cod. 91544017
rel. 11/2021 EN

IS972LX - IS974LX

master/slave electronic controllers for “ventilated” refrigeration units with configurable outputs



BUTTONS AND LEDS

UP
Scrolls through the menu items
Increases the values
Activates manual defrost function (see par. H31)

DOWN
Scrolls through the menu items
Decreases the values
Parameter programmable (see H32 parameter)

fnc
ESC function (quit)
Parameter programmable (see par. H33)

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

Compressor or relay 1
ON when the compressor is started up;
blinking in case of delay, protection or blocked enabling

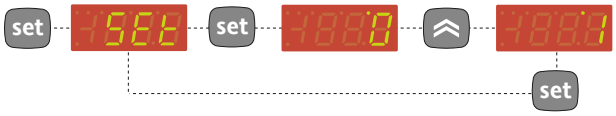
Defrost
ON when defrosting; blinking in case of manual enabling

Alarm
ON when the alarm is enabled;
blinking when the alarm is silenced

Fans
ON when the fan is working

SETTING THE SET POINT - MACHINE STATUS MENU

a) Press the ‘set’ button and release it to access the machine status menu.
In normal conditions, the label for the Set point values is found in the menu.
Once the ‘SEt’ label has been displayed, press the “set” button to display the Setpoint value.



The Setpoint value appears on the display.
To change the Set point value, use the “UP” and “DOWN” buttons within 15 seconds. If you press the “set” button again, when the fnc button is pressed or 15 seconds elapse, the last value displayed will be stored and the “SEt” label will reappear on the display.

b) If alarms are present, the “AL” label appears.



By using the “UP” and “DOWN” buttons, you can scroll through all the folders in the menu:
-AL: alarm folder (if alarms present, except for faulty probes/probe errors;
-SEt: Set point setting folder.

c) If an alarm condition exists when the Machine Status menu is accessed, the “ALfolder label appears.



(example: when maximum and minimum temperature alarms are present)

Use the UP and DOWN buttons to scroll through the list of active alarms and press ‘set’ to display the selected alarm.

PROGRAMMING MENU

The menu consists of 2 levels. Level 1, User Level Folders, can be accessed by pressing the ‘set’ button for 5 seconds (1)

Navigation at User level (1):



• By using the ‘UP’ / ‘DOWN’ buttons you can scroll through all the folders in the programming menu that only contain user level parameters (1)

How to access the Installer level (2):



• By using the ‘UP’ / ‘DOWN’ buttons, scroll through the user level folders (1) until the folder with the “CnF” label is displayed. Then press ‘set’ to access the parameters contained in it.

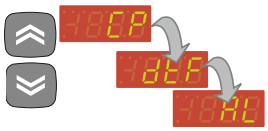


• By using the ‘UP’ / ‘DOWN’ all the parameters in the user level (1) in ‘CnF’ are displayed, continue until the ‘PA2’ label is not longer displayed and press ‘set’.



• By pressing the ‘set’ button next to ‘PA2’ the first folder containing installer level parameters will be displayed and then the ‘CP’ folder.

Navigation at Installer level (2):



• By using the ‘UP’ / ‘DOWN’ buttons you can scroll through all the folders in the programming menu that only contain installer level parameters (2)

How to modify the parameter value (on both levels):



• When the ‘set’ button is pressed, the first folder in the menu is displayed. (e.g.: “CP” folder)



• By using the ‘UP’ / ‘DOWN’ buttons you can scroll through all the folders in current level.



• By pressing the ‘set’ button next to the selected folder (in this case “AL”) the first parameter in the current level will be displayed. Select the desired parameter using the ‘UP’ / ‘DOWN’ keys.



• By pressing the ‘set’ button the value of the selected parameter is displayed and by using the ‘UP’ and ‘DOWN’ buttons, it can be modified.

PASSWORD

Access to parameter handling both at user level and installer level can be limited by using passwords. The passwords can be enabled by setting the PA1 (user password) and PA2 (installer password) in the ‘dIS’ folder. The passwords are enabled if the value of the 2 parameters PA1 and PA2 is not 0.



• To access the “Programming” menu hold down the “set” button for more than 5 seconds.
If specified, the user level(1) access PASSWORD will be requested



• If password 1 is enabled (not 0) you will be asked to enter it. Perform the operation by selected the correct value using the ‘UP’ e ‘DOWN’ keys and press the ‘set’ button to confirm.

Installer level (2) parameters

In the programming menu scroll through the folders containing the user level parameters using the UP’ and ‘DOWN’ buttons until the CnF folder is displayed.

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- Press the 'set' button to enter the 'CnF' folder where the'PA2' label is present.
- Scroll through the folder parameters and press the 'set' button next to the 'PA2' label, '0' will appear on the display.



- Use the 'UP' / 'DOWN' buttons to select the correct value of the installer password and then press the 'set' button to access the installer level parameters (2).

If the password is not entered correctly, the device will display the 'PA2' label again and the operation will have to be repeated.

At each level in both menus, when the "fnc" button is pressed or the 15 second time out elapses, you are taken back to the higher display level and the last value on the display is stored.

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). upload (UL label), download (dL label) and copy card formatting (Fr label) operations are performed in the following way:



- The 'FPr' folder contains the commands necessary for use of the Copy Card. Press 'set' to access the functions.



- Use the 'UP' / 'DOWN' buttons to display the required function. Press the 'set' and uploading (or downloading) will be performed.

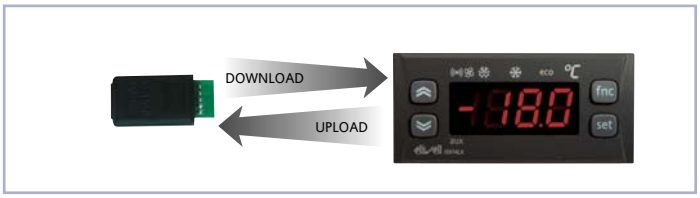


- If the operation is successful 'y' will be displayed, if it is not successful, 'n' will be displayed.

Download from reset

Connect the copy card when the instrument is OFF. The programming parameters are downloaded when the device is switched on. At the end of the lamp test, the following messages are displayed for about 5 seconds:

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



NOTE:

- after the parameters have been downloaded, the device uses the downloaded parameter map settings.
- **see** "FPr folder" in Parameter Table and Description of parameters

ALARMS

LABEL	ALARM	CAUSE	EFFECTS	Resolving problems	NOTES
E1	Probe 1(control) faulty	• measuring of values outside the nominal reading range • control probe faulty/shorted/open probe	"E1" label appears on display; Controller enabled as indicated by the On1 and OF1 parameters if programmed for the Duty Cycle	• check the probe wiring • replace the probe	
E2	Probe 2 (evaprator) faulty	• measuring of values outside the nominal reading range • control probe faulty/shorted/open probe	"E2" label appears on display;	• check the probe wiring • replace the probe	
AH1	High temperature alarm	• value read by probe 1 > HAL after time equal to "tAO". (see " MIN MAX ALARMS" and description of "HAL", "Att" and "tAO" parameters)	Alarms created in the "AL" folder with the AH1/AH2 label	• Wait for temperature value read by probe 1 to fall below HAL	
AL1	Low temperature alarm	• value read by probe 1 < LAL after time equal to "tAO". (see " MIN MAX ALARMS" and description of "LAL", "Att" and "tAO" parameters)	Alarms created in the "AL" folder with the AL1/AL2 label	• Wait for temperature value read by probe 1 to go above LAL	
Ad2	End of defrost due to time-out	• If defrost ends because of a time-out (instead of being caused by a defrost end temperature detected by the defrosting probe), an alarm is generated an the icon is turned on consequently.	Alarms created in the "AL" folder with the "Ad2" label	• Automatic back swing occurs when the next defrost starts • By pressing any key during the alarm condition, the signal light disappears. In order to really erase the alarm you must wait the next defrost.	
Opd	Open door alarm	• In case of an open door, in response to delay defined by tdO parameter the Open Door alarm is signaled.	Alarms created in the "AL" folder with the "Opd" label NOTE: parameter tAo does not set to zero in case the door is closed: actually, in case of continuous opening and closing of the door alarms would never be signalled.	• Automatic reset	
EA	External alarm	• control of alarm from active D.I. if "H11" = -5/5 (see description of "H11" parameter)	Alarms signalled in the "AL" folder with the EA label. Blocks controllers only if "H11"=-5 /5		
			ALL see Alarm LED – Signalling through buzzer. **ONLY IN MODELS WITH BUZZER AVAILABLE**	**ALL** • Manual silencing by pressing button	ALL – If there are alarm exclusion times (see parameter table "AL" folder) the alarm will not be signalled.

This family consist of a main unit called IS and an expansion module called EWEM, connected together with a telephone cable.

INSTALLATION

The instrument is designed for panel mounting. Make a hole of 29x71 mm, insert the instrument and fix it using the brackets provided. Do not mount the instrument in humid and/or dirty places; it is suitable for use in ordinary polluted places. Ventilate the place in proximity to the instrument colling slits.

ELECTRICAL WIRING

Attention! Never work on electrical connections when the machine is switched on.
The instrument is equipped with screw terminal boards for connection of electrical cables with a diameter of 2.5 mm^2 (one conductor only per terminal for power connections).
For the capacity of the terminals, see the label on the instrument.
The relay contacts are voltage free. Do not exceed the maximum current allowed; in case of higher loads, use an appropriate contactor. Make sure the power supply voltage complies with the one required by the instrument.

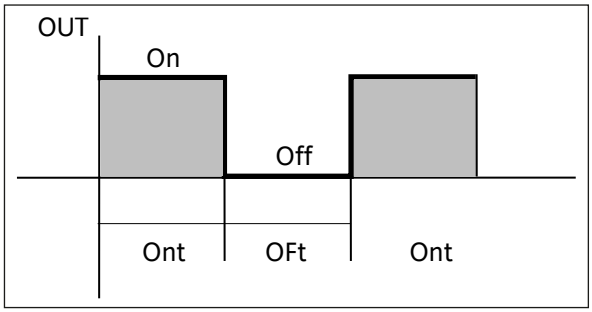
Probes have no connection polarity and can be extended using a regular bipolar cable (note that the extension of the probes affects the EMC electromagnetic compatibility of the instrument: pay extreme attention to wiring).
Probe cables, power supply cables and the TTL serial cables should be distant from power cables.

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 of the probe 1 (thermostat) causes the following:
• the code E1 is displayed
• the compressor is activated as indicated by the "On" and "Off" parameters if programmed for the duty cycle



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

UNPERMITTED USE
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.

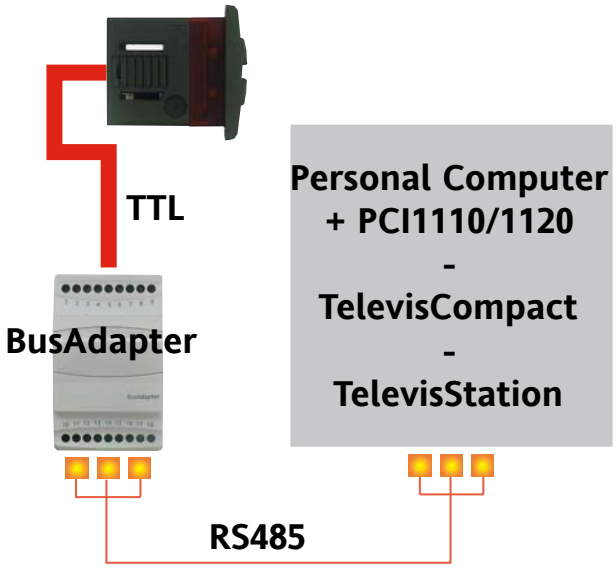
LIABILITY AND RESIDUAL RISKS
Eliwell & Controlli s.r.l. shall not be liable for any damages deriving from:
- installation/use other than that prescribed and, in particular, that which does not comply with safety standards anticipated by regulations and/or those given herein;
- use on boards which do 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;

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TelevisSystem

BusAdapter130/150
TTL - RS-485 serial interface on DIN rail for connecting the device and an RS-485 network designed for connection to Televis or ModBUS supervision system.

PCInterface1110/1120
RS-232/RS-485 serial interface for connecting a PC and a series of instruments in an RS-485 network. The device needs the BlueCard activation module supplied with the Eliwell software package licence to be plugged in.



Tab. 1 Parameter Table

****NOTE: At level 1 the folders will show only level 1 parameters. At level 2 the folders will show only level 2 parameters.**

	PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
CP		**COMPRESSOR REGULATOR (folder with "CP" label)**					
	diF	diFferential. Relay compressor tripping differential. The compressor stops on reaching the Setpoint value (as indicated by the adjustment probe), and restarts at temperature value equal to the Setpoint plus the value of the differential. Note: the value 0 cannot be assumed.	0.1...30.0	2.0		1	°C/°F
	HSE	Higher SEt. Maximum possible setpoint value.	LSE..302	99.0		1	°C/°F
	LSE	Lower SEt. Minimum possible setpoint value.	-55.0...HSE	-50.0		1	°C/°F
	OSP	Offset Setpoint: temperature value to be added algebraically to the setpoint in the case of reduced set enabled (Economy function). It can be activated through digital input or by a key configured for such use.	-30.0...30.0	0		**2**	°C/°F
	Cit	Compressor min on time. Minimum compressor activation time before any possible disabling. If set at 0 it is not active	0...250	0		**2**	min
	CAt	Compressor mAx on time. Maximum compressor activation time before any possible disabling. If set at 0 it is not active	0...250	0		**2**	min
	dOd	digital (input) Open door. Digital input user shut off. y = yes; n = no. Valid for parameter "H11" = ±4 (door switch).	n/y	n		**2**	flag
	dAd	digital (input) Activation delay. Delay time of digital input activation.	0...255	0		**2**	min
		COMPRESSOR PROTECTIVE DEVICE (folder with "CP" label)					
	Ont	On time (compressor). Compressor activation time in the event of faulty probe. If set to "1" with Oft at "0" the compressor is always on, while at Oft >0 it functions always in duty cycle mode. **see Duty Cycle diagram**	0...250	0		1	min
	OFt	OFF time (compressor). Compressor in disabled state time in the event of a faulty probe. If set to "1" with Ont at "0" the compressor is always off, while at Ont >0 it functions always in duty cycle mode. **see Duty Cycle diagram**	0...250	1		1	min
	dOn	delay (at) On compressor. Delay time in activating the compressor relay after switch-on of instrument	0...250	0		1	sec
	dOF	delay (after power) OFF. Delay after switch off; the indicated time must elapse between switch-off of the compressor relay and the successive switch-on.	0...250	0		1	min
	dbi	delay between power-on. Delay between switch-ons; the indicated time must elapse between two successive switch-ons of the compressor.	0...250	0		1	min
	OdO (!)	delay Output (from power) On. Delay time in activating the outputs after switch-on of the instrument or after a power failure.	0...250	0		1	min
dEF		**DEFROSTING REGULATOR (folder with "dEF" label)**					
	dty	defrost type. Type of defrosting. 0 = electric defrost; 1 = reverse cycle defrost (hot gas); 2 = Free defrost **see dCt-dty table**	0/1/2	0		1	num
	dit	defrost interval time. Interval between the start of two successive defrosting operations. U.M. Hours (default) /min/sec depending on dt1 parameter	0...250	6h		1	hours (/min/sec)
	dt1	defrost time 1. Measure unit for defrosting intervals ("dit" parameter). 0 = "dit" parameter in hours; 1 = "dit" parameter in minutes; 2 = "dit" parameter in seconds.	0/1/2	0		**2**	num
	dt2	defrost time 2. Measure unit for defrosting duration ("dEt" parameter). 0 = "dEt" parameter in hours; 1 = "dEt" parameter in minutes; 2 = "dEt" parameter in seconds.	0/1/2	1		**2**	num
	dCt	defrost Counting type. Selection of count mode for the defrosting interval. 0 = compressor operating hours (DIGIFROST® method); 1 = equipment operating hours; defrost counting is always active when the machine is on and starts at each power-on. ; 2 = compressor stop. **see dCt-dty table**	0/1/2	1		1	num
	dOH	defrost Offset Hour. Start-of-defrosting delay time from start up of instrument.	0...59	0		1	min
	dEt	defrost Endurance time. Defrosting time-out; determines duration of	1...250	30min		1	min
	dSt	defrosting. U.M. minutes (default) /hours/sec depending on dt2 parameter defrost Stop temperature. Defrost stop temperature (defined by the evaporator probe).	-50.0... 150	8.0		1	°C/°F
	dPO	defrost (at) Power On. Determines if at the start-up the instrument must enter defrosting (if the temperature measured by the evaporator allows this operation). y = yes, starts defrost at start-up; n = no, doesn't start defrost.	n/y	n		1	flag
	tcd	time compressor for defrost. Minimum time for compressor On or OFF before defrost. Negative values: compressor must be OFF for the time set by tcd (before defrost) Positive values : compressor must be ON for the time set by tcd (before defrost) If =0 parameter is disregarded	-31...31	0		**2**	min
	Cod	Compressor off (before defrost). Time for compressor OFF in proximity of the defrost cycle. If a defrost cycle is set within the programmed time for this parameter, the compressor is not started up.	0...60	0		**2**	min
FAn		**FAN REGULATOR (folder with "FAn" label)**					
	FPt	Fan Parameter type. "FSt" parameter mode. It can be displayed as temperature absolute value or as value related to Setpoint. 0 = absolute; 1 = relative.	0/1	0		**2**	flag
	FSt	Fan Stop temperature. Fan lock temperature; if the value, read by the evaporator probe, is higher than the set value, fans stop.	-50.0..150.0	2.0		1	°C/°F
	Fot	Fan on-start temperature. Fan starting temperature; if the temperature read by the evaporator is lower than the value set for this parameter, fans stay still.	-50.0..150.0	-50.0		**2**	°C/°F
	FAd	Fan differential. Fan starting differential (see par. "FSt" and "Fot").	1.0...50.0	2.0		1	°C/°F
	Fdt	Fan delay time. Delay time in activating fans after a defrost operation.	0...250	0		1	min
	dt	drainage time. Dripping time.	0...250	0		1	min
	dFd	defrost Fan disable. Allows to select the evaporator probes exclusion during defrost. y = yes; n = no.	n/y	y		1	flag
	FCO	Fan Compressor OFF. Allows to select compressor fans lock OFF (switched off). y = fans activated (with thermostat; based on the value read by the defrost probe, see parameter "FSt"); n = fans off; dc = duty cycle (by parameters "Fon" and "FoF").	n/y/dc	y		1	num
	Fod	Fan off (with opened) door. Fans activated with opened door. y = yes; n = no.	n/y	n		**2**	flag

	PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
FAn	FdC	Fan delay Compressor off. Fan stop delay time after compressor stop. In minutes. =0 function excluded	0..99	0		**2**	min
	Fon	Fan oFF (in duty cycle). Fan OFF time due to duty cycle Fan use with duty cycle mode; valid for FCO = dc and H42=1	0..99	0		1	min
	FoF	Fan oFF (in duty cycle). Fan OFF time due to duty cycle Fan use with duty cycle mode; valid for FCO = dc and H42=1	0..99	0		1	min
AL		**ALARMS (folder with "AL" label)**					
	Att	Alarm type. Parameter "HAL" and "LAL" modes, as temperature absolute values or as differential compared to the Setpoint. 0 = absolute value; 1 = relative value.	0/1	0		2	flag
	AFd	Alarm Fan differential. Alarm differential.	1.0...50.0	2.0		1	°C/°F
	HAL (5)	Higher ALarm. Maximum temperature alarm. Temperature value (absolute or related to Setpoint depending on Att parameter) which if exceeded in an upward direction triggers the activation of the alarm signal. **See Max/Min. Alarm Diagram;**	LAL...150.0	50.0		1	°C/°F
	LAL (5)	Lower ALarm. Minimum temperature alarm. Temperature value(absolute or related to Setpoint depending on Att parameter), which if exceeded in a downward direction, triggers the activation of the alarm signal. **See Max/Min. Alarm Diagram.**	-50.0...HAL	-50.0		1	°C/°F
	PAO (!)	Power-on Alarm Override. Alarm exclusion time after instrument switch on, after a power failure.	0...10	0		1	hours
	dAO	defrost Alarm Override. Alarm exclusion time after defrost.	0..999	0		1	min
	OAO	Output (door) Alarm Override. Delay time for temperature alarm signalling after disabling of digital input (or gate closure). Alarm is only for high-low temperature alarms.	0...10	0		**2**	hours
	tdO	Time-out Door Open. Alarm signalling delay time for gate open.	0...250	0		**2**	min
	tAO (6)	temperature Alarm Override. Temperature alarm signal delay time.	0...250	0		1	min
	dAt	defrost Alarm time. Alarm for defrost end due to time-out. n= alarm NOT enabled, y=alarm enabled	n/y	n		**2**	flag
	EAL	External Alarm Lock. External alarm for regulators stop. Allows the blocking of compressor, defrosting and fan regulators if the digital input (configured as external alarm) is	n/y	n		**2**	flag
	AOP	activated. n = not block; y = block. Alarm Output Polarity. Polarity of alarm output. 0 = alarm activated and output disabled; 1 = alarm activated and output enabled.	0/1	1		**2**	flag
Add		**COMUNICATION (folder with label "Add")**					
	dEA (!)	DEA= device number within the family (valid values: from 0 to 14)	0...14	0		1	num
	FAA (!)	FAA= device family (valid values: from 0 to 14) The value couple FAA and dEA represents the network address of the device and it is indicated in the following way: "FF.DD" (where FF=FAA and DD=dEA).	0...14	0		1	num
diS		**DISPLAY (folder with "diS" label)**					
	LOC	(keyboard) LOCk. Keyboard locking. However, you can enter parameter programming modify them along with the status of this parameter in order to allow keyboard locking. y = yes; n = no	n/y	n		1	flag
	PA1	PAssword 1. When enabled (value other than 0) it constitutes the access key for level 1 parameters.	0...250	0		1	num
	PA2***	PAssword 2. When enabled (value other than 0) it constitutes the access key for level 2 parameters.	0...255	0		**2**	num
	ndt	number display type. View with decimal point. y = yes; n = no	n/y	n		1	flag
	CA1	CAlibration 1.Calibration 1. Positive or negative temperature value added to the value read by probe 1, based on "CA" parameter settings.	-12.0...12.0	0		1	°C/°F
	CA2	CAlibration 2.Calibration 2. Positive or negative temperature value added to the value read by probe 2, based on "CA" parameter settings.	-12.0...12.0	0		1	°C/°F
	CA	CAlibration Intervention. Intervention on view offset, thermostat offset or both. 0= modifies the temperature displayed only; 1 = modifies the temperature used by regulators, not the temperature displayed, which stays unchanged. 2 = modifies the temperature displayed that is also used by regulators.	0/1/2	2		**2**	num
	LdL	Low display Label. Minimum value the instrument is able to display.	-55.0...302	-55.0		**2**	°C/°F
	HdL	High display Label. Maximum value the instrument is able to display.	-55.0..302	140.0		**2**	°C/°F
	ddL	defrost display Lock. Viewing mode during defrosting. 0 = shows the temperature read by the thermostat probe; 1 = locks the reading on the temperature value read by thermostat probe when defrosting starts, and until the next time the Setpoint value is reached; 2 = displays the label "deF" during defrosting, and until the next time the Setpoint value is reached.	0/1/2	1		1	num
	dro **(°)**	display read-out. Select °C or °F for displaying the temperature read by the probe. 0 = °C, 1 = °F. PLEASE NOTE: the switch between °C and °F DO NOT modify setpoint, differential, etc. (for example set=10°C become 10°F).	0/1	0		1	flag
	ddd	Selection of the value type to be shown on the display. 0 = Setpoint; 1 = probe 1; 2 = probe 2.	0/1/2	1		**2**	num
CnF		**CONFIGURATION (folder with "CnF" label)**					
	H00(!)(1)	Probe type selection, PTC or NTC. 0 = PTC; 1 = NTC.	0/1	1		1	flag
	H02	Time to enable keys, if these are configured for a specific function.	0...15	5		**2**	sec
	H11 (2)	Configurability digital inputs/polarity. 0 = disabled; ± 1 = defrosting; ± 2 = reduced set; ± 3 = not used; ± 4 = door switch; ± 5 = external alarm.	-5...5	0		**2**	num
	H21 (!)	Configurability digital output	0...5			**2**	num
	H22 (!)	Configurability digital output	0...5			**2**	num
	H23 (!)	Configurability digital output	0...5			**2**	num
	H24	Configurability digital output **FOR IS974LX ONLY**	0...5			**2**	num
	H25(!)(3)	Configurability buzzer output.	0...5			**2**	num

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CnF

PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
H31 (!)	Configurability UP key 0 = disabled; 1 = defrosting; 2 = auxiliary; 3 = reduced set (economy).	0...3	1		**2**	num
H32 (!)	Configurability DOWN key 0 = disabled; 1 = defrosting; 2 = auxiliary; 3 = reduced set (economy).	0...3	0		**2**	num
H33 (!)	Configurability FNC key (ESC function) 0 = disabled; 1 = defrosting; 2 = auxiliary; 3 = reduced set (economy).	0...3	0		**2**	num
H41	Regulating probe present. y = yes; n = no.	n/y	y		**2**	flag
H42	Evaporator probe present. y = yes; n = no.	n/y	y		1	flag
rEL	reLease firmware. Device version: read only parameter.	/	/		1	/
tAb	tAble of parameters. Reserved: read only parameter.	/	/		1	/
	COPY CARD (folder with "Fpr"label)					
UL	Up load. Programming parameter transfer from instrument to Copy Card.	/	/		1	/
dL	Down load. Programming parameter transfer from Copy Card to instrument	/	/		1	/
Fr	Format. Erasing all data in the copy card.	/	/		**2**	/

label PA2
Inside CnF folder it is possible to reach all level 2 parameters from label PA2 by pressing the "set" button
SEE 2) level 2 Parameters paragraph

PLEASE NOTE: using "Fr" parameter (copy card formatting) the data within the copy card will be lost permenently. The operation cannot be cancelled.

Fpr

(1) The default value is 1 (NTC input, see the label on the instrument).
(2) WARNING! positive o negative values change polarity; Positive values: active input for on contact; negative values: active input for off contact.
(3) Parameter visible in models with optional buzzer.
(5) If Alarms are relative to the Setpoint, HAL should be set to positive values and LAL to negative values
(6) referred exclusively to high/low temperature alarms

* VALUE column: to be filled manually, with customized settings (if different from the default value).
** LEVEL column: indicates the level of visibility of parameters accessible by PASSWORD (see the related paragraph)
*** PA2 is visible (it will be required, if necessary) at level 1 and can be set (editable) at level 2

(!) WARNING!
• If one or more of these parameters highlighted with (!) are modified, teh controlller must be switched off and switched on again to ensure correct operation.
• It is strongly recommended, anyway to switch off and switch on again the controller anytime parameters have been changed to prevent malfunctioning on configuration and/or ongoing timings.

(°) The mathematical conversion for temperature is °F=(9/5)* °C+32. For example: 32°F=0°C; 50°F=10°C.

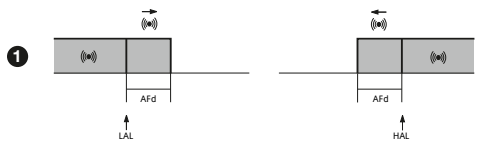
dro parameter: when changing from °C to °F or vice versa the mathematical conversion is NOT performed and the set point values, differentials, etc. are NOT modified. All the temperature values set will therefore need reviewing. e.g. with a set point set to 10°C, when changing the value to °F the set point will become 10°F and not 50°F (according to the conversion table)

dCt-dty table

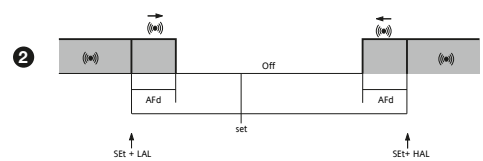
dCt	defrost relay	dty	regulator-cool mode relay (in defrost mode)
0= regulator-cool mode operating hours (DIGIFROST® method);	ON when dit is reached OFF when Pb2=dSt or for time (dEt)	0 = electrical defrosting; 1 = cycle reversing defrosting 2 = Free mode defrosting	OFF ON ON if requested by set point
1= equipment operating hours	ON when dit is reached OFF when Pb2=dSt or for time (dEt)	0 = electrical defrosting; 1 = cycle reversing defrosting 2 = Free mode defrosting	OFF ON ON if requested by set point
2 = regulator-cool mode stop.	ON when regulator-cool mode OFF OFF when Pb2=dSt or for time (dEt)	0 = electrical defrosting; 1 = cycle reversing defrosting 2 = Free mode defrosting	OFF **NOT RECOMMENDED!!!** ON if requested by set point

MAX-MIN ALARMS

Temperature expressed as an absolute value (par "Att"=0) Abs(olute)



Temperature in relation to set point (par "Att"=1) 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 positive only)
Maximum temperature alarm	Temperature greater than or equal to HAL (HAL with sign)	Temperature greater than or equal to set point +HAL (HAL positive only)
Minimum temperature alarm back swing	Temperature higher than or equal to LAL+AFd	Temperature greater 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-\|LAL\|

TECHNICAL DATA IS 972 LX

Frontal panel protection: IP65.
Casing: plastic body in resin type
PC+ABS UL94 V-0, inspection window in polycarbonate, buttons in thermoplastic resin.
Dimensions: frontal panel 74x32 mm, depth 30 mm.
Installation: on panel, with drilling template 71x29 mm (+0.2/–0.1 mm).
Use temperature: –5...55 °C.
Storage temperature.: –30...85 °C.
Use environment humidity: 10...90 % RH (not condensing).
Storage environment humidity: 10...90% RH (not condensing).
Viewing range: –50...110 (NTC); –55...140 (PTC) °C without decimal point (selectable through parameter on 3 digit & $^1/_2$ + mark display.
Digital input : 1 configurable low voltage digital input
Connections: telephone connector for the connection with EWEM 233 power module, screw connectors for the digital input.
Serial: TTL for connection to Copy Card or Televis**System**.
Measuring range: from –55 to 140 °C.
Accuracy: 0.5% better than end scale + 1 digit.
Resolution: 1 or 0.1 °C.
Power Consumption: see EWEM module.
Power Supply: see EWEM module.

PLEASE NOTE: please refer to label on the instrument for relay capacity, power supply and terminals layout.

WIRING IS 972 LX

3 - 4	Digital input
A	TTL input for Copy Card and connection to Televis**System**
B	connection IS 972 LX-EWEM 233

WIRING EWEM 243

1 - 2	output relay **OUT 3**
4 - 5 - 6	output relay **OUT 2**
11 - 12	Power Supply 230V
16	Probe 1 input (thermostat)
17	Probe 2 input (evaporator)
18	common analogue (probes) inputs
22 - 24	output relay **OUT 1**
B	connection IS 974 LX-EWEM 233

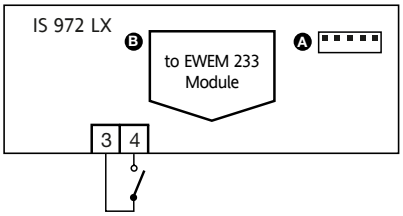
NOTE: Default user settings

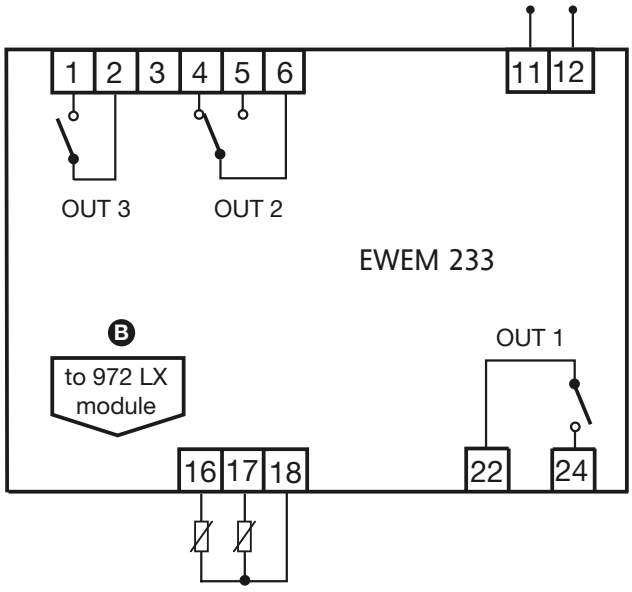
TECHNICAL DATA EWEM 233

Casing: plastic 4-Din module 70x85 mm (2.75x3.34").
Depth: 61 mm (2.40").
Mounting: Din-rail (Omega 3) or surface mounting.
Connections: telephone connector for the connection with IS 972 LX main module.
Use temperature: –5...50 °C.
Storage temperature: –30...75 °C.
Use environment humidity: 10...90 % RH (not condensing).
Storage environment humidity: 10...90% RH (not condensing).
Analog inputs: two NTC or PTC type (selectable by parameter configurable from display on IS 972 LX main module).
Digital outputs (configurable):
- 1 SPST output on 15(12)A 250V~ relay **- OUT1**
- 1 SPDT output on 10(7)A 250V~ relay, **- OUT2**
- 1 SPST output on 16(8)A 250V~ relay **- OUT3.**

Power Consumption: 3VA.
Power supply: 230 V~ ±15%.

PLEASE NOTE: The technical data included in this document, related to measurement (range, accuracy, resolution, etc.) refer to the instrument itself, and not to its equipment such as, for example, sensors.
This means, for example, that sensor(s) error(s) shall be added to the instrument's one.





All relay outputs (OUT) from EWEM 233 module are configurable by parameter according to the following table:

terminal	relay out.	related parameter	range	default
1 - 2	**OUT 3**	**H22**	**0...5**	**2**
4 - 5 - 6	**OUT 2**	**H23**	**0...5**	**3**
22 - 24	**OUT 1**	**H21**	**0...5**	**1**

relay output configurability, related parameter value H21-H22-H23:
0 = disabled; 1 = compressor; 2 = defrosting;
3 = fans; 4 = alarm; 5 = auxiliary.

TECHNICAL DATA IS 974 LX

Frontal panel protection: IP65.
Casing: plastic body in resin type
PC+ABS UL94 V-0, inspection window in polycarbonate, buttons in thermoplastic resin.
Dimensions: frontal panel 74x32 mm, depth 30 mm.
Installation: on panel, with drilling template 71x29 mm (+0.2/–0.1 mm).
Use temperature: –5...55 °C.
Storage temperature.: –30...85 °C.
Use environment humidity: 10...90 % RH (not condensing).
Storage environment humidity: 10...90% RH (not condensing).
Viewing range: –50...110 (NTC); –55...140 (PTC) °C without decimal point (selectable through parameter on 3 digit & $^1/_2$ + mark display.
Digital input : 1 configurable low voltage digital input
Connections: telephone connector for the connection with EWEM 243 power module, screw connectors for the digital input.
Serial: TTL for connection to Copy Card or Televis**System**.
Measuring range: from –55 to 140 °C.
Accuracy: 0.5% better than end scale + 1 digit.
Resolution: 1 or 0.1 °C.
Power Consumption: see EWEM module.
Power Supply: see EWEM module.

PLEASE NOTE: please refer to label on the instrument for relay capacity, power supply and terminals layout.

WIRING IS 974 LX

3 - 4	Digital input
A	TTL input for Copy Card and connection to Televis**System**
B	connection IS 974 LX-EWEM 243

WIRING EWEM 243

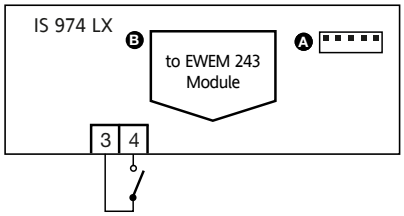
1 - 2	output relay **OUT 4**
2 - 3 - 4	output relay **OUT 2**
5 - 6	output relay **OUT 3**
11 - 12	Power Supply 230V
16	Probe 1 input (thermostat)
17	Probe 2 input (evaporator)
18	common analogue (probes) inputs
22 - 24	output relay **OUT 1**
B	connection IS 974 LX-EWEM 243

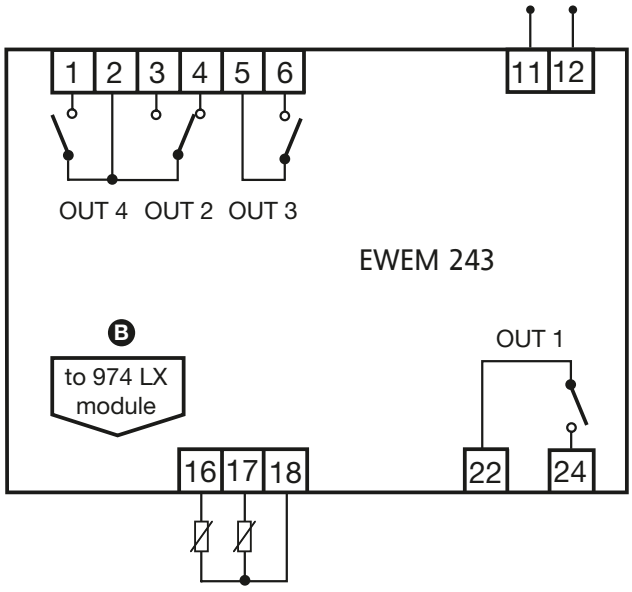
NOTE: Default user settings

TECHNICAL DATA EWEM 243

Casing: plastic 4-Din module 70x85 mm (2.75x3.34").
Depth: 61 mm (2.40").
Mounting: Din-rail (Omega 3) or surface mounting.
Connections: telephone connector for the connection with IS 974 LX main module.
Use temperature: –5...50 °C.
Storage temperature: –30...75 °C.
Use environment humidity: 10...90 % RH (not condensing).
Storage environment humidity: 10...90% RH (not condensing).
Analog inputs: two NTC or PTC type (selectable by parameter configurable from display on IS 974 LX main module).
Digital outputs (configurable):
- 1 SPST output on 15(12)A 250V~ relay **- OUT1**
- 1 SPDT output on 10(7)A 250V~ relay **- OUT2**
- 2 SPST outputs on 8(3)A 250V~ relays, **- OUT3, OUT4**.

Power Consumption: 3VA.
Power supply: 230 V~ ±15%.





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Telford, TF3 3BL
United Kingdom

All relay outputs (OUT) from EWEM 243 module are configurable by parameter according to the following table:

terminal	relay out.	related parameter	range	default
1 - 2	**OUT 4**	**H24**	**0...5**	**4**
2 - 3 - 4	**OUT 2**	**H23**	**0...5**	**2**
5 - 6	**OUT 3**	**H22**	**0...5**	**3**
22 - 24	**OUT 1**	**H21**	**0...5**	**1**

relay output configurability, related parameter value H21-H22-H23-H24:
0 = disabled; 1 = compressor; 2 = defrosting;
3 = fans; 4 = alarm; 5 = auxiliary.

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