FLUKE®

700 Series Pressure Modules

Instruction Sheet

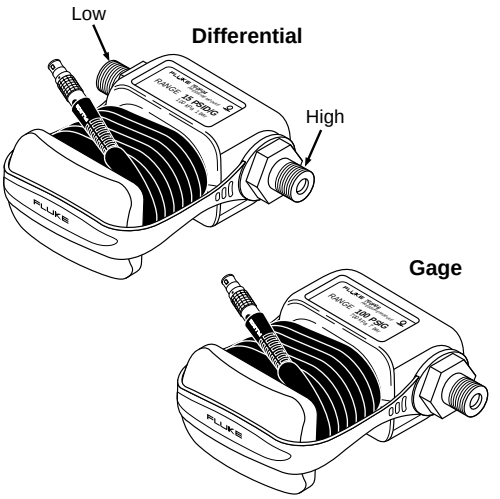

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Figure 1.

Introduction

The Fluke 700 Series Pressure Modules allow you to measure pressure with the Fluke 700 Series Process Calibrators. Read this sheet before you use the pressure module. This sheet contains specifications and information about how to avoid damaging the pressure module. See the Calibrator Users Manual for operating instructions.

The pressure module measures pressure using an internal microprocessor. It receives operating power from and sends digital information to the 700 Series calibrator.

Gage pressure modules have one pressure fitting and measure pressure with respect to atmospheric pressure. Differential pressure modules have two pressure fittings and measure the difference between the applied pressure on the high fitting versus the low fitting. Figure 1 shows the two types. A differential pressure module functions like a gage module when the low fitting is open.

Compatibility of Pressure Modules with Fluke Process Calibrators

Fluke-701, 702, 741, 743, and 744 Documenting Process Calibrators: The Fluke-700P00 and P27 Pressure Modules are completely compatible with these calibrators.

Fluke-716, 717, and 718 Pressure Calibrators: The Fluke-700P00 and P27 Pressure Modules will display pressure readings correctly on 716 Pressure Calibrators with firmware V1.2 or higher, or 717 and 718 Pressure Calibrators with firmware V1.3 or higher. To view the software revision, power-on the calibrator while holding down the MAX key. Read the REV number in the display. Contact your Fluke Service Center for a free update of calibrators with lower revision numbers. Reference PCN 4647.

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Fluke-725 Multifunction Process Calibrators: The Fluke-700P00 and P27 Pressure Modules will display correct pressure readings when used with Fluke-725 Multifunction Process Calibrators at internal software revision 1.9 and later. To view the software revision, power-on the calibrator while holding down the 0% key. Read the REV number in the display. Contact your Fluke Service Center for a free update of calibrators with lower revision numbers. Reference PCN 4578.

Box Contents

Pressure module, strap, 1/4 NPT to 1/4 ISO metric adapters, instruction sheet.

Protecting Yourself from Pressure Releases

To avoid a violent release of pressure in a pressurized system, shut off the isolation valve and slowly bleed off the pressure before you attach or remove the pressure module from the pressure line.

Avoiding Overpressure Damage

Applying pressure in excess of the BURST PRESSURE specified on the pressure module can destroy the pressure module. Burst pressure is 3X full scale (2X for 700P09, 30X for 700P00).

Table 1. Pressure Module Specifications[1]

MODEL	RANGE[2]	GAGE OR DIFFERENTIAL	ISOLATED OR NONISOLATED	REFERENCE UNCERTAINTY (23° ± 3°C)	STABILITY (1 YEAR)	TEMP (0° to 50°C)	TOTAL UNCERTAINTY (% of Full Scale)[3] 1 YEAR
FLUKE-700P00	0 to 1.000 in H_2O 0 to 0.249 kPa 0 to 0.002 bar	Differential	Nonisolated	0.300%	0.025%	0.025%	0.350%
FLUKE-700P01	0 to 10.00 in H_2O 0 to 2.49 kPa 0 to 0.02 bar	Differential	Nonisolated	0.200%	0.050%	0.050%	0.300%
FLUKE-700P02	0 to 1.0000 psi 0 to 6.8900 kPa 0 to 6.89 E–2 bar	Differential	Nonisolated	0.150%	0.070%	0.080%	0.300%
FLUKE-700P03	0 to 5.0000 psi 0 to 34.000 kPa 0 to 0.3400 bar	Differential	Nonisolated	0.050%	0.020%	0.030%	0.100%
FLUKE-700P04	0 to 15.000 psi 0 to 100.00 kPa 0 to 1.0000 bar	Differential	Nonisolated	0.025%	0.010%	0.015%	0.050%
FLUKE-700P05	0 to 30.000 psi 0 to 200.00 kPa 0 to 2.0000 bar	Gage	Isolated	0.025%	0.010%	0.015%	0.050%
FLUKE-700P06	0 to 100.00 psi 0 to 700.00 kPa 0 to 7.0000 bar	Gage	Isolated	0.025%	0.010%	0.015%	0.050%
FLUKE-700P27	0 to 300.00 psi 0 to 2000.0 kPa 0 to 20.000 bar	Gage	Isolated	0.025%	0.010%	0.015%	0.050%
FLUKE-700P07	0 to 500.00 psi 0 to 3400.0 kPa 0 to 34.000 bar	Gage	Isolated	0.025%	0.010%	0.015%	0.050%
FLUKE-700P08	0 to 1000.0 psi 0 to 7000.0 kPa 0 to 70.000 bar	Gage	Isolated	0.025%	0.010%	0.015%	0.050%
FLUKE-700P09	0 to 1500.0 psi 0 to 10000.0 kPa 0 to 100.000 bar	Gage	Isolated	0.025%	0.010%	0.015%	0.050%

1. Use of pressure zero function is required to achieve these specifications. Contact your Fluke Service Center for upgrade of your Fluke 701 or Fluke 702 V1.0, V1.1, or V1.2 calibrator.
2. Available pressure units (psi, kPa, bar, inHg, mmHg, inH_20, ftH_20., kg/cm^2, mmH_20, cmH_20) are determined by the calibrator being used.
3. Accuracy specifications apply for 0 to 100% of full scale, 0 to 50°C. 1% FS typical, -10 to 0°C. On 700P00 only, specification applies from 15 to 35°C.
4. Maximum Non-Destructive Pressure: 3X maximum rated pressure, including common mode pressure. (700P09: 2X, 700P00: 30X)
5. Maximum Common Mode Pressure: 3X maximum rated pressure. (700P09: 2X, 700P00: 30X)
6. Specifications reflect a confidence interval of 95%.

Avoiding Mechanical Damage

To avoid mechanically damaging the pressure module, never apply more than 10 ft.-lbs. of torque between the pressure module fittings or between the fittings and the body of the module. Always apply appropriate torque between the pressure module fitting and connecting fittings or adapters. Figure 2 shows the correct way and incorrect ways to use a wrench when applying torque to the pressure module fitting.

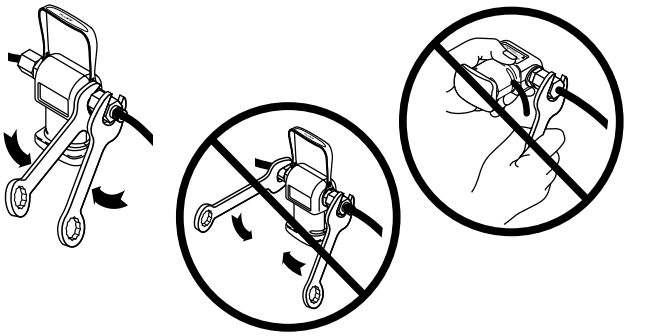

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Figure 2.

Avoiding Corrosion Damage

To avoid damaging the pressure module from corrosion, use it only with specified media as shown below:

- Isolated modules: any medium that is compatible with type 316 stainless steel.
- Nonisolated modules: dry, noncorrosive gasses only.

Recommended Measurement Technique

For best results, it is recommended that the module be pressurized to full scale and then vented to zero pressure (atmosphere) prior to zeroing and making measurements with the calibrator.

Note

Low range pressure modules may be sensitive to gravity. For best results, pressure modules 30 psi and below should be held at the same physical orientation from the time they are zeroed until the measurement is complete.

Performance Test

If you need to check that the pressure module meets its accuracy specification, use a dead weight tester or suitable pressure calibrator. The accuracy of the dead weight tester or pressure calibrator should be at least 4X better than the 700 Series pressure specification. Proceed as follows to verify that a pressure module is operating within specification:

1. Read the pressure value with no externally applied pressure to make sure the 0% of scale is correct. When reading the pressure with a 700 Series, press the ZERO key to remove any zero offset.
2. Connect the pressure module to a dead weight tester.
3. Set the dead weight tester to 20% of the pressure module's full scale value.
4. Make sure the reading agrees with the dead weight tester value within the Total Uncertainty specification in Table 1.
5. Set the dead weight tester to 40, 60, 80, and 100% of full scale and compare the respective readings.
6. If temperature sensitivity is of concern, repeat steps 1 through 5 at various controlled temperatures.

Pressure Calibration Kit

The Fluke-700PCK Pressure Calibration Kit makes it possible to calibrate pressure modules at ambient temperature with a precision pressure calibrator or dead weight tester at least 4x better than the module specification. A 386 or better PC and Windows® 3.1 or better are required. The kit is an optional accessory available from your distributor or Fluke.

Certifications

CE Conforms to European Standard EN61010-1, EN61326.

LIMITED WARRANTY & LIMITATION OF LIABILITY

Each Fluke product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is one year and begins on the date of shipment. Parts, product repairs and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries or to any product which, in Fluke's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

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Fluke's warranty obligation is limited, at Fluke's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke authorized service center within the warranty period.

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In Case of Difficulty

For service or calibration, call your nearest authorized Fluke Service Center. To contact Fluke call one of the following telephone numbers:

USA: 1-888-99-FLUKE (1-888-993-5853)
Canada: 1-800-36-FLUKE (1-800-363-5853)
Europe: +31 402-678-200
Japan: +81-3-3434-0181
Singapore: +65-738-5655
Anywhere in the world: +1-425-446-5500

Or, visit Fluke's Web site at www.fluke.com.

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