

DIGITAL TEMPERATURE ALARM

MODEL No. ST-1

Operating & installation instructions

Questions?
1-888-346-4276



Operation Sequence:

1. Cooler temperature exceeds alarm set point.
2. Time delay begins. (user selectable)
 - * If temperature in cooler returns to normal before time delay expires, unit resets and no alarm occurs.
 - * If time delay expires, red alarm light will flash, audio alarm sounds, and remote relay activates. By pressing the **Silence** key pad, audio alarm will stop and remote relay will be de-activated. Red alarm light will continue to flash until cooler temperature returns to normal.
3. When the cooler's temperature returns to normal, red alarm light stops flashing and all functions reset and resumes normal temperature monitoring.

INSTALLATION: Select a location where alarm is to be mounted on external was of cooler. This location should allow for clear viewing and access to alarm. Do not place unit in high traffic area where it can be damaged. Follow mounting instruction on label attached to unit. Drill a 3/8" hole into cooler. Insert sensor into hole and mount with hardware provided. Seal penetration.

NOTE: Sensor is side mounted from the factory. Sensor exit can be changed to enter back for cleaner look.

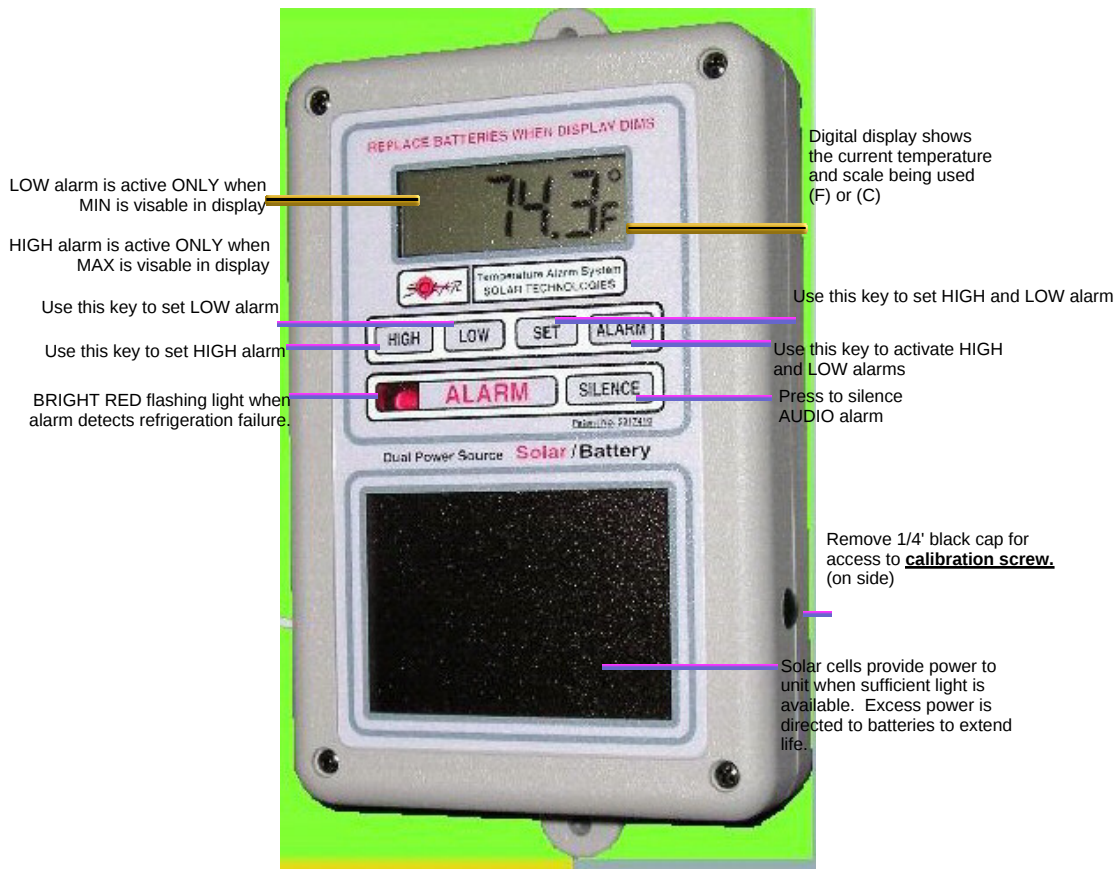
To change sensor location: Unplug sensor from circuit board. CAREFULLY remove sensor from side hole. Insert hole plug (supplied in screw package) into side hole. Mount back panel to wall. Drill a 3/8" hole into cooler using back hole as a template. insert sensor into hole. Plug sensor into circuit board and assemble. Be sure to leave at least 6" of slack in sensor so unit can be opened in the future.

1	2	3	4	5	6
TURNS UNIT ON OR OFF	SELECT TEMP SCALE	DISABLE KEY PAD TO PREVENT TAMPERING	SELECT TIME DELAY TO PREVENT FALSE ALARMS	ACTIVATES RELAY FOR EXTERNAL PHONE DIALER	
ON	ON	ON	ON	ON	ON
OFF	F°	ACTIVE	NONE	ACTIVE LEAVE OFF IF NOT USED	NOT USED
POWER	SCALE	KEY PAD	TIME DELAY	RELAY	
OFF	C°	DISABLED	ONE HOUR	DISABLED	
OFF	OFF	OFF	OFF	OFF	OFF

DIP SWITCHES

ST-1

Faceplate Components



SETTING THE ALARM FUNCTIONS

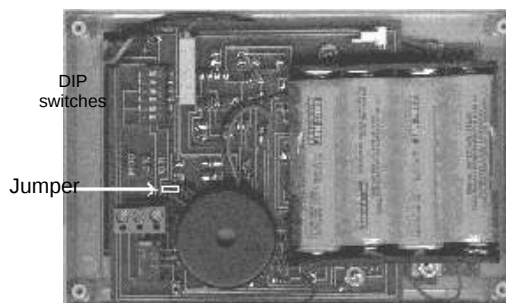
SETTING THE TIME DELAY. Make sure the correct time delay is selected. With the #4 DIP switch in the **ON** position, a very short time delay is set (15 seconds no matter what the jumper setting). When the #4 DIP switch is in the **OFF** position, a 55 minute or a 110 minute delay will occur. **REFER TO DIAGRAM BELOW TO SELECT A 55 MIN. OR A 110 MIN. DELAY.**

Jumper

■ Jumper in this position will allow a 60 minute delay when the #4 DIP switch is in the "OFF" position

Jumper

■ Jumper in this position will allow a 110 minute delay when the #4 DIP switch is in the "OFF" position



This unit comes factory set for a 55 minute time delay. Time delay can be changed to 110 minutes by changing the position of the JUMPER as described above.

To SET and ACTIVATE temperature alarm.

You may set both **HIGH** and **LOW** temperature alarms. The alarms will work **together** or **individually**.

HIGH TEMPERATURE ALARM: To view current setting, press and hold **HIGH** pad on keyboard. Set point will appear in display.

TO SET HIGH ALARM: Press and hold **HIGH** pad, then press the **SET** pad to advance the setting. Pressing the **SET** pad momentarily will advance the setting one degree at a time. Pressing and holding the **HIGH** and the **SET** pads for 3 seconds or more will cause the setting to advance rapidly. **Setting advances upward from -40 to 120, then repeats.**

TO ACTIVATE ALARM: Once the desired setting appears in the display, press and hold the **HIGH** pad and press the **ALARM**(black) pad once. **MAX** will appear at the left of the display to confirm high alarm in active.

MAX MUST be appear or the high alarm is not on! Pressing and holding the **HIGH** pad and pressing the **ALARM** pad again turns off the high alarm and **MAX** will not be visible in display.

LOW TEMPERATURE ALARM: To view current setting, press and hold **LOW** pad on keyboard. Set point will appear in display.

TO SET LOW ALARM: Press and hold **LOW** pad, then press the **SET** pad to advance the setting. Pressing the **SET** pad momentarily will advance the setting one degree at a time. Pressing and holding the **LOW** and the **SET** pads for 3 seconds or more will cause the setting to advance rapidly. **Setting advances upward from -40 to 120, then repeats.**

TO ACTIVATE ALARM: Once the desired setting appears in the display, press and hold the **LOW** pad and press the **ALARM**(black) pad once. **MIN** will appear at the left of the display to confirm low alarm in active.

MIN MUST be appear or the low alarm is not on! Pressing and holding the **LOW** pad and pressing the **ALARM** pad again turns off the low alarm and **MIN** will not be visible in display.

RELAY OUTPUT:

A secondary alarm or a phone dialer can be activated by the relay provided with this unit. The relay is set in the **OFF** position from the factory. To use relay, turn the #5 DIP switch to the **ON** position. Relay will now activate when an alarm condition exists.

Relay output is a 3 position terminal block. The common, normally open, and normally closed contacts are printed by terminal block. DO NOT EXCEED .5 AMP @ 24 V.

Relay operation: When time delay completes and sounds an alarm condition, relay will activate. Contacts will close and open. Relay will stay activated until the **SILENCE** pad is pressed, or the temperature returns to normal, which reset alarm automatically.

LEAVE RELAY IN THE OFF POSITION IF NOT BEING USED. THIS COMPONENT IS A HIGH POWER DRAIN AND WILL SHORTEN LIFE OF BATTERIES.

TO CALIBRATE: Turn unit on. Place sensor in ice slush solution. Stir sensor until display stabilizes. Remove 1/4" cap on right side of unit. Adjust screw CW to increase temp display, CCW to decrease temp display. One complete turn is approximately 4 degrees.

PLEASE BE PATIENT...DISPLAY UP-DATES EVERY 15 SECONDS.

DIGITAL TEMPERATURE ALARM
MODEL No. ST-1B
Operating & installation instructions

Solar/Battery Temperature Alarm Model No. ST-1 B

Microtemp Electronics 360-256-6789

 JUMPER IN THIS POSITION WILL ALLOW A 60 MINUTE DELAY WHEN THE #4 DIP SWITCH IS IN THE "OFF" POSITION.

 JUMPER IN THIS POSITION WILL ALLOW A 110 MINUTE DELAY WHEN THE #4 DIP SWITCH IS IN THE "OFF" POSITION.

THIS UNIT IS FACTORY SET FOR A 60 MINUTE TIME DELAY. TIME DELAY CAN BE CHANGED TO 110 MINUTES BY CHANGING THE POSITION OF THE JUMPER AS DESCRIBED ABOVE.

PHONE DIALER TERMINAL BLOCK

Normally open and normally closed dry contacts are available for dialers or secondary alarm systems. The #5 DIP switch **must** be in the UP position for this option to operate.

Switches

Jumper



Batteries must be replaced as soon as possible when low battery icon appears in upper right corner of display. Unit is supplied with alkaline batteries, lithium is recommended. When used outdoors, batteries must be NIMH to handle high current from solar cells.

CALIBRATION: Unit is factory calibrated. Accuracy: +/- 1 degree Celsius.

trouble shooting tips

Constant -45C or -55F on Display: Open circuit to sensor due to broken wires, unplugged sensor cable on circuit board, or defective sensor. If repairs cannot be made, replace sensor assembly.

- - - on Display: Shorted circuit to sensor due to pinched or crimped cable or defective sensor. Make repairs or replace sensor assembly.

Alarm does not go off: Make sure alarm is activated. HI or LOW must be visible at left in display. Batteries may have dislodged during shipment. Change batteries when battery icon appears on display.

WEAK BATTERIES MUST BE REPLACED.

10 second waiting period was not observed when setting second alarm. Reset alarm settings by pushing F/C button back of display. This will clear settings. Push F/C switch again to select scale (F or C) Set HIGH alarm, wait 10 seconds, then set LOW alarm.

Unit does not activate when DIP switches 1 and 2 are turned on: Check batteries. Push on/off button on back of display.

Alarm settings must be reset whenever batteries are replaced or F/C switch is pressed.

WARRANTY: Alarm is warranted for one year from date of purchase covering labor and material only. This unit cannot cause a refrigeration failure and is not liable for product loss. If unit becomes defective, contact manufacturer for replacement or repairs.

INSTALLATION AND OPERATING INSTRUCTIONS.

NOTE: All settings should be made before mounting alarm.

1. Turn on unit by placing the #1 and #2 DIP switches (on back) in the UP position.
2. Sensor can exit alarm from side or back. To move sensor to back exit Remove four front screws. Unplug sensor from circuit. Carefully remove sensor and lock from side hole. Insert hole plug (provided). Discard cord lock, then plug sensor back into circuit board. Feed sensor through large hole on back and assemble case. Replace screws.
3. Set DIP switches to fit your application.

No. 1 is power switch for circuit board.

No. 2 is power switch for display module.

No. 3 switch is **NOT USED**

No. 4 switch set time delay. **SEE DETAILS ON BACK**

No. 5 switch enables a relay to activate a secondary alarm system or phone dialer. This is accessed by using the terminal board provided on the circuit board.

No. 6 switch is **NOT USED**

ON	ON	ON	ON
SW	Mod- ule power	NOT USED	SW
POWER			RELAY
RT			NOT USED
OFF	OFF	OFF	ON

NOTE: After an alarm condition, this unit will automatically re-set when the temperature has been normal for two minutes.

4. After all DIP switches have been selected, set the alarm. Alarm can be set from face plate or on back of display module.

F / C must be selected FIRST before setting alarm parameters. NOTE: There is an unmarked switch under the left side of the LOGO on the face plate that must be pushed when selecting LOW or HI alarm settings. Alarm settings can be set using the buttons on the back of display module. **Unmarked switch helps prevent unauthorized tampering.**
HI ALARM: From faceplate, press and hold logo key pad and HIGH pad. Display will show HI setting. After one second, display will advance rapidly. When display approaches set point, release HI pad. Press and hold logo pad and press and release HI pad until set point is reached. Release both pads, display will return to temperature after reading after 4 seconds. HI will appear at left of display.

IMPORTANT: AFTER SETTING HIGH ALARM, YOU MUST WAIT 10 SECONDS BEFORE SETTING LOW ALARM. FAILURE TO DO SO WILL CAUSE THE ALARM TO MALFUNCTION.

LOW ALARM: Follow steps for HI alarm, but use LOW pad instead of HIGH pad. LOW will appear at left of display.

Alarm **must** be mounted in a well lit area that is illuminated most of the day. This unit requires light to operate or the batteries will not last.

Alarm should be mounted in an area that can be seen or heard at all times.

Alarm **must** be set no closer than 5 degrees higher than normal operating temperatures.

Example: Cooler operates at +35, set alarm to +40. Freezer operates at -10, set alarm to 0.

Any closer settings will make the alarm a nuisance and the batteries will not last.

LOW alarm setting should be 5 degrees lower than normal operating temperature. If the above conditions are



**Microtemp
Model No. ST-1B**

NOTE: When ever the F/C switch is pushed, all alarm settings are erased. HI and LOW alarms points **MUST** be reset after changing temp scale or batteries.