

9.2 MODEL 7MF4233, ABSOLUTE PRESSURE

This section contains a dimension drawing of the transmitter, a model designation table and performance specifications.

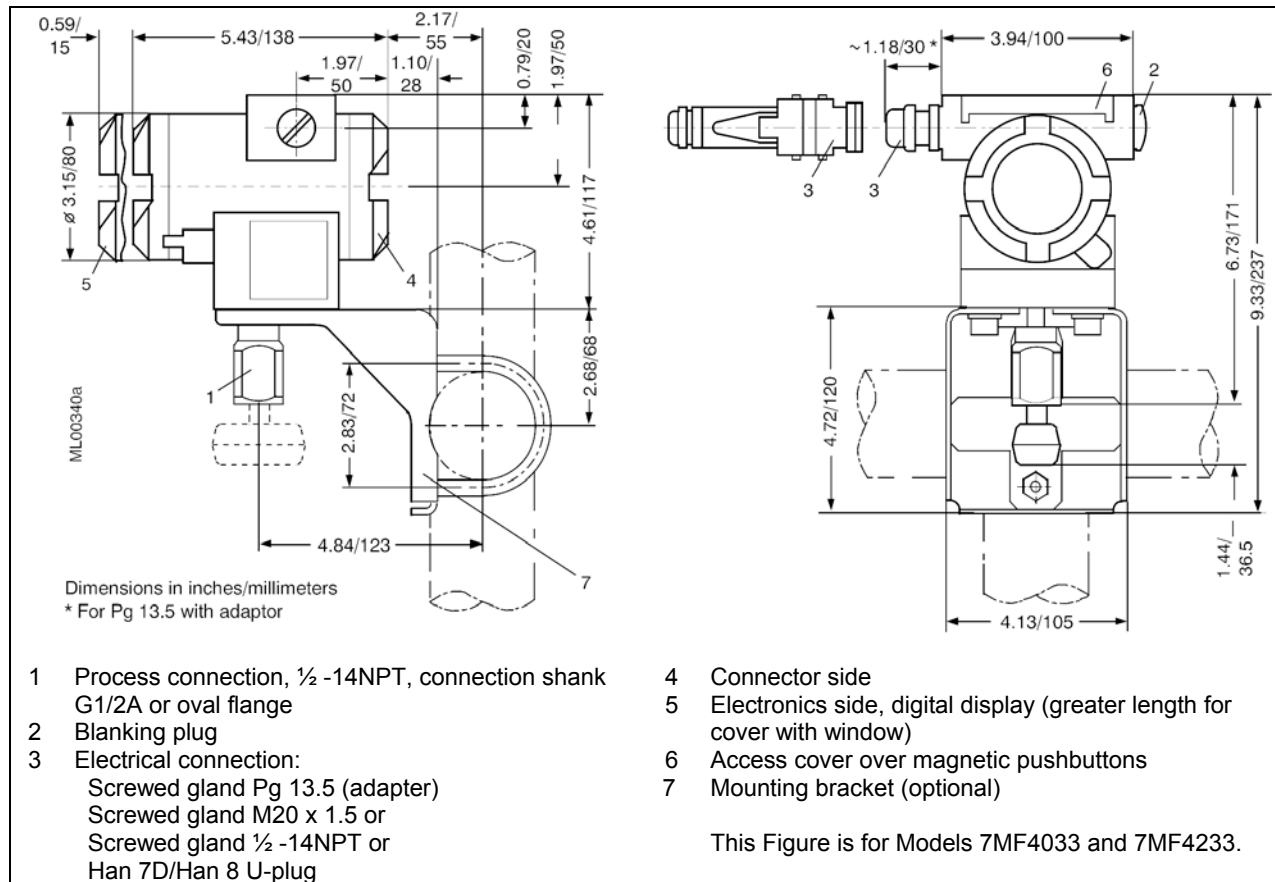


FIGURE 9-2 Model 7MF4233, Dimensions

TABLE 9-3 Model 7MF4233, Model Designation

| Absolute pressure, gauge construction, two-wire, series DSIII, 7MF4233- | | | | | | | | |
|---|--------------------------------|---|---|---|---|---|---|---|
| <u>Measuring cell filling</u> | <u>Measuring cell cleaning</u> | | | | | | | |
| Silicone oil | Standard | 1 | | | | | | |
| Inert liquid | Grease-free | 3 | | | | | | |
| <u>Span</u> | | | | | | | | |
| 8.3 to 250 mbar a | (0.12 to 3.63 psi a) | | D | | | | | |
| 43 to 1300 mbar a | (0.62 to 18.9 psi a) | | F | | | | | |
| 0.16 to 5 bar a | (2.32 to 72.5 psi a) | | G | | | | | |
| 1 to 30 bar a | (14.5 to 435 psi a) | | H | | | | | |
| <u>Wetted parts materials</u> | | | | | | | | |
| <u>Seal diaphragm</u> | <u>Process Connection</u> | | | | | | | |
| Stainless Steel | Stainless steel | | | A | | | | |
| Hastelloy | Stainless steel | | | B | | | | |
| Hastelloy | Hastelloy | | | C | | | | |
| Version for diaphragm seal | | | | Y | | | | |
| <u>Process connection</u> | | | | | | | | |
| • Connection shank G1/2A to EN 837-1 | | | | | 0 | | | |
| • Female thread 1/2-14 NPT | | | | | 1 | | | |
| • Oval flange stainless steel | | | | | | | | |
| - Mounting thread 7/16-20 UNF to EN 61518 | | | | | 2 | | | |
| - Mounting thread M10 to DIN 19213 | | | | | 3 | | | |
| • Male thread M20 x 1.5 | | | | | 5 | | | |
| • Male thread 1/2-14 NPT | | | | | 6 | | | |
| <u>Non-wetted parts material</u> | | | | | | | | |
| • Housing die-cast aluminum | | | | | | 0 | | |
| • Housing stainless steel precision casting | | | | | | 3 | | |
| <u>Version</u> | | | | | | | | |
| • Standard version | | | | | | | 1 | |
| • International version, English label inscriptions; documentation in 5 languages on CD | | | | | | | 2 | |
| <u>Explosion protection</u> | | | | | | | | |
| • Without | | | | | | | | A |
| • With ATEX; type of protection: | | | | | | | | B |
| - Intrinsic safety (Ex ia) | | | | | | | | D |
| - Explosion proof (Ex d) | | | | | | | | P |
| - Intrinsic safety and explosion-proof enclosure (Ex ia + Ex d) | | | | | | | | E |
| - Ex nA/nL (Zone 2) | | | | | | | | R |
| - Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D) | | | | | | | | N |
| • With FM + CSA, type of protection: intrinsic safety and explosion proof (is + xp) | | | | | | | | C |
| <u>Electrical connection / cable entry</u> | | | | | | | | |
| • Screwed gland Pg 13.5; Adapter | | | | | | | | A |
| • Screwed gland M20 x 1.5 | | | | | | | | B |
| • Screwed gland 1/2-14 NPT | | | | | | | | C |
| • Han 7D plug (plastic housing) includes mating connector | | | | | | | | D |
| • Plug M12 (metal) | | | | | | | | F |
| <u>Display</u> | | | | | | | | |
| • Without (digital indicator hidden, setting: mA) | | | | | | | | 1 |
| • With visible digital indicator, setting: mA | | | | | | | | 6 |
| • With customer specified digital indicator and setting, order code Y21 or Y22 required) | | | | | | | | 7 |

Additional selections and data on next page.

| Additional Model 7MF4233 Selections and Data* | Order Code |
|---|------------|
| Transmitter with mounting bracket of: | |
| - steel | A01 |
| - stainless steel | A02 |
| Plug: Han 7D (metal, gray) | A30 |
| Plug: Han 8U (instead of Han 7D) | A31 |
| Cable sockets for M12 connectors (metal) | A50 |
| Inscribing of rating plate (instead of German): | |
| - English | B11 |
| - French | B12 |
| - Spanish | B13 |
| - Italian | B14 |
| - English, pressure units in inH ₂ O or psi | B21 |
| Manufacturer's test/calibration certificate M to DIN 55350, part 18, and ISO 8402 | C11 |
| Acceptance test certificate to EN 10204-3.1 | C12 |
| Factory certificate to EN 10204-2.2 | C14 |
| "Functional Safety (SIL)" certificate | C20 |
| Setting upper limit of output signal limit to 22.0 mA | D05 |
| Manufacturer's declaration according to NACE | D07 |
| Type of protection IP68 | D12 |
| Digital indicator alongside the input keys | D27 |
| Supplied with oval flange | D37 |
| Use in or on Zone 1D/2D | E01 |
| Use in Zone 0 | E02 |
| Oxygen cleaning application, 160 bar g (2320 psi g) maximum, for oxygen measurement and inert liquid) | E10 |
| Explosion proof, intrinsic safety to INMETRO (Brazil) | E25 |
| Explosion proof, intrinsic safety to NEPSI (China) | E55 |
| Explosion protection, explosion proof to NEPSI (China) | E56 |
| Explosion proof, Zone 2 to NEPSI (China) | E57 |
| Measuring range to be set, specify in plane text (5 characters maximum): | |
| Y01: ... to ... mbar, bar, psi, kPa, MPa, | Y01 |
| Tag number/descriptor, 16 characters maximum, specify in plain text: | Y15 |
| Tag message, 27 characters maximum, specify in plain text | Y16 |
| Entry of HART address (Tag): 8 characters maximum, specify in plain text | Y17 |
| Setting of pressure indication in pressure units, specify in clear text: mbar, psi, kPa, MPa... | Y21 |
| Setting of pressure indication in non-pressure units, specify in plain text: l/min, m ³ /h, m, USgpm... (5 characters maximum) | Y22+Y01 |

Only Y01, Y21, Y22, Y25 and D05 can be factory preset.

* Add "-Z" to model number and specify Order Code(s).

TABLE 9-4 Model 7MF4233, Specifications

| | | | | | | | | | | | |
|---|---|-------------|---------------------------------------|--|--------------------|--|----------------------|---|----------------------|-----------------------------------|------------------------|
| <p>Input Measured variable Span (infinitely adjustable)</p> <p>Lower measuring limit • Measuring cell, silicone oil filling</p> <p>Upper measuring limit</p> | <p>Absolute pressure (gage construction)</p> <table border="0"> <tr> <td><u>Span</u></td> <td><u>Max. permissible test pressure</u></td> </tr> <tr> <td>8.3 to 250 mbar a (0.12 to 3.6 psi a) see Note</td> <td>6 bar a (87 psi a)</td> </tr> <tr> <td>43 to 1300 mbar a (0.62 to 18.9 psi a)</td> <td>10 bar a (145 psi a)</td> </tr> <tr> <td>160 to 5000 mbar a (2.32 to 72.5 psi a)</td> <td>30 bar a (435 psi a)</td> </tr> <tr> <td>1 to 30 bar a (14.5 to 435 psi a)</td> <td>100 bar a (1450 psi a)</td> </tr> </table> <p>0 mbar a (0 psi a)</p> <p>100% of maximum span</p> | <u>Span</u> | <u>Max. permissible test pressure</u> | 8.3 to 250 mbar a (0.12 to 3.6 psi a) see Note | 6 bar a (87 psi a) | 43 to 1300 mbar a (0.62 to 18.9 psi a) | 10 bar a (145 psi a) | 160 to 5000 mbar a (2.32 to 72.5 psi a) | 30 bar a (435 psi a) | 1 to 30 bar a (14.5 to 435 psi a) | 100 bar a (1450 psi a) |
| <u>Span</u> | <u>Max. permissible test pressure</u> | | | | | | | | | | |
| 8.3 to 250 mbar a (0.12 to 3.6 psi a) see Note | 6 bar a (87 psi a) | | | | | | | | | | |
| 43 to 1300 mbar a (0.62 to 18.9 psi a) | 10 bar a (145 psi a) | | | | | | | | | | |
| 160 to 5000 mbar a (2.32 to 72.5 psi a) | 30 bar a (435 psi a) | | | | | | | | | | |
| 1 to 30 bar a (14.5 to 435 psi a) | 100 bar a (1450 psi a) | | | | | | | | | | |
| <p>Output Output signal • Lower limit (infinitely adjustable) • Upper limit (infinitely adjustable)</p> <p>Load • Without HART communication • With Hart communication</p> | <p>4 to 20 mA</p> <p>3.55 mA, factory preset to 3.84 mA</p> <p>23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA</p> <p>$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A}$ in Ω; U_H: power supply in V</p> <p>$R_B = 230$ to 500Ω (SIMATIC PDM) or $R_B = 230$ to 1100Ω (HART Communicator)</p> | | | | | | | | | | |
| <p>Accuracy Reference Conditions</p> <p>Error in measurement and fixed-point setting (including hysteresis and repeatability) • Linear characteristic - $r \leq 10$ - $10 \leq r < 30$</p> <p>Long-term drift (temperature change +/-30°C (+/-54°F))</p> <p>Influence of ambient temperature • at -10 to +60°C (14 to +140°F) • at -40 to -10°C and +60 to +85°C (-40 to +14°F and 140 to +185°F)</p> | <p>To EN 60770-1</p> <p>Increasing characteristic, start of scale value 0 bar, stainless steel seal diaphragm, silicon oil filling, temperature 25°C (77°F) r: span ratio (r = max. span/set span)</p> <p>$\leq 0.1\%$</p> <p>$\leq 0.2\%$</p> <p>$\leq (0.1 * r)\%/year$</p> <p>$\leq (0.1 * r + 0.2)\%$</p> <p>$\leq (0.1 * r + 0.15)\%/10K$</p> | | | | | | | | | | |
| <p>Rated operating conditions Degree of protection (to EN 60529)</p> <p>Process temperature • Measuring cell, silicon oil filling • Measuring cell, inert filling liquid • In conjunction with dust explosion protection</p> <p>Ambient conditions • Ambient temperature, digital indicators • Storage temperature • Climatic class, condensation • Electromagnet compatibility</p> | <p>IP65</p> <p>-40 to +100°C (-40 to +212°F)</p> <p>-20 to +100°C (-4 to +212°F)</p> <p>-20 to +60°C (-4 to +140°F)</p> <p>-30 to +85°C (-22 to +185°F)</p> <p>-50 to +85°C (-58 to +185°F)</p> <p>Permissible</p> <p>To EN 61326 and NAMUR NE 21</p> | | | | | | | | | | |
| <p>Design Weight, approximate, without options</p> <p>Housing material</p> <p>Wetted parts materials • Connection shank • Oval flange • Seal diaphragm</p> | <p>1.5 kg (3.3 lb)</p> <p>Low copper die-cast aluminum, GD-AISi 12 or stainless steel precision casing, mat. No. 1.4408</p> <p>Stainless steel, mat. No. 1.4404/316L or Hastelloy C4, mat. No. 2.4610</p> <p>Stainless steel, mat. No. 1.4404/316L</p> <p>Stainless steel, mat. No. 1.4404/316L or Hastelloy C276, mat. No. 2.4819</p> | | | | | | | | | | |

| | |
|-----------------------------------|---|
| Measuring cell filling | Silicone oil or inert filling liquid; max. 160 bar a (2320 psia) with oxygen measurement |
| Process connection | Connection shank G1/2A to DIN EN837-1, female thread 1/2-14 NPT or oval flange to DIN 19213 with mounting thread M10 or 7/16-20 UNF to EN 16518 |
| Power Supply U_H | |
| Terminal voltage at transmitter | 10.5 to 45 Vdc 10.5 to 30 Vdc in intrinsically-safe mode |
| Certificate and approvals | See Table 9-20 |
| HART communication | |
| HART communication | 230 to 1100 Ω |
| Protocol | HART Version 5.x |
| Software for computer | SIMATIC PDM |

Note: 3.6 psi absolute (250 mbar a) Capsule

This measuring cell is designed for operation within the measuring limits of 0 to 3.63 psi (absolute). When stored in the normal ambient pressure of about 14.7 psi (absolute), the measuring cell is in the overload state. An overload error of up to 0.03 psi may occur. The overload disappears in normal operation within the measuring limits and the transmitter operates within specifications.

When performing accurate continuous pressure measurements within the measuring limits, a readjustment of the transmitter zero for absolute pressure must be performed after approximately one day (refer to Section 6.2.5).

If pressure measurements exceed the measuring limits repeatedly (e.g. batch processes with transitions between vacuum and ventilation), a measuring cell with a maximum range of 18.9 psi should be selected to avoid overloading.