

Overview



SIRIUS 3RS70 signal converters

More information

Homepage, see www.siemens.com/relays

Industry Mall, see www.siemens.com/product?3RS70

For the conversion tool, e.g. from 3RS17 to 3RS70, see www.siemens.com/sirius/conversion-tool

Signal converters perform the coupling function for analog signals on both the input side and the output side. They are indispensable when processing analog values with electronic controls. Under harsh industrial conditions in particular, it is often necessary to transmit analog signals over long distances. Electrical separation is then needed as a result of the different power supplies. The resistance of the wiring causes potential differences and losses which must be prevented.

Electromagnetic disturbance and overvoltages can affect the signals on the input side in particular or even destroy the analog modules. All terminals of the 3RS70 signal converters are safe up to a voltage of 30 V DC and protected against switching poles. Short-circuit protection is an especially important function for the outputs.

The devices are EMC-tested according to

- IEC 61000-6-4 (generic standard for emitted interference)
- IEC 61000-6-2 (generic standard for interference immunity)

The analog signals comply with

- IEC 60381-1/2

Article No. scheme

Product versions		Article number		
Signal converters		3RS70	<input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0 0	
Product function/type of input signal	Single-range converters, active	0 0	3-way separation, input 0 ... 10 V	
		0 2		3-way separation, input 0 ... 20 mA,
		0 3		3-way separation, input 4 ... 20 mA,
	Switchable multi-range converters, active	0 5		3-way separation, 3 standard signals can be switched 0 ... 10 V, 0/4 ... 20 mA
	Switchable universal converters, active	0 6		3-way separation, 16 signals can be switched
	Single-range converters, passive	2 0		2-way separation, 4 ... 20 mA
	Switchable multi-range converters, active	2 5	3-way separation, with manual/automatic switch and setting potentiometer	
Connection type	Screw terminals		1	
	Spring-type terminals (push-in)		2	
Type of output signal	0 ... 10 V		A	
	0 ... 20 mA		C	
	4 ... 20 mA		D	
	Loop power isolator 4 ... 20 mA		E	
	3 standard signals can be switched		F	
	4 frequencies can be switched		K	
Supply voltage	24 V AC/DC		E	
	None		T	
	24 ... 240 V AC/DC		W	
Example		3RS70 0 0 - 1 A E 0 0		

Note:

The Article No. scheme shows an overview of product versions for better understanding of the logic behind the article numbers.

For your orders, please use the article numbers quoted in the selection and ordering data.

Relays

Coupling Relays and Signal Converters/Interface Converters

SIRIUS 3RS70 signal converters

Benefits

- Narrow width
- Easy-to-set universal converters
- Converters with frequency output
- All ranges are fully calibrated
- Universal family of devices – the perfect solution for every application
- Integrated manual/automatic switch with a setpoint generator
- Outputs are short-circuit-proof
- Up to 30 V – protected against damage caused by wiring errors

Application

Signal converters are used in analog signal processing for

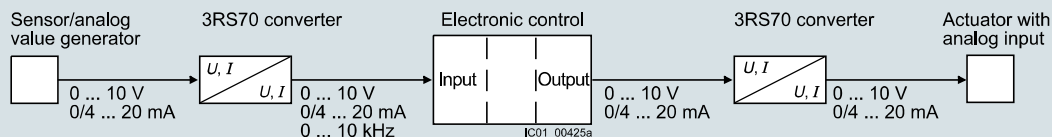
- Electrical separation
- Conversion of normalized and non-normalized signals
- Amplification and impedance adaptation
- Conversion to a frequency for processing by a digital input
- Overvoltage and EMC protection
- Short-circuit protection of the outputs

3RS7025 manual/automatic converter

For special applications in which analog signals have to be simulated, or during plant commissioning when the actual process value is not yet available, the 3RS7025 devices feature an adjustable potentiometer for manual setpoint selection and a manual/automatic switch.

The potentiometer for the 3RS7025 devices is used to simulate analog output signals when the changeover switch is set to "Manual" and the control supply voltage is applied, without the need for an analog input signal. The scale ranges from 0 ... 100%.

Example: When it is set for an output of 4 ... 20 mA, the left stop on the potentiometer represents an output current of 4 mA and the right stop represents an output current of 20 mA. In the "Auto" switch position, the output signal follows the input signal proportionally regardless of the potentiometer setting.



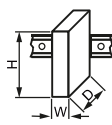
Application example of analog signal processing

Technical specifications

More information

Technical specifications, see
<https://support.industry.siemens.com/cs/ww/en/ps/16691/td>
 Operating instructions, see
<https://support.industry.siemens.com/cs/ww/en/view/109475738>

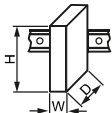
Circuit diagrams, see
<https://support.industry.siemens.com/cs/ww/en/view/109475738>

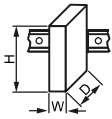
Article number	3RS7000-.AE00	3RS7002-.AE00, 3RS7003-.AE00	3RS7000-.CE00, 3RS7000-.DE00	3RS7002-.CE00, 3RS7002-.DE00, 3RS7003-.CE00, 3RS7003-.DE00	3RS7020-.ET00
Product designation Product version	Single-range converters, active				Single-range converters, passive
General data:					
Width x height x depth		mm	6.2 × 93 × 72.5		6.2 × 93 × 71
Ambient temperature		°C	-25 ... +60		
• During operation		°C	-40 ... +80		
• During storage					
Relative humidity during operation		%	10 ... 95		
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value		V	50		
Active power input		W	0.29		--
Degree of protection			IP20		
Input:					
Input voltage		V	30		
• Max.					
Input impedance		Ω	--	100	--
• Of current input, maximum		kΩ	330	--	330
• Of voltage input, minimum				100	--
Output:					
Load		Ω	--	500	1 000
• Maximum at current output		kΩ	2	--	--
• Minimum at voltage output					
Relative measuring accuracy		%	0.1		
Short-circuit-proof			Yes		No



Relays

Coupling Relays and Signal Converters/Interface Converters

SIRIUS 3RS70 signal converters

Article number		3RS7005- .FE00	3RS7005- .KE00	3RS7005- .FW00	3RS7005- .KW00	3RS7025- .FE00	3RS7025- .FW00
Product designation Product version		Switchable multi-range converters, active				Switchable multi-range converters, active, with manual/automatic switch and setting potentiometer	
General data:							
Width x height x depth	 mm	6.2 × 93 × 72.5		17.5 × 93 × 72.5		17.5 × 93 × 75	
Ambient temperature							
• During operation	°C	-25 ... +60					
• During storage	°C	-40 ... +80					
Relative humidity during operation	%	10 ... 95					
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value	V	50		300		50	300
Active power input	W	0.29		0.5	0.34	0.5	
Degree of protection		IP20					
Input:							
Input voltage							
• Max.	V	30					
Input impedance							
• Of current input, maximum	Ω	100					
• Of voltage input, minimum	kΩ	330					
Output:							
Load							
• Maximum at current output	Ω	500	--	500	--	500	
• Minimum at voltage output	kΩ	2	--	2	--	2	
Relative measuring accuracy	%	0.1					
Short-circuit-proof		Yes					

Article number		3RS7006-FE00	3RS7006-FW00
Product designation Product version		Switchable universal converters, active	
General data:			
Width x height x depth		mm	17.5 × 93 × 72.5
Ambient temperature		°C	-25 ... +60
• During operation		°C	-40 ... +80
• During storage			
Relative humidity during operation		%	10 ... 95
Insulation voltage for overvoltage category III to IEC 60664 for pollution degree 3 rated value		V	50
			300
Active power input		W	0.5
Degree of protection			IP20
Input:			
Input voltage		V	30
• Max.			
Input impedance		Ω	100
• Of current input, maximum		kΩ	330
• Of voltage input, minimum			
Output:			
Load		Ω	500
• Maximum at current output		kΩ	2
• Minimum at voltage output			
Relative measuring accuracy		%	0.1
Short-circuit-proof			Yes

Article number		3RS70..-1....	3RS70..-2....
Type of electrical connection		 Screw terminals	 Spring-type terminals (push-in)
Type of connectable conductor cross-sections			
• Solid		1x (0.25 ... 2.5 mm ²)	1x (0.25 ... 2.5 mm ²)
• Finely stranded			
- Without end sleeves		--	1x (0.25 ... 2.5 mm ²)
- With end sleeves		1x (0.25 ... 1.5 mm ²)	1x (0.25 ... 1.5 mm ²)
• Solid for AWG cables		1x (20 ... 14)	1x (20 ... 14)

Relays

Coupling Relays and Signal Converters/Interface Converters

SIRIUS 3RS70 signal converters





Selection and ordering data

Signal type	Supply voltage		Width	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
	At the input	At the output							
Single-range converters									
<i>Passive</i>									
Type of electrical isolation, 2-way									
4 ... 20 mA	4 ... 20 mA	--	6.2	2	3RS7020-□ET00		1	1 unit	41H
Single-range converters									
<i>Active</i>									
Type of electrical isolation, 3-way									
0 ... 10 V	0 ... 10 V	24 V AC/DC	6.2	2	3RS7000-□AE00		1	1 unit	41H
0 ... 20 mA	0 ... 10 V	24 V AC/DC	6.2	2	3RS7002-□AE00		1	1 unit	41H
4 ... 20 mA	0 ... 10 V	24 V AC/DC	6.2	2	3RS7003-□AE00		1	1 unit	41H
0 ... 10 V	0 ... 20 mA	24 V AC/DC	6.2	2	3RS7000-□CE00		1	1 unit	41H
0 ... 20 mA	0 ... 20 mA	24 V AC/DC	6.2	2	3RS7002-□CE00		1	1 unit	41H
4 ... 20 mA	0 ... 20 mA	24 V AC/DC	6.2	2	3RS7003-□CE00		1	1 unit	41H
0 ... 10 V	4 ... 20 mA	24 V AC/DC	6.2	2	3RS7000-□DE00		1	1 unit	41H
0 ... 20 mA	4 ... 20 mA	24 V AC/DC	6.2	2	3RS7002-□DE00		1	1 unit	41H
4 ... 20 mA	4 ... 20 mA	24 V AC/DC	6.2	2	3RS7003-□DE00		1	1 unit	41H
Multi-range converters									
<i>Active, switchable</i>									
Type of electrical isolation, 3-way									
0 ... 10 V,	0 ... 10 V,	24 V AC/DC	6.2	2	3RS7005-□FE00		1	1 unit	41H
0 ... 20 mA,	0 ... 20 mA,	24 ... 240 V AC/DC	17.5	2	3RS7005-□FW00		1	1 unit	41H
4 ... 20 mA	4 ... 20 mA								
	0 ... 50 Hz	24 V AC/DC	6.2	2	3RS7005-□KE00		1	1 unit	41H
	0 ... 100 Hz	24 ... 240 V AC/DC	17.5	2	3RS7005-□KW00		1	1 unit	41H
	0 ... 1 kHz								
	0 ... 10 kHz								
Multi-range converters									
<i>Active, with manual/automatic switch and setting potentiometer</i>									
Type of electrical isolation, 3-way									
0 ... 10 V,	0 ... 10 V,	24 V AC/DC	17.5	2	3RS7025-□FE00		1	1 unit	41H
0 ... 20 mA,	0 ... 20 mA,	24 ... 240 V AC/DC	17.5	2	3RS7025-□FW00		1	1 unit	41H
4 ... 20 mA	4 ... 20 mA								
Universal converters									
<i>Active, switchable</i>									
Type of electrical isolation, 3-way									
0 ... 60 mV,	0 ... 10 V,	24 V AC/DC	17.5	2	3RS7006-□FE00		1	1 unit	41H
0 ... 100 mV,	0 ... 20 mA,	24 ... 240 V AC/DC	17.5	2	3RS7006-□FW00		1	1 unit	41H
0 ... 300 mV,	4 ... 20 mA								
0 ... 500 mV,									
0 ... 1 V,									
0 ... 2 V,									
0 ... 5 V,									
0 ... 10 V,									
0 ... 20 V,									
2 ... 10 V,									
0 ... 5 mA,									
0 ... 10 mA,									
0 ... 20 mA,									
4 ... 20 mA,									
-5 ... +5 mA,									
-20 ... +20 mA									
Type of electrical connection									
<ul style="list-style-type: none"> • Screw terminals • Spring-type terminals (push-in) 									



1
2

Accessories

Version	SD	Article No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Galvanic isolation plates						
		Galvanic isolation plates For electrical separation of different potentials when devices of different types are installed side by side				
3RQ3900-0A	2	3RQ3900-0A		1	10 units	41H
Connecting combs						
		Connecting combs For linking the same potentials, current carrying capacity for infeed max. 6 A				
3RQ3901-0B	2	3RQ3901-0A		1	10 units	41H
	2	3RQ3901-0B		1	10 units	41H
	2	3RQ3901-0C		1	10 units	41H
	2	3RQ3901-0D		1	10 units	41H
Clip-on labels						
		Clip-on labels For terminal marking and equipment labeling, white				
	2	3RQ3902-0A		100	2 000 units	41H
Tools for opening spring-type terminals						
		Screwdrivers For all SIRIUS devices with spring-type terminals; 3.0 mm x 0.5 mm; length approx. 200 mm, titanium gray/black, partially insulated				
3RA2908-1A	2	Spring-type terminals (push-in) 3RA2908-1A		1	1 unit	41B

¹⁾ PC labeling system for individual inscription of unit labeling plates available from: Conta-Clip Verbindungstechnik GmbH, see page 16/16.

Relays

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Notes