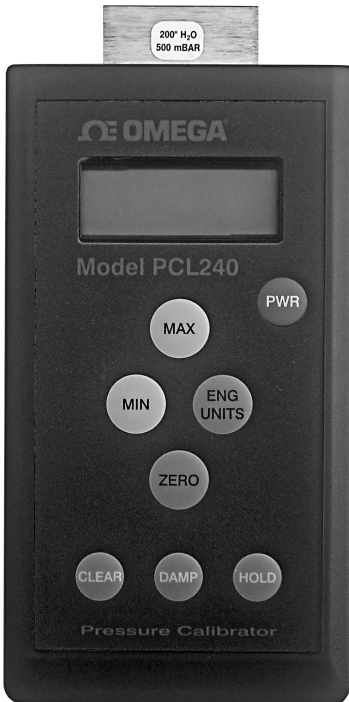




User's Guide



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M-3126/0906 PCL240 Pressure Calibrator



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PCL240

1. Introduction

The PCL240 is designed to be an accurate, easy to use pressure calibrator/manometer for a variety of pressure measuring applications. Its two port differential design allows the unit to be used in both gage and differential measurements providing a high degree of versatility. The PCL240 is capable of storing maximum and minimum pressure readings along with a hold function to freeze a reading if desired.

1.1 Customer Service

Omega Engineering

One Omega Drive
Box 4047
Stamford, CT 06907-0047

Tel: (203) 359-1660

Fax: (203) 359-7811

www.omega.com

email: cservice@omega.com

1.2 Unpacking



Remove the packing list and verify that all equipment has been received. If there are any questions about the shipment please call Omega at 1-800-826-6342. When the shipment is received inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE: The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material and carton in the event reshipment is necessary.

1.3 Safety information

Symbols Used

The following table lists the International Electrical Symbols. Some or all of these symbols may be used on the instrument or in this manual.

Symbol	Description
	AC (Alternating Current)
	AC-DC
	Battery
	CE Complies with European Union Directives
	DC
	Double Insulated
	Electric Shock
	Fuse
	PE Ground
	Hot Surface (Burn Hazard)
	Read the User's Manual (Important Information)
	Off
	On

The following definitions apply to the terms "Warning" and "Caution".

- "Warning" identifies conditions and actions that may pose hazards to the user.
- "Caution" identifies conditions and actions that may damage the instrument being used.

Use the calibrator only as specified in this manual, otherwise injury and damage to the calibrator may occur.

 **Warning**

To avoid possible electric shock or personal injury:

- Do not apply more than the rated voltage. See specifications for supported ranges.
- Follow all equipment safety procedures.
- Do not use the calibrator if it is damaged. Before you use the calibrator, inspect the case. Look for cracks or missing plastic. Pay particular attention to the insulation surrounding the connectors.
- Select the proper function and range for your measurement.
- Make sure the battery cover is closed and latched before you operate the calibrator.
- Remove test leads from the calibrator before you open the battery door.
- Inspect the test leads for damaged insulation or exposed metal.
- When using the probes, keep your fingers away from the probe contacts. Keep your fingers behind the finger guards on the test leads.
- Do not use the calibrator if it operates abnormally. Protection may be impaired. When in doubt, have the calibrator serviced.
- Do not operate the calibrator around explosive gas, vapor, or dust.
- Disconnect test leads before changing to another measure or source function.
- When servicing the calibrator, use only specified replacement parts.
- To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator appears.

 **Caution**

To avoid possible damage to calibrator or to equipment under test:

- Use the proper jacks, function, and range for your measurement or sourcing application.

2. Getting Started

Before beginning, become familiar with the keypad layout and the configuration of the pressure manifold connections. Note the location of the high and low pressure ports as indicated by the label on the rear of the calibrator.

Install the 9V alkaline battery by removing the two retaining screws securing the battery compartment door. Once the battery is in place secure the battery compartment door by tightening the retaining screws. The PCL240 is now ready for operation.

3. Media Compatibility

The PCL240 low pressure models (10", 200", 30 PSI and 100 PSI) can work with liquids and gases that are compatible with the following wetted materials:

- Silicon
- RTV
- Glass
- Ceramic
- Buna-N

The high pressure versions of the PCL240 (300 PSI, 3,000 PSI) can work with any liquid or gas compatible with 316 stainless steel and nickel plated brass.

4. Operating Procedure

1. Connect the desired 1/8NPT fitting to the pressure manifold. Note that for gage (positive pressure) measurements use the **HIGH** input port. If differential measurements are being made, both ports must be used with the higher of the two pressures going into the **HIGH** input port. The 300 and 3000 PSI versions have a single port since they operate as a gauge only device.
2. Turn on power and select the desired Engineering units you wish to use. Pressing the **ENG. UNITS** key will allow you to toggle through the available selections.
3. With the calibrator open to ambient pressure press the **ZERO** key to zero the reading.
4. Apply the pressure to be measured. If the reading is unstable due to pressure fluctuations, press the **DAMP** key to dampen the reading. To disable the damping function, press **DAMP** again.
5. The PCL240 can be used to monitor a pressure then recall the maximum and minimum values. When pressure is introduced into the port, the pressure value is automatically stored as maximum or minimum values. As the pressure changes, the minimum and maximum values are constantly updated. These stored values can be cleared at any time by

pressing the **CLEAR** key. The memory is also cleared when the calibrator is turned off.

To recall a stored value, press and hold either the **MAX** or **MIN** key, depending on the reading you wish to review. When the key is released the calibrator returns to the present reading value.

- 6. The PCL240 can be used to hold a pressure reading to be viewed after the pressure has changed. Pressing the **HOLD** key enables the hold function, pressing **HOLD** again disables it.

5. Accuracy

The PCL240 is checked against a NIST traceable reference before shipment to verify that it meets its accuracy specification. This accuracy is based at 25°C and error allowances must be made when operating at extreme temperatures. The specifications below list the stability and operating temperature range of the PCL240.

6. Specifications

Range

(Model PCL240-10")	-10 to 10" H ₂ O
(Model PCL240-200")	-200" to 200"H ₂ O (0-7PSI)
(Model PCL240-30)	-14 to 30 PSI
(Model PCL240-100)	-14 to 100 PSI
(Model PCL240-300)	-14 to 300 PSI
(Model PCL240-3000)	-14 to 3000 PSI

Accuracy @23 ±5°C

30/100 PSI, 200"	±0.05% F.S.
300/3000 PSI	±0.05% of Reading ±2 LSD
10"	±0.1% F.S.

Engineering Units

PSI, in H₂O, cm H₂O,
mm H₂O, BAR,
mm Hg, KPa

Operating Temperature

0 to 50°C

Storage Temperature

-20 to 60°C

Stability

0.01% F.S./°C outside of 23°C ± 5°C

MAX Overpressure

2x for ranges >100 PSI
3x for ranges <30 PSI

Power

9V alkaline battery

Case Size

1.43" x 3.15" x 5.7"

Weight

12 oz.

7. Maintenance

A. Battery Selection

The PCL240 operates on a standard 9V alkaline battery or an optional rechargeable 9V Ni-Cd battery. For most applications the 9V alkaline battery will suffice; however, in heavy use applications the 9V Ni-Cd may be a better choice. The 9V Ni-Cd battery supplied by Omega will offer approximately 3 hours of continuous use at 12 mA output on a full charge (the alkaline battery will yield about 12 hours). The charger supplied by Omega will provide an overnight charge rate (10-12 hours) and will also power the PCL120 for bench use while maintaining a float charge on the Ni-Cd battery.

Warning: Never connect the AC adapter/ charger with the 9V alkaline battery installed.

To order the 9V Ni-Cd battery or AC adapter/charger contact Omega Engineering at 800-826-6342.

B. Input Protection

The PCL240 incorporates a fuseless input protection and will tolerate most misconnections up to 250 VAC or 250 VDC for up to 30 seconds duration. Because of this protection no maintenance is required.

C. Calibration

The PCL240 is designed to hold its rated accuracy for a minimum of one (1) year. It is therefore recommend that an annual re-calibration be done to ensure operation within specification. Contact Omega's Customer Service Department for re-calibration information at 1-800-826-6342 or www.omega.com.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of 13 months from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal one (1) year product warranty to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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