MODEL 2032
HIGH ACCURACY AUTO RANGING SCANNING DVM

FEATURES

- High Accuracy - 14 Bits of Resolution with Microprocessor Controlled Ditherized

- Auto Ranging Amplifier Provides Dynamic Range of 1 μV Resolution vs 10 V Full Scale

- Auto Calibration via Internal Voltage Reference and Microprocessor

- 32 Differential Channels in a Single Width Module

- Good 50/60 Hz Rejection - Programmable Digital Filter

- Self Diagnostics

DESCRIPTION

The Model 2032 is a complete voltage measuring instrument. With a resolution down to 1 μV, a programmable digital filter for 50/60 Hz noise, and an autoranging amplifier, the 2032 provides for the measurement of 32 differential inputs in a single width CAMAC module.

The onboard microprocessor averages 64 measurements in 1/60 (1/50) seconds to suppress power line noise. Each measurement uses a ditherizing technique which adds to the signal, then subtracts from the result, a random offset to average out the differential non-linearity of the ADC. Self-diagnostics and automatic calibration of gain and offset are also performed by the microprocessor.

Front-end voltage protection and filtering, common-mode rejection and additional normal mode rms measurement capability add to the usefulness of this module in high noise environments for monitoring power supplies, for strain gauges, thermocouples, flow gauge measurements, and a wide range of other applications.

ACTUAL SIZE

ANALOG INPUT

Channels: 32 differential inputs

Impedance: 20 MΩ.

Signal Conditioning: 200 Hz roll off filters in each channel. Automatic ranging differential amplifier with gains from 1 to 1024. *[handwritten: 1mV @ 10⁴]*

Common Mode Rejection: 80 dB *[handwritten: ≠ 1mV @ 10⁴]*

Common Mode Range: ± 10 V for specified accuracy

Overvoltage Protection: ± 100 V for 1 sec.

CONVERSION

Analog-to-Digital Conversion: 25 µsec

Basic Resolution: 12 bits (1 part in 4096). Ditherized resolution after averaging = 14 bits

Scanning Mode: Each channel is updated every 640 msec. 64 measurements/16.7 msec in each channel. *[handwritten: Slow Mode]*

DATA MANIPULATION

Digital Filter: 64 successive samples are averaged together over a 16.7 msec interval to suppress 60 Hz variations.

Note: 50 Hz version available as option.

Auto-Ranging: Gain of input amplifier is microprocessor controlled to autoscale digitized voltage between 40% and 90% of full scale.

Auto-Calibration: Built-in voltage reference is used to continuously monitor gain and offset which is factored into the measurements, (once per 2 minutes).

Ditherizing: Random value of a small voltage is superimposed on the input signal by a DAC. The digital value of the DAC voltage is then subtracted from the digitized ADC value.

COMPUTER COMMANDS

X is returned for valid CAMAC commands.

X = 0 if calibration or AC measurement is in progress.

F (0): Read Output of channel n set by F(17) and increment channel number. Q=0 if data not available. Q Scan feature: Q=0 following read of channel 32.

F(9): Processor reset *[handwritten: Power-Up]*

F(16): Write Control Register to change scan rate, read software revision number or select IEEE or VAX output data format.

F(17): Sets first channel to be read. Channel number is placed on data lines (0-31). *[handwritten: ?]*

MATING CONNECTOR

2 ea. Amphenol 204731-2 (P/N MC3016) are included.

PACKAGING:

#1 width CAMAC module

221 mm H, 18 mm W, 292 mm D* (8.7" x 0.7" x 11.5")

*Depth front to rear panel. Rear connector 13 mm (0.5").

In conformance with the CAMAC standard for RF shielded instrumentation modules (IEEE standard 585, European Esone Report #EURA\4100e.)

POWER REQUIREMENTS:

+ 6 V	900 mA
± 24 V	50 mA

TEMPERATURE RANGE

0° C to 40° C (32° F to 104° F) ambient to operate within specifications when installed in crate with enough air flow to hold maximum air exit temperature to 55° C (131° F).

[handwritten notes:
? Auto-Calib takes how long -/per 2min = ½ sec
? How trigger'd, Auto? ✓
? Delivery
✗ TTL Trig
Fast Mode 8 Meas/Chan = 120 msec Total

Scan Rate ?
Warranty 1 yr
Repair = ≥ $200 most problems
Out 6-7 years (old !)
Delivery]