Gemini Data Loggers

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Tinytag Ultra Data Logger Manual

The name 'TINYTAG' covers a range of miniature dataloggers used to aid the collection and monitoring of data. TINYTAG ULTRA loggers offer many features including:

- 7900 Reading capacity
- Logging intervals of 1 sec. to 10 days
- Programmable delayed start
- Off-load whilst logging
- Min/Max/Actual readings
- Two programmable alarms
- 3 Stop options
- Manufactured to BS EN ISO9002
- Complies with EN 50082 Pt1&2: 1992/95

**TGU-0017 TGU-0020 TGU-0050 TGU-0073
TGU-0104 TGU-0304 TGU-1500 TGU-1510**

9800-4339 Provisional E&OE.

Contents

FEATURES

Reading Capacity

TINYTAG stores the 7900 data readings, along with related information such as the logging interval and description/title, together with details of the individual logger including the unique serial number.

Delayed Start

The logger may be programmed to delay the start of the logging cycle by up to 45 days. The delay can be set as relative or actual time and will have full date/time retention.

Logging Intervals

The logging interval can be specified in either seconds or minutes. The seconds mode can be set up to 4.5 hours, the minutes mode up to 10 days. Certain features are only available in minutes mode.

Off-load While Logging

When the logging interval is specified in minutes it is possible to retrieve data from a TINYTAG ULTRA without interrupting the logging program.

Stop Options

TINYTAG may be set to stop logging in one of three ways:

   i. Never (wraparound). In this mode the logger continues to record, over-writing the oldest data first once full.
   ii. When full.
   iii. After a specified number of readings.

Minimum, Maximum or Actual Readings

It is possible to record minimum, maximum or actual readings. For minimum and maximum readings, the recorded value is calculated from readings taken during the logging interval. Therefore a minimum logging interval of 2 minutes is needed for these functions.

Alarms

TINYTAG ULTRA has two programmable alarms. Both use a Red LED indicator to show an alarm state. Both are fully programmable for:

   i. Alarm trip point
   ii. Over or under value.

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iii. Latching or non-latching.

iv. One or two flashes.

The alarms can be cleared via the Windows software without interrupting the logging.

Red Alarm LED

One or two flashes as defined by the user when setting the alarms. If both alarms are triggered together, the red LED flashes 4 times.

When the unit stops logging, the red LED gives one bright, half-second flash.

This LED is not normally used at any other time, however if both LEDs flash brightly and rapidly together, the unit will not work. Remove and refit the battery. If the problem persists, return the unit for repair.

Green Status LED

Waiting delay start: 2 flashes every 4 sec

Logging (seconds): 1 flash every 3 sec

Logging (minutes): 1 flash every 4 sec

Storing a reading: 1 bright flash

Power Up: ON for several seconds

Note: Status indication may vary with short logging intervals.

MANAGING SOFTWARE

Logging is started and the data retrieved by means of the management software (OTLM) which is run on a Windows™ based host computer. Two-channel versions require OTLM version 1.5 or greater. In order for TINYTAG units to communicate with the host computer, the correct interface cable is required for connection between a spare serial port on the computer and your TINYTAG data logger (part number CAB-0007). Should any difficulty be experienced in communicating with the unit, firstly check that the cable is properly connected to the correct serial port. Please read the OTLM manual before using your TINYTAG data logger.

Exporting Data

Data may be exported from the software in text formats ready for importing into spreadsheet or other programs. Exported data may include the title, description and other headings.

CARE OF UNIT

General.

Care must be taken to ensure that no dirt or moisture gets into any connector. Moisture will cause the unit to stop recording and can lead to corrosion. Where the unit has been used in cold conditions, allow it to warm to room temperature prior to opening to avoid condensation forming inside.

IP Ratings

TINYTAG ULTRA RH loggers are rated IP53 and other TINYTAG ULTRA loggers are rated IP54, but only when connector caps are fitted and the unit is orientated with the fixing hole uppermost. Should the electronics become wet, remove the battery immediately, wash the unit in fresh water (avoiding the RH sensor if fitted – see special instructions in RH section) and dry completely before re-installing the battery. To open the unit, gently ease apart the tabs at the sides of the container to release the lid. Care should be taken when handling the unit once the

lid is removed, since it may be damaged by static electricity.

Battery

Always stop the unit logging before changing the battery. Check that the replacement is aligned with markings on battery holder. The green LED will light for a few seconds. If it does not, remove the battery and try again. When replacing the battery, it is recommended that the rubber seal and silica gel pack are also replaced (see below).

To maximise battery life, use longer logging intervals (in minutes mode) if possible, and do not leave the logger connected to the host computer for long periods. Low temperatures also reduce battery life.

WARNING: The lithium battery should be disposed of to local regulations. It should NOT be charged, short-circuited, heated above 85°C, incinerated or disassembled.

SPECIFICATION

Physical Dimensions

Size: h.72mm x w.60mm x d.33mm

Weight: approx. 50g

Battery

Size: 3.6v ½ AA size Lithium

Type: Saft LS 14250, Tadiran TL-2150/S,
          Sonnenschein SL-750 or equivalent.

Life: Up to 2 years in PT100, 4 years in 2-channel, and 5 years in all other Tinytag Ultras.

Battery replacement is recommended every 2 years (once a year for PT100 loggers). A Service kit including battery, seal and silica gel pack is available from your TINYTAG distributor.

EMC environment

The operating environment for TINYTAG ULTRA is as defined in EN50081 pt1: 1992 and EN50082 pt1&2: 1992/95. TINYTAG ULTRA complies with EMC generic immunity standard EN50082 pt1&2: 1992/95 with any standard leads or sensors supplied. User-supplied leads

and sensors may affect this compliance. Some degradation in accuracy of the logged variable may occur if the unit is subject to RF electro-magnetic disturbance (as per generic immunity standard EN50082 pt 1&2: 1992/95).

TINYTAG ULTRA Temperature

Operating Temperature

TINYTAG ULTRA Temperature loggers are designed to operate over a temperature range of -40°C to +85°C. The unit may not work properly if operated outside this range. See also battery warning. The measuring range can be extended by using the external probe version.

TINYTAG ULTRA TEMP Sensor ranges

TINYTAG ULTRA Temperature loggers use 10K NTC Thermistors. Ranges available are:

Range G -40°C to +85°C (Internal Sensor)

          -40°C to +125°C (External Sensor)

Range H -30°C to +50°C (Internal Sensor)

          -30°C to +50°C (External Sensor)

With internal sensor, the time constant is approximately <u>5 minutes to 90%</u>. Applications requiring a shorter time constant will require the external probe version. (See probe data sheets for time constants)

Accuracy and Resolution

Sensor Accuracy

Range G and Range H internal sensor loggers:
From 0°C to 70°C: ± 0.2°C.
(See probe data sheets for probe sensor accuracy)

Logger Resolution

Range G   0.4°C at +25°C
Range H   0.25°C at 0°C

TINYTAG ULTRA PT100

Operating Temperature

TINYTAG PT100 loggers are designed to operate over a temperature range of 0°C to +85°C. The unit may not work properly if operated outside this range. See also battery warning.

Sensor range

The standard range for TINYTAG PT100 is -50°C to +300°C. It is always supplied with a probe. This temperature is the maximum to which the tip of the probe may be exposed. High temperatures at the back of the probe may cause damage to the sleeving and reduce accuracy.

Thermal Time Constants

The time constant in water is approximately 15 seconds to 90%. In air it is 50 seconds.

Accuracy and Resolution

Sensor Accuracy: ±1°C from 0°C to +150°C

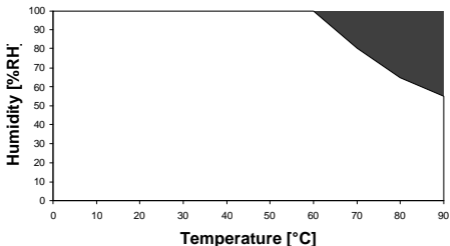Resolution: 1°C at 0°C

TINYTAG RH LOGGERS

Operating Range

0% to 95% RH (Non-condensing) between -20°C and +85°C.

RH Sensor working range

Accuracy

± 3% RH at 25°C.
Temperature Dependency is low.
Resolution is better than 0.5% RH.

Response Time

Less than 10 seconds to 90% in a non-condensing atmosphere. If wetted the sensor may take up to 30 minutes to recover.

The RH sensor

The sensor is necessarily exposed and therefore care must be taken not to cause damage. It may be gently cleaned in de-ionised water or pure isopropanol but NOT abrasive cleaners. Any scratch or residue on the delicate surface of the sensor will affect the accuracy of readings.

Chemical Resistance

The sensor will resist chemical attack by small amounts of the following vapours or gases: Carbon monoxide, Ammonia, Sulphur dioxide, Chlorine, Formaldehyde, Ethylene oxide, Freon, Hydrogen chloride, Hydrogen fluoride, Nitrogen dioxide, Ethanol, Methanol, Ozone, Isopropanol, Methyl chloride and Hydrogen peroxide. It also offers resistance to ultraviolet rays.

Permanent sensor degradation may be caused by contact with substances such as salt solution,

which can crystallise within the porous layers of the sensor affecting local moisture levels there, and hence readings.

Note: for high humidity or applications with significant temperature changes, it is advisable to use Tinytag Plus RH datalogger, Part No. TGP-0304, which has an IP68 waterproof case.

TWO CHANNEL LOGGERS

TINYTAG ULTRA two channel loggers enable two variables to be recorded simultaneously. The characteristics of each channel are identical to their single channel counterparts, however the following points should be considered before use. *(Further details will be given soon)*

The number of readings.

Assignment of alarms.

Starting, stopping, timing of readings.

Offloading. Software compatibility.

APPROVALS

All TINYTAGS are manufactured within the Orion Group to:

ISO EN 9002 part 2. (Cert. No 6134)

TINYTAGS conform to:

EN 50081 pt1:1992
EN 50082 pt1&2:1992/95

WARRANTY

TINYTAG units carry a manufacturing defects warranty of 12 months from the date of purchase. Units returned under warranty will be repaired or replaced at the manufacturer's discretion. This warranty does not cover mishandling, modification or battery replacement and is subject to the standard Terms and Conditions of Sale, a copy of which is available upon request.

Note: Claims under warranty should be referred to the point of sale.