



# RCK-461



## 1. DESCRIPTION

The image shows a white RCK-461 expansion module. It features a top terminal block with 24 pins labeled 13 through 24, with sub-labels for +12V, GND, C1, C2, C3, C4, +12V, GND, C5, C6, C7, and C8. The front panel has a digital display showing '48.7' and the website 'fullgauge.com'. Below the display are five green buttons: a menu button, an 'ESET' button, and three arrow buttons. The bottom terminal block has 39 pins, with labels for 'EXP' and 'A B GND' at positions 25-27, 29-36, and 37-39. The module is labeled 'RCK-461' and 'fullgauge.com' on its front face.

The **RCK-461** is an expansion module, that has the outputs and inputs of the Rackcontrol product line, compatible with the **RCK-862 plus**. It is intended for applications that require more inputs and outputs than are available on the **RCK-862 plus**. The **RCK-862 plus** controller allows you to connect up to ten expansion modules, which enables the RCK line to control small, medium and large refrigeration systems. In addition, as a result of this “expansion by module” system, you are able to add extra controls, functions and resources to your refrigeration system, as your need.


This module has eight digital outputs - five relays, three solid-state and two 0-10V analog. Suitable for operating digital compressors.

It also has 6 digital inputs and 8 analog configurations for temperature (NTC) and pressure (4-20mA) sensors.

## 2. TECHNICAL SPECIFICATIONS

Power Supply	24Vac 50/60Hz or 24Vdc± 10%
Maximum Consumption	500mA ac/dc
Working Temperature	0 to 50°C
Working Humidity	10 to 90% UR (sin condensation)
Type of Action	Type 1.B
Pollution Level	II
Class of software	Class A
Control Pressure	0.1 psi / 0.1 bar
Control Temperature	-50 to 200°C / -58 to 392°F
Analog inputs	S1 to S8: Configurable depending of the Pressure Sensor (4 to 20mA / SB69) or the Temperature Sensor (SB19, SB41, SB59, SB70);
Voltage output for pressure sensors	Voltage output +12V: 12Vdc, Idcmax= 160mA;
Digital inputs	I1 to I6: digital outputs, dry contact type.
Analog outputs	A1 A2 = 0-10Vdc (max. 10mA)
Digital outputs	O1, O5, O6, O7 and O8: relay output (SPST) NA, 5(3)A/250Vac; O2, O3, and O4: Solid State Relay output (SSR) 1A/24 - 240Vac*
RS-485 communication interface	EXP: communication with the <b>RCK-862 plus</b>
Size of the Product (WxLxD)	70,0 x 135,7 x 61,7 mm (2,76" x 5,34" x 2,43")

## 3. WARNING

 **BEFORE INSTALLING THE CONTROLLER, WE RECOMMEND THAT YOU READ THE INSTRUCTION MANUAL IN ITS ENTIRETY, TO AVOID ANY POSSIBLE DAMAGE TO THE PRODUCT.**

 **CARE WHEN INSTALLING THE PRODUCT:**

- Before doing anything with this device, disconnect it from the electricity first;
- Ensure that the device has sufficient ventilation; avoid installing it in panels with devices that could cause it to operate outside of the specified temperature limits;
- Install the product away from sources of electromagnetic disturbance, such as motors, contactors, relays, solenoids, etc.

 **AUTHORIZED SERVICING:**

- This product must only be installed or repaired by qualified technicians.

 **ACCESSORIES:**

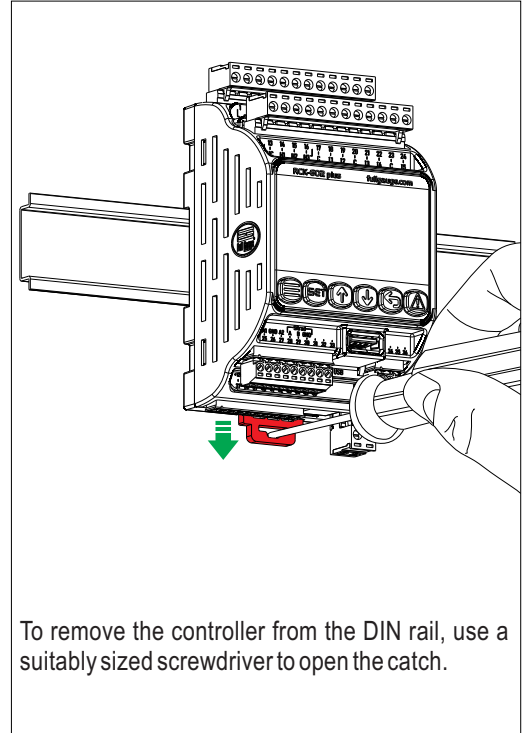
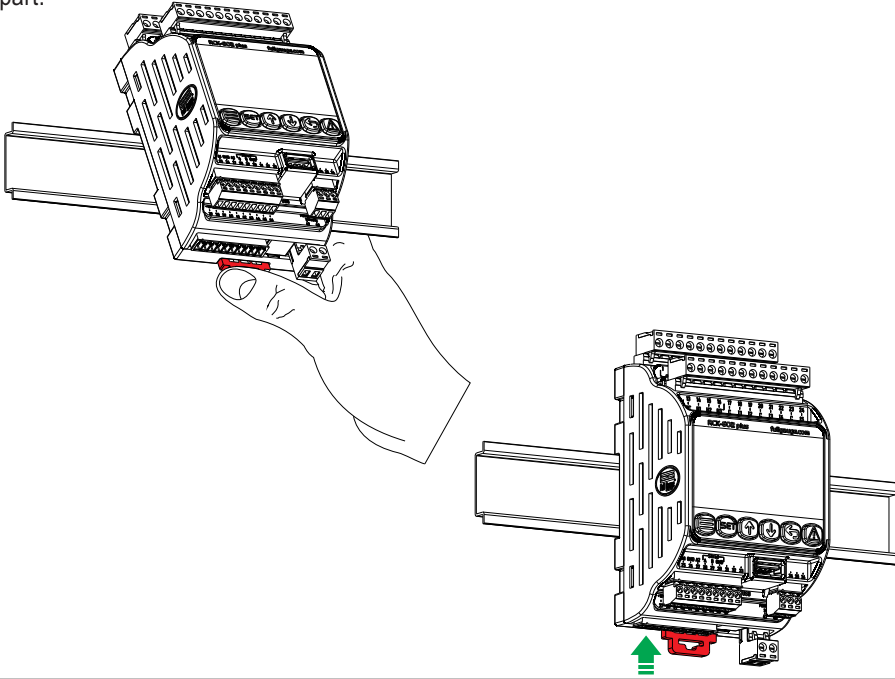
- Only use original Full Gauge Controls accessories;
- If you have any questions, please contact technical support.

**IN ORDER TO BE ABLE TO PROVIDE CONTINUOUS DEVELOPMENT, FULL GAUGE CONTROLS RESERVES THE RIGHT TO AMEND THE INFORMATION IN THIS MANUAL AT ANY TIME, WITHOUT NOTICE.**

## 4. INSTALLING THE RCK-461

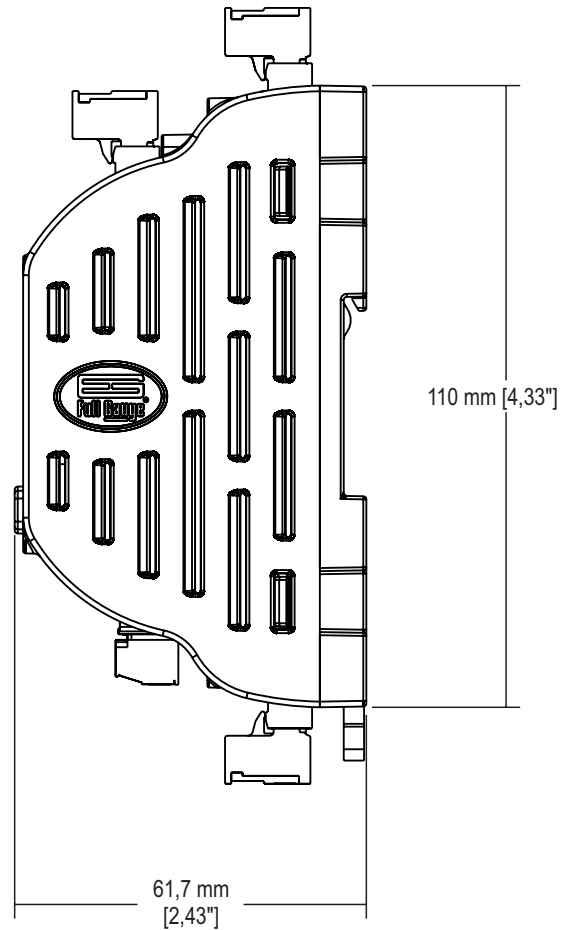
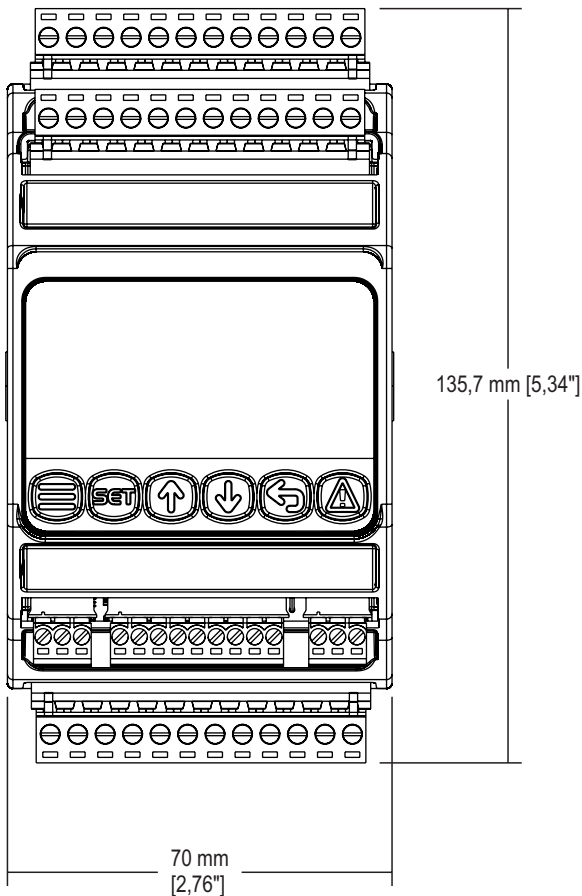
### 4.1 Installing on a DIN Rail.

To attach the interface to a DIN rail, place the interface as in the picture and attach the top part.

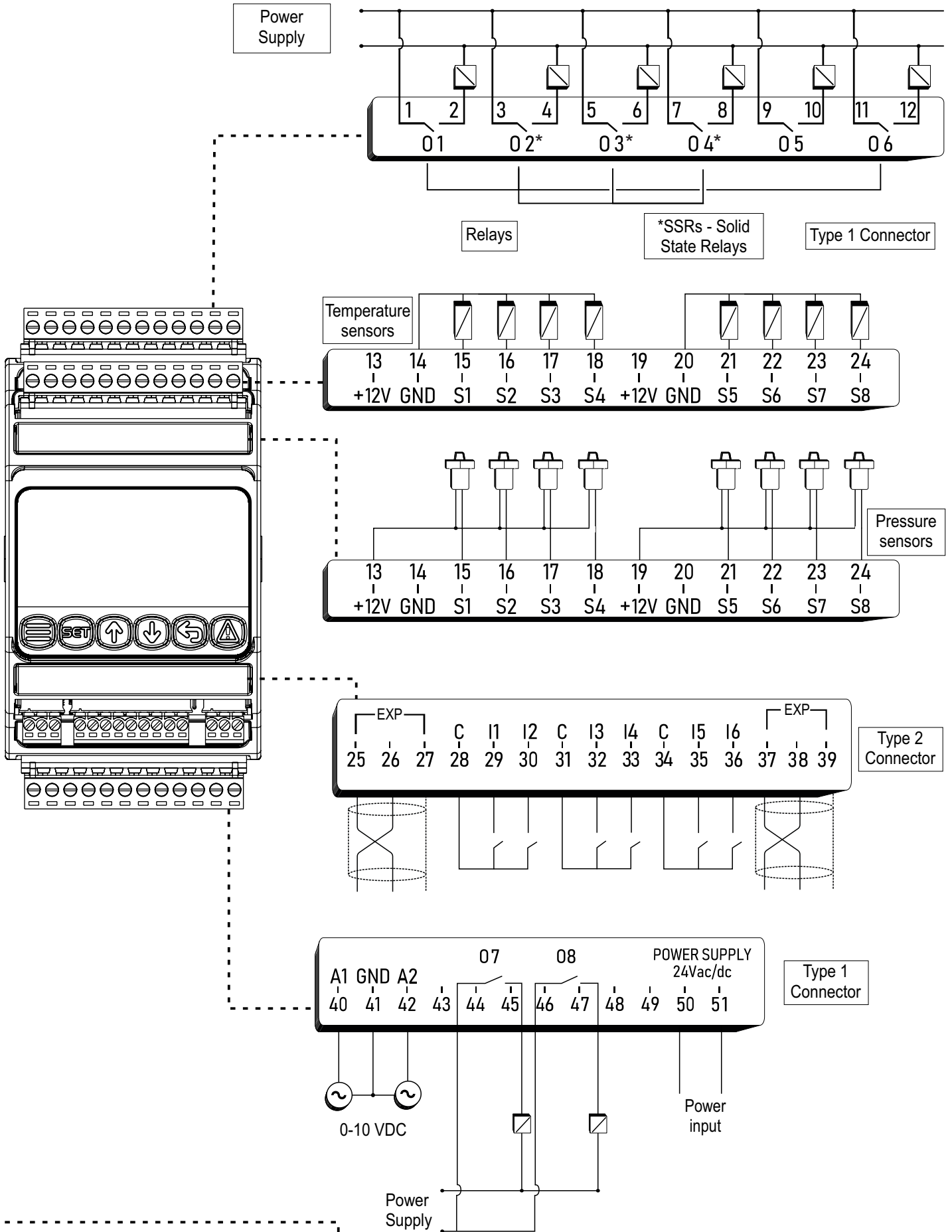


## 5. DIMENSIONS

To attach the **RCK-461** more effectively, please take into account the size of the device.



# 6. WIRING DIAGRAM



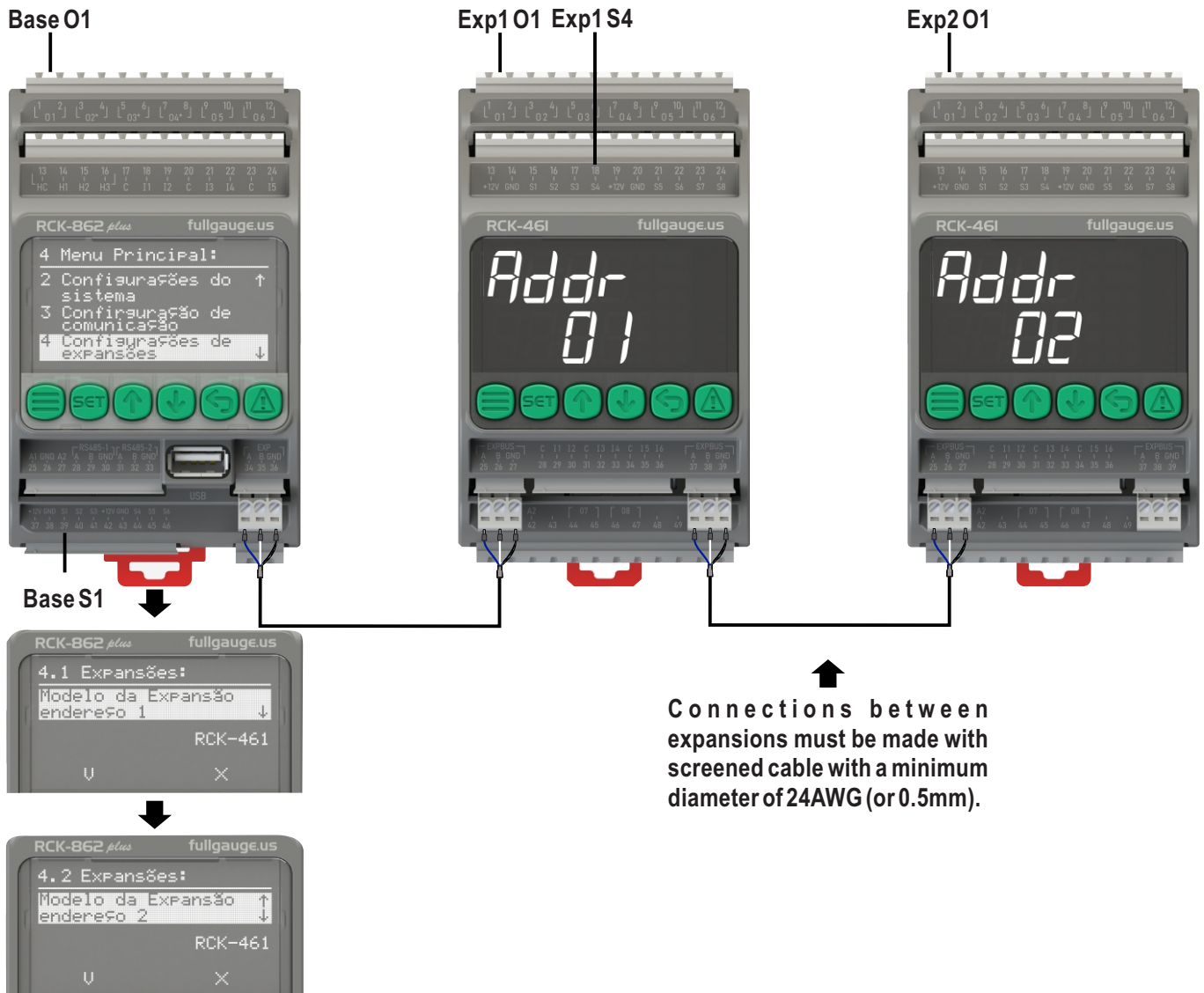
**Type 1 Connector:** For Type 1 (5.0mm) connections use a Philips #1 or a Flat-Headed 3.0mm. Do not exceed a maximum torque of 0.5 Nm.

**Type 2 Connector:** For type 2 (3.5mm) connections use a Philips #0 or a Flat-Headed 2.4mm. Do not exceed a maximum torque of 0.2 Nm.

## 6. WIRING DIAGRAM

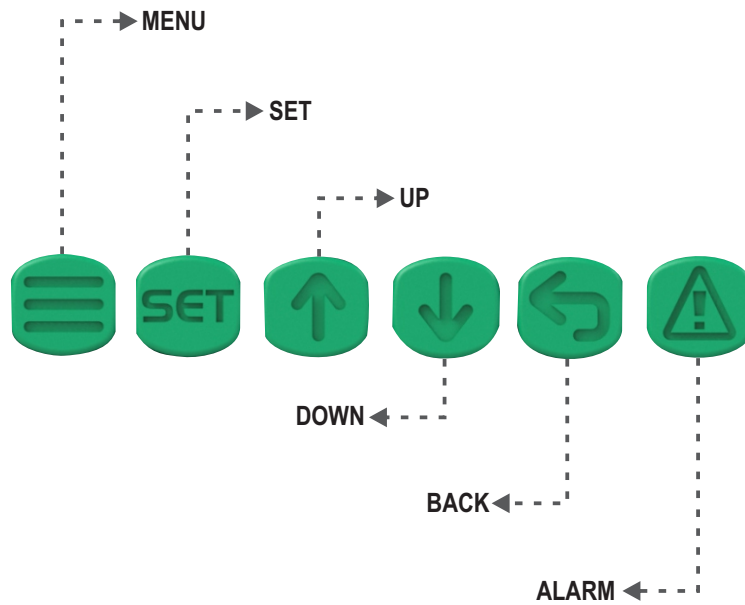
An address from 1 to 10 must be given to each expansion module, without any repetition. To do this, hold the **SET** key for 2 seconds, select the preferred address number using the **↑** and **↓** keys and press **SET** again to confirm it.

On the **RCK-862<sub>plus</sub>**, you have to select the model of the module used for each address.



## 7. NAVIGATION KEYS

The **RCK-461** has 6 navigation keys to allow you among other things, to switch between screens, change parameters or view advanced functions:



**MENU** Key: Not used.

**SET** Key: Confirm and edit settings and values.

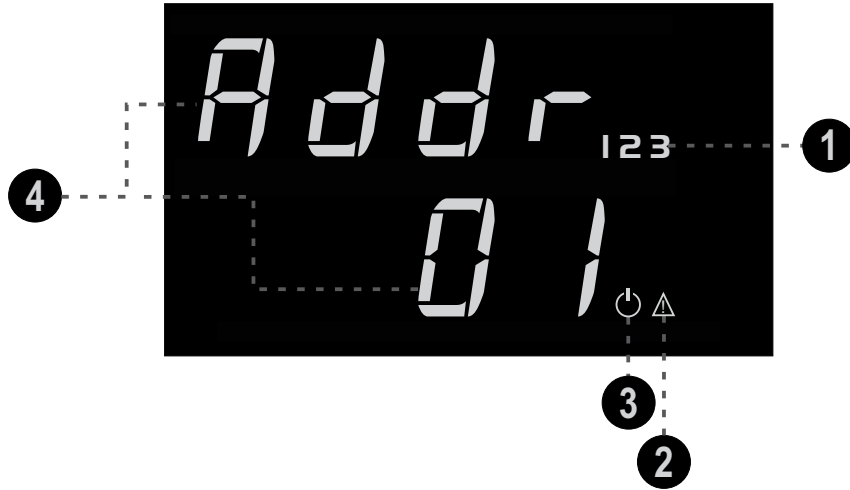
**UP** Key: Increase values and navigate “up” the menu.

**DOWN** Key: Decrease values and navigate “down” the menu.

**BACK** Key: Go back to the previous screen without confirming any change to the setting.

**ALARM** Key: Not used.

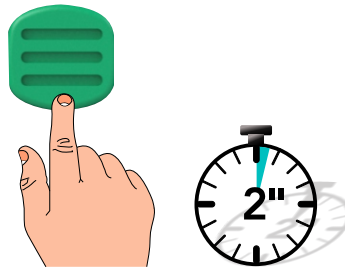
## 8. NAVIGATION TUTORIAL



- 1** – **123**:  
**1**: Indicates the data bus is transmitting  
**2**: Indicates the data bus is receiving  
**3**: Equipment is connected to the data bus

- 3** – Indicates that the equipment is powered on  
**4** – Main view

- 2** – Indicates that the equipment is not communicating with the data bus



Hold the **SET** key for 2 seconds to enter the mode for editing the address.



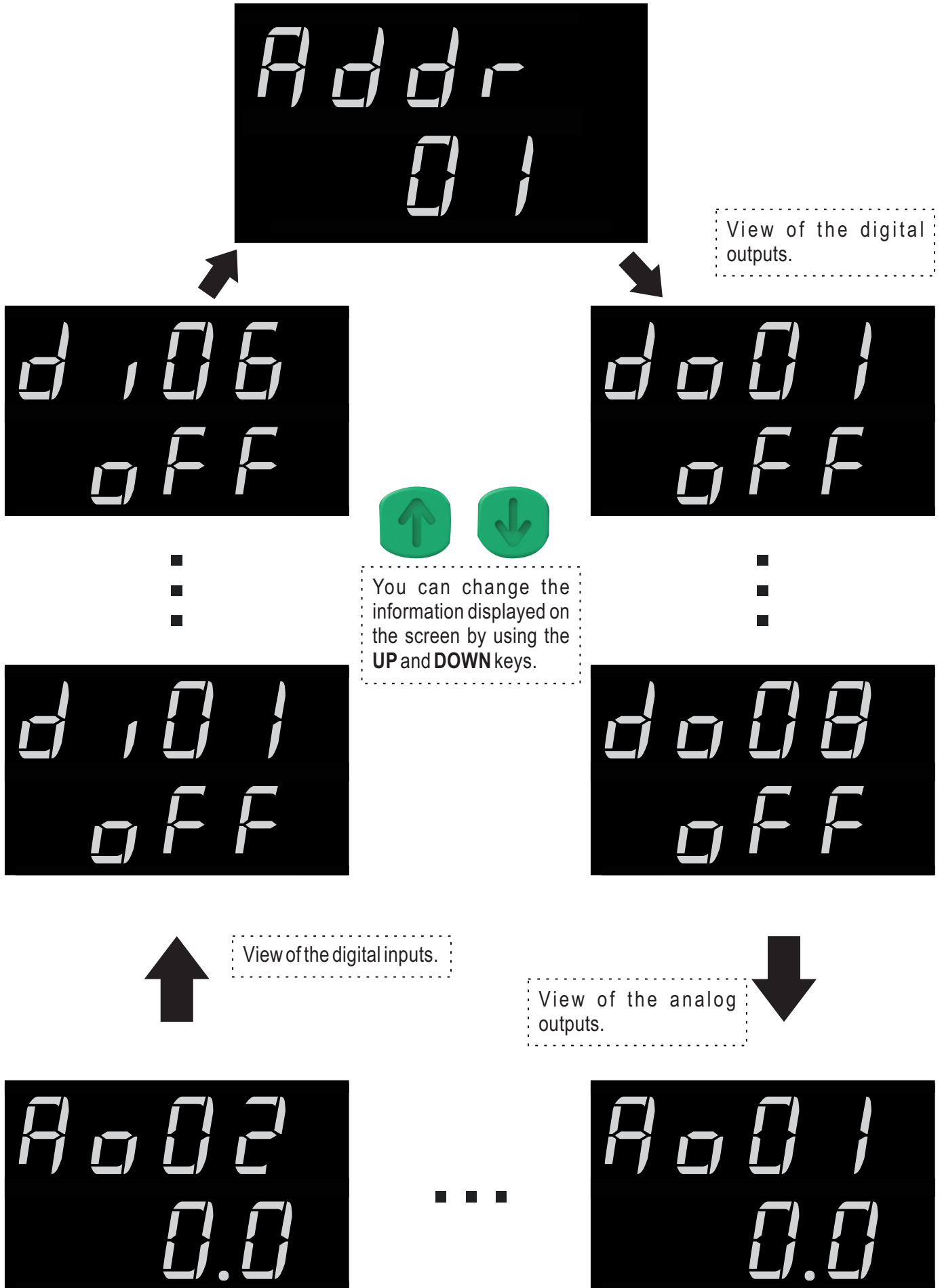
You can alter the value of the address by using the **UP** and **DOWN** keys.



One short press of the **SET** key will then confirm the change to the address.



# 8. NAVIGATION TUTORIAL

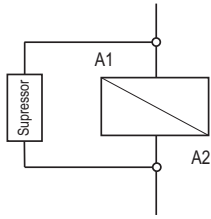


## 9. WARNING

As instructed by standard NBR 5410:

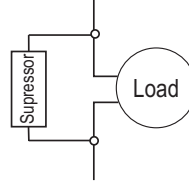
- 1: Install surge protectors in the power supply.
- 2: You can have sensor and serial communication cables together, but not in the same conduit as the power supply or load connection.
- 3: Install transient suppressors (RC filter) in parallel to the loads, as a way to increase the working life of the relays.

### Wiring Diagram for suppressors in contactors



A1 and A2 are the contactor coil terminals.

### Wiring Diagram for suppressors on direct loads



Take the maximum specified current into account when using direct activation.

**Suppressors are available for purchase from Full Gauge Controls**

## 10. WARRANTY



### ENVIRONMENTAL INFORMATION

#### Packaging:

Full Gauge products use packaging made from entirely recycled materials. Please dispose of it through specialized recyclers.

#### Product:

The components used in Full Gauge controllers can be recycled and reused if they are dismantled by specialists.

#### Disposal:

Do not burn or throw controllers in the domestic waste, once they have reached the end of their working life. Follow the current legislation applicable to your area in relation to disposing of electronic waste.

### WARRANTY - FULL GAUGE CONTROLS

Products manufactured by Full Gauge Controls, from May 2005, have a warranty period of 10 (ten) years direct from the factory and 01 (one) year from accredited retailers, starting from the consignment date on the sales invoice. After this year, the warranty will continue to be honored for purchases from retailers if the device is sent directly to Full Gauge Controls. This period is valid in Brazil. Other countries provide a guarantee for 2 years. The products are guaranteed in the event of a manufacturing fault that makes them unsuitable or inappropriate for the uses to which they were intended. The warranty is limited to the maintenance of devices manufactured by Full Gauge Controls, regardless of any other form of costs, such as any indemnity due to damage caused to other equipment.

### WARRANTY EXCEPTIONS

The Warranty does not cover transport and / or insurance costs for sending products believed to have defects or to have malfunctioned to Technical Support. The following events are also not covered: natural wear of parts, external damage caused by falls or improper packing of products.

### LOSS OF COVER

The product will automatically no longer be covered if:

- The instructions for use and assembly contained in the technical description and installation procedures listed in the NBR 5410 standard are not observed;
- It is subjected to conditions beyond the limits specified in its technical description;
- If it is opened up or repaired by a person who is not part of Full Gauge's technical team;
- The damage which has taken place was the result of a fall, blow or impact, water damage, electrical surge or atmospheric discharge.

### USING THE WARRANTY

To take advantage of the warranty, the customer must send the product properly packed, together with the corresponding purchase invoice, to Full Gauge Controls. The delivery cost for the product is borne by the client. You will also need to send as much information as possible regarding the defect that has been detected, thus making it possible to streamline the analysis, testing and servicing.

These processes and any eventual maintenance of the product will only be carried out by Full Gauge Controls' Technical Support, at the Company's head office - Rua Júlio de Castilhos, 250 - Zip Code 92120-030 - Canoas - Rio Grande do Sul - Brazil.