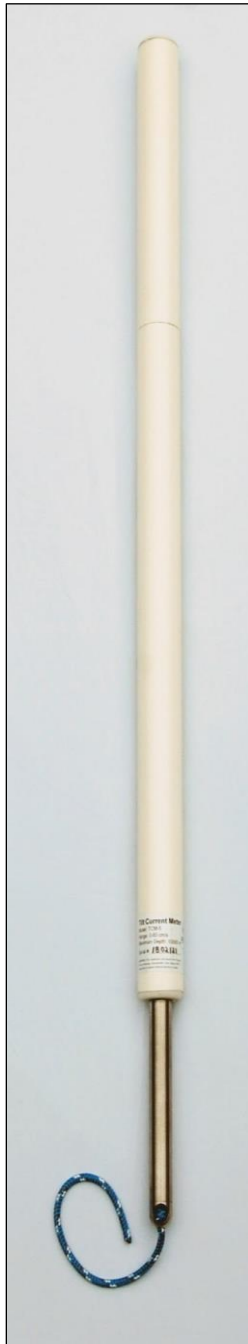


# Product Data Sheet

## TCM-5 Tilt Current Meter



10,000 Meter Depth Rated Current Meter for the Very Deep Ocean



| Feature               | Benefit  |
|-----------------------|--|
| 10,000 m Depth Rating | – Operate almost everywhere in the deep ocean  |
| Relatively Low Cost   | – Water velocity measurements for a fraction of the cost of an equivalent depth acoustic meter |
| Rugged Construction   | – Titanium pressure housing with toughened syntactic foam flotation                            |
| Long Battery Life     | – 1-minute velocity sampling for more than 1 year  |
| Large Memory          | – microSD memory card virtually eliminates memory concerns                                     |
| Temperature Sensor    | – Includes an internal thermistor accurate to < 0.1 °C with resolution of < 0.01 °C            |
| USB 2.0 Interface     | – Connect with standard USB cables   |

### Description

The TCM-5 Tilt Current Meter records water velocity in an affordable, easy-to-use package. The meter is designed for use beyond the edge of the continental shelf up to 10,000 meters depth. It is easy to deploy with a simple ground anchor from a remotely operated vehicle or attached to a benthic lander.

Tilt Current Meters measure current using the *drag-tilt principle*. The physical design is simple; the meter is buoyant and is secured by a flexible tether to an anchor. Moving water tilts the logger in the direction of flow. A 3-axis accelerometer and 3-axis magnetometer determine tilt and bearing. The meter also contains a thermistor for recording temperature.

The meter's electronics are housed in a titanium pressure case with no external sensors. The flotation is derived from toughened syntactic foam. The built-in data logger includes a USB communication interface, a microSD flash memory card, and a long-life lithium battery. Windows® software is used to configure the TCM-5 for deployment and to process data.

The TCM-5 is available at a fraction of the cost of similar depth capable acoustic meters and is simple to setup and deploy. The low total cost permits multiple current meters to be deployed in many locations simultaneously, thereby increasing spatial data density and reducing uncertainty.

## Specifications

| Measurement               | Range                 | Accuracy               | Resolution |
|---------------------------|-----------------------|------------------------|------------|
| Speed (Recommended Range) | 0-50 cm/s             | 3 cm/s + 3% of reading | 0.1 cm/s   |
| Speed (Maximum Range)     | 0-75 cm/s             | Not Specified          | 0.1 cm/s   |
| Direction                 | 0-360°                | 5° (for speed >5 cm/s) | 0.1°       |
| Temperature               | -5 to 30 °C           | 0.1 °C                 | <0.005 °C  |
|                           | -20 to -5, 30 to 50°C | 0.2 °C                 | <0.01 °C   |

### Electronics

|                |   |
|----------------|---|
| Memory         | 8 GB microSDHC flash card (standard)                                |
| Communications | Full speed USB micro-B port   |
| Battery Type   | 3.6 V, size "A", user replaceable lithium (from Lowell Instruments) |
| Battery Life   | Months to years depending on recording rates                        |
| Internal Clock | < 1 minute per month  |

### Operating Modes

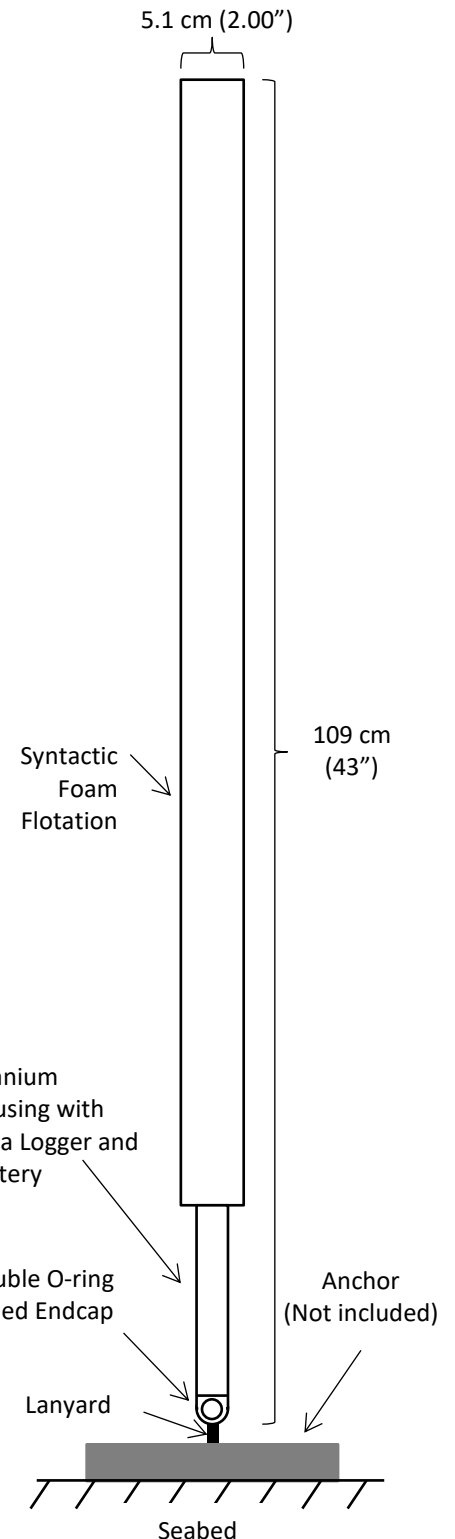
|                |   |
|----------------|---|
| Start and Stop | Start and Stop at user defined times  |
| Burst Mode     | Variable rate logging at user defined interval                                |
| Recording Rate | Current: 64 Hz to 1 sample per hour<br>Temperature: 1 Hz to 1 sample per hour |

### Mechanical

|              |  |
|--------------|--|
| Depth Rating | 10,000 m, housing tested to 13700m   |
| Dimensions   | Flotation Diameter: 5.08 cm (2.00")<br>Pressure Housing Diameter: 2.54 cm (1.00")<br>Overall Length: 109 cm (43")<br>Flotation Length: 91.4 cm (36.0") |
| Weight       | 1.86 Kg (4.09 lb)  |
| Construction | Flotation: Toughened Syntactic Foam<br>Pressure Housing: Titanium TI-6AL-4V<br>Double Buna O-ring seal with backup rings                               |

### Software

|                |                                       |
|----------------|---------------------------------------|
| User Interface | Windows® Compatible Software Download |
| USB            | USB 2.0 compliant MSC and CDC Classes |
| Firmware       | Field upgradable via USB cable        |



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