



# Portable MEMS Tilt Meter

**MEMS**  
TILT & INCLINATION  
SERIES**rst**  
INSTRUMENTS

Portable Tilt meter shown with the IC6800S Readout

The RST Portable MEMS Tiltmeter utilizes a MEMS inclinometer to measure tilt in either one or two axial planes perpendicular to the surface of the base plate. Portable MEMS Tiltmeters require placing the tiltmeter in a reproducible position on a reference plate attached to the surface being monitored. The portable tiltmeter system has a demountable sensor and is designed for applications where a large number of measuring points are to be observed.

## operating principle

Portable MEMS Tiltmeter systems consist of the tiltmeter, interconnecting cable, stainless steel tilt-plates, and the readout instrument. Tilt plates are bolted or bonded to the structure to accurately, and repeatedly, locate the sensor. When not in use, the plates should be shielded from damage with an optional, UHMW plastic protective cover. Readout is achieved with the Portable Tilt Meter Readout.

RST Portable MEMS Tiltmeters contain a solid state, DC powered inclinometer. The output is an analog DC signal directly proportional to the sine of angle of tilt. In the horizontal position the DC output is zero.

## tilt sensor specifications

ITEM	DESCRIPTION
Range	±15° (other ranges upon request)
Resolution	±5 arc sec. (±0.025 mm/m) (10Hz BW) (or better, readout method dependent)
Non-linearity	±0.05% F.S. (±0.0075°, 0.13 mm/m)
Repeatability	±0.025% F.S. (±0.004°, 0.06 mm/m)
Sensor	MEMS (Micro-Electro-Mechanical Systems) Accelerometer
Material	Stainless steel / Aluminum NEMA 4X (IP-65) weather proof enclosure
Weight	10.38 lbs (4.710 kg)

## tilt plate specifications

DESCRIPTION	SPECIFICATION
Material	316 stainless steel
Dimensions	5.5 in. OD x 2.5 ID x 0.95 (140 x 63 x 14 mm)
	4 pegs equally spaced on 4 in. (102 mm) diameter
Weight	1.7 lbs (0.77 kg)
Installation	Epoxy or mechanical 4 x ¼ mounting holes on 4 in. (102 mm) diameter

## ordering info

ITEM	PART #
Tilt Sensor (portable, horizontal & vertical)	ICTS0004
Tilt Plate	ICTS0010
IC6800S Readout	IC6800-S
UHMW Plastic Protective Cover	ICTS0008

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## applications

Monitor tilt of retaining and building walls.

Tilt of concrete dams.

Landslide monitoring.

Ground subsidence.

Building safety along adjacent excavations.

Applications where the failure mode is expected to have a rotational component.

Differential compression in earth dams and embankments.

Observation of benches and berms in open pit mines.

Bridge piers.

## features

Uniaxial or biaxial sensors available.

Horizontal or vertical applications.

Readout units and portable sensor are lightweight and easy to use.

Data logger compatible.

High accuracy and repeatability.

Operational range and temperature coefficients exceed that of bubble sensor devices.

## optional equipment

Protective cover for tilt plates.

Bonding compound for tilt plates and in-place sensors.

RST Instruments Ltd. reserves the right to change specifications without notice.