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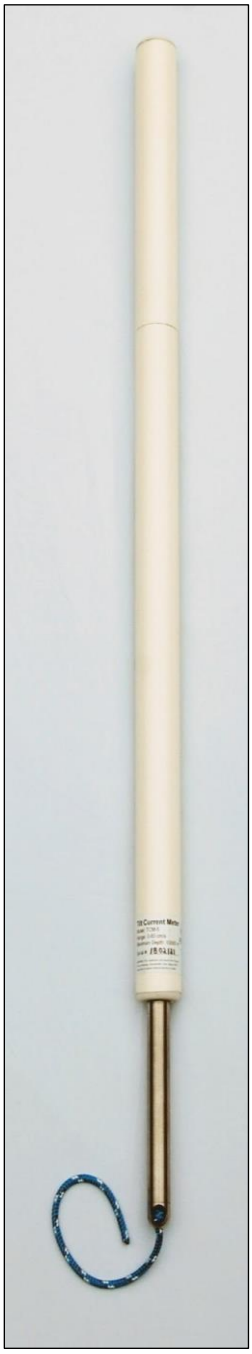
Product Data Sheet

TCM-5 Tilt Current Meter

LOWELL INSTRUMENTS LLC

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 floatation 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 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") Pressure Housing Diameter: 2.54 cm (1.00") Overall Length: 109 cm (43") Floatation Length: 91.4 cm (36.0")
Weight	1.86 Kg (4.09 lb)
Construction	Flotation: Toughened Syntactic Foam Pressure Housing: Titanium TI-6AL-4V 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