7200 Configurable Automated Test Set

A complete software-defined radio automated test platform with options for production testing of Ground and Portable Radio systems

Flexible Configuration
- Micro ATE configurations with built-in signal switching for total test automation
- General purpose instrument configurations with high performance front panel oscilloscope and DMM connections
- Multiple signal generation and measurement channels available

Broadband Frequency Coverage
- DC to 2.6 GHz standard
- 90 MHz instantaneous bandwidth standard

Software Defined Radio Ready
- SCA compatible architecture
- Powerful and expandable real-time baseband processing power

Robust Packaging
- MIL-PRF-28800F Class 3
- Rack mount option

Advanced Software Capabilities
- State-of-the-art and highly intuitive touch-screen based user interface
- Built-in test executive with breakthrough automatic test execution optimization for reduced test times

The Aeroflex 7200 Configurable Automated Test Set provides software defined radio (SDR) manufacturers and users with the premier synthetic instrument platform for production test available today, while providing future-proof support for next generation radio systems. The 7200 is a powerful communication radio production test platform, capable of testing advanced current and future radio systems.

Baseline standard features like very wide, high performance, 90 MHz instantaneous digitization and signal generation bandwidths, excellent phase noise performance across a 2.6 GHz range of operation with fast hopping capability, coupled with impressive real-time processing power and state-of-the-art data transport mechanisms make the 7200 platform truly unique. The 7200 is the result of applying decades of experience in developing test instrumentation for both military and commercial products. It combines innovative design and Aeroflex patented technologies with valued feedback from our customers to remain their test solution provider of choice.

The 7200 belongs to our 7000 Series product family and is based on the new Aeroflex Common Platform (CP). The Common Platform provides the most capable, flexible and scalable synthetic test instrumentation architecture in the industry. If our standard 7200 configurations do not fully match certain requirements then our state-of-the-art modular hardware and software components, leveraging open industry standards, allow Aeroflex to configure a 7200 to meet customer needs today while providing unmatched upgrade and obsolescence protection in the future.

One box that does the work of many

For the very latest specifications visit www.aeroflex.com
Comprehensive "ATE-in-a-Box" Test Solution

The 7200 is a complete radio test system in one small and portable package and even includes a MicroATE option with built-in signal switching capabilities for fully automated testing. The 7200 provides the functionality of many traditional instruments in a dramatically reduced footprint, and for a fraction of the cost. Standard instrumentation functions include:

- RF Signal Generator
- Tracking Generator
- RF Measurement Receiver
- Power Meter
- Spectrum Analyzer
- Digital Oscilloscope
- Audio Generator
- Digital Multimeter
- Audio Analyzer
- Distortion Meter
- SINAD Meter
- Frequency Counter
- Bit Error Rate (BER) Analyzer
- Frequency Reference
- Signal Switching Matrix (MicroATE configuration)

The 7200 platform also includes many options not normally found in Commercial-Off-The-Shelf (COTS) test instrumentation.

See your Aeroflex representative for custom configurations and option availability. Generally, the only external equipment required for fully automated testing are power supplies for the Device Under Test (DUT) and amplifiers or attenuators for high power applications. Even these external elements can be integrated under the control of the 7200 via several standard interfaces to maintain fully automated test capabilities.

Industry Standards

Unless they add significant value for our customers, we don’t like proprietary components and interfaces any more than you do. That is why the 7200 and all of our CP based products were developed to leverage a tremendous number of open industry standards for both hardware and software components.

Future-Proof Design

Aeroflex incorporated both current and anticipated future technology requirements from the very beginnings of our Common Platform and 7200 development. This includes the ability to configure support for advanced communications systems like JTRS, JTRS-compliant/SCA systems and several emerging commercial standards for 4th generation wireless communications. Aeroflex surveyed and analyzed the future of these technologies and developed the CP architecture to handle the necessary upgrades and growth that would be required of instrumentation for the next 5-10 years. All CP based products share the same software architecture, and many of the hardware building blocks are compatible from the hand-held platform all the way up to integrated systems. Since they share common hardware and software building blocks, Aeroflex can start with any of the standard product configurations and add on functionality from many of the others. The resulting products provide Aeroflex customers with the most comprehensive and future-proof instrumentation available that can be tailored to suit their specific needs.
Automatic Test Capabilities

The Aeroflex 7200 includes an advanced real-time control system that works in conjunction with a built-in test executive to provide unequalled levels of test automation. The full-featured test sequencer is based on the Python interpretive programming language and a control system running in State Space. It allows easy definition of test sequences using the library of extended test commands provided, as well as providing an ideal environment for the development of new signal processing or test sequencing algorithms in the powerful Python language, using either interpreted or compiled modules. This is combined with the State Space control system to allow full automation of tests of arbitrary complexity.

User Interface

With a 12.1 inch high resolution touch screen based user interface, the 7200 provides the most advanced and user friendly operator interface in the industry. It’s highly intuitive design is a result of 1000’s of research and development hours focused on user experience, graphical design and content depiction, and modern user interface techniques applied to the unique needs of test instrumentation and its operating environments.

Signal Modulation and Demodulation

Over many years Aeroflex has developed and refined its powerful software package called IQ Creator™, which allows users to define arbitrary waveforms and load them into our various RF signal generators, whether they are standalone instruments or radio test sets. The software offers a wide variety of predefined waveforms such as FDMA, TDMA, CDMA, and OFDM standards, or the user can build his or her own from scratch, including Spread Spectrum and Frequency Hopping waveforms. This IQ Creator™ software has been integrated into the 7200 and is directly available through the user interface.

Digital Modulation Types Available through the Embedded IQ Creator™ Software Include*

- **User Defined**
  - Arbitrary Waveforms

- **General**
  - AM, FM, PM, PSK, FSK, MSK, QAM modulation; User defined PSK and QAM mapping; Tones; Nyquist, Root Nyquist, Low Pass, Gaussian and user defined filters; PRBS, fixed pattern and user-defined data sources; Generic frame editor; 4 markers; Multi-carrier

- **TDMA Digital Standards**
  - GSM 900, 1800, 1900; EDGE; Combined GSM/EDGE; TETRA DECT; VDL - Modes 2, 3, 4; Generic frame editor; RF burst or IQ profile; Automatic burst control (marker); Multi-carrier

- **Impairments**
  - I/Q skew, carrier leak and gain imbalance, Gaussian noise (AWGN)

- **WiMAX**
  - 802.16 (2004 & 2005) OFDMA

- **WLAN**
  - 802.11a,b,g, Multi-carrier

- **CDMA Digital Standards**
  - CDMAone (IS-95), 3GPP TDD-LCR, CDMA2000 (release C) TD-SCDMA (TSM) (v3.0.0), 1xEVDO, Clipping, 3GPP FDD (release 6), Multi-carrier, HSDPA

- **Graphics**
  - FFT, Amplitude v time, Vector, Phase v time, Constellation, Frequency v time, CCDF, Zoom mode, Code domain power, 2 markers, I/Q v time, Save or print, I/Q wrap v time

*Note that some of the modulation types listed are optional upgrades.

Calibration

The 7200 hosts its own calibration software that controls externally connected instrumentation to perform its entire system calibration in a semi-automated manner. Hook-up diagrams are displayed on the screen once the operator has decided to run a particular system calibration, allowing the operator to follow the instructions and then walk away while the unit performs its automated system calibration. The calibration techniques are state-of-the-art and very fast and accurate. No more large ATE stations, with their racks of equipment, are required. The 7200 can be calibrated anywhere in the world by technicians with very little training since the 7200 does most of the work. Calibration data can be saved or restored easily.

Ask your Aeroflex sales representative for more information about option availability or custom configurations of the 7200 - the most advanced synthetic test platform available.
SPECIFICATIONS

(Standard General Purpose Configuration)

**RF GENERATOR**

**RF Frequency**
- Frequency Range: 1.0 MHz to 2.6 GHz
- Frequency Accuracy: Same as timebase
- Frequency Resolution: 1 Hz

**RF Output Level**
- **T/R Port**: -30 dBm to -130 dBm
- **GEN Port**: +10 dBm to -110 dBm

**Accuracy**
- **Gen Port**: ±1.0 dB (>-110 dBm), ±3.0 dB (≤-110 dBm)
- **T/R Port**: ±1.0 dB (>-120 dBm), ±2.5 dB (≤-120 dBm, >-130 dBm)

**Resolution**
- **Display Resolution**: 0.1 dB
- **Step Size**: 0.1 dB

**Port VSWR 50 Ohm**
- **T/R Port**: <1.2:1 (<1.05 GHz), <1.3:1 (>1.05 GHz to 2.6 GHz)
- **Gen Port**: <1.5:1 (1.0 MHz to 1.0 GHz), <1.9:1 (1.0 GHz to 2.6 GHz with attenuation)

**SSB Phase Noise**
- **Typical Phase Noise (Normal mode)**

<table>
<thead>
<tr>
<th>RF Frequency</th>
<th>dBC/Hz @ 20 kHz offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MHz</td>
<td>-131</td>
</tr>
<tr>
<td>100 MHz</td>
<td>-102</td>
</tr>
<tr>
<td>500 MHz</td>
<td>-102</td>
</tr>
<tr>
<td>800 MHz</td>
<td>-100</td>
</tr>
<tr>
<td>1200 MHz</td>
<td>-98</td>
</tr>
<tr>
<td>1700 MHz</td>
<td>-100</td>
</tr>
<tr>
<td>2000 MHz</td>
<td>-97</td>
</tr>
<tr>
<td>2350 MHz</td>
<td>-96</td>
</tr>
<tr>
<td>2600 MHz</td>
<td>-99</td>
</tr>
</tbody>
</table>

**RF Generator Spurious**
- **Harmonics**: < -30 dBc
- **Non-harmonics**: < -55 dBc

**RF Generator Residual**
- **FM Residual**: <15 Hz rms in 300 Hz to 3 kHz BW
- **AM Residual**: <0.1% rms in 300 Hz to 3 kHz BW

**RF Generator Modulations**

**Selections**
- NONE, FM, AM, PM, SSB USB, SSB LSB, AM NRZ, FM NRZ, PM NRZ, SSB USB NRZ, SSB LSB NRZ, I/Q File, I/Q Python

**FM Deviation**
- **Range**: ±1.0 Hz to ±150 kHz
- **Accuracy**: ±3% of setting (from ±1 kHz to ±100 kHz deviation, 20 Hz to 15 kHz rate)
- **Rate**: 0 Hz to 40 kHz

**FM Deviation Resolution**
- 0.1 Hz

**Waveform**
- Sine, square, triangle, ramp

**THD (Total Harmonic Distortion)**
- <1% (1 kHz rate, 6 kHz deviation, 300 Hz to 3 KHz, Sine)

**AM Modulation**
- **Range**: 0.1% to 100%
- **Accuracy**: ±1% modulation from 10% to 90%
- **Rate**: 0 Hz to 40 kHz

**AM Modulation Resolution**
- 0.1%

**Waveform**
- Sine, square, triangle, ramp

**THD (Total Harmonic Distortion)**
- <1% (1 kHz rate, 30 to 70% AM, 300 Hz to 3 kHz, Sine)

**PM Deviation**
- **Range**: 0.1 radians to 10 radians
- **Rate**: 10 Hz to 40 kHz
- **Accuracy**: ±5% of setting

**PM Deviation Resolution**
- <0.1 radians

**Waveform**
- Sine, square, triangle, ramp

**THD (Total Harmonic Distortion)**
- <1.0%

**Internal Single-Sideband (SSB)**

**Modulation Selection**
- Upper-Sideband (USB) or Lower-Sideband (LSB)

**Modulation Range**
- 0% to 100%

**Resolution**
- 0.1%

**Rate**
- 300 Hz to 3 kHz
Waveform
Sine, square, triangle and ramp

I/Q FILE

Modulation Capability
Allows user to “RUN” arbitrary waveforms as modulation source
Types
Browse and load I/Q creator file

RF Generator Modulation (External Input)
Types
AM, FM, PM
Sources
Audio 1

Accuracy
Audio In: With 1 Vrms, AM/FM/PM have same characteristics as internal sources, ±10% of indicated setting. [Audio 1, Input from 20 Hz to 15 kHz (300 Hz to 3 kHz SSB), unbalanced].

RF RECEIVER

RF Frequency
Frequency Range
1.0 MHz to 2.6 GHz
Resolution
1 Hz

Accuracy
Same as timebase

Input Reference Level Scale
Ant Port
10, 0, -10, -20, -40, -50, -70 dBm
T/R Port
+50, +40, +30, +20, 0, -10 dBm

RF Input Level
Max Input Level
ANT Port
+10 dBm, (damage will occur > +13 dBm)
T/R Port

T/R RF Input Power ON/OFF times:

<table>
<thead>
<tr>
<th>Peak RF Power</th>
<th>Max Time ON</th>
<th>Min Time OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 W</td>
<td>90 seconds</td>
<td>3 minutes</td>
</tr>
<tr>
<td>150 W</td>
<td>30 seconds</td>
<td>3 minutes</td>
</tr>
<tr>
<td>200 W</td>
<td>15 seconds</td>
<td>3 minutes</td>
</tr>
</tbody>
</table>

T/R Input Over Temp Screen activation:

<table>
<thead>
<tr>
<th>Alarm</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>&gt;100°C</td>
</tr>
<tr>
<td>OFF</td>
<td>&lt;100°C</td>
</tr>
</tbody>
</table>

Note 1: Remove RF input power any time the Over temp indicator appears on screen.

Sensitivity
ANT Port
-113 dBm (>10 dB SINAD, FM, 1 kHz rate, 6 kHz Deviation, 25 kHz BW, 300 Hz to 3.4 kHz AF Filter)

Port VSWR 50 Ohm
ANT Port
<1.5:1 (RF freq. <1.05 GHz) < 1.9:1 (RF freq. >1.05 GHz to <2.6 GHz)

T/R Port
See Section 3.1.3 Generator T/R port VSWR

RF Receiver Demodulation
Selections
None, AM, FM, PM, USB, LSB and all digital formats in section 3.1.12 I/Q Gen

IF and Demod audio bandwidths / filters
Selectivity
AM/FM IF bandwidths
250 Hz, 3, 6.25, 12.5, 25, 50, 100 kHz

FM IF bandwidths
300 kHz, 500 kHz, 5 MHz

Other bandwidths available based on I/Q modulation scheme

DEMOD Audio Filters Selections

<table>
<thead>
<tr>
<th>Filter</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>No Filter</td>
</tr>
<tr>
<td>300 Hz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>5 kHz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>3 kHz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>15 kHz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>20 kHz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>0.3 to 3.0 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>0.3 to 3.4 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>0.3 to 5 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>0.3 to 15 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>0.3 to 20 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>300 Hz</td>
<td>High-Pass</td>
</tr>
<tr>
<td>40 kHz</td>
<td>Low-Pass</td>
</tr>
</tbody>
</table>

AUDIO ROUTING AND DEFINITION

Audio 1
Audio In Balanced 600Ω

Audio 2
AF Gen Out
Demod Out
DD Gen Out
Audio in Balanced 600Ω

Audio Input Definition

Audio Input Characteristics for the following meters:
AF Counter, AF Level Meter, SINAD Meter, Distortion Meter, BER

Front Panel Audio Inputs
Audio 1, unbalanced, chassis reference
Audio 1 and Audio 2, balanced, 600Ω differential input

Audio Input Impedance Audio 1
Hi-Z (>50 kΩ) – unbalanced input
300 Ω - unbalanced input
150 Ω - unbalanced input
Audio Input Range
Frequency
0 to 40 kHz
Level
0.15 Vrms to 30 Vrms with Hi-Z Input Impedance and 600Ω balanced
Level
0.15 Vrms to 7 Vrms with 300Ω or 150Ω Input Impedance

Input Audio Filters Selections

<table>
<thead>
<tr>
<th>Filter</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>No Filter</td>
</tr>
<tr>
<td>300 Hz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>5 kHz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>3 kHz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>15 kHz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>20 kHz</td>
<td>Low-Pass</td>
</tr>
<tr>
<td>0.3 to 3.0 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>0.3 to 3.4 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>0.3 to 5 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>0.3 to 15 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>0.3 to 20 kHz</td>
<td>Band-Pass</td>
</tr>
<tr>
<td>300 Hz</td>
<td>High-Pass</td>
</tr>
<tr>
<td>40 kHz</td>
<td>Low-Pass</td>
</tr>
</tbody>
</table>

METERS

RF Power Meter (Power measured in Receiver IF BW)
Measurement Port
T/R port and ANT port
Frequency Range
1.0 MHz to 2.6 GHz
Input Range
ANT Port
-100 dBm to +10 dBm
T/R Port
-60 dBm to +53 dBm (see duty cycle table in 3.2.2)
Resolution
4 digits for watts measurement or .01 dB for dBm measurement
Accuracy
TR Port
>.02 mW levels, ±10% power, ±1 count
ANT Port
>.100 dBm ±1.0 dB ±1 count (After Normalize Function)
Unit of Measure
Watts, mWatts and dBm (absolute and relative)
Span
5 kHz to 90 MHz
Receive RF Error Meter
Frequency Range
1 MHz to 2.6 GHz
Error Meter Range
0 to ±5 MHz from displayed receiver frequency
Resolution
1 Hz

Accuracy
Same as timebase, ±1 count
Sensitivity
ANT and T/R port, S/N >15 dB

AF Counter Meter
Range
0 to ±100 kHz
Accuracy
±1 Hz
Resolution
±1 Hz
Meter Source
Audio Input
Audio 1 Input
DEMOD

AF Level Meter (Source: Audio Input)
Input Level Range
0 to 30 Vrms
Resolution
1 mV
Frequency Range
20 Hz to 40 kHz
Accuracy
5% (Unbalanced, Hi-Z, 300 Hz to 3 kHz, 0.1 to 30 Vrms)

AF Level Meter (Source: DEMOD)
Receive FM Deviation
Deviation Range
0 Hz to 150 kHz
Modulation Rate Range
20 Hz to 40 kHz
Accuracy
±5% plus source residual, ±1 count (1 to 150 kHz FM deviation, Modulation rate 1 kHz to 20 kHz). IF BW set appropriately for the received modulation BW)
Resolution
1 Hz
Sensitivity
ANT and T/R port, S/N >15 dB

Receive AM Modulation
Depth
0% to 100%
Modulation Rate Range
20 Hz to 40 kHz
Accuracy
±3.0% of reading from 30% to 90%
Resolution
1%
Sensitivity
ANT port, S/N >15 dB

Receive PM Modulation
Range
0.1 to 10 radians
Rate
100 Hz to 1 kHz
Accuracy
±5.0% of reading
**Resolution**
0.01 radians

**Sensitivity**
ANT port, S/N >15 dB

**SINAD Meter**

- **Range**
  0 to 60 dB
- **Accuracy**
  ±1 dB ±1 count
- **Resolution**
  0.01 dB
- **Notch Frequency**
  10 Hz to 10 kHz
- **Meter Source**
  Audio Input
  Audio 1 Input
  DEMOD

**Distortion Meter**

- **Range**
  0.0% to 100.0%
- **Accuracy**
  <±0.5% (Distortion 1% to 10%, 5 kHz LP AF filter)
  <±1.0% (Distortion 10% to 20%, 5 kHz LP AF filter)
- **Resolution**
  0.1%
- **Notch Frequency**
  10 Hz to 10 kHz
- **Meter Source**
  Audio Input
  Audio 1 Input
  DEMOD

**Bit Error Rate (BER) Meter**

- **Style**
  Decodes Non Return to Zero (NRZ) style data.
- **Range**
  1 x 10\(^{-1}\) to 1 x 10\(^{6}\)
- **Data Rates**
  75, 150, 300, 600, 1200, 2400, 4800 bps and 16 kbps
- **Data Pattern Size**
  100 to 100000 bits
- **Data Pattern Type**
  Random, fixed and user defined
- **Pattern**
  PN9, PN10, PN11 PN12, PN15 sequence
- **Accuracy**
  1 x 10\(^{-8}\)
- **Source**
  Modulation output
  Audio output

**Level Accuracy**

- **Range**
  0.1 V to 5.0 V (digital)
- **Resolution**
  0.1 V
- **Accuracy**
  ±3%

**SPECTRUM ANALYZER**

- **Frequency**
  1 MHz to 2.6 GHz (usable from 100 kHz)
- **Resolution**
  1 Hz
- **Frequency Accuracy**
  Same as frequency standard
- **Span**
  Span mode: Center/Span and Zero Span
- **Display/marker Accuracy**
  Span accuracy + frequency accuracy
- **Span Range**
  Selection list is 5 kHz to full, plus zero span
- **Span Accuracy**
  ±1% of span width
**Horizontal Resolution**
Span/(sweep points-1)

**LEVEL**

**Input Level Range**
Ant port Selected: See 3.2.1 and 3.2.2 for Input Level Range
T/R port Selected: See 3.2.1 and 3.2.2 for Input Level Range

**Reference Level Resolution**
1 dB

**Ref Level Units**
dBm

**Level Accuracy**
±1 dB (Input Level Scale must be set and Normalize Function: See 3.2.1)

**Residual Response**
≤110 dBm input terminated with 50 ohm load

**Harmonic Spurious**
-55 dBc (Input Level of -30 dBm, Ref Level at -20 dBm)

**Non-Harmonic Spurious**
-60 dBc (Input Level of -30 dBm, Ref Level at -20 dBm)

**3rd Order Intermodulation**
-60 dBc (Input Level of -30 dBm, Ref Level at -20 dBm)

**Displayed Average Noise Level (DANL)**
dBm/Hz, 0 dB RF attenuation, 1 Hz RBW, averaging on, 50Ω termination from 100 MHz to 2.6 GHz: -147 dBm, (-150 dBm typical)

**Vertical Scales**
Logarithmic, 1 to 50 dB/division

**Digitizer Dynamic Range**
85 dB (maximum analysis BW 90 MHz, digitizer AGC resolution 14 bits

**Bandwidth Switching Error**
≤±0.1 dB 5 k reference RBW, (After Normalize)

**Display Range**
200 dB

**Resolution Bandwidths**
1 Hz to 500 kHz in 1, 2, 5 Sequence based on Analyzer span

**FFT WINDOW**
Rectangle, Blackman, Hanning, Hamming, Triangle, Kaiser, Flattop

**OSCILLOSCOPE**

**Number of Channels**
2

**Bandwidth (-3 dB)**
All Ranges expect 0.04 Vpp DC to 125 MHz
Range 0.04 Vpp DC to 100 MHz

**Input Impedance**
50Ω and 1 MΩ || 26 pF

<table>
<thead>
<tr>
<th>50 Ω</th>
<th>1 MΩ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>Vertical off-</td>
</tr>
<tr>
<td>Vpp</td>
<td>Range V</td>
</tr>
<tr>
<td>0.04</td>
<td>±0.8</td>
</tr>
<tr>
<td>0.1</td>
<td>±0.8</td>
</tr>
<tr>
<td>0.2</td>
<td>±0.8</td>
</tr>
<tr>
<td>0.4</td>
<td>±0.8</td>
</tr>
<tr>
<td>1.0</td>
<td>±6.5</td>
</tr>
<tr>
<td>2.0</td>
<td>±6.0</td>
</tr>
<tr>
<td>4.0</td>
<td>±5.0</td>
</tr>
<tr>
<td>10</td>
<td>±2.0</td>
</tr>
</tbody>
</table>

**Accuracy**

**DC Functions**

**DC Voltage Accuracy**
±0.1% of full scale

**DC Voltage Ranges**
100 mV, 1 V, 10, 100 V, 300 V

**DC Current Accuracy**
±0.35% of full scale

**DC Current Ranges**
20 mA, 200 mA, 1 A, (10A with external shunt)

**Resistance Accuracy**
100Ω thru 1 MΩ: ±0.05% of full scale
10 MΩ: ±0.2% of full scale

**Resistance Ranges**
100Ω, 1 kΩ, 10 kΩ, 100 kΩ, 1 MΩ, 10 MΩ, 100 MΩ

**Resolution**
61/2 digits
**AC Functions**

**AC Voltage Ranges**
- 50 mV, 500 mV, 5 V, 50 V, 300 mV

**AC Voltage Accuracy**
- 50 mV, 500 mV scales: ±0.2% of full scale
- 5 V, 50 V, 300 V scales: ±0.8% of full scale
- 10 Hz to 20 kHz, usable to 300 kHz

**AC Current Ranges**
- 10 mA, 100 mA, 1 A, (10 A with external shunt)

**AC Current Accuracy**
- 10 mA and 100 mA scales: ±0.7% of full scale, 10 Hz to 30 kHz, 1A scale: ±0.7% of full scale, 10 Hz to 10 kHz

**Resolution**
- 6 1/2 digits

**TIMEBASE**

**Standard Oscillator**

**Temperature Range**
- 0°C To 50°C

**Temperature Stability**
- Typically better than ±.01 ppm

**Aging**
- 0.001 ppm per day, 0.01 ppm per year

**Warm-up Time**
- 10 Minutes

**DIMENSIONS AND WEIGHT**

<table>
<thead>
<tr>
<th></th>
<th>cm</th>
<th>in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>20.32</td>
<td>8</td>
</tr>
<tr>
<td>Width</td>
<td>44.45</td>
<td>17.5</td>
</tr>
<tr>
<td>Depth</td>
<td>60.96</td>
<td>24</td>
</tr>
<tr>
<td>Weight</td>
<td>20.41</td>
<td>45</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL**

**Operating Temperature**
- 0 to 50°C (Tested in accordance with MIL-PRF-28800F Class 3)

**Warm-up Time**
- 15 minutes

**Storage Temperature**
- -40 to 71°C (Tested in accordance with MIL-PRF-28800F Class 3)

**Relative Humidity**
- 80% up to 31 ºC decreasing linearly to 50% at 40°C. (Tested in accordance with MIL-PRF-28800F Class 3)

**Altitude**
- 4,600 m (15,092 ft) (Tested in accordance with MIL-PRF-28800F Class 3)

**Shock and Vibrations**
- 30 G Shock (Functional Shock) 5-500 Hz random vibrations (Tested in accordance with MIL-PRF-28800F Class 3)

**Use**
- Pollution degree 2

**EMC**
- Mil-PRF-28800F EN61326-1: Class A EN61000-3-2 EN61000-3-3

**SAFETY**

**Power Requirement**
- AC Voltage
  - 100 to 250 VAC, 47 to 63 Hz

**Mains Supply Voltage Fluctuations**
- ≤10% of the nominal voltage

**Fuse Requirements**
- 10 A, 250 V, Type F
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