



# Temperature & Humidity Data Logger

## RHTemp1000IS - Product User Guide



Temperature Sensor Resistance Temperature Detector (RTD)

Temperature Range -40 °C to +80 °C (-40 °F to +176 °F)

Temperature Resolution 0.01 °C

Calibrated Accuracy +0.5 °C (0 °C to 55 °C)

Humidity Sensor Capacitive Polymer

Humidity Range 0 %RH to 100 %RH (non-condensing)

Humidity Resolution 0.1 %RH

Calibrated Accuracy +3 %RH maximum

Memory 16,350 readings per channel

Memory Wrap Yes

Reading Rate 1 reading every second up to 1 reading every 24 hours

Time Accuracy ±1 minute/month at 25 °C

Data Format Date and time stamped °C, °F, K, °R; %RH, mg/mL, Dew Point

Required Interface Package IFC400 or IFC406

Baud Rate 125,000 baud

Typical Battery Life 2 years typical at 25 °C (15 minute reading rate)

Operating System Compatibility: XP SP3/Vista/Windows 7/Windows 8

Software Compatibility: Standard Software version 4.1.0.2 or later

Operating Environment: -40 °C to +80 °C (-40 °F to +176 °F),

0 %RH to 100 %RH (non-condensing)

Material: 316 Stainless Steel

IP Rating IP30

### Battery Warning

WARNING: FIRE, EXPLOSION AND SEVERE BURN HAZARD. DO NOT RECHARGE, DISASSEMBLE, HEAT ABOVE 100 °C (212 °F), INCINERATE, CRUSH, OR EXPOSE CONTENTS TO WATER. FAILURE TO USE A TADIRAN TL-2150 BATTERY WILL VOID THE INTRINSICALLY SAFE/NON-INCENDIVE RATINGS.

### RHTemp1000IS Intrinsically Safe

### Temperature & Humidity Data Logger



Approval: CE; Intrinsically Safe for Class I, Div 1, groups ABCD;  
Non-incendive for Class I, Division 2, groups ABCD Hazardous  
(Classified) Locations

Dimensions: 1.7 in x 0.97 in x 0.97 in (42 mm x 24.6 mm x 24.6 mm)

Weight: 2.3 oz (65 g)



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## Product Notes

### Intrinsic Safety Approval

The RHTemp1000IS has been certified by FM Approvals as Intrinsically Safe (IS) for use in Class I, Division 1, groups A, B, C, D, and Non-incendive (NI) for use in Class I, Division 2, groups A, B, C, D Hazardous (Classified) Locations. The rating listed in the FM Approvals guide is as follows:

RHTemp1000IS. Temperature and Humidity Recorder.

IS / I / 1 / ABCD T4A Ta=80 °C; NI / I / 2 / ABCD / T4A Ta=80 °C

These are the only safety ratings relevant to the use of this product. Use of this product in hazardous environments not specifically covered by this rating, is prohibited, unless the user takes the appropriate steps to ensure the safety of the product and assumes full responsibility for its safe use.

### IP Rating

The RHTemp1000 is rated IP30 and is non-submersible.

### O-Rings

*O-Ring maintenance is a key factor when properly caring for the RHTemp1000IS. The O-Rings ensure a tight seal and prevent liquid from entering the inside of the device. Please refer to the application note “O-Rings 101: Protecting Your Data,” found on the Madge-Tech website for information on how to prevent O-Ring failure.*

### Communication

To ensure desired operation of the RHTemp1000IS, **please keep the surface clear of any foreign objects or substances**. The RHTemp1000IS’s data is downloaded through **external contact** with the IFC400 or IFC406 docking station. Covering the surface with foreign objects (**i.e. Calibration Labels**) can prevent the communication and/or downloading process.

### Installation Guide

#### Installing the Interface cable & software

- IFC400 or IFC406 Refer to the “Quick Start Guide” included in the package.

**MadgeTech® Data Loggers are Made in the USA**

## Device Operation

### Connecting and Starting the data logger

- Once the software is installed and running, plug the interface cable into the docking station.
- Connect the USB end of the interface cable into an open USB port on the computer.
- Place the data logger into the docking station.
- The data logger will automatically appear under Connected Devices within the software.
- For most applications, select Custom Start from the menu bar and choose the desired start method, reading rate and other parameters appropriate for the data logging application and click **Start**. (Quick Start applies the most recent custom start options, Batch Start is used for managing multiple loggers at once, **Real Time Start** stores the dataset as it records while connected to the logger.)
- The status of the device will change to Running, Waiting to Start or Waiting to Manual Start, depending upon your start method.
- Disconnect the data logger from the docking station and place it in the environment to measure.

*Note: The device will stop recording data when the end of memory is reached or the device is stopped, unless user selectable memory wrap is enabled. At this point the device cannot be restarted until it has been re-armed by the computer.*

### Downloading data from a data logger

- Place the data logger in the IFC400 or IFC406 docking station.
- Highlight the data logger in the Connected Devices list. Click Stop on the menu bar.
- Once the data logger is stopped, with the logger highlighted, click Download. You will be prompted to name your report.
- Downloading will offload and save all the recorded data to the PC.

### Device Maintenance

Battery Replacement Materials: **TL-2150/S Battery** (user replaceable)

Unscrew the bottom of the logger and remove the battery.

Place the new battery into the logger. Note the polarity of the battery.

Screw the cover back onto the logger.

### Recalibration

The RHTemp1000 standard calibration is one temperature point at 25 °C and two humidity points at 25 %RH and 75 %RH.

**RMA Form**-Please fill out this [RMA form](#) to return your data logger calibration.

### Intrinsic Safety Approval:

The RHTemp1000IS has been certified by FM Approvals as Intrinsically Safe (IS) for use in Class I, Division 1, groups A, B, C, D, and Nonincendive (NI) for use in Class I, Division 2, groups A, B, C, D Hazardous (Classified) Locations. The rating listed in the Factory Mutual approval guide is as follows:

**RHTemp1000is** Temperature and Humidity Recorder.  
IS / I / 1 / ABCD T4A Ta=80°C; NI / I / 2 / ABCD / T4A Ta=80°C

These are the only safety ratings relevant to the use of this product. Use of this product in hazardous environments not specifically covered by this rating, is prohibited, unless the user takes the appropriate steps to ensure the safety of the product and assumes full responsibility for its safe use. Refer to the reference sections at the end of this document for further information on approval standards and environments.

**Conditions of Use:** The following conditions must be satisfied to maintain the IS rating of the RHTemp1000IS:

- When used in hazardous locations, the RHTemp1000IS is to be installed prior to the location becoming hazardous, and removed only after the area is no longer hazardous.
- The maximum allowed ambient temperature for the RHTemp1000IS (under any circumstances) is 80°C. The minimum rated operating temperature is -20°C.
- The RHTemp1000IS approved for use only with the Tadiran TL- 2150/S battery. Replacement with any other battery will void the safety rating.
- Batteries are user replaceable, but are to be removed or replaced only in locations known to be non-hazardous.
- Tampering or replacement of non-factory components may adversely affect the safe use of the product, and prohibited. Except for replacement of the battery, the user may not service the RHTemp1000IS. MadgeTech, Inc. or PTC® Instruments must perform all other service to the product.
- The RHTemp1000IS enclosure does not carry a NEMA rating, as there are openings in the enclosure for measuring humidity. For this reason, **the product is only suitable for use in indoor locations.**

### Required Labeling:

The following label must be engraved to the enclosure of the RHTemp1000IS. It contains critical information for the safe use of the product.



### Reference Standards:

The RHTemp1000IS complies with the following standards:

| Standard                              | Date         | Title   |
|---------------------------------------|--------------|---|
| FM Class 3600                         | 2011         | Electrical Equipment for Use in Hazardous (Classified) Locations, General Requirements  |
| FM Class 3610                         | 2010         | Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II and III, Division 1 and Class I, Zone 0 and 1 Hazardous (Classified) Locations |
| FM Class 3611                         | 2004         | Non-incendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations                  |
| FM Class 3810 Including Supplement #1 | 2005<br>1995 | Electrical Equipment for Measurement, Control, and Laboratory Use   |

**Protection and Environment Reference:**

The environmental rating is per ANSI/NFPA 70 National Electric Code® (NEC®) Article 500.

The following is information excerpted from FM Approvals reference documents.

**Protection Concepts**

| Type of Protection | Code | Permitted Use       | Standard      |
|--------------------|------|---------------------|---------------|
| Intrinsic Safety   | (IS) | Class I, Division 1 | FM Class 3610 |
| Non-Incendive      | (NI) | Class I, Division 2 | FM Class 3611 |

**Apparatus Grouping Per NEC® 500:**

| Class | Group | Typical Gas |
|-------|-------|-------------|
| I     | A     | Acetylene   |
| I     | B     | Hydrogen    |
| I     | C     | Ethylene    |
| I     | D     | Propane     |

**Area Classification Per NEC® 500:**

| Division | Description                               |
|----------|---|
| 1        | Flammable Material Present Continuously   |
| 1        | Flammable Material Present Intermittently |
| 2        | Flammable Material Present Abnormally     |

**Temperature Class Per NEC® 500:**

| Temperature Class | Maximum Surface Temperature (of any component under fault conditions) |
|-------------------|---|
| T4A               | 120 °C (with maximum 80 °C ambient)                                   |

**NOTE:** the T4A rating indicates the maximum surface temperature potentially encountered in a fault condition. This is not the allowed operating temperature. This temperature rating limits the maximum ambient temperature of 80°C.