

Adjustment Manual

Handheld Pressure Calibrator

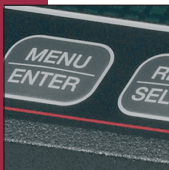
JOFRA HPC-400

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*...because calibration is
a matter of confidence*



Overview

The HPC 400 Pressure Calibrator has an electronic calibration. There are no mechanical adjustments and the calibration is done case closed. The calibration is done via a serial communications port by sending commands and receiving readings. The normal RS232 interface is used for the calibration of the HPC 400. The calibration can be done by using a terminal program or an automated calibration program can be written using programs like Visual Basic or Labview. In this manual only the serial terminal mode will be described.

Initiating Communication

The terminal communications can be setup using terminal communication software on a PC, such as Hyperterminal or PcPlus. Connect the RS232 cable to the stereo jack inside battery compartment of the HPC 400. The other end of the cable should be connected to the terminal/PC serial port. An adapter may be needed for terminals that use 25 pin 'D' serial connectors.

The terminal settings need to be set as follows:

- Bits per second: 9600
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: none
- Local echo: on

All calibrations commands are performed on the functions selected on the lower display. Use the following command sequence to turn off all but the lower display.

DISPLAY UPPER, OFF

DISPLAY MIDDLE, OFF

DISPLAY LOWER, ON

As long as the calibrator has been at a stable temperature, within the range of 20 to 26 degrees Celsius for an hour or more, the calibrator only needs 5 minutes to warm up. If temperature conditions were previously below 10 degrees Celsius or higher than 40 degrees Celsius, then the unit must be allowed to stabilize for a minimum of 3 hours prior to calibration.

Calibrating Voltage Input:

Test Equipment:

Table 1 List of Test Equipment For Calibrating Voltage Input

Quantity	Manufacturer	Model	Equipment
1	Pomona	2948-36-2 (red) 2948-36-0 (black)	Low Thermal EMF banana to banana leads
1	Fluke	5520A	Calibrator

Connections:

Use the test lead set to attach the voltage output of the 5520 to the input of the HPC 400.

Procedure:

1. After you have made your connections send the following command to put the unit in Voltage mode.
2. FUNC LOWER,DCV
3. Use the 5520 to input 0V when the reading is stable send the following command: CAL_POINT[0][0]
4. Use the 5520 to input 30V when the reading is stable send the following command: CAL_POINT[0][1]
5. The voltage range is now calibrated, use the 5520 to verify the calibration.

Calibrating mA Input:

Test Equipment:

Table 2 List of Test Equipment For Calibrating mA Input

Quantity	Manufacturer	Model	Equipment
1	Pomona	2948-36-2 (red) 2948-36-0 (black)	Low Thermal EMF banana to banana leads
1	Fluke	5520A	Calibrator

Connections:

Use the test lead set to attach the voltage output of the 5520 to the input of the HPC 400.

Procedure:

1. After you have made your connections send the following command to put the unit in Current mode.
2. FUNC LOWER,DCI
3. Use the 5520 to input 0mA when the reading is stable send the following command: CAL_POINT[0][0]
4. Use the 5520 to input 24mA when the reading is stable send the following command: CAL_POINT[0][1]
5. The voltage range is now calibrated, use the 5520 to verify the calibration.

Calibrating Pressure:

Test Equipment:

Table 3 List of Test Equipment For Calibrating Pressure Input

Quantity	Manufacturer	Model	Equipment
1			Pressure/Vacuum Standard (w/ a 4:1 TUR)

Connections:

The HPC 400 uses a 1/8" BSP female connection in the pressure input port. Various adapters may be needed to connect to the pressure standard. Always make sure the hose, tubing, fittings etc have a rated working pressure at or above the pressure of the unit. Also it is important that there be no leaks, when trying to achieve a good calibration, use Teflon tape where appropriate.

Procedure:

1. After all connections have been made send the following command to put the unit in pressure mode.
2. FUNC LOWER,{port} where port is P1.
3. Send the OFFSET_ADJ? command. Note the value returned.
4. Use the pressure standard to input a value equal or close to the noted value.
When the pressure is stable send.
OFFSET_ADJ n
Where n is the entered pressure.
5. Send the GAIN_ADJ? command. Note the value returned.
6. Use the pressure standard to input a value equal or close to the noted value.
7. When the pressure is stable send.
GAIN_ADJ n
Where n is the entered pressure.



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AMETEK[®]
CALIBRATION INSTRUMENTS

Headquarters:

AMETEK Denmark A/S
Gydevang 32-34 • 3450 Allerød • Denmark
Tel: +45 4816 8000 • ametek@ametek.dk

Sales & Service:

Europe, Asia, Africa, Middle East and South America

www.jofra.com

Sales & Service Offices:

AMETEK Mansfield & Green (North America)
Tel: +1 800 527 9999 • cal.info@ametek.com

AMETEK Singapore Pte. Ltd. (Singapore)
Tel: +65 6 484 2388 • aspl@ametek.com.sg

AMETEK Inc. Beijing Rep. Office (China)
Tel: +86 10 8526 2111 • jofra@ametek.com.cn

AMETEK GmbH (Germany)
Tel: +49 2159 9136 510 • info.mct-de@ametek.de

AMETEK Calibration Instruments (UK)
Tel: +44 (0) 1489 486 404 • jofra@ametek.co.uk