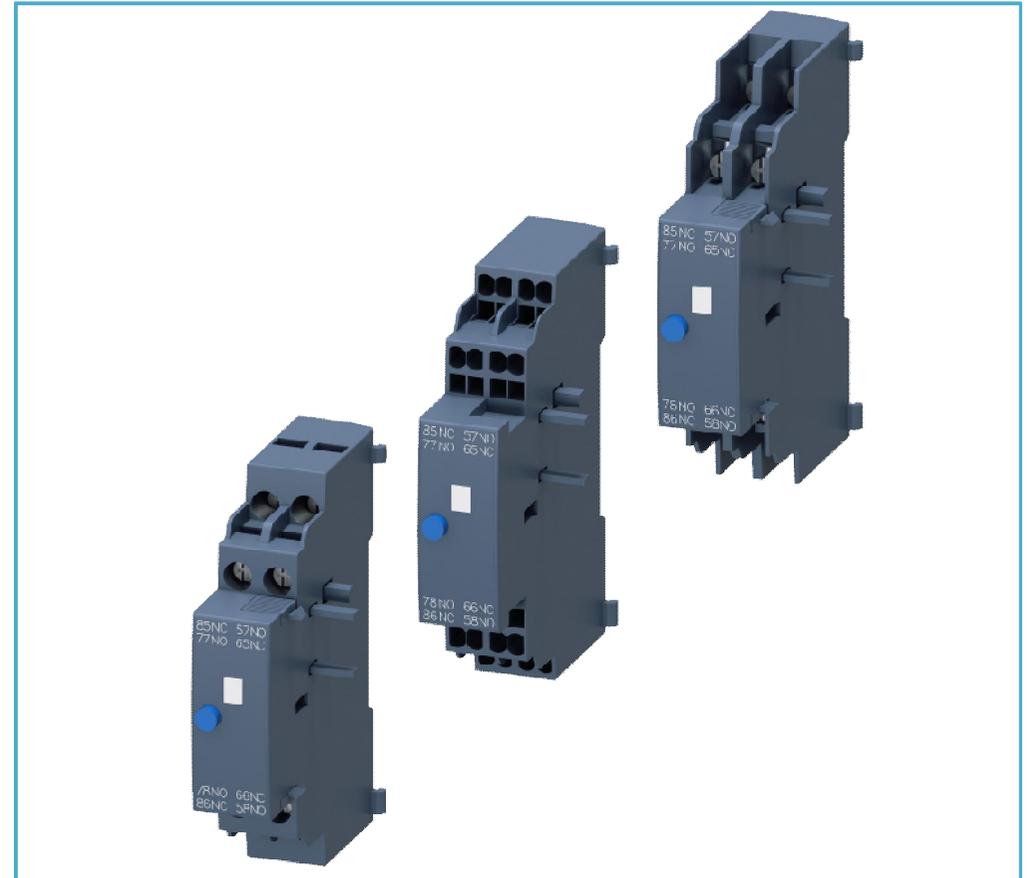
- 1NO + 1NC Screw and spring-type connection system, ring terminal lug
 - 2NO Screw and spring-type connection system
 - 2NC Screw and spring-type connection system
 - 2NO + 2NC Screw connection system
- Lateral mounting, 9/18 mm width



Mountable accessories for SIRIUS 3RV2 motor starter protectors Product description

Signaling switches

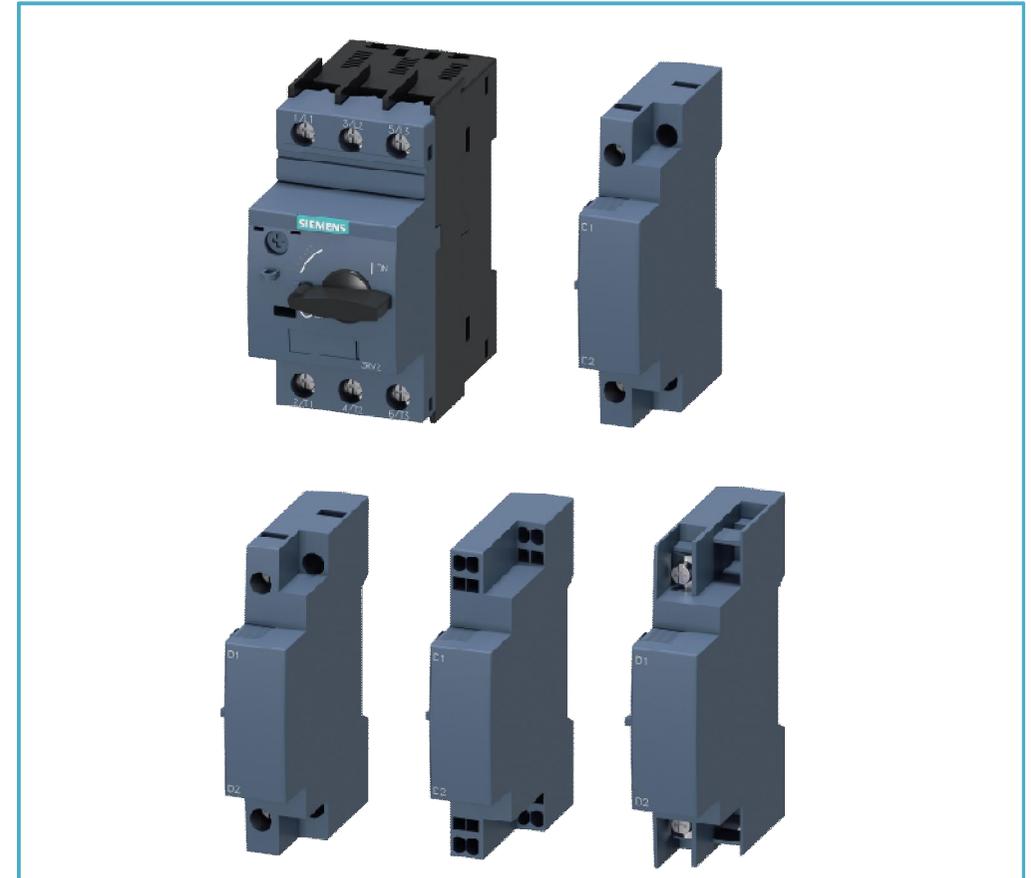
- Separate signaling of tripping (short-circuit or overload) and short-circuit
- 1NO + 1NC each
- Width 18 mm
- For all sizes
- Mounting on the left of the switch
- No tools needed for installation, simple snapping on
- Available with screw terminals, spring-type terminals and ring terminal lug connection



Mountable accessories for SIRIUS 3RV2 motor starter protectors Product description

Auxiliary releases

- Undervoltage release
- Undervoltage release with leading auxiliary contacts, 2NO
- Shunt release
- All auxiliary releases are fitted on the right of the motor starter protector
- Available for all commonly used voltages all over the world
- Installation inside molded-plastic enclosures possible
- Width 18 mm
- No tools needed for installation, simple snapping on



Motor starter protectors

Top customer benefits

Technical highlights	Customer benefits
<ul style="list-style-type: none">• 10 - 20% less power consumption than previous solutions	<ul style="list-style-type: none">• Reduced temperature rise in the control cabinet• Cost savings during operation
<ul style="list-style-type: none">• Spring-type terminals, also with plug-in technology and up to 10 mm² in size S00/S0	<ul style="list-style-type: none">• Operational reliability and reduction of wiring thanks to plug-in technology
<ul style="list-style-type: none">• Plug-in connectors from the motor starter protector to all types of switching devices available	<ul style="list-style-type: none">• Fast and error-free assembly of SIRIUS feeders with screw and spring-type terminals
<ul style="list-style-type: none">• All necessary plug-in connectors to the infeed system	<ul style="list-style-type: none">• Fast and error-free installation for screw and spring-type terminals
<ul style="list-style-type: none">• Performance increase in size S0 to 40 A (45 mm width) and in size S2 to 80A (55 mm width)	<ul style="list-style-type: none">• Space and cost savings
<ul style="list-style-type: none">• Two switching capacity classes now available in size S2/S3: 65kA and 100kA	<ul style="list-style-type: none">• Enhanced configuration flexibility

Motor starter protectors

Further customer benefits (1)

Technical highlights	Customer benefits
<ul style="list-style-type: none">• Consistent accessories for all sizes	<ul style="list-style-type: none">• Easy configuration
<ul style="list-style-type: none">• MSP combined with undervoltage release and contactor applicable as Cat. 3 feeder	<ul style="list-style-type: none">• Safety solution can be implemented with just one switching device
<ul style="list-style-type: none">• Screw connection for large cross-sections	<ul style="list-style-type: none">• Practice-oriented cable selection possible
<ul style="list-style-type: none">• Ring terminal lug connection with optional cover for sizes S00 and S0	<ul style="list-style-type: none">• Can be used in Japan and semiconductor markets
<ul style="list-style-type: none">• Design with relay function, motor protection, starter protection, type E, fuse monitoring	<ul style="list-style-type: none">• The ideal device for every application
<ul style="list-style-type: none">• Current values graded in accordance with all standard motors	<ul style="list-style-type: none">• The right motor starter protector for every standard motor• Consistent protection even for ambient temperatures >60°
<ul style="list-style-type: none">• Bimetals with extreme long-term stability	<ul style="list-style-type: none">• Operational reliability over many years

Motor starter protectors

Further customer benefits (2)

Technical highlights	Customer benefits
<ul style="list-style-type: none">• Common range of accessories for all sizes	<ul style="list-style-type: none">• Easy configuration
<ul style="list-style-type: none">• S00/S0 can be used in all infeed systems (combs, 3RA6, SIRIUS infeed, 8US)	<ul style="list-style-type: none">• Maximum flexibility in terms of power infeed
<ul style="list-style-type: none">• Integrated combination tests for fuseless and fused assembly	<ul style="list-style-type: none">• Planning reliability
<ul style="list-style-type: none">• Comprehensive approvals, including ATEX/IEC Ex	<ul style="list-style-type: none">• Can be used worldwide
<ul style="list-style-type: none">• Uniform tools and torques for all devices	<ul style="list-style-type: none">• Quick and easy installation
<ul style="list-style-type: none">• SIRIUS 3RA6 and 3RV29 infeed systems can be combined (for sizes S00/S0)	<ul style="list-style-type: none">• Maximum flexibility in terms of power infeed
<ul style="list-style-type: none">• Sizes S00 and S0 also uniformly available in spring-type connection technology	<ul style="list-style-type: none">• Improved operational reliability and quicker wiring

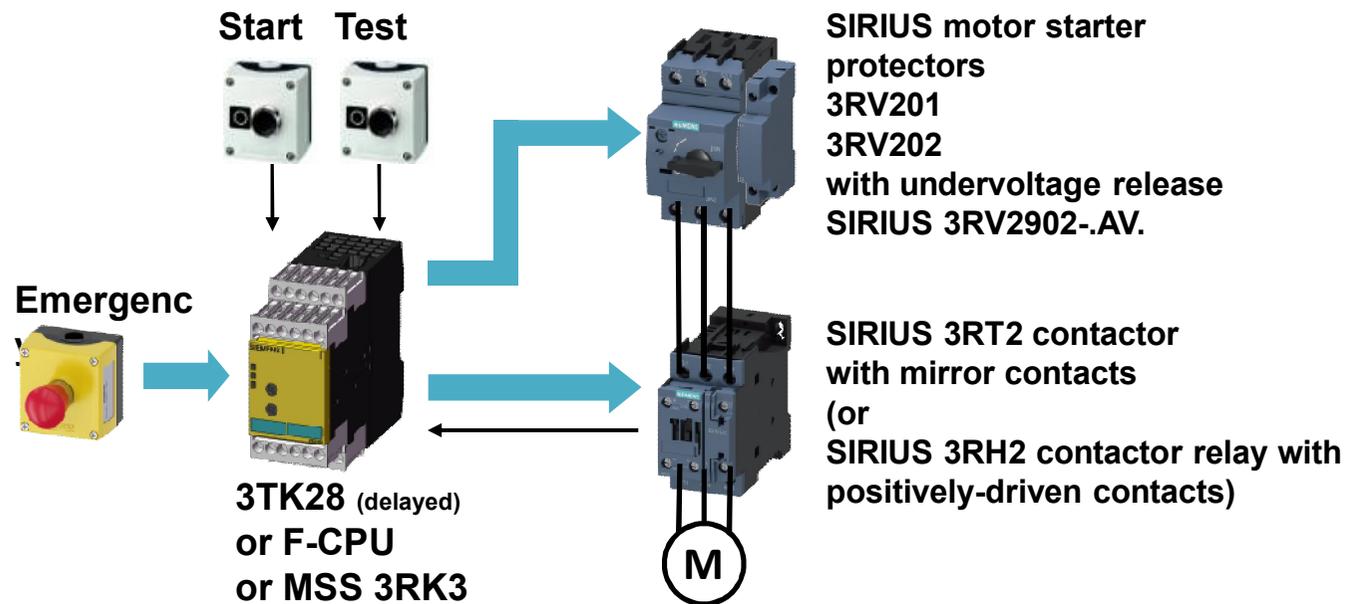
Motor starter protectors

Further customer benefits (3)

Technical highlights	Customer benefits
<ul style="list-style-type: none">• UL circuit breakers in sizes S00/S0 (3RV2711/2811) now also with transverse auxiliary switch	<ul style="list-style-type: none">• Space savings
<ul style="list-style-type: none">• Tested feeders up to 45/55 kW (100 A) in 45/55/70 mm design /up to 65 A also ready-assembled	<ul style="list-style-type: none">• Planning reliability
<ul style="list-style-type: none">• Extensive CAx data provision	<ul style="list-style-type: none">• Easy and fault-free configuration
<ul style="list-style-type: none">• Data sheets in 10 languages per MLFB	<ul style="list-style-type: none">• All technical data available (in all languages) and updated daily
<ul style="list-style-type: none">• Integrated in the Industry Mall	<ul style="list-style-type: none">• Fast and simple configuring and documentation - available at the push of a button

SIRIUS 3RV2 motor starter protectors for Cat. 3 use

Application examples



Contactor monitoring by SIRIUS 3TK28 safety relay,
F-CPU or SIRIUS 3RK3 modular safety system
If contactor welded: disconnection of the SIRIUS 3RV2 motor starter protector
via SIRIUS 3RV2902-1A.. undervoltage release

SIRIUS 3RV2 motor starter protectors

System overview

Functions

- Short-circuit protection, overload protection, switching (manual)
- Fuseless design
- Protection for motor, starter, system and transformer, as well as fuse monitoring

Dimensioning and design

- S00 and S0 (up to 40 A in a width of only 45 mm)
- S2 (up to 80 A in a width of only 55 mm)
- S3 (up to 100 A in 70 mm width)
- Short-circuit breaking capacity of 20kA/55kA/65kA and 100kA
- Choice of connection systems:
 - Screw terminal, spring-type terminal, ring terminal lug



SIRIUS 3RV2 motor starter protectors handle short-circuit and overload protection, operate particularly efficiently, and offer a wide range of uses.

SIRIUS 3RV2 motor starter protectors

System overview

Mounting advantages

- Can be combined easily and quickly with any SIRIUS switching device
- Reduction in main circuit wiring thanks to combination with
 - SIRIUS infeed system (S00/S0)
 - Three-phase busbar system
 - Infeed system for 3RA6 compact starters (S00/S0)
 - 8US busbar system

Application areas/customer benefits

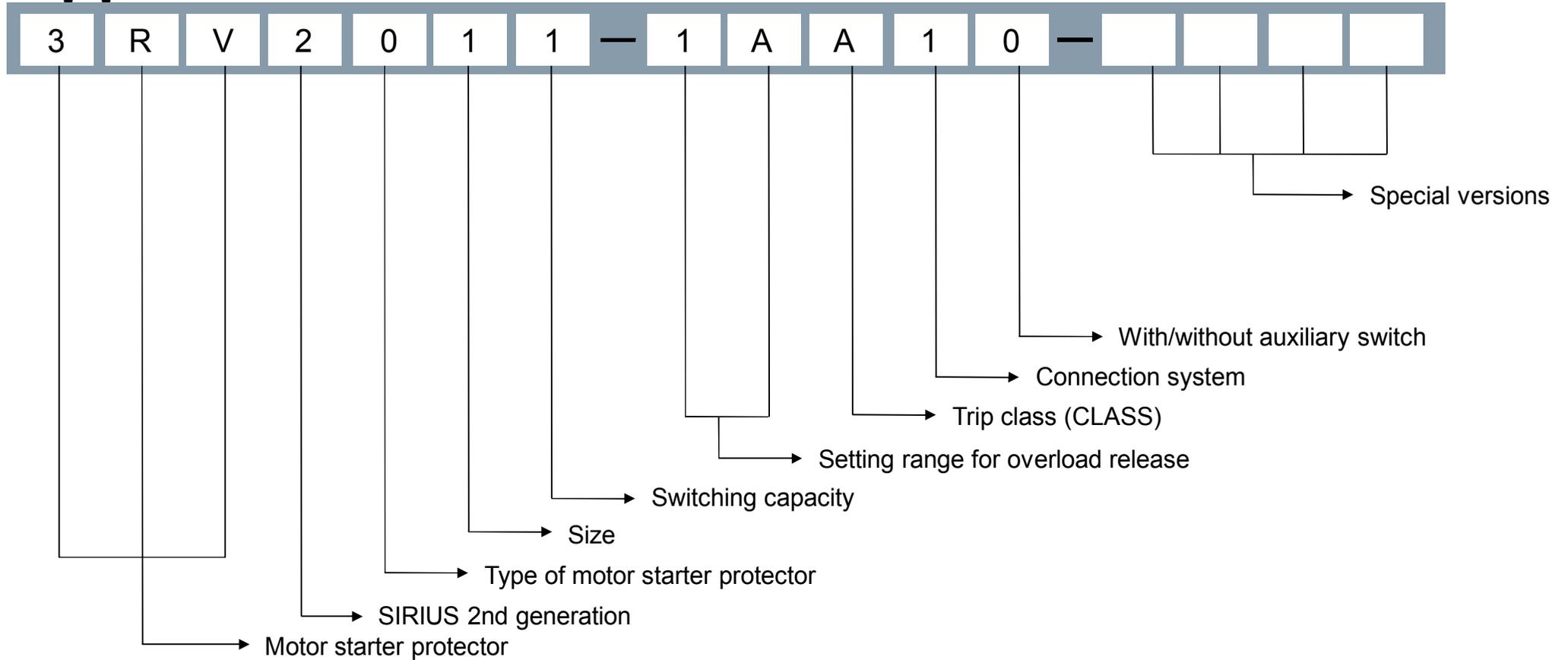
- Lower space requirement thanks to increased performance
- Reduced power consumption
- High short-circuit breaking capacity
- Global applicability thanks to comprehensive approvals



SIRIUS 3RV2 motor starter protectors handle short-circuit and overload protection, operate particularly efficiently, and offer a wide range of uses.

MLFB scheme

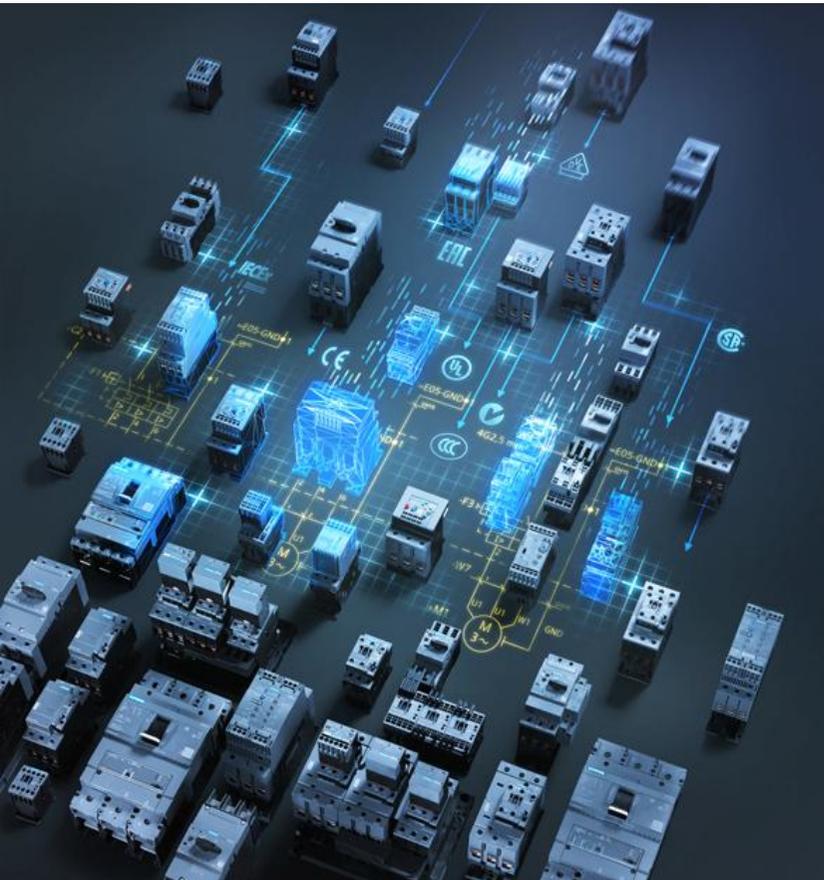
Appendix



Industry Automation Controls and Distribution

3RU thermal overload relays
3RB electronic overload relays

3RU thermal overload relays
3RB electronic overload relays



SIRIUS 3RU2
thermal overload relays

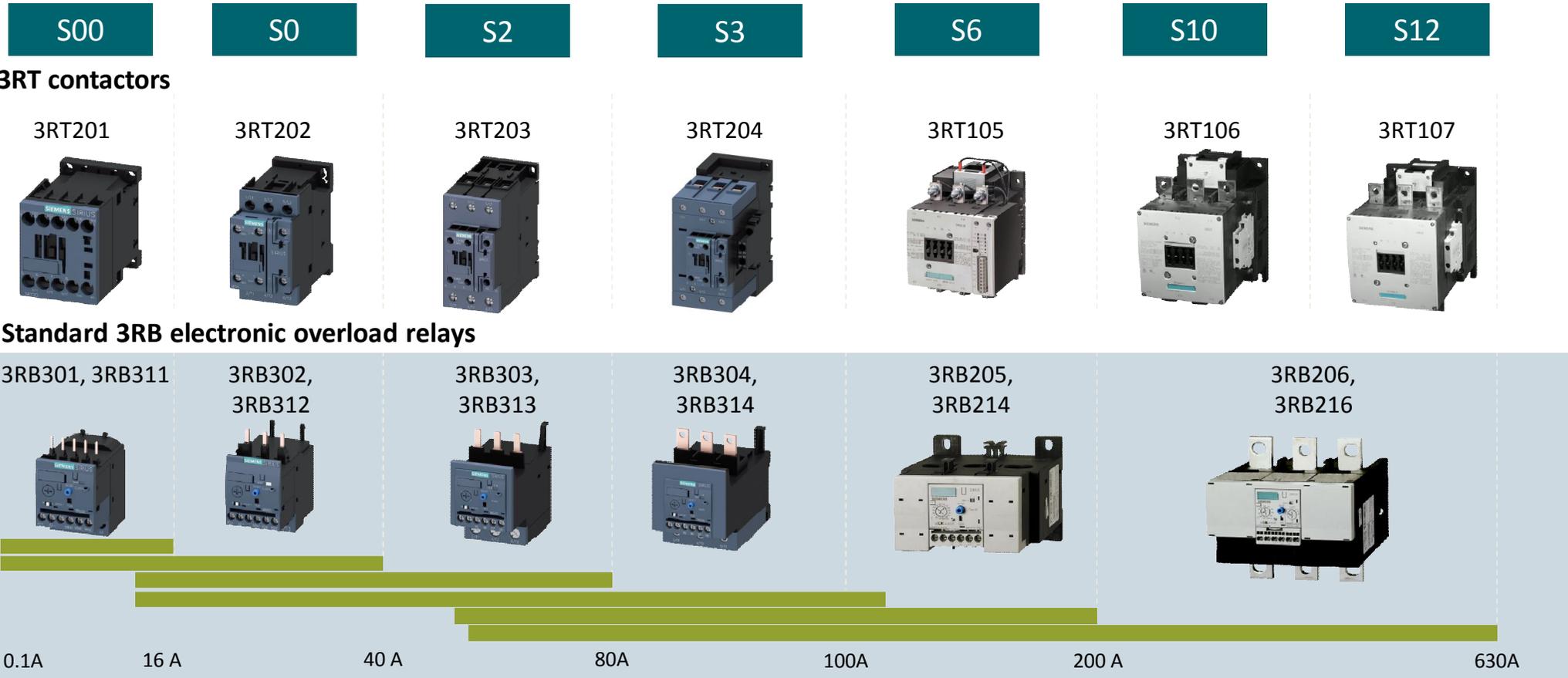
SIRIUS 3RB30 and 3RB31
electronic overload relays

Sirius 3RB24
electronic overload relays for IO-Link

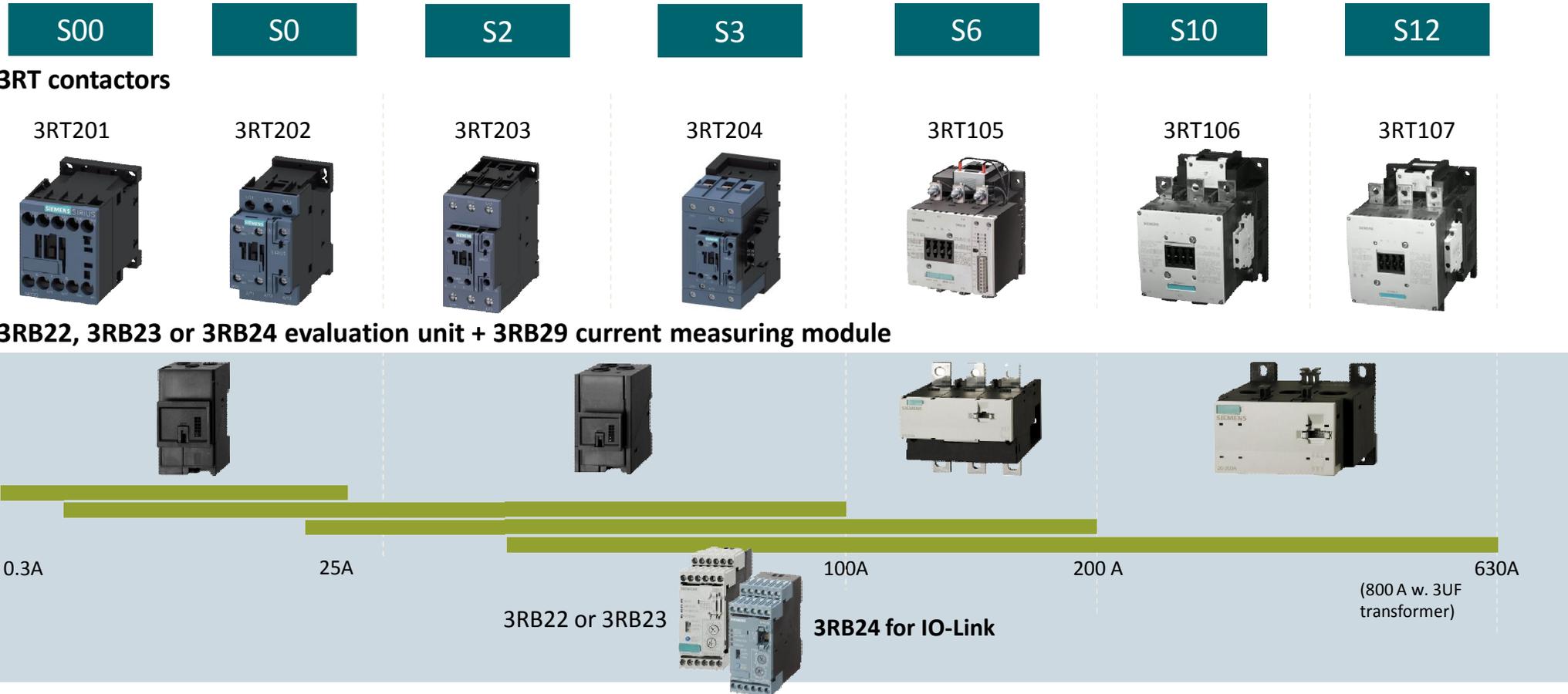
Overview of 3RU thermal overload relays

S00		S0		S2		S3		S6		S10		S12	
3RT contactors													
3RT201		3RT202		3RT203		3RT204		3RT105		3RT106		3RT107	
3RU thermal overload relays													
3RU211		3RU212		3RU213		3RU214							
0.1A		16 A		40 A		80A		100A					

Overview of 3RB electronic overload relays



Overview of 3RB electronic overload relays



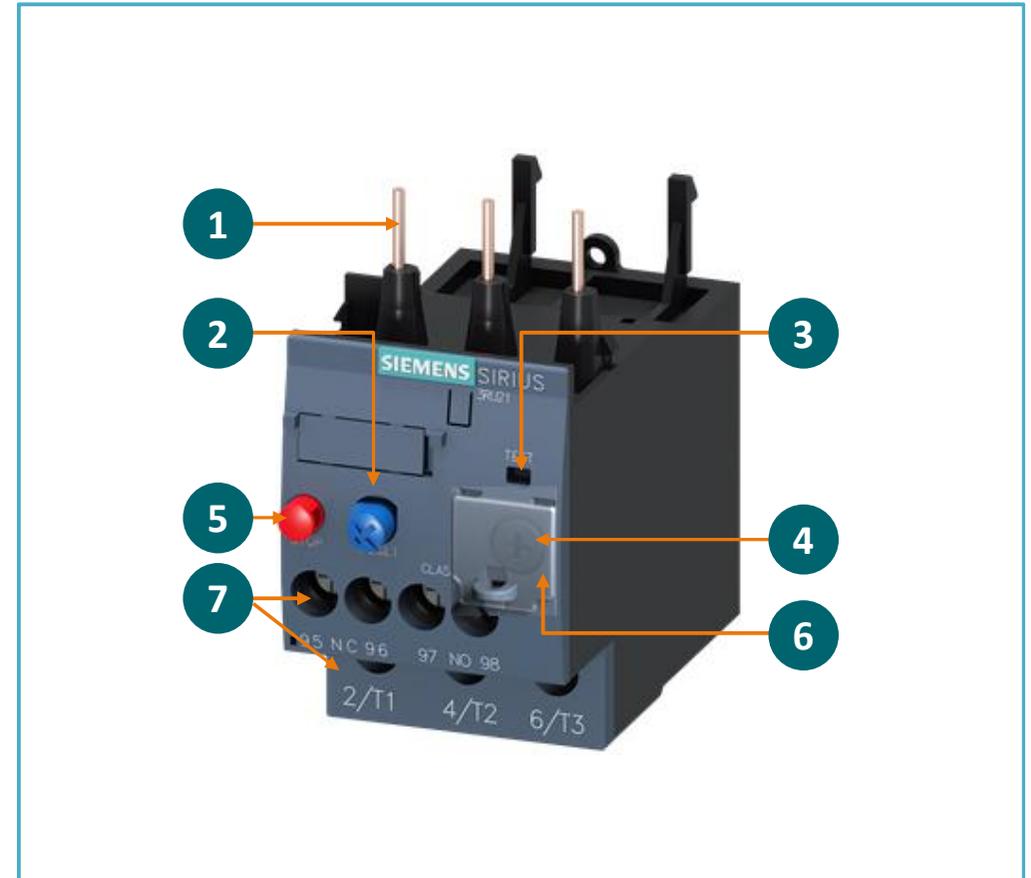
Positioning in SIRIUS Industrial Controls

				3 kW / 400 V				Size				250 kW / 400 V	
Function		Products		S00	S0	S2	S3	S6	S10	S12			
Main circuit	Switching	Contactors, contactors for capacitive loads,...											
		Solid-state contactors											
		Soft starters											
	Starting	Load feeders											
		Compact feeder, motor starter											
	Protecting	Motor starter protectors, motor circuit breakers											
		Overload relay	thermal										
			electronic										
	Monitoring	Current monitoring relays											
	Control circuit		Function and communication modules										

Overview - SIRIUS 3RU2 thermal overload relays

Product description

- 1 Terminal pins for mounting onto contactors
- 2 Selector switch for manual/automatic RESET and RESET button
- 3 Switch position indicator and TEST function of the wiring
- 4 Motor current setting
- 5 STOP button
- 6 Transparent cover, sealable (accessory)
- 7 Connecting terminals



SIRIUS 3RU2 thermal overload relays

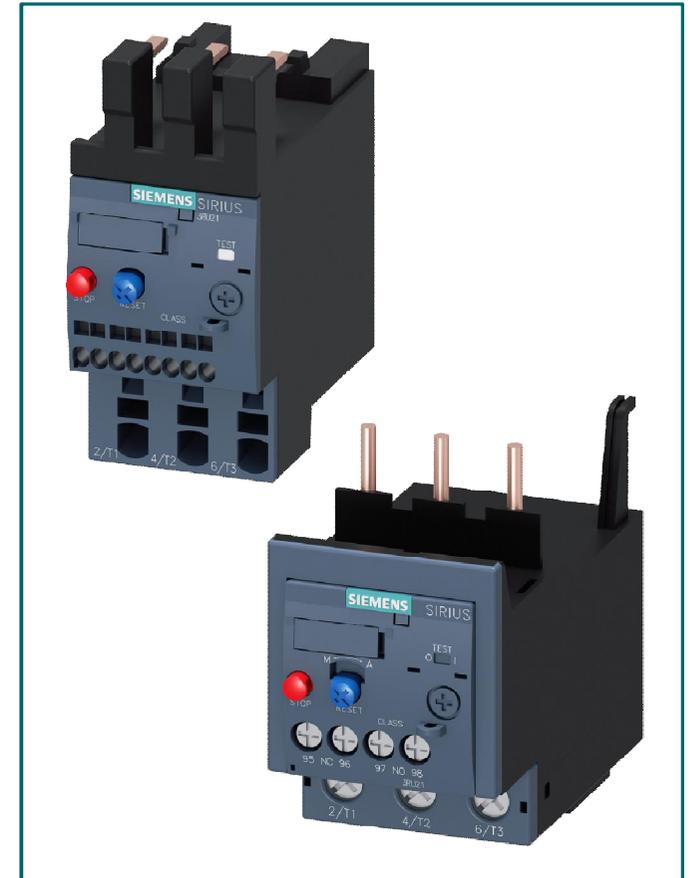
Product description

Protection functions

- Tripping in the event of overload
- Tripping due to phase unbalance and phase failure

Other characteristics

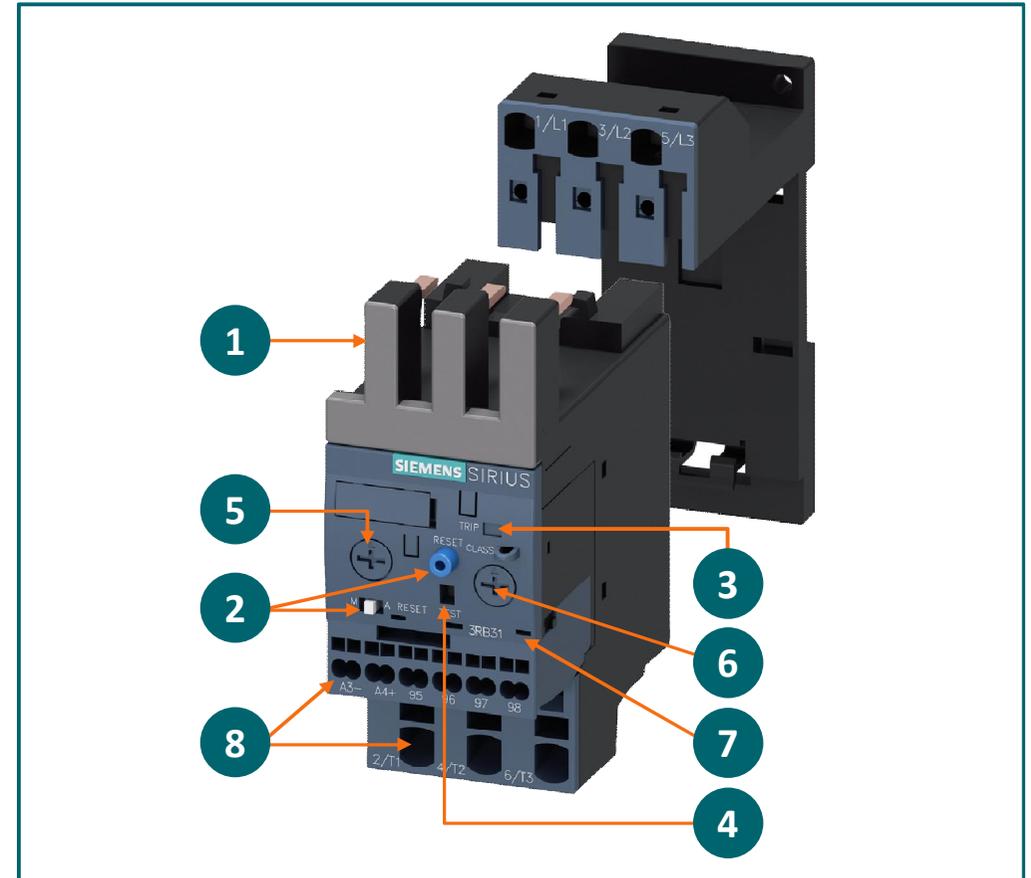
- Temperature compensation:
for uniform tripping at an ambient temperature between -20 and +60°C
- High long-term stability through special bimetals
- Trip class CLASS 10
- Automatic and manual reset (selectable)
- Setting range of 1:1.4



Overview – SIRIUS 3RB30/31 electronic overload relays

Product description

- 1 Terminal pins for mounting onto contactors
- 2 Selector switch for manual/automatic RESET and RESET button
- 3 Switch position indicator and TEST function of the wiring
- 4 Solid-state test (device test)
- 5 Motor current setting
- 6 Trip class setting/internal ground-fault setting (for 3RB31)
- 7 Transparent cover, sealable (accessory)
- 8 Connecting terminals (removable terminal block for auxiliary circuit)



SIRIUS 3RB30/31 electronic overload relays

Product description

Protection functions

- Tripping in the event of overload
- Tripping due to phase unbalance
- Tripping due to phase failure

Other characteristics

- Temperature compensation
- Very high long-term stability
- Large setting ranges (1:4)
- Trip classes CLASS 10E or CLASS 20E
- ATEX-certified
- Internal power supply of device
- Thermal memory
- Automatic and manual reset (selectable)

In addition for 3RB31

- Adjustable trip classes CLASS 5E...30E
- Internal ground-fault detection can be connected
- Integrated electrical remote reset, 24 V DC



Different grades of functionality to suit each individual requirement

Features – SIRIUS 3RB30/31 electronic overload relays

Product description

Basic units and accessories

- Performance increase: S00 16 A (7.5 kW) / S0 40 A (18.5 kW) / S2 80A (37kW) / S3 115A (55kW)
- Setting range 1:4
- Internal power supply (no additional power supply required)
- CLASS 10E or CLASS 20E in the case of 3RB30
- CLASS 5E to 30E can be set for 3RB31
- Internal ground-fault detection (3RB31 only)
- Integrated electrical remote reset with 24V DC (3RB31 only)
- Removable terminal for the auxiliary circuit
- Uniform mountable accessories S00 to S3
- S00 and S0 with screw and spring-type terminals
- S2/S3 with screw terminals or straight-through transformers
- Integrated test function
- Low power loss in comparison with thermal OLR

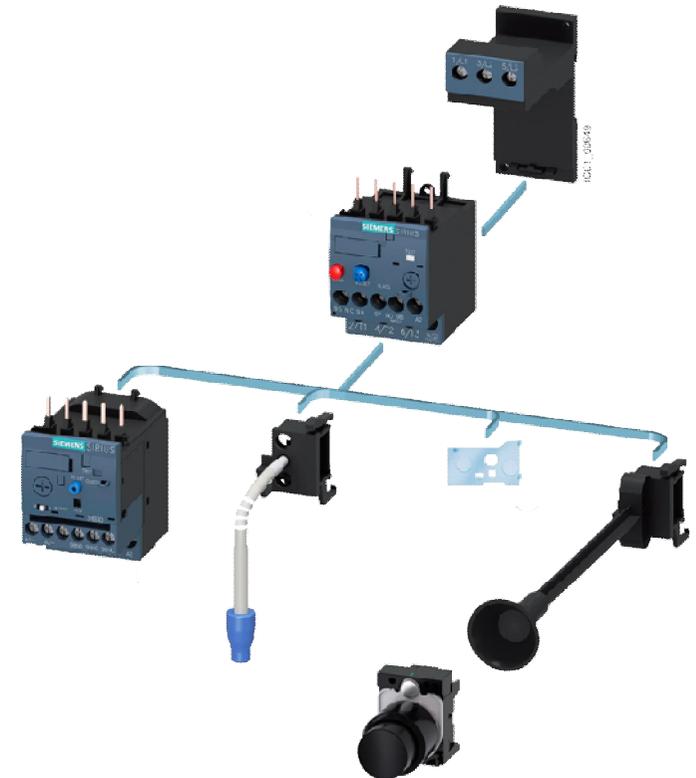


Accessories for SIRIUS 3RU2 and 3RB30/31 overload relays

Product description

Uniform accessories for SIRIUS 3RU2 thermal overload relay and SIRIUS 3RB30 and 3RB31 electronic overload relays

- One common stand-alone assembly support each available for thermal and electronic OLRs with screw terminals for S00, S0, S2 and S3; available with spring-type terminals for S00 and S0
- Mechanical reset and wire reset for 3RB30 and 3RU2
- Same electrical remote reset from predecessor series can be used (3RU2 only)
- Joint sealable cover for SIRIUS 3RU2 therm. OLR and SIRIUS 3RV2 motor starter protector



Perfectly matched accessories for individual requirements

Thermal and electronic overload relays

Summary

SIRIUS 3RU2. thermal overload relay SIRIUS 3RB3 and 3RB24 electronic overload relays

Functions

- Current-dependent motor protection, optionally 3RB24 full motor protection
- Modular system: different grades of functionality to suit each individual requirement
- Integrated temperature compensation
- Graded functionality from simple (3RU) to high-feature (3RB31 and 3RB24)

Dimensioning and design

- Performance increase: S00 (7.5 kW/16A), S0 (18.5 kW/up to 40A)
S2 (37kW/80A),
S3 3RU2 (45/55kW/100A); S3 3RB3 (55kW/115A)
- Width 45 mm (40 A), 55mm (80A), 70mm (100A/115A)
- Large wide setting range of 1:4 with 3RB3
- High long-term stability through special bimetals with 3RU2
- Coordinated and uniform accessories
- Depending on version, screw terminals, spring-type terminals, ring terminal lug connections or straight-through transformers available



The perfect, energy-efficient motor overload protection with scalable functionality for every application. Electronic overload relays consume less energy and simultaneously offer a significant increase in flexibility and possibilities of use.

Thermal and electronic overload relays

Summary

SIRIUS 3RU2. thermal overload relay SIRIUS 3RB3 and 3RB24 electronic overload relays

Mounting advantages

- Can be directly mounted onto contactor or for stand-alone assembly
- Removable terminals for control circuit wiring (3RB3, 3RB24)
- Same stand-alone assembly support available with screw and spring-type terminals for 3RU2, 3RB3 and 3RR

Application areas/customer benefits

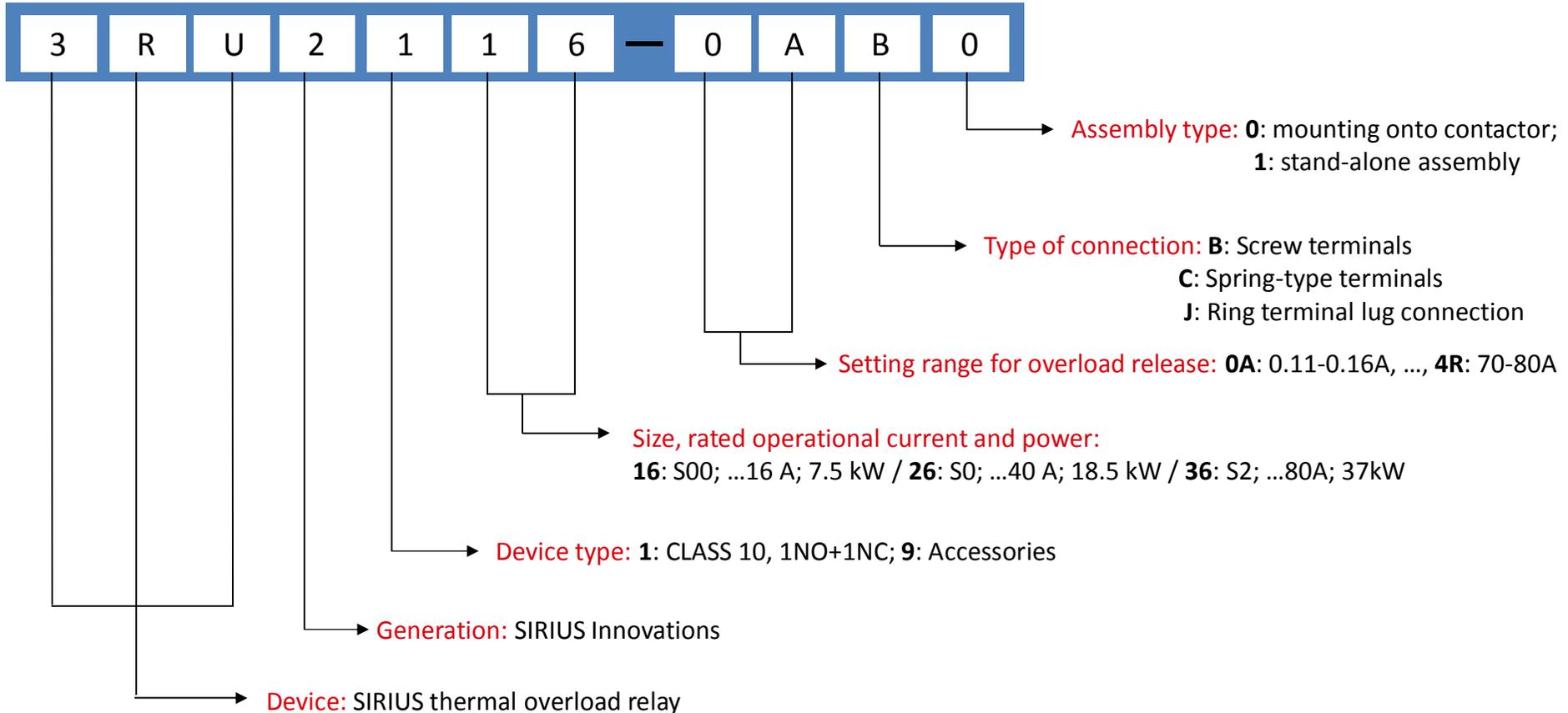
- 98 % less power consumption than conventional solutions (3RB3)
- Optimum adaptation (overlapping ranges) to the motor current up to 60 °C
- Comprehensive approvals for global applicability and additional certifications such as ATEX or IEC Ex
- Transparency and high functionality thanks to IO-Link (3RB24)



The perfect, energy-efficient motor overload protection with scalable functionality for every application. Electronic overload relays consume less energy and simultaneously offer a significant increase in flexibility and possibilities of use.

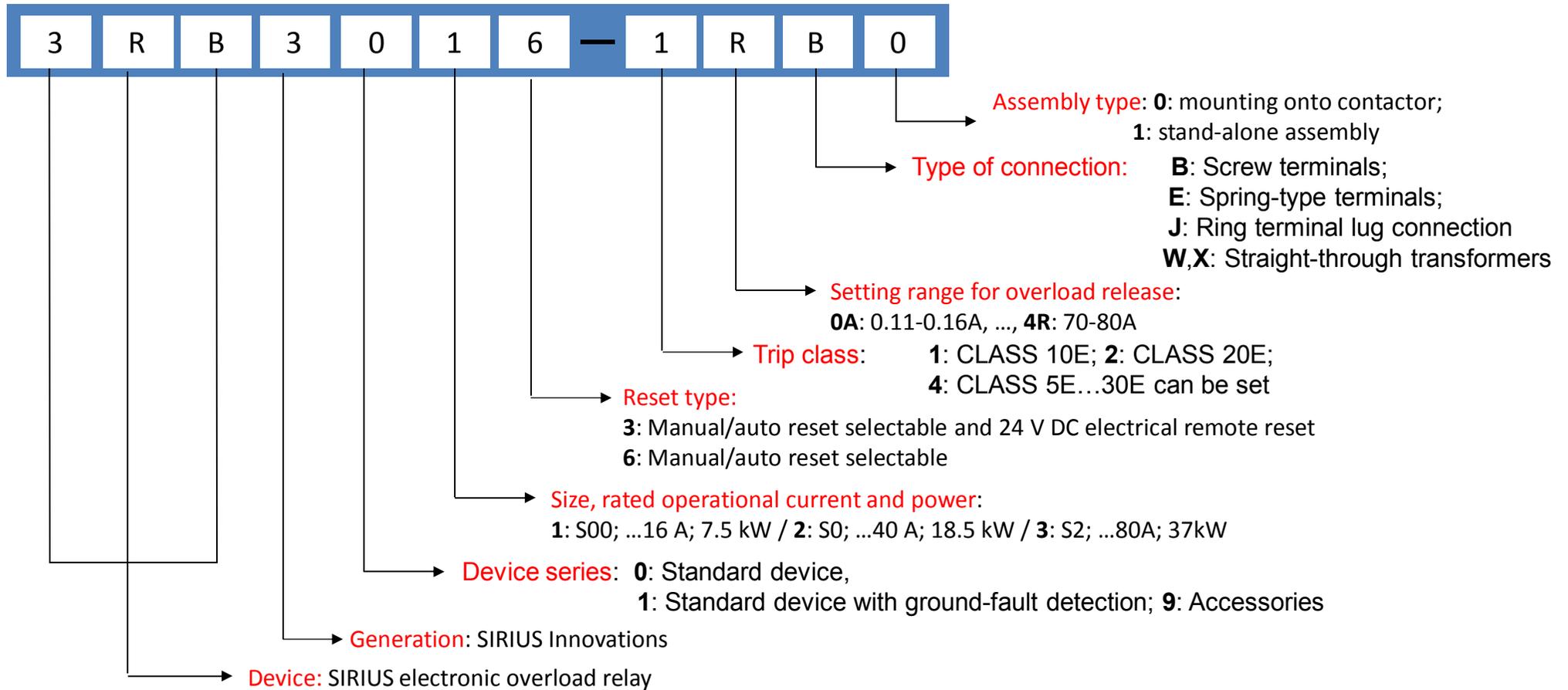
3RU2 MLFB structure, basic units

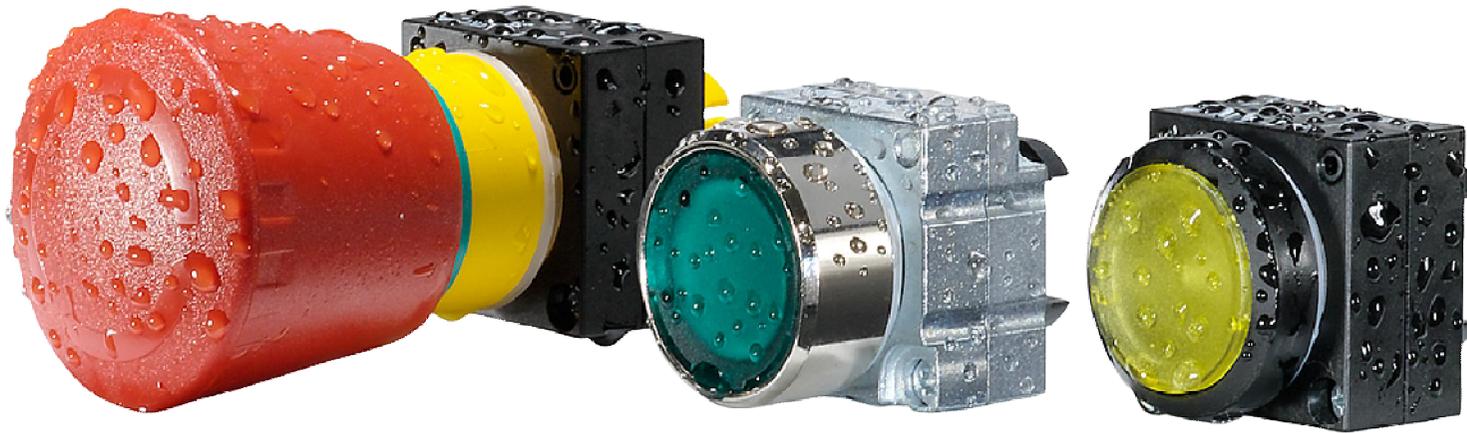
Appendix



3RB30 and 3RB31 MLFB system for basic units

Appendix





SIRIUS

Pushbuttons and Indicator Lights

Product overview

- **SIRIUS 3SB3** are pushbuttons and indicator lights featuring a very flat, round or square design, available in plastic or metal versions



- All **EMERGENCY-STOP mushroom pushbuttons** are marked with a “green” ring and certified in accordance with DIN ISO 13850 / EN 418
 - The **illuminated legend plate** improves the visibility of the command point and provides various information



- The **switching element 3SB34** monitors the proper mounting on and correct connection to an actuator
 - In case of incorrect mounting or drop-out from the actuator, the switching element initiates an automatic shutdown of the machine or system



Product overview

Standard lock with key monitoring

- Inhibits uncontrolled key removal
- Hole size and single-pole switching elements as with standard 3SB3
- 2 additional slots free for equipping
- No reworking for installation in enclosure

“Lockable” VW enclosure

- Suitable for lockable EMERGENCY-STOP actuator (40 mm)

EMERGENCY-STOP commanding devices with **direct AS-Interface connection** guarantee a high degree of safety; integrated signaling output



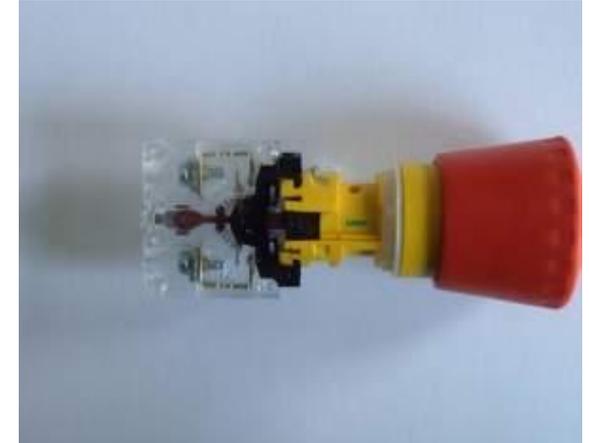
Product overview

Switching element with installation monitoring

- Monitors correct installation (emergency stop) actuator

Operating principle:

- 1) Delivery state: SE is open
- 2) Installation: SE is open
- 3) Initial activation of emergency stop: SE is open
- 4) After initial unlocking: SE closed
→ Emergency stop circuit ok
- 5) (Emergency situation) emergency stop activated: SE open
→ Emergency stop circuit open
→ Electrical circuit interrupted



Product overview

Housings for any application

- Standard housing made of plastic or metal with 1, 2, 3, 4 and 6 command points
- Customer-specific housings can be configured online for any application
- Can be connected with an AS-Interface
- High degree of protection IP 66/67

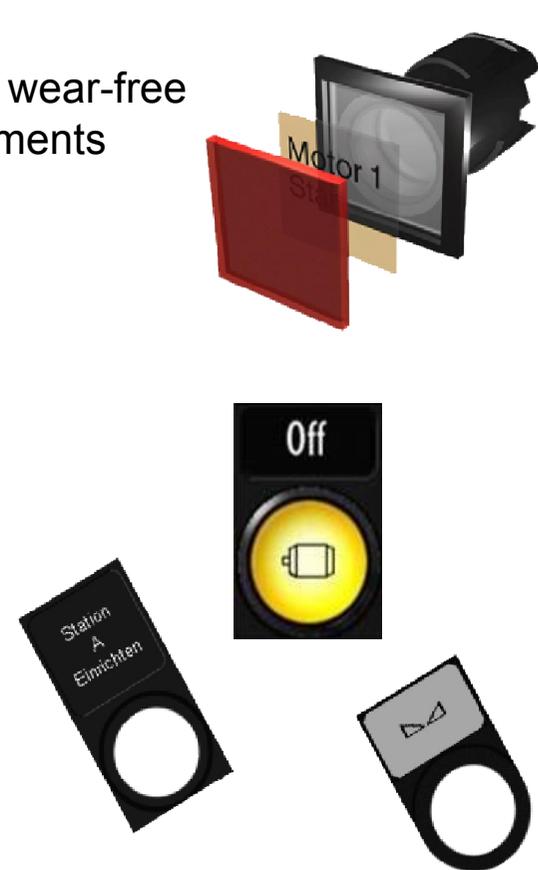
Housing with AS-Interface connection

- Three connection variants
- Data and power transmission via one two-wire line
- A/B technology
- DC socket integrated for addressing
- Modular design (configurable anytime)
- Integrated in TIA
- Unused bits can be used otherwise



Product overview

- **Labeling with laser technology**
directly on buttons and signaling lenses allows for wear-free extra information without additional space requirements
- **Plate holder** and separate legend plate facilitate subsequent labeling without disassembly of the command point
- **SIRIUS Label Designer** additionally allows for a short-term and flexible labeling of the plates on site



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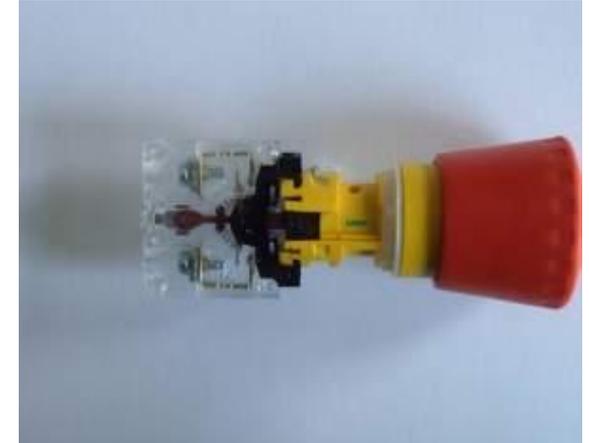
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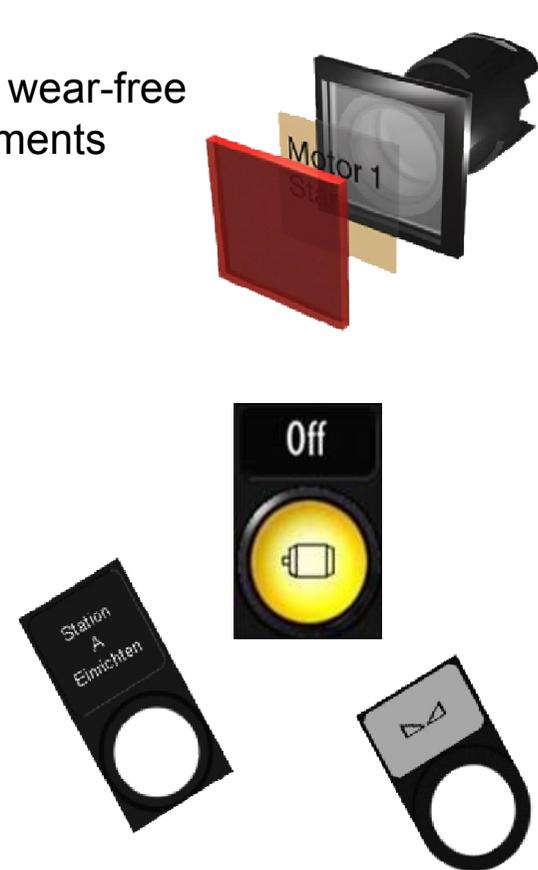
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SIRIUS 3RW30, 3RW40 and 3RW44 soft starters

Set of sales slides

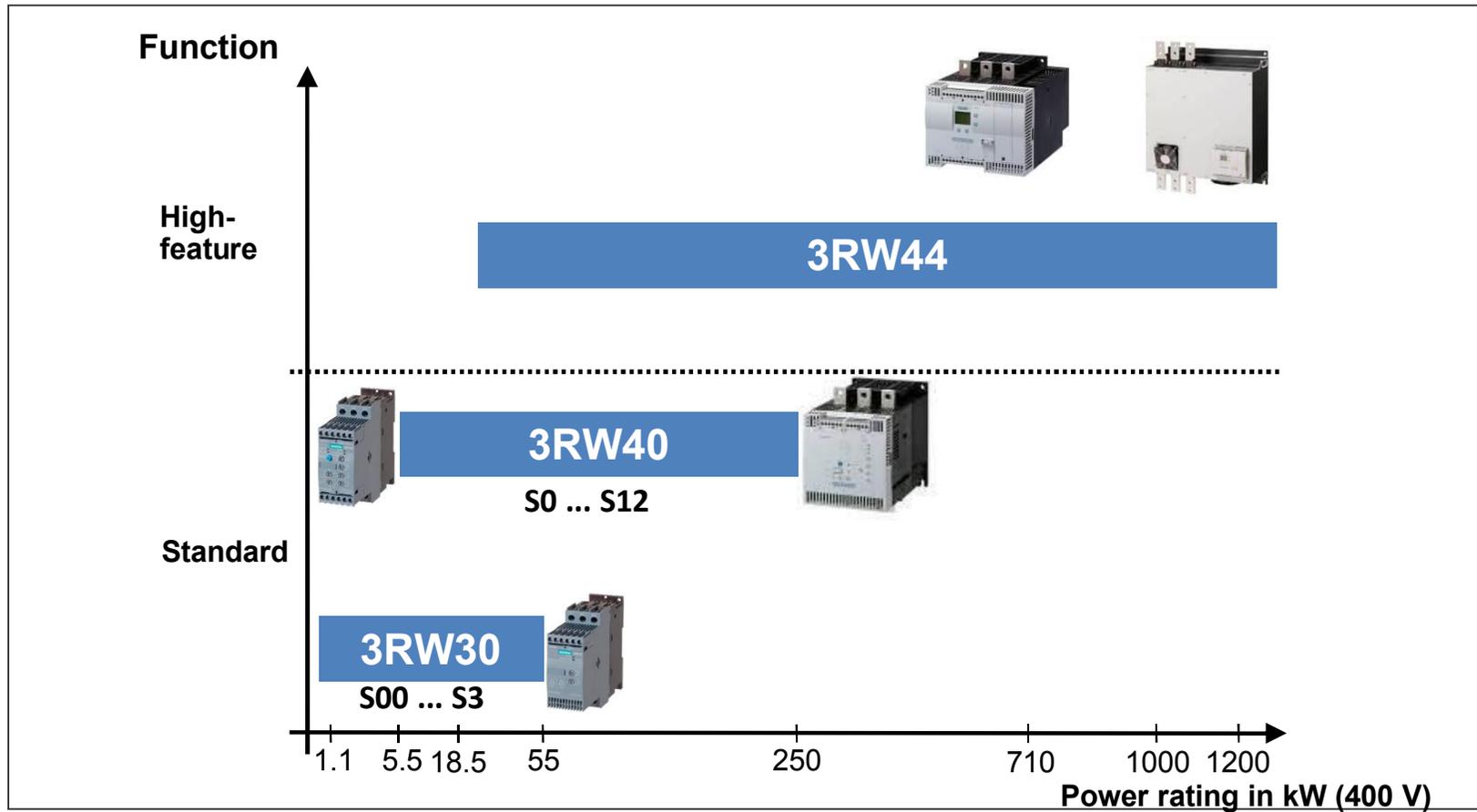
SIRIUS 3RW soft starters - Overview

Soft starters for standard applications		Soft starters for high-feature applications
SIRIUS 3RW30	SIRIUS 3RW40	SIRIUS 3RW44



- With basic functions
- For soft starting
- With device and motor protection functions
- For soft starting, stopping, and protecting
- For motor power ratings up to 1200 kW (at 400 V) in the inside-delta circuit
- PROFINET connection

Wide range of products



Top highlights at a glance

Top highlights at a glance

Reduced mechanical
and electrical load

Space and cost savings
thanks to compact design

Fast and easy
commissioning

Matched with the
SIRIUS modular system

Reduced temperature
rise in the control cabinet

The ideal solution for the control cabinet for fixed-speed applications

SIRIUS 3RW soft starters ...



... protect

- the motor
- the soft starter
- without additional costs



... save

- space in the control cabinet
- power loss
- installation time



... are easy on

- the mechanical components
- the power supply system



SIRIUS 3RW30 & 3RW40 soft starters

Top highlights for standard applications



Feature/function

Power rating extended up to 38A (18.5 KW) within 45 mm

Setting using a potentiometer

Low power loss through integrated bypass contact system

Prevention of torque peaks

Reduced starting current

Benefits

Space and cost savings

Fast and easy commissioning

Reduced temperature rise in the control cabinet
Cost savings

Easy on the drive and the load

Easy on the power supply system

SIRIUS 3RW44 soft starters

Top highlights for high-feature applications



Feature/function	Benefits
Torque control	Ideal acceleration
User-friendly display	Simple and fast commissioning
Operation in inside-delta circuit	Savings in terms of size and device costs
Optional PROFINET connection	Simple integration into higher-level controls

Product data overview SIRIUS 3RW30, 3RW40 and 3RW44 soft starters

Product data overview

<u>Rated data</u>	SIRIUS 3RW30	SIRIUS 3RW40	SIRIUS 3RW44
Operational voltages	200 ... 480 V AC (-15 % / +10 %)	200 ... 480 V AC 400 ... 600 V AC (-15 % / +10 %)	200 ... 460 V AC 400 ... 600 V AC 400 ... 690 V AC (-15 % / +10 %)
Control supply voltages	24 V AC/DC (-20 % / +20 %) 110 ... 230 V AC/DC (-15 % / +10 %)	24 V AC/DC (-20 % / +20 %) 110 ... 230 V AC/DC (-15 % / +10 %)	115 V AC 230 V AC (-15 % / +10 %)
Frequencies	50 / 60 Hz (-10 % / +10 %)	50 / 60 Hz (-10 % / +10 %)	50 ... 60 Hz (variable frequency) (-10 % / +10 %)
Currents at 40 ° C Currents at 50 ° C	3.6 ... 106 A 3 ... 98 A	12.5 ... 106 A 11 ... 98 A	29 ... 1214 A 26 ... 1076 A
Power ratings at 400 V Power ratings at 460/480 V	1.5 ... 55 kW 1.5 ... 75 hp	5.5 ... 55 kW 7.5 ... 75 hp	15 ... 710kW 22 ... 1200 kW 15 ... 950 hp 30 ... 1700 hp (standard circuit) (inside-delta circuit)
Ambient temperature	-25 ... +60° C	-25 ... +60° C	0° ... +60° C
Number of sizes	4	3	5

SIMOCODE pro

Sales slides – Edition November 2016

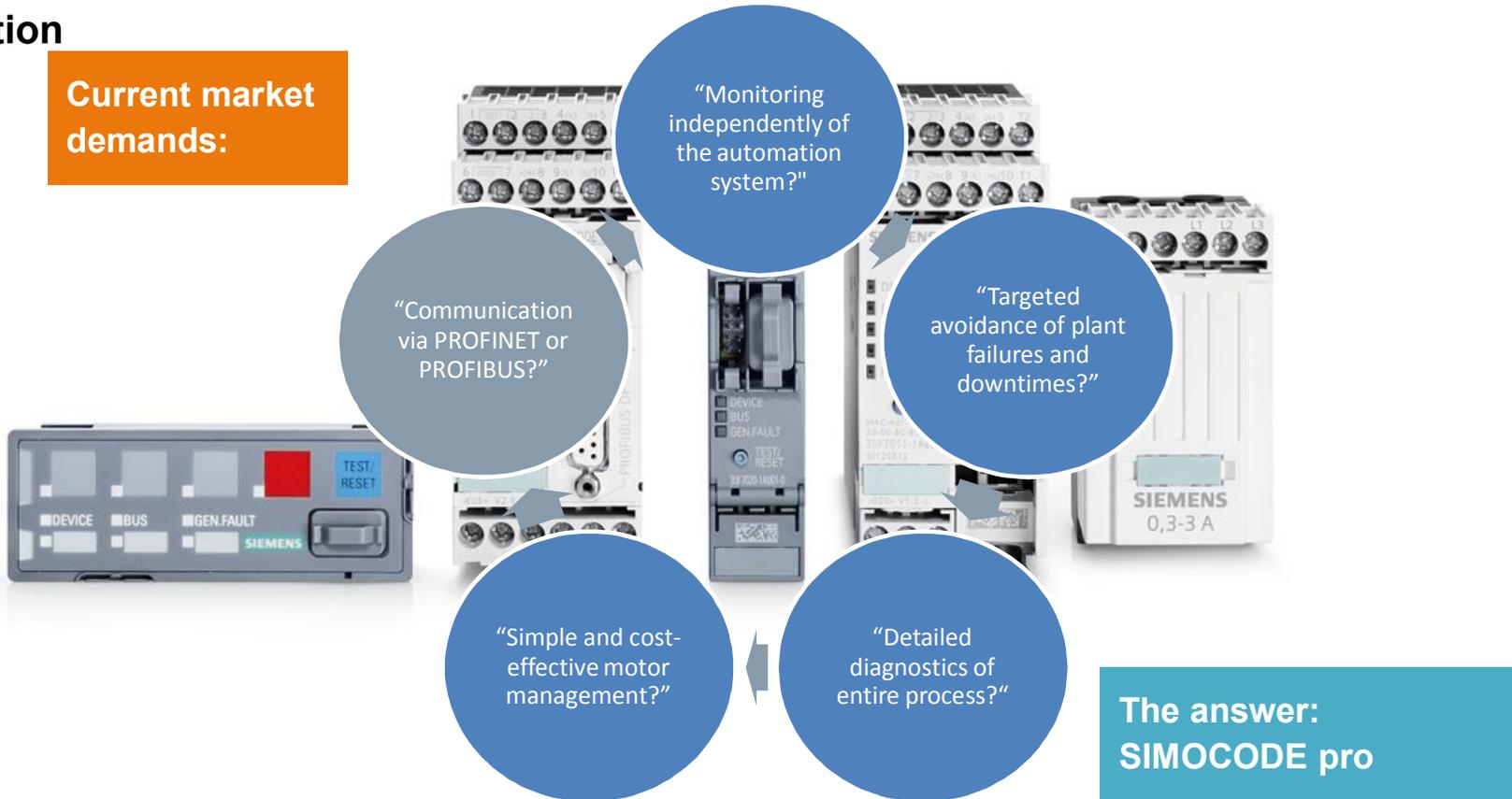
• Unrestricted © Siemens AG 2016

• siemens.com/simocode

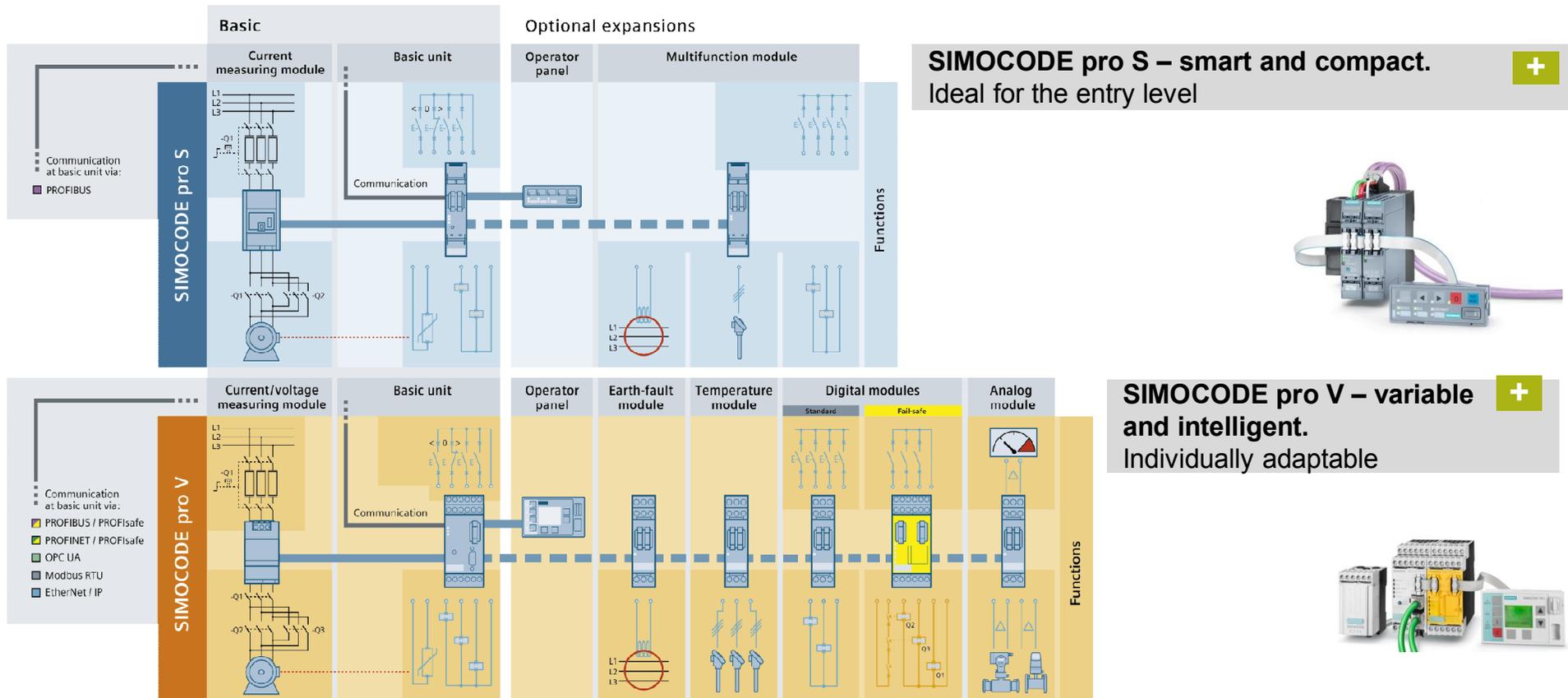
Modern motor management to boost plant availability

Introduction

Current market demands:



Tailored motor management – functions exactly as needed



Safe and reliable motor management

Top-Highlights at a Glance



Multifunctional and solid-state full motor protection, independently of the automation system

Safe shutdown of motors

Open communication via PROFIBUS or PROFINET

Detailed operating, service and diagnostic data

Convenient engineering thanks to SIMOCODE ES, also in the TIA Portal (V12)

Integration into process control systems

Top-Highlights at a Glance

SIMOCODE pro as the sensor for motor data!

More precise measurement
of current, voltage and power

Extension of measuring range
for variants up to 115 A

Reduced overall depth in
sizes up to 115 A

Measured value acquisition
the range from 20 Hz to
400 Hz for converter-
controlled motors

Powerful motor
management system for even
more communication systems

Integration in the
SIMOCODE ES V14 software
(TIA Portal)

Maximum flexibility, safety and range of functions

USPs and customer benefits



Feature/function
<p>Large number of protection, monitoring and control functions</p>
<p>Integrated safety function:</p> <ul style="list-style-type: none"> • Safety Solution local • Safety Solution PROFIsafe
<p>PROFIBUS and PROFINET interfacing with a large quantity of status and operational data (also diagnostic, via Web server or OPC UA, for example)</p>
<p>Engineering with SIMOCODE ES</p> <ul style="list-style-type: none"> • also in the TIA Portal • Including integrated graphics editor
<p>Integration in SIMATIC PCS7 and SIMATIC PDM process control systems</p>

Benefit
<p>▶ Enhanced monitoring and increased plant availability</p>
<p>▶ Protection of humans and machine via safety-related tripping</p>
<p>▶ Increased information density and availability for fast fault detection and troubleshooting</p>
<p>▶ Easy parameterization, fast commissioning and high configuration reliability</p>
<p>▶ Optimum process management for all process control systems with SIMOCODE pro</p>

One system – the full range of performance

SIMOCODE pro S	Functions	SIMOCODE pro V				
•	Simple control functions (e.g. overload relay, direct start and reversing start, soft start*, star-delta (wye-delta*))	•				
•	Protection functions (e.g. thermistor, overload, phase asymmetry)	•				
•	Simple monitoring functions (e.g. current limits, internal ground fault, downtimes)	•				
•	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td data-bbox="629 707 1077 758">Basic unit 4 inputs/2 outputs</td> <td data-bbox="1077 707 1550 758">Basic unit 4 inputs/3 outputs</td> </tr> <tr> <td data-bbox="629 758 1077 815">Basic unit with multifunction module Max. 8 inputs/4 outputs</td> <td data-bbox="1077 758 1550 815">Basic unit with digital module Max. 12 inputs/7 outputs</td> </tr> </table>	Basic unit 4 inputs/2 outputs	Basic unit 4 inputs/3 outputs	Basic unit with multifunction module Max. 8 inputs/4 outputs	Basic unit with digital module Max. 12 inputs/7 outputs	•
Basic unit 4 inputs/2 outputs	Basic unit 4 inputs/3 outputs					
Basic unit with multifunction module Max. 8 inputs/4 outputs	Basic unit with digital module Max. 12 inputs/7 outputs					
•	Current measurement	•				
•	External ground fault monitoring	•				
•	Temperature monitoring	•				
•	Expansion I/Os Input voltage 24 V DC, 110-240 V AC/DC, monostable relay outputs	•				
	Expanded control functions (e.g. pole-changing starter, positioner)	•				
	Voltage/power measurement	•				
	Analog value monitoring	•				
	Safety-related tripping	•				
	Expansion I/Os Input voltage 24 V DC, 110 – 240 V AC/DC, bistable relay outputs	•				

Introduction

New measuring modules for SIMOCODE pro: the answer to all requirements

Market – current requirements

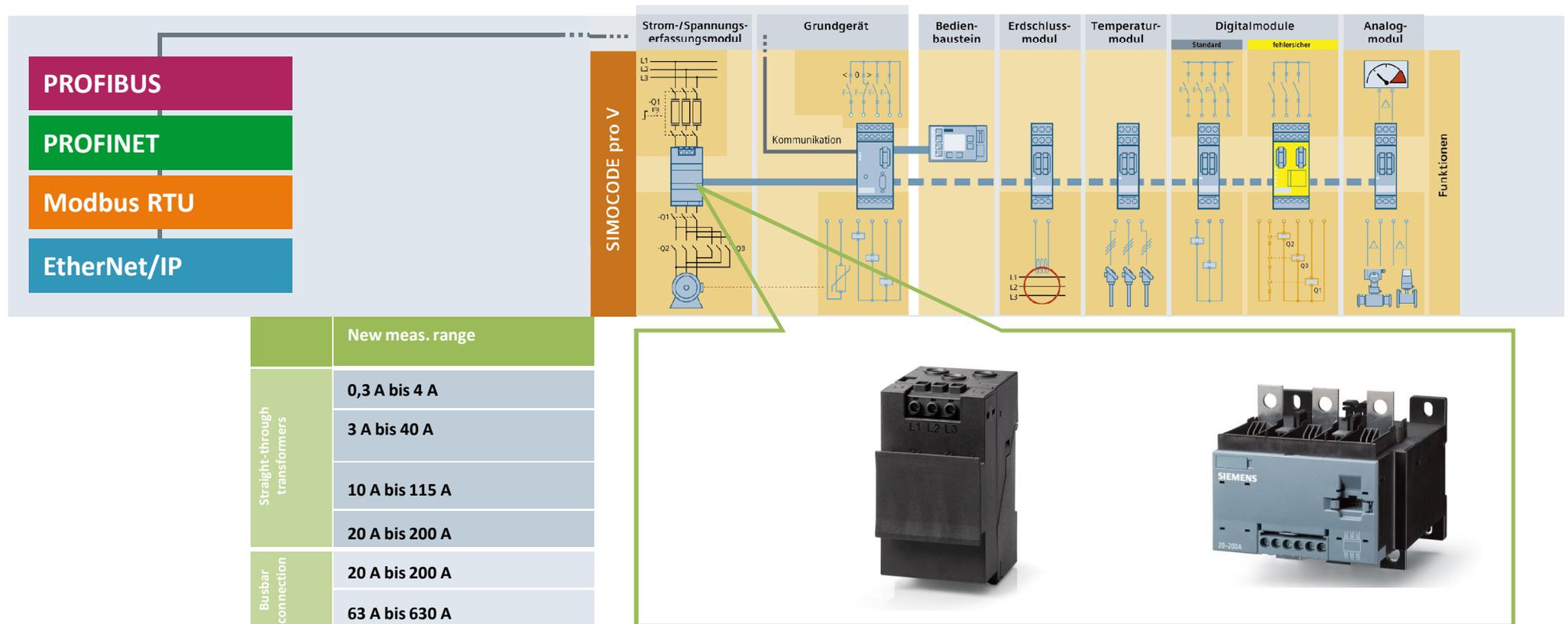
- ! Transparent and reliable measurement data
- ! Monitoring for fault currents
- ! Use of diverse communications protocols
- ! Space-saving design
- ! Broad field of application – also with frequency converters



Product

Current/ voltage measurement in the SIMOCODE pro portfolio

Product – Positioning in the SIMOCODE pro V system



Product data overview

Article numbers for SIMOCODE pro current/voltage measuring module

Product data overview

	current/voltage measuring modules SIMOCODE pro V	
3UF7110-1AA01-0	0,3 A bis 4 A	through-hole transformer
3UF7111-1AA01-0	3 A bis 40 A	
3UF7112-1AA01-0	10 A bis 115 A	
3UF7113-1AA01-0	20 A bis 200 A	
3UF7113-1BA01-0	20 A bis 200 A	busbar connection
3UF7114-1BA01-0	63 A bis 630 A	

Thank you for your attention.



Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

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