

# **Minitemp**

## **Digital Temperature Monitor**

### **Instructions**

#### **Instrument Operation**

Connect the Minitemp Monitor to the temperature sensor via the flexible cable and jack socket attached to the monitor. Switch the monitor on using the 'ON/OFF' button. If a portable fast-response sensor is being used, it will take just a few seconds (but may take up to as long as 1-2 minutes) before the monitor displays a stable temperature. The time delay will depend on the difference between the temperature in the grain and the air temperature. It may take longer to stabilize during the first few readings if the sensor has just been brought into the store from outside. To remove the temperature probe/sensor, press and hold down the red slide on the jack socket and remove the plug.

#### **HOLD**

If measuring the temperature in a hard to reach area or with limited lighting available, press the 'HOLD' button to maintain the reading displayed.

#### **Warranty**

The Martin Lishman Minitemp and range of sensors are guaranteed for a period of one year from the date of purchase against mechanical and electrical manufacturing defects. There are no user serviceable parts inside the instruments. To claim under warranty, the equipment should be returned, at the claimant's expense, to the supplier with a written explanation of the problem. Should there prove to be a defect or malfunction caused by faulty parts or workmanship, it will be repaired or replaced and returned to the claimant without charge. If a warranty claim is rejected, the cost of replacement or repair will be notified to the claimant before any work is carried out.

Any warranty claim will automatically be invalidated if the equipment has been modified or internally tampered with in any way. The manufacturers deem damage or faults occurring to the equipment which have been caused by inappropriate use of the equipment or by use not in accordance with these instructions will not be covered under warranty.

Under no circumstances will Martin Lishman re-imburse any costs associated with a warranty claim if these costs have been incurred without agreement in advance.

Under the terms of warranty for the equipment under no circumstances will liability exceed the cost of replacement or repair. The manufacturers will not be liable for any consequential or indirect loss suffered by purchasers or users of the equipment, whether this loss arises from correct or incorrect use of the equipment, defect or malfunction caused by faulty parts or workmanship or in any other way. Non-exhaustive illustrations of consequential or indirect loss are loss of profits, loss of contracts and damage to property.

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Distributed by

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#### **MAX/MIN**

Press the MAX/MIN button to display the values. The instrument retains the max/min values when switched off. To reset, hold down the MAX/MIN button for three seconds; 'rst' will be displayed.

#### **AUTO OFF**

The instrument will switch off automatically after 10 minutes. To disable auto off press down the HOLD button whilst switching on the instrument. (this is reset when the instrument is switched off.)

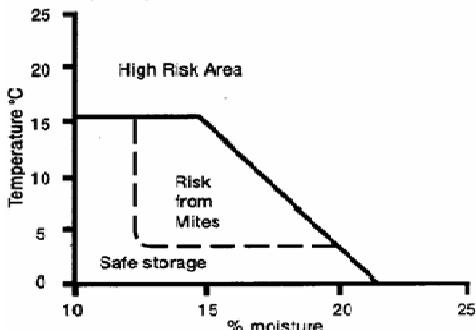
#### **Error Display**

'Err' will appear in the display if:

- There is no probe or if the wrong type of probe is fitted
- Communication with the sensor has failed
- The sensor is contaminated or wet
- The instrument has developed a fault

***If using a stainless steel sensor, remove the protective rubber cover from the tip of the sensor before use!***

### **A simple guide to crop storage temperature**



### **Sensors**

The Minitemp Monitor should only be used with 10K type thermistor sensors fitted with a 6mm 2-pole jack plug. Martin Lishman 10K type sensors include 1.5m stainless steel rapid-response sensors plus 2m or 3m static PVC sensors and static flexible cable sensors (any length). Apart from the 1.5m stainless steel sensor all the sensors are designed to be placed in the crop permanently throughout the storage period and are not meant to be portable.

To expand the use of the Minitemp Monitor into a multi-sensor crop monitoring device, it can be used in conjunction with a multi-switchbox. This allows up to 12 crop sensors to be connected in turn to the Minitemp Monitor by using a sensor selector switch. The sensors can be located in different parts of the store using extension cables of any length.

### **Battery Replacement.**

The instrument will display LO BAT to warn that the batteries will need changing soon. The instrument continues to measure accurately but after further usage the instrument will display 'flat bat' and shutdown. Replace the batteries with three AAA batteries located under the rear cover that is held in place by a single screw.

### **Maintenance and Care**

The Minitemp Monitor should be stored at room temperature away from direct sunlight when not in use. Do not leave it in the grain store after taking measurements. Failure to follow this advice could lead to incorrect temperature measurement caused by very high or low temperatures affecting the electronics of the monitor or component failure due to a build-up of dust and dirt. Static electricity can also cause problems (though this is rare). Symptoms of static include the monitor displaying constantly changing and high readings. If this happens, switch the monitor off and leave it off for up to 12 hours. The static electricity should discharge in this time. If the problem persists, contact Martin Lishman Ltd.

### **Calibration**

The Minitemp Monitor is supplied with a calibration certificate and has a full 1-year warranty. The monitor accuracy is given as  $\pm 0.4^{\circ}\text{C}$  over the range of  $-39.9^{\circ}\text{C}$  to  $+149.9^{\circ}\text{C}$ . The unit should retain its calibration for a long period of time, but should re-calibration or service be required it should be returned to Martin Lishman Ltd for this to be carried out.