

## SIPROTEC 7SA511 Distance Protection Relay



Fig. 6/90  
SIPROTEC 7SA511 distance protection relay

### Description

The 7SA511 distance protection relay provides fast, reliable and selective clearance of faults on overhead lines and cables being fed from one or multiple points. The network can be radial, ring or meshed.

The system star point may be isolated, resonance-earthed (e.g. Peterson coil), solidly earthed or low-resistance earthed. The relay incorporates all functions normally required for line protection and can also be applied as a time-graded backup protection for all types of differential protection schemes.

The 7SA511 can be incorporated in both conventional switchgear systems and SICAM substation control and protection systems. The serial system interface protocol used conforms to IEC 60870-5-103 and can also be connected to the fault monitoring computer DAKON or a star coupler/modem central or remote operation system.

### Function overview

#### Protection functions

- Distance protection for all types of faults
- Fault locator
- Earth-fault detection in isolated/resonant-earthed networks
- Sensitive earth-fault protection for high-resistance faults in earthed networks
- Backup overcurrent-time protection
- Auto-reclosure
- Synchro-check
- Universal teleprotection interface
- Overload protection
- Power swing blocking/tripping
- Switch-onto-fault protection

#### Features

- Adaptive measurement algorithms
- Dynamically unlimited directional sensitivity
- Compensation for the influence of a parallel line in case of earth faults
- Non-volatile storage of events

#### Monitoring functions

- Self-supervision of the relay
- Measured-value supervision
- Event logging
- Fault logging
- Oscillographic fault recording
- Circuit-breaker operation statistics

#### Communication interfaces

- Front interface for connecting a PC
- System interface for connecting to a control system via IEC 60870-5-103 or DIN 19244 protocol

#### Front design

- User-friendly local operation
- LEDs for local alarm
- PC front port for convenient relay setting

#### Hardware

- Analog inputs:
  - 4 current transformers
  - 7 voltage transformers
- Binary inputs: 10
- Binary outputs: 16

## Selection and ordering data

Description	Order No.
<b>7SA511 distance protection relay</b>	<b>7SA511□-□□A□□-□□□□</b>
<i>Rated current at 50 / 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 mounting/cubicle mounting	C
For panel flush mounting/cubicle mounting without glass cover	E
<i>Language</i>	
Operating language German	6
Operating language English	7
<i>Fault detection</i>	
With overcurrent ( $I >>$ )	1
With impedance ( $Z <$ )/overcurrent ( $I >>$ )/voltage-dependent overcurrent ( $V <$ , $I >$ ), settable option	2
With voltage-dependent overcurrent ( $V <$ , $I >$ )/overcurrent ( $I >>$ ), settable option	3
<i>Options A</i>	
Without wattmetric earth-fault detection      without FLPC	0
With wattmetric earth-fault detection      without FLPC	1
Without wattmetric earth-fault detection      with FLPC	2
<i>Serial system interface IEC 60870-5-103 or DIN 19244</i>	
Without	A
Electrically isolated, V.24/RS232C	B
Integrated fiber-optic interface (820 nm)	C
<i>Options B</i>	
Without AR      Without parameter changeover facility, without synchro-check	A
With AR, 3-pole      Without parameter changeover facility, with synchro-check	B
With AR, 1 and 3-pole      Without parameter changeover facility, with synchro-check	C
Without AR      With parameter changeover facility, with synchro-check	E
With AR, 3-pole      With parameter changeover facility, with synchro-check	F
With AR, 1 and 3-pole      With parameter changeover facility, with synchro-check	G
<i>Options C</i>	
Without power swing      Without earth-fault protection for earthed networks	0
With power swing <sup>1)</sup> Without earth-fault protection for earthed networks	1
Without power swing      With earth-fault protection for earthed networks	2
With power swing <sup>1)</sup> With earth-fault protection for earthed networks	3

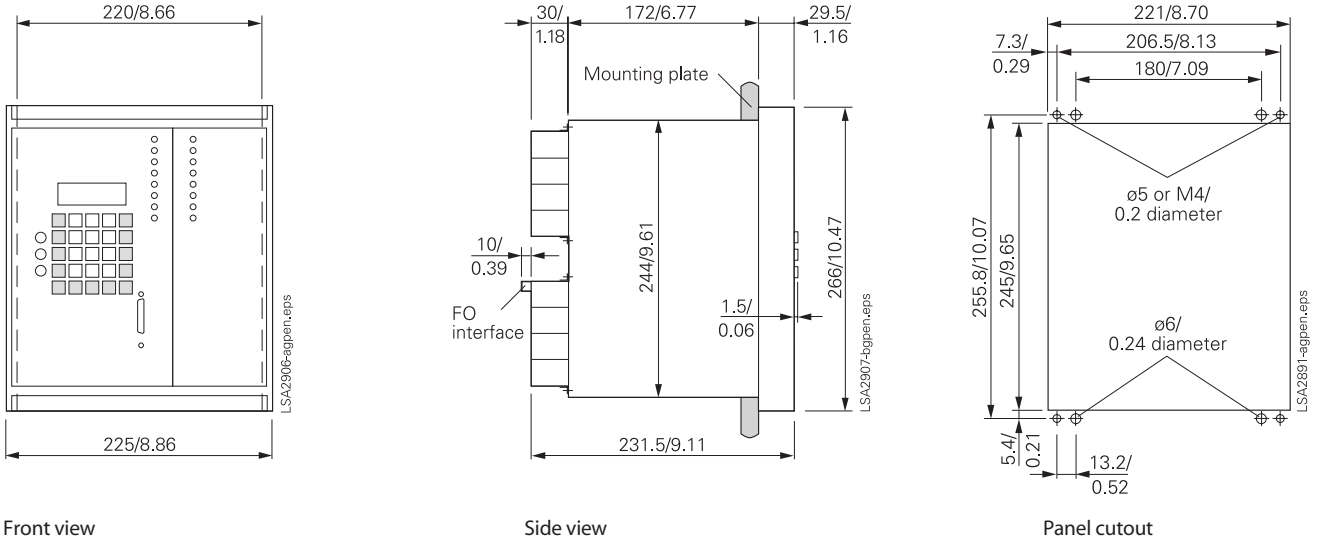
FLPC – Fault location with parallel line mutual compensation  
AR – Auto-reclose

1) Only available with impedance starting ( $Z <$ ).  
Mark 2 in the 12<sup>th</sup> position of the Order No.

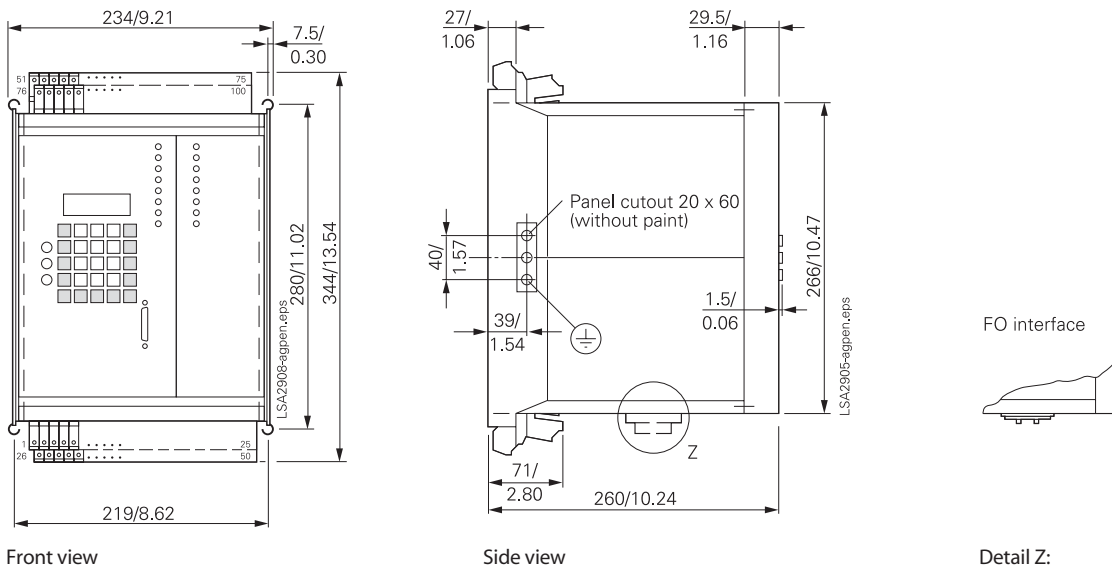
## Accessories

Description	Order No.
<p><b>DIGSI 4</b></p> <p>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)</p> <p>Basis</p> <p>Full version with license for 10 computers, on CD-ROM (authorization by serial number)</p>	7XS5400-0AA00
<p>Demo</p> <p>Demo version on CD-ROM</p>	7XS5401-0AA00
<p>Professional</p> <p>Complete version:</p> <p>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)</p>	7XS5402-0AA00
<p><b>SIGRA</b></p> <p>(generally contained in DIGSI Professional, but can be ordered additionally)</p> <p>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. Incl. templates, electronic manual with license for 10 PCs. Authorization by serial number. On CD-ROM.</p>	7XS5410-0AA00
<p><b>Connecting cable (copper)</b></p> <p>Cable between PC/notebook/ (9-pin connector) and protection unit (25-pin connector)</p> <p>or</p> <p>Cable between PC/notebook (9-pin connector) and protection unit (9-pin connector)</p> <p>Adaptor 9-/25-pin for 7XV5100-4 cable for protec. unit w. 25-pin connector (cable 7XV5100-4 and adaptor contained in DIGSI 4)</p>	7XV5100-2 7XV5100-4 7XV5100-8H
<p><b>Manual for 7SA511</b></p> <p>English</p>	C53000-G1176-C98

Dimension drawings for SIPROTEC 3  
1/2 x 19" housing



**Fig. 16/31**  
1/2 x 19" housing  
for panel flush mounting/cubicle mounting



**Fig. 16/32**  
1/2 x 19" housing  
for panel surface mounting