

Water velocity measurements for a fraction of the cost of an acoustic meter

# Lowell Instruments TCM-3 Tilt Current Meter

## Affordable & Easy-to-Use Current Meter for Deep Water

The Lowell Instruments TCM-3 Tilt Current Meter records water velocity in an affordable, easy-to-use package. The meter designed for use beyond the edge of the continental shelf up to 4500 meters depth. It is easy to deploy with a simple ground anchor from a remotely operated vehicle.



Feature	Benefit
<b>Low Cost</b>	Water velocity measurements for a fraction of the cost of an acoustic meter
<b>4500m Depth Rating</b>	Operate off the continental shelf
<b>Rugged Construction</b>	Titanium pressure housing with toughened syntactic foam flotation
<b>Small and Light</b>	Easy to deploy with small ROVs
<b>Long Battery Life</b>	1-minute velocity sampling for more than 1 year
<b>Large Memory</b>	microSD memory card virtually eliminates memory concerns
<b>Temperature Sensor</b>	Internal thermistor accurate to <0.1 °C with resolution of < 0.01 °C
<b>USB 2.0 Interface</b>	Connect with standard USB cables

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 a fixed anchor or tripod. 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-3 for deployment and to process data.

The TCM-3 is available at a fraction of the cost of 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

	Range	Accuracy	Resolution
Speed (Recommended Range)	0-80 cm/s	3 cm/s + 3% of reading	0.1 cm/s
Speed (Maximum Range)	0-120 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 of error 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	4,500 m (14760 ft), tested to 6,000m (19700 ft) m (100 ft)
Dimensions	Flotation Diameter: 5.08 cm (2.00") Pressure Housing Diameter: 2.54 cm (1.00") Overall Length: 77.6 cm (30.6") Flotation Length: 60.9 cm (24.0")
Weight	1.29 Kg (2.84 lb)
Construction	Flotation: Toughened Syntactic Foam with Titanium pressure housing and Buna 90 Durometer O-ring

### Software

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

