PRECISION DIGITAL MULTIMETERS

MODEL 1065A

Autocal Digital Multimeter

- **6½ Digit Resolution**
- **DCV, ACV and Resistance Functions**
- **90 Day DCV Specifications to ±48 ppm**
- **Autocal**
- **IEEE-488 Programmable**

The 1065A is a general purpose 6½ digit DMM designed to offer the facilities required in most systems and bench applications. With ACV, DCV and Resistance measurement capabilities installed as standard, the 1065A possesses many of the features from the higher performance models in the AUTOCAL range, including full autocalibration, selectable front or rear input terminals, maximum and minimum readings, and a powerful IEEE-488 bus capability.

Performance

On DCV five ranges, 100 mV to 1kV, cover the vast majority of applications in either bench or systems work. Basic 24 hour stability is ±15 ppm, with long term accuracy of better than ±60 ppm per year. 100% overrange (1,999,999) is provided throughout.

True RMS ACV measurement is a Datron specialty, and the electronic "log feedback" circuitry used accepts a wide range of inputs up to 1 MHz and also provides accuracies to ±0.04% in the 1065A.

Resistance ranges from 100Ω to 10MΩ provide accuracies to ±60 ppm over 1 year, and offer lead resistance rejection of 80 dB with up to 10Ω lead resistance on any range.

Programmable

All front panel controls are IEEE-488 programmable and additional features only available on the bus include superfast read rate up to 200 readings per second, and programmable Hi and Lo limits. Even AUTOCAL is controllable via the bus, enabling in-situ calibration to eliminate any errors that may be present at various system analog interfaces.

In addition, measurement integrity in systems is assured through the use of a 3 pole active filter before the input pre-amplifier, together with a line-locked, multi-slope, integrating analog to digital converter, giving over 100 dB of normal mode rejection.

Spec Readout

The complete accuracy specification of the instrument has been pre-programmed into its memory so that selection of the "spec" key will display the precise limits of uncertainty for any measured value. The spec readout facility—available on all Datron AUTOCAL instruments—means that the optimum range for any particular measurement can be readily determined.

Reliable

The whole instrument is designed to withstand hostile environments and a high level of user misuse. Input protection for example permits 1000V RMS on any DCV or ACV range, while resistance ranges are protected up to 250V RMS.

Support

The cost to support and maintain the 1065A is kept very low through the instrument's proven high reliability and fast AUTOCAL features, which eliminate expensive downtime for repair and recalibration. In addition, an extensive diagnostic self check routine can be run on command to sequentially test all displays, measurement circuits and the non-volatile calibration memory.

SPECIFICATIONS

1065A DC Voltage

Ranges: 100 mV to 1000V in decades.
FS: 2 x Full Range. 100% Overrange. (Except 1kV range).
Resolution: 100 nV, 6½ digits.
Total Uncertainty: (90 Day, 23° ±5°C, ±(ppmR+ppmFS)).

100 mV Range:	60+16
1V Range:	40+4
10V Range:	40+4
100V Range:	70+4
1000V Range:	70+4

Temperature Coefficient: (13°-18°C and 28° -33°C). 1/10th 90 Day Accuracy/° C ±0.3μV/°C.
CMRR: (1kΩ unbalance) >140 dB at DC, >(80 dB+NMRR) at 1-60 Hz.
NMRR: 66 dB at 50/60 Hz±0.15% (Filter out), 120 dB at 50/60 Hz (Filter in).
Input Impedance: >10,000MΩ from 100 mV to 10V ranges, 10MΩ ±0.1% on 100V and 1000V ranges.
Input Protection: Withstands 1kV RMS on any range.
Input Current: <50pA.
Settling Time: (To 10 ppm step size) <5ms (Filter out), <350 ms (Filter in).
Read Rate: 1.5/s at 6½ digits, 200/s in Super-fast mode, 4 digits.

1065A & 1065 True RMS AC Voltage

Ranges: 1V to 1000V in decades.
FS: 2 x Full Range. 100% Overrange. (Except 1kV range).
Resolution: 10μV, 5½ digits.
Total Uncertainty: (90 Day, 23° ±5°C, Signals >1%FS, ±(%R+%FS)).
1V to 1000V Ranges:

DC+45 Hz-30 kHz	0.06+0.025
DC+30-100 kHz	0.4+0.1
DC+100 kHz-1 MHz	6+1

Lf Accuracy: (Filter in) Add 2%R at 10 Hz. For DC multiply accuracy by 1.5.
Temperature Coefficient: (13°-18° C and 28°-33°C). 1/10th 90 Day Accuracy/°C.
CMRR: (1kΩ unbalance) >90 dB at DC-60 Hz.
Input Impedance: >1MΩ shunted by 150pF.
Input Protection: Withstands 1kV RMS on any range.
Crest factor: 5:1 at Full Range.
Max Volt-Hertz: 2 x 10^7.
Settling Time: (To 0.1% step size) <500 ms (Filter in), <150 ms (Filter out).
Read Rate: 3/s.

1065A Resistance

Ranges: 100Ω to 10MΩ in decades.
FS: 2 x Full Range, 100% Overrange.
Resolution: 100μΩ, 6½ digits.
Total Uncertainty: (90 Day, 23° ±5°C, ±(ppmR+ppmFS)).

100Ω Range:	60+16
1kΩ Range:	40+4
10kΩ Range:	40+4
100kΩ Range:	50+4
1MΩ Range:	150+4
10MΩ Range:	400+4

Temperature Coefficient: (13°-18°C and 28° -33°C). 1/10th 90 Day Accuracy/° C ±600μΩ/°C.
Open Circuit Voltage: <10V.
Lead Resistance: Up to 10Ω.
Current Through Unknown:

100Ω	1 mA
1kΩ	1 mA
10kΩ	100μA
100kΩ	10μA
1MΩ	1μA
10MΩ	100 nA

Input Protection: Withstands 250V RMS on any range.
Settling Time: Up to 10kΩ generally the same as DCV.
Read Rate: 1.5/s at 6½ digits, 200/s in Super-fast mode, 4 digits.

1065A DC Voltage

Resolution: 1μV, 5½ digits.
Total Uncertainty: (90 Day, 23° C±5° C, ±(ppmR+ppmFS))

100 mV Range:	60+20
1V Range:	40+5
10V Range:	40+5
100V Range:	70+5
1000V Range:	70+5

Other Specs: As 1065A.

1065 Resistance

Resolution: 1mΩ, 5½ digits.
Total Uncertainty: (90 Day, 23° ±5°C, ±(ppmR+ppmFS)).

100Ω Range:	60+20
1kΩ Range:	40+5
10kΩ Range:	40+5
100kΩ Range:	50+5
1MΩ Range:	150+5
10MΩ Range:	400+5

GENERAL

Calibration: Autocal from front panel or via IEEE-488 interface.
Remote Programming: IEEE-488.
Environmental:
Operating temp: 0° to +50°C.
Storage temp: −40° to +70°C.
Dimensions: 88 mm (3.5 in.) high; 455 mm (17.9 in.) wide; 420 mm (16.5 in.) deep.
Weight: 10 kg (22 lb).
Power: 105-127V or 205-255V, 50 Hz, 60 Hz, or 400 Hz. 20 Watts approx.

CONFIGURATIONS

Model 1065A: 6½ Digit AUTOCAL Digital Multimeter (Includes DCV, ACV, Resistance, IEEE-488, Rear Input, 5 Year Warranty).
Model 1065A/60: 6½ Digit AUTOCAL Digital Multimeter (Includes DCV, IEEE-488, Rear Input, 5 Year Warranty).
Model 1065: 5½ Digit AUTOCAL Digital Multimeter (Includes DCV, ACV, Resistance, IEEE-488, Rear Input, 1 Year Warranty).
Model 1065/60: 5½ Digit AUTOCAL Digital Multimeter (Includes DCV, IEEE-488, Rear Input, 1 Year Warranty).

OPTIONS

80: 115V 60Hz Line Operation
81: 115V 50 Hz Line Operation
82: 115V 400Hz Line Operation
90: Rack Mounting Kit

ACCESSORIES

1501: DMM Lead Kit

FACTORY/FOB

Indianapolis, IN
Norwich, England