

## M Precision Laboratories EMCPro Plus EMC Test System

Advanced EMC test system for compliance testing to IEC/EN standards

The M Precision Laboratories EMCPro Plus EMC Test System features resident capabilities for EMC CE Mark compliance testing to IEC/EN standards, and fully addresses new requirements for IEC 61000-4-4, IEC 61000-4-5 (Surge) and IEC 61000-4-11 (PQF).

- Portable, mid-range EMC test system for design integrity testing
- Resident capabilities for compliance testing to IEC/EN standards
- Addresses ANSI/IEEE, ITU, ETSI and
- Surge testing to 6.0kV with Combination, Telecom, and Ring Waves
- Monitors surge voltage and current at the output terminals
- Monitors output of the coupling unit and automatically switches connections according to coupling mode
- Highest test levels, widest selection of tests and lowest in-use costs
- Upgradable as standards change



A true, total immunity EMC test system The M Precision Laboratories EMCPro PLUS is a midrange, multi-capability EMC immunity tester. It operates via our easy to use Windows™ based PC software or from the front panel, and is easily configured to meet immunity standards required for CE Marking and compliance requirements.

Portable and low cost, the EMCPro PLUS system is ideal for companies who require flexibility, versatility, and the highest test level-to-cost ratio instrument on the market.

It also accommodates companies that test beyond levels dictated by the EMC Directive, including demanding national and international standards such as ANSI/IEEE, ITU, ETSI, and UL, as well as company- and market-driven test programs, which ensure quality and reliability in the field.

Users can configure custom test protocols

to meet specific test requirements using the full line of options and accessories, including mains and I/O line coupler/decouplers, magnetic field monitors, coils, and more. When test requirements change, or standards evolve, upgrading is a simple matter of adding appropriate options or accessories.

Breaking the 4.4kV voltage barrier for combination Wave, Telecom and Ring Wave Surge testing

The EMCPro PLUS test system features surge testing to 6kV with the combination, telecom and ring waves. It is the only combination tester on the market to offer the combination wave with one of two additional built-in surge waveforms.

The EMCPro PLUS, and its many technically advanced, cost effective features will serve you well for many years to come.

## Reach the Next Level of Success

Experience the many benefits of working with recognized experts in the field of EMC (ElectroMagnetic Compatibility) testing. Our commitment to the discipline is wide ranging; we actively participate on global standards committees and have helped define test methodologies to achieve regulatory standards such as CE Mark requirements, as well as company and market-driven product quality objectives. Our goal is to support you with lifelong service, from applications support, calibration services and preventive maintenance scheduling to full tactical field support.

|                       |  |
|-----------------------|--|
| <b>Model PRO-BASE</b> | EMCPro PLUS Base Unit  |
| System Voltage        | 90-240VAC, 50/60Hz   |
| Control Interface     | RS232 Fiber-optic  |
| Safety Features       | External Interlock for users, Interlock for CCL connector, External stop input |
| Dimensions            | 22.9 cm (8.7 in) x 43.4 cm (17.1 in) x 64.8 cm (25.5 in)                       |
| Weight                | 39 kg (85 lb)  |
| CE Marking            | Safety and EMC Directives  |

### Integrated EUT Mains Coupler/Decoupler

|                |                       |
|----------------|-----------------------|
| AC Voltage     | 1 phase, 50 - 277 VAC |
| AC Current     | 16 A maximum          |
| DC Voltage     | 100 VDC maximum       |
| DC Current     | 10 A maximum          |
| Frequency      | 50/60 Hz              |
| EUT Connectors | Nema, British, Schuko |

### Environmental Operating Conditions

|             |                        |
|-------------|------------------------|
| Temperature | +15°C to +40°C         |
| Humidity    | 10-75%, non-condensing |
| Altitude    | 8000 ft. maximum       |

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|------------------------|---|
| <b>Model PRO-SURGE</b> | Surge for compliant testing per IEC 61000-4-5, EN 61000-4-5, and ANSI C62.41 Category B               |
| Voltage Waveform       | 1.2/50 $\mu$ s  |
| Peak Voltage           | 250V - 6.0 kV, 12 mode; 250V - 6.0 kV, 2 mode   |
| Peak Current           | 125 A - 3.0k A $\pm$ 10%  |
| Additional 10 Resistor | Software selectable   |
| Repetition Rate        | Up to 4 per minute  |
| Open-circuit Voltage   | Front time: 1.2 $\mu$ s $\pm$ 30%; Duration: 50 $\mu$ s $\pm$ 20%; Undershoot: 30% at "DIRECT" output |
| Short-circuit Current  | Front time: 8.0 $\mu$ s $\pm$ 20%; Duration* 20 $\mu$ s $\pm$ 20%; Undershoot 30% at "DIRECT" output  |
| Line Sync Accuracy     | $\pm$ 10%   |

### Options

|                   |   |
|-------------------|---|
| Model CM-I/OCD    | External 8-line coupler/decoupler for I/O signal lines    |
| Model CM-I/OCD-HS | High speed I/OCD option for testing data rates to 100 kHz |

\* Durations are reduced in 12 mode and when coupling multiple lines to PE

|                       |   |
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| <b>Model PRO-EFT</b>  | EFT per IEC 61000-4-4, EN 61000-4-4 and ANSI C62.41                     |
| Voltage Waveform      | 5/50 ns $\pm$ 30%   |
| Peak Voltage          | 250 V - 4.4 kV  |
| Burst Period          | 300 ms $\pm$ 10%  |
| Burst Duration        | 15 ms $\pm$ 20%, for pulse frequencies up to 5 kHz, 0.75 ms above 5 kHz |
| Frequency             | 1-100 kHz, in 0.5k Hz steps, $\pm$ 10%                                  |
| DC Blocking Capacitor | 10 nF (internal)  |

### Options

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|----------------|--|
| Model CCL      | Capacitive coupling clamp                  |
| Model CCLC     | Coupling clamp cover                       |
| Model EFT-ATTN | EFT attenuator for oscilloscope monitoring |

|                           |  |
|---------------------------|--|
| <b>Model PRO-TELECOM*</b> | Surge Telecom compliant testing per IEC 61000-4-5, EN 61000-4-5, TIA-968-B (FCC Part 68), ITU K20, K21, K44, K45 |
| Voltage Waveform          | 10/700 $\mu$ s (9/720 $\mu$ s FCC Part 68)   |
| Peak Voltage              | 250 V - 6.0 kV   |
| Peak Current              | 6.25 - 150 A +10/-0%, 40 mode  |
| Repetition Rate           | Up to 4 per minute   |
| Open-circuit Voltage      | Front time: 7.0 $\mu$ s to 11.7 $\mu$ s; Duration: 576 $\mu$ s to 840 $\mu$ s                                    |
| Short-circuit Current     | Front time: 4 $\mu$ s to 6 $\mu$ s; Duration: 256 $\mu$ s to 384 $\mu$ s   |

**Options**

|                |                                    |
|----------------|------------------------------------|
| Model CM-TELCD | External coupler for telecom lines |
|----------------|------------------------------------|

|                        |   |
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| <b>Model PRO-RING*</b> | Ring Wave Surge per ANSI C62.41 Cat. A, B, UL 864, IEC 61000-4-12 and EN 61000-4-12 |
| Voltage Waveform       | 100 kHz damped cosine   |
| Peak Voltage           | 250 - 6.0 kV  |
| Repetition Rate        | Fewer than 4 per minute at 6.0 kV, faster at lower voltages                         |
| Open-circuit Voltage   | Rise Time: 0.5 $\mu$ s $\pm$ 30%  |
| Short-circuit Current  | 200 A & 500 A ranges Vp/Ip: 12 $\pm$ 3 or 30 $\pm$ 8; software selectable           |

\* PRO-TELECOM and PRO-RING can not be installed simultaneously.

**Surge Waveform Monitoring**

|                                   |  |
|-----------------------------------|--|
| Lines Monitored                   | Monitors are automatically switched to match generator coupling mode |
| Open-circuit Voltage              | 1000:1 $\pm$ 10% of actual output                                    |
| Short-circuit Current Attenuation | 200:1 $\pm$ 5% of actual output                                      |

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|-------------------------|---|
| <b>Model PRO-HPOWER</b> | Power Frequency Magnetic Field for compliant testing per IEC, @1000-4-8 and EN 61000-4-8                |
| Field Frequency         | 50 Hz/60 Hz   |
| Field Amplitude         | 0.5 - 4 A/m, in 0.25 A steps, $\pm$ 10% (with CM-HCOIL) up to 100 A/m with optional external HPOWER-EXT |
| Internal Resolution     | 0.25 A minimum  |
| Coil Factor             | 0.65 to 1.00  |
| Coil Resistance         | 0.05 maximum  |

**Options**

|                  |   |
|------------------|---|
| Model CM-TELCD   | Measurement probe for power frequency magnetic fields           |
| Model CM-HCOIL   | 1 m x 1 m magnetic field coil                                   |
| Model HPOWER-EXT | External generator for power frequency magnetic field to 30 A/m |

|                         |   |
|-------------------------|---|
| <b>Model PRO-HPULSE</b> | Pulse Magnetic Field for compliant testing per IEC 61000-4-9 and EN 61000-4-9 |
| Field Pulse             | 8/20 $\mu$ s  |
| Field Amplitude         | 100 A/m - 1000 A/m, $\pm$ 10%   |
| Resolution              | 5 A/m   |
| Coil Factor             | 0.65 to 1.00  |

**Options**

|                |   |
|----------------|---|
| Model CM-HMON  | Measurement probe for power frequency magnetic fields |
| Model CM-HCOIL | Model CM-HCOIL  |

|                      |   |
|----------------------|---|
| <b>Model PRO-PQF</b> | Dips and Interrupts for compliant testing IEC 61000-4-11, and EN 61000-4-11 |
| Dips                 | 40%, 70%, 80%   |
| Interrupts           | 0% (short and open)   |
| Transition Time      | 1 $\mu$ s - 5 $\mu$ s   |
| Inrush               | Minimum 250 Amps @ 100 - 120 V, Minimum 500 Amps @ 220 - 240 V              |
| AC Voltage           | 50 - 277 VAC, 50/60 Hz  |
| AC Current           | 16A max.  |
| PQFSyncOutput        | 5 V signal occurs at each dip, or interrupt transition                      |

#### Options

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| Model PQF-QUAL | Circuit per IEC 61000-4-11 for testing, PQF generator inrush capability |
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#### Model PQF Waveform Monitoring

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|--------------------------|--|
| Voltage Input Connection | Fixed, L1 to L2                        |
| Voltage Attenuation      | 100:1 $\pm$ 5%                         |
| Current Input Connection | Fixed, L1                              |
| Peak Current             | Minimum 500 A inrush into 1700 $\mu$ F |
| Current Attenuation      | 200:1 $\pm$ 5%                         |

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| <b>Model CM-TELCD</b>       | Optional telecom line coupler/decoupler provides the ability to couple both the telecom wave and combination wave per IEC 61000-4-5 |
| Waveforms                   | Designed to couple 1.2/50 $\mu$ s combination or 10/700 $\mu$ s telecom waves   |
| Telecom Line Frequency      | To 100kHz without significant degradation   |
| Number of Lines             | Up to four lines – one or two pairs of balanced telecom lines   |
| Maximum Surge Voltage       | 4.4 kV  |
| Maximum Signal Line Voltage | 200 V   |
| Maximum Signal Line Current | 1AAC or DC  |
| Clamping                    | Selectable built-in clamps of 20V and 225V; external bias input for other clamp levels  |

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| <b>Model CM-I/OCD</b>       | Optional I/O coupler/decoupler provides the ability to couple surges from EMCPro PLUS or any surge simulator, to I/O or data lines per IEC 61000-4-5                  |
| Waveforms                   | Designed to couple combination waves of 1.2/50 $\mu$ s open-circuit voltage, 8/20 $\mu$ s short-circuit current supplied by option PRO-SURGE with the EMCPro PLUS     |
| Repetition Rate             | Up to 5 per minute at 4.4 kV  |
| Data Line Frequency         | To greater than 100 kHz without significant degradation when CM-I/OCD-HS is installed. Option CM-I/OCD-HS is recommended for data line frequencies greater than 1 kHz |
| Number of Lines             | Eight lines – any line can be surged to any other line or ground  |
| Maximum Surge Voltage       | 4.4 kV  |
| Maximum Signal Line Voltage | 200 V   |
| Maximum Signal Line Current | 1AAC or DC  |
| Clamping                    | Selectable built-in clamps of 20V and 220V; external bias input for other clamp levels  |

#### Options

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|-------------|---|
| CM-I/OCD-HS | Internally-installed option provides selectable parallel resistors (400s, 200s, 100s) highly recommended for data line frequencies greater than 1 kHz up to 100kHz. |
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