



# Kotron® Model 82 CE RF Level Transmitter

## DESCRIPTION

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The Kotron Model 82 RF Capacitance transmitter is one of the most cost effective level transmitters available today. Compact in size, it employs state-of-the-art surface mount technology in an encapsulated (potted) module for a stable, accurate measurement in a wide range of materials.

## FEATURES

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- 4–20 mA isolated output signal  
(reversed 20–4 mA output optional)
- Utilizes a 24 VDC current loop for power source and signal transmission
- 120/240 VAC option available for four-wire applications
- Minimum span 50 pF
- Maximum span 4000 pF
- Integral metering points to allow the local measurement of 4–20 mA loop current without breaking the two-wire circuit loop
- Power indicator LED varies in brightness with level changes
- $\pm 0.25\%$  repeatability
- FM, CSA, and ATEX listed intrinsically safe when used in conjunction with an approved barrier
- CSA explosion proof designs
- Available with a full range of rigid and flexible sensing probes to 5000 psig (345 bar) and +1000° F (+538° C)
- Input voltage of 14 to 40 VDC at transmitter terminals
- Two-wire, integrally mounted units meet CE requirements for RFI/EMI noise immunity



## APPLICATIONS

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- Continuous level monitoring
- Liquid-liquid interface level measurement
- Clean or dirty liquids
- Viscous liquids
- Light slurries
- High temperature liquids
- Hydrocarbons & solvents
- Acids & corrosive liquids
- Food & beverage

## TECHNOLOGY

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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 (e.g. tank wall), and the dielectric of the medium being measured.

If the probe's mounting position is fixed and the dielectric value of the medium is constant, then the amount of

capacitance developed becomes dependent on the media in contact with the probe.

As media rises and falls in the tank, the amount of capacitance developed between the sensing probe and the ground also rises and falls. This change in capacitance is converted into a proportional 4–20 mA output signal.

## ELECTRICAL SPECIFICATIONS

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Supply Voltage	24 VDC, (14–40 VDC)
	120/240 VAC, 50–60 Hz, (+10/-15%)
Current	38 mA maximum
Line Variation	Less than $\pm 0.10\%$ /volt, for voltages between 14–40 VDC
Ambient Temperature	-40° to +160° F (-40 to +70° C) <sup>①</sup>
Zero Range	1000 pF (max.), 0 pF (min.)
Span Range	4000 pF (max.), 50 pF (min.)
Output Linearity	50–500 pF $\pm 1\%$ of span 501–1500 pF $\pm 2\%$ of span 1501–4000 pF $\pm 1\%$ of span
Response Time	Less than 0.1 second
Repeatability	$\pm 0.25\%$
Temperature Coefficient of Output	4000 pF span: Less than 0.035%/° F (0.063%/° C)
	-40° to +160° F (-40° to +70° C) 1000 pF span: Less than 0.025%/° F (0.045%/° C)
	50 pF span: Less than 0.075%/° F (0.135%/° C)

<sup>①</sup> Consult factory for higher temperatures on remote mounted transmitter

# MODEL NUMBER

## STANDARD PRESSURE

Models available for quick shipment, usually within one week after factory receipt of a purchase order, through the Expedite Ship Plan (ESP)

### BASIC

082	82 CE transmitter
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### HOUSING

8	FM/CSA/CENELEC EEx ia, aluminum 3/4" NPT dual conduit
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### FUNCTION/INPUT POWER

0	Four-wire, 120 VAC ①
1	Four-wire, 240 VAC ①
3	Two-wire, 24 VDC Nominal (14 to 40 VDC), FM, CSA
4	Two-wire, 24 VDC Nominal (14 to 40 VDC), ATEX Intrinsically Safe

### METER

0	None
1	Analog meter (Not FM/CSA approved)

### OUTPUT SIGNAL

3	Standard 4–20 mA
4	Reversed 20–4 mA ② ③ (Not CSA approved)

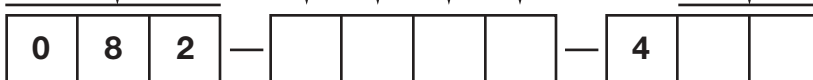
### MOUNTING CONFIGURATION

00	Integral, NEMA 4X/7/9 aluminum housing
04	Integral, NEMA 4X/7/9 316 stainless steel housing ③ ⑥
10	Remote, NEMA 4X/7/9 aluminum housing ④ ⑤
14	Remote, NEMA 4X/7/9 316 stainless steel housing ③ ④ ⑤ ⑥

### PROBE ASSEMBLIES ⑦

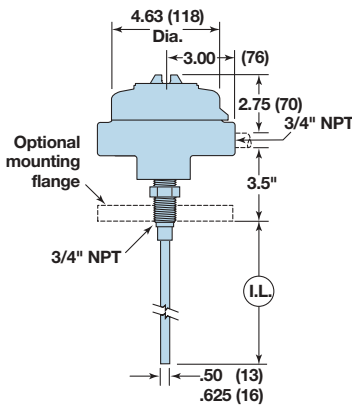
A full range of rigid and flexible probes for conductive and non-conductive process media is available. For further information on probe assemblies, please refer to bulletin 50-125.

- ① Not available with mounting codes 04 and 14.
- ② Consult factory on reversed output model.
- ③ Not available with function/input power codes 0 and 1.
- ④ Remote units supplied with separate probe and transmitter housing, 20 feet (6 meters) of cable and transmitter housing bracket.
- ⑤ Remote units up to 40 feet (12 meters) with special cable, order cable part number 009-8222-001.
- ⑥ Not available with Meter option code 1.
- ⑦ Delivery is ESP only if Model 082 and probe selected are both ESP.

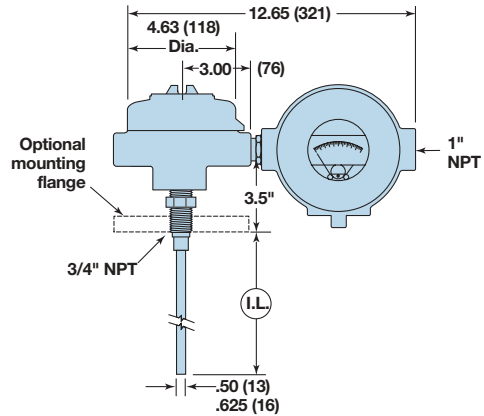


# DIMENSIONAL SPECIFICATIONS

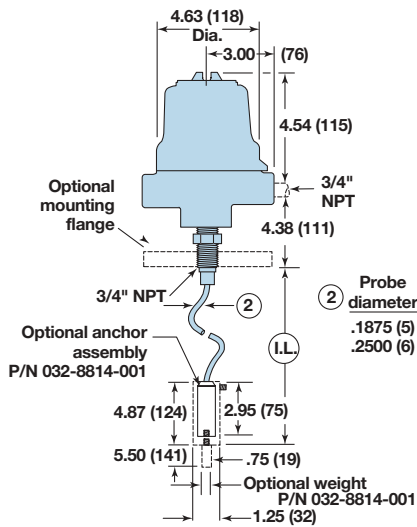
INCHES (mm)



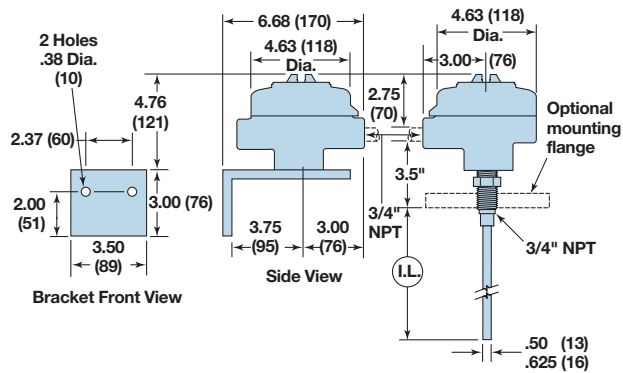
**Integral Mount with Rigid Probe  
(24 VDC Two-Wire)**



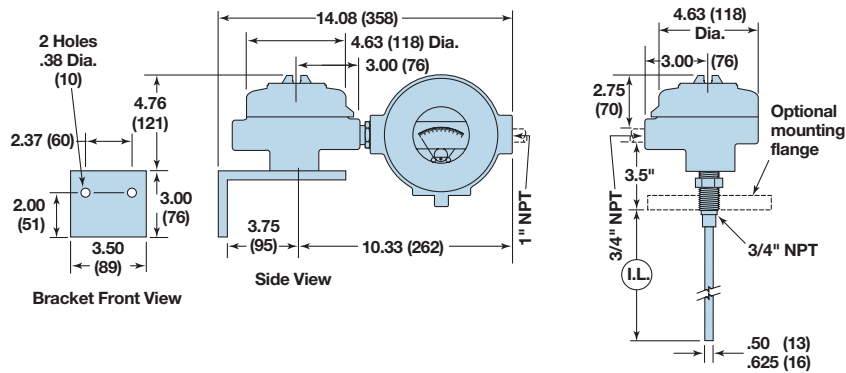
**Integral Mount with Rigid Probe and Meter  
(24 VDC Two-Wire)**



**Integral Mount with Flexible Probe  
(120 VAC or 240 VAC Four-Wire)**







**Remote Mount with Rigid Probe  
(24 VDC Two-Wire)**



**Remote Mount with Rigid Probe and Meter  
(24 VDC Two-Wire)**

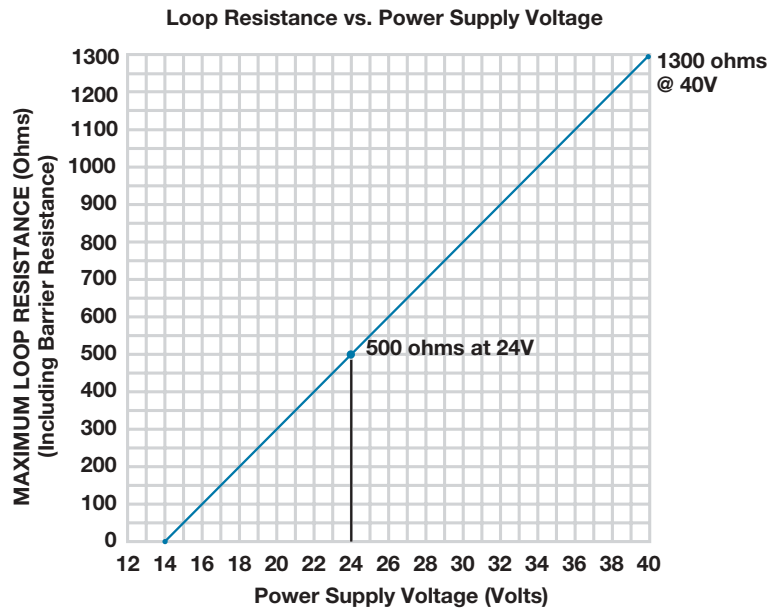
# AGENCY APPROVALS

AGENCY	APPROVED MODEL	PROTECTION METHOD	AREA CLASSIFICATION
<b>FM</b> 	082-8303-400	Intrinsically Safe	Class I, Div 1, Groups A, B, C & D; Class II, Div 1, Groups E, F & G; Class III, NEMA 4X
	082-8303-410 082-8304-400 082-8304-410	Non-Incendive Suitable for:	Class I, Div 2, Groups A, B, C & D Class II, Div 2, Groups F & G; Class III
<b>CSA</b> 	082-8303-400	Intrinsically Safe ①	Class I, Div 1, Groups A, B, C & D; Class II, Div 1, Groups E, F & G; Class III, TYPE 4X
	082-8303-410	Suitable for:	Class I, Div 2, Groups A, B, C & D; Class II, Div 2, Groups F & G; Class III
	082-8303-400 082-8303-410	Explosion Proof ②	Class I, Div 1, Groups C & D; Class II, Div 1, Groups E, F & G Class III, TYPE 4X
<b>ATEX</b> 	082-84XX-4XX	 II 1G EEx ia IIC T6	

① Not I.S. (CSA) for Groups E & F when used with a bare probe.  
 ② Approval is valid only with the use of insulated rigid probes.



These units have been tested to EN 50081-2 and EN 50082-2 and are in compliance with the EMC Directive 89/336/EEC.



Electrical data

## QUALITY

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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/service quality available.

## ESP

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### **E**xpedite **S**hip **P**lan

Several Model 82 CE transmitter models are available for quick shipment, usually within one week after factory receipt of a purchase order, through the Expedite Ship Plan (ESP).

To take advantage of ESP, match the color coded model number codes in the selection charts (standard dimensions apply).

ESP service may not apply to orders of ten units or more. Contact your local representative for lead times on larger volume orders, as well as other products and options.

## WARRANTY

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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.



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