

---

# USER'S MANUAL (PART 2)

## AIR CONDITIONER FOR ELECTRICAL ENCLOSURE INDOOR APPLICATION

# IP-ACIWM145.003



| Document: UMA-CDZ-IP-ACIWM145.003-00                                                                      |         | Date       | Name |
|-----------------------------------------------------------------------------------------------------------|---------|------------|------|
| Description<br><br>Original user's manual for air conditioner IP-ACIWM145.003 series<br>Language: English | ISSUE   | 15/12/2022 |      |
|                                                                                                           | REV. 01 |            |      |
|                                                                                                           | REV. 02 |            |      |
|                                                                                                           | REV. 03 |            |      |



## WARNING

- Safety of AIR CONDITIONER is warranted only by proper use of these instruction which must be kept.
- Installation must be done by qualified personnel only after enclosure power supply disconnecting.
- Before any operation, switch off the power supply.
- The appliance is classified as not accessible to the general public
- The air conditioner is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children being supervised not to play with the air conditioner.
- The air conditioner must be installed in accordance with national wiring regulations (IEC 60335-2-40:2018)
- Upstream of the electrical connection, an efficient disconnection system must be provided in compliance with the AS / NSZ 3000 standard
- Internal and external components of electrical enclosure don't have to affect the proper installation of air conditioner.
- Inside of electrical enclosure there must not be components that could affect the proper ventilation.
- Provide a proper fixing of the electrical enclosure to the floor to prevent accidental tipping due to the supplementary weight of installed AIR CONDITIONER.
- Installation position of AIR CONDITIONER must be selected to ensure good ventilation. Take care that any internal/external components of enclosure don't obstruct air passage. (see section 2.2 GENERAL CHECKS BEFORE INSTALLATION)
- The heat loss of the components installed inside of the electrical enclosure must be lower than useful cooling power of the AIR CONDITIONER.
- AIR CONDITIONER IP-ACIW series must be handled in upright position and protected against accidental tipping over.
- Do not modify the AIR CONDITIONER structure if it is not specified in these instruction or associated instructions.
- During transportation of enclosures with installed air conditioner a proper bracket must be used to support the cooling unit weight.
- Install only original spare parts and accessories.
- Protection against access to live parts must be warranty by installer.
- The supply connector of the AIR CONDITIONER must only be connected and disconnected when electrical enclosure is electrically disconnected.
- Follow all technical data shown in this manual

# TABLE OF CONTENTS

|                                                     |           |
|-----------------------------------------------------|-----------|
| <b>WARNING .....</b>                                | <b>2</b>  |
| <b>1 - TECHNICAL DATA.....</b>                      | <b>3</b>  |
| <b>2 - INSTALLATION .....</b>                       | <b>4</b>  |
| <b>2.1 PRODUCT HANDLING.....</b>                    | <b>4</b>  |
| <b>2.2 GENERAL CHECKS BEFORE INSTALLATION .....</b> | <b>4</b>  |
| <b>2.3 FITTING .....</b>                            | <b>5</b>  |
| <b>3 - ELECTRICAL CONNECTION.....</b>               | <b>7</b>  |
| <b>3.1 WIRING DIAGRAM.....</b>                      | <b>7</b>  |
| <b>3.2 ELECTRICAL INSTALLATION .....</b>            | <b>8</b>  |
| <b>3.3 ALARM OUTPUT / DIGITAL INPUT .....</b>       | <b>9</b>  |
| <b>4 - STARTING AND ADJUSTMENT .....</b>            | <b>10</b> |
| <b>4.1 DIGITAL THERMOSTAT INSTRUCTION.....</b>      | <b>10</b> |
| <b>5 - STANDARD MODBUS.....</b>                     | <b>17</b> |
| <b>6 - SPARE PARTS LIST .....</b>                   | <b>19</b> |
| <b>WARRANTY.....</b>                                | <b>20</b> |
| <b>UE DECLARATION OF CONFORMITY.....</b>            | <b>21</b> |
| <b>SAA CERTIFICATE.....</b>                         | <b>22</b> |

## 1 - TECHNICAL DATA

| CONTROL TYPE                                                             |           |             | ARTICLE CODE                                                       |
|--------------------------------------------------------------------------|-----------|-------------|--------------------------------------------------------------------|
| Digital thermostat with alarm, door interlock and RS485 serial interface |           |             | IP-ACIWM145.003                                                    |
| FEATURES                                                                 |           | Unit        |                                                                    |
| Power supply                                                             |           | V   ph   Hz | 230   1   50/60                                                    |
| Cooling capacity EN14511                                                 | A35-A35   | W           | 1450/1500                                                          |
|                                                                          | A35-A50   | W           | 1150/1200                                                          |
| Absorbed electric power EN14511                                          | A35-A35   | W           | 660/700                                                            |
|                                                                          | A35-A50   | W           | 800/860                                                            |
| Rated current                                                            |           | A           | 3.7/4.2                                                            |
| Motor circuit breaker / Delayed pre fuse (advised)                       |           | A           | 10                                                                 |
| Electrical connection                                                    |           | -           | Three-pole connector                                               |
| Air flow rate (free blow)                                                | enclosure | m3/h        | 600/625                                                            |
| Operating temperature                                                    | ambient   | °C (°F)     | +20   +55 (+68/+ 131)                                              |
|                                                                          | enclosure | °C (°F)     | +20   +45 (+68/+ 113)                                              |
| Refrigerant                                                              |           | -   g       | R134a   700                                                        |
| Protection degree EN60529/1                                              | ambient   | -           | IP34                                                               |
|                                                                          | enclosure | -           | IP54 (when installed on enclosure with the same protection degree) |
| Design                                                                   | casing    | -           | Galvanised sheet steel                                             |
|                                                                          | cover     | -           | Galvanised sheet steel powder coated RAL7035                       |
| Weight                                                                   |           | kg          | 37                                                                 |
| Conformity / Certifications                                              |           | -           | CE, SAA 203165                                                     |

## 2 - INSTALLATION

### 2.1 PRODUCT HANDLING



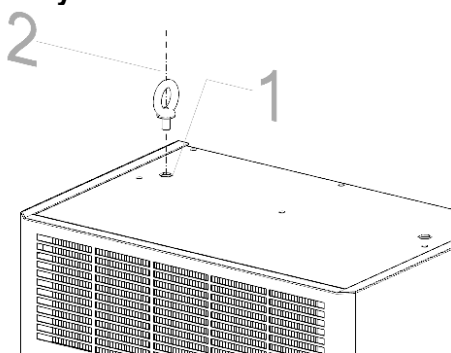
**AIR CONDITIONER IP-ACIW series must be handled in upright position and protected against accidental tipping over.**

Air conditioners IP-ACIW series are fitted with female blind threaded insert to screw male lifting eye bolts.

The air conditioner handling, when unpacked, can be done thanks to lifting eye bolt. If lifting eye bolts are not included, please provide an adequate M6 male lifting eye bolt (2) and screw it inside blind threaded (1) insert placed on top of the air conditioner



**Check the proper fixing of eye bolts before lift the air conditioner.**



### 2.2 GENERAL CHECKS BEFORE INSTALLATION

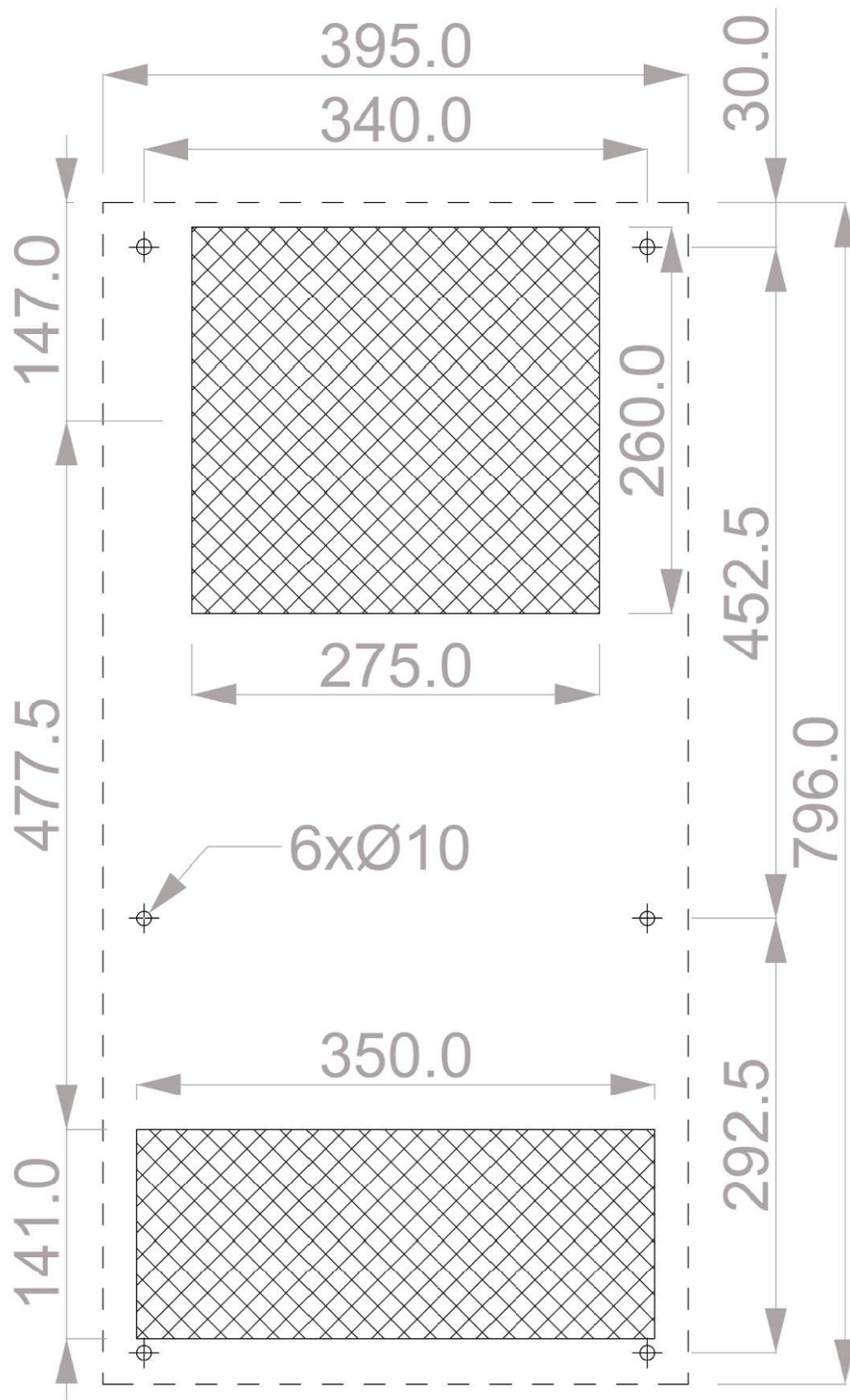


**Before the installation make sure that the cabinet is disconnected from the electrical supply.**

| GENERAL CHECKS |                                                                                                                                                                                                                 |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -              | electrical enclosure must be disconnected from power supply                                                                                                                                                     |
| -              | electrical data shown on rating label pasted on air conditioner side must be guaranteed                                                                                                                         |
| -              | Electrical enclosure must be sized according to air conditioner dimensions and weight.                                                                                                                          |
| -              | Electrical enclosure must have at least IP54 protection degree                                                                                                                                                  |
| -              | Internal and external components of electrical enclosure don't have to affect the proper installation of air conditioner                                                                                        |
| -              | The installation site must be free from excessive dirt, aggressive ambient conditions and moisture.                                                                                                             |
| -              | The installation site must be free from hot air flows                                                                                                                                                           |
| -              | The internal side of electrical enclosure must be free from dirt and moisture                                                                                                                                   |
| -              | The environment temperature must be within the range specified on label pasted on air conditioner side                                                                                                          |
| -              | Inside of electrical enclosure there must not be components that could affect the proper ventilation                                                                                                            |
| -              | the enclosure positioning with installed air conditioner must be carefully selected to ensure good ventilation (clearance between the air conditioner and the near walls must be at least 500 mm in each side). |
| -              | Proper disposing of condensate discharge                                                                                                                                                                        |

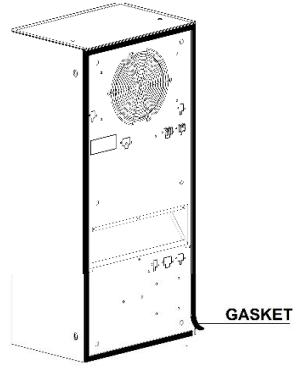
## 2.3 FITTING

- 1) Make the fixing hole on the enclosure as is shown in the drilling template

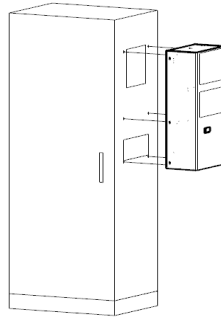


**Deburr all sharp edges to avoid accidental injuries**

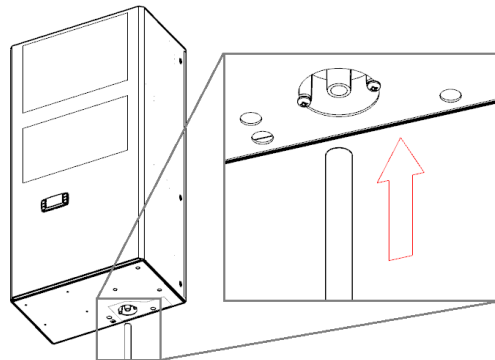
- 2) Apply the gasket (included in fixing kit) on the back panel of the air conditioner.



- 3) Lift the air conditioner by lifting eyebolt and place it near the enclosure wall
- 4) Mount the air conditioner on the electrical cabinet according to the drilling template with M6X16 screws and washers against unscrewing (included in mounting kit)



- 1) Connect the condensate drain pipe as is shown in picture below



**Air conditioner is fitted with condensate evaporator. Condensate is collected into a vessel and it is warmed by the hot discharge compressor pipe. If condensate rises over a certain level, it is evacuated by over flow pipe**



**Air conditioner produces condensate because the moist air inside of the enclosure meets cold heat exchanger (evaporator) and then it becomes water; water production decreases during air conditioner working because enclosure air becomes dry.**



**The enclosure must be at least IP 54 protected, if enclosure is not airtight, condensate production could increase.**



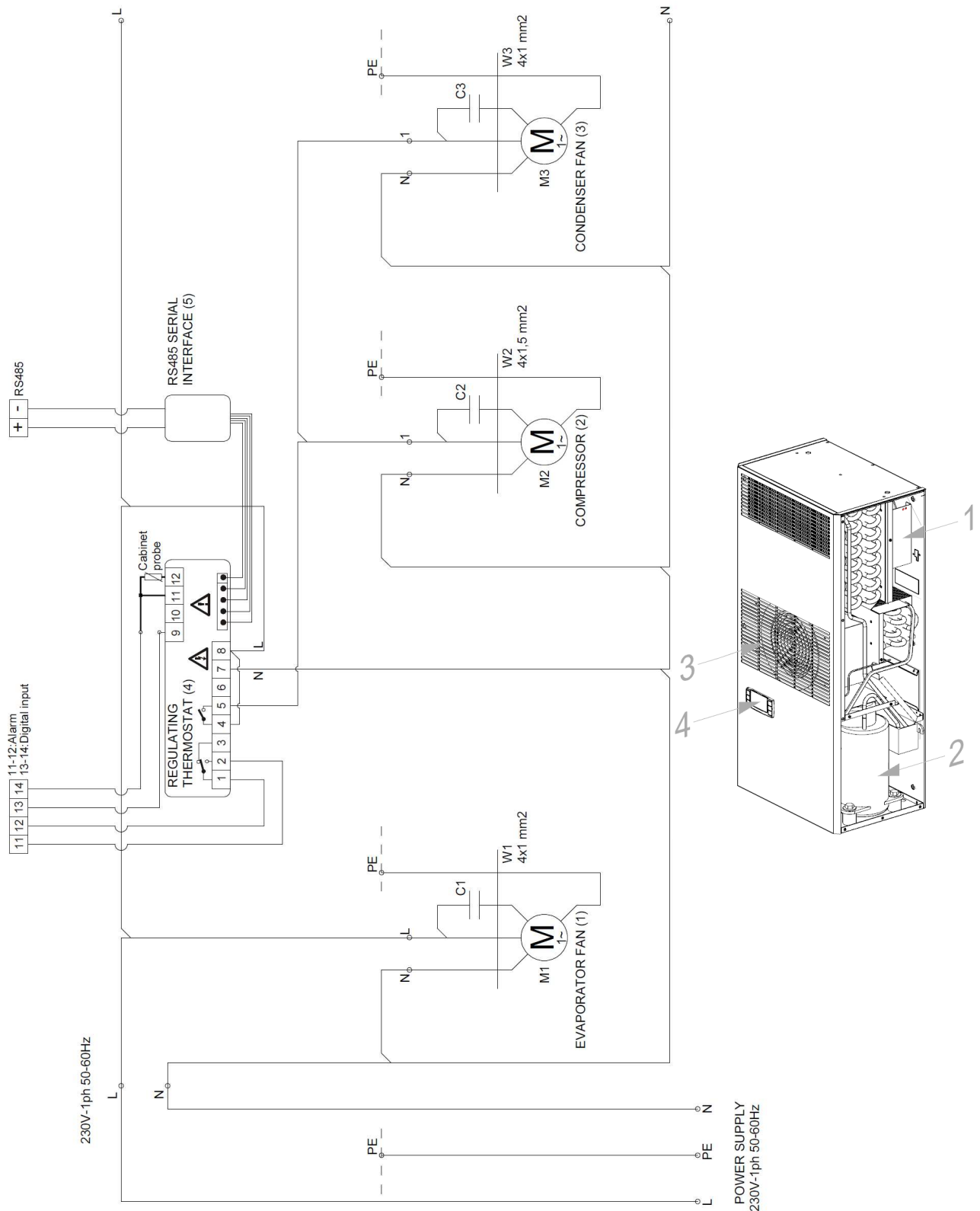
**Installation of a door limit switch can reduce condensate production when the door is open. (see 3.3.2 Digital input)**



**The enclosure IP54 degree is guaranteed only if the air conditioner is proper mounted.**

# 3 - ELECTRICAL CONNECTION

## 3.1 WIRING DIAGRAM



## 3.2 ELECTRICAL INSTALLATION



The electrical installation must be carried out by a qualified electrician who is responsible for compliance with the applicable standards and regulations.

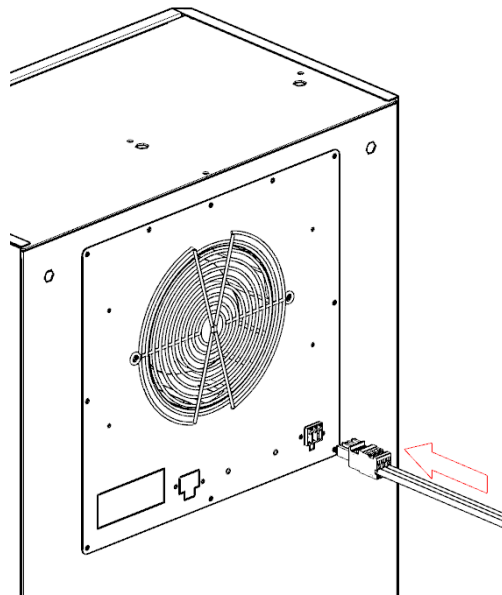
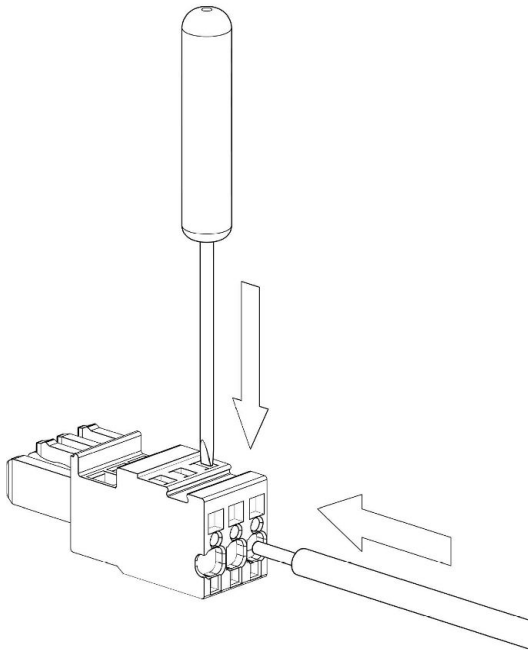
Wire male plug (included) with an adequate cable as is shown by following picture



**Cable section must be at least 1,5mm<sup>2</sup>**

The male plug is fitted with spring terminals:

- 1) Push the spring with a screwdriver and then insert the wire.
- 2) Check the proper wire insertion.
- 3) Connect the unit with the power supply



**Electrical data shown on rating label pasted on air conditioner side must be guaranteed**



**Install the delayed fuse recommended on rating plate pasted on air conditioner side to protect the line and enclosure components against short-circuit.**

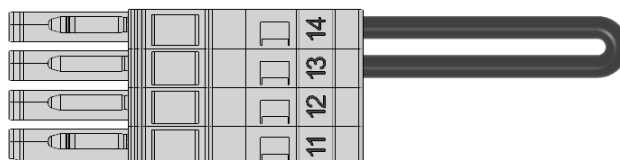


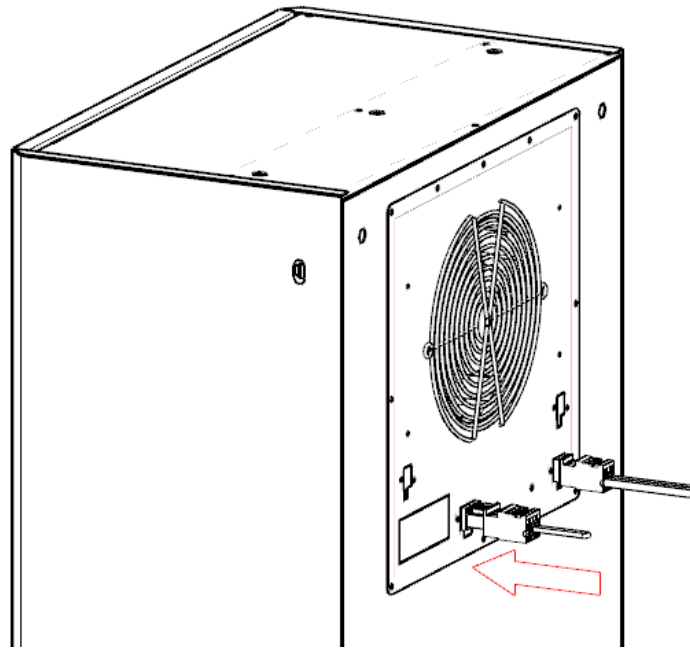
**Upstream of the electrical connection, an efficient disconnection system must be provided and it must be clearly identified**



**Air conditioner is already fitted with a temperature controller, no additional temperature control must be connected upstream of the unit.**

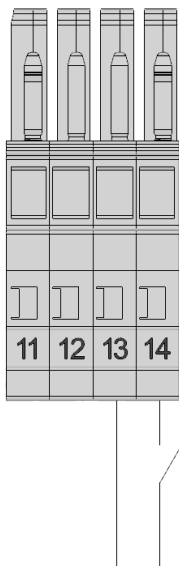
Insert signal connector (included in installation kit, refer to picture below) inside of 4 poles female connector placed on the back of the air conditioner.





### 3.3 ALARM OUTPUT / DIGITAL INPUT

Air conditioner is fitted with an electronic controller which permits alarm output and digital input signals.



#### 3.3.1 Alarm output

Alarm output is activated according to alarm parameters (for example in case of enclosure temperature higher than ALU value, digital input not activated... See PARAMETERS at 4.2 **DIGITAL THERMOSTAT INSTRUCTION** section)

Alarm output is a dry contact.

#### 3.3.2 Digital input

**WARNING:** proper functions of air conditioner are allowed only if digital input is activated. (closed contact between poles 13-14).

Digital input can be a door limit switch or a generic external dry contact.



**Plug for signals is factory wired with a bridge between 13-14 poles. Bridge can be removed to wire, for example, a door limit switch.**

## 4 - STARTING AND ADJUSTMENT

After finishing assembly of the conditioner, wait approx. 30 min. before starting it (the oil must collect in the compressor to ensure lubrication and cooling).

The air conditioner operates automatically, that is to say, after insertion, the evaporator fan operates continuously making the air inside the cabinet circulate. This way a uniform distribution of temperature inside the cabinet itself is attained. The built-in thermostat drives compressor and condenser fan according to set point value.

**Compressor turns and condenser fan ON when internal enclosure temperature rises up to set point value + hysteresis.**

**Compressor and condenser fan turn OFF when internal enclosure temperature decreases below set point value.**

### 4.1 DIGITAL THERMOSTAT INSTRUCTION



**WARNING: the air conditioner is designed to operate at 35 ° C cabinet temperature. If the set point is changed the performance of the unit will vary.**

- 1) Regulating thermostat is fixed air conditioner cover.
- 2) Thermostat could be set into a range from 20°C up to 50°C. Follow thermostat instructions for parameter changing.
- 3) **Factory parameters are especially set for the proper unit functionality, it is not suggested to change them.**

**Setting parameters are divided in two menu: main menu and hidden menu.**



**WARNING: Some parameters collected in HIDDEN MENU are not needed for air conditioner operation, do not modify them.**



|            |                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>SET</b> | To display target set point; in programming mode it selects a parameter or confirm an operation.                         |
|            | (DEF) To start a manual defrost                                                                                          |
|            | To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value. |
|            | To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.  |
|            | To switch the instrument off, if onF = oFF.                                                                              |
|            | To switch the light, if oA1 = Lig                                                                                        |

#### 4.1.1 KEY COMBINATIONS:

|                                                                                   |                                           |
|-----------------------------------------------------------------------------------|-------------------------------------------|
|  | To lock & unlock the keyboard.            |
|  | To enter in programming mode              |
|  | To return to the room temperature display |

#### 4.1.2 LED FUNCTION DESCRIPTION:

| LED                                                                                | MODE     | FUNCTION                       |
|------------------------------------------------------------------------------------|----------|--------------------------------|
|   | ON       | Compressor enabled             |
|   | Flashing | Anti-short cycle delay enabled |
|   | ON       | Defrost enabled                |
|   | ON       | An alarm is occurring          |
|   | ON       | Continuous cycle is running    |
|   | ON       | Energy saving enabled          |
|   | ON       | Light on                       |
|   | ON       | Auxiliary relay on             |
|   | ON       | Measurement unit               |
|  | Flashing | Programming phase              |

#### 4.1.3 MAX & MIN TEMPERATURE MEMORIZATION

##### How to see the min temperature

1. Press and release the ▼ key.
2. The “Lo” message will be displayed followed by the minimum temperature recorded.
3. By pressing the ▼ key again or by waiting 5s the normal display will be restored.

##### How to see the max temperature

1. Press and release the ▲ key.
2. The “Hi” message will be displayed followed by the maximum temperature recorded.
3. By pressing the ▼ key again or by waiting 5s the normal display will be restored.

##### How to reset the max and min temperature recorded

1. Hold press the **SET** key for more than 3s, while the max. or min temperature is displayed. (rSt message will be displayed)
2. To confirm the operation the “rSt” message starts blinking and the normal temperature will be displayed.

#### 4.1.4 HOW TO SEE THE SET POINT

1. Push and immediately release the **SET** key: the display will show the Set point value;
2. Push and immediately release the **SET** key or wait for 5 seconds to display the probe value again.

#### 4.1.5 HOW TO CHANGE THE SETPOINT

1. Push the **SET** key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the “°C” or “°F” LED starts blinking;
3. To change the Set value push the ▲ or ▼ arrows within 10s.
4. To memorise the new set point value push the **SET** key again or wait 10s.

#### 4.1.6 HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

1. Enter the Programming mode by pressing the **SET + ▼** keys for 3s (the “°C” or “°F” LED starts blinking).
2. Select the required parameter. Press the **SET** key to display its value
3. Use **▲** or **▼** to change its value.
4. Press **SET** to store the new value and move to the following parameter.

**To exit:** Press **SET + ▲** or wait 15s without pressing a key.

**NOTE:** the set value is stored even when the procedure is exited by waiting the time-out to expire.

#### 4.1.7 HOW TO LOCK THE KEYBOARD

1. Keep pressed for more than 3 s the **▲ + ▼** keys.
2. The **POF** message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point or the MAX o Min temperature stored
3. If a key is pressed more than 3s the **POF** message will be displayed.

#### 4.1.8 HOW TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the **▲ + ▼** keys, till the **Pon** message will be displayed.

#### 4.1.9 THE ON/OFF FUNCTION

With **onF = oFF**, pushing the **ON/OFF** key, the instrument is switched off. The **OFF** message is displayed. In this configuration, the regulation is disabled.

To switch the instrument on, push again the **ON/OFF** key.

**WARNING:** Loads connected to the normally closed contacts of the relays are always supplied and under voltage, even if the instrument is in standby mode.

#### 4.1.10 MAIN MENU PARAMETERS

**Hy Differential:** (0,1 ÷ 25,5°C / 1÷255 °F) Intervention differential for set point. Compressor Cut IN is Set Point + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.



**DO NOT CHANGE THE VALUE OF Hy PARAMETER**

**Ot Thermostat probe calibration:** (-12.0÷12.0°C; -120÷120°F) allows to adjust possible offset of the thermostat probe.

**AC Anti-short cycle delay:** (0÷50 min) minimum interval between the compressor stop and the following restart.

**CH Type of action:** CL = cooling; Ht = heating. **(do not change this parameter)**

**rES Resolution (for °C):** (in = 1°C; dE = 0.1 °C) allows decimal point display.  
**dLy Display delay:** (0 ÷20.0m; risul. 10s) when the temperature increases, the display is updated of 1 °C/1°F after this time.

**IdF Interval between defrost cycles:** (0÷120h) Determines the time interval between the beginning of two defrost cycles. **(the air conditioner is not equipped with defrost, do not change this parameter)**

- MdF (Maximum) length for defrost:** (0÷255min) (0=no defrost) When P2P = n, (not evaporator probe: timed defrost) it sets the defrost duration, when P2P = y (defrost end based on temperature) it sets the maximum length for defrost. **(the air conditioner is not equipped with defrost, do not change this parameter)**
- ALU MAXIMUM temperature alarm:** (SET÷110°C; SET÷230°F) when this temperature is reached the alarm is enabled, after the “ALd” delay time.
- ALL Minimum temperature alarm:** (-50.0 ÷ SET°C; -58÷230°F when this temperature is reached the alarm is enabled, after the “ALd” delay time.
- I1P Digital input polarity:** oP: the digital input is activated by opening the contact; CL: the digital input is activated by closing the contact.
- I1F Digital input configuration:** EAL = external alarm: “EA” message is displayed; bAL = serious alarm “CA” message is displayed. PAL = pressure switch alarm, “CA” message is displayed; dor = door switch function; dEF = activation of a defrost cycle; AUS =to switch on the second relay if oA1 = AUS; Htr = kind of action inversion (cooling –heating); Fan = not set it; ES = Energy saving.
- Did** (0 ÷ 255 min) with i1F= EAL or i1F = bAL digital input alarm delay: delay between the detection of the external alarm condition and its signalling.  
With i1F= dor: door open signalling delay  
with i1F = PAL: time for pressure switch function: time interval to calculate the number of the pressure switch activation.
- PbC Type of probe:** it allows to set the kind of probe used by the instrument: PbC = PBC probe, ntc = NTC probe. **(the air conditioner is fitted with NTC probe, do not change this parameter)**
- dP3 Third probe display-** no available
- dP4 Fourth probe display-** no available

#### 4.1.11 DIGITAL INPUT (ENABLED WITH P3P = N)

The free voltage digital input is programmable in different configurations by the “i1F” parameter.

##### Door switch input (i1f = dor)

It signals the door status and the corresponding relay output status through the **odc** parameter:

**no**= normal (any change);, **Fan**= fan OFF; **CPr**= Compressor OFF, **F\_C**= Compressor and fan OFF.

Since the door is opened, after the delay time set through parameter **did**, the door alarm is enabled, the display shows the message **dA** and the regulation restarts is **rtr = yES**. The alarm stops as soon as the external digital input is disabled again. With the door open, the high and low temperature alarms are disabled.

##### Digital inputs polarity

The digital input polarity depends on the **i1P** parameter.

**I1P=CL:** the input is activated by closing the contact.

**I1P=OP:** the input is activated by opening the contact

#### 4.1.12 GENERIC ALARM (i1F = EAL)

As soon as the alarm input is activated (for example enclosure temperature higher than ALU value) the unit will wait for **did** time delay before signalling the **EAL** alarm message.

The outputs status doesn't change. The alarm stops just after the alarm input is de-activated.

#### 4.3.13 SERIOUS ALARM MODE (i1F = bAL)

When the alarm input is activated (for example enclosure temperature higher than ALU value), the unit will wait for **did** delay before signalling the **CA** alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the alarm input is de-activated.

#### 4.2.14 ALARM SIGNALS

| Mess age | Cause                            | Outputs                                                                                                         |
|----------|----------------------------------|-----------------------------------------------------------------------------------------------------------------|
| "P1"     | Room probe failure               | Compressor output acc. to par. "Con" and "COF"                                                                  |
| "P3"     | Third probe failure              | Outputs unchanged                                                                                               |
| "P4"     | Fourth probe failure             | Outputs unchanged                                                                                               |
| "HA"     | Maximum temperature alarm        | Outputs unchanged.                                                                                              |
| "LA"     | Minimum temperature alarm        | Outputs unchanged.                                                                                              |
| "HA2"    | Condenser high temperature       | It depends on the "Ac2" parameter                                                                               |
| "LA2"    | Condenser low temperature        | It depends on the "bLL" parameter                                                                               |
| "dA"     | Door open                        | Compressor according to rrd                                                                                     |
| "EA"     | External alarm                   | Output unchanged.                                                                                               |
| "CA"     | Serious external alarm (i1F=bAL) | All outputs OFF.                                                                                                |
| "CA"     | Pressure switch alarm (i1F=PAL)  | All outputs OFF                                                                                                 |
| "rtc"    | Real time clock alarm            | Alarm output ON; Other outputs unchanged;<br>Defrosts according to par. "IdF" Set real time clock has to be set |
| rtF      | Real time clock board failure    | Alarm output ON; Other outputs unchanged;<br>Defrosts according to par. "IdF" Contact the service               |

#### 4.2.15 DEFAULT SETTING VALUES



THE LIST OF PARAMETERS IS DISPLAYED ONLY TO ALLOW THE PARAMETERS SET AT THE FACTORY TO BE RESTORED IN CASE OF ACCIDENTAL CHANGES. IT IS STRONGLY RECOMMENDED NOT TO CHANGE THE FACTORY SETS, THE FUNCTIONING OF THE UNIT MAY BE AFFECTED

| Parameter  | Menu        | Description                  | Range                  | Factory set |
|------------|-------------|------------------------------|------------------------|-------------|
| <b>Set</b> | MAIN MENU   | Set point                    | LS÷US                  | 31          |
| <b>Hy</b>  | MAIN MENU   | Differential                 | 0,1÷25.5°C/ 1÷ 255°F   | 4           |
| <b>LS</b>  | HIDDEN MENU | Minimum set point            | -50°C÷SET/-58°F÷SET    | 20          |
| <b>US</b>  | HIDDEN MENU | Maximum set point            | SET÷110°C/ SET ÷ 230°F | 50          |
| <b>ot</b>  | MAIN MENU   | Thermostat probe calibration | -12÷12°C /-120÷120°F   | 0           |
| <b>P3P</b> | HIDDEN MENU | Third probe presence         | n=not present; Y=pres. | n           |
| <b>O3</b>  | HIDDEN MENU | Third probe calibration      | -12÷12°C /-120÷120°F   | 0           |
| <b>P4P</b> | HIDDEN MENU | Fourth probe presence        | n=not present; Y=pres. | n           |

|                       |             |                                                 |                                                                                                                                                |     |
|-----------------------|-------------|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>O4</b>             | HIDDEN MENU | Fourth probe calibration                        | -12÷12°C / -120÷120°F                                                                                                                          | 0   |
| <b>OdS</b>            | HIDDEN MENU | Outputs delay at start up                       | 0÷255 min                                                                                                                                      | 0   |
| <b>AC</b>             | MAIN MENU   | Anti-short cycle delay                          | 0 , 50 min                                                                                                                                     | 1   |
| <b>CCt</b>            | HIDDEN MENU | Continuos cycle duration                        | 0.0÷24.0h                                                                                                                                      | 0   |
| <b>CCS</b>            | HIDDEN MENU | Set point for continuous cycle                  | (-55.0÷150,0°C) (-67÷302°F)                                                                                                                    | 3   |
| <b>CO<sub>n</sub></b> | HIDDEN MENU | Compressor ON time with faulty probe            | 0÷255 min                                                                                                                                      | 15  |
| <b>COF</b>            | HIDDEN MENU | Compressor OFF time with faulty probe           | 0÷255 min                                                                                                                                      | 30  |
| <b>CH</b>             | MAIN MENU   | Kind of action                                  | CL=cooling; Ht= heating                                                                                                                        | CL  |
| <b>CF</b>             | HIDDEN MENU | Temperature measurement unit                    | °C ÷ °F                                                                                                                                        | °C  |
| <b>rES</b>            | MAIN MENU   | Resolution                                      | in=integer; dE= dec.point                                                                                                                      | dE  |
| <b>dLy</b>            | HIDDEN MENU | Display temperature delay                       | 0 ÷ 20.0 min (10 sec.)                                                                                                                         | 0   |
| <b>IdF</b>            | MAIN MENU   | Interval between defrost cycles                 | 1 ÷ 120 h                                                                                                                                      | 8   |
| <b>MdF</b>            | MAIN MENU   | (Maximum) length for defrost                    | 0 ÷ 255 min                                                                                                                                    | 0   |
| <b>dFd</b>            | HIDDEN MENU | Displaying during defrost                       | rt, it, SEt, DEF                                                                                                                               | it  |
| <b>dAd</b>            | HIDDEN MENU | MAX display delay after defrost                 | 0 ÷ 255 min                                                                                                                                    | 30  |
| <b>AIC</b>            | HIDDEN MENU | Temperat. alarms configuration                  | rE= related to set; Ab = absolute                                                                                                              | Ab  |
| <b>ALU</b>            | MAIN MENU   | MAXIMUM temperature alarm                       | Set÷110.0°C; Set÷230°F                                                                                                                         | 50  |
| <b>ALL</b>            | MAIN MENU   | Minimum temperature alarm                       | -50.0°C÷Set/ -58°F÷Set                                                                                                                         | -50 |
| <b>AFH</b>            | HIDDEN MENU | Differential for temperature alarm recovery     | (0,1°C÷25,5°C) (1°F÷45°F)                                                                                                                      | 5   |
| <b>ALd</b>            | HIDDEN MENU | Temperature alarm delay                         | 0 ÷ 255 min                                                                                                                                    | 0   |
| <b>dAo</b>            | HIDDEN MENU | Delay of temperature alarm at start up          | 0 ÷ 23h e 50'                                                                                                                                  | 0   |
| <b>AP2</b>            | HIDDEN MENU | Probe for temperat. alarm of condenser          | nP; P1; P2; P3; P4                                                                                                                             | P4  |
| <b>AL2</b>            | HIDDEN MENU | Condenser for low temperat. Alarm               | (-55 ÷ 150°C) (-67÷ 302°F)                                                                                                                     | -40 |
| <b>AU2</b>            | HIDDEN MENU | Condenser for high temperat. Alarm              | (-55 ÷ 150°C) (-67÷ 302°F)                                                                                                                     | 110 |
| <b>AH2</b>            | HIDDEN MENU | Differ. for condenser temp. alar. recovery      | [0,1°C ÷ 25,5°C] [1°F ÷ 45°F]                                                                                                                  | 5   |
| <b>Ad2</b>            | HIDDEN MENU | Condenser temperature alarm delay               | 0 ÷ 254 (min.) , 255=nU                                                                                                                        | 15  |
| <b>dA2</b>            | HIDDEN MENU | Delay of cond. temper. alarm at start up        | 0.0 ÷ 23h 50'                                                                                                                                  | 1,3 |
| <b>bLL</b>            | HIDDEN MENU | Compr. off for condenser low temperature alarm  | n(0) - Y(1)                                                                                                                                    | n   |
| <b>AC2</b>            | HIDDEN MENU | Compr. off for condenser high temperature alarm | n(0) - Y(1)                                                                                                                                    | n   |
| <b>tbA</b>            | HIDDEN MENU | Alarm relay disabling                           | n=no; y=yes                                                                                                                                    | n   |
| <b>oA1</b>            | HIDDEN MENU | 2nd relay configuration                         | ALr = alarm; dEF = do not select it; Lig =Light; AUS =AUX; onF=always on; Fan= do not select it; db = do not select it; dF2 = do not select it | ALr |
| <b>AOP</b>            | HIDDEN MENU | Alarm relay polarity (oA1=ALr)                  | oP; cL                                                                                                                                         | cL  |
| <b>i1P</b>            | MAIN MENU   | Digital input polarity                          | oP=opening;CL=closing                                                                                                                          | oP  |
| <b>i1F</b>            | MAIN MENU   | Digital input configuration                     | EAL, bAL, PAL, dor; dEF;                                                                                                                       | dor |

|            |             |                                         |                           |     |
|------------|-------------|-----------------------------------------|---------------------------|-----|
|            |             |                                         | Htr,AUS                   |     |
| <b>did</b> | MAIN MENU   | Digital input alarm delay               | 0 ÷ 255 min               | 0   |
| <b>nPS</b> | HIDDEN MENU | Number of activation of pressure switch | 0 ÷ 15                    | 15  |
| <b>odC</b> | HIDDEN MENU | Compress status when open door          | no; Fan; CPr; F_C         | CPr |
| <b>rrd</b> | HIDDEN MENU | Regulation restart with door open alarm | n – Y                     | n   |
| <b>HES</b> | HIDDEN MENU | Differential for Energy Saving          | (-30°C÷30°C) (-54°F÷54°F) | 0   |
| <b>Adr</b> | HIDDEN MENU | Serial address                          | 0÷247                     | 1   |
| <b>PbC</b> | MAIN MENU   | Kind of probe                           | Ptc; ntc                  | ntc |
| <b>OnF</b> | HIDDEN MENU | on/off key enabling                     | nu, oFF; ES               | noP |
| <b>dP3</b> | MAIN MENU   | Third probe display                     |                           | noP |
| <b>dP4</b> | MAIN MENU   | Fourth probe display                    |                           | noP |
| <b>rSE</b> | HIDDEN MENU | Real set point value                    | actual set                | 31  |
| <b>rEL</b> | HIDDEN MENU | Software release                        |                           | 1   |
| <b>Ptb</b> | HIDDEN MENU | Map code                                |                           | 4   |

The hidden menu Includes all the parameters of the instrument.

**WARNING: Some parameters collected in HIDDEN MENU are not needed for air conditioner operation, do not modify them.**



#### 4.2.16 HOW TO ENTER IN THE HIDDEN MENU

- 1) Enter the Programming mode by pressing the Set + ▼ keys for 3s (the “°C” or “°F” LED starts blinking).
- 2) Released the keys, then push again the Set+▼ keys for more than 7s. The Pr2 label will be displayed immediately followed from the HY parameter.
- 3) Select the required parameter.
- 4) Press the “SET” key to display its value
- 5) Use ▲ or ▼ to change its value.
- 6) Press “SET” to store the new value and move to the following parameter.  
To exit: Press SET + ▲ or wait 15s without pressing a key.

NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

## 5 - STANDARD MODBUS

### 5.1 COMMUNICATION SETTING

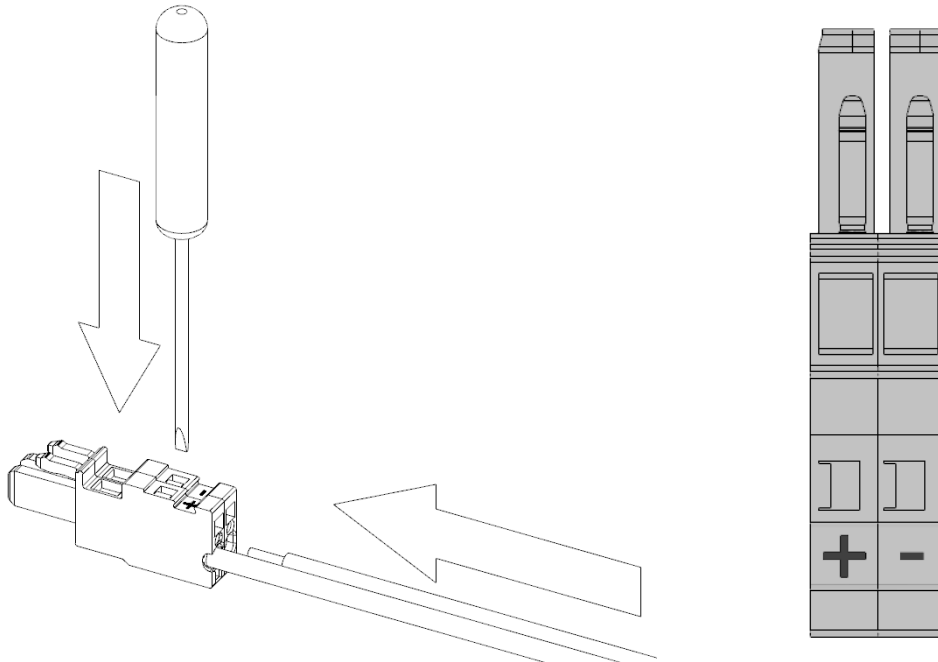
|                             |        |
|-----------------------------|--------|
| BAUDRATE                    | 9600   |
| DATA LENGHT                 | 8 bits |
| PARITY                      | NONE   |
| STOP                        | 1 bit  |
| MINIMUM TIMEOUT             | 60ms   |
| MODBUS DEFAULT UNIT ADDRESS | 1      |

### 5.2 MODBUS TABLE

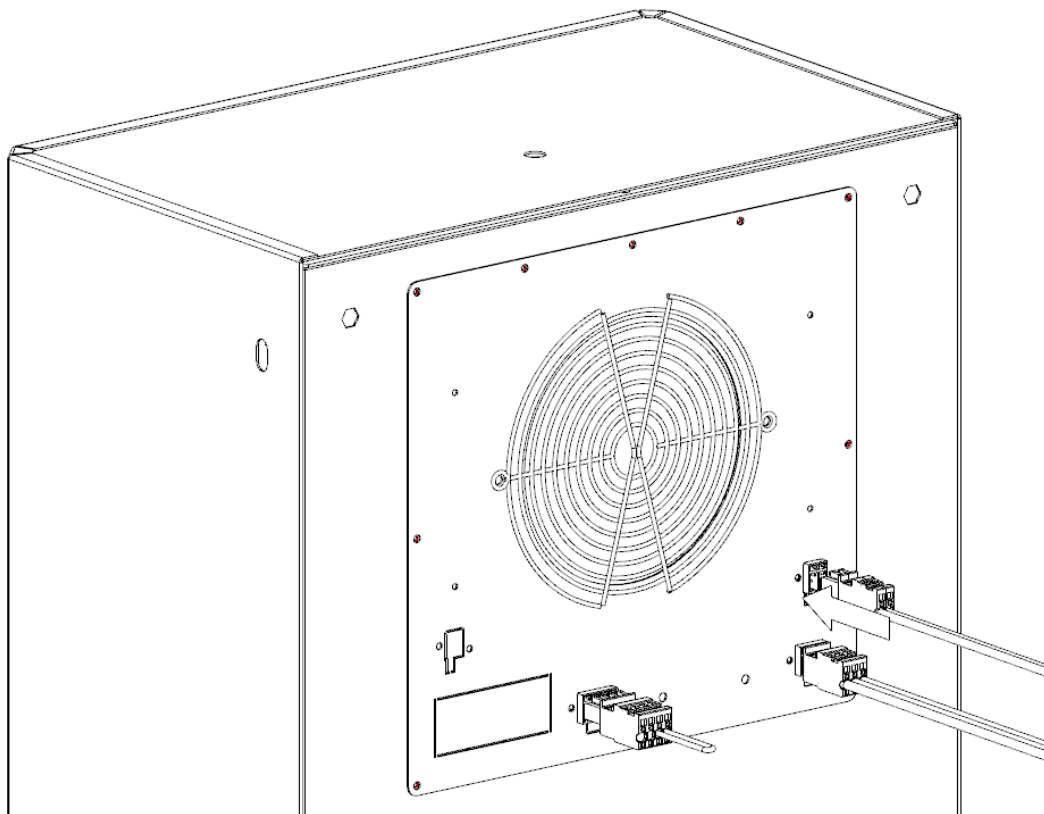
| DESCRIPTION                                 | PARAMETER | ADDRESS | R/W |
|---------------------------------------------|-----------|---------|-----|
| TEMPERATURE DETECTED BY THE PROBE           |           | 0108    | R   |
| SET POINT                                   | SEt       | 035F    | R/W |
| DIFFERENTIAL                                | Hy        | 0300    | R/W |
| MINIMUM SET POINT                           | LS        | 0301    | R/W |
| MAXIMUM SET POINT                           | US        | 0302    | R/W |
| THERMOSTAT PROBE CALIBRATION                | ot        | 0303    | R/W |
| COOLING                                     |           | 021E    | R   |
| OPEN DOOR                                   |           | 0212    | R   |
| ALARM                                       |           | 0219    | R   |
| ERROR PROBE                                 |           | 0208    | R   |
| OUTPUTS DELAY AT START UP                   | odS       | 030A    | R/W |
| ANTI-SHORT CYCLE DELAY                      | AC        | 030B    | R/W |
| COMPRESSOR ON TIME WITH FAULTY PROBE        | Con       | 0310    | R/W |
| COMPRESSOR OFF TIME WITH FAULTY PROBE       | CoF       | 0311    | R/W |
| TEMPERATURE ALARMS CONFIGURATION            | ALC       | 0339    | R/W |
| MAXIMUM TEMPERATURE ALARM                   | ALU       | 033A    | R/W |
| MINIMUM TEMPERATURE ALARM                   | ALL       | 033B    | R/W |
| DIFFERENTIAL FOR TEMPERATURE ALARM RECOVERY | AFH       | 033C    | R/W |
| TEMPERATURE ALARM DELAY                     | ALd       | 033D    | R/W |
| DELAY OF TEMPERATURE ALARM AT START UP      | dAo       | 033E    | R/W |
| SERIAL ADDRESS                              | Adr       | 0353    | R/W |

### 5.3 RS485 CONNECTING

- 1) Unsheathe 30 mm of the end of the RS485 cable.
- 2) Shorten unused insulated conductors flush with the cable sheath.
- 3) Strip off the conductor insulation by 8 mm.
- 4) Wire the RS485 conductor to the supplied two-pole plug. Observe assignments printed on the plug



- 5) Plug the two-pole plug into the RS485 port on the air conditioner.



## 6 - SPARE PARTS LIST

| REFERRED TO<br>WIRING DIAGRAM | DESCRIPTION                  | CODE          |
|-------------------------------|------------------------------|---------------|
| 1                             | Evaporator fan               | VCENT190D230V |
| 2                             | Compressor                   | BSD122DT      |
| 3                             | Condenser fan                | VCENT220D230U |
| C1                            | Evaporator fan capacitor     | CON2UFS2M8F   |
| C2                            | Compressor capacitor         | CON20UFS2M8F  |
| C3                            | Condenser fan capacitor      | CON2UFS2M8F   |
| 4                             | Regulating thermostat        | TERMDIG1S1D2R |
| 5                             | RS485 Serial interface       | XJ485CX       |
|                               | Supply connector (male plug) | SPINALIM3.1   |
|                               | Signal connector (male plug) | SPIN-SEGN4    |
|                               | RS485 connector (male plug)  | SPIN-RS485    |

# WARRANTY

WE  
IP ENCLOSURES



**guarantees that the product is free from any quality defects.**

The product is guaranteed for a period of 12 months from the date of delivery, provided it operates under the following conditions:

1. value of power supply indicated in the data plate is completely respected;
2. requirements specified on user's manual are completely respected;
3. cabinet temperature is not higher or lower than its rated temperature;
4. ambient temperature is not higher or lower than its rated temperature;
5. the product is mounted on cabinets with a minimum IP54 protection level;
6. the product is mounted on cabinets that not requiring higher cooling power than expected;
7. the product is clearly identifiable by serial number.

The warranty does not apply if :

1. the cooling circuit has been modified about type and quantity of refrigerant or composition;
2. the unit operates in acid or corrosive ambient;
3. the unit has been modified without IP ENCLOSURES consent.

This warranty shall become null as soon as the product is altered or modified in its structure or in circuits.

The terms of this warranty (commencement and termination dates) are not modified by any repair or replacement of products.

For every part that results defective during the period of this warranty, IP ENCLOSURES shall repair or replace it. Any others charges arising from removal, handling and installation of the products shall not be refunded by IP ENCLOSURES.

Like is specified on user's manual, installation, handling, the correct earthing in accordance with all current standards are under the responsibility of costumer.

In the event of any damage caused by a defective product shall apply the EEC85.374 standard.

The malfunction must be communicated in writing to IP ENCLOSURES.

Warranty is void if the costumer is not in good standing with the payments

# UE DECLARATION OF CONFORMITY



WE  
IP ENCLOSURES



DECLARE THAT THE AIR CONDITIONER FOR ELECTRICAL CABINETS

## IP-ACIW series

DO COMPLY WITH THE FOLLOWING DIRECTIVES

**2006/42/CE** MACHINERY DIRECTIVE (17 May 2006)

**2014/35/UE** LOW VOLTAGE DIRECTIVE (26 February 2014)

**2014/30/UE** EMC DIRECTIVE (26 February 2014)

**2011/65/UE** ROHS DIRECTIVE (8 June 2011)

STANDARDS APPLIED TO MEET THE PRINCIPAL ELEMENTS OF THE DIRECTIVE

**EN 60335-2-40:2003; A1; A2** (IEC 60335-2-40: 2002; A1; A2)

**EN 60335-1: 2010; A11; A13; A14; A1; A2** (IEC 60335-1; A1; A2)

OTHER STANDARDS APPLIED

**EN 55014-1: 2017**

**EN 55014-2: 2015**

**EN IEC 61000-3-2: 2019**

**EN 61000-3-3: 2013**

|                                                                             |        | Date       | Name |
|-----------------------------------------------------------------------------|--------|------------|------|
| <b>Description</b><br>Declaration of Conformity for air conditioner IP-ACIW | ISSUE  | 01/06/2020 |      |
|                                                                             | REV. 1 |            |      |
|                                                                             | REV. 2 |            |      |
|                                                                             | REV. 3 |            |      |

# SAA CERTIFICATE



## Certificate of Suitability

**\*Addendum\***

**Certificate No.:** SAA203165

**Date of Issue:** 28 March 2022

**Regulatory Definition:** Non-Declared  
**Product Description:** Air-conditioning unit for cabinet

| Additional Models | Trade Name    | Rating/Marking                                                                                                       |
|-------------------|---------------|----------------------------------------------------------------------------------------------------------------------|
| IP-ACIWM145.002   | IP Enclosures | 230Vac 50/60Hz Max 800W<br>R134a/700g, Max Pressure: 2400kPA<br>Class I, IP34 (External side), IP54 (Internal side)  |
| IP-ACIWM145.003   | IP Enclosures | 230Vac 50/60Hz Max 800W<br>R134a/700g, Max Pressure: 2400kPA<br>Class I, IP34 (External side), IP54 (Internal side)  |
| IP-ACOWM145.002   | IP Enclosures | 230Vac 50/60Hz Max 800W<br>R134a/700g, Max Pressure: 2400kPA<br>Class I, IP34 (External side), IP54 (Internal side)  |
| IP-ACOWM145.003   | IP Enclosures | 230Vac 50/60Hz Max 800W<br>R134a/700g, Max Pressure: 2400kPA<br>Class I, IP34 (External side), IP54 (Internal side)  |
| IP-ACIWM200.002   | IP Enclosures | 230Vac 50/60Hz Max 1240W<br>R134a/450g, Max Pressure: 2400kPA<br>Class I, IP34 (External side), IP54 (Internal side) |
| IP-ACIWM200.003   | IP Enclosures | 230Vac 50/60Hz Max 1240W<br>R134a/450g, Max Pressure: 2400kPA<br>Class I, IP34 (External side), IP54 (Internal side) |
| IP-ACOWM200.002   | IP Enclosures | 230Vac 50/60Hz Max 1240W<br>R134a/450g, Max Pressure: 2400kPA<br>Class I, IP34 (External side), IP54 (Internal side) |
| IP-ACOWM200.003   | IP Enclosures | 230Vac 50/60Hz Max 1240W<br>R134a/450g, Max Pressure: 2400kPA<br>Class I, IP34 (External side), IP54 (Internal side) |

For and on Behalf of  
SAA Approvals Pty Ltd

SAA certifies the product nominated in this certificate  
complies with standard/s listed above.

For SAA Contact Details and to verify this Certificate go to:  
[www.saaapprovals.com.au](http://www.saaapprovals.com.au)



Issued: 28-03-22 203165/6

## NOTES