

SZ-7524T2
Instruction Manual

Touch Sensitive Temperature Controller

Features:

- 2 NTC probes for cold room temp. + Evap. coil Temperature.
- Range: -50.0°C to 50.0°C (when rS = 0.1) -50°C to 50°C (when rS = 1)
- Relay outputs: Compressor + Defrost + Evap. Fan. Compressor protection algorithm.
- Auto/Manual defrosting facility (Time/Temp based).
- Pro-Key is given to Upload / Download Parameters.

Cautions

WIRING: The probe and its corresponding wires should never be installed in a conduit next to control or power supply lines. The electrical wiring should be done as shown in the diagram. The power supply circuit should be connected to a protection switch. The terminals admit wires of upto 2.5sq mm.

WARNING: Improper wiring may cause irreparable damage and personal injury. Kindly ensure that wiring is done by qualified personnel only.

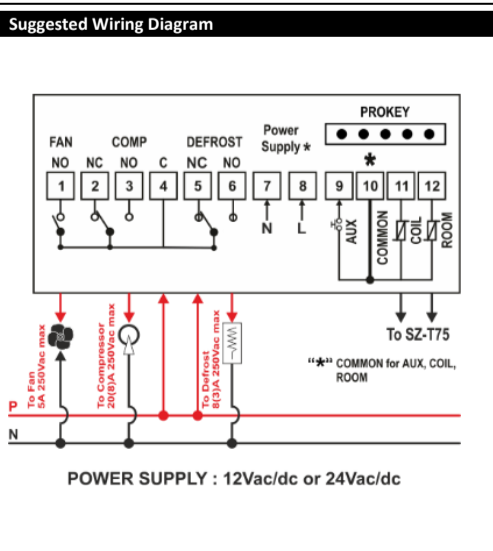
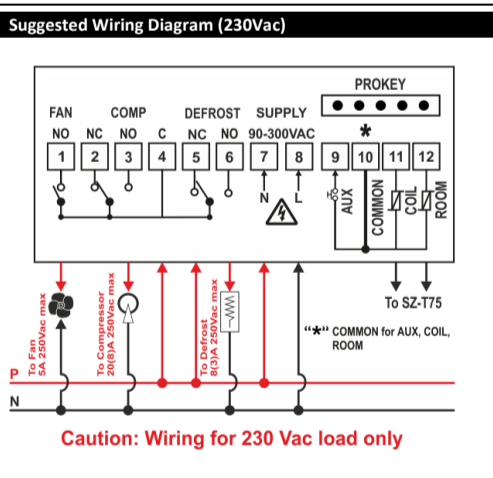
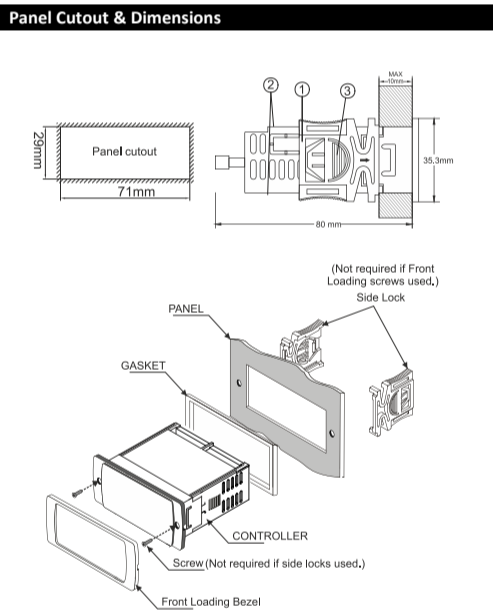
Maintenance: Cleaning: Clean the surface of the controller with a soft moist cloth. Do not use abrasive detergents, petrol, alcohol or solvents.

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Installation: Fixing and dimensions of panel models: To fix the unit, slide the fastener (1) through the guides (2) as per the position shown in the figure. Move the fastener in the direction of the arrow, pressing tab (3) it permits to move the fastener in the opposite direction of the arrow.

Controller: Controller should be installed in a place protected by vibration, water and corrosive gasses and where ambient Temperature does not exceed the values specified in the technical data.

Probe: To give a correct reading, the probe must be installed in a place protected from thermal influences, which may affect the Temperature to be controlled.



Technical Data

Housing : Black ABS Plastic, Auto-extinguish

Front Cover : Polycarbonate Plastic V0 Grade

Dimensions : Frontal: 94 X 35.3mm, Depth: 80mm

Panel Cutout : 29 X 71mm

Mounting : Flush panel mounting with fasteners

Protection : IP65 Front (with gasket)

Connections : Screw terminal blocks. < 2.5sq mm terminal only.

Display : 3 X 17mm 7 segment display
9 LEDs for Indication

Data storage : Flash APROM Memory.

Power input : 90-300VAC, 50/60 Hz standard. Others on request.

Relay output : Defrost Relay 8(3)A, 250V AC
Compressor Relay 20(8)A, 250V AC
Fan Relay 5A, 250V AC

Operating temp. : 0°C to 60°C (non-condensing)

Operating humidity : 20% to 85% (non-condensing)

Storage temp : -25.0°C to 60.0°C (non-condensing)

Measuring Range : -50.0°C to 50.0°C (when rS=0.1)
-50°C to 50°C (when rS=1)

Input Resolution : 1°C / 0.1°C

Accuracy : +/- 1°C

Digital Input : DI for Compressor Fault or Door Open Fault

Prokey : SZ-PK-3010

User Interface

COIL In Program mode: Scroll through parameters & Increases parameter value. To view Coil Temperature. Touch and hold key for 1 sec to check LL and LH Log.

PRG Touch and hold for 2sec to enter into Program Mode. In Program Mode: Decreases parameter value.

RST This key will mute the visual alarm. This key will start a manual defrost cycle if pressed for 2 sec. Press again for 2 seconds it will come out of defrost mode and STOP defrost cycle. If P7 parameter is set to 0, or Coil Temperature is greater than Defrost stop Temperature this key will remain inactive.

SET Touch and hold for 2sec to enter into Set Mode. In Program Mode: Set/Save the changed value of parameter.

COIL + PRG If "nd" parameter is set to P_{r-2} or SP and COIL + PRG keys pressed simultaneously; Display will show Room Temperature.

PRG + SET To view actual duration of Defrost Frequency.

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Parameter List:

1. SP Function: To set Compressor Relay Set Point.
Touch & hold SET key for 2 seconds.

Display will show set value. The Set Point value can now be modified by using the UP/DOWN key. After selecting the desired value, touch the set key and user can see " - - - " which confirms that the Set Point has been stored in memory.

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
LS+1.0	HS-1.0	3.0°C	LS+1	HS-1	3°C

2. To Set Other Parameters Touch & hold PRG key for 2 seconds.
Display will flash "P2".
To select other parameters, use UP/DOWN keys.

3. P2 Function: To Set Maximum Allowable High Temperature Limit.
To change value use PRG keys. To set value touch SET key.

Example: If this parameter is set to 50.0°C and the Temperature reaches or goes above 50.0°C, Display will show Ht (High Temperature) indicating that the Temperature has reached or gone above the value set in this parameter. Differential of 1.0°C is considered for clearing the fault.

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
P3+1.0	50.0°C	50.0°C	P3+1	50°C	50°C

HL (Message on display)

4. P3 Function: To Set Minimum Allowable Low Temperature Limit.
Example: If this parameter is set to -50.0°C and the Temperature reaches or goes below -50.0°C, Display will show Lt (Low Temperature) indicating that the Temperature has reached or gone below the value set in this parameter. Differential of 1.0°C is considered for clearing the fault.

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
-50.0°C	P2-1.0	-50.0°C	-50°C	P2-1	-50°C

Lt (Message on display)

5. HS Function: To set Maximum Set Point Limit.
Once set at a particular value, this will not allow the Set Point to go above this value.
Example: Setting this parameter at 25.0°C will not allow the Set Point to go above 24.0°C (HS-1.0).

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
SP+1.0	50.0°C	50.0°C	SP+1	50°C	50°C

SP = Set Point

6. LS Function: To set Minimum Set Point Limit.
Once set at a particular value, this will not allow the Set Point to go below this value.
Example: Setting this parameter at -10.0°C will not allow the Set Point to go below -9.0°C (LS+1.0).

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
-50.0°C	SP-1.0	-50.0°C	-50°C	SP-1	-50°C

SP = Set Point

7. P4 Function: To set the Differential for Compressor Relay ON condition.
Differential between cut out and cut in temperature can be set between 1.0°C to 20.0°C.
Example: If the Set Point is set at 10.0°C and differential is set at 2.0°C, then when the system reaches 10.0°C, the Compressor Relay will go OFF. Since the differential is 2.0°C, the Compressor Relay will come ON (restart) at 12.0°C (10.0°C + 2.0°C).

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
1.0°C	20.0°C	2.0°C	1°C	20°C	2°C

8. P5 Function: To Set Probe Calibration.
In time it may be possible that the display may be offset by a degree or so.
To compensate for this error, user may need to add or minus the degrees required to achieve the correct Temperature.
Example: The Temperature on the display is 28.0°C, whereas the actual Temperature is 30.0°C. User will have to set the P5 parameter to 2.0°C, which means that once out of the programming mode, the Temperature on display will be 30.0°C (28.0°C + 2.0°C).

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
-10.0°C	10.0°C	0.0°C	-10°C	10°C	0°C

9. P6 Function: To set time delay between Compressor Relay restart.
This parameter is used to protect the Compressor from restarting in a short period of time.
Example: If this parameter is set at 3 minutes, the Compressor Relay goes OFF at the Set Point, it will not restart for a minimum of 3 minutes, even if the differential is achieved earlier. This parameter is good to protect the life of the compressor.

Flashing Time delay in progress

Min	Max	Fac. Set
0 Min	99 Min	3 Min

10. ot Function: Minimum ON Time for Compressor Relay.
This parameter is used to protect the Compressor so that there is enough time for oil to return back to the Compressor. This delay starts once the Compressor Relay is ON.
Example: If this parameter is set at 1 minute and if the Temperature is achieved before 1 minute, then the Compressor Relay will remain ON for minimum 1 minute, though Set Point is achieved.

Min	Max	Fac. Set
0 Min	20 Min	0 Min

11. E1 Function: Compressor Relay status in case of Probe Failure.
When set to OFF (0) = Compressor Relay status is OFF.
ON (1) = Compressor Relay status is ON.
CYC (2) = Compressor Relay performs a duty cycle for Cn for minutes OFF and Cy for minutes ON.

Min	Max	Fac. Set
OFF	CYC	CYC

12. Cn Function: Compressor Relay OFF Time during probe fault.
If E1 is not CyC, this parameter will not applicable.
Example: If this parameter is set to 4 minutes, then Compressor Relay will be OFF for 4 minutes while performing the duty cycle.

Min	Max	Fac. Set
1 Min	99 Min	4 Min

13. Cy Function: Compressor Relay ON Time during probe fault.
If E1 is not CyC, this parameter will not applicable.
Example: If this parameter is set to 10 minutes, then Compressor Relay will be ON for 10 minutes while performing the duty cycle.

Min	Max	Fac. Set
1 Min	99 Min	10 Min

14. dF0 Function: To set Mode to start Defrost.
When set to, 0 = Defrost will start on time. 1 = Defrost will start on Time or Temperature, whichever takes first to start Defrost.

Min	Max	Fac. Set
0	1	0

Note: When dF0 set to 1, L7-L8 parameters reset to Factory settings. L8, L9 parameters will be visible only when dF0 set to 1.

15. E2 Function: To set type of Defrost.
When set to, ELE (0) = Electric Defrost in which case Compressor is OFF. Hot (1) = Hot gas Defrost where Compressor is ON.

Min	Max	Fac. Set
ELE	Hot	ELE

16. E3 Function: To set drip time for defrost water to drain out.
This is the time for which the Fan, Compressor, Heater will stay OFF so that the Defrost Water can drip & drain out.

Min	Max	Fac. Set
0 Min	99 Min	3 Min

17. E4 Function: To set post drip time.
Example: This is the time where Compressor goes ON after drip time.
Note: In Electric Defrost Compressor will ON only if Room Temperature > SP + diff. but it will not check this in Hot Gas Defrost.

Min	Max	Fac. Set
0 Min	99 Min	1 Min

18. E5 Function: Defrost duration during Coil probe failure (Only manual).
Example: If this is set to 5 min, then Manual Defrost for 5 min will take place during Coil probe fail.

Min	Max	Fac. Set
1 Min	10 Min	5 Min

19. E6 Function: To set computation method for Defrost.
When set to, rEt (0) = Defrost Frequency time calculation will start once the Controller is ON.
Example: If this parameter is set to 6Hrs, then defrost will happened at every 6Hrs.
rH (1) = Defrost Frequency time calculation will be done only When Compressor is ON.
Example: If this parameter is set to 6Hrs, then after every 6Hrs of Compressor ON Defrost will happen.

Min	Max	Fac. Set
rEt	rH	rEt

20. P7 Function: To set Defrost duration.
This is maximum amount of time allowed for Defrost. If set to 0, there will be no Defrost Cycle.
Example: If P7 is set to 30 Mins, E6 is set to rEt and P8 is set to 1 Hr then after every 1 Hr defrosting will take place for 30 mins.

Min	Max	Fac. Set
0 Min	99 Min	30 Min

Note: When P7 parameter set to 0, Defrost related parameters will not display.

21. P8 Function: To set Defrost Frequency.
This is the amount of time between two Defrost Cycles.
Example: Same as P7 parameter.

Min	Max	Fac. Set
1 Hr	31 Hrs	6 Hrs

22. P9 Function: To set power ON defrost delay.
Example: If P9 parameter is 30 minutes then at power after 30 minutes defrosting will take place once.

Min	Max	Fac. Set
0 Min	99 Min	30 Min

Note: When P7 is set to 0, P9 parameter will not be applicable or considered.

23. L1 Function: Evaporator Fan stop Temperature.
Evaporator Fan will be switched off when Coil Temperature is greater than or equal to Evaporator Fan Stop Temperature.
Example: If this parameter is set to 2.0°C, then Evaporator Fan will cut OFF at 2.0°C.

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
-50.0°C	50.0°C	2.0°C	50°C	50°C	2°C

24. **L2** Function: To set time delay between Evap. Fan Relay restart time

Example: If this parameter sets at 1 minutes, the Evaporator Fan Relay will cut-off at the Temperature set by L1 parameter but the fan will not come ON for a minimum of 3 minutes even if L4 is achieved earlier.

Min	Max	Fac. Set
0 Min	20 Min	1 Min

25. **L3** Function: Evap. Fan operation when Compressor is OFF.

When set to,

OFF (0) = Evaporator fan is OFF when Compressor is OFF, and it will be ON depending on Coil Temperature and its Set Point.

ON (1) = Evaporator Fan will be ON/OFF independent of Compressor Status according to Coil Probe Temperature.

Min	Max	Fac. Set
OFF	ON	ON

26. **L4** Function: Evaporator Fan Differential (hysteresis).

Example: If L1 parameter is set to 2.0°C, and the L4 is set to 2.0°C, then Evaporator Fan will cut OFF at 2.0°C and restart only at 0.0°C

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
1.0°C	20.0°C	2.0°C	1°C	20°C	2°C

27. **ELS** Function: To set Probe 2 offset calibration (Evaporator Fan Coil Probe).

In time it may be possible that the Temperature on the Display may be offset by a degree or so. To Compensate for this error, you may need to add or minus the degrees required to achieve the correct Temperature setting value is from -10.0°C to 10.0°C

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
-10.0°C	10.0°C	0.0°C	10°C	10°C	0°C

28. **L7** Function: To set Defrost stop Temperature (Evap. coil probe)

Defrost process will Stop when Coil Temperature is greater than or equal to Stop Temperature.

To start Defrost Process, Coil Temperature should be less than or equal to L7-diff.

Example: If Stop Temperature set to 8.0°C, then when Coil Temperature reaches to or goes above 8.0 °C, the Defrost process will Stop.

To start Defrost Cycle based on P8 parameter or Manual, Coil Temperature should be less than or equal to 7.0°C.

df0 = 0

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
-50.0°C	50.0°C	8.0°C	-50°C	50°C	8°C

df0 = 1

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
L8+1.0	50.0°C	8.0°C	L8+1	50°C	8°C

29. **L8** Function: To set Defrost start Temperature.

Defrost process will start when Coil Temperature is less than or equal to Start Temperature.

When defrost stop condition occurs due to P7 duration over or defrost stop manually then it will check Coil Temperature should be greater than or equal to L8+1.0.

Example: If start Temperature set to -10.0°C, the Defrost process will start.

If defrost stop condition occurs that time Temperature should be greater than or equal to -9.0°C.

rS = 0.1			rS = 1		
Min	Max	Fac. Set	Min	Max	Fac. Set
-50.0°C	L7-1.0	-10.0°C	-50°C	L7-1	-10°C

Note: L8 & L9 parameters will be visible, only when df0 = 1.

30. **L9** Function: To set Defrost Start Temperature Delay.

When Coil Temperature is less than or equal to L8 parameter, defrost will Start After L9 duration.

Min	Max	Fac. Set
0 Min	99 Min	10 Min

31. **AF0** Function: To activate or deactivate Compressor fault digital input.

When set to,

diS (0) = Compressor/door Open Fault digital input is disabled.

doP (1) = Door Open Fault digital input is activated when contact is Open.

dCL (2) = Door Open Fault digital input is activated when contact is Closed.

CoP (3) = Compressor Fault digital input is activated when contact is open.

CCl (4) = Compressor Fault digital input is activated when contact is closed.

Min	Max	Fac. Set
diS	CCl	diS

32. **AF1** Function: To set Compressor fault digital input sensing delay.

Example: If CF1 = 5seconds and if compressor digital input (Fault) is present for 5 seconds then fault is detected.

Min	Max	Fac. Set
0 sec	99 sec	5 sec

Note: This parameter will be visible, only when AFO > diS.

33. **AF2** Function: To set Compressor / Fan status on Compressor fault Digital Input.

When set to,

Enb (0) = No action will be performed, Alarm indication OFF.

EnA (1) = No action will be performed, Alarm indication ON.

CoF (2) = Compressor will be OFF.

FoF (3) = Fan will be OFF.

FCF (4) = Fan and Compressor will be OFF.

Min	Max	Fac. Set
Enb	FCF	Enb

Note: This parameter will be visible, only when AFO > diS.

34. **AF3** Function: To set reset mode for Compressor output, on Compressor fault digital input.

When set to,

Aut (0) = Auto Reset.

nAn (1) = Manual Reset after CF4 retrials in 1 hour.

Example: If this parameter set to "nAn" mode & CF4 is set to 5 then, Compressor fault will be cleared after 5 retrials only after pressing reset key for 2 seconds.

If this parameter is set to "Aut" mode then Compressor fault will be cleared automatically when it is healthy.

Min	Max	Fac. Set
Aut	nAn	Aut

Note: This parameter will be visible, only when AF0 is set to CoP or CCL.

35. **AF4** Function: No of retrials of Compressor when Manual reset is selected.

Example: As mentioned in CF3

Min	Max	Fac. Set
1	10	5

Note: This parameter will be visible, only when AF0 is set to CoP or CCL.

36. **do3** Function: To set delay time for Temperature updating at Door open digital input fault.

Example: This Parameter is set to 10sec, Room Temperature is -18.0°C & Door open condition occurs then Room Temp value -18.0°C at Door open condition will be held for the 10sec even if Room Temperature is rising.

After over the Temperature hold duration display Temperature will be increased by 0.1°C at every 1sec until it reaches current Room Temperature.

Min	Max	Fac. Set
0 sec	180 sec	10 sec

Note: This parameter will be visible, only when AF0 is set to doP or dCL.

37. **ddf** Function: This parameter is used to select display while the Defrost Cycle is in progress.

When set to,

ndd (0) = Default display as per nd parameter setting

df (1) = Defrost Label

rHt (2) = Hold Room Temperature when Defrost Start.

When Defrost stops, Room Temperature is less than Hold Room Temperature at Defrost, it will show Room Temperature.

If Room Temperature is greater than or equal to Hold Room Temperature at Defrost, it will wait till Room Temperature reaches to Hold Room Temperature, and till that time Display will show Hold Room Temperature.

Min	Max	Fac. Set
ndd	rHt	ndd

Note: After Clearing Ht/Lt or PP Fault, even if ddf = rHt, Display will show value as per nd Parameter.

38. **nd** Function: Default (Normal) display.

When set to,

Pr1 (0) = Room Temperature

Pr2 (1) = Coil Temperature

SP (2) = Set Point

Min	Max	Fac. Set
Pr1	SP	Pr1

39. **dd** Function: This parameter is used to Delay the display of Temperature update by the set in this parameter.

Each value corresponds to 5 seconds, if the value is set to 1, it corresponds to 5 seconds, if it is set to 2, it corresponds to 10 seconds and so on.

Example: if this parameter is set to 1, Temperature on the display will be updated after 5 seconds. The same value will be considered for calculation and logging.

Display delay parameter is applicable only when Temperature is increasing (rising). When Temperature is decreasing (falling) this parameter will not be applicable.

If this parameter is set to 0, this feature will be disabled.

Min	Max	Fac. Set
0	36	0

40. **AL** Function: To activate Buzzer.

When set to,

diS (0) = Disable Buzzer for all Faults.

EHL (1) = Enable Buzzer at Ht, Lt & PP Faults

EHL (2) = Enable Buzzer at Ht & PP Faults.

ELt (3) = Enable Buzzer at Lt & PP Faults.

Min	Max	Fac. Set
diS	ELt	EHL

Note: Buzzer will activate for PP & AUX Digital Input Fault, if this parameter is not set to disable.

41. **Ad** Function: This parameter is used to set the time delay at Power ON for Alarm Indication.

Example: If this parameter is set to 20 minutes, once the controller is powered ON, no fault indication will be activated for 20 minutes.

Alarm delay is used only for High Temperature and Low Temperature, but not for Room Sensor fail.

If Control Probe Temperature reaches or goes above P2 parameter value, High Temperature (Ht) fault will be displayed.

If Control Probe Temperature reaches or drops below P3 parameter value, Low Temperature (Lt) fault will be displayed. Differential of 1°C is considered for clearing the fault.

Min	Max	Fac. Set
0 Min	99 Min	20 Min

42. **rS** Function: To set controller resolution.

This parameter when set to 0.1, it will take all parameter in 0.1°C resolution.

This parameter when set to 1, it will take all parameter in 1°C resolution.

Note: Temperature and parameter will also change accordingly.

Min	Max	Fac. Set
0.1	1	-

43. **PR** Function: To change Password.

User cannot enter into Program Mode & Set Mode, if correct Password is not entered.

If the Password is kept other than 0, user need to enter correct Password to enter into Set/Program Mode.

If Password is 0, user can directly access Set/Program Mode.

Min	Max	Fac. Set
-999	999	0

44. **LP** Function: To lock keypad.

This parameter is used to lock the keypad so that tampering is not possible by by-standers.

UnL (0) = Keypad unlocked.

LoL (1) = Keypad locked.

When locked all parameters can only be viewed, but not modified.

Note: If LP parameter is set to LoL and if user tries to change any parameter value, "LP" will flash on the display.

Min	Max	Fac. Set
UnL	LoL	UnL

45. **FS** Function: To restore default settings of the controller.

When set to 1 all parameters are programmed to factory set values.

Useful to debug setting related Problems.

When set to,

0 = FS is disable.

1 = FS as per default value.

Min	Max	Fac. Set
0	1	0

46. **EP** Function: To end programming.

To end programming Once the key is pressed, the Controller goes into the normal mode and displays the Temperature and all settings are recorded.

LED Indications

LED	Status	Description	Parameter
❄️	OFF	Compressor is OFF.	SP, P4
	ON	Compressor is ON.	
🌀	OFF	Evaporator Fan is OFF.	L1, L4
	ON	Evaporator Fan is ON.	
❄️	FLASHING	Evaporator Fan is in time delay.	L2
	ON	Defrost in progress.	-
❄️	FLASHING	Drip or post drip time.	P7
	ON	Door Open.	AF0=doP/dCL
🕒	ON	Compressor is ON and in time delay for switching OFF. (ot parameter)	ot
	FLASHING	Compressor is in time delay and about to start.	P6
AUX	ON	Auxiliary fault is present.	AF0, AF2, AF3
🔔	ON	Ht, Lt, PP, CF, do, CPP	-
°C	ON	When Temperature is displayed.	-

Operating Messages

Message	Description	Parameter
Ht	High Temperature Alarm Temperature above the maximum high Temperature limit.	P2
ss, Lt	Low Temperature Alarm Temperature below the minimum low Temperature limit.	P3
PP	Room Probe Fail Probe short circuit, circuit open or without probe, or Temperature is > 50.0°C or < -50.0°C.	-
CPP	Coil Probe Fail Probe short circuit, circuit open or without probe, or Temperature is > 50.0°C or < -50.0°C.	-
CF	AUX (Auxiliary) Input Compressor fault present.	AF0, AF2, AF3
do	Door open fault	AF0, do3
LL	Last Low Temperature Last low Temperature logged.	-
LH	Last High Temperature Last high Temperature logged.	-
df	Defrost Defrost in progress.	ddf
ndf	No defrost Action takes place if Start or Stop temperature is not achieved.	-
LrS	In Log function: When LL and LH values are cleared.	-
FrS	To reset Manual Reset Fault.	-
Err	Connected Pro-Key need to check.	-
LP	Keypad lock Keypad is locked.	LP

Password Function

- In Programme Mode:**
Touch & hold "PRG" key for 2sec. Display will flash "P2" parameter if "PA" value is kept "0". If other than "0", then "PA" and "0" will flash. Use "▲" and "▼" keys to enter the Password. On entering correct value, Display will flash the first parameter "P2". User can scroll through parameters using "▲" or "▼" keys.
- In Set Mode:**
Touch & hold "SET" key for 2sec. Display will flash Set Point value if "PA" parameter value is kept to "0". If other than "0", then Display will flash "PA" and "0". Use "▲" or "PRG" to enter the Password. On entering correct value, Display will flash Set Point value. User can set desired value using "▲" or "PRG" keys. To save the modified value use "SET" key.

High and Low Temperature Logging function

- How to see the logged values:**
LL: Last Low Temperature
LH: Last High Temperature
Touch and hold "▲" key for 1 second Display will flash "LL" and the corresponding Temperature for 4 seconds. After this, Display will flash "LH" and the corresponding Temperature for 4 seconds and come out of Log mode and will display Control probe Temperature.
- How to reset the Logged values:**
While the display is showing the logged values, if User touches & holds the "SET" key for 1sec, the logged values will be cleared and "LrS" will be displayed.
Log Values will get reset after Power ON/OFF.

Pro-Key

To use Pro-key user must insert it prior to Power ON. Insert the Pro-Key and Power ON Controller. When the Display flashes for 5 seconds, touch the "PRG" for 1 second. Controller will enter into Pro-key Mode and will display "Pr". Then touch either of the below given keys to use the Pro-key.

Functions of Pro-key and the keys to be used for are as given below:

Function	Key to be Used
To upload the parameters from the controller.	touch "▲" key
To download the parameters to the controller.	touch "▼" key
To set the user Lock parameter.	touch "SET" key

If user tries to enter Pro-key mode without inserting the pro key or with wrong connection, no further function will be activated after displaying "ULP" or "dP". Controller will display "Er". Then switch off controller and insert the pro key properly and try to enter Pro key mode.

User has to first Upload the parameters in the Subzero Validated Blank Pro-Key and then subsequently use it for downloading.

- Uploading Mode:**
When "Pr" is displayed user has to touch "▲" key to select uploading mode. Display will show "ULP". Then touch "SET" key to confirm uploading of parameter values from controller to the Pro-key. After validation controller will show "Er" and if Pro-key is not validated user will see "Er" on display. Touch "SET" key again, display will show "- - -" which means the uploading is successful without error. If any error occurs then "Er" will be displayed. Touch "SET" key to come out of Pro-key mode.
- Downloading mode:**
When "Pr" is displayed user has to touch "▼" key to select downloading mode. Display will show "dP". Then touch "SET" key to confirm downloading of parameter values from Pro-key to the controller. After validation controller will show "Er" and if Pro-key is not validated user will see "Er" on display. Touch "SET" key again, display will show "- - -" which means the downloading is successful without error. If any error occurs then "Er" will be displayed. Touch "SET" key to come out of Pro-key mode.
- User Lock:**
When "Pr" is displayed touch "SET" key for 1sec. Controller will validate the Pro-key and will display either "LL" if parameters are locked or "UL" if they are unlocked. If Pro-key is not validated "Er" will be displayed. User can select locking or unlocking by "▲" or "PRG" Touch "SET" key and display will show "- - -". If any error occurs then "Er" will be displayed. Touch again "SET" key to come out of Pro-key Mode.
Note: If user has set this to "LL", once out of the Pro-Key mode, in normal operation, altering the value of any parameter will not be possible. For that "User lock parameter" to be selected as "LL".
The LP parameter will also be considered for the same.

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