

USER INTERFACE

The user has a display and four buttons for controlling instrument status and programming. The device can also be connected to a remote display.

At start-up the instrument performs a Lamp Test; the display and LEDs flash for a few seconds to check that they are working correctly. The instrument has two main menus: the Machine Status menu and the Programming menu.

ACCESSING AND USING MENUS

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). 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 press the “fnc” button once, the last value shown on the display is confirmed and you are taken back to the previous screen mask.

REMOTE DISPLAY

The remote display has a screen with 3 1/2 digits + sign that displays the parameter programming and alarm display values on the controller it is connected to during probe reading.

MACHINE STATUS MENU

(See Machine Status Menu Diagram)

To access the Machine Status menu, press the “set” button and quickly release it. If no alarms are present, the label “SET” appears.

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

-AL: alarm folder (if alarms present, except for faulty probes/probe errors;

-Set: Setpoint setting folder.

-Pb1: probe 1 value folder;

Set setting

Access the “Machine Status” menu, press the “set” button and quickly release it. The “Set” folder label appears. To display the Set point value, press the “set” button again. The Set point value appears on the display. To change the Set point value, use the “UP” and “DOWN” buttons within 15 seconds. If the parameter is LOC = y the Set point cannot be changed.

Alarm on

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

BUTTONS AND DISPLAY

UP Button

Scrolls through the menu items
Increases the values
Activates manual defrosting



DOWN button

Scrolls through the menu items
Decreases the values



fnc button

ESC function (quit)
Parameter programmable
(see H33 parameter)



Set button

Accesses the set point
Accesses the Menus
Confirms the commands
Displays the alarms (if active)



LEDs

Position	Associated function	Status
	Set point/Reduced set point	ON for parameter programming level 2 blinking when reduced set point is entered
	Compressor or relay 1 for protection	ON for compressor on; blinking delay or enabling blocked
	Defrosting	ON when defrosting in progress; blinking when activated manually or by digital input
	Alarm	ON for active alarm; blinking for silenced alarm

Displaying probe

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

PROGRAMMING MENU (See Programming Menu Diagram)

1) Displaying 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.

When the instrument is on stand-by, para-

meter programming can be accessed with the display both on and off. Use the “UP” and “DOWN” buttons to scroll through the other folders;

NOTE: at this point, level 2 parameters are NOT visible.

2) Displaying level 2 parameters

Go to the “CnF” folder in the Programming Menu and scroll down the parameters until you reach the PA2 label. By pressing the “set” button, all the parameters will be displayed including 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 the “diS” folder, not to be confused with PA2 label in the “CnF” folder). If specified, level 2 parameters are hidden to the 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. 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.

PLEASE NOTE: We strongly recommend that you switch the instrument off and on again each time parameter configuration is changed in order to prevent malfunctioning of the configuration and/or ongoing timings.

PASSWORD

Passwords “PA1” and “PA2” allow level 1 and level 2 parameters to be accessed. There are no passwords in the standard configuration. To enable them and assign them the desired value, access the Programming menu in the “diS” folder (0=disabled) 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 the level 1 parameters.

ACTIVATING MANUAL DEFROST CYCLE

To activate the defrost cycle manually, press the “UP” button for 5 seconds. If there are not the right defrosting conditions (the temperature of the evaporator probe is higher than the end of defrosting temperature, for example) or parameter OdO 0, the display will flash 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 used for quick programming of the unit parameters (upload and download parameter map to one or more units of the same type). Operations are described below:

Fr-Format

This command can be used to format the copy card. This operation **must** be performed when it is used for the first time or used with models that are not compatible. Warning: when the copy card has been programmed, all the data entered is cancelled when the “Fr” parameter is used. 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 —> instr.**

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

Download “from reset”

Connect the copy card with the instrument OFF.

When the instrument is switched on, the programming parameters will be downloaded. When the lamp test has been completed, the following are displayed for about 5 seconds:

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

PLEASE NOTE:

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

KEYBOARD LOCKED

Keyboard operating can be locked by programming the “LOC” parameter (see folder with “diS” table). If the keyboard is locked you can access the Programming Menu by pressing the “set” button.

The Set point can also be displayed.

ADVANCED FUNCTIONS

DOOR SWITCH INPUT

This is a clean contact digital input with programmable polarity. The door switch input functions are controlled by the values of the following parameters:

Par	Description
dOd	Digital input switches off loads
dAd	D.I. activation delay
OAO	Alarm signal delay after disabling the digital input (door closed)
tdO	Time out door open. Time out signalled when D.I is activated. (door open)
dOA	Forced behaviour from digital input
PEA	Enables forced behaviour from door switch and/or external alarm
dCO	Delay in enabling compressor with consensus
dFO	Delay in enabling fans with consensus
H11	Digital output configurability/polarity 1
H22	Digital output configurability (A)

If activation state forcing is enabled (dOA is not 0), the compressor output can be activated when the time set in parameters dCO and dFO expires.

Parameter H11 is used to configure the digital input with values between -9 and +9. Positive and negative values are used to select the polarity assigned to the input and:

NOTE: the “-“ sign indicates that the function is activated when the contact is closed

the “+“ sign indicates that the function is active when the contact is open

DEVICE STAND-BY CONTROLLER

This controls the operating mode of the device when it is on stand by according to the following parameters:

Par	Description
PAO	alarm exclusion at start-up
OdO	Output delay from power-on
H08	Operating mode in stand-by.

The Stand-by controller can be digital input or button enabled if suitably configured. The status of the instrument when on stand-by is determined by the value of parameter H08. Three possible operating modes are defined:

EXAMPLE 1: the display is off and the controllers active, the instrument signals any alarms by reactivating the display - OFF DISPLAY

EXAMPLE 2: the display is off and all the controllers, including the alarms, are also disabled - STAND-BY

EXAMPLE 3: the display shows the “OFF” label and all the controllers, including the alarms, are also disabled- STAND-BY

DEFROST CONTROL

The instrument can be used to select different types of defrosting with the parameter **dty, defrost type. (defrost execution mode).**

The dty parameter can have these values:
0 = electrical defrosting; the compressor is turned off.

1 = cycle reversing defrosting (hot gas); the compressor continues operating.

2 = Free mode defrosting.

(defrosting irrespective of state of compressor)

GENERAL PRESSURE SWITCH INPUT CONTROLLER

This controller performs diagnostics on an associated digital input using a configuration table. It is activated by setting parameters H11 and H12 = 9.

If the pressure switch input trips, the compressor loads are immediately deactivated, the alarm LED lights up to signal tripping and the label nPA in the alarm folder is displayed.

Controlling is performed using 2 parameters PEn and PEI:

Par.	Description
PEn	number of errors allowed per maximum/minimum pressure switch input switch input (number)
PEI	Minimum/maximum pressure switch error count time (minutes)

nPA is an AL (Alarms) subfolder, and keeps a record of each time the pressure switch is activated. If the value indicated by PEn is reached in a period of time that is less than or equal to PEI, the nPA label is replaced by PA (pressure alarm).

The alarm condition only occurs when the maximum number of alarms is reached before the time indicated by parameter PEI expires. As soon as the first alarm occurs, the time PEI is calculated.

If the number of times the pressure switch is activated exceeds the number established PEn in the period PEI:

- compressor outputs, fans and defrosting are deactivated
- the label PA is displayed in the subfolder nPA

- the alarm LEDs and alarm relay if configured are switched on.

NOTE: Once the device is in alarm mode, it must be switched off and on again or reset by activating the rAP parameter in the functions menu. The nPA folders can be reset using the rPA function in the Fnc folder.

NOTE: If parameter PEn is set to 0 the function is excluded and the alarms and counts are disabled.

DIAGNOSTICS

The alarm condition is always signalled by a buzzer (if present) and the alarm icon LED. The alarm signal generated by a faulty probe (probe 1) appears directly on the instrument display as E1.

Table of faulty probes

DISPLAY	FAULT
E1	Faulty probe 1 (thermostat control)

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

Other alarms do not appear on the instrument display but can be seen in the "Machine Status" menu in the "AL" folder. The maximum and minimum temperature alarm is regulated according to the thermostat control probe (probe 1). The temperature limits are defined by the "HAL" (maximum alarm) and "LAL" (minimum alarm) parameters.

MAXIMUM AND MINIMUM TEMPERATURE ALARM

If an alarm condition occurs and alarm exclusion times are not running (see alarm exclusion parameters), the alarm icon lights up permanently and the relay configured as an alarm is activated. This type of alarm does not affect the regulating in progress.

Alarms are considered as absolute (default) values or as values related to the Set point (the distance from the Set point itself) and based on the Att parameter. If the alarms are relative (Att=1), the parameter HA1 is set to positive values and LA1 to negative values.

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

DEFROST ALARM

If the end of defrosting is due to a timeout (rather than because an end of defrosting temperature is detected by the defrosting probe), an alarm is generated and the icon lights up.

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

OPEN DOOR ALARM

If a door is open, the Open Door alarm is signalled in response to a delay defined by the tdO parameter. The alarm is signalled by the flashing alarm icon. This alarm condition can be viewed in the "AL" folder with the label "Opd".

NOTE: Do not set parameter tAo to zero when the door is closed since if the door is continually opened and closed, any alarms would never be signalled.

ELECTRICAL CONNECTIONS

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

The instrument has screw terminals for connecting electrical cables with a maximum diameter of 2.5 mm² (only one conductor per terminal for power connections): for terminal capacity, see the label on the instrument.

The relay contacts are voltage free.

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

Make sure that the power voltage complies with the device voltage.

Probes have no connection polarity and can be extended using an ordinary bipolar cable (N.B. extending the probes affects the electromagnetic compatibility (EMC) of the instrument: special care must be used when wiring).

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

INSTALLATION MECHANICAL ASSEMBLY

The unit has been designed for panel-mounting. Drill a 29x71 mm hole, insert a tool and fix it in place with the brackets provided. The remote display has also been designed for panel-mounting on a cut-out measuring 45.9 x 26.4 mm.

Do not install the instruments in excessively humid and/or dirty locations. They are suitable for use in locations with normal pollution levels.

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

PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
SEt	Set point with range falling between the minimum LSE set point and the maximum HSE set point. The value of the set point is in the <i>m chine s t s men</i>	LSE...HSE	0.0			°C/°F

Compressor controller-CP label	diF	When the compressor stops when it reaches the set point value, it restarts at a value corresponding to the set point plus the value of the differential. It must not be 0	0.1...30.0	2.0		1-2	°C/°F
	HSE	Maximum set point value	LSE...302	50.0		1-2	°C/°F
	LSE	Minimum set point value	-55.0...HSE	-50.0		1-2	°C/°F
	OSP	Offset point. Value to be added to set point if reduced set point is activated (Economy function).	-30.0...30.0	0		2	°C/°F
	Cit	Minimum compressor ON time. Minimum time for activating a compressor before deactivation. Not active if=0	0...250	0		2	min
	CAt	Maximum compressor ON time. Maximum time for activating a compressor before deactivation. Not active if=0	0...250	0		2	min
	Ont (1)	Compressor activation time if probe is faulty. If set to 1 with OFt=0 the compressor always remains on whereas if OFt>0 it operates in duty cycle mode (see Duty Cycle diagram)	0...250	0		1-2	min
	OFt (1)	Compressor shut-down time if probe is faulty. If set to 1 with Ont=0 the compressor always remains off whereas if OFt>0 it operates in duty cycle mode (see Duty Cycle diagram)	0...250	1		1-2	min
	dOn	Delay in activating compressor relay after start-up	0...250	0		1-2	sec
	dOF	Delay after shut-down; between compressor relay shut-down and subsequent start-up the specified time must elapse.	0...250	0		1-2	min
	dbi	Delay between switch-ons; the specified time must elapse between two subsequent switch-ons	0...250	0		1-2	min
	OdO	Delay in enabling outputs after start-up of instrument or after a power failure. Not active if=0	0...250	0		1-2	min

Defrosting controller-deF label	dty	Type of defrost. 0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrosting (irrespective of state of compressor).	0/1/2	0		1-2	flag
	dit	Period of time elapsing between start of two defrosts; 0=function disabled	0...250	6		1-2	hours
	dCt	Selection of defrosting time count mode mode. 0=compressor operating hours DIGIFROST® method). Defrosting active only if compressor is on. 1 = equipment operating hours; defrost counting is always active when the machine is on 2=compressor stop. Each time the compressor stops a defrosting cycle is performed according to par. dtY	0/1/2	1		1-2	flag
	dOH	Delay between start of first defrosting operation and start-up of instrument.	0...59	0		1-2	min
	dEt	Defrosting time-out; determines maximum duration of defrosting.	1...250	30		1-2	min
	dPO	Determines when instrument starts up if the defrosting cycle must be activated (if the temperature on the evaporator allows this) y=defrosting activated at start-up n=defrosting not activated at start-up	n/y	n		1-2	flag

Alarm controller — AL label	Att	Determines if "LAL" and "HAL" are expressed as absolute values or as a differential related to the set point 0=absolute value 1=value related to set point	0/1	0		2	flag
	Afd	Alarm differential	1.0...50.0	2.0		1-2	°C/°F
	HAL (2)	Maximum alarm. Temperature limit (whose absolute or relative value status is regulated by "Att") above which the alarm is activated.	LAL...150.0	50.0		1-2	°C/°F

NOTE: The level marked 1-2 allows the parameter to be displayed at both levels. The level marked 1 allows the parameter to be displayed at level 1 only. The level marked 2 allows the parameter to be displayed at level 2 only.

	PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
Alarms-AL label	LAL (2)	Minimum alarm. Temperature limit (whose absolute or relative value status is regulated by "Att") below which the alarm is activated.	-50.0...HAL	-50.0		1-2	°C/°F
	PAO	Alarm exclusion time after start-up of instrument following a power failure	0...10	0		1-2	hours
	dAO	Alarm exclusion time after defrosting	0...999	0		1-2	min
	OAO	High and low temperature alarm delay after disabling digital input (door closed)	0...10	0		2	hours
	tdO	Time out after alarm signal when disabling digital input (door open)	0...250	0		2	min
	tAO	Temperature alarm delay time	0...250	0		1-2	min
	AOP	Polarity of alarm output: 0 = alarm active and output disabled; 1 = alarm active and output enabled	0/1	1		2	flag
Light & digital inputs Lit Label	dOd	Digital input switches off loads	n/y	n		2	flag
	dAd	Delay in enabling digital input	0...255	0		2	min
	dOA	Forced behaviour from digital input: 0=no enabling; 1=compressor enabled 2=fans enabled; 3=compressor and fans enabled	0/1/2/3	0		2	num
	PEA	Enables forced behaviour from door light and/or from external alarm 0=function disabled; 1=associated with door light 2=associated with external alarm; 3=associated with door light and external alarm	0/1/2/3	0		2	num
	dCO	Delay in enabling compressor with consensus	0...250	0		2	min
Display - dis label	LOC	Keyboard locked. Parameters can still be programmed. n= keyboard not locked y= keyboard locked	n/y	n		1-2	flag
	PA1	Contains the password for level 1 parameters. Enabled if not 0	0...250	0		1-2	num
	PA2	Contains the password for level 2 parameters. Enabled if not 0	0...255	0		2	num
	ndt	Display with decimal point. n= without decimal point (only whole numbers) y= with decimal point	n/y	n		1-2	flag
	CA1	Temperature value to be added to that read by probe 1 as specified by parameter CA	-12.0...12.0	0		1-2	°C/°F
	CA	Application of offset 0 = modifies the temperature displayed 1 = is added to the temperature used by controllers not the temperature displayed that remains unchanged. 2= adds to temperature displayed that is also used by controllers.	0/1/2	2		2	num
	ddl	display during defrosting: 0= displays temperature read by thermostat control probe 1= displays temperature read entering defrost cycle until set point is reached 2= displays "deF" label during defrosting until set point is reached (or when Ldd expires)	0/1/2	1		1-2	flag
	Ldd	Time out for unlocking display (with ddl=2) if defrosting lasts too long	0...255	0		1-2	min
	dro (3)	Select °C or °F to display temperature: 0= °C 1= °F	0/1	0		1-2	flag
Ero	Establishes which analogue input to display on the ECHO between: 0= display of associated device 1=probe 1 2=not used 3=not used 4=Set-Point	0...4	1		1-2	num	

NOTE: The level marked 1-2 allows the parameter to be displayed at both levels. The level marked 1 allows the parameter to be displayed at level 1 only. The level marked 2 allows the parameter to be displayed at level 2 only.

	PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.	
Configuration- CnF label	H00	Selects probe PTC or NTC 0= PTC 1= NTC	0/1	1		1-2	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: 0= disabled 1 = defrost 2 = reduced set point 3 = auxiliary 4 = door switch 5 = external alarm 6= disables storage of HACCP alarms 7= stand-by (On/Off) 8= maintenance request 9= pressure switch alarm	-9...9	0		2	num	
	H12 (4)	Configuration of digital inputs/polarity Same as	-9...9	0		2	num	
	H22	Digital output configurability (A) 0=disabled; 1=compressor; 2=defrost; 4=alarm; 5=auxiliary; 6=stand-by; 7=light; 8=buzzer; 3=9=10=not used	0...10	1		2	num	
	H33	fnc button configurability 0=disabled 1=defrost 2=aux 3=reduced set point 4=5=8=not used 6=light 7=stand-by	0...8	0		2	num	
	reL	Device version . Read only parameter	/	/		1-2	/	
	tAb	Parameter table; Reserved; Read only parameter	/	/		1-2	/	
	PA2	in the CnF folder you can access only the level 2 parameters from label PA2 when you enter the correct password by pressing the "set" button						
	Pressure switch PRE label	PEn	number of errors allowed per maximum/minimum pressure switch input	0...15	10		2	num
PEI		minimum/maximum pressure switch error count time	1...99	60		2	min	
Copy Card Fpr label	UL	Transfer of parameter map from instrument to Copy Card;	/	/		1	/	
	dL	Transfer of parameter map from Copy Card to instrument	/	/		1	/	
	Fr (5)	Formatting. Cancels all data in the Copy Card	/	/		1	/	

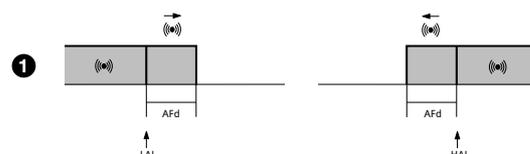
NOTES:

- (1) See Duty Cycle diagram
- (2) Refers exclusively to high and low temperature alarms
- (3) when changing from °C to °F or vice versa the set points, differentials, etc. are NOT converted (for example, "set=10 °C becomes set=10°F")
- (4) CAUTION: positive or negative values change polarity. Positive values: active input when contact is closed; Negative values: active input when contact is open.
- (5) If the Fpr parameter is used, the data previously stored on the Copy Card will be permanently lost. **This operation cannot be undone**

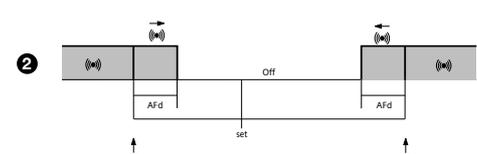
* Value: to be compiled manually by user with any custom settings (if different from default settings)
 ** Level: indicates the visibility level of parameters accessed using a password (see relevant paragraph)

MAX/MIN ALARMS

Temperature expressed as an absolute value (par "Att0") Abs(olute)



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



Minimum temperature alarm	Temperature lower than or equal to LAL (LAL with sign)	Temperature lower than or equal to set point+LAL (LAL only positive)
Maximum temperature alarm	Temperature higher than or equal to HAL (HAL with sign)	Temperature higher than or equal to set point+HAL (HAL only positive)
Minimum temperature alarm back swing	Temperature higher than or equal to LAL+AFd	Temperature higher than or equal to set point + LAL + AFd set point - LAL +AFd
Maximum temperature alarm back swing	Temperature lower than or equal to HAL-AFd	Temperature lower than or equal to set point+HAL-AFd

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

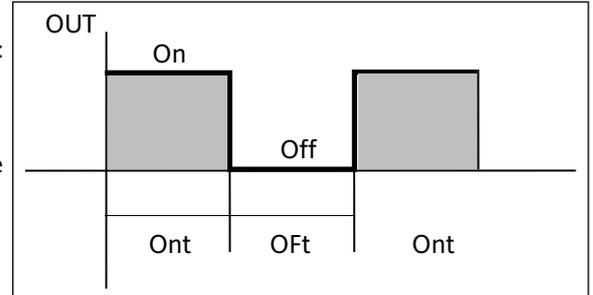
DUTY CYCLE DIAGRAM

Ont, OFt parameters programmed for Duty Cycle

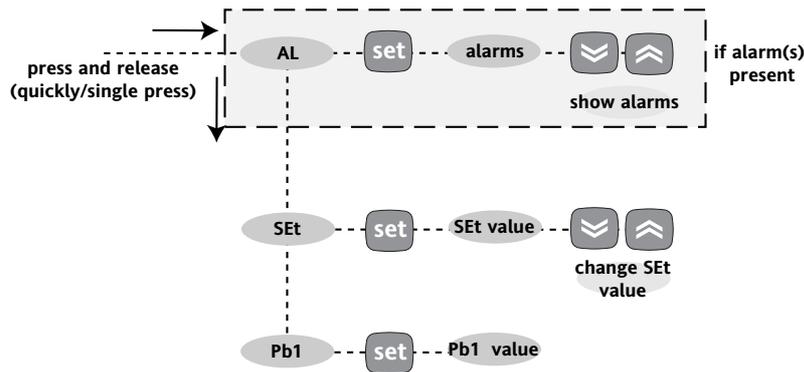
Ont	OFt	Compressor output
0	0	OFF
0	>0	OFF
>0	0	ON
>0	>0	dc

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

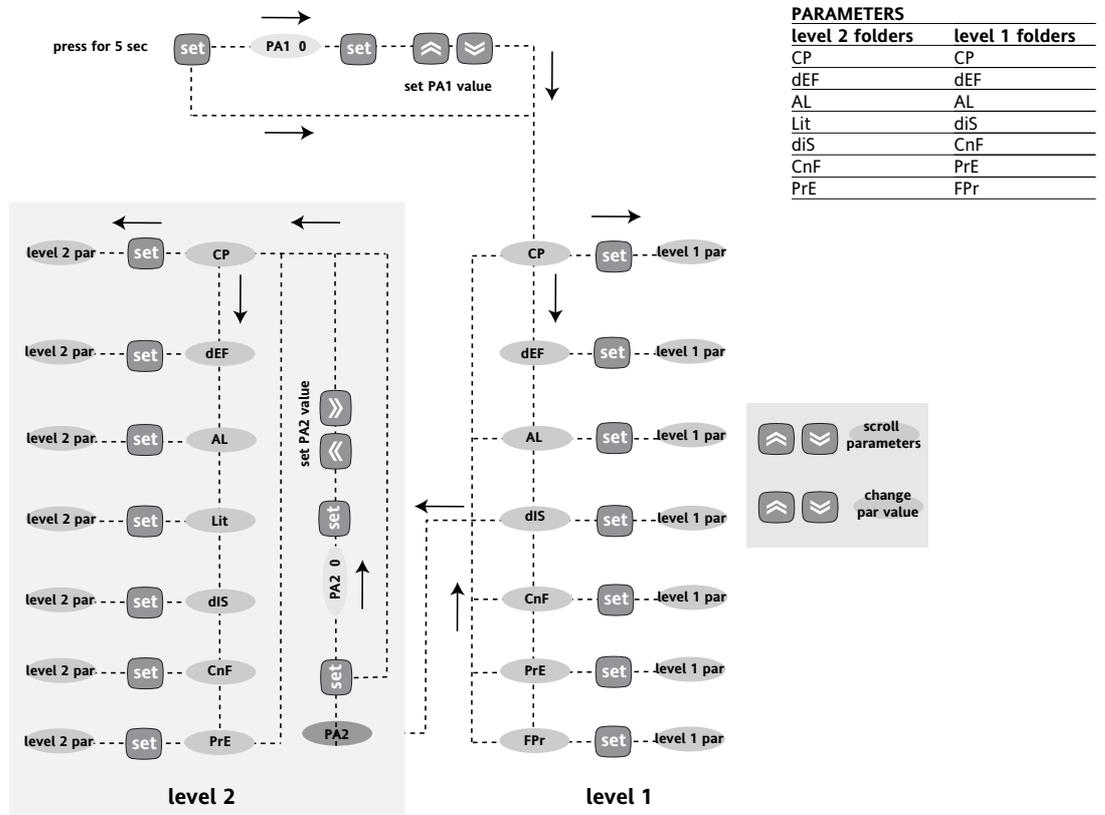
- E1 code appears on display
- the controller is activated as indicated by the "Ont" and "OFt" parameters if programmed for the duty cycle



MACHINE STATUS MENU



PROGRAMMING MENU



PARAMETERS	
level 2 folders	level 1 folders
CP	CP
dEF	dEF
AL	AL
Lit	diS
diS	CnF
CnF	PrE
PrE	FPr

NOTE: The technical characteristics in this document concerning measurements (range, accuracy, resolution, etc.) refer to the instrument in the strictest sense and not to any accessories provided such as probes, for example. This means, for example, that an error introduced by the probe is added to any error that is typical of the instrument.

CONDITIONS OF USE

PERMITTED USE

For safety reasons the instrument must be installed and used in accordance with the instructions supplied. Users must not be able to access parts with dangerous voltage levels under normal operating conditions. The device must be suitably protected from water and dust according to the specific application and only be accessible using special tools (except for the front keypad) The device can be fitted to equipment for household use and/or similar use in the refrigeration sector and has been tested with regard to safety in accordance with the European harmonized reference standards.

It is classified as follows:

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

UNPERMITTED USE

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

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

RESPONSIBILITY AND RESIDUAL RISKS

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

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Invensys Controls Europe
Part of the Invensys Group

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TECHNICAL DATA

ID 981/E

Front protection: IP65.

Casing: PC+ABS UL94 V-0 resin plastic body, polycarbonate front, thermo-plastic resin buttons.

Dimensions: front 74x32 mm, 60 mm depth.

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

Operating temperature: -5...55 °C.

Storage temperature: -30...85 °C.

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

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

Display range: -50...110 (NTC); -55...140 (PTC) °C without decimal point (parameter selectable), on display 3 digits + sign.

Analogue inputs: 1 PTC or NTC input (parameter selectable).

Digital inputs: 2 voltage-free parameter-configurable digital inputs.

Serial: TTL for Copy Card connection.

Digital outputs: 1 relay output: (A) SPDT 8(3)A 250V~

Measurement range: from -55 a 140 °C.

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

Resolution: 1 or 0.1 °C.

Consumption: 3 VA.

Power supply: 12 V~/±10% 50/60 Hz

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

ECHO

Casing: PC+ABS UL94 V-0 resin plastic body, polycarbonate front

Dimensions: front 48x28.6 mm, 15 mm deep.

Mounting: on panel, with drilling template 45.9x26.4 mm

Operating temperature: -5...55 °C.

Storage temperature: -30...85 °C.

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

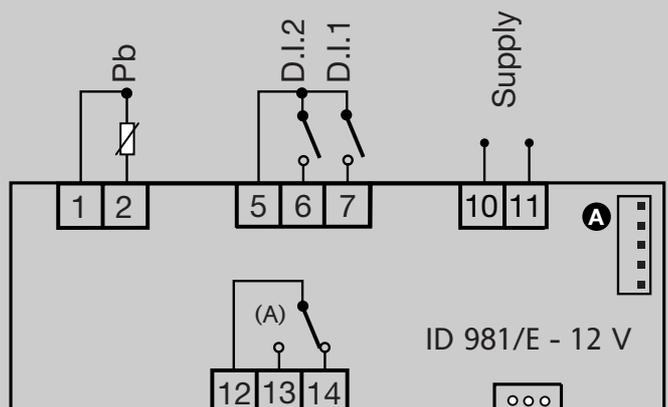
Storage ambient humidity: 10...90% RH (non-condensing).

Display range: -50...110 (NTC); -55...140 (PTC) °C without decimal point (parameter selectable), on display 3 digits + sign.

Serial: 3-way connection (GND, DAT1, 12V) on quick connection terminal block. Resolution: 1 or 0.1 °C.

Power supply: from instrument it is connected to

WIRING DIAGRAM



TERMINALS

1 - 2	Probe input 1 (thermostat control)
5 - 6	Digital input 2
5 - 7	Digital input 1
10 - 11	Power supply
12 - 13	N.O. relay output (A) see H22 (compressor default)
12 - 14	N.C. relay output (A) see H22 (compressor default)
A	TTL input for Copy Card