

MODEL 633 ELECTRONIC FLUID SWITCH

SENSES WHAT KIND OF FLUID IS IN A PIPELINE

TS 633

BENEFITS

- Detects a Liquid/Liquid Interface as it Moves through a Pipeline
- Senses the Kind of Fluid Flowing in a Pipeline; Will Signal Gas, Hydrocarbon, Water, or a Mixture
- Can Signal that a Pipeline is "Empty" or "Full"
- Can Withstand Abrasion from Sand Entrained in the Flowing Fluid
- Electronic, No Moving Parts, No Pumps, Filters, Columns, Valve Ports, etc.

APPLICATION

The Delta Controls Model 633 fluid switch senses the nature of a gas or liquid contained in a pipeline. The Model 633 can provide multiple contact closures signifying the kind of fluid in the pipeline. The 633 is used instead of target type flow switches when flow detection does not provide a complete or reliable answer.

A simple application is to protect pumps against running with a dry suction. The sensor is inserted into the pump suction line; a contact closure is produced when there is no fluid present. This prevents seizing, galling, or burned seals in a dry pump.

The Model 633 fluid switch can be used to detect loss of liquid flow in a pipeline where the flow does not actually stop. An example of this situation can be found where an air pressure tank pad instead of a pump is used to move the liquid. The flow of the liquid and not of the air is the variable of interest. A target type switch is not reliable in this application because the pad air will continue to flow after the liquid supply has been exhausted. The target switch will be kept activated by the air flow. It cannot distinguish between liquid and high air flow. The Model 633 can tell the difference and will produce a reliable alarm signal.

The Delta Controls Model 633 can also detect the change in composition of the fluid. A good common application is decanting a process liquid after a water wash. The change in the flowing liquid from water to product is detected and an output contact is produced. The sensor is jacketed with PTFE for most services. It is also available with an Alumina jacket for abrasive and high temperature services.

OPERATING PRINCIPLE

The Delta Controls Model 633 is electronic and does not have any moving parts in contact with the process fluid. It has a sensor, which is inserted into the pipeline. The nature of the process fluid is determined as a function of the effect that the fluid has on a very high frequency signal impressed on the sensing probe. Adjustable setpoints operate output signaling relays. From 1 to 4 relays are available, the quantity is dependent on the function(s) to be performed.



Inserted Sensor Style,
Shown with Integral
Electronics Unit



Inline Body Style,
Shown for Use With
Remoted Electronics Unit

SPECIFICATIONS

Style: Inline body or open inserted; 316 SS is basic, Others optional, C/F

Accuracy: Better than 1/2% of range

Operating Temperature:

Electronics: -40° to 180°F (-40 to 80°C)

Process: -20 to 250°F (-28 to 120°C) Basic

-350 to 750°F (-210 to 435°C) with various options

Temperature Stability: 0.01% per °F (0.6°C)

Time Delay: Adjustable from 1 to 90 seconds

Signal Outputs: 4-20mA and/or one to four 5 amp SPDT or DPDT dry contacts

Electronic Housing: CSA Explosionproof, Class 1, Division 1, Groups BCD & 4X, IP67

Housing Location: Integral is standard; may also be remoted (cabling required for remoted)



DELTA CONTROLS
CORPORATION

USED TO ALARM THE PRESENCE OF A LIQUID (or Type of Liquid)
-UNAFFECTED BY FLOW RATE -

Model Number System

BASIC TYPE	SUPPLY POWER	OUTPUT & CONTACTS	WETTED MATERIAL	TYPE MOUNTING	PIPELINE SIZE & CONN	OPTIONS
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MODEL EXAMPLE 633A - 1 - S - YD - BN - 2" 150 RF - TE

M/N	DESCRIPTION
633I	Integral Electronics
633R	Remoted Electronics

M/N	DESCRIPTION
1	120 VAC
2	240 VAC
3	24 VDC

M/N	DESCRIPTION
*S	SPDT, 10A @ 250 VAC
*D	DPDT, 5A @ 250 VAC
mA	4-20mADC

Replace * with required quantity of relay outputs

M/N	DESCRIPTION
YD	316 SS, PTFE
YZ	316 SS, Alumina
ZZ	Others

M/N	DESCRIPTION
IN	Direct Inserted, 1 1/2" NPT Sensor / Process Conn.
BN	Inline Body, 1 1/2" NPT Sensor / Body Conn.
BF	Inline Body, 2" Flanged Sensor/ Body Conn.

M/N	DESCRIPTION
AA	None
7T	300 S.S. Housing
TE	Temperature Extension
ZZ	Other materials, options, etc.

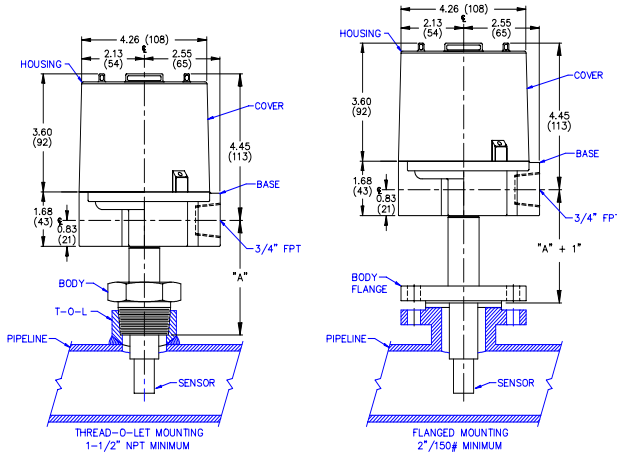
Inline Threaded – Specify:
1 1/2", 2", or Larger

AA Inserted Style

Inline Flanged – Specify Required
"Size" - "Rating" - "Face" -

INSTALLATION

The sensor can be installed through branch a fitting, such as a Thread-O-Let, flanged nozzle, or a piping tee. 1.5" (38mm) or more of the sensor must extend into the pipeline. The sensor is normally installed through the wall of a pipeline. It is insensitive to position and can be mounted in any plane. It can also be installed in vertical pipelines. The flow direction may be either up or down. The minimum pipeline size is 1 1/2", Schedule 40 ANSI; there is no limit on the maximum size.



DIMENSIONS AND OPERATING CONDITIONS (-20°F Min)

TEMPERATURE - °F		100	250	350	Higher
Maximum in PSIG	Std TFE	1500	200	150	NA
	Ceramic	1560	1500	1500	C/F
Dimension "A"	All	5.5	5.5	8.5	C/F

APPLICATION DESCRIPTION

Describe the pipeline and the service details by building up an application number as shown below.

Basic Type	Pipeline I.D.	Dim "A"	MAX Press	Liquid Temp	Liquid Visc.	Con-ductive?	Liquid Coats?	Liquid Name
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Example 633 - 4.06 - 5.50 - 910 - 135°F - 6CP - Y - N - Dye

Specify pipeline inside dimension in inches.

Distance from the top face of the Thread-O-Let or flange to the inside bottom of the pipeline; in inches

Specify in PSIG

Specify maximum Temperature in F°

Specify viscosity in centipoise at operating temperature

A/N	Description
Y	Yes
N	No

Specify name of liquid

BODY CONNECTIONS

NPT: 1 1/2" or larger ANSI taper pipe thread
FLANGED: 2" or larger; 150, 300, or 600# ANSI; or Metric equivalent

WETTED MATERIALS (ANY COMBINATION)

BODY: Steel, 316SS, Hastelloy "C"
SENSOR SHEATH: PTFE® or Alumina*
 * Required for slurries and abrasive flows



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