# Metran-502-PKD-10P
# Portable Pressure Calibrator


- **Medium: air, oil**
- **Applications:**
  - **- pressure calibrator;**
  - **- digital pressure gage**
- **Range:**
  - **-0.1 to 60 MPa**
- **Reference accuracy**
  - **±0.15% URL**
- **Measurement units: kPa, MPa, kgf/cm², bar, mmHg**
- **Built-in interface RS232 (option)**
- **Pressure Monitoring software**
- **Dust and water tightness per IP54**
- **Calibrator supply:**
  - **- built-in Ni-Cd battery;**
  - **- network power supply unit**

Metran-502-PKD-10P calibrator is designed for precise measurement and reproduction of gage and vacuum.

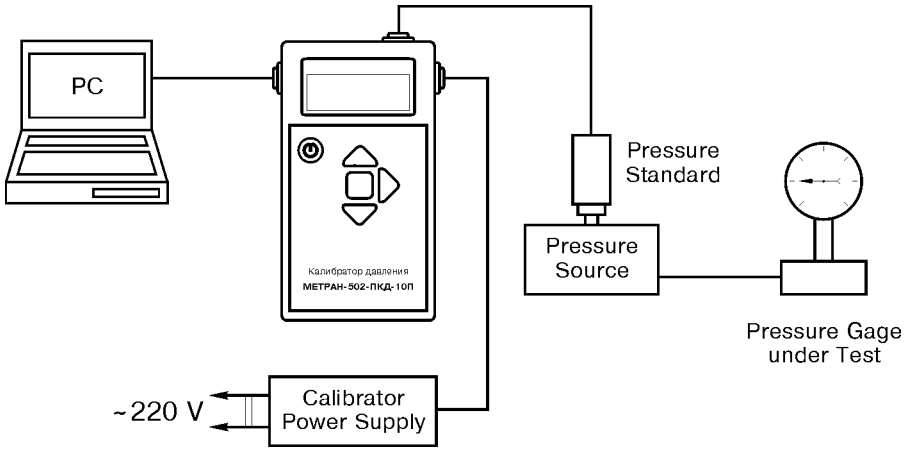
It is used as working standard (calibrator or reference digital pressure gage) at verification and pressure gages calibration and as digital pressure gage at pressure change processes monitoring.

Functionality:

- leak test for leakage detection in a system;
- gage pressure measurement;
- audio alarm at 15% excess of pressure URL;
- storage up to 1800 fixed pressure values with timing;
- fixation of min. and max. pressure values;
- controlled averaging of readings.

29 Komsomolsky pr., Chelyabinsk, 454138, Russia
t. +7 351 247 16 20, f. +7 351 247 16 67, e-mail: metran@metran.ru

## DESIGN AND OPERATING PRINCIPLE




**Design**

The main components of the calibrator are:

- Electronic module;
- External reference module;
- Pressure sources: a pneumatic hand pump, a hydraulic hand press, and a multifunctional hand pump (pneumohydraulic).

All calibrator's components are supplied in a compact, easy-to-handle carrying case.

**The electronic module of calibrator** is designed as a hand-held device in a plastic housing, with the keypad and liquid-crystal alphanumeric display (LCD) on the front panel, and with connectors for a pressure module on the upper end face, and the connector for an external power supply on the side face.

**The external reference pressure module** is a standard instrument for pressure and vacuum measurement.

All pressure modules have a protective diaphragm (membrane) of stainless steel 12X18H10T and provide the operation not only with air, but with fluid medium: water, oil, technical fluids, which do not cause corrosion of a protective diaphragm (membrane).

In order to provide the desired measurement accuracy at each value of pressure standard sizes, measurement range of calibrator pressure modules is divided into 2-4 subranges so that URL of each subrange corresponds to URL of transmitters under test. Characterization of pressure module is executed for each subrange irrespective of other subranges.

**Operating principle at pressure gage verification**

Measuring pressure generated by the pressure source is directly applied to the pressure module and through a connecting hose to the pressure gage under test (if necessary, use reducing sleeves and a stand for the pressure gage mounting).

Changing a pressure value at indicating pressure gage under test with the help of the pressure source, a pressure gage indicator needle is set to scale mark under test.

At the same time this pressure is applied to the calibrator module. The electrical signal from a pressure module output proportional to measured pressure is applied to an electronic module ADC input and converted to a digital code. Then a signal in digital code is transferred to a microprocessor, which is located in the module of data collection and processing of the electronic module. A microprocessor calculates pressure value, including a pressure module correction factor, received at its individual calibration and programmed in EEPROM electronic module memory. The processed signal is displayed on an electronic module LCD as the true pressure value, produced by the pressure source in the operating cavity of the calibrated pressure gage.

The calibrator's LCD readings (they are reference readings) are compared with pressure gage readings.

**Monitoring mode**

Monitoring mode allows user to investigate the process of pressure behavior in time, if necessary, (e.g. the process of fluid pressure or gage change in a pipeline). The calibrator in the monitoring mode will sequentially store measured pressure values, and also fix in the memory min. and max. values of measured pressure during a set time period with timing. Setting of measurements time or number of measurements (up to 1800 fixed pressure values) is set by a user from an electronic module keypad or PC keyboard. All stored data on pressure change could be reviewed on the electronic module LCD.

**Software**

Pressure Monitoring software allows transmitting the pressure change data from the calibrator's memory to PC for processing, controlling the operation of the calibrator from PC keyboard, and automatically executing of pressure gages calibration report.

## SPECIFICATIONS

### PRESSURE RANGES

*Table 1*

| Code of pressure module | Measurement limits of pressure modules, MPa | Subranges of pressure measurement, MPa | | | | Limiting pressure, MPa |
|---|---|---|---|---|---|---|
| **M0.16** | 0-0.16 | 0-0.04 | 0-0.06 | 0-0.1 | 0-0.16 | 0.22 |
| **M1** | 0-1 | 0-0.25 | 0-0.4 | 0-0.6 | 0-1.0 | 1.4 |
| **M2.5** | 0-2.5 | - | - | 0-1.6 | 0-2.5 | 3.5 |
| **M10** | 0-10 | - | 0-4.0 | 0-6.0 | 0-10.0 | 15 |
| **M25** | 0-25 | - | - | 0-16.0 | 0-25.0 | 35 |
| **M60** | 0-60 | - | - | 0-40 | 0-60 | 70 |
| **M63B** | -0.063-0 | | | -0.063-0 | -0.04-0 | -0.088 |
| **M100B** | -0.1-0 | | | -0.1-0 | -0.063-0 | -0.100 |

### ACCURACY

Reference accuracy of pressure measurement is ±0.15% of URL of pressure module subrange.

### ELECTRONIC MODULE OVERALL DIMENSIONS

110x185x46 mm

### ELECTRONIC MODULE WEIGTH

0.45 kg maximum

### OPERATION CONDITIONS

Ambient air temperature: 0 to 50°C.
Relative humidity: 30 to 80%.
Atmospheric pressure: 84 to 106.7 kPa.

### OPTION

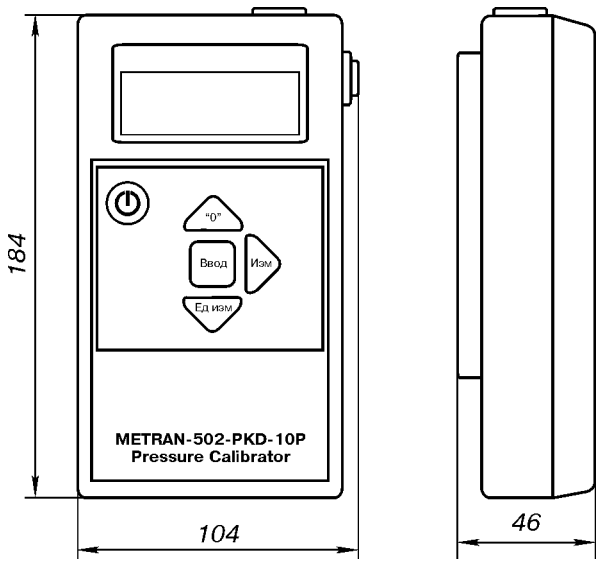
Pressure Monitoring software. See the information at the end of the present section.

### DELIVERY SET

The calibrator delivery set includes:

| | |
|---|---|
| - Electronic Module | 1 pc. |
| - Pressure Module | by request |
| - Pressure Source | by request |
| - Battery | 1 pc. |
| - AC Power Supply | 1 pc. |
| - Carrying Case | 1 pc. |
| - Product Data Sheet 1556.000PS | 1 copy |
| - Operation Manual 1556.000RE | 1 copy |
| - Verification Procedure | 1 copy |
| - Verification Certificate | 1 copy |

### OVERALL AND CONNECTION DIMENSIONS




**Electronic module**