

OPERATING MANUAL

PATHFINDER INSTRUMENTS

Model ORPT-1

I. General Description

The **Model ORPT-1** (encapsulated miniature transmitter) is a 2-wire, 4-20mA ORP transmitter featuring encapsulated construction, high performance and small size.

The transmitter accepts as its input any ORP electrode via a BNC coaxial connector. It transforms the probe signal to a 4 to 20mA current proportional to the ORP level. This output may be transmitted over two wires to a control location, the same 2 wires provide power to the transmitter. Any D.C. power supply from 12 to 36V may be used. There are two adjustments on the transmitter to standardize probes for "Zero" and "Span". The output can be monitored with a loop powered meter, a loop resistor or a multimeter during the standardization procedure.

Specifications

Input:	±1000mV
Output:	4-20mA
Power Supply:	12 to 36VDC
Load Resistor:	0 to 750Ω at 24VDC
Accuracy:	±1mV
Operating Temperature Range:	-25 to +70°C
Reverse Polarity Protection:	Internal diode
Dimensions:	1.5" × 2.0" × 1.0"

II. Installation

1. Two mounting holes are provided. The transmitter can be mounted in a head, weather-proof box, or DIN rail.
2. The input probe connector is a BNC jack. Use only a coaxial cable that has insulation around the shield. The shield is isolated from ground, and this isolation should be maintained for proper operation. For best results, the probe cable should not be longer than 50 feet. Long cables result in a slow response because the probe must charge the cable capacitance through the high probe source resistance.
3. The output wires are isolated from ground; connections are made to the terminal strip observing polarity to the terminals marked +, - OUT. These wires are to be connected to a D.C. power supply through a load resistor. The wires can be as long as necessary. Connect the ground terminal to earth ground.
4. The loop resistor can be either in the positive or negative power supply lead. The value of the loop resistor depends on the voltage required at the monitoring location. Calculate the required power supply voltage from the following equation: Minimum power supply voltage = $12 + (.02 \times R_L)$. A convenient value for the loop resistor might be 250 ohms, $V_{OUT} = 1V$ to $5V$. Minimum supply voltage = $12 + (.02 \times 250) = 17V$. The maximum supply voltage is 36V.
5. To calibrate the transmitter use a precision millivolt source. Apply -1000mV and adjust the "Zero" pot for an output current of 4.00 mA. Apply +1000mV and adjust the "Span" pot for an output current of 20.00mA. Repeat "Zero" and "Span" until both are correct.