EXTECH INSTRUMENTS

INSTRUCTION MANUAL

Model 444731
Hygro-Thermometer

1. INTRODUCTION

Congratulations on your purchase of the Extech Model 444731 Hygro-Thermometer. This meter includes a remote sensor and simultaneously displays Relative Humidity and Temperature measurements.

2. SPECIFICATIONS

	Range	Accuracy
Humidity	10 - 95%	± 3% (25 to 90%); ± 5% (10 to 25% and 90 to 95%)
Temperature	0 to 199.9 ^{0}F (0 to 93^{0}C)	± 4^{0}F, +2^{0}C
Operating temperature	32^{0}F to 122^{0}F (0^{0}C to 50^{0}C)	
Storage temperature	32^{0}F to 140^{0}F (-20C to 60^{0}C)	
TTL Serial Output	Baud rate 1200bps, data bits 7, stop bits 1, parity none	
Format	Txxx.xF:Hxx.x% cr lf	
	Txxx.xC:Hxx.x% cr lf	
Power	9 V battery	
Battery life	100 hrs. typical (alkaline)	
Dimensions - meter	6.8 x 2.9 x 1.14"	
Dimensions - probe	8.2"L x 0.7"D	
Weight	2 lbs. 2 oz.	

3. METER DESCRIPTION

1. Keypad
2. LCD Display
3. TTL Output jack
4. AC Adapter jack
5. Sensor Input jack
6. Sensor

4. OPERATION

4.1 Basic Operation

a) Press the **"ON"** key. The meter will display the relative humidity (large characters) and the temperature (small characters). Press the **"OFF"** key to power down.
b) Press the **"C/F"** key to change the display from degrees C to degrees F.
c) Press the **"HOLD"** key to freeze the most recent reading on the LCD.
d) Press the **"Min/Max"** key to display first the minimum and then the maximum readings that have been taken by the meter since the last reset or power up. Press the **" RESET "** key to clear the Min/Max memory.

4.2 Sleep Mode (Auto Shut-Off)

a) Auto shut-off is the default mode. If no key is pressed for 20 minutes the meter will automatically shut off. A warning beep will sound shortly before 20 minutes. Press any key to restart the 20 minute cycle.
b) To disable the auto shut-off feature, press and hold the **"MN/MX"** and the **"ON"** keys at the same time until "nSL" is displayed. Release the keys and the meter is in the non-sleep mode.

4.3 Error Messages

a) **"OP"** displayed with a continuous beep: The probe is not properly connected.
b) 0.0% or 99.9% remains on the display: Possible damaged probe.
c) The error messages Er 1, Er 2, Er 3, Er 4 display along with an alert beep.
Er 1, Er 3 and Er 4 messages indicate a meter circuit error. In the event of any of these errors return unit for repair.
The Er 2 message indicates a calibration error, damaged probe, or a compromised humidity reference. Contact Technical Support in the event of these errors.
d) When the Battery symbol flashes on the LCD, the battery voltage is low. Replace battery.

5. CALIBRATION

5.1 Relative Humidity Calibration

1. Insert the sensor probe into the 33% Calibration Reference (magnesium chloride saturated salt solution). Place the probe and the salt reference into the carrying case. Leave the hygrometer out of the case. Ensure a stable temperature by closing the case tightly.

2. From a power OFF condition, enter the CAL mode by pressing the **" C/F ", " RESET "**, and **" ON "** keys simultaneously until " CAL " is displayed on the LCD.

3. The LCD will display a flashing offset temperature on the lower right hand portion of the display window. Do not attempt to adjust at this time, a later calibration will address this.

4. Press the **" RESET "** switch. The display will indicate 32%RH and an audible beep will be heard. The meter has now begun the 33% calibration process.

5. In the stable temperature environment, the calibration will continue for 45 to 60 minutes. When "SA" is indicated on the display, the 33% calibration is complete.

6. Remove the probe from the salt reference and leave the probe outside of the case for one minute. Now plug the sensor probe into the 75% humidity reference. Follow steps 1 and 2 above and then go to step 7.

7. Press the **" RESET "** key and the LCD will indicate 75%RH and an audible beep will sound. The meter has now begun the 75% calibration process.

8. The automatic calibration will take approximately 45 to 60 minutes or until the "C2" appears on the LCD indicating that the 75% calibration is complete.

9. Remove the probe and remove power to the meter.

5.2 Temperature Calibration

1. Press the **" ON "** key to apply meter power. Record the meter's temperature reading and mark as (Tm). Compare this reading to a known temperature standard and mark this standard temperature as (Ys).

2. Press the **" OFF "** key and then re-apply power by pressing the **" ON "** and **"PROG"** keys simultaneously until " CAL " is indicated on the LCD. When the **"ON"** and **" PROG "** keys are released the LCD will indicate the two-digit temperature in the lower right-hand portion of the display with the left-most digit flashing. Record this as (To). This value represents the last sensor offset value.

3. The formula used for calibration is Tc = (To + Tm) - Ts. Where "Tc" is the new sensor offset value and "To" is the existing sensor offset value.

4. EXAMPLE: Reference temperature (Ts) is 59 degrees and the meter's temperature (Tm) is 68 degrees. Existing offset value (To) is 0.5 degrees. From the formula in Step 3 we have: Tc = 0.5 + 60.8 - 59.0. Tc then equals 2.3.

5. Press and hold the **" Mn/Mx "** key and the flashing digit will scroll as follows: "0,1,2,3-3,-2,-1,0".

6. Release the **" Mn/Mx "** key while a "2" is indicated on the display during the scroll sequence.

7. Press the " **NX/td** " key and the right-most digit will begin to flash.

8. Press and hold the **" Mn/Mx "** key and the digits will continuously scroll from 0 through 9. Release the " **NX/td** " key when the scrolling digit is a "3".

9. Press and hold the **" PRG "** key until " SA " appears on the LCD.

10. Press the **" OFF "** key and then the **" ON "** key to exit the calibration mode and return the meter to the standard measurement mode.

6. CALIBRATION / REPAIR SERVICES

Extech offers complete repair and calibration services for all of the products we sell. For periodic calibration, NIST certification or repair of any Extech product, call customer service for details on services available. Extech recommends that calibration be performed on an annual basis to insure calibration integrity.

7. WARRANTY

EXTECH INSTRUMENTS CORPORATION warrants this instrument to be free of defects in parts and workmanship for one year from date of shipment (a six month limited warranty applies on sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 for authorization. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit.

This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product.

The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.