















## DIAGNOSTICS

Alarms are always indicated by the alarm icon (🔔), the buzzer and the relay (if setting).

To switch off the buzzer, press and release any key; the corresponding icon will continue to flash.

**N.B.:** If alarm exclusion times have been set (see "AL" folder in the parameters table) the alarm will not be signalled.

In the event of an alarm caused by an inoperable **Pb1** probe (ambient), the indication "E1" will appear on the display.

For an inoperable **Pb2** probe (evaporator), the indication "E2" will appear.

For an inoperable **Pb3** probe, the indication "E3" will appear on the display.

## ALARMS

| Label     | Description               | Cause  | Effects  | Remedy   |
|-----------|---------------------------|--|--|--|
| <b>E1</b> | Probe1 in error (ambient) | <ul style="list-style-type: none"> <li>• measured values are outside operating range</li> <li>• Probe inoperable/short-circuited/open</li> </ul> | <ul style="list-style-type: none"> <li>• Display label <b>E1</b></li> <li>• Alarm icon permanently on</li> <li>• Relay activation (if setting)</li> <li>• Disable max/min alarm controller</li> <li>• Compressor operation based on parameters "<b>Ont</b>" and "<b>Oft</b>"</li> </ul>  | <ul style="list-style-type: none"> <li>• check probe type (<b>H00</b>)</li> <li>• check probe wiring</li> <li>• replace probe</li> </ul> |
| <b>E2</b> | Probe2 in error (defrost) | <ul style="list-style-type: none"> <li>• measured values are outside operating range</li> <li>• Probe inoperable/short-circuited/open</li> </ul> | <ul style="list-style-type: none"> <li>• Display label <b>E2</b></li> <li>• Alarm icon permanently on</li> <li>• Relay activation (if setting)</li> <li>• The Defrost cycle will end due to Timeout (parameter <b>dEt</b>)</li> <li>• The evaporator fans will be: on if the compressor is ON, or running in accordance with the <b>FCO</b> parameter if the compressor is OFF.</li> </ul> | <ul style="list-style-type: none"> <li>• check probe type (<b>H00</b>)</li> <li>• check probe wiring</li> <li>• replace probe</li> </ul> |
| <b>E3</b> | Probe3 in error           | <ul style="list-style-type: none"> <li>• measured values are outside operating range</li> <li>• Probe inoperable/short-circuited/open</li> </ul> | <ul style="list-style-type: none"> <li>• Display label <b>E3</b></li> <li>• Alarm icon permanently on</li> <li>• Relay activation (if setting)</li> </ul>  | <ul style="list-style-type: none"> <li>• check probe type (<b>H00</b>)</li> <li>• check probe wiring</li> <li>• replace probe</li> </ul> |



| Label      | Description                    | Cause   | Effects   | Remedy   |
|------------|--------------------------------|---|---|--|
| <b>AH1</b> | Alarm for HIGH Pb1 temperature | value read by <b>Pb1</b> > <b>HAL</b> after time of " <b>tAO</b> ".<br>(see "MAX/MIN TEMP.ALARMS")          | <ul style="list-style-type: none"> <li>Recording of label <b>AH1</b> in folder AL</li> <li>Relay activation (if setting)</li> <li>No effect on regulation</li> </ul>  | wait until value read by Pb1 returns below <b>HAL</b> .  |
| <b>AL1</b> | Alarm for LOW Pb1 temperature  | value read by <b>Pb1</b> < <b>LAL</b> after time of " <b>tAO</b> ".<br>(see "MAX/MIN TEMP.ALARMS")          | <ul style="list-style-type: none"> <li>Recording of label <b>AL1</b> in folder AL</li> <li>Relay activation (if setting)</li> <li>No effect on regulation</li> </ul>  | wait until value read by Pb1 returns above <b>LAL</b>  |
| <b>EA</b>  | External alarm                 | Digital input activated<br>( <b>H11</b> = $\pm 5$ )   | <ul style="list-style-type: none"> <li>Recording of label <b>EA</b> in folder AL</li> <li>Alarm icon permanently on</li> <li>Relay activation (if setting)</li> <li>Regulation locked if <b>rLO</b> = y</li> </ul>  | check and remove the external cause which triggered the alarm on the D.I.                                      |
| <b>OPd</b> | Door open alarm                | Digital input activated<br>( <b>H11</b> = $\pm 4$ )<br>(for longer than <b>tdO</b> )                        | <ul style="list-style-type: none"> <li>Recording of label <b>OPd</b> in folder AL</li> <li>Alarm icon permanently on</li> <li>Relay activation (if setting)</li> <li>Regulation locked</li> </ul>   | <ul style="list-style-type: none"> <li>close the door</li> <li>delay function defined by <b>OAO</b></li> </ul> |
| <b>Ad2</b> | Defrost due to timeout         | End of defrost cycle due to timeout rather than due to defrost end temperature being recorded by probe Pb2. | <ul style="list-style-type: none"> <li>Recording of label <b>Ad2</b> in folder AL</li> <li>Alarm icon permanently on</li> <li>Relay activation (if setting)</li> </ul>  | wait for the next defrost cycle for automatic return   |
| <b>COH</b> | Over Heating alarm             | Pb3 value set by parameter SA3 exceeded.  | <ul style="list-style-type: none"> <li>Recording of label <b>COH</b> in folder AL</li> <li>Alarm icon permanently on</li> <li>Relay activation (if setting)</li> <li>Regulation locked (Compressor)</li> </ul>  | wait for the temperature to return to a value of <b>SA3</b> (Setpoint) minus <b>dA3</b> (differential).        |
| <b>nPA</b> | General pressure switch alarm  | Activation of pressure alarm by general pressure switch.  | <p>If the number of pressure switch activations is <b>N</b> &lt; <b>PEn</b>:</p> <ul style="list-style-type: none"> <li>Recording of folder <b>nPA</b> in folder AL, with the number of pressure switch activations</li> <li>Regulation locked (Compressor and Fans)</li> </ul> | check and remove the cause which triggered the alarm on the D.I. (Automatic Reset)                             |

| Label       | Description                                     | Cause   | Effects   | Remedy  |
|-------------|---|---|---|---|
| <b>PAL</b>  | General pressure switch alarm                   | Activation of pressure alarm by general pressure switch.  | <p>If the number of pressure switch activations is <b>N = PEn</b>:</p> <ul style="list-style-type: none"> <li>• Display label <b>PAL</b></li> <li>• Recording of label <b>PA</b> in folder AL</li> <li>• Alarm icon permanently on</li> <li>• Relay activation (if setting)</li> <li>• Regulation locked (Compressor and Fans)</li> </ul> | <ul style="list-style-type: none"> <li>• Switch the device off and back on again</li> <li>• Reset alarms by entering the functions folder and selecting the <b>rAP</b> function (Manual Reset)</li> </ul> |
| <b>HC n</b> | Max/Min Pb3 value when out of range (SLH...SHH) | Logs the Max/Min value recorded by Pb3 when it exceeds the range SLH...SHH. " <b>n</b> " represents the sequential number of times the range is exceeded. | <ul style="list-style-type: none"> <li>• Recording of folder "HC <b>n</b>" in folder AL</li> <li>• Alarm icon permanently on</li> <li>• Relay activation (if setting)</li> <li>• No effect on regulation</li> </ul>   | <b>N.B.:</b><br>" <b>n</b> " can assume the values 1 to 8. If <b>n</b> > 8, folder HC8 will flash and the system will overwrite folders where <b>n</b> =1.  |
| <b>tC n</b> | Pb3 out-of-range dwell time (SLH...SHH)         | Stores the dwell time of the Pb3 value outside of the range SLH...SHH. " <b>n</b> " represents the sequential number of times the range is exceeded.      | <ul style="list-style-type: none"> <li>• Recording of folder "tC <b>n</b>" in folder AL</li> <li>• Alarm icon permanently on</li> <li>• Relay activation (if setting)</li> <li>• No effect on regulation</li> </ul>   | <b>N.B.:</b><br>" <b>n</b> " can assume the values 1 to 8. If <b>n</b> > 8, folder HC8 will flash and the system will overwrite folders where <b>n</b> =1.  |
| <b>bC n</b> | Value recorded by Pb3 on return from <b>bOt</b> | Logs the value recorded by Pb3 on return from a blackout. " <b>n</b> " represents the sequential number of blackouts that have occurred.                  | <ul style="list-style-type: none"> <li>• Recording of folder "bC <b>n</b>" in folder AL</li> <li>• No effect on regulation</li> </ul>   | <b>N.B.:</b><br>" <b>n</b> " can assume the values 1 to 8. If <b>n</b> > 8, folder bC8 will flash and the system will overwrite folders where <b>n</b> =1.  |
| <b>bt n</b> | Pb3 out-of-range dwell time during <b>bOt</b>   | Stores the out-of-range dwell time of the Pb3 value during a blackout. " <b>n</b> " represents the sequential number of blackouts that have occurred.     | <ul style="list-style-type: none"> <li>• Recording of folder "bt <b>n</b>" in folder AL. The value contained will be <b>0</b> if the value of Pb3 has remained within the range, <b>≠ 0</b> if the value has gone outside of the range.</li> <li>• No effect on regulation</li> </ul>   | <b>N.B.:</b><br>" <b>n</b> " can assume the values 1 to 8. If <b>n</b> > 8, folder bC8 will flash and the system will overwrite folders where <b>n</b> =1.  |

**NOTE:** to delete folders "**HC n**", "**tC n**", "**bC n**" and "**bt n**" from folder AL, start function **rES** in folder FnC.

## PASSWORD

**Password "PA1"**: used to access **User** parameters. The password is not enabled by default (**PS1=0**).

To enable it (**PS1≠0**): press and hold **set** for longer than 5 seconds, scroll through the parameters using **⏪** and **⏩** until you see the label **PS1**, press **set** to display the value, modify it using **⏪** and **⏩**, then save it by pressing **set** or **⓪**. If enabled, it will be required in order to access the User parameters.

**Password "PA2"**: used to access **Installer** parameters. The password is enabled by default (**PS2=15**).

To modify it (**PS2≠15**): press **set** and hold for longer than 5 seconds, scroll through the parameters using **⏪** and **⏩** until you see the label **PA2**, press **set**, set the value to "15" using **⏪** and **⏩**, then confirm using **set**. Scroll through the folders until you find the label **diS** and press **set** to enter. Scroll through the parameters using **⏪** and **⏩** until you see the label **PS2**, press **set** to display the value, modify it using **⏪** and **⏩**, then save it by pressing **set** or **⓪**.

The visibility of "PA2" is as follows:

- 1) **PA1 and PA2 ≠ 0**: Press and hold **set** for longer than 5 seconds to display "PA1" and "PA2". It will then be possible to decide whether to access the User (PA1) or the Installer (PA2) parameters.
- 2) **Otherwise**: The password "PA2" is amongst the level 1 parameters. If enabled, it will be required when accessing the Installer parameters; to enter it, proceed as instructed for password "PA1".

If the password entered is incorrect, the label PA1/PA2 will be displayed again and the procedure will need to be repeated.

## USING THE COPY CARD

The Copy Card is connected to the serial port (TTL) and allows rapid programming of the instrument parameters.

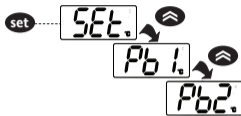
Access **Installer** parameters by entering "PA2", scroll through the folders using **⏪** and **⏩** until folder **FPr** appears. Select it using **set**, scroll through the parameters using **⏪** and **⏩**, then select the function using **set** (e.g. **UL**).

- **Upload (UL)**: Select UL and press **set**. This function uploads the programming parameters from the instrument to the card. If the procedure is a success, "y" will appear on the display, otherwise "n" will appear.
- **Format (Fr)**: This command is used to format the copy card, (recommended when using the card for the first time).  
**Important**: the **Fr** parameter deletes all data present. This operation cannot be cancelled.
- **Download**: Connect the Copy Card when the instrument is switched off. At power-on, data is downloaded from the copy card to the instrument automatically. At the end of the lamp test, the display will show "dLy" if the operation was successful and "dLn" if not.

**NOTE**: After downloading, the instrument works with the settings of the new map just downloaded.

## MACHINE STATUS MENU

Access the Machine Status menu by pressing **set** and releasing the key. If no alarms are active, the "SEt" label appears. Use the keys **⏪** and **⏩** to scroll through all the folders in the menu:



- AL: alarms folder (**only visible if an alarm is active**);
- SEt: Setpoint setting folder;
- Pb1: probe 1 - Pb1 folder;
- Pb2: probe 2 - Pb2\* folder;
- Pb3: probe 3 - Pb3\*\* folder;

\* folder displayed if Pb2 present (H42 = y)

\*\* folder displayed if Pb3 present (H11 = 0 and H43 = y)

### Setting the Setpoint:

To display the Setpoint value press the **set** key when the "SEt" label is displayed.

The Setpoint value appears on the display. To change the Setpoint value, press the **⏪** and **⏩** keys within 15 seconds. Press **set** to confirm the modification.

### Displaying the probes:

When labels Pb1, Pb2 or Pb3 are present, press the **set** key to view the value measured by the corresponding probe (**NOTE**: the value cannot be modified).

## PROGRAMMING MENU

To access the "Programming" menu, press the **set** key for more than 5 seconds. If specified, an access PASSWORD will be requested: "PA1" for User parameters and "PA2" for Installer parameters (see "PASSWORD" paragraph).

### User parameters:

When accessed, the display will show the first parameter (e.g. "diF"). Press **⏪** and **⏩** to scroll through all the parameters on the current level. Select the desired parameter by pressing **set**. Press **⏪** and **⏩** to modify it and **set** to save the changes.

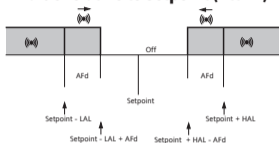
### Installer parameters:

When accessed, the display will show the first folder (e.g. "CP"). Press **⏪** and **⏩** to scroll through the folders on the current level. Select the desired folder using **set**. Press **⏪** and **⏩** to scroll through the parameters in the current folder and select the parameter using **set**. Press **⏪** and **⏩** to modify it and **set** to save the changes.

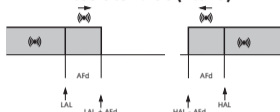
**NOTE:** Make sure you switch the instrument off and on again each time the parameter configuration is changed, in order to prevent malfunctioning in the configuration and/or timing in progress.

## MAX/MIN TEMPERATURE ALARMS

### Temperature as a value relative to Setpoint (Att=1)



### Temperature as an Absolute value (Att=0)



|  |  |   |
|--|--|---|
| Minimum alarm                            | Temp. $\leq$ <b>Set + LAL *</b>  | Temp. $\leq$ <b>LAL (LAL with sign)</b> |
| Maximum alarm                            | Temp. $\geq$ <b>Set + HAL **</b>   | Temp. $\geq$ <b>HAL (HAL with sign)</b> |
| Returning from minimum temperature alarm | Temp. $\geq$ <b>Set + LAL + Afd</b> or<br>$\geq$ <b>Set -  LAL  + Afd (LAL &lt; 0)</b> | Temp. $\geq$ <b>LAL + Afd</b>           |
| Returning from maximum temperature alarm | Temp. $\leq$ <b>Set + HAL - Afd (HAL &gt; 0)</b>                                       | Temp. $\leq$ <b>HAL - Afd</b>           |
|  | <b>* if LAL is negative, Set + LAL &lt; Set</b>  |   |
|  | <b>** if HAL is negative, Set + HAL &lt; Set</b>                                       |   |

## ELECTRICAL CONNECTIONS

**Attention! Make sure the machine is switched off before working on the electrical connections.**

The instrument is equipped with screw or disconnectable terminal blocks for connecting electrical cables with a max. diameter of 2.5 mm<sup>2</sup> (one wire per terminal for power connections): for the terminal ratings, see the label on the instrument.

Do not exceed the maximum permissible current; in case of higher loads, use a suitably rated contactor. Make sure the power supply voltage complies with that required by the instrument. Probes have no connection polarity and can be extended using a normal bipolar cable (note that the extension of the probes influences the electromagnetic compatibility - EMC - of the instrument: take great care with the wiring).

Probe cables, power supply cables and the TTL serial cable should be routed separately from power cables.

## TECHNICAL DATA (EN 60730-2-9)

|                            |   |
|----------------------------|---|
| Classification:            | operation (not safety) device for incorporation               |
| Mounting:                  | panel mounting with 71x29 mm (+0.2/-0.1 mm) drilling template |
| Type of action:            | 1.B   |
| Pollution class:           | 2   |
| Insulation material class: | IIIa  |
| Overvoltage category:      | II  |
| Rated impulse voltage:     | 2500 V  |
| Temperature:               | Use: -5 ... +55°C - Storage: -30 ... +85 °C                   |
| Power supply:              | 230 Vac ( $\pm 10\%$ ) 50/60 Hz                               |
| Consumption:               | 4.5 W max   |
| Digital outputs (relay):   | refer to the label on the device                              |
| Fire resistance category:  | D   |
| Software class:            | A   |

**NOTE: check the power supply specified on the instrument label; contact our Sales Office for power supply and relay ratings.**

## FURTHER INFORMATION

### Input Characteristics

|                  |  |
|------------------|--|
| Display range:   | <b>NTC:</b> -50.0 ... 110 °C; <b>PTC:</b> -55.0 ... 140 °C; <b>PT1000:</b> -55.0 ... 150 °C<br>(on display with 3 digits + sign)                               |
| Accuracy:        | <b>NTC, PTC, PT1000</b> (-55,0 ... 70 °C): Better than 0.5% of full scale +1 digit<br><b>PT1000</b> (70,0 ... 150 °C): Better than 0.6% of full scale +1 digit |
| Resolution:      | 0.1 °C   |
| Buzzer:          | YES  |
| Analogue inputs: | 2 NTC (default)/PTC/PT1000 (can be selected using parameter <b>H00</b> )   |
| Digital inputs:  | 2 voltage-free digital inputs  |

- N.B.:** - D.I.1 can also be configured as a probe input (**H11**=0 and **H43**=y)  
- D.I.2, if activated, should be connected to terminals 1-2 of the TTL

### **Output Characteristics**

|                  |   |
|------------------|---|
| Digital outputs: | 1 Compressor relay: UL60730 (A) 1.5Hp (10FLA - 60LRA) max 240 Vac |
|                  | 1 Defrost relay: NA 8(4) A - NC 6(3) A max 250 Vac                |
|                  | 1 Fans relay: 5(2) A max 250 Vac                                  |
|                  | 1 Alarm relay: 5(2) A max 250 Vac                                 |

### **Mechanical Characteristics**

|             |   |
|-------------|---|
| Casing:     | PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys    |
| Dimensions: | front panel 78.6x37 mm, depth 59 mm (without terminals)                         |
| Terminals:  | screw/disconnectable terminals for cables with a diameter of 2.5mm <sup>2</sup> |
| Connectors: | TTL for connection of Copy Card + D.I.2   |
| Humidity:   | Use / Storage: 10 ... 90 %RH (non-condensing)                                   |

### **Regulations**

|              |  |
|--------------|--|
| Food Safety: | The device complies with standard EN 13485 as follows: <ul style="list-style-type: none"><li>- suitable for storage</li><li>- application: air</li><li>- climate range A</li><li>- measurement class 1 in the range from -25 ... 15 °C (*)</li></ul> |
|--------------|--|

**(\* exclusively using Eliwell probes)**

**NOTE:** The technical specifications given in this document regarding measurement (range, accuracy, resolution, etc.) refer to the instrument and not to any accessories provided (for example: probes).

## DESCRIPTION OF IDPlus 978 FAMILY

IDPlus 978 devices are controllers with 4 relay outputs, 2 temperature sensors (regulation and evaporator), a multifunctional Digital/Temperature input and a digital input.

Relay outputs 2, 3 and 4 can be used to control:

- compressor
- defrost heating elements
- evaporator fans
- AUX output
- alarm
- Standby

The second probe can be used to control the defrost cycle and the evaporator fans.

The Digital inputs (D.I.1 and D.I.2) can be used for:

- Energy Saving
- defrost activation
- AUX management
- door switch
- standby
- external alarm
- deep cooling
- pressure switch
- HACCP alarms



## "USER MENU" PARAMETERS TABLE

| PAR. | DESCRIPTION  | RANGE          | AP1   | AP2   | AP3   | AP4   | M.U.  |
|------|--|----------------|-------|-------|-------|-------|-------|
| SEt  | Temperature control SEtpoint                                 | LSE ... HSE    | 0.0   | 0.0   | 0.0   | 0.0   | °C/°F |
| diF  | Compressor relay activation differential                     | 0.1 ... 30.0   | 2.0   | 2.0   | 2.0   | 2.0   | °C/°F |
| HSE  | Maximum value that can be assigned to the Setpoint           | LSE ... 302    | 99.0  | 99.0  | 99.0  | 99.0  | °C/°F |
| LSE  | Minimum value that can be assigned to the Setpoint           | -58.0 ... HSE  | -50.0 | -50.0 | -50.0 | -50.0 | °C/°F |
| dtY  | Type of defrost  | 0/1/2          | 0     | 0     |       | 1     | num   |
| dIt  | Interval between the start of two consecutive defrost cycles | 0 ... 250      | 6     | 6     | 6     | 6     | hours |
| dEt  | Defrost timeout  | 1 ... 250      | 30    | 30    | 30    | 30    | min   |
| dSt  | End defrost temperature                                      | -50.0 ... 150  | 8.0   | 8.0   | 8.0   | 8.0   | °C/°F |
| FSt  | Fans stop temperature  | -58.0 ... 302  | 50.0  | 50.0  | 50.0  | 50.0  | °C/°F |
| Fdt  | Fan activation delay after a defrost cycle                   | 0 ... 250      | 0     | 0     | 0     | 0     | min   |
| dt   | Coil drainage time   | 0 ... 250      | 0     | 0     | 0     | 0     | min   |
| dFd  | To select or exclude the fans (it depends on FCO parameter)  | n/y            | y     | y     | y     | y     | min   |
| HAL  | Maximum temperature alarm                                    | LAL ... 150    | 50.0  | 50.0  | 50.0  | 50.0  | °C/°F |
| LAL  | Minimum temperature alarm                                    | -50.0 ... HAL  | -50.0 | -50.0 | -50.0 | -50.0 | °C/°F |
| LOC  | Basic commands modification lock                             | n/y            | n     | n     | n     | n     | flag  |
| PS1  | PASsword 1 for access to QUICK menu parameters               | 0 ... 250      | 0     | 0     | 0     | 0     | num   |
| CA1  | Calibration1. Value to be added to the value read by probe 1 | -12.0 ... 12.0 | 0.0   | 0.0   | 0.0   | 0.0   | °C/°F |
| CA2  | Calibration2. Value to be added to the value read by probe 2 | -12.0 ... 12.0 | 0.0   | 0.0   | 0.0   | 0.0   | °C/°F |
| CA3  | Calibration3. Value to be added to the value read by probe 3 | -12.0 ... 12.0 | 0.0   | 0.0   |       | 0.0   | °C/°F |
| ddl  | Display mode during defrost                                  | 0/1/2          | 0     | 0     | 0     | 0     | num   |
| Ldd  | Display lock disabling timeout. 0 = function disabled        | 0 ... 255      | 30    | 30    | 30    | 30    | min   |
| SHH  | Maximum HACCP alarm signals threshold                        | -55.0 ... 150  |       | 10.0  |       |       | °C/°F |
| SLH  | Minimum HACCP alarm signals threshold                        | -55.0 ... 150  |       | -10.0 |       |       | °C/°F |
| drA  | Minimum time spent in critical range before alarm occurs     | 0 ... 99       |       | 10    |       |       | min   |
| drH  | HACCP alarm reset time after last reset                      | 0 ... 250      |       | 24    |       |       | hours |
| H50  | enable HACCP and alarm relay functions                       | 0/1/2          |       | 2     |       |       | num   |
| H51  | HACCP alarm exclusion time                                   | 0 ... 250      |       | 0     |       |       | min   |
| H42  | Evaporator probe present                                     | n/y            | y     | y     | y     | y     | flag  |
| H43  | Probe 3 present  | n/y            | n     | y     | n     | n     | flag  |
| rEL  | firmware rELease. Reserved: read-only parameter              | /              | /     | /     | /     | /     | /     |
| tAb  | table of parameters. Reserved: read-only parameter           | /              | /     | /     | /     | /     | /     |

**Notes:** \* The USER menu parameters also include: **PA2**, which can be used to access the Installer menu

\*\* To reset the HACCP alarms, use the **rES** function in the FnC folder for Installer parameters

\*\*\* For the complete list of parameters, see: **Table of Installer menu parameters.**

## "INSTALLER MENU" PARAMETERS TABLE

| PAR.                            | DESCRIPTION   | RANGE        | AP1   | AP2   | AP3   | AP4   | M.U.  |
|---------------------------------|---|--------------|-------|-------|-------|-------|-------|
| SEt                             | Temperature control SEtpoint.   | LSE ... HSE  | 0,0   | 0,0   | 0,0   | 0,0   | °C/°F |
| <b>COMPRESSOR ("CP" folder)</b> |   |              |       |       |       |       |       |
| diF                             | diFferential. Compressor relay activation differential.   | 0,1...30,0   | 2,0   | 2,0   | 2,0   | 2,0   | °C/°F |
| HSE                             | Higher SEt. Maximum value that can be assigned to the Setpoint.   | LSE...302    | 99,0  | 99,0  | 99,0  | 99,0  | °C/°F |
| LSE                             | Lower SEt. Minimum value that can be assigned to the Setpoint.  | -58,0...HSE  | -50,0 | -50,0 | -50,0 | -50,0 | °C/°F |
| OSP                             | Temperature value to be added to the Setpoint if reduced set enabled (Economy function).  | -30,0...30,0 | 3,0   | 0,0   | 0,0   | 3,0   | °C/°F |
| Hc                              | Control mode. <b>C</b> (0) = Cold; <b>H</b> (1) = Hot.  | C/H          | C     | C     | C     | C     | flag  |
| Ont                             | Controller on time for faulty probe.<br>If <b>Ont = 1</b> and <b>Oft = 0</b> , the compressor remains on;<br>if <b>Ont=1</b> and <b>Oft&gt;0</b> it runs in duty cycle mode.              | 0 ... 250    | 0     | 0     | 0     | 0     | min   |
| Oft                             | Controller off time for faulty probe.<br>If <b>Oft = 1</b> and <b>Ont = 0</b> , the controller remains off;<br>if <b>Oft = 1</b> and <b>Ont&gt;0</b> , it operates in duty cycle mode.    | 0 ... 250    | 1     | 1     | 1     | 1     | min   |
| dOn                             | Compressor relay activation delay after request.  | 0 ... 250    | 0     | 0     | 0     | 0     | secs  |
| dOf                             | Delay after switching off and subsequent activation.  | 0 ... 250    | 0     | 0     | 0     | 0     | min   |
| dbi                             | Delay between two consecutive compressor activations.   | 0 ... 250    | 0     | 0     | 0     | 0     | min   |
| OdO (!)                         | Delay in activating outputs after the instrument is switched on or after a power failure. <b>0</b> = not active.  | 0 ... 250    | 0     | 0     | 0     | 0     | min   |
| dcS                             | Deep Cooling cycle Setpoint.  | -58,0...302  | 0,0   | 0,0   | 0,0   | 0,0   | °C/°F |
| tdc                             | Deep Cooling cycle duration.  | 0 ... 255    | 0     | 0     | 0     | 0     | min   |
| dcc                             | Defrost activation delay after a Deep Cooling cycle.  | 0 ... 255    | 0     | 0     | 0     | 0     | min   |
| <b>DEFROST ("DEF" folder)</b>   |   |              |       |       |       |       |       |
| dtY                             | Type of defrost. <b>0</b> = electrical defrost;<br><b>1</b> = reverse cycle defrost; <b>2</b> = defrost independent of compressor.  | 0/1/2        | 0     | 0     | 0     | 1     | num   |
| dit                             | Interval between the start of two consecutive defrost cycles.   | 0 ... 250    | 6     | 6     | 6     | 6     | hours |
| dCt                             | Selection of count mode for the defrost interval.<br><b>0</b> = compressor running time; <b>1</b> = appliance running time;<br><b>2</b> = A defrost cycle is run at each compressor stop. | 0/1/2        | 1     | 1     | 1     | 1     | num   |

| PAR.                 | DESCRIPTION   | RANGE        | AP1   | AP2   | AP3   | AP4   | M.U.  |
|----------------------|---|--------------|-------|-------|-------|-------|-------|
| dOH                  | Delay for start of first defrost after request.   | 0 ... 59     | 0     | 0     | 0     | 0     | min   |
| dEt                  | Defrost timeout; determines the maximum defrost duration.   | 1 ... 250    | 30    | 30    | 30    | 30    | min   |
| dSt                  | Defrost end temperature - determined by probe Pb2.  | -50,0...150  | 8,0   | 8,0   | 8,0   | 50,0  | °C/°F |
| dPO                  | Determines whether the instrument must enter defrost mode at start-up.<br><b>n</b> (0) = no; <b>y</b> (1) = yes.  | n/y          | n     | n     | n     | n     | flag  |
| FANS ("FAn" folder)  |   |              |       |       |       |       |       |
| FSt                  | Fans stop temperature.  | -58,0...302  | 50,0  | 50,0  | 50,0  | 50,0  | °C/°F |
| FAd                  | Fan activation differential.  | 1,0 ... 50,0 | 2,0   | 2,0   | 2,0   | 2,0   | °C/°F |
| Fdt                  | Fan activation delay after a defrost cycle.   | 0 ... 250    | 0     | 0     | 0     | 0     | min   |
| dt                   | Coil drainage time.   | 0 ... 250    | 0     | 0     | 0     | 0     | min   |
| dFd                  | Allows evaporator fan exclusion to be selected or not selected during defrosting.<br><b>n</b> (0) = no (it depends on FCO parameter); <b>y</b> (1) = yes (fans excluded). | n/y          | y     | y     | y     | y     | flag  |
| FCO                  | Selects or deselects fan deactivation at compressor OFF.<br><b>0</b> = fans off; <b>1</b> = fans active; <b>2</b> = duty cycle  | 0/1/2        | 0     | 0     | 0     | 0     | num   |
| FOn                  | Fans ON time in day duty cycle.   | 0 ... 99     | 0     | 0     | 0     | 0     | min   |
| FOF                  | Fans OFF time in day duty cycle.  | 0 ... 99     | 0     | 0     | 0     | 0     | min   |
| Fnn                  | Fans ON time in night duty cycle.   | 0 ... 99     | 0     | 0     | 0     | 0     | min   |
| FnF                  | Fans OFF time in night duty cycle.  | 0 ... 99     | 0     | 0     | 0     | 0     | min   |
| ESF                  | Night mode activation. <b>n</b> (0) = no; <b>y</b> (1) = yes.   | n/y          | n     | n     | n     | n     | flag  |
| ALARMS ("AL" folder) |   |              |       |       |       |       |       |
| Att                  | Can be used to select absolute ( <b>Att=0</b> ) or relative ( <b>Att=1</b> ) values for HAL and LAL parameters.   | 0/1          | 0     | 0     | 0     | 0     | num   |
| Afd                  | Alarm differential.   | 1,0 ... 50,0 | 2,0   | 2,0   | 2,0   | 2,0   | °C/°F |
| HAL                  | Maximum temperature alarm.  | LAL...302    | 50,0  | 50,0  | 50,0  | 50,0  | °C/°F |
| LAL                  | Minimum temperature alarm.  | -58,0...HAL  | -50,0 | -50,0 | -50,0 | -50,0 | °C/°F |
| PAO                  | Alarm exclusion time after re-activation following a power failure.   | 0 ... 10     | 0     | 0     | 0     | 0     | hours |
| dAO                  | Temperature alarm exclusion time after defrost.   | 0 ... 999    | 0     | 0     | 0     | 0     | min   |
| OAO                  | Alarm signalling delay after disabling of digital input.  | 0 ... 10     | 0     | 0     | 0     | 0     | hours |
| tdO                  | Delay in door open alarm activation.  | 0 ... 250    | 0     | 0     | 0     | 0     | min   |

| PAR.                                   | DESCRIPTION  | RANGE        | AP1 | AP2 | AP3 | AP4 | M.U.  |
|--|--|--------------|-----|-----|-----|-----|-------|
| tAO                                    | Time delay for temperature alarm indication.   | 0 ... 250    | 0   | 0   | 0   | 0   | min   |
| dAt                                    | Alarm signalling end of defrost due to timeout. <b>n</b> (0) = no; <b>y</b> (1) = yes.   | n/y          | n   | n   | n   | n   | flag  |
| rLO                                    | External alarm locks controllers. <b>n</b> (0) = does not lock; <b>y</b> (1) = locks.  | n/y          | n   | n   | n   | n   | flag  |
| SA3                                    | Probe 3 alarm Setpoint.  | -58,0...302  | 0,0 | 0,0 | 0,0 | 0,0 | °C/°F |
| dA3                                    | Probe 3 alarm differential.  | 1,0 ... 50,0 | 1,0 | 1,0 | 1,0 | 1,0 | °C/°F |
| LIGHTS & DIGITAL INPUTS ("Lit" folder) |  |              |     |     |     |     |       |
| dOd                                    | Digital input for switching off utilities. <b>0</b> =disabled; <b>1</b> =disables fans; <b>2</b> =disables the compressor; <b>3</b> =disables fans and compressor. | 0/1/2/3      | 0   | 0   | 0   | 0   | num   |
| dAd                                    | Activation delay for digital input.  | 0 ... 255    | 0   | 0   | 0   | 0   | min   |
| dCO                                    | Compressor deactivation delay after door opened.   | 0 ... 255    | 1   | 1   | 1   | 1   | min   |
| AuP                                    | Aux output activation when door opened. <b>n</b> (0) = not linked; <b>y</b> (1) = linked.  | n/y          | n   | n   | y   | n   | flag  |
| PRESSURE SWITCH ("PrE" folder)         |  |              |     |     |     |     |       |
| Pen                                    | Number of errors allowed for general pressure switch input.  | 0 ... 15     | 0   | 0   | 0   | 0   | num   |
| PEI                                    | General pressure switch error count interval.  | 1 ... 99     | 1   | 1   | 1   | 1   | min   |
| PEt                                    | Delay in activating compressor after pressure switch deactivation.   | 0 ... 255    | 0   | 0   | 0   | 0   | min   |
| COMMUNICATION ("Add" folder)           |  |              |     |     |     |     |       |
| PtS                                    | Communication protocol selection. <b>t</b> (0) = Televis; <b>d</b> (1) = Modbus.   | t/d          | t   | t   | t   | t   | flag  |
| dEA                                    | Index of the device inside the family (valid values from 0 to 14).   | 0 ... 14     | 0   | 0   | 0   | 0   | num   |
| FAA                                    | Device family (valid values from 0 to 14).   | 0 ... 14     | 0   | 0   | 0   | 0   | num   |
| Pty                                    | Modbus parity bit. <b>n</b> (0) = none; <b>E</b> (1) = even; <b>o</b> (2) = odd.   | n/E/o        | n   | n   | n   | n   | num   |
| StP                                    | Modbus stop bit. <b>1b</b> (0) = 1 bit; <b>2b</b> (1) = 2 bit.   | 1b/2b        | 1b  | 1b  | 1b  | 1b  | flag  |
| DISPLAY ("diS" folder)                 |  |              |     |     |     |     |       |
| LOC                                    | Basic commands modification lock. It is still possible to enter parameter programming mode and modify them. <b>n</b> (0) = no; <b>y</b> (1) = yes.                 | n/y          | n   | n   | n   | n   | flag  |
| PS1                                    | PAssword1: if <b>PS1≠0</b> is the access key to <b>User</b> parameters.  | 0 ... 250    | 0   | 0   | 0   | 0   | num   |
| PS2                                    | PAssword2: if <b>PS2≠0</b> is the access key to <b>Installer</b> parameters.   | 0 ... 250    | 15  | 15  | 15  | 15  | num   |
| ndt                                    | Display with decimal point. <b>n</b> (0) = no; <b>y</b> (1) = yes.   | n/y          | y   | y   | y   | y   | flag  |
| CA1                                    | Calibration 1. Temperature value to be added to the Pb1 value.   | -12,0...12,0 | 0,0 | 0,0 | 0,0 | 0,0 | °C/°F |
| CA2                                    | Calibration 2. Temperature value to be added to the Pb2 value.   | -12,0...12,0 | 0,0 | 0,0 | 0,0 | 0,0 | °C/°F |

| PAR.  | DESCRIPTION   | RANGE        | AP1 | AP2 | AP3 | AP4 | M.U.  |
|---|---|--------------|-----|-----|-----|-----|-------|
| CA3   | Calibration 3. Temperature value to be added to the Pb3 value.  | -12,0...12,0 | 0,0 | 0,0 | 0,0 | 0,0 | °C/°F |
| ddl   | Display mode during defrost. <b>0</b> = display the temperature recorded by Pb1; <b>1</b> = lock recorded value of Pb1 at defrost start; <b>2</b> = display the "dEF" label.  | 0/1/2        | 0   | 0   | 0   | 0   | num   |
| Ldd   | Timeout value for display unlock - dEF label.   | 0 ... 255    | 30  | 30  | 30  | 30  | min   |
| dro   | Select the unit of measurement used when displaying the temperature recorded by the probes. ( <b>0</b> = °C, <b>1</b> = °F).<br><b>NOTE: switching between °C and °F or viceversa DOES NOT modify the Set, diF values, etc. (e.g. Setpoint=10°C becomes 10°F).</b>  | 0/1          | 0   | 0   | 0   | 0   | flag  |
| ddd   | Selects the type of value to display.<br><b>0</b> = Setpoint; <b>1</b> = probe Pb1; <b>2</b> = probe Pb2; <b>3</b> = probe Pb3.   | 0/1/2/3      | 1   | 1   | 1   | 1   | num   |
| <b>HACCP ("HCP" folder)</b>   |   |              |     |     |     |     |       |
| SHH   | Maximum HACCP alarm signals threshold.  | -55,0...150  | 0   | 10  | 0   | 0   | °C/°F |
| SLH   | Minimum HACCP alarm signals threshold.  | -55,0...150  | 0   | -10 | 0   | 0   | °C/°F |
| drA   | Minimum time spent in critical range for the event to be recorded. After this a HACCP alarm will be triggered and logged.   | 0 ... 99     | 0   | 10  | 0   | 0   | min   |
| drH   | HACCP alarm reset time after last reset.  | 0 ... 250    | 0   | 24  | 0   | 0   | hours |
| H50   | Enable HACCP and alarm relay functions. <b>0</b> = HACCP alarms NOT enabled; <b>1</b> = HACCP alarms enabled and alarm relay NOT enabled; <b>2</b> = HACCP alarms enabled and alarm relay enabled.  | 0/1/2        | 0   | 2   | 0   | 0   | num   |
| H51   | HACCP alarm exclusion time.   | 0 ... 250    | 0   | 0   | 0   | 0   | min   |
| <b>CONFIGURATION ("CnF" folder) ➡ If one or more parameters present in this folder are changed, the controller MUST be powered-off and then powered-on.</b> |   |              |     |     |     |     |       |
| H00 (!)   | Probe type selection. <b>0</b> = PTC; <b>1</b> = NTC; <b>2</b> = PT1000.  | 0/1/2        | 1   | 1   | 1   | 1   | num   |
| H11   | Configuration of digital input 1/polarity. <b>0</b> = disabled;<br><b>±1</b> = defrost; <b>±2</b> = economy Setpoint; <b>±3</b> = AUX;<br><b>±4</b> = door switch; <b>±5</b> = external alarm; <b>±6</b> = Standby;<br><b>±7</b> = pressure switch; <b>±8</b> = deep cooling; <b>±9</b> = disable HACCP alarm logging.<br><b>NOTE:</b> • the "+" sign indicates that the input is active if the contact is closed.<br>• the "-" sign indicates that the input is active if the contact is open. | -9 ... +9    | 0   | 0   | 4   | 0   | num   |

| PAR.                            | DESCRIPTION   | RANGE     | AP1 | AP2 | AP3 | AP4 | M.U. |
|---------------------------------|---|-----------|-----|-----|-----|-----|------|
| H12                             | Configuration of digital input 2/polarity. Same as H11.   | -9 ... +9 | 0   | 0   | 0   | 0   | num  |
| H21                             | Configurability of digital output 1 (✱).<br><b>0</b> = disabled; <b>1</b> = compressor; <b>2</b> = defrost; <b>3</b> = fans;<br><b>4</b> = alarm; <b>5</b> = AUX; <b>6</b> = Standby.   | 0 ... 6   | 1   | 1   | 1   | 1   | num  |
| H22                             | Configurability of digital output 2 (✱). Same as H21.   | 0 ... 6   | 2   | 2   | 2   | 2   | num  |
| H23                             | Configurability of digital output 3 (✱). Same as H21.   | 0 ... 6   | 3   | 3   | 3   | 3   | num  |
| H24                             | Configurability of digital output 4 (△).<br><b>0</b> = disabled; <b>1</b> = compressor; <b>2</b> = defrost; <b>3</b> = fans;<br><b>4</b> = alarm; <b>5</b> = AUX; <b>6</b> = Standby; <b>7</b> = not used.                          | 0 ... 7   | 4   | 4   | 5   | 4   | num  |
| H25                             | Enable/Disable buzzer.<br><b>0</b> = Disabled; <b>4</b> =Enabled; <b>1-2-3-5-6-7-8</b> = not used.  | 0 ... 8   | 4   | 4   | 4   | 4   | num  |
| H31                             | Configurability of UP key.<br><b>0</b> = disabled; <b>1</b> = defrost; <b>2</b> = AUX; <b>3</b> = economy Setpoint; <b>4</b> = standby;<br><b>5</b> = reset HACCP alarms; <b>6</b> = disable HACCP alarms; <b>7</b> = deep cooling. | 0 ... 7   | 1   | 1   | 1   | 1   | num  |
| H32                             | Configurability of DOWN key. Same as H31.   | 0 ... 7   | 0   | 0   | 0   | 0   | num  |
| H42                             | Evaporator probe present. <b>n</b> (0) = not present; <b>y</b> (1) = present.   | n/y       | y   | y   | y   | y   | flag |
| H43                             | Probe 3 present. <b>n</b> (0) = not present; <b>y</b> (1) = present.  | n/y       | n   | y   | n   | n   | flag |
| rEL                             | Device version. Read-only parameter.  | /         | /   | /   | /   | /   | /    |
| tAb                             | tAble of parameters. Reserved: read-only parameter.   | /         | /   | /   | /   | /   | /    |
| <b>COPY CARD ("FP" folder)</b>  |   |           |     |     |     |     |      |
| UL                              | Programming parameter transfer from instrument to Copy Card .   | /         | /   | /   | /   | /   | /    |
| Fr                              | Format Copy Card. Erase all data contained in the Copy Card.<br><b>NOTE: If parameter "Fr" is used, the data entered will be permanently lost. This operation cannot be cancelled.</b>  | /         | /   | /   | /   | /   | /    |
| <b>FUNCTIONS ("FnC" folder)</b> |   |           |     |     |     |     |      |
| rAP                             | Reset pressure switch alarms.   | /         | /   | /   | /   | /   | /    |
| rES                             | Reset HACCP alarms.   | /         | /   | /   | /   | /   | /    |

**NOTE:** If one or more parameters marked with (!) are modified, the controller MUST be switched off and then switched on again to ensure correct operation.

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