

# ■ Chiller Organizer 2/3



## OPERATOR'S MANUAL

### ■ Introduction

The Chiller Organizer 2/3, is a further evolution of the basic model Chiller Organizer, and it is a microprocessor-based device, which translates with an electronic key the "Know-How" of Condaria in the field of marine air-conditioning, and it is designed to manage automatically to the functioning of a reverse cycle water chiller, with cooled sea water, configured from one to four compressors.

The Chiller Organizer 2/3 has a backlighted , liquid cristal, alphanumeric display, on two lines of 16 digits each, and it is therefore able to converse with the utilizer by showing messages, in four languages, such as italian, english, french and spanish at choice, with temperature values displayed in degrees °C or degrees °F.

The system is designed and manufactured to comply with the underlisted rules:

- \* Disturbance immunity IEC 801-2, level 4
- \* CE mark
- \* "Low tension" directive

The instrument is essentially composed of two part: a CPU and Power board, a Control Panel with display and keyboard.

The two boards are connected with a 4-wires system.

A slave display panel for remote installation is foreseen as an option.

E' moreover previewed the option of one card interface computer for the management by PC, working through bus RS485.

This manual has been developped to useful information, necessary to grant a proper operation of the controller.

The use of the Chiller Organizer 2/3 is user-friendly to a high degree; nevertheless, misunderstanding of procedures may result in unsatisfactory performance and/or failure of the Organizer.

**PLEASE READ THIS MANUAL CAREFULLY AND COMPLETELY BEFORE PROCEEDING!**

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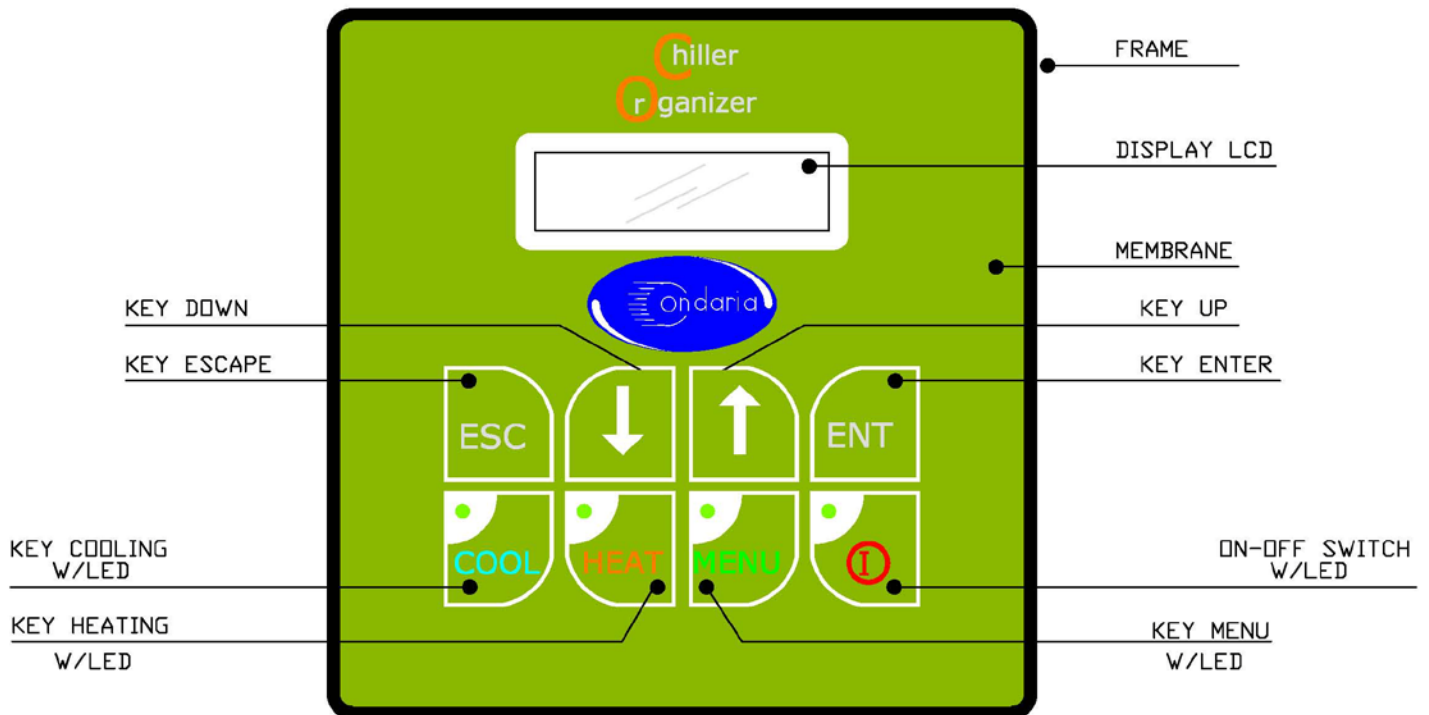
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# ■ Description Of Control Panel



## NOTE:

The four leds cooling, heating, menu and switch, when blinking simultaneously, indicate a status of general alarm.

The specific alarm is indicated on the display by means of a written message.

## EXAMPLE:

* Italian	-----	ALLARME POMPA CIRCOLAZIONE
* English	-----	TREATED WATER PUMP ALARM
* French	-----	ALARME POMPE EAU TRAITEE
* Spanish	-----	ALARMA BOMBA CIRCULACIUN

## **Operation Of The Chiller Organizer 3**

When the system is off, with the instrument energized, the display is showing in sequence a series of messages:

\* SYSTEM OFF \*  
\* SYSTEM OFF \*

\* CONDARIA 87 \*  
\* s.r.l. \*

Marine Air  
Conditioning

Nova Milanese  
Milano – Italy

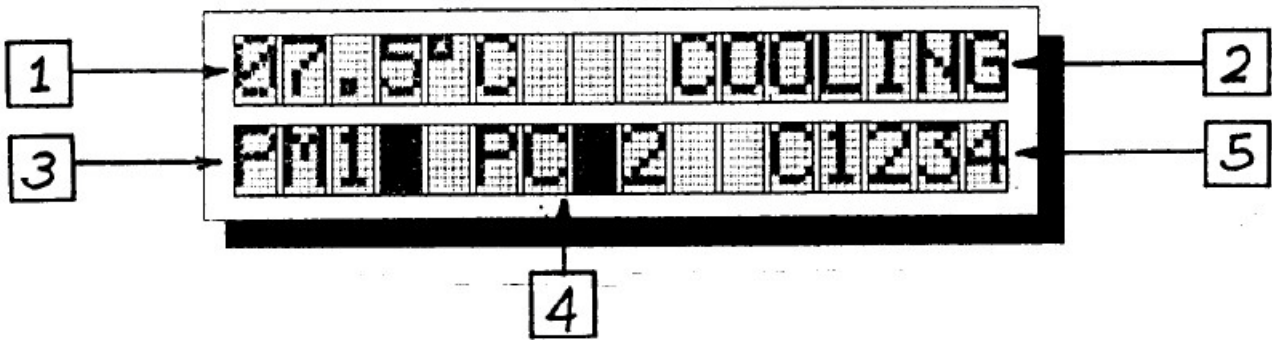
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To switch the system on or off, press the key “on/off switch”.

With system on, the display is showing a status message, similar to the following example:



The value shown in field 1 indicates the temperature of chilled/hot water out.

The message shown in field 2 indicates the operation mode of the plant, COOLING or HEATING.

The field 3 indicates whether two salt water pumps (PM) are fitted (if a black digit is shown) and which one is selected between 1 or 2. If no black digit shown, one pump is field.

The field 4 indicates whether two circulation pumps (PC) are fitted (if a black digit is shown) and which one is selected between 1 or 2. If no black digit shown, one pump only is installed.

The field 5 refers to compressors; just after digit °C, numbers indicate the machine configuration.

Example:	C1	single compressor unit
	C12	twin compressors unit
	C123	three compressors unit
	C1234	four compressors unit

A blinking number indicated that the relevant compressor is operative but waiting (timed).

A dash in lieu of the number indicates that relevant compressor is in stand-by mode (the set temperature has been achieved).

A black digit indicates that the relevant compressor is intentionally not operative (see “user’s settings”)



## **Significance of the DOWN, UP and ENT keys:**

**DOWN:** Shows the temperature of Sensor 1. The temperature displayed is the average condensing temperature (COOLING) or evaporating temperature (HEATING).

**UP:** Shows the temperature felt by Sensor 2, also indicates the average value of condensation or evaporation. Both Sensors 1 and 2 are located on the SW condenser pipes.

**ENT:** Shows the temperature of the return water (chilled or treated) water in. This value guides the software to reduce or increase the number of compressors operating. When the chiller has satisfied the load on the boat (after start up) the return water value should be between 50 degrees to 56 F or 10 and 14 degrees C. This sensor is located where it will sense the return water from the chiller loop, either in a well inside the BOX heat exchanger or near the inlet of a brazed plate heat exchanger.

**Chiller Organizer 3 balances the operation time of each single compressor, starting first the compressor with lower working hours.**

The instrument has two programming levels, the first one reserved to the factory and to Service Centers (not described in this manual). The second level is reserved to the utilizer, and can be accessed with key MENU (description at the following chapter).

## **User Setting**

A series of programmable parameters is foreseen, that can be modified by the utilizer.

### **1.) SELECTION OF ENABLED OR DISABLED COMPRESSORS**

It is possible to set which compressors are enabled or disabled.

Please note that, by disabling one or more compressors, the total of the system is reduced.

PROCEDURE: with instrument ON

\* Press key MENU

\* The display will show:

IMPOSTAZIONI UTENTE or

USER SETTING or

REGLAGES UTILISATEUR or

CONFIGURACION USUARIO

and in sequence the status of compressor 1 ("enabled" or "disabled")

\* press ENT (the cursor blinks)

\* Choose the desired status of compressor 1 by using the key UP

\* Confirm the choice with ENT

To set the other compressors, press UP and repeat the procedure.

### **2.) CHOICE OF LANGUAGE**

It is possible to choose the language of the message italian, english, french or spanish. After having set the compressors, press UP

A message will be shown    LINGUA    Italiano    or

   LINGUA    English    or

   LINGUA    Francais    or

   LINGUA    Espanol

\* To modify press ENT (cursor will blink)

\* Choose the desired language with key UP

\* Confirm with ENT

Example: if the english language is chosen, the display will show "LANGUAGE English".

### 3.) **CHOICE BETWEEN DEGREES Celsius or Fahrenheit**

After having selected the language, press UP

\* The message GRADI (°C or °F) will appear

\* Press ENT (cursor will blink)

\* Choose the selected unit with key UP

\* Confirm the choice with ENT

### 4.) **CHOICE OF SALT WATER PUMP**

Only if a second stand-by pump is installed.

If the second pump is not installed, the parameter 4 is not shown.

After having selected °C or °F, press UP.

\* The message "Salt Water Pump 1 or 2" will appear.

\* Press ENT (cursor will blink)

\* Choose the pump 1 or 2 with key UP

\* Confirm the choice with ENT

### 5.) **CHOICE OF CIRCULATION PUMP**

Only if a second stand-by pump is installed.

If the second pump is not installed, the parameter 5 is not shown.

After having selected the Salt Water Pump, press UP.

\* The message "Circulation Pump 1 or 2" will appear.

\* Press ENT (cursor will blink).

\* Choose the pump 1 or 2 with key UP

\* Confirm the choice with ENT

### 6.) **RESET (do not use without factory guidance)**

Use RESET to return to the original inputs (default) if you are not sure of the programmed settings.

After having set the preceding parameter, press UP

\* The message "RESET : NO" will appear

If you wish to go on with RESET, push ENT (cursor blinks)

\* With key UP, scroll to RESET : YES

\* Confirm the choice with ENT

\* The message RESET: OK will appear.

**NOTE:** When in USER'S SETTINGS procedure, it is possible to use the key DOWN instead of UP, to scroll the parameters in reverse way.

To leave the USER'S SETTINGS procedure, push ESC.

Setting of COOLING or HEATING is direct, by pushing the relevant key.

No other programmable parameters are available at user's level.

**The programming can be carried out by the primary control panel on the Electric Panel of the unit, or elsewhere by the remote panel, if installed.**



## **Factory Settings**

### **CHILLER ORGANIZER 3 FOR CONDARIA AND SERVICE CENTERS ONLY**

**The following instructions are to be treated as strictly private and confidential; they must be known to professionals only.**

#### **SETTING THE DIP SWITCHES (on CO2/3 main board)**

##### **Basic configuration:**

- 1 OFF 2 OFF One compressor chiller
- 1 ON 2 OFF Two compressors chiller
- 1 OFF 2 ON Three compressors chiller
- 1 ON 2 ON Four compressors chiller
  
- 3 OFF One salt water pump
- 3 ON Two salt water pumps
  
- 4 OFF One circulation pump
- 4 ON Two circulation pumps
  
- 5 OFF Single phase
- 5 ON Three phase
  
- 6 OFF Compressors switching YES
- 6 ON Compressors switching NO
  
- 7 OFF Reverse cycle (heat pump)
- 7 ON Electric water heater
  
- 8 OFF Alarms YES
- 8 ON Alarms NO

## **“FACTORY SET UP PROCEDURE”**

*The Factory Set Up Procedure is in english language and degrees °C only.*

*With the system off, but with power on, simultaneously press and hold the keys ESC and ENT, until the following message appears in the display window:*

*In sequence, the message “COOLING SET POINT” will appear; this is the first adjustable parameter. The factory setting is 10°C*

*Press UP to scroll to the second parameter: The message “HEATING SET POINT” will appear. The factory setting is 43°C*

*Press UP. The message “COMPRESSOR DELTA T” will appear. The factory setting is 03.0°C*

*Press UP. The message “COMPRESSOR OFFSET” will appear. The factory setting is 00.5°C*

*Press UP. The message “AF 1 LOW LIMIT” will appear. The factory setting is -7°C (for PWCM units with box evap)*

*Press UP. The message “AF 1 HIGH LIMIT” will appear. The factory setting is 65°C*

*Press UP. The message “AF 2 LOW LIMIT” will appear. The factory setting is -7°C (for box type heat exchanger)*

*Press UP. The message “AF 2 HIGH LIMIT” will appear. The factory setting is 65°C*

*Press UP. The message “COMPRESSOR DELAY” will appear. The factory setting is 60 sec*

*Press UP. The message “COMPRESSOR 1 HOURS” will appear. The shown value indicates the working hours of Compressor 1.*

*Press UP. The message “COMPRESSOR 2 HOURS” will appear. The shown value indicates the working hours of Compressor 2.*

*Press UP. The message “COMPRESSOR 3 HOURS” will appear. The shown value indicates the working hours of Compressor 3.*

*Press UP. The message “COMPRESSOR 4 HOURS” will appear. The shown value indicates the working hours of Compressor 4.*

*Note: When the Mini Switch # 6 is in position OFF, the automatic switching of the compressors is operative.*

*A further pressure of the UP key will start again the scrolling of the parameters, beginning from the first one "COOLING SET POINT".*

*The factory setting should not be modified, except by skilled personnel, and always following the instructions from the factory.*

*To modify the selected parameter:*

*Press ENT (a cursor will start blinking), then set the desired value by means of the UP or DOWN keys, and confirm with ENT. To exit the Factory Set Up Procedure, press ESC.*

## Alarm Messages

A general alarm is shown by the blinking of the four leds located at the upper left corner of keys COOL, HEAT, MENU and ON/OFF. A specific alarm is signalled on the display by means of 16 messages, in the selected language. The alarm messages are:

ITALIANO	INGLESE	FRANCESE	SPAGNOLO
ALLARME BASSA COMPRESSORE 1	LOW P ALARM COMPRESSOR 1	ALARME BP COMPRESSEUR 1	ALARMA BAJA COMPRESOR 1
ALLARME ALTA COMPRESSORE 1	HIGH P ALARM COMPRESSOR 1	ALARME HP COMPRESSEUR 1	ALARMA ALTA COMPRESOR 1
ALLARME BASSA COMPRESSORE 2	LOW P ALARM COMPRESSOR 2	ALARME BP COMPRESSEUR 2	ALARMA BAJA COMPRESOR 2
ALLARME ALTA COMPRESSORE 2	HIGH P ALARM COMPRESSOR 2	ALARME HP COMPRESSEUR 2	ALARMA ALTA COMPRESOR 2
ALLARME BASSA COMPRESSORE 3	LOW P ALARM COMPRESSOR 3	ALARME BP COMPRESSEUR 3	ALARMA BAJA COMPRESOR 3
ALLARME ALTA COMPRESSORE 3	HIGH P ALARM COMPRESSOR 3	ALARME HP COMPRESSEUR 3	ALARMA ALTA COMPRESOR 3
ALLARME BASSA COMPRESSORE 4	LOW P ALARM COMPRESSOR 4	ALARME BP COMPRESSEUR 4	ALARMA BAJA COMPRESOR 4
ALLARME ALTA COMPRESSORE 4	HIGH P ALARM COMPRESSOR 4	ALARME HP COMPRESSEUR 4	ALARMA ALTA COMPRESOR 4
ALLARME MINIMA SONDA 1	LOW TEMP ALARM SENSOR 1	ALARME BASSE TEMP SONDE 1	ALARMA MINIMA SONDA 1
ALLARME MASSIMA SONDA 1	HIGH TEMP ALARM SENSOR 1	ALARME HAUTE TEMP SONDE 1	ALARMA MAXIMA SONDA 1
ALLARME MINIMA SONDA 2	LOW TEMP ALARM SENSOR 2	ALARME BASSE TEMP SONDE 2	ALARMA MINIMA SONDA 2
ALLARME MASSIMA SONDA 2	HIGH TEMP ALARM SENSOR 2	ALARME HAUTE TEMP SONDE 2	ALARMA MAXIMA SONDA 2
ALLARME POMPA CIRCOLAZIONE	TREATED WATER PUMP ALARM	ALARME POMPE EAU TRAITEE	ALARMA BOMBA CIRCULACION
SONDA ENTRATA ACQUA GUASTA	FAILURE OF W IN SENSOR	DEFAUT SONDE ENTREE EAU	SONDA ENTRADA AGUA AVERIADA
SONDA 1 GUASTA	FAILURE OF SENSOR 1	DEFAUT SONDE 1	SONDA 1 AVERIADA
SONDA 2 GUASTA	FAILURE OF SENSOR 2	DEFAUT SONDE 2	SONDA 2 AVERIADA

# Faults – Causes – Remedies

FAULT	PROBABLE CAUSE	REMEDY
LOW P ALARM COMPRESSOR 1	* Freon leak compressor 1	* Find leak, repair, vacuum the system and refill
	* Poor treated water circulation	* Check for air in the circuit * Check clogging
	* Air in refrigerant circuit	* Vacuum compressor and make refrigerant charge
HIGH P ALARM COMPRESSOR 1	* Refrigerant overcharge	* Remove excess refrigerant
	* Insufficient or no condenser water flow; clogged condenser or sea water strainer, or non operative sea water pump	* Adjust water regulating valve to condenser; clean condenser or strainer, check electrical connection on the sea water pump
LOW P ALARM COMPRESSOR 2	* Freon leak compressor 2	* Find leak, repair, vacuum the system and refill
	* Poor treated water circulation	* Check for air in the circuit * Check clogging
	* Air in refrigerant circuit	* Vacuum compressor and make refrigerant charge
HIGH P ALARM COMPRESSOR 2	* Refrigerant overcharge	* Remove excess refrigerant
	* Insufficient or no condenser water flow; clogged condenser or sea water strainer, or non operative sea water pump	* Adjust water regulating valve to condenser; clean condenser or strainer, check electrical connection on the sea water pump
LOW P ALARM COMPRESSOR 3	* Freon leak compressor 3	* Find leak, repair, vacuum the system and refill
	* Poor treated water circulation	* Check for air in the circuit * Check clogging
	* Air in refrigerant circuit	* Vacuum compressor and make refrigerant charge
HIGH P ALARM COMPRESSOR 3	* Refrigerant overcharge	* Remove excess refrigerant
	* Insufficient or no condenser water flow; clogged condenser or sea water strainer, or non operative sea water pump	* Adjust water regulating valve to condenser; clean condenser or strainer, check electrical connection on the sea water pump
LOW P ALARM COMPRESSOR 4	* Freon leak compressor 4	* Find leak, repair, vacuum the system and refill
	* Poor treated water circulation	* Check for air in the circuit * Check clogging
	* Air in refrigerant circuit	* Vacuum compressor and make refrigerant charge
HIGH P ALARM COMPRESSOR 4	* Refrigerant overcharge	* Remove excess refrigerant
	* Insufficient or no condenser water flow; clogged condenser or sea water strainer, or non operative sea water pump	* Adjust water regulating valve to condenser; clean condenser or strainer, check electrical connection on the sea water pump
LOW TEMP ALARM SENSOR 1	* Poor treated water circulation on cooling mode	* Check for air in the circuit * Check clogging * Check electrical connection on the treated water pump
HIGH TEMP ALARM SENSOR 1	* Poor treated water circulation on heating mode	* Check for air in the circuit * Check clogging * Check electrical connection on the treated water pump
LOW TEMP ALARM SENSOR 2	* Poor treated water circulation on cooling mode	* Check for air in the circuit * Check clogging * Check electrical connection on the treated water pump
HIGH TEMP ALARM	* Poor treated water circulation on heating mode	* Check for air in the circuit



SENSOR 2		* Check clogging * Check electrical connection on the treated water pump
TREATED WATER PUMP ALARM	* Poor treated water circulation Indicates failed or ineffective circulation	* Check for air in the circuit * Check clogging * Check electrical connection on the treated water pump
FAILURE OF W IN SENSOR	* Faulty sensor	* Change probe
FAILURE OF SENSOR 1	* Faulty sensor	* Change probe
FAILURE OF SENSOR 2	* Faulty sensor	* Change probe

## Mini Switch (Important Warning)

The main CPU board contains eight dip switches ,the setting of which is reserved to the factory **and should not be modified by the user.**

These switches create the configuration of the board on the basis of the characteristics of the chiller, and their use is only reserved to skilled personnel.

Tampering of dip switches may damage the system and void the warranty.