

Real Modularity in design offers diverse flexibilities in test equipments



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Moving Test 3000

We felt rigorously some time ago that traditional approach in designing the portable meter test equipments which is single box, fixed features based, will not serve the objectives of a meter tester efficiently, completely and from long term point of view. Stiff competition in free energy market has changed the role of energy meter as well meter tester and specifically high volume metering installation. It is quite essential to ensure that energy being measured accurately (no more & no less) complains (related to billing, wrong wiring, multiplication factors etc) are solved immediately up to best satisfaction of consumer and to avoid further losses to power supply companies. This scenario also demands from meter testing equipments that new functions, features of the meters can be checked and tested easily. Ever increasing testing burden demands that test equipment should be available all the time despite the fact that total time required in the calibration process (from going to lab and returned back to operator) is considerably high. While designing the new product following points were considered very strongly.

- User can select the product, as required. Different country has different testing rules & procedures.
- Features can be expanded, updated by the user himself later on without great efforts
- This should be beyond a simple meter testing device, which can be used by a meter tester for several other tasks in checking of metering installation, testing of transducers, testing of instrument transformers.
- Smoothly maintaining the legal metrological system without stopping testing task for single day i.e. no need to stop work while measurement unit has gone to national laboratory for calibration, for this period operator can use another measurement module till the original unit come back from lab.
- Easy in service support, customer can change module by himself without sending unit back to ZERA, ensuring continuity and reduce the total out time drastically.

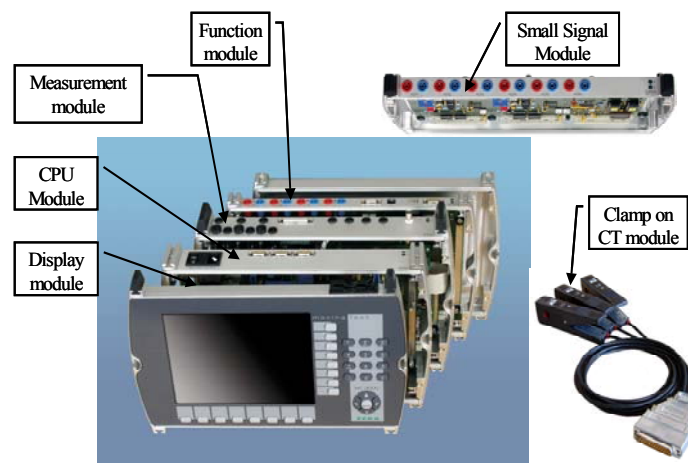
Innovative design concept

ZERA designed the true modular and flexible portable meter test system Moving Test 3000. This was launched in April 2003 during its International representative sales conference. The moving test system family includes the measuring instrument (reference meter) and generation instrument (Phantom Load). All instruments consist of stand-alone modules. Combining various modules can configure the desired instrument. The instrument design is registered pattern under approval No. 20111830.0.

- The modular design allows upgrading or expanding the basic unit later on, which ensures long term uses and functional compatibility of instrument without investing in the complete new instrument.
- Individual modules can be replaced without removing the calibration seal
- Control of instrument via keyboard and TFT colour display
- Accuracy selectable (0.02 or 0.05)

A basic unit of moving test contents the following modules

- ❑ Display module which is 10.4" TFT colour display and having 16 soft keys, 12 alpha numeric keys, 4 arrow keys and 1 enter button. This module provides comfortable interaction between tester and device. It is possible to have unit without display in this case operator can control through PC



- ❑ CPU Module is responsible to control the complete moving test, interfacing with PC and other modules.
- ❑ Measurement module for measuring of three phase AC input test values up to 300 V and 12 A current. This is possible in two different accuracy class 0.02 and 0.05. This module sealed independently to ensure the legal metrological requirements all the time.
- ❑ Function module to test the meter using scanning head, testing of S0 pulse, Tm/Te etc.

Add on modules

To increase the functionality of moving test following module can be added at any time without sending until back to ZERA.

Clamp on CT Module: - In the conventional design, Clamp on CTs was permanently linked with the specific main device due to compensation of these clamp on CTs are stored in the main unit. Now in the moving test, clamp on CT are independents, i.e. these Clamp on CT can be used with any other moving test 3000. Secondly in case of damage, customer is not required to send the complete units back to ZERA. He can get the compensated clamp on CTs, just plug and play. Calibrations are stored in 25-pin socket.

These are available in two models a) up to 12 A b) up to 120A

Small Signal Module

Six independent channels are available to measure the output of transducer or clamps in the form of $\pm 10V$ or 20mA signal. These out put can be configured to display the primary side value like kV, kA,kW, MW, etc. Operator can use this module to check the CT Ratio, transducer testing at site.

Additional function module

It is possible to add additional function module for testing of N meters at a time. For example testing of 2nd meters, operator can add one more additional module.

Expansion for testing of multiple transmitter/receiver output of meter

By adding suitable modules operator can test up to 11-transmitter and receiver output of an energy meter

Controlling old phantom load VCS320-1

A special module is available for the customers who are using our old phantom load VCS320. By this module operator can control the VCS320 through moving test 3000

Generating Device MT3000 Source

Conceptually design of the source is also based on modular concept. The basic device content the following modules

- ❑ Display module
- ❑ CPU Module
- ❑ Power supply module
- ❑ Current module to generate 3 phase current
- ❑ Voltage module to generate 3 phase voltage

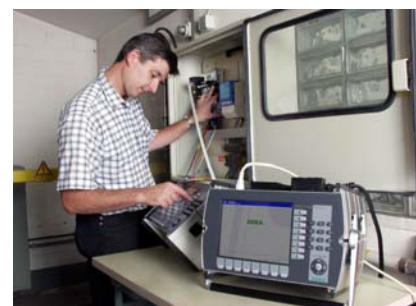
Basic device is capable to generate three phase 300 V and three phase current 12 A. Also possible to generate the harmonic in each phase up to 10th harmonic and chopping of waveforms

Using current booster module can expand current generation range up to 120A.



Easy Cabling

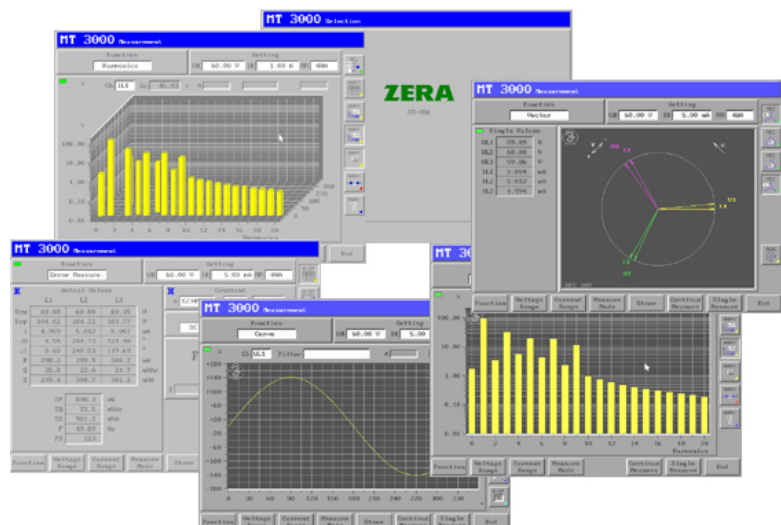
We made our efforts not only for innovative design of the units but also paid great attention on the cabling of the devices while testing of the device at the site to provide great comfort to operator and avoid juggling with cables during testing. This will save the time in testing and errors in cabling. In the new series of devices operator has to connect colour coded & marked cables to the meters only, and for the ZERA device will done by prefabricated quick connectors



Functions of Moving Test 3000 Series

The new Moving Test 3000 offers the following functions depending on the configuration:

- ❑ Testing of 2 meters or multiple meters at a time
- ❑ Display of all measured actual value in tabular format
- ❑ Vectorial display
- ❑ Curve display (Oscilloscope display)
- ❑ Measurement of harmonic up to 40th Harmonic and display in tabular, graphical format (2D/3D format)
- ❑ Burden measurement of voltage and current transformers
- ❑ Simultaneous measurement of primary and secondary current of the current transformers to test CT ratio
- ❑ Testing of transducers
- ❑ Automatic meter testing by the WINSAM Control software.
- ❑ Storing of all measured values on a compact flash card for transfer of the measuring data to other PC system. This will enhance the effective working time of Moving Test, because for readout of data does not need the device to be in the laboratory.
- ❑ Three phase voltage generation up to 300 V and current Max up to 120A
- ❑ Transmission of ripple control signals
- ❑ Generation of harmonics
- ❑ Control of old phantom load VCS320 (ZERA make)
- ❑ Following meters of the accuracy class 0.2, 0.5, 1 & 2 can be tested
 - 1phase 2 wire, 3 phase 3 wire/4 wire, active, reactive (true and cross connected)
 - Meter with mechanical and electronic energy and maximum demand registers
 - Meter with communication interface according to IEC 61107, which supports IR, 20 mA, RS232, RS485, M-Bus interfaces.
 - Meters with up to 11 S0 transmitter/receiver
 - Meters with integrated real time clock
 - Four quadrant meter
 - Meter with load profile.



Special Thanks

ZERA team would like to thanks especially to our customers and users from more than 65 countries from utilities, metrological institutes, testing houses, our representatives, for their feedback and inspiration for the revolutionary design.

More details about this product can be obtained from our website www.zera.de