E-1000 Temperature controller instruction

Description:

The E-1000 temperature controller is a smart "easy" to program temperature controller, designed for temperature control applications which require cooling and heating functions. The E-1000 controller has the following functions:temperature measuring, display and control; temperature calibration; lighting control; temperature sensor probe; one key recovery to factory default; key lock.

Operating conditions:

- Working voltage: 220VAC±10% 50/60Hz;
- Cooling relay max current10A/220VAC or 16A/220VAC
- Heating relay max current 10A/220VAC
- Lighting relay max current 10A/220VAC;

Operating environment:

- Temperature -5 C - 60C; relative humidity: 10%--90% {non-condensing);
- Storage temperature: -25C -75C;

Specification:

- Product size: L85 x H35 x W63.8 (mm);
- Installation opening: L71xW29 (mm);
- Sensor length: 2M (including probe)

Function and technical parameters:

- Main functions: Cooling and heating , running time based defrost cycle, lighting control.
- Temperature controlling range: -40C - 99C
- Display resolution 0.1C
- Accuracy -30C - 50C ,±1C
- Sensor type: NTC (10Kohm/25C , B value 3435K)

Operation and display panel

Touch Keys description:

Heat on Temp set; Cool on Temp.set; lighting(); Up (⬆), Down (⬇), /OK,

Display description:

The display panel displays three digits, two status indicating symbols (key lock and lighting), four function description words “heat”, “cool”, “defrost cycle”, “defrost time”.

Under normal running conditions, all function description word indicators are off. If an output is triggered, the word "heat" will light during heating output and the word "cool" will light during cooling output. If defrost is running, the word "defrost" will light.

When adjusting the temperature settings, either “cool on’ or “heat on” is displayed.

Routine operation indicator status description:

Indicator	Symbols	Status	Description
Key Lock	🔒	On	Keys Locked
		Off	Keys unlocked
Cooling Output	cool	Off	Cooling Off
		Flashing On	cooling output compressor delay
		on	Cooling On
Heating Output	heat	Off	Heating Off
		On	Heating On
Defrost	defrost	Off	No Defrost (cooling enabled)
		On	Defrost On (cooling disabled)
Lighting	💡	Off	Lighting Off
		On	Lighting On

Control explanation:
Temperature setting is a combination of settings for heating/cooling temperature “on” and also heating/cooling “hysteresis”. Hysteresis is essentially the amount of “deviation” you allow from a set temperature. For the most accurate temperature control, hysteresis should be set to the lowest value possible. This operation is best explained by way of an example.

In this example, we want to set a target temperature of 25C as accurately as possible. First, we set both the heating and cooling hysteresis values to the lowest possible value - 0.5C each. Then, we can set the cooling set temperature - we will set to 25.5C (target temperature+ cooling hysteresis.) WIth this setting, with a rising temperature from 25C, the cooling will switch on when it reaches 25.5C and will stay on until the temperature decreases to 25C. We can now set the heating set temperature - we will set to 24.4 (this is the maximum value the controller will allow based off the other settings we have made). WIth this setting, with a falling temperature from 25C, the heating will switch on when it reaches 24.4C and will stay on until the temperature increases to 25C. These setting will now enable control of temperature within the range of 24.4C - 25.5C.

Controller Key Lock:
Controller unlock and lock. The controller can be unlocked by pressing the 🔓/OK key for about 1 sec - the buzzer will beep when initially pressed and again when the controller is unlocked. If no key is pressed within 30s, the controller will lock automatically.

Temperature setting:
Unlock the controller as above. Press "cool on temp set" key (or "heat on temp set" key), the corresponding function description word will light ("cool on" or "heat on"). The temperature can now be adjusted by pressing the ⬆ or ⬇ keys. Press and holding the ⬆ or ⬇keys will change the value quickly. To save and exit temperature setting menu, press and release 🔓/OK , key or perform no key operations for 30 secs.

Description	Display symbol	Set Range	Default Setting	Max Setting
Heat On Temp Set	heat on	Min -40C	-10C	"Cool On Temp" - "heating hysterysis" - "cooling hysterysis"
Cool On Temp Set	cool on	Max 85C	10C	"Heat On Temp" + "heating hysterysis" + "cooling hysterysis"

System settings:

Unlock the controller as above. Press the /OK key for about 5 secs - the controller will display parameter code "F1". The other parameter codes can be accessed by pressing the ⬆ or ⬇ keys. Press 🔓/OK, key to display the corresponding parameter value, then press the ⬆ or ⬇ keys to adjust parameter. Press and hold of the ⬆ or ⬇ keys will change the value quickly.

Press 🔓/OK, key to save the adjusted parameters and return back to parameter code selection screen. Pressing the 🔓/OK, key for 3s or no key operation for 30 secs will exit from system setting. If an error occurs during parameter saving, the controller will display "Err", and return to normal display status after five seconds.

Parameter	Function	Set Range	Factory Default	Explanation
F1	Defrost time ("def time" is displayed).	1 - 120 minutes	30 minutes	Time to operate in defrost mode.
F2	Defrost Cycle ("def cycle" is displayed	0 - 120 hours	6 hours	Running time interval before defrost cycle. **Set to 0 hours to disable.**
F3	Defrost cycle calculation method	0 or 1	1	0 = Based of controller running time after power on or last defrost. 1= Based of compressor running time after power on or last defrost.
F4	Cooling hysteresis	0.5C - 20C	2C	See Section on temperature setting
F5	Heating Hysteresis	0.5C - 20C	2C	See Section on temperature setting
F6	Calibration temperature	-10C - 10C	0C	Offset temperature. For example if measuring 1C too high, enter -1C to calibrate.
F7	Compressor Time Delay	0 - 20 minutes	3 minutes	Time delay to prevent rapid cycling of compressor. **Set to 0 to disable.**

Operation:

Cooling On: If the controller is NOT in defrost mode AND the measured temperature exceeds the "'cool on temp set" value AND the compressor time delay has been exceeded, the Cooling relay will switch on.

Cooling Off: If the controller has entered the “defrost” mode OR when the measured temperature falls below the value ("cooling temp set"-"cooling hysteresis"), the cooling relay is switched off.

Heating Output

Heating On: When the measured temperature falls below the "heat on temp set" value the heating relay will switch on.

Heating Off: When the measured temperature exceeds (“heat on temp set" + "heating hysteresis"), the heating relay is switched off.

Lighting relay: Can be switched on or off by pressing the lighting key.

Factory Reset: Whilst locked, press ⬆ key for more than 10 secs, the display will show "rES" for 3s - within these three seconds, press " -/OK"' key and the parameters will be reset to the factory default settings and displays "YES... If an error occurs during parameter reset, the controller will display "Err", and return to normal display status after three seconds. If this occurs, we recommend turning off power to controller and powering on again.

Wiring diagram: