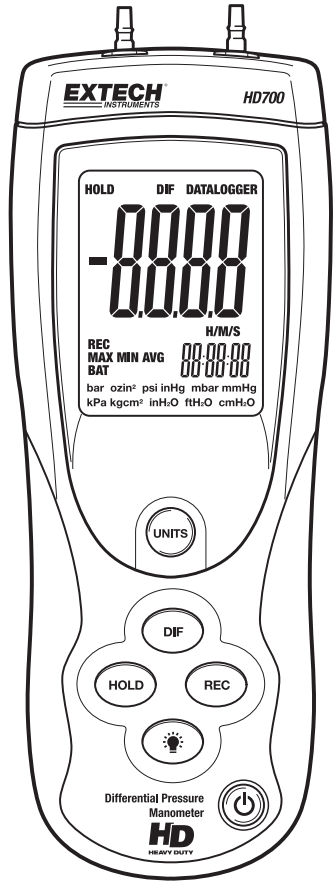
User Guide

EXTECH INSTRUMENTS

Heavy Duty
Differential Pressure Manometer

Model HD700



Warranty

EXTECH INSTRUMENTS CORPORATION *warrants this instrument to be free of defects in parts and workmanship for three years from date of shipment (a six month limited warranty applies to sensors and cables). If it should become necessary to return the instrument for service during or beyond the warranty period, contact the Customer Service Department at (781) 890-7440 ext. 210 for authorization or visit our website www.extech.com for contact information. A Return Authorization (RA) number must be issued before any product is returned to Extech. The sender is responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. Extech specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. Extech's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.*

Introduction

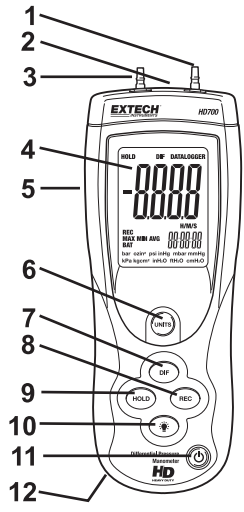
Congratulations on your purchase of the Extech Manometer Model HD700.

This device measures gauge and differential pressure in the range of ±2.000 psi. The HD700 offers eleven (11) units of measure (user selectable by front panel pushbutton) and has a differential input that uses convenient quick-disconnect fittings.

Advanced features include DATA HOLD, MIN-MAX-AVG RECORD mode, ZERO/OFFSET, AUTO POWER OFF, and USB PC interface.

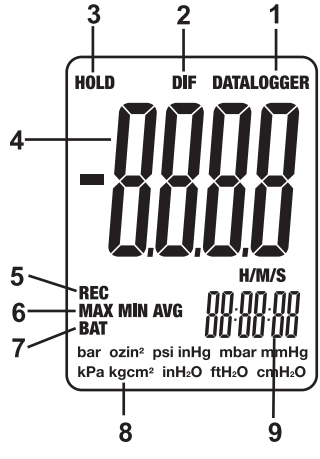
This instrument is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

Meter Description



1. P2 input
2. AC adaptor jack
3. P1 Input
4. LCD Display – Indicates the measurement data, unit of measure, elapsed timer, and function symbols as described in this manual
5. USB PC interface jack (3.5mm) – For use with data acquisition software
6. UNIT button – Press to select the unit of measure
7. DIF button– Press to display differential pressure. Also used to OFFSET the displayed readings.
8. RECORD button– Press to access the MIN/MAX/AVG recording mode
9. HOLD / ZERO button– Press to freeze the displayed reading. Also used to zero the display (press and hold until display shows all zeroes).
10. BACKLIGHT button – Press to switch the display backlight ON. The backlight will automatically turn OFF after 40 seconds.
11. POWER button – Press to turn the meter ON or OFF
12. Battery compartment (on rear)

Display



1. USB data output active
2. Differential Pressure Mode
3. Data Hold Mode
4. Primary display
5. Record Mode
6. MAX/MIN/AVG indicators
7. Low Battery Indicator
8. Pressure unit of measure
9. Elapsed Timer

Basic Operation

Meter Power

The HD700 uses a 9V battery for power. If the meter does not switch on when the POWER button is pressed or if the display shows **BAT**, replace the battery.

When the POWER buttons is pressed, the meter performs a short self-test and reverts to the settings in place when the meter was last turned off.

Automatic Power-off Feature

In order to conserve battery life, the meter has an automatic power off feature (after 20 minutes). To defeat this feature, press and hold the HOLD button while turning the meter on. Release the HOLD button when 'n' appears on the display. The meter will now remain on until the user turns it off or until the battery weakens. Note that the Auto Power OFF feature will be reactivated the next time the meter is turned off and then on.

Unit of Measure

Press the UNIT button to select the unit of measure. This meter offers eleven (11) units of measure as listed below.

Unit of Measure	**Display icon**
Pounds per square inch	psi
Inches of Mercury	inHg
Milli-bar	mbar
Millimeters of Mercury	mmHg
Kilo-Pascals	kPa
Kilograms per centimeter squared	$Kgcm^2$
Inches of water	inH_2O
Feet of water	ftH_2O
Centimeters of water	cmH_2O
Bars	Bar
Ounces per square inch	$ozin^2$

Fittings Connection

Connect tubing to the P1, P2 (or both) input port(s). If both inputs are used (differential mode), the meter displays a positive pressure reading if the P1 pressure is greater than P2 and a negative reading if P2 is greater than P1.

Zero Adjust and Offset function

To ZERO the meter: Before use and without fittings attached to the meter, press and hold the HOLD button for 3 seconds or until the display shows all zeroes.

To OFFSET meter readings: Press the DIF button while taking a measurement. Subsequent readings will represent the difference between the current measurement and the measurement that was on the display when the DIF button was pressed.

MIN-MAX-AVG Record Mode with Elapsed Timer

The RECORD function tracks the maximum (MAX), minimum (MIN), and average (AVG) readings with a time stamp. The elapsed timer is displayed on the lower right-hand corner of the LCD and informs the user of the time a MAX or MIN reading was recorded.

1. Press the RECORD button once. The REC indicator will appear on the display and the displayed elapsed timer will start (HH:MM:SS format [hours:minutes:seconds]).
2. Press the RECORD button again to view the highest (MAX) reading recorded since the RECORD button was first pressed. The MAX indicator and maximum reading will appear on the display. The elapsed timer will show the time of the MAX event.
3. Press the RECORD button again, the MIN indicator and the minimum value will appear on the display. The elapsed timer will show the time of the MIN event.
4. Press the RECORD button again, the AVG indicator and the average value will appear on the display. The elapsed timer will continue to run.
5. To return to normal operation, press and hold the RECORD button until the display indicators REC, MAX, etc. switch off.

Note that in the RECORD mode, the backlight and the power buttons are the only available functions.

USB PC Interface

The meter has a built-in USB port for use with the Manometer Data Acquisition software. The software allows the user to view, save, export, and print readings from the HD700. Refer to the documentation included with the software for complete details.

Displayed Error Codes

The following codes are displayed when the meter encounters an error.

ERR 1: Pressure input exceeds specified limits

ERR 2: Pressure input is too low to read

ERR 3: The Differential Pressure input exceeds specified limits

ERR 4: The Differential Pressure input is too low to read

Specifications

General Specifications

Display	Four digit LCD with function indicators
Units of Measure	BAR, mBAR, psi, kg/cm^2, mm Hg, inches Hg, kPa, feet H_2O, inches H_2O, cm H_2O, and oz in^2
Accuracy	±0.3%FS (@ 25°C)
Repeatability	±0.2% to 0.5% FS
Linearity/Hysteresis	±0.3%FS
Combined Accuracy	±1.1%FS
Maximum Pressure	10psi
Response time	0.5s typical
Input circuit	Differential inputs (P1 and P2)
Input Ports	Two metal 4.8mm, barbed for 1/8" (3.17mm) ID tubing
Data Hold	Freezes displayed reading
Sensor	Built-in piezoelectric sensors
Zero / Offset function	Pushbutton activation
Sample rate	0.5 sec. (approx.)
Compatibility	Air or non-corrosive and non-ionized gas (not intended for use with liquids)
Auto Power OFF	Meter turns off after approx. 20 minutes to conserve energy (can be deactivated)
PC Interface	Built-in USB serial interface
Storage conditions	14 to 140°F (0 to 60°C); < 80% RH
Operating conditions	32 to 122°F (0 to 50°C); < 80% RH
Battery power	9V alkaline battery (**BAT** low battery indicator)
Battery life	125 hours typical
Dimensions	8.2 x 2.9 x 1.9" (210 x 75 x 50mm)
Weight	9.8oz (280g)

Range Specifications

Range/Units (Max.)	Resolution
± 0.137 bar	0.001
± 137.8 mbar	0.1
± 2.000 psi	0.001
± 0.140 Kg/cm^2	0.001
± 103.4 mm Hg	0.1
± 4.072 inches Hg	0.001
± 13.79 kPa	0.01
± 4.612 feet H_2O	0.001
± 55.40 inches H_2O	0.01
± 140.6 cm H_2O	0.1
± 32.00 oz in^2	0.01

Warning: Pressure inputs of 10 psi or higher will damage the instrument. Do not apply pressure higher than the maximum pressure listed in the specification table

Battery Replacement

When the low battery indicator **BAT** appears on the display or if the meter does not switch on when the POWER button is pressed, it is necessary to replace the battery.

To replace the battery:

1. Open the battery compartment by sliding the meter's rear panel in the direction of the embossed arrow.
2. Replace the 9V alkaline battery
3. Replace the battery compartment cover.

Conversions

Useful conversion Factors

From	To	Multiplier
in of H_2O	in of Hg	0.07355
in of H_2O	cm of Hg	2.54
mm of Hg	in of H_2O	0.03937

Calibration and Repair Services

Extech offers repair and calibration services for the products we sell. Extech also provides NIST certification for most products. Call the Customer Care Department for information on calibration services available for this product. Extech recommends that annual calibrations be performed to verify meter performance and accuracy.



Support line (781) 890-7440

Technical Support: Extension 200; E-mail: support@extech.com

Repair & Returns: Extension 210; E-mail: repair@extech.com

Product specifications subject to change without notice

For the latest version of this User Guide, Software updates, and other up-to-the-minute product information, visit our website: www.extech.com

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