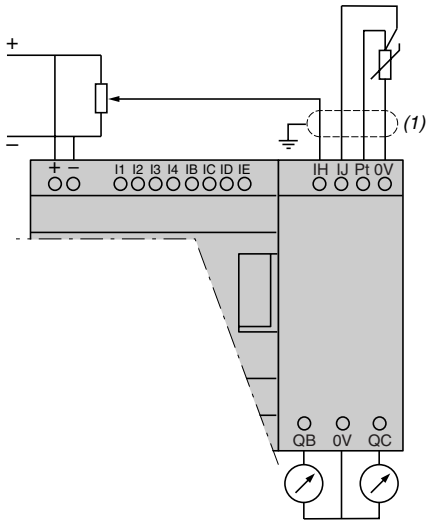
Connection of smart relays on ⎓ supply, with analog I/O extension module

SR3 B●●●BD + SR3 XT43BD

Connection alternatives

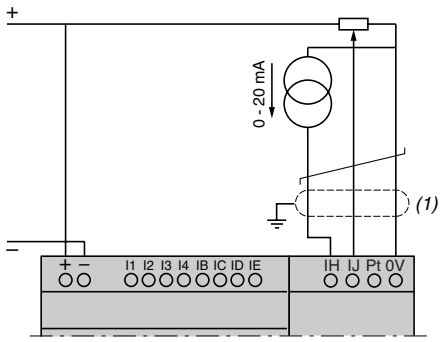
0 - 10 V	0 - 20 mA	Pt100
2	0	0
1	1	0
0	2	0
1	0	1
0	1	1

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



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

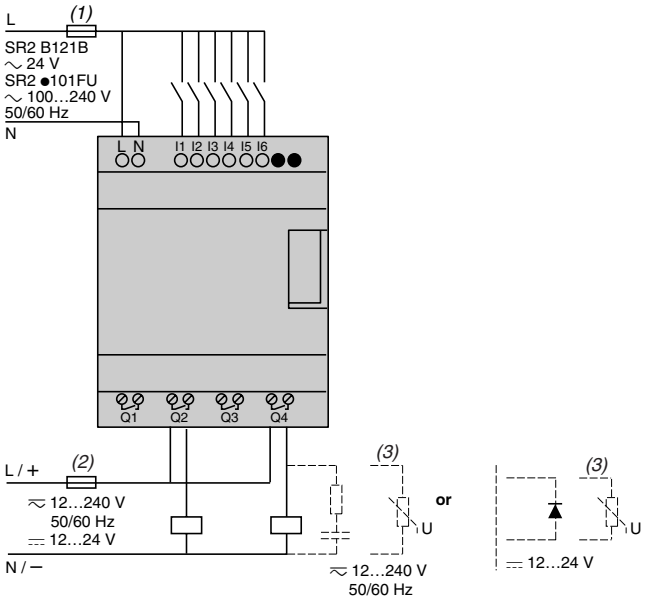
Application example with 1 x 0 - 20 mA input and 1 x 0 - 10 V input



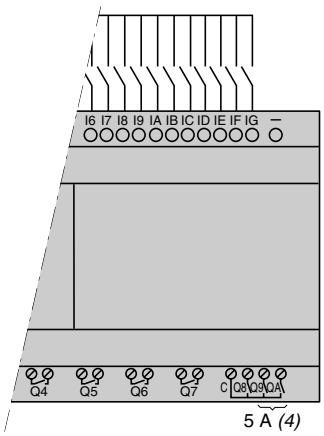
(1) Shielded cables, maximum length 10 m (32.81 ft.).

Connection of smart relays on ∿ supply

SR● ●●●1B, SR● ●●●1FU



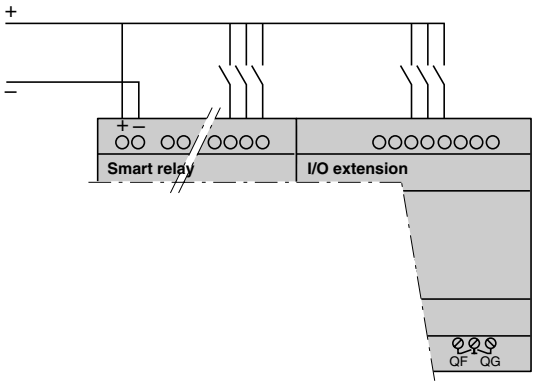
SR3 B261B and SR3 B261FU



(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●●**

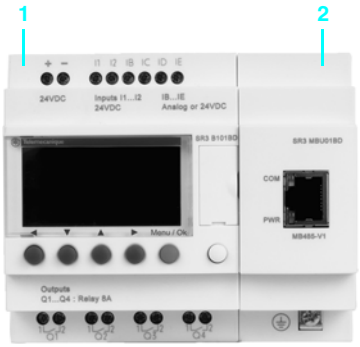
Zelio® Logic 2
Programmable Smart Relays
Modbus® network slave communication module

000005

SR3 MBU01BD

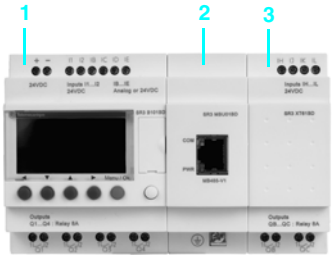
Combination of smart relays with communication and I/O extension modules

109458



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

000003-26



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.

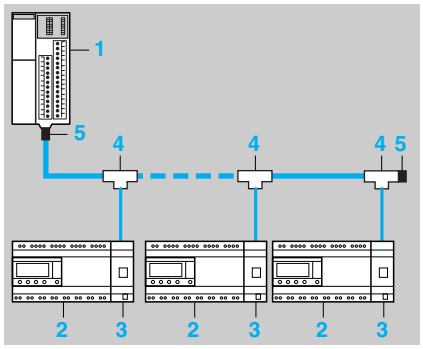
Zelio Logic modular smart relays are connected to the Modbus network via the Modbus network slave communication module. This module is a slave that is not electrically isolated.
The Modbus network slave communication module must be connected to an SR3 B●●●BD modular smart relay, with a ⎓ 24 V supply 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

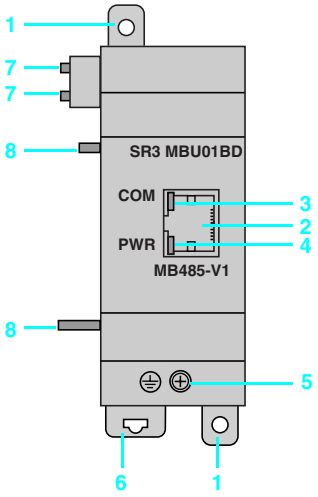
- The Modbus network slave communication module is connected to a 2-wire or 4-wire Modbus network.
- The maximum length of the network is 1000 m (3281 ft.) 9600 bauds max., AWG 26.
- A maximum of 32 slaves can be connected to the Modbus network, or a maximum of 247 slaves with repeaters.
- Line end adaptors 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.

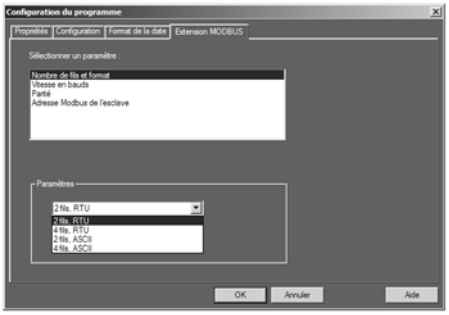
Environment characteristics

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



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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

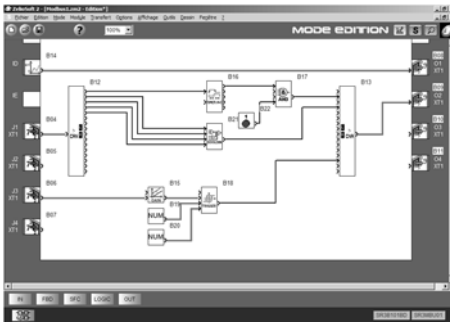
LADDER programming *(1)*

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.

Presentation: page 28
Characteristics: page 29
References: page 31
Dimensions: page 31

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

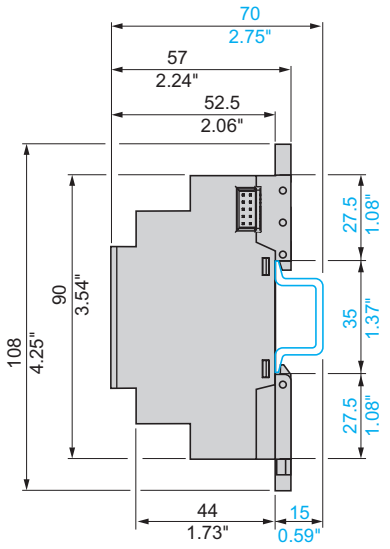
Connection accessories

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**	–

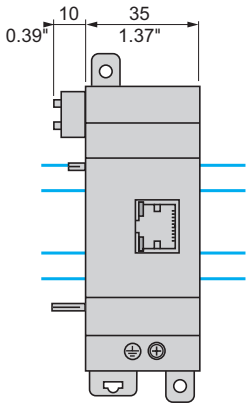
*(1) Compatible with **SR3 B●●2BD** featuring hardware version "H1.0.01", available since June 2005*

Dimensions and mounting

Side view

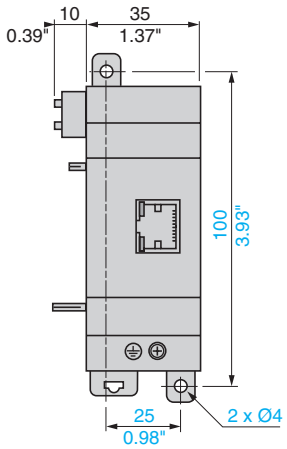


Rail mounting



Screw mounting

Dual Dimensions mm / inches



Presentation: page 28
Characteristics: page 29
Functions: page 30

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

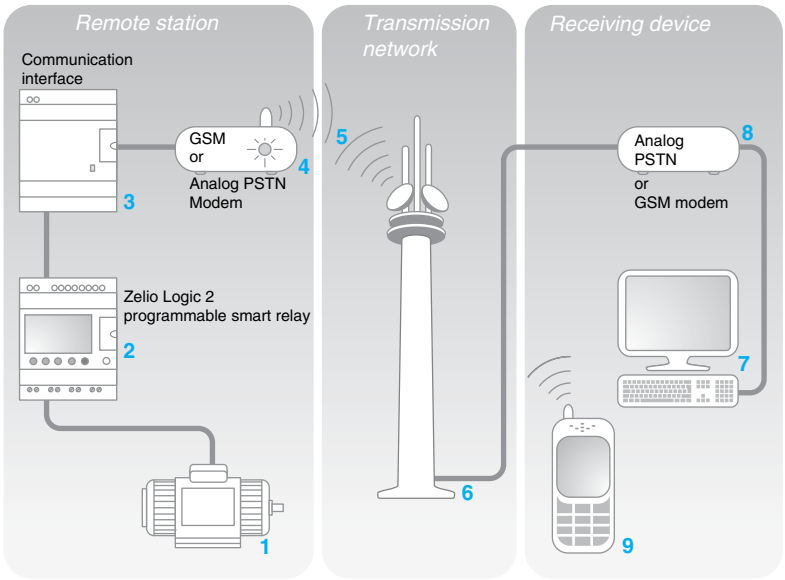
523083

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.

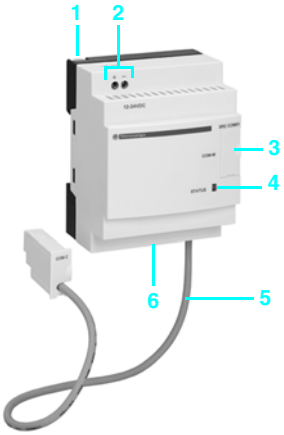
“Zelio Logic Alarm” alarm management software (PC type *Receiving device*)

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.*

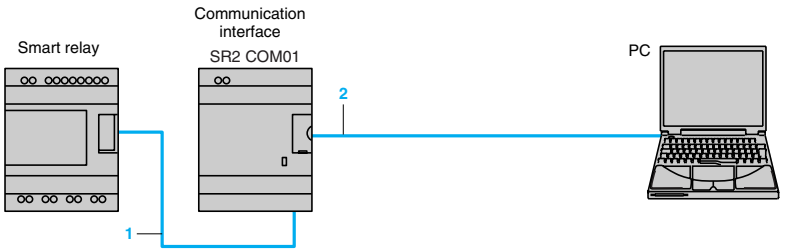
(1) When using a GSM Modem on the PC side, the SIM card must have a DATA number.

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.

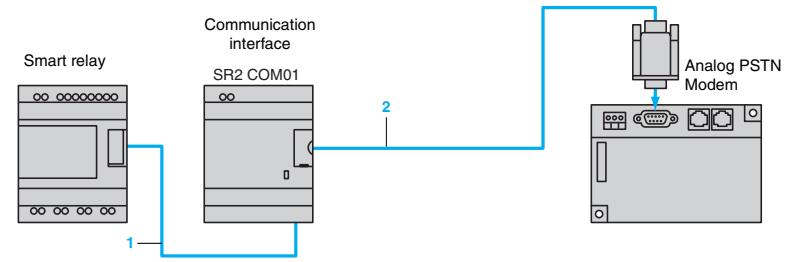
After having powered-up the smart relay and the interface, the application program can be transferred in order to simultaneously:
- load the automation system program into the smart relay,
- load the alert conditions, messages and telephone numbers/e-mail addresses into the interface.

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.

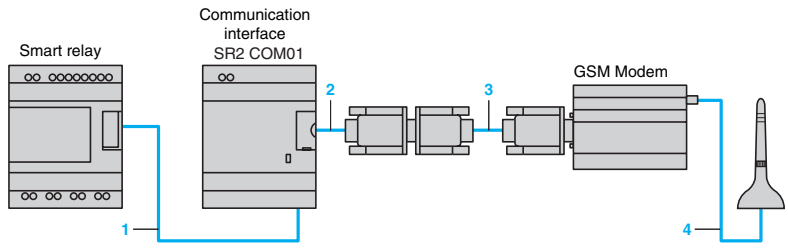
Operating connections

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).

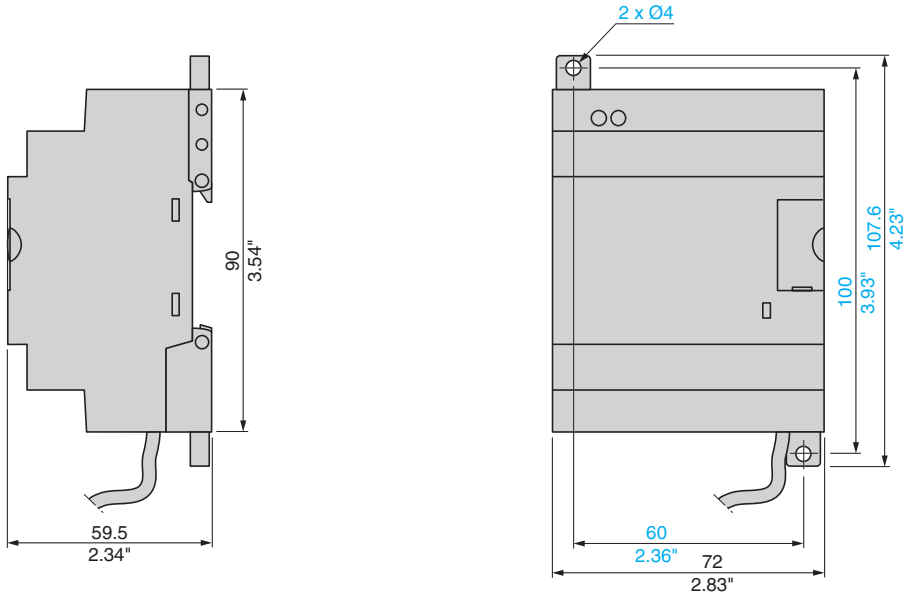
Presentation, functions: pages 32 to 35 | Setting-up: page 36 | Characteristics: page 37 | Dimensions: page 39 | Connections: pages 40 and 41

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

Communication interface

SR2 COM01

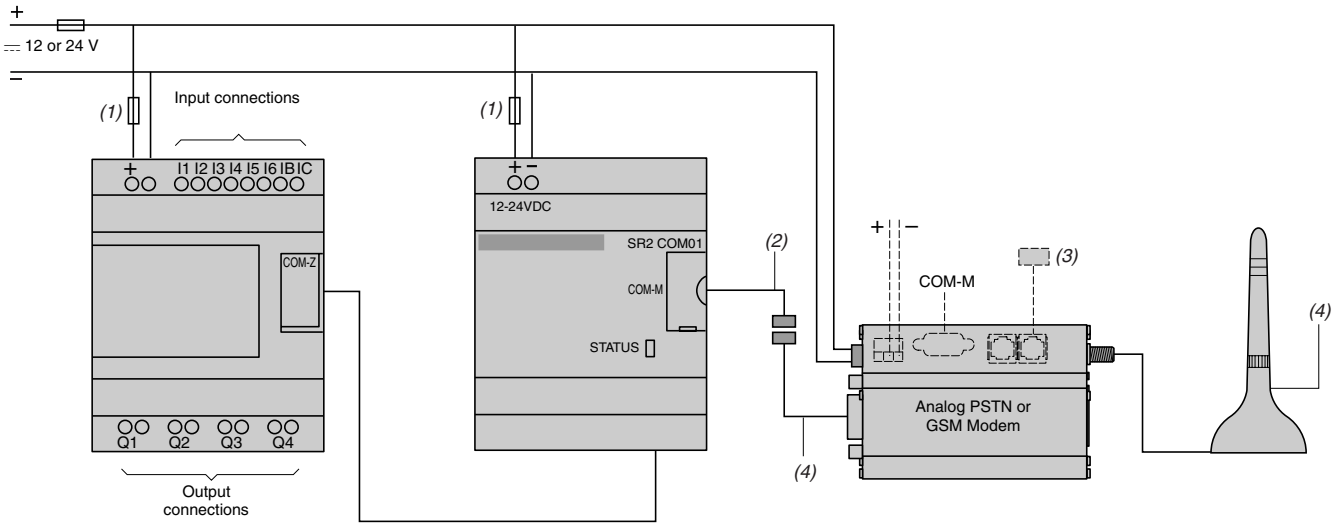
Dual Dimensions mm / inches



Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

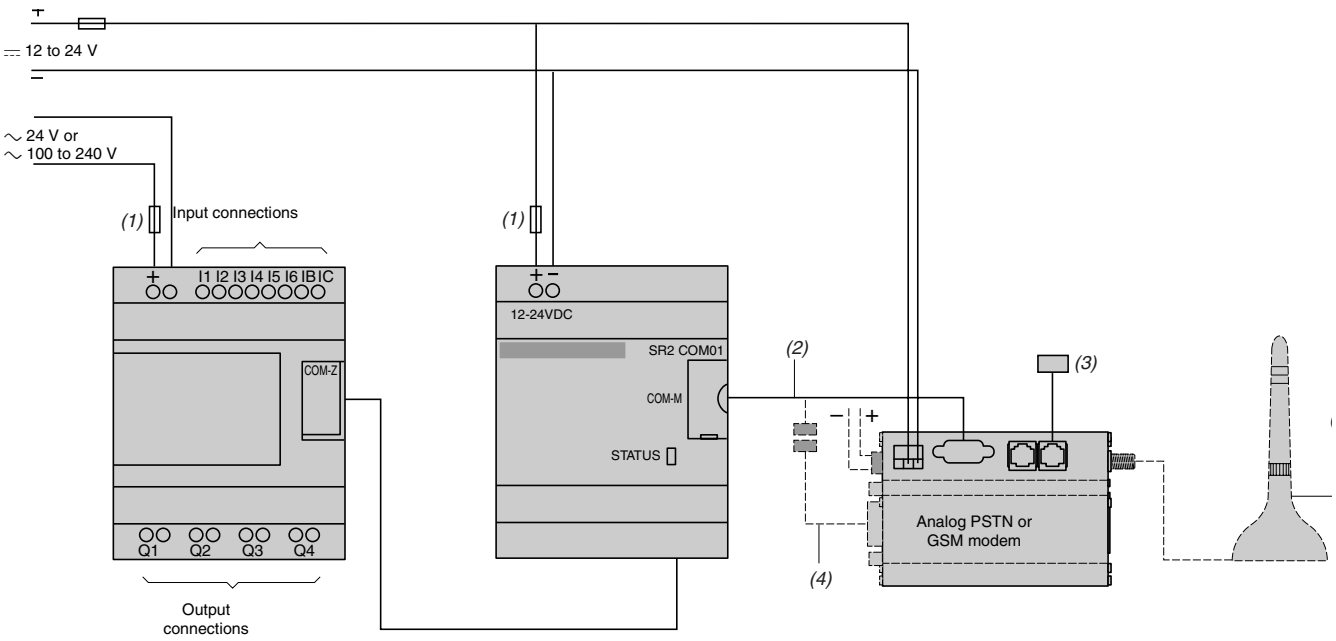
Connection schemes for connecting communication interface SR2 COM01 to the smart relay and the Modem

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



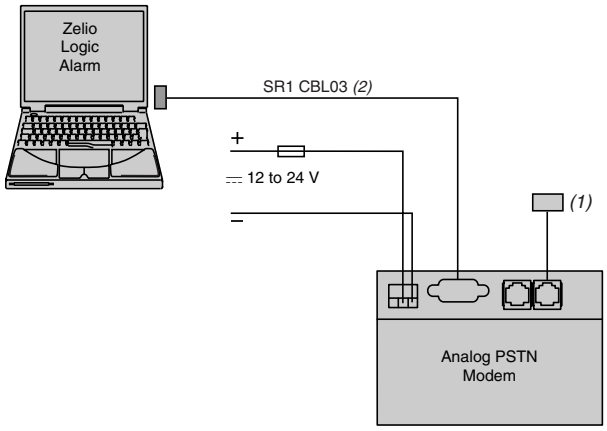
(1) 1 A quick-blow fuse.
(2) Cable included with Modem communication interface SR2 COM01.
(3) Cable for connection to the Transmission network (included with analog PSTN modem).
(4) Antenna and cable included with GSM Modem.

Zelio® Logic 2
Programmable Smart Relays
Modem communication interface

Connection schemes for connecting the PC to the Modem

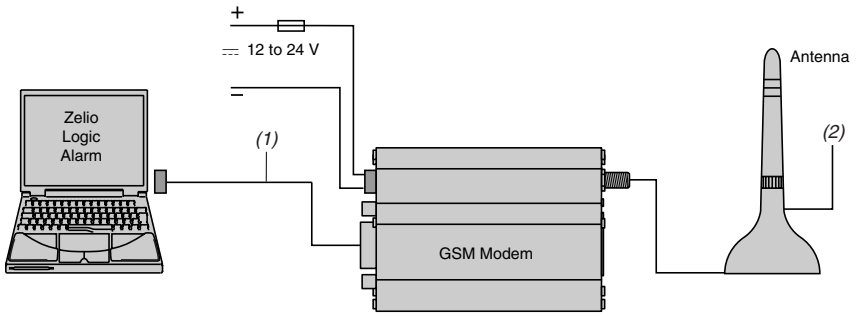
For PCs without an internal Modem.

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.

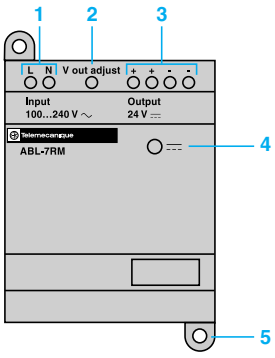
These switch mode power supplies are totally electronic and regulated. The use of electronics makes it possible to significantly improve the performance of these power supplies, which offer:
- very compact size,
- integrated overload, short-circuit, overvoltage and undervoltage protection,
- a very wide 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.

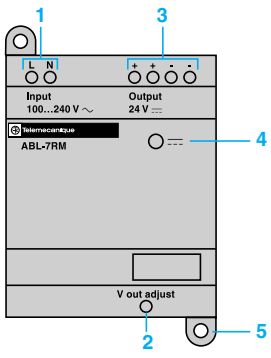
These power supplies are single-phase and three references are available:
- ABL 7RM2401 (24 V ⎓/1.3 A),
- ABL 7RM24025 (24 V ⎓/2.5 A),
- ABL 7RM1202 (12 V ⎓/1.9 A).

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

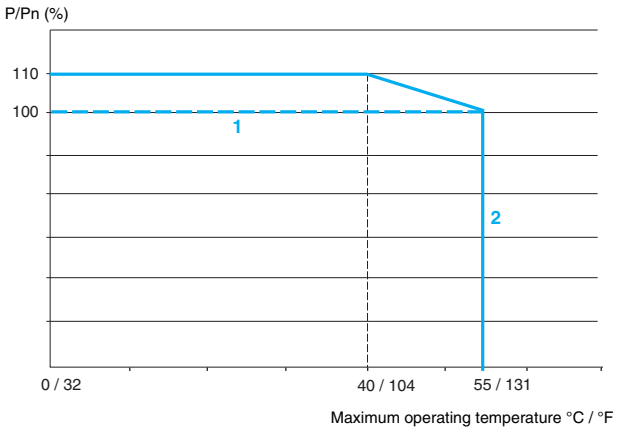
Power supplies
Power supplies for d.c. control circuits
Phaseo® modular regulated power supplies

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

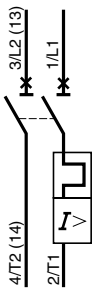
Upstream protection of power supplies

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

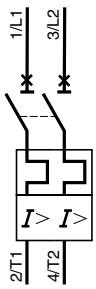
Schemes

GB2 CB●●

GB2 CD●●



GB2 DB●●



GB2 CS●●

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

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

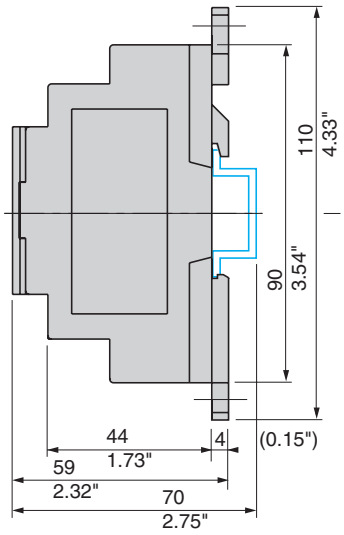
ABL 7RM

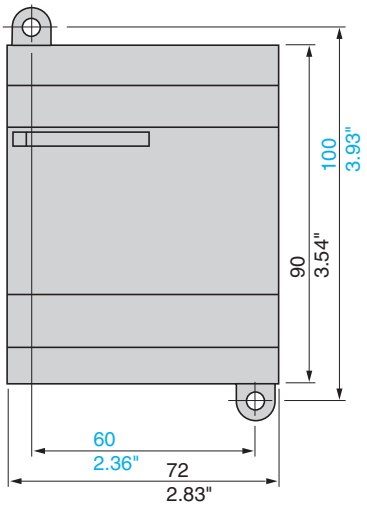
Mains input voltage 47 to 63 Hz	Output voltage	Nominal power	Nominal current	Auto-protect reset	Reference	Weight
V	⎓ V	W	A			kg
100 to 240 Single-phase wide range	12	22	1.9	Auto	**ABL 7RM1202**	0.180
	24	30	1.3	Auto	**ABL 7RM2401**	0.182
		60	2.5	Auto	**ABL 7RM24025**	0.255

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

Dimensions

Power supply ABL 7RM●●●●

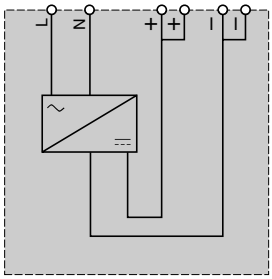




Dual Dimensions mm / inches

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

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- 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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