cod. 9IS42067
rel. 8/06 -GB-

ID 974LX

electronic controllers for “ventilated” refrigeration units



KEYS

UP Button
Scrolls through the menu items
Increases the values
Activates manual defrosting
Parameter programmable
(see H31 parameter)

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

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)

USER INTERFACE

The user has a display and four buttons that can be used to control the status of the device and program it. At start-up the device runs a Lamp Test; and the display and LEDs flash for a few seconds to check that they are working correctly. The device has two main menus: Machine Status and Programming.

ACCESSING AND USING MENUS
Resources are arranged in a menu that can be accessed by pressing and quickly releasing the “set” button (Machine Status menu) or by holding the “set” button down 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 the keyboard is not used for more than 15 seconds (timeout) or the “fnc” button is pressed once, the last value shown on the display is confirmed and the display returns to the previous screen.

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;
-Pb2: Probe value folder 2 - If present (parameter H42=y).

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”).

Displaying probes
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 device is in standby, it is possible to program parameters regardless of whether the display is on or 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 parame n be protected by a second password (see “PA2” parameter in the “diS” folder, which is different from the PA2 label in the “CnF” folder). If specified, level 2 parameters are not visible to the user. To access the “CnF” folder, users will have to insert the level 2 access PASSWORD. If the correct password is entered, the label of the first folder in the programming menu displays.
To open the folder, press “set”. The label of the first visible parameter will appear.
To scroll through the other parameters,

LEDs

Position	Associated function	Status
	Compressor or relay 1	ON for compressor on; blinking for protection 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
	Fans	ON when fan is on

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 device off and on again after changing the configuration of parameters to prevent configuration problems 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 the desired values to them, open the Programming menu in the “diS” folder (0=disabled):
If passwords are enabled, they will be requested:
- Use PA1 to open the Programming menu (see the “Programming Menu” section);
- Use PA2 in the “Cnf” folder containing the level 1 parameters.

ACTIVATING MANUAL DEFROST CYCLE
To enable the defrost cycle manually, press the “UP” button (if configured =1) for 5 seconds.
If the defrost conditions are not correct (the temperature of the evaporator probe is higher than the end of defrost 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 (level 2 parameter)
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 --> istr.
These operations can be performed by accessing the folder with the “FPr” label and selecting the “UL”, “dL” or “Fr” commands. The operation is confirmed when you press 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.
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:
• label dLY if copy operation is successful
• label DLn if operation fails
PLEASE NOTE:
• After the parameters have been downloaded, the device uses the downloaded parameter map settings.

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	Delay of D.I. enabling
OAO	Alarm signal delay after dis Enabling the digital input (door closed
tdO	Time out door open. Time out signalled when D.I is enabled (door opened).
iH11	Configurability of digital input/polarity 1
H21...H23	Digital output configurability 1...3

Parameter H11 is used to configure the digital input with values between -5 and +5. Positive and negative values enable you to select the polarity assigned to the input and:
• The “-” sign indicates that the function is active with closed contact
• The “+” sign indicates that the function is active when the contact is open

DEFROST CONTROL
The device can be used to select different types of defrost cycles 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)

DIAGNOSTICS

The alarm signal generated by a faulty thermostat control probe (probe 1), is displayed as E1.
The alarm signal generated by a faulty evaporator probe (probe 2) is displayed as E2.

Table of faulty probes

DISPLAY	FAULT
E1	Faulty probe 1 (thermostat control)
E2	Faulty probe 2 (evaporator)

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 display on the device, but are visible in the “Machine Status” menu under the “AL” folder.
The maximum and minimum temperature alarm is regulated by 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 active (see alarm exclusion parameters), the alarm icon lights up permanently and the relay that is configured as an alarm is enabled. 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 defrost stops due to a timeout (instead of being stopped by the detection of the end defrost temperature), 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.
In the model ID 974 LX with Switching power supply only one voltage free relay output is present, on all other models on the contrary all relay outputs 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 device. special care must be used when wiring).
Probe cables, power supply cables and the TTL serial cable should be kept separate from power cables.

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.

Do not install the devices in excessively humid and/or dusty locations. These devices are designed to be used in locations with ordinary pollution levels
Always make sure that the area next to the instrument cooling slits is adequately ventilated.

TECHNICAL DATA

Front protection: IP65.
Casing: PC+ABS UL94 V-0 resin plastic body, polycarbonate front, thermoplastic resin buttons.
Dimensions: front 74x32 mm, 60 mm depth. **(depth 68 mm only for ID 974 switching)**
Mounting: and to be installed on panels with a 71x29 mm drilling template (+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: 2 PTC or NTC inputs (parameter selectable).
Digital inputs: 1 voltage-free parameter-configurable digital input.
Serial: TTL for connection to Copy Card and Televis **System**.
Digital outputs: 3 outputs on relays:
• (A) SPDT 8(3)A 250V~
• (B) SPST 8(3)A 250V~
• (C) SPST 5(2)A 250V~
Measurement range: from –55 to 140°C.
Accuracy: better than 0.5% of bottom scale +1 digit.
Resolution: 1 or 0.1 °C.
Consumption: 1,5 VA (model 12V~/⎓) / 3 VA (model 230V~) / 3W (model switching)
Power supply: 230V~ or 12 V~/⎓ ±10% 50/60 Hz (see also in other models)

VERSION WITH COMPRESSOR RELAY 15(8)A 1 hp

Digital outputs: 3 outputs on relays:
• (A) SPDT 8(3)A 250V~
• (B) SPST 8(3)A 250V~
• (C) SPST 15(8)A 250V~
Consumption: 3 VA.
Power supply: 12 V~/⎓ ±10% 50/60 Hz

MODEL with Switching power supply:
Digital outputs: 3 outputs on relays:
• (A) first output SPDT 8(3)A 250V~,
• (B) second output SPST 3A 250V~,
• (C) third output SPST 11A 250V~.
Consumption: 3W max.
Power Supply: 95...240V~ ±10%

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

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:

• according to its manufacture: as an automatic electronic control device to be incorporated;
• 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 Controls 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.

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 device.

Tab. 1 Table of parameters

	PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
CP		**COMPRESSOR CONTROLLER (folder with "CP" label)**					
	diF	diFferential. Compressor relay intervention differential; the compressor stops when the Set point value is reached (as indicated by the control probe), and restarts at temperature value equal to the Set point 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 set point value.	LSE..302	99.0		1	°C/°F
	LSE	Lower SEt. Minimum possible set point value.	-55.0...HSE	-50.0		1	°C/°F
	OSP	Offset SetPoint. Temperature value to be added algebraically to the set point if reduced set enabled (Economy function). It can be enabled from the digital output or a specially configured button.	-30.0...30.0	0		2	°C/°F
	Cit	Compressor min on time. Minimum compressor activation time before disabling. If set at 0 it is not active.	0...250	0		2	min
	CAt	Compressor mAx on time. Maximum compressor activation time before disabling. If set at 0 it is not active.	0...250	0		2	min
	dOd	digital (input) Open door. Digital input switches off loads. y = yes; n = no. Valid for parameter H11 = ±4 (door microswitch).	n/y	n		2	flag
	dAd	digital (input) Activation delay. Delay in enabling digital input.	0...255	0		2	min
		COMPRESSOR PROTECTIONS (folder with "CP" label)					
	Ont	On time (compressor). Compressor activation time in the event of a faulty probe. If set to "1" with Oft at "0" the compressor is always on whereas if OFt >0 it operates in duty cycle mode.	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 Oft at "0" the controller is always off whereas if Ont >0 it operates in duty cycle mode.	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 subsequent switch-on.	0...250	0		1	min
	dbi	delay between power-on. Delay between switch-ons; the indicated time must elapse between two subsequent switch-ons of the compressor.	0...250	0		1	min
	OdO	delay Output (from power) On. Delay time in activating outputs after the start of the device or after a power failure.	0...250	0		1	min
dEF		**DEFROST CONTROLLER (folder with "dEF" label)**					
	dty	**defrost type. Type of defrost. .**(see Par.dCt table) 0 = electrical defrosting; 1 = cycle reversing defrosting (hot gas); 2 = Free mode defrost (regardless of compressor).	0/1/2	0		1	flag
	dit	defrost interval time. Period of time between the start of two defrost operations. **0= function disabled (defrost is NEVER performed)**	0...250	6		1	hours
	dt1	defrost time 1. Unit of measurement for defrost times ("dit" parameter). 0 = "dit" parameter expressed in hours. 1 = "dit" parameter expressed in minutes. 2 = "dit" parameter expressed in seconds.	0/1/2	0		2	flag
	dt2	defrost time 2. Measure unit for defrosting duration ("dEt" parameter). 0 = "dEt" parameter expressed in hours. 1 = "dEt" parameter expressed in minutes. 2 = "dEt" parameter expressed in seconds.	0/1/2	1		2	flag
	dCt	defrost Counting type. Selection of defrost time count mode. **(see Par.dCt table)** 0 = Hours of operation of compressor (DIGIFROST® method) 1 = Hours of operation of device 2 = compressor stop.	0/1/2	1		1	flag
	dOH	defrost Offset Hour. Start-of-defrost delay time from start up of instrument.	0...59	0		1	min
	dEt	defrost Endurance time. Defrosting time-out; determines maximum duration of defrosting.	1...250	30		1	min
	dSt	defrost Stop temperature. Defrosting end temperature (determined by evaporator probe).	-50.0... 150	8.0		1	°C/°F
	dPO	defrost (at) Power On. Determines if the instrument must enable the defrost cycle at start-up (if the temperature measured by the evaporator allows this): y = Yes; n = No.	n/y	n		1	flag
	tcd	time compressor for defrost. Minimum time for compressor ON or OFF before defrost Negative values: The compressor must stop (OFF) for the preset interval of time (before defrost) – Positive values: The compressor must stay ON for the preset interval of time (before defrost)	-31...31	0		2	min
	Cod	Compressor off (before) defrost. Time for compressor OFF before defrost cycle. If a defrost cycle is set within the programmed time for this parameter, the compressor is not started.	0...60	0		2	min
FAn		**FAN CONTROLLER (folder with "FAn" label)**					
	FPt	Fan Parameter type. "FSt" parameter mode that can be expressed as an absolute temperature value or as a value related to the Set point. 0 = absolute; 1 = relative.	0/1	0		2	flag
	FSt	Fan Stop temperature. Fan stop temperature; a value read by the evaporator probe that is higher than the set value causes the fans to stop.	-50.0..150.0	2.0		1	°C/°F
	Fot	Fan on-start temperature. Fan start temperature; if the temperature read by the evaporator is lower than the value set for this parameter, the fans do not start.	-50.0..150.0	-50.0		2	°C/°F
	FAd	FAn differential. Fan activation intervention differential (see par. "FSt" and "Fot").	1.0...50.0	2.0		1	°C/°F
	Fdt	Fan delay time. Delay time at fan start after a defrosting cycle.	0...250	0		1	min
	dt	drainage time. Dripping time.	0...250	0		1	min
	dFd	defrost Fan disable. Used to select the exclusion of the evaporator fans during defrost. y = Yes; n = No.	n/y	y		1	flag
	FCO	Fan Compressor OFF. Used to select fan stop when compressor is switched OFF. y = fans active (with thermostat; in response to the value read by the defrost probe, see "FSt" parameter); n = fans off; dc = duty cycle (using parameters "Fon" and "FoF").	n/y/dc	y		1	flag
	Fod	Fan off (with open) door. Fans on with open door. y = Yes; n = No.	n/y	n		2	flag
	FdC	Fan delay Compressor off. Fan switch off delay time after compressor stop.	0..99	0		2	min

	PAR.	DESCRIPTION	RANGE	DEFAULT	VALUE*	LEVEL**	U.M.
FAn	Fon	Fan on (in duty cycle). Time fans are ON in duty cycle. Use of fans in duty cycle mode; valid for FCO = dc	0..99	0		1	min
	FoF	Fan oFF (in duty cycle). Time fans are OFF in duty cycle. Use of fans in duty cycle mode; valid for FCO = dc	0..99	0		1	min
AL		**ALARMS (folder with "AL" label)**					
	Att	Alarm type. Parameter "HAL" and "LAL" modes, as absolute temperature values or as differential compared to the Set point. 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	Higher ALarm. Maximum temperature alarm. Temperature value (difference between the set point and the absolute value; see paragraph Att). If the upper limit is exceeded, the alarm signal is enabled.	LAL...150.0	50.0		1	°C/°F
	LAL	Lower ALarm. Minimum temperature alarm. Temperature value (difference between the set point and the absolute value; see paragraph Att). If the lower limit is exceeded, the alarm signal is enabled.	-50.0...HAL	-50.0		1	°C/°F
	PAO	Power-on Alarm Override. Alarm exclusion time after the start of the device following 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. Temperature alarm signal delay time after the disabling of the digital input (i.e. door closed).	0...10	0		2	hours
	tdO	Time out door open. Alarm signal timeout after the disabling of the digital input (door open).	0...250	0		2	min
	tAO	temperature Alarm Override. Delay of temperature alarm signal.	0...250	0		1	min
	dAt	defrost Alarm time. Alarm signal for defrost stop due to timeout. n = Does not enable the alarm; y = Enables the alarm.	n/y	n		2	flag
	EAL	External Alarm Lock. External alarm locks controllers; it locks the compressor controllers, defrost and fans if the digital input (configured as external alarm) is enabled. n = Does not lock; y = locks.	n/y	n		2	flag
	AOP	Alarm Output Polarity. Polarity of alarm output. 0 = alarm active and output disabled; 1 = alarm active and output enabled.	0/1	1		2	flag
Add		**COMMUNICATION (folder with "Add" label)**					
	dEA	dEA = Device address in family (valid values from 0 to 14).	0...14	0		1	num
	FAA	FAA = Device family (valid values from 0 to 14) Values FAA and dEA represent the device network address and are identified with "FF.DD" (where FF=FAA and DD=dEA).	0...14	0		1	num
diS		**DISPLAY (folder with "diS" label)**					
	LOC	(keyboard) LOCK. Keyboard locked. However, you can still access the parameter programming menu and modify parameters including the status of this parameter to allow keyboard unlocking. y = yes; n = no.	n/y	n		1	flag
	PA1	PAssword 1. When enabled (value is not 0) it represents the access key to level 1 parameters.	0...250	0		1	num
	PA2***	PAssword 2. When enabled (value is not 0) it represents the access key to level 2 parameters.	0...255	0		2	num
	ndt	number display type. Display with decimal point. y = Yes; n = No.	n/y	y		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. Offset intervenes on display, thermostat control or both. 0 = modifies the temperature displayed only; 1 = Changes the temperature used by regulators, not the temperature displayed, which stays unchanged. 2 = Changes the temperature displayed that is also used by regulators.	0/1/2	2		2	num
	LdL	Low display Label. Minimum value the device 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. Display mode during defrosting. 0 = displays the temperature read by the thermostat control probe; 1 = Freezes the reading on the temperature value read by the thermostat control probe when the defrost cycle starts until the next set point value is reached. 2 = displays the label "deF" during defrosting until the next time the Set point value is reached.	0/1/2	1		1	num
	dro (3)	display read-out. Select °C or °F to display temperature read by probe. 0 = °C, 1 = °F.	0/1	0		1	flag
	ddd	Selection of the value type to be displayed. 0 = Set point 1 = Probe 1 2 = Probe 2	0/1/2	1		2	num
CnF		**CONFIGURATION (folder with "CnF" label)**					
	H00 (1)	For selection of probe type, PTC or NTC. 0 = PTC; 1 = NTC.	0/1	0		1	flag
	H02	Button activation time if buttons are configured for a second function.	0...15	5		2	sec
	H11 (2)	Configurability of digital inputs/polarity 0 = disabled; ±1 = defrosting; ±2 = reduced set point; ±3 = Auxiliary ±4 = door switch; ±5 = external alarm.	-5...5	0		2	num
	H21	Digital output configurability **(B)** 0 = disabled; 1 = compressor; 2 = defrosting; 3 = fans; 4 = alarm; 5 = auxiliary	0...5	1		2	num
	H22	Digital output configurability **(A)** Same as H21.	0...5	2		2	num
	H23	Digital output configurability **(C)** Same as H21.	0...5	3		2	num

CnF

PAR.	DESCRIPTION	RANGE	DEFAULT	LEVEL**	U.M.
H25 (4)	Buzzer output configurability. Same as H21.	0...5	4	2	num
H31	UP button configurability. 0 = disabled; 1 = defrosting; 2 = Auxiliary 3 = Reduced set (economy)	0...3	1	2	num
H32	DOWN button configurability. 0 = disabled; 1 = defrosting; 2 = Auxiliary 3 = Reduced set (economy)	0...3	0	2	num
H33	Function key configurability (ESC function). 0 = Disabled 1 = defrosting; 2 = Auxiliary 3 = Reduced set (economy)	0...3	0	2	num
H41	Presence of regulation probe	n/y	y	2	flag
H42	Presence of evaporator probe	n/y	y	1	flag
rEL	reLease firmware. Device version: read only parameter.	/	/	1	/
tAb	tAble of parameters. Reserved: read only parameter.	/	/	1	/

Fpr

	COPY CARD (folder with "Fpr" label)				
UL	Up load. Transfer of programming parameters from instrument to Copy Card.	/	/	1	/
dL	Down load. Transfer of programming parameters from Copy Card to instrument.	/	/	1	/
Fr	Format. Cancelling all data entered in the copy card.	/	/	2	/

N.B.: If "Fr" parameter (copy card formatting) is used, the data entered in the card will be permanently lost. This operation cannot be undone.

(1) For 230 V~ models, the default value is 1 (NTC input, see label on the device).
(2) Positive values: Active function for closed contact; negative values: Active function with open contact
(3) When you change the set points from °C to °F or vice versa, set point and differential values, etc., are NOT converted. (for example, "set=10 °C becomes set=10°F")
(4) Parameter displayed on models with optional buzzer.
* VALUE column: to be compiled manually with any custom settings (if different from default value).
** LEVEL column: indicates the visibility level of parameters accessed using a PASSWORD (see relevant paragraph)
*** PA2 is visible (it will be requested, if specified) at level 1 and can be set (modified) at level 2

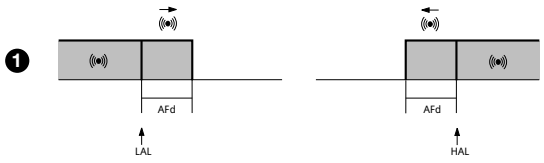
dCt	defrost relay	dty	compressor relay (in defrost mode)
0= operating hours Compressor (DIGIFROST® method);	ON when dit is reached OFF when Pb2=dSt or for time (dEt)	0 = electrical defrosting; 1 = cycle reversing defrosting; 2 = Free mode defrosting.	OFF ON ON if requested from set point
1= Hours of operation of device	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 from set point
2 = compressor stop.	ON when compressor is 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 from set point

Set	DESCRIPTION
SEt	Regulation values ranging between the minimum set point LSE and the maximum set point HSE. The set point value is displayed in the machine status menu.
PA2	**The CnF folder you only be used to access level 2 parameters from label PA2 after you have entered the correct password by pressing the "set" button**

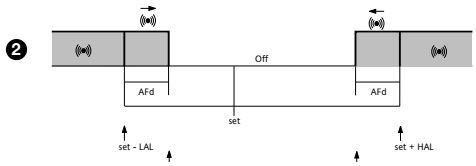
NOTE: Level 1 enables you to display the parameters of level 1 only.
Level 2 enables you to display the parameters of level 2 only.

MAX/MIN ALARMS

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



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

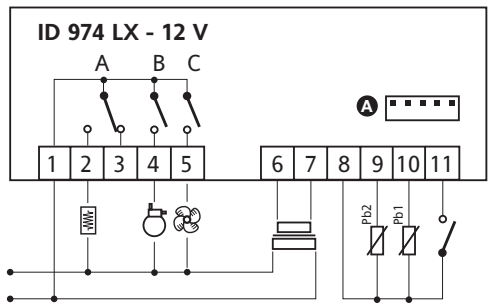


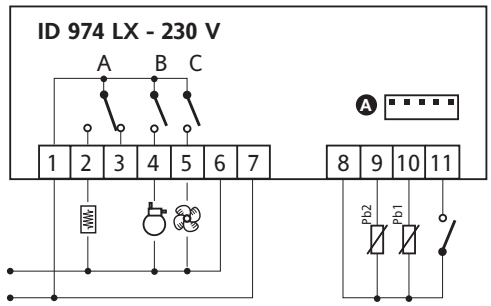
	Abs(olute)	reL(ative)
Minimum temperature alarm	Temperature lower than or equal to LAL (LAL with sign)	Temperature lower than or equal to set point+LAL (LAL only positive)
Maximum temperature alarm	Temperature higher than or equal to HAL (HAL with sign)	Temperature higher than or equal to set point+HAL (HAL only positive)
Minimum temperature alarm back swing Temperature	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	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+LAL<set because set+(-|LAL|)=set-|LAL|

WIRING DIAGRAM

MODEL 12-230V⎓



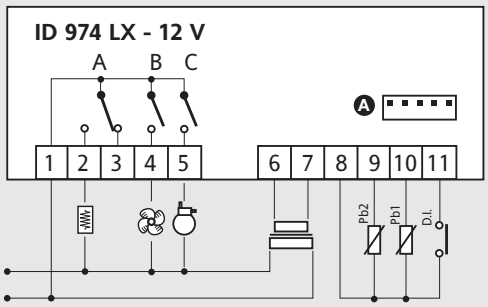


TERMINALS

1	Common relay (A)-(B)-(C) **15A max.**
2	N.O. defrost relay **(A)**
3	N.C. defrost relay **(A)**
4	Compressor relay output **(B)**
5	Fan relay output **(C)**
6 - 7	Power supply
8 - 9	Probe input 2 (evaporator)
8 - 10	Probe input 1 (thermostat)
8 - 11	Digital input
A	TTL input for Copy Card and connection to Televis system

NOTE: Default load settings

MODEL with RELAY 15(8)A 1 hp

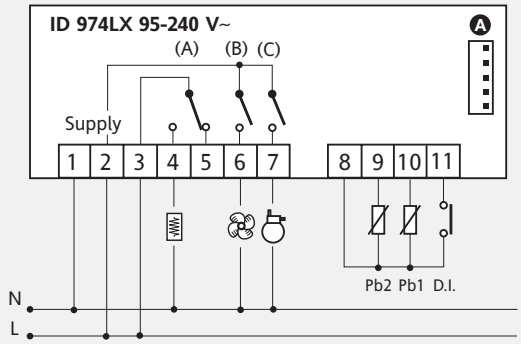


TERMINALS

1	Common relay (A)-(B)-(C) **15A max**
2	N.O. defrost relay **(A)**
3	N.C. defrost relay **(A)**
4	Fan relay output **(B)**
5	Compressor relay output **(C)**
6 - 7	Power supply 12V~/⎓
8 - 9	Probe input 2 (evaporator)
8 - 10	Probe input 1 (temperature control)
8 - 11	Digital input
A	TTL input for Copy Card and the connection of TelevisSystem

NOTE: Default load settings

MODEL with Switching Power Supply



TERMINALS

3 - 4	N.O. defrost relay **(A)**
3 - 5	N.C. defrost relay **(A)**)
2 - 6	Fan relay output **(B)**)
2 - 7	Compressor relay output **(C)**
8 - 9	Probe input 2 (evaporator)
8 - 10	Probe input 1 (thermostat)
8 - 11	Ingresso digitale D.I.
1 - 2	Power supply - 95...240V~
A	TTL input for Copy Card

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TelevisSystem

BusAdapter130/150
TTL - RS-485 serial interface on DIN rail to connect the device
to a RS-485 network designed for the connection to a Televis supervision system.

PCInterface1110/1120
RS-232/RS-485 serial interface to connect a PC to several devices connected to a RS-485 network.
The BlueCard activation module with Eliwell software license must be plugged into the special slot.

