

## Automatic pressure calibrating and controlling device APK



### Intended use

Automatic pressure generation, control and high-precision measurement for all stages of production and testing of pressure transducers (sensors) and pressure gauges. Verification and calibration in automatic and semi-automatic modes of gauge and absolute pressure measuring instruments such as pressure calibrators, sensors, reference and technical pressure gauges of accuracy classes 0.02 and lower in the range of -0.1... 42 MPa.

### Highlights

- Automatic pressure generation and control in the range from -0.1 to 42 MPa.
- From one to three built-in reference pressure sensors. The possibility of easy replacement of sensors and completing with sensors for different measurement ranges and accuracy classes. An optional built-in barometric sensor for monitoring and measuring gauge and absolute pressure values.
- Accuracy classes: from 0.01 to 0.1.
- Instability of automatic pressure control:  $\pm 0.005\%$ .
- Control is carried out from a touchscreen multifunctional monitor or remotely via a PC (USB interface).
- An open protocol and a standard set of commands for the possibility of writing an individual control software.
- The low noise level allows to install the instrument directly at a metrologist's workplace.
- A compact design, versions for desktop installation and 19" rack mounting.
- Dry, oil free, non-corrosive gas maintained at a value of 10% above the maximum required outlet pressure. Dry air or Nitrogen recommended.
- Power supply: from a single-phase 220V/50 Hz. Power consumption: less than 2 kW.

Main Technical and Performance Data

Pressure type	Measuring range, MPa	Accuracy			
		Standart	IS-50		MV-50
		(0-100)% FS	(0-50)% FS	(From 50 to 100)% FS	(0-100)% FS
Gauge	from 0 – 0,0025 to 0 – 0,007	0,02% FS 0,025% FS 0,05% FS 0,1% FS	-	-	-
	from 0 – 0,007 to 0 – 42	0,01% FS 0,015% FS 0,02% FS 0,025% FS 0,05% FS 0,1% FS	-	-	-
	from 0 – 0,1 to 0 – 42	-	0,005% FS 0,0075% FS 0,01% FS 0,0125% FS 0,025% FS 0,05% FS	0,01% MV 0,015% MV 0,02% MV 0,025% MV 0,05% MV 0,1% MV	0,005% FS+0,005% MV 0,0075% FS+0,0075% MV 0,01% FS+0,01% MV 0,0125% FS+0,0125% MV 0,025% FS+0,025% MV 0,05% FS+0,05% MV
Negative gauge	from minus 0,0025 – 0 to minus 0,007 – 0	0,02% FS 0,025% FS 0,05% FS 0,1% FS	-	-	-
	from minus 0,007 – 0 to minus 0,1 – 0	0,01% FS 0,015% FS 0,02% FS 0,025% FS 0,05% FS 0,1% FS	-	-	-
Bidirectional	from minus 0,0025 – plus 0,0025 to minus 0,0025 – plus 0,0045	0,02% FS 0,025% FS 0,05% FS 0,1% FS	-	-	-
	from minus 0,0025 – plus 0,0045 to minus 0,1 – plus 42	0,01% FS 0,015% FS 0,02% FS 0,025% FS 0,05% FS 0,1% FS	-	-	-
	from minus 0,1 – plus 1 to minus 0,1 – plus 42	-	0,005% FS 0,0075% FS 0,01% FS 0,0125% FS 0,025% FS 0,05% FS	0,01% MV 0,015% MV 0,02% MV 0,025% MV 0,05% MV 0,1% MV	0,005% FS+0,005%  MV  0,0075% FS+0,0075%  MV  0,01% FS+0,01%  MV  0,0125% FS+0,0125%  MV  0,025% FS+0,025%  MV  0,05% FS+0,05%  MV
Absolute	from 0 – 0,04 to 0 – 10	0,01% FS 0,015% FS 0,02% FS 0,025% FS 0,05% FS 0,1% FS	-	-	-
	from 0 – 0,1 to 0 – 10	-	0,005% FS 0,0075% FS 0,01% FS 0,0125% FS 0,025% FS 0,05% FS	0,01% MV 0,015% MV 0,02% MV 0,025% MV 0,05% MV 0,1% MV	0,005% FS+0,005% MV 0,0075% FS+0,0075% MV 0,01% FS+0,01% MV 0,0125% FS+0,0125% MV 0,025% FS+0,025% MV 0,05% FS+0,05% MV
Barometric	0,08 – 0,12	0,01% MV 0,02% MV 0,05% MV	-	-	-

FS – Measuring range  
MV – Measured value  
LPL – Lower pressure limit

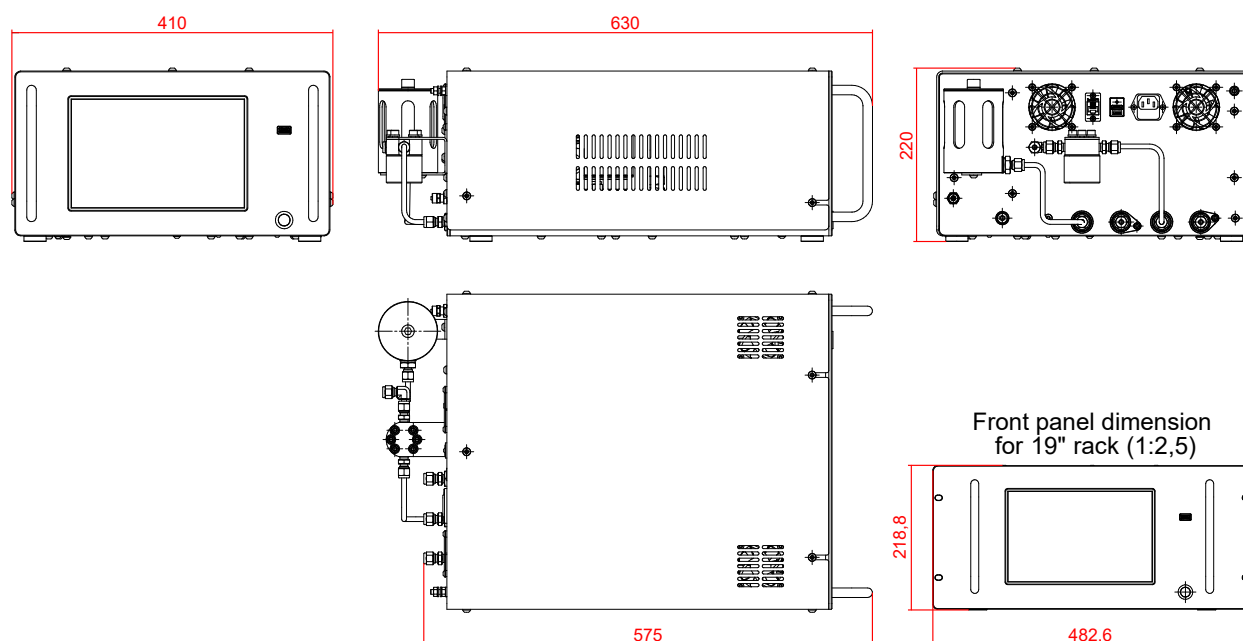


Fig. 1. Control unit

### Principle of operation

APK has two modes: "Measurement" and "Task". In the "Tasks" mode APK automatically reproduces the necessary pressure. To create pressure, it is necessary to have an external source of compressed gas with a pressure 10% higher than that created. In the "Measurement" mode, the current pressure in the system is measured. The operating mode is set via the multifunctional touchscreen display or by external control via PC.

Up to 3 reference pressure sensors as well as a barometric sensor can be installed simultaneously in the APK for monitoring and measuring both gauge and absolute pressure. The pressure gauges and barometer are removable, so the calibrator can be equipped with an unlimited number of them.

The APK serves to control the operation, process the obtained measurement result, indicate on the display the current value of the measured (set) pressure, as well as the measuring range, units and other information on the display. There is a function of both manual selection of the range and selection of the range in automatic mode. When the pressure than the upper limit of one of the modules, the switchover to the next higher pressure sensor in the range is made. The device is equipped with various functions: selection of measurement units, selection of pressure type (absolute/gauge pressure), setting of the pressure set point, zero calibration, calibration at different points of the ranges, change of the set point speed. The following functions are available: pressure units selection (absolute/gauge pressure), setting the limits of the pressure task, zero calibration, calibration at different points of the ranges, change of the pressure setting speed, the possibility of pressure reproduction according to the pre-defined algorithm, choice of menu languages, etc.

APK can be installed both on the table (the power unit is installed under the table) and in a 19" rack.

### Package

#### Standard package:

- Electronic unit with selected number and operating ranges of built-in reference sensors.
- Kit of connection fittings and hoses.

#### Options:

- Additional reference pressure sensors.
- Rack-mounted version 19"
- Fully organized workplace (stand) according to the terms of reference.