Electricity Meter Test System

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Full Electricity Meter Test Solution

Three phase testing using a single connection point for the EUT is labour saving and eliminates potential operator error.

EMC Partner systems for EFT, Surge and DOW can all be coupled through one single device:

The CDN3000A-06-32
Testing of electricity meters has evolved to take account of the increasing use of electronics. Apart from tests of electrical safety, Electricity meters must be tested for Electromagnetic Compatibility (EMC) relevant to the installation environment and in more modern electricity meters, tests against disturbance caused by mains signalling must be conducted. EMC PARTNER specialize in test equipment to simulate the impulse and short duration disturbances that can be propagated down the power mains. By their very nature, most electricity meters are required to operate in three phase power main systems.

**Impulse Voltage Tests**

Impulse transients can be generated by external events such as lightning or internal events like switching. The result is a voltage impulse with low energy content that appears between windings in transformers, between power lines or across physical gaps between conductors and cases etc. A normalised voltage impulse of 1.2/50us is defined in the standards IEC 60060-1 and IEC61180-1.

**Fast Transient (Burst) Tests**

Industrial measurement and control equipment nearly always use conventional control units containing relays or other electro-mechanical switching devices. Fluorescent lamp ballast units, insufficiently suppressed motors (hair dryers, vacuum cleaners, drills, etc.) are found everywhere in the public power supply. EFT is defined in the basic standard IEC 61000-4-4

**Combination Wave Tests (CWG)**

Surge events are generated by lightning phenomena, switching transients or protection devices in the power distribution system. A surge is influenced by the propagation path resulting in different forms depending upon where a measurement is taken. Combination Wave Generators (CWG) simulate a surge event in power lines close to or within buildings. Surge is defined according to IC 61000-4-5

**Dips & Interrupt Tests**

Voltage failures occur following switching operations, short-circuits, response of fuses and when running up heavy loads. The interference sources in the mains, caused by electronic power control with non-linear components e.g. thyristors are used more frequently in domestic appliances. IEC 61000-4-11 defines DIPS & Interrupts.

**Damped Oscillatory Waves (DOW)**

Damped oscillatory waves occur mainly in power, control and signal cables installed in air insulated (AIS) high voltage and medium voltage (HV/MV) substations. The event has a relatively high transfer impedance resulting in a voltage impulse. A normalised voltage impulse of a damped sinewave as defined in the standards IEC 61000-4-18 and ANSI C37.90 are an industry standard.

**Electrostatic Discharge Tests**

The capacity of the body can be charged to several kilovolts and is discharged when contact is made with an electronic unit or system. The discharges are harmless to humans, but not to sensitive, electronic equipment. The resulting currents cause interference or even component damage. ESD is defined in IEC 61000-4-2.

**Differential Mode Testing**

Designed according IEC61000-4-19 to generate and inject differential mode disturbances in the frequency range 2 kHz – 150 kHz, the system allows testing smart electricity meters or different devices connected to the AC power network, where disturbances from mains signalling, inverters or other power electronics is present.
Features

**Single Port Testing**
- Fast Transient / Burst tests
- Damped Oscillatory Wave Tests 100kHz & 1MHz
- Combination Wave Tests
- Dips and Interruptions
- 3-Phase Power Line CDNs up to 690V

**Class I + Class II**
- Test level to 6kV or 12kV
- Impulse tests with 0.5 Joules and 500 ohm
- Impulse tests with 9 Joules and 500 ohm
- Single phase meter tests up to 280V
- three phase meter tests up to 690V

**Electronic Smart meters**
- Differential Mode testing
- According to IEC 61000-4-19
- Referenced in EN 50470-1 and pr TR 50579
- Integrated 25A current source to load meters
- 2kHz to 150kHz

**All test types included**
- Insulation tests up to 12kV
- Electrical tests single and three phase
- EMC tests
- special Interrupt tests
- Load to Line tests up to 20kV

**Software control**
- Product tests in software library
- Programing remotely on a computer
- Test report parameters selectable
- Test report format selectable
- Create user defined sequences
Electricity Meter Test System

Benefits

Less operator error
- Automated test routines
- Less user intervention in setups
- Test report automatically generated in pdf format
- Simple EUT connections using standard sockets
- Coupling path selection pre-programed

Faster testing
- Minimum system learning time
- Easy to follow interface
- EUT monitoring
- Easy setup
- Higher test throughput

Return on investment
- Reduces non-productive time
- Spend time testing only, get the job done
- Software operation speeds data collection
- High impulse integrity, no need for retests
- Operator training time minimum

Complete Test Report
- Test results collected automatically
- User defined information in report
- Add company logo and set report format
- Integrate different test types into one report
- Create report in the file format you want

Service Friendly
- Easy firmware update from EMC PARTNER.com
- Discrete tests in generators, reduced downtime
- Minimum calibration accessories
- BNC outputs to verify generator output
- Operator safety ensured
### Applicable Standards

#### International Electrotechnical Committee (IEC)

- **IEC 62052-11 (2003)**. Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 11: Metering equipment
- **IEC 62053-21 Ed 2 (2003)**. Electricity metering equipment (a.c.) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2)
- **IEC62055-31 (2005)**. Electricity metering – Payment systems – Part 31: Particular requirements – Static payment meters for active energy (classes 1 and 2)

#### American National Standards Institute (ANSI)

- **C12.20 (Date)**: American National Standard for Electricity Meters 0.2 and 0.5 accuracy class

#### National Ministry (Australia)

- **NMI M6 (2009)**: Pattern Approval and Verification of Electricity Meters: Definitions, Metrological and Technical Requirements

#### European Standard

- **EN50470-1**: Electricity metering equipment (a.c.) Part 1: General requirements, tests and test conditions – Metering equipment (class indexes A, B and C)

#### Basic Standards

**International Electrotechnical Committee (IEC)**

- **IEC 61000-4-2**: Testing and measurement techniques - Electrostatic discharge immunity test.
- **IEC 61000-4-4**: Testing and measurement techniques - Electrical fast transient / burst immunity test.
- **IEC 61000-4-5**: Testing and measurement techniques - Surge immunity test.
- **IEC 61000-4-8**: Testing and measurement techniques - Power frequency magnetic field immunity test.
- **IEC 61000-4-11**: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests.
- **IEC 61000-4-18 Ed2 (2009)**: Electromagnetic compatibility (EMC) - Testing and measurement techniques - Damped oscillatory wave immunity test.
- **IEC 61000-4-19**: Testing and measurement techniques - Test for immunity to conducted, differential mode disturbances and signalling in the frequency range 2Hz to 150kHz at ac power ports.
- **IEC 61000-4-34**: Testing and measurement techniques - Voltage, dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16A per phase.
Application Options

Electricity Meter

Energy meter testing is a complex and lengthy affair. With EMC PARTNER impulse test equipment, the insulation test, Electrical tests and Electromagnetic Compatibility tests (EMC) are reduced to manageable levels. Your aim is to test and approve electricity meters as fast as possible. EMC PARTNER can help.

Smart Meter

The addition of electronics and control interfaces to energy meters has created the need for more tests to ensure reliable energy measurement and reporting. In particular when mains signalling is used, there is a need to perform differential mode tests on the power interfaces. IMU SMART SLAVE V1I1 accomplishes this task in a single unit including the CDN to decouple interference signals from a reference meter and also a 25A current source to allow I_b setup without external equipment.

Electricity Meter Equipment Guide

<table>
<thead>
<tr>
<th>STANDARDS</th>
<th>IMU3000/4000 F-S-D-V-C</th>
<th>IMU SMART SLAVE I1 V1</th>
<th>MIG1203CWG</th>
<th>ESD3000 or EXT-TRA3000E+</th>
<th>MIG-OS-OS1</th>
<th>MIG1803 + NW-NMI-M6C34C</th>
<th>MIG2412</th>
<th>External Options</th>
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<tbody>
<tr>
<td>IEC61000-4-2 ESD</td>
<td>●</td>
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<td>NW-IEC61036C1 + C2</td>
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<td>IEC61000-4-4 EFT</td>
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<td>CN-MIG18 AMP</td>
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<td>IEC61000-4-16 Common mode</td>
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<td>CN16</td>
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<td>●</td>
<td>●</td>
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<td>EXT-TRA3000 C-SHORT</td>
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<tr>
<td>SP Method 1618</td>
<td>●</td>
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<td>MF-1000-1 &amp; MF-1STAND</td>
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<tr>
<td>IEC62052-11</td>
<td>●</td>
<td>●</td>
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<td>VAR-EXT1000 (1-PHASE)</td>
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<tr>
<td>IEC62053-21</td>
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<td></td>
<td>PFS32 + SRC32 (3-PHASE)</td>
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<tr>
<td>IEC62055-31</td>
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<tr>
<td>ANSI C12.1</td>
<td>●</td>
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<td>ANSI C12.20</td>
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<td>NMI-M6</td>
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<td>EN50470-1</td>
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**Generators**

Because there is such a wide range of testing required for electricity meters, several unique stand-alone generators are required. Test equipment from other product areas can be used and the relevant generators are referenced in this brochure. For full technical specifications, please refer to the corresponding equipment brochure as noted below the relevant product.

**Insulation Tests**

MIG0603CWG and MIG1203CWG include two different impulse types. The voltage impulse with a source impedance of 40Ω and a combination Wave Generator (CWG) with a source impedance of 2Ω. The 1.2/50µs impulse voltage connections made by screw terminals on the generator top plate and the CWG connections (up to maximum 6kV/3kA) are through 4mm connections on the instrument front panel.

Because the high voltage terminals on the top plate are exposed, a protective device such as the TC-MIG24 test cabinet is necessary. For further details refer to the brochure System Automation Hardware Accessories.

**Class I**

**MIG0603OS2**

For Class I equipment, a test up to 6kV is sufficient. The MIG0603OS2 can therefore be used. Energy 0.5J, Impedance 500 Ohm. Lightning impulse tester 1.2/50µs voltage range 0.5kV up to 6kV. CWG impulse 1.2/50µs (8/20µs) range 0.25kV(0.125kA) up to 6kV(3kA).

**Class 2**

**MIG1203CWG**

+ NW-IEC61036C1 + NW-IEC61036C2 + CN-MIG18 AMP

For Class II equipment, a test up to 10kV is needed. The MIG1203CWG is appropriate. Lightning impulse tester 1.2/50µs voltage range 0.5kV up to 12kV.

Lightning impulse tester 1.2/50µs voltage range 0.5kV up to 12kV. Energy 0.5J, Impedance 500 Ohm. CWG impulse 1.2/50µs (8/20µs) range 0.25kV(0.125kA) up to 6kV(3kA). Impulse magnetic field with MF1000-1 (1m x 1m) 90 A/m up to 2,100 A/m

**Line to Load**

**MIG2403**

For line to load voltage surge testing, an impulse up to 20kV with 80 Ohm impedance is required. MIG2403 with an external impedance box can fulfill this requirement. Lightning impulse tester 1.2/50µs voltage range 1kV up to 24kV

**Electrical Tests**

**IMU4000 + VAR1000-EXT (1 Phase) or PFS32 + SRC32 (3 Phase)**

Within this category of tests, are interrupt and dip requirements specific to energy metering equipment. Provided as standard within EMC PARTNER dip testers, the special dip requirements are pre-programmed for easier access.
**Generators**

## Electro-Magnetic Compatibility (EMC) Tests

As part of the test schedule, a range of EMC tests are called upon. These include Fast transient/Burst, Damped Oscillatory Wave, Electrostatic Discharge and Surge Immunity tests. For all EMC tests, a coupling / decoupling network (CDN) is also required.

### Damped Oscillatory Waves (DOW)
**MIG-OS-OS1**

The “classic” damped oscillatory wave generator for IEC, EN and ANSI applications. The slow waves are available through either balanced differential or grounded outputs. The 100kHz and 1MHz waveforms can be programmed up to 3000V. This generator is ideal for applications requiring only the slow waves. For Electricity Meter testing, a three phase coupling de-coupling network (CDN) is required.

For further information, refer to the Oscillatory Wave Test System brochure.

### Electrostatic Discharges (ESD)
**ESD3000**

ESD3000 is a light weight, hand-held battery operated tester. The modular construction enables many different test standards to be performed by simply changing the module. A broad range of accessories enable testing to many applications for contact discharge, air discharge and indirect discharge.

For further information, refer to the ESD Test System brochure.

### Electric Fast Transient (EFT) & SURGE
**IMU4000**

IMU4000 is the latest generation EMC immunity tester. Employing a modular design, IMU4000 can be configured to meet the Fast transient / Burst, Surge and Interrupt test requirements for electricity meters. The 7” touchpanel display enables a fast and intuitive control of the generator. ESD Extension (EXT-TRA3000-E) up to 16 A (AD) & 10A (CD) available to this System.

For further information, refer to the IMU4000 brochure.

### Differential Mode
**IMU SLAVE SMART I1V1**

The new IMU SMART series from EMC Partner enables customers to start performing fully automatic tests according to IEC 61000-4-19. Designed to generate and inject differential mode disturbances in the frequency range 2 kHz – 150 kHz, the system allows testing smart electricity meters or different devices connected to the AC power network, where disturbances from mains signalling, inverters or other power electronics is present.
## Generator Specifications

### Test of insulation properties

<table>
<thead>
<tr>
<th>Model</th>
<th>Circuit Type</th>
<th>Voltage Range</th>
<th>Pulse Front Time</th>
<th>Pulse Duration</th>
<th>Source Impedance</th>
<th>Impulse Energy</th>
<th>Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MIG0603OS2</strong></td>
<td><strong>Insulation Test Circuit</strong></td>
<td>0.5 up to 6kV</td>
<td>1.2µs</td>
<td>50µs</td>
<td>500ohm</td>
<td>0.5Joules</td>
<td>positive, negative, alternating</td>
</tr>
<tr>
<td></td>
<td><strong>Combination Wave Test Circuit</strong></td>
<td>0.25 up to 6kV</td>
<td></td>
<td></td>
<td>2ohm</td>
<td></td>
<td>positive, negative, alternating</td>
</tr>
<tr>
<td><strong>MIG1203CWG</strong></td>
<td><strong>Insulation Test Circuit</strong></td>
<td>0.5 up to 12kV</td>
<td>1.2µs</td>
<td>50µs</td>
<td>40ohm and 500ohm</td>
<td>420Joules and 0.5Joules</td>
<td>positive, negative, alternating</td>
</tr>
<tr>
<td></td>
<td><strong>Combination Wave Test Circuit 6kV</strong></td>
<td>0.25 up to 6kV</td>
<td>1.2µs / 50µs</td>
<td>20µs</td>
<td>2ohm</td>
<td></td>
<td>positive, negative, alternating</td>
</tr>
<tr>
<td><strong>MIG2403</strong></td>
<td><strong>Line to Load Test Circuit</strong></td>
<td>1 up to 24kV</td>
<td>1.2µs</td>
<td>50µs</td>
<td>40ohm</td>
<td>840Joules</td>
<td>positive, negative, alternating</td>
</tr>
</tbody>
</table>

* for more details please read the generators brochure & technical specifications
Generator Specifications

Tests of Electromagnetic Compatibility

### MIG-OS-OS1
- **Voltage range**: 0.2A up to 3kV
- **Oscillation frequencies**: 100kHz, 1MHz
- **Voltage increment**: 1V steps
- **Burst repetition rates**: 40Hz, 400Hz
- **Phase angle synchronization**: 0 up to 360° in 1° steps
- **Source Impedance**: 200ohm
- **Pulse front time**: 75ns
- **Polarity**: Positive, Negative

### ESD3000 + ESD3000DM1
- **Air Discharge**: 0.1 up to 16kV
- **Contact Discharge**: 0.1 up to 10kV
- **Contact Discharge Repetition**: 0.05 to 30s
- **Discharge Counter**: 1 to 29999
- **Discharge Polarity**: Positive / Negative
- **Discharge Trigger**: Manual or Automatic

### IMU3000 / IMU4000 EFT/Burst
- **EXT-IMU3000 F / F5 / F6**
  - **Pulse front time**: 5ns
  - **Pulse duration**: 50ns
  - **Voltage range into 1000ohm**: 0.125 up to 2kA
  - **Source Impedance**: 50 ohm
  - **Spike Frequency**: 1kHz up to 1MHz
  - **Burst Duration**: 0.01ms up to 30ms
  - **Burst Repetition**: 1 up to 1000ms
  - **Polarity**: Positive, Negative

### IMU3000 / IMU4000 Surge
- **EXT-IMU3000 S / S6**
  - **Voltage range**: 0.25 up to 4kV (IMU4000)
    - 0.25 up to 6kV (IMU3000)
    - 0.25 up to 8kV (IMU3000)
  - **Pulse front time**: 1.2µs
  - **Pulse duration**: 50µs
  - **Current range**: 0.125 up to 2kA
  - **Pulse front time**: 8µs
  - **Pulse duration**: 20µs
  - **Source impedance**: 20ohm
  - **Pulse Repetition**: 20 per minute

*for more details please read the generators brochure & technical specifications*
## Generator Specifications

### IMU SLAVE SMART V1 (Voltage Tests)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUT Voltage input</td>
<td>80 - 500V, L-L or L-N, 50Hz and 60Hz</td>
</tr>
<tr>
<td>EUT Current input</td>
<td>0 - 16A L-L or L-N</td>
</tr>
<tr>
<td>Voltage waveform</td>
<td>sinusodial, THD &lt;5%</td>
</tr>
<tr>
<td>Output frequency range</td>
<td>2kHz - 150kHz</td>
</tr>
<tr>
<td>CDN Output impedance</td>
<td>10 ±30%, 2 kHz – 150 kHz</td>
</tr>
<tr>
<td>CDN decoupling</td>
<td>as per IEC 61000-4-19</td>
</tr>
<tr>
<td>Frequency step</td>
<td>2% standard, adjustable 1% - 100%</td>
</tr>
<tr>
<td>Dwell time</td>
<td>3s standard, adjustable 1s - 300s</td>
</tr>
<tr>
<td>Pause time</td>
<td>300ms ± 200ms, adjustable 0.1s - 30s</td>
</tr>
<tr>
<td>Signal type</td>
<td>continuous with pause, 50% rectangular modulation</td>
</tr>
<tr>
<td>Modulation frequency standard</td>
<td>50Hz: 3Hz, 101Hz, 301Hz, 601Hz</td>
</tr>
<tr>
<td></td>
<td>60Hz: 4 Hz, 121Hz, 361 Hz, 721 Hz</td>
</tr>
<tr>
<td>Modulation frequency adjustable</td>
<td>3 Hz - 1kHz</td>
</tr>
<tr>
<td>Measurement and control</td>
<td>internal, automatic</td>
</tr>
</tbody>
</table>

### IMU SLAVE SMART I1 (Current Tests)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUT voltage input</td>
<td>80 - 500V, L-L or L-N, 50Hz and 60Hz</td>
</tr>
<tr>
<td>EUT Current input</td>
<td>0 - 25A L-L or L-N</td>
</tr>
<tr>
<td>Current waveform</td>
<td>sinusodial, THD &lt;5%</td>
</tr>
<tr>
<td>Test current</td>
<td>0.01A (-10%) up to +4A (+10%) tolerance ±10%</td>
</tr>
<tr>
<td>Output frequency range</td>
<td>2kHz - 150kHz</td>
</tr>
<tr>
<td>Output impedance</td>
<td>1 Ohm ±30%, 2 kHz - 150kHz</td>
</tr>
<tr>
<td>Decoupling impedance</td>
<td>1 Ohm ±30%, 2 kHz - 150kHz</td>
</tr>
<tr>
<td>Frequency step</td>
<td>2% standard, adjustable 1% - 100%</td>
</tr>
<tr>
<td>Dwell time</td>
<td>3s standard, adjustable 1s - 300s</td>
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<tr>
<td>Pause time</td>
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<td>50Hz: 3 Hz, 101Hz, 301 Hz, 601Hz</td>
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</tr>
<tr>
<td>Modulation frequency adjustable</td>
<td>3 Hz - 1kHz</td>
</tr>
<tr>
<td>Built-in reference load current source</td>
<td>selectable 1 - 25A, synchronized with voltage input</td>
</tr>
<tr>
<td>Measurement and control</td>
<td>internal, automatic</td>
</tr>
</tbody>
</table>

* for more details about this generator please read the generators brochure & technical specifications
CDN3000A-06-32
Automatic three phase CDN with phase voltages up to 690V, line current 32A per phase. Coupling path selection for EFT, Damped Oscillatory, Surge and Ring. Differential input for Damped Oscillatory Waves.

TC-MIG24
A test cabinet for EUT with maximum dimensions 20x20x30cm. Can be used together with all Protection Device Testers except the MIG1248 which has its own built-in test cabinet.

TC-MIG24 is linked to the MIG tester safety circuit. Opening the test cabinet disables test voltages. Safety circuit status is indicated by red and green lamps in the test cabinet.

CN-MIG24
EUT connection box with two test pistols, interlock and green / red safety warning lamps. Usable with MIG systems with output on top up to Vmax 18kV (1.2/50µs), Imax 1kA (8/20µs).

CN-MIG18AMP
Two test pistols for conducted tests. Cable length 1m with AMP plugs. The test pistols can be used together with MIG systems equipped with AMP plug outputs or together with the networks mounted on either MIG0603CWG or MIG1203CWG.

NW-NMI-M6C3C4
Network to MIG1803 according to NMI M6 section A.2.19, waveform 1.2/50µs, 10J at 10kV and 12 kV
- MIG1803 generator only

NW-IEC61036C1
Network in accordance with IEC62052-11 section 5.6. 0.5J, 500ohm. Output voltages 800V, 1500V, 2500V, 4000V. For use with
- MIG1203CWG
- MIG1203

NW-IEC61036C2
Network in accordance with IEC62052-11 section 5.6. 0.5J, 500ohm. Output voltages 800V, 1500V, 2500V, 4000V. For use with
- MIG1203CWG
- MIG1203
TEMA3000 Software

Remote control from a PC requires TEMA3000 software and an OPTICAL LINK to galvanically separate the PC from IMU4000.

TEMA3000 is a modern software running under Win7 operating systems.

The heart of a complex test system, TEMA3000 includes the functions:

- Generator control from a PC
- Linking of test to form a complex sequence
- Library of predefined tests for IEC basic and product standards
- Integration of DSOs
- Test report generation

Generator control from a PC

Connected using the Ethernet cable to IMU4000, TEMA3000 opens a window which emulates the EPOS in IMU4000. All parameters are input exactly as on the IMU3000 front panel. Any generator connected to TEMA3000 will be simultaneously programmed over the Ethernet cable. Conversely, parameters entered on IMU3000 are changed in TEMA3000.

Linking tests to form a sequence

Individual tests stored on the PC or in IMU4000 can be combined to form a complex test sequence. This feature enables ESD, EFT, SURGE, VARIATIONS, DIPS and COMMON MODE tests to be linked and run in a continuous sequence. Apart from tests, other applications can be started, an oscilloscope can be integrated or a message box opened. As a LIBRARY module, pre-defined test routines are available from EMC PARTNER. These cover all IEC basic and generic standards.

Control of a DSO

A DSO module is available to extend the basic TEMA3000 software package. DSOs with Ethernet and USB interfaces can be controlled from TEMA3000 software. Apart from setting timebase and amplitude, measurement features in the DSO can also be accessed and measurement results added to the test report. Tektronix, Agilent, Lecroy and Rohde & Schwarz models are supported as standard.

Test Report Generation

TEMA3000 basic module generates a HTML format test report. The basic software can be extended with the PROTOCOL module which enables transfer of report data as .csv files for import into EXCEL®, custom report formatting and final reports generated as Adobe®.pdf files.

Web Server

Use any PC with any operating system and internet browser to connect to the internal web server. This enables access to test report and service data either directly on a PC internet browser or using the USB memory stick. Customize the test report by uploading company logo and test information from the USB memory stick. Conversely, by simply selecting the GOTO USB button, test report and service information can be saved directly to the USB memory stick. Communication with a PC is by Ethernet, which again reduces dependency on obsolete or expensive interfaces.

Remote control from a PC is best achieved with the OPTICAL LINK and the TEMA3000 software package.
EMC PARTNER’s Product Range
The Largest Range of Impulse Test Equipment up to 100kA and 100kV.

Immunity Tests
Transient Test Systems for all EMC tests on electronic equipment. ESD, EFT, surge, AC dips, AC magnetic field, surge magnetic field, common mode, damped oscillatory and DC dips. According to IEC and EN 61000-4-2, -4, -5, -8, -9, -10, -11, -12, -13, -14, -16, -18, -19, -29.

Lightning Tests
Impulse test equipment and accessories for aircraft, military and telecom applications. Complete solutions for RTCA / DO-160 and EUROCAE / ED-14 for indirect lighting on aircraft systems, MIL-STD-461 tests CS106, CS115, CS116 and Telecom, ITU-T K44 basic and enhanced tests for impulse, power contact and power induction.

Component Tests
Impulse generators for testing: varistors, gas discharge tubes (GDT), surge protective devices (SPDs), X / Y capacitors, circuit breakers, watt-hour meters, protection relays, insulation material, suppressor diodes, connectors, chokes, fuses, resistors, emc-gaskets, cables, etc.

Emission Measurements
Measurement of Harmonics and Flicker in 1-phase and 3-phase electrical and electronic products according to IEC /EN 61000-3-2 and 61000-3-3. HARCS Immunity software adds interharmonic tests, voltage variation and ripple on DC tests according to IEC/EN 61000-4-13, -4-14.

System Automation
A full range of accessories enhance the test systems. Test cabinets, test pistols, adapters and remote control software, simplify interfacing with the EUT. Programmable PSU, EMC hardened for frequencies form 16.7Hz to 400Hz. Frequency PS3-SOFT-EXT complies with IEC / EN 61000-4-14 and -4-28.

Service
Our commitment starts with a quality management system backing up our ISO 17025 accreditation. With the SCS number 146, EMC PARTNER provide accredited calibration and repairs. Our customer support team are at your service!
For further information please do not hesitate to contact EMC PARTNER’s representative in your region. You will find a complete list of our representatives and a lot of other useful information on our website:

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Information and specifications in this document are an indication of capability only. Technical performance is given in the EMC PARTNER AG Technical specification for the corresponding instruments. Version 11.2016. Subject to change without notice.