

Meter Test Equipment



PTS 3.3 C, class 0.05
Three phase, stationary test system

Three phase test system PTS 3.3 C

The PTS 3.3 C portable test system consists of an integrated three-phase current and voltage source and a three-phase electronic reference standard of accuracy class 0.05%. Characteristic features of the PTS 3.3 C are its wide measuring range, high accuracy and high tolerance to unwanted external influences.

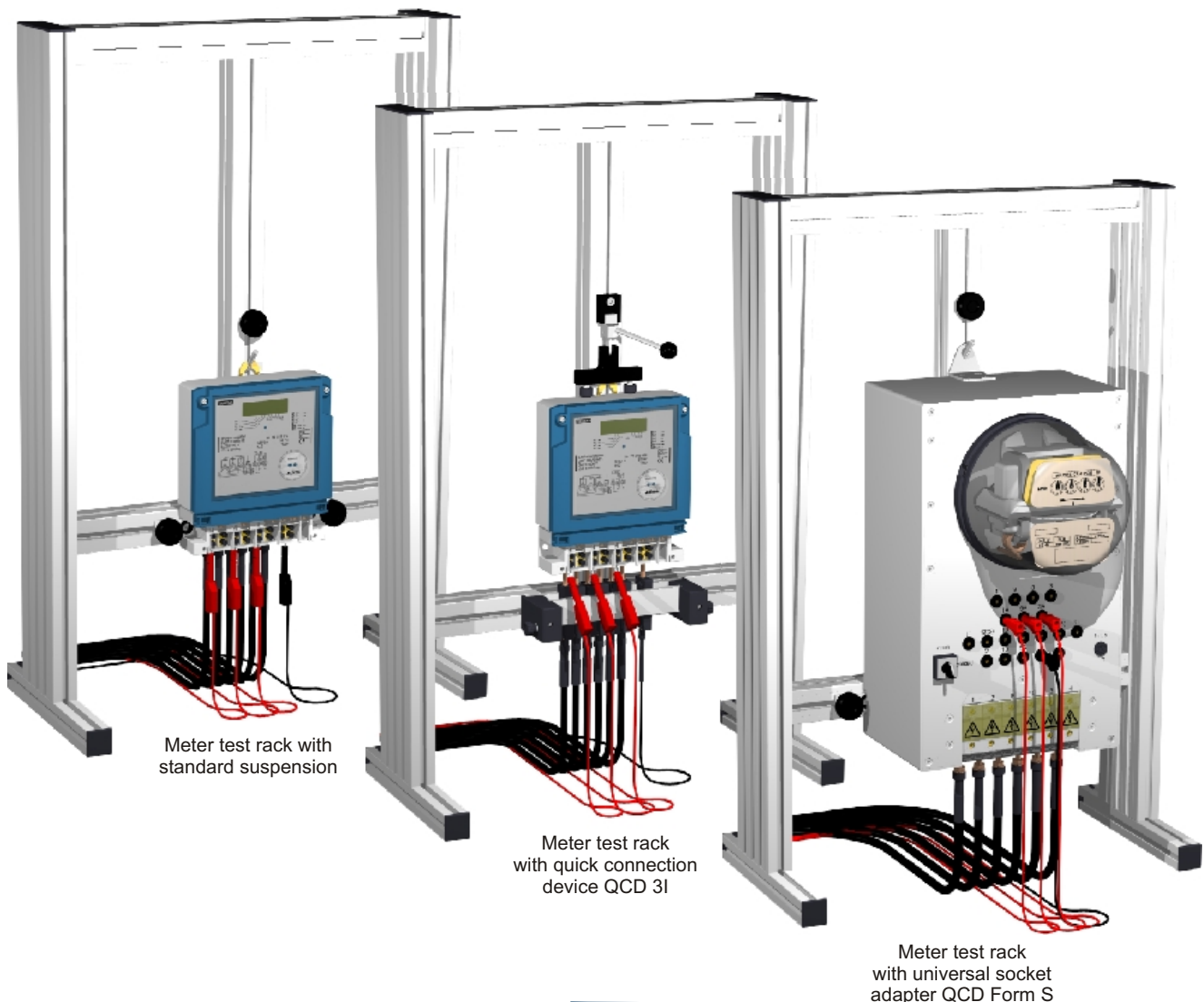
The PTS 3.3 C allows the overall testing of meters and metering installations plus analysis of the local mains conditions.

Advantages

- Easy verification of meters under precise load conditions, using the built-in, compact, current and voltage source
- Automatic operation with (programmable) predefined load points without the need of an external PC
- Exchangeable Compact Flash (CF) memory card for storage of measurement results and customer data
- Display of vector diagram and phase sequence for analysis of the supply conditions
- User-friendly system for data input and easy operation of combined source and reference meter
- The system may be used either as a stand-alone reference standard meter, or together with the integrated power source as a complete portable test system

Functions

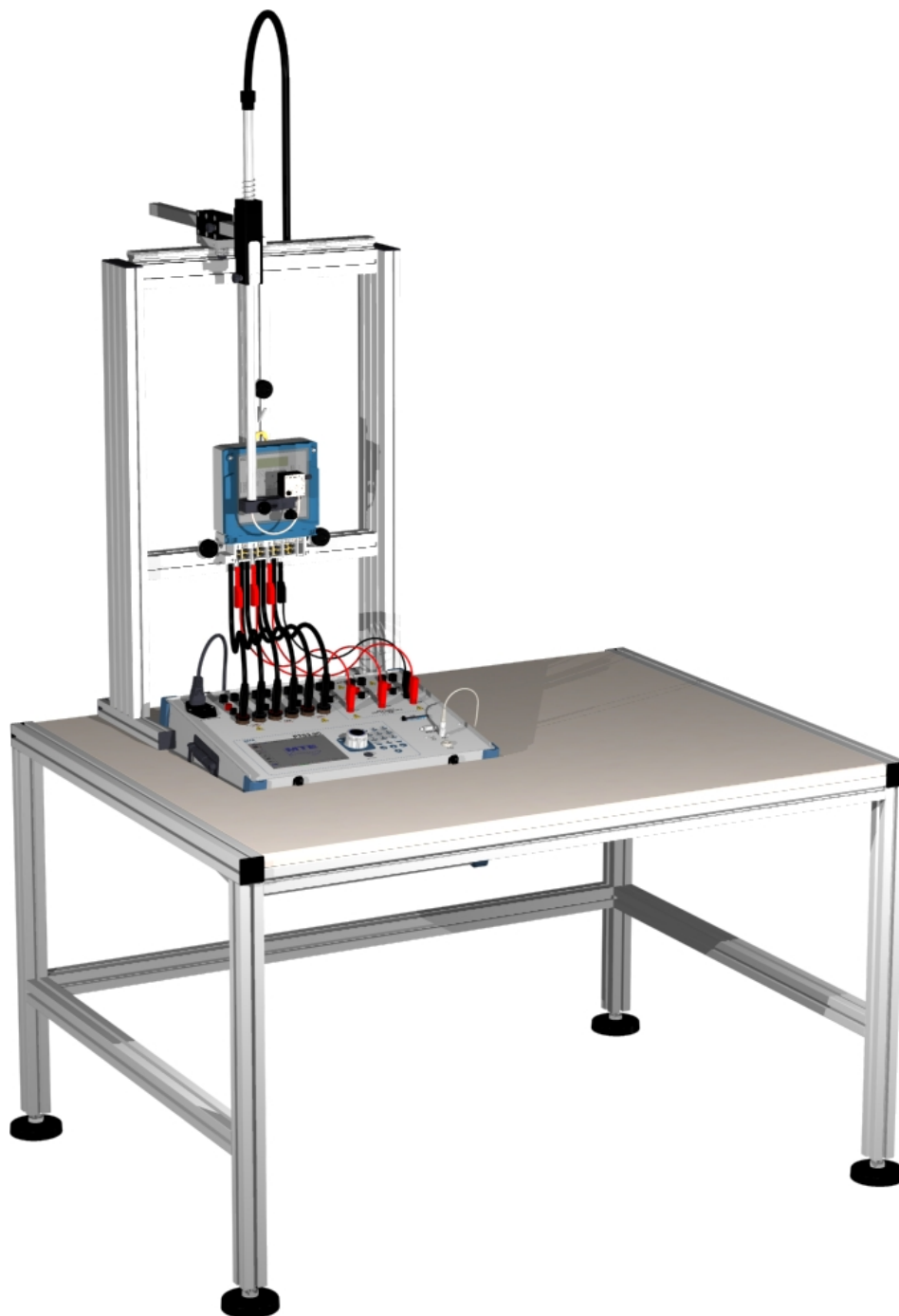
- Independent generation of single or three-phase loading conditions for verification of meters
- Active, reactive and apparent energy measurement for single phase, three phase, 3 wire or 4-wire, systems with integrated error calculator and pulse output
- Vector diagram, harmonics spectrum, wave form and rotary field display for analysis of the mains conditions
- Burden measurement of Current Transformer (CT) and Potential Transformer (PT)



Stationary single position test system PTS 3.3 C-1

The stationary system type PTS 3.3 C-1 allows the automatic testing of a single meter, without the need of an additional personal computer and has the following characteristics:

- Test system PTS 3.3 C-1 consists of a 3 phase reference standard, a 3 phase voltage and current source plus a single position meter suspension rack
- The suspension rack provides a fast and easy mounting of the meter
- Scanning head support SHC x.x with scanning head SH 2003 or SH 11 for scanning the marks of mechanical rotating disc meters or the detection of light emitting diodes (LED's) of electronic meters. The scanning head is adjustable in all 3 axis (left to right, up and down, in and out), as required to align with all normal configurations of meters

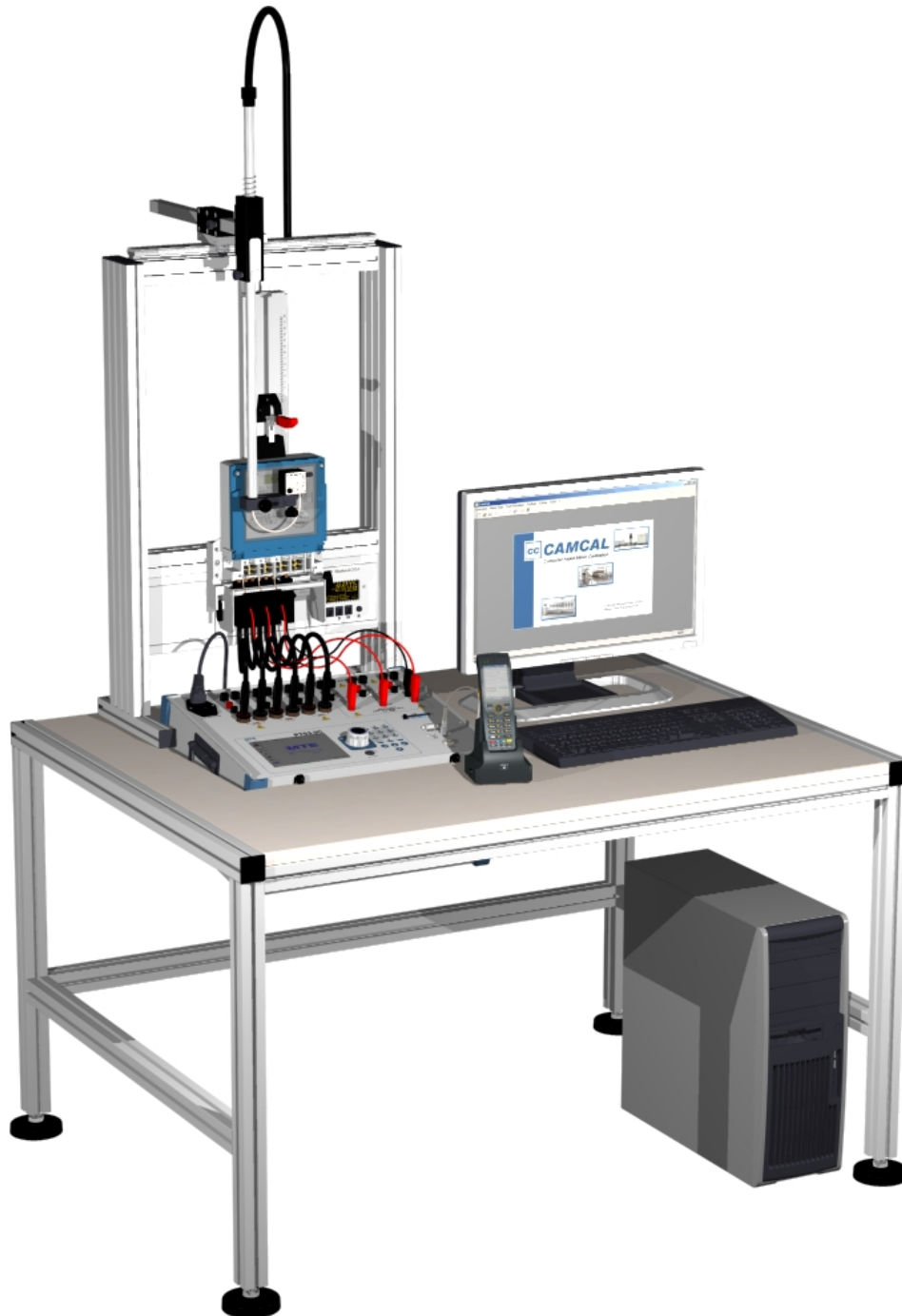


- The PTS 3.3 C is supplied with an integrated software, allowing automatic measuring runs with (programmable) predefined load points to be carried out
- Optional quick connection devices according to IEC- or ANSI standard, which allow fast suspension and connection of meters

Stationary single position test system PTS 3.3 C-2

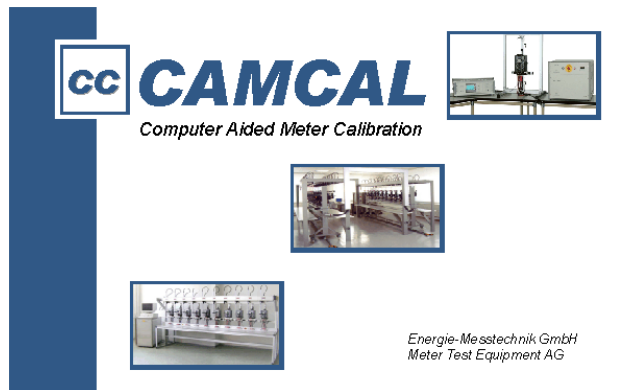
The static system type PTS 3.3 C-2 allows the testing of a single, complex, multifunction meter fully automatically and has the following characteristics:

- Test system PTS 3.3 C-2 consists of a 3 phase reference standard, a 3 phase voltage and current source plus a single position meter suspension rack
- The suspension rack provides a fast and easy mounting of the meter
- Scanning head support SHC x.x with scanning head SH 2003 or SH 11 for scanning the marks of mechanical rotating disc meters or the detection of light emitting diodes (LED's) of electronic meters. The scanning head is adjustable in all 3 axis (left to right, up and down, in and out), as required to align with all normal configurations of meters



- Modular evaluation system SMM 400 for meter error display, inputs for the testing of output contacts or pulses plus a serial interface for meter communications and programming
- Software package CAMCAL® for Windows provides a PC controlled fully automatic measuring test system
- Optional quick connection devices according to IEC- or ANSI standard, which allow fast suspension and connection of meters

CAMCAL® for WINDOWS is a comprehensive software package designed to fulfil the requirements of the modern meter testing environment but also provides the flexibility to easily incorporate future meter testing requirements.



CAMCAL® for WINDOWS software allows the control of both static and portable meter test equipment, including the recording and evaluation of meter and measurement data.

CAMCAL® for WINDOWS software can be used throughout the meter test environment.

Tests can be carried out for simple or highly complex meters in accordance with the customer requirements and national / international test and calibration regulations (e.g. PTB, IEC, ANSI).

The user interface of the basic version shows all essential information required, therefore making the system easily understandable to operators with limited technical knowledge.

Advantages of CAMCAL® for Windows

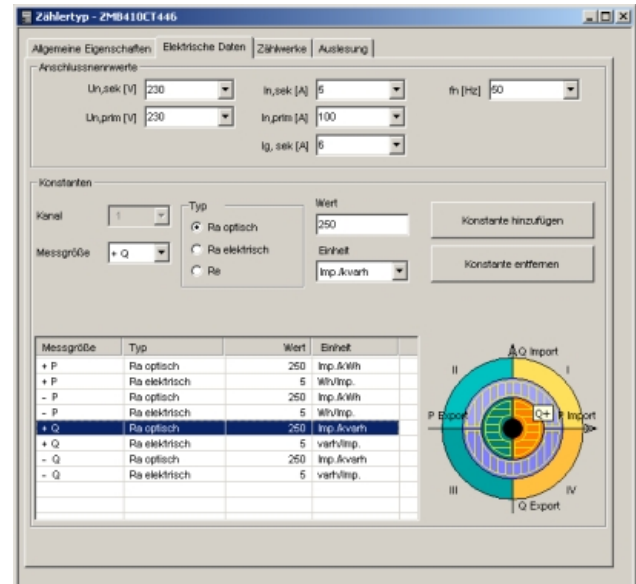
- User-friendly operation
- Database for meters and test sequences
- Fully-automatic test sequences for meter testing
- Transparent evaluation and presentation of results and statistics
- Suitable for use with various hardware combinations
- Modular system allows the integration of customer specific applications
- Operator interface available in several languages

Meter type description

The meter type description contains the electrical and functional definitions of meters under test (connection values, constants, registers, ...).

For the tariff device communication, a communication module is assigned to the meter types.

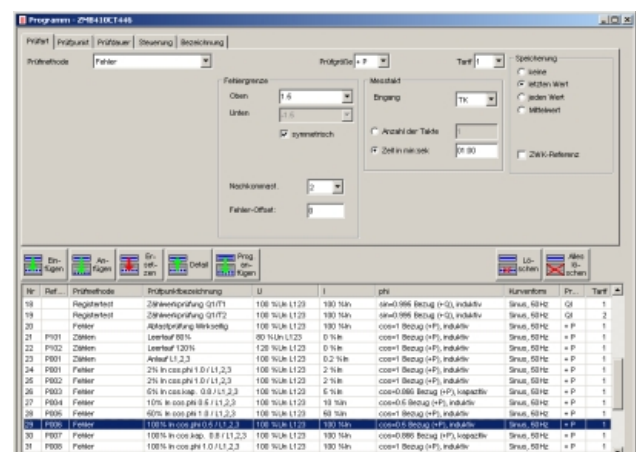
This defines the data to be selected or programmed plus the dispatching commands, adaptable by the customer, makes the fully automatic examination of high-functional meters and tariff devices possible.



The basic version supports the communication protocol in accordance with that described in the IEC 62056-21 Mode C standard. As an additional option the communication protocol is prepared according to dlms / COSEM.

Test sequence

A test sequence describes the order and content of the various test steps in a sequence. For each test step the desired test quantities (current, voltage, phase angle, frequency, ...) are specified.

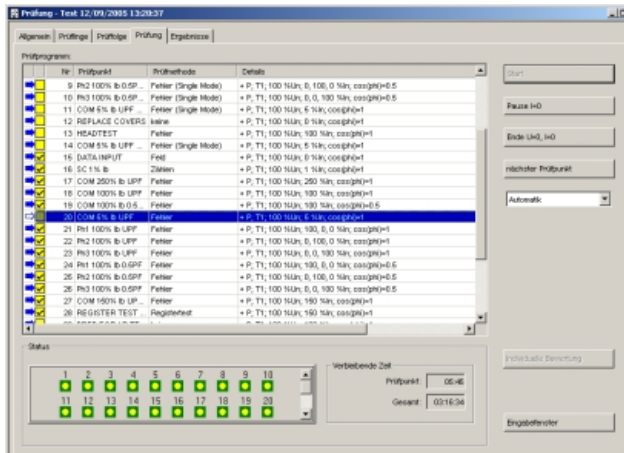


In addition to the respective test method (e.g. error measurement, register tests, ...) each checkpoint can be linked with control commands. Control commands display for instance instructions to the operator, switching of tariff relays or dispatching of commands e.g. to adjust time, ...

Software package CAMCAL® for Windows

Meter testing

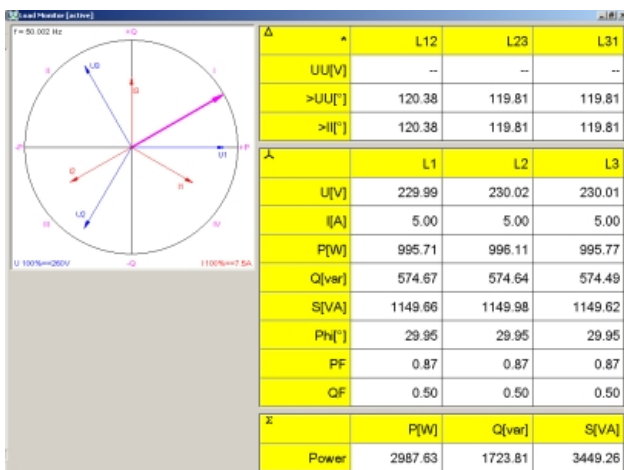
The user allocates to each active measurement position a meter type and selects a test sequence. Subsequently the user will comfortably be guided through the test. The actual status of the test and active test point is clearly indicated at all times.



It is possible to display simultaneously the actual test values and/or results in their own windows using large, easily visible fonts.

Results

After executing an automatic test sequence all saved results are available for further data processing, such as creating an individual test report or export to Excel tables. The results can also be viewed and evaluated directly using several sort criteria in the database.



The CAMCAL Report Generator, enables the user to create and define their own protocol masks (calibration certificates, pass/fail reports, statistical reports, customer reports etc).

Furthermore the CAMCAL Report Generator has the flexibility to add to reports logos, diagrams and fields (e.g. for signatures) etc.

Additional standard functions of the CAMCAL® for Windows Software

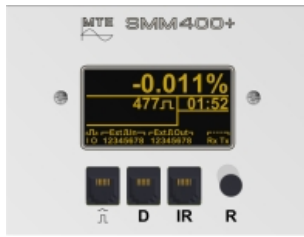
Testing of modern meters requires an adaptable and flexible software package. Because of its modular design, CAMCAL® for Windows covers this requirement.

CAMCAL® for Windows Software meets the following requirements:

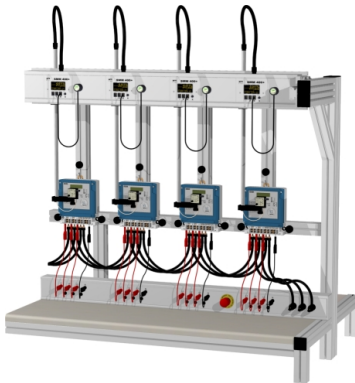
- Modular extensions of semi-automatic and fully automatic systems are possible without extensive software adaptations
- Demonstration programmes allow training to be given before delivery of the test system
- Standardized meter type and test sequence definitions considerably reduce the need for extensive training and familiarisation
- Data export modules support data transfer to other systems
- The operator interface is available in many different languages
- Password protection is provided for different user levels
- Import and export function enable the easy transfer of meter types, test sequences, report protocol masks etc. between test systems or across sites or between manufacturers and customers for instance

Optional Software Modules

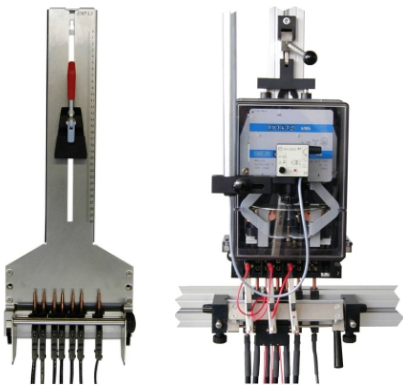
- Tariff device communication / dlms
- Generation of harmonics
- Tariff device testing with pulse transmitter
- Error compensation
- Generation of ripple control signals
- Generation of special test signals and wave forms according to IEC 62052-11
IEC 62053-11/-21/-22



SMM 400+ Error Evaluation System



SHC Scanning head support



EMP 1.3 and QCD quick connection devices



HT 2010 Hand held terminal
with barcode reader

Error Evaluation System

The modular Evaluation System SMM 400 performs error calculation, testing of emitting contacts and communication to tariff device units to the meter under test.

Four different versions covering customer's requirements are available.

Scanning Heads

The SH 2003 and SH 11 photoelectric scanning heads are suitable for scanning the marks of mechanical rotating disc meters or the detection of light emitting diodes (LED's) of electronic meters plus simulated pulses on LCD displays (SH 11). Mode of operation is selectable via a switch

Scanning Head Supports

The SCD 2003, TVU 7.2 und SHC scanning head supports has been designed for use with the SH 2003 and SH 11 scanning

Impulse Interface Adapter

The IMP-IF1 interface adapter is suitable for interfacing MTE reference standards with meters having retransmitting contacts, open-collector transistor outputs or true S0-outputs to allow full testing of meters with these types of outputs interfaces

Quick connection devices

Several quick connection devices according to IEC- or ANSI standard, which allow fast suspension and connection of meters, are available

Hand Held Terminals

The HT 2010 wireless hand held terminal with an integrated bar code reader is designed for recording meter specific data at meter test systems

The following MTE brochures are available:

Stationary Meter Test Systems:	Fixed Rack Systems / Gantry-Trolley System / Customized System
Comparator:	K2006
Portable Reference Standards:	PRS 400.3 / CALPORT 300
Portable Working Standards:	PWS 3.3 / PWS 2.3 PLUS
Portable Standard Meters:	CheckMeter 2.3 / CheckMeter 2.1
Portable Power Sources:	PPS 400.3 / PPS 3.3 C / CheckSource 2.3
Portable Test Systems:	PTS 2.3 C / PTS 3.1 C / PTS 3.3 C / PTS 400.3 / CheckSystem 2.1 / CheckSystem 2.3
Instrument Transformer Tester:	PTT 2.1
Transformer Monitoring Systems:	HYDROCAL 1001 / HYDROCAL 1003 / HYDROCAL 1005 / HYDROCAL 1008
Software:	CAMCAL for Windows / CALSOFT I / II

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Edition 02.2012
Subject to alterations