MTE Meter Test Equipment

PTS 400.3, class 0.02

Modular three-phase Portable Test System

Modules

PTS 400.3 Three-phase, fully automatic test system with class 0.02 reference standard and integrated three-phase current and voltage source available in two versions.

For many years, electricity utility companies have realized the importance of performing measurements and tests, on-site, at the metering installation. MTE continually supplies and develops new and improved products that reduces and simplifies the on-site efforts. MTE's latest meter test equipment with enhanced functionality and high measurement accuracy does not only determine the accuracy of meters, but also provides additional information relating to the conditions at the respective mains points.

Three modules allowing combinations for many applications

The new, highly accurate, portable test system PTS 400.3, comprises of various interchangeable modules.

The PTS 400.3 system consists of a reference standard PRS 400.3 of class 0.02, a programmable power source PPS 400.3, which is available in two versions of up to 12 A or 120 A, as well as a control module PCS 400.3.

The control module serves for controlling the other modules either separately or as a combination of reference standard and source. All modules are easily assembled and controlled. The control module automatically recognizes the modules it is connected to, therefore a reference meter PRS 400.3 may be simply and quickly upgraded with a source PPS 400.3 thereby producing a one-position portable test system. Operation of the system may begin immediately after connecting both modules.

The reference standard or source if used without the control module can be controlled and test values retrieved via the serial interface RS 232 C. It is therefore possible to easily apply modules unchanged into stationary test systems.

PCS 400.3 Portable Control Module

Although the reference standard and the power source are equipped with many functions, their features in portable application are most efficient when used in combination with the control module PCS 400.3.

The control module automatically detects the modules connected to it. It is user friendly and is equipped with a keypad, a rotary switch and a large graphical colour display. Values may be entered using the keypad.

The graphical display is arranged so as to display and represent all the functions in the system PTS 400.3. The overall functionality is comparable to modern stationary meter test systems.

The operator can not only perform single test steps but also can easily predefine and store automatic test runs using the control module and advanced database functions of the system.

However, due to the unique module recognition system the user is not overwhelmed with unnecessary information on the display when using the separate source or separate reference standard.

Modules

PRS 400.3 Portable Reference Standard

The reference standard of the modular system is based on the well-known digital measurement value retrieval, fast analogue-digital conversion and calculation of the values using fast signal processors. As opposed to the past, reference standards are not only used as standards for meter testing in a stationary meter test installation, but predominantly in the field for the measurement of all main parameters.

In order to meet these requirements, the PRS 400.3 offers the following main functions:

- Simultaneous testing of up to three meters or registers of a multi-functional meter
- Internal memory for measurement results and customer data
- Vector diagram, harmonics spectrum, wave form and rotary field display for analysis of the mains conditions
- Active, reactive and apparent energy measurement in three-wire or four-wire circuits with integrated error measurement and pulse output for energy
- Voltage measurement
- Current measurement, direct and with current transformer clamps up to 3000 A or hot sticks
- Active, reactive and apparent power measurement per phase and sum of all phases
- Phase angle, power factor and frequency measurement
- Burden measurement and ratio test of PTs and Cts
- Measuring of current, voltage and power transducers

PPS 400.3 Portable Power Source

The PPS 400.3, portable power source may be used as enhancement of the reference standard PRS 400.3 as well as independently. Following the different demands of the customers, this source is available in two versions, for the supply of transformer meters with a maximum current up to 12 A as well as wider range source up to 120 A. The source is designed to generate any network independent of its supply voltage, e.g. three-phase four-wire, two-phase three-wire, single-phase two-wire, T-net or others. Generation of harmonics in both voltage and current circuits as well as ripple control signals are optionally available.

The source module may be connected to the reference meter with little effort. The control software automatically recognises the module. It may therefore immediately be put into operation, and automatic measurement of a load curve of the meter may begin.

Controlling the source is carried out in a similar way as to controlling the reference meter, by use of the control module or via RS 232 C.

The PPS 400.3 source is developed such as to be fully operational without the reference meter.

Communication and Operation

Communication between the modules

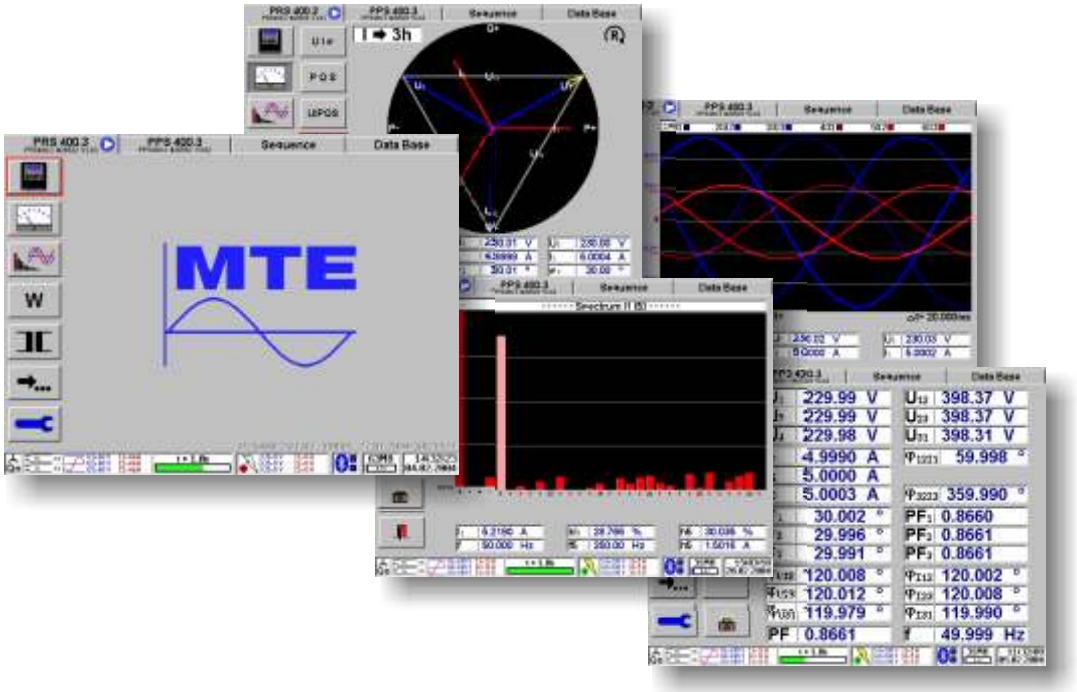
The Portable Control Module PCS 400.3 can be operated on a stand-alone basis. The other modules are in this application controlled via bluetooth.
The innovative technology allows easy and comfortable measurements and tests on site even in difficult accessible situations.
The Reference Standard and if required the Portable Power Source are directly connected to the installation whereas the Portable Control Module PCS 400.3 can be operated and controls the modules from distance.

Operation of the system

The PCS 400.3 is the operation interface for all system modules of the Portable Test System PTS 400.3 and allows direct operation of the reference standard module PRS 400.3 and / or one of the available portable power source models PPS 400.3-12A or PPS 400.3-120A.
The operation concept is based on self-explaining functional software buttons combined with a rotary selector button.

Features & Functions:

- Automatic test procedures (if PPS 400.3-12A or PPS 400.3-120A are used)
- Database for meter types, test procedures and customers that can be pre-programmed in the instrument and allocated when carrying out meter tests.



Extended Functionalities

Clamp-on Current Transformers to the Portable Test System PTS 400.3

The PTS 400.3 allows to use several clip-on CTs in the range of 100 A up to 3000 A or hot sticks for measurement on high voltage and current potential.

The clip-on CTs and hot sticks are “clamped” around conductors to perform non-contact / intrusive measurements without interrupting the circuit under test.

Hot sticks for measurement on high voltage and current potential up to 40 KV and 2000 A

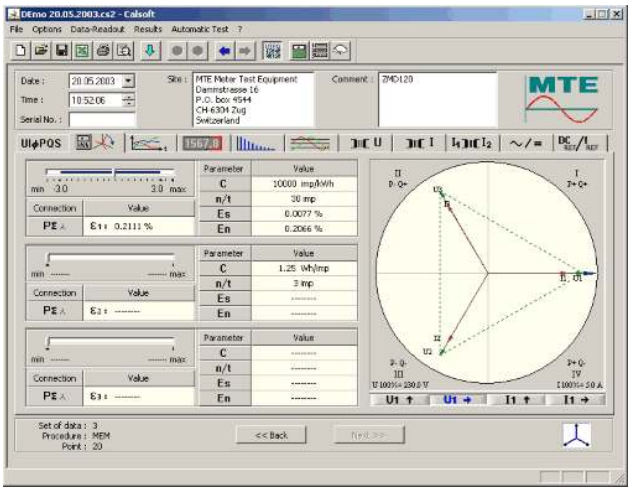
Error compensated clip-on CTs for mesurements in the range 0.5 A ... 100 A with a maximum error of 0.2 %

Clip-on Cts for measurements in the range of 2 A up to 1000 A

Flexible current transformers LEMflex for current up to 30 / 300 / 3000 A

The CALSOFT Software Package for extended functionality

The CALSOFT software package is designed to load predefined data in the Portable Test System PTS 400.3 and read data from the instrument, as well as displaying and processing measurement results on a PC or notebook .



CALSOFT has an additional database with meter and test sequence definitions enabling the user to prepare and standardize measurements. Automatic tests can be carried out when used together with a suitable controllable power source.

Additional features with CALSOFT

- **Database** to predefine meters, CP/PT data of the measuring test points and to set-up automatic test sequences
- **Automatic measurement** of test sequences is possible
- **Read out** of stored data from the instrument's built-in memory, and presentation and processing of the information
- **Recording** the actual measurement values by direct periodic sampling of the unit, and presentation and processing of the information

The following MTE brochures are available:

Standard Meter Test Stations:	MTE-S 10.10 - MTE-S 20.20 / MTE-E 10.10 - MTE-E 20.20
Power Converters / Transfer Standards:	C 1-2 / K 2006
Portable Reference Standards:	PRS 1.3 / PRS 400.3 / CALPORT 200
Portable Working Standards:	PSM 2.1 / PWS 2.3
Portable Power Sources:	PPS 60.3 / PPS 400.3 / CALSOURCE 100 / CALSOURCE 200
Network Quality Analysers and Voltage Regulator Systems:	NSQ 100 / NSQ 400 / REGSys
Portable Test Systems:	PTS 2.1 / PTS 2.3 / PTS 3.1 / PTS 3.3 / PTS 400.3
Software:	CAMCAL for Windows / CALSOFT I / II
Accessories:	Scanning heads / Scanning heads supports / QCD / EMP

MTE Meter Test Equipment

MTE Meter Test Equipment AG
Dammstrasse 16
P.O. box 4544
CH-6304 Zug, Switzerland
Phone: +41 (41) 724 24 48
Fax: +41 (41) 724 24 25
Internet: www.mte.ch
e-mail: info@mte.ch

EMH Energie-Messtechnik GmbH
Vor dem Hassel 2
D-21438 Brackel, Germany
Phone: +49 (4185) 58 57 0
Fax: +49 (4185) 58 57 68
Internet: www.emh.de
e-mail: info@emh.de

MTE - India Office
115, Navjiwan Vihar
New Delhi - 110017, India
Phone: +91 (11) 2669 10 17
Mobile: +91 (98) 911 12000
Fax: +91 (11) 2669 24 91
e-mail: vinarora@vsnl.com

EMH Energie-Messtechnik (Beijing) Co. Ltd.
Section 305, Building 2, Ke-Ji-Yuan
Nr.1 Shangdi-Si-Jie, Shangdi-Information-Industry-Base
Haidian District
Beijing 100 085
P.R. China
Phone: +86 (10) 629 81 227
Mobile: +86 (139) 0 103 6875
Fax: +86 (10) 629 88 689
e-mail: guo@emh.com.cn

EDI Electronic Engineering Ltd.
Unit F, Bristol Court, Betts Avenue
Martlesham Heath Business Park
Ipswich IP5 3RY, England
Phone: +44 (1473) 33 43 20
Fax: +44 (1473) 33 43 21
Internet: www.edi.uk.net
e-mail: info@edi.uk.net

OOO MTE
Malaya Tulskaya str. 2/1, Building 8
115191, Moscow, Russian Federation
Phone: +7 095 725 54 63
Fax: +7 095 725 54 64
Internet: www.meter-test.ru
e-mail: info@meter-test.ru