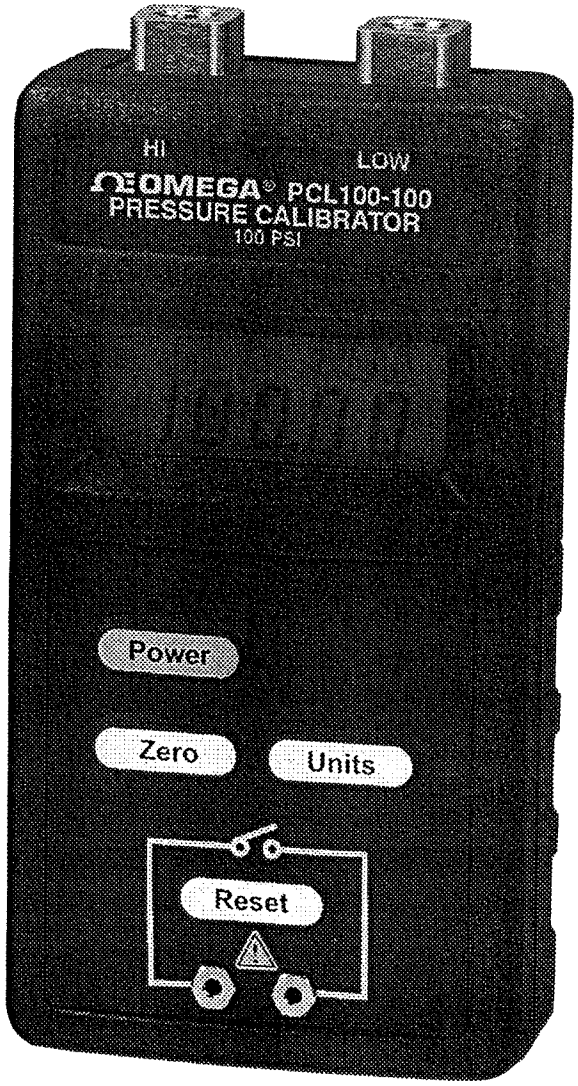

User's Guide

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MADE IN USA

CE

PCL-100
Pressure Calibrator

Safety Considerations

- It is imperative that all system pressure is relieved prior to making any connections or disconnections. Failure to relieve system pressure could result in serious personal injury and/or equipment damage.
- Always exercise standard physical protection practices (i.e., eye protection, gloves, protective clothing, etc.) when working around pressure devices.

Connections

Connect the Model PCL-100 to the line or device under test via the pressure input port(s) at the top of the case. External air supply fittings must be installed in the pressure input port(s) bulkhead fitting. For 10-100 psi range units, this is a 1/8"-27 NPT female thread. For 300-2000 psi range units, this is a 1/4"-18 NPT female thread.

To install the fitting:

1) Wrap the supply fitting threads with two turns of Teflon tape.

2) Securely tighten the supply fitting. Use a 5/8" open-end wrench on the differential input port or a 7/8" open-end wrench on the isolated port to prevent it from rotating while the supply fitting is being tightened.

Operating Modes

The Model PCL-100 features two operating modes:

- **Pressure Measurement mode:** In this mode, pressure is measured and displayed. This is the default mode when the calibrator is turned on unless another mode is specified.
- **Setup mode:** This mode is enabled by pressing and holding the **Reset** key while turning on the calibrator. Release the **Reset** key when AUTO appears on the display. To exit the Setup mode and return to the Pressure Measurement mode, press the **Reset** key.

  This mode permits the Battery Save and Zero Key Enable features to be turned on or off (the factory default is ON for both). When the Setup mode is enabled, AUTO and the current state of the Battery Save feature (ON or OFF) will be displayed. Press the **Units** key to toggle the Battery Save feature on or off. Press the **Reset** key to save the displayed Battery Save state and return to the Pressure Measurement mode. Alternately, press the **Zero** key to save the displayed Battery Save state and display the current state of the Zero Key Enable feature (ON or OFF). Press the **Zero** key to toggle the Zero Key Enable feature on or off. Press the **Reset** key to save the displayed Zero Key Enable state and return to the Pressure Measurement mode.

Function Keys

The Model PCL-100 keypad contains four function keys

- **Power key:** This key turns the calibrator on or off. When the calibrator is turned on, the measured pressure will be displayed. The engineering units that were in use when the calibrator was turned off will be indicated.

  If the Battery Save feature is enabled via the Setup mode, the calibrator will turn itself off approximately 15 minutes after the last key is pressed.
- **Zero key:** If this key is pressed while the Pressure Measurement mode is enabled, the current pressure is stored as the "zero" value. This value is then subtracted from all subsequent display readings. This value is retained even when calibrator power is turned off.

  If this key is pressed immediately after pressing the **Reset** key, the Factory "zero" value is recalled.

  In Setup mode, pressing this key will toggle the Zero Key Enable feature on and off.
- **Units key:** This key scrolls through the list of available engineering units. The display will update to indicate the selected units and the displayed pressure value will be converted to the selected engineering units. If the selected engineering units are not appropriate for the calibrator's range (i.e., mm H_2O on a 0-2000 psi calibrator), five dashes ("-----") will appear on the display. The selected engineering unit will remain in use until a new one is selected, even when calibrator power is turned off.

  If this key is pressed while the Setup mode is enabled, the Battery Save feature will toggle on and off.
- **Reset key:** When the switch test input changes state, the display will "freeze" to lock in the pressure reading. Pressing this key resumes normal calibrator operation.

  If this key is pressed immediately before pressing the **Zero** key, the Factory "zero" value is recalled.

OPERATING INSTRUCTIONS

Display

The five-digit liquid crystal display indicates the pressure value, various operating legends, and error messages. In Pressure Measurement mode, the measured pressure value and the selected engineering units will be displayed. When in Setup mode, SETUP will be displayed.

When an error condition is detected, a fault legend will be displayed. BATTERY will be displayed if the battery voltage is low. OVR will appear on the display instead of the engineering units if the input pressure is outside the range of the calibrator. ERROR will be displayed if the input pressure is too large to be displayed. If the selected engineering units are inappropriate for the calibrator's range (i.e., mm H2O on a 0-2000 psi calibrator), five dashes ("-----") will be displayed.

Switch Testing

The switch test feature is a "dry circuit" test. No external power should be connected to the switch being tested. To use the switch test feature:

1) Connect the electrical contacts of the switch being tested to the jacks on the front of the Model PCL-100.

2) Connect the pressure input of the switch being tested to the pressure input port on the Model PCL-100 and to a source of pressure.

3) Slowly change the pressure.

4) The display will continuously indicate the pressure until the switch opens or closes. When the switch changes state, the display will freeze, indicating the pressure just as the switch changed state. The display will indicate OPN if the switch is open or CLS if the switch is closed.

5) Press the Reset key to return the Model PCL-100 to normal operation.

Replacing the Batteries

The Model PCL-100 is powered by four AA batteries. When battery voltage is low, BATTERY will be indicated on the display. To replace the batteries:

1) Remove the two screws from the lower rear of the calibrator.

2) Remove the rear cover.

3) Remove the batteries from the battery clips.

4) Install fresh AA batteries, with the proper polarity, in the battery clips. (Alkaline batteries provide the longest service life.)

5) Install the rear cover.

6) Replace the two screws on the rear of the calibrator.

Ranges/Resolution

Pressure Range psi	Full Scale Pressure kPa	Full Scale Pressure mBAR	Full Scale Pressure BAR	Full Scale Pressure Kgf	Full Scale Pressure Inches Hg	Full Scale Pressure mm Hg	Full Scale Pressure Inches H_2O	Full Scale Pressure mm H_2O
10.000*	70.00	700.0	NA	NA	20.000	500.0	270.00	7000
30.000*	200.00	2000.0	2.0000	2.0000	60.00	1500.0	830.0	20,000
100.00*	700.0	7000	7.000	7.000	200.00	5000	2700.0	NA
300.00	2000.0	20,000	20.000	20.000	600.0	15,000	8300	NA
1000.0	7000	NA	70.0	70.0	2000.0	NA	NA	NA
2000.0	14,000	NA	140.00	140.00	4000.0	NA	NA	NA

SPECIFICATIONS

(Unless otherwise indicated, specifications are reffered to an ambient temperature of 23°C ±1°C (72°F ±2°F)

Pressure Ranges/Resolution:	See Table on page 1
Sensor Types:	
10-100 psi ranges:	Differential, non-isolated
300-2000 psi ranges:	Isolated
Calibrated Accuracy:	±0.05% of full scale ± 1 LSD
Switch Test (dry circuit only):	Display will freeze when switch test input changes state; normal operation is resumed when Reset key is pressed
Maximum Indicated Pressure:	At least 105% of full scale
Overload Safe:	200% of full scale on pressure input; 250 VAC on switch test input
Operating Temperature:	-9°C to 50°C (15°F to 122°F)
Storage Temperature:	-28°C to 85°C (-20°F to 185°F)
Media Compatibility:	
10-100 psi ranges:	Any gas or liquid compatible with glass, ceramic, silicon, RTV, and nickel
300-2000 psi ranges:	Any gas or liquid compatible with 316 stainless steel
Pressure Connection:	
10-100 psi ranges:	1/8"-27 NPT female bulkhead fitting
300-2000 psi ranges:	1/4"-18 NPT female bulkhead fitting
Engineering Units:	psi, KPa, Bar, mBar, kgF/cm^2, mm Hg, inches Hg, mm H_2O*, inches H_2O* (*Reference temperature = 20°C [68°F])
Zero Adjustment:	Via front panel pushbutton, ±10% of full scale
Display:	5-digit LCD with status indicators
Power:	Four AA alkaline batteries
Battery Life (typical):	100 powered hours; automatic shutoff after 15 minutes (user defeatable)
Size (HWD):	170 mm x 82 mm x 44 mm (6.75" x 3.25" x 1.75")
Weight:	0.43 kg (15 oz.)

Warranty

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **37 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the normal **three (3) years product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit should malfunction, 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 being 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, EXPRESSED 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.

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It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

WARNING: These products are not designed for use in, and should not be used for, patient connected applications.

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

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