

## PRO-LINE

### Tilt Switches and Control Units



Light-Weight  
(Plastic) Probe  
Model 20-31



Stainless Steel  
Probe  
Model 20-30-SS



Heavy-Duty  
Standard Probe  
Model 20-39  
Model 21-39



Heavy-Duty  
2" Probe  
Model 20-32



Float Ball  
Accessory



Control Unit  
Model 20-43

- Rugged, abrasion-resistant tilt switch.
- Simple installation.
- Control unit is solid state, printed circuit board construction.
- Adjustable time delay to 10 seconds - Prevents false trips.
- Control unit standard NEMA 4X enclosure (Model 20-43) or without enclosure (Model 20-43-1) for control panel mounting.
- Performance proven in thousands of applications throughout the world.
- All probes include mounting hardware.

#### APPLICATIONS

- High level detector in bins and vessels containing a wide variety of materials.
- Chute or transfer point plug-up detector.

- Conveyor belt misalignment detector.
- Level control in volumetric batching.
- Crash probe for tripper car.
- Starvation or no-flow detector for belt and vibratory feeders.

The Pro-Line tilt switch is actuated when material rises to tilt the probe 15 degrees or more from its vertical position. The mercury switch is precisely positioned so that, regardless of direction of tilt, the normally-closed contacts are caused to open. The switches are encapsulated in various sizes to suit the application.

The Model 20-43 control unit is housed in a NEMA 4X box with green ("Normal") and red ("Alarm") indicating lights inside a clear front enclosure. A 0-10 second adjustable time delay

circuit in the control unit prevents momentary tilting of the switch from causing a false or premature contact transfer. An internal jump wire permits selection of "Normal" condition either with the tilt switch vertical or tilted. Two normally-open and two normally-closed output contacts are available for connection to external alarms and/or controls. Interruption of line power causes a relay transfer.

Various probe assemblies are available for application with a wide variety of materials and environmental conditions (see chart on back side for description of available probe assemblies.) The control unit is also available without enclosure for mounting in other types of enclosures and control panels (Model 20-43-1.)

# SPECIFICATIONS

**PROBES** (See Table Below)

**Contact Rating:**

( Model 20-41 ) 4 amperes at 110 VAC.  
 ( All Other Probes ) 1 ampere at 24 VDC,  
 Non-inductive

**Temperature Rating:**

-25°F - 180° F Standard  
 180°F - 390° F Special (20-39 C Series)  
 Below -25°F (20-39 B Series)

**CONTROL UNIT** (See Drawing)

**Relay Contact Rating:**

10 amperes at 115 VAC, non-inductive  
 ( DPDT Contact Agreement )

**Time Delay:**

0-10 seconds, adjustable

**Temperature Rating:**

-40° F - +158° F  
 -40° C - +70° C

**Case Size:**

( Model 20-43 )  
 6.89" High x 4.92" Wide x 3.90" Deep

**Printed Circuit Board Size:**

( Model 20-43-1 ) 5.95" High x 4.4" Wide

**Circuitry:**

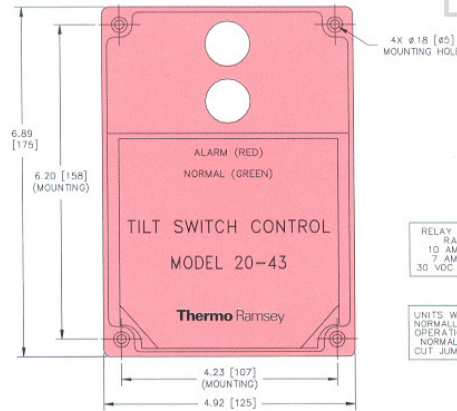
Selection of vertical or tilted probe position  
 for "normal" condition

**Power Requirements:**

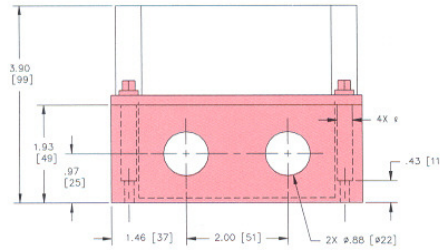
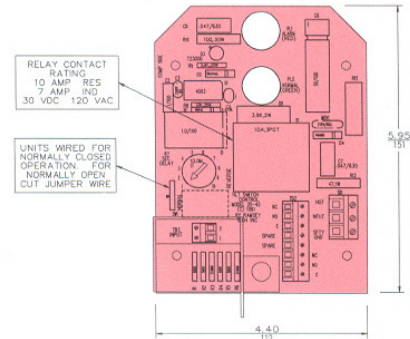
20-43, 20-38 (metal box) are available in 110  
 or 220 VAC versions, 50/60Hz ±10%

METAL ENCLOSURE  
 AVAILABLE  
 UPON REQUEST

**MODEL 20-43 (NEMA 4X)**



**MODEL 20-43-1  
 (Board Only)**



Dimensions shown  
 in inches and MM  
 (in parenthesis)

**TILT SWITCH PROBE SELECTION TABLE**

Model No.	Description	Finish	Overall Length	Diameter	(Including Hanger Assembly)	Weight
20-39	Standard Probe	Nickel Chrome	8 1/4"	1 1/4"	2 1/2"	1.5#
20-31	Light-Weight, 1" Plastic Probe	PVC	9"	1"	2"	0.5#
20-32	Heavy-Duty, 2" Probe	Acrylic Enamel	10"	2"	4"	8#
20-33	Buoyant, Plastic Slurry Probe	PVC	19"	1"	1"	1#
20-30-SS	Stainless Steel Probe	304 SS	10 1/4"	1"	2"	1#
20-39B	*Low-Temp. (Below -25° F)	Nickel Chrome	8 1/4"	1 1/4"	2 1/2"	1.5#
20-39C	Hi-Temp. (180-390° F)	Nickel Chrome	8 1/4"	1 1/4"	2 1/2"	1.5#
21-39	**Class I & II, FM Approved	Nickel Chrome	8 1/4"	1 1/4"	2 1/2"	1.5#
20-41	Standard Probe, 110 VAC	Nickel Chrome	8 1/4"	1 1/4"	2 1/2"	1.5#
20-41-SS	Stainless Probe, 110 VAC	304 SS	10 1/4"	1"	2"	1#

\* Requires Model 20-38 - B - 4 Control  
 \*\* Requires Model 21-38 Control

Accessories include wear paddles, float balls and fins that are easily attached. Standard cable lengths are 25 feet unless otherwise specified.

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