

Intelligent pressure transducers with microprocessor DMU 12



Application

For high accuracy electronic measurement of pressure or differential pressure, with integrated digital display. The robust design renders this unit suitable for use under arduous operating conditions in the chemical industry, process technology as well as the food and feed-stuffs industry.

Description

The DMU 12 pressure transducer features a calibrated, amplified sensor signal which is available as a standardised current output.

DMU 12 is available in the following versions:

- Relative, absolute or differential pressure versions
- With threaded connection, flange connection EN 61518, relief/stop valve, fitted diaphragm seals
- Level measurement version with parameter tables

Menu types

Refer to table on page 460.

Graphic display

Text orientated menu guide
Display modes (standard):
Measured value and pressure unit plus choice of the following:

1. Bar chart
2. Sensor temperature
3. Measured value expressed as a percentage
4. Output current in mA

Refer to page 467 for prices

Mounting position

Any position; housing can be rotated by 170° to the left or to the right, allowing the display and control panel to be factory pre-set at angles of 90°, 180° or 270°, as required.

Accuracy of measurement

< 0/200 bar ≤ ±0.2 % FSO
≥ 0/200 bar ≤ ±0.5 % FSO

Measuring ranges

Refer to table on page 460.

Range selection/range spread

User adjustable without test bed
Maximum 1:20
(differential pressure, max. 1:10)

Operating temperature range

Medium: -10 °C/+90 °C
Ambient: -10 °C/+55 °C
Storage: -20 °C/+60 °C
TC zero point: < ±0.1 %/10 K

Dynamic characteristics

Suitable for static and dynamic measurements
Measuring cycle max. 0.5 s
(0.8 s with HART protocol)

Process connection

Stainless steel 1.4404
G1½B (EN 837-1/7.3)

Wetted parts

Stainless steel 1.4404

Pressure transmission liquid

Silicone oil

Output signal/supply voltage

4–20 mA DC 12–50 V
2-wire
optional with HART protocol)
Short circuit proof and polarity protected
max. ± supply voltage

Load

4–20 mA ≤ $\frac{U_B - U_{Bmin}}{0,02 A}$

Current input

4–20 mA max. 20 mA

Housing (protection)

Stainless steel 1.4305 (IP 65),
safety front glass (display)

Electrical connections

Cable gland

CE conformity (EMC)

EN 50081-1 and EN 50082-2

Options

- HART protocol
- Differential pressure version
- Level version
- Fitting of diaphragm seal
- Bracket for wall mounting
- Ex version
(II 2 G EEx ia II C T4/T5/T6)

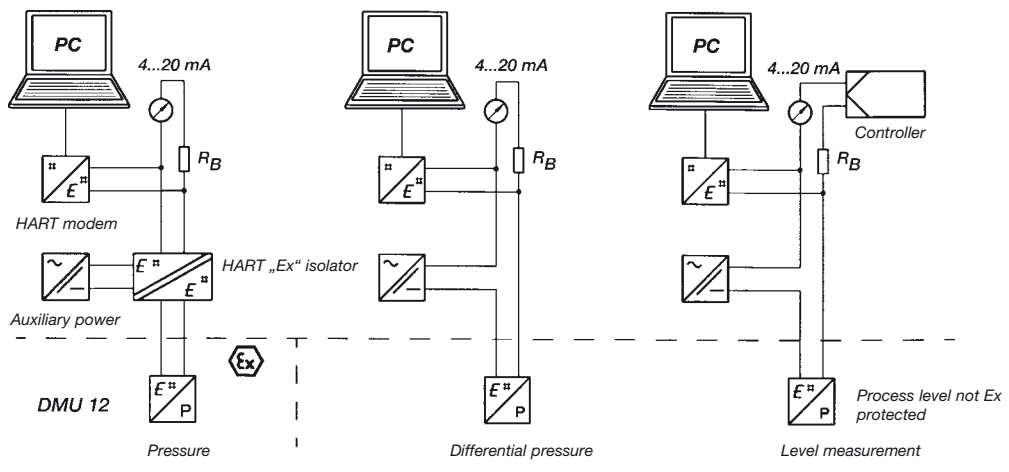
Intelligent pressure transducers with microprocessor DMU 12

Menu types
The following menus are available for displaying information and selecting parameters:

Menu type	Meaning	Menu type	Meaning
Measuring range selection	Specify min. and max. pressure range, without actual pressure	Alarm condition	Specify output current for fault or malfunction
Damping	Select signal damping	Calibrate	Specify min. and max. pressure range, with pressure
Min./max. values	Display of min./max. values for pressure, level measurement and temperature	Current balancing	Adapt output signal to connected instruments
Signal evaluation	Select transmission mode	Factory defaults	Re-set to factory defaults
Pressure units	Selection of physical unit with conversion	Security lock	Protection against unauthorised use
Measurement cycle test	Create a defined output signal		

Measuring ranges	Overpressure safety	Measuring ranges	Overpressure safety (on one side)	Max. static pressure
<i>Relative pressure:</i>		<i>Differential pressure:</i>		
-1/ +1 bar	-1/ +6 bar	0/ 1 bar	6 bar	75 bar
-1/ +4 bar	-1/ +10 bar	0/ 4 bar	10 bar	75 bar
-1/ +16 bar	-1/ +30 bar	0/16 bar	30 bar	75 bar
-1/ +40 bar	-1/ +75 bar			
-1/+100 bar	-1/+200 bar			
-1/+400 bar	-1/+500 bar			
<i>Absolute pressure:</i>				
0/ 1 bar	6 bar			
0/ 4 bar	10 bar			
0/16 bar	30 bar			

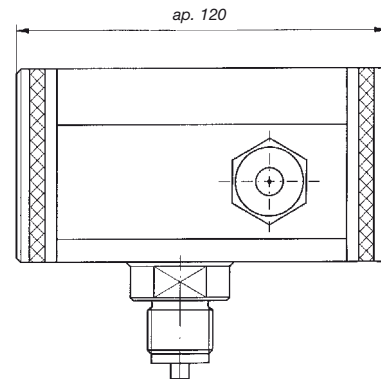
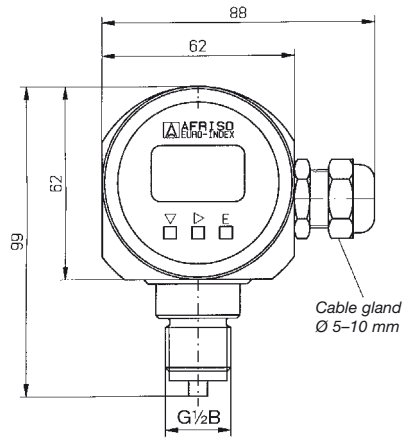
Function diagram with HART protocol



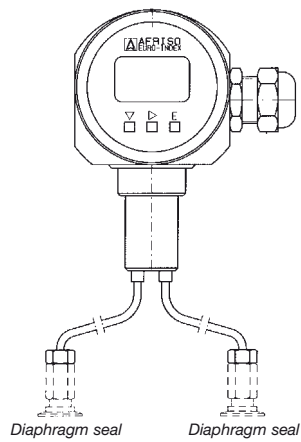
Pressure transducers DMU 12

Types and dimensions (in mm)

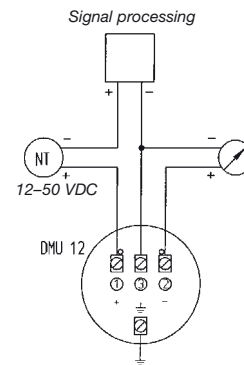
Standard version – connection G $\frac{1}{2}$ B



Differential pressure version – diaphragm seal fitted



Wiring diagram



Intelligent pressure transducers DMU 14



Application

For electronic pressure measurement in applications requiring high accuracy of measurement and long-term stability, especially under arduous operating conditions. With aluminium die cast housing, the units are particularly suitable for process technology applications. With stainless steel weatherproof housing and hygienic process connection, the units are ideally suited for applications in the food and beverage industries.

Description

The DMU 14 pressure transducers use piezo-resistive stainless steel measuring cells and feature calibrated, amplified sensor signals which are available as standardised current outputs.

DMU 14 features:

- Robust housing versions
- High accuracy
- Long service life
- High long-term stability
- High overpressure safety
- Turn Down 1:5
- Display (optional)
- HART communication (optional)
- Ex version (optional)

Accuracy of measurement

Deviation characteristics according to IEC 60770 – limit point setting (non-linearity, hysteresis, repeatability)

250 mbar: $\leq \pm 0.2$ % FSO
 > 0/1 bar: $< \pm 0.1$ % FSO

Long-term stability

$\pm 0,1$ % x Turn Down FSO/year

Meas. ranges/overpressure safety

Measuring range	Max. overpressure
0/ 250 mbar	1000 mbar
0/1 bar	3 bar
0/1,6 bar	6 bar
0/6 bar	20 bar
0/16 bar	60 bar
0/25 bar	100 bar
0/60 bar	140 bar
0/160 bar	340 bar
0/250 bar	600 bar
0/600 bar	1000 bar

Operating temperature range

Without display

Medium: -40 °C/+125 °C

Ambient: -40 °C/ +80 °C

Storage: -40 °C/ +80 °C

With display

Medium: -40 °C/+125 °C

Ambient: -20 °C/ +70 °C

Storage: -30 °C/ +80 °C

Temperature error

-20/+80 °C $\leq 0,1$ % FSO/10 K

Dynamic characteristics

Response time < 200 ms

Process connection

G $\frac{1}{2}$ B (EN 837-1/7.3)

Materials

Housing: Stainless steel 1.4435

Process-

connection: stainless steel 1.4571

Diaphragm: stainless steel 1.4435

Seal: FKM, NBR for ≥ 35 bar

Adjustable parameters

Electronic damping: 0/100 s

Offset: 0/90 %

Turn down (of span): 1:5

Output signal/supply voltage

4–20 mA, 2-wire DC 10–30 V

4–20 mA, 2-wire DC 10–28 V

with Ex version/

HART communication

Load

$R_{max} = [(U_B - U_{Bmin}) / 0.02] \Omega$

HART-Kommunikation $R_{min} = 250 \Omega$

Current input

4–20 mA max. 25 mA

Protective electrical measures

Short circuit proof and polarity protected

Electrical connection (protection)

Connection terminals in terminal chamber (IP 67)

CE conformity (EMC)

EN 61326

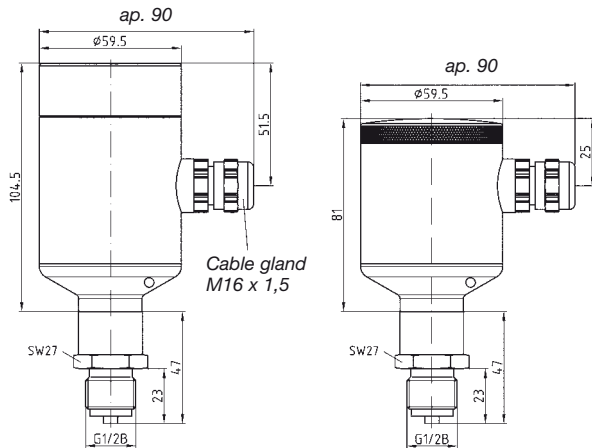
Options

- Other process connections
- Ex version with HART communication
- High temperature version
- Integrated local display

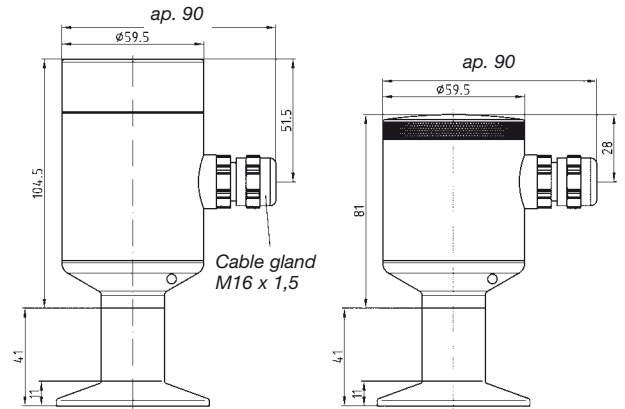
Intelligent pressure transducers DMU 14

Dimensions (in mm) and electrical connections

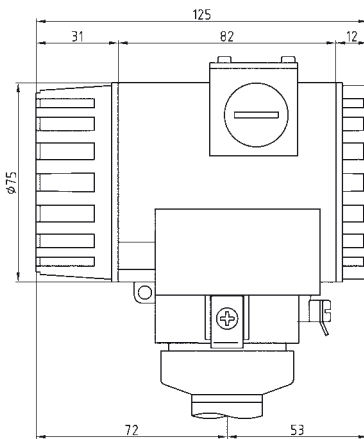
DMU 14 FG 1/2" with and without local display



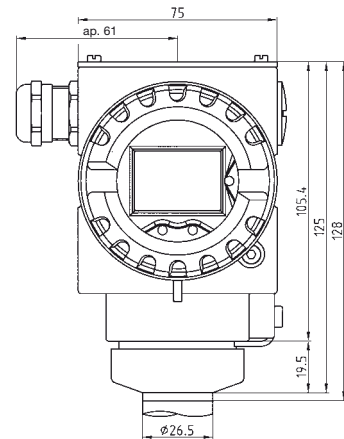
DMU 14 FG clamp 1 1/2" with and without local display



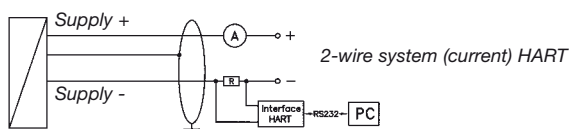
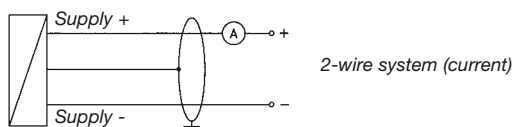
DMU 14 DG



DMU 14 DG



Wiring diagrams



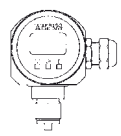
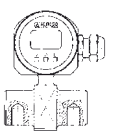
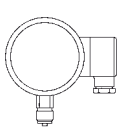
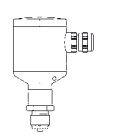
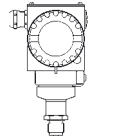

Pin assignment table

		Stainless steel weatherproof housing	Aluminium die cast housing
		Connection terminals	Connection terminals
Supply	+	1	2
Supply	-	2	4
Test	-	-	3
Earth	-	6	1

By connecting an ammeter between supply + and test terminals, the output signal can be checked without disconnecting the supply voltage.

Pressure transducer / Digital pressure gauge

RK: H

Type	DMU 12	DMU 12 Dif	DMU 13	DMU 14 FG	DMU 14 DG	DIM 20
Housing diam						
Housing -Ø	62	62	100	60	75	75
Housing	stainless	stainless	stainless	stainless	aluminium	plastic
Accuracy	0,2 % FSD	0,2 % FSD	0,35 % FSD	see data sheet	see data sheet	0,5 % FSD
Wetted parts	stainless 1.4404	stainless 1.4404	stainless 1.4571/1.4404	stainless 1.4571/1.4435	stainless 1.4571/1.4435	stainless 1.4305 ceramic
Connection	G ¹ / ₂ B	EN 61518	G ¹ / ₂ B	G ¹ / ₂ B	G ¹ / ₂ B	G ¹ / ₄ B
Supply voltage	DC 12–50 V	DC 12–50 V	DC 12–36 V	DC 10–30 V	DC 10–30 V	DC 3,6 V
Output	4–20 mA	4–20 mA	4–20 mA	4–20 mA	4–20 mA	---
Measuring range	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
Price €						
0/250 mbar	---	---	---	31977	31987	---
Price €						
-1/0 bar	---	---	---	---	---	32500
0/0,6 bar	---	---	31076	---	---	---
0/1 bar	31040*	31049	31077	31978	31988	---
Price €						
0/1,6 bar	---	---	31078	31979	31989	---
0/2,5 bar	---	---	31079	---	---	32503
0/4 bar	31041*	31050	31080	---	---	---
0/6 bar	---	---	31081	31980	31990	32505
0/10 bar	---	---	31082	---	---	32506
0/16 bar	31042*	31051	31083	31981	31991	---
0/25 bar	---	---	31084	31982	31992	32508
0/40 bar	31043*	---	31085	---	---	32509
Price €						
0/60 bar	---	---	---	31983	31993	---
0/100 bar	31044*	---	---	---	---	32511
0/160 bar	---	---	---	31984	31994	32512
0/250 bar	---	---	---	31985	31995	32513
0/400 bar	31045*	---	---	---	---	32514
0/600 bar	---	---	---	31986	31996	---
Additional costs**	Price €	Price €	Price €	Price €	Price €	Spare battery Part no. 68309 Price €
Ex-version with HART protocol	on request	on request	---			
Liquid filling	---	---		---	---	
Display	standard	standard	---			
Clamp connection 1" or 1½"	---	---	---			
Clamp connection 2"	---	---	---			
Dairy fitting DIN 11851 DN 25	---	---	---			
Dairy fitting DIN 11851 DN 40	---	---	---			
Dairy fitting DIN 11851 DN 50	---	---	---			
High temperature version +300 °C	---	---	---			

* Measuring range -1/+x bar

** Wetted parts of clamp and dairy fittings = stainless steel 1.4435