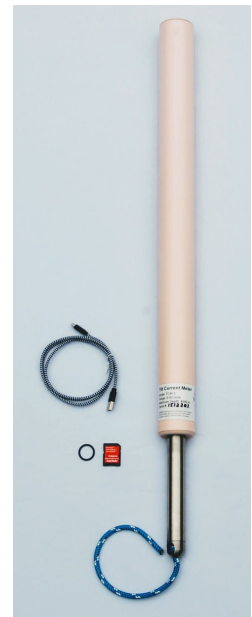




# Lowell Instruments TCM-3 Deep Water Tilt Current Meter

## Product Images



# Short Description

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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 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-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.

# Description

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## Affordable & Easy-to-Use 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.

## Key Features

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



Country of Manufacture	United States																																																					
Explanation	<p>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.</p> <p>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-3 for deployment and to process data.</p> <p>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.</p> <p>The core of the TCM-3 is the MAT-1 Data Logger. The MAT-1 data logger was designed for NOAA and is ideally suited as the "brains" of a tilt current meter.</p> <h3>Specifications</h3> <table><thead><tr><th></th><th>Range</th><th>Accuracy</th><th>Resolution</th></tr></thead><tbody><tr><td>Speed (Low Range)</td><td>0-80 cm/s</td><td>3 cm/s + 3% of reading</td><td>0.1 cm/s</td></tr><tr><td>Speed (High Range)</td><td>0-120 cm/s</td><td>Not specified</td><td>0.1 cm/s</td></tr><tr><td>Direction</td><td>0-360°</td><td>5° (for speed &gt;5 cm/s)</td><td>0.1°</td></tr><tr><td rowspan="2">Temperature</td><td>-5 to 30 °C</td><td>0.1 °C</td><td>&lt;0.005 °C</td></tr><tr><td>-20 to -5, 30 to 50°C</td><td>0.2 °C</td><td>&lt;0.01 °C</td></tr></tbody></table> <h3>Electronics</h3> <table><tbody><tr><td>Memory</td><td>8 GB microSDHC flash card (standard)</td></tr><tr><td>Communications</td><td>Full speed USB micro-B port</td></tr><tr><td>Battery Type</td><td>3.6 V, size A, user replaceable lithium (from Lowell Instruments)</td></tr><tr><td>Battery Life</td><td>Months to years depending on recording rates</td></tr><tr><td>Internal Clock</td><td>&lt; 1 minute of per month</td></tr></tbody></table> <h3>Operating Modes</h3> <table><tbody><tr><td>Start and Stop</td><td>Start and Stop at user defined times</td></tr><tr><td>Burst Mode</td><td>Variable rate logging at user defined interval</td></tr><tr><td>Recording Rate</td><td>Current: 64 Hz to 1 sample per hour Temperature: 1 Hz to 1 sample per hour</td></tr></tbody></table> <h3>Mechanical</h3> <table><tbody><tr><td>Depth Rating</td><td>4,500 m (14760 ft), tested to 6,000m (19700 ft) m (100 ft)</td></tr><tr><td>Dimensions</td><td>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")</td></tr><tr><td>Weight</td><td>1.29 kg (2.84 lb)</td></tr><tr><td>Construction</td><td>Flotation: Toughened Syntactic Foam with Titanium pressure housing and Buna 90 Durometer O-ring</td></tr></tbody></table> <h3>Software</h3> <table><tbody><tr><td>User Interface</td><td>Windows® Compatible Software Download</td></tr><tr><td>USB</td><td>USB 2.0 compliant MSC and CDC Classes</td></tr><tr><td>Firmware</td><td>Field upgradable via USB cable</td></tr></tbody></table>		Range	Accuracy	Resolution	Speed (Low Range)	0-80 cm/s	3 cm/s + 3% of reading	0.1 cm/s	Speed (High 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	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 per month	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	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	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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Contents	<ul style="list-style-type: none"><li>• TCM-3 Tilt Current Meter</li><li>• Lithium battery (installed in logger)</li><li>• 8 GB microSD card (installed in data logger)</li><li>• 1 m (3 ft) USB A to micro-B Cable</li><li>• Spare O-ring (pre-lubricated)</li><li>• 30 cm (12") lanyard</li></ul>																																																					
Brand	Lowell Instruments																																																					
Typical applications	Datalogging																																																					
Measurements	Water Flow																																																					