Ethernet Adapter

SPA-ZC 402

Buyer's Guide



Issued: 08.12.2004
Status: Updated
Version: B/04.01.2005Data subject to change without notice

Features

- Enables IEC 61850 connectivity for IEDs with a fibre optic SPA bus.
- Auxiliary power supply
- Easy-to-use configuration tool for the IEC 61850 data mapping
- Support of SPA communication over TCP/IP

Application

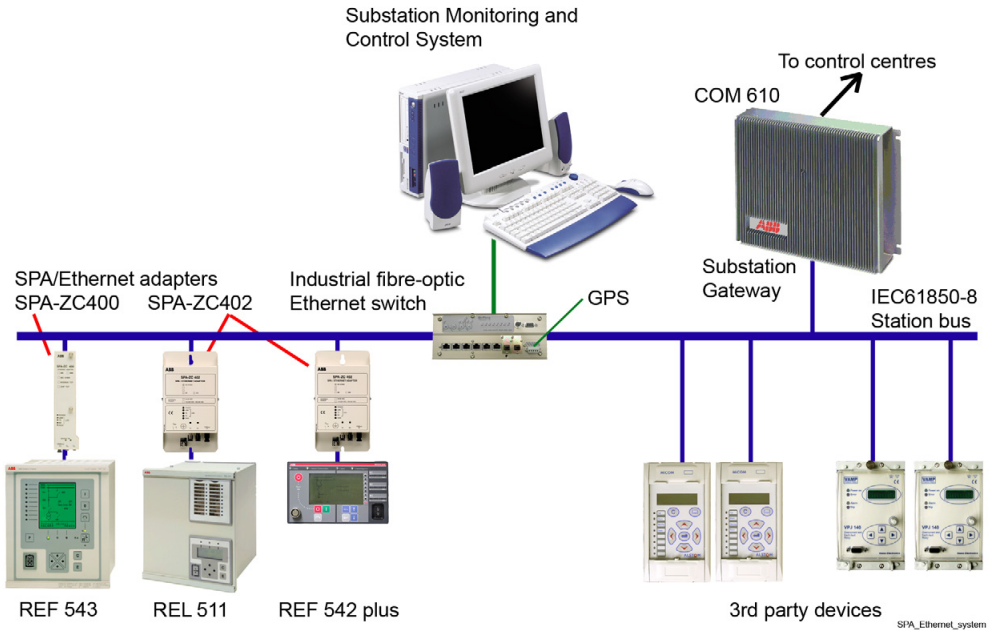


Fig. 1 Conceptual picture of a typical system setup

Introduction

Using the SPA-ZC 402, an IED with a fibre optic SPA bus can be connected to the Ethernet based 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.

SPA-ZC 402 also enables access to an Intelligent Electronic Device (IED) using the SPA protocol tunneled over TCP/IP.

The SPA-ZC 402 acts as a communication adapter between the SPA bus and the IEC 61850-8-1 station bus. The SPA-ZC 402 maps the SPA protocol interface to the IEC 61850-8-1 standard. This enables connecting products with optical SPA interface to IEC 61850 based networks in both new and retrofit installations.

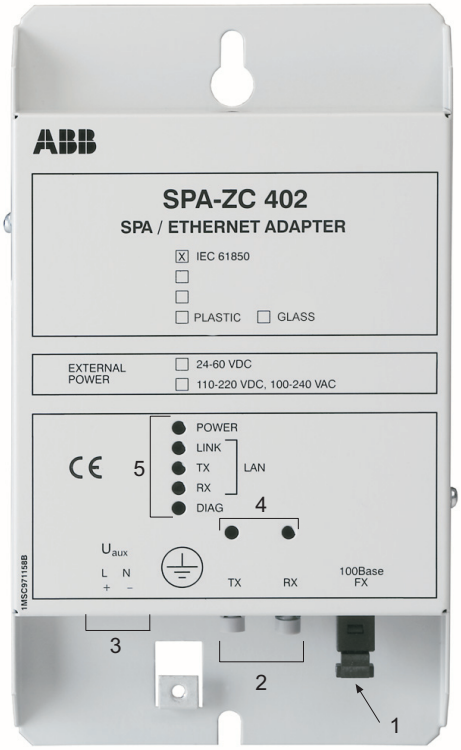
More information on how to physically connect the device can be found in the chapter 3 of the Installation and Commissioning manual. SPA-ZC 402 programming is described in the Installation and commissioning manual, chapter 4, Engineering.

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

Design

Module parts

1. 100BaseFX connector
2. Fibre optic SPA-bus connectors
3. Auxiliary power supply connector
4. SPA TX and RX LEDs
5. LAN and diagnostic LEDs



A040157

Fig. 2 Parts of SPA-ZC 402

Technical data

Interfaces

SPA-ZC 402 - IED interface

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

IEC 61850 interface

Fibre optic LAN connector

- MT-RJ multimode glass fibre transceiver

Optical fibers

See fibre optic quides:

- 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 402 common diagnostic LEDs:

- Power
- Diagnostic:
  - Red
  - Green

LAN diagnostic LEDs:

- LINK
- TX
- RX

SPA diagnostic LEDs:

- TX
- RX

Technical data (cont´d)

SPA-ZC402 dimensions and weight

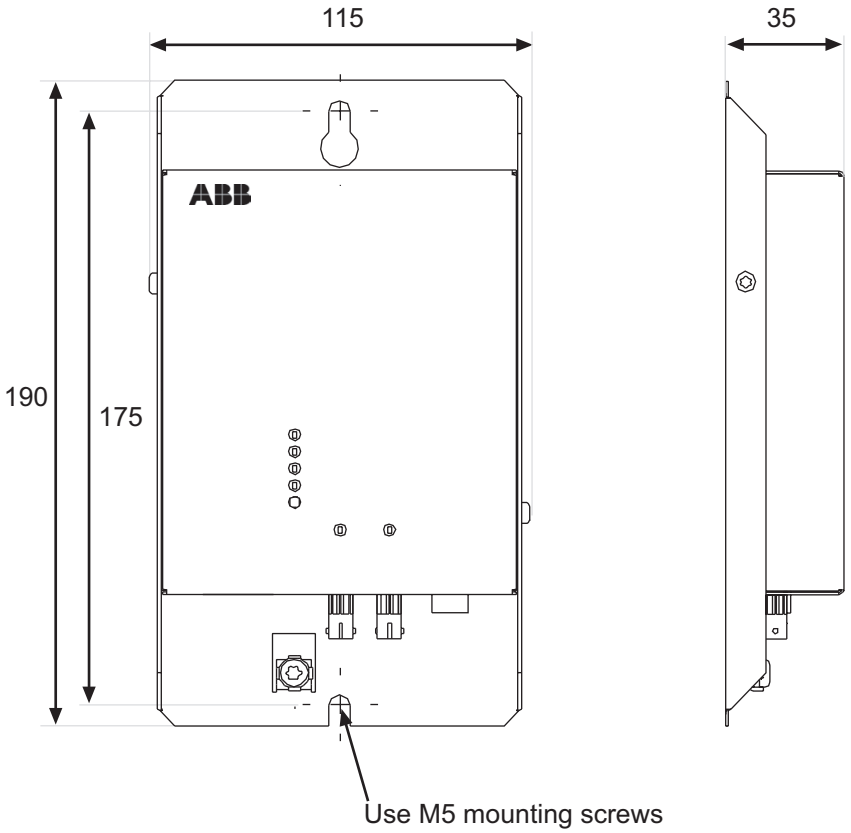


Fig. 3 SPA-ZC 402 dimensions

Type	Dimensions [mm]	Weight [g]
SPA-ZC 402	190 x 115 x 35	510

Tests and conditions

Environmental tests and conditions

Recommended service temperature range	-10...+55°C (continuous)
Limit temperature range (short-term)	-40...+70°C
Transport and storage temperature range	-40...+70°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

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

Technical data (cont´d)

Electromagnetic compatibility tests

Radio frequency interference tests	
Conducted, common mode	According to the IEC 61000-4-6 and IEC 60255-22-6 10 V (rms), f = 150 kHz ... 80 MHz
Radiated, amplitude-modulated	According to the IEC 61000-4-3 and IEC 60255-22-3 10 V/m (rms), f = 80 ... 1000 MHz
Radiated, pulse-modulated	According to the ENV 50204 and IEC 60255-22-3 10 V/m, f = 900 MHz
Fast transient disturbance tests	According to the IEC 60255-22-4 and IEC 61000-4-4
All terminals	4 kV
Surge immunity test	According to the IEC 60255-22-5 and IEC 61000-4-5
Power supply	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	According to the EN 55011
Conducted, RF-emission (Mains term.)	EN 55011, class A, IEC 60255-25
Radiated RF-emission	EN 55011, class A, IEC 60255-25
CE approval	Complies with the EMC directive 89/336/EEC and the LV directive 73/23/EEC

Standard tests

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

Power consumption

Running	~ 3 W

Ordering

SPA-ZC 402 product package

SPA-ZC 402EMPA
- SPA-ZC 402 module
  - Snap-in connectors for plastic fibre to connect SPA-ZC 402 to IED
  - MT-RJ connector for LAN
  - Auxiliary voltage 100 V - 240 V AC, 110 V - 220 V DC
- SPA-ZC 402 Installation and Commissioning Manual

SPA-ZC 402EMPC
- SPA-ZC 402 module
  - Snap-in connectors for plastic fibre to connect SPA-ZC 402 to IED
  - MT-RJ connector for LAN
  - Auxiliary voltage 24 V - 60 V DC
- SPA-ZC 402 Installation and Commissioning Manual

SPA-ZC 402EMGA
- SPA-ZC 402 module
  - ST connectors for glass fibre to connect SPA-ZC 402 to IED
  - MT-RJ connector for LAN
  - Auxiliary voltage 100 V - 240 V AC, 110 V - 220 V DC
- SPA-ZC 402 Installation and Commissioning Manual

SPA-ZC 402EMGC
- SPA-ZC 402 module
  - ST connectors for glass fibre to connect SPA-ZC 402 to IED
  - MT-RJ connector for LAN
  - Auxiliary voltage 24 V - 60 V DC
- SPA-ZC 402 Installation and Commissioning Manual

SPA-ZC 402CD
- SPA-ZC 402 configuration CD
  - Engineering tool, Communication Engineering Tool (CET) for SPA-ZC 40x

Order at least one SPA-ZC 402 configuration CD with your delivery to get the Communication Engineering Tool.

The connectivity packages for a set of ABB IEDs can be found from the internet address: http://www.abb.com/substationautomation. Please contact ABB to check the connectivity package's status for the IED in question.

References

Related documents

Name of the document	Document id
SPA-ZC 402 Installation and commissioning manual	1MRS755380
SPA-ZC 402 configuration CD	1MR151049
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