# Zelio® Measurement and Control Relays
## REG Temperature Controllers

| | | |
|---|---|---|
| **Size (mm) - Standard** | | **24 x 48 – 1/32 DIN** |

| | | |
|---|---|---|
| **Inputs** | | Thermocouple PT 100 probe - Voltage/current, depending on model |
| **Sampling TIme** | | 500 ms |
| **Communication on Modbus® bus** | | Yes, except for **REG24PTP1A●HU** |
| **Dust and Watertight Front Panel** | IP66 (conforming to NEMA 4X) | Yes |
| **Functions** | Hysteresis | Yes |
| | PID | Yes |
| | Auto-tuning | Yes |
| | Fuzzy logic | Yes |
| | Ramps | 8 steps |
| | Controlled start-up | No |
| | Operating mode | Automatic |
| **Alarm Outputs** | | 1 on **REG24PTP1A●HU** only |
| **Display** | 7 segment LED, 4 digits | 1 |
| | Operating indicators | 4 |
| **Process Outputs** (number - type) | 1 relay | ■ |
| | 2 relays | — |
| | 1 solid state relay interface | ■ |
| | 1 relay + 1 solid state relay interface | — |
| | 1 current (4-20 mA) | ■ |
| | 1 solid state relay interface + 1 current (4-20 mA) | — |
| **Supply Voltage** | ∼ 100…240 V | **REG24P●●●●HU** |
| | ⎓ 24 V | **REG24P●●●●LU** |
| **Temperature Controller** | | **REG 24** |
| **Page** | | 14 |

# Zelio® Measurement and Control Relays
## REG Temperature Controllers

| Size (mm) - Standard | | 48 x 48 – 1/16 DIN | 96 x 48 – 1/8 DIN |
|---|---|---|---|
| | |  |  |
| **Inputs** | | Universal (Thermocouple, PT100, Voltage: 1-5 Vdc, 0-5 Vdc, 0-10 Vdc, 2-10 Vdc, 0-100 mVdc, Current: 0-20 mA, 4-20 mA) | Universal (Thermocouple, PT100, Voltage: 1-5 Vdc, 0-5 Vdc, 0-10 Vdc, 2-10Vdc, 0-100 mVdc, Current: 0-20 mA, 4-20 mA) |
| **Sampling TIme** | | 200 ms | 200 ms |
| **Communication on Modbus® bus** | | Yes, except for **REG 48PUNL1●HU** | Yes, except for **REG96PUNL1●HU** |
| **Dust and Watertight Front Panel** | IP66 (conforming to NEMA 4X) | Yes | Yes |
| **Functions** | Hysteresis | Yes | Yes |
| | PID | Yes | Yes |
| | Auto-tuning | Yes | Yes |
| | Fuzzy logic | Yes | Yes |
| | Ramps | 16 steps | 16 steps |
| | Controlled start-up | Yes | Yes |
| | Operating mode | Automatic and manual | Automatic and manual |
| **Alarm Outputs** | | 2 | 3 |
| **Display** | 7 segment LED, 4 digits | 2, red and green, configurable | 2, red and green, configurable |
| | Operating indicators | 5 | 6 |
| **Process Outputs** (number - type) | 1 relay | ■ | ■ |
| | 2 relays | ■ | ■ |
| | 1 solid state relay interface | ■ | ■ |
| | 1 relay + 1 solid state relay interface | ■ | ■ |
| | 1 current (4-20 mA) | ■ | ■ |
| | 1 solid state relay interface + 1 current (4-20 mA) | ■ | ■ |
| **Supply Voltage** | ∿ 100…240 V | **REG48PUN●●HU** | **REG96PUN●●HU** |
| | ⎓ 24 V | **REG48PUN●●LU** | **REG96PUN●●LU** |
| **Temperature Controller** | | **REG 48** | **REG 96** |
| **Page** | | 14 | 14 |

# Zelio® Measurement and Control Relays
## REG Temperature Controllers


*24 x 48 mm size*


*48 x 48 mm size*


*96 x 48 mm size*


*Zelio Control Soft software available free of charge from www.schneider-electric.us*

## Introduction

### Product

The range of **REG** temperature controllers provides a solution with 3 product sizes (DIN standard):
- □ 24 x 48 mm (1/32 DIN)
- □ 48 x 48 mm (1/16 DIN)
- □ 96 x 48 mm (1/8 DIN)

The range includes 40 models which offer the following characteristics (depending on model):
- ■ Supply voltage ∿ 100...240 V or ⎓ 24 V
- ■ Input: Thermocouple, PT 100 probe
- ■ Voltage/current: depending on model
- ■ Configurable display: red and green display colors and possibility of flashing display in the event of an alarm
- ■ 1, 2 or 3 alarm outputs, depending on model
- ■ Advanced functions, depending on model

### Operation

- ■ One or two dedicated outputs for heating, cooling, or heating/cooling of processes based on PID algorithms
- ■ Advanced functions:
  - □ ramps
  - □ fuzzy logic to avoid over/under temperature
  - □ auto-tuning
  - □ controlled start-up, depending on model
  - □ automatic or manual operating mode, depending on model

### Applications

**REG** temperature controllers are designed for system integrators and machine manufacturers. They provide a solution for temperature control in the following applications: industrial machines, HVAC, packaging, and textile industry.

**Application examples:**
- ■ Boilers and furnaces
- ■ Extrusion lines
- ■ Plastic and rubber injection presses
- ■ Thermo-forming
- ■ Production of synthetic fibers and polymerization
- ■ Food and drink processing lines
- ■ Molding presses
- ■ Environmental test chambers, overhead furnaces, and test benches
- ■ UV and laser technologies
- ■ Maintaining the temperature of a color bath
- ■ Cold rooms
- ■ Paint booths
- ■ Horticultural and livestock farms

## Software Configuration

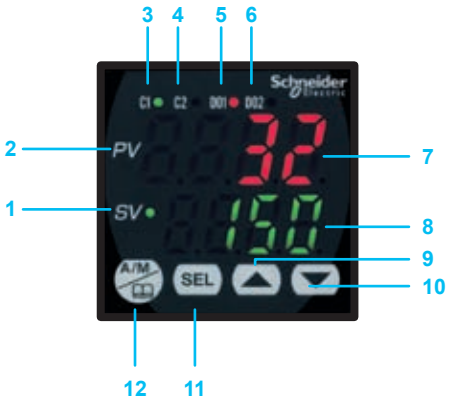
**Zelio Control Soft** software is used to configure the parameter settings of **REG** temperature controllers (except for REG24PTP1A●HU).
- ■ This software is available free of charge and can be downloaded from www.schneider-electric.us
- ■ It runs on a PC, with a Windows 98, XP, or Vista operating system
- ■ It allows modification of parameter settings, saving, and downloading of configurations

# Zelio® Measurement and Control Relays
## REG Temperature Controllers


## Description

### 24 x 48 size – 1/32 DIN standard

1 C1: indicator showing output 1 ON
2 SV: set-point value indicator; ON = SV, OFF = PV present value indicator, if parameter entry
3 SEL: selector button
4 Display of parameter value entered, 4 red digits, 10 mm (0.39 in) high
5 UP (increment) arrow
6 DOWN (decrement) arrow
7 AL1: relay output alarm on REG24PTP1A●HU only
8 AL2: Modbus® communication alarm




### 48 x 48 size – 1/16 DIN standard

1 SV: set-point value indicator
2 PV: present value indicator
3 C1: indicator showing output 1 ON
4 C2: indicator showing output 2 ON
5 D01: Alarm 1 output ON
6 D02: Alarm 2 output ON
7 Display of process value, 4 red digits, 12 mm ( 0.47 in) high
8 Display of parameter value entered, 4 green digits, 10 mm ( 0.39 in) high
9 UP (increment) arrow
10 DOWN (decrement) arrow
11 SEL: selector button
12 A/M: automatic/manual mode or configuration key


### 96 x 48 size – 1/8 DIN standard

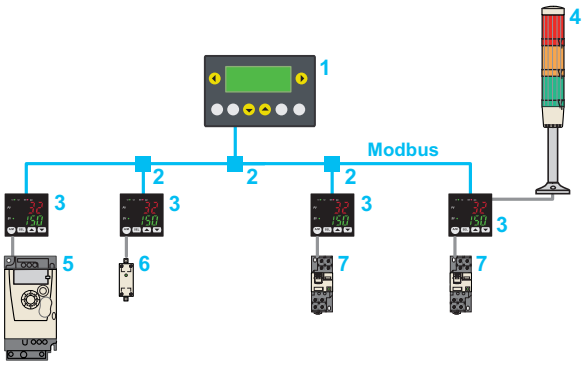
1 SV: set-point value indicator
2 PV: present value indicator
3 C1: indicator showing output 1 ON
4 C2: indicator showing, output 2 ON
5 D01: Alarm 1 output ON
6 D02: Alarm 2 output ON
7 D03: Alarm 3 output ON
8 Display of process value, 4 red digits, 12 mm ( 0.47 in) high
9 Display of parameter value entered, 4 green digits, 10 mm ( 0.39 in) high
10 UP (increment) arrow
11 DOWN (decrement) arrow
12 A/M: automatic/manual mode or configuration key
13 SEL: selector button

# Zelio® Measurement and Control Relays
## REG Temperature Controllers

### Examples of Architectures with Communication Over a Modbus® Serial Port

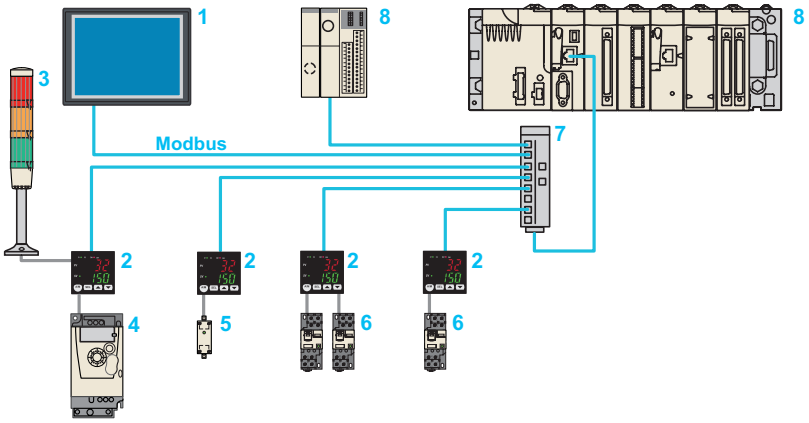
Temperature controllers **REG 24**, **REG 48** and **REG 96** *(1)* have a communication port for data exchange and parameter entry on the Modbus® bus.
These temperature controllers can be incorporated in intelligent architectures supervised by Magelis® terminals or controlled by PLCs (Twido®, M340™ or Premium™) for the exchange and transmission of data such as set-point values, present values, and alarms.

#### REG Temperature Controllers Supervised by a Magelis Compact Terminal




1 Compact terminal **XBT N**, master on the Modbus communication network
2 Junction box **TWDXCATR3RJ**
3 Temperature controllers **REG24/48/96**
4 Alarm: illuminated indicating banks **XVC** *(2)*
5 Current output: variable speed drive **ATV12H075M2** *(3)*
6 Solid state relay interface output **SSR**
7 Electromechanical relay output **RXM2AB2●●**

#### REG Temperature Controllers Controlled by PLCs




1 Graphic terminal **XBTG**, slave on the Modbus communication network, for regular reading of values, recording of curves (ramps), and changes in presets
2 Temperature controllers **REG 24/48/96**
3 Alarm: illuminated indicating banks **XVC** *(2)*
4 Current output: variable speed drive **ATV12H075M2** *(3)*
5 **SSR** solid state relay interface output
6 **RXM2AB2●●** electromechanical relay output
7 Modbus hub **LU9GC3**
8 PLCs with sequential processing of instructions: Twido programmable controller or Modicon® M340™ automation platform, or masters on the Modbus communication network

*(1) Except on **REG24PTP1A●HU**, **REG48PUNL1●HU** and **REG96PUNL1●HU**.*
*(2) Illuminated indicating banks **XVC**, preassembled and pre-wired with a buzzer incorporated in the base. Please see our "Control and Signaling Components" catalog.*
*(3) Variable speed drive **ATV12H075M2**: frequency converter for 3-phase asynchronous motors, 200…240 V from 0.18 kW to 4 kW.*

# Zelio® Measurement and Control Relays
## REG Temperature Controllers

| Environment characteristics | | | | | |
|---|---|---|---|---|---|
| **Size (mm) - Standard** | | | **24 x 48 - 1/32 DIN** | **48 x 48 - 1/16 DIN** | **96 x 48 - 1/8 DIN** |
| **Conforming to Standards** | | | EMC EN 61326-1, LVD EN 61010-1 | | |
| **Product Certifications** | | | cURus (873), CSA C22.2 n° 24-93, Gost | | |
| **Product Marking** | | | CE | | |
| **Ambient Air Temperature Around the Device** | Operation | **°C (°F)** | - 10…+ 50 (+ 1 4…+ 122) | | |
| | Storage | **°C (°F)** | - 20…+ 60 (- 4…+ 140) | | |
| **Relative Humidity** | | | 90% without condensation | | |
| **Altitude** | Operation | **m** | 2000 | | |
| | Storage | **m** | 3000 | | |
| **Vibration Resistance** | | | 1 gn (10…70 Hz) | | |
| **Shock Resistance** | | | 5 gn | | |
| **Input Type** | PT100 probe | | Yes | Yes | Yes |
| | Thermocouple J, K, R, B, S, T, E, N, PLII | | Yes | Yes | Yes |
| | Voltage/current | **V** | 1…5 | 0…5, 1…5, 0…10, 2…10, 0…0.1 | |
| | | **mA** | 4…20 | 0…20, 4…20 | |
| **Precision of Information Displayed** | | **%FS** | 0.5 | 0.3 | 0.3 |
| **Number of Process Outputs** | | | 1 | 1 or 2 | 1 or 2 |
| **Sampling Time** | | **ms** | 500 | 200 | 200 |
| **Max. Number of Recording Operations to Memory (EEPROM)** | | | 100,000 | 100,000 | 100,000 |
| **Power Supply** | | | | | |
| **Voltage Range** | ~ 100…240 V | **V** | 85…264 | | |
| | ⎓ 24 V | **V** | 21.6…26.4 | | |
| **Power Consumption** | ~ 100…240 V | **VA** | 6 for 100 V<br>8 for 240 V | 12 | 12 |
| | ⎓ 24 V | **VA** | 8 | 12 | 12 |
| **Communication on Modbus® Bus** | | | | | |
| **Serial Port** | Number and type | | 1 x RS-485 | | |
| **Flow Rate** | | **K bits/s** | 9600 and 19,200 | | |
| **Isolation Between Internal Circuit and Serial Port** | | | Non isolated | | |
| **Communication Protocol** | | | Modbus slave RTU, half duplex | | |
| **Built-in Functions** | | | | | |
| **Hysteresis** | | | Yes | Yes | Yes |
| **PID** | | | Yes | Yes | Yes |
| **Auto-tuning** | | | Yes | Yes | Yes |
| **Fuzzy Logic** | | | Yes | Yes | Yes |
| **Ramps** | | **Steps** | 8 | 16 | 16 |
| **Controlled Start-up** | | | No | Yes | Yes |
| **Operating Mode** | | | Automatic | Automatic and manual | Automatic and manual |
| **Output Characteristics** | | | | | |
| **Relays** | | | SPDT ~ 220 V, ⎓ 30 V / 3 A | SPST ~ 220 V, ⎓ 30 V / 3 A | |
| **Solid State Relay Interface** | | | ⎓ 24 V, 20 mA, 850 Ω | | |
| **Current** | | | 4…20 mA, load resistance 600 Ω max | | |
| **Alarm Outputs** | SPDT | **~ V** | 100…220, load capacity 1 A | 100…220, load capacity 3 A | |
| | | **⎓ V** | 30, load capacity 1 A | 30, load capacity 3 A | |

# Zelio® Measurement and Control Relays
## REG Temperature Controllers


*REG24PTP1●●●●*
*REG24PUJ1 ●●●*


*REG48PUN●●●●●*


*REG96PUN●●●●●*

### Temperature Controllers

#### 24 x 48 size – 1/32 DIN standard

| Input type | Supply Voltage | Number and type of outputs | Alarm | Communication on Modbus® Bus | Catalog Number | Weight kg (lb) |
|---|---|---|---|---|---|---|
| **Thermocouple PT100 Probe** | **~ 100/240 V** | 1 relay | No | Yes | **REG24PTP1RHU** | 0.200 (0.44) |
| | | 1 relay | 1 | No | **REG24PTP1ARHU** | 0.200 (0.44) |
| | | 1 solid state relay interface | No | Yes | **REG24PTP1LHU** | 0.200 (0.44) |
| | | 1 solid state relay interface | 1 | No | **REG24PTP1ALHU** | 0.200 (0.44) |
| | | 1 current (4-20 mA) | No | Yes | **REG24PTP1JHU** | 0.200 (0.44) |
| | **⎓ 24 V** | 1 relay | No | Yes | **REG24PTP1RLU** | 0.200 (0.44) |
| | | 1 solid state relay interface | No | Yes | **REG24PTP1LLU** | 0.200 (0.44) |
| | | 1 current (4-20 mA) | No | Yes | **REG24PTP1JLU** | 0.200 (0.44) |
| **Voltage/Current** | **~ 100/240 V** | 1 relay | No | Yes | **REG24PUJ1RHU** | 0.200 (0.44) |
| | | 1 solid state relay interface | No | Yes | **REG24PUJ1LHU** | 0.200 (0.44) |
| | **⎓ 24 V** | 1 relay | No | Yes | **REG24PUJ1RLU** | 0.200 (0.44) |
| | | 1 solid state relay interface | No | Yes | **REG24PUJ1LLU** | 0.200 (0.44) |

#### 48 x 48 size – 1/16 DIN standard

| Input type | Supply Voltage | Number and type of outputs | Alarm | Communication on Modbus® Bus | Catalog Number | Weight kg (lb) |
|---|---|---|---|---|---|---|
| **Universal** | **~ 100/240 V** | 1 relay | 2 | Yes | **REG48PUN1RHU** | 0.300 (0.66) |
| | | | | No | **REG48PUNL1RHU** | 0.300 (0.66) |
| | | 2 relays | 2 | Yes | **REG48PUN2RHU** | 0.300 (0.66) |
| | | 1 solid state relay interface | 2 | Yes | **REG48PUN1LHU** | 0.300 (0.66) |
| | | | | No | **REG48PUNL1LHU** | 0.300 (0.66) |
| | | 1 solid state relay interface + 1 relay | 2 | Yes | **REG48PUN2LRHU** | 0.300 (0.66) |
| | | 1 current (4-20 mA) | 2 | Yes | **REG48PUN1JHU** | 0.300 (0.66) |
| | | 1 solid state relay interface + 1 current (4-20 mA) | 2 | Yes | **REG48PUN2LJHU** | 0.300 (0.66) |
| | **⎓ 24 V** | 1 relay | 2 | Yes | **REG48PUN1RLU** | 0.300 (0.66) |
| | | 2 relays | 2 | Yes | **REG48PUN2RLU** | 0.300 (0.66) |
| | | 1 solid state relay interface | 2 | Yes | **REG48PUN1LLU** | 0.300 (0.66) |
| | | 1 solid state relay interface + 1 relay | 2 | Yes | **REG48PUN2LRLU** | 0.300 (0.66) |
| | | 1 current (4-20 mA) | 2 | Yes | **REG48PUN1JLU** | 0.300 (0.66) |
| | | 1 solid state relay interface + 1 current (4-20 mA) | 2 | Yes | **REG48PUN2LJLU** | 0.300 (0.66) |

#### 96 x 48 size – 1/8 DIN standard

| Input type | Supply Voltage | Number and type of outputs | Alarm | Communication on Modbus® Bus | Catalog Number | Weight kg (lb) |
|---|---|---|---|---|---|---|
| **Universal** | **~ 100/240 V** | 1 relay | 3 | Yes | **REG96PUN1RHU** | 0.300 (0.66) |
| | | | | No | **REG96PUNL1RHU** | 0.300 (0.66) |
| | | 2 relays | 3 | Yes | **REG96PUN2RHU** | 0.300 (0.66) |
| | | 1 solid state relay interface | 3 | Yes | **REG96PUN1LHU** | 0.300 (0.66) |
| | | | | No | **REG96PUNL1LHU** | 0.300 (0.66) |
| | | 1 solid state relay interface + 1 relay | 3 | Yes | **REG96PUN2LRHU** | 0.300 (0.66) |
| | | 1 current (4-20 mA) | 3 | Yes | **REG96PUN1JHU** | 0.300 (0.66) |
| | | 1 solid state relay interface + 1 current (4-20 mA) | 3 | Yes | **REG96PUN2LJHU** | 0.300 (0.66) |
| | **⎓ 24 V** | 1 relay | 3 | Yes | **REG96PUN1RLU** | 0.300 (0.66) |
| | | 2 relays | 3 | Yes | **REG96PUN2RLU** | 0.300 (0.66) |
| | | 1 solid state relay interface | 3 | Yes | **REG96PUN1LLU** | 0.300 (0.66) |
| | | 1 solid state relay interface + 1 relay | 3 | Yes | **REG96PUN2LRLU** | 0.300 (0.66) |
| | | 1 current (4-20 mA) | 3 | Yes | **REG96PUN1JLU** | 0.300 (0.66) |
| | | 1 solid state relay interface + 1 current (4-20 mA) | 3 | Yes | **REG96PUN2LJLU** | 0.300 (0.66) |

# Zelio® Measurement and Control Relays
## REG Temperature Controllers

### Accessories for Temperature Controllers (1)

| Description | For use with Temperature Controller Size | Sold in Lots of | Catalog Number | Weight g (oz) |
|---|---|---|---|---|
| Bracket for Mounting on ⊥ Rail | 24 x 48 | 4 | REG24PSOC | 14.93 (0.53) |
| Terminal Block Cover | 48 x 48 | 2 | REG48PCOV | 7.77 (0.27) |
| | 96 x 48 | 2 | REG96PCOV | 13.17 (0.46) |

### Miniature Plug-in Relays with Lockable Test Button and LED

RXM2AB2●●

**2 C/O Contacts - Thermal Current (Ith): 12 A**

| Control Circuit Voltage | Sold in Lots of | Catalog Number | Weight |
|---|---|---|---|
| V | | | kg (lb) |
| ⎓ 12 | 10 | RXM2AB2JD | 0.037 (0.08) |
| ⎓ 24 | 10 | RXM2AB2BD | 0.037 (0.08) |
| ⎓ 48 | 10 | RXM2AB2ED | 0.037 (0.08) |
| ⎓ 110 | 10 | RXM2AB2FD | 0.037 (0.08) |
| ∿ 24 | 10 | RXM2AB2B7 | 0.037 (0.08) |
| ∿ 48 | 10 | RXM2AB2E7 | 0.037 (0.08) |
| ∿ 120 | 10 | RXM2AB2F7 | 0.037 (0.08) |
| ∿ 230 | 10 | RXM2AB2P7 | 0.037 (0.08) |

### Solid State Relays with 1 N/O Contact, for mounting on ⊥ rail

SSRDCDS10A1

**For more information, please consult our** *Electromechanical and Solid-State Zelio Relays* Catalog , Part Number: DIA3ED2090304EN-US

| Switching | Voltage Range | | Load Current (A) | Catalog Number | Weight kg (lb) |
|---|---|---|---|---|---|
| | Input (V) | Output (V) | | | |
| **SCR output** | | | | | |
| Zero Voltage | ⎓ 4…32 | ∿ 24…280 | 10 | SSRDCDS10A1 | 0.272 (0.60) |
| | | | 20 | SSRDCDS20A1 | 0.272 (0.60) |
| | | | 30 | SSRDCDS30A1 | 0.272 (0.60) |
| | | | 45 | SSRDCDS45A1 | 0.482 (1.06) |

### Altivar® 12 Variable Speed Drives with Heat Sink

ATV12H075M2

**For more information, please consult our** *Altivar® 12 Variable Speed Drives* **catalog**

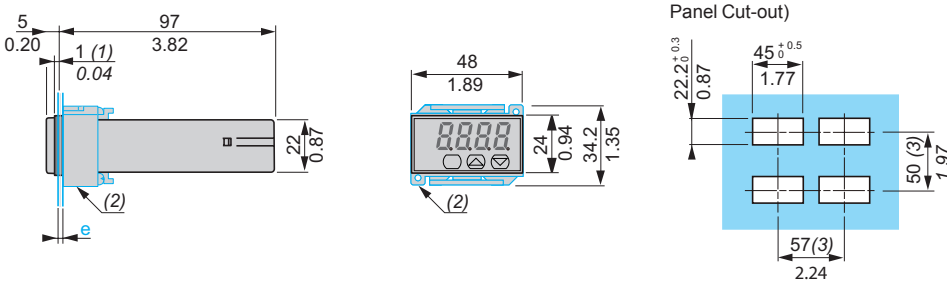
| Motor | | Network | | | | Altivar 12 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Power Indicated on Rating Plate | | Maximum Line Current | | Apparent Power | Pro-spective Maximum Line Isc | Maximum Continuous Output Current (In) | Maximum Transient Current for 60 s | Power Dissipated at Maximum Output Current (In) | Catalog Number | Weight |
| | | at U1 | at U2 | at U2 | | at U2 | | | | |
| kW | *HP* | A | A | kVA | kA | A | A | W | | kg (lb) |
| **Single-phase Supply Voltage: 100…120 V 50/60 Hz** | | | | | | | | | | |
| 0.75 | *1* | 18.9 | 15.7 | 3.3 | 1 | 4.2 | 6.3 | 48 | ATV12H075M2 | 1.300 (2.87) |
| **Single-phase Supply Voltage: 200…240 V 50/60 Hz** | | | | | | | | | | |
| 0.75 | *1* | 10.2 | 8.5 | 3.5 | 1 | 4.2 | 6.3 | 44 | ATV12H075M2 | 0.800 (1.76) |
| **3-phase Supply Voltage: 200…240 V 50/60 Hz** | | | | | | | | | | |
| 0.75 | *1* | 6.3 | 5.3 | 2.2 | 5 | 4.2 | 6.3 | 41 | ATV12H075M3 | 0.800 (1.76) |

*(1) To be ordered separately.*

# Zelio® Measurement and Control Relays
## REG Temperature Controllers

### 24 x 48 size– 1/32 DIN standard

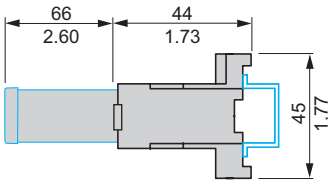
**Panel Mounting (bracket supplied)**




Dimensions $\frac{mm}{in.}$

n: number of devices mounted side-by-side

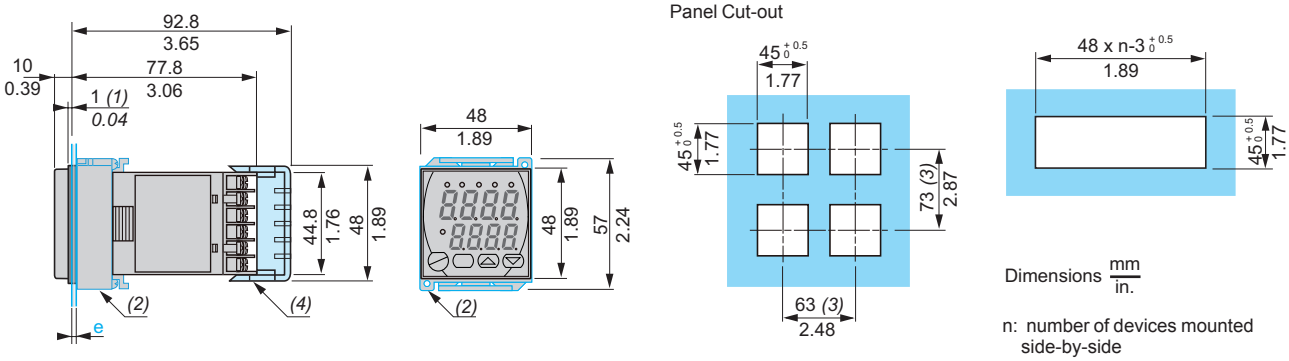
**Mounting on ⊔ Rail with Accessory REG24PSOC (to be ordered separately, see page 15)**




Dimensions $\frac{mm}{in.}$

### 48 x 48 size – 1/16 DIN standard

**Panel Mounting (bracket supplied)**

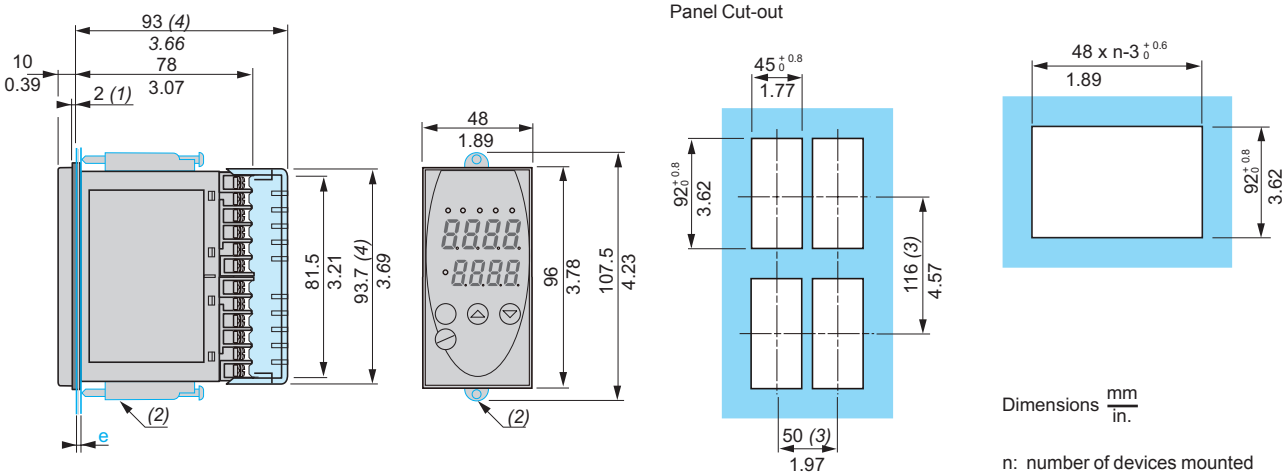



Dimensions $\frac{mm}{in.}$

n: number of devices mounted side-by-side

### 96 x 48 – 1/8 DIN standard

**Panel Mounting (bracket supplied)**




Dimensions $\frac{mm}{in.}$

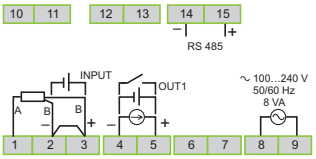
n: number of devices mounted side-by-side

*e: panel thickness*
*(1) Seal.*
*(2) Mounting brackets supplied with **REG** temperature controllers.*
*(3) Minimum value.*
*(4) Terminal block cover, to be ordered separately, see page 15.*

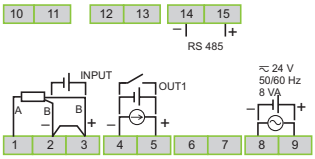
# Zelio® Measurement and Control Relays
## REG Temperature Controllers

### REG 24

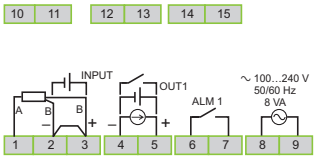
**REG24PTP1RHU, REG24PUJ1RHU, REG24PTP1LHU, REG24PUJ1LHU, REG24PTP1JHU**




**REG24PTP1RLU, REG24PUJ1RLU, REG24PTP1LLU, REG24PUJ1LLU, REG24PTP1JLU,**

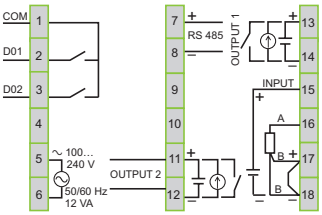



**REG24PTP1ARHU, REG24PTP1ALHU**

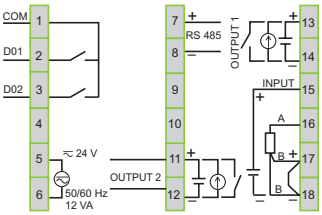



### REG 48

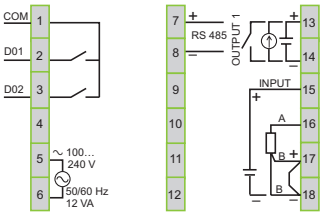
**REG48PUN2RHU, REG48PUN2LRHU, REG48PUN2LJHU**



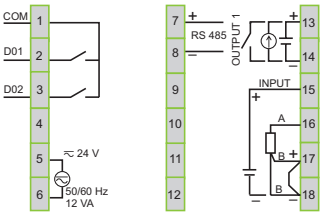

**REG48PUN2RLU, REG48PUN2LRLU, REG48PUN2LJLU**



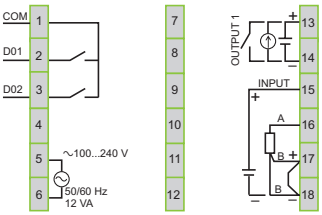

**REG48PUN1RHU, REG 48PUN1LHU, REG48PUN1JHU**




**REG48PUN1RLU, REG48PUN1LLU, REG48PUN1JLU**

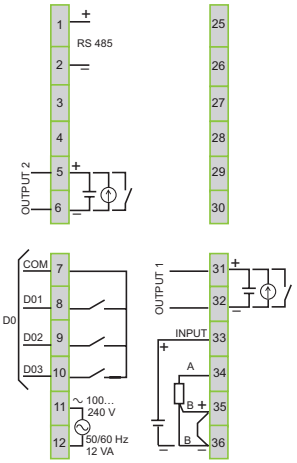



**REG 48PUNL1RHU, REG48PUNL1LHU**

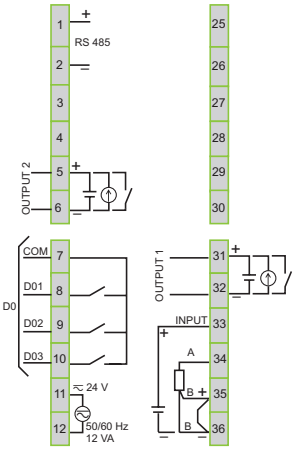



### REG 96

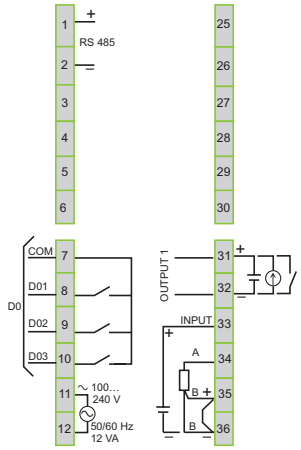
**REG96PUN2RHU, REG 96PUN2LRHU, REG96PUN2LJHU**



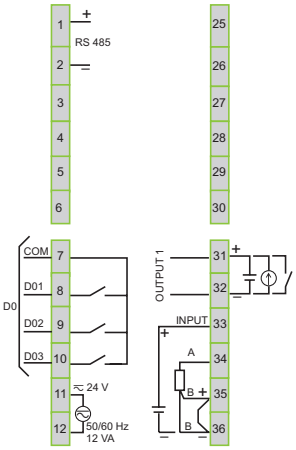

**REG96PUN2RLU, REG96PUN2LRLU, REG96PUN2LJLU**




**REG96PUN1RHU, REG96PUN1LHU, REG96PUN1JHU**




**REG96PUN1RLU, REG96PUN1LLU, REG96PUN1JLU**




**REG96PUNL1RHU, REG96PUNL1LHU**