# Profibus-DPV1/SPA Gateway SPA-ZC 302

## Product Guide


spa-zc302_rightco300

Issued: 25.11.2003
Status: Updated
Version: D/16.05.2008
Data subject to change without notice

## Features

- Profibus DP Version 1 connectivity for devices with SPA bus interface
- Internal power supply
- Support of SPA bus interface with RS-485, RS-232 or TTL levels
- Easy-to-use configuration tool
- Library of pre-defined standard configurations
- Support of user defined SPA messages in acyclic Profibus messages
- Support of RS-485 Profibus interface
- Support of circuit breaker control operations in selected configurations
- Support for up to 16 SPA slaves
- Reading multiple binary data using SPA

## Application

### Introduction

The SPA-ZC 302 is an interface module for SPA bus protection relays, that provides connectivity to the Profibus DP fieldbus. The Profibus DP specification and the structure of its messages are defined in the European standard EN50170.

### Standard configuration templates

This section lists the standard configurations that are designed for use with SPA-ZC 302 gateways. Standard configuration templates consist of pre-defined signals that allows easy configuration of the gateway.

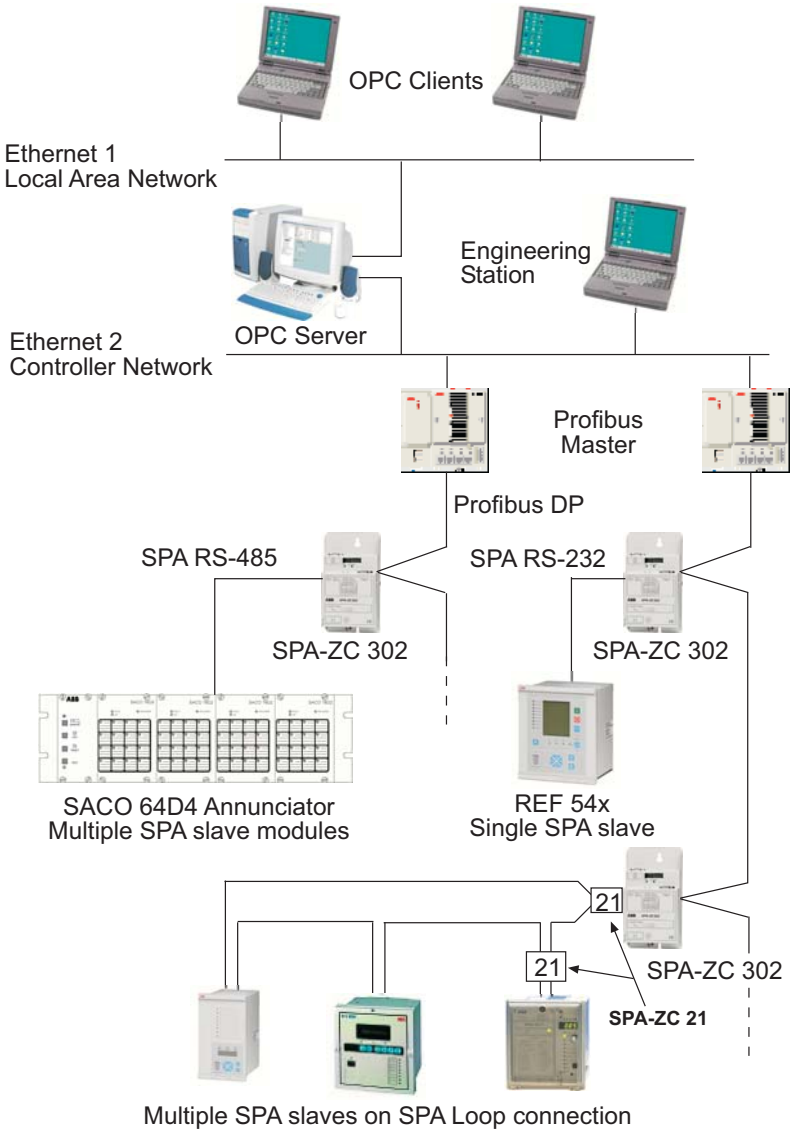


Fig. 1 An application sceme

Application (cont´d) .

## Standard configuration templates

| Relay type*) | Standard configuration template | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SPAJ_SPAU | SPAM150 | SPAU140 | SACO16A3 | SACO16D1_3 | SACO64D4 | SPAU341 | SPAD346 | SPAD346C3 | REM 610 | REF 610 | REX 521 | REX521_M01_M02 | REX521_H05_H07 | REX521_H05_08_09 | RE500 | RE500_Motor | REM 54_ | RE500_Feeder | RET54_Basic | RET54_Multi | RET54_Control | RET 521 |
| SPAJ 140 C | X | | | | | | | | | | | | | | | | | | | | | |
| SPAJ 141 C | X | | | | | | | | | | | | | | | | | | | | | |
| SPAJ 144 C | X | | | | | | | | | | | | | | | | | | | | | |
| SPAJ 160 C | X | | | | | | | | | | | | | | | | | | | | | |
| SPAM 150 C | | X | | | | | | | | | | | | | | | | | | | | |
| SPAU 130 C | X | | | | | | | | | | | | | | | | | | | | | |
| SPAU 140 C | | | X | | | | | | | | | | | | | | | | | | | |
| SACO 16A3 | | | | X | | | | | | | | | | | | | | | | | | |
| SACO 16D1 | | | | | X | | | | | | | | | | | | | | | | | |
| SACO 16D3 | | | | | X | | | | | | | | | | | | | | | | | |
| SACO 64D4 | | | | | | X | | | | | | | | | | | | | | | | |
| SPAU 341 | | | | | | | X | | | | | | | | | | | | | | | |
| SPAD 346 | | | | | | | | X | | | | | | | | | | | | | | |
| SPAD 346 C3 | | | | | | | | | X | | | | | | | | | | | | | |
| REM 610 | | | | | | | | | | X | | | | | | | | | | | | |
| REF 610 | | | | | | | | | | | X | | | | | | | | | | | |
| REF 541 | | | | | | | | | | | | | | | | X | | | X | | | |
| REF 541R | | | | | | | | | | | | | | | | X | X | | X | | | |
| REF 543 | | | | | | | | | | | | | | | | X | | | X | | | |
| REF 543R | | | | | | | | | | | | | | | | X | X | | X | | | |
| REF 545 | | | | | | | | | | | | | | | | X | | | X | | | |
| REM 543 | | | | | | | | | | | | | | | | X | | X | X | | | |
| REM 543R | | | | | | | | | | | | | | | | X | X | X | X | | | |
| REM 545 | | | | | | | | | | | | | | | | X | | X | X | | | |
| REM 545R | | | | | | | | | | | | | | | | X | X | X | X | | | |
| REX 521 B01 | | | | | | | | | | | | X | | | | | | | | | | |
| REX 521 B02 | | | | | | | | | | | | X | | | | | | | | | | |
| REX 521 H02 | | | | | | | | | | | | X | | | | | | | | | | |
| REX 521 H03 | | | | | | | | | | | | X | | | | | | | | | | |
| REX 521 H04 | | | | | | | | | | | | X | | | | | | | | | | |
| REX 521 H05 | | | | | | | | | | | | X | | X | X | | | | | | | |
| REX 521 H06 | | | | | | | | | | | | X | | | | | | | | | | |
| REX 521 H07 | | | | | | | | | | | | X | | X | | | | | | | | |
| REX 521 H08 | | | | | | | | | | | | X | | | X | | | | | | | |
| REX 521 H09 | | | | | | | | | | | | X | | | X | | | | | | | |
| REX 521 M01 | | | | | | | | | | | | X | X | | | | | | | | | |
| REX 521 M02 | | | | | | | | | | | | X | X | | | | | | | | | |
| RET 54 Basic | | | | | | | | | | | | | | | | X | | | | X | | |
| RET 54 Multi | | | | | | | | | | | | | | | | X | | | | | X | |
| RET 54 Control | | | | | | | | | | | | | | | | | | | | | | X |
| RET 521 | | | | | | | | | | | | | | | | | | | | | | X |

*)Protection relay types marked with an R contain a RTD card that enable use of analog inputs.

## Design

### Module parts

1 Profibus D-connector

2 SPA bus D-connector

3 Profibus communication LEDs

4 SPA communication LEDs

5 DIP switches

6 Auxiliary power connector


A050293

Fig. 1 Parts of SPA-ZC 302

## Technical data

### Interfaces

#### Profibus DP version 1 interface

- RS-485 twisted pair
- 9-pin female D-connector

#### SPA bus interface

- RS-232, RS-485 or TTL levels
- 9-pin female D-connector

### Power supply

#### SPA-ZC 302

- Input voltage: 110 V...240 V AC/DC
- Output voltage (conf. with DIP switch 1.5): +8 V DC unregulated from pin 9 (RS-485, TTL)

Supply current consumption: <80 mA

#### Environmental conditions

| | |
|---|---|
| Specified ambient service temperature range | -10...+55ºC |
| Transport and storage temperature range | -40...+70ºC |
| Maximum relative humidity (without condenzation) | 95% |

#### Environmental tests

| | |
|---|---|
| Dry heat test according to IEC 60068-2-2 | +55ºC |
| Dry cold test according to IEC 60068-2-1 | -10ºC |
| Damp heat test according to IEC 60068-2-30 | RH > 93%, 55ºC, 6 cycles |
| Degree of protection by enclosure of the device case according to IEC 60529 | IP20 |

## Electromagnetic compatibility tests

| The EMC immunity test level fulfils the requirements specified below | | |
|---|---|---|
| 1 MHz burst disturbance test, class III, IEC 60255-22-1 | common mode | 2.5 kV |
| | differential mode | 1.0 kV |
| Electrostatic discharge test, class III, IEC 61000-4-2 and IEC60255-22-2 | for contact discharge | 6 kV |
| | for air discharge | 8 kV |
| Radio frequency interference test | conducted, common mode IEC 61000-4-6 and IEC 60255-22-6 | 10 V (rms), f = 150 kHz…80 MHz |
| | radiated, amplitude-modulated IEC 61000-4-3 and IEC 60255-22-3 | 10 V/m (rms), f = 80…1000 MHz |
| | radiated, pulse-modulated ENV 50204 | 10 V/m, f = 900 MHz |
| Fast transient disturbance test IEC 60255-22-4 and IEC 60255-22-5 | power supply | 4 kV |
| Surge immunity test IEC 61000-4-5 | power supply | 4 kV, line to earth<br>2 kV, line to line |
| Power frequency (50 Hz) magnetic field IEC 61000-4-8 | 300 A/m continuous | |
| Voltage dips and short interruptions IEC 61000-4-11 | 30%, 10 ms<br>60%, 100 ms<br>60%, 1000 ms<br>>90%, 5000 ms | |
| Electromagnetic emission tests EN 55011 and IEC 60255-25 | conducted RF emission (mains terminal) | 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 | |

## Dimensions and weight

| Type | Dimensions [mm] | Weight [g] |
|---|---|---|
| SPA-ZC 302 | 197 x 104 x 50 | 530 |

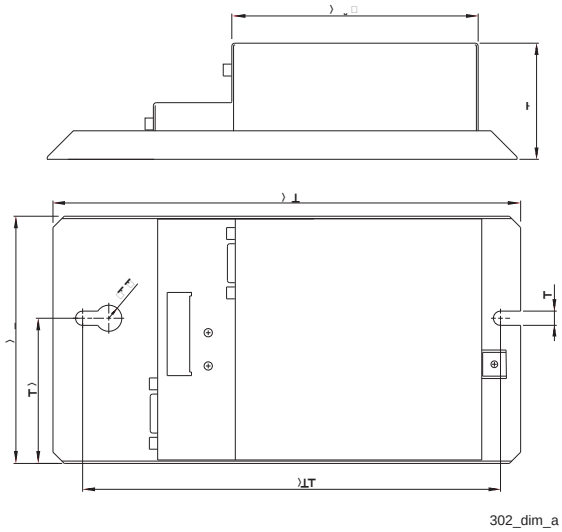


Fig. 2 Dimensions of the SPA-ZC 302 module

## Ordering

### SPA-ZC 302-BA

Includes:

- SPA-ZC 302 module
- Connection cable for configuring SPA-ZC 302 module and connecting SPA bus relays, for example REF 541/3/5, RET 541/3/5, REM 543/5 and SPACOM (Order number: 1MRS120541)
- Connection cable for SPA bus relays, for example REX 521, RE_ 610 relays and SACO annunicator units (Order number: 1MRS120539)
- Gender changer
- This manual
- SPA-ZC 302 configuration CD

With REF 541/3/5, RET 541/3/5 and REM 543/5, the following cable information must be noticed:

- SPA-ZC 302 to port X3.2 (RS-232, protocol 2). Use cable 1MRS120513-003. This has to be ordered separately.
- SPA-ZC 302 to port X3.3 (RS-485, protocol 3). Use cable 1MRS120541 included in the delivery of SPA-ZC 302.

## References

### Additional information

| | |
|---|---|
| • Standard Configuration Templates | 1MRS755177 |
| • SPA-ZC 302 configuration CD | 1MRS752534-MCD |
| • SPA-ZC 302 Profibus-DVP1/SPA Gateway Installation and Commissioning Manual | 1MRS755014 |
| • SPA-bus Communication Protocol v2.5 | 1MRS750076-MTD |