

THE USER INTERFACE

Fig. 1 Frontlet of instrument



USE OF THE KEYS

The keys of the instrument permit both the utilisation of the menu and the direct activation of a function.

Table 1 Keys and menu

KEY	DESCRIPTION	FUNCTION
⬆	UP key	Scrolls through the menu items Increases the values
⬇	DOWN key	Scrolls through the menu items Decreases the values
⬆	ESC key	Returns to the previous level
⬅	ENTER key	Accesses the menus Confirms the commands

Table 2 Keys and functions set directly

KEY	DESCRIPTION	FUNCTION
⬆	UP	Activates manual defrost function
⬆	ESC	Accesses the setpoint
⬇	DOWN	Programmable
⬅	ENTER	-

USE OF THE MENUS

ACCESS TO THE MAIN MENU

The programming of the instrument is organised by menu (see Fig. 2, Menu flowchart), which can be accessed in two ways:

1. by keeping the key ⬇ pressed down for 5 sec. (path A).
2. by keeping the key ⬇ pressed down for 10 sec. (path B).

NAVIGATION OF THE MENUS

In order to access the contents of each folder, just press the key ⬆ once.

Table 3 Icons

ICON	INDICATION	DETAILS
🔔	alarm active	Permanently lit up in the event of an alarm, flashing in the event of a silenced alarm
🌡	temperature range	Flashing in the Setpoint programming or in parameters programming
❄	defrost active	Permanently lit up in the event of defrosting in progress, flashing in the event of manual defrost
⚙	compressor	Permanently lit up in the event of compressor valve working, flashing in the event of delay in activating and for the presence of external alarm

If called for, a password will be required. There are two different passwords. The first password (PA1) is for access to the parameters in the PL1 and FnC folders. The second password (PA2) is for access to the parameters in the PL2 and FPr folders. (see Fig. 2, Menu flowchart).

At this point in the proceedings it is possible to scroll through the contents of each folder, amend them or use the functions provided in each of the latter.

If you do not use the keyboard or hit the ⬆ key within 15 seconds, the last value displayed on the screen is confirmed and you return to the previous screen.

DESCRIPTION OF FOLDERS

FnC = functions

This folder permits the manual activation of the functions it contains (see Table 4).

Table 4 Menu table

FUNCTION	DESCRIPTION
OFF	Switches off the instrument
ON	Switches on the instrument
DEF	Activates the manual defrost process
LON	Activates the light relay
LOF	Deactivates the light relay
COF	Deactivates the continuous cycle
CON	Activates the continuous cycle
AON	Activates the auxiliary relay
AOF	Deactivates the auxiliary relay
OSP	Activates the offset Setpoint
SP	Activates the main Setpoint

PL1 = user parameters (level 1)

This folders contains the parameters required by the end user in order to make any minimum amendments to the programming parameters (see Table 7 and Table 10).

PL2 = machine parameters (level 2)

This folders contains the parameters required by the manufacturer and the assembler for the optimum configuration of the controlling machine (see Table 7 and Table 10).

AL = alarms

This folder is only visible in the event of an alarm status as described below (see Table 9).

It is possible to scroll through the list of all the active alarms using the UP and DOWN keys.

St = machine status

In this folder the status of the inputs and outputs or the machine status can be viewed; an access password is not anticipated (see Table 5).

Table 5 Machine status table

PARAMETER	VALUE
Pb1-Pb2-Pb3 sensor 1-2-3	sensor 1-2-3 value
OU1-OU2-OU3 outputs 1-2-3	"y" or "n" output "active" or "not active"
di1 digital input 1	"y" or "n" input "active" or "not active"

Note: Pb3 only for 331 model.

TC = day, hour and minutes

The tC folder is present in the menu of those instruments equipped with an optional internal clock (RTC) and permits the user to view the hour and day of the week in a cyclic manner (d00, H00, '00) three consecutive times.

FPr = copy card

Use of the contents of this folder enables the user to carry out two operations (see Table 6).

1. Upload: download the programming parameters from the instrument to a memory card.
2. Download: download the programming parameters from a copy card to the instrument.

Table 6 Copy card table

FUNCTION	RESULT
dL - Download	"n" or "y"
uL - Upload	"n" or "y"


Note: "y" or "n" indicate if the operation has concluded satisfactorily (y) or not (n).



RAPID ACTIVATION

Certain specific functions (ON/OFF, defrost, light, continuous cycle, auxiliary) can be associated with keys on the frontlet by means of appropriate programming (see Table 7 and Table 10, "Machine set-up" parameters).

A description of the direct functions set in the factory is presented (see Table 2).

DISPLAY AND DEFINITION OF THE SETPOINT VALUE


In order to view the Setpoint value, keep the key  pressed down for five sec.

The Setpoint value will appear on the display and the temperature gauge icon will begin to flash. In order to vary the Setpoint value operate, within 15 seconds, on the keys  and .

If the parameter LOC = y is not possible to modify the Setpoint.


MANUAL ACTIVATION OF THE DEFROST CYCLE

Manual activation of the defrost cycle is achieved:

1. By keeping the key  pressed down for five seconds.
2. By activating the programmable digital input.

KEYPAD LOCK

The instrument anticipates, by means of appropriately programming the "Loc" parameter (see Table 6, "Miscellaneous" parameters), the possibility of disabling the functioning of the keypad.

In the event the keypad is locked, the user can always access the programming MENU by pressing the key .

PARAMETERS

The parameters can be viewed in two different tables: the first (see Table 7) describes the function of the parameter, while the second (see Table 10) lists the characteristics of each parameter.

ADVANCED SETTINGS

COPY CARD

The copy card is an optional card that connects directly with the instrument through the TTL serial port. By accessing to the parameters of the FPr directory through the keyboard (see Table 6), it will be possible to record the instrument parameter setting and successively download the same information on another instrument.

To use the copy card it is necessary for the instruments to be (see label on the instrument) compatible.

ATTENTION: if the instrument is provided with the serial port RS-485, alternative to

Table 7 Description parameters table

PARAMETER	DESCRIPTION
SETTING OF CLOCK (1)	
dyC (1)	Day clock: day 0 = Sunday; ... ; day 6 = Saturday.
HrC (1)	Hour clock.
'PC (1)	Minute clock.
COMPRESSOR CONTROLLER	
SEt	Setpoint: value ranging between the set minimum (LSE) and the set maximum (HSE).
diF	Operating differential of the setpoint. For applications in the refrigeration sector the compressor will cut off on reaching the Setpoint value set (on indication of the control sensor), only to restart at a temperature value equal to the Setpoint plus the differential value. Note: It will not accept a 0 value.
HSE	Maximum value attributable to the setpoint.
LSE	Minimum value attributable to the setpoint; normally set at the lowest value measurable by the sensor.
OSP	Offset setpoint: temperature value to be added algebraically to the setpoint in the event of a reduced set enabled by the function present in the menu; by the day-night controller or by digital input.
Cit	Minimum activation time of the compressor before its possible deactivation. Expressed in minutes or seconds according to the "dtU". If set at 0 it is not active.
Cat	Maximum activation time of the compressor before its possible deactivation. Expressed in minutes or seconds according to the "dtU". If set at 0 it is not active.
Cct	Duration of continuous cycle. This is the effective operating time of the compressor.
COMPRESSOR PROTECTION CONTROLLER	
Ont	ON time of the compressor due to sensor failure.
OFt	OFF time of the compressor due to sensor failure.
dOn	Start-up delay. The parameter indicates that a protection is active on the realisation of the compressor/general relay.
dOF	Delay after shut-down. The parameter indicates that a protection is active on the realisation of the compressor/general relay. At the very minimum, the time indicated must elapse between shut-down of the compressor relay and the subsequent start-up.
dbi	Delay between start-ups. The parameter indicates that a protection is active on the realisation of the compressor/general relay. At the very minimum, the time indicated must elapse between two subsequent start-ups of the compressor relay.
OdO	Activation delay of the instrument start-up outputs or after a lack of voltage; expressed in minutes.
DEFROST CONTROLLER	
dtY	Execution mode of defrost process: 0 = electric defrosting; 1 = defrosting by inversion of cycle (hot gas); 2 = free (the compressor relay is disengaged from the defrosting functions; continue in this way to regulate on the setpoint).
dit	Interval between one defrost cycle and the subsequent one; expressed in hours and in minutes in relation to the "dtU".
dtU	Time measurement unit for intervals/length of defrosting. 0 = interval between two defrost cycles in hours, duration of defrost cycle in minutes; 1 = interval between two defrost cycles in minutes; duration of defrost cycle in seconds.
dCt	Defrost interval reckoning mode. 0 = only the running time of the compressor is counted; 1 = the running time of the instrument is counted; 2 = defrosting takes place every time the compressor shuts down.
dt1 (1)	Time of commencement of defrost cycle 1
dt2 (1)	Time of commencement of defrost cycle 2
dt3 (1)	Time of commencement of defrost cycle 3
dt4 (1)	Time of commencement of defrost cycle 4
dt5 (1)	Time of commencement of defrost cycle 5
dt6 (1)	Time of commencement of defrost cycle 6
dOH	Delay in commencement of defrost cycle; expressed in minutes.
dEt	Defrost cycle Time out; expressed in minutes or seconds in relation to the "dtU".
dSt	Defrost cycle conclusion temperature.
dS2 (2)	Defrost cycle conclusion temperature – 2nd evaporator.
POS	Postponement of activation of defrost controller in the event of request during the continuous cycle. Postpones the activation of the defrost controller until conditions dictating defrost cycle exist. y = yes; n = no.
dPO	Request for activation of the defrost controller on start-up. y = yes; n = no.
dri	By means of this parameter it is possible to decide if, on request of a manual defrost cycle, the reckoning for the defrost interval must be set to zero or not. y = yes; n = no.
tcd	Minimum compressor On or OFF time before defrost.
FAN CONTROLLER	
FSt	Fan temperature lock: a value read by the defrost sensor which exceeds that set causes the halting of the fans.
FPt	It characterises the "FSt" parameter which can be expressed as an absolute temperature value (FPt = 0) or as a relative value with respect to the setpoint (FPt = 1).
Fdt	Delay in activating the fans; expressed in minutes.
dt	Drainage time; expressed in minutes.
dFd	Permits the user to select, or otherwise, the exclusion of the evaporator fans during defrosting. n = no; y = yes
Afd	Alarm/fan set differential: temperature difference between the setting off and disconnection of the minimum or maximum alarm or of the fans.
FCO	Permits the user to select, or otherwise, the blocking of the compressor fans in OFF mode. n = fans switched off; y = fans thermostated.
Fod	Fan status with door open: n = fans switched off; y = fans unaltered.
LIGHT CONTROLLER	
dSd	Light relay enabled by micro-door. n = door open, light not switched on; y = door open, light switched on.
dLt	Deactivation delay (switch off) of light relay (cold cell light).
OFL	Light key always deactivates (switch off) light relay (cold cell light). Enables the switching off of the cold cell light by using the related key even if the switch off delay after the closure of the door (dLt parameter) is active. n = function not enabled; y = function enabled.
dOd	Digital input (micro-door) switch off use. Any eventual protection timing will nonetheless be respected. n = do not switch off use; y = switch off use.

PARAMETER	DESCRIPTION
	DAY/NIGHT CONTROLLER (1)
E00 (1)	Functions enabled during events: 0 = control disabled; 1 = set reduced; 2 = set reduced+light; 3 = set reduced+light+aux.
E11 (1)	Hour of commencement of 1st event (all the days of the week).
E12 (1)	Minute of commencement of 1st event.
E10 (1)	Duration of 1st event.
E21 (1)	Hour of commencement of 2nd event (day indicated by the E23 parameter).
E22 (1)	Minute of commencement of 2nd event.
E23 (1)	Day of commencement of 2nd event: 0 = Sunday; 6 = Saturday.
E20 (1)	Duration of 2nd event.
E31 (1)	Hour of commencement of 3rd event (day indicated by the E33 parameter).
E32 (1)	Minute of commencement of 3rd event.
E33 (1)	Day of commencement of 3rd event: 0 = Sunday; 6 = Saturday.
E30 (1)	Duration of 3rd event.
	COMMUNICATIONS
dEA	Device address: indicates the address of the equipment to the control protocol.
FAA	Series address: indicates the series of the equipment to the control protocol.
	ALARMS
Att	Mode of interpreting the value of the HAL and LAL parameters. 0 = interprets the values as absolutes (not referring to the setpoint); 1 = interprets the values as relative with respect to the setpoint.
HAL	Maximum temperature alarm. Temperature value whose excess upwards will determine the activation of the alarm signal.
LAL	Minimum temperature alarm. Temperature value whose excess downwards will determine the activation of the alarm signal.
PAO	Exclusion of the alarms on start-up of the instrument, both with key on/off or after a failure in the power supply. In the event of reactivation of additional delay times the highest among these will be valid.
dAO	Exclusion of alarm after defrosting.
OAO	Alarm signal delay after deactivation of digital input (door closure).
tdO	Alarm signal time-out after activation of the digital input (door opening).
CAO	Alarm exclusion time after continual cycle.
tAO	Delay time for signalling of temperature alarm.
dAt	Alarm signal for defrost concluded due to time-out. n = activate alarm; y = do not activate alarm.
PbA (2)	Configuration of temperature alarm on sensor 1 and/or 3. 0 = alarm on sensor 1; 1 = alarm on sensor 3; 2 = alarm on sensors 1 and 3.
EAL	External alarm blocking controllers. Enables the locking of the compressor, defrost and fan controllers if the digital input (configured as an external alarm) is activated. n = does not lock; y = lock.
AOP	Indicates the polarity type of the relay/buzzer configured as an alarm. 0 = alarm active and output disabled; 1 = alarm active and output enabled.
	MISCELLANEOUS
LOC	Keypad lock (blocks the activation of the primary functions). With the keypad disabled, viewing of the Setpoint is only permitted by means of the key associated with direct functions. However it remains possible to enter parameter programming and modify the status of the parameter so as to enable the unlocking of the keypad. n = do not lock; y = lock.
PA1	Password 1 (blocks activation and the modification of parameters only).
PA2	Password 2 (blocks activation and the modification of parameters only).
	DISPLAY
ndt	Display mode of the temperature on the display. n = full number; y = decimal number.
CAL	Gauging. Positive or negative temperature offset which is added to the value read by the thermostating sensor before being displayed and used for control purposes.
CAI	Determines if the value of the "CAL" parameter is added algebraically to the sole value displayed or to the sole value used by the controllers, or to both. 0 = sum with the sole temperature displayed; 1 = sum with the sole temperature which remains unaltered; 2 = sum with the temperature displayed which is also used by the controllers.
LdL	Minimum value of the sensor which can be viewed on the display.
HdL	Maximum value of the sensor which can be viewed on the display.
dLc	Display mode during the defrost cycle. 0 = displays the temperature read by the cold cell sensor; 1 = displays the temperature read by the cold cell sensor at the time of commencement of defrosting; 2 = displays the "dEF" label during defrosting. Once defrosting and de-tearing has finished, the device will continue to display the information anticipated until the cold cell sensor reaches the setpoint value. If set at zero, the display does not entail the reaching of the setpoint.
dro	°C or °F selection. 0 = °C; 1 = °F.
ddd	Display of the basic status 0 = sensor 1; 1 = sensor 2; 2 = sensor 3; 3 = setpoint.
	MACHINE SETTINGS
H02	Key activation time.
H06	Aux.-light-micro door key/input active when instrument in OFF mode. n = not active; y = active
H11 (3)	Configuration capacity of digital inputs/polarities. 0 = deactivated; ±1 = defrost; ±2 = on/off; ±3 = reduced set; ±4 = auxiliary; ±5 = door switch; ±6 = continuous cycle; ±7 = external alarm.

the TTL one, the use of the copy card will not be possible.

THE TELEVIS SYSTEMS

You can connect to the Televis systems by the TTL serial port using the EWRS 485 interface module or directly by the optional RS-485 serial port.

DAY/NIGHT CONTROL

This requires the optional RTC function. The Day/Night control is used to set a weekly schedule.

DIAGNOSTICS

The alarm icon indicates an alarm condition. Breakdowns are indicated on the screen (see Table 8).

Table 8 Error table

DISPLAY	ERROR
E1	Cold cell sensor fault
E2	Defrost sensor fault
E3	Display sensor fault

BREAKDOWNS

When the sensor detects an error condition:

- the code E1 is displayed
- the compressor is activated as indicated by the "On" and "Off" parameters if programmed for the duty cycle or:

Ont	Oft	Compressor output
0	0	OFF
0	>0	OFF
>0	0	ON
<0	>0	D.C.

Otherwise, when the defrost sensor detects an error condition:

- the code E2 is displayed
- the defrost process is terminated.

All the alarms can be seen in the alarms (AL) folder (see Table 9).

Table 9 Alarm table

DISPLAY	ALARM
AH1	High temperature alarm (referring to cold cell sensor or sensor 1)
AL1	Low temperature alarm (referring to cold cell sensor or sensor 1)
AH3	High temperature alarm (referring to sensor 3)
AL3	Low temperature alarm (referring to sensor 3)
Ad2	End of defrost cycle due to time-out
AE	External alarm
E10	Clock battery alarm
Er	Memory alarm

Note: in order to silence alarm press any key.

When an alarm status occurs, it is possible to silence the buzzer and/or relay configured as an alarm, by pressing any key. The buzzer is optional and is present on the EWDA 231/331 B model.

PARAMETER	DESCRIPTION
H21	Configuration capacity of digital output 1. 0 = compressor; 1 = defrost; 2 = fans; 3 = alarm; 4 = auxiliary; 5 = light; 6 = on/off; 7 = 2nd evaporator.
H22	Configuration capacity of digital output 2. 0...7 same as H21.
H23	Configuration capacity of digital output 3. 0...7 same as H21.
H24 (4)	Configuration output buzzer. 0...7 same as H21. 3=buzzer enabled; 4= buzzer disabled; 0-2,5-7= not used
H31	Configuration capacity of UP key. 0 = disactivated; 1 = on/off; 2 = defrost; 3 = light; 4 = continuous cycle; 5 = auxiliary.
H32	Configuration capacity of DOWN key. 0...5 same as H31.
H33	Configuration capacity of ESC key. 0 = disactivated; 1 = on/off; 2 = defrost; 3 = light; 4 = continuous cycle; 5 = auxiliary; 6 = Setpoint.
H41	Capacity Control sensor presence. y = sensor present; n = sensor not present.
H42	Evaporator sensor presence. y = sensor present; n = sensor not present.
H43 (2)	Configuration of sensor 3 0 = sensor not present; 1 = 2nd evaporator sensor; 2 = display sensor.
reL	Release firmware
tAb	Table of parameters
(1) PLEASE NOTE: requires the RTC function (optional).	
(2) PLEASE NOTE: only for EWDA 331.	
(3) PLEASE NOTE: positive values: active input for close contact (NO); negative values: active input for open contact (NC)	
(4) PLEASE NOTE: in the version with the buzzer.	

MINIMUM AND MAXIMUM TEMPERATURE ALARMS

Regulation of the minimum and maximum temperature alarms refers to the cold cell and/or sensor n. 3.

The temperature limits defined by the “HAL” (maximum temperature alarm) and “LAL” parameters (minimum temperature alarm) are characterised by the “Att” parameter which specifies if they represent the absolute temperature value or a differential with respect to the setpoint.

When an alarm status occurs, if no alarm exclusion phases are underway (see alarm exclusion parameters), the alarm set icon is lit up and the buzzer, and/or the relay configured as an alarm, is activated. The occurrence of this alarm does not in any way effect the control activities in progress. This alarm status can be viewed in the “AL” folder.

DEFROST ALARM

In the event of the conclusion of the defrost process as a result of time-out (rather than as a result of reaching the correct defrost conclusion temperature picked up by the defrost sensor), an alarm will be generated and consequently the alarm icon will be lit up.

This alarm status can be viewed in the “AL” folder with the “Ad2” label. Automatic re-setting occurs in correspon-

dence with the start of a subsequent defrost process.

In this alarm status, the user can switch off the alarm icon by pressing any key.

EXTERNAL ALARM

This device also anticipates the possibility of controlling an external alarm, or an alarm originating from a digital input. In the event of activation of the digital input, the alarm controller is activated without any delay and said alarm persists until the subsequent deactivation of the digital input. The alarm is indicated by means of lighting up the alarm set icon, activation of the buzzer and/or relay configured as an alarm and the deactivation of the compressor, defrost and fan controllers (if the “EAL” parameter anticipates such action). This alarm status can be viewed in the “AL” folder with the “EA” label. It is possible to silence the buzzer/relay; the alarm icon will continue to flash but the controllers will remain blocked until the subsequent deactivation of the digital input.

FITTER ASSEMBLY

The instruments belonging to the DIGIFROST series range have been conceived for panel mounting purposes. Cut a hole and insert the instrument fastening it with the supplied bracket. The distance between two coupled devices is

79 mm.

With the appropriate adapter, the instruments can also be assembled on holes for the standard ELIWELL 32x74 mm. The panel thickness must be between 0.5 mm and 7 mm.

The room temperature range admitted for correct operation is between -5 e 60 °C. Furthermore, avoid mounting the instruments in locations subject to high levels of humidity and/or dirt: said instruments are in fact suitable for use in environments with an ordinary or normal level of pollution.

Make sure that the area near to the cooling slits is left aerated.

ELECTRICAL CONNECTIONS

The instrument is equipped with a screw terminal board for the connection of electric cables with a maximum element 2.5 mm² (only one conductor per terminal for power connections).

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

The outputs on the relays are voltage-free. Do not exceed the maximum electrical current permitted; in the event of greater loads use a contact with a suitable capacity.

Ensure that the voltage of the power supply conforms to that required by the instrument.

The sensors do not require connection polarities and can be extended using a normal bipolar cable (remember that extending the sensors adversely affects the conduct of the instrument in terms of electromagnetic compatibility EMC: take great care when wiring).

The sensor cable and the power supply cable must be kept at a distance from the high voltage cables.

The power contacts of the instrument and the contacts of the sensors have one main insulation coating compared to the relay contacts. As a result, these contacts (power supply and sensors) and the parts that are accessible during normal use and/or possible SELV areas (extremely low safety voltage) must at least be ensured additional insulation. For example, if the sensors are normally accessible, they must be equipped with additional insulation. The standard resin-bonded sensors, normally supplied by Eliwell, possess this characteristic. Reinforced insulation must be guaranteed between the relay contacts and the accessible parts.

Instruments equipped with RS-485 come supplied with a transformer and small cable for the power supply of the serial port. A terminal board is mounted on the transformer which then enables repetition of the RS-485 signal.

CONDITIONS OF USE

PERMITTED USE

For safety reasons the instrument must be installed and used according to the instruction 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 frontlet).

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 1 B-type operated control type;
- as a Class A device in relation to the category and structure of the software.

USE NOT PERMITTED

Any other use other than that permitted is de facto prohibited.

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.

LIABILITY AND RESIDUAL RISKS

Invensys Controls Italy s.r.l. shall not be liable for any damages deriving from:
- installation/use other than that prescribed and, in particular, that 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 products;
- installation/use on boards not complying with the standards and provisions of current legislation.

TECHNICAL DATA

Frontlet protection: IP65.

Casing: plastic in PC+ABS resin.

Dimensions: frontlet 72x30 mm, depth 60 mm.

Mounting: panel mounted, with drill holes of 58x25,4 mm (+0,2/-0,1 mm) in diameter.

Room temperature: -5...60 °C.

Storage temperature: -30...75 °C.

Display range: -50...110 °C without decimal point, -50.0...99.9 with decimal point, on a 3 digit + sign display.

Analog inputs: two for EWDA 231 and three for EWDA 331 standard NTC type supplied or PTC (according to availability).

Digital inputs: one configurable input.

Digital outputs: 1 SPDT output and two SPST outputs on 8(3)A 250V AC relay, configurable.

NOTE: in the event the buzzer is present, the relay with output on terminal 3 will be 5(2)A 250V.

Serial outputs: standard TTL type supplied; optional RS-485.

RTC memory retention: approximately 36 hours.

Temperature range: from -50 to 110 °C (from -40 to 230 °F).

Accuracy: the best of 0.5% at bottom of scale.

Definition: 1 or 0.1 °C.

Power consumption: 1.5 VA maximum

Power supply: 12 V~/± ±10%.

NOTE: for the optionals, see label on the instrument.

DISCLAIMER

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OPTIONALS	
Buzzer	B
RS-485	S
RTC	C



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Table 10 Complete parameters table

PARAMETER	DESCRIPTION	LEVEL	RANGE	DEFAULT	U.M.
dyC	day Clock	1	0...6	0	gg
HrC	Hour Clock	1	0...23	0	h
'PC	' (minutes) Clock	1	0...59	0	min
SEt	SEtpoint	2	LSE...HSE	0	°C/°F
diF	diFFerential	1	0.1...30.0	2	°C/°F
HSE	High SEt	1	LSE...150	50	°C/°F
LSE	Low SEt	1	-55.0...HSE	-50	°C/°F
OSP	Offset SetPoint	2	-15.0...15.0	0	°C/°F
Cit	Compressor (min) On time	2	0...250	0	min
Cat	Compressor (max) On time	2	0...250	0	min
Cct	Cycle continuous time	2	0...99	0	h
Ont	On time compressor	1	0...250	10	min
OFt	OFF time compressor	1	0...250	10	min
dOn	dealy On compressor	1	0...250	0	sec
dOF	dealy OFF compressor	1	0...250	0	min
dbi	delay between interval	1	0...250	0	min
OdO	Output delay at On	1	0...250	0	min
dtY	defrost type selection	2	0/1/2	0	num
dit	defrost interval time	2	0...31	6	h
			0...250		min
dtU	defrost time unit	2	0/1	0	num
dCt	defrost count type	2	0/1/2	1	num
dt1	defrost time 1	1	0...23...off	off	num
dt2	defrost time 2	1	0...23...off	off	num
dt3	defrost time 3	1	0...23...off	off	num
dt4	defrost time 4	1	0...23...off	off	num
dt5	defrost time 5	1	0...23...off	off	num
dt6	defrost time 6	1	0...23...off	off	num
dOH	defrost Offset	2	0...59	0	min
dEt	defrost Endurance time	1	1...250	30	min/sec
dSt	defrost stop temperature	2	-55...150	6	°C/°F
dS2	defrost stop temp. 2° evap.	2	-55...150	6	°C/°F
POS	POStpone defrost	2	n/y	y	flag
dPO	defrost at Power ON	2	n/y	n	flag
dri	defrost reset interval	2	n/y	y	flag
tcd	time compressor for defrost	2	-31...31	0	min
FSt	Fan Stop temperature	1	-50...50	2	°C/°F
FPt	Fan Parameter "FSt" type	2	0/1	0	num
Fdt	Fan delay time	1	0...250	0	min
dt	drainage time	1	0...250	0	min
dFd	defrost Fan disable	1	n/y	y	flag
Afd	Alarm fan differential	1	1.0...50.0	2	°C/°F
FCO	Fan Compressor OFF	1	n/y	y	flag
Fod	Fan off (with opened) door	2	n/y	n	flag
dSd	diSable light with opened door	2	n/y	y	flag
dLt	disable Light time	2	0...31	0	min
OFL	disable with opened door	2	n/y	n	flag
dOd	digital Output door	2	n/y	n	flag
E00	Functions enabled during events	2	0...3	0	num
E11	Hour of commencement of 1st event	2	0...23	0	h
E12	Minute of commencement of 1st event	2	0...59	0	min
E10	Duration of 1st event	2	0...99	0	h
E21	Hour of commencement of 2nd event	2	0...23	0	h
E22	Minute of commencement of 2nd event	2	0...59	0	min
E23	Day of commencement of 2nd event	2	0...6	0	gg
E20	Duration of 2nd event	2	0...99	0	h
E31	Hour of commencement of 3rd event	2	0...23	0	h
E32	Minute of commencement of 3rd event	2	0...59	0	min
E33	Day of commencement of 3rd event	2	0...6	0	gg
E30	Duration of 3rd event	2	0...99	0	h
dEA	dEvice Address	2	0...14	0	num
FAA	FAMily Address	2	0...14	0	num
Att	Alarm temperature type	2	0/1	0	num
HAL	High ALarm	1	LAL...150	50	°C/°F
LAL	Low ALarm	1	-50...HAL	-50	°C/°F
PAO	Power on Alarm Override	1	0...10	2	h
dAO	defrost Alarm Override	1	0...999	60	min
OAO	Output Alarm Override	1	0...10	0	h
tdO	time-out door Open	1	0...250	0	min
CAO	Cont. cycle Alarm Override	2	0...99	0	h
tAO	time Alarm Override	1	0...250	0	min
dAt	defrost Alarm time-out	2	n/y	n	flag
PbA	Probe Alarm configuration	2	0/1/2	0	num
EAL	External Alarm Lock	2	n/y	n	flag
AOP	Alarm Output Polarity	2	0/1	1	num
LOC	keyboard LOCK	1	n/y	n	flag
PA1	Password 1	1	0...255	0	num
PA2	Password 2	2	0...255	0	num
ndt	number display type	2	n/y	n	flag
CAL	CALibration	2	-15.0...15.0	0	°C/°F
CAI	CALibration Intervention	2	0/1/2	2	num
LdL	Low display	2	-55.0...150	-50	°C/°F
HdL	High display	2	-55.0...150	110 NTC / 140 PTC	°C/°F
dLc	display Lock	2	0/1/2	0	num
dro	display read-out	2	0/1	0	num
ddd	Display of the basic status	2	0/1/2/3	0	num

PARAMETER	DESCRIPTION	LEVEL	RANGE	DEFAULT	U.M.
H02	Key activation time	2	0...15	5	sec
H06	Aux.-light-micro door key/input	2	n/y	y	flag
H11	Configuration capacity of digital inputs/polarities	2	-7...7	1	num
H21	Configuration capacity of digital output 1	2	0..7	0	num
H22	Configuration capacity of digital output 2	2	0..7	1	num
H23	Configuration capacity of digital output 3	2	0..7	2	num
H24	Configuration output buzzer	2	0..7	3	num
H31	Configuration capacity of UP key	2	0..5	2	num
H32	Configuration capacity of DOWN key	2	0..5	0	num
H33	Configuration capacity of ESC key	2	0..6	6	num
H41	Capacity Control sensor presence	2	n/y	y	flag
H42	Evaporator sensor presence	2	n/y	y	flag
H43	Configuration of sensor 3	2	0..2	0	num
reL	reLease Firmware	2	/	/	/
tAb	tAble of parameters	2	/	/	/

Fig. 2 Menù flowchart

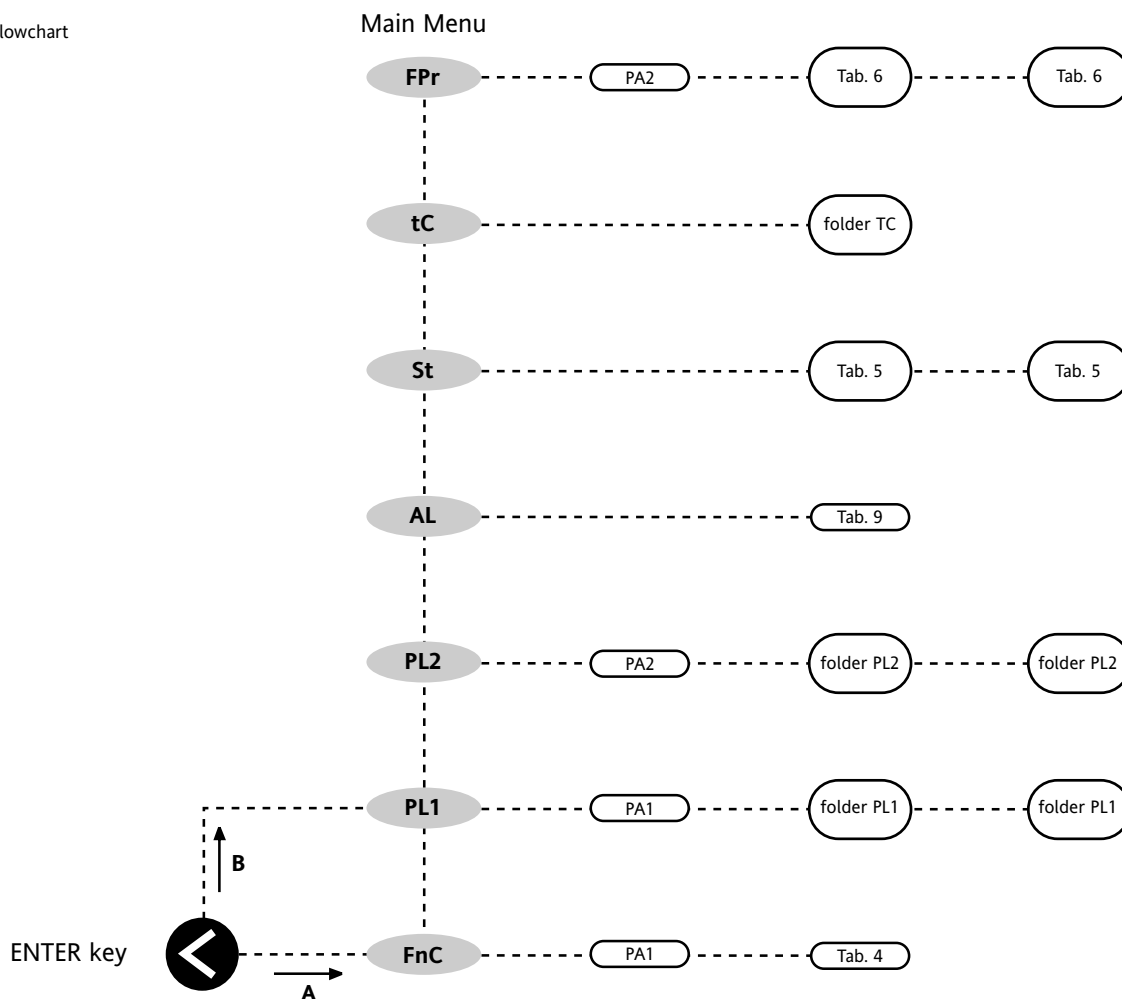


Fig. 3 Lay-out connections

