

# FrostAlert User Manual



Overview:

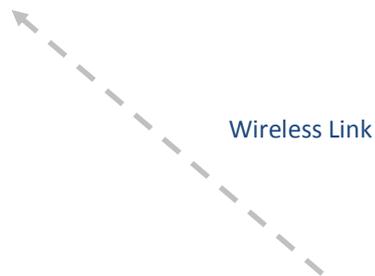
The Frost Alert Early Warning system (FrostAlert) has been designed to provide warning as the temperature in the field is approaching freezing conditions. The point at which the alarm activates (Alarm Temperature) is user adjustable. Typically, this would be set a couple degrees above the freezing condition to enable the user to implement preventative action (such as turning on the sprinkler system).

Once the ambient temperature rises 1 degree above the setpoint, the alarm will deactivate.

The system can be supplied with optional add-on wireless relay unit. This unit can be controlled by the Master (main base unit) to automatically activate valve or solenoid controllers when the alarm is activated.



Master Unit



Remote Temperature Unit

#### How it Works:

The remote temperature unit in the field is powered by a rechargeable 6 AHr lithium battery. The field unit should run for the entire Frost season between charge. (The Remote unit should be fully charged before the next season by plugging the USB charge cable into a Computer USB port, USB hub or USB charger).

The remote temperature unit reads the ambient temperature approximately every 30 seconds and sends the value to the Master unit for processing. Every 60 seconds, the Master unit will process any readings received from remote temperature nodes and display the current temperature for each on the main display window.

In the event of a faulty link between the Master unit and remote temperature unit, the display will show the last known value. If the link is not re-established within 5 minutes then a RF ERROR alarm will be activated. Common cause for faulty radio link are.

1. Damaged antenna or cable
2. Antenna cable not screwed in correctly
3. Power supply problem (no power, exhausted battery, wrong power supply value)
4. Obstacles in signal path between the Remote temperature unit and the Master unit (hill, heavy wooded trees, buildings)
5. Distance too far between remote temperature unit and Master unit

The system is supplied with high gain Yagi antennas. Typically, this should result in distances between the Master and Remote unit up to several km. To ensure best signal strength between the remote temperature sensor and Master unit

1. The supplied Yagi antenna is mounted high as possible (usually 3-4m or higher is best)
2. The elements of the Yagi antenna are horizontal.
3. The SHORTEST element of the antenna is pointing directly at the location of the whip antenna at the Master unit

When the Master unit alarm is activated the following will occur

1. A local warning will sound at the Master unit
2. The remote temperature reading that caused the alarm will be highlighted on the display
3. If Optional Wireless Relay unit is installed then the relay contacts at the relay will close.

#### Setting the Alarm Temperature

Setting the alarm temperature is very simple. Pressing "F1" will decrease the alarm temperature and pressing "F2" will increase the alarm temperature. The temperature will change by 0.1 Degrees for each press of either button. The new alarm temperature will be retained in the unit even after power off.

#### Silence the alarm

Pressing "F5" during an alarm event will cause the buzzer to be silenced. Once the alarm is cleared (by temperature at remote unit rising at least 1 Degree C) the alarm will reset and activate the buzzer automatically if the temperature falls again below the user-defined Alarm Temperature.

**Charging the Battery:**

This should be done just before the system is installed into the field.

Plug the supplied USB cable into the small socket on the main board (as identified in diagram above). Plug the other end of cable into a Computer USB port, USB hub or USB charger power pack). Leave on charge for at least 24 hours to ensure full charge.

The ON/OFF switch is located in the centre-front of the main board. Forward is OFF, switched toward back of unit is ON. The amsll green LED will flash several times when power is applied. The LED will also briefly flash approximately every 30 seconds when a temperature reading is being taken and sent to the Master Unit.

U-Bolts are supplied to enable the unit to be located on a 40mm water pipe or similar. Alternately, the unit can simply be bolted to a flat surface.

The temperature probe protrudes slightly from the bottom of the enclosure.

The Yagi Antenna (large antenna with multiple elements) attaches to the small gold connector at bottom of enclosure and should be mounted horizontally at least 4-4 metres in the air. Ensure SMALLEST element points toward Master unit whip antenna.

**Wireless Relay Unit**



Power input Socket (+ left - right)  
Use 12V or 24V DC.

Antenna Connector to  
Whip antenna

Charge Socket

Relay Contacts (2A max. Normally  
Open) Close on activation

The relay contacts close during alarm activation. If the Temperature Unit “1” alarm is activated then R1 Relay (left-most) will close contacts. If Temperature unit “2” alarm is activated then R2 (next relay to right) will close its contact. If BOTH units are in alarm state then both relay contacts will be closed.

When the temperature at the remote unit rises 1 degree above the setpoint then the corresponding contacts will open.