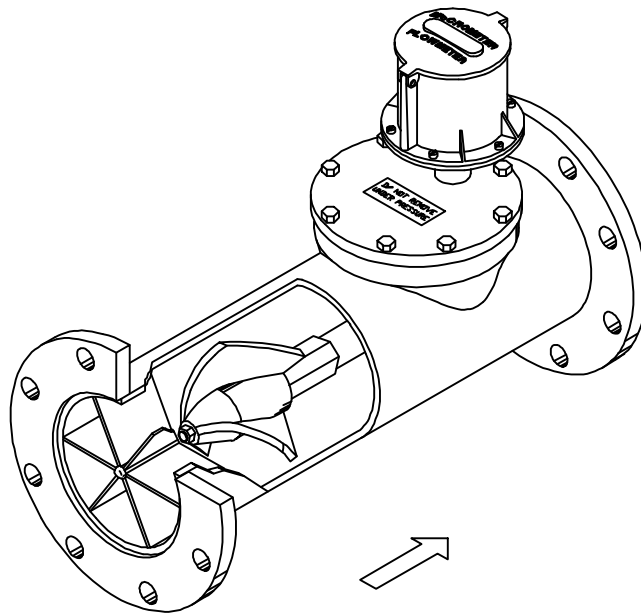


ELECTRONIC INSTRUMENTATION

FOR

PROPELLER FLOWMETERS



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Electronic Instrumentation
for
McCrometer Propeller Flowmeters

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4-20 mA Transmitters:

- ◆ E7000 series 4-20 mA Transmitter
- ◆ E7500 series Anti-Reverse 4-20 mA Transmitter
- ◆ E8000 series Forward-Reverse 4-20 mA Transmitter
- ◆ Accessory: ET424-10 DC Power supply

Overview:

The E7000 series transmitter is a two-wire 4-20 mA transmitter designed to provide a linear 4-20 mA output from any McCrometer propeller meter with a mechanical register. The industry standard 4-20 mA signal can be connected to flow computers, chart recorders, Programmable Logic Controllers (PLCs), and computerized data acquisition systems over 5000 feet away. The transmitter is easily installed under the mechanical register without removal of the flowmeter from the pipe so there is no interruption of service. The unit requires a 16-40 VDC power supply.

The E7500 series transmitter is an Anti-Reverse version that holds the output signal at 4 mA if the propeller turns backwards.

The E8000 series transmitter is a Forward-Reverse version that has dual 4-20 mA outputs for indicating both forward and reverse flows.

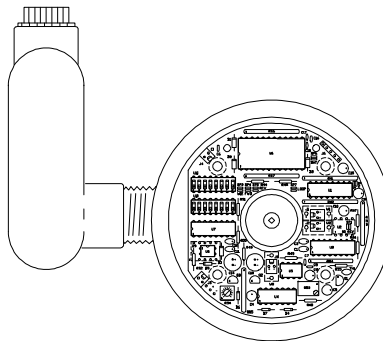


Figure 1. E7000, E7500 and E8000 Series 4-20 mA Transmitter

Totalizer Options:

There are two totalization output options available for E7000, E7500 and E8000 transmitters:

- Dry Contact Relay - Provides a mechanical contact closure for a programmed totalization period. It can be used with electronic or electromechanical counters with a contact closure input.
- Optically Isolated Transistor Output - Provides an NPN open-collector transistor output for a programmed totalization period. It can be used with electronic counters with a current sinking device input.

The ET424-10 Power Supply is a Wall Plug type DC power supply that supplies power to 4-20 mA instrumentation. Its rated output is 24 VDC at 100 mA. It can be used with E7000, E7500 and E8000 series 4-20 mA transmitters.

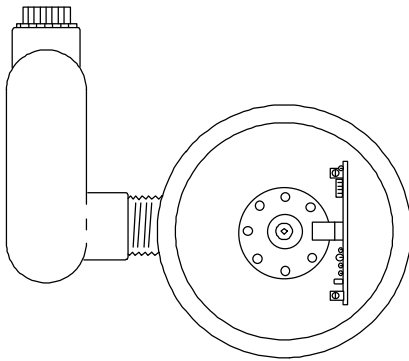
Note: 4-20 mA output is also available on the R0900 Register. See Electronic Register section for more information.

Pulse Transmitters:

- ◆ EA630 Pulse Transmitter
- ◆ EA550 Hall-Effect Pulse Transmitter

Overview:

The EA630 transmitter is a three-wire pulse transmitter designed to provide a digital 0-12 Volt pulse output from any McCrometer propeller meter with a mechanical register. The output frequency is linear with the flowrate. The pulse output can be connected to flow computers, digital counters, Programmable Logic Controllers (PLCs), and computerized data acquisition systems up to 500 feet away. Unit can be ordered with a resolution of 1 to 10 pulses per propeller revolution. The transmitter requires a 12 VDC supply voltage to operate.



The EA630 transmitter is contained in aluminum housing similar to the E7000 transmitter. The transmitter is easily installed under the mechanical register without removal of the flowmeter from the pipe. Installation of the electronic transmitter does not affect the mechanical register.

Figure 2. EA630 Transmitter

The EA550 transmitter is a three-wire pulse transmitter that provides a digital 0-12 Volt pulse output from any McCrometer propeller meter without a mechanical or electronic register. The unit has 2 pulses per propeller revolution and the output frequency is linear with the flowrate. The pulse output can be connected to flow computers, digital counters, Programmable Logic Controllers (PLCs), and computerized data acquisition systems up to 500 feet away. The unit requires a 12 VDC power supply.



Figure 3. EA550 Transmitter

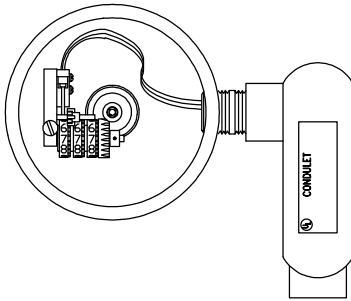
The EA550 transmitter replaces the aft magnet in the bearing assembly providing an electronic signal without a drive cable. This has the advantage of extending the accurate performance of a flowmeter into lower flow rates than the mechanical register option can offer.

Dry Switch Transmitters:

- ◆ SA100 Dry Switch Transmitter

Overview:

The SA100 Transmitter is a three-wire transmitter that provides a switch closure at quantitative totalization intervals. The three output wires are normally-open, normally-closed and common connections. This transmitter can be used with digital counters, electromechanical counters, Programmable Logic Controllers (PLCs), and computerized data acquisition systems with a switch closure input. The switch is rated 5 Amps Resistive at 115 VAC, 60Hz.



The SA transmitter is easily installed under the mechanical register without removal of the flowmeter from the pipe. Installation of the transmitter does not affect the mechanical register.

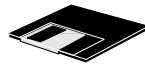
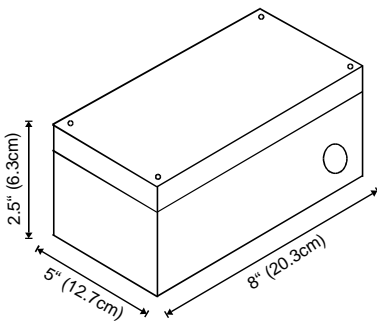
Figure 4. SA100 Transmitter

Data Logger Systems:

- ◆ E2500 Data Logger
- ◆ E9100 No-Power Pulse Transmitter

Overview:

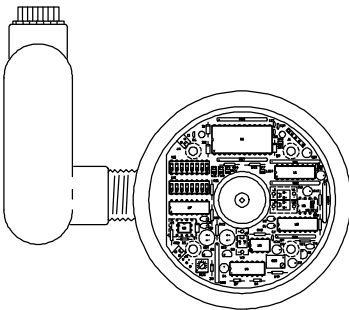
The E2500 Data Logger is a battery powered electronic instrument designed for unattended measuring and recording of pulse signals. Key features include a 40-day data storage capacity, 90-day battery life, two analog and two digital input channels, watertight construction, and user programmable measurements. The unit is also capable of forward and reverse datalogging, has RS232 interface for communications, and an optional modem interface. The E2500 data logger is used with the E9100 no-power pulse transmitter and it is installed as a stand-alone unit up to 50 feet away from the flowmeter.



The E2500 data logger includes Windows® 95 compatible software for programming and extracting data from the unit via an RS-232 port or a modem. The software features graph and data printouts, and is compatible with database and spreadsheet applications.

Figure 5. E2500 Data Logger

The E9100 transmitter is a two-wire no-power pulse transmitter designed to provide a digital 0-10 Volt pulse output to the E2500 data logger unit up to 50 feet away. The output frequency is linear with flowrate. This transmitter can be used where local power service is unpredictable or non-existent. The E9100 requires no power to operate.



The E9100 transmitter is contained in aluminum housing similar to the E7000 transmitter. The transmitter is easily installed under the mechanical register without removal of the flowmeter from the pipe. Installation of the electronic transmitter does not affect the mechanical register.

Figure 6. E9100 Transmitter

Electronic Registers:

- ◆ RE100 Electronic Register

Overview:

The RE100 Electronic Register is a battery powered device that accepts pulse inputs from a McCrometer Propeller flowmeter and simultaneously indicates both rate and total on a liquid-crystal display (LCD). The RE100 includes a non-volatile memory to store the totalizer count and programming, has separate scaling factors for rate and total, and also offers optional scaled pulse and industry-standard 4-20mA outputs. The RE100 is mounted in the standard McCrometer canopy housing in place of the mechanical register directly on the meter, or as a remote installation up to 50 feet from the flowmeter.

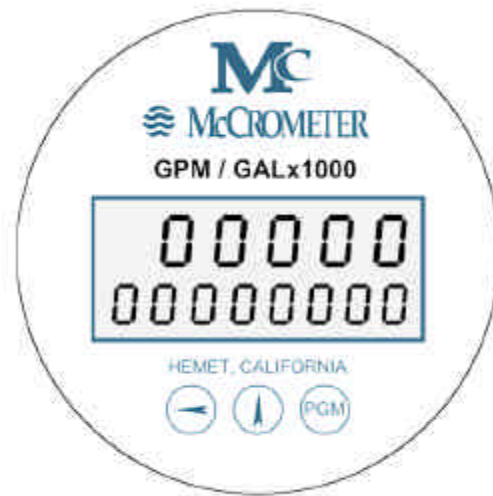


Figure 7. RE100 Electronic Register

Options:

- Scaled Pulse Output - The scaled pulse option includes an NPN transistor output (non-isolated) to provide a pulse output for every totalizer increment. This can be used to drive a remote totalizing counter or telemetry equipment.
- 4-20 mA Output - The unit has an optional industry standard 4-20 mA output that can be connected to remote instrumentation such as flow computers, chart recorders, PLCs and data acquisition systems. The unit is powered from the 4-20 mA signal when present, automatically switching back to battery power when the 4-20 mA power is disconnected. The 4-20 mA option also includes an optically isolated transistor scaled pulse output.
- Remote Mounting - The register can be remote mounted up to 50 feet away from the flowmeter. This can be useful for monitoring the flow when the flowmeter is in a hard-to-reach place.

Electronic Registers (continued):

◆ R0900 Electronic Register

Overview:

The R0900 Electronic Register is an electronic ratemeter/totalizer used in place of the standard mechanical register. The R0900 is mounted inside a NEMA 4 rated enclosure with an electromechanical non-resettable totalizer. It is used in conjunction with a no-power transmitter to provide a more accurate low flow capability. It can be battery powered or, when fitted with the 4-20 mA option, powered from a 4-20 mA signal.

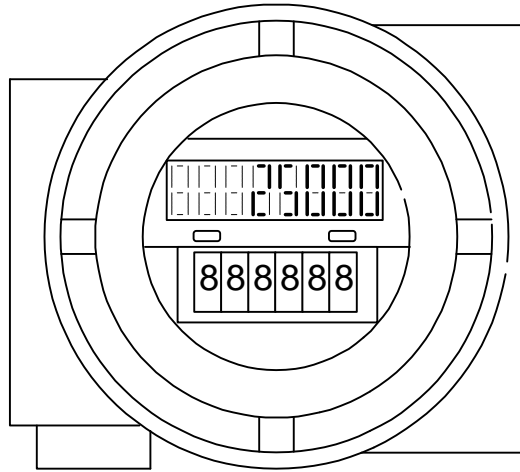


Figure 8. R0900 Electronic Register

Options:

- Battery Powered - The unit has an internal battery so it can be used in places where local power service is non-existent.
- 4-20 mA Output - The unit is fitted with an industry standard 4-20 mA output capability that can be connected to remote instrumentation such as flow computers, chart recorders, PLCs and data acquisition systems. The unit is powered from the 4-20 mA signal, and a 16-40 VDC power supply is required. This option cannot be used with the battery-powered option.
- Dry Contact Relay - The unit provides a mechanical contact closure for a programmed totalization period. This option can be used with electronic or electromechanical counters with a contact closure input. It is available only in conjunction with the 4-20 mA output option.
- Optically Isolated Transistor Output - The unit provides an NPN open-collector transistor output for a programmed totalization period. This option can be used with electronic counters with a current sinking device input. It is available only in conjunction with the 4-20 mA output option.
- Remote Mounting - The register can be remote mounted up to 50 feet away from the flowmeter. This can be useful for monitoring the flow when the flowmeter is in a hard-to-reach place.

Flow Computers:

- ◆ EA230 Flow Computer

Overview:

The EA230 Flow Computer is an electronic ratemeter/totalizer used as a remote instrument to monitor the flowrate. The unit totalizes flow on a ten-digit totalizer and displays flowrate on a six-digit ratemeter with high and low alarm outputs. It is completely programmable and has many additional features such as control inputs, control and alarm outputs, relay outputs, an RS-485 multidrop serial communications port and an optional 4-20 mA output. It features a Nema 4X rated sealed front panel and operates with 110 VAC.

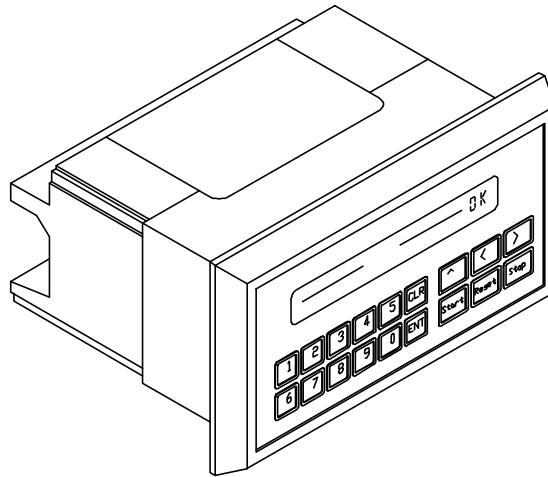


Figure 9. EA230 Flow Computer

Options:

- Pulse Input - The model EA230-00 accepts a standard digital pulse input from either an EA630 or an EA550 pulse transmitter. It also features a built-in 12 VDC power supply to power the transmitter.
- 4-20 mA Input - The model EA230-20 accepts an industry standard 4-20 mA input from either an E7000 series 4-20 mA transmitter or an R0900 Register with 4-20 mA output option. It provides a 20-point linearization for more accurate flow measurement. It also features a built-in 24 VDC power supply to power the transmitter.
- 4-20 mA Output - Models EA230-10 (pulse input) and EA230-30 (4-20 mA input) each have programmable optically isolated 4-20 mA outputs to connect with other instrumentation such as chart recorders and data acquisition systems.

Chart Recorders:

- ◆ E4201 Chart Recorder
- ◆ E4501 Chart Recorder

Overview:

The E4201 Chart Recorder is a microprocessor-based, circular chart recorder. It is used as a remote instrument to monitor and record flowrate information. The unit draws lines onto preprinted charts using an ink pen. It is available with 24 hour and 7 day charts. The chart recorder is available with 4-20 mA input to use with E7000, E7500 or E8000 series transmitters.

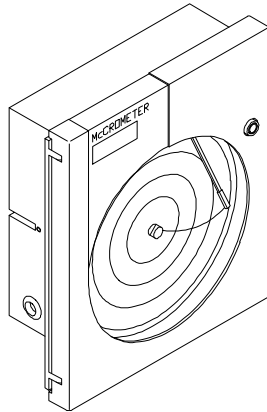


Figure 10. E4201 Chart Recorder

The E4501 Chart Recorder is a microprocessor-based, circular chart recorder. It is completely user-configurable to specific requirements, including type of input, without recalibration. Its “one-pen” stylus printhead produces analog traces and prints alphanumeric chart data on a blank heat-sensitive chart. This all-purpose blank chart eliminates the need for ordering and stocking several types of charts. Therefore, users can design the chart to match their specific application. The comprehensive operator interface includes clear, brilliant alphanumeric displays, indicators, bargraph, and keypad for visual interaction. The E4501 Chart Recorder is available with 4-20 mA inputs to use with E7000, E7500 or E8000 series transmitters.

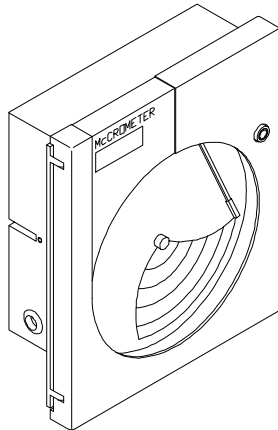
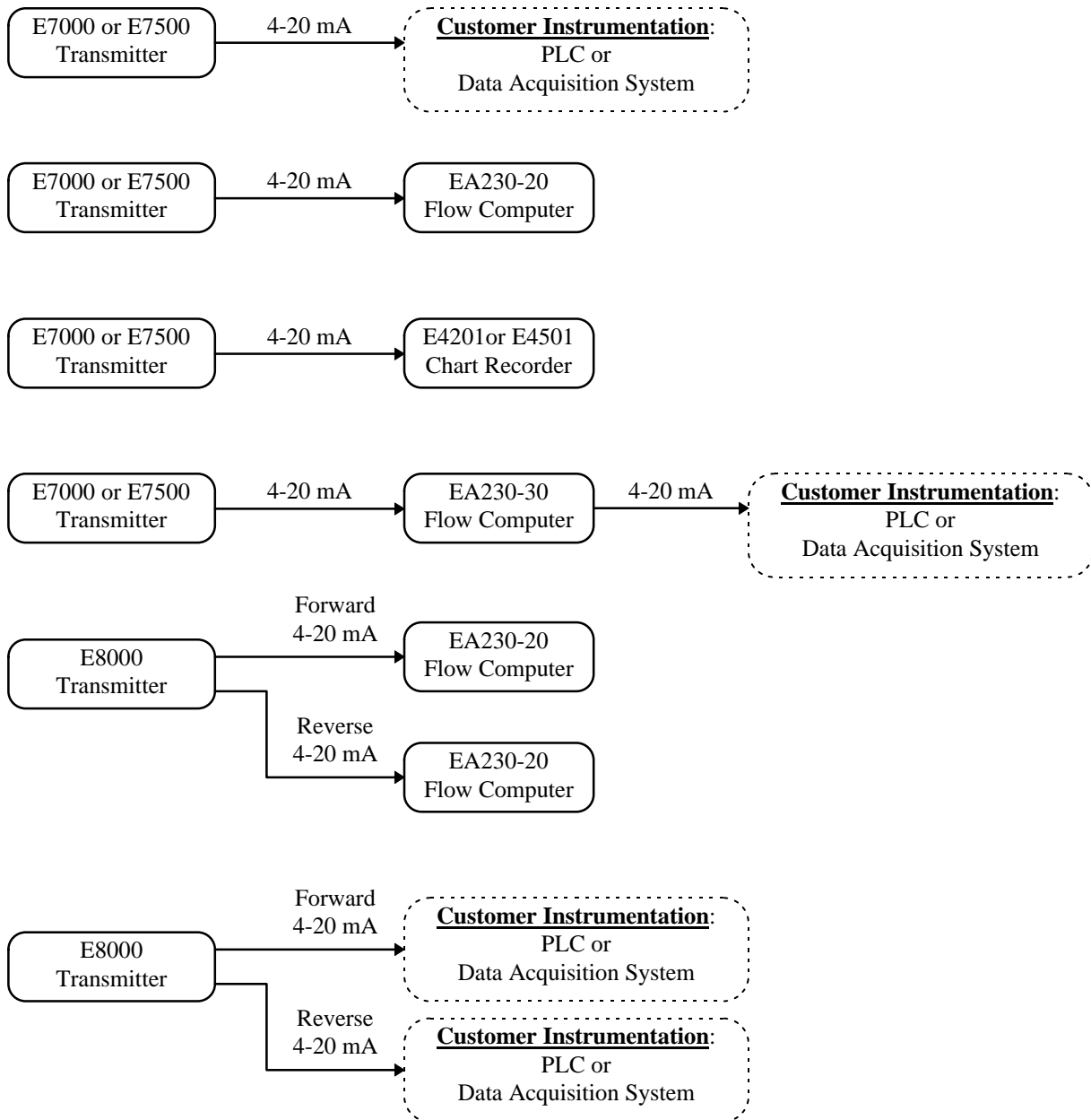


Figure 11. E4501 Chart Recorder

Instrumentation Configuration Diagrams:

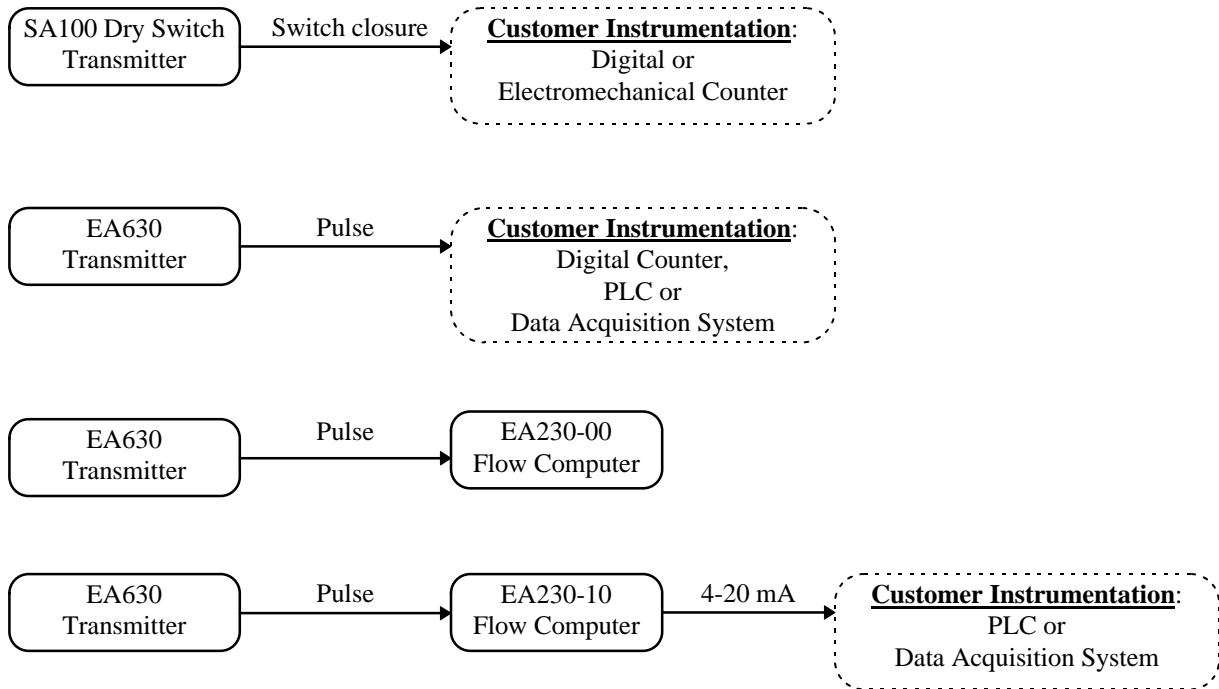
Propeller Meters with Mechanical Register:

4-20 mA Systems:

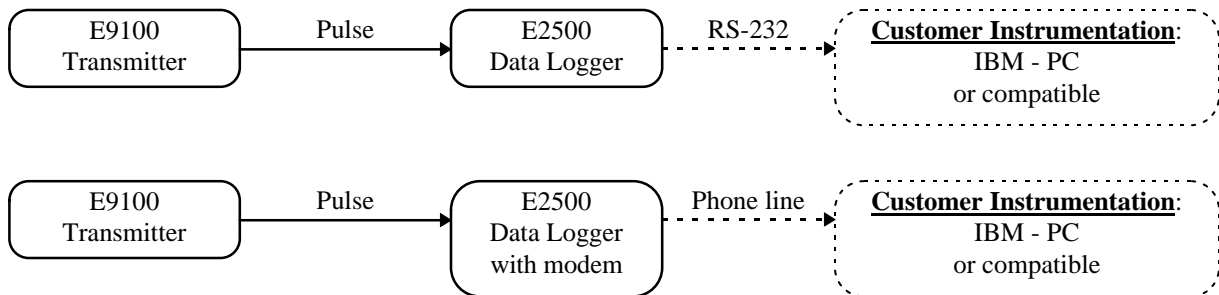


Instrumentation Configuration Diagrams (continued):

Pulse Systems:

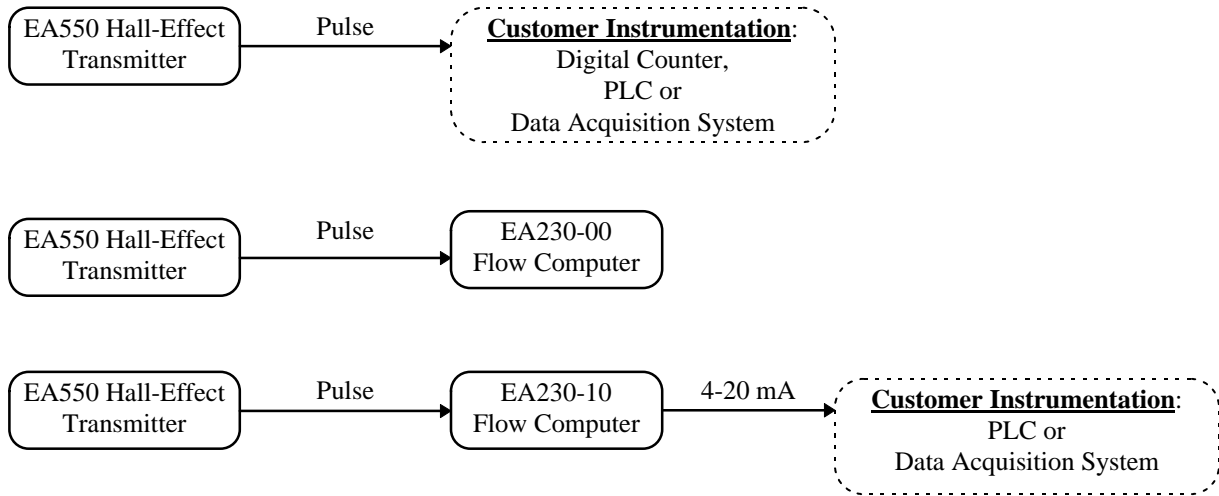


Data Logging Systems:



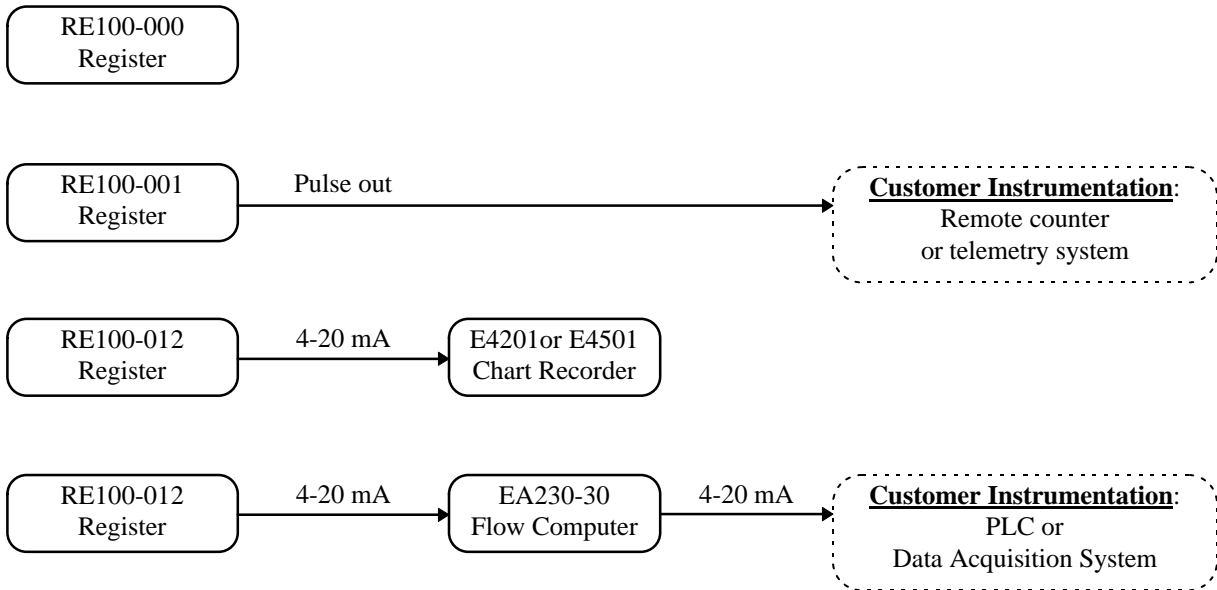
Instrumentation Configuration Diagrams (continued):

Propeller Meters with Electronic Sensor:

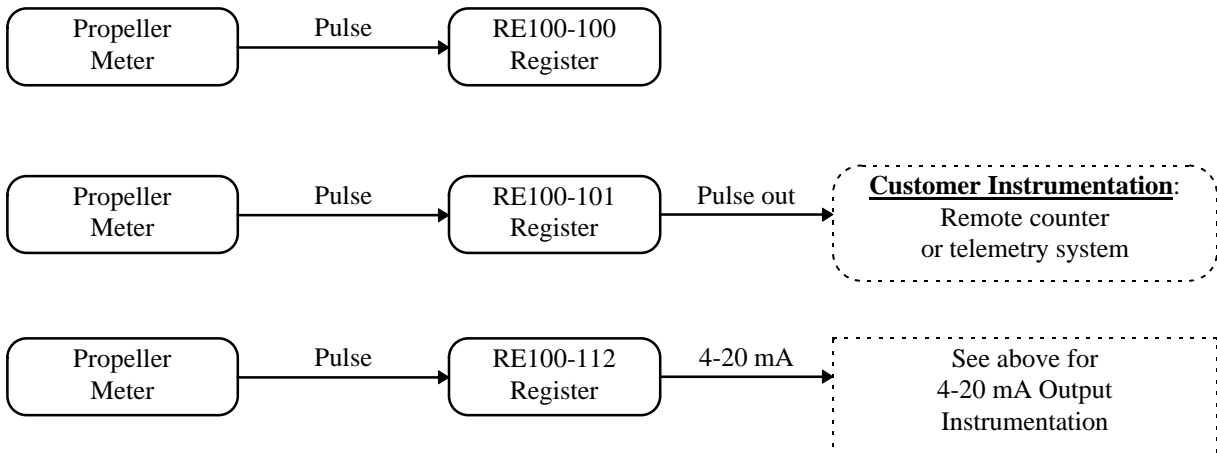


Propeller Meters with RE100 Register:

Meter Mounted:

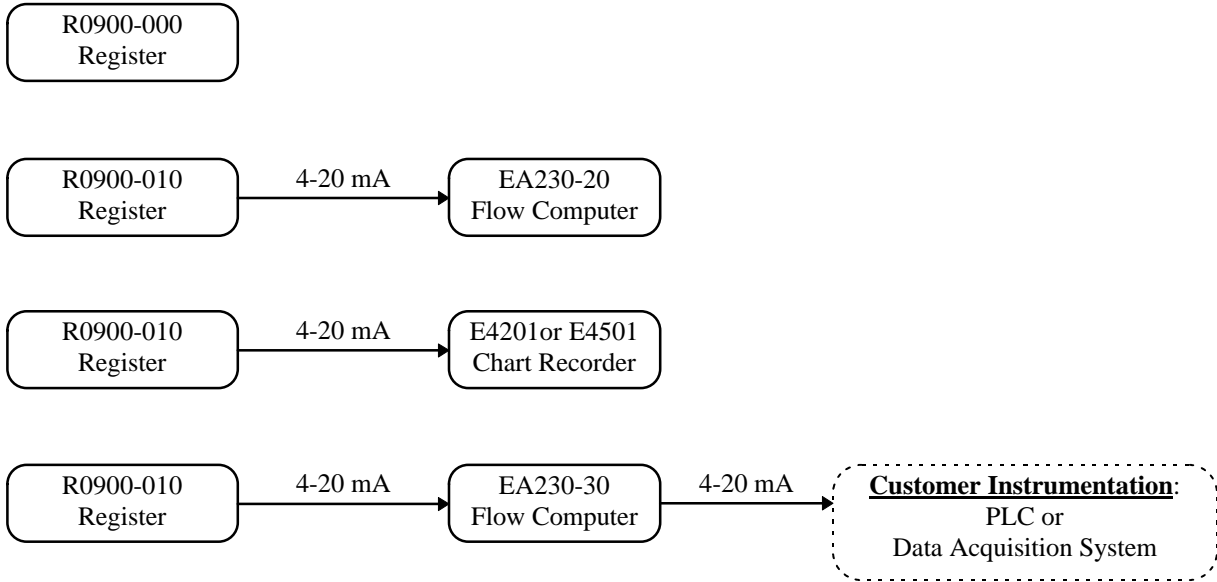


Remote Mounted:

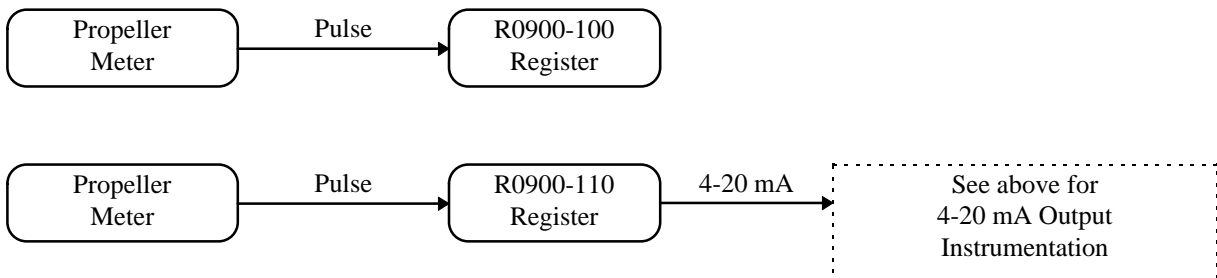


Propeller Meters with R0900 Register:

Meter Mounted:



Remote Mounted :



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