MTE Meter Test Equipment

PSP System

Power Source for Meter Testing

The PSP System is an electronic voltage- and current power source and a meter supply unit (phantom load) for testing electricity meters or for testing other devices which use current or voltage.

In addition to the generation of standard test values, the meter test equipment offers the following options:

- Addition of harmonics to the voltage and current paths up to 40 % of the fundamental wave
- Generation of ripple control signals up to 10 % of the fundamental wave of the voltage path
- Generation of test values synchronous to network frequency for examinations of extremely network sensitive measuring instruments
- Generation of unsymmetrical test values of polyphase test systems

The cabinet is equipped with the following components

- Control unit STE 10
- One up to three power sources PSP 10 with digital voltage and current amplifier
- Digital electronic reference meter SRS 121.3 or other types (Option)

Principal Characteristics

- Voltage and current ranges:
  Voltage: 30 V up to 300 V
  Current: 1 mA up to 120 A
- Output power:
  Voltage: 800 VA
  Current: 1200 VA
- Power efficiency: > 85 %
- Operation of the PSP System over RS 232 C serial line interface

Further Characteristics

The generators create the nominal values for the amplifiers with extremely high accuracy and stability. The amplifiers use the pulse-width modulation principle, this implies a high working efficiency and therefore very low heat losses. The construction of the PSP System is very compact.

PSP System Technical Data

Auxiliary voltage:	3 x 230 / 400 V ± 15 %, 50 (60 Hz) ± 5 %, (other voltages or frequencies on demand)
Housing:	One 19" cabinet
Dimensions:	
Single phase:	553 x 800 x 1020 mm
Three phase:	553 x 800 x 1725 mm

Control Unit STE 10

The STE 10 protect the meter test equipment PSP System in case of interrupts or over voltage of the mains supply. Further the STE 10 contains the RS 232 C interface to control the power amplifiers and some other necessary functions for the control of complete meter test equipment.

The STE 10 is placed in a 19”-rack with 3 height units and its functions are the followings:

- Central On/Off switch
- Emergency On/Off
- Protection against U/I short circuit in the output circuits
- Network surveillance system
- Generation of tariff unit control signals (optional)
- Control of dosage function (optional available)

Voltage and Current Power Source PSP 10

The PSP 10 is a single-phase computer controlled voltage and current source, designed for use in meter test systems and in laboratory. The models are accommodated in a 19”-plug-in unit 6 height modules.

The voltage and current source PSP10 generates a potential-free, variable alternating voltage and current, which has transformer decoupling. The output values are stabilized by an internal feedback loop and overlaid digital control loop for amplitude, phase angle and distortion factor. Harmonics and ripple control can be added to the fundamental wave.

Internal protection circuits are protecting the source by overload, open outputs, mains break and feedback current. The use of a voltage stabiliser at the entry point is not necessary.

The control of the source is done via an optical serial interface. A ring bus system and a synchronizing signal interface allows connecting several sources to a poly-phase system.

Output power:	
Voltage:	800 VA
Current:	1200 VA

This unit is fully described in the PSP 10 data sheet

Reference Standard (Option)

The electronic system reference standards are precision measurement units for all AC values, which are used in the measurement of energy. The wide measurement range, the high precision, and the extremely low effect of disturbance factors, are the striking characteristics of the reference standards. This makes it the ideal measurement unit for verification of electricity meters in the test area.

This reference standard is operated completely via the RS 232 C serial line interface.

According to the system required, one of the following reference standards may be used:

- **SRS 121.3, accuracy class 0.05**
  Current range: 1 mA ... 120 A
- **SRS 400.3, accuracy class 0.02**
  Current range: 1 mA ... 120 A
- **PRS 600.3, accuracy class 0.02**
  Current range: 1 mA ... 120 A
- **K2006, accuracy class 0.02**
  Current range: 1 mA ... 160 A

Each of these units is fully described in its own data sheet.