

# Transformer Protection

## SIPROTEC 7UT87

### Multiple Winding Transformer Differential Protection – 7UT87

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

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

Q1: 2/3, 15 BI, 22 BO (5S, 16F, 1 Life contact), 20CT, 4VT

Q2: 5/6, 27 BI, 38 BO (22S, 16F, 1 Life contact), 20CT, 4VT

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

Three Winding Basic (0 function points)

Three Winding Basic for 1,5 CB Application (50 function points)

Autotransformer with delta winding (30 function points)

Autotransformer with delta winding for 1,5 CB Application (30 function points)

Motor (Diff-protection) ( 50 function points)

Two Winding (Diff-Protection, voltage transformer) (175 function points)

Three Winding (Diff-Protection, SVS, EDS, distance protection) (150 function points)

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.
<b>Arc Protection</b>	(Short Product Code)
Arc Protection Plugin Module (ARC-CD-3FO)	<b>P1Z1966</b>
Point Sensor 3 m	<b>P1X19</b>
Point Sensor 4 m	<b>P1X28</b>
Point Sensor 5 m	<b>P1X37</b>
Point Sensor 10 m	<b>P1X46</b>
Point Sensor 15 m	<b>P1X55</b>
Point Sensor 20 m	<b>P1X64</b>
Point Sensor 35 m	<b>P1X82</b>

# SIPROTEC 5 - Interfaces

Product description	Order No. <sup>1)</sup>
<b><u>Plug-in modules for System Interface</u></b>	(Short Product Code)
<b>USART-AB-1EL: 1 x electric</b> 1 x electrical RS485, applicable for serial protocols, e.g. IEC60870-5-103, DNP3, RTD-unit and 20 mA unit	<b>P1Z79</b>
<b>USART-AC-2EL: 2 x electric</b> 2 x electrical RS485, applicable for serial protocols, e.g. IEC60870-5-103, DNP3, RTD-unit and 20 mA unit	<b>P1Z437</b>
<b>USART-AD-1FO: 1 x opt. 1.5 km</b> 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)	<b>P1Z62</b>
<b>USART-AE-2FO: 2 x opt. 1.5 km</b> 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)	<b>P1Z48</b>
<b>ETH-BA-2EL: 2 x electrical Ethernet interfaces</b> 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)	<b>P1Z55</b>
<b>ETH-BB-2FO: 2 x optical Ethernet interfaces</b> 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)	<b>P1Z390</b>
<b><u>Plug-in module for various applications</u></b>	
<b>ANAI-CA-4EL: 4x 20 mA</b> ANAI-CA-4EL: 4 Analog inputs 20 mA, screw terminals	<b>P1Z1137</b>

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.