

Distance Protection

SIPROTEC 7SA631, 7SA632

Protection
SIPROTEC 4

Product description	Variants	Order No.						
Distance protection		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 7 S A 6 3 <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>						
Operator panel with	<u>Housing, number of LEDs</u>							
- backlit graphic display for single-line diagramm	Housing width 1/2 19", 14 LEDs	1						
- control keys	Housing width 1/1 19", 14 LEDs	2						
- key-operated switches	<u>Measuring inputs (4xV, 4xI)</u>							
- function keys	$I_{ph} = 1 A^{4)}$, $I_e = 1 A^{4)}$ (min. = 0,05 A)	1						
- numerical keys	$I_{ph} = 1 A^{4)}$, $I_e = \text{sensitive}$ (min. = 0,003 A)	2						
- PC-interface	$I_{ph} = 5 A^{4)}$, $I_e = 5 A^{4)}$ (min. = 0,25 A)	5						
	$I_{ph} = 5 A^{4)}$, $I_e = \text{sensitive}$ (min. = 0,003 A)	6						
	<u>Auxiliary voltage (power supply, binary inputs)</u>							
	DC 24 V to 48 V, binary input threshold 19 V	2						
	DC 60 V to 125 V ¹⁾ , binary input threshold 19 V ²⁾	4						
	DC 110 V to 250 V ¹⁾ , AC 115 V to 230 V, binary input threshold 88 V ²⁾	5						
Binary / indication inputs	Signal / command outputs incl Life contact	Fast relays ³⁾	High Speed ⁴⁾ trip outputs	Power relays ⁵⁾	Flush-mounting housing / screw terminals	Flush-mounting housing / plug-in terminals	Surface-mounting housing / screw terminals	
for 7SA631								
13	5	12			■			A
13	5	12					■	E
13	5	12				■		J
13	4	8	5		■			M
13	4	8	5				■	N
13	4	8	5			■		P
20	9			4	■			B
20	9			4			■	F
20	9			4		■		K
for 7SA632								
21	13	12			■			A
21	13	12					■	E
21	13	12				■		J
21	12	8	5		■			M
21	12	8	5				■	P
21	12	8	5			■		R
29	21	12			■			B
29	21	12					■	F
29	21	12				■		K
29	20	8	5		■			N
29	20	8	5				■	O
29	20	8	5			■		S
33	12			8	■			C
33	12			8			■	G
33	12			8		■		L

- 1) Transition between the three auxiliary voltage ranges can be selected by means of jumpers.
- 2) The binary input thresholds are selectable in three steps by means of jumpers.
- 3) Fast relays are identified in the terminal connection diagram. The time advantage compared with signal/command outputs is approx. 3 ms, mainly for protection commands.
- 4) High-speed trip outputs are identified in the terminal connection diagram. The time advantage compared with Fast relays is approx. 5 ms.
- 5) Power relay for direct control of isolating switch actuator motors; each pair of contacts is mechanically interlocked to prevent simultaneous closure.
- 6) Rated current 1/5 A can be selected by means of jumpers.

Distance Protection

SIPROTEC 7SA61, 7SA63, 7SA64

Product description	Variants	Order No.
		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 Short code
Distance protection SIPROTEC 4		7 S A 6 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
(continued from previous pages)		↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑
<u>Region and operating language (language changeable)</u>		
Region GE, language German		A
Region World, language English		B
Region US, language US-english		C
Region FR, language French		D
Region World, language Spanish		E
Region World, language Italian		F
Region World, language Russian		G
Region World, language Polish		H
<u>Definition of region-specific presettings and function versions:</u>		
<u>Region GE:</u> preset f = 50 Hz and fault detector in km, no ANSI, no logarithmic inverse EF-characteristics		
<u>Region US:</u> preset f = 60 Hz and fault detector in miles, ANSI inverse characteristic only		
<u>Region World:</u> preset f = 50 Hz and fault locator in km		
<u>Region FR:</u> EF: no logarithmic inverse characteristic, with zero sequence power protection; weak infeed logic acc. to French specification.		
<u>Port B</u>		
Empty	0	
System port, IEC 60870-5-103 Protocol, RS232	1	
System port, IEC 60870-5-103 Protocol, RS485	2	
System port, IEC 60870-5-103 Protocol, optical 820 nm, ST-connector	3	
2 analog outputs, each 0...20 mA	7	
Further protocols see supplement L	9	
		L 0 <input type="checkbox"/>
		↑
		A
		B
		G
		H
		R
		S
<u>Port C and Port D</u>		
Port C : DIGSI / Modem, RS232, Port D : empty	1	
Port C : DIGSI / Modem, RS485, Port D : empty	2	
With Port D see supplement M	9	
<u>Port C</u>		
Port C : DIGSI / Modem, RS232		M <input type="checkbox"/> <input type="checkbox"/>
Port C : DIGSI / Modem, RS485		↑
		1
		2
<u>Port D</u> Protection interface:		
FO5: Optical 820 nm, 2 ST-connectors, line length up to 1,5 km via multimode FO cable for communication converter or direct FO connection ²⁾		↑
FO6: Optical 820 nm, 2 ST-connectors, line length up to 3,5 km via multimode FO cable for direct FO connection		A
Two analog outputs, each 0...20 mA		B
		K
FO17: Optical 1300 nm, LC-Duplex-plugs, line length up to 24 km via monomode FO cable for direct FO connection ³⁾		G
FO18: Optical 1300 nm, LC-Duplex-plugs, line length up to 60 km via monomode FO cable for direct FO connection ^{4) 5)}		H
FO19: Optical 1550 nm, LC-Duplex-plugs, line length up to 100 km via monomode FO cable for direct FO connection ^{3) 6)}		J
FO30: Optical 820 nm, 2 ST-connectors, line length up to 1,5 km via multimode FO cable for communication networks with IEEE C37.94 interface or direct FO connection ⁷⁾		S

(continued on next page)

1) Optical interface is not available with Surface-mounting housing. Please order the version with RS485 interface and a separate electric/optical converter.
2) Suitable communication converters 7XV5662 (optical to G703.1/X21 or optical to pilot wire) see chapter „Accessories communication“.
3) For Surface-mounting housing applications an internal fiber-optic module 820mm will be delivered in combination with an external repeater.
4) For Surface-mounting housing applications please order the relay with electrical ethernet interface and use a separate fiber-optic switch.
5) For distances less than 25km a set of optical attenuators 7XV5107-0AA00 must be installed to avoid saturation of the receiver element.
6) For distances less than 50km a set of optical attenuators 7XV5107-0AA00 must be installed to avoid saturation of the receiver element.
7) Only available in flush-mounting housing.

Distance Protection SIPROTEC 7SA61, 7SA63, 7SA64

Product description Variants Order No.

(continued from previous page)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 S A 6 □ □ □ - □ □ □ □ □ - □ □ □ □ □

Functions 1

Trip mode	Overload protection (ANSI 49)	BCD-coded fault locator output
3-pole		
3-pole		■
3-pole	■	
3-pole	■	■
1/3 pole		
1/3 pole		■
1/3 pole	■	
1/3 pole	■	■

Functions 2

Distance protection pickup (ANSI 21, 21N)	Power Swing detection (ANSI 68, 68T)	Parallel line compensation
I>		
V< / I>		
Z< (Polygon)		
Z< (Polygon), V< / I> / φ		
Z< (Polygon)	■	
Z< (Polygon), V< / I> / φ	■	
V< / I>		■ ²⁾
Z< (Polygon)		■ ²⁾
Z< (Polygon), V< / I> / φ		■ ²⁾
Z< (Polygon)	■	■ ²⁾
Z< (Polygon), V< / I> / φ	■	■ ²⁾

Functions 3

Auto-reclosure (ANSI 79)	Synchrocheck (ANSI 25)	Breaker failure protection (ANSI 50BF)	Over-/Undervoltage Over-/Underfrequency Protection (ANSI 27,59)
			■
		■	
		■	■
	■		
	■		■
	■		■
	■	■	■
■			
■			■
■		■	
■		■	■
■	■		
■	■		■
■	■	■	
■	■	■	■

Functions 4

Direction Earth-fault protection Earthed networks (ANSI 50N, 51N, 67N)	Earth-fault detection comp./isolated networks	Measured values, ext. Min. max. mean
		■
	■ ¹⁾	
	■ ¹⁾	■
■		
■		■
■	■ ¹⁾	
■	■ ¹⁾	■

↑ ↑ ↑
0
1
2
3
4
5
6
7

A
B
C
D
E
F
G
J
K
L
N
P

A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
R

0
1
2
3
4
5
6
7

Protection
SIPROTEC 4

----- Preferential types with special prices see next page -----

1) Only with Order No. Position 7 = 2 or 6.
2) Only with Order No. Position 7 = 1 or 5.

Distance Protection

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Protection
SIPROTEC 4

Product description

Variants

Order No.

Preferential types with special prices

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 S A 6 □ □ □ - □ □ □ □ □ □ □ □ □ □

Functions 1

trip, 3-pole	trip 1-or 3-pole	pick-up I>	pick-up V< / I>	Z< (quadrilateral) V< / I> / φ	power swing detection	parallel line compensation	auto-reclosure	synchro-check	breaker failure protection	voltage / frequency protection	directional earth fault protection for earthed	earth fault detection for compensated /	overload protection measured values, extended, min, max, mean					
Basic version														1	A	B	0	3
■		■								■				1	A	B	1	3
Medium voltage, cables														3	B	D	6	4
■		■	■						■	■	■	■ ¹⁾	■	3	B	D	7	4
Medium voltage, cables, with Z<-pickup														3	D	D	6	4
■		■	■	■					■	■	■	■ ¹⁾	■	3	D	D	7	4
Medium voltage, overhead lines														3	B	M	6	4
■		■	■				■		■	■	■	■ ¹⁾	■	3	B	M	7	4
Medium voltage, overhead lines, with Z<-pickup														3	D	M	6	4
■		■	■	■			■		■	■	■	■ ¹⁾	■	3	D	M	7	4
High voltage, cables														3	G	H	4	4
■		■	■	■	■			■	■	■	■		■	3	G	H	5	4
High voltage, overhead lines														7	P	R	4	5
■	■	■	■	■	■	■ ²⁾	■	■	■	■	■		■	7	P	R	5	5
■	■	■	■	■	■	■ ²⁾	■	■	■	■	■		■	7	P	R	5	5



1) Only with Order No. position 7 of Order No. = 2 or 6.
 2) Only with Order No. position 7 of Order No. = 1 or 5.
 3) Prices are also valid for option 13; position = 0 without BCD-output fault locator.
 4) Prices are also valid for option 13; position = 2 without BCD-output fault locator.
 5) Prices are also valid for option 13; position = 6 without BCD-output fault locator.