



Reyrolle Protection Devices

7SR10 Argus Overcurrent Relay

Section 1: Introduction

This manual is applicable to the following relay:

7SR10 Overcurrent Relay

General Safety Precautions



Current Transformer Circuits

The secondary circuit of a live CT must not be open circuited. Non-observance of this precaution can result in injury to personnel or damage to equipment.

1.2 External Resistors



Where external resistors are connected to the relay circuitry, these may present a danger of electric shock or burns, if touched.

1.3 Description

The 7SR10 Overcurrent relay is developed by using the latest generation of hardware technology and is available in multiple variants depending on power supply, binary input/output configuration, voltage input, and data communication facility. 7SR10 is a member of Siemens Reyrolle[®] protection devices Argus product family.

The 7SR10 overcurrent relay consists of non-directional functions and with additional voltage inputs providing directional functions (based on the ordering option).

The 7SR10 Overcurrent relay is housed in a 4U high, size 4 non draw-out case and these relays provide protection, monitoring, instrumentation, and metering with integrated input and output logic, data logging and fault reports.

Communication access to the relay functionality is via a front USB port for local PC connection or rear electrical RS485 (optional) port for remote connection.

The conformal coating on device electronic modules increases protection against harmful environmental influences such as extreme moisture, corrosive gases and aggressive dust.

NOTE:

The **relay password** which is further referenced in this user manual is only a **Confirmation ID**. Refer to section 6.9 Confirmation ID (Password Feature) for more information.

7SR10 Directional Overcurrent Relay

Product Description Order Number																						
	1	2	2 3	4	5	5 6	7	7 –	8	9	10	11	12	-	13	14	15	16	17	18	19	20
7SR10 Argus	7	5	6 R	1	0) ()																
	-							1			1	1	1	1	Ι	1	Ι	1	Ι	Ι	Ι	1
Directional Overcurrent Relay (Argus)		_			_			1			1	1	1	1	Ι	1	Ι	1	Ι	Ι	Ι	Ι
Case, I/O and Fascia												Ι	1	Ι	1	Ι	1	Ι				
Size 4 moulded case, 4 CT, 3 VT, 9 binary inputs, 6 binary outputs,10 LEDs 4												Ι	1	Ι	1	Ι	Ι	Ι	Ι			
												1	Ι	Ι	Ι	1	Ι	1				
Measuring Input I												Ι	Ι	Ι	Ι	Ι	Ι	Ι				
1 A/5 A, 40 V to 160 V, 50 Hz/60 Hz ¹) 3												1	Ι	Ι	Ι	Ι	Ι	I				
1 A/5 A, with SEF input, 40 V to 160 V, 50 Hz/60 Hz ²)											1	Ι	1	Ι	Ι	Ι	Ι					
1 A/5 A, 50 Hz/6 0Hz with SEF input, 63.5 V/110 V ³) 5											1	T	1	T	1	T	1					
												1	1	1								
Auxiliary Voltage										1	1	İ				1		1	I	1	I	1
AC 60 V to AC 240 V/DC 60 V to DC 240 V, binar	y inj	pu	t thres	nold	A	C 44 V	/DC	; 44	V	L	i	İ		-	·	1		i.				
AC 60 V to AC 240 V/DC 60 V to DC 240 V, binary input threshold AC 88 V/DC 88 V K I I											İ	i I	i	İ	I	İ	1					
DC 24 V to DC 60 V, binary input threshold DC 19 V J I I I											Ì	İ	Ì	İ	Ì	1	Ì	İ				
											I		I	I	I	1	I	Ì				
I I I I Protective Cover I I I I												T		I	1	I	1	I	Ī			
Standard version – no cover													1	1	I	1	I	1				
Plastic cover with 1 push button for test/reset											Ι	1	I	I	I	1	I	I				
											I	1	1	1	1	1	1	1				
Communication											1	Ι	1	I	1	I	I					
Front port: USB and rear port: RS-485 supporting IEC 60870-5-103 or Modbus RTU or DNP 3.0 2											Ι		Ι	1	Ι	1	Ι					
												Ι	Ι	Ι		Ι	Ι	Ι	Ι			
Front Fascia												1	Ι		Ι	Ι	Ι	Ι				
Standard version – with breaker control push buttons 2											2	Ι	Ι		Ι	Ι	Ι	Ι				
														Ι		Τ	1	I	Ι			
Protection and Supervision Function Packages											С	Ι		Ι	Ι	Ι	Ι					
Standard version – included in all models													1	1	I	I						
27 Undervoltage protection – phase																						
32 Power protection																				I	Ι	I I
32S Sensitive power protection 2)																				Ι	Ι	I I
37 Undercurrent protection – phase																				I	Ι	I I
37G Undercurrent earth fault protection - measure	_{ed} 1	I)															Τ			I –	I –	I I
37SEF Undercurrent sensitive earth fault protection	on –	m	easure	ed 2))												Ι			1	1	1
46BC Broken conductor protection													Ι		1		1	1				
46NPS Negative sequence overcurrent protection																I	Ι	I I				
47NPS Negative sequence overvoltage protection																1	1	Ι				
49 Thermal overload protection																1	1	I				
50 Instantaneous overcurrent – phase															1	Ι	Ι	Ι				
50AFD Arc flash detection 4)												Ι			Ι	Ι	Ι					
50BF Circuit-breaker failure protection – 3-pole												Ι	Ι		1	Ι	Ι	Ι				
50G Instantaneous earth fault – measured ¹⁾																I –	1	I.				
50GLC Line check earth fault – measured ⁵⁾												Ι	Ι		1	Ι	Ι	Ι				
50LC Line check ⁵⁾																1		1				
50N Instantaneous earth fault – calculated													1		1	1		1				
50SEF Instantaneous sensitive earth fault – measured ²⁾															1		1					
50SEFLC Line check sensitive earth fault – measured ⁵⁾												1		1			Ι					
51 Time delayed overcurrent – phase													1		1	1	I	1				
51c Cold load overcurrent – phase													1		1	1		1				
51G Time delayed earth fault - measured ¹⁾															Ι	Ι	Ι	Ι				
51N Time delayed earth fault - calculated																						1

¹⁾ 4CT is configured as 3PF + EF

²⁾ 4CT is configured as 3PF + SEF

CEI 0-16:2012 specification. Refer to setting range for 7SR1004-5-2CAO for 50SEF and 50SEFLC functions. 811_THD function is not available.

⁴⁾ Refer 7XG31XX documents for Arc Fault Interface Module and sensor ordering information.

⁵⁾ Not available on 79 Auto-reclose variant.

 $^{^{3)}}$ 4CT is configured as 3PF+SEF and this hardware supports Directional Earth fault V₀/I₀ Phase angle measurement function as per

Product Description Order Numb	er							
51SEF Time delayed sensitive earth fault – measured ²⁾								
51V Voltage dependent overcurrent – phase					Ι	Ι	Ι	Ι
55 Power factor						Ι	Ι	Ι
59 Overvoltage protection – phase					Ι	Ι	Ι	Ι
59N Neutral voltage displacement						Ι	Ι	Ι
60CTS CT supervision		Ι				Ι	Ι	Ι
60VTS VT supervision						Ι	Ι	Ι
64H Restricted earth fault protection - high-impedance		Ι			I	Ι	Ι	Ι
67 Directional overcurrent – phase						Ι	Ι	Ι
67G Directional earth fault – measured		Ι			I	Ι	Ι	Ι
67N Directional earth fault – calculated						Ι	Ι	Ι
67SEF Directional sensitive earth fault – measured					I	Ι	Ι	Ι
67SEF Directional sensitive earth fault – measured $3V_0/I_0-\phi$ (Resonant and Isolated Networks) ³)						Ι	Ι	Ι
74CCS Close-circuit supervision						Ι	Ι	Ι
74T Trip-circuit supervision						Ι	Ι	Ι
81 Frequency protection – "f>" or "f<"						Ι	Ι	Ι
81HBL2 2 nd Inrush current detection ⁶⁾						Ι	Ι	Ι
81I_THD Total harmonic distortion supervision		Ι				Ι	Ι	Ι
86 Hand reset contacts						Ι	Ι	Ι
Programmable logic								
		Ι						Ι
Standard Version – Plus		Ι				Ι	Ι	Ι
79 Automatic reclosing		D				Ι	Ι	Ι
						Ι	Ι	Ι
Conformal Coat								
Standard version - No conformal coating on PCBA					I	Ι	Ι	
Conformal coating on PCBA								

1.5 Functional Diagram



⁷⁹ Optional Version D software









Fig 4. Terminal/Wiring Diagram of 7SR10 Directional Overcurrent Relay

NOTE:

For DC variants, connect the positive and negative terminals to X3: L and X3: N terminals respectively.