

SIPROTEC 7SD502 Pilot-Wire Line Differential Protection Relay



Fig. 7/64
SIPROTEC 7SD502
pilot-wire differential protection relay

Description

The SIPROTEC 7SD502 line differential protection is a fast and selective differential protection unit for cables and overhead lines. It is the successor of the 7SD22 and 7SD76 static differential protection. Combination with 7SD76 or 7SD22 is not possible, i.e. 7SD502s must be used at both ends of the line. The connection between 7SD502s is made via a twisted pair of pilot wires, i.e. existing pilot-wire connections can be used.

The maximum pilot-wire loop resistance is 2000 Ω , so that distances up to 25 km can be spanned.

The unit can be connected directly to the secondary 1 A or 5 A CT current outputs. A summation CT integrated in the housing of the unit transforms a 20 mA current output, which is the comparison quantity. The overload protection and the two-stage definite-time/dependent time overcurrent protection as backup-function are based on the summated current.

As an option the relay features a pilot-wire supervision and intertrip facility. Differential protection can be combined with an overcurrent release. The 2nd harmonic restraint remains stable due to inrush of transformers in the protection zone. Minimum current transformer requirements due to the integrated saturation detector.

The serial PC port (interface) and the numerical keys for convenient relay setting are located on the front part of the unit as are the 8 LEDs serving for local indication and the switch for crossing the pilot-wire connection.

Function overview

Differential protection relay for overhead lines and cables:

- Current differential protection with integrated summation current transformer. Output current under nominal conditions 20 mA
- Pilot-wire monitoring function (option)
- Intertrip facility (option)
- Two-stage definite-time overcurrent protection as backup function based on the summated current.
- Overload protection based on the summated current
- Applicable for 3 terminal lines with 2 relays at each line end

Features

- 100 % protection against all types of short-circuit within the protection zone
- High sensitivity to single-phase faults below rated current
- Fully digital acquisition of the summated current behind the summation current transformer and of currents via the pair of pilot wires
- Loop resistance and capacitor measurement included. Automatic adaptation of the differential setpoint to the loop resistance
- Software-controlled adaptation of the sensitivity of the differential protection to different wire resistances. This makes pilot-wire trimming unnecessary

Monitoring functions

- Integrated pilot-wire monitoring. With digital filters, aging problems are avoided
- Operational measured values
 I_{M1} , I_{M2} , I_{Diff} , I_{Restr}
- Self-supervision of the relay
- Event logging
- Fault logging
- Oscillographic fault recording (differential current included)

Communication interfaces

- System interface
 - IEC 60870-5-103 protocol or DIGSI 3 for remote access

Selection and ordering data

Description	Order No.
<i>7SD502 numerical pilot-wire line differential protection relay</i>	<i>7SD502</i> □-□□□A□1-0□A0
<i>Rated current at 50 to 60 Hz</i>	
1 A	1
5 A	5
<i>Rated auxiliary voltage</i>	
24, 48 V DC	2
60, 110, 125 V DC	4
220, 250 V DC	5
<i>Unit version</i>	
For panel surface mounting	B
For panel flush and cubicle mounting	C
For panel flush and cubicle mounting (without glass cover)	E
<i>Integrated pilot-wire monitoring / c. b. intertripping</i>	
With	1
<i>Serial system interface</i>	
Without	A
With integrated optical 820 nm module	C

Accessories

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DIGSI 4

Software for configuration and operation of Siemens protection units running under MS Windows (version Windows 95 and higher) device templates, Comtrade Viewer, electronic manual included as well as "Getting started" manual on paper, connecting cables (copper)

Basis

Full version with license for 10 computers, on CD-ROM (authorization by serial number)

7XS5400-0AA00

Demo

Demo version on CD-ROM

7XS5401-0AA00

Professional

Complete version:

DIGSI 4 Basis and additionally SIGRA (fault record analysis), CFC Editor (logic editor), Display Editor (editor for default and control displays) and DIGSI 4 Remote (remote operation)

7XS5402-0AA00

SIGRA

(generally contained in DIGSI Professional, but can be ordered additionally)

Software for graphic visualization, analysis and evaluation of fault records.

Can also be used for fault records of devices of other manufacturers (Comtrade format). Running under MS Windows 95/98/ME/NT/2000/XP Professional Edition.

Incl. templates, electronic manual with license for 10 PCs.

Authorization by serial number. On CD-ROM.

7XS5410-0AA00

Connecting cable

Cable between PC/notebook (9-pin connector) and protection unit (25-pin connector)

7XV5100-2

or

Cable between PC/notebook (9-pin connector) and protection unit (9-pin connector)

7XV5100-4

Adaptor 9-/25-pin for 7XV5100-4 cable for protection unit with 25-pin connector

(cable 7XV5100-4 and adaptor contained in DIGSI 4)

7XV5100-8H

Manual for 7SD502

English

C53000-G1176-C95-4