ETC–974 Operation Instructions

1. Working conditions:

1.1. Power supply: 230VAC±10% 50/60Hz
1.2. Rated current of the relays (refrigeration, defrost and fan): 8A/220VAC
1.3. Use temperature: -5°C ~ 55°C Relative humidity: 10% ~ 90% RH (not condensing)
1.4. Storage temperature: -30°C ~ 85°C

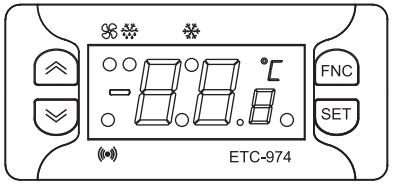
2. Specification:

2.1. Product: Length 77× Width 34.5 × Depth 58 (mm)
2.2. Mounting size: Length 71 × Width 29 (mm)
2.3. Probe wire length: 2M (including the probe)

3. Technical Parameters:

3.1. Temperature controlling range: NTC probe: –50…110°C (-58...230°F)
3.2. Display resolution: 1°C/0.1°C (With the switch mode between integer and decimal)
3.3. Accuracy: NTC: ±0.5°C (-30°C-50°C), others, ±1°C
3.4. Probe type: NTC (-50°C～120°C)

4. Operation and display panel:



FNC key: Exit SET key: Set

⩓ key: Up ⩔ key: Down

Position	Related Function	Status
❄	Compressor	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

5. Controller parameters and operation:

5.1. Set the temperature setpoint

To access the user menu, press and quickly release the “set” key. If alarms are not present, the label “SEt” appears. By using the “UP” and “DOWN” keys you can scroll through the other folders in the menu:

-Pb1: probe 1 value folder; -Pb2: probe 2 value folder; -SEt: Setpoint setting folder.

The step of setting the temperature is as below:

5.1.1. When it displays the measured temperature in the display panel, press SET key, it will display Set.
5.1.2. At this time, press SET key, you could view the current temperature setpoint.
5.1.3. Press ⩓ key or ⩔ key to modify the setpoint.
5.1.4. Press FNC key, it will display the measured temperature, and exit from the temperature setting. If high/low temperature alarm happens, user could inquiry alarm type through parameter folders “AL”.

5.2. Parameter setting

ETC-974 has classifies all parameters into seven folders according to the objects and functions: CP、Def、FAn、AL、diS、CnF、FPr, the method to enter the folder is as below:

5.2.1. When it displays the measured temperature in the display panel, press SET key for at least five seconds, it will display the first parameter folder code CP.
5.2.2. At this time, press SET key, it enters the parameter folder CP, and it will display the first parameter diF.
5.2.3. Press ⩓ key or ⩔ key, it will display all parameters under the folder of CP in circulation.
5.2.4. If need to view or modify one of the parameters, when it displays the parameter code in the display panel, press SET key to view the parameter setpoint, and then press ⩓ key or ⩔ key to modify the setpoint.
5.2.5. Press FNC key, it will exit from the parameter folder of CP, and it will restore to display the parameter CP. Press FNC, it will restore to display the measured temperature value and exit from parameter setting.

5.3. Enter the parameter folders of、Def、FAn、 AL、diS、CnF、FPr

5.3.1. When it displays the first parameter folder code CP, press ⩓ key or ⩔ key, it will display each parameter folder code in circulation.
5.3.2. Select the desired parameter folder code and press SET key, and it will display first parameter of the current parameter folder.
5.3.3. The method to view, modify and exit the parameter value will be the same as above.

5.4. Manual activation of the defrosting cycle

To manually activate the defrosting cycle, press the “UP” key for 5 seconds. If defrosting conditions are not present, (for example the evaporator probe temperature is higher than defrost stop temperature), and the display will blink three times, in order to indicate that the operation will not be performed.

5.5. Password setting

ETC-974 has a parameter PA1 which permits user setting a number as the password to enter the parameter folders. In this way, if uses press SET key for five seconds, it will not display the first parameter folder CP, instead, it displays parameter code PAI. Press SET key and then press ⩓ key or ⩔ key, input the correct password, it will display parameter folder CP. Other operation is the same as “parameter setting”.

5.6. Alarm codes

5.6.1. E1: Probe 1 in failure
5.6.2. E2: Probe 2 in failure
Note: If simultaneous, they will be showed on the display alternately, every 2 seconds.
5.6.3. EE: Eeprom data storage error
5.6.4. AH1: High temperature alarm
5.6.5. AL1: Low temperature alarm
Note: To silence alarms press any key.

6. Parameter table:

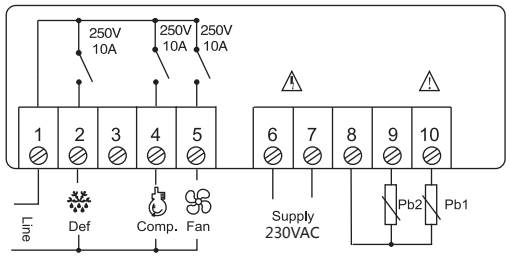
COMPRESSOR REGULATOR (folder with “CP” label)					
	Parameter code	Description	Set range	Default value	Unit
1	diF	diFferential. Relay compressor tripping differential. The compressor stops on reaching the Setpoint value (as indicated by the adjustment probe), and restarts at temperature value equal to the Setpoint plus the value of the differential. Note: the value 0 cannot be assumed.	(0.1...30.0)	2.0	°C/°F
2	HSE	Higher SEt. Maximum possible setpoint value.	(LSE...302)	99.0	°C/°F
3	LSE	Lower SEt. Minimum possible setpoint value.	(-55.0...HSE)	-50.0	°C/°F
4	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.	(0 ... 250)	0	min
5	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.	(0 ... 250)	1	min
6	dOn	delay (at) On compressor. Delay time in activating the compressor relay after switch-on of instrument.	(0 ... 250)	0	S
7	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	min
8	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	min
9	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	min

	Parameter code	Description	Set range	Default value	Unit
DEFROSTING REGULATOR (folder with "dEF" label)					
10	dtY	defrost type. Type of defrosting. 0 = electric defrost; 1 = reverse cycle defrost (hot gas); 2 = Free defrost (compressor hot).	(0…2)	0	number
11	dit	defrost interval time. Interval between the start of two successive defrosting operations.	(0...250)	6	hours
12	dCt	defrost Counting type. Selection of count mode for the defrosting interval. 0 = compressor operating hours; 1 = Real Time – appliance operating time; 2 = compressor stop.	(0... 2)	1	number
13	dOH	defrost Offset Hour. Start-of-defrosting delay time.	(0…59)	0	min
14	dEt	defrost Endurance time. Defrosting time-out; determines duration of defrosting.	(1…250)	30	min
15	dSt	defrost Stop temperature. Defrost stop temperature (defined by the evaporator probe).	(-50.0...150.0)	8.0	°C/°F
16	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; n = no.	(0=n ... 1=Y)	n	flag
FANS REGULATOR (folder with "FAn" label)					
17	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	°C/°F
18	FAd	Fan differential. Fan starting differential (see par. "FSt").	(1.0...50.0)	2.0	°C/°F
19	Fdt	Fan delay time. Delay time in activating fans after a defrost operation.	(0...250)	0	min
20	dt	drainage time. Dripping time.	(0...250)	0	min
21	dFd	defrost Fan disable. Allows to select the evaporator probes exclusion during defrost. y = yes; n = no.	(0=n...1=Y)	y	flag
22	FCO	Fan Compressor OFF. Allows to select compressor fans lock OFF (switched off). y = fans activated (with controller; based on the value read by the defrost probe,see parameter "FSt"); n = fans off; dc = not used	(0=n ...1=Y ... 2=dc)	y	flag
ALARMS (folder with "AL" label)					
23	AFd	Alarm Fan differential. Alarm differential.	(1.0...50.0)	2.0	°C/°F
24	HAL	Higher ALarm. Maximum temperature alarm.Temperature value (with regard to Setpoint) which if exceeded in an upward direction triggers the activation of the alarm signal.	(LAL...150.0)	50.0	°C/°F
25	LAL	Lower ALarm. Minimum temperature alarm. Temperature value (with regard to Setpoint), which if exceeded in a downward direction, triggers the activation of the alarm signal.	(-50.0...HAL)	-50.0	°C/°F
26	PAO	Power-on Alarm Override. Alarm exclusion time after instrument switch on, after a power failure.	(0...10)	0	hours
27	dAO	defrost Alarm Override. Alarm exclusion time after defrost.	(0...999)	0	min
28	tAO	temperature Alarm Override. Temperature alarm signal delay time.	(0...250)	0	min
DISPLAY (folder with "diS" label)					
29	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.	(0=n ...1=Y)	n	flag
30	PA1	PAssword 1. When enabled (value other than 0) it constitutes the access key for level 1 parameters.	(0…250)	0	number
31	ndt	number display type. View with decimal point. y = yes; n = no	(0=n ...1=Y)	y	flag
32	CA1	CAlibration 1. Calibration 1. Positive or negative temperature value added to the value read by probe 1.	(-12.0...12.0)	0.0	°C/°F
33	CA2	CAlibration 2. Calibration 2. Positive or negative temperature value added to the value read by probe 2.	(-12.0...12.0)	0.0	°C/°F

	Parameter code	Description	Set range	Default value	Unit
34	ddL	defrost display Lock. Viewing mode during defrosting. 0 = shows the temperature read by the controller probe; 1 = locks the reading on the temperature value read by controller 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...2)	1	number
35	dro	display read-out. Select °C or °F for displaying the temperature read by the controller 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	number
CONFIGURATION (folder with "CnF" label)					
36	H00	Probe type selection 1 = NTC.	(0...1)	1	number
37	H42	Evaporator probe present.	(0=n...1=Y)	y	flag
38	rEL	reLease firmware. Device version: read only parameter.	/		
39	tAb	tAble of parameters. Reserved: read only parameter.	/		
COPY CARD (folder with "Fpr" label)					
40	UL	Up load. Programming parameter transfer from instrument to Copy Card.		/	
41	dL	Down load. Programming parameter transfer from Copy Card to instrument		/	
42	Fr	Format. the default parameters of the instrument will be downloaded to the copy card.		/	

Note: After setting the parameters about timing, it is suggested to power on the instrument again.

7. Wiring Diagram:



★Caution:

1. Confirm whether the power voltage meets the requirements of controller power supply, or else, the instrument might work improperly even burnout.
2. Probe down-leads and power wires should be kept for a proper distance to avoid possible interference.

Appendix 1 Character Set: