AMETRIX

BLEuVUE
Windows and Android User Interfaces

BLEuDAQ
6 ½ Digit Multi-Channel DMM, Wireless, USB* or BLE Communications, Battery Powered

Battery Level: 2%

		No Filter	Relative	Enabled		3.971781
Vcc	DCVolts	Auto Range	No Filter	Relative	Enabled	4.981746
Vee	DCVolts	Auto Range	No Filter	Relative	Enabled	3.294194
Vref	DCVolts	Auto Range	Moving Average	Relative	Enabled	4.999938
Input Buffer	Temperature C	Type T	No Filter	Relative	Enabled	24.74
Sensor	TwoWireResistanc	Auto Range	No Filter	Relative	Enabled	09.98456

Continuous measurement

BLEuDAQ – High Voltage, Wireless, Precision DMM/DataLogger

6 ½ Digit - 300VDC/150VAC, Voltage/Resistance/Temperature Measuring Instrument

UNIQUE FEATURES AND CAPABILITIES

- **Five 300 VDC/150 VAC Channels, One 2/4 Wire Resistance**
- **6 ½ Digit DCV, ACV, and Ohms Precision 2 measurements per second**
- USB or Internal Rechargeable Li-Ion Cell Powered
- **Bluetooth Low Energy (BLE 5) Wireless Remote Connectivity**
- **40+ Hour Long Run Time on Internal Li-Ion cell power**
- **>140dB isolation (CMRR) from earth ground on cell power**
- **Compatible with Android OS Mobile & Windows 10 & 11 PCs**
- **50 nV DC Resolution, 10uOhm 4-W Resistance Resolution**
- **500V Peak Earth Isolation to USB Power, Fully Isolated DIO Port**
- **Half Decade Step Ranges improve noise/accuracy (w/Autorange)**
- **User Selectable Filtering and Math Functions***

The AMETRIX BLEuDAQ Model DMM-100 series provides 5 channels of high voltage, highly isolated, high resolution and accuracy measurements that are highly isolated from earth in a compact, self-powered wireless or *USB* connected package. The BLEuDAQ offers measurement performance typically only found in laboratory grade, bench/rack format instruments providing NIST traceable, high resolution Volts, Ohm, Temp readings with near infinite ground/line isolation and very low noise performance in a compact and remote mountable format. Rechargeable single Li-Ion cell power combined with BLE BlueTooth® 5.0 connectivity. *Extend the operating time under cell power with external cell phone charger battery packs for long duration logging with ultimate earth isolation.* Internal non-volatile memory stores up to 50K logged readings while un-tethered.

APPLICATION EXAMPLES:

- **Precision Monitoring/Logging of Physically Distributed Lab Experiments and Electrical Equipment Systems**
- **High Voltage Battery Pack and Individual Cell State of Charge Voltage/Current Monitoring (Mobile Vehicles)**
- **Remote Temperature Monitoring and Data Logging With Floating Thermocouples/RTDs (EV Cell Stacks)**
- **Isolated DC and AC Current Monitoring and Data Logging of Resistive Current Shunts and CT Type Detectors**
- **Bonding and Contact Resistance Testing of Electrical Switches, Contacts and Equipment Validation**
- **Power Supply Monitoring/Limit Alarming of Fixed Equipment AC Mains and UPS Type Power Supplies**

Specifications

DC Voltage

Sample Rates

Rate (measurements per sec)	Mains rejection (Hz.)
2	50
2	60

Slower rates may be achieved by using one of the following digital filters:

- Moving Average
- Repeat Average
- Moving Median
- Repeat Median

Selectable scan interval can be added at any of the sample rates to extend the time between scans. Scan interval resolution is one second. Default it is zero seconds.

Mains frequency rejection accuracy assume that the mains frequency is within ± 0.05 Hz of nominal. This is true in most of the industrialized world.

Ranges and Accuracy

			DC Voltage Measurement Uncertainty ±(ppm of measurement + ppm of range)		
Range ± Full scale	Resolution	Input Impedance	Noise µV rms / µV P-P	1 Year + 18 °C to + 28 °C	Temperature Coefficient Per °C 0 °C to + 18 °C & + 28 °C to + 45 °C
50 mV	10 nV	> 1 GΩ	0.10 / 0.6	250 + 20	4 + 4
100 mV	100 nV		0.12 / 0.6	150 + 8	3 + 2
500 mV	100 nV		0.48 / 3.7	72 + 6	3 + 2
1.0 V	1 µV		0.80 / 5.0	71 + 6	2.5 + 1
5.0 V	1 µV		5.0 / 40	72 + 6	2.7 + 1
10 V	10 µV		9.0 / 68	72 + 7	2.7 + 1
50 V	10 µV	10 MegΩ	70 / 550	114 + 6	3.2 + 1
100 V	100 µV		110 / 900	167 + 7	15 + 5
300 V	100 µV		415 / 3.1	166 + 7	15 + 5

Temperature Sensors and Accuracy

Thermocouple Measurement Uncertainty[1] ± (% of |reading| + offset)				
Thermocouple Type	Temperature Range (°C)	Accuracy (±°C) 1 Year +18 °C to +28 °C	Temperature Coefficient Per °C 0 °C to + 18 °C & + 28 °C to + 45 °C	Resolution
B	0 to + 630 +630 to +1820	0.02% + 0.01°C 0.02 % + 0.08 °C	±0.03 °C per °C	0.01 °C 0.01 °F
E	-265 to -200 -200 to +1000	0.51 % + 0.06 °C 0.02 % + 0.00 °C		
J	-205 to 0 0 to +1195	0.03 % + 0.00 °C 0.02 % + 0.00 °C		
K	-265 to -200 -200 to +1370	0.81 % + 0.06 °C 0.02% + 0.00 °C		
N	-265 to -200 -200 to +1300	0.97 % + 0.06 °C 0.02 % + 0.00 °C		
R	-50 to +1064 +1064 to +1664 1664 to 1768	0.02 % + 0.00 °C 0.03 % + 0.21 °C 0.07 % + 0.36 °C		
S	-50 to +1064 +1064 to +1664 1664 to 1768	0.02 % + 0.00 °C 0.02 % + 0.22 °C 0.08 % + 0.38 °C		
T	-265 to -150 -150 to +400	0.48% + 0.05 °C 0.02 % + 0.00 °C		

Notes:
1. Does not include thermocouple or cold junction sensor uncertainty

Cold Junction Sensor	Temperature Range (°C)	Accuracy (± °C) 1 Year + 18 °C to + 28 °C	Resolution
	0 to + 50	0.18 typical 0.28 maximum	3×10^{-6} °C

Channel-to-channel matching typical ±0.005 °C, worst case ±0.1 °C

Resistance

Ranges and Accuracy

Range	1 Year[1] +18°C to +28°C	Resolution	Test Current	DUT FS Voltage	Temperature Coefficient Per °C 0 °C to 13 °C & 33 °C to 50 °C	2 Wire 4 Wire
	Ohmmeter Measurement Uncertainty ± (ppm of measurement + ppm of range)					
10	100 + 40	10 µΩ	5 mA	50 mV	16 + 4	2 + 4
100	70 + 14	100 µΩ	5 mA	500 mV	8 + 1	2 + 4
1 k	70 + 14	1 mΩ	500 µA	500 mV	8 + 1	2 + 4
10 k	70 + 14	10 mΩ	50 µA	500 mV	8 + 1	2 + 4
100 k	70 + 14	100 mΩ	5 µA	500 mV	8 + 1	2 + 4
1 Meg	70 + 14	1 Ω	4.1 µA	4.1 V	8 + 1	2
10 Meg	280 + 14	10 Ω	500 nA ||10 MΩ	2.50 V	70 + 1	2
100 Meg	1050 + 45	100 Ω	500 nA ||10 MΩ	4.54 V	385 + 1	2

Notes:
1 Assumes 4-wire connection when available

AC Voltage

Wide-band AC True RMS Voltage Measurements

Wide-band measurements do not require periodic input signals; they return accurate measurements of voice, noise, music, etc.

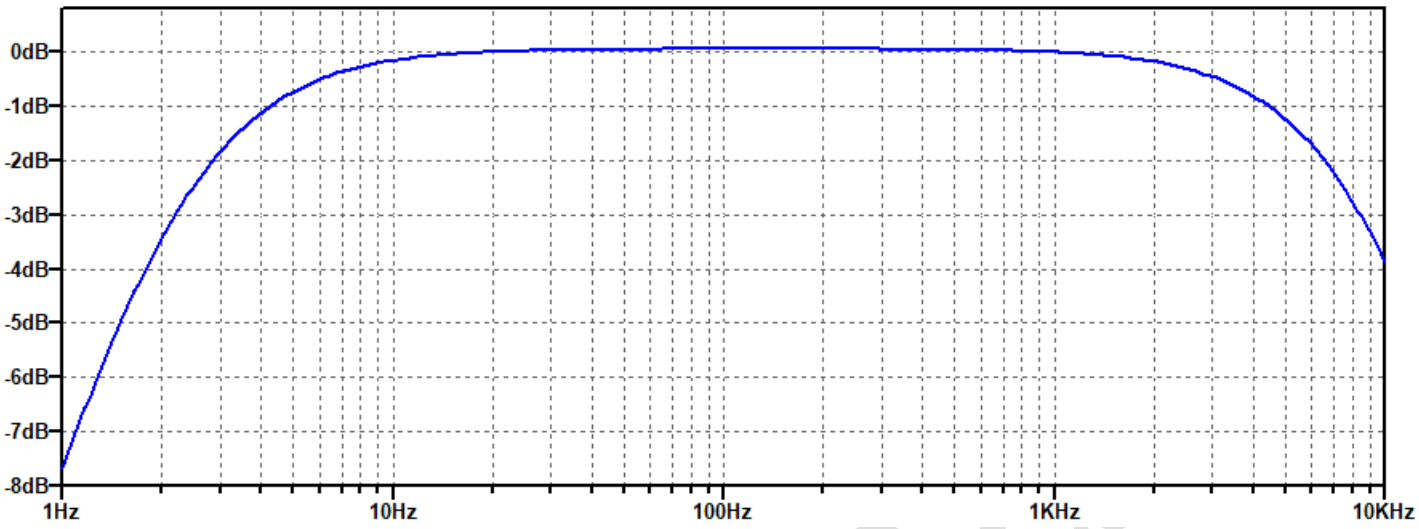
Sample Rate

Sample Rate	Acquisition Period
32 kHz	1 second

Ranges and Accuracy

AC Voltage AC Coupled Measurement Uncertainty ±(% of measurement + % of range)			
Range Peak ACV (RMS sine)	Input Impedance > 2 Hz.	1 Year 3 Hz to 921 Hz. +18°C to +28°C	Temperature Coefficient Per °C 0°C to +18°C & +28°C to 45°C
50 mV (35.3 mV)	10 MegΩ	0.60 + 0.12	0.008 + 0.005
100 mV (70.7 mV)		0.55 + 0.07	0.005 + 0.0003
500 mV (353 mV)		0.50 + 0.05	0.005 + 0.0005
1.0 V (0.707 V)		0.50 + 0.05	0.005 + 0.0005
5.0 V (3.53 V)		0.50 + 0.05	0.005 + 0.0005
10 V (7.07 V)		0.50 + 0.05	0.005 + 0.0005
50 V (35.3 V)		0.60 + 0.12	0.01 + 0.005
100 V (70.7 V)		0.55 + 0.07	0.01 + 0.003
300 V (212 V)		0.50 + 0.05	0.01 + 0.0005

AC Volts Wide-band Frequency Response



General Instrument Specifications:

General Specifications

Measurements

Measurements

Maximum Voltage Between Inputs High & Low, or High and Common: Without Damage: 600 V, *Category* II Pollution degree 2 250 V AC RMS or DC

Maximum Voltage Between Inputs and USB (earth): *Category* II Pollution degree 2 250 V AC RMS or DC

Input Bias Current: 30 pA typical, 200 pA maximum

NMRR: > 100 dB at 50/60 Hz at integer line cycle sample rates

CMRR: > 140 dB at 50/60 Hz at integer line cycle sample rates

Measurement Rates: Single channel up to 32K rdgs/sec to internal memory, 32K rdgs/sec to USB PC

Volt Channel Scanning Rates: Up to 32/sec single reading per channel, up to 50/sec multiple readings per channel

Input Connectors: Phoenix Push & Screw Type terminal block conductor cross section (0.2 - 1.5) mm^2 (24 - 16) AWG

Digital I/O

Channels: 1 Input 1 Output

Input Logic Levels

- **Low:** 0 V to + 0.75 V
- **High:** + 3 V to + 24 V

Output

- **Low:** 1mA max
- **High:** 0 V to +24 V

Input Connector: Removable screw type terminal block conductor size (0.2 - 1.5) mm^2 (24 - 16) AWG Digital In and Out share a common low and is isolated from measurement and charger input connectors by Category II Pollution degree 2 250 V AC RMS. or DC or AC peak.

Environmental

Charging Temperature: 0 °C to 45 °C
Operating Temperature: -10 °C to 60 °C
Storage Temperature: -20 °C to 60 °C
Humidity: Non-condensing
Altitude: *< 2000 meters*

General Specifications

Communications: Bluetooth Low Energy 5.0, *USB 2.1*
Vibration: MIL STD 810E Category 1 and 10
Safety: IEC/EN 61010-1:2010, CE xxxxx
EMC Compliance: IEC61326-1:2005
External Power: Connector Micro USB
Charger Voltage Range: 4.75 VDC to 5.25 VDC
Power Consumption when Charging: < 6 W
Power Consumption when Fully Charged: < 0.22 W
Dimensions: 38 mm high x 96 mm wide x 122.5 mm depth (1.39 in x 3.78 in x 4.82 in)
Weight: 200 g (7 oz)
Calibration cycle: 1 year
Warm-up Time: 15 minutes to within 2 °C of final operating temperature
Temperature Stabilization: 30 mins after completed charging

Included Accessories

1 ea Signal/Trigger Connector
Software and Drivers (on USB Drive) – Mobile App on Google Play Store

Available Accessories

International AC Line to USB A Charger
USB A to Micro USB Cable
External Battery Booster/Charger
Safety Banana Breakout Box (Volts and Ohms)
Spare Phoenix Signal and Trigger Connectors
Mounting "Feet"
Replacement Internal Li-Ion Cell