

User's Guide



<http://www.omega.com>
e-mail: info@omega.com



PCL12
Pressure Calibrator



OMEGAnetSM On-Line Service http://www.omega.com	Internet e-mail info@omega.com
---	--

Servicing North America:

USA: One Omega Drive, Box 4047
ISO 9001 Certified Stamford, CT 06907-0047
Tel: (203) 359-1660 FAX: (203) 359-7700
e-mail: info@omega.com

Canada: 976 Bergar
Laval (Quebec) H7L 5A1
Tel: (514) 856-6928 FAX: (514) 856-6886
e-mail: info@omega.ca

For immediate technical or application assistance:

Usa and Canada: Sales Service: 1-800-826-6342 / 1-800-TC-OMEGASM
Customer Service: 1-800-622-2378 / 1-800-622-BESTSM
Engineering Service: 1-800-872-9436 / 1-800-USA-WHENSM
TELEX: 996404 EASYLINK: 62968934 CABLE: OMEGA

Mexico and Latin America: Tel: (95) 800-826-6342 FAX: (95) 203-359-7807
En Español: (95) 203-359-7803
e-mail: espanol@omega.com

Servicing Europe:

Benelux: Postbus 8034, 1180 LA Amstelveen, The Netherlands
Tel: (31) 20 6418405 FAX: (31) 20 6434643
Toll Free in Benelux: 0800 0993344
e-mail: nl@omega.com

Czech Republic: ul. Rude armady 1868, 733 01 Karvina-Hranice, Czech Republic
Tel: 420 (69) 6311899 FAX: 420 (69) 6311114
Toll free: 0800-1-66342
e-mail: czech@omega.com

France: 9, rue Denis Papin, 78190 Trappes
Tel: (33) 130-621-400 FAX: (33) 130-699-120
Toll Free in France: 0800-4-06342
e-mail: france@omega.com

Germany/Austria: Daimlerstrasse 26, D-75392 Deckenpfronn, Germany
Tel: 49 (07056) 3017 FAX: 49 (07056) 8540
Toll Free in Germany: 0130 11 21 66
e-mail: info@omega.de

United Kingdom: One Omega Drive, River Bend Technology Centre
ISO 9002 Certified Northbank, Irlam, Manchester
M44 5EX, England
Tel: 44 (161) 777-6611 FAX: 44 (161) 777-6622
Toll Free in United Kingdom: 0800-488-488
e-mail: info@omega.co.uk

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.

The information contained in this document is believed to be corrected but OMEGA Engineering Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

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

INTRODUCTORY NOTE

*This publication contains operating instructions, as well as a description of the principles of operation, of **PCL12** pressure calibrator.*

***OMEGA** has used the best care and efforts in preparing this book and believes the information in this publication are accurate. The **OMEGA** products are subjected to continuous improvement, in order to pursue the technological leadership; these improvements could require changes to the information of this book. **OMEGA** reserves the right to change such information without notice.*

*No part of this document may be stored in a retrieval system, or transmitted in any form, electronic or mechanical, without prior written permission of **OMEGA Engineering Inc.***

***PCL12** units use sophisticated analogic and digital technologies. Any maintenance operation must be carried out by qualified personnel ONLY. We recommend to contact our technicians for any support requirements.*

***PCL12** is fully tested in conformity with the directive n°89/336/CEE Electromagnetic Compatibility. **OMEGA** shall not be liable in any event, technical and publishing error or omissions, for any incidental and consequential damages, in connection with, or arising out of the use of this book.*

1 General

PCL12 is a microprocessor digital pressure gauge of new generation, its advanced analog section ensures a very high long-term stability, and its converter A/D with 16 bits guarantee 65.000 internal divisions. This feature, together with the 0,05% accuracy class, make it an ideal laboratory instrument: the **PCL12** is specifically proposed as First Line Sampling for Metrologic Laboratories, and it's delivered together with the SIT certificate. The pressure gauge has internal batteries with 1 year autonomy, which is also guaranteed by the AUTO-POWER-OFF function, that turns off the pressure gauge if no pressure variation is detected within 30 minutes. The user can select different engineering units (mbar, bar, kPa, MPa, psi), and can program different resolutions and digital filter according to the application. In order to increase the integration level of the components, a combined traditional and SMT technology has been applied; which makes the pressure gauge more resistant against mechanical stresses and vibrations and ensures the maximum reliability of the electronic circuit. The display also show an analog indication bar of pressure always active also into a program-menu.

Main features:

- **1 YEAR AUTONOMY WITHOUT RECHARGE**
- **PROGRAMMABLE RESOLUTION**
- **DIGITAL FILTER**
- **PROGRAMMABLE MEASURE UNIT**
- **PEAK FUNCTION (positive and negative)**
- **RS232 OUTPUT (optional)**

1.1 Specifications

- ◆ **RELATIVE PRESSURE:** 20 - 50 - 100 - 250 - 350 bar
- ◆ **ACCURACY:** < ±0.05% f.s. (Including linearity, hysteresis and temperature effect from 0 to +50°C)
- ◆ **POWER SUPPLY:** n° 4 Alkaline Battery size AA
- ◆ **AUTONOMY:** 1 YEAR
- ◆ **MAX FULL SCALE:** 60.000 div.
- ◆ **PROGRAMMABLE MEASURING UNITS:** *mbar- bar- MPa- Kpa- psi (other units on request)
- ◆ **PROGRAMMABLE RESOLUTION:** 1-2-5-10
- ◆ **PROGRAMMABLE BAUD RATE:** 9600, 4800,2400
- ◆ **ZERO FUNCTION:** 100%
- ◆ **PEAK FUNCTION:** positive and negative
- ◆ **READING PER SEC.:** 3
- ◆ **DISPLAY:** 5 digit custom LCD
- ◆ **MECHANICAL LIMIT VALUES RELATED TO NOMINAL PRESSURE:**
 - service pressure 100%
 - max. permissible pressure 150%
 - breaking pressure >300%
 - high dynamic pressure 75%
- ◆ **SERVICE TEMPERATURE RANGE:** from 0 to 50 °C
- ◆ **STORAGE TEMPERATURE:** from -10 to +60°C
- ◆ **STANDARD PROCESS COUPLING:**
 - Pressure gauge 1/2" BSP male
 - Pump 1/4" NPT female
- ◆ **GASKET ADVISED:** USIT A 63-18
- ◆ **TIGHTENING WRENCH:** 27mm
- ◆ **TIGHTENING TORQUE:** 28Nm
- ◆ **PROTECTION CLASS (DIN 40050):** IP60
- ◆ **MATERIAL OF THE SENSOR:** INOX 17-4 pH
- ◆ **MATERIAL OF THE CONTAINER:** ALUMINIUM
- ◆ **ELECTRICAL CONNECTION (RS232C):** tank SUB D 9 pole FEMALE




2 Operating instructions

The **PCL12** LCD can be divided into 3 different areas as follow:

- ◆ The central area display the measured pressure value using the selected unit.
- ◆ The lower area display the measured value as bargraph referred to the full scale value (this is active in program mode also).
- ◆ The upper area show the active function (Zero, Peak+, Peak- e Low-Bat).

2.1 Keyboard

3 keys are available to program and operate with the calibrator.

	<p>ON Switch the PCL12 on. The instrument power off is automatic with a programmable delay (see par. 2.2).</p> <p>Set Press this key for 3 seconds to go in programming mode.</p>
	<p>ZERO Zeroing the pressure displayed. It is possible to run the function only if the displayed value is less than 10% of full scale.</p> <p>↓ In programming mode allows to decrease the values of the selected parameter.</p>
	<p>Peak Activating of peak+ (press it for 1 sec.) or peak- (press it for 5 sec.). This function display the max or min measured pressure.</p> <p>↑ In programming mode allows to increase the values of the selected parameter.</p>



2.2 Programming

It is possible, pressing the “SET” key for 3 seconds to activate the programming mode.

To select the next parameter and confirm the previous value, you have to press the “SET” key. After you have run all parameters, **PCL12** returns in measuring mode.

Unit	It is possible to select the measuring unit using the ↓ and ↑ keys.
FL XX	It is possible to modify the digital filter constant (from 0 to 99) using the ↓ and ↑ keys for instable and pulsing pressure measurements. This function change the display conversion time; if you have to measure peaks, you should set the constant to the minimum possible.
r XX	It is possible to change the measuring resolution (possible values are 1, 2, 5 and 10).
oFFXX	Set the auto power off time (from 1 to 99 minutes). The 0 value, disable the function and the instrument will be on all time. The function begin the time counting if the PCL12 doesn't measure pressure changes higher than 10% f.s.
bAUdX	Change the RS232 serial interface communication speed (if installed). Possible values are: 1=4800baud, 2=9600baud, 3=19200baud, 0=disable.

2.3 Power Supply

PCL12 calibrator is powered by 4 type AA 1.5V batteries. These batteries allows \approx 1 Year autonomy operative life. The "LOW BAT" message will be displayed if the batteries needs to be changed. Measured pressure will be incorrect if the LOW BAT message is displayed.

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 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 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.

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. 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.

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.

OMEGA is a registered trademark of OMEGA ENGINEERING, INC.

(C) Copyright 1999 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without prior written consent of OMEGA ENGINEERING, INC.

Where Do I Find Everything I Need for Process Measurement and Control? OMEGA...Of Course!

TEMPERATURE

- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

PRESSURE, STRAIN AND FORCE

- Transducers & Strain Gauges
- Load Cells & Pressure Gauges
- Displacement Transducers
- Instrumentation & Accessories

FLOW/LEVEL

- Rotameters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

pH/CONDUCTIVITY

- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

DATA ACQUISITION

- Data Acquisition & Engineering Software
- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

HEATERS

- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL

- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments