**DESCRIPTION**

The Magnetrol® 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**

- 4–20 mA isolated output signal (reversed 20–4 mA output optional)
- Utilizes a 24 VDC current loop for power source and signal transmission
- 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
- ±0.25% repeatability
- FM and CSA listed intrinsically safe when used in conjunction with an approved barrier
- Available with a full range of rigid and flexible sensing probes to 5000 psig (345 bar) and +1000 °F (+538 °C)

**APPLICATIONS**

- 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**

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

Supply Voltage 24 VDC, (14–40 VDC)
Current 38 mA maximum
Line Variation Less than ±10%/volt, for voltages between 16–40 VDC
Ambient Temperature -40 to +160 °F (-40 to +70 °C) ¹
Zero Range 1000 pF (max.), 0 pF (min.)
Span Range 4000 pF (max.), 50 pF (min.)
Output Linearity 50–500 pF ±1% of span
501–1500 pF ±2% of span
1501–4000 pF ±1% of span
Response Time Less than 0.1 second
Repeatability ±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)

¹ Consult factory for higher temperatures on remote mounted transmitter

DIMENSIONAL SPECIFICATIONS INCHES (m m)

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

Electrical data

Loop Resistance vs. Power Supply Voltage

<table>
<thead>
<tr>
<th>Power Supply Voltage (Volts)</th>
<th>MAXIMUM LOOP RESISTANCE (Ohms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100</td>
<td>400 ohms at 24V</td>
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<tr>
<td>1200</td>
<td>1200 ohms</td>
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<td>1300</td>
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</table>

<table>
<thead>
<tr>
<th>Power Supply Voltage (Volts)</th>
<th>MAXIMUM LOOP RESISTANCE (Ohms)</th>
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</thead>
<tbody>
<tr>
<td>12</td>
<td>1200 ohms</td>
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<tr>
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<td>38</td>
<td>1200 ohms</td>
</tr>
<tr>
<td>40</td>
<td>1200 ohms</td>
</tr>
</tbody>
</table>
Models available for quick shipment, usually within one week after factory receipt of a complete purchase order, through the Expedite Ship Plan (ESP)

### Basic

- **Model Number**: 082
- **Transmitter**: 82 CE

### Housing

- **Standard Pressure**: 08
- **Housing**: 3/4” NPT dual conduit

### Function/Input Power

- **Function/Power**: 3
- **Power**: Two-wire, 24 VDC Nominal (14 to 40 VDC), FM, CSA

### Output Signal

- **Output Signal**: 3
- **Output**: Standard 4–20 mA

### Mounting Configuration

- **Configuration**: 00
- **Configuration**: Integral, aluminum housing

- **Configuration**: 10
- **Configuration**: Remote, aluminum housing

### Probe Assemblies

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. Remote units supplied with separate probe and transmitter housing, 20 feet (6 meters) of cable and transmitter housing bracket.
2. Remote units up to 40 feet (12 meters) with special cable, order cable part number 009-8222-001.
3. Delivery is ESP only if Model 082 and probe selected are both ESP.
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.

The Magnetrol® 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.

**Expedite Ship Plan**

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).

**Warranty**

All Magnetrol® electronic level and flow controls are warranted free of defects in materials or workmanship for eighteen months 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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**Agency Approvals**

<table>
<thead>
<tr>
<th>AGENCY</th>
<th>APPROVED MODEL</th>
<th>PROTECTION METHOD</th>
<th>AREA CLASSIFICATION</th>
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<tbody>
<tr>
<td>FM</td>
<td>082-8303-400</td>
<td>Intrinsically Safe</td>
<td>Class I, Div 1, Groups A, B, C &amp; D; Class II, Div 1, Groups E, F &amp; G; Class III, NEMA 4X</td>
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<td>082-8303-410</td>
<td>Non-Incendive</td>
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<td>Suitable for:</td>
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<td>CSA</td>
<td>082-8303-400</td>
<td>Intrinsically Safe</td>
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<tr>
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<td>082-8303-410</td>
<td>Suitable for:</td>
<td>Class I, Div 2, Groups A, B, C &amp; D; Class II, Div 2, Groups F &amp; G; Class III</td>
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<td>082-8303-400</td>
<td>Explosion Proof</td>
<td>Class I, Div 1, Groups C &amp; D; Class II, Div 1, Groups E, F &amp; G; Class III, TYPE 4X</td>
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<td>082-8303-410</td>
<td></td>
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</tr>
</tbody>
</table>

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.

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BULLETIN: 50-123.21
EFFECTIVE: May 2019
SUPERSEDES: February 2019