



Kotron® Model 801 RF Capacitance Transmitter for Level/Flow/Volume

DESCRIPTION

The Kotron Model 801 Transmitter is a new generation RF Capacitance multi-function transmitter that offers the user unparalleled power. The preamplifier circuit provides installation flexibility of a 2500 feet maximum remote distance. The Model 801 can interface with two separate vessels, essentially making it a mini-multiplexer, while software mathematics allow for the sum or differential of the two signals.

FEATURES

- Capability for dual input of two probes from separate vessels.
- The level signal from one vessel can be mathematically added to or subtracted from another vessel.
- Level/Volume and Level/Flow characterization for all standard vessels and flumes/weirs.
- Integral keypad on front panel maintains NEMA 4X rating; no need to open the enclosure during calibration or setup.
- Provides one 4–20 mA isolated analog output signal.
- Four 10-amp SPDT relays provide complete flexibility from simple alarm applications to complex pump control including lead/lag alternation of pumps.
- 16-character alphanumeric display of all parameters.
- Display may be configured in units of level, volume, or flow.
- Continuous diagnostics check all major functions of the device including integrity of the probe.
- Unit may be remote mounted up to 2500 feet (760 m) using twisted, shielded pair cable.
- Intrinsically safe version can be remote mounted to 800 feet (240 m) and is supplied with on-board barriers.
- RS-232 for downloading of collected flow data (up to the last 31 days).



APPLICATIONS

- Hydrocarbons and solvents
- Slurries
- Viscous fluids
- Open channel flow
- High temperature/pressure liquids
- Acids

TECHNOLOGY

The amount of capacitance developed in any vessel is determined by the size (surface area) of the probe, the distance from the probe to its ground reference, and the dielectric constant of the medium being measured.

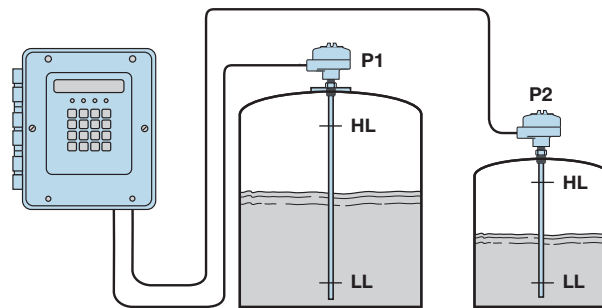
Considering that the probe's mounting position is fixed and the dielectric of the medium is constant, then the amount of capacitance developed in a vessel becomes dependent upon the amount of the probe which is covered with media.

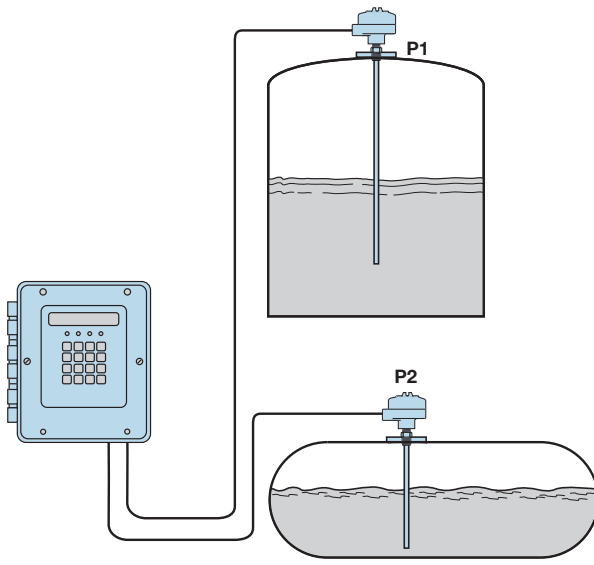
As the media rises and falls in the tank, the amount of capacitance developed between the probe and the ground reference also rises and falls. The Pulsatel circuit mounted on the probe changes the capacitance signal to a digital waveform proportional to the change in level. The amplifier then converts this digital signal into an isolated 4–20 mA analog output signal.

TYPICAL APPLICATIONS

Level/Volume monitoring of two tanks

The Model 801, with its dual input capability, can monitor the level or volume of two different tanks. The tanks can be of different sizes and configuration and contain different materials. The display will provide a visual indication of the level or volume and the alarms can be set up to provide high and low level detection on each tank.



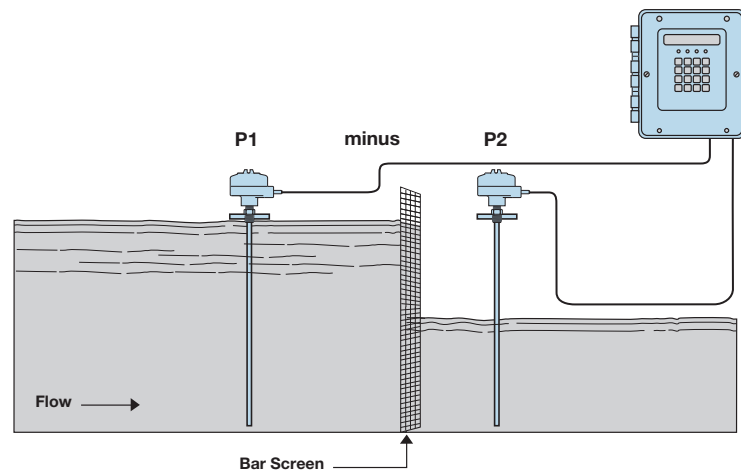


Sum the volume of two tanks

Using the dual input, the 801 can measure the total volume of two tanks. For instance there may be a main storage tank plus a smaller day tank. The 801 will display the volume of each tank plus provide a 4–20 mA signal of the total volume. Each tank can be a different size and shape. Alarms can also be provided for high or low level detection.

Level differential

The 801 is ideal for bar screen applications. Probes can be installed on either side of the bar screen. The 801 can measure the difference in level measured by the two probes. This will provide an indication that the bar screen requires cleaning. The 4–20 mA output can be provided on the actual level or on the level differential between the two probes. Alarms can also be set if the differential reaches a specific value.



Two Inputs — Differential (Bar Screen)

SPECIFICATIONS

Supply voltage	120 VAC, 50/60 Hz (+10 / -15%) 240 VAC, 50/60 Hz (+10 / -15%) 24 VDC ($\pm 10\%$)
Output:	
Analog	4–20 mA (isolated), reversible 1000 ohms max. loop resistance
Digital	RS-232
Range	5 pF minimum / 50,000 pF maximum
Accuracy	Better than 1.0% of span
Repeatability	$\pm 0.1\%$
Linearity	$\pm 0.5\%$
Data:	
Entry	Full numeric keypad
Indication	16-character alphanumeric LCD display
Relays 4 SPDT:	
AC	10 amp @ 120/240 VAC resistive
DC	10 amp @ 30 VDC resistive, 0.5 amp @ 125 VDC resistive
Set point range	0–50,000 pF
Differential range	0.50 pF minimum / 50,000 pF maximum
Time delay	0–120 seconds level rising, falling, both
Power consumption	15 Watts maximum 65 Watts maximum with heater
Humidity	99% non-condensing (electronics)
Response time	0.5 to approximately 2 seconds, depending upon probe capacitance and damping value
Ambient temperature (electronics):	
Without heater and thermostat	-4° to +160° F (-20° to +70° C)
With heater and thermostat	-40° to +160° F (-40° to +70° C)
Temperature coefficient of set point	$\pm 0.01\%$ / degree F ($\pm 0.018\%$ / degree C)
Maximum remote mount distance:	
Standard	2500 feet (760 meters)
Intrinsically safe	800 feet (240 meters)

AGENCY APPROVALS

Agency	Approved Model	Protection Method	Area Classification
FM 	Electronics (with any probe) 801-X034-X4X 801-X134-X4X 801-X234-X4X	Non-incendive	Class I, II, III, Div 2, Groups A, B, C, D, F & G NEMA 4X, IP 65
	801-X334-X4X 801-X434-X4X	Non hazardous	NEMA 4X, IP 65
	Probe	Intrinsically safe	Class I, Div 1, Groups A, B, C, D, E, F & G Class II, Div 1, Groups E, F & G Class III NEMA 4X, IP 65
	Electronics 801-X031-X4X 801-X131-X4X 801-X231-X4X	Non-incendive	Class I, II, III, Div 2, Groups A, B, C, D, F & G NEMA 4X, IP 65
	801-X131-X4X 801-X131-X4X	Non hazardous	Class I, Div 1, Groups C & D Class II, Div 1, Groups E, F & G
	Rigid insulated probes only	Explosion proof	Class I, Div 1, Groups B, C & D Class II, Div 1, Groups E, F & G NEMA 4X, IP 65
CSA 	801-XX34-N4X Electronics	Suitable for	Class I, II, III, Div 2, Groups A, B, C, D, E, F & G bare probes not approved for Groups E & F TYPE 4X
	Probe	Intrinsically safe	Class I, Div 1, Groups A, B, C, D, E, F & G Class II, Div 1, Groups E, F & G Class III bare probes not approved for Groups E & F TYPE 4X
	801-XX31-N4X Electronics	Suitable for	Class I, II, III, Div 2, Groups A, B, C, D, E, F & G TYPE 4X
	Rigid insulated probes only	Explosion proof	Class I, Div 1, Groups C & D Class II, Div 1, Groups E, F & G TYPE 4X

CAUTION: Agency ratings are dependent upon probe selection.

MODEL NUMBER

BASIC MODEL NUMBER

801	Kotron Transmitter
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NUMBER OF PROBES/OUTPUT

2	1 probe – One 4–20 mA output with RS-232
4	2 probes – One 4–20 mA output with RS-232

INPUT POWER

0	120 VAC, 50/60 Hz
1	240 VAC, 50/60 Hz
2	24 VDC
3	120 VAC with heater and thermostat
4	240 VAC with heater and thermostat

REMOTE MOUNTING CONFIGURATION

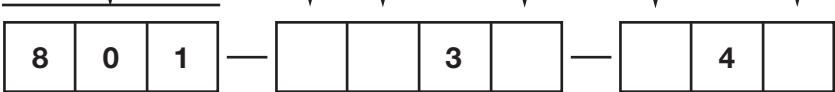
1	NEMA 4X
4	NEMA 4X with intrinsically safe probe circuit

HOUSING

A	NEMA 4X Noryl electronics with 316 stainless steel remote probe housing
N	NEMA 4X Noryl electronics with aluminum remote probe housing

SPECIAL OPTIONS

0	None
1	Mechanical totalizer
2	31 day data logger (smart watch)
3	Mechanical totalizer and 31 day logger



PROBES

A full range of rigid and flexible probes, for conductive and non-conductive process media, is available in various lengths and materials of construction. For further information on probe assemblies, refer to bulletin 50-125.

REMOTE CABLE

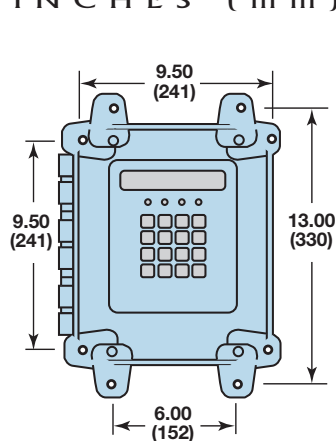
Specify remote cable by exact length between 10 and 999 feet using part number 009-7146-XXX.

For lengths from 1000 to 2500 feet, use part number X009-7146-999. Specify total length required.

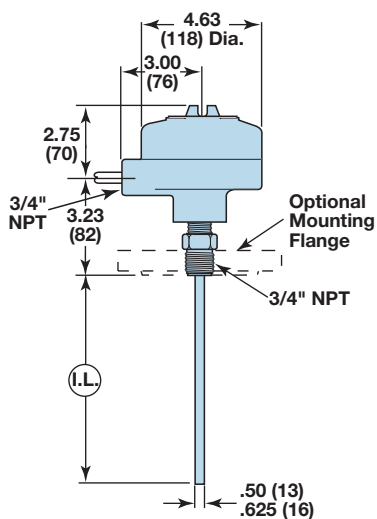
Example: X009-7146-999, X=1200 feet

DIMENSIONAL SPECIFICATIONS

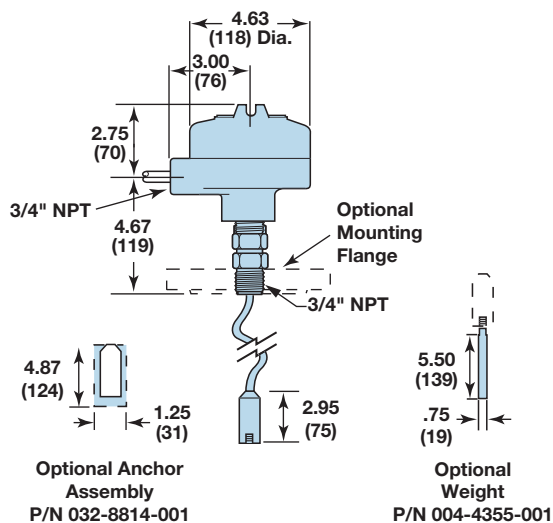
INCHES (mm)



Electronics Housing



Remote Mount/Standard Rigid Probe



Remote Mount/Flexible Probe

QUALITY



The quality assurance system in place at Magnetrol guarantees the highest level of quality throughout the company. Magnetrol is committed to providing full customer satisfaction both in quality products and quality service.

Magnetrol's quality assurance system is registered to ISO 9001 affirming its commitment to known international quality standards providing the strongest assurance of product and service quality available.

WARRANTY



All Magnetrol electronic level and flow controls are warranted free of defects in materials or workmanship for one full year from the date of original factory shipment.

If returned within the warranty period; and, upon factory inspection of the control, the cause of the claim is determined to be covered under the warranty; then, Magnetrol will repair or replace the control at no cost

to the purchaser (or owner) other than transportation.

Magnetrol shall not be liable for misapplication, labor claims, direct or consequential damage or expense arising from the installation or use of equipment. There are no other warranties expressed or implied, except special written warranties covering some Magnetrol products.

For additional information, see Instruction Manual 50-624.



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