

Instruction Manual

BPM-832

Dual Channel Transducer Amplifier



Read instructions carefully before operating this device.

- ❶ This device is not to be used for Human Life Support applications.
- ❷ To avoid possible electrical shock, do not operate this device if it is wet or has had liquids spilled onto it.
- ❸ Service or calibration procedures should only be performed by qualified personnel familiar with the electrical hazards of line-powered devices.



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STATEMENT OF WARRANTY

IF THIS INSTRUMENT FAILS WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF DELIVERY OR INSTALLATION, CWE, INC. WILL, AT ITS OPTION, REPAIR OR REPLACE IT FREE OF CHARGE. THIS WARRANTY EXCLUDES DAMAGE INCURRED THROUGH MISUSE OR ACCIDENT. CWE, INC. DOES NOT ASSUME ANY LIABILITY FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS INSTRUMENT.

DEFECTIVE UNITS SHOULD BE RETURNED TO THE FACTORY ALONG WITH A NOTE DESCRIBING THE NATURE OF THE FAULT. THIS WARRANTY IS APPLICABLE TO THE ORIGINAL PURCHASER OF THE INSTRUMENT ONLY, AND IS NOT TRANSFERABLE.

FACTORY SERVICE

Out of warranty or damaged instruments may be returned to the factory freight prepaid for service at prevailing rates. Upon request, a written or verbal quotation for such service will be issued after examination of the unit but prior to commencing repairs or service. Address requests for service or technical information to:

CWE, Incorporated
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(610)642-7719
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LIFE SUPPORT POLICY

Instruments manufactured by CWE, Incorporated are not authorized for use as critical components in human life support devices or systems. "Life support devices or systems", as used herein, are devices or systems whose failure to perform, whether through misuse, failure, or proper operation, can reasonably be expected to result in significant injury to the operator or subject persons.

This manual last updated on 2/14/24

1.0 INTRODUCTION

The BPM-832 is a dual-channel instrument for monitoring the output of strain-gage pressure transducers. A wide gain range and stable excitation and balancing circuit make the unit suitable for monitoring blood, airway, or other pressures in the laboratory. In addition, many force and acceleration transducers can also be used with the BPM-832. A direct-reading digital readout is provided for each channel, along with an analog output for external display or recording of the pressure signal. Adjustable low-pass filters include a mean pressure function. The BPM-832 is compatible with most strain-gage transducers using DC excitation.



Figure 1: Front panel view of BPM-832, showing the two identical sets of controls.

2.0 SPECIFICATIONS

Transducer compatibility	Statham, Gould, Grass
Transducer type required.....	resistive bridge
Input connector	Canon WK6-32S
Excitation voltage.....	4 – 10VDC (adjustable)
Pressure range	Depends on transducer used
Balance ranges.....	+/- .010, +/- .100, +/- .500V, 10-turn
Decade Sensitivity Switch.....	X10, X100, X1000
Size vernier.....	10-Turn, 0-1X attenuator
Low-pass filter	6 position, -12dB/octave slope
Filter frequencies	0.1 (Mean), 10, 50, 100, 200, 5000Hz
LCD Digital display	3 ½ digits, 0-1999 pressure units
Analog output	0-1.999V
Output connector	BNC Jack
Dimensions.....	3H x 9.5W x 7.5D inches
Power requirements.....	120V/60Hz, 5W

3.0 INSTALLATION

The included power supply should be plugged into a 3-wire grounded electrical outlet. Plug the cord from the power supply into the POWER jack on the rear of the case. The pressure transducers to be used are plugged into the TRANSDUCER connectors on the front panel.

4.0 OPERATING CONTROLS

4.1 POWER SWITCH

This switch turns on the power to the instrument. When switched ON, the digital display and the red LED will turn on, indicating that the instrument is receiving power. If the meter does not come on, check that the electrical outlet is working properly.

4.2 TRANSDUCER INPUT

The pressure transducer to be used is plugged into the TRANSDUCER connector. This connector is compatible with Gould, Statham, Electronics for Medicine, CWE Series PS-1000 and other transducers. If your transducer has a different connector, adaptor cables are available from CWE, Inc. or from Fogg Systems.

For reference, the input connector uses the following pin connections:

<u>PIN No.</u>	<u>Function</u>
1	+ excitation voltage
2	+ signal
3	- signal
4	- excitation voltage
5	Not used
6	shield

4.3 BALANCING

Balancing the transducer is necessary to offset any small DC voltage present on the strain-gage with a zero pressure input. First allow the BPM-832 to warm up for about five minutes with the transducers connected. Adjust the BALANCE dial until a zero reading is observed on the digital meter. The transducer is now balanced.

4.4 SENSITIVITY SETTING

The SENSITIVITY and SIZE controls are used to make the displayed pressure correspond to actual engineering units. A wide gain range is available to permit calibration in cmH₂O, mmHg, or other desired units. A three-position decade SENSITIVITY switch works in conjunction with a 0-1X SIZE knob.

Before calibrating the unit, be sure the transducer is balanced (see Section 4.3). For most applications, the MED range should be selected. Using a manometer or other known pressure source, apply pressure to the transducer. Adjust the SIZE knob until the displayed reading corresponds to the actual applied pressure. Try to find the SENSITIVITY range that allows the SIZE control to be positioned somewhere near its midrange, rather than at either extreme of its adjustment.

Note the the full-scale output of the BPM-832 is +/-1.999V. This is also the full-scale range of the digital panel meter (1999 units). To get the maximum resolution, adjust the gain controls so as to give a maximum expected reading of close to 2V. For example, if monitoring a pressure with an expected maximum reading of about 100cmH₂O, you could adjust the SENSITIVITY controls to give a reading of 100 on the meter with a 100cmH₂O. To obtain the best resolution however, adjust the gains to give a reading of 1000, which now reads directly in mmH₂O, thus giving you ten times more resolution.

4.5 FILTER

The low-pass filters built into the BPM-832 allow the user to attenuate unwanted high-frequency noise or artifacts which may be present on the pressure signal. The filter cutoff frequency should be selected to limit the signal to frequencies of interest. The lowest setting, 0.1Hz, gives a mean pressure reading, and is thus useful for monitoring mean blood pressure.

4.6 DIGITAL PRESSURE METER & ANALOG OUTPUT

The front-panel digital meters display the pressure readings in arbitrary units, up to 1999. It is up to the user to calibrate the instrument so that the display reads out in meaningful units (see Section 4.4). The displayed reading corresponds to the analog OUTPUT voltage in millivolts. Thus, a reading of 249 on the meter corresponds to an OUTPUT voltage of 249mV, or 0.249V. Note that the meter reading (and the OUTPUT voltage) is bipolar: positive and negative pressure signals are indicated correctly.

5.0 ORDERING INFORMATION

Many commercially available pressure, force, and acceleration transducers are compatible with the BPM-832 Pressure Monitor. To use transducers with a different cable connector than the Cannon WK6-32S, adaptor cables are available from the following source: Fogg System Company, Aurora, CO 80011
www.foggsystem.com (phone 1-800-525-0292; email sales@foggsystem.com)

Part No.	Model	Description
08-12000	BPM-832	2-Channel Pressure Monitor with power supply
10-04010	PS-1000/A-1	Differential Pressure Transducer (+/-70cmH ₂ O)
10-04011	PS-1000/A-004	Differential Pressure Transducer (+/-10cmH ₂ O)
10-04100	DTX-1	Standard medical grade BP Transducer
10-04110	DTX-10	Pack of 10 standard medical grade BP Transducers
10-04210	TC-GRA	Required adapter cable for DTX-1 BP Transducers