Electricity Meter Test System

Portable Three-Phase Phantom Load and Energy Standard class 0.04

EE-120A-3S-Color  EE-500V-3

NEW COLOR DISPLAY!  QUICK METER CONNECTOR!

General
The EE Meter Test System is used for testing of all types of electricity meters on-site or in a laboratory. In a laboratory, the Test System is used with a Quick Meter Connector. The System consists of two units:
- Unit 1: EE-120A-3S-Color – Three-Phase Current Generator to 120A and Energy Standard class 0.04;
- Unit 2: EE-500V-3 – Three-Phase Voltage Generator up to 500V controlled from Unit 1 via RS485.

The Phantom Load is able to generate three-phase voltages and currents with unprecedented stability and accuracy. The following meter tests can be carried out with the EE Test System: Error Test, Register Test, No Load Test and Starting Current Test. Full analysis of the customer load is easily performed with current clamps to 120A. Current transformer parameters and Z-Burden on the secondary can also be measured.

The test results (maximum 100 Files) are saved in an internal Flash or on a SD Memory Card.

Advantages
- Flexible structure - EE Test System works in four different modes:
  - EE-120A-3S unit is used only as a standard for analysis of the customer load, meter and CT testing;
  - EE-120A-3S unit is used for on-site meter tests, generating current synchronized with the service voltage;
  - EE-120A-3S and EE-500V-3 units are used together to test the meter with generated current and voltage;
  - Load Mode – generation of load values and indication of volts, amps, power, phase-shift, PF, THD, f.
- Automatic Test Plans: The Test Plans are used to perform meter error tests automatically, without PC. The Test Plans are predefined by the Operator - maximum 100, each one with 12 load points.
- Generation of harmonics - up to 19th harmonic, without the need of a PC.
- PC Control: The EE Test System can be controlled from a PC, using EE Software, working under Windows XP, 7, 8, 10. Fully automatic Test Plans can be performed, each with up to 100 load points.
Functions and Screens

Control from a PC via USB

**Global Setup**
- Phantom Load Settings: Voltage, Current, Phase shift, Frequency, Circuit type.
- Meter Test Settings: Energy type (Wh, Varh, Vah), Test type (Error, Register, No Load, Starting Current), Meter Constant, Number of pulses, Test Time, Energy

Load Generation
- Manual Mode (Table)
  The parameters of the load are displayed in a table – \( V, I, \phi, P, Q, S, PF (\cos\phi), THD, f \). Changes - in Setup menu.
- Test Plan Mode
  The load is changed easily within 12 predefined values in a Test Plan.

Meter Tests
- Manual mode:
  Meter Test – Wh, VArh, VAh; Error Measurement, Register Test, Starting Current Test, No Load Test
- Automatic mode
  Meter Error Tests with predefined Test Plans are fully automatic.

Analysis of Customer Load
- Vector diagram drawing;
- Table with display of \( V, I, \phi, P, Q, S, \cos\phi, THD, f \);
- Harmonics display in graphics and tables
- Wave-form display
- CT Ratio and Z-Burden

Functions

Control from the panel

**Test Plan**

**Load**

**Manual Test**

**Analysis**

**Table**
Technical Data

General
- EE-120A-3S (Current Source)
  85...265Vac, 47...63Hz
  max 300VA
  465x355x175 mm
  13.8 kg
- EE-500V-3 (Voltage Source)
  85...265Vac, 47...63Hz
  max 150VA
  400x330x160 mm
  10 kg

- Power Supply: 85...265Vac, 47...63Hz
- Power Consumption: max 300VA
- Dimensions WxDxH: 465x355x175 mm
- Weight: 13.8 kg
- Housing: Rugged plastic Pelican case
- Operation temperature range: -10°C...+50°C
- Color LCD Display: 640 x 480 pixels
- Relative humidity: <95 % non condensing
- Safety Tests: IEC61010-1-2002
- Degree of protection: IP-20 (opened), IP-65 (closed)
- Overvoltage Category: 300V, Cat III (600V Cat II)
- Standard Functionality: EN 60736, EN 62053

Three-Phase Load
- Ranges (per phase):
  - EE-120A-3S (Current Source)
    - 1 mA ... 12 A (max. 2.0V)
    - 10 mA ... 120 A (max. 0.6V)
    - 70 VA max.
    - <±0.04 % (of measured value)
    - <0.1 % (in 1 hour)
    - <0.8 %
  - EE-500V-3 (Voltage Source)
    - 500Vac (0.06A); 300Vac (0.12A)
    - 150Vac (0.24A); 75...5Vac (0.48A)
    - 36 VA max.
    - <±0.04 % (of measured value)
    - 0.1 V

- Resolution:
  - EE-120A-3S: 0.1 mA
  - EE-500V-3: 0.1 V

- Stability:
  - EE-120A-3S: <0.1 % (in 1 hour)
  - EE-500V-3: <0.8 %

- Harmonic Distortion:
  - EE-120A-3S: <0.8 %
  - EE-500V-3: <0.8 %

- Frequency (for all phases):
  - EE-120A-3S: 45...100Hz (step 0.1Hz)
  - EE-500V-3: 45...100Hz (step 0.1Hz)

- Bandwidth:
  - EE-120A-3S: 30...2000Hz
  - EE-500V-3: 30...2000Hz

Three-Phase Standard
- Measuring Quantities: Volts, Amps, Phase Shift, P, Q, S, Wh, VARh, VAh, PF, f, THD, CT Ratio, Z-Burden
- Measuring Modes: 1Ph 2W, 1Ph 3W, 3Ph 3W Delta, 3Ph 4W Wye
- Pulse Inputs: Scanning Head, Manual Button, High Frequency BNC Input (up to 200kHZ)
- BNC Pulse output: 50 000 imp/kWh (Isolated, TTL level, open collector up to 50V)

Standard Measurement Accuracy

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Error</th>
<th>Range (12A)</th>
<th>Range (120A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (Phase-to-Neutral)</td>
<td>≤ ±0.04 %</td>
<td>30...600Vac</td>
<td>30...600Vac</td>
</tr>
<tr>
<td></td>
<td>≤ ±0.04 % **</td>
<td>5...29Vac</td>
<td>5...29Vac</td>
</tr>
<tr>
<td>Current (direct)</td>
<td>≤ ±0.04 %</td>
<td>40mA...12A</td>
<td>250mA...120A</td>
</tr>
<tr>
<td></td>
<td>≤ ±0.04 % **</td>
<td>1mA...40mA</td>
<td>10mA...250mA</td>
</tr>
<tr>
<td>Current (with Current Clamps to 120A)</td>
<td>≤ ±0.2 %</td>
<td>--</td>
<td>100mA...120A</td>
</tr>
<tr>
<td>Current (with Current Clamps to 1000A)</td>
<td>≤ ±0.2 %</td>
<td>--</td>
<td>5A...1000A</td>
</tr>
<tr>
<td>Current (with Flex or HV Probe to 2000A)</td>
<td>≤ ±0.1% + Es***</td>
<td>--</td>
<td>30A...2000A</td>
</tr>
<tr>
<td>Wh / VAh (direct)</td>
<td>≤ ±0.04 %</td>
<td>40mA...12A</td>
<td>250mA...120A</td>
</tr>
<tr>
<td>VArh (direct)</td>
<td>≤ ±0.04 % *</td>
<td>40mA...12A</td>
<td>250mA...120A</td>
</tr>
<tr>
<td>Wh (with current clamps to 120A)</td>
<td>≤ ±0.2 % *</td>
<td>--</td>
<td>100mA...120A</td>
</tr>
<tr>
<td>Wh (with current clamps to 1000A)</td>
<td>≤ ±0.2 % *</td>
<td>--</td>
<td>5A...1000A</td>
</tr>
<tr>
<td>Phase shift</td>
<td>0.01°</td>
<td>0.00°...359.99°</td>
<td>0.00°...359.99°</td>
</tr>
<tr>
<td>Power Factor</td>
<td>0.002</td>
<td>-1.000...+1.000</td>
<td>-1.000...+1.000</td>
</tr>
<tr>
<td>Frequency</td>
<td>0.01Hz</td>
<td>40Hz...400Hz</td>
<td>40Hz...400Hz</td>
</tr>
<tr>
<td>CT Burden – Usec.</td>
<td>≤ ±0.5 %</td>
<td>--</td>
<td>0.10V ... 10.00V</td>
</tr>
<tr>
<td>Temperature coefficient (direct)</td>
<td>≤ 0.002 %/K</td>
<td>0 ... 40°C</td>
<td>0 ... 40°C</td>
</tr>
<tr>
<td>Long Term Stability (direct)</td>
<td>≤ 0.008 %/year</td>
<td>40mA...12A</td>
<td>250mA...120A</td>
</tr>
</tbody>
</table>

* Error related to Apparent Power (to be divided by the Power Factor);
** Error related to the maximum value of the range;
*** Es is the error of the sensor, specified by the Manufacturer.
EE Software - Features

MySQL Database

- Transfer of 100 saved files from EE-120A-3S to a PC via USB or SD Memory Card
- Store all tests in MySQL Database
- Search by Meter ID, Location, Date
- Create and Print Various Professional Reports
- Control of EE Test System from a PC via USB
- Fully automatic Test Plans
- Update your Software, free of Charge

Accessories

- Universal Scanning Head with clamping device
- Manual Button
- Current Cables 120A – 6pcs x 5 feet
- Current Cables 12A – 6pcs x 5 feet
- Voltage Cables – 4pcs x 5 feet, 4pcs x 3 feet
- Alligator clips – 5pcs
- Power Cord Cable – 2pcs
- Neutral Cable – 1pc x 5 feet
- Phase Adapters - 3pcs
- User’s Manual and Calibration Certificate
- Carrying case for the Accessories

Optional Accessories

Quick Meter Connector
120A / 1000A Current Clamps
2000A / 3000A Flexible Current Probe
High Voltage Current Probe to 2000A

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