Your Path Through the Sea MARINE | FRESHWATER | CRYOSPHERIC

Submersible Temperature Recorder

RBR

Model TR-1060

Improved Mechanical Design

## TR-1060 **Temperature Recorder**



The TR-1060 is a 25mm diameter version of TR-1050 and uses less power, but has the same or better performance with a 24 bit a/d. This compact, extremely rugged, high accuracy device is ideal for coastal and deep water oceanography, freshwater, groundwater, and ice research.

### Features:

- Smallest size 24 bit temp.
- 1200m depth rating
- **Highest accuracy**
- 8MB Memory
- Up to 3 years on one battery
- High-speed data download

The Model TR-1060 is calibrated to an accuracy of ±0.002°C (ITS-90 and NIST traceable standards). Typical drift has been measured to be better than 0.002 °C/year. The thermistors used in the TR-1060 are available in two housings. The standard thermistor has a time constant of less than 3 seconds. The optional fast thermistor has a time constant of about 0.1 seconds.

The TR-1060 can be deployed for a period of up to three years by using one high-power 3V lithium cell battery (CR123A). A new mechanical design makes for easy battery and desiccant access, and data download.

8MB of storage provides sufficient memory for 2,400,000 samples and a full set of samples can be taken by one battery. Flash memory ensures data retention for 20 years.

## **Technical**

### General

| Power:          | QTY 1, 3V CR123A cell                |
|-----------------|--------------------------------------|
| Communications: | RS-232                               |
| Depth Rating    | 1200m (57                            |
| Download Speed: | ~115,000 sample/minute               |
| Clock Accuracy: | ± 32 seconds/year                    |
| Memory:         | 8Mbyte Flash (2,400,000 samples)     |
| Size:           | 240mm x 25mm diameter                |
| Weight:         | 150g in air, 55g in water            |
| Calibration:    | NIST traceable standards             |
| Temperature     | 10 <sup>33</sup>                     |
| Range:          | -5°C to 35°C (may be calibrated from |
| 1 clair         | -40°C to +50°C on request)           |
| Accuracy:       | ±0.002 °C                            |
| Resolution:     | <0.00005 °C                          |
|                 |                                      |

R Time Constant: Drift:

~3 sec (standard); or ~0.1 sec (optional) ~0.002 °C/year - typical

## **Ordering Information**

**Temperature Recorder** 

| Model TR-1060P  | Delrin <sup>®</sup> case, 1200m depth rating ~3 sec time constant      |
|-----------------|--|
| Model TR-1060PF | Delrin <sup>®</sup> case, 1200m depth rating<br>~0.1 sec time constant |
| Accorrige       |  |

Accessories:

Mooring clamp, 1/4" hole size, Part # 2194-704 Support kit for TR-1060 (10 O-rings, grease, desiccant) Transit case, part # 2100

Optional u/w connector for data & power replaces battery For further information on sensor performance please consult RBR.

### Software

Integrated RBR Windows software is available at no additional charge for all of our instruments. See reverse for further details or check our website for details, downloads and upgrades.

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# **RBR Windows® Software** Data Logger Software

The RBR Windows<sup>®</sup> software package has been designed for easy use while still providing the necessary features for logger programming, data retrieval and analysis. One piece of software does it all!

### Features:

- Intuitive
- Graphical Display
- **Derived Units**
- Export to Matlab®
- **GPS** Integration
- **Telemetry ready**
- Setup cloning

**RBR's Windows®-based** data logger software includes a straightforward logger setup display menu that includes options for programming start and stop time, thresholding, sampling rates for both tides and waves (TWR-2050), burst rate, burst length, averaging, and batch programming.

Some basic analysis features are included that allow the user to review the data graphically. Data can also be saved in various file formats for easy import into third party software packages, such as Matlab® or Microsoft<sup>®</sup> Excel<sup>®</sup>.

### **Derived Units**

- Salinity (PSS-78)
- Depth
- Speed of Sound
- Density
- **Dissolved Oxygen**
- Specific Conductivity

#### Analysis of waves & wave spectra:

- Significant Wave Height
- Mean Period Significant Wave Period
- Total Energy

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Logger programming is easily achieved by using the 'Setup' dialog, which allows the user to choose Start and End times, Sampling Rate, Averaging, Thresholding, as well as synchronize the logger with the PC clock. The setup dialog also indicates the expected battery and memory usage for the chosen deployment settings.

Re-calibration is done easily by entering the coefficients for each channel of the logger in the appropriate columns. These values are stored in the



logger, and a complete calibration history is always available at the click of a button. In order to reduce deployment error, a log file is automatically generated for all logger setup activity.

### System Requirements

| <b>Operating System:</b> |
|--------------------------|
| CPU:                     |
| RAM:                     |
| Communications:          |
| Cost:                    |

Windows® 95/98/ME/2000/XP/Vista x86 133Mhz or higher 128MB recommended At least 1 RS-232 serial port, or USB **RBR** Software is free.



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