

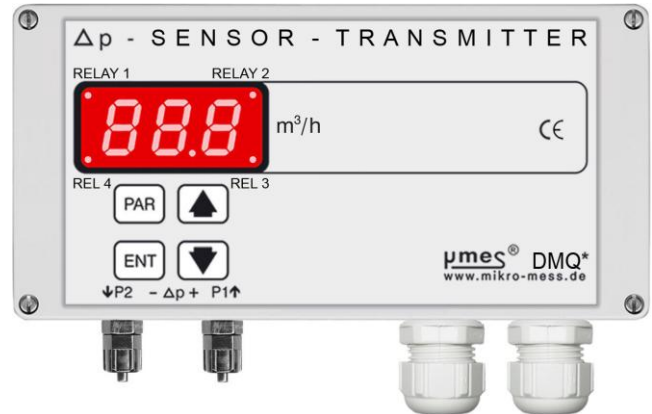
# **µmes® Δp-SENSOR-TRANSMITTER TYPE: DMQ\* DT-RAD**

Valid as of device no.: 10100000

Differential pressure, relative pressure (positive or negative pressure), programmable Δp measuring range



DMQ\*-0



DMQ\*-DT with buttons (T) in the cover

## DESCRIPTION

Robust, universal, industrial-grade Δp - SENSOR - TRANSMITTER for use worldwide with good long-time stability, with very low temperature drift and high single- or double-sided protection against overpressure and programmable Δp range, which the user can programme himself within the measuring span of a group and programmable display range e.g. in m<sup>3</sup>/h. 10 short circuit-proof analogue outputs with square root function 0-5 V, 0-10 V, 2-10 V, 0-20 mA, 4-20 mA or inverse: 5-0 V, 10-0 V, 10-2 V, 20-0 mA and 20-4 mA are programmable. The device has 3 relay outputs e.g. for min and/or max limits. A 4th relay output can be supplied as an option. Universal on supply voltages: Can be connected to 110-120 VAC, 230-240 VAC and 24 VDC. Small IP65 housing in shapely design.

**Examples:** Volume flow monitoring, Volume flow regulation, Industry etc.

Compact, universal Δp sensor-transmitter for the 3 indicators: overpressure, underpressure and differential pressure.

The differential pressure (+ P1↑ and P2↓ -), the overpressure (+ P1↑) or the underpressure (P2↓ -) are measured via the pressure connections which have integrated FT-P filters, displayed converted to e.g. volume flow in m<sup>3</sup>/h on the 3-digit digital display and output on the linear outputs with square root function.

Almost any kind of transmitter can be configured in one device with the 3 pressure indicators, the programmable measuring ranges and the 10 analogue outputs. This can reduce your costs for storage and servicing. Pressure measuring ranges from 0-0.4 mbar to 0-1000 mbar can be supplied.

For air-related applications with the ever-present turbulences, a programmable Δp damping of the switching points and the display is a necessary, functional advantage. 10 linear short circuit protected analogue outputs 0-5 V, 0-10 V, 2-10 V, 0-20 mA, 4-20 mA or inversely: 5-0 V, 10-0 V, 10-2 V, 20-0 mA and 20-4 mA are programmable and are available for volume flow - proportional output signal for further process controls.

## CHARACTERISTICS

- Universal electrical connection for 230-240 VAC and 110-120 VAC and 24 VDC in one device
- Pressure sensor highly overloadable and temperature compensated with manual zero-point calibration, with ZPC\* also automatic
- 9 device groups with user-programmable Δp measuring range within the measuring span of one group:
  - Group 1: 0 - 0.4 mbar to 0 - 2 mbar
  - Group 2: 0 - 1 mbar to 0 - 5 mbar
  - Group 3: 0 - 2 mbar to 0 - 10 mbar
  - Group 4: 0 - 4 mbar to 0 - 20 mbar
  - Group 5: 0 - 10 mbar to 0 - 50 mbar
  - Group 6: 0 - 20 mbar to 0 - 100 mbar
  - Group 7: 0 - 40 mbar to 0 - 200 mbar
  - Group 8: 0 - 100 mbar to 0 - 500 mbar
  - Group 9: 0 - 200 mbar to 0 - 1000 mbar
- Short circuit protected analogue output with square root function 0-5 V, 0-10 V, 2-10 V, 0-20 mA, 4-20 mA programmable, also inversely e.g. 20-4 mA
- Programmable Δp damping: Approx. 1 s to 240 s
- Relay output 1, as two-point regulator or limiting value contact, e.g. alarm, programmable
- Relay output 2, as two-point regulator or limiting value contact, e.g. alarm, programmable
- Relay output 3, as two-point regulator or limiting value contact, e.g. alarm, programmable
- OPTION: Relay output 4, as two-point regulator or limiting value contact, e.g. alarm, programmable
- All relay outputs with switch-over contacts, potential-free, switchable for manual tests
- Sample and hold function by means of which the Δp measuring value can be held
- Extreme ambient temperature range -20°C to +60°C
- Housing protection type IP 65. Housing also with membrane keypad in the lid and can be supplied for Ex areas according to ATEX
- Universal device for the lowest need for storage space, with meaningful functions required in practice
- Machinery directive 2006/42/EC, low voltage directive 2006/95/EC and EMC directive 2004/108/EC are fulfilled
- High reliability via "burn in"

The translation of this document is from the original German document and is for informative purposes only. Errors / omissions not excluded. Solely the original German document is binding.

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**TECHNISCHE DATEN / TECHNICAL DATA**

**Gruppe - max. Messbereich: / Group - max. range:**

<b>Messbereiche</b> $\Delta p$	:	0-0.4 - 0-2	Messspanne / measuring range	mbar.....	<b>1 - 2.....ORDER-INDEX: mbar-</b>
Gruppe 1-9	:	0-1 - 0-5	Messspanne / measuring range	mbar.....	<b>2 - 5.....ORDER-INDEX: mbar-</b>
<b>Pressure ranges</b> $\Delta p$	:	0-2 - 0-10	Messspanne / measuring range	mbar.....	<b>3 - 10.....ORDER-INDEX: mbar-</b>
Group 1-9	:	0-4 - 0-20	Messspanne / measuring range	mbar.....	<b>4 - 20.....ORDER-INDEX: mbar-</b>
	:	0-10 - 0-50	Messspanne / measuring range	mbar.....	<b>5 - 50.....ORDER-INDEX: mbar-</b>
	:	0-20 - 0-100	Messspanne / measuring range	mbar.....	<b>6 - 100.....ORDER-INDEX: mbar-</b>
	:	0-40 - 0-200	Messspanne / measuring range	mbar.....	<b>7 - 200.....ORDER-INDEX: mbar-</b>
	:	0-100 - 0-500	Messspanne / measuring range	mbar.....	<b>8 - 500.....ORDER-INDEX: mbar-</b>
	:	0-200 - 0-1000	Messspanne / measuring range	mbar.....	<b>9 - 1000.....ORDER-INDEX: mbar-</b>

**Wählen Sie eine Gruppe aus für die Messbereiche, die im Gerät verfügbar sein sollen.**

**Please choose out one group for the ranges, which should be integrated in the unit.**

**Anzeige, Display** : Digital, 3-stellig, 7-Segment- LED rot, 14 mm hoch, mit Tasten im Deckel .....**ORDER-INDEX: -DT-**  
**Tasten, buttons** : Digital, 3-digit, 7-segment - LED (red), 14 mm high, with buttons in the cover.  
 Digital, 3-digit, 7-segment - LED (red), 14 mm high. **Ohne Anzeige / without display...****ORDER-INDEX: -0-**

**Anzeige Einheit** : m/s .....**ORDER-INDEX: -m/s-**  
**Display unit** : m<sup>3</sup>/h .....**ORDER-INDEX: -m<sup>3</sup>/h-**  
 Nm<sup>3</sup>/h .....**ORDER-INDEX: -Nm<sup>3</sup>/h-**

**$\Delta p$ -Dämpfung, Damping** Programmierbar / programmable: ca. 1 s bis / till 240 s

**Überlastbarkeit** : **Statischer Gleichdruck einseitig / Static balanced pressure on one side:**  
**Overload capacity** : Messbereich / range, bis / up to: 0.4 - 10 mbar: pmax = 250 mbar  
 Messbereich / range, bis / up to: 4 - 20 mbar: pmax = 250 mbar  
 Messbereich / range, bis / up to: 10 - 100 mbar: pmax = 750 mbar  
 Messbereich / range, bis / up to: 40 - 200 mbar: pmax = 750 mbar  
 Messbereich / range, bis / up to: 100 - 1000 mbar: pmax = 4 bar  
 Messbereich / range, bis / up to: 1b - 10b bar: pmax = 20 bar  
**Statischer Gleichdruck beidseitig / Static balanced pressure on two sides:**  
 Messbereich / range, bis / up to: 0.4 - 10 mbar: pmax = 0,6 bar  
 Messbereich / range, bis / up to: 4 - 20 mbar: pmax = 0,6 bar  
 Messbereich / range, bis / up to: 10 - 100 mbar: pmax = 5 bar  
 Messbereich / range, bis / up to: 40 - 200 mbar: pmax = 5 bar  
 Messbereich / range, bis / up to: 100 - 1000 mbar: pmax = 10 bar  
 Messbereich / range, bis / up to: 1b - 10b bar: pmax = 20 bar

**Gesamtfehler** : Linearität + Hysterese + Reproduzierbarkeit :  $\pm$  1% F.S. ab / from  $\geq$  3 mbar Messbereich / range  
**Total error** : Linearität + Hysterese + Reproduzierbarkeit :  $\pm$  2% F.S. bis / to  $\leq$  2 mbar Messbereich / range  
**Langzeitstabilität** : Linearity + hysteresis + reproducibility :  $\pm$  4% F.S. bis / to  $\leq$  0,5 mbar Messbereich / range  
 : 0,1 % F.S. / Jahr ab / from  $\geq$  3 mbar Messbereich / range (F.S. = vom Messbereich / Full Scale)  
 : 0,25 % F.S. / Jahr bis / to  $\leq$  2 mbar Messbereich / range  
**Long term stability** : 0,5 % F.S. / year bis / to  $\leq$  0,5 mbar Messbereich / range  
**Temperaturfehler** : +10°C bis +50°C : 0,025 % F.S. / K (K = Kelvin)  
**Temperature error** : +50°F up to +122°F : 0.025 % F.S. / K  
**Betriebstemperatur** : -20°C bis +60°C.  
**Operating temperature** : -4°F to +140°F.

**Druckmedium** : Nicht brennbare Gase, Luft, die Polyamid, Polyetherimide, POM, PVC, Silizium, Silicon, Edelstahl, Messing, Aluminium und Gold nicht angreifen.

**Fragen Sie uns auch bitte nach Sondermaterialien, auch für andere Medien, z.B. Wasser, Öl usw.**

**Pressure media** : Not flammable gases, air, not corroding polyamide, polyetherimide, POM, PVC, silicon, silicone, stainless steel, brass, aluminum and gold.  
**If you require special materials, for other medias too, f.eg. water, oil a.s.o. do not hesitate to ask us!**

**Signalausgänge** : **Analogausgang, radiziert / Analogue output with square root function:**  
**Signal outputs** : 0-5 V, 5-0 V, Bürde / load = min. 5 k $\Omega$ .  
 0-10 V, 10-0 V, Bürde / load = min. 10 k $\Omega$ , 0-20 mA, 20-0mA, Bürde / load = max. 500  $\Omega$ .  
 2-10 V, 10-2 V, Bürde / load = min. 10 k $\Omega$ , 4-20 mA, 20-4 mA, Bürde / load = max. 500  $\Omega$ .

**Signalausgänge** : **1, 2, 3 Digital:** Relais / relay, 3x potentialfreier Wechsler: min 10 mA, max 2 A cos phi = 1, 24-255 V, 50-60 Hz,  $\geq$ 24 VDC.  
**Signal outputs** : Leuchtdiode für RELAY1 / LED RELAY1, RELAY2 / LED RELAY2, RELAY3 / LED RELAY3  
**Signalausgänge OPTION** : **4: Digital:** Relais / relay, 1x potentialfreier Wechsler: min 10 mA, max 2 A cos phi = 1, 24-255 V, 50-60 Hz,  $\geq$ 24 VDC.  
**Signal outputs option** : Leuchtdiode für RELAY4 / LED RELAY4.....**ORDER-INDEX: -4-**  
 All relay contacts 1x change-over switch : min 10 mA, max 2 A cos phi = 1, 24-255 V, 50-60 Hz,  $\geq$ 24 VDC.

**Signaleingänge** : **Digital:** Sample and Hold Funktion durch externen, potentialfreien Kontakt, der 5 mA bei 5 VDC, zuverlässig schalten kann oder durch eine externe Spannung 24 VDC, 10 mA. Mit Sample and Hold kann der Messwert festgehalten werden.  
**Signal inputs** : **Digital:** Sample and hold function with external, potentialfree relay contact, which can switch 5 mA, 5 VDC, dependable or with external voltage 24 VDC, 10 mA. With sample and hold function, the measured value can be stored.

**Stromversorgung** : **Universell: 230 - 240 V $\approx$ , 50 - 60 Hz** umschaltbar auf / changeable to: **110 - 120 V $\approx$ , 50 - 60 Hz**  
**Power supply** : und / and **24 VDC** in einem Gerät verfügbar / in one unit available.  
 Bei M12-Steckeranschluß nur in 24 VDC lieferbar. Only available for main power 24 VDC with M12-plugs.

**Nennleistung Nom.Power** : 5 VA; 3,3 W

**Elektr. Anschluss** : Schraubklemmen, max. Drahtquerschnitt 2,5 mm<sup>2</sup>, alternativ: schraubenlose Klemmen  
**Electric connection** : Screw terminal, max cross section of wire AWG 14, alternative: screw less terminals

**Druckanschluss** : 2x POM-Kunststoff-Schlauchverschraubungen mit Überwurfmutter / 2x POM-plastic-tube connectors with connector nut:  
**Pressure connection** : Schlauchgrößen / size of tube: Da/OD = 6 mm, Di/ID = 4 mm.....**ORDER-INDEX: -64POM-**

**Gehäuse 1** : Abmessungen / dimensions : 80 x 160 x 55 mm, Drei Kabeleinführungen, blind, M16x1,5 / Three cable inputs M16x1,5  
**Housing 1** : Material / material : ABS. Farbe / colour: grau / grey. Gewicht / weight : 500 g  
 Schutzart / protection class : IP 65.....**ORDER-INDEX: -AB-**

**Gehäuse 2** : Abmessungen wie Gehäuse 1. Der elektrische Anschluss erfolgt über zwei außen angebaute M12-Stecker.  
**Housing 2** : Nur für eine Versorgung von 24 VDC lieferbar.  
 Dimensions like case 1. For the electrical connection the unit has two M-12 plugs mounted outside.  
 Available only for main power 24 VDC.  
 Schutzart / protection class : IP 65.....**ORDER-INDEX: -ABM12P-**

**Vorschriften / Rules** : EN 60 204-1, EN 61010, EN 61326-1, EN 61326-2-3, BGV A2.

<b>Bestell-Nr.</b>	:	DMQ Gruppe-Messbereich - Anzeige- Einheit - Volt - AC - <b>Option</b> - Anschluss - Gehäuse - RAD - CE
	:	<b>mbar / bar</b> - <b>Tastatur</b> - - - - 4.Relais -
<b>ORDER-INDEX</b>	:	DMQ Group -range of group- <b>Display</b> - <b>Unit</b> - <b>Volt</b> - DC - <b>4<sup>th</sup> relay</b> - <b>Connection</b> - <b>Case</b> - <b>RAD</b> - <b>CE</b>
<b>Beispiel 1 / example 1</b>	:	<b>DMQ 2 - 5 - DT - m<sup>3</sup>/h - 24DC - 0 - 64POM - ABM12P - RAD - CE</b>
<b>Beispiel 2 / example 2</b>	:	<b>DMQ 4 - 20 - DT - m/s - 24DC-240AC - 4 - 64POM - AB - RAD - CE</b>