Zelio® Logic 2

Programmable Smart Relays

Catalog
January

07

a brand of Schneider Electric

Telemecanique

Contents

Zelio® Logic 2
Programmable Smart Relays

Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays

Smart relay type	Compact smart relays			
				
Supply voltage	⎓ 12 V	⎓ 24 V	∿ 24 V	∿ 100…240 V
Number of I/O (maximum number of I/Os with extension modules)	12 and 20	10, 12 and 20	12 and 20	10, 12 and 20
Number of discrete inputs (including analog inputs)	8 (4) and 12 (6)	6 (0), 8 (4), 12 (2) and 12 (6)	8 (0) and 12 (0)	6 (0), 8 (0) and 12 (0)
Number of "relay"/"transistor" outputs	4/0 and 8/0	4/0, 0/4, 8/0 and 0/8	4/0 and 8/0	
With display, with clock Programming language	**SR2 B●●●●●** FBD or LADDER			
With display, without clock Programming language		**SR2 A●●●●●** LADDER only		**SR2 A●●●●●** LADDER only
Without display, with clock Programming language		**SR2 E●●●●●** FBD or LADDER		
Without display, without clock Programming language		**SR2 D●●●●●** LADDER only		**SR2 D●●●●●** LADDER only
Analog I/O extension modules (see page 21)				
Modbus® network slave communication module (see page 31)				
Modem communication interface (see page 38)	**SR2 COM01**	**SR2 COM01** (for SR2 B and SR2 E)	**SR2 COM01**	**SR2 COM01** (for SR2 B and SR2 E)
EEPROM memory cartridge (see page 22)	**SR2 MEM02** ⚠ incompatible with SR2 COM01			
"Zelio Soft 2" software (see page 22)	**SR2 SFT01**			
"Discovery" packs		**SR2 PACK●BD** (see page 20)		**SR2 PACK●FU** (see page 20)
Power supplies for d.c. control circuit (see page 45)	**ABL 7RM1202**	**ABL 7RM240●●**		
References	**SR2 B●●●JD**	**SR2 ●●●●BD**	**SR2 ●●●●B**	**SR2 ●●●●FU**
Page	20	20	20	20

(1) FBD: Function Block Diagram.

Modular smart relays

⎓ 12 V	⎓ 24 V	∿ 24 V	∿ 100…240 V
26 (30, 32, 36 and 40)	10 (14, 16, 20 and 24) and 26 (30, 32, 36 and 40)		
16 (6)	6 (4) and 16 (6)	6 (0) and 16 (0)	
10/0	4/0, 0/4, 10/0 and 0/10	4/0 and 10/0	
SR3 B●●●●● FBD or LADDER			
	SR3 XT43BD		
	SR3 MBU01BD		
SR2 COM01			
	SR3 PACK●BD (see page 21)		**SR3 PACK●FU** (see page 21)
ABL 7RM1202	**ABL 7RM240●●**		
SR3 B261JD	**SR3 B●●●BD**	**SR3 B●●1B**	**SR3 B●●1FU**
21	21	21	21

(1) FBD: Function Block Diagram.

Zelio® Logic 2
Programmable Smart Relays
Extensions and interfaces

Product types	Discrete I/O extension modules			
				
Supply voltage	via SR3 B261JD (⎓ 12 V)	via SR3 B●●●BD (⎓ 24 V)	via SR3 B●●1B (∿ 24 V)	via SR3 B●●1FU (∿ 100...240 V)
Number and type of I/O	Discrete inputs/outputs: 6, 10 and 14			
Number and type of inputs	Discrete inputs: 4, 6 and 8			
Number and type of outputs	Relay outputs: 2, 4 and 6			
Programming software	"Zelio Soft 2" **SR2 SFT01** (see page 22)			
Alarms management software				
References	**SR3 XT●●●JD**	**SR3 XT●●●BD**	**SR3 XT●●●B**	**SR3 XT●●●FU**
Page	21	21	21	21

Analog I/O extension modules	Modbus® network slave communication module	Modbus® communication interface	Power supplies for d.c. control circuit
			
via SR3 B●●●BD (⎓ 24 V)	via SR3 B●●●BD (⎓ 24 V)	⎓ 12 to 24 V	∿ 100…240 V single-phase
Analog inputs/outputs: 2/2	■ Number of words: □ 4 (inputs) □ 4 (outputs) □ 1 (status) ■ Maximum number of slaves: 32 ■ Maximum number of slaves with repeaters: 247	Functions ■ alarm sending ■ receipt of instruction ■ remote dialogue with Zelio Soft 2 software: □ Transfer □ Monitoring □ Diagnostics 2 types of modem: ■ analog (PSTN) modem ■ GSM modem	Nominal output voltage.: ■ ⎓ 12 V ■ ⎓ 24 V Nominal output current: ■ 1.9 A (⎓ 12 V) ■ 1.3 A (⎓ 24 V) ■ 2.5 A (⎓ 24 V)

Analog inputs: 2

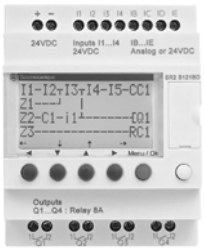
0-10 V	0-20 V	Pt100
2	0	0
1	1	0
0	2	0
1	0	1
0	1	1

Analog outputs 0-10 V: 2

"Zelio Logic Alarm" **SR2 SFT02** (see page 38)

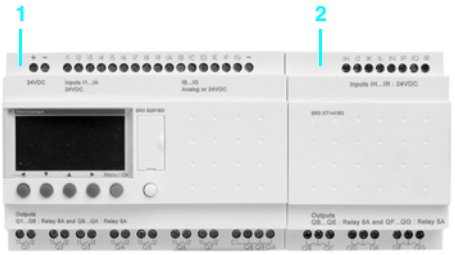
SR3 XT43BD	SR3 MBU01BD	SR2 COM01	ABL 7RM●●●●●
21	31	38	45

Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays

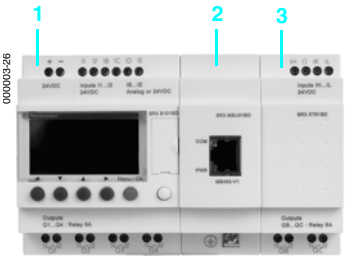


SR2 B121BD

Modular smart relay and extension module combination



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



1 Modular smart relay (10 or 26 I/O)
2 Network communication module
3 Discrete I/O (6, 10 or 14 I/O) or analog I/O(4 I/O) extension module

⚠ *The order shown above must be observed when using a Modbus network slave communication module and a discrete or analog I/O extension module.*
An I/O extension module cannot be fitted before the Modbus network slave communication module.

Presentation

Zelio Logic 2 programmable smart relays are designed for use in small automation systems. They are used in both the industrial and commercial sectors.

■ **For industry:**
□ automation of small finishing, production, assembly or packaging machines.
□ decentralized automation of ancillary equipment of large and medium-sized machines (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.

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

■ **Programming**
Simple programming, ensured by the universal nature of the languages, meets all the requirements of automation specialists and also the needs of the electrician.
Programming can be performed:
□ independently, using the buttons on the 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 pages 12 and 13.

Backlighting of the LCD display *(1)* is set by either using the 6 programming buttons on the smart relay or by using “Zelio Soft 2” software (example: flashing in the event of a malfunction).

The autonomous operating time of the clock, assured by a lithium battery, is 10 years.
Data backup (preset values and current values) is provided by an EEPROM Flash memory (10 years).

Compact smart relays

Compact smart relays meet requirements for simple automation systems.
The number of inputs/outputs can be:
■ 12 or 20 I/O, supplied with ⎓ 12 V or ∿ 24 V,
■ 10, 12 or 20 I/O, supplied with ⎓ 24 V or ∿ 100…240 V.

Modular smart relays and extensions

The number of inputs/outputs for modular smart relays can be:
■ 26 I/O, supplied with ⎓ 12 V,
■ 10 or 26 I/O, supplied with ⎓ 24 V, ∿ 24 V or ∿ 100 to 240 V.

To improve performance and flexibility, Zelio Logic 2 modular smart relays can be fitted with I/O extension modules with from 10 to 40 I/O:
■ discrete I/O extension modules with 6, 10 or 14 I/O, supplied via the smart relay at the same voltage,
■ analog I/O extension modules with 4 I/O, supplied with ⎓ 24 V via the smart relay at the same voltage,
■ network communication module, supplied with ⎓ 24 V via the smart relay at the same voltage.

(1) LCD: Liquid Crystal Display.

Zelio® Logic 2 Programmable Smart Relays

Compact and modular smart relays

534944

SR2 MEM01
SR2 MEM02

Memory cartridges

The Zelio Logic 2 programmable smart relays can be fitted with a backup memory cartridge which enables copying of the program into another smart relay for: loading and updating of on-board software and firmware *(1)*, building of identical equipment, remote transmission of updates.

These memory cartridges also enable a backup copy of the program to be saved prior to replacing the product.

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

534941

SR2 COM01
Communication interface

Modem communication interface

The “communication” products in the Zelio Logic 2 range include:
- a Modem communication interface connected between a smart relay and a Modem, see pages 32 to 41,
- analog (PSTN) *(2)* or GSM *(3)* Modems,
- “Zelio Logic Alarm” software.

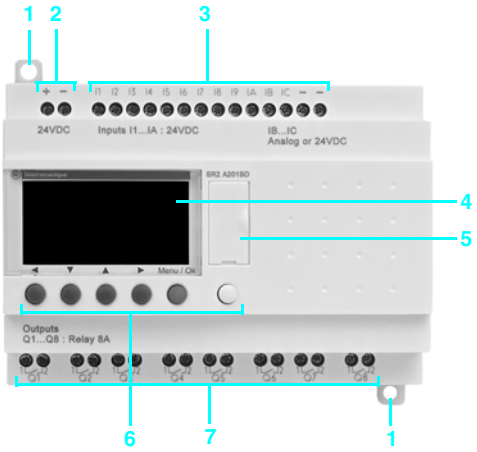
They are designed for monitoring or remote control of machines or installations which operate without personnel.
The Modem communication interface supplied with ⎓ 12 to 24 V, enables messages, telephone numbers and calling conditions to be stored.

(1) Use memory cartridge SR2 MEM02 only for software and firmware versions V3.0 or higher. Use SR2 MEM01 for any software versions earlier then V3.0 of the Zelio Logic 2 software. The SR2 MEM01 cannot update firmware of any version.
(2) Public Subscriber Telephone Network.
(3) Global System Mobile.

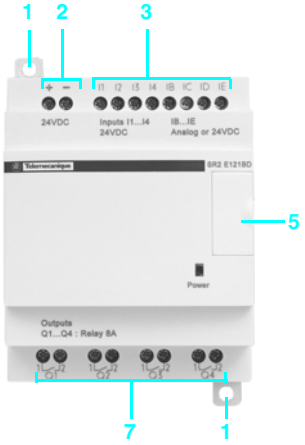
Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays

Compact smart relays

With display - 10, 12 and 20 I/O



Without display - 10, 12 and 20 I/O

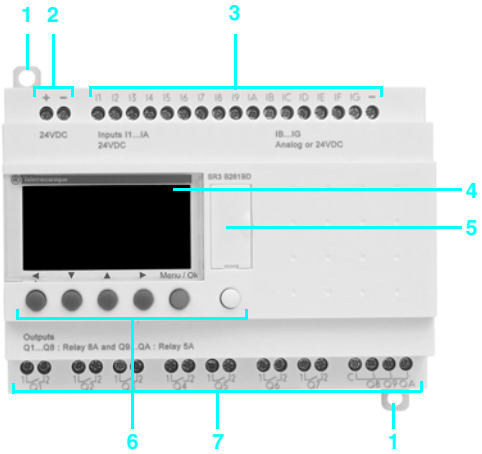


Compact smart relays have the following on the front face:

1 Two retractable mounting feet.
2 Two power supply terminals.
3 Terminals for connection of the inputs.
4 Backlit LCD display with 4 lines of 18 characters.
5 Slot for memory cartridge or connection to a PC or communication interface.
6 6 buttons for programming and parameter entry.
7 Terminals for connection of the outputs.

Modular smart relays

With display - 10 and 26 I/O

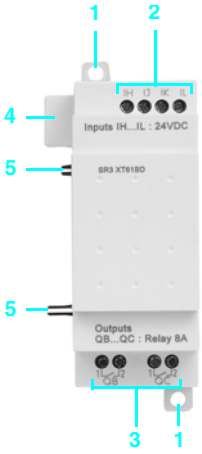


Modular smart relays have the following on the front panel:

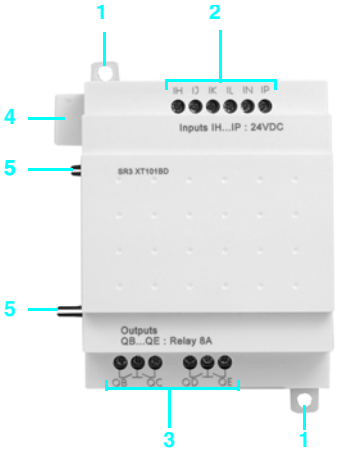
1 Two retractable mounting feet.
2 Two power supply terminals.
3 Terminals for connection of the inputs.
4 Backlit LCD display with 4 lines of 18 characters.
5 Slot for memory cartridge or connection to a PC or communication interface.
6 6 buttons for programming and parameter entry.
7 Terminals for connection of the outputs.

Discrete and analog I/O extension modules

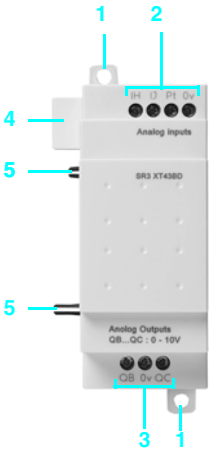
6 discrete I/O



10 and 14 discrete I/O



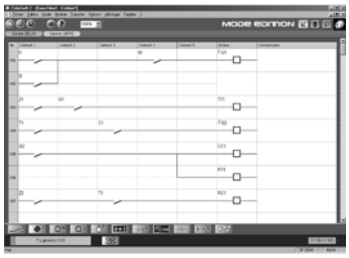
4 analog I/O



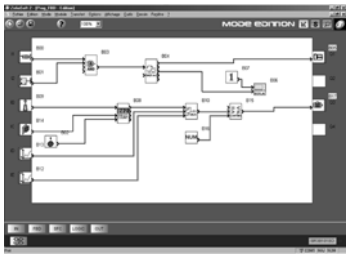
I/O extension modules have the following on the front face:

1 Two retractable mounting feet.
2 Terminals for connection of the inputs.
3 Terminals for connection of the outputs.
4 A connector for connection to the smart relay (powered by the smart relay).
5 Locating pegs.

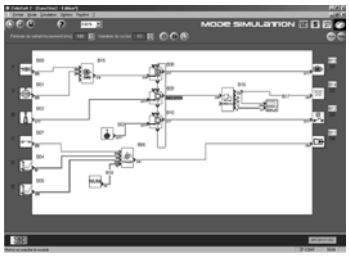
Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays
“Zelio Soft 2” programming software



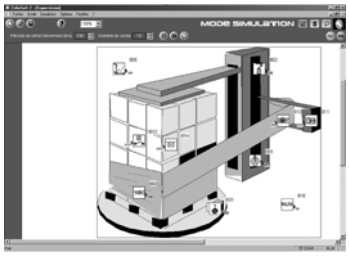
Programming in LADDER language



Programming in FBD language



“Simulation” mode in FBD language



“Monitoring” window

“Zelio Soft 2” for PC (versions 3.1 and above)

“Zelio Soft 2” software enables:
- programming in LADDER language or in function block diagram (FBD) language, see pages 12 and 13.
- simulation, monitoring and supervision,
- uploading and downloading of programs,
- output of personalized files,
- automatic compiling of programs,
- on-line help.

Coherence tests and application languages

“Zelio Soft 2” software monitors applications by means of its coherence test function. An indicator turns red at the slightest input error. The problem can be located by simply clicking the mouse.
“Zelio Soft 2” software allows switching, at any time, to any of the 6 languages (English, French, German, Spanish, Italian, Portuguese) and editing of the application file in the selected language.

Inputting messages for display on Zelio Logic 2 programmable smart relays

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

Program testing

2 test modes are provided:
- “Zelio Soft 2” **simulation** mode allows a program to be tested without a Zelio Logic 2 programmable smart relay, i.e.:
  - enable discrete inputs,
  - display the status of outputs,
  - vary the voltage of the analog inputs,
  - enable the programming buttons,
  - simulate the application program in real time or in accelerated time,
  - dynamically display (in red) the various active elements of the program.

- “Zelio Soft 2” **monitoring** mode makes it possible to test the program executed by the smart relay, i.e.:
  - display the program “on-line”,
  - force inputs, outputs, control relays and current values of the function blocks,
  - adjust the time,
  - change from STOP mode to RUN mode and vice versa.

In simulation or monitoring mode, the monitoring window allows the status of the smart relay I/Os to be displayed within your application environment (diagram or image).

Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays
“Zelio Soft 2” programming software

LADDER language

Definition


Text function block


Timer


Up/down counter


Fast counter


Analog comparator


Clock


Control relay


Counter comparator


LCD backlighting


Summer/Winter time switching


Output coil


Message

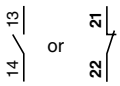
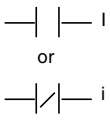
LADDER language enables a LADDER program to be written with elementary functions, elementary function blocks and derived function blocks, as well as with contacts, coils and variables.
The contacts, coils and variables can be annotated. Text can be placed freely within the graphic.

■ **Control scheme input modes**
“Zelio input” mode enables users who have directly programmed the Zelio Logic 2 programmable smart relay to find the same user interface, even when using the software for the first time.
“Free input” mode, which is more intuitive, is very user-friendly and incorporates many additional features.
With LADDER programming language, two alternative types of symbol can be used :
- LADDER symbols,
- electrical symbols.

“Free input” mode also allows the creation of mnemonics and notes associated with each line of the program.
Instant switching from one input mode to the other is possible at any time, by simply clicking the mouse.
Up to 120 control scheme lines can be programmed, with 5 contacts and 1 coil per program line

■ **Functions:**
- 16 time delay function blocks; parameters of 11 different types can be set for each of these (1/10th second to 9999 hours),
- 16 up/down counter function blocks from 0 to 32767,
- 1 fast counter (1 kHz),
- 16 Text function blocks,
- 16 analog comparator function blocks,
- 8 clock function blocks, each with 4 channels,
- 28 control relays,
- 8 counter comparators,
- automatic Summer/Winter time switching,
- variety of functions: coil, latching (Set/Reset), impulse relay, contactor,
- LCD screen with programmable backlighting,
- 28 message blocks (with communication interface, see page 32).

Functions

Function	Electrical scheme	LADDER language	Notes
Contact			I corresponds to the real state of the contact connected to the input of the smart relay. i corresponds to the inverse state of the contact connected to the input of the smart relay.
Standard coil			The coil is energized when the contacts to which it is connected are closed.
Latch coil (Set)			The coil is energized when the contacts to which it is connected are closed. It remains tripped when the contacts re-open.
Unlatch coil (Reset)			The coil is de-energized when the contacts to which it is connected are closed. It remains inactive when the contacts re-open.

Presentation, description: pages 8 to 10 | Characteristics: pages 14 to 17 | Curves: pages 18 and 19 | References: pages 20 to 22 | Dimensions, schemes: pages 23 to 27

Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays
"Zelio Soft 2" programming software

Function block diagram language (FBD) *(1)*

Definition

FBD language allows graphical programming based on the use of predefined function blocks.
This language provides the use of 24 pre-programmed functions for counting, time delay, timing, definition of switching threshold (example: temperature regulation), generation of impulses, time programming, multiplexing, display, etc.

Pre-programmed functions

Zelio Logic 2 programmable smart relays provide a high processing capacity, up to 200 function blocks, including 24 pre-programmed functions:

TIMER AC
Timer. Function A/C
(ON-delay and OFF-delay)

TIMER BH
Timer. Function BH.
(adjustable pulsed signal)

TIMER BW
Timer. Function BW
(pulse on rising/falling edge)

TIMER Li
Pulse generator
(ON-delay, OFF-delay)

BISTABLE
Impulse relay function

SET- RESET
Bistable latching - Priority assigned either to SET or RESET function

BOOLEAN
Allows logic equations to be created between connected inputs

CAM
Cam programmer

PRESET COUNT
Up/down counter

UP DOWN COUNT
Up/down counter with external preset

PRESET H-METER
Hour counter
(hour, minute preset)

TIME PROG
Time programmer, weekly and annual.

GAIN
Allows conversion of an analog value by change of scale and offset.

TRIGGER
Defines an activation zone with hysteresis

MUX
Multiplexing functions on 2 analog values

COMP IN ZONE
Zone comparison
(Min. ⩽ Value ⩽ Max.)

ADD/SUB
Add and/or subtract function

MUL/DIV
Multiply and/or divide function

DISPLAY
Display of digital and analog data, date, time, messages for Human-Machine interface.

COMPARE
Comparison of 2 analog values using the operands =, >, <, ⩽, ⩾.

STATUS
Access to smart relay status

ARCHIVE
Storage of 2 values simultaneously

SPEED COUNT
Fast counting up to 1 kHz

COM
Sending of messages with communication interface (see page 32).

SFC functions *(2)* (GRAFCET)

RESET-INIT
Reinitializable step

INIT STEP
Initial step

STEP
SFC step

DIV-OR 2
Divergence to OR

CONV-OR 2
Convergence to OR

DIV-AND 2
Divergence to AND

CONV-AND 2
Convergence to AND

Logic functions

AND
AND function

OR
OR function

NAND
NOT AND function

NOR
NOT OR function

XOR
Exclusive OR function

NOT
NOT function

(1) Function Block Diagram.
(2) Sequential Function Chart.

Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays

General environment characteristics (except for communication Modem interface SR2 COM01, see page 37)

Product certifications			UL, CSA, GL (pending), C-Tick
Conformity with the low voltage directive	Conforming to 73/23/EEC		EN (IEC) 61131-2 (open equipment)
Conformity with the EMC directive	Conforming to 89/336/EEC		EN (IEC) 61131-2 (Zone B) EN (IEC) 61000-6-2, EN (IEC) 61000-6-3 *(1)* and EN (IEC) 61000-6-4
Degree of protection	Conforming to IEC/EN 60529		IP 20
Overvoltage category	Conforming to IEC/EN 60664-1		3
Degree of pollution	Conforming to IEC/EN 61131-2		2
Ambient air temperature around the device	Operation	**°C (°F)**	- 20 to + 55 (- 4 to + 131) + 40 (+ 104) in an enclosure, conforming to IEC 60068-2-1 and IEC 60068-2-2
	Storage	**°C (°F)**	- 40 to + 70 (- 40 to + 158)
Maximum relative humidity			95% without condensation or dripping water
Maximum operating altitude	Operation	**m (ft.)**	2000 (6562)
	Transport	**m (ft.)**	3048 (10 000)
Mechanical resistance	Immunity to vibration		IEC/EN 60068-2-6, test Fc
	Immunity to mechanical shock		IEC/EN 60068-2-27, test Ea
Resistance to electrostatic discharge	Immunity to electrostatic discharge		IEC/EN 61000-4-2, level 3
Resistance to HF interference (immunity)	Immunity to electromagnetic radiated fields		IEC/EN 61000-4-3, level 3
	Immunity to fast transients in bursts		IEC/EN 61000-4-4, level 3
	Immunity to shock waves		IEC/EN 61000-4-5
	Radio frequency in common mode		IEC/EN 61000-4-6, level 3
	Voltage dips and breaks (⏦)		IEC/EN 61000-4-11
	Immunity to damped oscillation waves		IEC/EN 61000-4-12
Conducted and radiated emissions	Conforming to EN 55022/11 (Group 1)		Class B *(1)*
Screw terminals connection capacity (Tightening using Ø 3.5 screwdriver)	Flexible cable with cable end	**mm²**	1 conductor: 0.25 to 2.5, cable: AWG 24 to AWG 14 2 conductors: 0.25 to 0.75, cable: AWG 24 to AWG 18
	Semi-solid cable	**mm²**	1 conductor: 0.2 to 2.5 cable: AWG 25 to AWG 14
	Solid cable	**mm²**	1 conductor: 0.2 to 2.5, cable: AWG 25 to AWG 14 2 conductors: 0.2 to 1.5, cable: AWG 24 to AWG 16
	Tightening torque	**N.m (lbf-in)**	0.5 (4.4)

Processing characteristics

Number of control scheme lines	With LADDER programming		120
Number of function blocks	With FBD programming		Up to 200
Cycle time		**ms**	10 to 50
Response time		**ms**	20 minimum
Back-up time (in the event of power failure)	Day/time		10 years (lithium battery) at 25 °C (77 °F)
	Program and settings		10 years (EEPROM memory cartridge)
Program memory checking			On each power-up
Clock drift			12 min/year 0 to 55 °C (32 to 131 °F) 6 sec/month at 25 °C (77 °F) and calibration
Timer block accuracy			1% ± 2 cycle time

⎓ 12 V supply characteristics

Smart relay type			**SR2 B121JD**	**SR2 B201JD**	**SR3 B261JD**
Primary	Nominal voltage	**V**	12		
Voltage limits	Including ripple	**V**	⎓ 10.4 to 14.4		
Nominal input current	Without extensions	**mA**	120	200	250
	With extensions	**mA**	–		400
Power dissipated	Without extensions	**W**	1.5	2.5	3
	With extensions	**W**	–		5
Micro-breaks	Permissible duration	**ms**	⩽ 1 (repeated 20 times)		
Protection			Against reverse polarity		

(1) Except for the configuration SR3 B●●●BD + SR3 MBU01BD + SR3 XT43BD class A (class B: work in progress).

Zelio® Logic 2 Programmable Smart Relays

Compact and modular smart relays

⎓ 24 V supply characteristics

Smart relay type				SR2 ●1●1BD	SR2 B122BD	SR2 ●201BD	SR2 B202BD	SR3 B101BD	SR3 B102BD	SR3 B261BD	SR3 B262BD
Primary	Nominal voltage		**V**	24							
Voltage limits	Including ripple		**V**	19.2 to 30							
Nominal input current	Without extensions		**mA**	100					50	190	70
	With extensions		**mA**	–				100	160	300	180
Power dissipated	Without extensions		**W**	3		6	3		4	6	5
	With extensions		**W**	–				8		10	
Micro-breaks	Permissible duration		**ms**	⩽ 1 (repeated 20 times)							
Protection				Against reverse polarity							

∿ 24 V supply characteristics

Smart relay type			SR2 ●121B	SR2 ●201B	SR3 B101B	SR3 B261B
Primary	Nominal voltage	**V**	24			
Voltage limits		**V**	20.4 to 28.8			
Nominal frequency		**Hz**	50-60			
Nominal input current	Without extensions	**mA**	145	233	160	280
	With extensions	**mA**	–		280	415
Power dissipated	Without extensions	**VA**	4	6	4	7.5
	With extensions	**VA**	–		7.5	10
Micro-breaks	Permissible duration	**ms**	⩽ 10 (repeated 20 times)			
rms insulation voltage		**V**	1780 (50-60 Hz)			

∿ 100 to 240 V supply characteristics

Smart relay type			SR2 ●101FU	SR2 ●121FU	SR2 ●201FU	SR3 B101FU	SR3 B261FU
Primary	Nominal voltage	**V**	100 to 240				
Voltage limits		**V**	85 to 264				
Nominal input current	Without extensions	**mA**	80/30		100/50	80/30	100/50
	With extensions	**mA**	–			80/40	80/60
Power dissipated	Without extensions	**VA**	7		11	7	12
	With extensions	**VA**	–			12	17
Micro-breaks	Permissible duration	**ms**	10				
rms insulation voltage		**V**	1780				

Discrete ⎓ input characteristics (inputs I1 to IA and IH to IR)

Smart relay type				SR● ●●●●JD	SR● ●●●●BD
Nominal value of inputs	Voltage		**V**	12	24
	Current		**mA**	4	
Input switching limit values	At state 1	Voltage	**V**	⩾ 5.6	⩾ 15
		Current	**mA**	⩾ 2	⩾ 2.20
	At state 0	Voltage	**V**	⩽ 2.4	⩽ 5
		Current	**mA**	< 0.9	< 0.75
Input impedance at state 1			**kΩ**	2.7	7.4
Conforming to IEC/EN 61131-2				Type 1	
Sensor compatibility	3-wire			Yes PNP	
	2-wire			No	
Input type				Resistive	
Isolation	Between supply and inputs			None	
	Between inputs			None	
Maximum counting frequency			**kHz**	1	
Protection	Reverse polarity protection			Control instructions not executed	

Zelio® Logic 2 Programmable Smart Relays

Compact and modular smart relays

Discrete or analog ⎓ input characteristics (inputs IB to IG)

⎓ discrete inputs

Smart relay type				SR● ●●●●JD	SR● ●●●●BD
Nominal value of inputs	Voltage		**V**	12	24
	Current		**mA**	4	
Input switching limit values	At state 1	Voltage	**V**	⩾ 7	⩾ 15
		Current	**mA**	⩾ 0.5	⩾ 1.2
	At state 0	Voltage	**V**	⩽ 3	⩽ 5
		Current	**mA**	⩽ 0.2	⩽ 0.5
Input impedance at state 1			**kΩ**	14	12
Conforming to IEC/EN 61131-2				Type 1	
Sensor compatibility	3-wire			Yes PNP	
	2-wire			No	
Input type				Resistive	
Isolation	Between supply and inputs			None	
	Between inputs			None	
Maximum counting frequency			**kHz**	1	
Protection	Reverse polarity protection			Control instructions not executed	

⎓ analog inputs

Smart relay type			SR● ●●●●JD	SR● ●●●●BD
Input range		**V**	0 to10 or 0 to 12	0 to 10 or 0 to 24
Input impedance		**kΩ**	14	12
Maximum non destructive voltage		**V**	14.4	30
Value of LSB			39 mV, 4 mA	
Input type			Common mode	
Conversion	Resolution		8 bits	
	Conversion time		Smart relay cycle time	
	Precision	at 25 °C (77 °F)	± 5 %	
		at 55 °C (131 °F)	± 6.2 %	
	Repeat accuracy	at 55 °C (131 °F)	± 2 %	
Isolation	Between analog channel & supply		None	
Cabling distance		**m**	10 maximum, with shielded cable (sensor not isolated)	
Protection	Reverse polarity protection		Control instructions not executed	

Analog ⎓ input characteristics (inputs IH, IJ and Pt.)

Analog inputs	Application			0 -10 V	0-20 mA	Pt100
	Assignable inputs			IH and IJ	IH and IJ	IJ
	Input range			0 to 10 Vdc	0 to 20 mA	- 25 to + 125 °C (- 13 to + 257 °F)
	Input impedance		Ω	18 k	246	–
	Maximum non destructive value			30 V	30 mA	–
	Value of LSB			9.8 mV	20 µA	0.15 °C (32 °F)
	Input type			Common mode		Pt100 probe - IEC 751 3-wire
Conversion	Resolution			10 bits		
	Conversion time			Smart relay cycle time		
	Precision	at 25 °C (77 °F)		± 1 %		± 1.5 °C (35 °F)
		at 55 °C (131 °F)		± 1 %		± 1.5 °C (35 °F)
	Repeat accuracy	at 25 °C (77 °F)		< ± 1 %		< ± 0.3 °C (32 °F)
Isolation	Between analog chan. & supply			None		
Cabling distance			**m (ft.)**	10 (32.81) maximum, with shielded cable (sensor not isolated)		
Protection	Reverse polarity protection			Control instructions not executed		–

Discrete ∿ input characteristics

Smart relay type				SR● ●●●●B	SR● ●●●●FU
Nominal value of inputs	Voltage		**V**	24	100 to 240
	Current		**mA**	4.4	0.6
	Frequency		**Hz**	47 to 63	
Input switching limit values	At state 1	Voltage	**V**	⩾ 14	⩾ 79
		Current	**mA**	> 2	> 0.17
	At state 0	Voltage	**V**	⩽ 5	⩽ 40
		Current	**mA**	< 0.5	
Input impedance at state 1			**kΩ**	4.6	350
Configurable response time	State 0 to 1 (50/60 Hz)		**ms**	50	
	State 1 to 0 (50/60 Hz)		**ms**	50	
Isolation	Between supply and inputs			None	
	Between inputs			None	
Protection	Reverse polarity protection			Control instructions not executed	

Relay output characteristics

Smart relay type				SR2 ●●●/ SR3 B101●●/ SR3 XT61●●/ SR3 XT101●●	SR3 B261●●	SR3 XT141●●
Operating limit values			**V**	⎓ 5 to 150 ∿ 24 to 250		
Contact type				N/O		
Thermal current			**A**	8	8 outputs: 8 A 2 outputs: 5 A	4 outputs: 8 A 2 outputs: 5 A
Electrical durability for 500 000 operating cycles	Utilization category	DC-12	**V**	24		
			A	1.5		
		DC-13	**V**	24 (L/R = 10 ms)		
			A	0.6		
		AC-12	**V**	230		
			A	1.5		
		AC-15	**V**	230		
			A	0.9		
Minimum switching capacity	At minimum voltage of 12 V		**mA**	10		
Low power switching reliability of contact				12 V - 10 mA		
Maximum operating rate	No-load		**Hz**	10		
	At Ie (operational current)		**Hz**	0.1		
Mechanical life	In millions of operating cycles			10		
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-1 and IEC/EN 60664-1		**kV**	4		
Response time	Trip		**ms**	10		
	Reset		**ms**	5		
Built-in protection	Against short-circuits			None		
	Against overvoltage and overload			None		

Transistor output characteristics

Smart relay type			SR● B●●2BD
Operating limit values		**V**	19.2 to 30
Load	Nominal voltage	**V**	⎓ 24
	Nominal current	**A**	0.5
	Maximum current	**A**	0.625 at 30 V
Drop-out voltage	At state 1	**V**	⩽ 2 for I = 0.5 A
Response time	Trip	**ms**	⩽ 1
	Reset	**ms**	⩽ 1
Built-in protection	Against overload and short-circuits		Yes
	Against overvoltage *(1)*		Yes
	Against inversions of power supply		Yes

(1) If there is no volt-free contact between the smart relay output and the load.

Analog output characteristics (QB, QC)

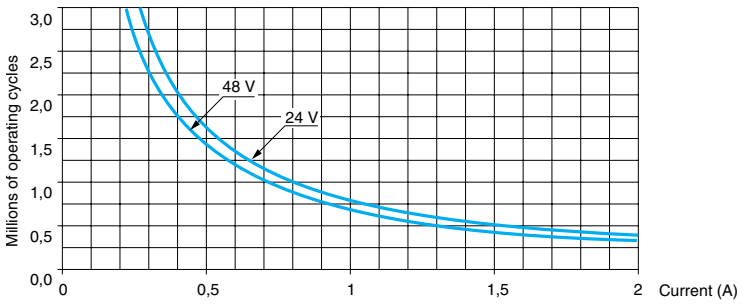
Analog outputs	Output range		**V**	∿ 0 to 10
	Type of load			Resistive
	Maximum load		**mA**	10
	Value of LSB		**mV**	10
Conversion	Resolution			10 bits
	Conversion time			Smart relay cycle time
	Precision	at 25 °C (77 °F)		± 1% of the full scale value
		at 55 °C (131 °F)		± 1% of the full scale value
	Repeat accuracy at 55 °C (131 °F)			< ± 1%
Isolation	Between analog channel and supply			None
Cabling distance			**m (ft.)**	10 (32.81) maximum, with shielded cable
Built-in protection	Reverse polarity protection			Yes

Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays

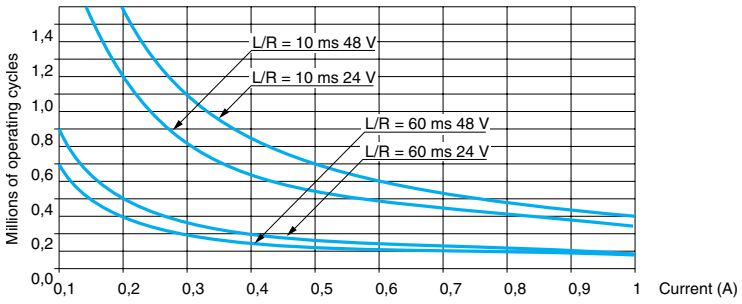
Electrical durability of relay outputs
(in millions of operating cycles, conforming to IEC 60947-5-1)

d.c. loads

DC-12 *(1)*



DC-13 *(2)*



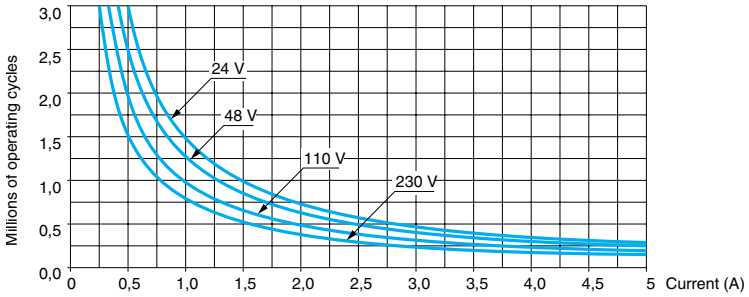
(1) DC-12: switching resistive loads and photo-coupler isolated solid-state loads, L/R ⩽ 1 ms.
(2) DC-13: switching electromagnets, L/R ⩽ 2 x (Ue x Ie) in ms, Ue: rated operational voltage, Ie: rated operational current (with a protection diode on the load, DC-12 curves must be used with a coefficient of 0.9 applied to the number in millions of operating cycles).

Electrical durability of relay outputs (continued)

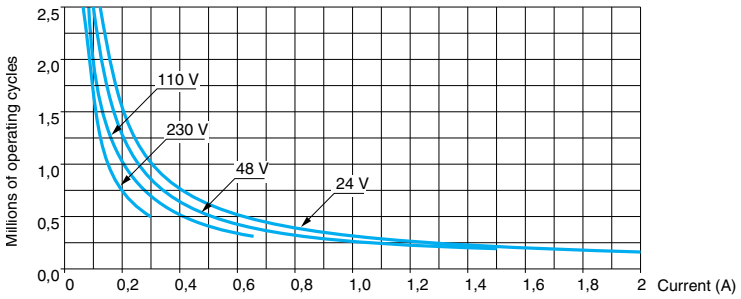
(in millions of operating cycles, conforming to IEC 60947-5-1)

a.c. loads

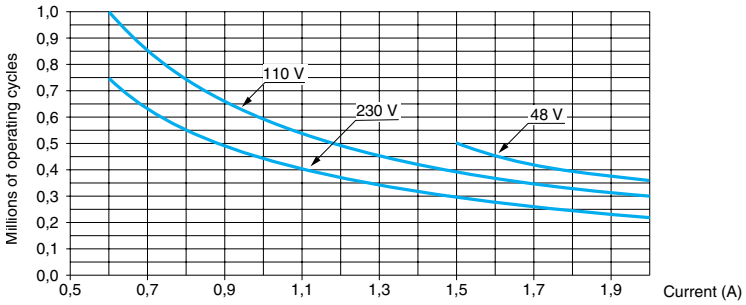
AC-12 *(1)*



AC-14 *(2)*



AC-15 *(3)*



(1) AC-12: switching resistive loads and photo-coupler isolated solid-state loads, cos ≥ 0.9.
(2) AC-14: switching small electromagnetic loads ≤ 72 VA, make: cos = 0.3, break: cos = 0.3.
(3) AC-15: switching electromagnetic loads > 72 VA, make: cos = 0.7, break: cos = 0.4.

Zelio® Logic 2 Programmable Smart Relays

Compact smart relays

109440

SR2 A201BD

Compact smart relays with display

Number of I/O	Discrete inputs	Including 0-10 V analog inputs	Relay outputs	Transistor outputs	Clock	Reference	Weight kg
Supply ⎓ 12 V							
12	8	4	4	0	Yes	**SR2 B121JD**	0.250
20	12	6	8	0	Yes	**SR2 B201JD**	0.380
Supply ⎓ 24 V							
10	6	0	4	0	No	**SR2 A101BD** *(1)*	0.250
12	8	4	4	0	Yes	**SR2 B121BD**	0.250
	8	4	0	4	Yes	**SR2 B122BD**	0.220
20	12	2	8	0	No	**SR2 A201BD** *(1)*	0.380
	12	6	8	0	Yes	**SR2 B201BD**	0.380
	12	6	0	8	Yes	**SR2 B202BD**	0.280
Supply ∿ 24 V							
12	8	0	4	0	Yes	**SR2 B121B**	0.250
20	12	0	8	0	Yes	**SR2 B201B**	0.380
Supply ∿ 100 to 240 V							
10	6	0	4	0	No	**SR2 A101FU** *(1)*	0.250
12	8	0	4	0	Yes	**SR2 B121FU**	0.250
20	12	0	8	0	No	**SR2 A201FU** *(1)*	0.380
	12	0	8	0	Yes	**SR2 B201FU**	0.380

109442

SR2 E121BD

Compact smart relays without display

Number of I/O	Discrete inputs	Including 0-10 V analog inputs	Relay outputs	Transistor outputs	Clock	Reference	Weight kg
Supply ⎓ 24 V							
10	6	0	4	0	No	**SR2 D101BD** *(1)*	0.220
12	8	4	4	0	Yes	**SR2 E121BD**	0.220
20	12	2	8	0	No	**SR2 D201BD** *(1)*	0.350
	12	6	8	0	Yes	**SR2 E201BD**	0.350
Supply ∿ 24 V							
12	8	0	4	0	Yes	**SR2 E121B**	0.220
20	12	0	8	0	Yes	**SR2 E201B**	0.350
Supply ∿ 100 to 240 V							
10	6	0	4	0	No	**SR2 D101FU** *(1)*	0.220
12	8	0	4	0	Yes	**SR2 E121FU**	0.220
20	12	0	8	0	No	**SR2 D201FU** *(1)*	0.350
	12	0	8	0	Yes	**SR2 E201FU**	0.350

510345

SR2 PACK●●●

Compact “discovery” packs

Number of I/O	Pack contents	Reference	Weight kg
Supply ⎓ 24 V			
12	An **SR2 B121BD** compact smart relay with display, a connecting cable and “Zelio Soft 2” programming software supplied on CD-ROM.	**SR2 PACKBD**	0.700
20	An **SR2 B201BD** compact smart relay with display, a connecting cable and “Zelio Soft 2” programming software supplied on CD-ROM.	**SR2 PACK2BD**	0.850
Supply ∿ 100 to 240 V			
12	An **SR2 B121FU** compact smart relay with display, a connecting cable and “Zelio Soft 2” programming software supplied on CD-Rom.	**SR2 PACKFU**	0.700
20	An **SR2 B201FU** compact smart relay with display, a connecting cable and “Zelio Soft 2” programming software supplied on CD-Rom.	**SR2 PACK2FU**	0.850

(1) Programming on smart relay in LADDER language only.

Presentation, description: pages 8 to 10 | Functions: pages 11 to 13 | Characteristics: pages 14 to 17 | Curves: pages 18 and 19 | Dimensions, schemes: pages 23 to 27

Zelio® Logic 2
Programmable Smart Relays
Modular smart relays

109442

SR3 B101BD

109363

SR3 XT61BD

109369

SR3 XT141BD

534945

SR3 XT43BD

Modular smart relays with display

Number of I/O	Discrete inputs	Including 0-10 V analog inputs	Relay outputs	Transistor outputs	Clock	Reference	Weight kg
Supply ⎓ 12 V							
26	16	6	10	0	Yes	**SR3 B261JD** *(1)*	0.400
Supply ⎓ 24 V							
10	6	4	4	0	Yes	**SR3 B101BD**	0.250
	6	4	0	4	Yes	**SR3 B102BD**	0.220
26	16	6	10 *(2)*	0	Yes	**SR3 B261BD**	0.400
	16	6	0	10	Yes	**SR3 B262BD**	0.300
Supply ∿ 24 V							
10	6	0	4	0	Yes	**SR3 B101B**	0.250
26	16	0	10 *(2)*	0	Yes	**SR3 B261B**	0.400
Supply ∿ 100-240 V							
10	6	0	4	0	Yes	**SR3 B101FU**	0.250
26	16	0	10 *(2)*	0	Yes	**SR3 B261FU**	0.400

Discrete I/O extension modules *(3)*

Number of I/O	Discrete inputs	Relay outputs	Reference	Weight kg
Supply ⎓ 12 V (for smart relay SR3 B261JD)				
6	4	2	**SR3 XT61JD**	0.125
10	6	4	**SR3 XT101JD**	0.200
14	8	6	**SR3 XT141JD**	0.220
Supply ⎓ 24 V (for smart relays SR3 B●●●BD)				
6	4	2	**SR3 XT61BD**	0.125
10	6	4	**SR3 XT101BD**	0.200
14	8	6	**SR3 XT141BD**	0.220
Supply ∿ 24 V (for smart relays SR3 B●●●B)				
6	4	2	**SR3 XT61B**	0.125
10	6	4	**SR3 XT101B**	0.200
14	8	6	**SR3 XT141B**	0.220
Supply ∿ 100-240 V (for smart relays SR3 B●●●FU)				
6	4	2	**SR3 XT61FU**	0.125
10	6	4	**SR3 XT101FU**	0.200
14	8	6	**SR3 XT141FU**	0.220

Analog I/O extension modules

Supply ⎓ 24 V

Number of I/O	Number of inputs	Including 0 - 10 V	Including 0 - 20 mA	Including Pt100	Output 0 - 10 V	Reference	Weight kg
4	2 *(4)*	2 max	2 max	1 max	2	**SR3 XT43BD** *(1) (5)*	0.110

Network communication module *(3) (6)*

For use on	Supply voltage	Reference	Weight kg
Modbus® network (slave)	⎓ 24 V	See page 31	0.300

Modular “discovery” packs

Number of I/O	Pack contents	Reference	Weight kg
Supply ⎓ 24 V			
10	An **SR3 B101BD** modular smart relay, a connecting cable and “Zelio Soft 2” programming software supplied on CD-ROM.	**SR3 PACKBD**	0.700
26	An **SR3 B261BD** modular smart relay, a connecting cable and “Zelio Soft 2” programming software supplied on CD-ROM.	**SR3 PACK2BD**	0.850
Supply ∿ 100 to 240 V			
10	An **SR3 B101FU** modular smart relay, a connecting cable and “Zelio Soft 2" programming software supplied on CD-Rom.	**SR3 PACKFU**	0.700
26	An **SR3 B261FU** modular smart relay, a connecting cable and “Zelio Soft 2” programming software supplied on CD-Rom.	**SR3 PACK2FU**	0.850

(1) Can only be used with “Zelio Soft 2” software version ⩾ V3.1.
(2) Including 8 outputs at maximum current of 8 A and 2 outputs at maximum current of 5 A.
(3) Power supply to the I/O extension and communication modules is via the modular smart relay.
(4) See page 26.
(5) Can only be used in FBD language.
(6) See pages 28 to 31.

Note : *The smart relay and its associated extensions must have an identical voltage.*

Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays
Separate components

510352

SR2 SFT01

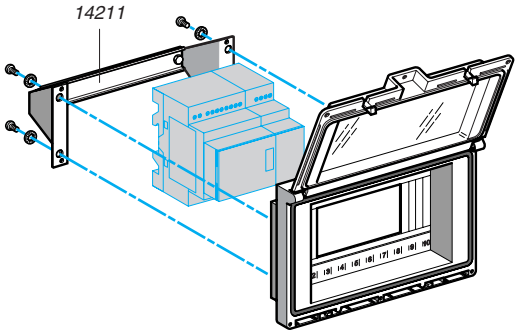
523109

SR2 USB01

534944

SR2 MEM01
SR2 MEM02

DF563990



"Zelio Soft 2" software for PC

Description	Application	Reference	Weight kg
Programming software "Zelio Soft 2", multilingual	For PC, supplied on CD-ROM *(1)*, compatible with Microsoft® Windows 98, NT, 2000, XP and ME.	**SR2 SFT01**	0.200
Connecting cable	Between the PC (SUB-D, 9-pin connector) and the smart relay, length: 3 m (9.8 ft.)	**SR2 CBL01**	0.150
	Between the PC (USB connector) & the smart relay, length: 3 m (9.8 ft.)	**SR2 USB01**	0.100
Interface	For USB port (to be used with cable SR2 CBL01), length: 1.8 m (5.9 ft.)	**SR2 CBL06**	0.350

Memory cartridges *(2)*

Description	Application	Reference	Weight kg
EEPROM memory cartridge	For software incorporated in the smart relay version ≤ 2.4 (no firmware of any version)	**SR2 MEM01**	0.010
	For firmware (software incorporated in the smart relay) version ≥ 3.0	**SR2 MEM02**	0.010

Modem communication interface *(3)*

Description	Supply	Reference	Weight kg
Modem communication interface	⎓ 12 to 24 V	See page 38	

Power supplies

Input voltage	Nominal output voltage	Reference	Weight kg
∿ 100 to 240 V (47 to 63 Hz)	⎓ 12 V or ⎓ 24 V	See page 45	–

Mounting accessories *(4)*

Description	Mounting capacity	Application	Reference	Weight kg
Dust and damp-proof enclosure with split blanking plate arrangement, fitted with IP 55 dust and damp-proof window with hinged flap.	- 1 or 2 SR2 modules with 10 or 12 I/O, or - 1 SR2 module with 20 I/O, or - 1 SR3 module with 10 I/O + 1 I/O extension module (6, 10 or 14 I/O), or - 1 SR3 module with 26 I/O + 1 I/O extension module (6 I/O).	For mounting through a door	**14210**	0.350
Mounting bracket and symmetrical mounting rail	–	For mounting enclosure **14210** through a door panel	**14211**	0.210

Documentation

Description	Application	Language	Reference	Weight kg
User's manual	For direct programming on the smart relay	English	**SR2 MAN01EN**	0.100
		French	**SR2 MAN01FR**	0.100
		German	**SR2 MAN01DE**	0.100
		Spanish	**SR2 MAN01ES**	0.100
		Italian	**SR2 MAN01IT**	0.100
		Portuguese	**SR2 MAN01P0**	0.100

(1) CD-ROM comprising "Zelio Soft 2" software, an application library, a self-training manual, installation instructions and a user's manual.
(2) Program loading using memory cartridge SR2 MEM02 is incompatible with Modem communication interface SR2 COM01.
(3) See pages 32 to 41.
(4) Products marketed under the Merlin Gerin™ brand.

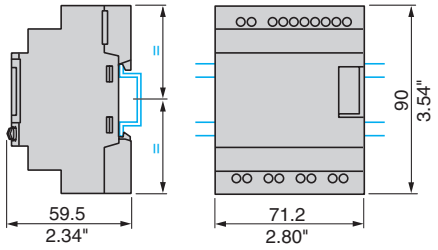
Zelio® Logic 2 Programmable Smart Relays

Compact and modular smart relays

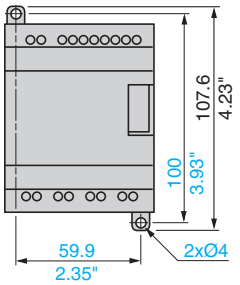
Compact and modular smart relays

SR● ●10●●● (10 I/O), SR2 ●12●●● (12 I/O)

Mounting on 35 mm ⊓ rail



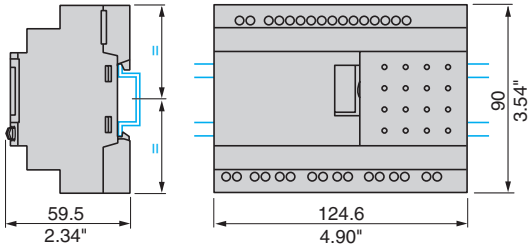
Screw mounting (retractable lugs)



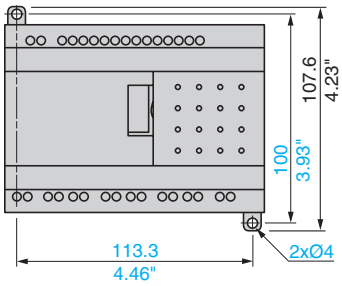
Dual Dimensions mm / inches

SR2 ●20●●● (20 I/O), SR3 B26●●● (26 I/O)

Mounting on 35 mm ⊓ rail



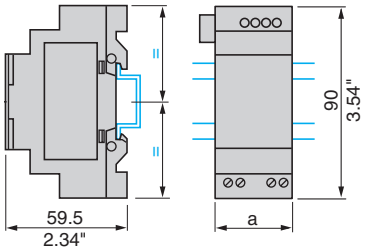
Screw mounting (retractable lugs)



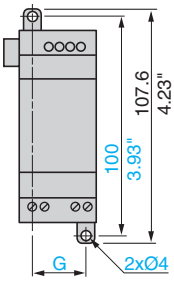
I/O extension modules

SR3 XT43BD (4 I/O), SR3 XT61●● (6 I/O), SR3 XT101●● and SR3 XT141●● (10 and 14 I/O)

Mounting on 35 mm ⊓ rail



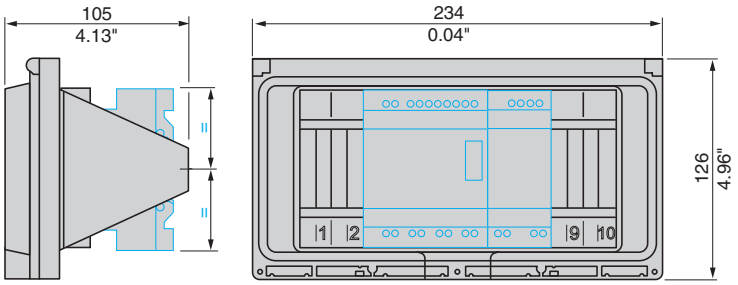
Screw mounting (retractable lugs)



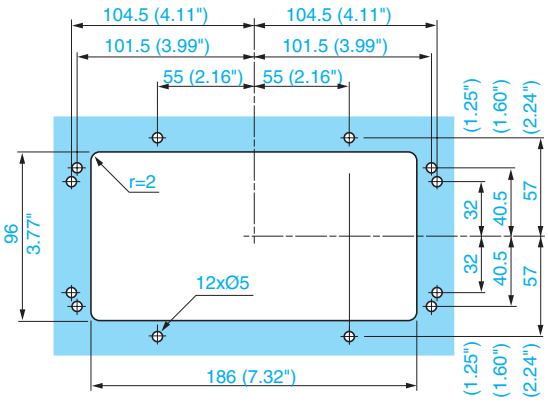
SR3	a	G
XT43BD	35.5 (1.39")	25 (0.98")
XT61●●	35.5 (1.39")	25 (0.98")
XT101●●	72 (2.83")	60 (2.36")
XT141●●	72 (2.83")	60 (2.36")

Enclosure + mounting bracket

14210 + 14211



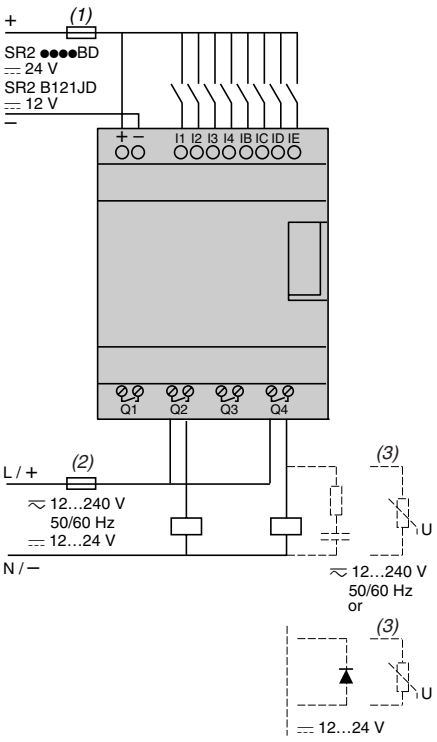
Cut-out



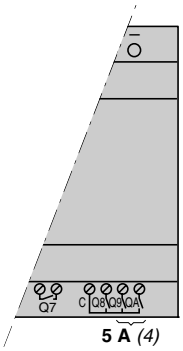
Zelio® Logic 2
Programmable Smart Relays
Compact and modular smart relays

Connection of smart relays on ⎓ supply

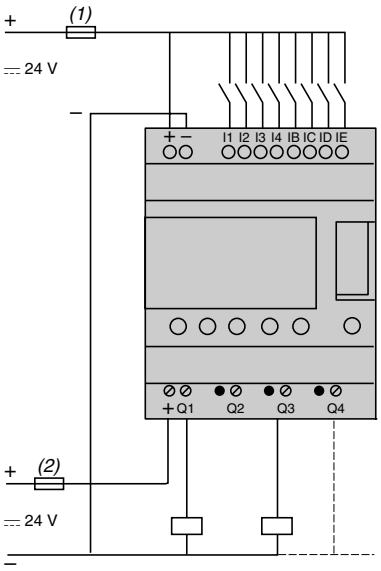
SR● ●●●1BD, SR● ●●●1JD



SR3 B261●D

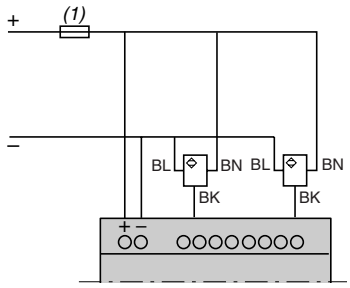


SR2 B●●2BD and SR3 B●●2BD



(1) 1 A quick-blow fuse or circuit-breaker.
(2) Fuse or circuit-breaker.
(3) Inductive load.
(4) Q9 and QA: 5 A.

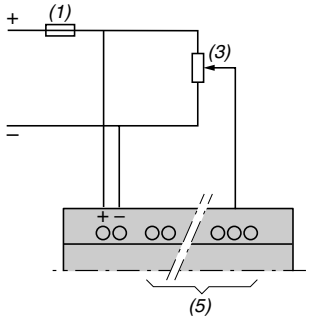
Discrete input used for 3-wire sensors

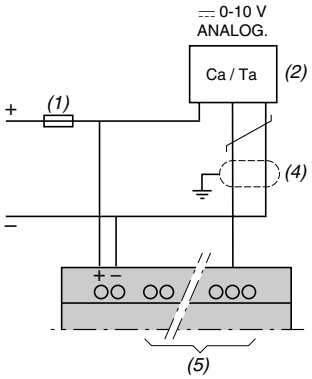


(1) 1 A quick-blow fuse or circuit-breaker.

Connection of smart relays on ⎓ supply (continued)

Analog inputs



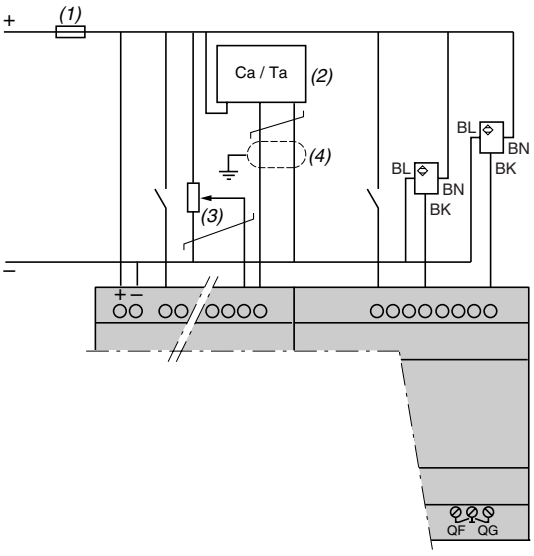


(1) 1 A quick-blow fuse or circuit-breaker.
(2) Ca: Analog sensor / Ta: Analog transmitter.
(3) Recommended values: 2.2 kΩ / 0.5 W (10 kΩ max.).
(4) Shielded cables, maximum length 10 m (32.81 ft.).
(5) Analog inputs according to smart relay, see table below:

Smart relays	Analog inputs
SR2 ●12●●D	IB to IE
SR2 A201BD	IB and IC
SR2 D201BD	IB and IC
SR2 B20●●D	IB to IG
SR2 E201BD	IB to IG
SR3 B10●BD	IB to IE
SR3 B26●●D	IB to IG

Connection of smart relays on ⎓ supply, with discrete I/O extension modules

SR3 B●●●JD + SR3 XT●●●JD, SR3 B●●●BD + SR3 XT●●●BD



Note: QF and QG: 5 A for **SR3 XT141●●**

(1) 1 A quick-blow fuse or circuit-breaker.
(2) Ca: Analog sensor / Ta: Analog transmitter.
(3) Recommended values: 2.2 kΩ / 0.5 W (10 kΩ max.).
(4) Shielded cables, maximum length 10 m (32.81 ft.).

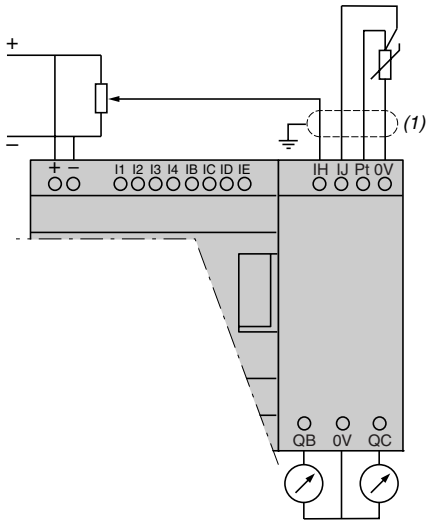
Connection of smart relays on ⎓ supply, with analog I/O extension module

SR3 B●●●BD + SR3 XT43BD

Connection alternatives

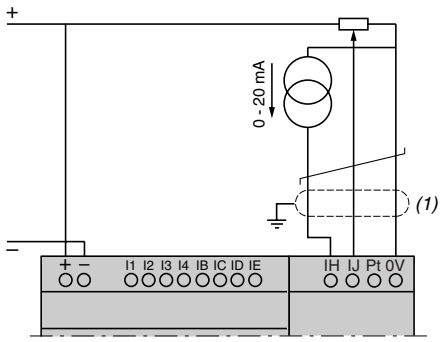
0 - 10 V	0 - 20 mA	Pt100
2	0	0
1	1	0
0	2	0
1	0	1
0	1	1

Application example with 1 x 0 - 10 V input and 1 x Pt100 input



(1) Shielded cables, maximum length 10 m (32.81 ft.).

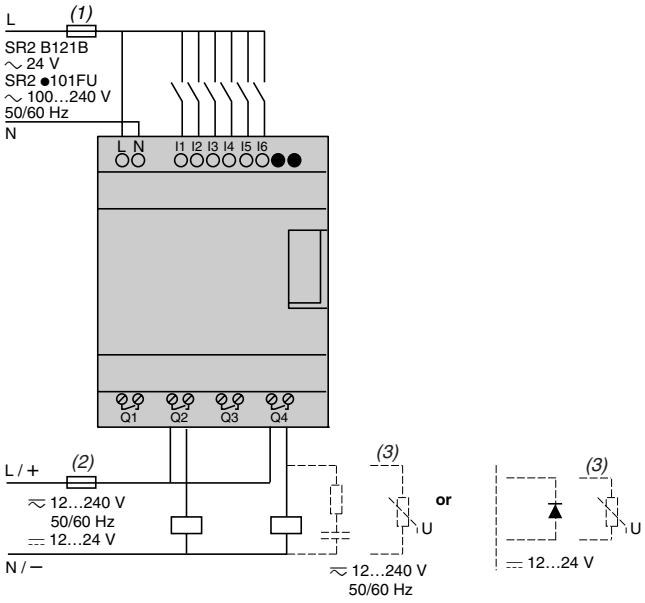
Application example with 1 x 0 - 20 mA input and 1 x 0 - 10 V input



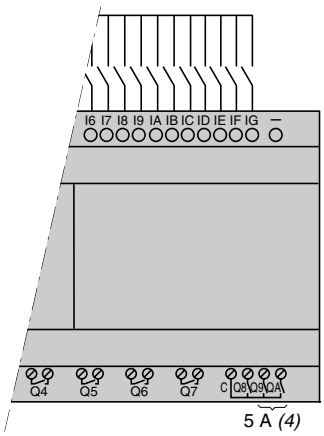
(1) Shielded cables, maximum length 10 m (32.81 ft.).

Connection of smart relays on ∿ supply

SR● ●●●1B, SR● ●●●1FU



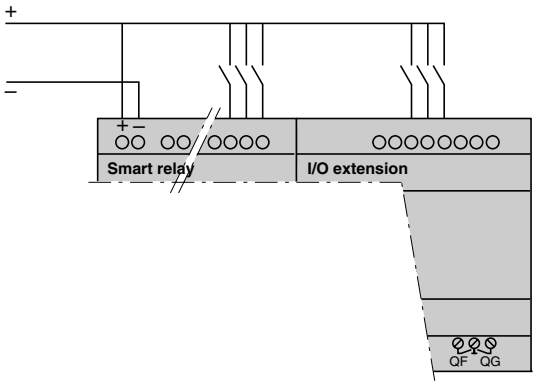
SR3 B261B and SR3 B261FU



(1) 1 A quick-blow fuse or circuit-breaker.
(2) Fuse or circuit-breaker.
(3) Inductive load.
(4) Q9 and QA: 5 A.

With discrete I/O extension module

SR3 B●●●B + SR3 XT●●●B, SR3 B●●●FU + SR3 XT●●●FU

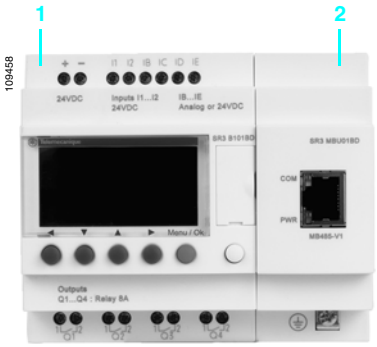


Note: QF and QG: 5 A for **SR3 XT141●●**

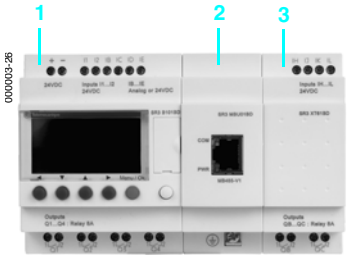
Zelio® Logic 2
Programmable Smart Relays
Modbus® network slave communication module

SR3 MBU01BD

Combination of smart relays with communication and I/O extension modules



1 Modular smart relay (10 or 26 I/O)
2 Modbus network slave communication module



1 Modular smart relay (10 or 26 I/O)
2 Network communication module
3 I/O extension module: discrete (6, 10 or 14 I/O) or analog (4 I/O)

⚠ *The order shown above must be observed when using a Modbus network slave communication module and a discrete or analog I/O extension module.*
An I/O extension module cannot be fitted before the Modbus network slave communication module.

Presentation

The Modbus protocol is of the master/slave type.

Two exchange methods are possible:
- request/reply: the request from the master is addressed to a specific slave. The master waits for the reply to be returned by the slave polled,
- distribution: the master distributes a request to all the slave stations on the bus. These stations execute the instruction without sending a reply.

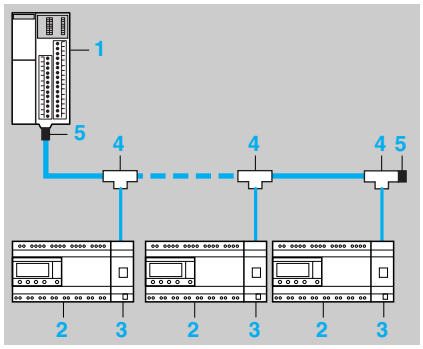
Zelio Logic modular smart relays are connected to the Modbus network via the Modbus network slave communication module. This module is a slave that is not electrically isolated.
The Modbus network slave communication module must be connected to an SR3 B●●●BD modular smart relay, with a ⎓ 24 V supply only (no other voltages are available).

Configuration

The Modbus network slave communication module can be configured:
- independently, using the buttons on the smart relay,
- on a PC, using “Zelio Soft 2” software, see page 14102/16.

When using a PC, programming can be performed either in LADDER language or in function block diagram (FBD) language, see pages 12 and 13.

Connection example



1 Modbus Master programmable controller (for example Twido® PLC).
2 Zelio Logic 2 programmable smart relay.
3 Modbus network slave communication module.
4 T-junction.
5 Line end adaptors.

Function description

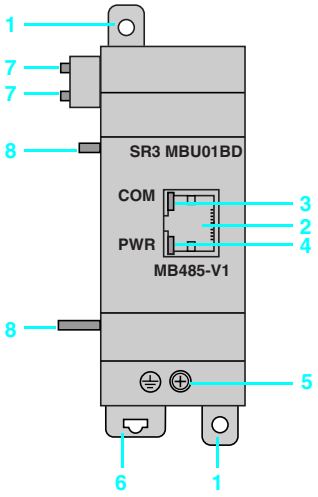
- The Modbus network slave communication module is connected to a 2-wire or 4-wire Modbus network.
- The maximum length of the network is 1000 m (3281 ft.) 9600 bauds max., AWG 26.
- A maximum of 32 slaves can be connected to the Modbus network, or a maximum of 247 slaves with repeaters.
- Line end adaptors must be fitted to both ends of the line (1 nF/10 V, 120 Ω /0.25 W in series).
- The line must be polarized (470 Ω /0.25 W resistors) *(1)*.
- The connection cable and its RJ45 male connectors must be shielded.
- The “COMMON” signal must be connected directly to the protective ground at one point on the bus.

(1) The polarization resistors must be managed by the master.

Zelio® Logic 2 Programmable Smart Relays

Modbus® network slave communication module

Description



The Modbus network slave communication module **SR3 MBU01BD** comprises:

1 Two retractable mounting feet.
2 A Modbus network connection (RJ45 shielded female connector).
3 A communication LED (COM).
4 A “Power on” LED (PWR).
5 A screw terminal block for the protective ground connection.
6 A spring clip for mounting on a 35 mm (1.38”)mounting rail.
7 Two locating pegs.
8 Two locating pegs for clip-on mounting.

Environment characteristics

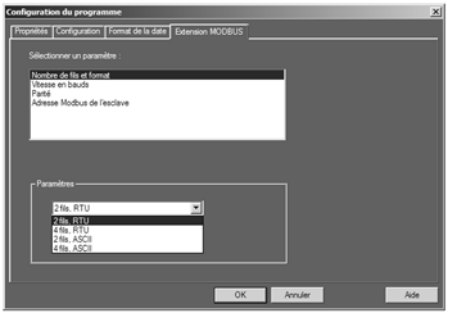
Product certifications			UL, CSA, GL (pending), C-TICK
Conformity with the low voltage directive	Conforming to 73/23/EEC		EN (IEC) 61131-2 (open equipment)
Conformity with the EMC directive	Conforming to 89/336/EEC		EN (IEC) 61131-2 (Zone B) EN (IEC) 61000-6-2, EN (IEC) 61000-6-3 and EN (IEC) 61000-6-4
Degree of protection	Conforming to IEC/EN 60529		IP 20
Overvoltage category	Conforming to IEC/EN 60664-1		3
Degree of pollution	Conforming to IEC/EN 61131-2		2
Ambient air temperature around the device	Operation	**°C (°F)**	- 20 to + 55 (-4 to +131) + 40 (+104) in an enclosure, conforming to IEC 60068-2-1 and IEC 60068-2-2
	Storage	**°C (°F)**	- 40 to + 70 (-40 to 158)
Maximum relative humidity			95% without condensation or dripping water
Maximum operating altitude	Operation	**m (ft.)**	2000 (6562)
	Transport	**m (ft.)**	3048 (10 000)
Mechanical resistance	Immunity to vibration		IEC/EN 60068-2-6, test Fc
	Immunity to mechanical shock		IEC/EN 60068-2-27, test Ea
Resistance to electrostatic discharge	Immunity to electrostatic discharge		IEC/EN 61000-4-2, level 3
Resistance to HF interference (immunity)	Immunity to electromagnetic radiated fields		IEC/EN 61000-4-3, level 3
	Immunity to fast transients in bursts		IEC/EN 61000-4-4, level 3
	Immunity to shock waves		IEC/EN 61000-4-5
	Radio frequency in common mode		IEC/EN 61000-4-6, level 3
	Voltage dips and breaks (~)		IEC/EN 61000-4-11
	Immunity to damped oscillation waves		IEC/EN 61000-4-12
Conducted and radiated emissions	Conforming to EN 55022/11 (Group 1)		Class B

Presentation: page 28 Functions: page 30 References: page 31 Dimensions: page 31

Zelio® Logic 2
Programmable Smart Relays
Modbus® network slave communication module

Parameter entry

510391



Software workshop parameter entry window

Parameters can be entered either using “Zelio Soft 2” software or directly using the buttons on the Zelio Logic 2 programmable smart relay.
When the “RUN” instruction is given, the Zelio Logic 2 programmable smart relay initializes the Modbus network slave communication module in a configuration previously defined in the basic program.
The Modbus network slave communication module has 4 parameters:
- number of UART wires and format of the frames on the Modbus network,
- transmission speed,
- parity,
- network address of the Modbus module.

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

Parameter entry	Options
Number of wires	2 or 4
Frame format	RTU or ASCII
Transmission speed in bauds	1200, 2400, 4800, 9600, 19 200, 28 800, 38 400, 57 600
Parity	None, even, odd
Network address	1 to 247

Addressing of Modbus exchanges

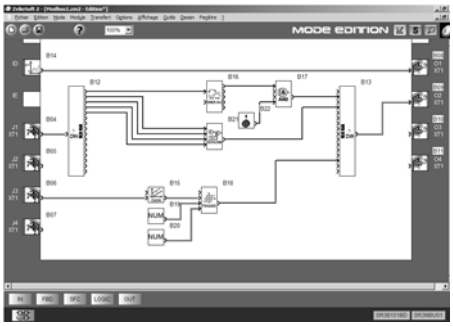
LADDER programming *(1)*

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 effected in a way that is totally transparent.

Modbus exchanges	Code	Number of words
Image of smart relay I/O	Read 03	4
	Read/Write 16, 06 or 03	4
Status ⇨	Read 03	1

Function block diagram (FBD) programming *(2)*

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. Dedicated function blocks make it possible to:
- break down a ‘complete’ type input (16 bits) into 16 separate “bit” type outputs.
  - example: break down a Modbus type input (J1XT1 to J4XT1) and copy these status values to discrete outputs.
- make up a ‘complete’ type output (16 bits) from 16 separate “bit” type outputs.
  - example: transfer the status value of the discrete inputs or the status of a function to a Modbus type output (O1XT1 to O4XT1).



Modbus exchanges	Code	Number of words
➜	Read/Write 16, 06 or 03	4
⇨	Read 03	4
	Read/Write 16, 06 or 03	4
Status ⇨	Read 03	1

(1) See page 12.
(2) See page 13.

Zelio® Logic 2 Programmable Smart Relays

Modbus® network slave communication module

References

000007

SR3 MBU01BD

Modbus network slave communication module

For use with	Reference	Weight kg
Modular smart relays SR3 B●●1BD and SR3 B●●2BD *(1)*	**SR3 MBU01BD**	0.110

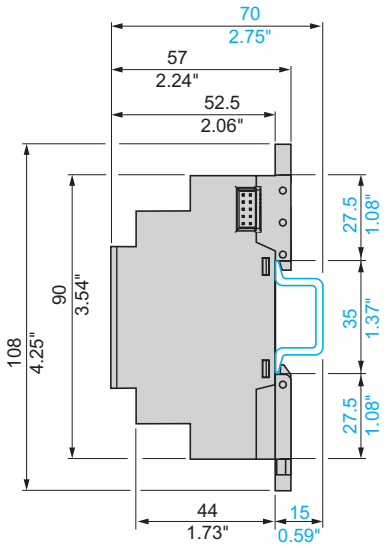
Connection accessories

Description		Reference	Weight kg
T-junctions	Complete with 0.3 m (0.98 ft.) cable	**VW3 A8 306TF03**	–
	Complete with 1 m cable	**VW3 A8 306TF10**	–
	Without cable	**170 XTS 04100**	–
Cables with 2 x RJ45 connectors	Length 0.3 m (0.98 ft.)	**VW3 A8306R03**	–
	Length 1 m (3.28 ft.)	**VW3 A8306R10**	–
	Length 3 m (9.8 ft.)	**VW3 A8306R30**	–

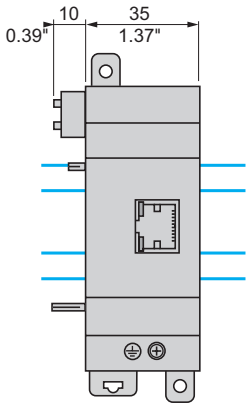
*(1) Compatible with **SR3 B●●2BD** featuring hardware version "H1.0.01", available since June 2005*

Dimensions and mounting

Side view

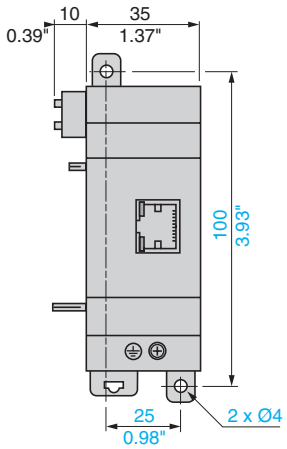


Rail mounting



Screw mounting

Dual Dimensions mm / inches



Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

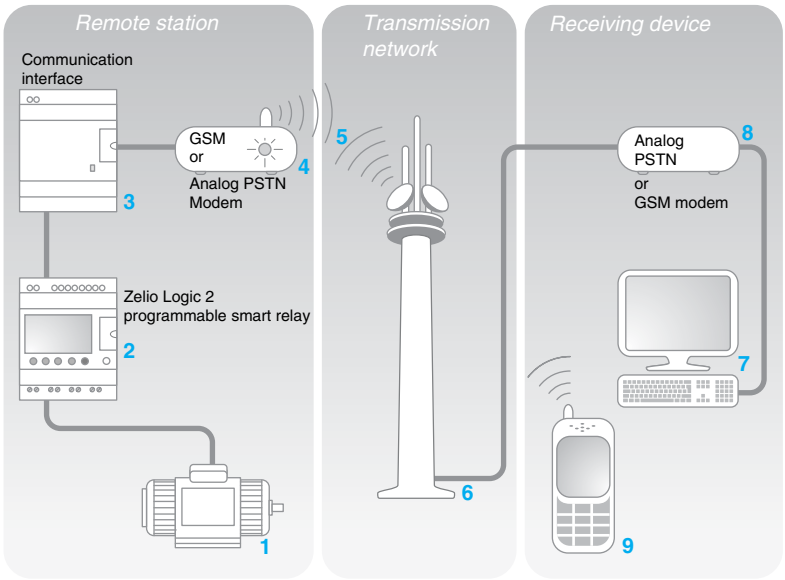
523083

SR2 COM01

Presentation

The communication products in the Zelio Logic 2 range are primarily designed for monitoring or remote control of machines or installations which operate without personnel.
Examples:
- monitoring of lift pumps, livestock premises (ventilation, food level, etc.), refrigeration units, car-washes,
- alert in the event of failure of industrial or domestic heating boilers,
- remote control of lighting: car parks, warehouses,
- remote control and monitoring of escalators in large stores, in the transport sector,
- refuse compact or full alert.

The communication range comprises:
- a communication interface connected between a smart relay and a Modem,
- GSM *(1)* or analog (PSTN) *(2)* Modems,
- "Zelio Logic Alarm" software.



The system comprises:

- a *Remote station,* machine or installation to be monitored 1: control is achieved using a smart relay with clock from the "Zelio Logic" SR● B●●●●● or SR2 E●●●●● 2 range, via its inputs and outputs. The smart relay is connected via a communication interface 3 to a GSM *(1)* type Modem 4, or, when a telephone line is available nearby, to an analog PSTN modem *(2)*,

- the GSM 5 or analog 6 *TRANSMISSION NETWORK* provided by different telecommunication operators,

- a monitoring or control *Receiving device*, which may be one of the following:
  - a PC 7 fitted with an analog PSTN or GSM Modem 8,
  - or a GSM telephone 9.

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* and the type of *Receiving device* (PC + Modems or GSM telephone).
The type of architecture selected will therefore depend mainly on:
- whether or not an analog PSTN telephone line is available,
- whether or not it is necessary to send SMS messages,

see page 35.

(1) Global System Mobile.
(2) Public Switched Telephone Network.

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

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” software.
The smart relay may be selected from the various models in the Zelio Logic 2 range:
- for all supply voltages,
- with 10, 12, 20 or 26 I/O (up to 40 I/O with discrete extension module),
- with or without display,
- with clock.

The firmware version of the smart relay must be V3.1. or above.

Modem communication interface (*Remote station*)

The Modem communication interface allows messages, telephone 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 (degree, bar, Pascal, etc.) required by the user.

Modems

Either GSM or analog PSTN type Modems can be used on both the *Remote station* and PC type *Receiving devices* (when the PC is not fitted with an internal Modem).

GSM modem

In order to exploit all the capabilities associated with Modem communication, the Modem(s) must be fitted with DATA type SIM cards. VOICE type SIM cards may be used but some functions will not be available. See table on page 35.

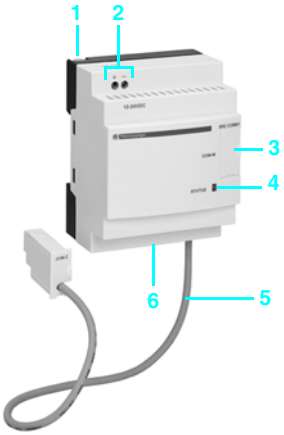
“Zelio Logic Alarm” alarm management software (PC type *Receiving device*)

This software makes it possible to:
- receive, classify and export alarm messages,
- read or remotely force the status of program elements (inputs, outputs, control relays, timing or counting values, etc.),
- send control instructions (RUN, STOP, setting the time of the smart relay, etc.),
- send specific instructions (modifying access rights, recipients, etc.).

(1) Zelio Logic smart relays, see pages 8 to 28.

Description

The communication interface Zelio Logic SR2 COM01 comprises:



1 Retractable mounting feet.
2 A ⎓ 12 to 24 V supply terminal block.
3 A slot for connection to the Modem or the PC
4 An interface status LED indicator.
5 A connection cable to the smart relay.
6 A spring clip for mounting on a 35 mm mounting rail.

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

Functions

Sending of alerts

This function makes it possible to send an alert to a *Receiving device*.
When the calling condition is met, a message is sent to one or several telephone numbers or e-mail addresses.
Types of message:
- alert message to a PC with Modem and “Zelio Logic Alarm” software,
- SMS message *(1)* to a GSM telephone,
- e-mail via SMS *(1) (2)*.

One or all of the solutions can be selected simultaneously.
The *Remote station* to be monitored initiates the call.
The telephone line is only used while the alert message is being transmitted.
Up to 28 messages can be used.
These messages consist of:
- a 160 character text, which may contain a discrete and/or analog value (counting values, analog input voltages that can be scaled, etc.).
- 1 to 10 recipient telephone numbers/e-mail addresses.

Receipt of instruction

This function allows the status or the value of a program element to be modified from the *Receiving device*.
The operator initiates the call using the *Receiving device* (PC or GSM telephone). It is then possible to force the status of the discrete and/or analog value of each of the 28 messages.

Remote dialogue 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 the physical link (cable SR2 USB01 or SR2 CBL01) between the product (*Remote station*) and the PC (*Receiving 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, from the PC, the receiving device telephone numbers/e-mail addresses, and the alert sending conditions,
- update the firmware in the smart relay and the Modem communication interface,
- display and modify discrete and analog values,
- perform diagnostics on the smart relay and on the Modem communication interface.

(1) Requires the use of a GSM Modem on the Remote station side.
(2) Verify with the Transmission network operator that the e-mail by SMS service is available.

Presentation: pages 32 and 33 | Characteristics: page 37 | References: page 38 | Dimensions: page 39 | Connections: pages 40 and 41

Zelio® Logic 2 Programmable Smart Relays

Modem communication interface

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

Function	*Remote station* device				
	Analog PSTN Modem	GSM Modem			
		Type of SIM card			
		DATA	DATA VOICE		VOICE
			DATA N°	VOICE N°	
Send alert/receive instruction with GSM telephone		■	■	■	■
Send alert/receive instruction with PC running "Zelio Logic Alarm" software *(1)*	■	■	■		
Transfer program Update firmware Monitoring	■	■	■		
Send alert to e-mail address		■	■	■	■

■ Functions available
Functions not available

Note: *Instructions cannot be transmitted by e-mail.*

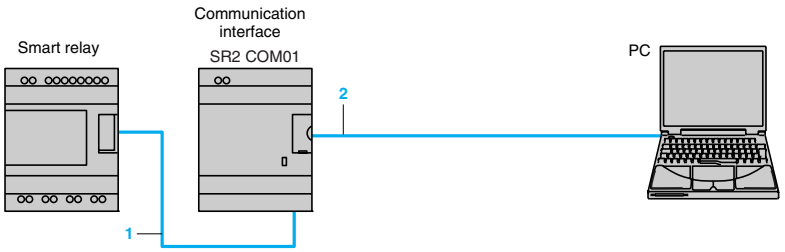
(1) When using a GSM Modem on the PC side, the SIM card must have a DATA number.

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

Installation set-up

Setting-up of the installation or the machine to be monitored involves 2 steps:

Connection for programming the smart relay and the interface



1 Interface cable marked COM-Z
2 Cable SR2 USB01 or SR2 CBL01.

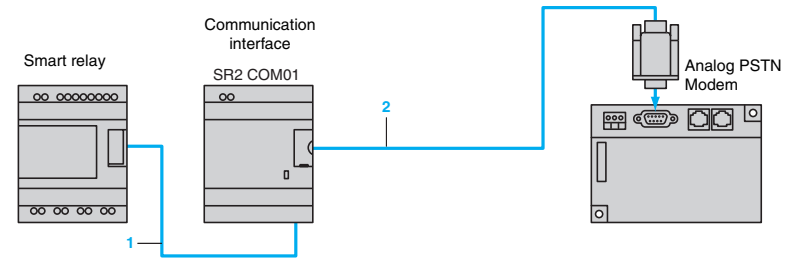
After having powered-up the smart relay and the interface, the application program can be transferred in order to simultaneously:
- load the automation system program into the smart relay,
- load the alert conditions, messages and telephone numbers/e-mail addresses into the interface.

This operation can also be carried out remotely using “Transfer” mode, after having made the operating connections described below.

⚠ Program loading using memory cartridges SR2 MEM01 or SR2 MEM02 is incompatible with Modem communication interface SR2 COM01.

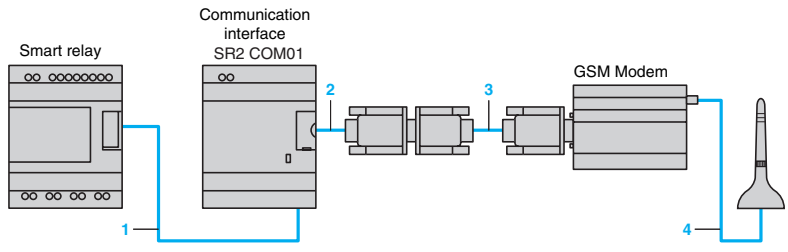
Operating connections

Analog PSTN modem



1 Interface cable marked COM-Z.
2 Cable SR2 CBL07 included with the interface.

GSM Modem



1 Interface cable marked COM-Z.
2 Cable SR2 CBL07 included with the interface.
3 SUB-D 9/SUB-D 15 cable included with the Modem
4 Antenna and cable included with the Modem.

Zelio® Logic 2 Programmable Smart Relays
Modem communication interface

Environment characteristics of communication interface SR2 COM01

Product certifications	Environment category C		UL, CSA, C-Tick
Degree of protection			IP 20
Ambient air temperature	Operation	**°C (°F)**	- 20 to + 55 (- 4 to 131) conforming to IEC/EN 60068-2-1 and 60068-2-2
	Storage	**°C (°F)**	- 25 to + 70 (- 13 to 158) conforming to IEC/EN 61131-2
Maximum relative humidity			95% without condensation or dripping water
Maximum operating altitude		**m (ft.)**	2000 (6562)
Mechanical resistance	Vibration resistance		Conforming to IEC/EN 60068-2-6 test Fc ± 1 mm (0.04") 2 to 13.2 Hz, ± 0.15 mm ((0.01") 13.2 to 57.6 Hz 2 gn (57.6 to 150 Hz
	Shock resistance		Conforming to IEC/EN 60068-2-27 test Ea
Resistance to electrostatic discharge			Conforming to IEC/EN 61000-4-2 level 3, 8 kV air, 6 kV at the contacts
Resistance to HF interference	Immunity to radiated electromagnetic fields		Conforming to IEC/EN 61000-4-3 level 3, 10 V per metre
	Immunity to fast transients in bursts		Conforming to IEC/EN 61000-4-4 level 3
	Immunity to shock waves		Conforming to IEC/EN 61000-4-5, on common mode supply 1 kV, serial mode supply 0.5 kV
	Immunity to damped oscillation waves		Conforming to IEC/EN 61000-4-12, on 1 kV supply, 30 seconds, 4 periods
	Conducted interference induced by radiated fields		IEC/EN 61000-4-6, 10 kHz to 80 MHz level 3: 10 V
Connection to screw terminals (tightened using Ø 3.5 screwdriver)	Flexible cable with cable end	**mm²**	1 conductor: 0.14 to 1.5, AWG26 to AWG16 cable 2 conductors: 0.14 to 0.75, AWG26 to AWG18 cable
	Semi-solid cable	**mm²**	1 conductor: 0.14 to 2.5, AWG26 to AWG14 cable
	Solid cable	**mm²**	1 conductor: 0.14 to 2.5, AWG26 to AWG14 cable 2 conductors: 0.14 to 1.5, AWG26 to AWG16 cable
	Tightening torque	**Nm**	0.6

Supply characteristics

Interface type			**SR2 COM01**	**SR2 MOD01**	**SR2 MOD02**
Nominal voltage		**V**	⎓ 12 to 24		
Voltage limits		**V**	⎓ 10 to 28.8	⎓ 10 to 30	⎓ 5.5 to 32
Maximum ripple			5 %	–	–
Nominal current	⎓ 12 V	**mA**	30	140	125
	⎓ 24 V	**mA**	30	70	60
	Current peak on power-up	**mA**	550	9600	2100 on 5.5 V
Power dissipated		**W**	1.1	1.7	1.5
Micro-breaks	Permissible duration		1 ms, repeated 20 times	–	–
Protection	Integrated		Against reversed polarity	–	–
	To be provided externally	**A**	1 A fuse	–	Supplied with 2.5 A fuse

Characteristics of "Com-Z" link with the smart relay

Type of connector			Specific to Zelio
Type of link			Specific Zelio communication protocol
Compatibility			Only with Zelio Logic smart relays SR● B●●●●● and SR2 E●●●●● version V3.1 and above
Isolation of "Com-Z" connector	From the "Com-M" connector		By ∿ 1780 V opto-coupler
	From the +/- supply terminals		By ∿ 1780 V opto-coupler

Characteristics of "Com-M" link with the Modem

Type of connector			Specific to Zelio
Type of link with SR2 CBL07			RS 232 serial (included with the communication interface)
Compatibility	Analog PSTN modem		AT commands
	GSM Modem		AT commands
Isolation of "Com-M" connector	From the Modem		By the cable SR2 CBL07
	From the +/- supply terminals		By the cable SR2 CBL07

Processing characteristics

Data saved by the interface	Messages		Up to 28 messages
	Telephone/e-mail details and recipient profiles		1 to 10 recipients (telephone numbers and/or e-mail addresses) per message
	Date and time		Dating of messages to be sent
	Discrete and digital values		Backup of values when the message activation condition is triggered.
Backup of data to be sent			Flash memory

Presentation: pages 32 and 33 | Setting-up: page 36 | References: page 38 | Dimensions: page 39 | Connections: pages 40 and 41

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

523083

SR2 COM01

523086

SR2 CBL07

Modem communication interface

Description	Supply voltage	Reference	Weight kg
Communication interface (including cable SR2 CBL07)	⎓ 12 to 24 V	**SR2 COM01** *(1)*	0.200

Software

Description	Application Compatibility	Medium	Reference	Weight kg
Zelio Logic Alarm	PC Microsoft® Windows 98, NT4, 2000 and XP	CD-ROM	**SR2 SFT02**	0.200

Connection accessories

Description	Application	Length m	Reference	Weight kg
Connection cables	SUB-D9/SUB-D9 connectors Between modem and PC	1.8	**SR1 CBL03**	0.110
	Specific Zelio/SUB-D9 connector Between communication interface and modem	0.5	**SR2 CBL07** *(2)*	0.050

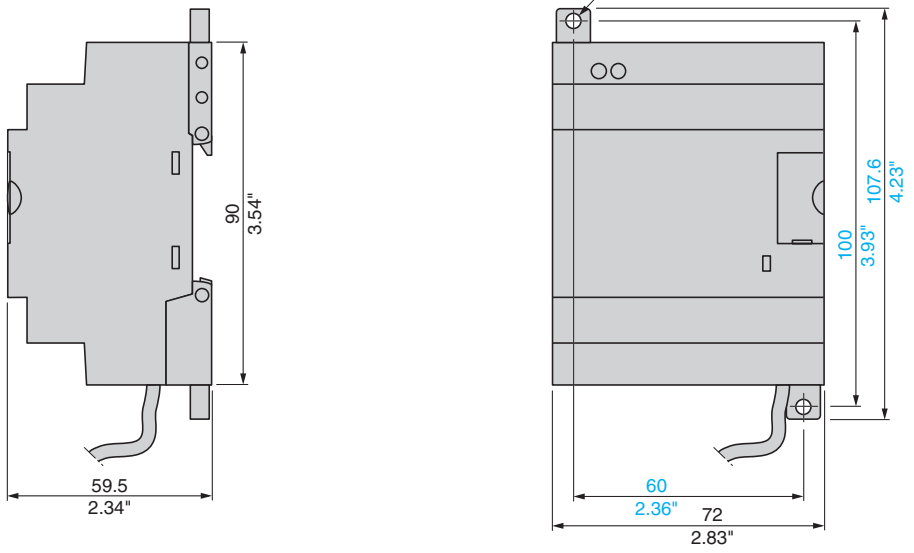
(1) Can only be used with "Zelio Soft 2" software version V3.1 or above.
(2) Spare part (cable included with communication interface SR2 COM01).

Presentation, functions: pages 32 to 35 | Setting-up: page 36 | Characteristics: page 37 | Dimensions: page 39 | Connections: pages 40 and 41

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

Communication interface
SR2 COM01

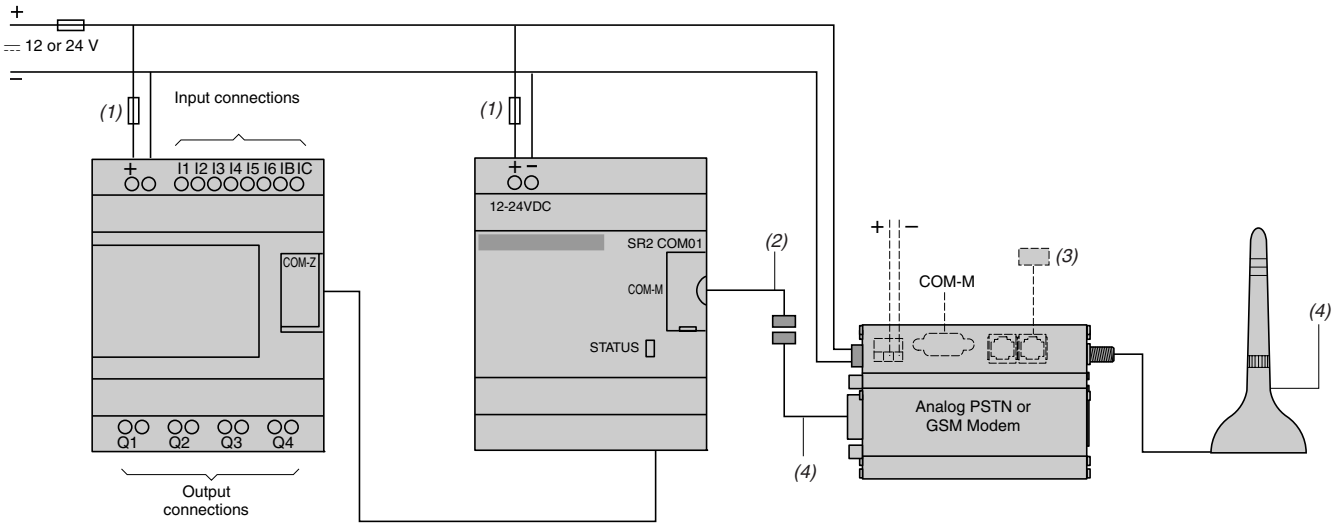
Dual Dimensions mm / inches



Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

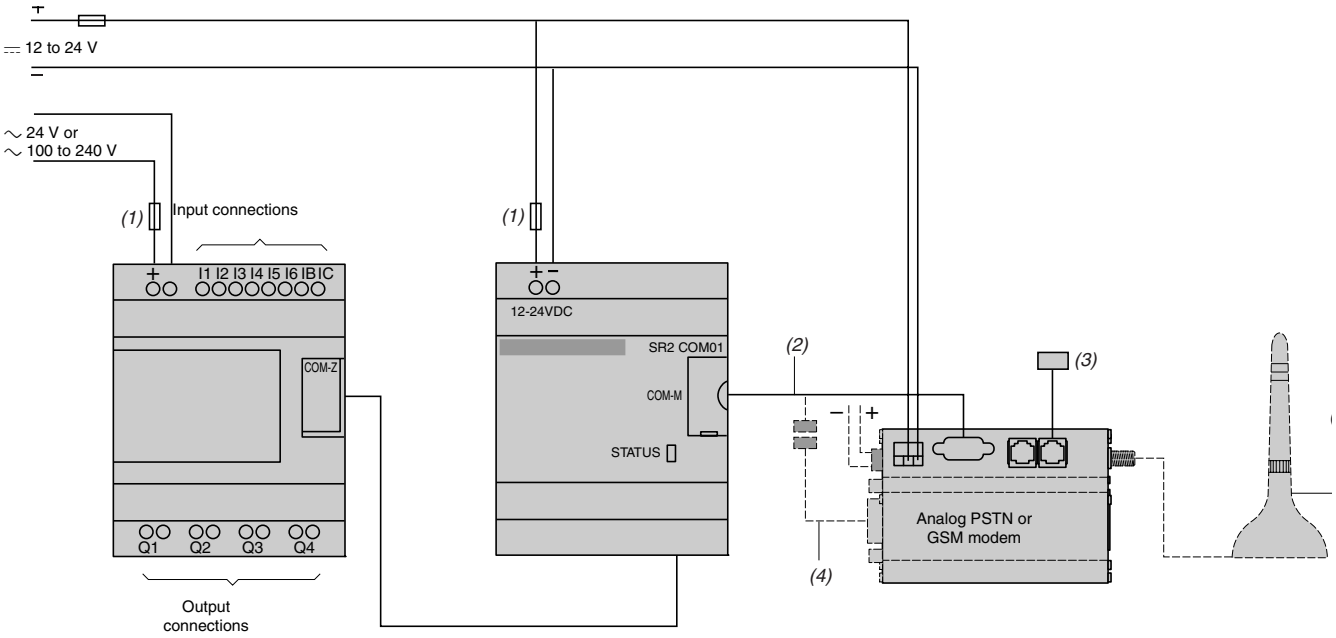
Connection schemes for connecting communication interface SR2 COM01 to the smart relay and the Modem

SR● B●●1JD, SR● B●●●BD et SR2 E●●●BD



(1) 1 A quick-blow fuse.
(2) Cable included with Modem communication interface SR2 COM01.
(3) Cable for connection to the Transmission network (included with analog PSTN modem).
(4) Antenna and cable included with GSM Modem.

SR● B●●1B, SR● B●●●FU, SR2 E●●●B et SR2 E●●●FU



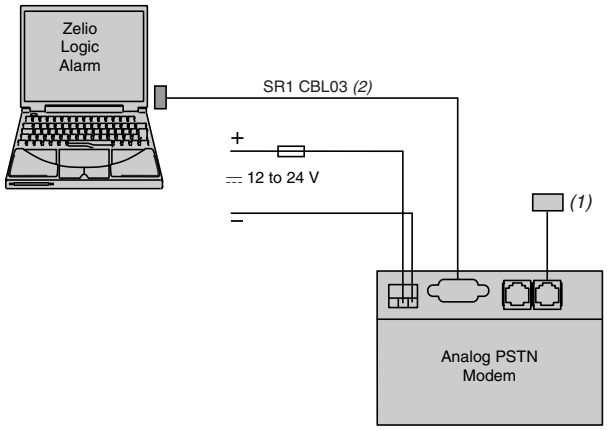
(1) 1 A quick-blow fuse.
(2) Cable included with Modem communication interface SR2 COM01.
(3) Cable for connection to the Transmission network (included with analog PSTN modem).
(4) Antenna and cable included with GSM Modem.

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

Connection schemes for connecting the PC to the Modem

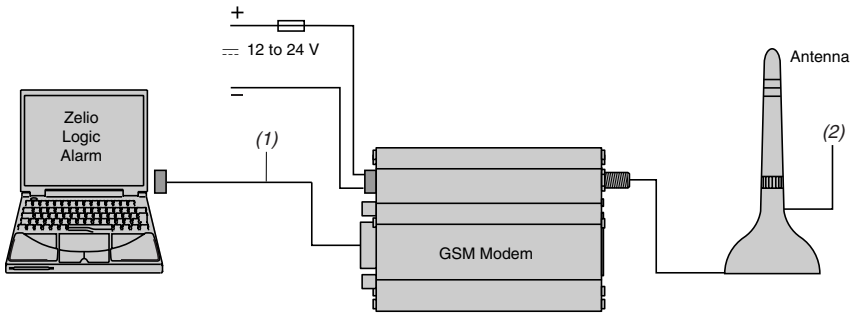
For PCs without an internal Modem.

Analog PSTN Modem



(1) Cable for connection to the Transmission network (included with analog PSTN modem).
(2) To be ordered separately.

GSM Modem



(1) Cable included with the Modem, length 50 cm (19.7"). The cable length can be increased using SR1 CBL03, 1,8 m (5.9 ft.).
(2) Antenna and cable included with GSM Modem.

Power supplies
Power supplies for d.c. control circuits
Phaseo® modular regulated power supplies

Modular switch mode power supplies ABL 7RM

The ABL 7RM range of power supplies is designed to provide the d.c. voltage necessary for the control circuits of automation system equipment. Comprising 3 products, this range meets the needs encountered in industrial, commercial and residential applications. These single-phase, modular, electronic switch mode power supplies provide a quality of output current which is suitable for the loads supplied and compatible with the Zelio Logic 2 programmable smart relays range, making them ideal partners. Clear guidelines are given on selecting the upstream protection devices which are often used with them, and thus a comprehensive solution is provided that can be used in total safety.

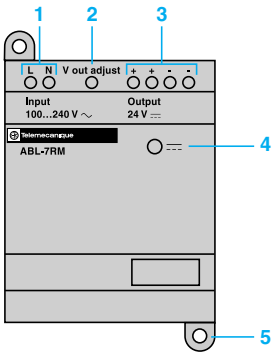
These switch mode power supplies are totally electronic and regulated. The use of electronics makes it possible to significantly improve the performance of these power supplies, which offer:
- very compact size,
- integrated overload, short-circuit, overvoltage and undervoltage protection,
- a very wide range of permissible input voltages, without any adjustment,
- a high degree of output voltage stability,
- good performance,
- considerably reduced weight,
- a modular format allowing integration into panels.

Phaseo power supplies deliver a voltage which is precise to 3%, whatever the load and whatever the type of mains supply, within a range of 85 to 264 V for single-phase. Conforming to IEC standards and UL and CSA certified, they are suitable for universal use. The inclusion of overload and short-circuit protection makes downstream protection unnecessary if discrimination is not required.
All the products are fitted with an output voltage adjustment potentiometer in order to be able to compensate for any line voltage drops in installations with long cable runs. These power supplies are designed for direct mounting on 35 mm (1.38") and 75 mm (2.95") ⊔ rails, or on a mounting plate using the retractable mounting feet.

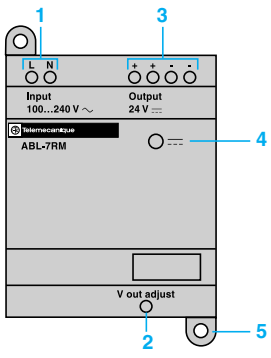
These power supplies are single-phase and three references are available:
- ABL 7RM2401 (24 V ⎓/1.3 A),
- ABL 7RM24025 (24 V ⎓/2.5 A),
- ABL 7RM1202 (12 V ⎓/1.9 A).

Description

ABL 7RM2401
ABL 7RM1202



ABL 7RM24025



1 2.5 mm² (# 14 AWG) screw terminals for connection of the incoming a.c. supply voltage.
2 Output voltage adjustment potentiometer.
3 2.5 mm² (# 14 AWG) screw terminals for connection of the output voltage.
4 LED indicating presence of the d.c. output voltage.
5 Retractable mounting feet.

Characteristics: pages 43 and 44
References: page 45
Dimensions: page 45
Schemes: page 45

Power supplies

Power supplies for d.c. control circuits

Phaseo® modular regulated power supplies

Technical characteristics					
Power supply type			**ABL 7RM1202**	**ABL 7RM2401**	**ABL 7RM24025**
Certifications			UL - CSA - TÜV		
Conforming to standards	Safety		IEC/EN 60950-1 - IEC/EN 61131-2/A11		IEC/EN 60950-1
	EMC		IEC/EN 61000-6-2 (IEC/EN 61000-6-1), IEC/EN 61000-6-3		
Input circuit					
LED indication			No		
Input voltage	Nominal values	**V**	∿ 100 to 240		
	Permissible values	**V**	∿ 85 to 264		
	Permissible frequencies	**Hz**	47 to 63		
	Efficiency at nominal load		> 80%		> 84%
	Current consumption	**A**	0.5 (100 V)/0.3 (240 V)	0.6 (100 V)/0.4 (240 V)	1.2 (120 V)/0.7 (240 V)
	Current at switch-on	**A**	< 20		< 90 for 1 ms
	Power factor		0.6		
Output circuit					
LED indication			Green LED		
Nominal output voltage		**V**	⎓ 12	⎓ 24	
Nominal output current		**A**	1.9	1.3	2.5
Precision	Output voltage		Adjustable from 100 to 120%		
	Line and load regulation		± 4 %	± 3 %	
	Residual ripple - interference	**mV**	200	250	200
Micro-breaks	Holding time for I max and Ue min	**ms**	> 10		
Protection	Against short-circuits		Permanent/Thermal protection		
	Against overcurrent, cold state		< 1.7 In	< 1.6 In	< 1.4 In
	Against overvoltage	**V**	< 10.5	< 19	
Operating characteristics					
Connections	Input	**mm² (AWG)**	1 x 2.5 (#14 AWG) or 2 x 1.5 (#16 AWG) screw terminals		
	Output	**mm² (AWG)**	1 x 2.5 (#14 AWG) or 2 x 1.5 (#16 AWG) screw terminals		
Environment	Storage temperature	**°C (°F)**	- 25 to + 70 (-13 to + 158)		- 40 to + 70 (-40 to +158)
	Operating temperature	**°C (°F)**	- 20 to + 55 (-4 to + 131)		
	Maximum relative humidity		95 %		
	Degree of protection		IP 20		
	Vibration		IEC/EN 61131-2, IEC/EN 60068-2-6 test Fc		
Operating position			Vertical		
Connections	Series		No		
	Parallel		Yes (same references)		
Dielectric strength	Input/output		3000 Vac/50 Hz/1 min		
Protection class conforming to VDE 0106 1			Class II without PE		
Input fuse incorporated			Yes (not interchangeable)		
Emissions	Conducted/radiated		IEC/EN 61000-6-3, EN 55011, EN 55022 Cl:B		
Immunity	Electrostatic discharge		IEC/EN 61000-6-2 (generic standard), IEC/EN 61000-4-2 (4 kV contact/8 kV air)		
	Electromagnetic		IEC/EN 61000-4-3 level 3 (10 V/m)		
	Conducted interference		IEC/EN 61000-4-4 level 3 (2 kV), IEC/EN 61000-4-6 (10 V)		
	Mains interference		IEC/EN 61000-4-11		

Presentation: page 42 References: page 45 Dimensions: page 45 Schemes: page 45

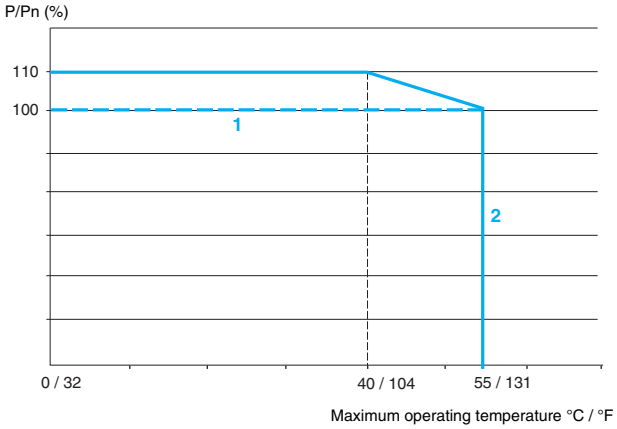
Power supplies
Power supplies for d.c. control circuits
Phaseo® modular regulated power supplies

Output characteristics

Exceeding the nominal power (only applicable to ABL 7RM1202 and ABL 7RM2401)

The ambient temperature is a determining factor which limits the power that an electronic power supply can deliver continuously. If the temperature around the electronic components is too high, their life will be significantly reduced. Conversely, a power supply can deliver more than its nominal power if the ambient temperature remains well below the nominal operating temperature.

The maximum ambient temperature for Phaseo power supplies is 55 °C (131 °F). Below this temperature, uprating is possible up to 110% of the nominal power. The graph below shows the power (in relation to the nominal power) that the power supply can deliver continuously, according to the ambient temperature. Power supply ABL 7RM24025 cannot exceed the nominal power of 60 W.



1 ABL 7RM24025
2 ABL 7RM1202 and ABL 7RM2401

Selection

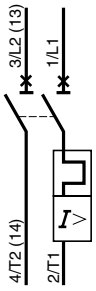
Upstream protection of power supplies

Type of mains supply	~ 100 V single-phase			~ 240 V single-phase		
Type of protection	Thermal-magnetic circuit-breaker		Fuse gG	Thermal-magnetic circuit-breaker		Fuse, gG
	GB2 (UL/IEC)	C60N (IEC) C60N (UL)		GB2 (UL/IEC)	C60N (IEC) C60N (UL)	
ABL 7RM1202	GB2 ●●06	24580 24516	1 A	GB2 ●●05	24494 24516	1 A
ABL 7RM2401	GB2 ●●06	24580 24516	1 A	GB2 ●●06	24580 24516	1 A
ABL 7RM24025	GB2 ●●08	24582 24518	3 A	GB2 ●●08	24582 24518	3 A

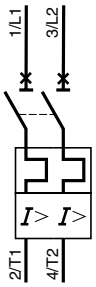
Schemes

GB2 CB●●

GB2 CD●●



GB2 DB●●



GB2 CS●●

Power supplies

Power supplies for d.c. control circuits

Phaseo® modular regulated power supplies

Modular regulated switch mode power supplies ABL 7RM *(1)*

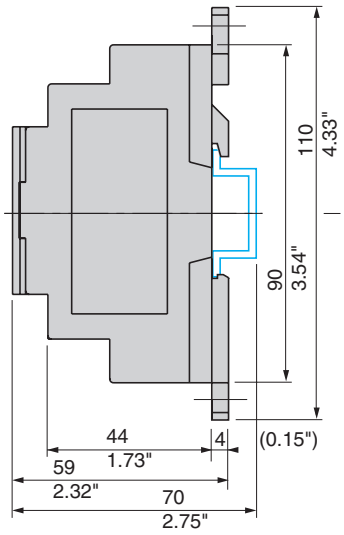
ABL 7RM

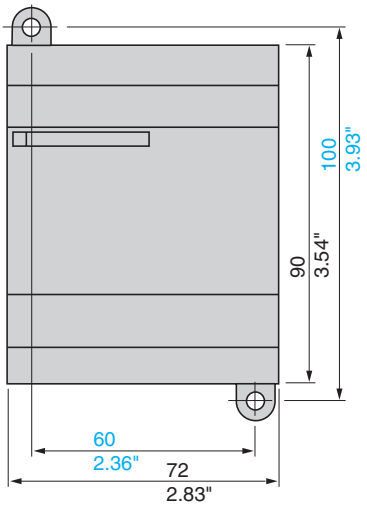
Mains input voltage 47 to 63 Hz	Output voltage	Nominal power	Nominal current	Auto-protect reset	Reference	Weight
V	⎓ V	W	A			kg
100 to 240 Single-phase wide range	12	22	1.9	Auto	**ABL 7RM1202**	0.180
	24	30	1.3	Auto	**ABL 7RM2401**	0.182
		60	2.5	Auto	**ABL 7RM24025**	0.255

(1) For additional products, please contact your local Schneider Electric representative.

Dimensions

Power supply ABL 7RM●●●●

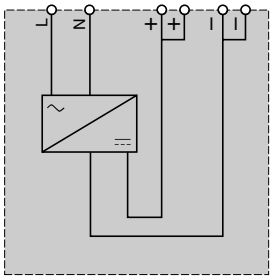




Dual Dimensions mm / inches

Scheme

ABL 7RM●●●●



Presentation: page 42
Characteristics: page 43 and 44

Zelio® Logic 2
Programmable Smart Relays

The efficiency of Telemecanique® branded *solutions*

Used in combination, Telemecanique products provide quality solutions, meeting all your Automation & Control applications requirements.

A worldwide presence

Constantly available

- More than 5 000 points of sale in 130 countries.
- You can be sure to find the range of products that are right for you and which complies fully with the standards in the country where they are used.

Technical assistance wherever you are

- Our technicians are at your disposal to assist you in finding the optimum solution for your particular needs.
- Schneider Electric provides you with all necessary technical assistance, throughout the world.

Find out more about Zelio Logic
for your applications with the “discovery” packs:

- pack contains:

1 product, 1 connecting cable and 1 software CD

- available in 24 Vdc or 100...240Vac

Schneider Electric

Simply Smart !

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Palatine, IL 60064
TEL 847-397-2600

http://www.us.telemecanique.com
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Owing to changes in standards and equipment, the characteristics given in the text and images in this document are not binding us until they have been confirmed with us.

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