



INSTRUCTION MANUAL

UCxx – UCPxx



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GENERAL ADVICES



- Please read before using this manual
- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.



1.1 Safety Precaution

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- In case of failure or faulty operation send the instrument back to the distributor or to Thermowell (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.

USER INTERFACE



2.1 Display

The display area is divided in three parts:
 Left Upper Side : It shows the evaporator "water IN / OUT" temperature.
 Left Lower Side : It shows various labels.
 Right Side: Icon area.

2.2 Icons of the Display

Icon	Meaning
°C	Celsius degrees
°F	Fahrenheit degrees
	Compressor 1
	Unit in Stand-by
	General Alarm
	High pressure Alarm
	Low pressure Alarm

	Fresh water pump
Flow!	Water Flow Alarm
Menu	Function Menu activated

3. KEY FUNCTION

	1. M to enter the function Menu
	1. SET allows to show and modify the set point. 2. In programming mode it selects a parameter and confirm its value.
	1. Push it for 5 s to run the unit in Chiller mode. 2. Push and release to change the read-out between "IN/OUT water". 3. In programming mode it scrolls the parameter list or decreases the value of the parameter itself.
	4. Push it for 5 s to run the unit in Heat Pump mode. 5. In programming mode it scrolls the parameter list or increases the value of the parameter itself.

KEYBOARD LEDS


Symbol	Led	Function
	On	Heat pump
	On	Chiller

REMOTE KEYBOARD CONREC1



5.1 Key Function

	M allows to enter the menu.
	SET allows to show and modify the set point. During the programming it selects a parameter and confirm its value.
	It selects the water IN / OUT or the ambient air read-outs. During the programming it scrolls the parameter code or increases its value.
	During the programming it scrolls the parameter code or decreases its value.
	If pushed for 5s it allows to start the unit in chiller function.

 If pushed for 5s it allows to start the unit in heat pump function.

When the communication between the keyboard and the instrument is broken, the left upper side of the display will show "noL" (no link message).

NORMAL CONDITION READ-OUT

If no alarm conditions are present, the display shows:

Left upper side:

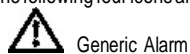
- Evaporator water Inlet/Outlet

6.1 Alarm Read-Out

Starting from the normal condition (no alarms), when the instrument detects an alarm event, the left lower side shows the alarm code alternated with the probe value. The corresponding icon lighted.

6.2 Icon Dedicated to the Alarm Read-Outs

The following four icons are dedicated to a better alarm understanding:



Generic Alarm



High pressure alarm



Low pressure alarm


Flow! Water flow Alarm


SILENCING THE BUZZER

Automatically: just after the alarm condition is recovered.


Manually: push and release one of the four keys; the buzzer is stopped even if the alarm is still active.


START/STOP CHILLER OR HEAT PUMP

By pressing  key for 5 seconds the unit starts or stops the Chiller cycle.

The  led blinks for 5 seconds then it turns on.


To change from Chiller to HP or vice versa, it is necessary to stop the cycle and then restart the new.

By pressing  key for 5 seconds, the unit starts or stops the Heat Pump cycle.

The  led blinks for 5 seconds then it turns on.

To change from Chiller to HP or vice-versa, it is necessary to stop the cycle and then restart the new.

STAND-BY FUNCTION

Each time the Chiller or Heat Pump cycles are stopped, the unit goes in stand-by and the  icon turns on.

The controller stand-by allows to:

- Show the probe values using key arrows.
- Show and manage the alarm events.

"M KEY" THE FUNCTION MENU

Entering the function Menu allows to:

1. Show and reset the active alarms.
2. Show the alarm log.
3. Reset the alarm log.

During the Menu operations the "menu" icon is on.

10.1 Access to Function Menu

Push and release the M key. The "menu" icon is on.

10.2 Exit from function Menu

Push and release the M key or wait the time out. The "menu" icon disappears.

10.3 How to Show the Alarm Events

Enter the function Menu:

1. Use UP or DOWN keys to find the "ALrM" label.
2. Push and release the SET key.
3. Use UP or DOWN keys to scroll the alarm list.

To exit the function Menu push and release the M key or wait the time-out. The "menu" icon disappears.

10.4 How to Reset an Alarm Event

- 1) Enter the function Menu.
- 2) Use UP or DOWN keys to find the "ALrM" label.
- 3) Push and release the SET key, the lower display shows the alarm code.
- 4) Upper display: rSt label if the alarm can be reset, NO label if it is not possible. Use UP or DOWN keys to scroll the alarm list.
- 5) Push SET key, when rSt is lighted, to reset the alarm, after a while the read-out move to next alarm.
- 6) To exit the function menu push and release the M key or wait the time-out. The "menu" icon disappears.

10.5 How to See the Alarm Log

1. Enter the function Menu.
2. Use UP or DOWN keys to find ALOG label.
3. Push SET key: the lower display shows the alarm code, the upper display shows "n^o" followed by the progressive number.
4. With UP or DOWN scroll the alarm list.
5. To exit from ALOG function push M key or wait the time-out delay is expired.

The memory contains 50 alarm events structured in a FIFO list. Each new alarm will take the place of the oldest alarm contained in the FIFO list. (the read-out is ordered from the oldest to the newest)

11. KEYBOARD FUNCTIONS

11.1 How to See the Set Point Value

Push and release the SET key.

Lower display shows: SetC set of chiller mode;
SetH set of heat pump mode.

The upper display shows the corresponding set value. (SetH is available only if configured for Heat Pump).

11.2 How to Change the Set Point Value

- 1) Push SET key for more than 6 seconds.
- 2) The setpoint value is now blinking.
- 3) Use UP or DOWN to increase or decrease the new value.

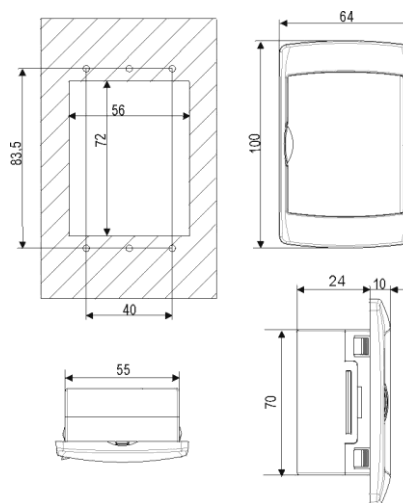
When finishing, push and release SET key again or wait for the time-out to exit the programming.

12. BLACK OUT

After a black-out:

1. The controller restarts from the pervious status.
2. All the working time delay will be reloaded.

INSTALLING AND MOUNTING

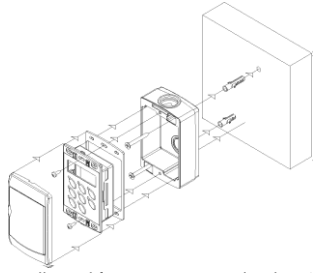


Remote terminal "Vertical" shape

Mounted on a panel with 72x56 mm cut-out, fixed with screw.

To obtain the IP65 protection, even for the panel, use the rubber gasket RGW-V (optional). For wall mounting use the V-KIT plastic adapter as illustrated in figure 2.

Fig. 2



The temperature range allowed for correct operation is $-10\pm 60^{\circ}\text{C}$. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

14. ALARM CODE AND EVENTS				
Cod	Meaning	Cause / Origin	Instrument behaviour	Reset
P1	Pb1 probe alarm	Missing, faulty probe or resistance exceeding value	Open collector / alarm relay ON Buzzer ON General alarm icon lighted Alarm code on display	Automatic if the probe value recovers
P2	Pb2 probe alarm	Missing, faulty probe or resistance exceeding value	Open collector / alarm relay ON Buzzer ON General alarm icon lighted Alarm code on display	Automatic if the probe value recovers
A01	High pressure switch alarm	Digital input for high pressure activated	Open collector / alarm relay ON Buzzer ON High pressure icon lighted Alarm code on display	Manual: after the alarm event expires, proceed with manual reset.
A02	Low pressure switch alarm	Digital input for low pressure activated	Open collector / alarm relay ON Buzzer ON Low pressure icon lighted Alarm code on display	Automatic. It turns to manual after AL02 events in 1 hour. Manual: after the alarm event expires, proceed with manual reset.
A07	Anti freeze alarm	Digital input active anti freeze probe Pbr < AR03 in chiller mode for minimum AR05 seconds Pbr < AR24 in heat pump mode for minimum AR05 seconds	Open collector / alarm relay ON Buzzer ON General alarm icon lighted Alarm code on display	Automatic. It turns to manual after Ar06 events in 1 hour. Manual: the event expires if Pbr > (AR03+AR04), then proceed with manual reset.
A07	Anti freeze alarm (air/water) motocondensing unit	Digital input active CF01=6,7 and CF05=2	Open collector / alarm relay ON Buzzer ON General alarm icon lighted Alarm code on display	Automatic. It turns to manual after Ar06 events in 1 hour. Manual: the event expires, then proceed with manual reset.
A08	Water flow alarm (air/water) water/water; Supply air fan thermal protection (air/air)	Digital input active for AL06 duration.	Open collector / alarm relay ON Buzzer ON Flow alarm icon lighted Alarm code on display	Automatic. It turns to manual after Ar05 events in 1 hour. Manual: the event expires for AL07, then proceed with manual reset.
A09	Compressor 1 thermal protection alarm	Digital input active	Open collector / alarm relay ON Buzzer ON General alarm icon lighted Alarm code on display	Manual: the event expires, then proceed with manual reset. After AL09 events in 1 hour and digital input not active, set AL10=0 to resume.
EE	EEPROM error alarm	Possible data losing	Open collector / alarm relay ON Buzzer ON General alarm icon lighted Alarm code on display	Manual: Proceed with manual reset., if nothing happens the controller is locked, no regulation available.
AFr	Frequency alarm	The frequency of power supply is out of range	Open collector / alarm relay ON Buzzer ON General alarm icon lighted Alarm code on display	Automatic After the frequency becomes normal

OUTPUT LOCK FOR ALARM EVENT TABLE

Alarm Code	Alarm Description	Comp. 1	Water Pump
P1	Pb1 Probe Alarm	Yes	
P2	Pb2 Probe Alarm	Yes	
A01	High pressure alarm from digital input	Yes	
A02	Low pressure alarm from digital input	Yes	
A07	Anti freezer digital input	Yes	
A07	Anti-freeze digital input alarm	Yes	
A08	Water flow Alarm	Yes	Yes
A09	Compressor 1 thermal protection	Yes	
EE	Eeprom error	Yes	Yes
AFr	Frequency alarm	Yes	Yes

PARAMETER DESCRIPTION

16.1 Regulation Parameters

ST01 Setpoint in Chiller mode
ST02 Differential of the Chiller mode.
ST03 Setpoint in Heat Pump mode
ST04 Differential of the Heat Pump mode.
ST09 Regulation band

PARAMETER TABLE

SUB MENU SELECTIONS

PARAMETER DESCRIPTION

Regulation Parameters					
Parameter	Description	Min	Max	Meas.	Resolution
ST01	Summer Set point	ST05	ST06	$^{\circ}\text{C}/^{\circ}\text{F}$	Decimal integer
ST02	Summer differential	0.0 0	25.0 45	$^{\circ}\text{C}$ $^{\circ}\text{F}$	Decimal integer
ST03	Winter Set point	ST07	ST08	$^{\circ}\text{C}/^{\circ}\text{F}$	Decimal integer
ST04	Winter differential	0.0 0	25.0 45	$^{\circ}\text{C}$ $^{\circ}\text{F}$	Decimal integer
ST09	Regulation band	0.0 0	25.0 45	$^{\circ}\text{C}$ $^{\circ}\text{F}$	Decimal integer

TECHNICAL DATA

Housing: Self extinguishing ABS.
Case: Front panel 32x74 mm, depth 60mm ("C" format);
Front panel 38x185 mm; depth 75mm ("L" format)
Mounting : "C" format panel mounting in a 29x71 mm panel cut-out
"L" format panel mounting in a 150x31 mm panel cut-out with two screws. $\varnothing 3 \times 2\text{mm}$. Distance between the holes 165mm
Protection: IP65.
Frontal protection: IP65 with frontal gasket mod RG-L or C model.
Connections: Removable terminal block 12 and 14 ways;
Power supply: 12Vac/dc $\pm 10\%$, 24Vac/dc $\pm 10\%$, 50-60Hz.
Power absorption: 5VA max.
Display: 3 digits red led and 4 digit orange led.
Inputs: 4 NTC probes, or 3 NTC probes and one 4..20mA.
Digital inputs: 5 free voltage
Relay outputs: 5 relay SPDT 5(3)A, 250Vac
Open collector: alarm output: 12V, 40mA.
Analogue output: 4..20mA for fan control, trigger for fan control
Serial output : TTL standard Communication protocol: Modbus – RTU
Data storing: on the non-volatile memory (EEPROM).
Kind of action: 1B.
Pollution grade: normal
Software class: A.
Operating temperature: $0\text{--}60^{\circ}\text{C}$.
Storage temperature: $-25\text{--}60^{\circ}\text{C}$.
Relative humidity: 20-85% (no condensing)
Measuring range: NTC probe: $-40\text{--}110^{\circ}\text{C}$.
Resolution: $0,1^{\circ}\text{C}$ or 1°C .
Accuracy (ambient temp. 25°C): $\pm 0,5^{\circ}\text{C} \pm 1$ digit



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