

OPERATING INSTRUCTIONS

SZ-7556-58-66-68-P



General Description

The Sub-Zero Series SZ-75XX-P are aesthetically superior versions of their predecessors. The SZ-7556/58/66/68-P are two relay controllers.

SZ-7556/58-P are specifically designed for the panel A/C, oil cooler, package a/c and similar kind of applications.

The SZ-7558/68-P has an inbuilt power relay which can drive compressive loads directly upto 20 Amps, thus eliminating the need of a contactor esp. in single phase applications.

The controllers have special features like power on time delay for alarms. Additionally these series offer several protection features that are easily understood by the examples in the instructions below.

A number of parameters are displayed alphanumerically to set up the instrument for each specific application.

SZ-7556/58-P can be used for several applications with a measuring range from 0°C to + 50°C, whereas SZ-7566-68-P can be used for several applications with a measuring range from -50°C to + 99°C.

Technical Data

Housing	Black, ABS Plastic
Front Cover	Red Polycarbonate plastic.
Dimensions	Front : 75 X 34.5 MM Depth : 71 MM (w/o back lid)
Panel Cutout	29 X 70.5 MM
Mounting	Flush panel mounting with fasteners.
Frontal protection	IP 65
Connections	Screw terminal blocks. ≤ 2.5 sq mm one wire/ terminal only.
Display	2 X 14.2 mm (0.56") LED.
Data storage	Non-volatile EEPROM memory.
Power input	230Vac +/-10%, 50-60Hz. Others on request.
Operating temp.	5°C to 50°C (non-condensing).
Storage temp	-20°C to 70°C (non-condensing).
Input	NTC Probe, SZ-N75
Resolution	1°C
Accuracy	+/- 1°C
Probe tolerance	+/- 0.3°C at 25°C

Front Panel View, Relay



Relay: 8(3)A/250Vac,
Alarm: 5A/250Vac
Range: 0°C to 50°C



Relay: 8(3)A/250Vac,
Alarm: 5A/250Vac
Range: -50°C to 99°C

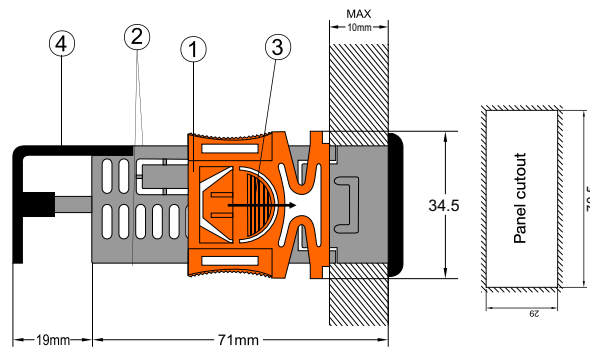


Relay: 20A/250Vac
Alarm: 5A/250Vac
Range: 0°C to 50°C



Relay: 20A/250Vac
Alarm: 5A/250Vac
Range: -50°C to 99°C

Installation and Dimensions



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. Once the controller has been connected, they should be covered with the lid ④. Silicon sealant should be applied along the perimeter of the panel cut out or a rubber 'O' ring supplied before the unit is fitted to increase protection against water seepage.

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.

Operating Messages And Icon Status

Message	Mode	Description	Parameter
HL	Flashing	Temp. above the maximum limit of the set point.	P2
LL	Flashing	Temp. below the minimum limit of the set point.	P3
pp	Flashing	Probe short circuit, circuit open or without probe, or temperature >70°C or <0°C for SZ-7556/58-P or temperature >99°C or <-50°C for SZ-7566/68-P.	
❄ ●	ON/OFF	Comp. Relay on/off.	SP, P4
❄ ☀	Flashing	Comp. Relay time delay active.	P6
🔔 ●	ON/OFF	Alarm Relay On/Off.	AL, P7
🔑 ●	ON/OFF	Keypad locked/unlocked.	LP

Min = Minimum, Max = Maximum
Fac. = Factory Setting (Default)

1. Set Point : To set the cut out point.	Min	Max	Fac.
<ol style="list-style-type: none"> Press and hold the "SET" key for 2 Seconds. The set value will start flashing. Use ▲ or ▼ to set the desired range. Press SET key & you will see "--" which confirms that the set point has been stored in memory. 	0°C	50°C	0°C
	SZ-7556 /58-P		
	-50°C	99°C	0°C
	SZ-7566 /68-P		

Parameter List

2. To set other Parameters
<ol style="list-style-type: none"> Press & hold the prg key for 2 seconds. Display will show "P1" for SZ-7566/68-P or 'P2' for SZ-7556/58-P & flash. To go to other parameters, use ▲ or ▼ keys.

3. P1 Parameter : To set controller for heating or cooling. (SZ-7566/68-P only.)	Min	Max	Fac.
<ol style="list-style-type: none"> To change the P1 parameter, press the "SET" key. To go to desired value, use ▲ or ▼ keys. 0 : Cooling mode. 1 : Heating mode. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory. 	0	1	0

SZ-7556/58-P controller is by default set for cooling mode.

OPERATING INSTRUCTIONS

4. P2 Parameter : To set maximum allowable high temperature limit & alarm.

Min	Max	Fac.
XX°C	50°C	50°C
SZ-7556 /58-P		
XX°C	99°C	99°C
SZ-7566 /68-P		

1. To change the P2 parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.
3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.

Once set at a particular range, this will not allow the set point to go above this range and below P3 setting.

Example: Setting this parameter at 30°C will not allow the set point to go above 30°C. Also, if the temperature reaches 30°C, the display will show Ht (High Temp.) indicating that the temperature has reached or gone above the range in this parameter and at this point the alarm relay will activate.

Ht
(Message on display)

5. P3 Parameter : To set minimum allowable low temperature limit and alarm.

Min	Max	Fac.
0°C	XX°C	0°C
SZ-7556 /58-P		
-50°C	XX°C	-50°C
SZ-7566 /68-P		

1. To change the P3 parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.
3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.

Once set at a particular range, this will not allow the set point to go below this range and above P2 setting.

Example: Setting this parameter at 10°C will not allow the set point to go below 10°C. Also, if the temperature reaches 10°C, the display will show Lt (Low Temp.) indicating that the temperature has reached or gone below the range in this parameter and at this point the alarm relay will activate.

Lt
(Message on display)

6. P4 Parameter: To set the differential.

Min	Max	Fac.
1°C	20°C	2°C

1. To change the P4 parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.
3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.

Differential between cut out and cut in temperature can be set between 1°C to 20°C.

Example: Cooling Mode: If the set point is set at 10°C and differential is set at 2°C, then when the system reaches 10°C, the relay will cut out. Since the differential is 2, the relay will cut in (restart) at 12°C (10°C+2°C).

Heating Mode: If the set point is set at 10°C and differential is set at 2°C, then when the system reaches 10°C, the relay will cut out. Since the differential is 2, the relay will cut in (restart) at 8°C (10°C-2°C).

7. P5 Parameter : To set probe calibration.

Min	Max	Fac.
-9°C	10°C	0°C
SZ-7556 /58-P		
-10°C	10°C	0°C
SZ-7566 /68-P		

In time it may be possible that 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.

1. To change the P5 parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.
3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.

Example: The temperature on the display is 28°C, whereas the actual temperature is 30°C. You will need to set the P5 mode to 2, which means that once out of the programming mode, the temperature will show 30°C (28°C + 2°C).

8. P6 Parameter : To set time delay between relay restart time.

Min	Max	Fac.
0 Min	99 Min	3 Min

This parameter is used to protect the compressor from restarting in a short period of time and can be set between 0 to 99 minutes.

1. To change the P6 parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.
3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.


Flashing
(Time delay in progress)

Example: If this parameter is set at 3 minutes, the relay will cut off at the set temperature, but 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 when there are power fluctuations and the compressor is switched off and on within a few seconds.

9. P7 Parameter : To set power on time delay for alarm relay.

Min	Max	Fac.
0 Min	99 Min	0 Min

This parameter sets a time delay on power on for the high & low temperature alarm.

1. To change the P7 parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.
3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.


ON
(Defrost in progress)

Example: If this parameter is set to 20min once the unit is powered on the alarm relay will not activate for 20 minutes even if there is a fault. This is very useful to eliminate the nuisance alarm when a unit is switched on and the ambient is above the max set limit in P2. This delay is applicable for High and Low temperature alarms

10. LP Parameter : To lock keypad.

Min	Max	Fac.
0	1	0

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

1. To change the LP parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.


ON/OFF
(Keypad lock)

0 : keypad unlocked.
1 : keypad locked.

3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.

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

11. AL Parameter : To activate alarm relay.

Min	Max	Fac.
0	3	1

Once set to on, the alarm relay will come on in case the temperature reaches or goes above or below the points set in parameter P2 & P3 and if the probe fails.

1. To change the AL parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.


ON/OFF
(Alarm)

0 : De-activates alarm relay.
1 : Activate alarm relay on HT & LT.
2 : Activates alarm relay only on HT.
3 : Activates alarm relay only on LT.

3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.

RST

This key will reset the alarm relay.

12. E1 Parameter : To set relay status on Probe Failure.

Min	Max	Fac.
0	2	1

1. To change the E1 parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.

0 : Comp. relay status is ON.
1 : Comp. Relay performs a duty cycle 10 minutes ON and 4 minutes OFF.
2 : Relay status is OFF.

3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.

13. FS Parameter : To restore default settings of the controller.

Min	Max	Fac.
0	1	0

When set to 1 all parameters are programmed to factory values. Useful to debug setting related problems.

1. To change the FS parameter, press the "SET" key.
2. To go to desired value, use ▲ or ▼ keys.
3. To set confirm value press "SET" key you will see "--" which confirms that the value has been stored in memory.

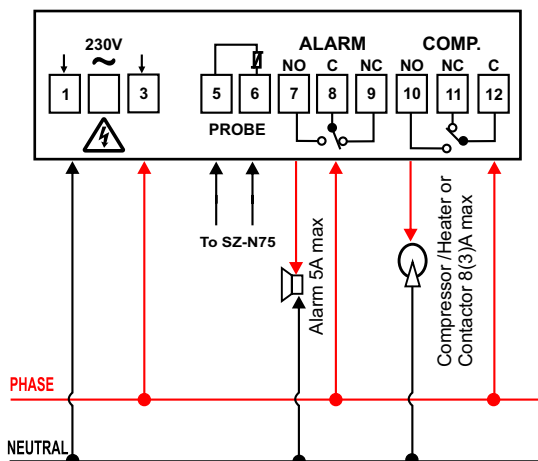
14. EP Parameter : To end programming.

Once the SET key is pressed, the control goes into the normal mode and displays the temperature and all settings are recorded.

OPERATING INSTRUCTIONS

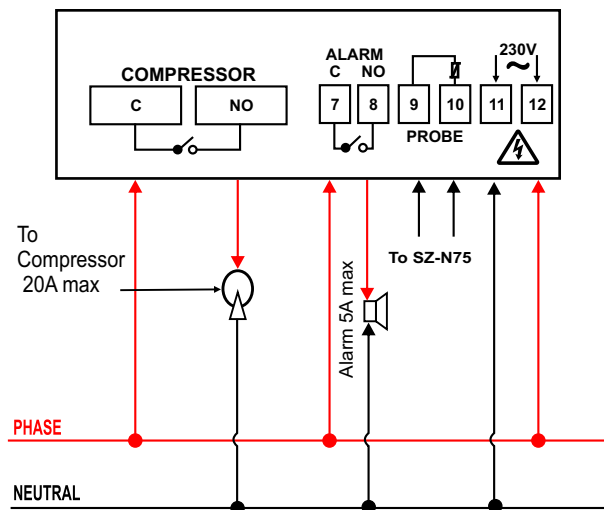
Wiring Diagram

SZ-7556/66-P



Caution : Wiring for 230vac Loads Only.

SZ-7558/68-P



Caution : Wiring for 230vac Loads Only.

Caution

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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