

IWC 750 TWIN

Electronic controllers for “ventilated” refrigeration units



KEYS AND LEDS

UP Scrolls menu entries Increases values Programmable by parameter (see par. H31) DOWN Scrolls menu entries Decreases values Programmable by parameter (see par. H32) set Accesses menus Activates functions Confirms commands Displays alarms (if active)	Defrost 1 * Manually enable defrost cycle machine 1 (hold down for 2 sec.) (see par. H34) Defrost 2 * ESC (exit) function Manually enable defrost cycle machine 2 (hold down for 2 sec.) (see par. H33) on/off Turns instrument on and off and forces the associated relay (if present)	Alarm ON for alarm active; blinking when the alarm is silenced Fans ON for fans on; OFF for fans off; otherwise blinking Compressor 1, 2 ON for compressor on; Blinking in case of delay, protection, or blocked enabling; otherwise OFF; Reduced set Blinking when the reduced set is on; OFF for main set on;	Function %RH ON for forcing on OFF for normal operation Lock ON for Lock on OFF for Lock off Manual defrost 1, 2 (LEDs associated with Defrost 1 and 2 keys) ON for manual defrosting on otherwise OFF Stand By (associated with on/off key) ON for instrument off OFF for instrument on
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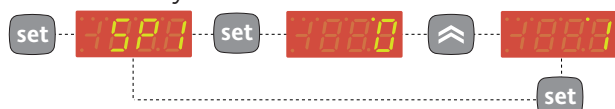
* if conditions for defrosting are not present or if OdO is not 0, the display will blink and defrosting will not be performed

MACHINE STATUS MENU

a) You can access the machine status menu by pressing and releasing the “set” key.
You can use the “UP” and “DOWN” keys to scroll through all the folders in the menu in normal conditions, which are:

- SP1, SP2: Setpoint 1 and Setpoint 2 setting folders.
- Pb1, Pb2, Pb3: probe 1, 2 and 3 displaying folders.

The first label displayed is “SP1”. To display the Setpoint 1 value press the “set” key.



The value of Setpoint 1 appears on the display. To change the Setpoint value, press the “UP” and “DOWN” keys within 15 seconds. If you press the “set” key again or press the “fnc” key or a time of 15 seconds elapses, the last value displayed will be saved and

the label “SP1” will reappear on the display.

To set the value of Setpoint 2, follow the same procedure as described for setting Setpoint 1.

b) To view the temperature value read by the probes, scroll through the menu labels and press the “set” key corresponding to the desired probe, “Pb1”, “Pb2” or “Pb3”.



c) If an alarm condition exists, when accessing the “Machine Status” menu the “AL” folder label appears. Press the “set” key to display the alarms present in the folder.



(e.g. in the presence of maximum and minimum temperature alarms)

“Use UP” and “DOWN” keys to scroll the list of active alarms

PROGRAMMING MENU

To access the programming menu, hold down the “set” key for more than 5 seconds.



- When you press the ‘set’ key the display will show the first folder in the menu.
(e.g. folder “CP1”)



- By pressing the ‘UP’ and ‘DOWN’ keys you can scroll through all the folders in the programming menu



- By pressing the “set” key when the selected folder appears (in this example ‘dE1’), the first parameter contained will be displayed. Use the “UP” and “DOWN” keys to select the desired parameter.
- Press “set” to display the value of the selected parameter and “UP” and “DOWN” to modify the value.

Once you have pressed the “set” key (or 15 seconds has elapsed), the new value will appear and the display will show the value of the corresponding parameter.

PASSWORD

Access to parameter management can be restricted by means of a password. The password can be enabled by setting parameter PA1 in the ‘diS’ folder. The password is enabled if the value of parameter PA1 is different from 0.



- To access the “Programming” menu, hold down the “set” key for more than 5 seconds.
If specified, the access PASSWORD will be requested.



- If the password PA1 is enabled (different from 0), you will be asked to enter it. Select the correct value using the UP and DOWN keys and press ‘set’ to confirm.

If the password is incorrect, the display will show the ‘PA1’ label again and you will have to repeat the operation.

On each level of both menus, if you press the “fnc” key or a time of 15 seconds elapses, you will return to the level above and the last value on the display will be saved.

COPY CARD

The Copy Card is an accessory connected to the TTL serial port which allows for quick programming of the instrument parameters (upload and download parameters map to or from one or more instruments of the same type). The operations of upload (label UL), download (label dL) and key formatting (label Fr) are performed as follows:

- The commands needed to use the Copy Card are contained in the 'FPr' folder. Press 'set' to access the functions.
- Scroll using 'UP' and 'DOWN' to display the required function. Press the 'set' key to perform the upload (or download).
- If the operation is successful, the display will show 'y', if not it will show 'n'.

Download reset

Connect the key with the instrument OFF. When the instrument is switched on, the programming parameters will be loaded into the instrument. After the lamp-test the display will read the following for about 5 seconds:

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



NOTE:

- after the download operation, the instrument will work with the newly loaded parameters map.
- see "FPr" folder in Parameters table and Parameters description

FUNCTIONS

The following functions are available in the FnC folder (last folder visible from the programming menu, level 1):

Function	Function label ACTIVE	Function label INACTIVE	D.I.	Key	Function active indication
defrost request 1	dE1	dE1	1	1	
reduced set	osp	sp*	2	3	LED ON
stand-by	On*	OFF	5	5	LED ON
maintenance request	Atn	AtF*	6	6	UnP blinking
alarm silencing	tAL	tAL	N.A.	N.A.	
defrost request 2	dE2	dE2	N.A.	7	

* indicates default

NOTE: to modify the status of a given function, press the 'set' key

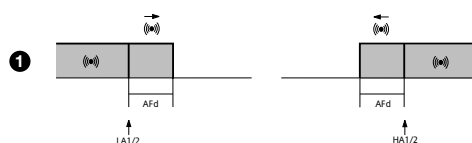
NOTE: If the instrument is switched off, the functions will return to the default status.

ALARMS

Label	Alarm	Cause	Effects	Solution to problems
E1/E2	Probe 1/2 (cell 1/2) faulty	- measured values outside the range of nominal readings - regulation probe faulty/short-circuited/probe open	- Label "E1"/"E2" shown on display; - Activation of compressor as shown by parameters On1/On2 and OF1/OF2; - disabling of maximum and minimum alarm regulator;	- check probe wiring - replace probe - when the error condition ceases, regulation continues as normal
E3	Probe 3 (defrost) faulty	Analogous to E1	- Label E3 shown on display; - End of defrost 1 due to timeout (if enabled)	- Analogous to E1 - if a defrost was in progress, it may terminate on reaching set point
AH1/AH2	Cell 1/2 high temperature alarm	value read by probe 1/2 > HA1/HA2 after time tA1/tA2. (see diagram for MIN MAX ALARMS and description of parameters HA1/HA2 and At1/At2 and tA1/tA2)	- Recording of label AH1/AH2 in folder AL of machine status menu - No effect on regulation	Wait until temperature value read by probe 1 returns below HAL.
AL1/AL2	Cell 1/2 low temperature alarm	value read by probe 1/2 < LA1/LA2 after time tA1/tA2 (see diagram for MIN MAX ALARMS and description of parameters LA1/LA2 and At1/At2 and tA1/tA2)	- Recording of label AL1/AL2 in folder AL of machine status menu - No effect on regulation	Wait until temperature value read by probe 1/2 returns above LA1/LA2.
EA	External alarm	for activation of digital input with delay established by parameter dAd	- Recording of label EA in folder AL of machine status menu - Blocks controllers in accordance with parameter EAL	- Manual silencing of buzzer - The controllers resume normal operation upon subsequent deactivation of D.I.
Ad2	Defrost alarm	interruption of defrost due to timeout instead of 2nd probe reaching defrost end temperature.	- Fixed alarm LED illuminates; - Recording of label Ad2 in folder AL of machine status menu	- Manual silencing to turn off LED - Wait for the subsequent defrost cycle to delete signal from folder AL
Opd	Door open alarm	- In the event of open door and delay time tdO elapsed - Delay tdO count performed when time set by parameter dAd elapses	- Signalling LED blinking - Activation of buzzer when delay time tdO has elapsed - Recording of label Opd in folder AL of machine status menu	- Manual silencing of alarm relay - The LED and signal in folder AL will remain active until the door is closed

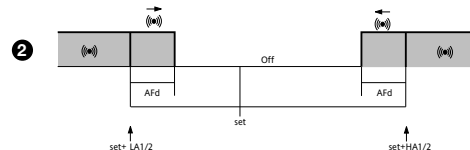
MAX-MIN ALARMS

Absolute temperature value (par "Att"=0) Abs(olute)



Minimum temperature alarm	Temperature less than or equal to LA1/2 (LA1/2 with sign)
Maximum temperature alarm	Temperature greater than or equal to HA1/2 (HA1/2 with sign)
Returning from minimum temperature alarm	Temperature greater than or equal to LA1/2+Afd
Returning from maximum temperature alarm	Temperature less than or equal to HA1/2-Afd

Temperature value relative to set point ("Att"=0) reL(ative)



Temperature less than or equal to set+LA1/2 (LA1/2 only positive)
Temperature greater than or equal to set+HA1/2 (HA1/2 only positive)
Temperature greater than or equal to set + LA1/2 + Afd
Temperature less than or equal to set - LA1/2 + Afd

if Att=reL(ative) LA1/2 must be negative: so set+LA1/2<set because set+(-|LA1/2|)=set-|LA1/2|

KEYBOARD LOCKING

The instrument includes a facility for disabling the keyboard:

- using the keys (pressing **UP+DOWN** simultaneously for 2 seconds; see KEYS AND LEDS)
- by programming the “Loc” parameter (see folder with “diS” label).

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

The Setpoint can also be viewed.

PARAMETERS TABLE

PAR.	RANGE	DEFAULT	U.M.
SP1	LS1...HS1	0.0	°C/°F
SP2	LS2...HS2	0.0	°C/°F
Compressor 1 - label CP1	dF1	-0.1...30.0	2.0 °C/°F
	HS1	LS1...302	50.0 °C/°F
	LS1	-58.0...HS1	-50.0 °C/°F
	OS1	-30.0...30.0	0 °C/°F
	Ci1	0...250	0 min
	Ct1	0...250	0 min
	On1	0...250	0 min
	OF1	0...250	1 min
	dn1	0...250	0 sec
	dO1	0...250	0 min
	db1	0...250	0 min
	Od1	0...250	0 min
Compressor 2 - label CP2	dF2	0.1...30.0	2.0 °C/°F
	HS2	LS2...302	50.0 °C/°F
	LS2	-58.0...HS2	-50.0 °C/°F
	OS2	-30.0...30.0	0 °C/°F
	Ci2	0...250	0 min
	Ct2	0...250	0 min
	On2	0...250	0 min
	OF2	0...250	1 min
	dn2	0...250	0 sec
	dO2	0...250	0 min
	db2	0...250	0 min
	Od2	0...250	0 min
Defrost 1-label dE1	dtY	0/1/2	0 num
	di1	0...250	6h hours/min/sec
	dc1	0/1/2	1 num
	dH1	0...59	0 min
	dE1	1...250	30 min
	dSt	-50.0...50.0	8.0 °C/°F
	dP1	n/y	n flag
Defrost 2- dE2	di2	0...250	6h hours/min/sec
	dc2	0/1/2	1 num
	dH2	0...59	0 min
	dE2	1...250	30 min
	dP2	n/y	n flag
Fans - label FAN	FSt	-50.0...150.0	2.0 °C/°F
	FAd	1.0...50.0	2.0 °C/°F
	Fdt	0...250	0 min
	dt	0...250	0 min
	dFd	n/y	y flag
	FCO	n/y/d.c.	y num
	Fod	n/y	n flag
	FdC	0...99	0 min
	Fon	0...99	0 min
	FoF	0...99	0 min
Alarms - label AL	At1	0/1	0 flag
	AF1	1.0...50.0	2.0 °C/°F
	HA1	LAL1...150.0	50.0 °C/°F
	LA1	-50.0...HA1	50.0 °C/°F
	P1O	0...10	0 hours
	dA1	0...999	0 min
	OA0	0...10	0 hours
	tdO	0...250	10 min
	tA1	0...250	0 min
	dAt	n/y	n flag
	EAL	n/y	n flag
	AOP	0/1	0 flag
	At2	0/1	0 flag
	AF2	1.0...50.0	2.0 2.0 °C/°F
Configuration - label CnF	HA2	LA2...150.0	50.0 °C/°F
	LA2	-50.0...HA2	-50.0 °C/°F
	P2O	0...10	0 hours
	dA2	0...999	0 min
	TA2	0...250	0 min
label Lit	dSd	n/y	n flag
	OFL	n/y	n flag
	dOd	n/y	n flag
	dAd	0...250	0 min
	1o2	0...2	1 num
Display - label diS	LOC	n/y	n flag
	PA1	0...250	0 num
	ndt	n/y	n flag
	CA1	-12.0...12.0	0 °C/°F
	CA2	-12.0...12.0	0 °C/°F
	CA3	-12.0...12.0	0 °C/°F
	ddl	0/1/2	2 num
	dro	0/1	0 flag
	ddd	0/1/2/3/4	4 num
label FPr	H06	n/y	y flag
	H11	-6...6	3 num
	H21	0...8	1 num
	H22	0...8	2 num
	H23	0...8	3 num
	H24	0...8	6 num
	H25	0...8	4 num
	H26	0...8	8 num
	H31	0...7	0 num
	H32	0...7	0 num

DESCRIPTION OF PARAMETERS

COMPRESSOR CONTROL 1/2 (folders with label “CP1”/“CP2”)

dF1/dF2 Compressor relay activation 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.

HS1/HS2 Maximum possible setpoint value.

LS1/LS2 Minimum possible setpoint value.

NOTE: The two sets are interdependent: HS1/HS2 (maximum set) cannot be less than LS1/LS2 (minimum set) and vice versa

OS1/OS2 Temperature value to be added algebraically to the setpoint if reduced set enabled (Economy function). The reduced set can be enabled by pressing a key which must be specially configured for this purpose.

Ci1/Ci2 Minimum compressor activation time before disabling. If set to 0, it is not active.

Ct1/Ct2 Maximum compressor activation time before disabling. If set to 0, it is not active.

On1/On2 Compressor activation time in the event of a faulty probe. If set to “1” with Of1 set to “0”, the compressor is always on, while with Of1/Of2 > 0 it operates in duty cycle mode.

OF1/OF2 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 On1/On2 > 0 it operates in duty cycle mode.

dn1/dn2 Starting delay. The parameter indicates that a protection is active on the relay actuations of the generic compressor. Between the request and effective activation of the compressor relay, at least the specified time must elapse.

dO1/dO2 Delay after switching off. The parameter indicates that the protection is active on compressor relay actuations. At least the indicated time must elapse between switch-off of the compressor relay and the successive switch-on.

db1/db2 Delay between switch-ons. The indicated time must elapse between two subsequent switch-ons of the compressor.

Od1/Od2 Delay time in activating the outputs after switch-on of the instrument or after a power failure. 0= not active.

DEFROSTING CONTROL 1/2 (folders with labels “dE1”/“dE2”)

DEFROSTING CONDITIONS

The instrument allows defrosting to be performed in the following conditions:

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

dtY Type of defrost.
0 = electrical defrosting;
1 = cycle inversion defrosting (hot gas);
2 = Free mode defrost (independent of compressor).

Automatic defrosting

In this case, defrosting takes place at time intervals set by parameter dit (=0 defrosting will not take place at all).

As mentioned above, if the parameter dit > 0 and defrosting conditions apply (see parameter dSt), defrosting will take place at fixed intervals and according to the parameter dCt

di1/di2	Interval between the start of two subsequent defrosting operations. 0= the function is disabled (defrosting is NEVER performed)
dC1/dC2	Selection of count mode for the defrosting interval. 0 = compressor hours 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 = 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 Defrost start delay time from start up of instrument.
dH1/dH2	Defrost start delay time from start up of instrument.
dSt	Defrosting end temperature (determined by the evaporator probe).
dE1/dE2	Defrost time-out: determines the maximum duration of defrosting.
dP1/dP2	Determines whether the instrument must enter defrosting at start-up (if the temperature measured by the evaporator allows this operation). y = yes, starts defrosting at start-up; n = no, does not start defrosting at start-up.

FAN CONTROL (folder with "FAn" label)

FSt	Fan lock temperature: if the evaporator probe reads a higher value than the set value, the fans are stopped. The value is positive or negative and, depending on parameter FPt, can represent the temperature as an absolute value or relative to the Setpoint.
FAd	Fan activation intervention differential (see par. "FSt" and "Fot").
Fdt	Delay time at fan activation after a defrosting cycle.
dt	Dripping time.
dFd	Allows exclusion of the evaporator fans to be selected or not selected during defrosting. y = yes (fans excluded); n = no.
FCO	It allows the fan lock to be selected or not when the compressor is 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).
Fod	Allows fan lock to be selected when the door is open and fan restart when the door is shut (if they were active). n=fan lock; y=fans unchanged
FdC	Fan switch off delay time after compressor stop. In minutes. 0= function excluded
Fon/FoF	Time fans are ON/OFF per duty cycle. Use of fans in duty cycle mode; valid for FCO = dc

ALARMS (folder with "AL" label)

At1/At2	Parameter "HAL" and "LAL" modes, as temperature absolute value or as differential relative to the Setpoint. 0 = absolute value; 1 = relative value.
AF1/AF2	Alarm differential.
HA1/HA2	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.
LA1/LA2	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.
P1O/P2O	Alarm exclusion time after instrument is switched on following a power failure.
dA1/dA2	Alarm exclusion time after defrost.
OA0	RitAlarm signalling delay after digital input disabling (door open). Alarm means high/low temperature alarm.
tdO	Time out after alarm signal following digital input disabling (door open).
tA1/tA2	Temperature alarm signal delay time.
dAt	Alarm signal for defrosting end due to time-out. n = alarm not enabled; y = alarm enabled.
EAL	External alarm to lock controls (n=does not lock, y=locks).
AOP	Polarity of alarm output. 0 = alarm active and output disabled; 1 = alarm active and output enabled.

LIGHT AND DIGITAL INPUTS (folder with "Lit" label)

The Digital Input can be configured as the auxiliary/door switch (parameter H11=3). In this case, a digital output should be provided as an auxiliary (parameters Hxx=5). As mentioned above, this function allows the light relay to be activated if it was de-energized and vice versa.

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.

To maintain correct operation, the status is stored 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

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).
OFL	The light key always disables the light relay. Enables switching off via the cell light switch even if the delay after closing the door set by dLt is enabled

dOd	Door switch switches off loads. On digital input command, programmed as door-switch, this allows all loads to be stopped when the door is opened and restarted when the door is closed (respecting any timings in progress).
dAd	Digital input activation delay
1o2	Determines which controller the function associated with the digital input is to act on: 0=acts on both controllers 1=acts on controller 1 2=acts on controller 2

LOC	DISPLAY (folder with "diS" label) Keyboard locking. It is still possible to enter parameter programming and modify the parameters, including the status of this parameter, in order to allow keyboard unlocking. y = yes (keyboard locked); n = no. When enabled (value other than 0), it constitutes the access key for level 1 parameters.
PA1	View with decimal point. y = yes (view with decimal point); n = no (only integers).
ndt	Calibration 1/2/3. Positive or negative temperature value added to the value read by probe 1/2/3.
CA1/CA2/CA3	Viewing mode during defrosting. 0 = shows the temperature read by the thermostat probe; 1 = locks the reading at 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.
ddl	Select °C or °F for displaying the temperature read by the probe. 0 = °C, 1 = °F. PLEASE NOTE: switching between °C and °F or vice versa DOES NOT modify the setpoint, differential, etc. (for example set=10°C become 10°F).
dro	Determines which parameter the display is to show by default: 0=Setpoint 1=Probe 1 (cell 1) 2=Probe 3 (defrost) 3=Probe 2 (cell 2) 3=Probe 1 and Probe 2 alternating for 4 seconds
ddd	

CONFIGURATION (folder with "CnF" label)

H06	key/aux input/light door switch active when the instrument is off (but powered)
H11	Configuring digital inputs/polarity. 0 = disabled 1 = defrosting 2 = reduced set 3 = door switch 4 = external alarm 5 = on-off (STAND-BY) 6 = maintenance requested
H21	Digital output configurability (A) 0 = disabled 1 = compressor 2 = defrosting 3 = fans 4 = alarm 5 = auxiliary/light 6 = compressor 2 7 = Stand-by 8 = buzzer
H22	Digital output configurability (B) (Analogous to H21)
H23	Digital output configurability (C) (Analogous to H21)
H24	Digital output configurability (D) (Analogous to H21)
H25	Digital output configurability (E) (Analogous to H21)
H26	BUZZER output configurability 0= disabled; 8 = enabled; 1-7 = not used

Function R.H.%

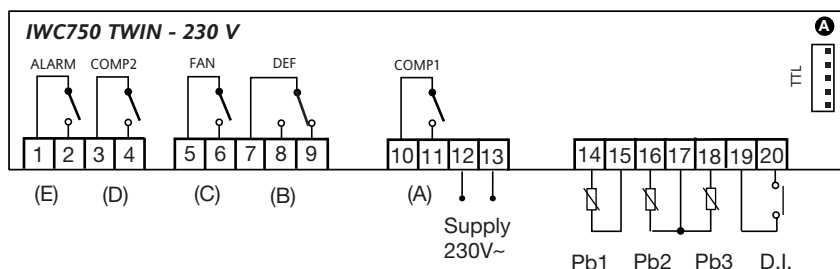
Pressing the key programmed as R.H.% forces the fans always ON": the fans operate continuously (always ON). During defrosting the fans are controlled according to the defrosting parameters. In particular during the dripping cycle, they will be turned off even if RH% is enabled. **NOTE: RH% status takes priority over all other parameters.** 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.

H31	UP key configurability 0 = NOT used 1 = defrost 2 = light 3 = reduced set 4 = function R.H.% 5 = stand-by 6 = maintenance requested 7 = defrost 2
H32	DOWN key configurability (Analogous to H31)
H33	Defrost 2 key configurability (Analogous to H31)
H34	Defrost 1 key configurability (Analogous to H31)
H35	on/off key configurability (Analogous to H31)
H52	Reduced set on first, second or both setpoints 0=only on Setpoint 1 1=only on Setpoint 2 2=on both Setpoints
rEL	Device version: read only parameter.
tAb	Reserved: read-only parameter.

UL	COPY CARD (folder with label "Fpr") - (see "Copy Card" section) Upload. Programming parameter transfer from instrument to Copy Card.
dL	Download. Programming parameter transfer from Copy Card to instrument.
Fr	Format. Erasing all parameters in the key. PLEASE NOTE: using the "Fr" parameter (key formatting) results in permanent loss of data inserted in key. The operation cannot be cancelled.

TECHNICAL DATA AND ELECTRICAL DIAGRAM

Container	PC+ABS UL94 V-0 resin plastic casing, polycarbonate glass
Dimensions	front 180x37 mm, depth 69mm
Mounting	panel mounting with 150x31mm (+0.2/-0.1mm) drilling template
Usage temperature	-5°C...55°C
Storage temperature	-30°C...85°C
Usage and storage environment humidity	10...90% RH (non-condensing)
Display range	NTC: -50...110°C (-58...230°F) on display 3 and a half digits and sign
Analog inputs	3 NTC type inputs
Serial	TTL for Copy Card connection
Digital outputs (configurable)	1 SPST 20A 2 hp 250 Vac 1 SPDT 16(3)A 1 hp 250 Vac 1 SPST 8(3)A 1/2 hp 250 Vac 1 SPST 8(3)A 1/2 hp 250 Vac 1 SPST 8(3)A 1/2 hp 250 Vac
Buzzer output	only on models where provided
Measurement range	from -50 to 110°C
Accuracy	better than 0.5% of full-scale +1 digit.
Resolution	0.1°C (0.1°F up to +199.9°F; then 1°F)
Consumption	9 VA
Power supply	230 Vac 10% 50/60 Hz.



*1 - 2	N.O. relay output (E) (default ALARM par.H25)	10 - 11	N.O. relay output (A) (default compressor 1 / par. H21)
3 - 4	N.O. relay output (D) (default compressor 2 / par. H24)	12 - 13	Power Supply 230VAC
5 - 6	N.O. relay output (C) (default fans / par. H23)	A	TTL input for Copy Card
7 - 8	N.O. relay output (B) (default defrost / par. H22)	14 - 15	Probe 1 input Pb1 (cell 1) NTC
7 - 9	N.C. relay output (B) (default defrost / par. H22)	15 - 16	Probe 2 input Pb2 (cell 2) NTC
		17 - 18	Probe 2 input Pb3 (2nd evaporator) NTC
		18 - 19	Digital input (Digital Input, D.I.)

NOTE: The technical specifications stated in this document regarding the measurement (range, accuracy, resolution, etc.) refer strictly to the instrument and not to any accessories provided, such as the probes.

This means, for example, that the error introduced by the probe must be added to the error of the instrument.

MECHANICAL ASSEMBLY

The instrument is designed for mounting on a panel. Drill a 150x31 mm hole 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 places with ordinary or normal levels of pollution. Always make sure that the area next to the cooling openings of the instrument is adequately ventilated.

ELECTRICAL CONNECTIONS

Warning! Turn the machine off before working on electrical connections.

The instrument is equipped with screw terminal boards for connection of electrical cables with a diameter of 2.5 mm² (one conductor only per terminal for power connections). For the capacity of the terminals, see the label on the instrument.

The relay outputs are voltage free. Do not exceed the maximum permitted current; in case of higher loads, use an appropriate contactor. Make sure that power supply is the correct voltage for the instrument.

Probes have no connection polarity and can be extended using a normal bipolar cable (note that the extension of the probes influences the instrument's electromagnetic compatibility (EMC): take great care with the wiring).

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

CONDITIONS OF USE

PERMITTED USE

For safety reasons, the instrument must be installed and used according to the instructions provided. In particular, parts with dangerous voltage levels must not be accessible in normal conditions.

The device must be adequately protected from water and dust according to the application and must also only be accessible by 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 for safety aspects in accordance with harmonised European reference standards.

It is classified as follows:

- according to its construction, as an independently mounted automatic electronic control device;
- according to its automatic operating characteristics, as a 1B-type operated control type device;
- according to its software class and structure, as a Class A device.

UNPERMITTED USE

The unit must not be used for applications other than those described.

Note that the relay contacts provided are of a functional type and therefore subject to malfunction. Any protection devices required by product standards or dictated by common sense for obvious safety reasons must be applied externally to the instrument.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell & Controlli S.r.l. shall not be liable for damage or injury deriving from:

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

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