sub-Zero®

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OPERATING INSTRUCTIONS

sub-Zero®

SZ-7510-WV

Instructions :

GENERAL DESCRIPTION

The Sub-Zero Series 7510-WV are aesthetically superior versions of their predecessors. The SZ 7510-WV is a single set point controller It is specifically designed for refrigeration applications wherein the compressor cuts off at set point and is restarted at a temperature of set point plus differential.

Additionally these controllers offer several protection features that are easily understood by the examples in the instructions below. The controller can be used for heating applications, when the P1 parameter is set to "1".

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

The SZ-7510-WV controller can be used for several applications with a measuring range from -40°C to 99°C (1°C Resolution) or -40.0°C to 50.0°C(0.1°C Resolution)

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Set point	Function: To set the cut out point of the controller.
Press and hold the SET key for 2 Seconds. SET	Display will change to set value. The set point value can now be changed by using the UP/DOWN key. After setting the desired value, press the set key and you will see "- - -" which confirms that the set point has been stored in memory.

RS = 0

Min	Max	Fac.
P3	P2	0.0°C

RS = 1

Min	Max	Fac.
P3	P2	0°C

To set other Parameters.	
Press & hold the DOWN(prg) key for 2 seconds. prg	Display will show P1 & flash. To go to other parameters, use UP/DOWN keys.

P1 Parameter	Function: To set controller for heating or cooling.
To change the P1 parameter, press the SET key. **RS = 0 / 1** Min | Max | Fac. 0 | 1 | 0	Use UP/DOWN keys to get desired value & press set to confirm. 0: Cooling mode 1: Heating mode.

P2 Parameter	Function: To set maximum allowable high temperature limit.
To change the P2 parameter, press the SET key. **RS = 0** Min | Max | Fac. XX°C | 50.0°C | 50.0°C **RS = 1** Min | Max | Fac. XX°C | 99°C | 50°C Ht (Message on display)	Use UP/DOWN keys to set desired value. 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 25.0°C. Also, if the temperature reaches 25.0°C, the display will show Ht (High Temp.) indicating that the temperature has gone above the value in this parameter.

P3 Parameter	Function: To set minimum allowable low temperature set point.
To change the P3 parameter, press the SET key. **RS = 0** Min | Max | Fac. -40.0°C | XX°C | -40.0°C **RS = 1** Min | Max | Fac. -40°C | XX°C | -40°C Lt (Message on display)	Use UP/DOWN keys to set desired value. Once set at a particular value, this will not allow the set point to go below this value. Example: Setting this parameter at -30°C will not allow the set point to go below -30.0°C. Also, if the temperature reaches -30.0°C, the display will show Lt (LowTemp.) indicating that the temperature has gone below the value in this parameter.

P4 Parameter	Function: To set the differential.
To change the P4 parameter, press the SET key. **RS = 0** Min | Max | Fac. 0.1°C | 20.0°C | 2.0°C **RS = 1** Min | Max | Fac. 1°C | 20°C | 2°C	Use UP/DOWN keys to set desired value. Differential between cut out and cut in temperature can be set between 1°C to 20°C. Example: If the set point is set at 10°C and differential is set at 2.0°C, then when the system reaches 10.0°C, the relay will cut out. Since the differential is 2.0°C, the relay will cut in (restart) at 12.0°C (10°C+2°C).

P5 Parameter	Function: To set probe calibration.
To change the P5 parameter, press the SET key. **RS = 0** Min | Max | Fac. -10.0°C | 10.0°C | 0.0°C **RS = 1** Min | Max | Fac. -10°C | 10°C | 0°C	Use UP/DOWN keys to set desired value. 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. Setting value is from -10°C to +10°C. **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).

P6 Parameter	Function: To set time delay between relay restart time.
To change the P6 parameter, press the SET key. **RS = 0 / 1** Min | Max | Fac. 0 Min | 99 Min | 3 Min Flashing Time delay in progress	Use UP/DOWN keys to set desired value. 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. **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.

LP Parameter.	Function: To lock keypad.
To change the LP parameter press the SET key. **RS = 0 / 1** Min | Max | Fac. 0 | 1 | 0 	Use UP/DOWN keys to set desired value. This parameter can lock the keypad so that tampering is not possible by by-standers. 0 = keypad unlocked 1 = keypad locked When locked all parameters can only be viewed, but not modified.

E1 Parameter	Function : Relay status on Probe Failure.
To change the E1 parameter press the SET key. **RS = 0 / 1** Min | Max | Fac. 0 | 2 | 1	Use UP/DOWN keys to set desired value. When set to 0 = Relay status is ON. 1 = Relay performs a duty cycle 10 minutes ON and 4minutes OFF. 2 = Relay status is OFF.

PO Parameter	Function : To enable/disable Power Switch.
To change the PO parameter press the SET key. **RS = 0 / 1** Min | Max | Fac. 0 | 1 | 0	Use UP/DOWN keys to get desired value & press SET key to confirm. 0 = Disable power switch 1 = Enables power switch Controller has power switch, which if enable puts controller in active or stand by state. If press for 2 seconds controller will go in stand by mode, display will show “OF”. To again switch to ACTIVE WORKING MODE, press power switch again for 2 seconds. All leds and 7-segment display will flash and enter into NORMAL WORKING MODE.

RS Parameter	Function : To change the resolution.
To change the FS parameter press the SET key. **RS = 0 / 1** Min | Max | Fac. 0 | 1 | 0	Use UP/DOWN keys to set desired value. If this parameter when set to 0,it will take all parameter in 0.1^{0}C resolution. If this parameter when set to 1,it will take all parameter in 1^{0}C resolution. Note : Temperature and parameter will also change accordingly.

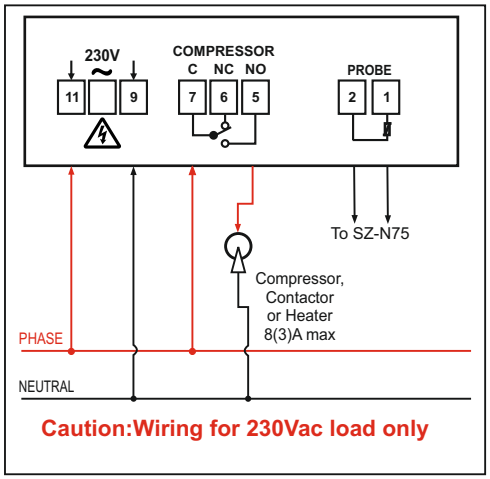
FS Parameter	Function : To restore default settings of the controller.
To change the FS parameter press the SET key. **RS = 0 / 1** Min | Max | Fac. 0 | 1 | 0	When set to 1 all parameters are programmed to factory values. Useful to debug setting related problems.
EP Parameter.	Function: To end programming.
To end programming press the SET key	Once the SET key is pressed, the control goes into the normal mode and displays the temperature and all settings are recorded.

Operating messages and Icon status

Message	Description	Parameter
Ht	Temperature above the maximum limit of the set point.	P2
Lt	Temperature below the minimum limit of the set point.	P3
PP	Probe short circuit, circuit open or without probe, or temperature > 99^{0}C or <-40^{0}C when RS=1 and temperature >50.0^{0}C or <-40.0^{0}C when RS=0.	
On/Off	Comp. Relay on/off	SP, P4
Flashing	Alarm (Ht, Lt or PP)	P2,P3
Flashing	Time delay in progress	P6
On/Off	Keypad locked/unlocked	LP

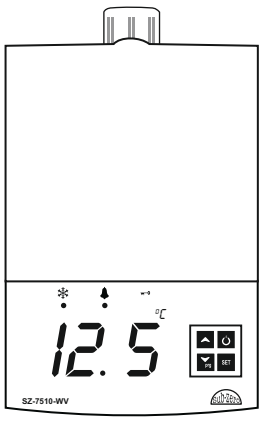
Technical data:

Housing	: White, ABS Plastic
Front Cover	: Polycarbonate plastic.
Dimensions	: Front : 80 X 126 mm, Depth : 15 mm.
Mounting	: Wall Mount.
Connections	: Screw terminal blocks. ≤ 2.5sqmm one wire/terminal only
Display	: 3 X14.2 mm (0.56") LED
Data storage	: Non-volatile EEPROM memory
Power input	: 230Vac +/-15%,50-60Hz. Other on request.
Operating temp.	: 5°C to 50°C(non-condensing).
Storage temp	: -20°C to 70°C(non-condensing).
Output	:1 SPDT relay 8 (3)A, 250Vac.
Input	: NTC probe, SZ-N75.
Range	: -40°C to 99°C (1°C). -40.0°C to 50.0°C (0.1°C).
Resolution	: 1°C / 0.1°C.
Accuracy	: +/- 1°C.
Probe tolerance at 25°C	: +/- 0.3°C.



Caution:Wiring for 230Vac load only

FRONT VIEW



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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