



STAND ALONE “INTELLIGENT” PANEL METER - COMBINES SENSOR SIGNAL CONDITIONER, USER DISPLAY & INTERFACE, AND A PROGRAMMABLE LOGIC CONTROLLER FOR APPLICATION SPECIFIC CONFIGURATIONS INVOLVING UP TO TWO AC LVDT TRANSDUCERS

The Model **4032** Two-Channel AC LVDT Conditioner/Indicator/Controller accurately measures displacement, force, pressure, and other parameters obtained with one or two 5- or 7-wire LVDT sensors or 3- or 5-wire variable reluctance transducers. Accepting two independent displacement signals, the **4032** allows direct measurement of thickness — when the two inputs are summed by means of an internal “CALCULATE” channel— or of taper—when their difference is calculated. Working on the synchronous carrier- demodulator principle, the **4032** supplies regulated, remotely sensed excitation for each transducer input. It then demodulates, filters, and amplifies the resulting signal to produce a reading precisely proportional to LVDT core displacement. The **4032**'s full-scale input ranges are 0-120 mV/V, 0-240 mV/V, and 0-480 mV/V—selectable via the RANGE (RNG) command.2 As with most standard 4000 Series models, both active low-pass filtering and user-selectable digital smoothing are provided. Internal 15-segment linearization allows easy calibration of nonlinear LVDT inputs.

Functions Provided by the **4032** “STANDARD CONFIGURATION” & features:

- **A preprogrammed tare function** may be activated by a frontpanel button. Via front-panel buttons, you can call to display the “live” tared input, the maximum (most positive) value of tared input since last reset, the minimum (least positive) value of tared input since last reset, or the existing net difference between these maximum and minimum values.
- **The “MAX minus MIN” function** is particularly useful when you need to know the precise range of an excursive phenomenon like the runout, wobble, or looseness of a rotating part—as in the Total Indicated Runout (TIR). The “MAX” and “MIN” functions can be reset by a front-panel button.
- **real-time math processing** (including constants and digital Max/Min)
- **remote sensing and regulation of bridge excitation**—eliminates errors from temperature effects on cable resistance and yields consistently stable ratiometric measurement, unaffected by possible power-supply drift
- **active low-pass filtering** and user-selectable digital smoothing eliminate dynamic components arising from vibration, power impulses, etc., that might prevent stable digital conversion or control action

Superior Signal Conditioning, a 4000 instrument's internal scan cycle typically produces 1000 finished engineering-unit answers per second (this includes linearization, “ $y = mx + b$ ” scaling, limit comparison, cross-channel calculations, and other numeric processes). 16-bit A/D resolution with multipole per-channel analog filtering and selectable per-channel digital filtering yields rocksolid stability and a typical overall accuracy of 0.02%, following calibration by the user

MODEL 4032

AC LVDT - TWO INPUT PANEL INSTRUMENT
[4000 SERIES]

SPECIFICATIONS

Number of Inputs: Two

Input Type: Series-opposed 5- or 7-wire LVDT sensor or 3- or 5-wire variable reluctance transducer capable of 4000-Hz operation and having primary impedance of 80 Ohms or greater

Sensitivity Range: Selectable 0-120, 0-240, and 0-480 mV/V, full scale

Dimensions: 2.84" W x 5.68" W x 9.50" D

Operating Temperature Range: 0° C to +50°C (+32° F to +122° F)

Storage Temperature Range: -40°C to +80°C (-40° F to +176° F)

Operating Humidity Range: 10 to 95% max., noncondensing

Instrument Weight: 3.5 lb (1.6 kg), approximate

Power

Voltage: 90-135 or 180-279 V-AC, selectable by rearpanel switch; optional 11-18 V-DC ("V" Option)

Frequency: 47-63 Hz

Consumption: 35 W max. (30 W max. for "V" Option)

A/D Conversion: 16-bit (± 32000 count); 1000 finished engineering-unit answers per second, typical

Digital Filtering: Per-channel quieting factor selectable from front panel or by computer-port command

Internal 15-Segment Linearization: Programmable from front panel or by computer-port command

Excitation Supplied: Nominal 3 V-AC (rms) at 4000 Hz; 40 mA max.

Common-Mode Range: ± 5 V operating; ± 12 V without instrument damage

Common-Mode Rejection Ratio: Infinite at DC and 60 Hz; -60 dB at 3 kHz

Input Impedance: Differential: 400 k Ohms; **Common-Mode:** 100 k Ohms

Offset: Initial: $\pm 3\%$ of full scale; vs. Temperature: ± 20 ppm/°C; vs. Time: $\pm 0.01\%$ of full scale/month

Gain Accuracy: $\pm 0.02\%$ of full scale ± 1 count LSD, typical, following calibration⁴

Gain Stability: Vs. Temperature: ± 50 ppm/°C; vs. Time: ± 20 ppm/month

Analog Filtering: 2-pole modified Butterworth filter; -3 dB at 7.5 Hz; -60 dB at 110 Hz

Step Response Settling Time (Full-Scale Output)

To 1% of final value 250 ms

To 0.1% of final value 300 ms

To 0.02% of final value 400 ms

Analog Output

Any scanned channel may be represented by the 4000 instrument's single analog output; however, for certain models, the analog output will not be assigned to any specific channel under the instrument's "Standard Configuration" Full-Scale Range: ± 10 V, microprocessor driven and scaled

Resolution: ± 1 mV

Allowable Loading: 5 mA, maximum

Accuracy: 0.05% of current voltage reading ± 2 mV

Bandwidth: 40 Hz maximum

Configuration: Single-ended, return to System Common

Communications

Serial: 9-pin RS232 standard; RS485 optional with "N" Option; standard baud rates from 300 through 153.6K for both RS232 and RS485; RS485 configuration allows operation as an individual datacollection "node" within a computer-controlled network