

The device consists of two units:

- an open IWK Desmon keyboard 225x28mm ;
- an IWP power module.

The IWK keyboard is connected to the IWP power module using an “powered” serial connection called **LINK PLUS**.

NOTE:

The IWK Desmon keyboard is an open keyboard (supplied as an open board with no silk screening and polycarbonates) that can be installed/enclosed in a special device/casing according to the manufacturer’s requirements.

The keyboard is shown on the right. It consists of:

- 6 buttons (4 “primary” and 2 “secondary” or “function buttons”
- 7 LEDs (1 display LED and 6 “button” LEDs)

The symbols and names of the buttons and LEDs clearly indicate their functions.

USER INTERFACE

(example with 6-button open-keyboard).

The user has a keyboard with a display, 6 LEDs on the keyboard and the LED on the Display and 6 buttons for controlling instrument status and programming.

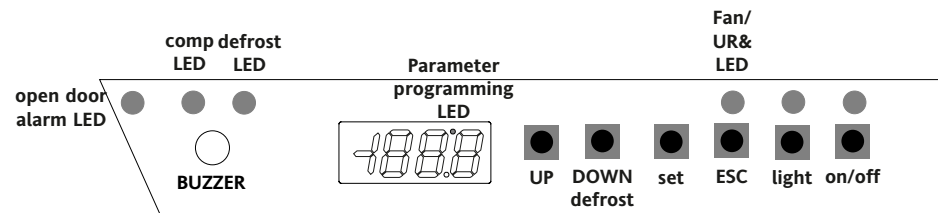
BUTTONS AND MENUS

| | |
|----------------------------|---|
| UP Button | Scrolls through the menu items Increases the values |
| DOWN button/manual defrost | Scrolls through the menu items Decreases the values <u>(hold down)</u> activates defrosting Manual |
| esc button | ESC function (quit) <u>(hold down)</u> Activates RH% (function RH&, reduction in humidity) |

Set point/programming button
(press once)

MACHINE STATUS MENU

- Accesses set point
- Displays alarms (if active)
- Displays Pb1 and Pb2 (see) (hold down)



- Accesses Parameter Programming menu

UP button +esc button pressed simultaneously

(press for 2 seconds)

- Locks/unlocks keyboard

“ON-OFF” button(hold down)

Switches unit on/off

“LIGHT” button

Switches on light

LEDS

Parameter programming LED

- ON in PROGRAMMING MENU;
- blinking for delay, protection or enabling blocked

Compressor LED

- ON for compressor on;
- blinking for delay, protection or enabling blocked

Defrost LED

- ON when defrosting is in progress;
- blinking when activated manually or with digital input

Fans/RH% LED

- ON when fan is on;
- blinking for **RH& function, humidity reduction**

Door open alarm LED

- blinking when door open for **tdO**. When this time expires, the buzzer is activated; **the LED stays permanently on when buzzer goes off;**

“on-off” LED

- ON when unit is “off” (on **STAND-BY**);
- OFF when unit is on;

“cell light” LED

- ON when light is on;
- PLEASE NOTE:** the LEDS are OFF in any other circumstances not described here

START-UP

At Start-up the instrument performs a Lamp Test; the display and LEDs flash for a few seconds (**888**), to check that they are working correctly.

ACTIVATING MANUAL DEFROST CYCLE

To activate the defrost cycle manually, press the DOWN button for n seconds. If the right defrosting conditions are not present (the temperature of the evaporator probe is higher than the end of defrost temperature, for example) or parameter $OdO \neq 0$, the display will flash three (3) times to indicate that the operation will not be performed.

ACCESSING AND USING MENUS

The instrument has two main menus: the Machine Status menu and the Programming menu. The resources are arranged in a menu that can be accessed:

- by pressing and quickly releasing the “set” button (Machine Status menu) or
- by holding down the “set” button for more than 5 seconds (Programming menu) or

• by holding down the “UP” and “DOWN” buttons for more than 3 seconds (Local keyboard programming menu). To access the contents of each folder indicated by the relevant label, just press the “set” button once. You can now scroll through the contents of each folder, modify it or use its functions.

If you do not use the keyboard for over 15 seconds (time-out) or if you press the “fnc” button once, the last value shown on the display is confirmed and you return to the previous screen mask.

MACHINE STATUS MENU

(See Machine Status Menu Diagram)

To access the Machine Status menu, press the “set” button and quickly release it. If no alarms are present, the label “SEt” appears. By using the “UP” and “DOWN” buttons you can scroll through the other folders in the menu:

-AL: alarm folder (if alarms present, except

for faulty probes/probe errors;

-SEt: Setpoint setting folder.

-Pb1: probe 1 value folder;

-Pb2: probe 2 value folder;

Set setting

Access the "Machine Status" menu, press the "set" button and quickly release it.

The "Set" folder label appears. To display the Set point value, press the "set" button again.

The Set point value appears on the display.

To change the Set point value, use the "UP" and "DOWN" buttons within 15 seconds. If the parameter is LOC = y the Set point cannot be changed.

Alarm on

If an alarm condition exists when the Machine Status menu is accessed the "AL" folder label appears (see section on "Diagnostics").

Displaying probes

If you press the "set" button when the corresponding label appears, the value of the probe associated with it is displayed.

PROGRAMMING MENU

(See Programming Menu Diagram)

To access the Programming menu, hold the "set" button for more than 5 seconds. If specified, the level 1 access PASSWORD will be requested (see parameter "PA1") and (if the password is correct) the label of the first folder will appear. If the password is incorrect, the display will show the PA1 label again.

Use the "UP" and "DOWN" buttons to scroll through the other folders; **the folders will only display level 1 parameters.**

FUNCTIONS

FNC FUNCTION FOLDER

The FnC folder (last folder visible from the Programming Menu, level 1) contains the following functions. They are activated using the "set" button

If the unit is switched off, the function labels go back to their default status.

PASSWORD

The "PA1" password allows level 1 parameters to be accessed.

| Function | Function label ACTIVE | Function label INACTIVE |
|-------------------|-----------------------|-------------------------|
| HACCP alarm reset | rES | rES |

This password is not present in the standard configuration.

To enable it (value ≠0) and assign it the desired value, access the Programming menu in the "diS" folder.

If the password is enabled, it will be requested when entering the Programming menu. (see the "Programming Menu" section);

LIGHT-DOOR SWITCH

• button enabled

If you press the "LIGHT" button the auxiliary relay/light is activated (if it was off, otherwise if it was on it is deactivated).

• digital input enabled

The digital input can be configured as auxiliary/door switch.

As stated, this function can be used to activate the light relay if it was de-energized or energize it if this was not the case.

When the digital input (D.I.) is activated, the light relay is enabled (if par. dSd=y) and the light relay is disabled when the D.I. is disabled.

The status is recorded so that it functions correctly in the event of a black-out; the light button and the light enable function can also be activated if the unit is on STAND-BY.

The light button always disables the light relay if par. OFL=y

STAND BY/ON-OFF

Note: The STAND BY/ON-OFF function can be selected quickly by pressing the dedicated on/off button for at least 2 seconds.

Once the STAND-BY/ON-OFF function has been enabled, the display goes out, the controllers are blocked including the alarms and the cycle times are reset.

The status is recorded so that when power is restored after a black-out the device can continue to operate in the same way as before the power failure. After start-up, the temperature alarm is excluded for the period of time set by parameter PAO.

RH& FUNCTION

If this control is enabled, the fans operate continuously (always on). During defrosting the fans are controlled by the defrosting parameters and during the dripping cycle they will be turned off even if RH% is active.

NOTE: RH% status has priority over all other parameters.

If there is a power failure or the machine has been turned off, the RH% status will be restored as soon as the mains power supply returns or the machine is turned on.

MECHANICAL ASSEMBLY

The unit has been designed for:

- IWK Desmon keyboard:
 - open installation with screw mounting
- IWP power module: on special fixing points.

Do not assemble the keyboard in excessively humid and/or dirty locations because it is designed to be used in locations with normal pollution levels.

Always make sure that the area next to the unit cooling slits is adequately ventilated.

ELECTRICAL

WIRING

Warning! Always switch off machine before working on electrical connections.

The unit is fitted with:

- **IWP power base:** FASTON connectors and screw connectors for connecting electrical cables with a diameter of 2.5 mm² max. (only one conductor per terminal for power connections): for terminal capacity, see the label on the instrument.
- **IWK Desmon keyboard:** screw connectors for connecting electrical cables with a diameter of 2.5 mm² max. (only one conductor per terminal for power connections): for terminal capacity, see the label on the instrument.

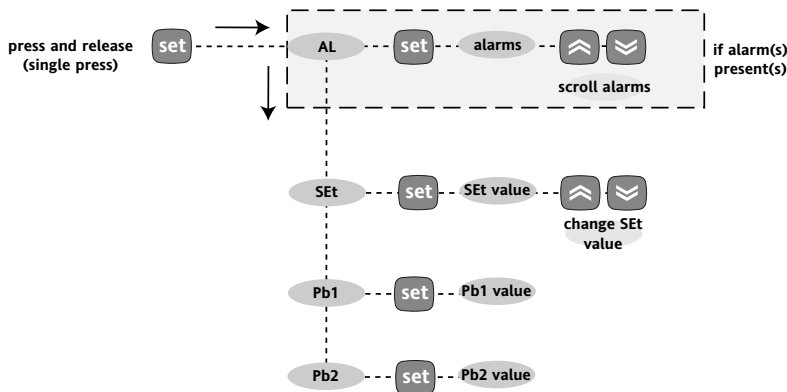
The relay contacts are voltage free.

Do not exceed the maximum current allowed. For higher loads, use a suitable contactor.

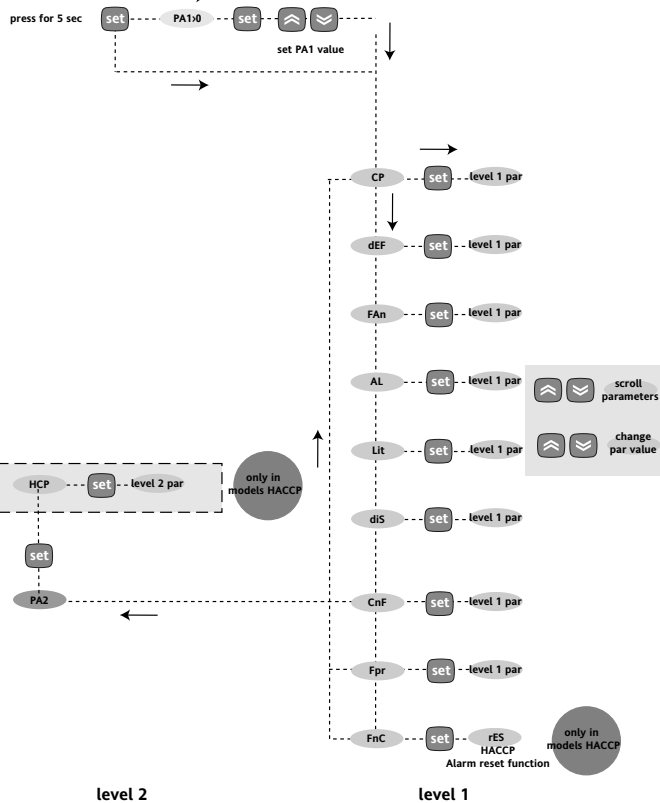
Make sure that the power voltage complies with the device voltage. Probes have no connection polarity and can be extended using an ordinary bipolar cable (note that if probes are extended this affects the electromagnetic compatibility (EMC) of the instrument: special care must be used when wiring).

Probe cables, power supply cables and the TTL serial cable should be kept separate from power cables.

MACHINE STATUS MENU DIAGRAM



PROGRAMMING MENU DIAGRAM



USING COPY CARD

The Copy Card is an accessory connected to the TTL serial port used for quick programming of the unit parameters (upload and download parameter map to one or more units of the same type). Operations are described below:

Fr-Format

This command is used to format the copy card. This is **necessary** if

- it is used for the first time,
- it is used with models that are incompatible,
- after use with a specific model if another model needs to be connected.

Warning: when the copy card has been programmed using the “Fr” parameter all the data entered is cancelled. This operation cannot be undone.

UL-Upload

This operation unloads the programming parameters from the instrument.

dL-Download

This operation downloads the programming parameters to the instrument.

NOTE:

- **UPLOAD:** instrument → Copy Card
- **DOWNLOAD:** Copy Card → instrument.

The operations are performed by accessing the folder identified by the “FPr” label and selecting the “UL”, “dL” or “Fr” commands. The operation is confirmed by pressing the “set” button. If the operation is successful, a “y” is displayed whereas if it is unsuccessful an “n” will be displayed.

Download “from reset”

Connect the copy card with the instrument OFF.

When the instrument is switched on the programming parameters will be downloaded into the copy card; when the lamp test has been completed, the following appear on the display for about 5 seconds:

- label dLY if copy operation is successful
- label DLn if operation fails

PLEASE NOTE:

- after downloading the instrument will work with the parameter map settings that have just been downloaded.

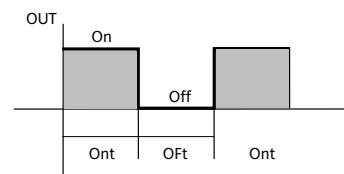
DUTY CYCLE DIAGRAM

Ont, OFt parameters programmed for Duty Cycle

| Ont | OFt | Compressor output |
|-----|-----|-------------------|
| 0 | 0 | OFF |
| 0 | >0 | OFF |
| >0 | 0 | ON |
| >0 | >0 | dc |

The error condition for probe 1 (compressor) causes the following:

- E1 code appears on display
- the controller is activated as indicated by the “Ont” and “OFt” parameters if programmed for Duty Cycle



DIAGNOSTICS

The alarm condition is always signalled by a buzzer (if present) and the alarm icon LED. The alarms from the faulty thermostat control probe (probe 1) and the faulty evaporator probe (probe 2) appear directly on the instrument display as E1 and E2 respectively.

Table of faulty probes

| DISPLAY | FAULT |
|---------|-------------------------------------|
| E1 | Faulty probe 1 (thermostat control) |
| E2 | Faulty probe 2 (1st evaporator) |

If simultaneous, they will be shown on the display alternately every 2 seconds

An error condition in probe 1 (thermostat control) causes the following:

- E1 code appearing on display
- compressor is activated as indicated by "Ont" and "OfT" parameters if these are programmed for duty cycle or (see **Duty Cycle Diagram**)

The error condition for probe 2 (evaporator) causes the following:

- E2 code appears on display
- end of defrost due to time-out. Other alarms do not appear on the instrument display but can be seen in the "Machine Status" menu in the "AL" folder.

The maximum and minimum temperature alarm is controlled by the thermostat control probe (probe 1).

The temperature limits are preset by the "HAL" (maximum alarm) and "LAL" (minimum alarm) parameters.

MAXIMUM AND MINIMUM TEMPERATURE ALARM

If an alarm condition occurs and alarm exclusion times are not in progress (see alarm exclusion parameters), the alarm icon lights up permanently and the relay that is configured as an alarm is activated.

This type of alarm does not affect the regulating in progress.

Alarms are considered as absolute (default) values or as values related to the Set point (the distance from the Set point itself) and based on the Att parameter. This alarm condition can be viewed in the folder "AL" with the labels "AH1-AL1".

DEFROST ALARM

If the end of defrosting is caused by a time-out (rather than because an end of defrost temperature is detected by the defrosting probe), an alarm is generated and the icon lights up.(if **dAt=y**).

This condition can be viewed in the "AL" folder with the label "Ad2". Automatic back swinging occurs when the next defrost starts. By pressing any button during the alarm condition, the signal light disappears. In order to cancel the alarm properly, you must wait until the next defrost.

EXTERNAL ALARM

The device can also control an external alarm, i.e. from a digital input. If the digital input is enabled, the alarm control is activated by programming and remains enabled until the next time the digital input is deactivated. When an alarm is set off, the alarm icon lights up permanently, the relay configured as alarm is activated and the compressor, defrost and fan controllers are deactivated (if specified by the "EAL" parameter). This alarm condition can be displayed in the "AL" folder using the "EA" label. The relay can be silenced; even if the alarm icon starts blinking, the controllers remain locked until the next time the digital input is deactivated.

OPEN DOOR ALARM

If a door is open, in response to a delay preset by the tdO parameter, the Open Door alarm is signalled.

The alarm is signalled by the alarm icon that starts blinking. This alarm condition can be viewed in the "AL" folder with the label "OPd".

Alarm table

| DISPLAY | ALARM |
|---------|---|
| AH1 | High temperature alarm (referring to room probe or probe 1) |
| AL1 | Low temperature alarm (referring to room probe or probe 1) |
| Ad2 | Defrosting timed out |
| EA | External alarm |
| OPd | Door Open Alarm |

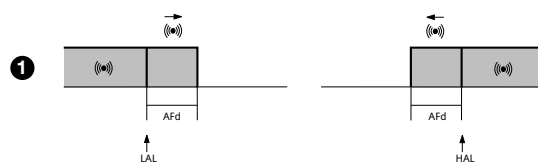
Press any button to silence the alarm. The LED will start to blink.

HACCP ALARMS

SEE HACCP APPENDIX

MAX/MIN ALARM DIAGRAM

Temperature expressed as an absolute value (par "Att"=0) Abs(olute)



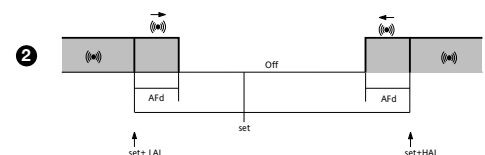
Minimum temperature alarm Temperature lower than or equal to LAL (LAL with sign)

Maximum temperature alarm Temperature higher than or equal to HAL (HAL with sign)

Minimum temperature alarm back swing Temperature higher than or equal to LAL+AFd

Maximum temperature alarm back swing Temperature lower than or equal to HAL-AFd

Temperature expressed in relation to set point (par "Att"=0) reL(ative)



Temperature lower than or equal to set point+LAL (set point-|LAL|) (LAL only negative)

Temperature higher than or equal to set point+HAL (HAL only positive)

Temperature higher than or equal to set point + LAL + AFd set point - |LAL| +AFd

Temperature lower than or equal to set point+HAL-AFd

if Att=reL(ative) LAL must be negative: therefore set point+LAL<set point because set point+(-|LAL|)=set point-|LAL|

IWP 750(LX) MODULE

TECHNICAL DATA

Casing: open board.

Dimensions:

• IWP 750 (LX) model: 108x160 mm.

Mounting: adaptable to casings with dimensions that comply with DIN standards (DIN rail mounted)

Operating temperature: -5...55 °C.

Storage temperature: -30...85 °C.

Usage ambient humidity: 10...90 % RH (non-condensing).

Storage ambient humidity: 10...90% RH (non-condensing).

Display range: -50...110 (NTC);

-55...140 (PTC) °C without decimal point (parameter selectable), on display 3 digits + sign. Analogue inputs: two PTC or NTC inputs (H00 parameter-selectable).

Digital inputs: 1 voltage-free (clean contact) door switch digital input.

Serial outputs (**also see Serial Output table**):

TTL Serial Outputs (standard 5-way connectors):

• TTL.

• TTL for Copy Card connection.

Serial Outputs for base board-keyboard connection:

• “Powered” serial connection (also called LINK PLUS) using +12V, GND and DATA lines.

NOTE: the distance between two modules must be less than 10 m

Digital outputs:

• IWP 750 model: 5 outputs on configurable relays:

• first output (OUT1) 20A SPST 2 Hp 250V~;

• second output (OUT2) 8 A SPDT 1/2 Hp 250V~;

• third output SPST (OUT3) 8A SPST 1/2 Hp 250V~;

• fourth output (OUT4) 8(3)A SPDT 1/2 Hp 250V~;

• fifth output (OUT5) 16 A SPST 1 Hp 250V~;

Measurement range: from -55 a 140 °C.

Accuracy: better than 0.5% of bottom scale +1 digit.

Resolution: 1 or 0.1 °C.

Consumption: 8 VA.

Power supply: 230 V~/= ±10% 50/60 Hz

Warning: check the power supply specified on the instrument label; for information on relay capacity and power supplies contact the Sales Office.

IWK DESMON KEYBOARD

TECHNICAL DATA

Front protection: IP65.

Casing: open board.

Dimensions: 225x28mm

Mounting: screw

Number of buttons: 6

Number of LEDs: 7

Operating temperature: -5...55 °C.

Storage temperature: -30...85 °C.

Usage ambient humidity: 10...90 % RH (non-condensing).

Storage ambient humidity: 10...90% RH (non-condensing).

Display range: -50...110 (NTC);

-55...140 (PTC) °C without decimal point (parameter selectable), on display 3 digits + sign.

Measurement range: from -55 a 140 °C.

Accuracy: better than 0.5% of bottom scale +1 digit.

Resolution: 1 or 0.1 °C.

Outputs: BUZZER output

Base board-keyboard connection: **see IWP750 Technical Data**

Serials: see IWP750 Technical Data

Consumption: **see IWP750 Technical Data**

Power supply: 12V= from IWP power module.

NOTE: The technical characteristics in this document concerning measurements (range, accuracy, resolution, etc.) refer to the instrument in the strictest sense and not to any accessories provided such as probes, for example.

This means that an error introduced by the probe is added to any error that is in the instrument.

Table of IWP Serial Outputs

| Type | Use | Lines | Accessories (on IWP base) |
|----------------------------|--------------------------------|----------------|---------------------------|
| TTL | Copy Card | TTL | - |
| Powered serial (LINK PLUS) | Base Board-KeyBoard Connection | GND, DATA, 12V | - |

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CONDITIONS OF USE

PERMITTED USE

For safety reasons the instrument must be installed and used in accordance with the instructions supplied. Users must not be able to access parts with dangerous voltage levels under normal operating conditions.

The device must be protected from water and dust depending on the specific application and only be accessible using special tools. (except for the front panel).

The device is ideally suited for use on household appliances and/or similar refrigeration equipment and has been tested with regard to safety in accordance with the European harmonized reference standards.

It is classified as follows:

- for its construction, as an automatic electronic control device to be independently mounted;
- for its automatic operating features, as a 1 B-type operated control type device;
- as a Class A device in relation to the category and structure of the software.

UNPERMITTED USE

The use of the unit for applications other than those described above is forbidden.

It should be noted that the relay contacts supplied with the device are functional and therefore exposed to potential faults. Any protection devices required to comply with product requirements or dictated by common sense due to obvious safety reasons should be installed externally.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell & Controlli srl shall not be liable for any damages deriving from:

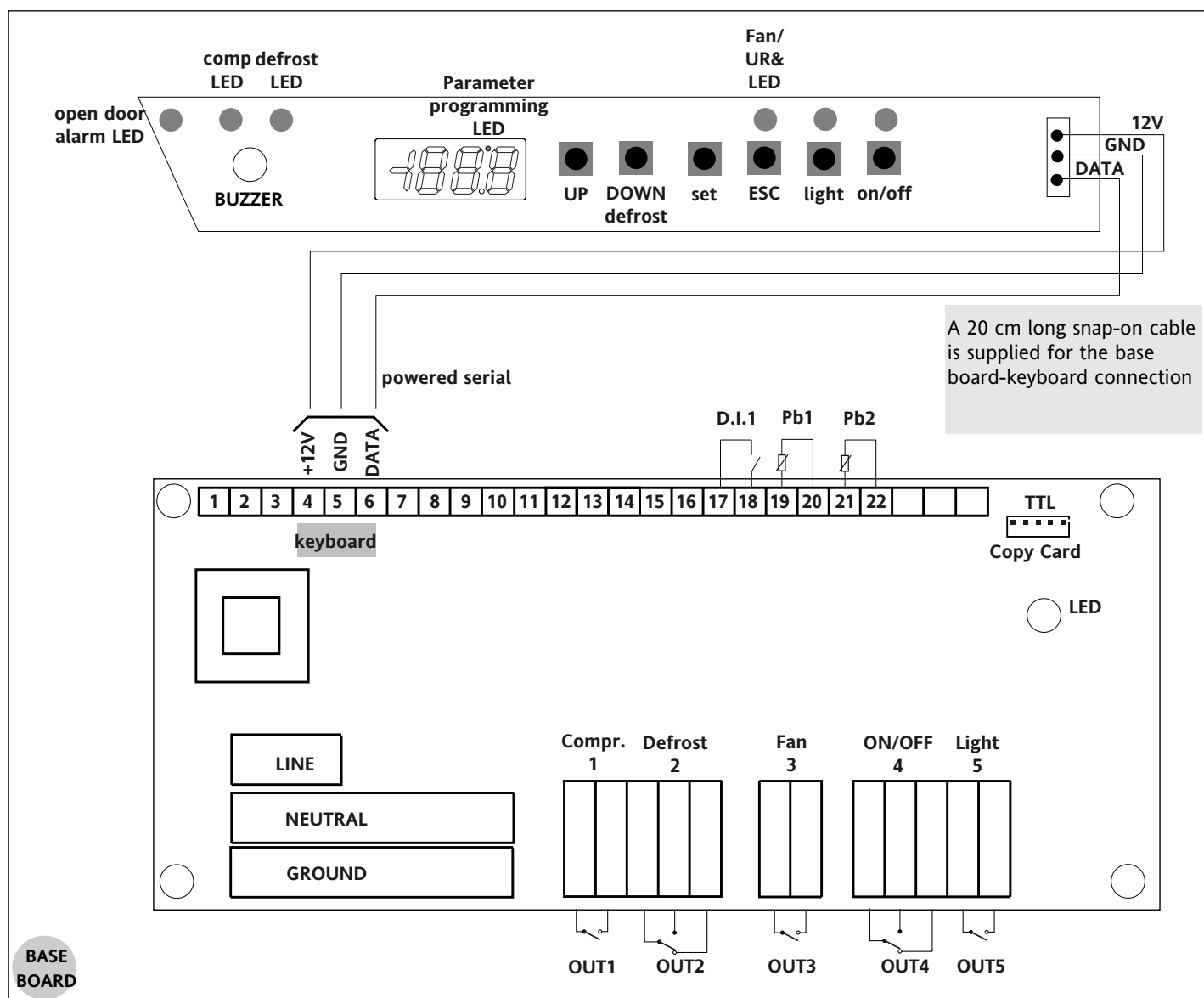
- installation/use other than that prescribed and, in particular, which does not comply with the safety standards specified in the regulations and/or those given herein;
- use on boards which do not guarantee adequate protection against electric shock, water or dust when assembled;
- use on boards which allow dangerous parts to be accessed without the use of tools;
- tampering with and/or alteration of the product;
- installation/use on boards that do not comply with the standards and regulations in force.

Tab. 1 SET POINTS, Table of parameters and FUNCTIONS

| SET | DESCRIPTION | RANGE | DEFAULT* | CUSTOM** | U.M. | |
|--|--|---|----------|----------|--------|--|
| Set | Setpoint The Set point can be displayed from the machine status menu and not the programming menu. The range is determined by parameters LSE and HSE. | -LSE...HSE | 0.0 | -2 | °C/°F | |
| PAR. | DESCRIPTION | RANGE | DEFAULT* | CUSTOM** | LEVEL§ | U.M. |
| | COMPRESSOR CONTROLLER (folder with "CP" label) | 0.1...30.0 | | | | |
| diF | differential. Compressor relay intervention differential; the compressor stops when the Set point value is reached (as indicated by the control probe), and restarts at temperature value equal to the Set point plus the value of the differential. Note: cannot be 0. | | 2.0 | 3 | 1 | °C/°F |
| HSE | Higher SET. Maximum possible set point value. | LSE..302 | 50.0 | 40 | 1 | °C/°F |
| LSE | Lower SET. Minimum possible set point value. NOTE: The two sets are interdependent: HSE (maximum set point) cannot be less than LSe (minimum set point) and vice versa | -55.0...HSE | -50.0 | -2 | 1 | °C/°F |
| Cit | Compressor min on time. Minimum compressor activation time before disabling. If set at 0 it is not active. | 0...250 | 0 | 0 | 1 | min |
| CAt | Compressor mAx on time. Maximum compressor activation time before disabling. If set at 0 it is not active. | 0...250 | 0 | 0 | 1 | min |
| | COMPRESSOR PROTECTIONS (folder with "CP" label) | | | | | |
| Ont (1) | On time (compressor). Compressor activation time in the event of a faulty probe. If set to "1" with OFt at "0" the controller is always on whereas if OFt >0 it operates in duty cycle mode. See Duty Cycle diagram | 0...250 | 0 | 15 | 1 | min |
| OFt (1) | OFF time (compressor). Compressor in disabled state time in the event of a faulty probe. If set to "1" with OFt at "0" the controller is always off whereas if OFt >0 it operates in duty cycle mode. See Duty Cycle diagram | 0...250 | 1 | 15 | 1 | min |
| dOn | delay (at) On compressor. Delay in activating compressor relay after switch-on of instrument. | 0...250 | 0 | 0 | 1 | sec |
| dOF | delay (after power) OFF. Delay after switch off; the indicated time must elapse between switch-off of the compressor relay and the subsequent switch-on. | 0...250 | 0 | 0 | 1 | min |
| dbi | delay between power-on. Delay between switch-ons; the indicated time must elapse between two subsequent switch-ons of the compressor. | 0...250 | 0 | 1 | 1 | min |
| OdO (!) | delay Output (from power) On. Delay time in activating outputs after switch-on of the instrument or after a power failure. 0= not active. | 0...250 | 0 | 0 | 1 | min |
| | DEFROSTING CONTROLLER (folder with "dEF" label) (6) | | | | | |
| dty | defrost type. Type of defrost. 0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrosting (compressor disabled). | 0/1/2 | 0 | 1 | 1 | num |
| | see dCt-dty table | | | | | |
| dit | defrost interval time. Period of time elapsing between the start of two defrosting operations. 0= function disabled (defrost is NEVER performed) | 0...250 | 6h | 6h | 1 | hours/min/sec |
| dCt | defrost Counting type. Selection of defrosting time count mode. 0 = compressor operating hours (DIGIFROST® method); Defrosting active ONLY with compressor on. NOTE: compressor time of operation is counted irrespective of evaporator probe (counting is active if evaporator probe is absent or faulty). 1 = Real Time - device operating hours; defrost counting is always active when the machine is on and starts at each power-on. 2 = compressor stop. Every time the compressor stops, a defrost cycle is performed according to the parameter dTy 3= not used | 0/1/2/3 0=df 1=rt 2=SC 3=not used | 1 | 1 | 1 | num |
| | see dCt-dty table | | | | | |
| dOH | defrost Offset Hour. Start of defrost delay time from start-up of instrument. | 0...59 | 0 | 0 | 1 | min |
| dEt | defrost Endurance time. Defrosting time-out; determines maximum duration of defrosting. | 1...250 | 20 min | 30min | 1 | min/sec |
| dSt | defrost Stop temperature. End of defrosting temperature (determined by evaporator probe). | -50.0... 150 | 8.0 | 12 | 1 | °C/°F |
| dPO | defrost (at) Power On. Determines if the instrument must start defrosting at start-up (if the temperature measured by the evaporator allows this) y = yes, starts defrost at start-up; n = no, does not start defrost at start-up. | n/y | n | n | 1 | flag |
| | FAN CONTROLLER (folder with "FAn" label) | | | | | |
| FSt | Fan Stop temperature. Fan stop temperature; a value read by the evaporator probe that is higher than the set value causes the fans to stop. The value is positive or negative and, depending on the FPt parameter, could represent the temperature in absolute value or relative to Set point. | -50.0..150.0 | 2.0 | 15 | 1 | °C/°F |
| FAd | FAn differential. Fan activation intervention differential (see par. "FSt" and "FoT"). | 1.0...50.0 | 2.0 | 2 | 1 | °C/°F |
| Fdt | Fan delay time. Delay time between start-up of fan after defrosting. | 0...250 | 0 | 0 | 1 | min |
| dt | drainage time. Dripping time. | 0...250 | 0 | 1 | 1 | min |
| dFd | defrost Fan disable. Used to select exclusion of evaporator fans during defrosting. y = yes; n = no. | n/y | y | y | 1 | flag |
| FCO | Fan Compressor OFF. Used to select fan stop when compressor is switched OFF. y = fans active (with thermostat; in response to the value read by the defrost probe, see "FSt" parameter); n = fans off; dc = duty cycle (using parameters "Fon" and "FoF"). | n/y/dc | y | y | 1 | num |
| Fod | Fan open door open. Used to select the fan stop when door is open and fan re-start when door is closed (if they were active). n=fans stop; y=fans unchanged. | n/y | n | n | 1 | flag |
| dCt | defrost relay | | | | | compressor relay (in defrost mode) |
| 0= compressor operating hours (DIGIFROST® method); | ON when dit is reached OFF when Pb2=dSt or for time (dEt) | | | | | 0 = electrical defrosting; OFF 1 = cycle reversing defrosting; ON 2 = Free mode defrosting; ON if requested by set point |
| 1= Real time | ON when dit is reached OFF when Pb2=dSt or for time (dEt) | | | | | 0 = electrical defrosting; OFF 1 = cycle reversing defrosting; ON 2 = Free mode defrosting; ON if requested by set point |
| 2 = compressor stop. 3=not used | ON when compressor OFF OFF when Pb2=dSt or for time (dEt) | | | | | 0 = electrical defrosting; OFF 1 = cycle reversing defrosting; NOT RECOMMENDED!!! 2 = Free mode defrosting; ON if requested from set point |

| PAR. | DESCRIPTION | RANGE | DEFAULT* | CUSTOM** | LEVEL§ | U.M. |
|--|---|--|----------|----------|---|-------|
| ALARMS (folder with "AL" label) | | | | | | |
| Att | Alarm type. Parameter "HAL" and "LAL" modes, as absolute temperature values or as differential compared to the Set point. 0 = absolute value; 1 = relative value. | 0/1 | 0 | 1 | 1 | flag |
| AFd | Alarm Fan differential. Alarm differential. | 1.0...50.0 | 2.0 | 1 | 1 | °C/°F |
| HAL (2) | Higher ALarm. Maximum alarm. Temperature value (considered as distance from Set point or as an absolute value based on Att) which if gone above triggers the alarm signal. See Max/Min. Alarm Diagram; | LAL...150.0 | 50.0 | 50 | 1 | °C/°F |
| LAL (2) | Lower ALarm. Minimum alarm. Temperature value (considered as distance from Set point or as an absolute value based on Att) which if gone below triggers the alarm signal. See Max/Min. Alarm Diagram; | -50.0...HAL | -50.0 | -50 | 1 | °C/°F |
| PAO (!) (3) | Power-on Alarm Override. Alarm exclusion time after instrument start-up, after a power failure. | 0...10 | 0 | 2 | 1 | hours |
| dAO | defrost Alarm Override. Alarm exclusion time after defrost. | 0.999 | 0 | 2 | 1 | min |
| OAO | Alarm signal delay after disabling digital input (door open). Alarm refers to a high and low temperature alarm. | 0...10 | 0 | 0 | 1 | hours |
| tdO | time out door Open. Time out after alarm signal following digital input disabling (door open). | 0...250 | 0 | 3 | 1 | min |
| tAO (3) | temperature Alarm Override. Temperature alarm signal delay time. | 0...250 | 0 | 1 | 1 | min |
| LIGHT AND DIGITAL INPUTS (folder with "Lit" label) | | | | | | |
| dSd | Light relay enable from door switch. n = door open, light does not turn on; y = door open, light turns on (if it was off). | n/y | y | y | 1 | flag |
| dLt | Light relay disabling (switch off) delay (cell light). The cell light will remain on for dLt minutes after closing the door if the dSd parameter is set to do this. | 0...31 | 0 | 0 | 1 | min |
| OFL | Light switch always disables light relay. Enables switching off with light button even if the delay after closing the door set by dLt is active. | n/y | n | y | 1 | flag |
| dOd | Door switch switches off loads. When commanded by the digital input, programmed as door-switch, it stops all the loads (delay time determined by dCO parameter), when the door is opened and re-starts them when the door is closed (observing any timings in progress). | n/y | n | y | 1 | flag |
| dAd | Digital input enabling delay | 0...255 | 0 | 0 | 1 | min |
| dCO | Compressor stop (by digital input) delay | 0...250 | 0 | 2 | 1 | min |
| DISPLAY (folder with "diS" label) | | | | | | |
| LOC | (keyboard) LOCK. Keyboard locked. However, you can still access the parameter programming menu and modify parameters including the status of this parameter to allow keyboard unlocking. y = yes (keyboard locked); n = no. | n/y | n | n | 1 | flag |
| PA1 | PASsword 1. When enabled (value is not 0) it represents the access button to level 1 parameters. | 0...250 | 0 | 0 | 1 | num |
| ndt | number display type. Display with decimal point. y = yes; n = no. | n/y | n | y | 1 | flag |
| CA1 | CAlibration 1. Positive or negative temperature value that is added to the value read by probe 1. | -12.0...12.0 | 0 | 0 | 1 | °C/°F |
| CA2 | CAlibration 2. Positive or negative temperature value that is added to the value read by probe 2. | -12.0...12.0 | 0 | 0 | 1 | °C/°F |
| CA | CAlibration Intervention. Intervention on display offset, thermostat offset or both. 0 = modifies the temperature displayed only; 1 = adds to the temperature used by regulators, not to the temperature displayed, which stays unchanged; 2 = adds to the temperature displayed that is also used by regulators. | 0/1/2 | 0 | 0 | 1 | flag |
| ddl | defrost display Lock. Display mode during defrosting. 0 = displays the temperature read by the thermostat control probe; 1 = locks the reading on the temperature value read by thermostat control probe when defrosting starts until the next time the Set point value is reached; 2 = displays the label "def" during defrosting until the next time the Set point value is reached. | 0/1/2 | 0 | 0 | 1 | num |
| ldd | Lock defrost disable. Time-out value for unlocking display (DEF label) if reaching the set point takes too long during defrosting. | 0...255 | 0 | 0 | 1 | num |
| dro (°) | display read-out. Select °C or °F to display temperature read by probe. 0 = °C, 1 = °F. N. B: switching from °C to °F DOES NOT modify set points, differentials, etc. (for example set point=10°C becomes 10°F). | 0/1 | 0 | 0 | 1 | flag |
| <p>(°) The mathematical conversion for temperature is °F=(9/5)* °C+32. For example: 32°F=0°C; 50°F=10°C. dro parameter: when changing from °C to °F or vice versa the mathematical conversion is NOT performed and the set point values, differentials, etc. are NOT modified. All the temperature values set will therefore need reviewing. e.g. with a set point set to 10°C, when changing the value to °F the set point will become 10°C=9°F and not 50°F (according to conversion table)</p> | | | | | | |
| CONFIGURATION (folder with "CnF" label) | | | | | | |
| H00 | For selection of probe type, PTC or NTC. | 0/1 | 1 | 1 | 1 | flag |
| label PA2 | | | | | | |
| In the CnF folder you can access HACCP level 2 parameters from label PA2 by pressing the "set" button | | | | | | |
| rEL | release firmware. Device version: read only parameter. | 0...999 | / | / | 1 | / |
| tAb | tAble of parameters. Reserved: read only parameter. | 0...999 | / | / | 1 | / |
| COPY CARD (folder with "Fpr" label) | | | | | | |
| UL | Up load. Transfer of programming parameters from instrument to Copy Card. Down load. | / | / | / | 1 | / |
| dL | Transfer of programming parameters from Copy Card to instrument. | / | / | / | 1 | / |
| Fr | Format. Cancels all data entered in the copy card. | / | / | / | 1 | / |
| Fr parameter N.B.: if "Fr" parameter (formatting of copy card) is used the data entered in the card will be permanently lost. This operation cannot be undone. | | Table of Parameters NOTES (1) See Duty Cycle diagram (2) See Max/Min. Alarm Diagram (3) Refers exclusively to high and low temperature alarms * DEFAULT column: ELIWELL default settings. ** CUSTOM column: custom settings. | | | (!) WARNING! • If one or more parameters marked with (!) are modified, the controller must be switched off after the modification and then switched back on •PLEASE NOTE: We strongly recommend that you switch the instrument off and on again each time parameter configuration is changed in order to prevent malfunctioning of the configuration and/or ongoing timings. | |
| HACCP MODELS ONLY HACCP (folder with "HCP" label) SEE APPENDIX HACCP ALARM RESET function (folder with "FnC" label) | | § LEVEL column: indicates the visibility level of parameters accessed using a PASS-WORD (see relevant paragraph) | | | | |
| rES | HACCP Alarm Reset | | | | | |

IWP 750 DESMON POWER MODULE and Desmon Keyboard CONNECTIONS



PLEASE NOTE

The layout of the base board and keyboard in the connection diagram is not to scale and is only intended to indicate the position of the terminals and modules.

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TERMINALS

| | |
|-----------------------------------|--|
| 4 - 5 - 6 | LINK PLUS "powered" serial |
| LINK PLUS "powered" SERIAL | |
| 1 | DATA |
| 2 | VDD (+12V on base) |
| 3 | GND |
| 17 - 18 | Digital input |
| 19 - 20 | Probe input 1 (thermostat control) Pb1 |
| 21 - 22 | Probe input 2 (evaporator) Pb2 |
| OUT 1 | N.O. relay output OUT1 |
| OUT 2 | relay output OUT2 |
| OUT 3 | N.O. relay output OUT3 |
| OUT 4 | relay output OUT4 |
| OUT 5 | N.O. relay output OUT5 |
| TTL | TTL input |
| Copy Card | TTL input for Copy Card |

HACCP APPENDIX - when available -

To meet the minimum requirements of the HACCP regulations a series of dedicated parameters records and logs the high and low alarms (referring to the thermostat control probe) that occur during normal operating of the device. If present, these parameters can be displayed in the "AL" folder.

In addition to these alarms, these parameters also record any black-outs suffered by the device by recording the number of power failures since the last machine reset. Alarm management for the HACCP function is effected independently by the rest of the controllers.

ALARM LOGGING DURING NORMAL OPERATING CONDITIONS

Each HACCP alarm consists of two folders (displayed under the alarm folder AL if the alarms are present):

- HCn* (n = 1...8) containing the maximum or minimum temperature reached out of band limits;
- tCn* (n = 1...8) containing the period of time that the thermostat control probe is out of the band **(from when the alarm is generated until it returns within the band limits) (*)**.

*n is a progressive number between 1 and 8 that indicates the number of times the thermostat control probe has detected temperature values exceeding the band limits preset by the parameters "SHH" and "SLH". The temperatures will be logged in the 8 folders HC1...HC8 and the holding time in the 8 folders tC1...tC8.

HCn folder (n = 1...8)

If you press the "ENTER" button, the maximum (minimum) value displayed by the thermostat control probe beyond (below) the limit preset by the "SHH" ("SLH") parameter is displayed.

tCn folder (n = 1...8)

if you press the "ENTER" button, the time that the thermostat control probe **(from when the alarm is generated) (*)** was out of the band limits preset by the "SHH" and "SLH" parameters, if it has already returned, or that has elapsed up to then with minimum resolution of one minute is displayed.

NOTE 1

(*) The alarm is generated after a set holding time (established by parameter drA) in the critical area outside the band limits.

NOTE 2

The first 8 HACCP alarms are logged sequentially when the folders HC1...HC8 and tC1...tC8 appear. The subsequent alarms (n>8) will overwrite the previous alarms starting with HC1 (tC1). When the limit of 8 events is exceeded, the HC8 (tC8) folder flashes on and off.

Video display

When the value of the main temperature (thermostat control) probe exceeds the band preset by the parameters "SHH" and "SLH" for longer than "drA" the alarm is generated and a LED lights up permanently.

If present, the internal buzzer and the alarm relay are also switched on.

If you press any button on the unit, the alarm LED flashes to indicate that the alarm has been read by the user.

When the probe value falls within the permitted band, the LED will remain in the condition it was in previously (permanently on or blinking) to signal the event.

NOTE: To prevent false HACCP alarms, alarm exclusion times are used (see table of parameters, ALARMS/HACCP section, especially par. dAO, H51).

ALARM LOGGING AFTER A BLACK OUT

If a reset event occurs (machine black-out), two new folders are generated in the AL folder in order to assess the conditions of the power source correctly:

- "bCn"(n = 1...8)*;
- "btn"(n = 1...8)*;

*n is a number between 1 and 8 that indicates the number of machine resets.

"bCn" folder

If the thermostat control probe reads a temperature value that is within the band limits preset by the values SLH and SHH following a black out, this folder will contain this value (and the "btn" folder will contain the value zero).

If the thermostat control probe reads a value that exceeds the permitted temperature range, an HACCP alarm is generated. The maximum (or minimum) value reached by the thermostat control probe is logged in this folder.

"btn" folder

If the thermostat control probe reads a temperature value that is within the band limits preset by the values SLL and SHH following a black out, this folder will contain the value zero.

If the thermostat control probe reads a value that exceeds the permitted temperature range, an HACCP alarm is generated. The period of time that the thermostat control probe remains out of band limits will be logged in the same way as for normal operating in this folder.

Video display

If there are more than 8 (eight) black out events, folder bC8 flashes and the subsequent events are recorded starting with folders bC1(bt1).

RESET FUNCTION

The RES function (HACCP reset) manually cancels the HACCP alarms and can be associated with a button (see parameters H31...H33; set to 4 to reset) with a delay set by parameter H02. The RES function cancels the folders HCn, tCn, bCn, btn (n=1...8) and resets the drH parameter (the counter starts).

The alarm LED remains off whereas the display flashes to indicate that the parameter has been reset. After a period of time set by parameter drH (if not 0) after the last reset all the HACCP alarms are automatically deleted. If the machine is subjected to another black-out in this period, the counter will be reset with the value preset with parameter drH and the next automatic reset will occur when this value has been reached.

NOTE: When the unit is switched on for the first time, any alarms must be manually deleted using this function.

NOTE: The HACCP parameters are located at level 2. To access them, go to folder CnF/PA2 (see programming menu diagram). The tcn and Hcn folders will be displayed (if HACCP alarms are present) in the AL folder.

Table 2 HACCP parameters

| PAR. | DESCRIPTION | RANGE | DEFAULT | CUSTOM | U.M. |
|--|--|---------------|---------|--------|-------|
| HACCP (folder with "HCP" label) | | | | | |
| SHH | SHH: Set High HACCP. Maximum HACCP alarm threshold: when the thermostat control probe temperature value displayed exceeds the band limits preset by the "SHH" value for longer than parameter "drA" an HACCP alarm is indicated and the LED/(alarm relay) lights up for parameter H50 (see). The return differential from the alarm condition is 0.1 °C. SLH: | -50.0...150.0 | 10.0 | 50.0 | °C/°F |
| SLH | Set Low HACCP. Minimum HACCP alarm threshold: when the thermostat control probe temperature value displayed exceeds the band preset by the "SLH" value for longer than parameter "drA" an HACCP alarm is indicated when the LED/(alarm relay) lights up for parameter H50 (see). The return differential from the alarm condition is 0.1°C. | -50.0...150.0 | -10.0 | -50.0 | °C/°F |
| drA | drA: delay record Alarm. Minimum holding time in critical area until event is logged: when this time has elapsed an HACCP alarm is logged and signalled. | 0...99 | 10 | 10 | min |
| drH | drH: delay register HACCP. HACCP alarm reset time from last reset: the period of time that must elapse from start-up of the device until logged alarms are automatically reset. If the parameter is set to 0 the automatic reset is disabled and only the manual reset is activated. | 0...250 | 10 | 24 | hours |
| H50 | H50: enable HACCP functions and alarm relay: 0= HACCP alarms disabled 1= HACCP alarms enabled and alarm relay disabled. 2= HACCP alarms enabled and alarm relay enabled. | 0/1/2 | 0 | 0 | num |
| H51 | H51: HACCP alarm exclusion time. This parameter sets the alarm exclusion time after shut-down (or start-up depending on the sign in parameter H11) of the D.I. digital input and/or after pressing the button (selectable with parameters H31...H33). If an HACCP alarm is already present at the start of a defrost cycle or an operation on the D.I.(or a button is pressed) the maximum (or minimum) temperature reached and the holding time continue to be logged until the value read by the thermostat control probe falls within the band preset by parameters "SHH" and "SLH". | 0...250 | 0 | 0 | min |
| dAo | HACCP - (folder with "AL" label) defrost Alarm Override. Alarm exclusion time after defrost. (*To avoid false HACCP alarms after a defrosting cycle, the alarm is excluded for the time set by this parameter. | 0,,999 | 0 | 2 | min |