

# Distance Protection

## SIPROTEC 7SA86

### Distance Protection, 3-pole tripping – 7SA86

Housing: expandable, 1/3 x 19" to 2/1 x 19"

#### Base function with hardware standard variant <sup>1)</sup>

- B1: 1/3, 7 BI, 14 BO (5S, 1 Life contact, 8F), 4CT, 4VT
- B2: 1/3, 11 BI, 9 BO (2S, 1 Life contact, 6F), 4CT, 4VT
- B3: 1/2, 13 BI, 21BO (12S, 1 Life contact, 8F), 4CT, 4VT
- B4: 1/2, 19 BI, 30 BO (21S, 1 Life contact, 8F), 4CT, 4VT
- B5: 1/2, 21 BI, 17 BO (6S, 1 Life contact, 6F, 4P), 4CT, 4VT
- B6: 1/2, 15 BI, 18 BO (5S, 1 Life contact, 8F, 4HS), 4CT, 4VT
- B7: 1/2, 15 BI, 20 BO (5S, 1 Life contact, 14F), 8CT, 8VT
- B8: 2/3, 31 BI, 46 BO (37S, 1 Life contact, 8F), 4CT, 4VT
- B9: 2/3, 31 BI, 25 BO (10S, 1 Life contact, 6F, 8P), 4CT, 4VT
- B10: 2/3, 27 BI, 34 BO (21S, 1 Life contact, 8F, 4HS), 4CT, 4VT
- B11: 2/3, 27 BI, 36 BO (21S, 1 Life contact, 14F), 8CT, 8VT
- B12: 5/6, 27 BI, 33 BO (8S, 1 Life contact, 16F, 8HS), 8CT, 8VT

#### Application templates/ Function points <sup>2)</sup>

- Basic (0 function points)
- DIS, comp./isol. starpoint, with AR (125 function points)
- DIS overhead line, solid earthed starpoint (225 function points)
- DIS Mho, overhead line, solid earthed starpoint (225 function points)
- DIS overhead line, solid earthed starp., 1.5 CB (375 function points)
- DIS overhead line, solid earth. starp., 1.5 CB (375 function points)
- (The application templates for 1.5 CB applications require 8CTs + 8VTs, e.g. standard variant Type 7, 11 or 12)

#### Warranty extension

- Price per extra year of warranty

#### Communication

- Integrated Ethernet interface RJ45 for DIGSI
- Integrated Ethernet interface RJ45 for DIGSI and IEC 61850
- SIPROTEC 5 Plug-In Modules

#### Display, Housing, Key switch, LEDs etc.

- General price relevant options

1) Abbreviations:

Housing width in 19" fragments, with small display, with 16 LEDs

BI: Binary inputs

BO: Binary outputs

S: Standard relays, F: Fast relays

HS: High-speed relays, P: Power relays.

2) Available function scope acc. to catalog or function points calculator in the order configurator.

# General Ordering Options for Complete Devices

## SIPROTEC 5 General

### General ordering options for complete devices - General

#### Display type

Without display and without keypad  
Small display  
Large display

#### Key switch

Without  
With

#### Number of LEDs

16  
32  
48  
64  
80

#### Housing type

Flush mounting  
Surface mounting  
Surface-mounting with detached operation panel and 2,5 m cable  
Surface-mounting with detached operation panel and 5,0 m cable

#### Expansion modules for further expansion of hardware standard variants <sup>1)</sup>

**IO201:** 4I, 8BI, 6 BO (6F)  
**IO202:** 4I, 4U, 8BI, 6 BO (6F)  
**IO203:** 8I, 4BI, 4 BO (4F)  
**IO204:** 10BI, 6 BO (4S, 2P)  
**IO205:** 12BI, 16 BO (16S)  
**IO206:** 6BI, 7 BO (7S)  
**IO207:** 16BI, 8BO (8S)  
**IO208:** 4I, 4U, 4BI, 11BO (3S, 8F)  
**IO209:** 8BI, 4BO (4HS)  
**IO211:** 8 BI, 8VT  
**IO214:** 4I, 4U, 2BI, 5BO (5F)  
**IO215:** 4I, 4U, 8BI, 6BO (6F) Special module for RC-divider with 10 V voltage inputs  
**IO230:** 48 BI  
**IO231:** 24 BI, 24 BA  
**CB202:** Communication board with ports M, N, P for plug-in modules  
**PB201:** Process bus (in preparation)  
**PS203:** Power supply for second row, contains connecting cable to 1st row

#### 1) Abbreviations:

Housing width in 19" fragments, with large display, with 16 LEDs

BI: Binary inputs

BO: Binary outputs

S: Standard relays, F: Fast relays.

## General ordering options for complete devices – General

### Extra function points

Basis  
Basis + 10 function points  
Basis + 20 function points  
Basis + 30 function points  
Basis + 40 function points  
Basis + 50 function points  
Basis + 75 function points  
Basis + 100 function points  
Basis + 125 function points  
Basis + 150 function points  
Basis + 175 function points  
Basis + 200 function points  
Basis + 225 function points  
Basis + 250 function points  
Basis + 275 function points  
Basis + 300 function points  
Basis + 325 function points  
Basis + 350 function points  
Basis + 375 function points  
Basis + 400 function points  
Basis + 425 function points  
Basis + 450 function points  
Basis + 475 function points  
Basis + 500 function points  
Basis + 600 function points  
Basis + 700 function points  
Basis + 800 function points  
Basis + 900 function points  
Basis + 1 000 function points  
Basis + 1 100 function points  
Basis + 1 200 function points  
Basis + 1 300 function points  
Basis + 1 400 function points

# SIPROTEC 5 - Arc Protection

Product description

Order No.

## Arc Protection

Arc Protection Plugin Module (ARC-CD-3FO)  
Point Sensor 3 m  
Point Sensor 4 m  
Point Sensor 5 m  
Point Sensor 10 m  
Point Sensor 15 m  
Point Sensor 20 m  
Point Sensor 35 m

(Short Product Code)

**P1Z1966**  
**P1X19**  
**P1X28**  
**P1X37**  
**P1X46**  
**P1X55**  
**P1X64**  
**P1X82**

# SIPROTEC 5 - Interfaces

Product description

Order No. <sup>1)</sup>

## Plug-in modules for System Interface

(Short Product Code)

### **USART-AB-1EL: 1 x electric**

1 x electrical RS485, applicable for serial protocols, e.g. IEC60870-5-103, DNP3, RTD-unit and 20 mA unit

**P1Z79**

### **USART-AC-2EL: 2 x electric**

2 x electrical RS485, applicable for serial protocols, e.g. IEC60870-5-103, DNP3, RTD-unit and 20 mA unit

**P1Z437**

### **USART-AD-1FO: 1 x opt. 1.5 km**

1 x optic serial, 820 nm, ST-connector, 1.5 km over 62,5/125 µm multimode - fiber applicable for IEC 60870-5-103 (extended), DNP 3 serial and Protection interface (Sync. HDLC, IEEE C37.94)

**P1Z62**

### **USART-AE-2FO: 2 x opt. 1.5 km**

2 x optic serial, 820 nm, ST-connector, 1.5 km over 62,5/125 µm multimode - fiber applicable for IEC 60870-5-103 (extended), DNP 3 serial and Protection interface (Sync. HDLC, IEEE C37.94)

**P1Z48**

### **ETH-BA-2EL: 2 x electrical Ethernet interfaces**

RJ45 plug, 100 Mbit/s integrated switch (for RSTP, PRP, HSR), applicable for IEC 61850, DNP3 TCP, IEC 60870-5-104 and IEEE C37.118 (Syncho-phasor)

**P1Z55**

### **ETH-BB-2FO: 2 x optical Ethernet interfaces**

LC-Duplex connector, 100 Mbit/s, integrated switch (for RSTP, PRP, HSR), applicable for IEC 61850, DNP3 TCP, IEC 60870-5-104 and IEEE C37.118 (Syncho-phasor)

**P1Z390**

## Plug-in module for various applications

### **ANAI-CA-4EL: 4x 20 mA**

ANAI-CA-4EL: 4 Analog inputs 20 mA, screw terminals

**P1Z1137**

1) The below-mentioned Ordering No. is applicable for a warranty period of 5 years. For extended warranty, please select the appropriate Ordering No. (Short product code) by using the online configurator.

**Plug-in modules for Protection Interface**Ordering No. <sup>5)</sup>  
(Short Product Code)

<b>USART-AF-1LDFO: 1 x opt. 24 km (single-mode) / 4 km (multimode)</b> 1 x optic serial, 1300 nm, LC duplex connector, 24 km over 9/125 µm singlemode – fiber, 4 km over 62,5/125 µm multimode - fiber applicable for Protection interface	<b>P1Z758</b>
<b>USART-AW-2LDFO: 2x opt. 24 km (single-mode) / 4 km (multimode)</b> 2 x optic serial, 1300 nm, LC duplex connector, 24 km over 9/125 µm singlemode – fiber, 4 km over 62,5/125 µm multimode - fiber applicable for Protection interface	<b>P1Z772</b>
<b>USART-AG-1LDFO: 1 x opt. 60 km</b> 1 x optic serial, 1300 nm, LC duplex connector, 60 km over 9/125 µm singlemode – fiber applicable for Protection interface	<b>P1Z468</b>
<b>USART-AU-2LDFO: 2 x opt. 60 km</b> 2 x optic serial, 1300 nm, LC duplex connector, 60 km over 9/125 µm singlemode – fiber applicable for Protection interface	<b>P1Z239</b>
<b>USART-AK-1LDFO: 1x opt. 100 km</b> 1 x optic serial, 1550 nm, LC duplex connector, 100 km over 9/125 µm singlemode – fiber applicable for Protection interface	<b>P1Z888</b>
<b>USART-AV-2LDFO: 2 x opt. 100 km</b> 2 x optic serial, 1550 nm, LC duplex connector, 100 km over 9/125 µm singlemode – fiber applicable for Protection interface	<b>P1Z741</b>
<b>USART-AH-1LDFO: 1x opt.,bidir.</b> 1 x optic serial, bidirectional via 1 common fiber, 1300 nm/1550 nm (Tx/Rx), LC simplex connector, 40 km over 9/125 µm singlemode – fiber <sup>1)</sup> applicable for Protection interface	<b>P1Z765</b>
<b>USART-AJ-1LDFO: 1x opt.,bidir.</b> 1 x optic serial, bidirectional via 1 common fiber, 1550 nm/1300 nm (Tx/Rx), LC simplex connector 40 km over 9/125 µm singlemode – fiber <sup>2)</sup> applicable for Protection interface	<b>P1Z1007</b>
<b>USART-AX-2LDFO: 2x opt.,bidir.</b> 2 x optic serial, bidirectional via 1 common fiber, 1300 nm/1550 nm (Tx/Rx), 2 x LC simplex connector, 40 km over 9/125 µm singlemode – fiber <sup>3)</sup> applicable for Protection interface	<b>P1Z802</b>
<b>USART-AY-2LDFO: 2x opt.,bidir.</b> 2 x optic serial, bidirectional via 1 common fiber, 1550 nm/1300 nm (Tx/Rx), 2x LC simplex connector, 40 km over 9/125 µm singlemode – fiber <sup>4)</sup> applicable for Protection interface	<b>P1Z789</b>

**Warranty extension**

price per extra year of warranty (applicable for each plug-in module)

- 1) USART-AH-1LDFO only in conjunction with USART-AJ-1LDFO or USART-AY-2LDFO at the remote end.
- 2) USART-AJ-1LDFO only in conjunction with USART-AH-1LDFO or USART-AX-2LDFO at the remote end.
- 3) USART-AX-2LDFO only in conjunction with USART-AJ-1LDFO or USART-AY-2LDFO at the remote end.
- 4) USART-AY-2LDFO only in conjunction with USART-AH-1LDFO or USART-AX-2LDFO at the remote end.
- 5) The below-mentioned Ordering No. is applicable for a warranty period of 5 years. For extended warranty, please select the appropriate Ordering No. (Short product code) by using the online configurator.