SMALLEST POWERLESS™ SMART DPM

***LOOP/SIGNAL POWERED *SERIAL I/O**
***4 1/2 DIGITS *>20 INPUT SIGNALS**

MODEL 6K

Features:
- <150mW@5VDC
- Powerless™ or 5-32VDC/ 90-265 VAC
- 232/485/USB I/O
- Explosion Proof
- Led Multicolor
- Replaces OTEK'S 6000 Series (1980)
- Only 2 1/4x1 1/2x2 1/4"
- Plug-In connectors
- Power for transmitter
- Lifetime Warranty (Ltd)

If You Don't See It Ask For It!

SNAP RING

SANITARY

NEMA 4X

EXPLOSION PROOF

Specifications@25°C (See Individual Options:

Mainframe:
- Display: 4 1/2 LED 0.4"
- Accuracy: +/- 0.01%
- Resolution: 0.005%
- Linearity: +/- 0.005%
- Power: <150mW@5VDC
- Temp. Coef.: 50 PPM
- Sampling Rate: 3/Sec.
- OP/Store Temp: -20+70/-20-80°C
- Humidity: 5-95% rH N. C.
- CMTBF: >100,000 hrs
- RS232, 485, or USB: 300-19.2 KB (8N1)
- Sanitary Case: Water tight, steam clean to 250°F
- Explosion Proof: Class 1, Div. 1 & 2 certified.

Description:

Finally! A system panel meter that has all the features of units four times its size and just snaps-in your panel. No tools/hardware required!

The new series **6K** replaces FF&F our old (1980) series 6000 but with the latest technology (for indefinite life expectancy) such as Sigma-Delta A/D, CPU, any Serial I/O, any power input (or loop/VDC signal powered). The **6K** also has over 20 input signal conditioners built in, and all these features come in a snap-in case only 2.5" (64)x 1.5" (36)x 2.0 (50). Where can you get so much for so little?

The Display: Choose from 4 1/2 digits (1.9.9.9.9) 0.4" LED red (standard) or any other color (red, orange, yellow, green or blue.

The A/D: Either stand alone Sigma-Delta A/D or controlled by CPU via serial I/O (232/485 or USB) or your choice, all SV&V (software verifications and validation) for high reliability (sister products are used in nuclear applications, outer space and under seas).

Serial I/O: RS232, 485 or USB options give you access to the **6K** μC with all its SV &V proven power, such as polynomials, X-Y tables, math functions, decimal points & display. You can use the **6K** as a serial input remote display. Hyperterminal, PROCOMM, Kermit compatible.

The Power: **OTEK** invented (1975) and coined the term "Powerless™"-meaning Signal Powered for either current loops, DC or AC signals, even with parasitic Serial I/O. You can also specify 5-48 VDC or 90-265VAC or 100-330VDC. Need others? Just contact us.

The Signal Conditioners: We have over 20 input signal conditioners (see description) or our "SC" series, which was developed over the last 35 years. If you don't see it, ask for it!

The Case: Either "Snap-In" panel mount plastic 94-VO, explosion proof (Class I, Div 1, GPS. B-G, Ex & 1ECex: IM2, Exd1) or sanitary for >250°steam cleaning in food industry.

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OTEK™ CORP.
SINCE 1974

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TUCSON, AZ. 85714 U.S.A.
MADE IN USA

6K Continued

THE SIGNAL CONDITIONERS:

Option 00: 4-20mA Powered: First introduced in 1975, the current flows through a Zener and "Shunt" resistor. The Zener clamps the voltage to about 3.5 Volts and the voltage across the Shunt is measured and displayed. Because an LED acts as a Zener, instead of a Zener the LEDs of the backlite are used to power the meter. If the "burden" (3.5 - 4.5V) is too high for your application, use the externally powered Option 01.

Option 01: 4-20mA Externally Powered: It only drops 1V @ 20mA (10 Ohms) but the "**6K**" needs 5VDC @ 20mA to operate (including the backlight or LEDs).

Option 02: 4-30VDC Signal Powered: Another **OTEK** innovation. The voltage signal powers an **LDO** to protect the **6K** and a divider network is used to measure and display the signal. If the relatively low impedance (500 Ohms) and current (3-20mA) required by this Powerless™ technique is unacceptable, use Options 04-08 (externally powered).

Option 02: Serial Input Remote Display: This option offers no input signal so you can use the **6K** as a remote display. It replaces OTEK's HI-Q111 in form, fit and function with latest componetry and added features. Note: Select desired serial input on Digit 7 and refer to User's Manual (see ordering information).

Options 03: Serial Input Remote Display: This option offers no input signal so you can use the **6K** as a remote display. The **6K** replaces OTEK's **HIQ111** form, fit and function with latest componentry and added features. Note: Select desired serial input on Digit 7 and refer to the User's Manual (see ordering information).

Options 04-08: VDC Externally Powered: Input impedance is 1Mega Ohms. (See power input Digit 4).

Option 09: Custom: Use this option to describe any custom input, scale or modification to the **6K** and contact us for feasibility and cost.

Options 10-13: 200uA - 200mADC: Since the **6K** 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!.

Options 14-22: V & mA RMS: Here we use a **True RMS-DC** Converter for accurate (± 0.05%) measurement of sine waves up to 10KHz (± 0.5%, 10-20KHz) and SCR's fired to ± 2%. Input impedances vs. range are the same as for VDC ranges.

Option 23: 5 Amps 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 **6K** but make sure the connections are "Perfect" to electrical codes. The C.T. might have **"Lethal" High Voltage** without a "Shunt" (Open) and the **6K** will "Smoke". See OTEK's New **ACS** & **CTT** models for **C.T.** powered instruments (Patent #7,626,378).

Option 24: Strain-Gage (<1000 Ohm Type): Here we use a highly accurate and stable constant current (~1mA) source, and a differential amplifier to convert the 2 or 3mV/V (typical) sensitivity of your "Load-cell". ***Specify*** your Strain-Gage sensitivity and full scale and the **6K's** display at Zero and Full Scale Please!

Accuracy: ±0.05% of F.S.

Option 25: Strain-Gage (≥1K < 4K Ohm): These are typically "Monolithic" **S-G** that require constant voltage (preferably) excitation. We use 4.096V for high stability and accuracy. **Specify** your S-G impedance and sensitivity and the **6K's** display at Zero and Full Scale.

Accuracy: ±0.1% of F.S.

Note on S-G: Some S-G offer +/- 1VDC or 4-20mA condition output. Use Option 9 and specify.

Option 26: RTD (PT100): We excite your 2, 3 or 4 wire RTD with 200uA to avoid the "self heating" effect. The range of the **6K** is the same as your **RTD** typically -200^{0}C to +800^{0}C (-328 + 1562^{0}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/^{0}C. For legacy 0.00392 TC (known as ANSI 392) contact **OTEK** and use Option "09".
Note: Use serial port to change °C to °F.

Option 27: RTD (PT1000): Same as PT100 except it is 1000 Ohms at 0^{0}C instead of 100 Ohms @ 0^{0}C. The same technique is used. For copper **RTD** (10 Ohm), contact **OTEK**.
Note: Use serial port to change °C to °F.

Option 28: Thermocouple (Type J): This **TC** has a range of -210 to + 760^{0}C (-350 + 1390^{0}F). Its color is white (+) and Red (-), cold junction (CJ) is inside the **6K** at the connector base. Make sure the connections from the **6K** 6" wires and your **TC** are as close to the **6K's** entrance as possible to avoid errors and calibrate after connecting. If you short out the **6K's** TC wires together, the **6K** will read the ambient temperature due to its built-in C.J.C.
Note: Use serial port to change °C to °F.

6K Continued

Option 30: TC (Type K): This is yellow (+) and red (-) and has a range of -270 + 1370^{0}C (-440 + 2500^{0}F). Use same notes as Option 28.

Note: Use serial port to change °C to °F.

Option 31: TC (Type T): This blue (+) and red (-) **TC** wire has the range of -270^0 + 400^{0}C (-440 + 750^{0}F). Use same notes as Option 28.

Note: Use serial port to change °C to °F.

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 to 440 Hz power line frequency measurement. Use Option #"33" or see our **ACS** Powerless™ Series.

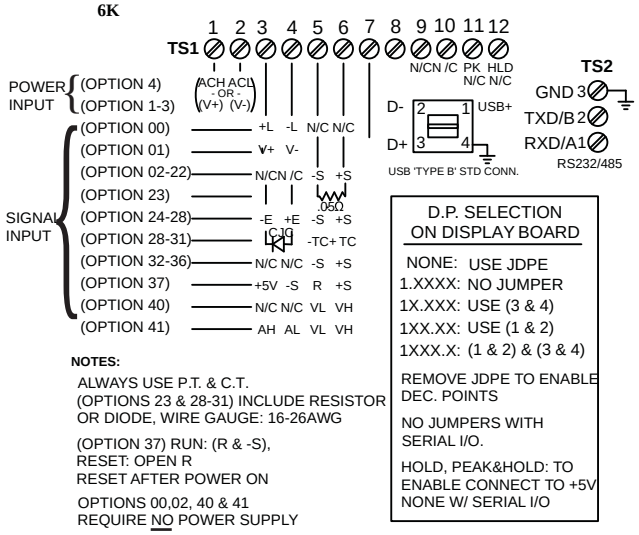
Option 34: %RH: This conditioner is designed to interface to a typical (capacitance type) 2-3pF/% of **RH** made by several manufacturers. Use Option "09" and contact **OTEK** to specify your sensor's specifications.

Option 35: pH (Acidity): We use a FET input (1015) amplifier and calibrate the **6K** for 0-14.00 pH using the Industry's standard ±413 mV = ±7pH coefficient.
Accuracy: +0.05% of F.S.

Option 36: ORP(Oxygen Reduction Potential):
Our FET amplifier (109) accepts the industry standard 2000mVF.S. of the probe and the **6K** displays it in % (0-100.00%)

FIG. 6K

6K SERIES TYP. CONNECTIONS



D.P. SELECTION ON DISPLAY BOARD

NONE: USE JDPE
1.XXXX: NO JUMPER
1X.XXX: USE (3 & 4)
1XX.XX: USE (1 & 2)
1XXX.X: (1 & 2) & (3 & 4)

REMOVE JDPE TO ENABLE DEC. POINTS

NO JUMPERS WITH SERIAL I/O.

HOLD, PEAK&HOLD: TO ENABLE CONNECT TO +5V NONE W/ SERIAL I/O

NOTES:

ALWAYS USE P.T. & C.T.
(OPTIONS 23 & 28-31) INCLUDE RESISTOR OR DIODE, WIRE GAUGE: 16-26AWG

(OPTION 37) RUN: (R & -S),
RESET: OPEN R
RESET AFTER POWER ON

OPTIONS 00,02, 40 & 41
REQUIRE NO POWER SUPPLY

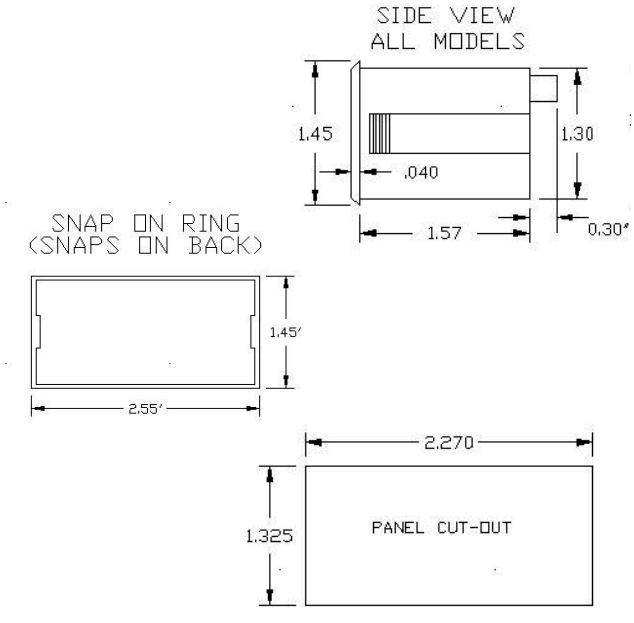
Option 37: Hi Speed Peak & Hold (P&H): Now you can capture fast transients greater than 50 microseconds (even faster soon) with resolution greater than 0.1% of F.S. and retention of greater than 10 years (Due to OTEK's new and patent-pending **P&H Option**).

Input: V or mADC (Specify Range). Contact OTEK for V/mA RMS or Loop Powered).
Accuracy: ± 0.1% of F.S. ± 1 Digit
Linearity & Resolution: ± of F.S.
Response time: >20KHz (<50us)
Retention: >10 years (with power on).

Option 40: Signal Powered for VAC: No power supply req'd! Just connect to your P.T.(non-isolation) and display value. Analog meter replacement, range: 40-150VAC, 50-400Hz. Burden 0.1W, Accy.& Lin. : ±.5% of F.S.

Option 41: Signal Powered Amps AC: No Power Supply Req'd! Just connect to your C.T. & P.T. range: VAC: 40-150; AAC; 0-5Amp; 50-400Hz; burden; 0.1W Accy. & Lin.; ± 0.5% of F.S.
Note: NO Isolation, use with P.T. & C.T. only. Must use shunt on C.T. 0.05% Ohm, 3W. **Warning** No isolation connect D.P. if req'd before Powering.
Yel: VAC Hi, White & Black VAC Lo & Amp Lo, Red: Amp Hi.
More: New Signal Conditioners will be added as per your requests and popularity, such as Ohms, Conductivity, Shock, Vibration, Position etc. Contact **OTEK**.

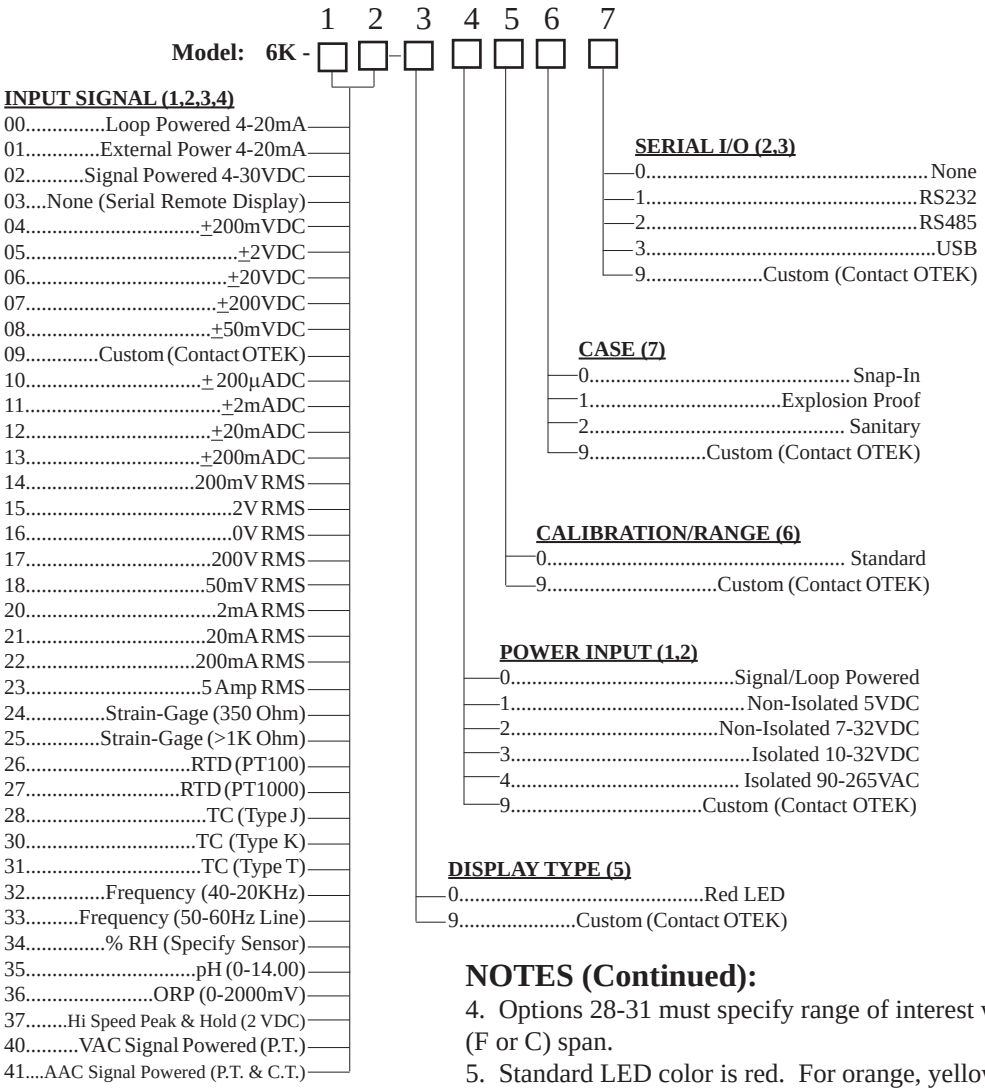
6K MECHANICAL INFORMATION



6K ORDERING INFORMATION 4/29/13

NOTE: Please READ BEFORE building part number:

1. If digit 1 & 2 is option 00, digit 4 must be option 0.
2. If digit 1 & 2 is option 02, 40 or 41, digit 4 must be option 0 and digit 7 must be option 0.
3. If digit 1 & 2 is option 03, digit 7 must be option 1, 2 or 3.



NOTES (Continued):

4. Options 28-31 must specify range of interest within 300^0 (F or C) span.
5. Standard LED color is red. For orange, yellow, green or blue, use Option #9 and specify color.
6. Standard calibration is 0-10,000 counts for V Input, 0-10,000 for 4-20mA (0-100.00%) or per sensor's range.
7. Sanitary case can hold up to three **6K**'s. If using more than 1 unit per case, choose option 9 and describe.

DOWNLOADS: ***For manuals, user-software or drivers:***
www.otekcorp.com

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