ESME
Instruments for Power Industry

Making energy visible

STATIONARY TEST SYSTEM

MTS-ME 3.1KM-S

ACCURACY CLASSES 0.02; 0.05

Application

General-purpose semi-automatic test system MTS ME 3.1KM-S (stationary) is applied for accuracy testing and calibration of energy meters and instruments measuring electrical quantities.

The system is applied as a ***working standard of AC power.***

The Following Instruments Can Be Tested

1 Single- and three-phase active and reactive energy meters of accuracy classes up to 0.05 with/without power quality metering function

Energy meter

2 Single- and three-phase wattmeters, varmeters, voltmeters, amperemeters, phase- and frequency meters of accuracy classes up to 0.05

Energomonitor 3.3T1

3 Measuring converters of voltage, current, active and reactive power (accuracy class 0.05 or less accurate) having standard low-voltage outputs and operating within the commercial frequency range

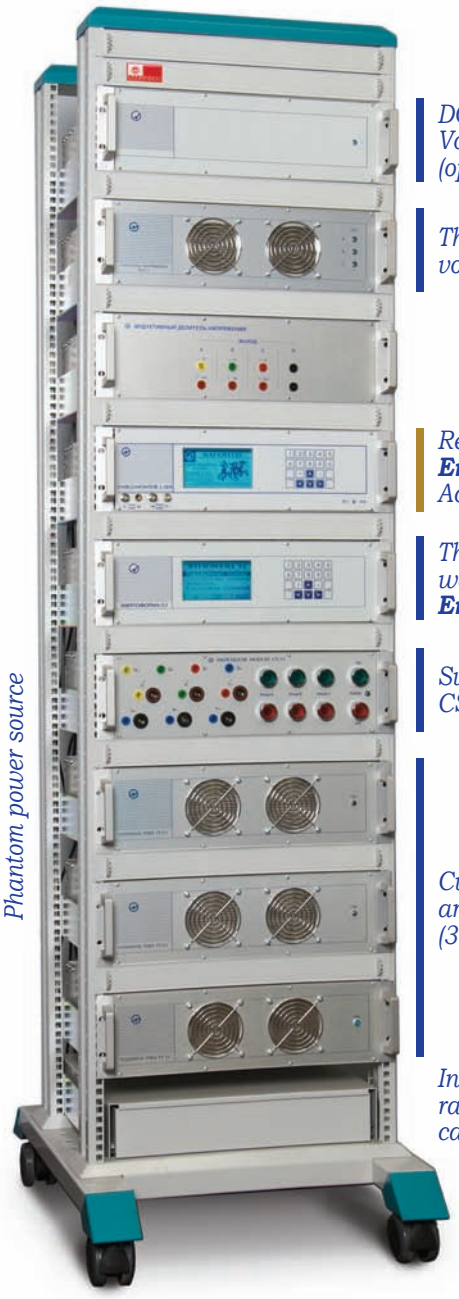
Instrument converter

4 Power quality meters compliant with: IEC 61000-4-30; IEC 61000-4-7; IEC 61000-4-15 (with AC current probes rated up to 3000 A)

Marsen PQP

PQP-A Energotester

Basic Delivery Set



DC Current/ Voltage amplifier (optional)

Three-phase voltage amplifier

Reference standard ***Energomonitor 3.1KM*** *Accuracy classes 0.02; 0.05*

Three-phase waveform generator ***Energoforma 3.1***

Switchgear unit CS-3.1

Current amplifiers (3 units)

Instrument rack and cables

Phantom power source

Basic specifications for the reference standard

		0.02	0.05
Voltage	0.1÷960 V	±0.01 %	±0.02 %
Current (AC/DC)	5 mA÷120 A	±0.01 %	±0.02 %
Angles U-I, U-U	0÷360°	±0.01°	±0.03°
Active power		±0.015%	±0.05 %

Basic specifications for the phantom power source

AC voltage	3 × 0.1 ... 528 V / 25 VA
AC current	3 × 5 mA... 120 A / 50 VA
Angles	3 × 0 ... 360°
Fundamental frequency	42 ... 70 Hz
Order of harmonics (interharmonics)	2 ... 50 (50.5)
Voltage dips and swells, flicker	IEC
DC voltage*	0 ... 300 V / 600 W
DC current*	0 ... 100 A / 600 W

**In the presence of DC amplifier unit.*

Software

EnForm, EnForm-MTS

- Reading and recording measurement results
- Setting test signals in the waveform generator
- Testing in semi-automatic and manual modes
- Generating test reports

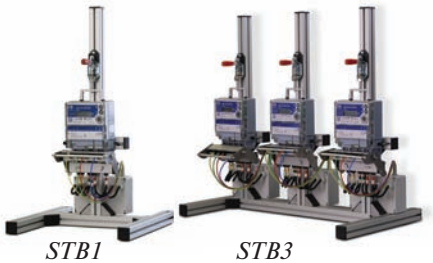
EnfCalibrationRig

- Automatic calibration of generator Energoforma 3.1

Accessories

Three-phase isolated potential transformer (SMD-3) supplies a galvanic isolation test signal to three single-phase meters with closed U-I links

One- and three-position test bench



STB1 *STB3*

Three-phase Inductive Voltage Divider (1:10, 1:100) is used to proportionally reduce the voltage taken from the amplifier (to widen the output range of the voltage source down to 0.02 V)

Set of Calibrated Coils
(*number of turns n = 10; 20; 100; 300*)
to multiply 10 A primary test current by n for testing AC current probes

KT-3-10 (20)
Output current 100 (200) A

KT-1-200 (300)
Output current 2000 (3000) A

KT-3-100
Output current 1000 A

Current/Voltage-to-Frequency Converter (CVFC)

- Provides for automated testing of energy meters (calculates meter errors)
- Turns output DC signals from measuring converters of current, voltage or power to frequency

Accessories for testing energy meters:

SH-E – scanning head for reading LED pulses

SH-I – scanning head for reading disc marks

Pulse Former – used to read pulses from telemetry outputs or enter them manually

Converter USB - 4RS232

Ethernet Switch
Connects three Current/Voltage-to-Frequency converters to a PC

Amplifier VCA-DC produces DC current and voltage

PC and printer for automatic testing

Work bench, rolling table and operator chair

ME Service – Hardware-Software Reference Setup

1 Software EnForm-MTS (version 1.9) for generation of test reports

2 IEC 1107 **optical head** for reading meter data is connected to a PC via RS-232 or USB ports

3 Time Correction Module TCM-02C (*PC-connected GPS receiver*)
UTC correction signals provided by the GPS network are used for:

- Calibration of the internal clocks of tested meters
- Receiving 1PPS timing signals

4 Environment monitor
automatically records environment data (ISO/IEC 17025-2009)