

The device consists of two units:

- a IWK keyboard available in 3 sizes (see below and in paragraph on Models)\*;
- an IWP power module.

The IWK keyboard is connected to the IWP power module using an “powered” serial connection also referred to as **SHORT DISTANCE**.

**\*Different types of IWK keyboards are available: the functions and connection of the standard 32x74 4 button IWK keyboard are illustrated below. For information on this and other keyboards, refer to the relevant technical data sheets.**

## MODELS

Model	Characteristics
<b>IWK keyboard</b>	
IWK std 6 buttons	open board keyboard 68x124mm (LxH)
IWK 32x74 4 buttons	Eliwell std. keyboard 32x74x60mm (LxHxD)
IWK wide 6 (max 8) buttons	“IWC” style keyboard 180x37x45mm (LxHxD)

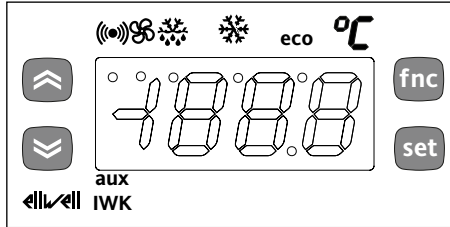
### IWP power module

IWP 740 (LX)	base module with 4 relays 92x121mm (LxH)
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**PLEASE NOTE - IF WIDE OR “OPEN” KEYBOARDS ARE USED, SOME FUNCTIONS RELATED TO THE DEDICATED BUTTONS MAY NOT BE AVAILABLE: READ THE USER INTERFACE SECTION ONLY FOR IWK WIDE AND 6-BUTTON KEYBOARDS “ AND TABLE OF PARAMETERS, “configuration parameters”**

**PLEASE NOTE - WIDE AND 32X74 KEYBOARD ALL LEDS ARE RED**

## USER INTERFACE



(example of a standard 32x74 4-button keyboard).

The user has a keyboard with a 6 LED display and four buttons for controlling status and programming of the instrument.

### BUTTONS AND MENU

UP Button



Scrolls through the menu items  
Increases the values  
Parameter programmable\*  
(see H31 parameter: by default Manual DEFROST is defrost)

DOWN Button



Scrolls through the menu items  
Decreases the values  
Parameter programmable\*  
(see parameter H32, by default aux relay is active)

ESC button



ESC function (exit)  
Parameter programmable\*  
(see H33 parameter)

set button



(press once)  
**MACHINE STATUS MENU**  
•Accesses the set point  
•Displays the alarms  
(if active)  
•Displays Pb1,Pb2 and Pb3  
(see)  
(hold down)  
•Accesses the programming Menu Parameters

UP button +esc button pressed simultaneously



(press for 2 seconds)  
•Keyboard locking/unlocking

**FOR WIDE AND 6 BUTTON IWK KEYBOARDS “secondary” or function buttons**

“ON-OFF”



(hold down, see par.H02)  
(function 2)  
Switches unit on/off  
Parameter programmable\*  
(see H35 parameter)

“LIGHT” button



(function 1)  
Switches on the light  
Parameter programmable\*  
(see H34 parameter)

\*NOTE:

The “primary” buttons can be programmed using the parameters H31...H33 (see)

In standard configuration the buttons are set by default as:

- “UP” button; par. H31=1; enables manual defrosting
- “DOWN” button; par. H32=0 no related function (disabled)
- “esc” button; par. H33=3 enables the reduced set function
- “set” button; not programmable.

### LEDS

#### “Display” LEDs

The display is red, the 6 LEDs are red

“eco” LED

- ON for parameter programming level 2;
- blinking when **OSP** reduced set is entered

Compressor LED



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

Defrosting LED



- ON when automatic **defrosting** in progress;
- blinking when **manual** defrosting is in progress;

LED Fans



- ON when fan is on;
- blinking for manual or D.I. (Digital Input) fan forcing  
**(%RH function, humidity reduction if par. H11=13)**

Alarms LED



- ON for active alarm;
- blinking for silenced alarm

### FOR IWK WIDE AND 6-BUTTON LED KEYBOARDS ONLY

“set” LED



- ON for parameter programming level 2;
- blinking when **OSP** reduced set is entered

“on-off” LED



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

“light” LED



- ON when output is active, (%RH / light depending on model and/or default settings);
- ON when output is also active from D.I.**

**NOTE:** the LEDs are OFF in any other circumstances not described here

## START-UP

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

## IWK KEYBOARD LOCKING

Press the “UP” and “esc” buttons for 2 seconds to lock the keyboard. Repeat to unlock. The keyboard can also be locked with a parameter (par. LOC) **NOTE:** If the keyboard is locked you can access the Programming Menu by pressing the “set” button.

The Set point can also be displayed.

## ACTIVATING MANUAL DEFROST CYCLE

To activate the defrost cycle manually, press the “UP/Def” button (if configured =1) for 2 seconds.

If the conditions for defrosting are not present (for example, the evaporator probe temperature is higher than the end of defrost temperature) or parameter OdO≠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
- holding down the “set” button for more than 5 seconds (Programming menu) or
- 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;
- rtc: real time clock folder;

- Pb1: probe 1 value folder;
- Pb2: probe 2 value folder;
- Pb3: probe 3 value folder (if present);

## 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 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.

## Real Time Clock

By pressing the “set” button when the related “rtc” label appears, the label d00 (days) is displayed. Use the “UP” and “DOWN” buttons to set days.

If you do not use the buttons for over 2 seconds or if you press “set” you switch to the hours (h00) and minutes (‘00) folders: use the “UP” and “DOWN” buttons to set the hours and minutes respectively. If you do not use the keyboard for over 15 seconds (time-out) or if you press the “fnc” button once you are taken back to the previous screen mask.

**NOTE1: Always use the “set” button to confirm the hours/minutes/days setting.**

**NOTE2: We recommend considering the first day d00 as SUNDAY.**

## 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

By pressing the “set” button when the corresponding label appears, the value of the probe associated with it is displayed.

## PROGRAMMING MENU

**(See Programming Menu Diagram)**

### 1) Displaying level 1 parameters

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. To scroll other folders, use “UP” and “DOWN” buttons; **the folders will only display all the level 1 parameters.**

**NOTE: at this level level 2 parameters are NOT visible, even if NOT password-protected.**

### 2) Displaying level 2 parameters

Go into the “CnF” folder in the Programming Menu, and scroll down the parameters until you reach the PA2 label.

By pressing and releasing the “set” button you will enter the level 2 parameters and the label of the first folder in the programming menu will appear.

Level 2 parameters can be protected by a second password (see “PA2” parameter in “dis” folder, not to be confused with PA2 label in the “CnF” folder). If specified, level 2 parameters are hidden to user; when accessing the “CnF” folder the level 2 access PASSWORD will be requested and (if the correct password is entered) the label of the first folder in the programming menu will appear.

**NOTE: At this level the folders will only display all the level 2 parameters.** Therefore level 1 parameters will only be visible if you exit the Programming Menu and repeat procedure 1).

To enter the folder, press “set”. The label of the first visible parameter will appear. To scroll through the other parameters, use the “UP” and “DOWN” buttons; to change the parameter, press and release “set”, then set the desired value using the “UP” and “DOWN” buttons and confirm with the “set” button. Move on to the next parameter.

**NOTE:** It is strongly recommended that the unit is switched off and on again each time parameter configuration is changed in order to prevent malfunctioning of the configuration and/or ongoing timings.

## LOCAL KEYBOARD PROGRAMMING MENU

To access the Local Keyboard Programming menu, press the “UP” and “DOWN” buttons for 32x74 and wide keyboards and the “UP” and “ESC” buttons for “open” keyboards for at least 3 seconds.

If specified, the access PASSWORD will be requested (see parameter “PA3”) and (if the password is correct) the **PLO (Local Parameters) label will appear. This folder contains the local keyboard parameters (see Local Keyboard Parameters table).**

If the password is incorrect, the display will show the PA3 label again. **NOTE: the folder may NOT be visible; if this is the case, local keyboard programming cannot be accessed.**

To enter the folder, press “set”. The label of the first visible parameter will appear. To scroll through the other parameters, use the “UP” and “DOWN” buttons; to change the parameter, press and release “set”, then set the desired value using the “UP” and “DOWN” buttons and confirm with the “set” button. Move on to the next parameter.

## PASSWORD 1) PROGRAMMING MENU

The passwords “PA1” and “PA2” allow level 1 and level 2 parameters to be

accessed. In the standard configuration passwords are not present.

To enable them (value≠0) and assign them the desired value, access the Programming menu in the “diS” folder . If passwords are enabled, they will be requested:

- PA1 when entering the Programming menu (see the “Programming Menu” section);

- PA2 in the “Cnf” folder containing level 1 parameters.

## 2) LOCAL KEYBOARD

Password “PA3” gives access to the local keyboard parameters. In the standard configuration the password is not present. To enable it (value ≠0) and assign it the desired value, access the Local Keyboard Programming menu in the “PLO” folder .

If passwords are enabled, they will be requested:

- PA3 when entering the PLO menu

## USING COPY CARD

The Copy Card is an accessory connected to the TTL serial port that is used to program the unit parameters quickly (upload and download parameter map to one or more units of the same type). The operation is performed as follows:

### Fr-Format (level 2 par.)

This command can be used to format the copy card **when** used for the first time or when used with models that are not compatible.

Attention: when the copy card has been programmed and the “Fr” parameter is used 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 fails 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 display will show for about 5 seconds:

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

### NOTE:

- after downloading the instrument will

work with the new parameters map settings.

## DISTANCE-MANAGED SYSTEMS

### (LX MODELS ONLY)

Televis systems can be connected using the RS 485 serial input (see connection diagram for terminals on base 1-2-3)

**In this case, use the Televis plug-in module available as an optional extra (TTL - RS 485 converter)**

To configure the instrument to do this, you need to access the folder(**only in LX models**) identified by the “Add” label and use the “dEA” and “FAA” parameters.

## FUNCTIONS

### LINK

The Link function is used to connect several IWP base units and IWK keyboards up to a maximum of 10 instruments (1 Master base device and 4 slaves, 1 IWK keyboard for the Master base and 4 IWK Slave keyboards).

The serial connection between the devices is implemented by way of an “powered” serial connection (SHORT DISTANCE).

**NOTE: for a SHORT DISTANCE connection two adjoining modules must be less than 10 m apart whereas the two furthest modules must be less than 50 m apart.**

### MASTER-SLAVE-ECHO DEFINITIONS AND NETWORK COMMANDS

#### 1)IWP base

##### •Master Base

Strumento che gestisce la rete, inviando i comandi agli Slave. La selezione del Master avviene tramite il parametro L00 (il valore 0 definisce il Master).

**The Master Base is the only default device that is able to:**

Activate for all the Slaves:

- a) switching lights on/off;
- b) alarm silencing;
- c) activating auxiliary set point (reduced set);
- d) placing devices in STAND-BY (ON-OFF);
- e) activating the auxiliary relay. The Master also:

- 1) synchronizes the displays on all the Slaves and Echos with its own display;
- 2) synchronizes defrosting (simultaneous or sequential);
- 3) synchronizes the compressors (with a delay in activating them, see par. don);
- 4) shares probe 1 (temperature probe) so that there is only one thermostat control: if this is the case, the Master probe is used by all the Slaves for regulation.

##### •Slave Base

Instrument(s) supplied with own controls which also perform(s) commands issued by the Master (with parameters L00..L09). **The Slave Base according to parameter L08 is also enabled for:**

a) switching lights on/off;

b) placing devices in STAND-BY (ON-OFF).

According to parameters L00..L09 it may also become dependent on/independent of the Master with regard to points a)-b) with regard to defrosting management and thermostat control probe sharing. By using parameter L09, the slave decides whether to use the probe shared by the Master or its own to adjust temperature. In the first case, the probe can be omitted on the Slave.

### 2) IWK keyboard

#### •Master keyboard

Keyboard connected to the network that configures and displays the status of the Master base unit. Each keyboard can be configured to control the Master or Slave base units.

#### •Slavekeyboard

Keyboard connected to the network that configures and displays the status of the Slave base unit. Each keyboard can be configured to control the Master or Slave base units. (using parameters L00..L09).

#### • Echo keyboard

Keyboard connected to the network that only displays the values of the instrument which it is associated to (it does not therefore have with its own I/O resources, but only acts as a repeater).

**NOTE:** several Echo keyboards can be connected to the same Master or Slave base unit.

### LINK Network Defrosting

The main characteristics of the Link network is the control of defrosting; the Master sends the defrost command which can be performed synchronously(**1**) or sequentially (**2**) (defrost after defrost), without affecting the normal protections or delays of each instrument (see parameter L03).

#### (1) Synchronized defrost

The synchronization of defrosting is effected with regard to the actual defrosting phase; dripping and all the functions that follow the defrosting stage are therefore not considered. The Master only supplies the commands that enable the start of defrosting or thermostat control without interfering with the normal protections or delays on each device. When the slave units are awaiting thermostat control enabling from the Master (when synchronized defrosting has terminated) the defrost LED blinks.

**WARNING:** if the Slaves connected to the network are programmed to accept the commands from the Master concerning defrosting and network functions, no defrosting or functions associated with the events requested by the Slaves will be enabled.

Only in the event of a “no link” (error E7), the Slaves will activate defrosting and functions associated with the events requested by the Slaves.

## (2) Sequential Defrosting

The Master enables defrosting for the various devices in the network. When each device has completed defrosting (and not dripping) it begins thermostating.

Finally, using the parameters **dt**, **defrost type**, (and **and dCt, defrost Counting**) the defrosting modes are defined.

### 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 (see par. H34, for IWK WIDE and 6-button keyboards only).

#### • digital input enabled

The digital input can be configured as auxiliary/light (parameter H11=3/4): in this case, a digital output can be configured as light/AUX (parameters H21...24=5).

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 stored 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 in STAND-BY (see **par. H06**). 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 rapidly selected 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 controls are blocked including the alarms and the cycle times are reset.

**OFF will also be displayed.**

The status is stored so that when power is restored after a black-out the device can resume operation 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

Press one of the programmable buttons to activate the %RH function (enabling the humidity reduction control) **if the parameter H31...33=9 has been set.** The %RH function can also be D.I.-enabled **if par. H11=9.**

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.

### NIGHT & DAY CONTROL

The Night & Day control algorithm can be used to set events and cycles at pre-defined times of the week. You can set an event start time and duration, as well as functions and defrostings (daily or festive) to be enabled for each day of the week. By pressing the "set" button when the "nad" label appears, the label d0 (day 1) is displayed in the "Programming" menu. **Tip: consider d0 = Sunday.** Use the "UP" and "DOWN" buttons to set other days (d1 (day 2 = Monday)...d6 (day 7 = Saturday)) and Every Day. By pressing "set" the first parameter E00 is displayed; use the "UP" and "DOWN" buttons to scroll through other parameters E01...03.

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. The different functions are set using the appropriate parameters (see the parameter table for the folder with the "nad" label)

### GENERAL PRESSURE SWITCH CONTROL

The Pressure switch algorithm can be used to effect a diagnostic role on a digital input (see par. H11-H14 =11).

Every time the pressure switch is triggered, the compressor is deactivated, the alarm LED is turned on and the displayed in the alarm folder of a subfolder called nPA. The number of times the pressure switch has been activated is stored in this folder: once the number set by the parameter PEn has been reached this folder is replaced by the PA (pressure alarm) Label. When the pressure switch input is reset, control restarts automatically and any timings and protections are observed.

If the number of activations in the interval established by parameter PEI (pressure switch error count interval) exceeds the number established by parameter PEn (number of errors allowed per pressure switch input) the control activates an alarm condition. This condition consists in 1. Deactivation of the compressor outputs, fans and defrosting;

2. Display of the PA label in the alarm folder;

3. Switching on of the alarm LED and alarm relay if configured.

Once the device is in alarm mode, it must be switched off and on again or reset using the rAP (pressure switch alarm reset) in the Fnc functions menu

(see).

During the pressure switch intervention time, counting of the defrosting time proceeds normally.

If parameter PEn = 0 the function is excluded, the alarms are excluded and the counts deleted and disabled.

### MAXIMUM AND MINIMUM PRESSURE SWITCH CONTROL

As above with the digital input set correctly (see par. H11-H14 =9, Minimum pressure switch input; H11-H14 =10, Maximum pressure switch input). In this case the labels displayed will be LPA (minimum) or HPA (maximum).

### PREHEATING CONTROL (THERMAL PROTECTION)

As above with the digital input set correctly (see par. H11-H14 =12). In this case the label displayed in the Alarm folder will be Prr and the compressor LED will blink.

## DIAGNOSTICS

The alarm condition is always signalled by a buzzer (if present) and the alarm icon LED. The alarm signals from the faulty thermostat control probe (probe 1), the faulty evaporator probe (probe 2), and the faulty display probe (probe 3) appear on the instrument display as E1, E2, and E3 respectively.

Probe errors table

DISPLAY	FAULT
E1 E2	Faulty probe 1 (thermostat control)
E3	Faulty probe 2 (evaporator) Faulty probe 3 (display)
If simultaneous, they will be showed on the display alternately every 2 seconds	
<b>If E1 or E2 appears on the Master (see LINK network) and the display is shared, the slaves will always show the Master display: to understand which unit is faulty, refer to the alarm LED for each instrument.</b>	

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

- E1 code appears on display
- compressor is activated as indicated by "Ont" and "Oft" parameters if these are programmed for duty cycle or:

Ont	Oft	Compressor output
0	0	OFF
0	>0	OFF
>0	0	ON
>0	>0	dc

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

- E2 code appears on display
- end of defrost caused by time-out. The error condition for probe 3 (display) causes the following:
- E3 code appears on display. Other

alarms do not appear on the instrument display but can be seen in the “Machine Status” menu in the “AL” folder.

Regulation of the maximum and minimum temperature alarm refers to the thermostat control probe (probe 1) and/or display probe (probe 3). The temperature limits are defined by the “HAL” (maximum alarm), “LAL” (minimum alarm) and PbA (alarm configuration on probe 1,3 or both) parameters.

### MAXIMUM AND MINIMUM TEMPERATURE ALARM

In an alarm condition occurs and alarm exclusion times are not in progress (see, alarm exclusion parameters), the fixed alarm icon is turned on and the relay configured as an alarm is activated. This kind of alarm does not affect the regulation 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”.

### ALARM WITH THRESHOLD (PROBE 3)

By setting the PbA=3 parameter an alarm is associated to probe 3. It refers to a specific threshold (defined by the SA3 parameter). An over-temperature or an under-temperature alarm is generated and the icon is turned on. This alarm condition can be viewed in the “AL” folder with the labels “AH3-AL3”.

The alarm is managed as a temperature alarm referred to probe 3: refer to standard delays and backswings

### DEFROST ALARM

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

This condition can be viewed in the “AL” folder with the label “Ad2”. Automatic back swing 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. The alarm is signalled by turning on the fixed alarm icon, activating the relay configured as alarm and deactivating compressor, defrost and fan controls (if specified by the “EAL” parameter). This alarm condition can be viewed in the “AL” folder with the label “EA”. The relay can be silenced; even if the alarm icon starts blinking, controls

stay locked until the next time the digital input is deactivated.

### OPEN DOOR ALARM

If a door is open, in response to a delay defined 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”.

### LINK NETWORK ALARM

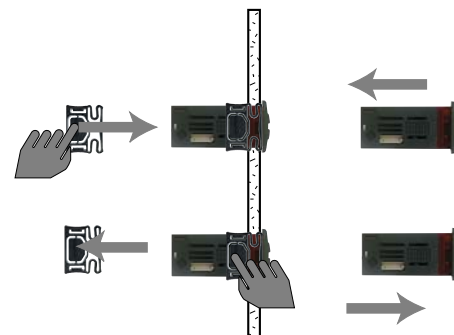
In the event of a master/slave/echo communication failure, the NO LINK alarm is signalled. This alarm condition can be viewed in the “AL” folder with the label “E7”.

NOTE:

- The E7 error is signalled after approx. 20 seconds in “no link” condition to avoid any link disturbance causing communication errors.
- The E7 error is also signalled for addressing conflicts when: a) the number of Slaves set on the MASTER is different from the effective number of Slaves on the network b) 2 or more Slaves have the same address.

### PRESSURE SWITCH ALARM

If the pressure switch alarm is activated by the general pressure switch control, the label “PA” will appear in the “AL” folder. The device must be switched off and then on again (machine reset) or the alarms reset in the alarm folder. If the pressure switch alarm is activated by the minimum (maximum) pressure switch control, the label “LPA” (“HPA”) will appear in the “AL” folder. Once in alarm mode, the device must be switched off and then on again (machine reset) or the alarms reset in the alarm folder.



the unit and fix it in place using the brackets supplied.

- IWK wide keyboard: panel mounted. Drill a 150x31 mm hole, insert the unit and fix it on the front using the special screws supplied.
- 6 button IWK keyboard: open board
- IWP power module, open board 92x121mm for open installation. Do not assemble the keyboard in excessively dirty and/or dirty locations because it is designed to be used in locations with normal degrees of pollution. Always make sure that the area next to the unit cooling slits is adequately ventilated.

Alarm table

DISPLAY	ALARM
AH1	High temperature alarm (referring to thermostat control probe or probe 1)
AL1	Low temperature alarm (referring to thermostat control probe or probe 1)
AH3	High temperature alarm (referring to probe 3)
AL3	Low temperature alarm (referring to probe 3)
Ad2	End of defrost due to time-out
EA	External alarm
Opd	Open Door Alarm Master-Slave
E7	Communication failed
E10	Clock battery alarm
PA	General pressure switch alarm
LPA	Minimum pressure switch alarm
HPA	Maximum pressure switch alarm

Press any button to silence the alarm. In this case the LED will start to blink.

### MECHANICAL ASSEMBLY

The unit has been designed for:

- 32x74 4 button IWK keyboard: panel mounted. Drill a 29x71 mm hole, insert

## CONNEXIONS ELECTRICAL

**Attention! 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 diameter of 2,5 mm<sup>2</sup>(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 an appropriate contactor. Make sure that the power voltage complies with the device voltage. Probes have no connection polarity and can be extended using a regular bipolar cable (note that if probes are extended this affects the EMC electromagnetic compatibility of the instrument: wiring operations must be performed very carefully). Probe cables, power supply cables and the TTL serial cables should be kept separate from power cables.

- **4 button IWK standard or wide keyboard:** screw connectors\*\* (or quick disconnect connectors) for connection of electrical cables;

\*\*with max. diameter of 2 mm<sup>2</sup>: for terminal capacity, see the label on the instrument.

## CONDITIONS OF USE

### PERMITTED USE

For safety reasons the instrument must be installed and used according to the instructions provided. In normal operating conditions, parts with dangerous voltage levels must not be accessible. The device must be adequately protected from water and dust as per the application and must also only be accessible by using tools (with the exception of 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 the aspects concerning European reference standards on safety. It is classified as follows:

- according to its manufacture: as an automatic electronic control device to be independently mounted;
- according to its automatic operating features: as a 1 B-type operated control type;
- 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 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.

## IWP 740 (LX) BASE TECHNICAL DATA

Casing: open board. Dimensions:  
• IWP 740 (LX) model 92x121 mm.  
Usage 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: three NTC inputs (PTC preset in factory on request) Digital inputs: 1 voltage-free (clean contact) parameter configurable digital input. Serial outputs (**see also Serial Output table**):

TTL Serial Outputs (standard 5-way connectors):

- TTL for Copy Card connection.

485 serial output for connection to the Televis system (LX MODELS ONLY):

- 485 serial for connection to the TelevisSystem. Televis systems can be connected using the RS 485 serial input (see connection diagram for terminals on base 1-2-3)

**Note: in this case, use the Televis plug-in module available as an optional extra (TTL - RS 485 converter)**

Serial Outputs for base board-keyboard connections:

- “powered” serial connection (also called SHORT DISTANCE) through +12V lines (only for base board-keyboard connections), GND and DATA terminals for:  
a) simple connection between base board and keyboard\*;  
b) multiple connection between several modules on the network (up to a max. of 5 modules)\*\*

**Note:**

**1) the modules can be base boards or keyboards.**

**2) two adjoining modules must be less than 10 m apart whereas the two furthest modules must be less than 50 m apart.**

**3) \*in this case an optional plug-in module (vertical) is necessary for the base board**

Digital outputs: 4 outputs on relays: configurable:

- first output (A) 16A SPST 1 Hp 250V~, (12 A SPST 1 Hp 250V~on request);
- second output (B) 16 A SPST 1 Hp 250V~;
- third output SPST (C) 8A SPST 1/2 Hp 250V~;
- fourth output (D) 8(3)A SPDT 1/2 Hp 250V~

Measurement range: from -55a 140 °C.  
Accuracy: better than 0.5% of bottom scale +1 digit.  
Resolution: 1 or 0.1 °C.  
Consumption: 6 VA.  
Power supply: 230 V~/= ±10% 50/60 Hz

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

## STANDARD 4 BUTTON IWK KEYBOARD TECHNICAL DATA

Front protection: IP65.

Casing: plastic body in resin type PC+ABS UL94 V-0, inspection window in polycarbonate, buttons in thermoplastic resin. Dimensions: front 74x32 mm, 30 mm depth.

Mounting: on panel, with drilling template 71x29 mm (+0.2/-0.1 mm).

Usage 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 -55a 140 °C.  
Accuracy: better than 0.5% of bottom scale +1 digit.

Resolution: 1 or 0.1 °C.

**Serial Outputs: see IWP740 (LX) Technical Data**

Consumption: **see IWP740 (LX) Technical Data**

**Technical Data**

Power supply: from IWP power module.

## TECHNICAL DATA IWK WIDE KEYBOARD

Front protection: IP65.

Casing: plastic body in resin type PC+ABS UL94 V-0, inspection window in polycarbonate, buttons in thermoplastic resin.

Dimensions: front panel 180x37 mm, depth 69 mm (terminals excluded)

Mounting: on panel, with drilling template 150x31 mm (+0.2/—0.1 mm). Usage 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 °C (NTC), without decimal point, on display 3 digits + sign.

Measurement range: from -50 a 110 °C.

Accuracy: better than 0.5% of bottom scale +1 digit. Resolution: 1 or 0.1 °C.

**Serial Outputs: see IWP740 (LX)**

**Technical Data**

Consumption: **see IWP740 (LX)**

**Technical Data**

Power supply: from IWP power module.

## STANDARD 6 BUTTON IWK KEYBOARD TECHNICAL DATA

Front protection: IP65.

Casing: Open board.

Dimensions: front 68x124 mm (LxH)

Usage 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.

**Serial Outputs: see IWP740 (LX)**

**Technical Data**

Consumption: **see IWP740 (LX)**

**Technical Data**

Power supply: from IWP power module.

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

**This means, for example, that an error introduced by the probe is added to any error that is inherent to the unit.**

**Table of TTL Serial Outputs (see also network connections)**

Type	Usage	Lines	Accessories (on IWP base)
TTL	Copy Card	TTL	- plug-in
serial RS 485 (for Televis)	for connexion to Televis	GND, 485+, 485- (input) GND, 485+, 485- (output)	TELEVIS module

**Table of IWK Serial Outputs (see also keyboard connections)**

Type	Usage	Lines	Accessories (on IWK keyboard)
Serial under tension (SHORT DISTANCE)	for single Base Board-KeyBoard connection	GND, DATA, VDD	

**Table of IWP Serial Outputs (see also network connections)**

Type	Usage	Lines	Accessories (on IWP base)
Serial in tension (SHORT DISTANCE)	single Base Board-KeyBoard connection Multiple Base-KeyBoard connection	GND, DATA 12V not connected	- -

**\*\*NOTE :** At level 1 the folders will only display all the level 1 parameters. At level 2 the folders will only display all the level 2 parameters.

**Tab. 1 SET POINTS, Table of parameters and FUNCTIONS**

SET	DESCRIPTION	RANGE	DEFAULT*			U.M.
Set	Setpoint <b>The Set point can be viewed from the machine status menu and not the programming menu.</b> The range is determined by parameters LSE and HSE.	-LSE...HSE	0.0			°C/°F
<b>PAR.</b>	<b>DESCRIPTION</b>	<b>RANGE</b>	<b>DEFAULT</b>	<b>VALUE*</b>	<b>LEVEL**</b>	<b>U.M.</b>
diF	<b>COMPRESSOR CONTROLLER (folder with "CP" label)</b> 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: the value 0 cannot be assumed.	0.1...30.0	2.0		1	°C/°F
HSE	Higher SET. Maximum possible set point value.	LSE..302	50.0		1 1	°C/°F
LSE	Lower SET. Minimum possible set point value. <b>NOTE: The two sets are interdependent: HSE (maximum set) cannot be less than LSe (minimum set ) and vice versa</b>	-55.0...HSE	-50.0		2	°C/°F
OSP	Offset SetPoint. Temperature value to be added algebraically to the set point if reduced set enabled (Economy function). It can be enabled by a specially configured button or Digital Input.	-30.0...30.0	0		2	°C/°F
Cit	Compressor min on time. Minimum compressor activation time before disabling. If set at 0 it is not active.	0...250	0		2	min
CAt	Compressor mAx on time. Maximum compressor activation time before disabling. If set at 0 it is not active.	0...250	0			min
Ont (1)	<b>COMPRESSOR PROTECTIONS (folder with "CP" label)</b> On time (compressor). Compressor activation time in the event of a faulty probe. If set to "1" with Offt at "0" the compressor is always on whereas if Offt >0 it operates in duty cycle mode. <b>See Duty Cycle diagram</b>	0...250	0		1	min
OfT (1)	OFF time (compressor). Compressor in disabled state time in the event of a faulty probe. If set to "1" with Ont at "0" the compressor is always off whereas if Ont >0 it operates in duty cycle mode. <b>See Duty Cycle diagram</b>	0...250	1		1	min
dOn	delay (at) On compressor. Delay time in activating the compressor relay after switch-on of instrument.	0...250	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		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	min
OdO (1)	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			min
dtY	<b>DEFROSTING REGULATOR (folder with "dEF" label) (6)</b> defrost type. Type of defrost. 0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrosting.	0/1/2	0	See table dCt-dty	1	num
dit	defrost interval time. Interval between the start of two defrosting operations. <b>0= the function is disabled (defrost is NEVER performed)</b>	0...250	6h		1	hours/min/sec (see dt1)
dt1	defrost time 1. Measure unit for defrost times ("dit" parameter). 0 = "dit" parameter expressed in hours. 1 = "dit" parameter expressed in minutes. 2 = "dit" parameter expressed in seconds.	0/1/2	0		2	num
dt2	defrost time 2. Measure unit for defrosting duration ("dEt" parameter). 0 = "dEt" parameter expressed in hours. 1 = "dEt" parameter expressed in minutes. 2 = "dEt" parameter expressed in seconds.	0/1/2	1		2	num
dCt	defrost Counting type. Selection of count mode for defrosting time. 0 = compressor operating hours (DIGIFROST® method); Defrosting active ONLY with compressor on. NOTE: compressor time of operation is counted independently of evaporator probe (counting is active if evaporator probe is absent or faulty). The value is ignored if RTC is enabled. 1 = Real Time - equipment 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 dtY parameter 3= With RTC. Defrosting at times set by dE1...dE8, F1...F8 parameters	0/1/2/3 0=df 1=rt 2=SC 3=RTC	1	See table dCt-dty	1	num
"dd"	dE1...dE8 daily defrost start time 1...8. Range 0...23, 24= off (default)	0...23/0...59	24		1	hours/min.
"Fd"	F1...F8 festive defrost start time 1...8. Range 0...23, 24= off (default) <b>WARNING: d1...d8, F1...F8 parameters are visible only if dCt=3 with clock option present. They are included in the dd and Fd folders.</b> <b>If dit=0 defrosting is NEVER performed (manual defrosting is also not possible).</b>	0...23/0...59	24		1	hours/min.
<b>SEE table 4a "dd" daily defrost start time and table 4b "Fd" Festive defrost start time</b>						
dOH	defrost Offset Hour. Start-of-defrosting delay time from start up of instrument.	0...59	0		1	min
dEt	defrost Endurance time. Defrosting time-out; determines maximum duration of defrosting.	1...250	30min		1	hours/min/sec (see dt2)
dSt	defrost Stop temperature. Defrosting end temperature (determined by evaporator probe).	-50.0... 150	8.0		1	°C/°F
dPO	defrost (at) Power On. Determines if the instrument must enter 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		1	flag
tcd	time compressor for defrost. Minimum time for compressor On or OFF before defrost If >0 (positive value) the compressor remains ACTIVE for tcd minutes; If <0 (negative value) the compressor remains INACTIVE for tcd minutes; If =0 the parameter is ignored.	-31...31	0		2	min
Cod	Compressor off (before defrost). Time for compressor OFF before defrost cycle. If a defrost cycle is set within the programmed time for this parameter, the compressor is not started up. If =0 function is stopped.	0...60	0		2	min



PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE	LEVEL**	U.M.
<b>FAN REGULATOR (folder with "FAn" label)</b>						
FpT	Fan Parameter type. Characterizes the "FSt" parameter that can be expressed as an absolute temperature value or as a value related to the Set point. 0 = absolute; 1 = relative.	0/1	0		2	flag
FSt	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 Setpoint.	-50.0..150.0	2.0		1	°C/°F
Fot	Fan on-start temperature. Fan start temperature; if the temperature read by the evaporator is lower than the value set for this parameter, the fans remain deactivated. The value is positive or negative and, depending on the FpT parameter, could represent the temperature in absolute value or relative to Setpoint.	-50.0..150.0	-50.0		2	°C/°F
FAd	FAn differential. Fan activation intervention differential (see par. "FSt" and "Fot").	1.0...50.0	2.0		1	°C/°F
Fdt	Fan delay time. Delay time at fan activation after a defrosting cycle.	0...250	0		1	min
dt	drainage time.	0...250	0		1	min
dFd	defrost Fan disable. Used to select the exclusion of the evaporator fans during defrosting. y = yes; n = no.	n/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		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		2	flag
FdC	Fan switch off delay time after compressor stop. In minutes. 0= function excluded	0..99	0		2	min
Fon	Fan on (in duty cycle). Time fans are ON in a duty cycle. Use of fans in duty cycle mode; valid for FCO = dc and H42=1 (evaporator probe present)	0..99	0		2	min
FoF	Fan oFF (in duty cycle). Time fans are OFF in a duty cycle. Use of fans in duty cycle mode; valid for FCO = dc and H42=1 (evaporator probe present)	0..99	0		2	min
<b>ALARMS (folder with "AL" label)</b>						
Att	Alarm type. Parameter "HAL" and "LAL" modes, as absolute temperature values or as differential compared to the Setpoint. 0 = absolute value; 1 = relative value.	0/1	0		2	flag
AFd	Alarm Fan differential. Alarm differential.	1.0...50.0	2.0		1	°C/°F
HAL (2)	Higher ALarm. Maximum temperature alarm. Temperature value (with regard to Set point, or as an absolute value based on Att) which if exceeded in an upward direction triggers the activation of the alarm signal. <b>See Max/Min. Alarm Diagram;</b>	LAL...150.0	50.0		1	°C/°F
LAL (2)	Lower ALarm. Minimum temperature alarm. Temperature value (with regard to Set point, or as an absolute value based on Att) which if exceeded in a downward direction triggers the activation of the alarm signal. <b>See Max/Min. Alarm Diagram;</b>	-50.0...HAL	-50.0		1	°C/°F
PAO (!) (3)	Power-on Alarm Override. Alarm exclusion time after instrument switch on, after a power failure.	0...10	0		1	hours
dAO	defrost Alarm Override. Alarm exclusion time after defrost.	0..999	0		1	Minutes
OAO	Alarm signal delay after disabling digital input (door open), refers to high and low temperature alarms.	0...10	0		2	hours
tdO	time out door Open Time out after alarm signal following digital input disabling (door open)	0...250	0		2	min
tAO (3)	temperature Alarm Override. Temperature alarm signal delay time.	0...250	0		1	min
dAt	defrost Alarm time. Alarm signal for defrost end due to time-out. n = does not activate alarm; y = activates alarm	n/y	n		2	flag
EAL	External Alarm Lock. External alarm to lock controls (n=does not lock, y=locks).	n/y	n		2	flag
AOP	Alarm Output Polarity. Polarity of alarm output 0 = alarm active and output disabled; 1 = alarm active and output enabled.	0/1	1		2	flag
PbA	Configuration of temperature alarm on probe 1 and/or 3. 0 = alarm on probe 1 (thermostat control); 1 = alarm on probe 3 (display); 2 = alarm on probe 1and 3 (thermostat control and display). 3 = alarm on probe 1and 3 (thermostat control and display) on external threshold	0...3	0		2	min
SA3	Probe 3 alarm set point (display)	-50.0...150.0	0		2	°C/°F
dA3	Probe 3 alarm differential (display)	-30.0...30.0	2.0		2	°C/°F
tA3	Probe 3 alarm delay (display)	0...59	0		2	min
<b>LIGHT AND DIGITAL INPUTS (folder with "Lit" label)</b>						
dSd	Enabling light relay by door switch. n = door open, the light does not turn on; y = door open, the light turns on (if it was off)	n/y	y		2	flag
dLt	Light relay disabling (switch off) delay (cell light). The cell light will remain on for dLt minutes after closing the door if dSd parameter is set for this.	0...31	0		2	min
OFL	Light switch always disables light relay. Enables switching off through light switch even if the delay after closing the door set by dLt is active.	n/y	n		2	flag
dOd	Door switch switches off loads When commanded by the digital input, programmed as door-switch, it stops all the loads when opening the door and re-starts them when the door is closed (observing any timings in progress).	n/y	n		2	flag
dAd	Digital input enabling delay	0...255	0		2	min
<b>dCt</b>	<b>defrost relay</b>	<b>dt</b>	<b>compressor relay (in defrost mode)</b>			
0= compressor operating hours (DIGIFROST® method);	ON when dit is reached OFF when Pb2=dSt or for time (dEt)	0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrosting	OFF ON ON if requested from set point			
1= Real time	ON when dit is reached OFF when Pb2=dSt or for time (dEt)	0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrosting	OFF ON ON if requested from set point			
2 = compressor stop.	ON when compressor OFF OFF when Pb2=dSt or for time (dEt)	0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrosting	OFF <b>NOT RECOMMENDED!!!</b> ON if requested from set point			
3= With RTC.	ON in dd and Fd OFF when Pb2=dSt or for time (dEt)	0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrosting.	OFF ON ON if requested from set point			

PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
L00	<b>LINK CONTROL (folder with "Lin" label)</b> Master, Slave, Keyboard Selection Selects the instrument as Master (0), Slave (from 1 to 7), Echo (0, in this case the Echo is a repetitor of the Master even if connected to a Slave).	0...4	0		2	num
L01	Number of Slaves in the Network Refers to Master only. Number of Slaves in the network (from 0 to 7).. Per Slaves/Echo leave value =0	0...4	0		2	num
L03	Sequential /Contemporary Defrost Refers to Master and Slave. Simultaneous/sequential defrosting Master: n = simultaneous; y = sequential. Slave: n = ignore; y = accept.	n/y	n		2	flag
L04	Distributed Display Refers to Slave only. Distributed display. n = the Slave displays local values; y = the Slave shows Master display	n/y	y		2	flag
L05	Network Command Enabled Refers to Master and Slave Master: n = does not ask Slaves to activate remote functions; y = asks Slaves to activate remote functions. Slave: n = ignores activation of remote functions; y = accepts activation of remote functions.	n/y	n		2	flag
L06	Resources Lock At End Of Defrost. Locks resources (compressors, fans, etc) at the end of defrosting. n=no; y=yes NOTE: related to Ldd parameter which has priority over L06 (see)Alarm Relay with slave	n/y	y		2	flag
L07	Alarm relay activated if slave alarm is generated	n/y	n		2	flag
L08	Network Command Enabled from Slave	n/y	n		2	flag
L09	Network function enabled from slave Master probe shared (n=no, y=yes)	n/y	n		2	flag
<b>NIGHT/DAY CONTROL (night and day)</b> <b>(folder with "nad" label, parameters E00...E03)</b> <b>SEE Event table (NIGHT AND DAY) for day0, day1, day2, day3, day4, day5, day6, and every day</b>						
<b>NIGHT/DAY CONTROL (night and day) (folder with "nad" label)</b>						
E00	Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0...4	0		2	num
E01	Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by EO2.	0...23/0...59	0		2	hours/min
E02	Duration of event. Sets duration of event (for type of event, see E00)	0...99	0		2	Hours
E03	Blocking/unblocking daily or festive defrosting. 0= "work days" defrost sequence defined by par. d0...d8; 1= "festive/holidays" defrost sequence defined by par. F0...F8; <b>NOTE: does not affect defrosting at intervals like Every Day event (same defrost sequence for work days/festive).</b>	0/1	0		2	flag
<b>COMMUNICATION: FOLDER PROVIDED FOR LX MODELS ONLY</b>						
dEA (I)	<b>COMMUNICATION(folder with "Add" label)</b> dEvice Address. Device address: indicates the appliance address to the management protocol.	0..14	0		1	num
FAA (I)	FAmily Address. Family address: indicates the appliance family to the management protocol.	0..14	0		1	num
<b>DISPLAY (folder with "dis" label)</b>						
LOC	(keyboard) LOCK. Keyboard locked. However, it is still possible to enter parameters and modify them, including the status of this parameter to allow keyboard unlocking. y = yes (keyboard locked); n = no.	n/y	n		1	flag
PA1	PAssword 1.When enabled (value is not 0) it represents the access key to level 1 parameters.	0...250	0		1	num
PA2***	PAssword 2. When enabled (value is not 0) it represents the access key to level 2 parameters.	0...255	0		2	num
ndt	number display type. Display with decimal point. y = yes (display with decimal point); n = no (only whole numbers).	n/y	n		1	flag
CA1	CAlibration 1. Calibration 1. Positive or negative temperature value added to the value read by probe 1, based on "CA" parameter settings.	-12.0...12.0	0		1	°C/°F
CA2	CAlibration 2. Calibration 2. Positive or negative temperature value added to the value read by probe 2, based on "CA" parameter settings.	-12.0...12.0	0		1	°C/°F
CA3	CAlibration 3. Calibration 2. Positive or negative temperature value added to the value read by probe 3, based on "CA" parameter settings.	-12.0...12.0	0		1	°C/°F
CA	CAlibration Intervention. Intervention on view offset, thermostat control 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 temperature displayed that is also used by regulators.	0/1/2	2		2	num
LdL	Low display Label. Minimum value the instrument is able to display..	-55.0...302	-50.0		2	°C/°F
HdL	High display Label. Maximum value the instrument is able to display.	-55.0...302	140.0		2	°C/°F
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 "deF" label during defrosting until the next time the Set point value is reached (or the Ldd expires).	0/1/2	1		1	num
Ldd	Lock defrost disable. Time-out value for unlocking display (DEF label) if reaching the set point takes too long during defrosting or if the Link (Master-Slave) communication fails (E7 error).	0...255	0		1	min
dro (*)	Select °C or °F to display temperature read by probe. 0 = °C, 1 = °F. <b>PLEASE NOTE: switching from °C to °F DOES NOT modify set points, differentials, etc. (for example set=10°C becomes 10°F).</b>	0/1	0		1	flag
ddd	Selection of the value type to be displayed. 0 = Setpoint; 1 = probe 1(thermostat control); 2 = probe 2 (evaporator); 3 = probe 3 (display).	0/1/2/3	1		2	num
<b>(*) The mathematical conversion for temperature is °F=(9/5)* °C+32. For example: 32°F=0°C; 50°F=10°C. 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=G=F and not 50°F (according to the conversion table)</b>						

PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
	<b>CONFIGURATION (folder with "CnF" label)</b>					
H02	Button activation time if buttons are configured for a second function. For the ESC, Up and DOWN buttons configured for a second function (defrost, aux, etc) the time for rapid enabling is set. Aux is an exception and has a set time of 1 second	0...15	5		2	sec
H06	button/input aux/door switch light active when instrument is off (but powered)	n/y	y		2	flag
H08	Stand-by operating mode. 0= only display switched off; 1= display on and controls locked; 2= display off and controls locked;	0/1/2	2		2	num
H11 (4)	Configuration of digital inputs/polarity (4) WARNING! positive or negative values change polarity 0 = disabled; 1 = defrosting; 2= reduced set; 3 = auxiliary; 4 = door switch 5 = external alarm *6 = disables storage of HACCP alarms (*only in HACCP models) not used 7 = stand-by (ON-OFF) 8 = maintenance request (LX models only) 9 = minimum pressure switch 10 = maximum pressure switch 11 = general pressure switch 12 = preheating 13 = evaporator fan forcing	-13...13	3		2	num
H21 (!)	Digital output 1 configurability.(A) 0 = disabled; 1 = compressor; 2 = defrosting; 3 = fans; 4 = alarm; 5 = auxiliary. 6 = stand-by 7 = light 8 = buzzer 9 = not used 10 = not used	0...10	2		2	num
H22 (!)	Digital output 2 configurability. (B) Same as H21.	0...10	5		2	num
H23 (!)	Digital output 3 configurability. (C) Same as H21	0...10	1		2	num
H24 (!)	Digital output 4 configurability. (D) Same as H21	0...10	3		2	num
H31 (!)	UP button configurability. 0 = disabled; 1 = defrosting; (default) 2 = auxiliary; 3 = reduced set; *4 = reset HACCP alarms (*only in HACCP models); not used *5 = disables storage of HACCP alarms (*only in HACCP models) not used 6 = light; 7 = stand-by 8 = maintenance request (LX models only) 9 = not used	0...9	1		2	num
H32 (!)	DOWN button configurability. Same as H31. (0 = disabled; default)	0..9	2		2	num
H33 (!)	ESC button configurability. Same as H31. (0 = disabled; default)	0...9	0		2	num
H34 (!)	<b>PARAMETER AVAILABLE ONLY WITH IWK WIDE AND IWK 6 BUTTON KEYBOARDS</b> Function 1 button configurability. default LIGHT.	0...9	6		2	num
H35 (!)	<b>PARAMETER AVAILABLE ONLY WITH IWK WIDE AND IWK 6 BUTTON KEYBOARDS</b> Function 2 button configurability. default on-off	0...9	7		2	num
H41	Presence of control probe. n= not present; y= present.	n/y	y		2	flag
H42	Presence of Evaporator probe. n= not present; y= present.	n/y	y		2	flag
H43	Display probe configuration. n= not present; y= present (display probe);	n/y	n		2	num
PEI	Number of errors allowed per maximum/minimum pressure switch input	0...15	10		1	min
Pen	Error count interval	0...99	60		1	/
reL	reLease firmware. Device version: Read only parameter.	/	/		1	/
tAb	tAbLe of parameters. Reserved: read only parameter.	/	/		1	/
	<b>COPY CARD (folder with "Fpr" label)</b>	/	/		1	/
UL	Up load. Transfer of programming parameters from instrument to Copy Card.	/	/			
dL	Down load. Transfer of programming parameters from instrument to Copy Card.	/	/		1	/
Fr	Format. Cancelling all data entered in the copy card. <b>parameter Fr PLEASE NOTE: if "Fr" parameter (formatting of copy card ) is used the data entered in the card will be permanently lost. This operation cannot be undone.</b>	/	/		2	/

#### label PA2

Inside the CnF folder you can access all level 2 parameters from label PA2 by pressing the "set" button.  
SEE paragraph 2) Displaying level 2 parameters

**Table of parameters: NOTES**

(1) See Duty Cycle diagram

(2) See Max/Min. Alarm Diagram

(3) Refers exclusively to high and low temperature alarms

(4) WARNING! positive or negative values change polarity Positive values: active input when the contact is closed; negative values: active input when contact is open.

In the deF folder there are two folders: “dd” (daily defrost) and “Fd” (Festive Defrost); the first folder includes dE1...dE8 parameters (working day defrost start) and the second folder includes F1...F8 parameters (Festive defrost). The two folders are only visible if dit =3 and RTC is present.

If dit=0 defrosting is NEVER performed (manual defrosting is also not possible).

**NOTE: DO NOT confuse the days d0...d6 related to the nad folder with dE1...dE8 daily defrost**

\* VALUE column: to be compiled manually with any custom settings (if different from the default value).

\*\* LEVEL column: indicates the level of visibility for parameter that can be accessed by a PASSWORD (see relevant paragraph)

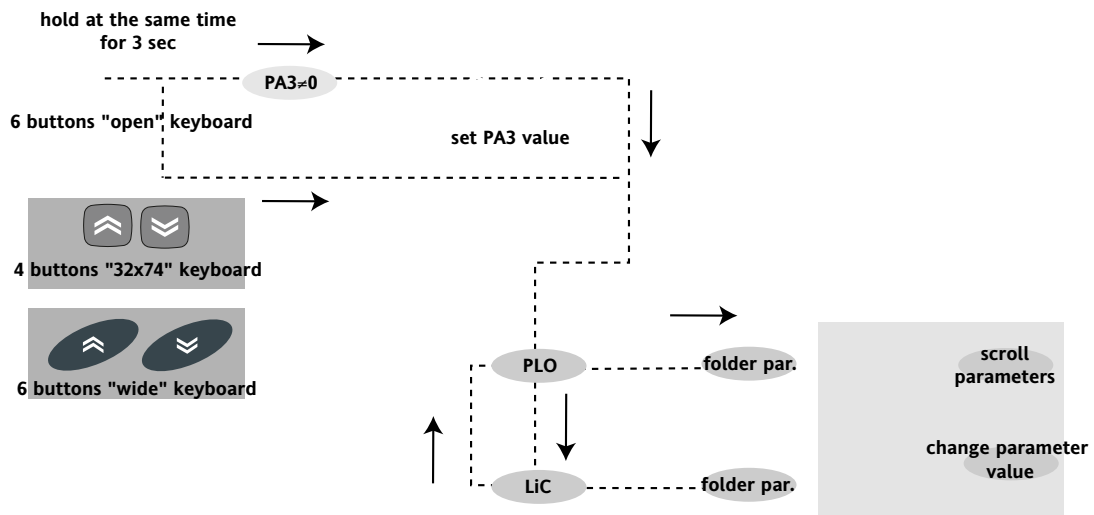
\*\*\*\* PA2 is visible (or will be requested, if specified) at level 1 in the CnF folder and can be set (it can be modified) at level 2 in the diS folder

**(!) WARNING!**

• If one or more parameters marked with (!) are modified, the controller must be switched off after the modification and then switched back on

•NOTE: It is strongly recommended that the unit is switched off and on again each time parameter configuration is changed in order to prevent malfunctioning of the configuration and/or ongoing timings.

## LOCAL KEYBOARD PARAMETER MENU DIAGRAMS



**Tab. 2 Local keyboard parameters table**

PARAMETER	DESCRIPTION	RANGE	DEFAULT*	U.M.
ECO	<b>ECO (folder with “PLO” label)</b> Type of keyboard 0= Master keyboard 1= ECO keyboard	0...1	0	num
adb	address base. Base address	0...4	0	num
PA3	Keyboard PAssword When enabled (value is not 0) it represents the access key for the local keyboard parameters.	0...255	0	num
rEL	release firmware. Device version: Read only parameter. time-out Address.	0...999	0	num
toA	Timeout of tbA address.	0...250	10	sec
Li1	<b>LiC (folder with “LiC” label)</b> Broadcast communication n= the keyboard communicates with the adb address base (see par.) (in this case, there are several bases); y= the keyboard communicates with the broadcast address base (in this case there must only be one base).	n/y	n	num
tbA	Temporary navigation base address. Temporary address for network navigation.	0...4	0	num

\* DEFAULT column: The term default identifies the standard factory-set configuration;

**(!) WARNING!**

It is strongly recommended that the unit is switched off and on again each time parameter configuration is changed in order to prevent malfunctioning of the configuration and/or ongoing timings.

## “dd” and ”Fd” folders

In the deF folder there are two folders: “dd” (daily defrost) and “Fd” (Festive Defrost); the first folder includes dE1...dE8 parameters (working day defrost start) and the second folder includes F1...F8 parameters (Festive defrost). The two folders are only visible if dit =3 and RTC is present. **If dit=0 defrosting is NEVER performed (manual defrosting is also not possible).**

dE1...dE8 daily defrost start time 1...8. Range 0...23, 24= off (default) F1...F8 festive defrost start time 1...8. Range 0...23, 24= off (default) WARNING: d1...d8, F1...F8 parameters are visible only if dCt=3 with clock option present. They are included in the dd and Fd folders.

**Tab. 4a “dd” daily defrost start time**

PAR.	DESCR.	RANGE	DEFAULT	CUSTOM	U.M.	LEVEL
dE1	<b>Time1</b>	00-24, 00-59	24.00*		hours/min.	1
dE2	<b>Time2</b>	00-24, 00-59	24.00*		hours/min	1
dE3	<b>Time3</b>	00-24, 00-59	24.00*		hours/min	1
dE4	<b>Time4</b>	00-24, 00-59	24.00*		hours/min	1
dE5	<b>Time5</b>	00-24, 00-59	24.00*		hours/min	1
dE6	<b>Time6</b>	00-24, 00-59	24.00*		hours/min	1
dE7	<b>Time7</b>	00-24, 00-59	24.00*		hours/min	1
dE8	<b>Time8</b>	00-24, 00-59	24.00*		hours/min	1

\* 24=disabled

**Tab 4b “Fd” Festive defrost start time**

PAR.	DESCR.	RANGE	DEFAULT	CUSTOM	U.M.	LEVEL
F1	<b>Time1</b>	00-24, 00-59	24.00*		hours/min	1
F2	<b>Time2</b>	00-24, 00-59	24.00*		hours/min	1
F3	<b>Time3</b>	00-24, 00-59	24.00*		hours/min	1
F4	<b>Time4</b>	00-24, 00-59	24.00*		hours/min	1
F5	<b>Time5</b>	00-24, 00-59	24.00*		hours/min	1
F6	<b>Time6</b>	00-24, 00-59	24.00*		hours/min	1
F7	<b>Time7</b>	00-24, 00-59	24.00*		hours/min	1
F8	<b>Time8</b>	00-24, 00-59	24.00*		hours/min	1

\* 24=disabled

## Tab. 5 Event Table

NIGHT/DAY CONTROL (night and day)  
(folder with "nad" label)

Event table (NIGHT AND DAY) for day0, day1, day2, day3, day4, day5, day6, and every day

For every day of the week d0...d6 (Sunday...Saturday) the parameters E00...E03 can be displayed/set. (see also nad diagram). Compile manually the CUSTOM column with the desired settings for each day of the week.

### d0 Day 1 Sunday



PARAMETER	DESCRIPTION	RANGE	DEFAULT	CUSTOM	U.M.
E00	<b>Functions enabled during events</b> Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0..4	0		num
E01	<b>Event Start hours/minutes</b> Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by E02.	0...23/0...59	0		hours/min
E02	<b>Event Duration</b> Duration of 1st event. Sets the duration of the event.	0...99	0		hours
E03	<b>Daily or Festive Defrost Block</b> Blocking/unblocking daily or festive defrosting. NOTE: does not affect defrosting at intervals like Every Day event	0/1	0		flag

### d1 Day 2 Monday

PARAMETER	DESCRIPTION	RANGE	DEFAULT	CUSTOM	U.M.
E00	<b>Functions enabled during events</b> Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0..4	0		num
E01	<b>Event Start hours/minutes</b> Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by E02.	0...23/0...59	0		hours/min
E02	<b>Event Duration</b> Duration of 1st event. Sets the duration of the event.	0...99	0		hours
E03	<b>Daily or Festive Defrost Block</b> Blocking/unblocking daily or festive defrosting. NOTE: does not affect defrosting at intervals like Every Day event	0/1	0		flag

### d2 Day 3 Tuesday

PARAMETER	DESCRIPTION	RANGE	DEFAULT	CUSTOM	U.M.
E00	<b>Functions enabled during events</b> Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0..4	0		num
E01	<b>Event Start hours/minutes</b> Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by E02.	0...23/0...59	0		hours/min
E02	<b>Event Duration</b> Duration of 1st event. Sets the duration of the event.	0...99	0		hours
E03	<b>Daily or Festive Defrost Block</b> Blocking/unblocking daily or festive defrosting. NOTE: does not affect defrosting at intervals like Every Day event	0/1	0		flag

### d3 Day 4 Wednesday

PARAMETER	DESCRIPTION	RANGE	DEFAULT	CUSTOM	U.M.
E00	<b>Functions enabled during events</b> Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0..4	0		num
E01	<b>Event Start hours/minutes</b> Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by E02.	0...23/0...59	0		hours/min
E02	<b>Event Duration</b> Duration of 1st event. Sets the duration of the event.	0...99	0		hours
E03	<b>Daily or Festive Defrost Block</b> Blocking/unblocking daily or festive defrosting. NOTE: does not affect defrosting at intervals like Every Day event	0/1	0		flag

### d4 Day 5 Thursday

PARAMETER	DESCRIPTION	RANGE	DEFAULT	CUSTOM	U.M.
E00	<b>Functions enabled during events</b> Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0..4	0		num
E01	<b>Event Start hours/minutes</b> Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by E02.	0...23/0...59	0		hours/min
E02	<b>Event Duration</b> Duration of 1st event. Sets the duration of the event.	0...99	0		hours
E03	<b>Daily or Festive Defrost Block</b> Blocking/unblocking daily or festive defrosting. NOTE: does not affect defrosting at intervals like Every Day event	0/1	0		flag

**d5 Day 6 Friday**

PARAMETER	DESCRIPTION	RANGE	DEFAULT	CUSTOM	U.M.
E00	<b>Functions enabled during events</b> Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0...4	0		num
E01	<b>Event Start hours/minutes</b> Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by EO2.	0...23/0...59	0		hours/min
E02	<b>Event Duration</b> Duration of 1st event. Sets the duration of the event.	0...99	0		hours
E03	<b>Daily or Festive Defrost Block</b> Blocking/unblocking daily or festive defrosting. NOTE: does not affect defrosting at intervals like Every Day event	0/1	0		flag

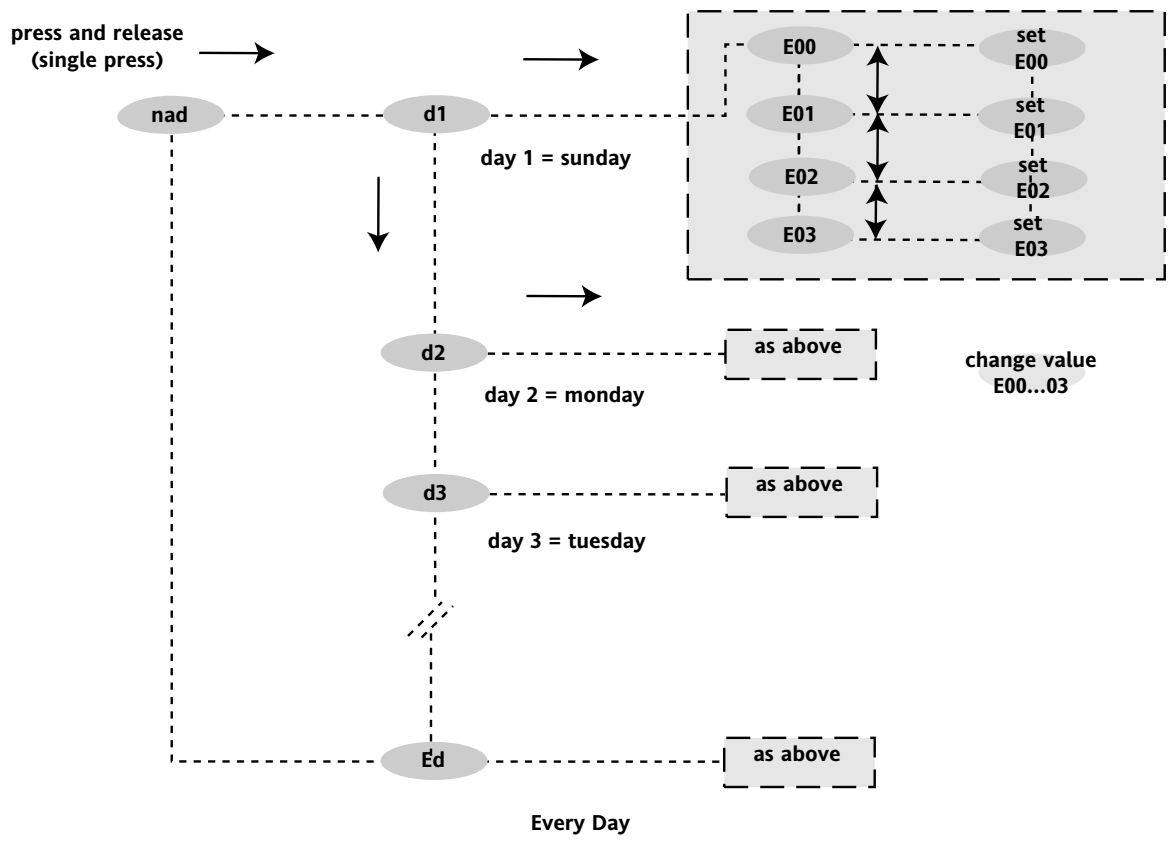
**d6 Day 7 Saturday**

PARAMETER	DESCRIPTION	RANGE	DEFAULT	CUSTOM	U.M.
E00	<b>Functions enabled during events</b> Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0...4	0		num
E01	<b>Event Start hours/minutes</b> Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by EO2.	0...23/0...59	0		hours/min
E02	<b>Event Duration</b> Duration of 1st event. Sets the duration of the event.	0...99	0		hours
E03	<b>Daily or Festive Defrost Block</b> Blocking/unblocking daily or festive defrosting. NOTE: does not affect defrosting at intervals like Every Day event	0/1	0		flag

**Every Day**

PARAMETER	DESCRIPTION	RANGE	DEFAULT	CUSTOM	U.M.
E00	<b>Functions enabled during events</b> Functions enabled during events: 0 = control disabled. 1 = reduced set; 2 = reduced set+light; 3 = reduced set+light+aux. 4= instrument off	0...4	0		num
E01	<b>Event Start hours/minutes</b> Hours/minutes of start of event. Sets start time of event. Starting from this time, the "NIGHT" mode will be enabled. The duration is determined by EO2.	0...23/0...59	0		hours/min
E02	<b>Event Duration</b> Duration of 1st event. Sets the duration of the event.	0...99	0		hours
E03	<b>NOT USED</b>	-	-		-

**nad (night and day) DIAGRAM**



# ALARM DIAGRAM — DUTY CYCLE DIAGRAM

## Max/Min. Alarm Diagram (maximum and minimum temperature)

The maximum temperature alarm occurs when the probe temperature is:

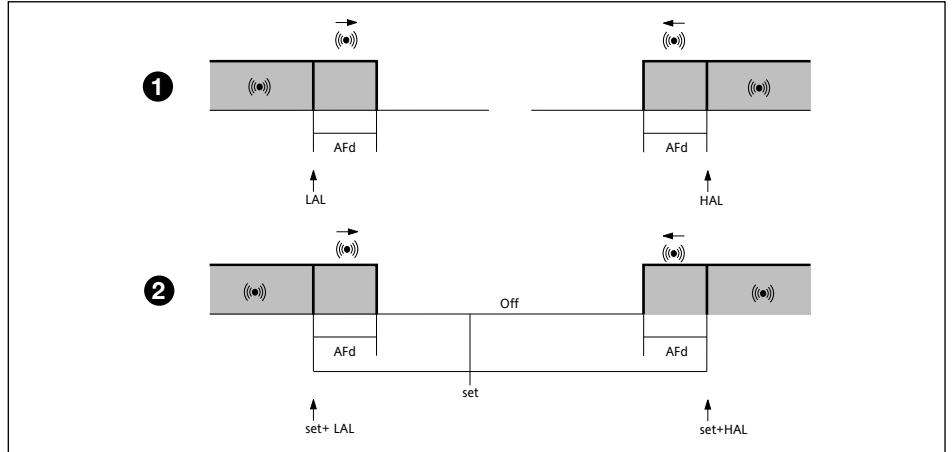
- (1) higher than or equal to HAL if Att=Ab(solute)
- (2) higher than or equal to Set + HAL if Att=rEL(ative)

- if Att=rEL(ative) HAL must be only positive.

The minimum temperature alarm occurs when the probe temperature is:

- (1) lower than or equal to LAL if Att=Ab(solute)
- (2) lower than or equal to Set + LAL if Att=rEL(ative)

- if Att=rEL(ative) LAL must be only negative.



The maximum temperature alarm back swing occurs when the probe temperature is:

- (1) lower than or equal to HAL - AFd if Att=Ab(solute)
- (2) lower than or equal to set + HAL - AFd if Att=rEL(ative)

The minimum temperature alarm back swing occurs when the probe temperature is:

- (1) greater than or equal to LAL - AFd if Att=Ab(solute)
  - (2) greater than or equal to set + LAL + AFd if Att=rEL(ative)
- \* (set - |LAL| + AFd)

**\*NOTE : if Att=rEL(ative) LAL must be negative: Therefore set+LAL < set because set+(-|LAL|)=set-|LAL|**

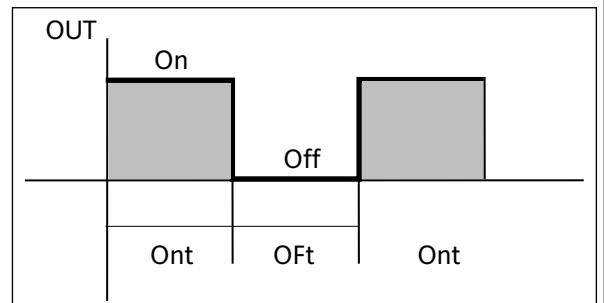
## Duty Cycle diagram

Ont, OFt parameters programmed for Duty Cycle

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

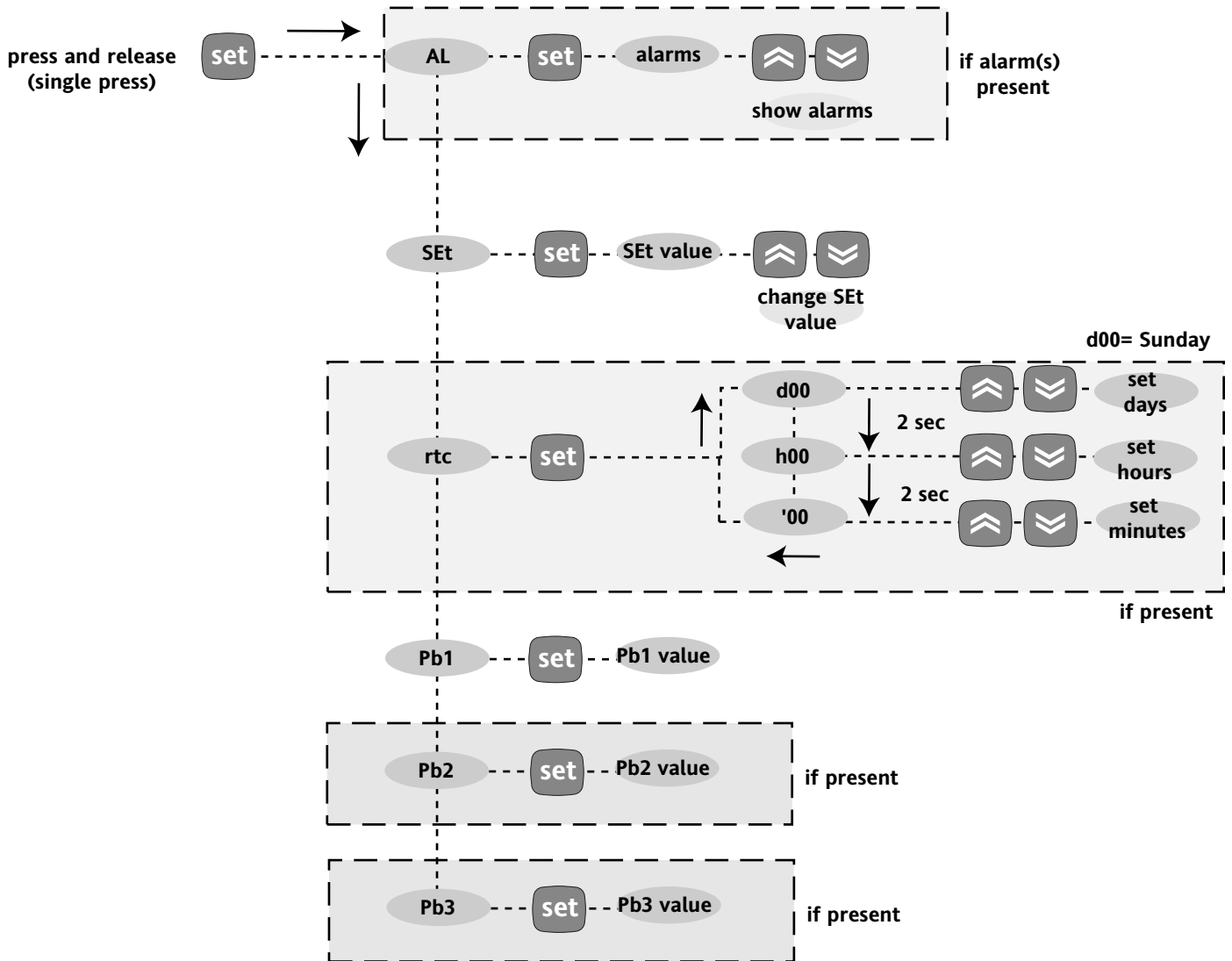
The error condition for probe 1 (compressor) causes the following:

- E1 code appears on display
- the regulator is activated as indicated by the "Ont" and "OFt" parameters if programmed for the duty cycle



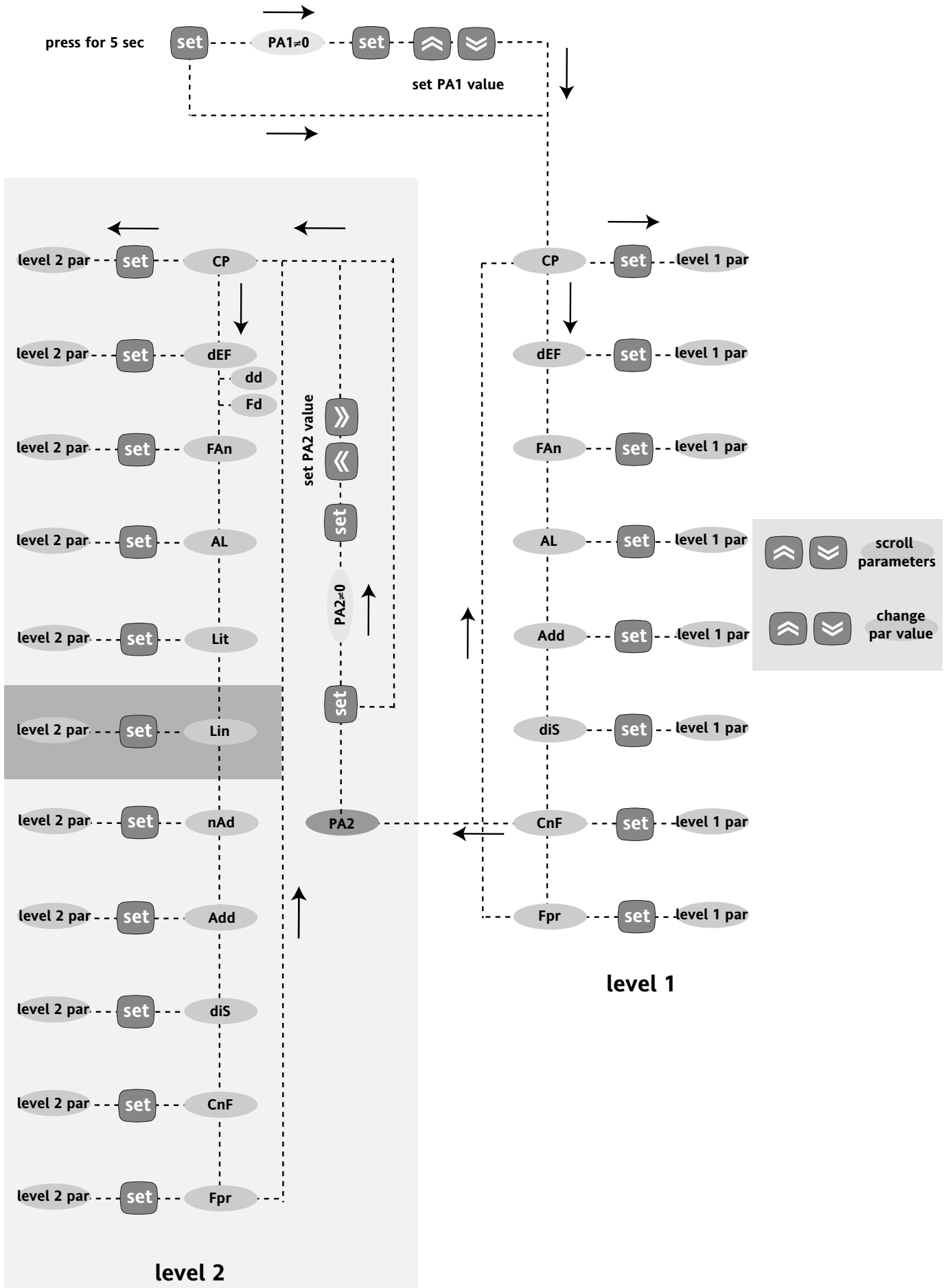


# MACHINE STATUS MENU DIAGRAM



Machine Status Menu Diagram

# PROGRAMMING MENU DIAGRAM



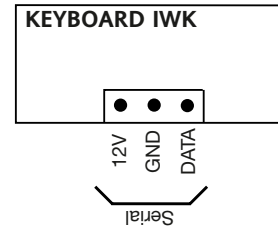
Programming Menu Diagram

# WIRING

## 1 - KEYBOARD WIRING

### KEYBOARD WIRING IWK 32x 74

32x74



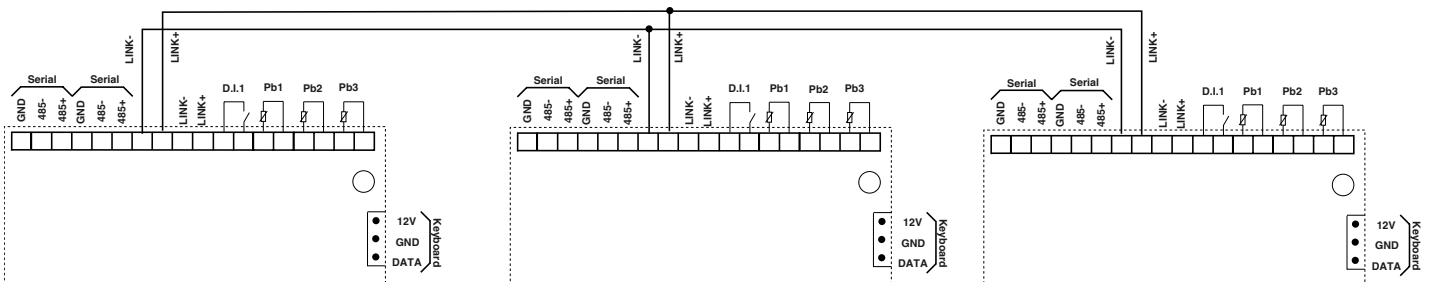
Quick  
connexion

#### TERMINALS

##### “POWERED” or SHORT DISTANCE SERIAL

from left to right	12V
	GND
	DATA

## 2 - LINK WIRING

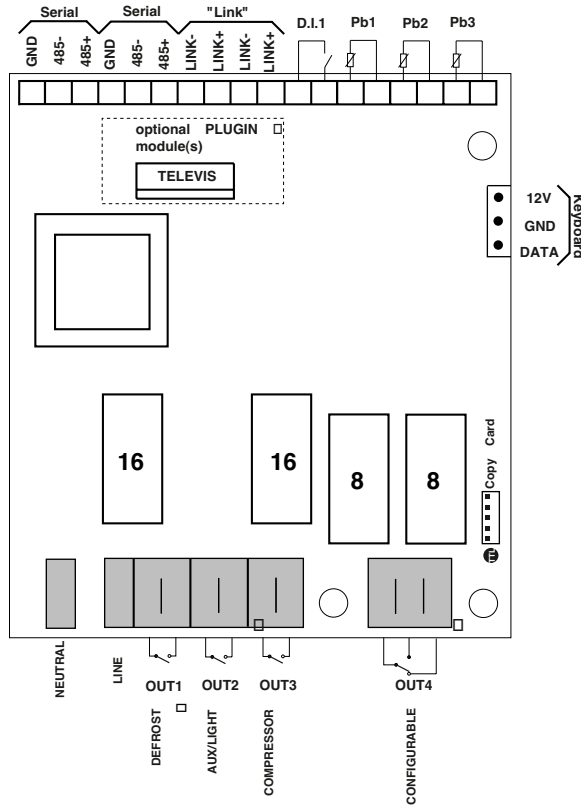


### PLEASE NOTE - BASE BOARD-KEYBOARD WIRING/PROGRAMMING

1 - PROGRAMMING/CONFIGURATION BETWEEN THE BASE BOARD AND KEYBOARD CANNOT BE EFFECTED IF THE UNITS ARE CONNECTED IN THE LINK NETWORK. FOR THIS REASON FIRST THE MASTER AND SLAVES BE CONFIGURED (WITH KEYBOARDS) AND THEN CONNECTED IN THE LINK NETWORK.

2 - FLICKERING OF THE DISPLAYS ON THE KEYBOARDS INDICATES THAT THE CONNECTED UNITS ALL HAVE THE SAME ADDRESS: DISCONNECT THE LINK NETWORK AND PROGRAM EACH UNIT AS DESCRIBED ABOVE.

BASE BOARD



## TERMINALS

Serial	“Powered” serial <b>SHORT DISTANCE</b>
Serial	“Powered” serial <b>SHORT DISTANCE</b>
Link	—
D.I. 1	Digital input 1
Pb1	Probe input 1
Pb2	Probe input 2
Pb3	Probe input 3
OUT 1	N.O. relay output (A) see par. H21 (default 2)
OUT 2	relay output (B) see par. H22 (default 5)
OUT 3	N.O. relay output (C) see par. H23 (default 1)
OUT 4	relay output (D) see par. H24 (default 3)
L	Line
N	Neutral

Copy Card Input for Copy Card

## Keyboard

DATA	Data
GND	Ground
12V	12V

## optional modules

TELEVIS plug-in optional module for connection to Televis using Serial 485



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