Psyclone™

Protimeter
Thermo-Hygrometer

Operating Manual

Psyclone is a Protimeter product. Protimeter has joined other GE high-technology sensing businesses under a new name—GE Sensing.
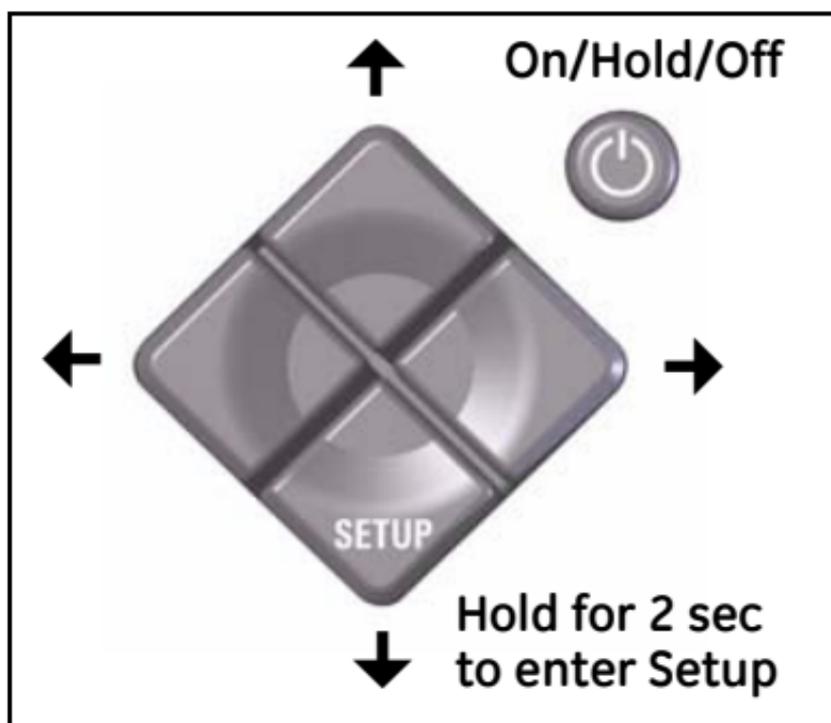
Psyclone is a registered trademark of GE Sensing.

Introduction

The *GE Protimeter Psyclone* thermo-hygrometer measures relative humidity with psychometric measurements, along with temperature. One button enables start, hold and OFF operation, and four arrow keys allow you to set up and change the measurements shown on the LCD screen. An optional surface temperature probe enables users to determine if condensation is present. Figure 1 below shows the Psyclone control buttons, while Table 1 on the next page lists the available parameters.

Figure 1: The Psyclone (#BLD7800) Control Buttons

Table 1: Psyclone Measurement Parameters

Parameter	Symbol
% Relative Humidity	% RH
[1]Grains per pound	GPP
[2]Grams per kilo Gram	g/kg
Dewpoint Temperature	DEW POINT
Wet Bulb Temperature	WET BULB
[2]Kilo Calorie per Kilogram	kcal/kg
[1]British Thermal Units per Pound	BTU/lb
Ambient Temperature	AMBIENT
Surface Temperature	SURFACE
Proximity to Dew Point at the Surface	TEMP DIFF

1 Displayed if °F units chosen in Setup

2 Displayed if °C units chosen in Setup

Starting the Psyclone for the First Time

The Psyclone comes with two AA, 1.5 V batteries already installed. To begin using the meter, extend the retractable probe and press the $\bigodot$ (ON) button. The LCD screen briefly flashes, similar to Figure 2 below. After a few seconds, the meter changes to measurement mode and displays only the currently selected parameters, as shown in Figure 3 on the next page. Moisture readings appear at the top, with temperature measurements below.

Figure 2: Full Screen Display

Starting the Psyclone for the First Time (cont.)

Figure 3: Typical Screen Display During Operation

- To freeze the Psyclone at a particular reading, press the ⏻ button briefly. The "Hold" message appears to the left of the temperature reading, as shown in Figure 2 on the previous page.

- To shut off the Psyclone, press the ⏻ button for 3 seconds, until the message OFF appears before the LCD blanks.

Selecting Parameters and Calculations

Use the four arrow keys to select the parameters and calculations you want to display. Press any of the arrow keys to scroll to the parameter row (shown in Figure 2); then press the **RIGHT** arrow key to scroll to the parameter or calculation. The reading changes immediately, and the parameter is set once the flashing stops. Pressing $\bigcirc$ instantly selects the parameter.

• **To select the humidity parameter (%RH, GPP or g/kg, or Dew Point):**
  Scroll to the top row, and then to the desired parameter.

Note: *If you have selected the Psychometric Calculation On option, your options include the available calculations.*
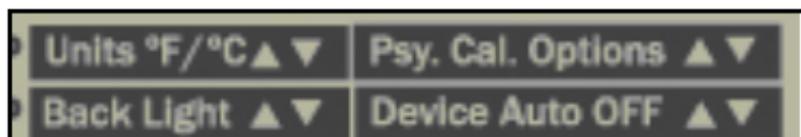
Selecting Parameters and Calculation (cont.)

- **To select a calculation (Minimum, Maximum or Average):**
  Scroll to the middle row, and then press the **RIGHT** or **LEFT** arrow key to select the desired calculation. The min/max/ave calculations are made from the last time the meter was powered up. If no parameter is selected, all the parameters in that row remain solid (not blinking), and the Psyclone displays the current reading. Min/Max/Ave will continue to calculate while in these modes. Push the **UP** arrow to return to free measurement mode.

Setting User Options

To set up the user options to your particular requirements, firmly press and hold the SETUP key (the **DOWN** arrow key) for 2 seconds. The lower part of the screen appears similar to Figure 4 below.

| Units °F/°C ▲ ▼ | Psy. Cal. Options ▲ ▼ |
| Back Light ▲ ▼ | Device Auto OFF ▲ ▼ |

Figure 4: Setup Menu

The factory default settings are:

- Temp - Off
- Psy. Cal. Options - Off
- Device auto off - 3 mins
- Back Light - 0 mins (off)

Use the **LEFT** and **RIGHT** arrow keys to scroll to the desired option, and the **UP** and **DOWN** arrow keys to set the desired selection. Once selected, wait for the meter to return to measurement mode or push the ⏻ button to save the change. Four options are available:

Setting User Options (cont.)

- **Units °F/°C** — You can display all temperature measurements in either °F or °C. (Setting °C also results in displaying other parameters in metric units, such as g/kg. Setting °F prompts the meter to display other parameters in non-metric units, such as GPP or grains per pound.) Press the **UP** or **DOWN** arrow key to toggle between °F and °C units.

- **Psychometric Calculations** — You can extend the available humidity measurements to include psychometric calculations (Wet Bulb Temperature, kcal/kg and BTU/lb, shown in Figure 2). Press the **DOWN** or **UP** arrow key to turn on (or off) the Psychometric Calculation options. When the screen refreshes, you can then select the desired calculation (see the next page).

Setting User Options (cont.)

- **Back Light** — You can set the back light for the LCD display to remain on from 1 to 9 minutes at a time. (If you set "0", the back light is turned off.) Use the **UP** and **DOWN** arrow keys to scroll to the desired number of minutes after the last button push.

- **Device Auto OFF** — You can set the Psyclone to shut off automatically after from 1 to 9 minutes at a time. (If you set "0", the automatic shutoff is turned off.) Use the **UP** and **DOWN** arrow keys to scroll to the desired number of minutes to stay on after the last button push.

Using the Optional Surface Temperature Probe (#BLD7710)

Note: *The Surface Temperature (Surface) and Temperature Difference (Temp Diff) appear only if you are using the surface temperature probe option.*

To obtain surface temperatures via the optional probe:

1. Plug in the surface temperature probe on the right side of the Psyclone.

2. Scroll to the bottom row using the **UP** or **DOWN** arrow keys, and then select Surface or Temp Diff on the screen. Selecting Ambient uses the Psyclone's internal sensors.

3. Remove the black cap, exposing the metal sensing strip on the sensor.

4. Apply the metal strip on the probe to the surface you wish to measure.

Using the Optional Surface Temperature Probe (cont.)

In Surface mode, the reading shown will be the surface temperature. (Allow time for the reading to settle.)

In Temp Diff mode, the temperature shown will be the proximity to Dew Point (when condensation will occur). For example, a reading of 5 degrees would indicate that the surface temperature is 5 degrees above the Dew Point. A reading of -5 degrees would indicate that the surface temperature is 5 degrees below the Dew Point and condensation is present.

Figure 5: Optional Surface Temperature Probe with Cap Removed

Caring for Your Psyclone

- When you have finished using the Psyclone, retract the probe back into the meter.

- Use the carrying case to shield the Psyclone when not in use.

- Keep the Psyclone out of water, and away from dirt and dust.

- If the Psyclone has been stored in excessive heat or cold (i.e., a vehicle), allow for increased acclimation time.

- A low battery warning **LOW** appears when the battery has only 20% of its charge. To replace the batteries, remove the panel on the rear of the Psyclone and insert two 1.5 V, AA batteries. **Do not use rechargeable batteries.**

Error Codes

E-1: Sensor probe not responding

E-2: CRC checksum error

If either of these codes appear, contact GE Sensing.

Replacement Parts

To order the parts listed below, or for additional service, contact GE Sensing at 800-833-9438 (North America), +353 61 470200 (Europe and Asia), or www.gesensing.com.

- Battery Cover (BAT7800)
- Pouch (POU8512)
- Belt Clip (BLD7810)

Specifications

Power	2 x AA 1.5v
Enclosure Material	ABS with silicone rubber boot
Dimensions	~165 mm x ~65 mm x ~30 mm (~6.5 in. x ~2.5 in. x ~1.2 in.)
Weight	~ 200 g
Front Panel Keys	Rubber function keys
Probe Humidity Measurement Range	1.0 - 99.0% (non condensing)
Humidity Precision	± 2% (10% to 90% @ 25°C/77°F)

Operating Temperature Range	0 to 50°C (32 to 122°F)
Probe Measurement Temperature Range	-20 to 85°C (-4 to 185°F)
Temperature Accuracy	± 0.5°C (0 to 50°C, or 32 to 122°F)
Certifications	CE Approval, RoHS Compliance & WEEE

Emissions: Class A Immunity - Annex C. Performance Criteria - Non Continuous Operation. |

Glossary

Symbol	Definition
% RH	The ratio of the amount of water vapor in the air at a specific temperature to the maximum amount that the air could hold at that temperature, expressed as a percentage.

Specific Humidity (GPP, g/kg and PPMw)	The ratio of the mass of water vapor to the mass of dry air. For very low levels, the Specific Humidity is also expressed as parts per million by weight (PPMw).
DEW POINT (°C/°F)	The temperature at which the air you are measuring would be saturated. Condensation would begin appear on surfaces if they are colder that the dew point temperature.
WET BULB (°C/°F)	The temperature of a wetted thermometer in moving air. The wet bulb temperature is a measure of the rate of evaporation which is influenced by the amount of water vapor in the air.
Enthalpy kcal/kg	The amount of thermal energy required to remove all the water from 1 kg of air and cool it to 0°C.
Enthalpy BTU/lb	The amount of thermal energy required to remove all the water from 1 lb. of air and cool it to 32°F.

Limited Warranty

GE Sensing (GE) warrants the Psyclone thermo-hygrometer (Psyclone) against defects in material and workmanship for 24 months from the date of shipment, except, however, the sensor components of the Psyclone, which are warranted for a one year period. Products not subjected to misuse will be repaired or replaced. GE reserves the right to make changes without further notice to any products herein. GE makes no warranty, representation or guarantee regarding the suitability of its products for any particular application nor does GE assume any liability arising out of the application or use of any product or circuit and specifically disclaims all liability without limitation for consequential or incidental damages. The foregoing warranties are exclusive and in lieu of all other warranties, whether written, oral, implied or statutory. NO IMPLIED STATUTORY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. GE Sensing standard terms and conditions apply.

Return Policy

If a GE Sensing, Inc. instrument malfunctions within the warranty period, the following procedure must be completed:

1. Notify GE Sensing, Inc., giving full details of the problem, and provide the model number and serial number of the instrument. If the nature of the problem indicates the need for factory service, GE Sensing, Inc. will issue a RETURN AUTHORIZATION NUMBER (RAN), and shipping instructions for the return of the instrument to a service center will be provided.

2. If GE Sensing, Inc. instructs you to send your instrument to a service center, it must be shipped prepaid to the authorized repair station indicated in the shipping instructions.

3. Upon receipt, GE Sensing, Inc. will evaluate the instrument to determine the cause of the malfunction.

Then, one of the following courses of action will then be taken:

- If the damage <u>is</u> covered under the terms of the warranty, the instrument will be repaired at no cost to the owner and returned.

- If GE Sensing, Inc. determines that the damage <u>is</u> <u>not</u> covered under the terms of the warranty, or if the warranty has expired, an estimate for the cost of the repairs at standard rates will be provided. Upon receipt of the owner's approval to proceed, the instrument will be repaired and returned.