DEI-104FC Operation Manual

1. CAUTION :

1.1 Before wiring, please make sure that power is switched off to prevent from getting electric shock.
1.2 The product should be avoided to install at humid environment.
1.3 To prevent the controller burning out, please make sure the water - proof procedure is undertaken during installation.
1.4 Before supplying the power, please always check if the wiring and input power is connected correctly.
1.5 Please install according to the wiring diagram, in order to avoid incorrect wiring.
1.6 Please always read this instruction carefully before installation. This product is beyond our warranty if any damage is caused by incorrect wiring.

2. SPECIFICATION :

2.1 Front panel size：34.5mm (H) × 76mm (L) ± 2mm
2.2 Mounting hole size：30mm (H) × 72mm (L) × 85mm (D) ± 1mm
2.3 Operating environment temperature：- 5℃ ～ 55℃ , ＜90%RH (non - condensing)
2.4 Storage environment temperature：- 10℃ ～ 65℃ , ＜90%RH (non - condensing)
2.5 Power supply：AC 230V ± 10%, single phase 50 / 60Hz
2.6 Power consumption：Max. 10 watts
2.7 Temperature sensing / display range：
　2.7.1 - 40℃ ～ 55℃ , accuracy ± 1℃ , in 0.5℃ step.
　2.7.2 - 40℉ ～ 131℉ , accuracy ± 2℉ , in 1℉ step.
2.8 Output / Input：
　2.8.1 Sensor：NTC , 3m (L)
　2.8.2 Compressor output contact：7(3)A / 230VAC

3. FUNCTION :

3.1 Button operation：
　3.1.1 Setup mode：In power on status, press and hold [Set] key for 3 seconds to enter setup mode, display showing "tS".
　　3.1.1.1 View Parameter values：When parameter code is shown in display, press [Set] key to view parameter values.
　　3.1.1.2 Select parameter code：When parameter code is shown in display, press [▲] or [▼] key to select parameter codes.
　　3.1.1.3 Parameter adjustment：When parameter value is displayed or under rapid setup mode, press [▲] or [▼] key to adjust parameter value. Whenever there is a switch in ℃ and ℉ readout, the controller will restore to their default values.
　3.1.2 Rapid setting：In power on status, press and hold [▼] key for 3 seconds to enter rapid setting mode.
　3.1.3 Enable / Disable defrost manually：In power on status, press and hold [▲] and [▼] key simultaneously for 3 seconds to enable / disable defrost manually.
　3.1.4 Parameter lockup：In normal status, press [Set] and [▼] key simultaneously for 3 seconds to lock or unlock parameter setting. After locked, all parameter values can not be adjusted except "tS" .
　3.1.5 Restore default values：Press [▲] and [▼] key simultaneously before power is supplied to restore default values, display showing "rS" . After loading default values, the controller reboots.
　3.1.6 Cabinet temperature record：In power on status, press [Log] key to view max. temperature or min. temperature record, the display will return to display current cabinet temperature after 5s. Press and hold key [Log] for 3s, max. and min. temperature record will be eliminated and they will be both recorded as current temperature

3.2 Function instruction：
　3.2.1 Compressor operation：
　　3.2.1.1 Compressor stops operating whenever cabinet temperature reaches the setpoint (tS)；the compressor operates when cabinet temperature rises up to setpoint (tS) + temperature differential (td).
　　3.2.1.2 Compressor delay protection can be set by parameter "AC". The delay time begins to count down whenever compressor is ready to operate; the compressor would not operate if delay time is not run out. When power is supplied, the compressor output will still delay 1 minute to operate.
　3.2.2 Defrosting：
　　3.2.2.1 Enable defrosting：
　　　3.2.2.1.1 Automatic defrosting：Defrosting enables when compressor operation duration up to dF - dt ; If defrosting is enabled manually, defrost period (dt) will not be counted in.
　　　3.2.2.1.2 Manual defrost does not affect the counting of defrost cycle (dF).
　　　3.2.2.1.3 The system starts to count "dt" time after entering defrost mode.
　　　3.2.2.1.4 After defrost period has been finished, controller will automatically load defrost cycle "dF" and begins to count down for next defrost period (dt).
　　　3.2.2.1.5 The system defrosts only once during one defrost cycle.
　　3.2.2.2 Disable defrosting：
　　　3.2.2.2.1 When defrost period (dt) up.
　　　3.2.2.2.2 Disable defrosting manually will not interfere with defrost cycle.
　　　3.2.2.2.3 Error alarming starts.
　　3.2.2.3 Defrosting (compress is off)：After defrosting enabled, the compressor output will be disabled. "dt" time will begin to be counted down to terminated defrosting.
　　3.2.2.4 After reset "dF" or "dt" values, the system will be loading the new values for next defrost cycle.
　　3.2.2.5 Any failure / malfunction occurred will not affect the time counting of defrost cycle.
　3.2.3 Parameter setup：
　　3.2.3.1 Parameter selection：Press [▲] or [▼] key to select parameter codes in sequence tS, td, dF, dt, AU, AL, HS, LS, Ad, AC, Cr, CS, Ot, Ut, OU.

　　3.2.3.2 Display or reset parameter values：Press [Set] to display parameter values after entering parameter setting mode. Parameter value will be increasing or decreasing by holding [▲] or [▼] key. Press [Set] again to save parameter and return to parameter code display. Select "OU" and then press [Set] to exit parameter setting and return to normal operation mode.
　　3.2.3.3 Setup mode would be ended and save parameter values without any key pressed within 15s and return to normal operation mode.
　3.2.4 Rapid setup：when "tS" value blinks in display, press [▲] or [▼] key to reset "tS" value, press [Set] key again or no keys have been pressed in 5s, the system will save the value and return to normal operation mode.
　3.2.5 Lock parameter：Parameter can't be reset after being locked, but "tS" can be adjusted. When the display shows "LC", it means parameter has been locked; "UL" means parameter is unlocked.
　3.2.6 Max. and min. cabinet temperature record (default temperature 4℃):
　　3.2.6.1 When cabinet temperature first time ≦ setpoint (tS), the controller begins to record max. & min. cabinet temperature.
　　3.2.6.2 Power failure will not harm for cabinet temperature record, after power is supplied, temperature record will be recalled by controller's memory.
　3.2.7 Parameter memory：If power failure happens, the controller will operate according to previous parameter values after power is supplied again.
　3.2.8 Restore default values：The display will be showing "rS" , the controller reboots in 5s.
　3.2.9 Temperature calibration (Ot)：When there is an aging or inaccuracy occurred on cabinet sensor, users can take this advantage to adjust temperature to a precise temperature.
　3.2.10 Abnormal temperature alarm：Alarm starts when cabinet temperature exceeds "AU" or drops below "AL" .
　3.2.11 Circuit board protection：Whenever the temperature of circuit board is out of 95℃ (203℉), the controller will disable output contacts compulsively, showing "tA" in display and enabling alarms. Once the temperature of circuit board drops below 75℃ (167℉), "tA" will be released.

3.3 LED indicator：
　3.3.1 Compressor status LED：
　　3.3.1.1 It keeps dark under setup mode.
　　3.3.1.2 It blinks rapidly under defrost mode.
　　3.3.1.3 It keeps bright when compressor is ON.
　　3.3.1.4 It keeps dark when compressor output is OFF.
　　3.3.1.5 It blinks when compressor's output has yet to reach compressor delay protection time.

4. FAILURE ELIMINATION :

4.1 Alarm code：
　4.1.1 " UA "：Cabinet temperature ≧ AU, UA and cabinet temperature display by turns.
　4.1.2 " LA "：Cabinet temperature ≦ AL, LA and cabinet temperature display by turns.
　4.1.3 " t A "：Circuit board temperature ≧ 95℃ (203℉), t A blinks.
4.2 Error code：Compressor operates with Cr / CS (When Cr and CS are 0, compressor continues operating).
　4.2.1 " EE "：Parameter memory failure. To reboot controller, if fails to work normally, send it back to factory for inspection.
　4.2.2 " E1 "：Cabinet sensor failure, please try to check if the sensor is well - connected (or replace sensor).
　4.2.3 " E3 "：There is a failure / malfunction occurred in circuit board sensor, send it back to factory for inspection.

5. PARAMETER LIST :

Code	Function	Range		Default	Unit	Description
		Min.	Max.			
tS	setpoint	LS	HS	4	℃	Compressor stops when it reaches the setpoint.
				40	℉	
td	Setpoint differential	0.5	10	4	℃	Compressor will be on when the temp. ≧ tS + td.
		1	20	8	℉	
dF	Defrost cycle	0	99	0	hr	Set the interval of defrost period.
dt	Defrost period	1	55	30	min	To control defrost time, the system would stop defrosting if defrost time is run out.
AU	Max. temperature alarm	AL+1	50	45	℃	Alarm outputs (Buzzer) when room temperature is higher than or equal to the setting value. (To operate: cabinet temperature needs to be up to setting temperature once)
			131	113	℉	
AL	Min. temperature alarm	-40	AU-1	-40	℃	Alarm outputs (Buzzer) when room temperature is lower than or equal to the setting value.(To operate: room temperature needs to be up to setpoint once)
					℉	
HS	Max. setpoint	tS		45	℃	To limit the max. setpoint.
				111	℉	
LS	Min. setpoint	-40	tS	-30	℃	To limit the min. setpoint.
				-20	℉	
AC	Compressor delay protection	0	30	1	min	Interval of protection time for compressor operation
Cr	Compressor operation period under any failure	0	60	15	min	Compressor operation time when EE or E1 blinks. (Cr=0, compressor is OFF constantly.)
CS	Compressor termination period under any failure	0	60	15	min	Compressor termination time when EE or E1 blinks. (CS=0, compressor is ON constantly.)
Ot	Temperature calibration	-12	12	0	℃	Cabinet temperature calibration.
		-20	20	0	℉	
Ut	Unit selection	℃	℉	℃		To display temperature unit.
OU	Exit setting	-	-	-		To quit setup mode.