

# MODEL 107 Probe Type Multipoint Level Switch

Digital Circuitry for Difficult Services, Pushbutton Menu Driven Calibration

- Intrinsically Safe probe circuit is standard.
- R.F. Admittance type circuitry.
- Insensitive to process coatings and buildup.
- LCD direct reading level display.
- Digital pushbutton setup and calibration.
- Simple, two point calibration without emptying tank.
- Can be direct or reverse calibrated.
- Built-in self-diagnostics warn of calibration error.
- Integral to probe or remote mounted electronics housing.
- Process temperature -350 to +750°F (-210 to 435°C).
- High or Low relay failsafe action.
- Adjustable 1-30 second time delay.
- Epoxy sealed electronics module.
- Pressure Ratings: Vacuum to 10,000 psig (-1 to 700 Bar).
- Choose from application specific probe shapes, styles, configurations, and process connections.
- Wetted materials: Stainless Steel, Teflon®, Kynar®, Monel, and Ceramic.
- Threaded, flanged, or bracket mounting.



Model 107D with  
Explosion Proof Housing  
and Model P51 Sensing  
Probe

## APPLICATION

The Model 107C and 107D probe type switches use RF Admittance technology to produce switching action when a material level crosses the switch point position set on its sensing probe. Many probe configurations are available; the proper type is determined by the service. The Model 107 can accurately detect the interface position between two liquids with different dielectric constants, including cloudy interfaces and produce a precise switch action as its position passes the set point. (Note: one of the liquids must be nonconductive).

## OPERATION

The Model 107 utilizes admittance technology to determine how much of the sensing probe is covered by the media. A radio frequency pulse is generated and travels from the sensing probe to the ground reference (normally the tank wall). The amount of liquid between the two determines how much energy is transferred. This energy (very small and low level in all cases) is a highly repeatable measure of the liquid level or interface position. The amount is compared to an internal reference and produces a switching action at the selected media levels.



Model 107D Front View  
(Display, Pushbutton  
Controls and Probe  
Connections)



Model 107D Rear View  
(Relays and Power  
Connections)



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# MODEL 107 NUMBERING SYSTEM

BASIC TYPE	SUPPLY VOLTAGE	HOUSING & RATING	MOUNTING LOCATION	OPTIONS
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MODEL EXAMPLE

107C - 1 - 4X - 10P - AA

SENSING PROBE FOR THIS LEVEL SWITCH MUST BE SPECIFIED SEPARATELY

M/N	# OF RELAYS
107C	2
107D	4

M/N	SUPPLY VOLTAGE
1	120 VAC 50/60 HZ
2	240 VAC 50/60 HZ
3	24 VDC

M/N	OPTIONS
AA	NONE
PSM	2" Pipestand or Surface Mounting Bracket for "7W" Remote Electronics Housing
PH	Probe Head Housing with Terminals for Remote Mounting of Electronics
DW	Display window for "4X" Hoseproof Housing
EC	NEMA 4X Epoxy Coating of NEMA 7 Housing
ZZ	Special configuration

M/N	ELECTRONICS MOUNTING LOCATION
AA	None, Integral
#P	Remote, Poly Jacketed Cable, 160°F Maximum
#D	Remote, Teflon Jacketed Cable, 450°F Maximum
Replace "#" with total length of cable required, in feet	

M/N	HOUSING MATERIAL	ELECTRONICS HOUSINGS & RATINGS
4X	Fiberglass	4X Hoseproof (Remote mounted only)
7W	Aluminum	Explosion Proof: Class 1, Div 1, Groups B,C,D,E,F,G ALSO NEMA 4 Hoseproof (For integral or remote mount) Third party listed



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## SPECIFICATIONS

**Differential Control:** Independently switch points

**Level Range:** Independently programmable On or OFF  
Switch points at any point along the length of the probe.  
Switch points may be set from 0-32,000 Sensing Units ("MSU"). 5 SU is the recommended minimum

**Number of Relays:**

Model 107C - 2 each DPDT 5A @ 250 VAC

Model 107D - 4 each DPDT 5A @ 250 VAC

**Time Delay:** 0.25 to 30 seconds

**Operating Temperature:** -40 to +180°F (-40 to +80°C).

**Temperature Effect (0-150°F):** Typically less than 0.25%.

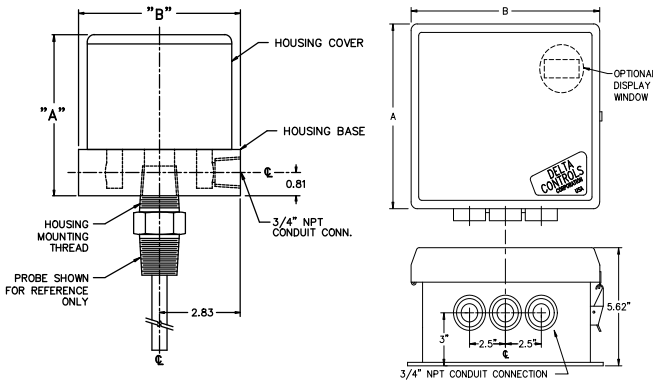
**Probe Sensing Circuit:** Intrinsically safe.

**Electronics Modules:** Potted for high reliability.

## MOUNTING CONFIGURATIONS

Integral mounting provides a simple, compact one-piece unit. Alternately, the 107 electronics module may be located up to 50 feet from the probe head; a coaxial cable connects the remote mounted electronics to the sensing probe, which may be inserted into the vessel either vertically or at an angle. The material level must move past the points on the probe where switch action is to occur.

## OUTLINE DIMENSIONS



INTEGRAL ELECTRONICS HOUSING

NEMA 4X REMOTE ELECTRONICS SURFACE MOUNT HOUSING

## CALIBRATION

The 107 may be calibrated using any two levels in the tank. The tank does not have to be completely full or empty, only the level needs to change to obtain a required second known elevation.

### CALIBRATION PROCEDURE

1. Measure the level of media in the tank or set the level in the tank to a known level. Press the NEXT button until CAL PT 1 is displayed. Press the INCREASE or DECREASE buttons until the actual level in the tank is displayed. Then press SAVE.
2. Change the level of material in the tank to another known level. The amount of change is not critical, however the farther apart the two calibration points are, the more accurate will be the calibration. Press the NEXT button until CAL PT 2 is displayed. Press the INCREASE or DECREASE buttons until the new level in the tank is displayed. Then press SAVE. Calibration can be done at any time, even when in service.
3. To set up the relays, Press the NEXT button until the relay set points ("IN" & "OUT") are displayed. Press the INCREASE or DECREASE buttons until the "IN" set point is reached. Then press SAVE. Repeat for the "OUT" set point.

## THIRD PARTY LISTING

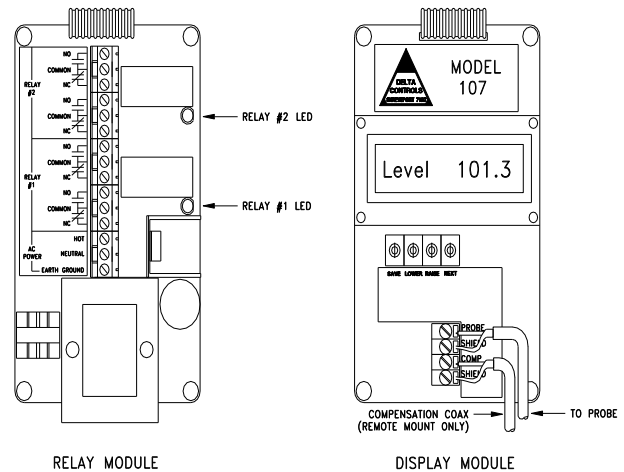
Housing: Explosion proof, Class 1, Division 1, Groups BCD, EFG; also 4X Hoseproof

CSA (Canada) NRTL/C (USA)



Sanitary (Worldwide)

## MODULE LAYOUT WITH WIRING



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