



EMSYST

Electricity Meter Test System

Portable Three-Phase Phantom Load and Energy Standard class 0.04

MANUAL TEST		LOAD MEAS	
(Test OFF) (Load OFF)			
Test type	ERROR	Va=	000.00 V
Circuit type	WYE	Vb=	000.00 V
Energy type	Wh	Vc=	000.00 V
Trigger type	PICK-UP	Ia=	000.00 A
Constant (pulses/kWh)	100000	Ib=	000.00 A
Pulses	1	Ic=	000.00 A
Test Time	15	ΣVaIa=	000.0
Progress: 0	100	ΣVbIb=	000.0
ERR -00.008 %		f=	00.00 Hz
STAND: 7.1805 Wh		ΣVcIc=	000.0
METER: 7.1800 Wh		ΣVA=	000.0
TIME: 14.993 SEC		ΣVB=	000.0
		ΣVC=	000.0
		Vab=	000.0 V
		Vbc=	000.0 V

EE-120A-3S

EE-500V-3



LOAD Table				
Phase	A	B	C	Σ
VOLT	230.01	229.60	229.91	
AMP	59.973	60.031	60.044	
Phase	359.8	119.7	240.6	
PF	1.000	1.000	1.000	
WATT	13821.4	13838.8	13839.4	41498.6
VAR	-23.94	-51.40	43.26	-31.78
VA	13824.8	13849.6	13483.7	41518.1
φ	0.0	120.0	239.3	
THDv	0.83	0.53	0.56	
THDx	1.21	1.08	1.13	

Frequency : 49.99 Hz

General

The Electricity Meter Test System is used for testing of all types of electricity meters on-site or in a laboratory: single- or three-phase, mechanical or electronic, direct or indirect. It consists of two units:

- Unit 1: EE-120A-3S – Three-Phase Current Generator to 120A & Energy Standard class 0.04;
- Unit 2: EE-500V-3 – Three-Phase Voltage Generator up to 500V, controlled by Unit 1 via RS485.

The Phantom Load is able to generate three-phase voltages and currents with great stability and accuracy. The following meter tests can be carried out with the EE Test System: **Error, Register, No Load and Starting Current Test; for active, reactive or apparent energy; with Test Plans or Manual Test.**

Full **Analysis** of the customer load is easily performed with current clamps to 100 A. The load parameters are displayed in a **Table** (U, I, φ, P, Q, S, PF, THD) or graphically – **Vector Diagram, Harmonics, Wave-forms.**

The test results are saved in a Flash. 100 saved files (each with max. 48 test points) are viewed on the LCD display or transferred to a PC. The **EE Software** operates under **Windows 7, 8, 10** with the following functions: **Search in Data Base, Print Test Reports, Export in Excel, Create Test Plans and Meter Types.**

Advantages

- **Flexible structure:** EE Test System works in 4 different modes, **with or without the Voltage Generator:**
 - 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 & 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 **Vector Diagram** or a **Table** with V,I,P,φ,PF,THD,f.
- **PC Control:** The EE Test System can be controlled from a PC, using EE Software for testing the meter.
- **Automatic Test Plans:** Test Plans are used to perform Meter tests automatically, with or without PC.
- **Statistics (New!):** Up to 5 Errors at one Test Point are measured, the **Standard Deviation** is calculated.
- **Generation of harmonics** - up to 19th harmonic, with or without PC.

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Technical Data

General

Power Supply:	85...265 Vac, 47...63 Hz
Power Consumption:	max 300 VA
Dimensions WxDxH:	465x355x175 mm
Weight:	13.8 kg
Housing:	Rugged plastic Pelican case
Operation temperature range:	-10°C...+50°C
Color 5" LCD Display:	640 x 480 pixels
Relative humidity:	<95 % non-condensing
Safety & EMC Tests:	IEC 61010-1, IEC 61000-4-4, -8, -11
Degree of protection:	IP-20 (opened), IP-65 (closed)
Overvoltage Category:	300V, Cat III (600V Cat II)
Standard Functionality:	IEC60736, IEC62052-11, IEC62053-21,-22,-23

Three-Phase Load

Ranges (per phase):	1 mA ... 12 A (max. 2.5 V) 10 mA ... 120 A (max. 0.6 V)
Output Power (per phase):	70 VA max.
Accuracy :	<±0.1 % (of measured value)
Resolution:	0.1 mA
Stability:	<0.02 % (in 1 hour)
Harmonic Distortion:	<0.8 %
Phase Shift (for each phase):	0.0°...359.9° (step 0.1°)
Frequency (for all phases):	45...65 Hz (step 0.1Hz)
Bandwidth:	30...2000 Hz

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, 3Ph 3W Delta, 3Ph 4W Wye; Active, Reactive or Apparent Energy
Pulse Inputs:	Scanning Head, Manual Button, BNC Input (4 V...15 V, max. 200 kHz)
BNC Pulse output:	Programmable (Isolated output, TTL level, open collector up to 50 V, > 10 μs)
Memory	100 files saved in a flash memory

Standard Measurement Accuracy

Quantity	Error	Range (12A)	Range (120A)
Voltage (Phase-to-Neutral)	≤ ±0.03 %	30...500 Vac	30...500 Vac
	≤ ±0.03 % ²⁾	5...30 Vac	5...30 Vac
Current (direct)	≤ ±0.03 %	40 mA...12 A	250 mA...120 A
	≤ ±0.03 % ²⁾	1 mA...40 mA	10 mA...250 mA
Current (with Current Clamps to 100A)	≤ ±0.2 %	--	100 mA...100 A
Current (with Current Clamps to 1000A)	≤ ±0.2 %	--	5 A...1000 A
Wh / VAh (direct)	≤ ±0.04 %	40 mA...12 A	250 mA...120 A
varh (direct)	≤ ±0.04 % ¹⁾	40 mA...12 A	250 mA...120 A
Wh (with current clamps to 100A)	≤ ±0.2 % ¹⁾	--	100 mA...100 A
Wh (with current clamps to 1000A)	≤ ±0.2 % ¹⁾	--	5 A...1000 A
Phase shift	0.01°	0.00°...359.99°	0.00°...359.99°
Power Factor	0.002	-1.000...+1.000	-1.000...+1.000
Frequency	0.01 Hz	40 Hz...100 Hz	40 Hz...100 Hz
CT Burden – Usec.	≤ ±0.5 %	--	0.10 V ... 10.00 V
Temperature coefficient (direct)	≤ 0.002 %/K	0 ... 40°C	0 ... 40°C
Long Term Stability (direct)	≤ 0.008 %/year	40 mA...12 A	250 mA...120 A

¹⁾ Error related to Apparent Power (to be divided by the Power Factor).

²⁾ Error related to the maximum value of the range.

EE METER TEST SYSTEM

EE-500V-3

Power Supply:	85...265 Vac, 47...63 Hz
Power Consumption:	max 150 VA
Dimensions WxDxH:	400x330x160 mm
Weight:	10 kg
Housing:	Rugged plastic Pelican case
Operation temperature range:	-10°C...+50°C
Color 5" LCD Display:	-
Relative humidity:	<95 % non-condensing
Safety & EMC Tests:	IEC 61010-1
Degree of protection:	IP-20 (opened), IP-65 (closed)
Overvoltage Category:	300V, Cat III (600V Cat II)

EE-500V-3 (Voltage Source)

500 Vac (0.06 A); 300 Vac (0.12 A)
150 Vac (0.24 A); 75...5 Vac (0.48 A)
36 VA max.
<±0.05 % (of measured value)
0.01 V
<0.005 % (in 1 hour)
<0.8 %
0.0°...359.9° (step 0.1°)
(V _A is always 0.0°)
45...65 Hz (step 0.1 Hz)
30...2000 Hz

EE-120A-3S

85...265 Vac, 47...63 Hz
max 300 VA
465x355x175 mm
13.8 kg
Rugged plastic Pelican case
-10°C...+50°C
640 x 480 pixels
<95 % non-condensing
IEC 61010-1, IEC 61000-4-4, -8, -11
IP-20 (opened), IP-65 (closed)
300V, Cat III (600V Cat II)
IEC60736, IEC62052-11, IEC62053-21,-22,-23

EE-120A-3 (Current Source)

1 mA ... 12 A (max. 2.5 V)
10 mA ... 120 A (max. 0.6 V)
70 VA max.
<±0.1 % (of measured value)
0.1 mA
<0.02 % (in 1 hour)
<0.8 %
0.0°...359.9° (step 0.1°)
45...65 Hz (step 0.1Hz)
30...2000 Hz