

## Models TC-1 and TC-3 Tilt Switch Level Monitors

### FEATURES & ADVANTAGES

- ▼ **Basic angular-sensing operation** to provide material level detection.
- ▼ **Plugged or backed-up** conveyor chute detection.
- ▼ **Mercury-Free**, electrically-passive sensing method provides environmentally-safe operation.
- ▼ **Durable, low maintenance and low-cost performance**
- ▼ **No calibration required** . . . output switch closes when tilted approximately 17°.
- ▼ **SPDT output** to connect with a signaling alarm, light or PLC interface.
- ▼ **Easily adjustable sensing point** by repositioning hanging height.

### PRINCIPLE OF OPERATION

A tilt switch provides material presence indication by detecting the angular position of the tilt switch enclosure. Typically the unit is suspended above the material to be sensed. Internally, a steel ball centers itself over a switch resulting in switch actuation. As rising material contacts the tilt switch (or the extension actuator) the enclosure begins to tilt. When the enclosure housing is tilted at 17° or more, the steel ball rolls off center which deactivates the switch by returning the switch's electrical contacts to its "normal" contact position. As material falls away from the switch enclosure body (or the extension actuator) and the unit again becomes upright, the ball returns to its original centered position which again causes switch actuation. The change in the internal switch status is user accessible for signaling alarms, lights, or interfacing with a PLC. Each tilt switch includes a threaded bore for attaching an extension actuator, if needed.

### PRACTICAL APPLICATIONS

- ▼ Excellent when facility personnel are expected to perform in-field troubleshooting and maintenance with virtually no prior training.
- ▼ Basic operation and minimal parts create a low-cost and easily maintained solution.
- ▼ Provides environmentally-safe, "green" operation with no power consumption.
- ▼ Typical material densities:
  - TC-3: 15 - 60 lb/ft<sup>3</sup> (240-960 kg/m<sup>3</sup>)
  - TC-1: 45+ lb/ft<sup>3</sup> (>720 kg/m<sup>3</sup>)
- ▼ Ideal for high level detection.
- ▼ Works for open stock piles.
- ▼ Useful in determining over or under-load on conveyor belts.
- ▼ Typical material applications include, but are not limited to: feed, wood, regrind, resin, silica sand, calcium dust, limestone, rocks, rubber, pre-mix, pellets, metals, clays and malt.

### OPTIONS

- ▼ Ball Type Actuators are available to limit material contact with tilt switch enclosure (TC-3 only).
- ▼ **TC-3** - Monitor's model TC-3 is a light-duty tilt switch constructed from cast aluminum. It is ideally suited for applications where relatively lightweight, moderately sized materials are handled (i.e. 15-60lb/ft<sup>3</sup> [240-960kg/m<sup>3</sup>] or particle sizes less than 2 inches [50mm]). Typical application materials include feed, plastic pellets, and pet food.
- ▼ **TC-1** - Monitor's model TC-1 is a heavy-duty, weather-proof tilt switch constructed from cast iron. It is ideally suited for applications where heavy coarse materials are handled (i.e. >45lb/ft<sup>3</sup> [>720kg/m<sup>3</sup>] or particle sizes exceeding 2 inches [50mm]). Typical application materials include coal, ore, rock, aggregate, and sand.

For more detailed information, please contact a Monitor representative or visit Monitor's website at [http://monitortech.com/product\\_p\\_tilt.shtml](http://monitortech.com/product_p_tilt.shtml)



#### Practical Tip

Keep hanger for tilt switch as short as possible to maintain 17° detection sensitivity.



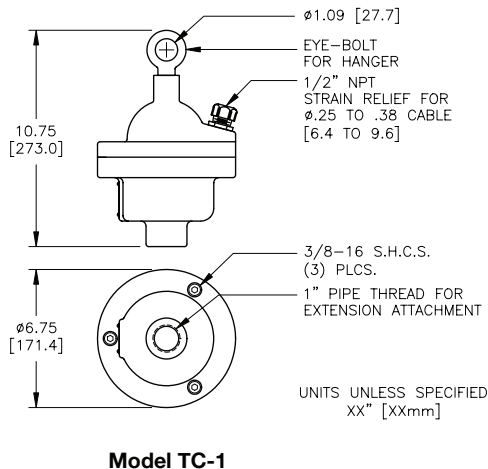
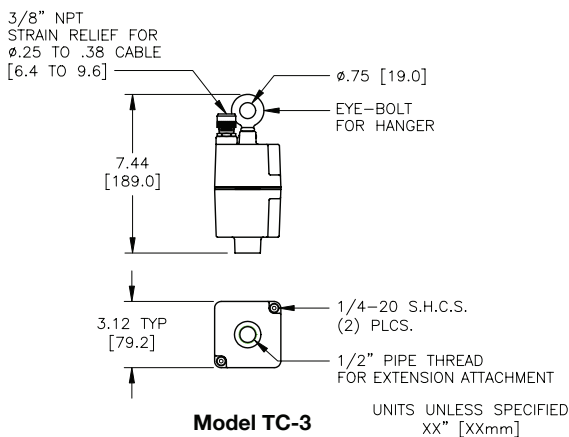


## SPECIFICATIONS

Model TC-3		Model TC-1	
Power Requirements:	None	Power Requirements:	None
Output:	SPDT, 10A @ 250 VAC max	Output:	SPDT, 15A @ 250 VAC max
Sensitivity:	17° from vertical axis	Sensitivity:	17° from vertical axis
Enclosure:	Cast aluminum, unpainted	Enclosure:	Cast iron, painted beige
Enclosure Protection:	NEMA 4, IP56	Enclosure Protection:	NEMA 4, IP56
Mounting Connection:	Eyebolt, 3/4 in (19mm) I.D.	Mounting Connection:	Eyebolt, 1-3/32 in (27.7mm) I.D.
Wire Entry:	3/8" NPT cord connector Cord dia. 0.25 to 0.38 in (6.4 to 9.6mm)	Wire Entry:	1/2" NPT cord connector Cord dia. 0.25 to 0.38 in (6.4 to 9.6mm)
Operating Temp:	-40° to 175° F (-40° to 80° C)	Operating Temp:	-40° to 250° F (-40° to 121° C)
Unit Weight (Approx.):	3 lbs. (1.35 kg)	Unit Weight (Approx.):	24 lbs. (11.25 kg)
Approvals:	CE Mark	Approvals:	CE Mark

## MECHANICALS

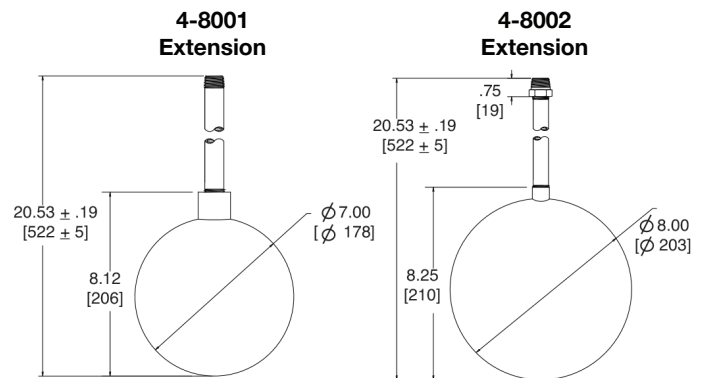
DIMENSIONS ARE SHOWN IN INCHES WITH MILLIMETER EQUIVALENT IN BRACKETS



Information on this sheet is subject to change without notice

## OPTIONAL ACCESSORIES

For Model TC-3



DIMENSIONS ARE SHOWN IN INCHES WITH MILLIMETER EQUIVALENT IN BRACKETS

## ORDERING INFORMATION

### TILT SWITCH SELECTION:

Part#	Description
4-8131	TC-3 light duty, cast aluminum housing
4-3103	TC-1 standard unit with heavy duty cast iron housing

### ACCESSORIES:

Part#	Description
4-8001	TC-3 SS extension actuator with 7" dia. SS ball float
4-8002	TC-3 Galvanized extension actuator with 8" dia. polypropylene ball float



## MONITOR TECHNOLOGIES, LLC

44W320 Keslinger Road, Elburn, IL 60119 USA

Tel: 1-630-365-9403 ▼ In US/CAN 1-800-766-6486

Fax: 1-630-365-5646 ▼ [monitor@monitortech.com](mailto:monitor@monitortech.com)

[www.monitortech.com](http://www.monitortech.com) ▼ [www.flexar.info](http://www.flexar.info)

Blog: [www.monitortech.typepad.com](http://www.monitortech.typepad.com)