

Ethernet Adapter

SPA-ZC 400

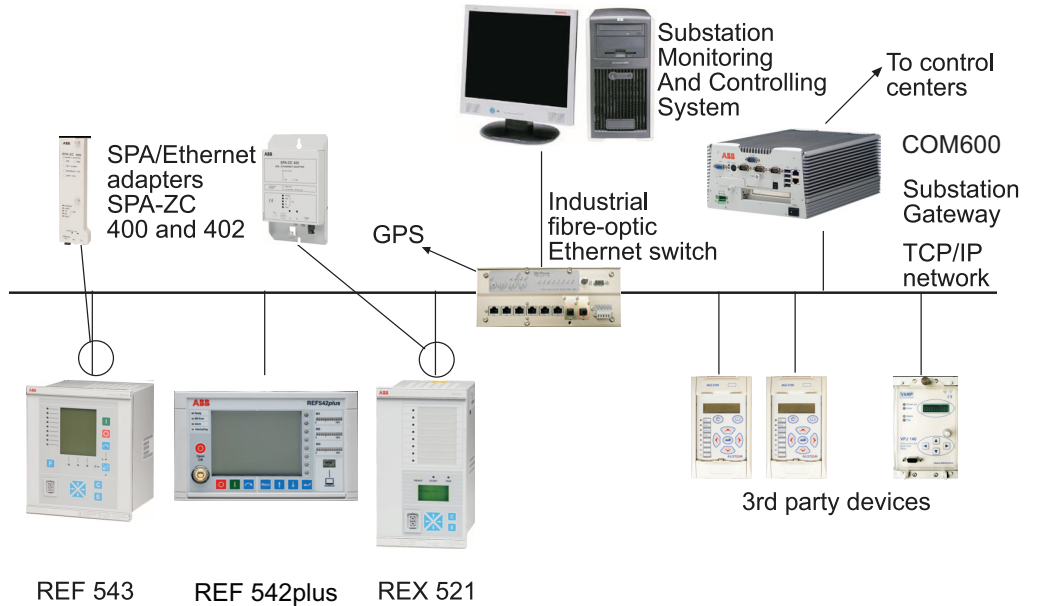
Product Guide



Features

- IEC 61850 connectivity for REF 541/3/5 REM 543/5 and RET 541/3/5
- Easy-to-use configuration tool for IEC 61850 data mapping
- IEC 61850 horizontal communication (GOOSE)
- Disturbance recorder file upload via IEC 61850
- Simultaneous dual port communication for LON® and SPA (Optional)
- Communication over SPA/TCP
- Communication over Modbus/TCP

Application



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Fig. 1 Conceptual picture of a typical system setup

Introduction

SPA-ZC 400 enables connection of one REF 541/3/5, REM 543/5 or RET 541/3/5 device to the IEC 61850-8-1 Station bus.

IEC 61850 is the new standard for substation communication. Additionally to being a communication standard, it also supports general substation automation functions as well as the engineering process.

The GOOSE messaging of the IEC 61850 standard is used in substation automation for fast horizontal communication between Intelligent Electronic Devices (IED) to send, for example, interlocking and blocking information.

SPA-ZC 400 also enables ethernet access to an IED using the SPA over TCP/IP and Modbus over TCP/IP.

In addition to the IEC 61850-8 communication the SPA-ZC 400 optionally enables simultaneous dual port communication for fibre-optic SPA and LON®.

More information on how to physically connect the device can be found in the chapter 5 of the Installation and Commissioning manual. SPA-ZC 400 programming is described in the Installation and commissioning manual, chapter 6, Engineering.

As a prerequisite, you should understand the communication properties of the IED that is to be connected to Ethernet adapter. This information is available in the manual for the protection IED in question.

Design

Module parts

1. Ethernet connector
2. LON/SPA bus FO connector (optional)
3. LON/SPA Rx LED
4. LON/LAN service pin
5. LAN and diagnostic LEDs

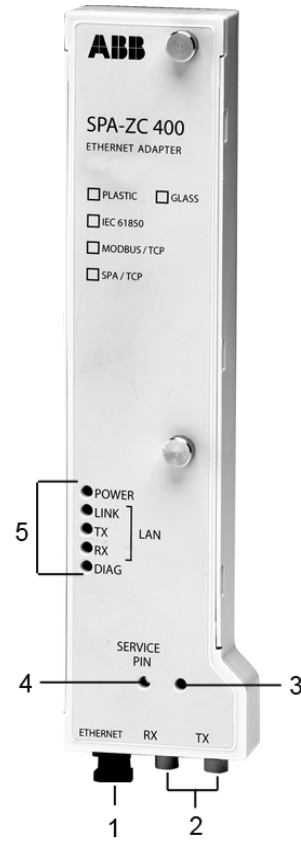


Fig. 2 Parts of SPA-ZC 400

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Technical data

Interfaces

SPA-ZC 400 - IED interface

Fixed mechanics and fixed connectors for REF 541/543/545, REM 543/545 and RET 541/543/545

- D-type subminiature connector for IEC 61850 traffic
- D-type subminiature connector for simultaneous dual port communication.

IEC 61850 interface

LAN connectors

- RJ-45 (STP CAT5e) galvanic connection
- MT-RJ multimode glass fibre transceiver
- LC multimode glass fibre transceiver

LON/SPA interface (Optional)

Fibre optic connector options

- ST multimode glass fibre transmitter/receiver pair or
- Snap-in multimode plastic fibre transmitter/receiver pair

Optical fibres

See fibre optic guides:

- SPA-ZF Optical glass fibres, multimode graded index type specifications, 1MRS755371
- Plastic-core fibre optic cables, features and instructions for mounting, 1MRS752089-MUM

Diagnostic leds**SPA-ZC 400 common diagnostic LEDs:**

- Power
- Diagnostic:
 - Red
 - Green

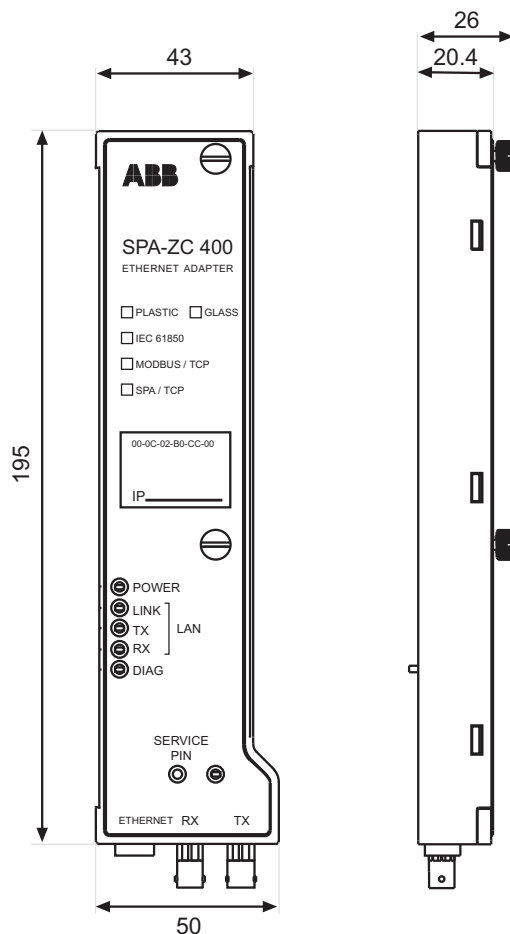
LAN diagnostic LEDs:

- LINK
- TX
- RX

LON/SPA diagnostic LED:

- RX

Technical data (cont'd) SPA-ZC400 dimensions and weight



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Fig. 3 SPA-ZC 400 dimensions

Type	Dimensions [mm]	Weight [g]
SPA-ZC 400	195 x 50 x 26	130

Tests and conditions

Environmental tests and conditions

Recommended service temperature range	-10...+55°C (continuous)
Transport and storage temperature range	-40...+85°C according to the IEC 60068-2-48
Dry heat test	IEC 60068-2-2
Dry cold test	IEC 60068-2-1
Damp heat test	IEC 60068-2-30

Technical data (cont'd)

Electromagnetic compatibility tests

EMC immunity test level meets the requirements listed below	
1 MHz burst disturbance test, class III Common mode Differential mode	According to the IEC 60255-22-1 2.5 kV 1.0 kV
Electrostatic discharge test, class IV For contact discharge For air discharge	According to the IEC 6100-4-2 and IEC 60255-22-2 6 kV 8 kV
Radio frequency interference tests Conducted, common mode Radiated, amplitude-modulated Radiated, pulse-modulated	According to the IEC 61000-4-6 and IEC 60255-22-6 10 V (rms), f = 150 kHz ... 80 MHz According to the IEC 61000-4-3 and IEC 60255-22-3 10 V/m (rms), f = 80 ... 2700 MHz According to the ENV 50204 and IEC 60255-22-3 10 V/m, f = 900 MHz
Fast transient disturbance tests All terminals	According to the IEC 60255-22-4 and IEC 61000-4-4 4 kV
Surge immunity test Power supply	According to the IEC 60255-22-5 and IEC 61000-4-5 4 kV, line-to-earth 2 kV, line-to-line
Power frequency (50 Hz) magnetic field	According to the IEC 61000-4-8 300 A/m continuous
Electromagnetic emission tests Conducted, RF-emission (Mains term.) Radiated RF-emission	According to the EN 55011 EN 55011, class A, IEC 60255-25 EN 55011, class A, IEC 60255-25
CE compliance	Complies with the EMC directive 2004/108/EC and the LV directive 2006/95/EC

Standard tests

Mechanical tests	
Vibration tests (sinusoidal)	According to the IEC 60255-21-1, class I
Shock and bump test	According to the IEC 60255-21-2, class I

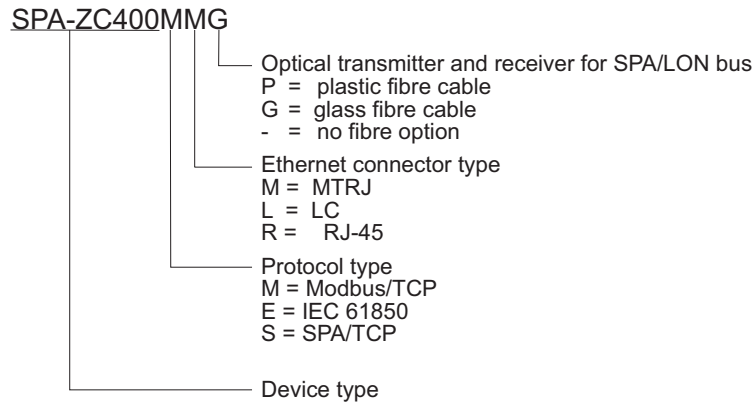
Supply current consumption

Running	340 mA
Start up	430 mA

RoHS Compliance

Complies with the RoHS directive 2002/95/EC

Ordering



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Fig. 4 Ordering information for SPA-ZC400

SPA-ZC 400CD

- SPA-ZC 400 Configuration CD:
 - Communication Engineering Tool (CET) for SPA-ZC40x
 - Connectivity packages for REF 541/543/545, REM 543/545 and RET 541/543/545.

i Order at least one SPA-ZC 400 configuration CD with your delivery to get the Communication Engineering Tool for SPA-ZC40x and the Connectivity Packages. SPA-ZC 400 packages do not include the configuration CD by default.

References

Related documents

Name of the document	Document id
SPA-ZC 400 Installation and commissioning manual	1MRS755347
SPA-ZC 400 configuration CD	1MRS151048
CAP 505 User's Guide	1MRS752292-MUM
SPA-ZF Optical glass fibres, multimode graded index type specifications	1MRS755371
Plastic-core fibre optic cables, features and instructions for mounting	1MRS752089
Standard	IEC 61850, parts -6, -7-2, -7-3, -7-4, -8-1



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