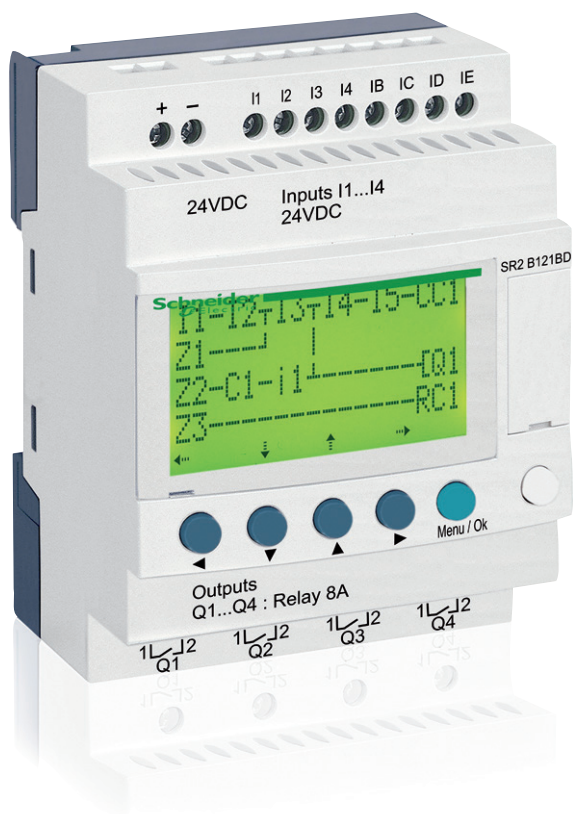


# Smart relays Zelio Logic

Catalog

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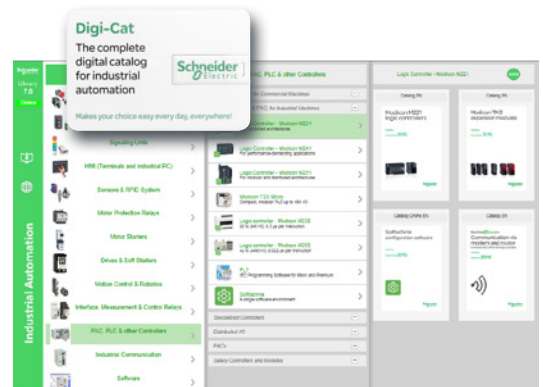
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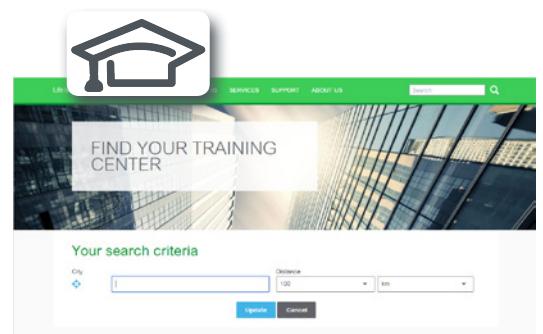
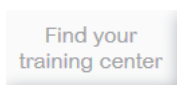


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# Zelio Logic - Smart relays

Smart relays for simple automation solutions

Step into an intuitive world!



Designed for the management of simple automation systems, Zelio Logic smart relays, with their unique combination of value for money and ease of use, provide a real alternative to solutions based on cabled logic or specific cards.

Simple to select, install, and program, Zelio Logic is suitable for all your applications.

Flexible, it offers you the choice of two ranges:

- > Compact versions with fixed configurations
- > Modular versions that allow the use of extension modules

with two programming languages (FBD or ladder).

## Benefits

Higher performance

- > 2x more programming memory and more function blocks by simply updating the firmware

Greater functionality

- > PID function for HVAC applications and 2G/3G modems

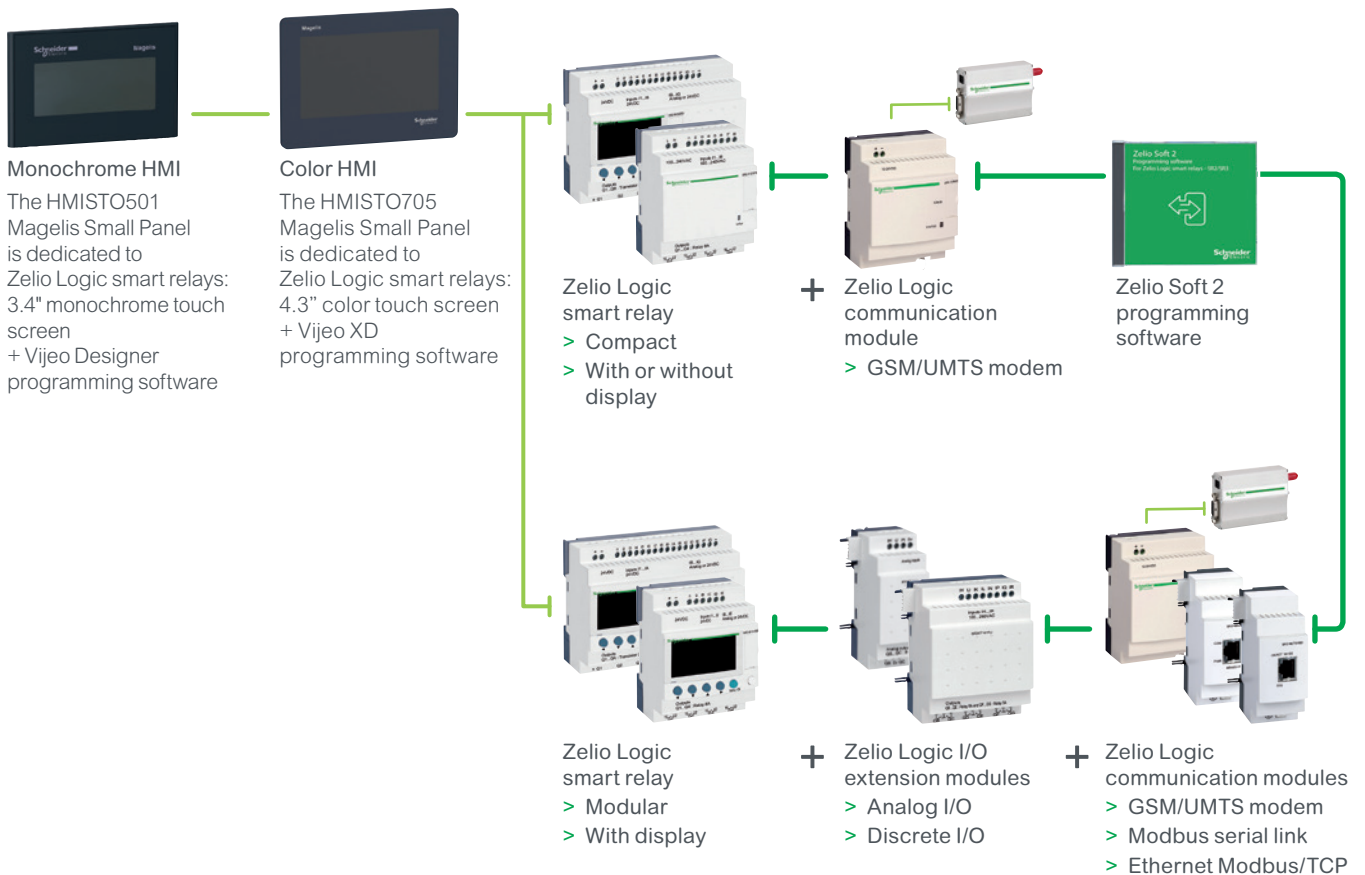
Greater efficiency, less engineering time

- > Free software and firmware downloadable from the Schneider Electric website
- > Get to grips with software in less than an hour, simplified tool-free programming in ladder or function block diagram (FBD) and SFC languages for small applications
- > Access to the ladder program and modification of settings on integrated display

More flexibility - Easy design, maintenance, and commissioning



- > Compact and modular smart relay range with expandable units
- > Programmable logic: a smart alternative to cabled logic or specific cards

## System components




# Zelio Logic - Smart relays

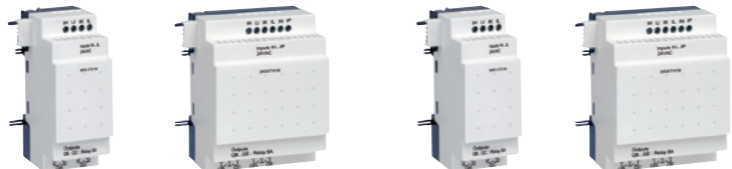
## Compact smart relays

| Product type  |                                   | Compact smart relays   |        |        |   |       |        |                                |        |                                |           |                               |           |  |
|---|-----------------------------------|--|--------|--------|---|-------|--------|--------------------------------|--------|--------------------------------|-----------|-------------------------------|-----------|--|
|   |                                   |                              |        |        |  |       |        |                                |        |                                |           |                               |           |  |
| Supply voltage  |                                   | 24 V ~   |        |        | 48 V ~  |       |        | 100...240 V ~                  |        |                                | 12 V DC   |                               | 24 V DC   |  |
| Number of I/O   |                                   | 12   | 20     | 20     | 10  | 12    | 20     | 12                             | 20     | 10                             | 12        | 20                            |           |  |
| Number of discrete inputs (including analog inputs)                       |                                   | 8 (0)  | 12 (0) | 12 (0) | 6 (0)   | 8 (0) | 12 (0) | 8 (4)                          | 12 (6) | 6 (0)                          | 8 (4)     | 12 (2), 12 (6)                |           |  |
| Number of "relay"/"transistor" outputs                                    |                                   | 4/0  | 8/0    | 8/0    | 4/0   | 4/0   | 8/0    | 4/0                            | 8/0    | 4/0                            | 4/0, 0/4  | 8/0, 0/8                      |           |  |
| With display, with clock<br>Programming language                          |                                   | SR2B●●1B<br>FBD (1) or LADDER  |        |        | -   |       |        | SR2B●●1FU<br>FBD (1) or LADDER |        | SR2B●●1JD<br>FBD (1) or LADDER |           | SR2B●●BD<br>FBD (1) or LADDER |           |  |
| With display, without clock<br>Programming language                       |                                   | -  |        |        | SR2A201E<br>LADDER only   |       |        | SR2A●●1FU<br>LADDER only       |        | -                              |           | SR2A●●BD<br>LADDER only       |           |  |
| Without display, with clock<br>Programming language                       |                                   | SR2E●●1B<br>FBD (1) or LADDER  |        |        | -   |       |        | SR2E●●1FU<br>FBD (1) or LADDER |        | -                              |           | SR2E●●BD<br>FBD (1) or LADDER |           |  |
| Without display, without clock<br>Programming language                    |                                   | -  |        |        | -   |       |        | SR2D●●1FU<br>LADDER only       |        | -                              |           | SR2D●●BD<br>LADDER only       |           |  |
| Programming software (see page 20)  |                                   | "Zelio Soft 2" SR2SFT01  |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| Connection accessories (see page 20)                                      | Serial link cable                 | SR2CBL01   |        |        |   |       |        |                                |        |                                |           |                               |           |  |
|   | USB connecting cable              | SR2USB01   |        |        |   |       |        |                                |        |                                |           |                               |           |  |
|   | Magelis terminal connecting cable | SR2CBL08 for XBTN, XBTR, and XBTRT Magelis terminals<br>SR2CBL09 for HMISTO501 and HMISTO705 Magelis terminals |        |        |   |       |        |                                |        |                                |           |                               |           |  |
|   | Bluetooth interface               | SR2BTC01   |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| Memory cartridge (see page 20)  |                                   | SR2MEM02<br>(⚠ incompatible with SR2COM01)   |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| "Discovery" packs (see page 18)   |                                   | -  |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| Modem communication interface (see page 35)                               |                                   | SR2COM01   |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| GSM/UMTS modem (see page 35)  |                                   | SR2MOD02   |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| Alarm management software (see page 35)                                   |                                   | "Zelio Logic Alarm" SR2SFT02   |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| Converters (thermocouple types J and K, Pt100 probes and voltage/current) |                                   | -  |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| Power supplies for DC control circuit                                     |                                   | -  |        |        |   |       |        |                                |        |                                |           |                               |           |  |
| References  |                                   | SR2●●●1B   |        |        | SR2A201E  |       |        | SR2●●●1FU                      |        |                                | SR2B●●1JD |                               | SR2●●●BD  |  |
| Pages   |                                   | 16 and 17  |        |        | 16  |       |        | 16 and 17                      |        |                                | 16        |                               | 16 and 17 |  |


(1) FBD: Function Block Diagram



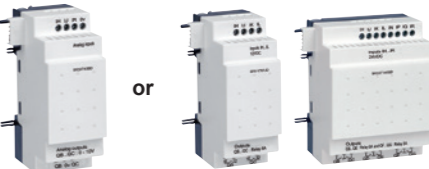
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|   |   |        |               |        |
|---|---|--------|---------------|--------|
| <b>Product type</b>   | <b>Modular smart relays</b>   |        |               |        |
|   |   |        |               |        |
| <b>Supply voltage</b>   | 24 V ~  |        | 100...240 V ~ |        |
| <b>Number of I/O</b>  | 10  | 26     | 10            | 26     |
| <b>Number of discrete inputs (including analog inputs)</b>                        | 6 (0)   | 16 (0) | 6 (0)         | 16 (0) |
| <b>Number of "relay"/"transistor" outputs</b>                                     | 4/0   | 10/0   | 4/0           | 10/0   |
| <b>With display, with clock</b>   | Yes   |        |               |        |
| <b>Programming language</b>   | FBD (1) or LADDER   |        |               |        |
| <b>Programming software (see page 20)</b>   | "Zelio Soft 2" SR2SFT01   |        |               |        |
| <b>Connection accessories (see page 20)</b>                                       | Serial link cable<br>SR2CBL01<br>USB connecting cable<br>SR2USB01<br>Magelis terminal connecting cable<br>SR2CBL08 for XBTR, XBTR, and XBTRT Magelis terminals<br>SR2CBL09 for HMISTO501 and HMISTO705 Magelis terminals<br>Bluetooth interface<br>SR2BTC01 |        |               |        |
| <b>Memory cartridge (see page 20)</b>   | SR2MEM02 (⚠ incompatible with SR2COM01)   |        |               |        |
| <b>"Discovery" packs (see page 18)</b>  | -   |        | SR3PACK●BD    |        |
| <b>Modem communication interface (see page 35)</b>                                | SR2COM01  |        |               |        |
| <b>GSM/UMTS modem (see page 35)</b>   | SR2MOD02  |        |               |        |
| <b>Alarm management software (see page 35)</b>                                    | "Zelio Logic Alarm" SR2SFT02  |        |               |        |
| <b>Converters (thermocouple types J and K, Pt100 probes, and voltage/current)</b> | -   |        |               |        |
| <b>Power supplies for DC control circuit</b>                                      | -   |        |               |        |
| <b>References</b>   | SR3B●●1B  |        | SR3B●●1FU     |        |
| <b>Pages</b>  | 18  |        | 18            |        |

|  |  |       |       |            |       |       |
|--|--|-------|-------|------------|-------|-------|
| <b>Associated extensions</b>                                 | <b>Discrete I/O extensions</b>   |       |       |            |       |       |
|  |  |       |       |            |       |       |
| <b>Number of I/O</b>   | 6  | 10    | 14    | 6          | 10    | 14    |
| <b>Type and number of discrete inputs (or analog inputs)</b> | 4 (0)  | 6 (0) | 8 (0) | 4 (0)      | 6 (0) | 8 (0) |
| <b>Type and number of relay outputs (or analog outputs)</b>  | 2 (0)  | 4 (0) | 6 (0) | 2 (0)      | 4 (0) | 6 (0) |
| <b>References</b>  | SR3XT●●●B  |       |       | SR3XT●●●FU |       |       |
| <b>Pages</b>   | 19   |       |       |            |       |       |

(1) FBD: Function Block Diagram

|   |   |          |            |  |
|---|---|----------|------------|--|
|   |    |          |            |  |
| <b>Supply voltage</b>   | 12 V ~  |          | 24 V ~     |  |
| <b>Number of I/O</b>  | 26  | 10       | 26         |  |
| <b>Number of discrete inputs (including analog inputs)</b>                        | 16 (6)  | 6 (4)    | 16 (6)     |  |
| <b>Number of "relay"/"transistor" outputs</b>                                     | 10/0  | 4/0, 0/4 | 10/0, 0/10 |  |
| <b>With display, with clock</b>   | Yes   |          |            |  |
| <b>Programming language</b>   | FBD (1) or LADDER   |          |            |  |
| <b>Programming software (see page 20)</b>   | "Zelio Soft 2" SR2SFT01   |          |            |  |
| <b>Connection accessories (see page 20)</b>                                       | Serial link cable<br>SR2CBL01<br>USB connecting cable<br>SR2USB01<br>Magelis terminal connecting cable<br>SR2CBL08 for XBTR, XBTR, and XBTRT Magelis terminals<br>SR2CBL09 for HMISTO501 and HMISTO705 Magelis terminals<br>Bluetooth interface<br>SR2BTC01 |          |            |  |
| <b>Memory cartridge (see page 20)</b>   | SR2MEM02 (⚠ incompatible with SR2COM01)   |          |            |  |
| <b>"Discovery" packs (see page 18)</b>  | -   |          | SR3PACK●BD |  |
| <b>Modem communication interface (see page 35)</b>                                | SR2COM01  |          |            |  |
| <b>GSM/UMTS modem (see page 35)</b>   | SR2MOD02  |          |            |  |
| <b>Alarm management software (see page 35)</b>                                    | "Zelio Logic Alarm" SR2SFT02  |          |            |  |
| <b>Converters (thermocouple types J and K, Pt100 probes, and voltage/current)</b> | -   |          |            |  |
| <b>Power supplies for DC control circuit</b>                                      | -   |          |            |  |
| <b>References</b>   | SR3B261JD   |          | SR3B●●●BD  |  |
| <b>Pages</b>  | 18  |          | 18         |  |

|  |   |       |       |  |  |   |            |
|--|---|-------|-------|--|--|---|------------|
|  |  |       |       | <b>Network communication extensions</b><br>Modbus serial link (slave) or Ethernet port (server)  |  | <b>I/O extensions</b><br>Analog or Discrete |            |
|  |  |       |       |   |  |   |            |
| <b>Number of I/O</b>   | 6   | 10    | 14    | 4  | 6  | 10  | 14         |
| <b>Type and number of discrete inputs (or analog inputs)</b> | 4 (0)   | 6 (0) | 8 (0) | ■ Number of words:<br><input type="checkbox"/> 4 (inputs)<br><input type="checkbox"/> 4 (outputs)<br><input type="checkbox"/> 4 (clock)<br><input type="checkbox"/> 1 (status) | ■ Number of words:<br><input type="checkbox"/> 4 (inputs)<br><input type="checkbox"/> 4 (outputs)<br><input type="checkbox"/> 4 (clock)<br><input type="checkbox"/> 1 (status) | 0 (2)                                       | 4 (0)      |
| <b>Type and number of relay outputs (or analog outputs)</b>  | 2 (0)   | 4 (0) | 6 (0) | 0 (2)  | 2 (0)  | 4 (0)                                       | 6 (0)      |
| <b>References</b>  | SR3XT●●●JD  |       |       | SR3MBU01BD   | SR3NET01BD   | SR3XT43BD                                   | SR3XT●●●BD |
| <b>Pages</b>   | 19  |       |       | 29   | 31   | 19  |            |

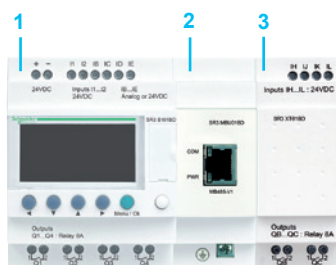


Zelio Logic compact smart relay

### Combination of modular smart relays and extensions



- 1 Modular Zelio Logic smart relay (10 or 26 I/O)
- 2 Discrete (6, 10, or 14 I/O) or analog (4 I/O) I/O extension



- 1 Modular Zelio Logic smart relay (10 or 26 I/O)
- 2 Modbus serial link or Ethernet Modbus/TCP network communication extensions
- 3 Discrete (6, 10, or 14 I/O) or analog (4 I/O) I/O extension

⚠ Observe the order of assembly above when using a Modbus slave or Ethernet server network communication extension and a discrete or analog I/O extension. An I/O extension cannot be inserted before a network communication extension.

### Presentation

Zelio Logic smart relays are designed for use in small automated systems. They are used in both the industrial and commercial sectors.

- **For industry:**
  - automation of small finishing, production, assembly, or packaging machines
  - small automated systems operating at 48 V ~ (hoisting application, etc.)
  - decentralized automation of ancillary equipment for large and medium-sized machines (in the textile, plastics, materials processing sectors, etc.)
  - automation systems for agricultural machinery (irrigation, pumping, greenhouses, etc.)
- **For the commercial/building sectors:**
  - automation of barriers, roller shutters, access control
  - automation of lighting systems
  - automation of compressors and air conditioning systems
  - etc.

Their compact size and ease of setup make them a competitive alternative to solutions based on cabled logic or specific cards.

### Programming

Simple programming, backed up by the universal nature of the languages, meets the requirements of automation specialists and the needs of electricians.

Programming can be performed:

- locally, using the buttons on the Zelio Logic smart relay (ladder language)
- on a PC using “Zelio Soft 2” software

When using a PC, programming can be performed either in ladder language or in function block diagram (FBD) language (see page 10).

The LCD display unit backlight (1) is activated by pressing one of the 6 programming buttons on the Zelio Logic smart relay or by programming with “Zelio Soft 2” software (e.g. flashing when diagnosing a malfunction).

The clock has a lithium battery, which gives it an independent operating time of 10 years.

Data backup (preset values and current values) is provided by an EEPROM Flash memory (with the same lifetime as the smart relay).

### Compact smart relays

Compact smart relays meet requirements for simple automation systems.

The number of I/O can be:

- 12 or 20 I/O, supplied with 24 V ~ or 12 V = power
- 20 I/O, supplied with 48 V ~ power
- 10, 12, or 20 I/O, supplied with 100...240 V ~ or 24 V = power

### Modular smart relays and extensions

The number of I/O for modular smart relays can be:

- 26 I/O, supplied with 12 V = power
- 10 or 26 I/O, supplied with 24 V ~, 100...240 V ~, or 24 V = power

To improve performance and flexibility, Zelio Logic modular smart relays can take extensions to obtain a maximum of 40 I/O.

- Modbus serial link or Ethernet Modbus/TCP network communication extensions, supplied with 24 V = power via the Zelio Logic smart relay at the same voltage
- analog I/O extension with 4 I/O, supplied with 24 V = power via the Zelio Logic smart relay at the same voltage
- discrete I/O extensions with 6, 10, or 14 I/O, supplied with power via the Zelio Logic smart relay at the same voltage

(1) LCD: Liquid crystal display





Connecting cable



Bluetooth interface



Memory cartridge



Modbus serial link communication extension



Ethernet Modbus/TCP communication extension



Modem communication interface



GSM/UMTS modem interface



HMISTO705 Small Panel



Zelio Logic compact smart relay + SR2CBL09 cable

### Communication

#### Cabled and wireless programming tools

- These programming tools allow the Zelio Logic smart relay to be connected to a PC running “Zelio Soft 2” software:
  - Cable connection:
    - SR2USB01 cable to USB port
    - or
    - SR2CBL01 cable to 9-way serial port
  - Wireless link:
    - SR2BTC01 Bluetooth interface

#### ■ Memory cartridge

The Zelio Logic smart relay can take a backup memory cartridge that allows the application program to be copied to another Zelio Logic smart relay (it is only possible to load and update the firmware with the SR2MEM02 memory cartridge).

The memory cartridge also enables a backup copy of the program to be saved prior to replacing the product.

When used with a smart relay without display or buttons, the copy of the program contained in the cartridge is automatically transferred to the Zelio Logic smart relay on power-up.

#### Modbus serial link and Ethernet Modbus/TCP communication extensions

The Modbus serial link and Ethernet Modbus/TCP network communication extension modules allow connection to automation system equipment such as display units or PLCs (see page 22).

#### Modem communication interface

The “modem communication interface” offer in the Zelio Logic range includes:

- an SR2COM01 modem communication interface connected between a Zelio Logic smart relay and a modem
- an SR2MOD02 GSM/UMTS (1) modem
- SR2SFT02 “Zelio Logic Alarm” software

This offer is designed for monitoring or remote control of machines or installations that operate without personnel.

The modem communication interface, supplied with 12...24 V  $\overline{\text{DC}}$  power, enables messages, phone numbers, and calling conditions to be stored (see page 32).

#### HMI terminals

HMISTO Small Panels offer added value to the equipment by enabling the creation of eye-catching dialog screens.

They are available in monochrome (HMISTO501) or color (HMISTO705) versions. They connect directly to the front panel of the smart relays in the memory cartridge slot via the special cable (SR2CBL09).

The terminals are configured using Vijeo Designer (HMISTO501) or Vijeo XD (HMISTO705) software. Exchanges with the smart relay are simplified using the SLIn and SLout data exchange blocks in “Zelio Soft 2” (FBD language only). 24 words can be exchanged in each direction.

(1) Global System Mobile (2G)/Universal Mobile Telecommunications System (3G)

# Zelio Logic - Smart relays

## Compact and modular smart relays

### “Zelio Soft 2” programming software

#### “Zelio Soft 2” for PC - version 5.1 (1)

“Zelio Soft 2” software enables:

- programming in ladder language or function block diagram (FBD) language (see page 12)
- simulation, monitoring, and supervision
- uploading and downloading of programs
- print-out of customized files
- automatic program compilation
- online help

#### Consistency checks and application languages

“Zelio Soft 2” monitors applications by means of its consistency check function. An indicator turns red at the slightest input error (ladder language). The problem can be located simply by clicking the mouse.

“Zelio Soft 2” software allows users to switch between the 6 languages (English, French, German, Italian, Portuguese, and Spanish) at any time and edit the application file in the selected language.

#### Inputting messages for display on Zelio Logic

“Zelio Soft 2” software allows text function blocks to be configured, which can then be displayed on Zelio Logic smart relays that have a display.

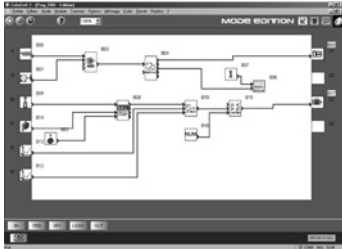
#### Program testing

2 test modes are provided:

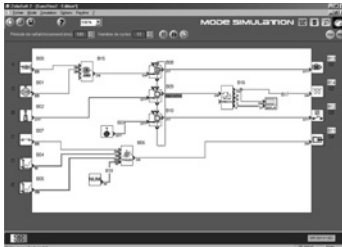
- The **simulation** mode in “Zelio Soft 2” is used to test a program without a Zelio Logic smart relay, i.e. to:
  - enable discrete inputs
  - display output status
  - vary the voltage of the analog inputs
  - enable the programming buttons
- simulate the application program in real time or in accelerated time
- display the different active program elements dynamically in red
- The **monitoring** is used to test the program executed by the smart relay, i.e. to:
  - display the program “online”
  - force inputs, outputs, auxiliary relays, and current function block values
  - adjust the date and time
  - switch from STOP mode to RUN mode and vice versa

In simulation or monitoring mode, the supervision window allows users to view the status of the smart relay I/O within the application environment (diagram or image).

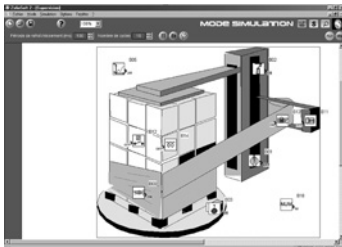
(1) These functions exist for versions  $\geq$  V 5.1.



Programming in FBD language



Simulation mode



Monitoring window

# Zelio Logic - Smart relays

## Compact and modular smart relays

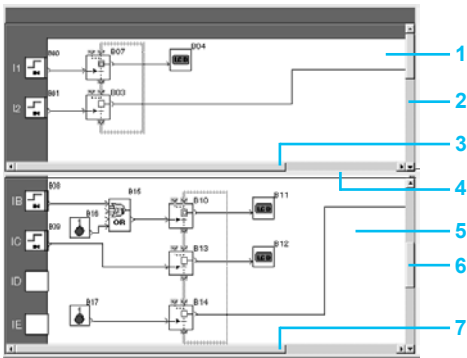
### “Zelio Soft 2” programming software

#### User interfaces

“Zelio Soft 2” software (versions ≥ 4.1) improves the ease of use of user interfaces for the following functions:

#### “Split wiring sheet” function (ladder and FBD language)

The wiring sheet can be split into 2 to allow two separate parts of the wiring sheet to be displayed on the same screen.



Structure of a split wiring sheet

This can be used to:

- Display the required function blocks in the top and bottom parts of the screen
- Move the split bar as required
- Connect the function blocks between the 2 parts of the wiring sheet

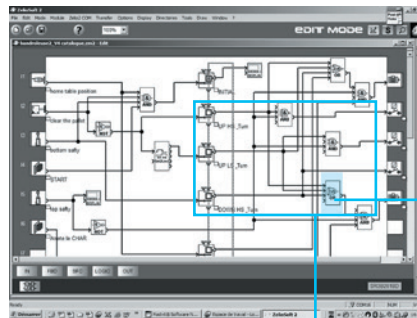
The split wiring sheet is structured as follows:

- 1 View of top part
- 2 Top window vertical scroll bar
- 3 Top window horizontal scroll bar
- 4 Split bar
- 5 View of bottom part
- 6 Bottom window vertical scroll bar
- 7 Bottom window horizontal scroll bar

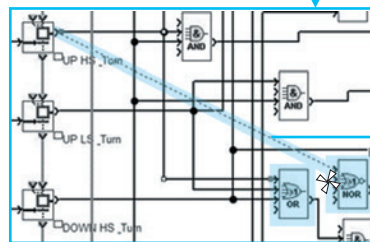
#### “Replace function block” function (FBD language)

This function allows a block to be replaced without losing the input and output connections.

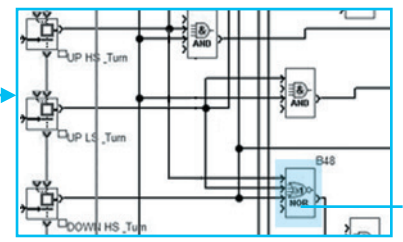
E.g. replacing an “OR” block with a “NOR” block



- 1 “OR” block to be replaced



- 2 Move the links to the new “NOR” block



- 3 Delete the “OR” block and position the “NOR” block in its place



2

1

“Acceleration and simulation terminals” window

#### “Time Prog simulation” function (ladder and FBD languages)

Ladder or FBD program simulation mode allows the program to be debugged by simulating it on the software workshop host computer.

A function allows the time on the simulator clock to be modified by setting it to 3 s before the start of the next event .

The “Next event” button 1 is used to modify the simulator clock 2.

## Ladder language

### Definitions



Text function block



Timer



Up/down counter



Fast counter



Analog comparator



Clock



Auxiliary relay



Counter comparator



LCD backlight



Daylight saving time change



Output coil



Message

Ladder language enables a ladder program to be written with elementary functions, elementary function blocks, and derived function blocks, as well as with contacts, coils, and variables.

The contacts and coils can be annotated. Text can be placed freely within the graphic.

#### ■ Ladder diagram input modes

“Zelio input” mode allows users who have programmed the Zelio Logic smart relay directly on the device to achieve the same ease of use, even when using the software for the first time.

“Ladder input” mode, which is more intuitive, is very user-friendly and incorporates many additional features.

Two types of symbol can be used in ladder programming language:

- ladder symbols
- electrical symbols

“Ladder input” mode also allows the creation of mnemonics and comments associated with each program line.

Instant switching from one input mode to the other is possible at any time, simply by clicking the mouse.

Up to 240 (1) ladder diagram lines can be programmed, with 5 contacts and 1 coil per program line.

#### ■ Functions

- 16 text function blocks
- 28 (1) timers, each of which can be configured from among 11 different types (from 1/10 second to 9,999 hours)
- 28 (1) up/down counters from 0 to 32,767
- 1 fast counter (1 kHz)
- 16 analog comparators
- 8 clocks, each with 4 channels
- 56 (1) auxiliary relays
- 8 counter comparators
- LCD screen with programmable backlight
- automatic daylight saving time changeover
- variety of functions: coil, latching (Set/Reset), impulse relay, contactor
- 28 message blocks (with modem communication interface, see page 32)

### Functions

| Function             | Electrical scheme | Ladder language | Comment   |
|----------------------|-------------------|-----------------|---|
| Contact              |                   |                 | I corresponds to the real state of the contact wired to the smart relay input.<br>i corresponds to the inverse state of the contact wired to the smart relay input. |
| Standard coil        |                   |                 | The coil is energized when the contacts to which it is connected are closed.  |
| Latch coil (Set)     |                   |                 | The coil is energized (set) when the contacts to which it is connected are closed.<br>It remains energized even if the contacts are no longer closed.               |
| Unlatch coil (Reset) |                   |                 | The coil is de-energized (reset) when the contacts to which it is connected are closed.<br>It remains de-energized even if the contacts are no longer closed.       |

(1) Possible using version V5.0 and above of “Zelio Soft 2” provided that the SR2COM01 communication module is not used. If this module is used, 16 timers, 16 counters, and 32 auxiliary relays are available and the program is limited to 120 ladder diagram lines.

## Function block language (FBD/Grafcet SFC/logic functions) (1)




































### Definition

FBD language allows graphical programming based on the use of predefined function blocks, and provides the use of:








- 35 preprogrammed functions for counting, time delay, timing, switching threshold definition (e.g. temperature regulation), pulse generation, time programming, multiplexing, and display
- 7 SFC functions
- 6 logic functions

### Pre-programmed functions

Zelio Logic smart relays provide a high processing capacity, up to 500 (2) function blocks, including 35 pre-programmed functions:

|  |   |   |  |   |
|--|---|---|--|---|
|  <b>TIMER AC</b><br>TIMER A+C |  <b>TIMER BH</b><br>TIMER B+H        |  <b>TIMER Li</b><br>TIMER Li             |  <b>TIMER BW</b><br>TIMER B+W                  |  <b>TIMER AC</b><br>TIMER A+C  |
| Timer. Function A/C (ON-delay and OFF-delay)   | Timer. Function BH (adjustable pulsed signal)   | Pulse generator (ON-delay, OFF-delay)   | Timer. Function BW (pulse on rising/falling edge)  | Timer. Function A/C with external preset adjustment (ON-delay and OFF-delay)                                      |
|  <b>TIMER BH</b><br>TIMER B+H |  <b>TIMER Li</b><br>TIMER Li         |  <b>BISTABLE</b><br>BISTABLE             |  <b>SET-RESET</b><br>SET Q<br>RESET            |  <b>BOOLEAN</b><br>BOOLEAN     |
| Timer. Function BH with external preset adjustment (adjustable pulsed signal)                                  | Pulse generator with external preset adjustment (ON-delay, OFF-delay)   | Impulse relay function  | Bistable latching - Priority assigned either to SET or RESET function  | Allows logic equations to be created between connected inputs   |
|  <b>CAM</b><br>CAM            |  <b>PRESET COUNT</b><br>PRESET COUNT |  <b>UP DOWN COUNT</b><br>UP DOWN COUNT   |  <b>PRESET H-METER</b><br>PRESET H-METER       |  <b>TIME PROG</b><br>TIME PROG |
| Cam programmer   | Up/down counter   | Up/down counter with external preset  | Hour counter (hour, minute preset)   | Time programmer, weekly and annual  |
|  <b>GAIN</b><br>GAIN        |  <b>TRIGGER</b><br>TRIGGER         |  <b>MUX</b><br>MUX                     |  <b>COMP IN ZONE</b><br>MAX<br>VAL<br>MIN    |  <b>ADD/SUB</b><br>+         |
| Allows conversion of an analog value by change of scale and offset   | Defines an activation zone with hysteresis  | Multiplexing functions on 2 analog values   | Zone comparison (Min. ≤ Value ≤ Max.)  | Add and/or subtract function  |
|  <b>MUL/DIV</b><br>x<br>=   |  <b>TEXT</b><br>TEXT               |  <b>DISPLAY</b><br>DISPLAY             |  <b>COM</b><br>COM                           |  <b>COMPARE</b><br>COMPARE   |
| Multiply and/or divide function  | Display of digital and analog data, date, time, messages for Human-Machine interface                                  | Display of digital and analog data, date, time, messages for Human-Machine interface                                      | Sending of messages with communication interface (see page 32)   | Comparison of 2 analog values using the operands =, >, <, ≤, ≥, ≠   |
|  <b>STATUS</b><br>STATUS    |  <b>ARCHIVE</b><br>ARCHIVE         |  <b>SPEED COUNT</b><br>SPEED COUNT     |  <b>CAN</b><br>CAN                           |  <b>CNA</b><br>CNA           |
| Access to smart relay status   | Storage of 2 values simultaneously  | Fast counting up to 1 kHz   | Analog-to-digital converter  | Digital-to-analog converter   |
|  <b>SL In</b><br>In         |  <b>SL Out</b><br>Out              |  <b>SUNTRACK</b><br>SUN<br>SET<br>RISE |  <b>SUNRISE/SUNSET</b><br>SUN<br>RISE<br>SET |  <b>PID</b> (n)              |
| Input of a word via serial link  | Output of a word via serial link  | Tracks the sun's position   | Outputs the sunrise and sunset times   | Temperature, level, flow rate, or pressure control functions  |

### SFC functions (3) (GRAF CET)

|   |   |   |  |   |
|---|---|---|--|---|
|  <b>RESET-INIT</b><br>RESET-INIT |  <b>INIT STEP</b><br>INIT STEP   |  <b>STEP</b><br>STEP |  <b>DIV-OR 2</b><br>DIV-OR 2 |  <b>CONV-OR 2</b><br>CONV-OR 2 |
| Reset initial step  | Initial step  | SFC step  | Divergence to OR   | Convergence to OR   |
|  <b>DIV-AND 2</b><br>DIV-AND 2   |  <b>CONV-AND 2</b><br>CONV-AND 2 |   |  |   |
| Divergence to AND   | Convergence to AND  |   |  |   |

### Logic functions

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|  <b>AND</b><br>AND |  <b>OR</b><br>OR |  <b>NAND</b><br>NAND |  <b>NOR</b><br>NOR |  <b>XOR</b><br>XOR |  <b>NOT</b><br>NOT |
| AND function  | OR function   | NOT AND function  | NOT OR function   | Exclusive OR function   | NOT function  |

(n) New feature for 2017

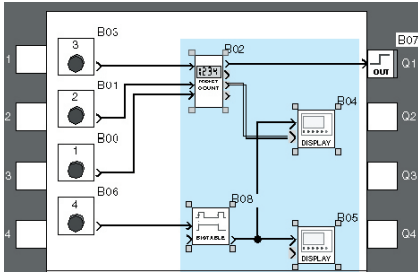
(1) Function block diagram

(2) Possible in version V5.0 or above of "Zelio Soft 2"

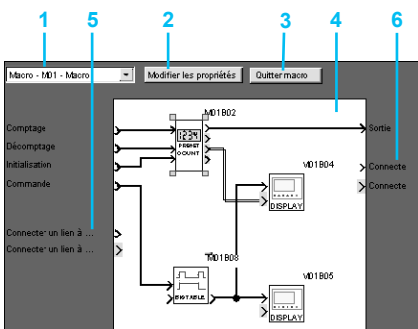
(3) Sequential function chart

## Function block language (FBD/Grafset SFC/logic functions) (continued)

### Macro function

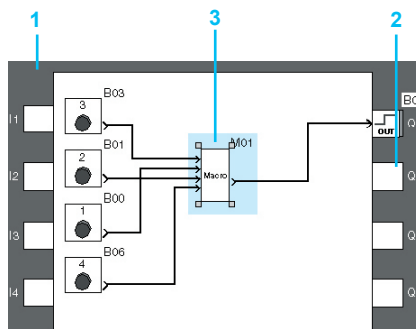


Creating a macro



Inside a macro

- 1 Select macro
- 2 Edit properties
- 3 Return to external view of a macro
- 4 Internal function block in the macro
- 5 Non-connected inputs
- 6 Non-connected outputs



External view of a macro

- 1 Input connections
- 2 Output connection
- 3 Macro function block

A macro is a group of function blocks. It is characterized by its number, name, links, internal function blocks (255 max.), and its I/O connections.

Seen from the outside, a macro behaves like a function block with inputs and/or outputs likely to be connected to links. Once created, a macro can be manipulated like a function block.

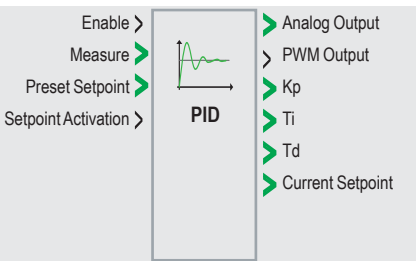
- Macro characteristics:
  - The maximum number of macros is 64.
  - A password dedicated to macros can be used to protect their content.
  - A macro can be edited/duplicated.
  - A macro's comments can be edited.

- Macro properties:
 

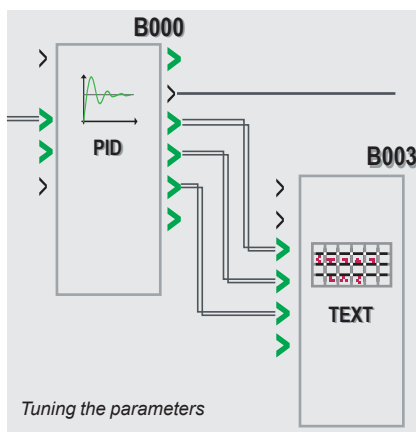
A "Macro Properties" dialog box is used to enter or modify the properties of a macro. The properties of a macro are as follows:

  - Macro name (optional)
  - Block symbol, which may be:
    - an identifier
    - an image
  - Name of inputs
  - Name of outputs

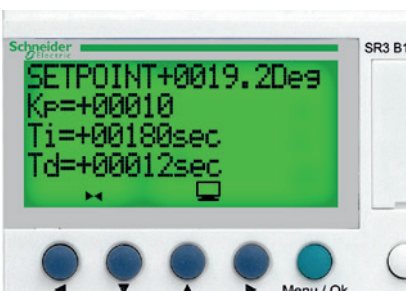
### PID function



Programming the PID function



Tuning the parameters



Modifying parameters (Kp, Ti, Td) using the programming and parameter setting buttons

### Presentation

The PID function block is used to program simple temperature, level, or pressure control functions.

Two types of output enable adaptation to the most common actuators available on the market:

- Analog output, requiring the use of a modular smart relay and an analog I/O extension
  - PWM output, enabling the integrated outputs in any smart relay to be used.
- Depending on the period set for PWM, and to help extend service life, a smart relay equipped with transistor outputs is recommended.

### Programming

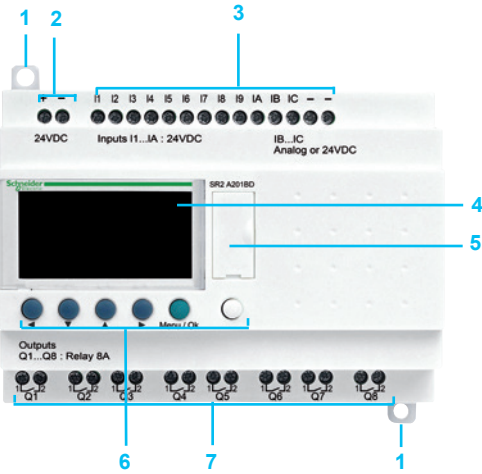
PID function blocks are available in FBD language. To help with tuning, default parameters are available for several typical applications (flow, level, pressure, temperature). These parameters can be modified.

### Tuning

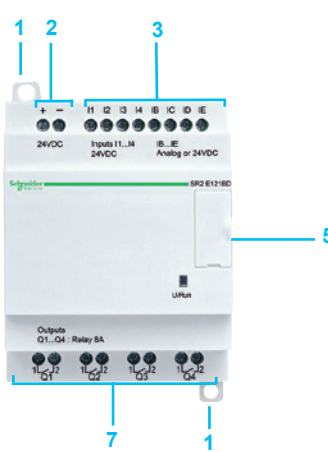
The TEXT and DISPLAY function blocks are used to help tune the control parameters (Kp, Ti, Td) without using Zelio Soft 2: the parameters can be modified directly using the buttons on the front of the smart relay and the display.

## Compact smart relays

With display - 10, 12, and 20 I/O



Without display - 10, 12, and 20 I/O

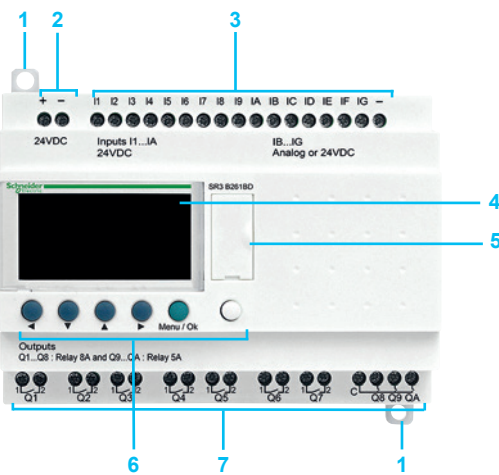


Zelio Logic compact smart relay front panels comprise:

- 1 Two retractable mounting feet
- 2 Two power supply terminals
- 3 Terminals for connecting the inputs
- 4 Backlit LCD display with 4 lines of 18 characters
- 5 Slot for memory cartridge or connection to PC, modem communication interface, HMI terminal (Magelis Small Panel), or Bluetooth interface
- 6 6 buttons for programming and parameter entry
- 7 Terminals for connecting the outputs

## Modular smart relays

With display - 10 and 26 I/O



Zelio Logic modular smart relay front panels comprise:

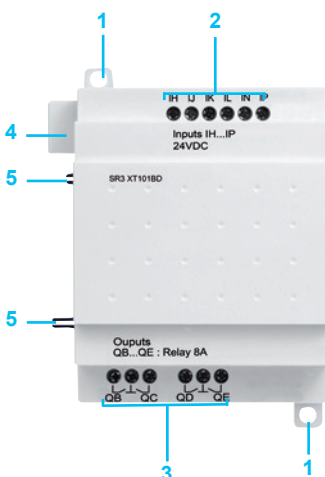
- 1 Two retractable mounting feet
- 2 Two power supply terminals
- 3 Terminals for connecting the inputs
- 4 Backlit LCD display with 4 lines of 18 characters
- 5 Slot for memory cartridge or connection to PC, modem communication interface, HMI terminal (Magelis Small Panel), or Bluetooth interface
- 6 6 buttons for programming and parameter entry
- 7 Terminals for connecting the outputs

## Discrete I/O extensions

6 discrete I/O

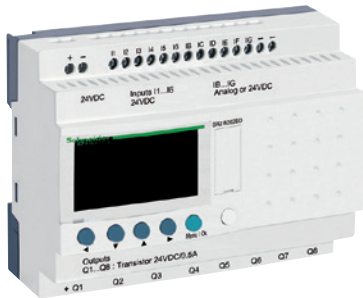


10 and 14 discrete I/O



Discrete I/O extension front panels comprise:

- 1 Two retractable mounting feet
- 2 Terminals for connecting the inputs
- 3 Terminals for connecting the outputs
- 4 Connector for connection to the Zelio Logic smart relay (powered via the Zelio Logic smart relay)
- 5 Locating pegs



SR2A201BD



SR2SFT01



SR2PACK...



Modem communication interface

### Compact smart relays with display

| Number of I/O   | Discrete inputs | Including 0-10 V $\overline{\text{---}}$ analog inputs | Relay outputs | Transistor outputs | Clock | Reference     | Weight<br>kg<br>lb |
|---|-----------------|--|---------------|--------------------|-------|---------------|--------------------|
| <b>24 V <math>\sim</math> power supply</b>                  |                 |  |               |                    |       |               |                    |
| 12  | 8               | 0  | 4             | 0                  | Yes   | SR2B121B      | 0.250<br>0.551     |
| 20  | 12              | 0  | 8             | 0                  | Yes   | SR2B201B      | 0.380<br>0.838     |
| <b>48 V <math>\sim</math> power supply</b>                  |                 |  |               |                    |       |               |                    |
| 20  | 12              | 0  | 8             | 0                  | No    | SR2A201E (1)  | 0.380<br>0.838     |
| <b>100...240 V <math>\sim</math> power supply</b>           |                 |  |               |                    |       |               |                    |
| 10  | 6               | 0  | 4             | 0                  | No    | SR2A101FU (1) | 0.250<br>0.551     |
| 12  | 8               | 0  | 4             | 0                  | Yes   | SR2B121FU     | 0.250<br>0.551     |
| 20  | 12              | 0  | 8             | 0                  | No    | SR2A201FU (1) | 0.380<br>0.838     |
|   |                 |  |               |                    | Yes   | SR2B201FU     | 0.380<br>0.838     |
| <b>12 V <math>\overline{\text{---}}</math> power supply</b> |                 |  |               |                    |       |               |                    |
| 12  | 8               | 4  | 4             | 0                  | Yes   | SR2B121JD     | 0.250<br>0.551     |
| 20  | 12              | 6  | 8             | 0                  | Yes   | SR2B201JD     | 0.380<br>0.838     |
| <b>24 V <math>\overline{\text{---}}</math> power supply</b> |                 |  |               |                    |       |               |                    |
| 10  | 6               | 0  | 4             | 0                  | No    | SR2A101BD (1) | 0.250<br>0.551     |
|   |                 |  |               |                    | Yes   | SR2B121BD     | 0.250<br>0.551     |
| 20  | 12              | 2  | 8             | 0                  | Yes   | SR2B122BD     | 0.220<br>0.485     |
|   |                 |  |               |                    | No    | SR2A201BD (1) | 0.380<br>0.838     |
|   |                 |  |               |                    | Yes   | SR2B201BD     | 0.380<br>0.838     |
|   |                 | 6  | 8             | 0                  | Yes   | SR2B202BD     | 0.280<br>0.617     |

### "Zelio Soft 2" software

See page 20

### Connection accessories

See page 20

### Compact "discovery" packs

Pack contents:

- Compact smart relay with display SR2B.....
- + "Zelio Soft 2" programming software on CD-ROM SR2SFT01
- + PC connecting cable SR2USB01

| Number of I/O   | Pack contents (references) | Reference  | Weight<br>kg<br>lb |
|---|----------------------------|------------|--------------------|
| <b>100...240 V <math>\sim</math> power supply</b>           |                            |            |                    |
| 12  | SR2B121FU                  | SR2PACKFU  | 0.700<br>1.543     |
|   | + SR2SFT01<br>+ SR2USB01   |            |                    |
| 20  | SR2B201FU                  | SR2PACK2FU | 0.850<br>1.874     |
|   | + SR2SFT01<br>+ SR2USB01   |            |                    |
| <b>24 V <math>\overline{\text{---}}</math> power supply</b> |                            |            |                    |
| 12  | SR2B121BD                  | SR2PACKBD  | 0.700<br>1.543     |
|   | + SR2SFT01<br>+ SR2USB01   |            |                    |
| 20  | SR2B201BD                  | SR2PACK2BD | 0.700<br>1.543     |
|   | + SR2SFT01<br>+ SR2USB01   |            |                    |

### Modem communication interface

| 12...24 V $\overline{\text{---}}$ power supply |             |
|--|-------------|
| Description                                    | Reference   |
| Modem communication interface                  | See page 32 |

(1) Programming in ladder language only





SR2E121BD



SR2SFT01



SR2USB01



Modem communication interface

### Compact smart relays without display

| Number of I/O   | Discrete inputs | Including 0-10 V $\overline{\text{---}}$ analog inputs | Relay outputs | Transistor outputs | Clock | Reference     | Weight<br>kg<br>lb |
|---|-----------------|--|---------------|--------------------|-------|---------------|--------------------|
| <b>24 V <math>\sim</math> power supply</b>                  |                 |  |               |                    |       |               |                    |
| 12  | 8               | 0  | 4             | 0                  | Yes   | SR2E121B      | 0.220<br>0.485     |
| 20  | 12              | 0  | 8             | 0                  | Yes   | SR2E201B      | 0.350<br>0.772     |
| <b>100...240 V <math>\sim</math> power supply</b>           |                 |  |               |                    |       |               |                    |
| 10  | 6               | 0  | 4             | 0                  | No    | SR2D101FU (1) | 0.220<br>0.485     |
| 12  | 8               | 0  | 4             | 0                  | Yes   | SR2E121FU     | 0.220<br>0.485     |
| 20  | 12              | 0  | 8             | 0                  | No    | SR2D201FU (1) | 0.350<br>0.772     |
|   |                 |  |               |                    | Yes   | SR2E201FU     | 0.350<br>0.772     |
| <b>24 V <math>\overline{\text{---}}</math> power supply</b> |                 |  |               |                    |       |               |                    |
| 10  | 6               | 0  | 4             | 0                  | No    | SR2D101BD (1) | 0.220<br>0.485     |
| 12  | 8               | 4  | 4             | 0                  | Yes   | SR2E121BD     | 0.220<br>0.485     |
| 20  | 12              | 2  | 8             | 0                  | No    | SR2D201BD (1) | 0.350<br>0.772     |
|   |                 | 6  | 8             | 0                  | Yes   | SR2E201BD     | 0.350<br>0.772     |

### “Zelio Soft 2” software

See page 20

### Accessories

See page 20

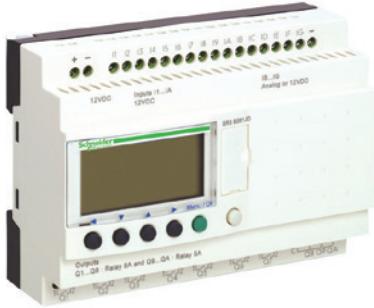
### Modem communication interface

| 12...24 V $\overline{\text{---}}$ power supply |             |
|--|-------------|
| Description                                    | Reference   |
| Modem communication interface                  | See page 32 |

(1) Programming in ladder language only

# Zelio Logic - Smart relays

## Modular smart relays



SR3B261B



SR2SFT01



SR3PACK●●●

### Modular smart relays with display

| Number of I/O   | Discrete inputs | Including 0-10 V $\overline{\text{---}}$ analog inputs | Relay outputs | Transistor outputs | Clock | Reference | Weight kg / lb |
|---|-----------------|--|---------------|--------------------|-------|-----------|----------------|
| <b>24 V <math>\sim</math> power supply</b>                  |                 |  |               |                    |       |           |                |
| 10  | 6               | 0  | 4             | 0                  | Yes   | SR3B101B  | 0.250 / 0.551  |
| 26  | 16              | 0  | 10 (1)        | 0                  | Yes   | SR3B261B  | 0.400 / 0.882  |
| <b>100...240 V <math>\sim</math> power supply</b>           |                 |  |               |                    |       |           |                |
| 10  | 6               | 0  | 4             | 0                  | Yes   | SR3B101FU | 0.250 / 0.551  |
| 26  | 16              | 0  | 10 (1)        | 0                  | Yes   | SR3B261FU | 0.400 / 0.882  |
| <b>12 V <math>\overline{\text{---}}</math> power supply</b> |                 |  |               |                    |       |           |                |
| 26  | 16              | 6  | 10 (1)        | 0                  | Yes   | SR3B261JD | 0.400 / 0.882  |
| <b>24 V <math>\overline{\text{---}}</math> power supply</b> |                 |  |               |                    |       |           |                |
| 10  | 6               | 4  | 4             | 0                  | Yes   | SR3B101BD | 0.250 / 0.551  |
|   |                 |  | 0             | 4                  | Yes   | SR3B102BD | 0.220 / 0.485  |
| 26  | 16              | 6  | 10 (1)        | 0                  | Yes   | SR3B261BD | 0.400 / 0.882  |
|   |                 |  | 0             | 10                 | Yes   | SR3B262BD | 0.300 / 0.661  |

### "Zelio Soft 2" software

See page 20.

### Connection accessories

See page 20.

### Modular "discovery" packs

Pack contents:  
 Modular smart relay with display SR3B●●●●  
 + "Zelio Soft 2" programming software on CD-ROM SR2SFT01  
 + PC connecting cable SR2USB01

| Number of I/O   | Pack contents (references) | Reference  | Weight kg / lb |
|---|----------------------------|------------|----------------|
| <b>100...240 V <math>\sim</math> power supply</b>           |                            |            |                |
| 10  | SR3B101FU                  | SR3PACKFU  | 0.700          |
|   | + SR2SFT01<br>+ SR2USB01   |            | 1.543          |
| 26  | SR3B261FU                  | SR3PACK2FU | 0.850          |
|   | + SR2SFT01<br>+ SR2USB01   |            | 1.874          |
| <b>24 V <math>\overline{\text{---}}</math> power supply</b> |                            |            |                |
| 10  | SR3B101BD                  | SR3PACKBD  | 0.700          |
|   | + SR2SFT01<br>+ SR2USB01   |            | 1.543          |
| 26  | SR3B261BD                  | SR3PACK2BD | 0.850          |
|   | + SR2SFT01<br>+ SR2USB01   |            | 1.874          |

(1) Including 8 outputs at maximum current of 8 A and 2 outputs at maximum current of 5 A.

**Note:** The Zelio Logic smart relay and its associated extensions have an identical voltage to be able to operate together.

# Zelio Logic - Smart relays

## Modular smart relays



Modbus serial link communication extension



Ethernet Modbus/TCP communication extension



SR3XT141JD



Modem communication interface

### Communication extension (1)

#### 24 V $\overline{\text{---}}$ power supply (via SR3B...BD smart relays)

| For use with   | Communication ports             | Reference   |
|--|---------------------------------|-------------|
| SR3B...1BD and SR3B...2BD Zelio Logic modular smart relays | Modbus RS485 serial link (RJ45) | See page 22 |
|  | Ethernet Modbus/TCP (RJ45)      | See page 22 |

### Analog I/O extension (2)

#### 24 V $\overline{\text{---}}$ power supply (via Zelio Logic SR3B...BD smart relay)

| Number of I/O | Inputs | Including $\overline{\text{---}}$ 0-10 V | Including $\overline{\text{---}}$ 0-20 mA | Including Pt100 | 0-10 V $\overline{\text{---}}$ output | Reference   |
|---------------|--------|--|---|-----------------|---------------------------------------|-------------|
| 4             | 2      | 2 max.                                   | 2 max.                                    | 1 max.          | 2                                     | See page 30 |

### Discrete I/O extensions

| Number of I/O | Discrete inputs | Relay outputs | Reference | Weight kg/lb |
|---------------|-----------------|---------------|-----------|--------------|
|---------------|-----------------|---------------|-----------|--------------|

#### 24 V $\sim$ power supply (via Zelio Logic SR3B...B smart relays)

|    |   |       |           |                |
|----|---|-------|-----------|----------------|
| 6  | 4 | 2     | SR3XT61B  | 0.125<br>0.276 |
| 10 | 6 | 4     | SR3XT101B | 0.200<br>0.441 |
| 14 | 8 | 6 (3) | SR3XT141B | 0.220<br>0.485 |

#### 100-240 V $\sim$ power supply (via Zelio Logic SR3B...FU smart relays)

|    |   |       |            |                |
|----|---|-------|------------|----------------|
| 6  | 4 | 2     | SR3XT61FU  | 0.125<br>0.276 |
| 10 | 6 | 4     | SR3XT101FU | 0.200<br>0.441 |
| 14 | 8 | 6 (3) | SR3XT141FU | 0.220<br>0.485 |

#### 12 V $\overline{\text{---}}$ power (via Zelio Logic SR3B261JD smart relay)

|    |   |       |            |                |
|----|---|-------|------------|----------------|
| 6  | 4 | 2     | SR3XT61JD  | 0.125<br>0.276 |
| 10 | 6 | 4     | SR3XT101JD | 0.200<br>0.441 |
| 14 | 8 | 6 (3) | SR3XT141JD | 0.220<br>0.485 |

#### 24 V $\overline{\text{---}}$ power supply (via Zelio Logic SR3B...BD smart relays)

|    |   |       |            |                |
|----|---|-------|------------|----------------|
| 6  | 4 | 2     | SR3XT61BD  | 0.125<br>0.276 |
| 10 | 6 | 4     | SR3XT101BD | 0.200<br>0.441 |
| 14 | 8 | 6 (3) | SR3XT141BD | 0.220<br>0.485 |

### Modem communication interface (4)

#### 12...24 V $\overline{\text{---}}$ power supply

| Description                   | Reference   |
|-------------------------------|-------------|
| Modem communication interface | See page 32 |

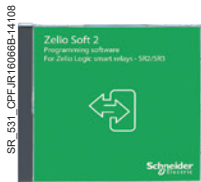
(1) See page 22.

(2) See page 30.

(3) Including 4 outputs at maximum current of 8 A and 2 outputs at maximum current of 5 A.

(4) See page 32.

**Note:** The Zelio Logic smart relay and its associated extensions have an identical voltage to be able to operate together.



SR\_531\_CPF-IR16068B-14108

SR2SFT01



PA577329

HMISTO501



PF153902B

HMISTO705



SR\_531\_CPF-IR16063

SR2USB01



SR\_531\_CPF-IR16082B

SR2CBL09



SR\_531\_CPF-IR16058B

SR2BTC01



SR\_531\_CPF-IR16088

SR2MEM02

### Programming

| Description  | Use   | Reference       | Weight<br>kg<br>lb |
|--|---|-----------------|--------------------|
| <b>“Zelio Soft 2” software</b>   |   |                 |                    |
| <b>Programming software</b><br>“Zelio Soft 2”, multilingual,<br>supplied on CD-ROM (1) | For PC and 32-bit and 64-bit operating systems compatible with Windows 7, 8.1, and 10 | <b>SR2SFT01</b> | 0.200<br>0.441     |

### HMI

|   |  |                      |                 |
|---|--|----------------------|-----------------|
| <b>Magelis Small Panel with monochrome touch screen</b> | 3.4" monochrome screen with 3 colors (green, orange, red)<br>16 MB application memory capacity<br>Programmed using Vijeo Designer ≥ V6.0 | <b>HMISTO501</b>     | 0.200<br>0.441  |
| <b>Magelis Small Panel with color TFT touch screen</b>  | 4.3" color screen<br>26 MB application memory capacity<br>Programmed using Vijeo XD  | <b>HMISTO705 (2)</b> | 0.220/<br>0.485 |

### Connection accessories

|   |   |                 |                |
|---|---|-----------------|----------------|
| <b>Connecting cables</b><br>Length: 3 m (9.84 ft.)<br>For use with “Zelio Soft 2” | Between the PC (9-way SUB-D connector) and the Zelio Logic smart relay (programming port connector)   | <b>SR2CBL01</b> | 0.150<br>0.331 |
|   | Between the PC (USB connector) and the Zelio Logic smart relay (programming port connector)   | <b>SR2USB01</b> | 0.100<br>0.220 |
| <b>Connecting cables</b><br>Length: 2.5 m (8.20 ft.)                              | Between the Magelis XBTN, XBTR, or XBTRT Small Panel (8-way mini-DIN connector) and the Zelio Logic smart relay (programming port connector)                | <b>SR2CBL08</b> | 0.100<br>0.220 |
|   | Between the Magelis HMISTO501 or HMISTO705 Small Panel (9-way removable screw terminal block) and the Zelio Logic smart relays (programming port connector) | <b>SR2CBL09</b> | -              |

|   |   |                 |                |
|---|---|-----------------|----------------|
| <b>Bluetooth interface for Zelio Logic smart relays</b> | Between the PC (wireless link) and the Zelio Logic smart relay. Range of 10 m (32.80 ft.) (class 2) | <b>SR2BTC01</b> | 0.015<br>0.033 |
|---|---|-----------------|----------------|

### Memory cartridges (3)

|                                 |   |                 |                |
|---------------------------------|---|-----------------|----------------|
| <b>EEPROM memory cartridges</b> | For firmware (software embedded in the smart relay) version ≤ 2.4 | <b>SR2MEM01</b> | 0.010<br>0.022 |
|                                 | For firmware (software embedded in the smart relay) version ≥ 3.0 | <b>SR2MEM02</b> | 0.010<br>0.022 |

### Online documentation available

**User Manuals** for direct programming on the Zelio Logic smart relay (in English, French, German, Italian, Portuguese, or Spanish): please visit our website [www.schneider-electric.com](http://www.schneider-electric.com).

### Regulated switch mode power supplies

| Input voltage            | Nominal output voltage   | Reference  |
|--------------------------|--|--|
| 100...240 V ~ (50/60 Hz) | 5 V $\overline{\text{---}}$ , 12 V $\overline{\text{---}}$ , or 24 V $\overline{\text{---}}$ | Please refer to the product catalog (DIA3ED2170401EN) and visit our website <a href="http://www.schneider-electric.com">www.schneider-electric.com</a> |

### Converters

| Description   | Reference   |
|---|-------------|
| <b>Converters for J and K type thermocouples, for Pt100 probes, and voltage/current</b> | See page 38 |

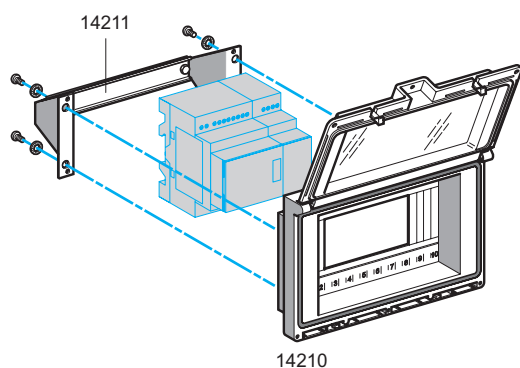
(1) Also available as a free download from [www.schneider-electric.com](http://www.schneider-electric.com).

(2) The SR2CBL09 cable used to connect an HMISTO705 terminal to a smart relay must be equipped with a shunt between the terminals marked CTS and RTS. This shunt is included on all cables leaving the factory after June 2017 (date code 1722).

(3) The use of memory cartridge SR2MEM02 to load the program is not compatible with the SR2COM01 modem communication interface.

# Zelio Logic - Smart relays

## Compact and modular smart relays



### Mounting accessories

| Description/use  | Mounting capacity  | Reference    | Weight<br>kg<br>lb |
|--|--|--------------|--------------------|
| <b>Dust- and damp-proof enclosure</b> with split blanking plate arrangement, equipped with an IP 55 dust- and damp-proof window with hinged flap for mounting through a door | - 1 or 2 SR2 smart relays with 10 or 12 I/O                                | <b>14210</b> | 0.350              |
|  | - or 1 SR2 smart relay with 20 I/O   |              | 0.772              |
|  | - or 1 SR3 smart relay with 10 I/O + 1 I/O extension with 6, 10, or 14 I/O |              |                    |
|  | - or 1 SR3 smart relay with 26 I/O + 1 I/O extension with 6 I/O            |              |                    |
| <b>Mounting bracket and symmetrical mounting rail</b>  | For mounting enclosure <b>14210</b> through a door panel                   | <b>14211</b> | 0.210<br>0.463     |

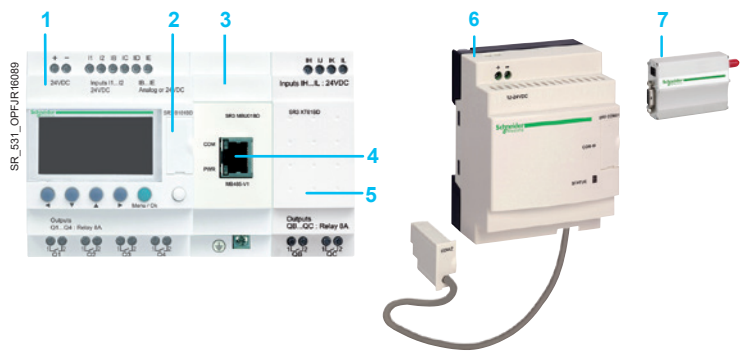
# Zelio Logic - Smart relays

## Communication

### Presentation

In order to communicate with their environment, Zelio Logic compact and modular smart relays and their extensions are equipped with various types of communication port.

- Compact and modular smart relays feature 1 serial link port for connecting a PC, the modem communication interface, a memory cartridge slot, or an HMI terminal. This port uses a dedicated Zelio Logic communication protocol.
- Zelio Logic modular smart relay extensions feature:
  - 1 RS 485 serial link port using the Modbus protocol on the **SR3MBU01BD** extension
  - 1 Ethernet Modbus/TCP 10/100 base T port on the **SR3NET01BD** extension



- 1 Modular smart relay (10 or 26 I/O)
- 2 Serial link port, Zelio Logic connector
- 3 Modbus slave or Ethernet server communication extension module
- 4 RJ45 connector for Modbus serial link or Ethernet Modbus/TCP network connection
- 5 Discrete (6, 10, or 14 I/O) or analog (4 I/O) I/O extension
- 6 Modem communication interface
- 7 GSM/UMTS modem

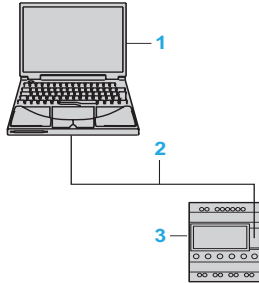
△ Observe the order of assembly above when using a Modbus serial link (slave) or Ethernet Modbus/TCP (server) network communication extension and a discrete or analog I/O extension. An I/O extension cannot be inserted before the Modbus serial link (slave) or Ethernet Modbus/TCP (server) network communication extension.

### Communication ports on Zelio Logic smart relays and their extensions

|              | Smart relay serial link port  | Modbus serial link port on SR3MBU01BD extension                            | Ethernet Modbus/TCP port on SR3NET01BD extension                           | Modem communication interface port                             |
|--------------|---|--|--|--|
| Smart relays | Physical layer  |  |  |  |
|              | Proprietary   | RS 485   | 10/100 base T  | RS 232   |
|              | Connector   |  |  |  |
|              | Zelio Logic   | RJ45   | RJ45   | Dedicated Zelio  |
| Compact      | All types (connection and isolation via SR2CBL01 or SR2USB01 cable) | –  | –  | All SR2B●●●●●, SR2E●●●●● smart relays with clock (see page 32) |
| Modular      | All types (connection and isolation via SR2CBL01 or SR2USB01 cable) | All SR3B●●●●BD smart relays with 24 V $\overline{\text{---}}$ power supply | All SR3B●●●●BD smart relays with 24 V $\overline{\text{---}}$ power supply | All types (see page 32)  |

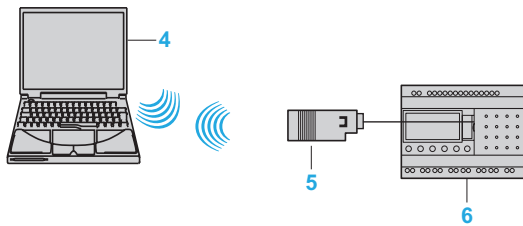
### Description

#### Wired connection



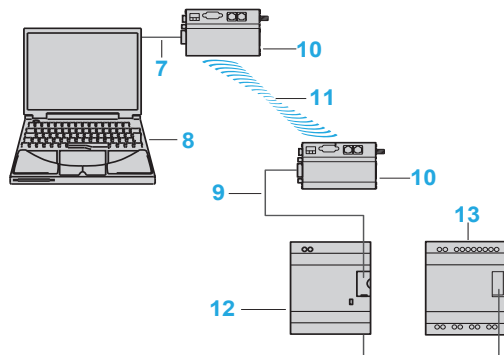
- 1 Programming PC
- 2 USB cable (SR2USB01) or serial link cable (SR2CBL01) (1)
- 3 Zelio Logic compact or modular smart relay

#### Wireless connection



- 4 Programming PC with integrated Bluetooth technology (1)
- 5 Bluetooth interface (SR2BTC01) for Zelio Logic smart relay (1)
- 6 Zelio Logic compact or modular smart relay

#### Modem link



- 7 PC-modem connecting cable (SR1CBL03)
- 8 Programming PC
- 9 Modem interface connecting cable included with SR2COM01(1)
- 10 Data transmission/reception modem (SR2MOD02) (1)
- 11 Phone or radio link
- 12 Communication interface (SR2COM01)
- 13 Zelio Logic compact or modular smart relay

(1) See page 20.



Modbus serial link network communication extension

### Presentation

The Modbus communication protocol is the master/slave type.

Two exchange methods are possible:

- Request/response:
  - The request from the master is addressed to a specific slave.
  - The response is expected by return from the polled slave.
- Broadcast:
  - The master broadcasts a request to all slave stations on the bus. These stations execute the command without transmitting a response.

Zelio Logic modular smart relays are connected to the Modbus network via the Modbus slave network communication extension. This extension is a slave that is not electrically isolated.

The Modbus slave network communication extension must be connected to an SR3B●●●BD modular smart relay with a 24 V  $\square$  power supply.

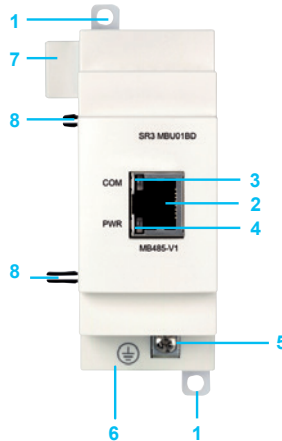
### Configuration

The Modbus slave network communication extension can be configured:

- locally, using the buttons on the smart relay (1)
- on a PC using "Zelio Soft 2" software (see page 10)

When using a PC, programming can be performed either in ladder language or in function block diagram (FBD) language (see page 12).

### Description



The Modbus slave network communication extension **SR3MBU01BD** comprises:

- 1 Two retractable mounting lugs
- 2 A Modbus network connection (RJ45 shielded female connector)
- 3 A communication LED (COM)
- 4 A power LED (PWR)
- 5 A screw terminal block for the protective ground connection
- 6 Spring for clip-on mounting on a 35 mm / 1.38 in rail
- 7 Connector for connection to the Zelio Logic smart relay (powered via the Zelio Logic smart relay)
- 8 Locating pegs

(1) Programming via the buttons on the front panel of the smart relay is only possible in ladder language.



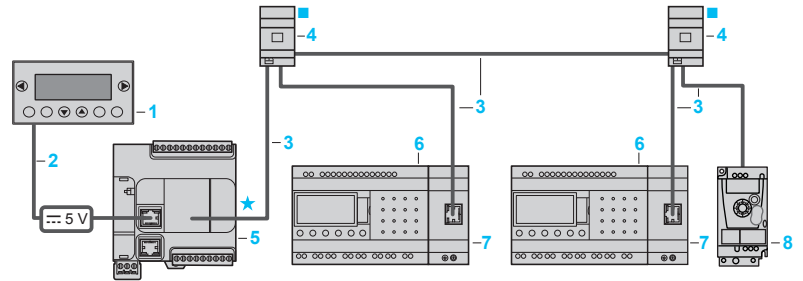
# Zelio Logic - Smart relays

## Communication

### Modbus serial link communication protocol

#### Connection examples

##### Example 1



- Total length of cables between M221 and Altivar 12:  $\leq 30$  m (98.43 ft)

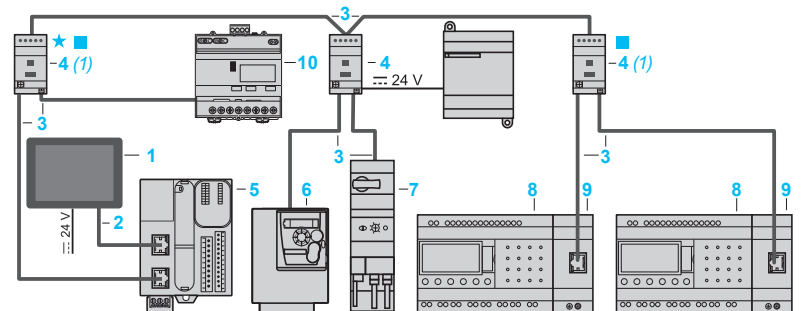
- Length of cable 3:  $\leq 10$  m (32.81 ft)

★ Line polarization active ■ Line terminator

- 1 Slave display unit **XBTN401**
- 2 Controller to Magelis HMI cordsets
- 3 Modbus RS485 cordsets (**VW3A8306R** extension cables)
- 4 Junction box **TWDXCAT3RJ** (1 x RJ45 for trunk cable, 2 x RJ45 for drop)
- 5 Modicon master logic controller **TM221C** equipped with communication cartridge **TMC2SL1** (1)
- 6 Modular smart relay **SR3B**
- 7 Modbus communication extension module **SR3MBU01BD**
- 8 Altivar 12 drive

(1) Polarization must be enabled in the Modicon M221 master.

##### Example 2



- Total length of cables between isolation boxes 4:  $\leq 1,000$  m (3,281 ft)

- Length of drop cables 3:  $\leq 10$  m (32.81 ft)

★ Line polarization active ■ Line terminator

- 1 Master display unit **HMISCU**
- 2 Controller to Magelis HMI cordsets
- 3 Modbus RS485 cordsets (**VW3A8306R** extension cables)
- 4 Serial link tap isolation box **TWDXCAISO** (1 x RJ45 for trunk cable, 2 x RJ45 for drop)
- 5 Modicon master logic controller **TM221M** (2)
- 6 Altivar 312 variable speed drive
- 7 TeSys U motor starter controller
- 8 Modular smart relay **SR3B**
- 9 Modbus communication extension module **SR3MBU01BD**
- 10 Power meter **IEM31**

(1) Box powered by the logic controller

(2) Network master connected to serial link port (SERIAL1)

#### Function description

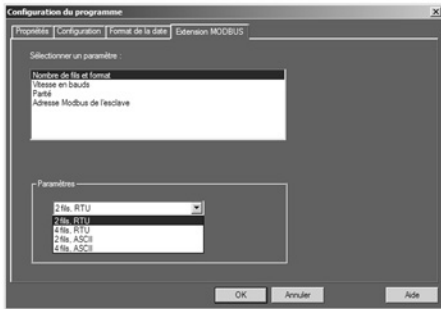
- The Modbus slave network communication extension is connected to a 2-wire or 4-wire Modbus network (1).
- The maximum length between 2 **TWDXCAISO** taps configured as line terminators is 1,000 m/3,281 ft (9600 baud max., AWG 26).
- A maximum of 32 slaves can be connected to the Modbus network, or a maximum of 247 slaves with repeaters.
- The connection cable and its RJ45 male connectors must be shielded.
- The module  $\perp$  terminal must be connected directly to the protective ground.

(1) Refer to the Quick Reference Guide supplied with the product.

# Zelio Logic - Smart relays

## Communication

### Modbus serial link communication protocol



Software workshop parameter entry window

#### Parameter entry

Parameters can be entered either using “Zelio Soft 2” software, or directly using the buttons on the Zelio Logic smart relay (1).

When the “RUN” command is issued, the Zelio Logic smart relay initializes the Modbus slave network communication extension in a configuration previously defined in the basic program.

The Modbus slave network communication extension has 4 parameters:

- number of UART wires and Modbus frame format
- transmission speed
- parity
- Modbus extension network address

The default parameter settings are as follows: 2-wire, RTU, 19,200 baud, even parity, address 1.

| Parameters                | Options  |
|---------------------------|--|
| Number of wires           | 2 or 4   |
| Frame format              | RTU or ASCII   |
| Transmission speed (baud) | 1200, 2400, 4800, 9600, 19,200, 28,800, 38,400, 57,600 |
| Parity                    | None, even, odd  |
| Network address           | 1 to 247   |

#### Addressing Modbus exchanges

##### Ladder programming

In ladder mode, the 4 data words (16 bits) to be exchanged cannot be accessed by the application. Transfers with the master are implicit and are carried out in a way that is totally transparent.

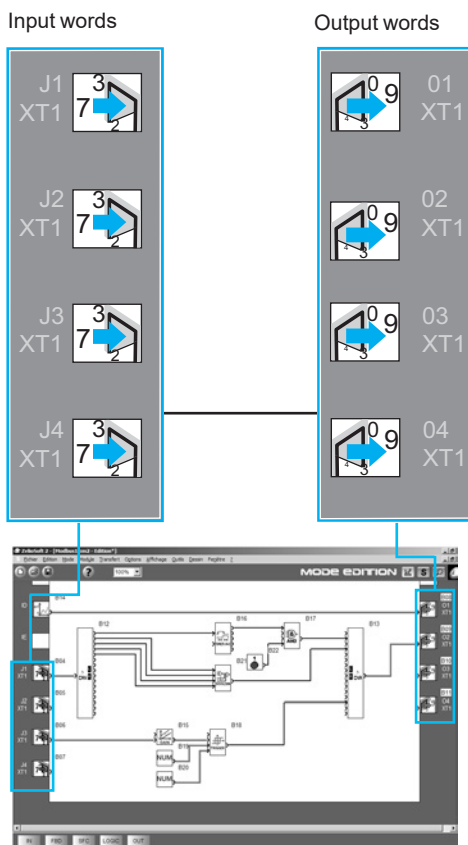
| Modbus exchanges         | Code                        | Number of words |
|--------------------------|-----------------------------|-----------------|
| Image of smart relay I/O | Read<br>03                  | 4               |
| Clock words              | Read/Write<br>16, 06, or 03 | 4               |
| Status words             | Read<br>03                  | 1               |

##### Function block diagram (FBD) programming

In FBD mode, the 4 input data words (16 bits) (J1XT1 to J4XT1) and the 4 output data words (O1XT1 to O4XT1) can be accessed by the application. Conversion function blocks are used to:

- break down a word type input (16 bits) into 16 separate “bit” type outputs using the CAN (analog-to-digital conversion) function e.g. to break down a J1XT1 to J4XT1 type input and copy these status values to discrete outputs
- compose a word type output (16 bits) from 16 separate “bit” type outputs using the CNA (digital-to-analog conversion) function e.g. to transfer the status value of discrete inputs or the status of a function to an O1XT1 to O4XT1 type output

| Modbus exchanges | Code                        | Number of words |
|------------------|-----------------------------|-----------------|
| Input words      | Read/Write<br>16, 06, or 03 | 4               |
| Output words     | Read<br>03                  | 4               |
| Clock words      | Read/Write<br>16, 06, or 03 | 4               |
| Status words     | Read<br>03                  | 1               |



FBD program editing window

(1) Programming via the buttons on the front panel of the smart relay is only possible in ladder language.



Ethernet (server) network communication extension

### Presentation

The **SR3NET01BD** extension is used to communicate over Ethernet via the Modbus/TCP protocol in server mode. It must be connected to an **SR3B●●●BD** smart relay with a 24 V  $\bar{\text{---}}$  power supply.

### Configuration

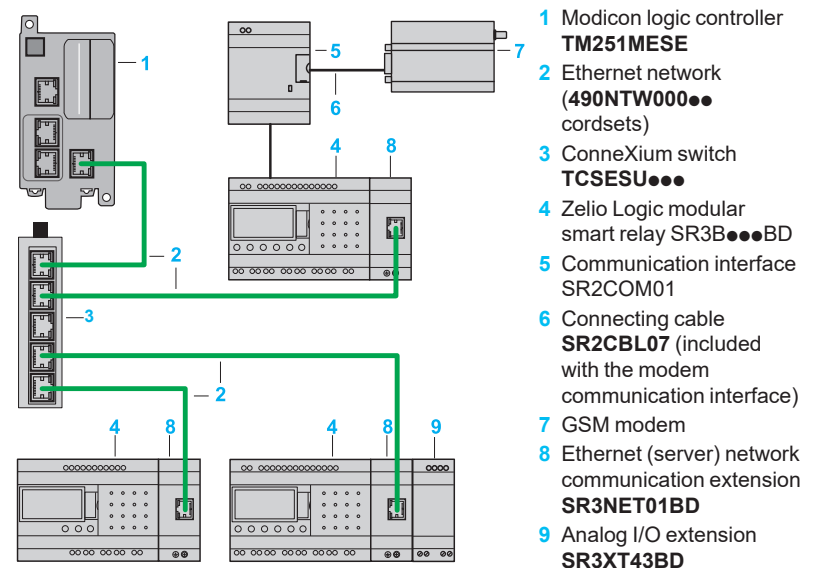
The extension is configured on a PC using “Zelio Soft 2” software (see page 10). Programming on the PC is performed in function block diagram (FBD) language (see page 12).

### Description

The Ethernet Modbus/TCP network communication extension **SR3NET01BD** comprises:

- |  |   |
|--|---|
|  | <ol style="list-style-type: none"> <li>1 Two retractable mounting lugs</li> <li>2 An Ethernet network connection (RJ45 shielded female connector)</li> <li>3 A communication LED (LK/ACT 10/100)</li> <li>4 A status LED (STS)</li> <li>5 A screw terminal block for the protective ground connection</li> <li>6 Spring for clip-on mounting on a 35 mm/1.38 in rail</li> <li>7 Connector for connection to the Zelio Logic smart relay (powered via the Zelio Logic smart relay)</li> <li>8 Locating pegs</li> </ol> |
|--|---|

### Connection example



### Function description

- The Ethernet Modbus/TCP network communication extension is connected to a LAN.
- The maximum cable length between 2 devices is 100 m/328.08 ft.
- The connection cable must be at least category 5, and its RJ45 male connectors must be shielded.
- The  $\bar{\text{---}}$  terminal must be connected directly to the protective ground.



Ethernet extension configuration window

### Parameter entry

Parameters can be entered using “Zelio Soft 2” software. When the “RUN” command is issued, the Zelio Logic smart relay initializes the Ethernet Modbus/TCP network communication extension in a configuration previously defined in the basic program.

The Ethernet Modbus/TCP network communication extension has 6 parameters:

- type of addressing (dynamic or static)
- IP address
- subnet mask
- gateway address
- reserved address
- time out

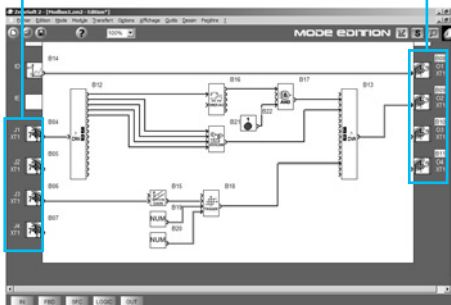
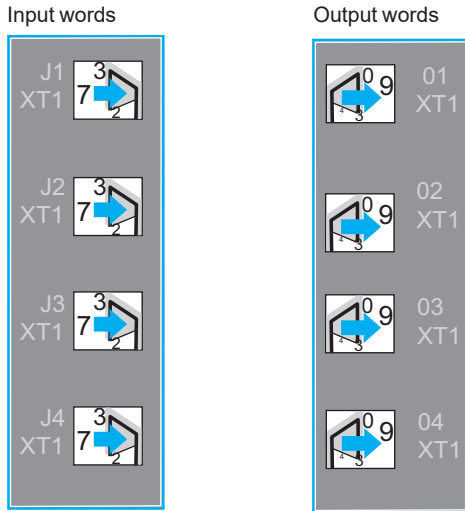
### Addressing Ethernet exchanges

#### Function block diagram (FBD) programming


In FBD mode, the 4 input data words (16 bits) (J1XT1 to J4XT1) and the 4 output data words (O1XT1 to O4XT1) can be accessed by the application.

Conversion function blocks are used to:

- break down a word type input (16 bits) into 16 separate “bit” type outputs using the CAN (analog-to-digital conversion) function e.g. to break down a J1XT1 to J4XT1 type input and copy these status values to discrete outputs
- compose a word type output (16 bits) from 16 separate “bit” type outputs using the CNA (digital-to-analog conversion) function e.g. to transfer the status value of discrete inputs or the status of a function to an O1XT1 to O4XT1 type output



FBD program editing window

| Ethernet exchanges  | Code                        | Number of words |
|---|-----------------------------|-----------------|
| Input words   | Read/Write<br>16, 06, or 03 | 4               |
| Output words  | Read<br>03                  | 4               |
| Clock words  | Read/Write<br>16, 06, or 03 | 4               |
| Status words  | Read<br>03                  | 1               |



SR3MBU01BD



SR3NET01BD



TWDXCAT3RJ



TWDXCAISO

### Modbus serial link and Ethernet Modbus/TCP network communication extensions

| For use with                                 | Communication ports | Reference         | Weight<br>kg<br>lb |
|--|---------------------|-------------------|--------------------|
| SR3B●●1BD and SR3B●●2BD modular smart relays | Serial link (RJ45)  | SR3MBU01BD        | 0.110<br>0.242     |
|  | Ethernet (RJ45)     | SR3NET01BD<br>(1) | 0.110<br>0.242     |

### Connection accessories

| Designation   | Description   | Network             | Length<br>m/ft          | Reference                                    | Weight<br>kg<br>lb |          |             |                |
|---|---|---------------------|-------------------------|--|--------------------|----------|-------------|----------------|
| T-junctions   | <input type="checkbox"/> 2 x RJ45 connectors<br><input type="checkbox"/> 1 integrated cable with RJ45 connector   | Modbus serial link  | 0.3/0.98                | VW3A8306TF03                                 | 0.190<br>0.418     |          |             |                |
|   |   |                     | 1/3.28                  | VW3A8306TF10                                 | 0.210<br>0.462     |          |             |                |
|   | <input type="checkbox"/> 2 x RJ45 female connectors<br><input type="checkbox"/> 1 x RJ45 male connector   | Modbus serial link  | Without cable           | 170XTS04100                                  | 0.020<br>0.044     |          |             |                |
| Junction boxes  | <input type="checkbox"/> Screw terminal block for trunk cable<br><input type="checkbox"/> 2 x RJ45 connectors for tap link<br><input type="checkbox"/> Isolation of RS 485 serial link<br><input type="checkbox"/> Polarization and line termination<br><input type="checkbox"/> 24 V $\overline{\text{DC}}$ power supply<br><input type="checkbox"/> Mounting on $\overline{\text{C}}$ rail (35 mm/1.38 in.) | Modbus serial link  | –                       | TWDXCAISO                                    | 0.100<br>0.220     |          |             |                |
|   |   |                     | –                       | TWDXCAT3RJ                                   | 0.080<br>0.176     |          |             |                |
| Line terminator   | <input type="checkbox"/> For RJ45 connector<br><input type="checkbox"/> R = 120 $\Omega$ , C = 1 nF   | Modbus serial link  | –                       | VW3A8306RC                                   | 0.200<br>0.440     |          |             |                |
|   |   |                     | RS 485 extension cables | <input type="checkbox"/> 2 x RJ45 connectors | Modbus serial link | 0.3/0.98 | VW3A8306R03 | 0.030<br>0.066 |
|   |   |                     |                         |  |                    | 1/3.28   | VW3A8306R10 | 0.050<br>0.110 |
| –   | –   | –                   | 3/9.84                  | VW3A8306R30                                  | 0.150<br>0.330     |          |             |                |
| RS 485 double shielded twisted pair trunk cables        | <input type="checkbox"/> Modbus serial link, supplied without connector   | Modbus serial link  | 100/328.08              | TSXCSA100                                    | 5.680<br>12.52     |          |             |                |
|   |   |                     | 200/656.17              | TSXCSA200                                    | 10.920<br>24.074   |          |             |                |
|   |   |                     | 500/640.42              | TSXCSA500                                    | 30.00<br>66.13     |          |             |                |
| Straight-through shielded twisted pair extension cables | <input type="checkbox"/> 2 x RJ45 connectors  | Ethernet Modbus/TCP | 2/6.56                  | 490NTW00002<br>(2)                           | –                  |          |             |                |
|   |   |                     | 5/16.40                 | 490NTW00005<br>(2)                           | –                  |          |             |                |
|   |   |                     | 12/39.37                | 490NTW00012<br>(2)                           | –                  |          |             |                |
|   |   |                     | 40/131.23               | 490NTW00040<br>(2)                           | –                  |          |             |                |
|   |   |                     | 80/262.47               | 490NTW00080<br>(2)                           | –                  |          |             |                |

(1) Can only be used in FBD language.

(2) Cable compliant with EIA/TIA-568 standard category 5 and IEC 1180/EN 50173 class D.  
For UL and CSA 22.1 approved cables, add the letter U at the end of the reference.



Analog I/O extension

### Presentation

#### Modular smart relays and analog I/O extensions

To improve performance and flexibility, Zelio Logic modular smart relays can take analog I/O extensions with 10-bit resolution. The inputs accept 0-10 V, 0-20 mA, and Pt 100 signals.

Using a Zelio Logic modular smart relay with a 24 V  $\overline{\text{DC}}$  power supply in conjunction with an analog 4 I/O extension makes it possible to obtain up to 30 I/O, including 8 analog inputs and 2 analog outputs.

The analog I/O extension works with SR3●●●BD smart relays with a 24 V  $\overline{\text{DC}}$  power supply.

### Description



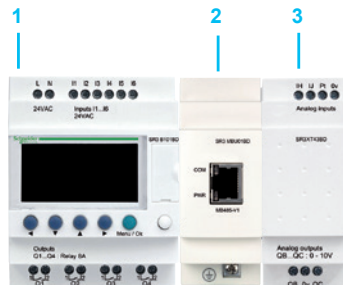
The analog I/O extension front panel comprises:

- 1 Two retractable mounting feet
- 2 Terminals for connecting the inputs
- 3 Terminals for connecting the outputs
- 4 Connector for connection to the smart relay (powered via the smart relay)
- 5 Locating pegs

### Combination of modular smart relays and extensions



- 1 Modular smart relay (10 or 26 I/O)
- 2 Analog I/O extension (4 I/O)



- 1 Modular smart relay (10 or 26 I/O)
- 2 Modbus serial link or Ethernet Modbus/TCP network communication extensions
- 3 Analog I/O extension (4 I/O)

$\Delta$  Observe the order of assembly above when using a network communication module and an analog I/O extension. An I/O extension cannot be inserted before the network communication extension.



SR3XT43BD

### Analog I/O extension

24 V  $\overline{\text{---}}$  power supply (via SR3B●●BD smart relays)

| Number of I/O | Number of inputs | Including 0 - 10 V | Including 0 - 20 mA | Including Pt100 | 0 - 10 V output | Reference     | Weight kg / lb |
|---------------|------------------|--------------------|---------------------|-----------------|-----------------|---------------|----------------|
| 4             | 2                | 2 max.             | 2 max.              | 1 max.          | 2               | SR3XT43BD (1) | 0.110 / 0.243  |

(1) Can only be used in FBD language.

# Zelio Logic - Smart relays

## Modem communication interface



Modem communication interface



GSM/UMTS modem (1)

### Presentation

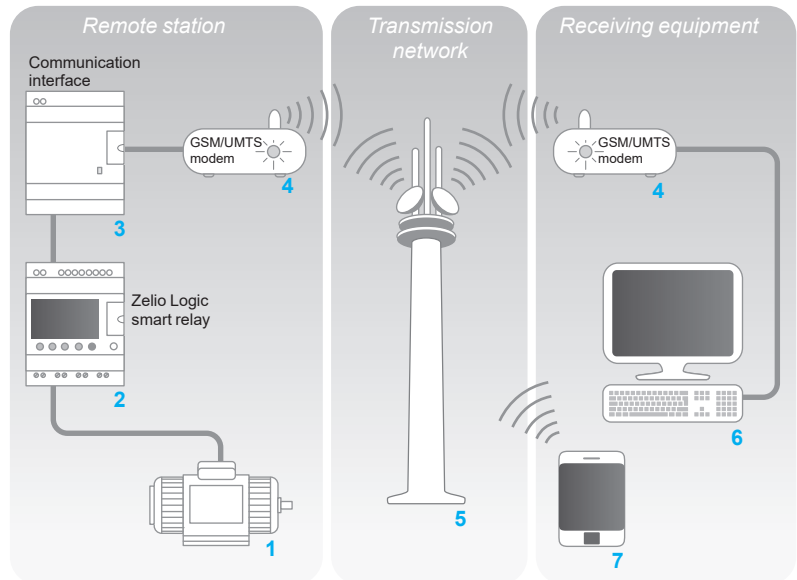
The communication products in the Zelio Logic range are primarily designed for monitoring or remote control of machines or installations which operate without personnel.

Examples:

- monitoring of lift pumps, livestock buildings (ventilation, feed level, etc.), refrigeration units, car washes
- alarm in the event of failure of industrial or domestic heating boilers
- remote control of lighting: parking lots, warehouses
- remote control and monitoring of escalators, public transport
- refuse compactor full alert

The communication range comprises:

- a communication interface connected between a smart relay and a modem
- A GSM/UMTS modem (1)
- "Zelio Logic Alarm" software



The system comprises:

- A remote station, machine, or installation to be monitored 1: control is achieved using a Zelio Logic smart relay with clock from the SR●B●●●●● or SR2E●●●●● range 2 via its inputs and outputs. The smart relay is connected via a communication interface 3 to a GSM/UMTS modem (1) 4.
- The GSM/UMTS telephone transmission network 5 provided by different telecommunications operators
- A monitoring or control receiver device, which may be either of the following:
  - a PC 6 equipped with a GSM/UMTS modem
  - A GSM/UMTS phone 7

**Note:** The majority of modems built into PCs can be used.

Various combinations are possible between the types of modem used on the Remote station, the type of receiver device (PC + modems or phone), and the type of GSM/UMTS network available.

The type of architecture selected will therefore mainly depend on whether there is a need to send SMS messages or not (see page 35).

(1) GSM = Global System Mobile (2G). UMTS = Universal Mobile Telecommunications System (3G). The versions of modem communicating on the UMTS network (3G) are reserved for certain countries. Please contact our Customer Care Center.



### Presentation (continued)

#### Smart relay (remote station)

The smart relay, as on an independent machine or installation, is used for control (1). It contains the application program created using "Zelio Soft 2".

The smart relay can be selected from the various models in the Zelio Logic range:

- according to the supply voltage
- with 10, 12, 20, or 26 I/O (up to 40 I/O with discrete extension)
- with or without display
- with clock

#### Modem communication interface (remote station)

The modem communication interface allows messages, phone numbers, and calling conditions to be stored.

When the calling conditions are met, the messages, as well as any values to be sent, are date-stamped and stored in the interface.

The modem communication interface scales analog values to the physical values (degrees, bar, Pascal, etc.) required by the user.

#### Modem GSM/UMTS

GSM or UMTS modems can both be used on the *remote station* and PC type *receiver device* (if the PC is not equipped with an internal modem). This modem automatically adapts to the available network, by prioritizing the GSM network, which offers the greatest functionality. If there is only a UMTS network available, there will be reduced functionality (see the table on page 35).

In order to exploit all the capabilities associated with the communication modem, the modems are equipped with DATA type SIM cards. VOICE type SIM cards may also be used but some functions will not be available (see the table on page 35).

#### "Zelio Logic Alarm" alarm management software(PC type receiver device)

This software is used to:

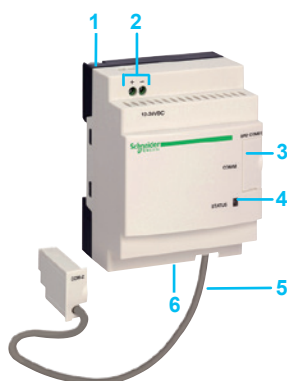
- receive, classify, and export diagnostic alarm messages
- read or remotely force the status of program elements (inputs, outputs, auxiliary relays, timer or counter values, etc.)
- send control instructions (RUN, STOP, setting the time of the smart relay, etc.)
- send specific instructions (modifying access rights, recipients, etc.)

*Note: This software can only be used on GSM networks (2G).*

(1) Zelio Logic smart relays (see page 8)

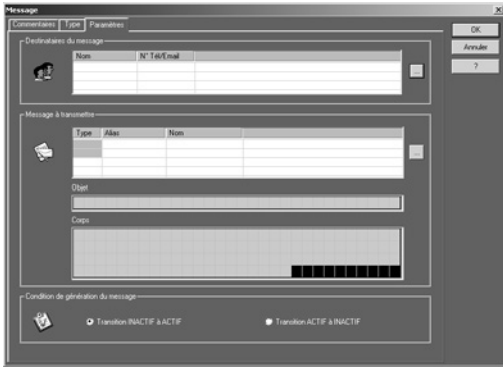
### Description

The SR2COM01 modem communication interface comprises:



- 1 Retractable mounting lugs
- 2 12...24 V  $\overline{\text{DC}}$  power supply terminal block
- 3 Slot for connection to modem or PC
- 4 Interface status LED indicator
- 5 Connection cable to the smart relay
- 6 Spring for clip-on mounting on a 35 mm (1.38 in.) rail

### Functions



Message parameter entry window

#### Sending alarms

This function is used to send an alarm message to a *receiver device*. When the calling condition is met, a message is sent to one or several phone numbers or e-mail addresses.

Types of message:

- alarm message on a PC with modem and “Zelio Logic Alarm” software
- “SMS” message (1) on a GSM/UMTS phone
- e-mail via SMS (1) (2)

One or all of these solutions can be selected simultaneously.

The *remote station* to be monitored initiates the call.

The phone line is only used while the alarm message is being transmitted.

Up to 28 messages can be used.

These messages consist of:

- a 160-character text, which may contain discrete and/or analog values (counter values, analog input voltages that can be scaled, etc.)
- 1 to 10 recipient phone numbers/e-mail addresses

#### Receiving commands

This function allows the status or the value of a program element to be modified from the *receiver device*.

The operator initiates the call using the *receiver device* (PC or phone). It is then possible to force the status of the discrete and/or analog value of each of the 28 messages.

#### Remote dialog using “Zelio Soft 2”

This function enables use of the Transfer, Monitoring, and Diagnostics modes available in “Zelio Soft 2” via the *transmission network* instead of via the physical link (SR2USB01 or SR2CBL01 cable) between the device (*remote station*) and the PC (*receiver device*).

It is then possible to:

- transfer a program created on a PC station to the *remote station*
- transfer a program installed on the *remote station* to the PC station
- modify the receiver device phone numbers/e-mail addresses and the alarm sending conditions from the PC
- update the firmware for the smart relay and the modem communication interface
- display and modify discrete and analog values
- perform diagnostics on the smart relay and modem communication interface

(1) Requires the use of a GSM/UMTS modem on the remote station side.

(2) Check with the transmission network operator that the e-mail by SMS service is available.

### Functions available depending on the hardware architecture and/or type of SIM card

| Function  | Remote station device |            |  |                   |  |
|---|-----------------------|------------|--|-------------------|--|
|   | GSM network (2G)      |            |  |                   |  |
|   | Type of SIM card      |            |  |                   |  |
|   | DATA                  | DATA VOICE |  | VOICE             |  |
|   | DATA No.              | VOICE No.  |  | UMTS network (3G) |  |
| Send alarm/receive command with GSM/UMTS phone                                    |                       |            |  |                   |  |
| Send alarm/receive command with PC equipped with “Zelio Logic Alarm” software (1) |                       |            |  |                   |  |
| Program transfer, firmware update, monitoring (1)                                 |                       |            |  |                   |  |
| Send alarm via e-mail   |                       |            |  |                   |  |

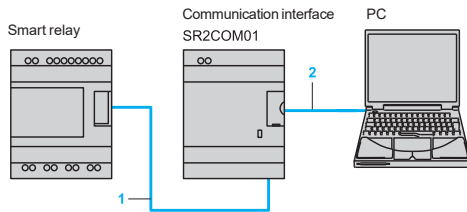
Functions available

Functions not available

**Note:** Commands cannot be sent by e-mail.

(1) When using a GSM/UMTS modem on the PC side, it is essential that the SIM card has a DATA number.

### Installation setup



There are 2 steps involved in setting up the installation or machine to be monitored:

#### Connection for programming the smart relay and interface

- 1 Interface cable marked COM-Z
- 2 SR2USB01 or SR2CBL01 cable

After having powered-up the smart relay and the interface, the application program can be transferred in order to simultaneously:

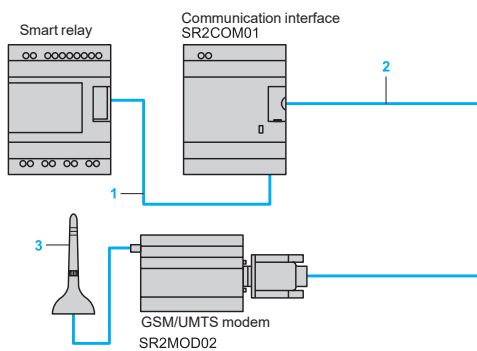
- load the automation system program into the smart relay
- load the alarm conditions, messages, and phone numbers into the interface

This operation can also be carried out remotely using "Transfer" mode, after having established the connections described below.

△ The use of memory cartridge SR2MEM01 or SR2MEM02 to load the program is not compatible with the SR2COM01 modem communication interface.

#### Connections for operation

- 1 Interface cable marked COM-Z
- 2 SR2CBL07 cable supplied with the interface
- 3 Antenna included with modem



### References



SR2COM01



SR2MOD02



SR2CBL07

#### Modem communication interface

| Description   | For use with            | Power supply | Reference | Weight<br>kg/lb |
|---|-------------------------|--------------|-----------|-----------------|
| Modem communication interface<br>(including SR2CBL07 cable) | SR●B●●●●●,<br>SR2E●●●●● | 12...24 V ~  | SR2COM01  | 0.200<br>0.441  |

#### Modem

| Description   | Supply voltage | Reference       | Weight<br>kg/lb |
|---|----------------|-----------------|-----------------|
| GSM/UMTS modem (1)<br>including:                      | 12...24 V ~    | SR2MOD02<br>(2) | 0.335<br>0.739  |
| □ power supply cable (1.5 m/4.92 ft)                  |                |                 |                 |
| □ antenna with cable (2.5 m/8.20 ft)                  |                |                 |                 |
| □ mounting on 15-rail (assembled with GSM/UMTS modem) |                |                 |                 |
| □ 2 lugs for plate mounting                           |                |                 |                 |

#### Software

| Description       | Use Compatibility   | Media  | Reference | Weight<br>kg/lb |
|-------------------|---|--------|-----------|-----------------|
| Zelio Logic Alarm | For PC and 32-bit and 64-bit operating systems compatible with Windows 7, 8.1, and 10 | CD-ROM | SR2SFT02  | 0.200<br>0.441  |

#### Connection accessories

| Description       | Composition/Use  | Length<br>m/ft | Reference       | Weight<br>kg/lb |
|-------------------|--|----------------|-----------------|-----------------|
| Connecting cables | 9-way SUB-D/9-way SUB-D connectors<br>Between modem and PC                       | 1.80/5.90      | SR1CBL03        | 0.110<br>0.243  |
|                   | Special Zelio/9-way SUB-D connector<br>Between communication interface and modem | 0.50/1.64      | SR2CBL07<br>(3) | 0.050<br>0.110  |


(1) Global System Mobile (2G)/Universal Mobile Telecommunications System (3G). The versions of modem communicating on the UMTS network (3G) are reserved for certain countries. Please contact our Customer Care Center.


(2) Not recommended for Japan.

(3) Spare part (cable included as standard with SR2COM01 communication interface).

# Analogue interfaces - Zelio Analog

Converters for thermocouples and Pt100 probes  
Voltage/current converters

| Product types               |                                | Converters for thermocouples  |                 |                 |                 |                 |
|-----------------------------|--------------------------------|---|-----------------|-----------------|-----------------|-----------------|
|                             |                                |                           |                 |                 |                 |                 |
| <b>Input type</b>           |                                | J (Fe-CuNi)   |                 | K (Ni-CrNi)     |                 |                 |
| <b>Input signal</b>         | <b>Temperature range</b>       | 0...150 °C  | 0...300 °C      | 0...600 °C      | 0... 600 °C     | 0...1200 °C     |
|                             |                                | 32...302 °F   | 32...572 °F     | 32...1112 °F    | 32...1112 °F    | 32...2192 °F    |
| <b>Output signal</b>        | <b>Voltage</b>                 | -   |                 |                 |                 |                 |
|                             | <b>Current</b>                 | -   |                 |                 |                 |                 |
| <b>Output signal</b>        | <b>Voltage/Current</b>         | Switchable: 0...10 V / 0...20 mA; 4...20 mA   |                 |                 |                 |                 |
| <b>Supply voltage</b>       | <b>Rated</b>                   | ~ 24V ± 20%, not isolated   |                 |                 |                 |                 |
| <b>Built-in protection</b>  | <b>Outputs</b>                 | Reverse polarity, overvoltage and short-circuit<br>Output safety feature, if input not wired or wire broken |                 |                 |                 |                 |
|                             | <b>Supply</b>                  | Reverse polarity  |                 |                 |                 |                 |
| <b>Signalling</b>           |                                | Green LED (power on)  |                 |                 |                 |                 |
| <b>Conformity/Approvals</b> | <b>Conforming to standards</b> | IEC 60947-1, IEC 60584-1  |                 |                 |                 |                 |
|                             | <b>Approvals</b>               | UL, CSA, GL, CE   |                 |                 |                 |                 |
| <b>Type</b>                 |                                | <b>RMTJ40BD</b>   | <b>RMTJ60BD</b> | <b>RMTJ80BD</b> | <b>RMTK80BD</b> | <b>RMTK90BD</b> |
| <b>Pages</b>                |                                | 40  |                 |                 |                 |                 |

| Converters for Universal and Optimum Pt100 probes |  |  |  |  | Voltage/current converters  |  |  |  |
|---|--|--|--|--|---|--|--|--|
|   |  |  |  |  |    |  |  |  |
| <b>Input type</b>                                 |  |  |  |  | Pt100, 2, 3 et 4 fils   |  |  |  |
| <b>Input signal</b>                               |  |  |  |  | - 40...40 °C   -100...100 °C   0...100 °C   0...250 °C   0...500 °C   |  |  |  |
|   |  |  |  |  | - 40...104 °F   - 148...212 °F   32...212 °F   32...482 °F   32...932 °F  |  |  |  |
| <b>Output signal</b>                              |  |  |  |  | -   |  |  |  |
|   |  |  |  |  | 0...10 V   0...10 V; ± 10 V   0...50 V<br>0...300 V<br>0...500 V<br>~ or ~ 50/60 Hz   |  |  |  |
|   |  |  |  |  | 4...20 mA   0...20 mA<br>4...20 mA   -   0...1.5 A<br>0...5 A<br>0...15 A<br>~ or ~ 50/60 Hz  |  |  |  |
| <b>Output signal</b>                              |  |  |  |  | Switchable:<br>0...10 V/0...20 mA, 4...20 mA for Universal range <b>RMPT•0BD</b><br>0...10 V ou 4...20 mA for Optimum range <b>RMPT•3BD</b>   |  |  |  |
|   |  |  |  |  | 0...10 V or 4...20 mA   Switchable:<br>0...10 V<br>±10 V/0...20 mA<br>4...20 mA   Switchable:<br>0...10 V/4...20 mA<br>0...20 mA   0...10 V or<br>0...20 mA or<br>4...20 mA                       |  |  |  |
| <b>Supply voltage</b>                             |  |  |  |  | ~ 24 V ± 20 %, non isolé   ~ 24 V ± 20 %, isolé   |  |  |  |
| <b>Built-in protection</b>                        |  |  |  |  | Reverse polarity, overvoltage and short-circuit<br>Output safety feature, if input not wired or wire broken   |  |  |  |
|   |  |  |  |  | Reverse polarity  |  |  |  |
| <b>Signalling</b>                                 |  |  |  |  | Green LED (power on)  |  |  |  |
| <b>Conformity/Approvals</b>                       |  |  |  |  | IEC 60751, DIN 43 760   IEC 60947-1   |  |  |  |
|   |  |  |  |  | UL, CSA, GL, CE   |  |  |  |
| <b>Type</b>                                       |  |  |  |  | <b>RMPT10BD, RMPT13BD</b> <b>RMPT20BD, RMPT23BD</b> <b>RMPT30BD, RMPT33BD</b> <b>RMPT50BD, RMPT53BD</b> <b>RMPT70BD, RMPT73BD</b> <b>RMCN22BD</b> <b>RMCL55BD</b> <b>RMCV60BD</b> <b>RMCA61BD</b> |  |  |  |
| <b>Pages</b>                                      |  |  |  |  | 40 and 41   |  |  |  |

# Analogue interfaces - Zelio Analog

## Converters for thermocouples and Pt100 probes

### Voltage/current converters

The Zelio Analog range of converters is designed to convert signals emitted by sensors or electrical measurements into standard electrical signals which are compatible with automation platforms, controllers (thermal processes, speed, ...). They also allow the connection distance between a sensor and the measurement acquisition device to be increased: for example between a thermocouple and a programmable controller.

Conforming to IEC standards, UL and CSA certified, these converters are suitable for universal use.

#### Measurement signals for thermocouples and Pt100 probes

The voltages induced by thermocouples vary between 10 and 80  $\mu\text{V}/^\circ\text{C}$ , Pt100 probes (100 ohms at 0  $^\circ\text{C}$ ) produce about 0.5  $\text{mV}/^\circ\text{C}$ , with measurement currents of 1 mA. Depending on the sensor, the signal to be measured ranges from a few  $\mu\text{V}$  (thermocouple) to 250 and 700 mV for a Pt100 probe.

It is therefore difficult to transmit these low level signals over long electric lines without encountering problems of interference, signal reduction or errors.

Connecting Zelio Analog converters close to the sensors resolves these problems :

- 4-20 mA current loops transmitted over a long distance are less sensitive to interference than low level voltage signals from sensors,
- signal reductions during transmission (resistance) of voltages do not occur,
- the cables used to connect the converters to process equipment (programmable controllers) are standard cables, which are more cost effective than extension cables or compensation cables suitable for low level signals for Pt100 probes or thermocouples.

### Presentation

#### The Zelio Analog range

The Zelio Analog range has been developed both to take account of the most common applications and to ensure great simplicity of installation:

- pre-set input and output scales, requiring no adjustment
- outputs protected against reverse polarity, overvoltage and short-circuits
- $\approx$  24 V power supply
- sealable protective cover
- rail mounting and screw fixing onto mounting plate
- LED indicator on the front panel
- input and output selector switches on the front panel
- output with fallback value if no input signal is present (due to failure of a sensor, for example).

The Zelio Analog converter range is divided into four families:

- Converters for J and K type thermocouples: **RMTJ/K**
- Universal converters for Pt100 probes: **RMPT●0**
- Optimum converters for Pt100 probes: **RMPT●3**
- Universal voltage/current converters: **RMC**.

#### Converters for J and K type thermocouples

Thermocouples, which consist of two metals with different thermo-electric characteristics, produce a voltage that varies according to temperature. This voltage is transmitted to the Zelio Analog converter which converts it to a standard signal.

Converters for thermocouples have cold junction compensation to allow detection of measurement errors induced by the connection to the device itself.

Converters for J and K type thermocouples have:

- for inputs, a pre-set temperature range, depending on the model:
  - Type J: 0...150  $^\circ\text{C}$ , 0...300  $^\circ\text{C}$ , 0...600  $^\circ\text{C}$
  - Type K: 0...600  $^\circ\text{C}$ , 0...1200  $^\circ\text{C}$ .
- for outputs, a switchable signal:
  - 0...10 V, 0... 20 mA, 4... 20 mA.



RMTJ/K



RMPT●0



RMPT●3



RMC

# Analogue interfaces - Zelio Analog

## Converters for thermocouples and Pt100 probes

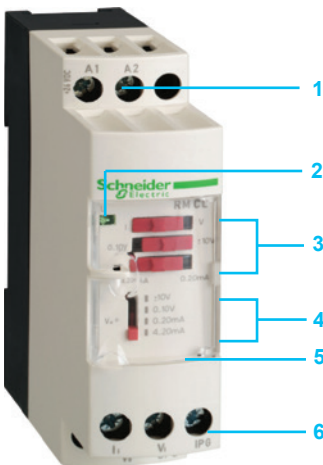
### Voltage/current converter



RMPT70BD



RMCA61BD



RMCL55BD

#### Universal converters for Pt100 probes

Pt100 probes with platinum resistor are electrical conductors whose resistance varies according to the temperature.

This ohmic resistance is transmitted to the Zelio Analog converter which converts it to a standard signal.

Universal converters for Pt100 probes have :

■ for inputs, a pre-set temperature range, depending on the model:

- -100...100 °C,
- -40...40 °C,
- 0...100 °C,
- 0...250 °C,
- 0...500 °C.

■ for outputs, a switchable signal:

- 0... 10 V, 0... 20 mA, 4... 20 mA.

The products in the family Universal converters for Pt100 probes allow wiring of Pt100 probes in 2, 3 and 4-wire mode.

#### Optimum converters for Pt100 probes

Derived from the above family, these converters have:

■ for inputs, a pre-set temperature range identical to that of universal converters for Pt100 probes.

■ for outputs: 0...10V signal dedicated to Zelio Logic analogue inputs.

They allow Pt100 probes to be wired in 2, 3 and 4-wire mode.

#### Universal voltage/current converters

This family of converters allows the adaptation of electrical values (voltage/current). Four products are available:

■ a cost effective converter which will convert a 0...10 V signal to a 4...20mA signal or vice versa.

■ a Universal voltage/current converter allowing the most common signals. They have:

□ for inputs, a voltage/current range:

- 0...10 V, ± 10 V, 0...20 mA, 4...20 mA.

□ for outputs, a switchable voltage/current range:

- 0...10 V, ± 10 V, 0...20 mA, 4...20 mA.

■ two Universal voltage/current converters which allow conversion of electrical power signals, both a.c. and d.c.

They have the following, depending on the model:

□ **for voltage inputs**, a range of 0 to 500 V (~ or ---)

□ for outputs, a switchable voltage/current range:

- 0...10 V, 0...20 mA, 4...20 mA.

□ **for current inputs**, a range of 0 to 15 A (~ or ---)

□ for outputs, a voltage/current range:

- 0...10 V, 0...20 mA, 4...20 mA.

#### Description

Zelio Analog converters have the following on their front panel, depending on the model:

- 1 Two terminals for --- 24 V supply connection
- 2 A 'Power ON' LED
- 3 Three input selector switches (depending on model)
- 4 An output selector switch (depending on model)
- 5 A sealable protective cover
- 6 A screw terminal block for inputs
- 7 A screw terminal block for outputs

# Analogue interfaces - Zelio Analog

Converters for thermocouples and Pt100 probes  
Voltage/current converters



RMTJ40BD



RMTK90BD



RMPT70BD



RMPT13BD

### Converters for J and K type thermocouples

Supply voltage  $\approx 24\text{ V} \pm 20\%$ , non isolated

| Type   | Temperature range |           | Switchable output signal          | Reference | Weight<br>kg<br>lb |
|--------|-------------------|-----------|-----------------------------------|-----------|--------------------|
|        | °C                | °F        |                                   |           |                    |
| Type J | 0...150           | 32...302  | 0...10 V, 0...20 mA,<br>4...20 mA | RMTJ40BD  | 0.120<br>0.264     |
|        | 0...300           | 32...572  | 0...10 V, 0...20 mA,<br>4...20 mA | RMTJ60BD  | 0.120<br>0.264     |
|        | 0...600           | 32...1112 | 0...10 V, 0...20 mA,<br>4...20 mA | RMTJ80BD  | 0.120<br>0.264     |
| Type K | 0...600           | 32...1112 | 0...10 V, 0...20 mA,<br>4...20 mA | RMTK80BD  | 0.120<br>0.264     |
|        | 0...1200          | 32...2192 | 0...10 V, 0...20 mA,<br>4...20 mA | RMTK90BD  | 0.120<br>0.264     |

### Universal converters for Pt100 probes

Supply voltage  $\approx 24\text{ V} \pm 20\%$ , non isolated

| Type                                  | Temperature range |            | Switchable output signal          | Reference | Weight<br>kg<br>lb |
|---------------------------------------|-------------------|------------|-----------------------------------|-----------|--------------------|
|                                       | °C                | °F         |                                   |           |                    |
| Pt100<br>2-wire, 3-wire<br>and 4-wire | -40...40          | -40...104  | 0...10 V, 0...20 mA,<br>4...20 mA | RMPT10BD  | 0.120<br>0.264     |
|                                       | -100...100        | -148...212 | 0...10 V, 0...20 mA,<br>4...20 mA | RMPT20BD  | 0.120<br>0.264     |
|                                       | 0...100           | 32...212   | 0...10 V, 0...20 mA,<br>4...20 mA | RMPT30BD  | 0.120<br>0.264     |
|                                       | 0...250           | 32...482   | 0...10 V, 0...20 mA,<br>4...20 mA | RMPT50BD  | 0.120<br>0.264     |
|                                       | 0...500           | 32...932   | 0...10 V, 0...20 mA,<br>4...20 mA | RMPT70BD  | 0.120<br>0.264     |

### Optimum converters for Pt100 probes (1)

Supply voltage  $\approx 24\text{ V} \pm 20\%$ , non isolated

| Type                                  | Temperature range |            | Output signal         | Reference | Weight<br>kg<br>lb |
|---------------------------------------|-------------------|------------|-----------------------|-----------|--------------------|
|                                       | °C                | °F         |                       |           |                    |
| Pt100<br>2-wire, 3-wire<br>and 4-wire | -40...40          | -40...104  | 0...10 V or 4...20 mA | RMPT13BD  | 0.120<br>0.264     |
|                                       | -100...100        | -148...212 | 0...10 V or 4...20 mA | RMPT23BD  | 0.120<br>0.264     |
|                                       | 0...100           | 32...212   | 0...10 V or 4...20 mA | RMPT33BD  | 0.120<br>0.264     |
|                                       | 0...250           | 32...482   | 0...10 V or 4...20 mA | RMPT53BD  | 0.120<br>0.264     |
|                                       | 0...500           | 32...932   | 0...10 V or 4...20 mA | RMPT73BD  | 0.120<br>0.264     |

(1) Converters dedicated to Zelio Logic smart relays.

# Analogue interfaces - Zelio Analog

## Converters for thermocouples and Pt100 probes

### Voltage/current converter



RMCN22BD



RMCL55BD



RMCA61BD

#### Universal voltage/current converters

##### Supply voltage $\approx 24\text{ V} \pm 20\%$ , non isolated

| Input signal          | Output signal         | Reference       | Weight<br>kg<br>lb |
|-----------------------|-----------------------|-----------------|--------------------|
| 0...10 V or 4...20 mA | 0...10 V or 4...20 mA | <b>RMCN22BD</b> | 0.120<br>0.264     |

##### Supply voltage $\approx 24\text{ V} \pm 20\%$ , isolated

| Input signal  | Output signal  | Reference       | Weight<br>kg<br>lb |
|---|--|-----------------|--------------------|
| 0...10 V, $\pm 10\text{ V}$ ,<br>0...20 mA, 4...20 mA                 | Switchable:<br>0...10 V, $\pm 10\text{ V}$ ,<br>0...20 mA, 4...20 mA | <b>RMCL55BD</b> | 0.120<br>0.264     |
| 0...50 V, 0...300 V, 0...500 V<br>$\approx$ or $\sim 50/60\text{ Hz}$ | Switchable:<br>0...10 V, 0...20 mA,<br>4...20 mA                     | <b>RMCV60BD</b> | 0.150<br>0.330     |
| 0...1.5 A, 0...5 A, 0...15 A<br>$\approx$ or $\sim 50/60\text{ Hz}$   | 0...10 V or 0...20 mA<br>or 4...20 mA                                | <b>RMCA61BD</b> | 0.150<br>0.330     |

#### Connection accessories

| Description  | Type   | Sold in lots of | Unit reference       | Weight<br>kg<br>lb |
|--|--------|-----------------|----------------------|--------------------|
| Terminal blocks for<br>connection of protective<br>earth conductor | Screw  | <b>100</b>      | <b>AB1TP435U</b>     | 0.025<br>0.055     |
|  | Spring | <b>100</b>      | <b>AB1RRNTP435U2</b> | 0.010<br>0.055     |



|               |    |             |    |              |    |
|---------------|----|-------------|----|--------------|----|
| 170XTS04100   | 29 | SR2CBL07    | 35 | VW3A8306TF03 | 29 |
| 490NTW00002   | 29 | SR2CBL08    | 20 | VW3A8306TF10 | 29 |
| 490NTW00005   | 29 | SR2CBL09    | 20 |              |    |
| 490NTW00012   | 29 | SR2COM01    | 35 |              |    |
| 490NTW00040   | 29 | SR2D101BD   | 17 |              |    |
| 490NTW00080   | 29 | SR2D101FU   | 17 |              |    |
| 14210         | 21 | SR2D201BD   | 17 |              |    |
| 14211         | 21 | SR2D201FU   | 17 |              |    |
| <b>A</b>      |    | SR2E121B    | 17 |              |    |
| AB1RRNTP435U2 | 41 | SR2E121BD   | 17 |              |    |
| AB1TP435U     | 41 | SR2E121FU   | 17 |              |    |
| <b>H</b>      |    | SR2E201B    | 17 |              |    |
| HMISTO501     | 20 | SR2E201BD   | 17 |              |    |
| HMISTO705     | 20 | SR2E201FU   | 17 |              |    |
| <b>R</b>      |    | SR2MEM01    | 20 |              |    |
| RMCA61BD      | 36 | SR2MEM02    | 20 |              |    |
|               | 41 | SR2MOD02    | 35 |              |    |
| RMCL55BD      | 36 | SR2PACK2BD  | 16 |              |    |
|               | 41 | SR2PACK2FU  | 16 |              |    |
| RMCN22BD      | 36 | SR2PACKBD   | 16 |              |    |
|               | 41 | SR2PACKFU   | 16 |              |    |
| RMCV60BD      | 36 | SR2SFT01    | 20 |              |    |
|               | 41 | SR2SFT02    | 35 |              |    |
| RMPT10BD      | 36 | SR2USB01    | 20 |              |    |
|               | 40 | SR3B101B    | 18 |              |    |
| RMPT13BD      | 40 | SR3B101BD   | 18 |              |    |
| RMPT20BD      | 36 | SR3B101FU   | 18 |              |    |
|               | 40 | SR3B102BD   | 18 |              |    |
| RMPT23BD      | 40 | SR3B261B    | 18 |              |    |
| RMPT30BD      | 36 | SR3B261BD   | 18 |              |    |
|               | 40 | SR3B261FU   | 18 |              |    |
| RMPT33BD      | 40 | SR3B261JD   | 18 |              |    |
| RMPT50BD      | 36 | SR3B262BD   | 18 |              |    |
|               | 40 | SR3MBU01BD  | 29 |              |    |
| RMPT53BD      | 40 | SR3NET01BD  | 29 |              |    |
| RMPT70BD      | 36 | SR3PACK2BD  | 18 |              |    |
|               | 40 | SR3PACK2FU  | 18 |              |    |
| RMPT73BD      | 40 | SR3PACKBD   | 18 |              |    |
| RMTJ40BD      | 36 | SR3PACKFU   | 18 |              |    |
|               | 40 | SR3XT43BD   | 31 |              |    |
| RMTJ60BD      | 36 | SR3XT61B    | 19 |              |    |
|               | 40 | SR3XT61BD   | 19 |              |    |
| RMTJ80BD      | 36 | SR3XT61FU   | 19 |              |    |
|               | 40 | SR3XT61JD   | 19 |              |    |
| RMTK80BD      | 36 | SR3XT101B   | 19 |              |    |
|               | 40 | SR3XT101BD  | 19 |              |    |
| RMTK90BD      | 36 | SR3XT101FU  | 19 |              |    |
|               | 40 | SR3XT101JD  | 19 |              |    |
| <b>S</b>      |    | SR3XT141B   | 19 |              |    |
| SR1CBL03      | 35 | SR3XT141BD  | 19 |              |    |
| SR2A101BD     | 16 | SR3XT141FU  | 19 |              |    |
| SR2A101FU     | 16 | SR3XT141JD  | 19 |              |    |
| SR2A201BD     | 16 | <b>T</b>    |    |              |    |
| SR2A201E      | 16 | TSXCSA100   | 29 |              |    |
| SR2A201FU     | 16 | TSXCSA200   | 29 |              |    |
| SR2B121B      | 16 | TSXCSA500   | 29 |              |    |
| SR2B121BD     | 16 | TWDXCAISO   | 29 |              |    |
| SR2B121FU     | 16 | TWDXCAT3RJ  | 29 |              |    |
| SR2B121JD     | 16 | <b>V</b>    |    |              |    |
| SR2B122BD     | 16 | VW3A8306R03 | 29 |              |    |
| SR2B201B      | 16 | VW3A8306R10 | 29 |              |    |
| SR2B201BD     | 16 | VW3A8306R30 | 29 |              |    |
| SR2B201FU     | 16 | VW3A8306RC  | 29 |              |    |
| SR2B201JD     | 16 |             |    |              |    |
| SR2B202BD     | 16 |             |    |              |    |
| SR2BTC01      | 20 |             |    |              |    |
| SR2CBL01      | 20 |             |    |              |    |

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