



Alarm

- ON for alarm active;
- blinking when the alarm is silenced and still present (NOTE: the alarm silencing only eliminates the acoustic alarm (buzzer, where present))



Fans

- ON when fan is on;

LED (ON THE KEYBOARD)

lock



- ON for lock (keyboard locked);

on/off

- ON for instrument “turned off” (on **STAND-BY**);
- OFF for instrument turned on;

“manual defrosting”

- ON for manual defrosting

“aux/light”

- ON for open output;
- NOTE: ON for open output also from D.I. (Digital Input)**

NOTE: the LEDs are turned off (“OFF”) in all other cases not described



“R.H. %”

- ON for fans forcing by key (see par. H31-32-34=4)
- OFF normal fans functioning

START UP

At start-up the instrument performs a Lamp Test; for a few seconds the display and the leds blink, in order to verify their intactness and correct operation. The instrument has two main Menus: the “Machine Status” Menu and the “Programming” Menu.

USER INTERFACE

The user has a keyboard fitted with displays (feat. six (6) LEDs), with six (6) keys and a further 5 LEDs on the keyboard for controlling status and programming of the instrument.

KEYS AND MENUS



UP Key

- Scrolls menu entries
- Increases values
- programmable key (can be associated a direct function)



DOWN Key

- Scrolls menu entries
- Decreases values
- programmable key (can be associated a direct function)



ESC Key

(press once)

- ESC function (exit) (hold down)
- activates manual defrosting (see paragraph entitled MANUAL DEFROSTING)



set key

(press once)

MACHINE STATUS MENU

- Accesses the setpoint
- Displays the alarms (if active)
- Displays Pb1 and Pb2 (see)

(hold down)

Accesses the PL1 parameter programming menus

UP Key+DOWN Key pressed simultaneously



(press for 2 seconds)

- Keyboard locking/unlocking

NOTE: To indicate the keyboard has been locked, the Lock LED turns on.



on-off key (STAND-BY)

(press for 2 seconds)

- Turns the instrument On/Off (the instrument nonetheless remains powered (on STAND-BY))
- the on-off LED turns on and the word OFF is displayed



AUX/LIGHT Key

- Turns on the auxiliary relay/light (1)
 - forcing fans ON (see par. H34) (2)
- the aux/light LED (1) R.H. % or the LED (2) turns on.

LED (ON THE DISPLAY)

eco

(Set/Reduced set)

- ON for Set-Point changing;
- blinking when the reduced set is on



Compressor

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



Defrosting

- ON when defrosting;
- blinking during dripping

ACCESSING AND USING MENUS

Resources are arranged in a menu, which can be accessed:

- by pressing and quickly releasing the “set” key (“Machine Status” menu) or
 - by pressing the “set” key for more than 5 seconds (“Programming” menu) or
- To access the contents of each folder, indicated by the relevant label, just press the “set” key 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” key 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 and quickly release the “set” key. If alarms are not present, the label “SEt” appears.

By using the “UP” and “DOWN” keys you can scroll through the other folders in the menu:

- AL: alarm folder (if alarms present, except for faulty probe(s)/probe(s) error(s);
- SEt: Setpoint setting folder.
- Pb1: probe 1 value folder;
- Pb2: probe 2 value folder;

Set setting

Access the “Machine Status” menu by pressing and quickly releasing the “set” key. The label of the “Set” folder appears. To display the Setpoint value press the “set” key again.

The value appears on the display. To change the Setpoint value, use the “UP” and “DOWN” keys within 15 seconds. If the parameter is LOC = y the Setpoint cannot be changed.

Alarm on

If an alarm condition exists, when accessing the “Machine Status” menu the “AL” folder label appears (see the “Diagnostics” section).

Displaying probes

By pressing the “set” key when the appropriate label appears, the value of the probe associated to it is displayed.

PROGRAMMING MENU

(See Programming Menu Diagram)

To access the “Programming” menu, press the “set” key for more than 5 seconds. If specified, the access PASSWORD will be requested (see parameter “PA1”) and (if the password is correct) the label of the first folder will follow. If the password is wrong, the display will show the PA1 label again.

To scroll other folders, use the “UP” and “DOWN” keys;

NOTE: It is strongly recommended, anyway to switch off and switch on again the instrument anytime parameters have been changed to prevent malfunctioning on configuration and/or ongoing timings.

*FUNCTIONS

(CAN BE ACTIVATED FROM THE FUNCTIONS FOLDER FnC)

Within the FnC folder (last folder visible from the Programming Menu) the following functions are available, which can be activated using the “set” key:

Function	Function label ACTIVE	Function label INACTIVE
Reduced set **default	OSP	SP**

KEYBOARD LOCKING

The instrument includes a facility for disabling the keyboard:

- using a key (see User Interface, UP key+DOWN key pressed simultaneously)
- by programming the “Loc” parameter (see folder with “diS” label).

If the keyboard is locked you can access to the “Programming” Menu by pressing the “set” key.

The Setpoint can also be viewed.

PROGRAMMING MENU PASSWORD

The password “PA1” allows access to the programming parameters. There is no password in the standard configuration. To enable it (value<>0) and assign it the desired value, access the “Programming” menu, within the folder with the “diS” label.

Should the password be enabled, it will be requested at the entrance of the “Programming” menu (see the Programming Menu section);

ENABLING DEFROSTING CYCLE MANUALLY

The defrosting cycle is enabled manually:

- by pressing the “manual defrosting” key for 2 seconds



If the conditions for defrosting are not present, (for example, the evaporator probe temperature is higher than the defrost end temperature), or if parameter OdO 0, the display will blink three (3) times, to indicate that the operation will not be performed.

USING THE COPY CARD

The Copy Card is an accessory connected to the TTL serial port which allows for the quick programming of the instrument parameters (upload and download parameter’s map). The operation is performed as follows:

Fr-Format

This command allows copy card formatting, an operation **necessary** in the event of first instrument use or to copy maps with different models.

Attention:after the spline has been programmed, all the data entered are erased (**formatted**) by using the “Fr” parameter. This operation cannot be cancelled.

UL-Upload

This operation loads the programming parameters from the instrument.

dL-Download

This operation downloads to the instrument the programming parameters.

NOTE:

• **UPLOAD:** instrument —> Copy Card

• **DOWNLOAD:** Copy Card —> instrument.

The operations are performed accessing the folder identified by the “FPr” label and selecting, according to the case, “UL”, “dL” or “Fr” commands; the operation is confirmed by pressing the “set” key. If the operation is successful, a “y” is displayed, on the contrary, 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 instrument; after the lamp-test the display will show for about 5 seconds:

- label dLY if copy operation successful
- label DLn if not

NOTE:

• after the download operation the instrument will immediately work with the new parameters map setting.

DEFROSTING

DEFROSTING CONDITIONS

The instrument allows for the defrosting to be enabled in the following conditions:

- the evaporator temperature is lower than the temperature of defrosting end set by the dSt parameter;
- the manual defrosting is not already activated (see), in which case the request for automatic defrosting will be cancelled.

DEFROSTING MODES

The instrument allows for the selection of different types of defrosting, selectable using parameter **dtY**, **defrost type**.

(defrosting mode)

dtY can assume the values:

0 = electrical defrosting; the compressor is turned off.

1 = cycle reversing defrosting (hot gas); the compressor stays on.

2 = Free mode defrosting (compressor disabling).

DEFROSTING OPERATION

The defrosting may take place automatically on start-up of the instrument (1), at time intervals (2), manually using the key (2) or externally via Digital Input (3):

(1) Defrosting on start-up

Defrosting on start-up of the instrument takes place if the parameter dPO foresees it (n= no defrosting on start-up; y= defrosting on start-up)

(1) Automatic defrosting

In this case, the defrosting takes place at time intervals set by parameter dit (=0 defrosting will not take place at all). If the parameter dit > 0, and the defrosting conditions apply, (see parameter dSt), the defrosting will take place at fixed intervals, as stated, and according to the parameter dCt (defrosting interval count mode)

(2) Manual defrosting

see paragraph entitled Enabling defrosting cycle manually

(3) External defrosting

The defrosting can be performed via the D.I. if the Digital Input is used for this function (par. H11=1). The request for defrosting will be performed after a change in the status of the D.I. (polarity can be selected)

ADVANCED FUNCTIONS

AUX/LIGHT-DOOR SWITCH

- enabled via key

If you press the aux/light key, the auxiliary/light relay is enabled (if it was turned off, or it is disabled if it was turned on) (see par. H34).

- enabled via digital input

The Digital Input can be configured as the auxiliary/door switch (parameter H11=3): in this case, a digital output should be arranged as an auxiliary (parameters Hxx=5).

This function, as stated, allows for the light relay to be enabled if it was de-energized or energized if this was not the case.

So when the digital input (D.I.) is enabled, 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, to preserve the correct operation, in the event of a black-out; the light key and the light enabling function can also be enabled if the instrument is on STAND-BY (see par. H06).

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

STAND BY/ON-OFF

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

Once the STAND-BY/ON-OFF function has been enabled, the display turns off, all controls are locked, including any alarms, and all cycle times are reset.

The status is stored, so that when the power is restored after a black-out the instrument can resume operation in the status in which it was before the power failure. After starting, the temperature alarm is stopped for an amount of time set with parameter PAO.

R.H.% FUNCTION

Press the key programmed as R.H.% (see par. H31-32-34=4) the fans are forced always ON: the fans operate continuously (always ON). During defrosting the fans are controlled according to the defrosting parameters, in particular during the dripping cycle, they will be turned off even if RH% is enabled.

NOTE: RH% status takes priority over any other parameter.

In the event of a power failure or when the machine has been turned off, the RH% status will be restored as soon as the mains power supply returns/the machine is turned on.

DIAGNOSTICS

The alarm condition is always signaled by the buzzer (if present) and by the led of the alarm icon. The alarm signals from the faulty thermostat probe (probe 1), the faulty evaporator probe (probe 2) is viewed directly on the instrument display by E1 and E2 respectively.

Note: to avoid incorrect signals, the error condition must last longer than 10 seconds.

Probe faults table

DISPLAY	FAULT
E1	Faulty probe 1 (thermostat)
E2	Faulty probe 2 (evaporator)
If simultaneous, they will be showed on the display alternately, every 2 seconds	

The error condition of the probe 1 (thermostat) causes the following:

- viewing E1 code on the display
- compressor enabling 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 of the probe 2 (evaporator) causes the following:

- viewing E2 code on the display
- end of defrost because of time-out. The other alarm signals do not appear directly on the instrument display, but can be viewed from the "Machine Status" menu within the "AL" folder. The regulation of the maximum and minimum temperature alarm refers to the thermostat probe (probe 1). The temperature limits are defined by "HAL" (maximum alarm) and "LAL" (minimum alarm) parameters.

MAXIMUM AND MINIMUM TEMPERATURE ALARM

In the event of an alarm condition, if 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 enabled. This kind of alarm does not affect the regulation in progress.

Alarms are considered as absolute (default) values or as values related to the Setpoint (the distance from the Setpoint itself) and based on the Att parameter. In this case (Att=1), the HAL parameter must be set to positive values and the LAL parameter to negative values.

This alarm condition can be viewed in the folder "AL" with the labels "AH1-AL1".

DEFROSTING ALARM

If defrosting ends because of a time-out (instead of ending on reaching the defrosting end temperature detected by the defrosting probe), an alarm is generated and the (se dAt =y (default =n)) icon is consequently turned on.

This condition can be viewed in the "AL" folder with the label "Ad2". Automatic back swing occurs when the next defrosting starts. By pressing any key during the alarm condition, the signal light disappears. In order to really erase the alarm you must wait for the next defrosting.

EXTERNAL ALARM

The device includes a facility for the control of an external alarm, i.e. from a digital input. If the digital input is enabled, the alarm control is enabled, with programming, and this alarm remains enabled until the next time the digital input is disabled. The alarm is signalled by turning on the fixed alarm icon, by activating the relay configured as alarm, and by deactivating the compressor, defrosting 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, the controls stay locked until the next time the digital input is disabled.

The external alarm activates the buzzer output (if present).

OPEN DOOR ALARM

In the event of an open door, in response to the delay defined by the tdO parameter, the Open Door alarm is signalled. The alarm is signalled by the blinking alarm icon.

This alarm condition can be viewed in the "AL" folder with the label "Opd".

Table of alarms

DISPLAY	ALARM
AH1	High temperature alarm (referred to the thermostat probe or probe 1)
AL1	Low temperature alarm (referred to the thermostat probe or probe 1)
Ad2	Defrosting end due to time-out
EA	External alarm
Opd	Open door alarm

To silence the alarm, press any key. In this case the LED will blink.
If simultaneous, they will be showed on the display alternately, every 2 seconds

MECHANICAL ASSEMBLY

The instrument is designed for panel mounting. Drill a 150x31 mm hole (**see CUT-OUT diagram**) and insert the instrument, securing it to the front panel using the screws provided.

Do not mount the instrument in humid and/or dirty places; it is suitable for use in ordinary polluted places.

Always make sure that the area next to the cooling openings of the instrument is adequately ventilated.

ELECTRICAL CONNECTIONS

Warning! Never work on electrical connections when the machine is switched on.

The instrument is equipped with FASTON terminal boards for connection of electrical cables. The relay contacts are voltage free.

Do not exceed the maximum current allowed; in case of higher loads, use an appropriate contactor. Make sure that power supply voltage meets the instrument voltage. Probes have no connection polarity and can be extended using a regular bipolar cable (note that the extension of the probes affects the EMC electromagnetic compatibility of the instrument: pay extreme attention to the wiring).

Probe cables, power supply cables and the TTL serial cables should be distant from power cables.

CONDITIONS OF USE

PERMITTED USE

For safety reasons, the instrument must be installed and used according to the instructions provided and in particular, under normal conditions, parts bearing 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 via the use of 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 incorporated by independent mounting;
- according to its automatic operating features: as a 1B-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 provided are of a practical type and therefore subject to fault. Any protection devices required by product standards or dictated by common sense due to obvious safety reasons should be applied externally.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell & Controlli s.r.l. shall not be liable for any damages deriving from:

- installation/use other than that prescribed and, in particular, which does not comply with safety standards anticipated by regulations and/or those given herein;
- use on boards which do not guarantee adequate protection against electric shock, water or dust under the conditions of assembly applied;
- use on boards which allow access to dangerous parts 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.

IWC 730 TECHNICAL DATA

Front protection: IP65.

Container: plastic in PC+ABS UL94 V-0 resin casing, polycarbonate glass, thermo-plastic resin keys.

Dimensions: front panel 180x37 mm, depth 45 mm (terminals excluded).

Mounting: panel, with 150x31 mm (+0.2/0.1 mm) drilling template.

Usage temperature: -5...55 °C.

Storage temperature: -30...85 °C.

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

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

View range: -50...110 °C (NTC)*, -55...140 °C (PTC)* without a decimal point, on a 3 and a half digits display and a plus sign.

Analog inputs: two NTC/PTC* type inputs

Digital inputs: 1 voltage-free digital input that can be set by parameter.

Serial Output TTL for Copy Card connection.

Digital outputs: 3

outputs on configurable relays:

- first output (A) 20 A SPST 2 Hp 250V~;
- second output (B) 8(3)A SPDT 1/2 Hp 250V~;
- third output (C) 8(3)A SPST 1/2 Hp 250V~;

Measurement range:

- from -50 to 110 °C (NTC)*.
- from -55 to 140 °C (PTC)*.

Accuracy: better by 0.5% than the end of scale +1 digit.

Resolution: 1 or 0.1 °C.

Consumption: 4 VA.

Power supply: 230 V~/~ ±10% 50/60 Hz

Attention: check the power supply indicated on the label of the instrument; for any information about the relay current carrying capacity and the power supply, contact the trade office.

•Optional buzzer on demand

*NTC/PTC factored set

DIAGRAMS

Max/Min. Alarms Diagram (Maximum and Minimum Temperature Alarms)

The maximum alarm will become when the probe temperature will be:

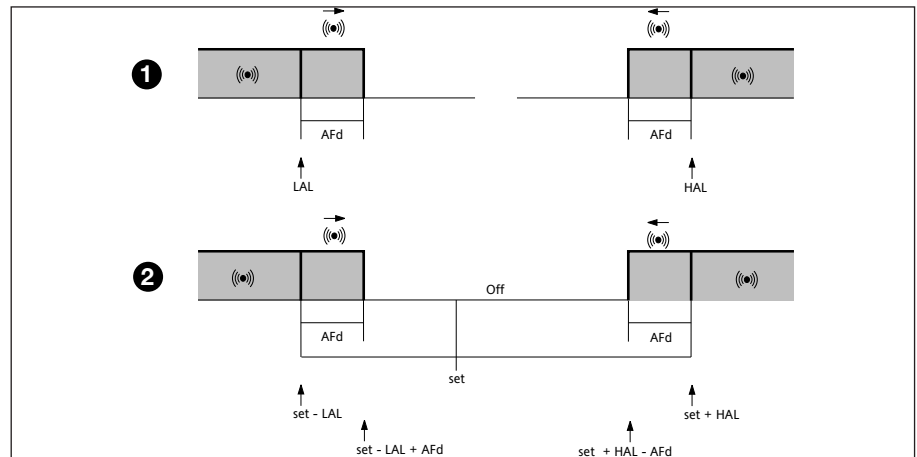
- (1) higher o equal to HAL if Att=Abs(olute)
- (2) higher o equal set + HAL if Att=rEL(ative)

- if Att=Abs(olute) HAL should be with sign;
- if Att=rEL(ative) HAL should be only positive

The minimum alarm will become when the probe temperature will be:

- (1) lower o equal to LAL if Att=Ab(solute)
- (2) lower o equal to set - LAL if Att=rEL(ative)

- if Att=Ab(solute) LAL should be with sign;
- if Att=rEL(ative) LAL should be only negative



The maximum alarm will ends when the probe temperature will be:

- (1) lower or equal to HAL - AFD if Att=Abs(olute)
- (2) lower or equal to set + HAL - AFD if Att=rEL(ative)

The minimum alarm will ends when the probe temperature will be:

- (1) higher o equal a LAL + AFD if Att=Abs(olute)
- (2) higher o equal a set - LAL + AFD if Att=rEL(ative)

$$* (set - |LAL| + AFD)$$

***PLEASE NOTE : if Att=rEL(ative) LAL should be only negative: so $set + LAL < set$ because $set + (-|LAL|) = set - |LAL|$**

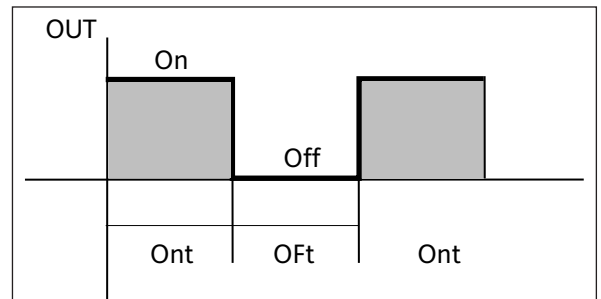
Duty Cycle diagram

Ont, OFt parameters programmed for Duty Cycle

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

When the sensor detects an error condition in probe 1 (compressor):

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



MACHINE STATUS MENU DIAGRAM

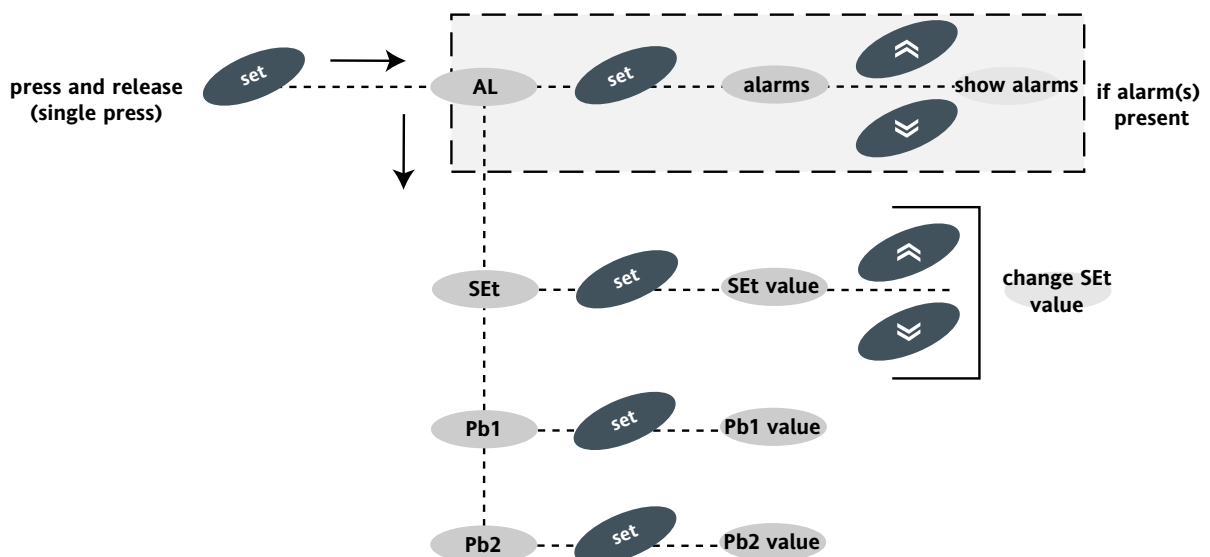


TABLE OF PARAMETERS

Tab. 1 SETPOINT, parameters table and FUNCTIONS

SET	DESCRIPTION	RANGE	DEFAULT*			U.M.
SEt:	Setpoint The SEtpoint can be viewed from the machine status menu and not from the program- ming menu The range is determined by parameters LSE and HSE.	-LSE...HSE	0.0			°C/°F
PAR.	DESCRIPTION	RANGE	DEFAULT*	VALUE**	LEVEL***	U.M.
diF	COMPRESSOR CONTROL (folder with “CP” label) diFFerential. The compressor stops on reaching the Setpoint value (as indicated by the adjustment probe), and restarts at a temperature value equal to the Setpoint 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 setpoint value.	LSE...302	50.0		1	°C/°F
LSE	Lower SEt. Minimum possible setpoint value. NOTE: The two sets are interdependent: HSE (maximum set) cannot be less than LSe (minimum set) and vice versa	-55.0...HSE	-50.0		1	°C/°F
OSP	Offset SetPoint. Temperature value to be added algebraically to the setpoint in the case of reduced set enabled (Economy function). The reduced set can be enabled by a key, configured especially for this purpose.	-30.0...30.0	0		1	°C/°F
Cit	Compressor min on time. Minimum compressor activation time before any possible dis- abling. If set to 0, it is not active.	0...250	0		1	min
CAt	Compressor mAx on time. Maximum compressor activation time before any possible dis- abling. If set to 0, it is not active.	0...250	0		1	min
Ont (1)	COMPRESSOR PROTECTIONS (folder with “CP” label) On time (compressor). Compressor activation time in the event of a faulty probe. If set to “1” with OFt set to “0”, the compressor is always on, while with OFt >0, it operates in duty cycle mode. See Duty Cycle diagram.	0...250	0		1	min
OFt (1)	OFF time (compressor). Compressor off time in the event of a faulty probe. If set to “1” with Ont at “0”, the compressor is always off, while with Ont >0, it operates in duty cycle mode. See Duty Cycle diagram.	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 successive 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 (!)	delay Output (from power) On. Delay time in activating the outputs after switch-on of the instrument or after a power failure. 0= not active.	0...250	0		1	min
dtY	DEFROSTING CONTROL (folder with “dEF” label) defrost type. Type of defrosting. 0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrost (compressor disabling).	0/1/2	0		1	num
dit	defrost interval time. Interval between the start of two subsequent defrosting operations. 0= the function is disabled (defrosting is NEVER performed)	0...250	6h		1	hours
dCt	defrost Counting type. Selection of count mode for the defrosting interval. 0 = compressor hour of operation (DIGIFROST® method); Defrosting active ONLY with the compressor on. NOTE: compressor time of operation is counted regardless of the evaporator probe (counting is active if evaporator probe is absent or faulty). 1 = Real Time - hours of appliance operation; 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 defrosting cycle is performed according to parameter dtY	0/1/2 0=df 1=rt 2=SC	1		1	num
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 the maximum duration of defrosting.	1...250	30min		1	min
dSt	defrost Stop temperature. Defrosting end temperature (determined by the evaporator probe).	-50.0... 150	8.0		1	°C/°F
dPO	defrost (at) Power On. Determines if at start-up the instrument must enter defrosting (if the temperature measured by the evaporator allows this operation). y = yes, starts defrosting at start-up; n = no, doesn't start defrosting at start-up.	n/y	n		1	flag
FSt	FAN CONTROL (folder with “FAn” label) Fan Stop temperature. Fan lock temperature; a value, read by the evaporator probe high- er than the set value causes the fans to stop. The value is positive or negative and, depending on parameter FPt, could represent the temperature in absolute value or rela- tive to the Setpoint.	-50.0..150.0	2.0		1	°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. Dripping time.	0...250	0		1	min
dFd	defrost Fan disable. It allows to select or to not select the exclusion of the evaporator fans during defrosting. y = yes(fans excluded); n = no.	n/y	y		1	flag
FCO	Fan Compressor OFF. It allows to select or to not select the fan lock when compressor is OFF (switched off). y = fans active (with thermostat; depending on the value read by the defrosting probe, see “FSt” parameter); n = fans off; dc = duty cycle (through “Fon” and “FoF” parameters).	n/y/dc	y		1	num
Fod	Fan open door open. Allows to select the fan lock when the door is open, and the fan re-start when the door is shut (if they were active). n=fan lock; y=fans unchanged	n/y	n		1	flag
FdC	Fan delay Compressor off. Fan switch off delay dime after compressor stop. In minutes. 0= function excluded	0..99	0		1	min
Fon	Fan on (in duty cycle). Time the fans are ON in a duty cycle. Use of fans in duty cycle mode; valid for FCO = dc and H42=1 ((evaporator) probe 2 pre- sent)	0..99	0		1	min
FoF	Fan oFF (in duty cycle). Time the fans are OFF in a duty cycle. Use of fans in duty cycle mode; valid for FCO = dc and H42=1 ((evaporator) 2 probe present)	0..99	0		1	min

PAR.	DESCRIPTION	RANGE	DEFAULT*	VALUE**	LEVEL***	U.M.
ALARMS (folder with "AL" label)						
Att	Alarm type. Parameter "HAL" and "LAL" modes, as temperature absolute value or as differential compared to the Setpoint. 0 = absolute value; 1 = relative value.	0/1	0		1	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 (understood as distance from the Setpoint, or as an absolute value based on Att) which if exceeded in an upward direction triggers the activation of the alarm signal. See Max/Min. Alarm Diagram.	LAL...150.0	50.0		1	°C/°F
LAL (2)	Lower ALarm. Minimum temperature alarm. Temperature value (understood as distance from the Setpoint, or as an absolute value based on Att) which if exceeded in a downward direction triggers the activation of the alarm signal. See Max/Min. Alarm Diagram.	-50.0...HAL	-50.0		1	°C/°F
PAO (!) (4)	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	min
OAO	Alarm signaling delay after digital input disabling (door open). Alarm is only for high-low temperature alarms.	0...10	0		1	hours
tdO	time out door Open. Time out after alarm signal following digital input disabling (door open)	0...250	0		1	min
tAO (4)	temperature Alarm Override. Temperature alarm signal delay time.	0...250	n		1	flag
dAt	defrost Alarm time. Alarm signal for defrosting end due to time-out. n = activates alarm; y = does not activate alarm.	n/y	0		1	min
EAL	External Alarm Lock. External alarm to lock controls (n= does not lock, y= locks).	n/y	n		1	flag
AOP	Alarm Output Polarity. Polarity of alarm output. 0 = alarm active and output disabled; 1 = alarm active and output enabled.	0/1	1		1	flag
LIGHT AND DIGITAL INPUTS (folder with "Lit" label)						
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		1	flag
OFL	The light key always disables the light relay. Enables the switching off through the cell light switch even if it is enabled the delay after closing the door set by dLt	n/y	n		1	flag
dOd	Door switch switches off loads . On digital input command, programmed as door-switch, allows to stop all the loads when opening the door and re-starting them when the door is shut (respecting any timings in progress).	n/y	n		1	flag
dAd	Digital input enabling delay.	0...250	0		1	min
DISPLAY (folder with "dis" label)						
LOC	(keyboard) LOCK. Keyboard locking. It is still possible to enter parameter programming and modify them, including the status of this parameter, in order to allow keyboard unlocking. y = yes (keyboard locked); n = no.	n/y	0		1	flag
PA1	PASsword 1. When enabled (value other than 0) it constitutes the access key for level 1 parameters.	0...250	0		1	num
ndt	number display type. View with decimal point. y = yes (view with decimal point) ; n = no (only integers).	n/y	n		1	flag
CA1	CAlibration 1. Calibration 1. Positive or negative temperature value added to the value read by probe 1.	-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.	-12.0...12.0	0		1	°C/°F
ddL	display Lock. Viewing mode during defrosting. 0 = shows the temperature read by the thermostat probe; 1 = locks the reading on the temperature value read by thermostat probe when defrosting starts, and until the next time the Setpoint value is reached; 2 = displays the label "def" during defrosting, and until the next time the Setpoint value is reached.	0/1/2	1		1	num
dro	display read-out. Select °C or °F for displaying the temperature read by the probe. 0 = °C, 1 = °F. PLEASE NOTE: the switch between °C and °F DOES NOT modify the set-point, differential, etc. (for example set=10°C become 10°F).	0/1	0		1	flag
CONFIGURATION (folder with "CnF" label)						
H06	key/input aux/light door switch active when the instrument is off (but powered)	n/y	y		1	flag
H11 (3)	Configuring digital inputs/polarity. 0 = disabled; 1 = defrosting; 2 = reduced set; 3 = door switch 4 = external alarm 5 = on-off (STAND-BY) 6 = NOT used	-6...6	-3		1	num
H21 (!)	Digital output configurability 1. (A) 0 = disabled; 1 = compressor; 2 = defrosting; 3 = fans; 4 = alarm; 5 = auxiliary/light. 6 = stand-by	0...6	1		1	num
H22 (!)	Digital output 2 configurability 2. (B) The same as H21.	0...6	2		1	num
H23 (!)	Digital output 3 configurability 3. (C) The same as H21.	0...6	3		1	num
H26	parameter visible ONLY models with a BUZZER (optional) BUZZER output configurability 0 = disabled ; 4 = enabled; 1-3, 5-6 = not used	0...6	0		1	num

PAR.	DESCRIPTION	RANGE	DEFAULT*	VALUE**	LEVEL***	U.M.
H31 (!)	UP key configurability 0 = NOT used; 1 = defrost; 2 = light; 3 = reduced set; 4 = R.H. % function (see related paragraph); 5 = stand-by; 6 = maintenance requested.	0...6	0		1	num
H32 (!)	DOWN key configurability The same as H31.	0...6	0		1	num
H34 (!)	Aux/light key configurability The same as H31.	0...6	2		1	num
H42	Evaporator probe presence. n= not present; y= present. release firmware. Device version: read only parameter.	n/y	y		1	flag
reL	tAble of parameters. Reserved: read only parameter.	/	/		1	/
tAb	COPY CARD (folder with "Fpr" label) Up load. Programming parameter transfer from instrument to Copy Card.	/	/		1	/
UL	Down load. Programming parameter transfer from Copy Card to instrument.	/	/		1	/
dL	Format. Erasing all parameters in the spline.	/	/		1	/
Fr	PLEASE NOTE: using the "Fr" parameter (spline formatting) the data within the same will be lost permanently. The operation cannot be cancelled.	/	/		1	/

(1) see Duty Cycle diagram.

(2) See Max/Min. Alarm Diagram.

(3) Positive values: active input when the contact is closed; negative values: Active input when the contact is open.

(4) Referred exclusively to high and low temperature alarms

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

** VALUE column: to be filled manually, with custom settings (including factory-set, if different from the default value set or foreseen).

*** LEVEL column: indicates the level of visibility (in standard models) for parameters that can be accessed by a PASSWORD (see relevant paragraph)

(!) WARNING!

- If one or more parameters marked with (!) are modified, the controller must be switched off after the modification and then switched back on
- It is strongly recommended, anyway to switch off and switch on again the controller anytime parameters have been changed to prevent malfunctioning on configuration and/or ongoing timings.

FUNCTIONS (folder with "FnC" label)

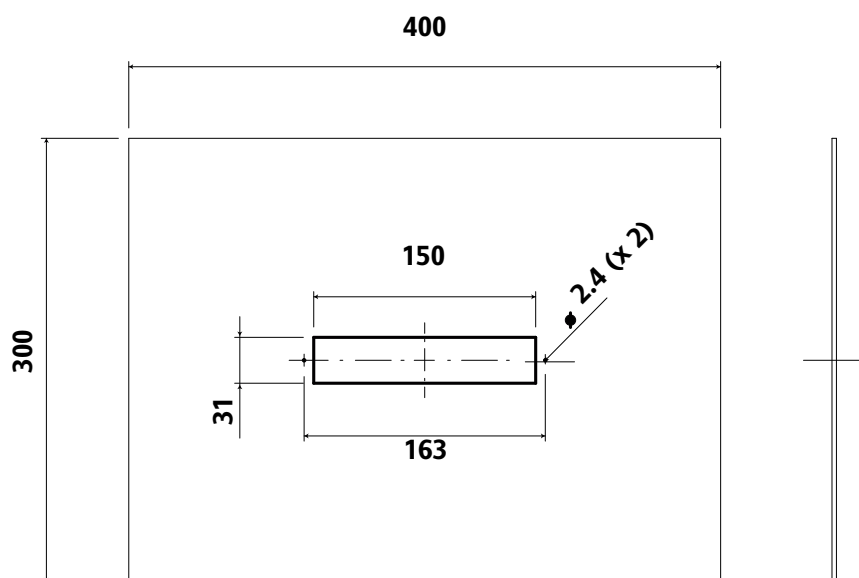
Within the FnC folder (last folder visible from the Programming Menu), the following functions are available, which can be activated using the "set" key:

SEE FUNCTIONS paragraph

DISCLAIMER

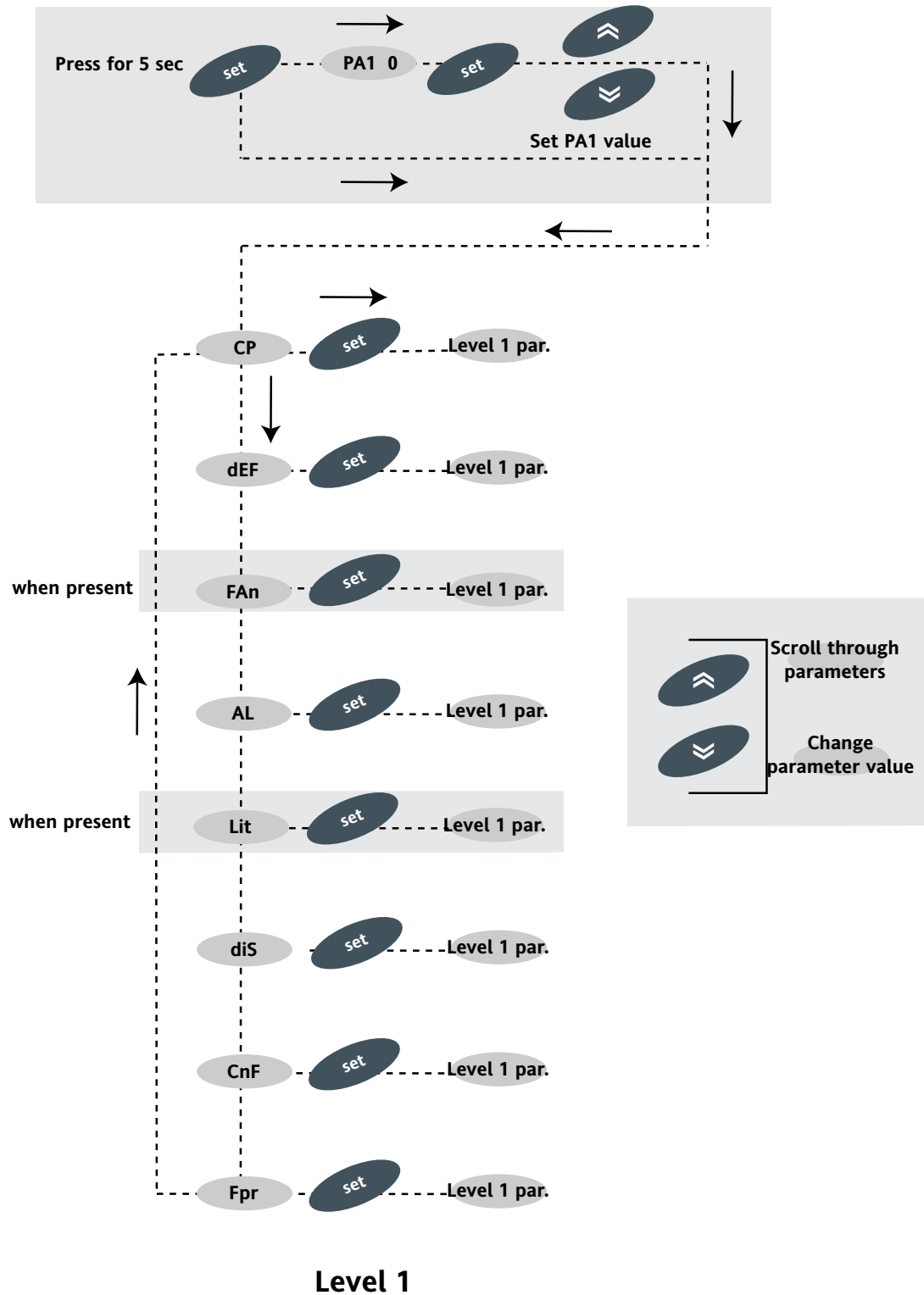
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CUT OUT



(A) PANEL THICKNESS 0.5-1-1.5-2-2.5-3 mm

PROGRAMMING MENU DIAGRAM



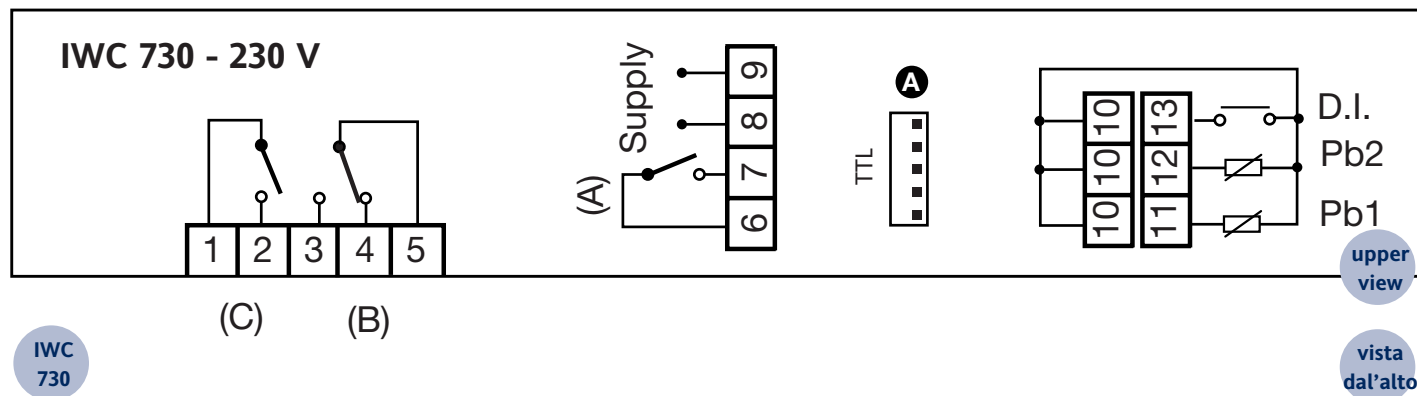
PARAMETERS

folders	folders level 1
compressor/protections	CP
defrosting (defrost)	dEF
fans when present	FAn
alarms	AL
light when present	Lit
display	diS
configuration	CnF
parameter programming key (Copy Card)	FPr

FUNCTIONS

FUNCTIONS	FUNCTIONS
FnC	FnC

NOTE: The technical specifications included in this document, concerning the measurement (range, accuracy, resolution, etc.) refer to the instrument in the strict sense, and not to any accessories provided, such as the probes. This means, for example, that the error introduced by the probe is in addition to any errors on the part of the instrument itself.



1 - 2	N.O. relay output (C) configurable by parameter H23
3 - 5	N.O. relay output (B) configurable by parameter H22
4 - 5	N.C. relay output (B)
6 - 7	N.O. relay output (A) configurable by parameter H21

8 - 9 Power **Supply 230V~**

A TTL input for Copy Card

10 - 11 Probe 1 input **Pb1** (thermostat) NTC/PTC*

10 - 12 Probe 2 input **Pb2** (evaporator) NTC/PTC*

10 - 13 Digital input (Digital Input, **D.I.**)

NOTE:

- Default user settings (see table entitled **OUTPUTS ON RELAYS**)

OUTPUTS ON RELAYS

0 = disabled;
1 = compressor;
2 = defrosting;
3 = fans;
4 = alarm;
5 = auxiliary/light.
6 = stand-by

- for the capacity of the relays, see the label on the instrument.
- **Optional buzzer on demand**
- ***NTC/PTC factored set**



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11/2003 eng

cod. 9IS23042