

# User Manual ECS-974neo Temperature Controller

**Elitech®**

## 1. Product overview

ECS-974neo is a universal standard temperature controller.

## 2. Display and operation panel



Mounting size: 71 x 29 mm

Product size: 78.5 x 34.5 x 74 mm

## 3. Technical parameters

- 1)Temperature measuring range: -50°C~99°C(Only when sensor calibration value is set to 0)
- 2)Resolution: 0.1°C/1°C settable
- 3)Accuracy: ±1°C(-40°C~50°C), ±2°C(others)
- 4)Temperature control range: -50°C~99°C
- 5)Power supply: 220 VAC±10 %, 50/60Hz; Overall power consumption: <3W
- 6)Input port: Cabinet sensor, Evaporator sensor
- 7)Output port: Cooling/Defrost/Fan
- 8)Protection grade of front panel: IP65
- 9)Operating ambient temperature: 0°C~55°C
- 10)Storage temperature: -25°C~75°C
- 11)Storage humidity: 20%~85% (non-condensing)

## 4. LED

LED	Symbol	Status	Meaning
Setting	set	ON	Set administrator menu
Cooling		ON	Cooling starts.
		OFF	Cooling stops.
		Flash	Cooling delays.
Defrost		ON	Defrost starts.
		OFF	Defrost stops.
Fan		ON	Fan starts.
		OFF	Fan stops.
Drip	drip	ON	Dripping.
	drip	OFF	Drip stops.

## 5. Parameter table

No.	Menu Item	Description	Setting range	Default	Unit
0	SET	Temperature set-point	User menu	LSE~HSE	4.0°C
1	PA1	Administrator menu password	Administrator menu	00~250	-
2	dF	Differential	0.1°C~30.0°C	2.0	°C
3	HSE	Higher SET: Max possible set-point	SET~99.0	90.0	°C
4	LSE	Lower SET: Min possible set-point	-50.0~5°F	-50.0	°C

No.	Menu Item	Description	Setting range	Default	Unit	Setting range	Default	Unit
5	On	On: On time (compressor). Compressor activation time in the event of a faulty probe.	0~250	0	min			
6	Off	If On=0 - the compressor is off. If Off=0 and On=0, the compressor is always on.	0~250	1	min			
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	OdO	Delay Output (from power) On. Delay time in activating the outputs after switch-on of the controller or after a power failure.	0~250	0	min			
9	dTy	Defrost type:0 = electric defrost; 1 = reverse cycle defrost (hot gas); 2 = Free defrost (compressor hot).	0~2	0	/			
10	dit	Defrost interval time. Interval between the start of two successive defrost operations.	1~250	1	/	0~1/2	1	/
11	dCt	Defrost Counting type. Selection of count mode for the defrost interval. 0 = compressor operating hours; 1 = fixed time interval; 2 = compressor stop hours.	1~59	1	min			
12	dOH	Defrost offset hour. Start-of-defrost delay time from startup of controller.	1~59	1	min	0~250	30	min
13	dTT	Defrost endurance time. Defrost time-out; dtt=0, defrost is disabled	n/y	y	/			
14	H42	Whether to enable evaporator sensor: y=yes; n=no						
15	oSt	Defrost stop temperature				-50.0~99.0	8.0	°C
16	dPO	Defrost (at) Power On.. Determines if at the start-up the controller must enter defrosting (if the temperature measured allows this operation). Y = yes; N = no.	n/y	n	/			
17	Fst	Fan stop temperature				-50.0~99.0	2.0	°C
18	FAd	Fan activation differential				1.0~50.0	2.0	°C
19	Fdt	Fan delay time. Delay time in activating fans after a defrost operation.	0~250	0	min	1~250	1	min
20	dt	Drainage time. Dripping time						
21	dFd	Defrost fan disable. Allows to select the evaporator probes exclusion during defrost. Y = yes; N = no.	n/y	y	/			
22	fCO	Fan Compressor OFF. Allows selecting compressor fans lock OFF (switched off). Y = n/y fans activated; N = fans off	0.1~20.0	4.0	°C			
23	HAL	High Alarm differential	0.1~20.0	4.0	°C			
24	LA1	Low Alarm differential	0~15	0	hour			
25	PAO	Power-on Alarm Override. Alarm exclusion time after defrost.	0~250	0	min			
26	dAO	Defrost Alarm Override. Alarm exclusion time after defrost.	0~250	0	min			
27	tAO	Temperature Alarm Override. Temperature alarm signal delay time.						
28	LOC	Keyboard locking Y = yes; N = no	n/y	n	/			
29	PA1	Password 1.	0~250	5	/			
30	ndt	number display type. View with decimal point: Y = yes; N = no	n/y	y	/			
31	CA1	Calibration 1. Positive or negative temperature value added to the value read by probe 1.	-12.0~12.0	0	°C			
32	CA2	Calibration 2. Positive or negative temperature value added to the value read by probe 2.	-12.0~12.0	0	°C			
33	dL	Defrost display Lock. Viewing mode during defrosting. 0 = shows the temperature read by the cabinet probe; 1 = locks the reading on the temperature value read by cabinet probe when defrosting starts, and until the next time the set point value is reached; 2 = displays "dEF" during defrosting, and until the next time the Set-point value is reached.	0/1/2	1	/			



Fault	E1	Cabinet sensor fault
E2	AH1	High cabinet temperature alarm
AL1	ER	Low cabinet temperature alarm
ER	EP	Copy card programming failure
EP	RS1	Reset to default (the second copy).

1) Do distinguish the ports of sensor lead, power cord and relays. Please do not connect lines wrong. The relay cannot be overloaded.

2) Wrong redundancies disconnecton of power supply first.

The controller is forbidden to be used in water or too humid environment, high temperature, strong electromagnetic interference or strong corrosion environment.

1) The power voltage must be in accordance with the voltage labeled on the controller. Please ensure the stability of power voltage.

2) Suggest keeping suitable distance between sensor lead and power cord to avoid possible interference.

3) Remove the sensor by slightly pulling out its end downwards.

#### \* Note:

When evaporator sensor is faulty or disabled, fan does not run based on the value read by the evaporator probe, i.e. in cooling status:

FCD=(Fan active), fan runs when compressor switches on for cooling.

FCD=(Fan off), fan runs when compressor switches off.

Fan is activated when Fan delay time (Fdt) elapses after a defrost operation.

Fan stops during defrosting.

In defrosting status: Fd=D(Defrost fan disable), fan runs during defrosting.

Fan stops when compressor switches off.

High cabinet temperature alarm is triggered when cabinet temperature > Set value + HAL.

Low cabinet temperature alarm is removed when cabinet temperature < Set value - HAL.

delay elapses. AL1 is displayed. Low cabinet temperature alarm is triggered when cabinet temperature < Set value, dAO (defrost Alarm

Note: Temperature alarm delays equals to PAO (Power On After Idle) after power on for the first time, dAO (defrost Alarm

Overidle) during defrosting and PAO (temperature Alarm Overidle) in other conditions.

When evaporator sensor is enabled (HAL=Y), fan runs per evaporator temperature. Fan runs when the temperature value read by evaporator probe < FS1(fan stop temperature) - Fad (Fan activation differential). Fan stops when the temperature value read by evaporator probe

based on the value read by the evaporator probe only based on the value read by the evaporator probe. FCD=(Fan off), fan runs only

in defrosting status: Fd=D(Defrost fan disable), fan runs only based on the value read by the evaporator probe.

Fan is activated when Fan delay time (Fdt) elapses after a defrost operation.

Fan stops during defrosting.

Fan stops when compressor switches off.

When evaporator sensor is faulty or disabled, fan runs when compressor switches on for cooling.

Fan is activated when Fan delay time (Fdt) elapses after a defrost operation.

Fan stops during defrosting.

Fan stops when compressor switches off.

When evaporator sensor is faulty or disabled, fan runs when compressor switches on for cooling.

Fan is activated when Fan delay time (Fdt) elapses after a defrost operation.

Fan stops during defrosting.

Fan stops when compressor switches off.

When evaporator sensor fails, E1 is displayed. When evaporator sensor fails, E2 is displayed.

When cabinet temperature alarm is triggered when cabinet temperature > Set value + HAL (High Alarm differential), and temperature

alarm elapses. AL1 is displayed. Low cabinet temperature alarm is removed when cabinet temperature < Set value - HAL.

High cabinet temperature alarm is triggered when cabinet temperature > Set value + HAL (High Alarm differential), and temperature

alarm elapses. AL1 is displayed. Low cabinet temperature alarm is triggered when cabinet temperature < Set value - HAL.

delay elapses. AL1 is displayed. Low cabinet temperature alarm is triggered when cabinet temperature < Set value - HAL.

Low cabinet temperature alarm is removed when cabinet temperature < Set value - HAL.

delay elapses. AL1 is displayed. Low cabinet temperature alarm is triggered when cabinet temperature < Set value - HAL.

High cabinet temperature alarm is triggered when cabinet temperature > Set value + HAL (High Alarm differential), and temperature

alarm elapses. AL1 is displayed. Low cabinet temperature alarm is triggered when cabinet temperature < Set value - HAL.

delay elapses. AL1 is displayed. Low cabinet temperature alarm is triggered when cabinet temperature < Set value - HAL.

High cabinet temperature alarm is triggered when cabinet temperature > Set value + HAL (High Alarm differential), and temperature

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delay elapses. AL1 is displayed. Low cabinet temperature alarm is triggered when cabinet temperature < Set value - HAL.

High cabinet temperature alarm is triggered when cabinet temperature > Set value + HAL (High Alarm differential), and temperature

alarm elapses. AL1 is displayed. Low cabinet temperature alarm is triggered when cabinet temperature < Set value - HAL.

## 9. Safety Precautions

Defrost type	Electric defrost	Reverse cycle defrost	Free defrost	Dripping
Compressor is on	Four-way valve closes.	Compressor is on	Compressor is off	Electric heating is off
Compressor is off	Four-way valve opens.	Compressor is on	Compressor is off	Compressor is off
Electric heating is on	Four-way valve opens.	Compressor is on	Compressor is off	Four-way valve opens.
Electric heating is off	Four-way valve opens.	Compressor is off	Compressor is off	Compressor is off

6) Defrost type: dtY = 0: electric defrost; dtY = 1: reverse cycle defrost (hot gas); dtY = 2: free defrost (compressor hot).

dL=2: displays the label "def" during defrosting, and until the set-point value is reached.

8. Fault code