

## DESCRIPTION

**MACON\_C2** is a control device for chiller units or heat pumps with 2 circuits. The second circuit (**MACON\_C2B**) has a plastic box for rail mounting and it is connected with the main device via three cables.

**MACON\_C2 (1st circuit) has the following specifications:**

**3 analog inputs** for measuring temperature with **range -50 - 150 °C**

SEN 1. Water input circuit 1. Operation thermostat HEATING - COOLING

SEN 2. Water output. Safety thermostat No1. Resistance No1

SEN 3. Defrost control C1 (Compressor 1st)

**6 digital inputs:**

1st input → Terminal block 11. ON-OFF device from a remote switch

2nd input → Terminal block 12 HEAT-COOL from a remote switch

3rd input → Terminal block 13 HP1. High pressure 1st circuit

4th input → Terminal block 14 LP1. Low pressure 2nd circuit

5th input → Terminal block 15 C1. Thermal of 1st circuit compressor

6th input → Terminal block 16 FLOW SWITCH

**6 relay outputs** 250 VAC 5 Amp: pump relay, compressor **C1**, valve **V1**, resistance **R1**, fan **FAN 1**, alarm.

**1 Analog output 0-10 Volt** → Terminal block 22, 23.

**MACON\_C2B (2nd circuit) has the following specifications:**

**2 inputs** for measuring temperature with **range -50 - 150 °C**

SEN 4. Water output 2nd circuit Safety thermostat No2. Resistance No2

SEN 5. Defrost C2 control (2nd compressor)

**3 digital outputs:**

7th Input → Terminal block 17 HP2. High pressure 2nd circuit

8th Input → Terminal block 16 LP2. Low pressure 2nd circuit

9th Input → Terminal block 15 C2. Thermal of 2nd circuit compressor

**4 relay output** 250 VAC 5 Amp: compressor **C2**, valve **V2**, resistance **R2** and fan **FAN 2**

## CONNECT TO NETWORK

Main device MACON\_C2 can connect to a PC via network RS485 or to a Remote Control via four cables.

- Connect to a PC: CAMIN software can monitor all temperatures, compressors relays, alarm, parameters, while sending SMS and emails in case of an alarm. More than 250 devices can connect to this network.
- Connect to a Remote Control device: it displays on screen whatever is displayed on the main device and it has full access from the keyboard to the main device. It can be installed up to 500 meters away from the main device.

## PARAMETERS

Parameters are separated in two groups: 67 main parameters and 8 secondary parameters (A1-A8). Two of the main and eight of the secondary parameters are easy accessible. The rest require an access code. Check relevant table page 2.

## TECHNICAL SPECIFICATIONS

Power supply: 24 VAC/DC 50/60 Hz 5W

Connection with terminal blocks 28-16 AWG 1.5 mm<sup>2</sup>

6 relays 250 VAC 5A Resistive Load στο MACON\_C2

4 relays 250 VAC 5A Resistive Load στο MACON\_C2B

Operation temperature: -10 – +50 °C

Storage temperature: -20 - +80 °C

MACON\_C2 is mounted on a panel / Dimensions 28x70x75mm

MACON\_C2B is mounted on a  $\Omega$  rail / Dimensions 70x90x65mm

It is suggested using a safety switch 1A (not included)

Maximum consumption for each device 5 Watt

## ON/OFF DEVICE

Press ▲ for 4 seconds to toggle the device between **ON/ OFF** state if the parameter is set to **Grc=0**.

If the input 11 ON/OFF is activated or the parameters are being programmed, this operation is cancelled.

## HEATING – COOLING OPERATION

Press ▼ for 4 seconds to toggle the operation between heating and cooling mode if parameter is set to **GrH=0**.

If the input 10 Heating-Cooling is activated or the parameters are being programmed, this operation is cancelled.

## RESET ALARMS

Press ▼ to reset the alarms: this feature is active even during programming the parameters.

## PROGRAMMING PARAMETERS

Press ← to enter or exit the parameters menu.

The first parameter "**SCo**" is displayed and with the ▲, ▼ we scroll into the parameters menu.

Press **SET** to **display** the parameters value and adjust it with the ▲, ▼.

Press ← to **confirm** the new value and display the parameters name.

Press **SET** to **cancel** the new value and revert to the parameters name.

**NOTE:** for safety reasons all parameters as presented to the parameters table are not displayed. We must enter parameter Cod=22 to access full parameters menu.

## DISPLAY AND RESET OPERATION HOUR OF COMPRESSORS

Press ← to display the first parameter **SCo**. Press ▲ to display parameter **H 2** which refers to operation hours of compressor 2. By pressing again ▲ the next parameter is displayed **H 1** which refers to operation hours of compressor 1. By pressing once more parameters **H P** is displayed which refers to pump hours operation.

Press **SET** to display the operation hours and press simultaneously ▲, ▼ to reset the timer. By pressing ← we **confirm** the reset.

## DISPLAY OF THE TEMPERATURE SENSORS

After we reach parameter **HP**, by pressing ▲, the following parameters are displayed: t5, t4, ... up to t1. Press **SET** to display the temperature of the corresponding sensor (5, 4, 3, 2, 1).

## LED OPERATION

|                                                                                 |                                                                                                                                                 |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ON</b>                                                                       | The system is activated.                                                                                                                        |
| <b>C1</b>                                                                       | ON when the compressor <b>C1</b> operates. When it starts blinking then the compressor is set to ON but a timer is active and waits to elapsed. |
| <b>C2</b>                                                                       | ON when the compressor <b>C2</b> operates. When it starts blinking then the compressor is set to ON but a timer is active and waits to elapsed. |
| <b>C</b>                                                                        | Cool – system operates in cooling mode.                                                                                                         |
| <b>H</b>                                                                        | Heat – system operated in heating mode.                                                                                                         |
|  | Blinks if an alarm is active.                                                                                                                   |
| <b>x100</b>                                                                     | ON when the operation hours are x100.                                                                                                           |

## RESET TO FACTORY DEFAULT SETTINGS

Enter Cod = 31 and press twice  to restore all parameters value to the default ones.

TABLE 1

| No                                                                                                                                                                                                                                                                                                                                                                                               | PARAMETERS – DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                | min | max  | DEFAULT | U.O.M. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|---------|--------|
| A1                                                                                                                                                                                                                                                                                                                                                                                               | t1                       | Temperature sensor N 1 (Input)                                                                                                                                                                                                                                                                                                                                 | -   | -    | -       | °C     |
| A2                                                                                                                                                                                                                                                                                                                                                                                               | t2                       | Temperature sensor N 2 (Water output 1)                                                                                                                                                                                                                                                                                                                        | -   | -    | -       | °C     |
| A3                                                                                                                                                                                                                                                                                                                                                                                               | t3                       | Temperature sensor N 3 (deFrost C1)                                                                                                                                                                                                                                                                                                                            | -   | -    | -       | °C     |
| A4                                                                                                                                                                                                                                                                                                                                                                                               | t4                       | Temperature sensor N 4 (Water output 2)                                                                                                                                                                                                                                                                                                                        | -   | -    | -       | °C     |
| A5                                                                                                                                                                                                                                                                                                                                                                                               | t5                       | Temperature sensor N 5 (deFrost 2)                                                                                                                                                                                                                                                                                                                             | -   | -    | -       | °C     |
| A6                                                                                                                                                                                                                                                                                                                                                                                               | HP                       | Pump operation hours                                                                                                                                                                                                                                                                                                                                           | -   | -    | -       | hours  |
| A7                                                                                                                                                                                                                                                                                                                                                                                               | H1                       | Compressor 1 operation hours                                                                                                                                                                                                                                                                                                                                   | -   | -    | -       | hours  |
| A8                                                                                                                                                                                                                                                                                                                                                                                               | H2                       | Compressor 2 operation hours                                                                                                                                                                                                                                                                                                                                   | -   | -    | -       | hours  |
| Operation hours: When the symbol <b>x100</b> is ON, the operation hours are x100.<br>To reset the timer, press simultaneously  +  and then  . |                          |                                                                                                                                                                                                                                                                                                                                                                |     |      |         |        |
| 1                                                                                                                                                                                                                                                                                                                                                                                                | SCo                      | SET POINT of compressor in Cooling mode                                                                                                                                                                                                                                                                                                                        | LCL | LCH  | 10      | °C     |
| 2                                                                                                                                                                                                                                                                                                                                                                                                | SHt                      | SET POINT of compressor in Heating mode                                                                                                                                                                                                                                                                                                                        | LHL | LHH  | 20      | °C     |
| 3                                                                                                                                                                                                                                                                                                                                                                                                | Cod                      | Access code: with <b>Cod=22</b> we access all the following parameters                                                                                                                                                                                                                                                                                         | 0   | 255  | 0       | -      |
| 4                                                                                                                                                                                                                                                                                                                                                                                                | diS                      | Adjust which sensor is displayed on screen, where 1 = sensor 1, etc.                                                                                                                                                                                                                                                                                           | 1   | 5    | 1       | -      |
| 5                                                                                                                                                                                                                                                                                                                                                                                                | LCL                      | minimum temperature limit of SCo in Cooling mode                                                                                                                                                                                                                                                                                                               | -50 | 150  | -10     | °C     |
| 6                                                                                                                                                                                                                                                                                                                                                                                                | LCH                      | maximum temperature limit of SCo in Cooling mode                                                                                                                                                                                                                                                                                                               | -50 | 150  | 40      | °C     |
| 7                                                                                                                                                                                                                                                                                                                                                                                                | LHL                      | minimum temperature limit of SHt in Heating mode                                                                                                                                                                                                                                                                                                               | -50 | 150  | 10      | °C     |
| 8                                                                                                                                                                                                                                                                                                                                                                                                | LHH                      | maximum temperature limit of SHt in Heating mode                                                                                                                                                                                                                                                                                                               | -50 | 150  | 60      | °C     |
| 9                                                                                                                                                                                                                                                                                                                                                                                                | FoP                      | <b>Fan operation</b><br>0 = Fans are always OFF<br>1 = Fans are ON when the device is ON.<br>2 = Fan is ON when the corresponding compressor is ON<br>3 = Fans are ON based on their heating <b>FSH</b> and cooling <b>FSC</b> set points and when the defrost sensor reaches a temperature for the fan to turn ON (in normal operation – not in defrost mode) | 0   | 3    | 1       | -      |
| 10                                                                                                                                                                                                                                                                                                                                                                                               | FSC                      | SET POINT of fan in Cooling mode. Operates when parameter <b>FoP=3</b> .                                                                                                                                                                                                                                                                                       | -50 | 150  | 15.7    | °C     |
| 11                                                                                                                                                                                                                                                                                                                                                                                               | FSH                      | SET POINT of fan in Heating mode. Operates when parameter <b>FoP=3</b> .                                                                                                                                                                                                                                                                                       | -50 | 150  | 15.7    | °C     |
| 12                                                                                                                                                                                                                                                                                                                                                                                               | doP                      | Defrost operation, where 0 = defrost operation is deactivated and 1 = defrost operation is activated                                                                                                                                                                                                                                                           | 0   | 1    | 1       | -      |
| 13                                                                                                                                                                                                                                                                                                                                                                                               | dto                      | 0: defrost ends based only on parameter timer <b>dt3</b><br>1: defrost ends when the temperature reaches temperature end deFrost. In the meantime, if timer <b>dt3</b> elapses, defrost ends and an indication <b>dF</b> appears on screen for a few minutes.                                                                                                  | 0   | 1    | 1       | -      |
| 14                                                                                                                                                                                                                                                                                                                                                                                               | dbE                      | <b>Temperature starting defrost</b><br>When temperature is below <b>dbE</b> for a period of time greater than <b>dt1</b> with the compressor ON, the defrost starts.                                                                                                                                                                                           | -50 | 150  | 3.6     | °C     |
| 15                                                                                                                                                                                                                                                                                                                                                                                               | dEn                      | <b>Temperature ending defrost</b><br>When parameter <b>dto = 1</b> defrost ends when it reaches <b>dEn</b> temperature in time smaller than the maximum defrost duration.                                                                                                                                                                                      | -50 | 150  | 15.6    | °C     |
| 16                                                                                                                                                                                                                                                                                                                                                                                               | dFA                      | Over this temperature, the <b>fan</b> is ON during defrost                                                                                                                                                                                                                                                                                                     | -50 | 150  | 16.4    | °C     |
| 17                                                                                                                                                                                                                                                                                                                                                                                               | dt1                      | Time frame in which all defrost requirements must occur in order to start defrost                                                                                                                                                                                                                                                                              | 1   | 200  | 1       | min    |
| 18                                                                                                                                                                                                                                                                                                                                                                                               | dt2                      | Minimum time defrost duration, where 1 unit = 10 sec                                                                                                                                                                                                                                                                                                           | 1   | 200  | 1       | 10sec  |
| 19                                                                                                                                                                                                                                                                                                                                                                                               | dt3                      | Maximum time defrost duration                                                                                                                                                                                                                                                                                                                                  | 1   | 200  | 1       | min    |
| 20                                                                                                                                                                                                                                                                                                                                                                                               | dt4                      | Minimum time between two successive defrosts of the same circuit                                                                                                                                                                                                                                                                                               | 1   | 200  | 1       | min    |
| 21                                                                                                                                                                                                                                                                                                                                                                                               | dt5                      | Minimum time between two successive defrost of the two circuits                                                                                                                                                                                                                                                                                                | 0   | 200  | 0       | min    |
| 22                                                                                                                                                                                                                                                                                                                                                                                               | ASP                      | Antifreeze ALARM SET POINT, Safety thermostat                                                                                                                                                                                                                                                                                                                  | -50 | 60   | 4       | °C     |
| 23                                                                                                                                                                                                                                                                                                                                                                                               | ArE                      | Antifreeze heater SET POINT, Resistance                                                                                                                                                                                                                                                                                                                        | -50 | 60   | 3.6     | °C     |
| 24                                                                                                                                                                                                                                                                                                                                                                                               | Adi                      | Differential of safety thermostat                                                                                                                                                                                                                                                                                                                              | 0.1 | 20.0 | 1.5     | °C     |
| 25                                                                                                                                                                                                                                                                                                                                                                                               | Adr                      | Differential of resistance thermostat                                                                                                                                                                                                                                                                                                                          | 0.1 | 20.0 | 1       | °C     |
| 26                                                                                                                                                                                                                                                                                                                                                                                               | SE2                      | Sensor operation No 2, where 0 = sensor deactivated, 1 = sensor activated                                                                                                                                                                                                                                                                                      | 0   | 1    | 1       | -      |
| 27                                                                                                                                                                                                                                                                                                                                                                                               | SE3                      | Sensor operation No 3, where 0 = sensor deactivated, 1 = sensor activated                                                                                                                                                                                                                                                                                      | 0   | 1    | 1       | -      |
| 28                                                                                                                                                                                                                                                                                                                                                                                               | SE4                      | Sensor operation No 4, where 0 = sensor deactivated, 1 = sensor activated                                                                                                                                                                                                                                                                                      | 0   | 1    | 1       | -      |
| 29                                                                                                                                                                                                                                                                                                                                                                                               | SE5                      | Sensor operation No 5, where 0 = sensor deactivated, 1 = sensor activated                                                                                                                                                                                                                                                                                      | 0   | 1    | 1       | -      |
| 30                                                                                                                                                                                                                                                                                                                                                                                               | AJ1                      | Sensor 1 offset                                                                                                                                                                                                                                                                                                                                                | -9  | 15   | 0       | °C     |
| 31                                                                                                                                                                                                                                                                                                                                                                                               | AJ2                      | Sensor 2 offset                                                                                                                                                                                                                                                                                                                                                | -9  | 15   | 0       | °C     |
| 32                                                                                                                                                                                                                                                                                                                                                                                               | AJ3                      | Sensor 3 offset                                                                                                                                                                                                                                                                                                                                                | -9  | 15   | 0       | °C     |
| 33                                                                                                                                                                                                                                                                                                                                                                                               | AJ4                      | Sensor 4 offset                                                                                                                                                                                                                                                                                                                                                | -9  | 15   | 0       | °C     |
| 34                                                                                                                                                                                                                                                                                                                                                                                               | AJ5                      | Sensor 5 offset                                                                                                                                                                                                                                                                                                                                                | -9  | 15   | 0       | °C     |
| 35                                                                                                                                                                                                                                                                                                                                                                                               | rCo                      | Differential of SET POINT in Cooling mode                                                                                                                                                                                                                                                                                                                      | 0.1 | 25   | 1       | °C     |
| 36                                                                                                                                                                                                                                                                                                                                                                                               | rHt                      | Differential of SET POINT in Heating mode                                                                                                                                                                                                                                                                                                                      | 0.1 | 25   | 1       | °C     |
| 37                                                                                                                                                                                                                                                                                                                                                                                               | rS2                      | <b>Differential of the second SET POINT</b><br>When parameter <b>GSP=1</b> the second compressor operates as follows:<br>cooling mode: SET POINT of 2nd compressor = set point <b>SCo</b> + <b>rS2</b> parameter<br>heating mode: SET POINT of second compressor = set point <b>SHt</b> – <b>rS2</b> parameter                                                 | 0.1 | 25   | 2       | °C     |
| 38                                                                                                                                                                                                                                                                                                                                                                                               | tPC                      | Timer <b>Pump - Compressor</b> : when this timer elapses, the compressor starts after the pump                                                                                                                                                                                                                                                                 | 0   | 200  | 3       | sec    |
| 39                                                                                                                                                                                                                                                                                                                                                                                               | tCP                      | Timer <b>Comp - Pump</b> : timer for the deactivation of the pump, after the deactivation of the compressor                                                                                                                                                                                                                                                    | 0   | 200  | 0       | min    |

| No | PARAMETERS – DESCRIPTION |                                                                                                                                                                                                                                                                                                                                         | min | max  | DEFAULT | U.O.M. |
|----|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|---------|--------|
| 40 | tF1                      | Bypass timer of <b>FLOW SWITCH</b> during pump start-up                                                                                                                                                                                                                                                                                 | 0   | 200  | 5       | sec    |
| 41 | tF2                      | Bypass timer of <b>FLOW SWITCH</b> during operation                                                                                                                                                                                                                                                                                     | 0   | 200  | 5       | sec    |
| 42 | too                      | Timer from ON to ON of the same compressor, where 1 unit = 10 sec                                                                                                                                                                                                                                                                       | 0   | 200  | 1       | 10sec  |
| 43 | tFo                      | Timer from OFF to ON of the same compressor, where 1 unit = 10 sec                                                                                                                                                                                                                                                                      | 0   | 200  | 1       | 10sec  |
| 44 | tdC                      | Timer from ON to ON between the two compressors                                                                                                                                                                                                                                                                                         | 0   | 200  | 5       | sec    |
| 45 | tFC                      | Timer from OFF to OFF between the two compressors                                                                                                                                                                                                                                                                                       | 0   | 200  | 2       | sec    |
| 46 | Ton                      | Compressor minimum time ON                                                                                                                                                                                                                                                                                                              | 0   | 200  | 2       | sec    |
| 47 | tLP                      | Bypass timer for the low pressure of the compressor ( <b>LP1</b> ) during start-up                                                                                                                                                                                                                                                      | 0   | 200  | 3       | sec    |
| 48 | tAF                      | Bypass timer of safety thermostat during start-up                                                                                                                                                                                                                                                                                       | 0   | 200  | 2       | sec    |
| 49 | Gnc                      | Number of compressors, where 1 = one compressor, 2 = two compressors                                                                                                                                                                                                                                                                    | 1   | 2    | 2       | -      |
| 50 | Grc                      | Remote Control ON-OFF of the system, where 0=OFF, 1=ON                                                                                                                                                                                                                                                                                  | 0   | 1    | 1       | -      |
| 51 | GrH                      | Remote Control for <b>heating/cooling</b> operation of the system, where 0=OFF, 1=ON                                                                                                                                                                                                                                                    | 0   | 1    | 1       | -      |
| 52 | GSP                      | <b>Compressors operation with one SET POINT or two SET POINTs</b><br>0 = one SET POINT<br>1 = two SET POINTs                                                                                                                                                                                                                            | 0   | 1    | 1       | -      |
| 53 | GAL                      | <b>Alarm operation</b><br>0 = manual alarm reset of the following alarms: HP1, LP1, Safety thermostat 1, FLOW SWITCH, HP2, LP2, Safety thermostat 2<br>1 = automatic alarm reset                                                                                                                                                        | 0   | 1    | 1       | -      |
| 54 | GSu                      | <b>Reverse Pumps</b><br>0 = in cooling mode pumps are OFF and in heating mode pumps are ON<br>1 = in heating mode pumps are OFF and in cooling mode pumps are ON                                                                                                                                                                        | 0   | 1    | 0       | -      |
| 55 | GFr                      | <b>Pumps operation</b><br>0 = pump always ON<br>1 = pump starts and stops with the compressors based on timers tPC and tCP.                                                                                                                                                                                                             | 0   | 1    | 0       | -      |
| 56 | GLE                      | out of order                                                                                                                                                                                                                                                                                                                            | 0   | 255  | 0       | -      |
| 57 | GPO                      | Starting-up timer of the compressors during Power-Up                                                                                                                                                                                                                                                                                    | 0   | 200  | 0       | -      |
| 58 | GLC                      | Compressors sequence<br>0= compressor with the minimum operation hours precedes<br>1= compressor 1 precedes<br>2= compressor 2 precedes                                                                                                                                                                                                 | 0   | 2    | 0       | -      |
| 59 | GFP                      | <b>Pump operation with Safety thermostat alarm during OFF status of the machine</b><br>0 = Pump is OFF and the Safety thermostat relay is activated<br>1 = Pump is ON and the Safety thermostat relay is activated                                                                                                                      | 0   | 1    | 1       | -      |
| 60 | trE                      | Time response of the device on network                                                                                                                                                                                                                                                                                                  | 30  | 100  | 30      | -      |
| 61 | Add                      | 0 = network is deactivated. 1= Remote Control operation is activated.<br>Address of the device on network from 1 – 255                                                                                                                                                                                                                  | 0   | 255  | 1       | -      |
| 62 | nCo                      | 0=SLAVE: PC operation<br>1=MASTER: REMOTE CONTROL operation and parameter Add = 1                                                                                                                                                                                                                                                       | 0   | 1    | 0       | -      |
| 63 | LLo                      | <b>Minimum voltage level of the analog output</b><br>The analog output has a range between <b>HLo</b> – <b>LLo</b> for a temperature range adjusted by the parameters <b>ArH</b> or <b>ArC</b> . For example, if <b>HLo</b> – <b>LLo</b> = 7 and <b>ArH</b> = 3 and <b>SHT</b> = 45 °C, the voltage changes from 3-10 Volt for 42÷45 °C | 0   | 5    | 3       | Volt   |
| 64 | HLo                      | Maximum voltage level of the analog output                                                                                                                                                                                                                                                                                              | 6   | 10   | 10      | Volt   |
| 65 | ArH                      | Temperature range for the analog output voltage in heating mode                                                                                                                                                                                                                                                                         | 1.0 | 25.0 | 3.0     | Volt   |
| 66 | ArC                      | Temperature range for the analog output voltage in cooling mode                                                                                                                                                                                                                                                                         | 1.0 | 25.0 | 3.0     | Volt   |
| 67 | IAO                      | Reverse analog output signal                                                                                                                                                                                                                                                                                                            | 0   | 1    | 0       | -      |

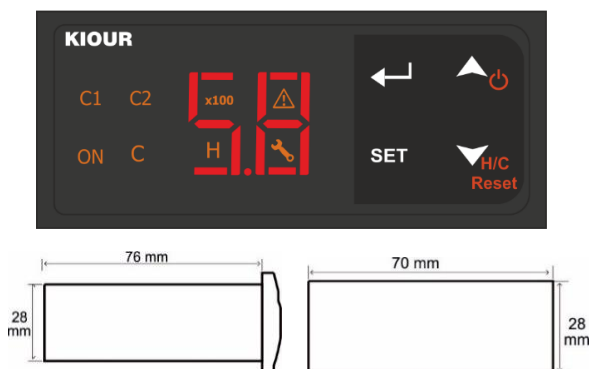
#### ALARM TABLE

|    |     |                                                                                                                                                                                             |
|----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | HP1 | ALARM HIGH PRESSURE C1: Stops the operation of compressor C1. By adjusting GAL = 0, alarm reset is manual.                                                                                  |
| 2  | LP1 | ALARM COMPRESSOR C1: Stops the operation of compressor C1. Alarm is only automatically deactivated when the cause of the alarm disappears.                                                  |
| 3  | C1  | ALARM COMPRESSOR C1: Stops the operation of compressor C1. Alarm is only automatically deactivated when the cause of the alarm disappears.                                                  |
| 4  | GA1 | ALARM FLOW SWITCH: ALARM from the FLOW SWITCH. By adjusting GAL = 0, alarm reset is manual.                                                                                                 |
| 5  | FLS | ALARM FLOW SWITCH: ALARM from the FLOW SWITCH. By adjusting GAL = 0, alarm reset is manual.                                                                                                 |
| 6  | HP2 | ALARM HIGH PRESSURE C2: Stops the operation of compressor C2. By adjusting GAL = 0, alarm reset is manual.                                                                                  |
| 7  | LP2 | ALARM LOW PRESSURE C2: Stops the operation of compressor C2. By adjusting GAL = 0, alarm reset is manual.                                                                                   |
| 8  | C2  | ALARM COMPRESSOR C2: Stops the operation of compressor C1. Alarm is only automatically deactivated when the cause of the alarm disappears.                                                  |
| 9  | GA2 | GENERAL ALARM CIRCUIT 2: Stops the operation of compressor C1. Alarm is only automatically deactivated when the cause of the alarm disappears.                                              |
| 10 | Ar1 | ALARM SENSOR 1: ALARM analog input No 1. Safety thermostat. (Water input). Sensor malfunction. Alarm is only automatically deactivated when the cause of the alarm disappears.              |
| 11 | Ar2 | ALARM SENSOR 2: ALARM analog input No 2. Safety thermostat. (Water output). Circuit 1. Sensor malfunction. Alarm is only automatically deactivated when the cause of the alarm disappears.  |
| 12 | Ar3 | ALARM SENSOR 3: ALARM analog input No 3. Defrost Sensor malfunction. Alarm is only automatically deactivated when the cause of the alarm disappears.                                        |
| 13 | Ar4 | ALARM SENSOR 4: ALARM analog input No 4. Safety thermostat. (Water output). Circuit 2. Sensor malfunction. Alarm is only automatically deactivated when the cause of the alarm disappears.  |
| 14 | Ar5 | ALARM SENSOR 5: ALARM analog input No 5. Defrost. Sensor malfunction. Alarm is only automatically deactivated when the cause of the alarm disappears.                                       |
| 15 | At1 | ALARM FROST: ALARM from the Safety Thermostat Circuit 1. At compressor's start-up, the thermostat is deactivated based on parameter timer tAF. By adjusting GAL = 0, alarm reset is manual. |
| 16 | At2 | ALARM FROST: ALARM from the Safety Thermostat Circuit 2. At compressor's start-up, the thermostat is deactivated based on parameter timer tAF. By adjusting GAL = 0, alarm reset is manual. |

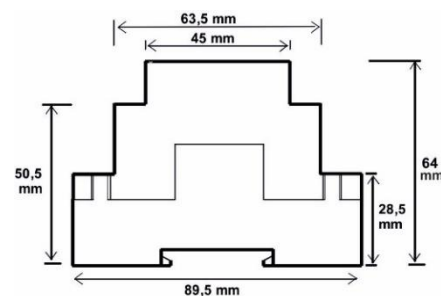
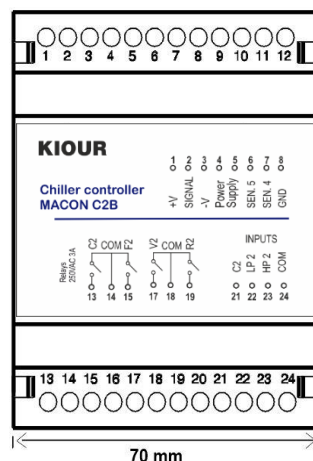
**The alarms are automatically deactivated when the cause of the alarm disappears.**

## DIMENSIONS

### MACON\_C2



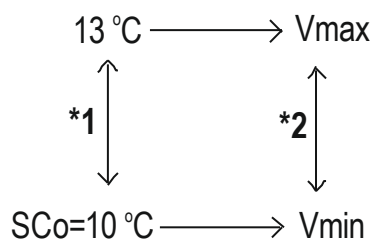
### MACON\_C2B



Secondary device model **MACON\_C2B** has two **LEDs** with the following operations:

- when the LED on **terminal block No. 2** starts blinking, the secondary device is in communication with the main device
- when the LED on **terminal block No.11** is ON, then the secondary device is under power supply.

## ANALOG OUTPUT OPERATION AND ADJUSTMENTS IN COOLING MODE



Parameter **IAO = 0**: 10°C correspond to **Vmin**, while 13°C correspond to **Vmax**

Parameter **IAO = 1**: the analog output signal is reversed as follows:  
10°C correspond to **Vmax**, while 13°C correspond to **Vmin**

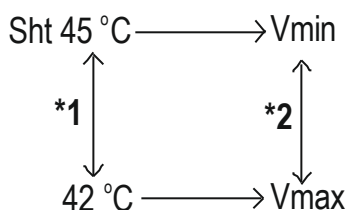
**Note 1.** The range is set from the parameter **ArC = 3°C**

**Note 2.** Analog output voltage (**terminal blocks 22, 23, Analog Out**) which corresponds to **10 ÷ 13°C**

**Vmin.** Minimum level of analog output voltage to **10°C, 0 ÷ 5 Volt**, which is set from parameter **LLo**.

**Vmax.** Maximum level of analog output voltage to **13°C, (6 ÷ 10 Volt)**, which is set from parameter **HLo**.

## ANALOG OUTPUT OPERATION AND ADJUSTMENTS IN HEATING MODE



Parameter **IAO = 0**: 45°C corresponds to **Vmin**, while 42°C corresponds to **Vmax**

Parameter **IAO = 1**: the analog output signal is reversed as follows:  
45°C correspond to **Vmax**, while 42°C correspond to **Vmin**

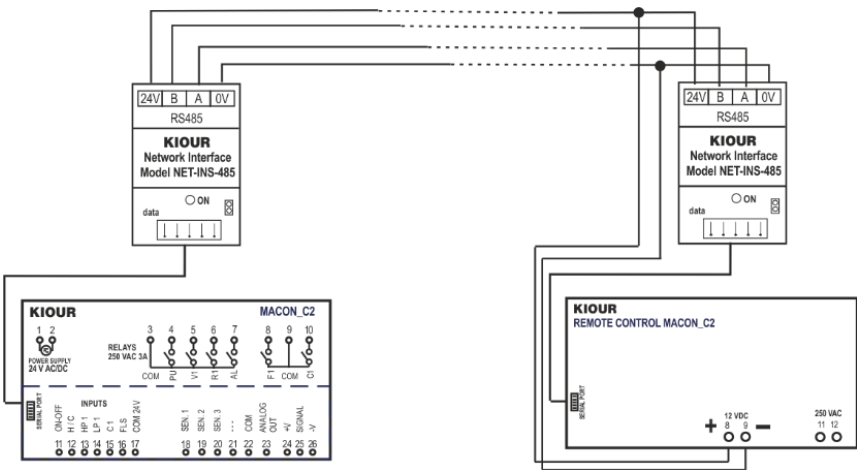
**Note 1.** The range is set from the parameter **ArH = 3°C**

**Note 2.** Analog output voltage (**terminal blocks 22, 23, Analog Out**) which corresponds to **45 ÷ 42°C**

**Vmin.** Minimum level of analog output voltage to **45°C, 0 ÷ 4 Volt**, which is set from parameter **LLo**.

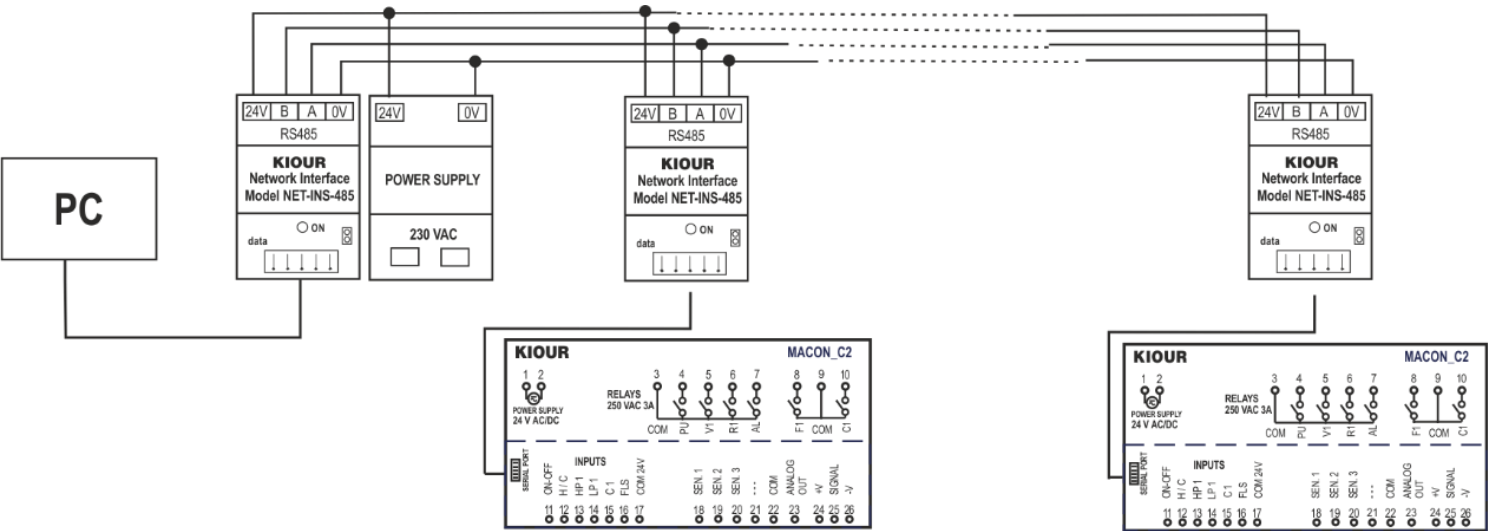
**Vmax.** Maximum level of analog output voltage to **42°C, (6 ÷ 10 Volt)**, which is set from parameter **HLo**.

CONNECTING TO THE REMOTE CONTROL

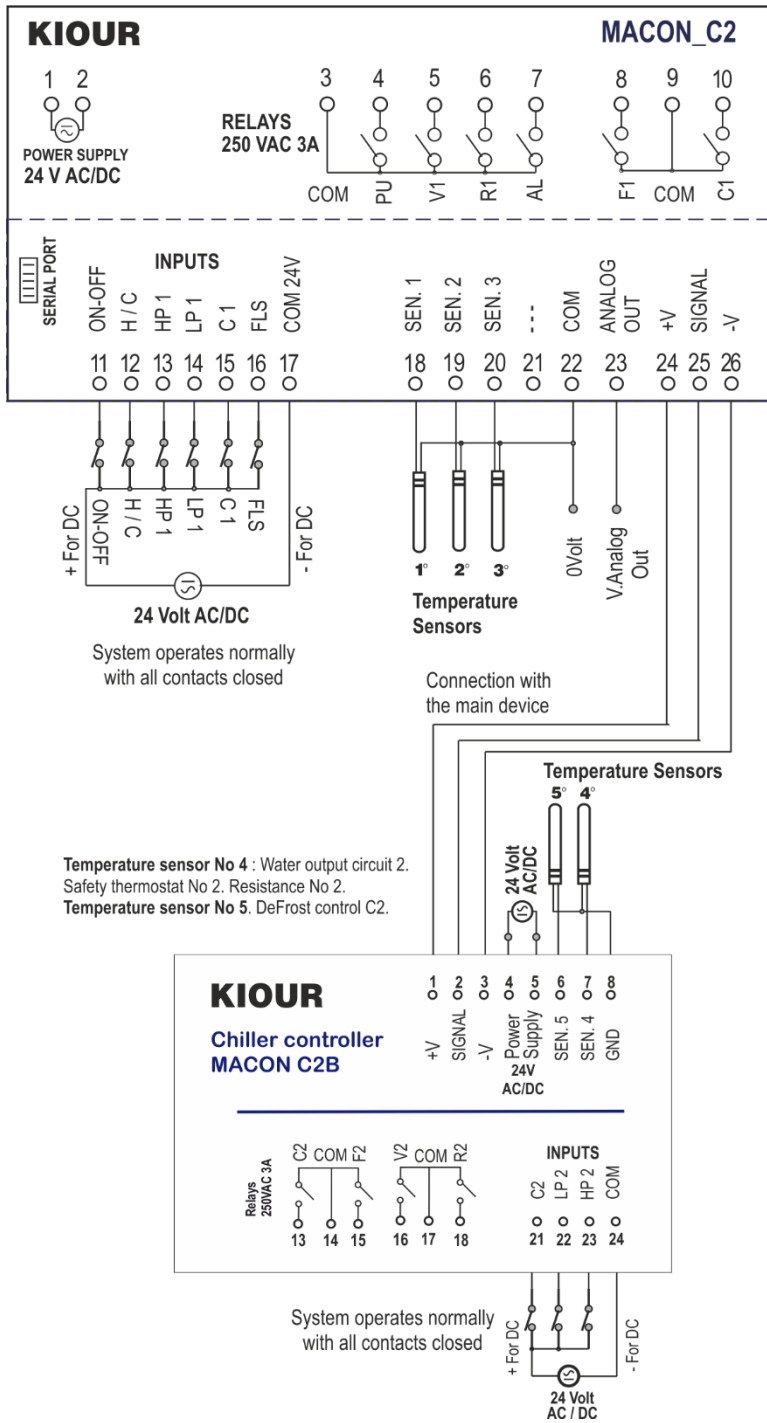


Network power supply: +12-24VDC

CONNECTION TO A PC



## CONNECTIONS OF MACON\_C2 AND MACON\_C2B (1ST and 2ND CIRCUIT)



**Temperature Sensor No 1.** Water input circuit 1.  
Operation thermostat HEATING-COOLING.  
**Temperature Sensor No 2.** Water output.  
Safety thermostat No 1. Resistance No 1.  
**Temperature Sensor No 3.** DeFrost control.

**Temperature sensor No 4 :** Water output circuit 2.  
Safety thermostat No 2. Resistance No 2.  
**Temperature sensor No 5.** DeFrost control C2.

Made in Greece.

**ATTENTION:** according to safety standards, the device must be properly positioned and protected from any contact with electrical parts. The device must be fastened in such a way that it cannot be removed without the use of tools. Disconnect the main safety switch of the installation before proceeding to any maintenance. Disconnect the power supply of the device before proceeding to any maintenance. Do not place the device near heat sources, equipment containing strong magnets, in areas affected by direct sunlight or rain. Prevent electrostatic discharges and sharp objects from being inserted to the device. Separate signal cables from power supply cables to prevent electromagnetic disorders. Signal cables must never be in the same pipe with the power supply cables.

The device is under two year's guarantee. The guarantee is valid only if the manual instructions have been applied. The control and service of the device must be done by an authorized technician. The guarantee covers only the replacement or the service of the device. KIOUR preserves the right to adjust its products without further notice.



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