



HIGHLIGHTS

- Custom built for the US Navy as direct replacement for Arbiter Systems 1040C Panel Meter Calibrator
- Wide range of storage and operating conditions
- 300 mA compliance in AC voltage
- Advanced terminal protection and self-diagnostics

DESCRIPTION

The 6040 Panel Meter Calibrator is a versatile solution for onsite calibration of panel meters measuring voltage, current, frequency, power (active, apparent, reactive), phase shift, power factor, and phase synchronization (synchrosopes). Its core features – high compliance, accuracy, and a handheld Remote Control Unit (RCU) – make it ideal for calibration of panel meters. With long test leads and RCU, users can safely and conveniently manage calibration from a distance in control rooms or substations. Beyond panel meters, the 6040 easily handles calibration of transducers, circuit breakers, overcurrent relays, and general-purpose meters such as multimeters.

Built for reliability, the 6040 features a ruggedized case, heavy-duty connectors, and advanced terminal protection against reverse voltage, overload, and overheating. Its heated reference ensures stable performance across a wide temperature range, even in demanding field environments. The built-in display provides all key power parameters together with specifications and compliance data, giving users full confidence in every measurement.

For seamless integration, the 6040 works with Meatest's Caliber/WinQBase software as well as other widely used calibration automation platforms. With Caliber, users can calibrate the full range of panel meters, including analog meters.

SPECIFICATION

Specifications below describe 1-year absolute uncertainty at a confidence interval of 95%, including long-term stability, linearity, load and line regulation and reference standard measurement uncertainty as well as ambient conditions within specified limits.

GENERAL DATA

Warm-up time	30 minutes
Reference temperature	13 – 33 °C
Operating temperature	0 – 50 °C
Storage conditions (with closed and locked case lid)	-40 °C – 71 °C, 0 – 100 % rel. humidity, max. altitude 12 km
Temperature coefficient	10 % of accuracy / °C outside T _{REF}
Max relative humidity	0 – 30 °C: 85 %, non-condensing 30 – 40 °C: 80 %, non-condensing 40 – 50 °C: 50 %
Power supply	115/230 V, 50/60 Hz
Dimensions (W x H x D)	16.87 x 14.10 x 9.27 in 42.8 x 35.8 x 23.5 cm
Weight	15.8 kg (35 lbs)
Interfaces	USB, IEEE 488.2, Ethernet

DC/AC Voltage

Voltage range summary	DC: 0.000 mV – 800.000 V AC: 1.00000 V _{RMS} – 750.000 V _{RMS}
AC range minimums	1 V _{rms} or 5 % of range, whichever is higher
THD & noise (in bandwidth up to 80 kHz)	max. 0.1 % below 500 Hz, 0.2 % otherwise
Frequency range	45.000 Hz – 1000.00 Hz
Frequency accuracy and resolution	10 ppm

DC Voltage – Ranges, resolution, 1 year uncertainty [% of set value + floor]

Range	Uncertainty	10-minute stability at ±1 °C	Max. burden current
0.000 – 105.000 mV	0.14 % + 2 μV	0.02 % + 2 μV	15 mA
0.10501 – 1.50000 V	0.28 % + 20 μV	0.028 % + 5 μV	15 mA
1.50001 – 5.00000 V	0.07 % + 70 μV	0.007 % + 15 μV	15 mA
5.0001 – 40.0000 V	0.14 % + 500 μV	0.014 % + 100 μV	15 mA
40.001 – 200.000 V	0.27 % + 2.5 mV	0.027 % + 0.5 mV	15 mA
200.001 – 800.000 V	0.27 % + 50 mV	0.027 % + 10 mV	15 mA

AC Voltage – Ranges, resolution, 1 year uncertainty [% of set value + floor]

Range	Uncertainty 45 – 500 Hz	Uncertainty 500 – 1000 Hz	Max. burden current
1.00000 – 1.50000 V	0.09 %	0.15 % + 500 μV	300 mA
1.50001 – 3.50000 V	0.09 %	0.15 % + 1 mV	300 mA
3.5001 – 25.0000 V	0.09 %	0.15 % + 4 mV	300 mA
25.001 – 162.000 V	0.09 %	0.15 % + 40 mV	300 mA
162.001 – 750.000 V	0.09 %	-	65 to 15 mA ¹

1. Max. burden current in 750V range is calculated as (77.5 - set voltage / 12) mA.

DC/AC Current

Current range summary	DC: 0.00 μ A – 10.0000 A AC: 70.000 mA _{RMS} – 7.0000 A _{RMS}
AC range minimums	70 mA _{RMS} or 5 % of range, whichever is higher
THD & noise (in bandwidth up to 80 kHz)	max. 0.2 % below 500 Hz, 0.3 % otherwise
Frequency range	45.000 Hz – 1000.00 Hz
Frequency uncertainty	10 ppm

DC Current – Ranges, resolution, 1 year uncertainty [% of set value + floor]

Range	Uncertainty	Compliance Voltage
0.00000 – 1.00000 mA	0.10 % + 200 nA	12 V
1.0001 – 10.0000 mA	0.10 % + 2 μ A	12 V
10.001 – 100.000 mA	0.10 % + 20 μ A	12 V
0.10001 – 0.50000 A	0.10 % + 100 μ A	3 V
0.50001 – 1.50000 A	0.10 % + 200 μ A	3 V
1.5001 – 5.0000 A	0.16 % + 1 mA	3 V
5.0001 – 10.0000 A	0.16 % + 2 mA	3 V

AC Current – Ranges, resolution, 1 year uncertainty [% of set value + floor]

Range	Uncertainty 45 Hz – 500 Hz	Uncertainty 500 Hz – 1 kHz	Compliance Voltage	Max. inductive load
70.000 – 320.000 mA	0.11 % + 30 μ A	0.22 % + 60 μ A	4 V _{rms}	50 μ H
0.32001 – 1.00000 A	0.11 % + 100 μ A	0.22 % + 200 μ A	2.5 V _{rms}	30 μ H
1.00001 – 3.20000 A	0.11 % + 300 μ A	0.22 % + 600 μ A	2.5 V _{rms}	20 μ H
3.2001 – 7.0000 A	0.11 % + 3 mA	0.22 % + 6 mA	2.5 V _{rms}	10 μ H

AC/DC Power

AC range summary	power: 0.7 W – 5.25 kW voltage: 10 V – 750 V current: 70 mA – 7 A frequency: 45 – 1000 Hz
DC range summary	power: 0.1 W – 8 kW voltage: 10 V – 800 V current: 10 mA – 10 A
Total uncertainty	based on voltage, current and phase shift specifications
Phase shift uncertainty	0.27° at 500 Hz and below 0.50° above 500 Hz

Total 1 year power accuracy in common AC applications [% of value]

Set current	EU grid power (230 V, 50 Hz)	US grid power (115 V, 60 Hz)	Aircraft onboard power (115 V, 400 Hz)	Ship onboard power (440 V, 60 Hz)
100 mA	0.169 %	0.169 %	0.169 %	0.169 %
1 A	0.153 %	0.153 %	0.153 %	0.153 %
7 A	0.180 %	0.180 %	0.180 %	0.180 %

Synchroscope

Voltage range summary	same as AC Voltage
Frequency range	same as AC Voltage
Selectable phase shift	0° or 180° against Voltage output