UNIPOWER

Verification equipment for electric meters

Unipower 3010

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Unipower has developed a unique solution for verifying electric meters for low-voltage applications in a very easy and straightforward way. With the Unipower 3010 you can realise verifications on site with high precision and without disconnecting the customer's equipment.

The commercial and technical development of the electricity market has increased with demands from law and regulations which concern test and verification of measuring systems for electric energy and power.

Verification of electric meters

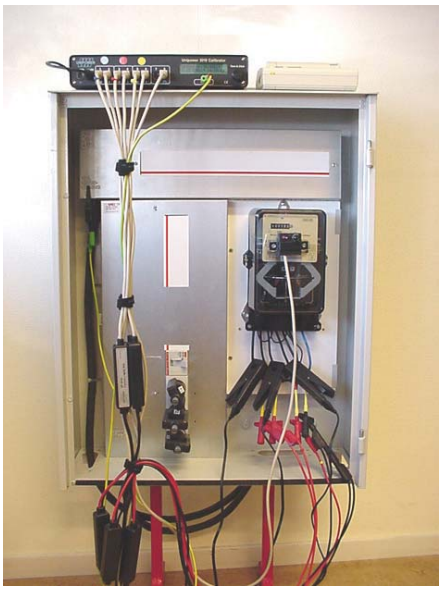
The demands stipulate that meters and measuring systems in low-voltage applications should be checked at the following occasions:

- Commissioning
- Routine maintenance
- Revision

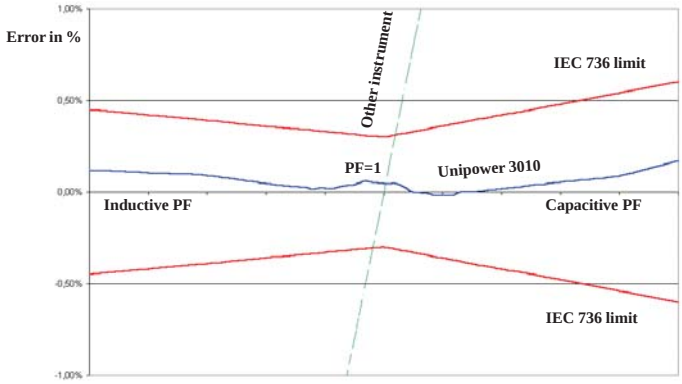
The intervals of revision and verification vary depending on national standards and regulations.
The demands, mentioned above, in combination with the present verification procedure, has implied a rather complicated process. This process often involves a lot of equipment and human resources.
Unipower has created a portable instrument for both test and/or verification, which can be used in the applications mentioned above. This instrument fulfills the demands that are made out according to accuracy and test.
The instrument complies with the standard IEC 514 relating to verification of electric meters and the standard IEC 736 relating to measurement equipment for this verification.

Principles for Unipower 3010

Unipower 3010 is connected in parallel with the electric meter and uses the existing load.
There is no need to connect an external load or other equipment for the measurement to take place. The measurement itself will only take a few minutes and you can directly create a written report with the help of a portable printer.



Field measurement on an electric meter at a customer facility



Unipower 3010 complies with the test specifications in IEC 736. Traditional instruments show high accuracy only when PF is equal to 1. Real applications with PF=1 have little or no occurrence.

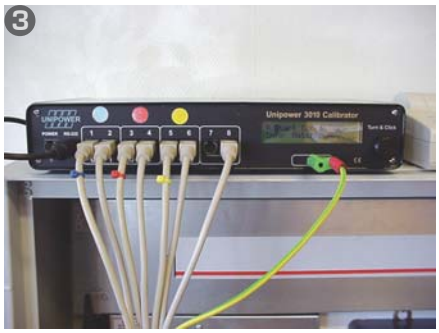
- User-friendly
- CT load measurement
- No disconnection of the customer
- CT verification
- Field verification
- Quick measurement - ready in minutes
- Measurement from PF 0.5 lagging to 0.5 leading
- Complete report

The most important advantages of this method are:

- the customer facility does not have to be disconnected
- the meter is checked in its natural operational environment

Operating conditions and accuracy

Unipower 3010 considers and adjusts to the different operating conditions that may occur. The real load is almost never purely resistive (PF=1), instead it is inductive (lagging) or capacitive (leading). Due to powerful methods and individual calibration of all transducers the high accuracy is maintained over a wide spectrum. Unipower 3010 is built for measuring and calibrating kWh-meters (electric meters) in both single and three-phase systems both with and without instrument transformers (PT / CT).



The Verification

1. Connect the voltage transducers and current clamps
2. Connect the pulse transducer to the electric meter
3. Start Unipower 3010. Push the Turn&Click button and enter the meter constant (stated on the meter) in the unit's menu.
   Choose "Start" and the verification begins. Unipower 3010 will stop automatically when the verification is done. This will happen in a few minutes or less.
4. If the portable printer is connected a report will be written. If it is not connected the report will be written directly in the menu window

The Unipower 3010-family

Unipower 3010-kWh:
For function test of the electric meter, e.g. at customer complaints

Unipower 3010-514:
For verification of electric meters in accordance with IEC 514 and IEC 736

Unipower 3010-CT:
For verification of electric meters with measuring transformers (PT / CT).
Also handles verification of directly connected meters

Unipower 3010 - Technical specification

Voltage inputs

Voltage channels	Three analogue channels
Input levels	200 mV
Input impedance	10 MΩ

Current inputs

Current channels	Three analogue channels
Input levels	200 mV
Input impedance	10 MΩ

Calculated parameters

Active power	(kW)
Energy	(kWh)
Voltage (RMS)	(V)
Current (RMS)	(A)
Power Factor PF	
THD - F	Harmonics up to 50th

Standards

Control of electric meters	IEC 736 and IEC 514
EMC	EN 50 081-1,2; EN 50 082-1,2
Personal safety	IEC 1010-1 (EN 61 010-1)

Calibration

Recommended	Every 12 months

Storage Capacity

Internal memory	128 kB

Transducers and clamp meters - calibrated

Current clamp meter (all)	30 A
Flex. current clamp (only 3010-CT)	500 A
Voltage transducer (all)	275 V

Other combinations of transducers and clamp meters up to 1000 V and 2000 A can be obtained for some of the applications on request.

Communication

Serial Communication	RS 232, 57600 bps

Power Supply

Power adapter	9V AC 780mA
Internal accumulator	6 Ah, Operating time 50 h

Environmental conditions

Temperature range	-10°C to +55°C
Humidity	10% to 95% non-condensing

Size and Weight

Unipower 3010	
Size WxHxD	310x55x190 mm
Weight	3.1 kg

Portable printer

Size WxHxD	170x67x160 mm
Weight	0.6 kg
Power Supply	6.4VDC 15W
Interface	RS 232

Sensor

Optical Sensor OG-6	Rotating disk or LED
Pulse adapter	S0
Digital channel for sensors	1

Accuracy

	3010 - kWh	3010 - 514	3010 - CT
Basic accuracy	0.25 %	0.15 %	0.05 %
Total three-phase accuracy 230V /30A at			
PF = 0.5 ind./cap.	1 %	0.4 %	0.4 %
PF = 1	0.4 %	0.2 %	0.1 %
Total three-phase accuracy 230V /500A at			
PF = 0.5 ind./cap.			0.5 %
PF = 1			0.3 %

Unipower reserves the right to changes of the product and its technical data.

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UNIPOWER

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