

NEW

EXPLOSION PROOF TRANSMITTING DIGITAL PANEL METER FOR ANY SENSOR'S SIGNAL INPUT

**MODEL
EPT**

FEATURES:

- Wireless I.R.D.A.
- 0.4" 4 1/2 LED Digits
- 4-20, 4-12-20 & 0-16mA Outputs
- 10-32VDC, 5-48VDC or 100-240VAC Power Input,
- RS232, 485 or USB I/O
- V/mADC/RMS, TC, RTD, S-G, pH, ORP, %RH, Frequency, etc. Inputs
- 3 each 3/4" NPT Ports
- Adjustable Display Position
- CMTBF: >100,000 Hours
- OTEK's Exclusive Lifetime



SPECIFICATIONS @ 25°C

- Accuracy & Linearity: $\pm 0.05\%$ of F.S.
- Input Signal: See Inputs Section
- C.M.R.R.: 100dB @ 50-60Hz
- Temperature Coefficient: $\pm 100\text{PPM}/^\circ\text{C}$
- Conversion Rate: 2.5/Second
- Conversion Type: Sigma-Delta
- Step Response: 0.1 Sec. 0-90%
- Output Load: 0-100 OHMs
- Baud Rate: 1200 - 19.2KB
- Protocol: ASCII (8N1)
- Temp. Range: $-20 + 70^\circ\text{C}$
- Humidity: 5-95% RH N.C.
- Housing: Explosion Proof FM & CSA: Class I, Div. 1 GPS. B-G EX & 1 ECex: IM2, Exd1
- Nuclear: To 10CFR50C
- Mil-Spec: To Specifications
- Connector: Screw Terminal
- I.R.D.A.: Per Industry Standard 9600

DESCRIPTION

"The Less The Links, The Stronger The Chain". Now you can eliminate one potential source of problems. The **EPT** has all you will need to monitor and control your hazardous process in one simple instrument, except your sensor/transducer (we can help you get it). It even has serial communications for your DCS, SCADA, PLC or P.C. (Ethernet on request), math functions (+, -, x, \div , $\sqrt{\quad}$, Poly & X-Y Tables) for linearization and limits (relays or O.C.T. on request). All this in one compact Explosion Proof Housing certified for Class I, Division 1 & 2, All Groups in either copper free aluminum or SS316 steel with 3 each 3/4" **NPT** ports. The internal connections are via captive screw terminal tested for Seismic conditions.

4-20mA Output: The **EPT** can **source** 4-20mA into a load of 0-100 Ohms (50 Ohms recommended) when powered from 5-48VDC or 100-240VAC (See Ordering Information). For greater **sourcing** loads (up to 1K Ohms) contact OTEK for new option. The 4-20mA output follows 100% the display for unipolar (0-19999 counts = 4-20mA) or bipolar (-10,000 = 4, 0000 = 12 & 10,000 counts = 20mA) or linear 0-19999 counts = 0-16mA out.

Calibration/Configuration? You don't have to stop! Use the included **I.R.D.A.** compatible I/O communications **through** the window when you order the Serial I/O option. All functions are available via the **I.R.D.A.** and RS232, 485 or **USB**.

For other Current Loop Products see our Selection Chart at www.otekcorp.com

Signal Inputs: See Description On Next Pages

**If You Don't See It
Ask For It!**



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MADE
IN
USA



THE SIGNAL CONDITIONERS

Options 04-08: VDC Externally Powered: Input impedance is 10 Mega Ohms.

Specs: See Front Page

Connections:

Option 09: Custom: Use this option to describe any custom input, scale or modification to the **EPT** and contact us for feasibility and cost.

Connections:

To Be Determined

Options 10-13: 20 μ A - 200mADC:

Since the **EPT** is 200mV full scale (20,000 Counts) the "Shunt" resistors used are 1K, 100, 10 or 1 Ohm. Don't forget that maximum display is 19,999 not 20,000!.

Connections:

Options 14-22: V & mA RMs:

Here we use a **True RMS-DC** Converter for accurate ($\pm 0.05\%$) measurement of sine waves up to

10KHz ($\pm 0.1\%$ for 10-20KHz) and SCR;s fired to $\pm 1\%$. Input impedances vs. range are the same as for VDC ranges.

Connections:

Option 23: 5Amps AC:

Specifically for current transformers (**C.T.**) this option requires an externally mounted (supplied) 0.05 Ohm, 0.1% 3 Watt resistor. You can mount the "Shunt" at your **C.T.** or next to the **EPT** but make sure the connections are "Perfect" to electrical codes. The C.T. might have "**Lethal**" **High Voltage** without a "Shunt" (Open) and the **EPT** will "Smoke". See OTEK's New **ACS & CTT** models for **C.T.** powered instruments (Patent Pend.)

Connections:

Option 24: Strain-Gage (350

Ohm Type): Here we use a "tracking" \pm excitation of ± 2.5 VDC and a differential amplifier to convert the 2 or 3mV/V (typical) sensitivity of your "Loadcell". Specify your Strain-Gage sensitivity and full scale and the **EPT's** display at Zero and Full Scale Please!

Connections:

Option 25: Strain-Gage ($\geq 1K <$

5K Ohm): These are typically "Monolithic" **S-G** that require constant current (preferably) excitation. We use 100 μ A and diff. op. amp for high stability and accuracy. **Specify** your S-G impedance and sensitivity and the **T**

Connections:

Option 26: RTD (PT100): We excite your 2 or 3 wire RTD with 200 μ A to avoid the "self heating" effect. The range of the **EPT** is the same as your **RTD** typically -200 $^{\circ}$ C to +800 $^{\circ}$ C (-328 + 1562 $^{\circ}$ F). You can place the decimal point at will (typically -200.0 to 800.0 (-328.0 to 1562.0)). The **PT100** has a temperature coefficient of 0.00385 Ohms/Ohm/ $^{\circ}$ C. For legacy 0.00392 TC (known as ANSI 392) contact **OTEK** and use Option "09".

Connections:

Option 27: RTD (PT1000): Same as PT100 except it is 1000 Ohms at 0 $^{\circ}$ C instead of 100 Ohms @ 0 $^{\circ}$ C. The same technique is used for copper **RTD** (10 Ohm), contact **OTEK**.

Connections:

Option 28: Thermocouple (Type

J): This **TC** has a range of -210 to +760 $^{\circ}$ C (-350 + 1390 $^{\circ}$ F). Its color is white (+) and Red (-), cold junction (CJ) is inside the **EPT** at the connector base. Make sure the connections from the **EPT** 6" "flying leads" and your **TC** are as close to the **EPT's** entrance as possible to avoid errors and calibrate after connecting. If you short out the **EPT's** "flying leads" together, the **EPT** will read the ambient temperature due to its built-in C.J.C.

Connections:

(SIGNAL CONDITIONERS (CONT))

Option 30: TC (Type K): This is yellow (+) and red (-) and has a range of -270 + 1370°C (-440 + 2500°F). The same notes as above.

Connections:

Option 31: TC (Type T): This blue (+) and red (-) **TC** wire has the range of -270° + 400°C (-440 + 750°F). Same notes as above.

Connections:

Options 32-33: Frequency Input:

We use an **F-V** to accept frequencies from 40 - 20KHz and amplitudes from 1-400V peak or dry contact or open collector transistor (O.C.T.) for 50 or 60Hz power line frequency measurement. Use Option # "33" or see our **ACS** Powerless™ Series.

Connections:

Option 34: %RH: This conditioner is designed to interface to a typical (capacitance type) 2-3pF/% of **RH** made by several manufacturers. Use Option "09" and contact **OTEK** to specify your sensor's specifications.

Connections:

Option 35: pH (Acidity): We use a FET input (10¹⁵) amplifier and calibrate the **EPT** for 0-14.00 pH using the Industry's standard ± 413 mV = ± 7 pH co-efficient.

Connections:

Option 36: ORP (Oxygen Reduction Potential): Our FET amplifier (10⁹) accepts the industry standard 2000mV F.S. of the probe and the **TPM** displays it in % (0-100.00%).

Connections:

More: New Signal Conditioners will be added as per your requests and popularity, such as Ohms, Conductivity, Shock, Vibration, Position etc. Contact **OTEK**.

4-20mA Output

TYPICAL CONNECTIONS

NOTES:

1. **Self Diagnostics:** The **EPT** will test all segments and I/O Signals for about 5 seconds on power up.

All Models Dec. Points, Serial I/O, Peak & Hold: See User's Manual

EPT SERIES

6-9-09

**MODEL
EPT**

Model: EPT- 1 - 2 - 3 - 4 - 5 - 6

GRADE (1)
 I Industrial
 M Mil-Spec
 N Nuclear (Contact Otek)
 9 Custom (Please Specify)

INPUT SIGNAL (1 & 2)

04 ±200mVDC
 05 ±2VDC
 06 ±20VDC
 07 ±200VDC
 08 ±50mVDC
 09 Custom (Specify)
 10 ± 200µADC
 11 ±2mADC
 12 ±20mADC
 13 ±200mADC
 14 200mV RMS
 15 2V RMS
 16 20V RMS
 17 200V RMS
 18 50mV RMS
 20 2mA RMS
 21 20mA RMS
 22 200mA RMS
 23 5 Amp RMS
 24 Strain-Gage (350 Ohm)
 25 Strain-Gage (>1K Ohm)
 26 RTD (PT100)
 27 RTD (PT1000)
 28 TC (Type J)
 30 TC (Type K)
 31 TC (Type T)
 32 Frequency (40-20KHz)
 33 Frequency (50-60Hz Line)
 34 % RH (Specify Sensor)
 35 pH (0-14.00)
 36 ORP (0-2000mV)
 37 Hi Speed Peak & Hold (2 VDC)
 40 AC Volts Signal Powered
 41 AC Amps Signal Powered

RANGE/CALIBRATION (2)

0 Unipolar 4-20mA
 1 Bipolar 4-12-20mA
 2 Linear 0-16mA
 9 Custom (Specify)

POWER INPUT (4)

0 Non-Isolated 5VDC
 1 Isolated 5VDC
 2 Isolated 12VDC
 3 Isolated 24VDC
 4 Isolated 48VDC
 5 Isolated 100-240VAC
 6 10-32VDC
 9 Custom (Specify)

SERIAL I/O (4)

0 None
 1 RS232E
 2 RS485
 3 USB
 4 I.R.D.A.
 5 IRDA & 232
 6 IRDA & 485
 7 IRDA & USB
 9 Custom

NOTES:

1. Mil-Specs to your requirements. Otek will build to certain MIL-standards but testing and confirmation of compliance, if required, will need to be done by a third party and at customer's expense.
2. Nuclear: To 10CFR50-B through our Qualifier **NLI**.
3. Serial I/O is not isolated from the signal. Only manual (behind the cover) Zero & Span available without Serial I/O. Must have serial I/O to implement processor's functions (if req'd)
4. Other power input on request. Option 0 = Non-Isolated from signal input.
5. Specify calibration F.S. signal vs. display. Standard is 0-2VDC = 0-19999 =Unipolar 4-20mA. Bipolar : 4mA @ -1V, 12 @ OV, 20 @ HV
6. You can mount the EPT using the 3/4" NPT port or using the optional wall/pipe adapter plate.

MECHANICAL INFORMATION

