

PEWM-3C-1C

Portable Single Phase Working Standard – Class 0.2

(used for quick tests of single-phase electricity meters)

APPLICATION AND BRIEF DESCRIPTION

The single-phase energy standard PEWM-3C-1 was developed in 2001 as a version of the three-phase standard PEWM-3C. It is used for on-site testing of all types single-phase electricity meters – for active, reactive or apparent energy; electronic or electromechanical. Voltage and current are measured at the same time. The current is measured with an electronically compensated current **clamp to 120A or 150A**. The standard was improved in 2017 with a 5" colour display and was named "**PEWM-3C-1C**".



Error of the electricity meter can be determined. The disc revolutions or the pulses from the electricity meter can be counted with a universal scanning head (type EH 11) or manually with the help of a hand switch. The scanning head is suitable for disk flag detection (red or black), or LED pulses from electronic meters (square, pulse, or modulated).

The **registers** of the electricity meter can be tested too, a preliminary quantity of energy being set in this latter case.

Other functions of the device are indication of the numerical values of **Current, Voltage, Phase-shift, Power, Power Factor** and **Harmonic** distortion measurement; drawing of two input signal waveforms in real time (two beam **oscilloscope**).

PEWM-3C-1C is indicating also the **Date and Time**. The information about the date and time of testing is saved together with the measurement results.

The device has got a **unique wide-range power supply**, which is powered from the voltage measuring circuit, or from an auxiliary supply.

Instrument case is protected with a **rubber cover** against dropping or blow.

300 screens with Meter Error or General Measurement can be memorized in a non-volatile memory and transferred later to a computer.

The test results can also be printed on a **thermal printer** via RS 232.

The **PEWM-3C-1C Software** is operating under Windows (XP, Vista, 7, 8 or 10). The Software transfers the readout data into a database, and is able to perform search with different criteria and print reports.

TECHNICAL DATA

Power supply auxiliary	230 Vac +15%, -25%
Power supply from the measuring circuit	45 Vac ... 300 Vac 45 Hz ... 65 Hz
Power consumption	max 10 VA
Dimensions	220 x 130 x 75 mm
Weight	1.6 kg
Housing	Hard plastic with protection
Operation temperature	-15 °C ... +50 °C
Storage temperature	-20 °C ... +60 °C
Relative humidity	< 95% non-condensing
Pulse output (isolated, blinking LED)	Programmable value, max.100 000 imp/kWh (kVarh)
Color 5" display, 65K colors	640 x 480 pixels
Degree of protection	IP 40
Temperature coefficient	0.01% / K (Range: 0 ... 40°C)
Dimensions 120A CC (Jaw 12mm)	110 x 35 x 20 mm / 160 g
Dimensions 120A CC (Jaw 16mm)	131 x 46 x 34 mm / 250 g
Dimensions 150A CC (Jaw 20mm)	130 x 50 x 20 mm / 180 g
Current range of 120 A CC	0.01 A ... 120.0 A
Current range of 150 A CC	0.10 A ... 150.0 A
Power range	0 ... 99.999 kW

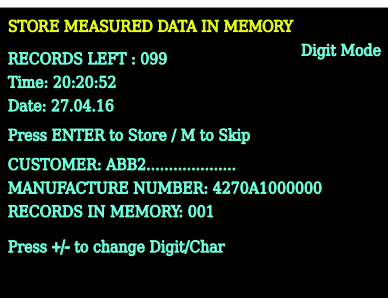
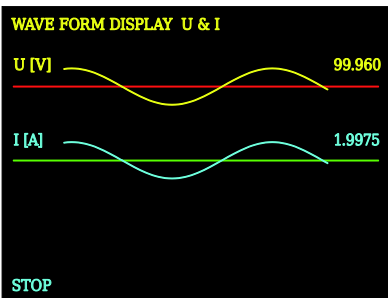
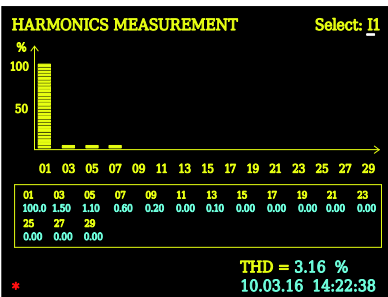
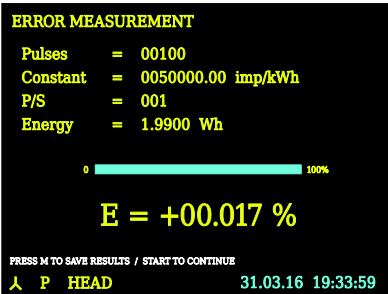
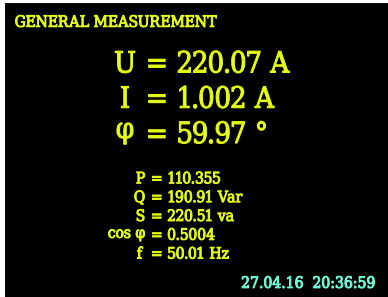
MEASUREMENT ERROR

	ERROR	RANGE
Voltage	± 0.1 %	40.00 V ... 300.00 V
	± 0.2 %	5.00 V ... 39.99 V
Current (120 A CC)	± 0.2 %	0.100 A ... 120.0 A
	± 0.2 % **	0.020 A ... 0.099 A
Current (150 A CC)	± 0.5 %	0.500 A ... 120.0 A
Power / energy (120 A CC)	± 0.2 %	0.100 A ... 120.0 A
	± 0.2 % **	0.020 A ... 0.100 A
Power / energy (150 A CC)	± 0.5 %	0.500 A ... 120.0 A
	± 0.5 % **	0.100 A ... 0.500 A
Phase angle	± 0.1°	0.0° ... 359.9°
Frequency	± 0.01 Hz	40.00 Hz ... 70.00 Hz
Power Factor	± 0.002	-1.000 ... +1.000

Notes:

1. The power / energy errors are identical for P (active), Q (reactive), S (apparent) power and are related to apparent power (to be divided to the PF for active and reactive power / energy).
2. ** The error is related to the maximum value of the range.

SAFETY TESTS: IEC 61010-1; IEC 61010-2-032; 300 V, Cat III
EMC TESTS: IEC 61000-4-2, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-11
FUNCTIONS: IEC60736; IEC62052-11; IEC62053-11,21,22,23,24; IEC62056-21



General measurement

The true RMS values of voltage and current, the angle between them, active, reactive and apparent power, power factor and frequency are indicated in this mode. A warning message appears in case of missing voltage or current or unusual phase-shift.

Error measurement

The device indicates the electricity meter error in [%] and the true value of energy in this mode. The delivery of pulses is traced with a bar-graph. The pulses or revolutions number “P”, the constant of the electricity meter “C” and the primary-to-secondary ratio of the transformer “P/S” are preset by the operator. The measurement can be changed for active, reactive or apparent energy. The operator is able to enter the pulses manually (using the Manual button or the Functional button on the panel) or read the pulses / rotations of the meter automatically with the universal scanning head.

Register error measurement

The value of energy is preset in this mode. The measurement is started and stopped by the operator using the Manual or Functional button. The error of the register is indicated in [%].

Harmonics

The harmonic content of each input signal of voltage or current can be measured in this mode. The amplitude in [%] of the odd harmonics up to the 29th are indicated numerically and graphically. The value to expand into harmonics is determined by the operator among the 2 input signals. The measurement and the corresponding screen display are updated in every two seconds.

Oscilloscope

The two input signals of voltage and current are drawn on-line on the display. Near the waveforms, the true RMS values of the corresponding signal in [V] or [A] are also displayed.

Settings

The last screen is intended for performing settings of some parameters like date, time and frequency of the standard’s constant. From this screen the operator is able to go to Calibration mode or connect to a PC.

Memory

200 electricity meter measurements can be stored in a non-volatile memory, and transferred to a computer via RS 232. The following data are stored: number of electricity meter (alpha-numerically); the current, voltage and power factor values; error of the electricity meter; the transformation ratio, regime. The program in the computer operates under Windows 7, 8, 10, XP and has the following features: printing of report; archive file organization; data search from the archive.

Accessories:

- Voltage Cables – 2 m (2 pcs)
- PEWM-3C-1C Software
- Manual button
- Optical Scanning Head and Frame
- Instructions Manual
- Transport Case Pelli® 1430
- Compensated current clamp
- Crocodile clips
- Power Supply Cable

