27M SERIES

SIL IEC 61508

27M series converters/transmitters measure and converts relative (for example 3÷15 psi or 0.2÷1 bar) and differential pressures into an electrical signal within a range between 0,003 and 16 bar.

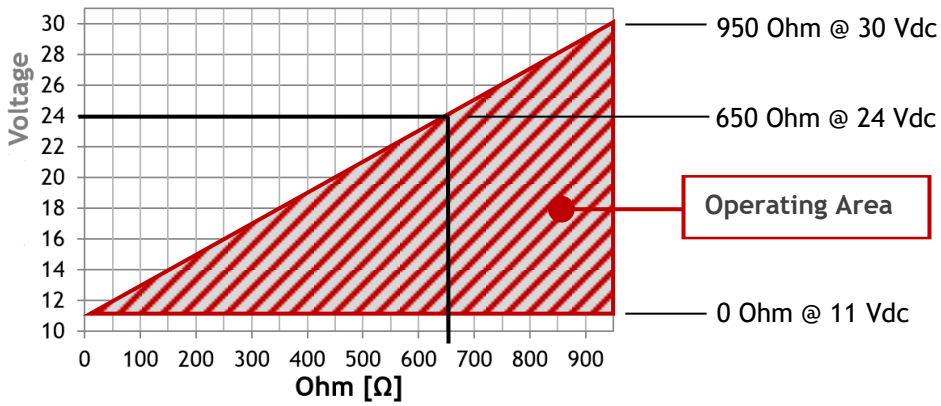
The sensor is a Wheatstone bridge integrated on a chip. The direct conversion of the pressure into an electrical signal is achieved by a minute deflection of sensor diaphragm which changes the resistance of the bridge with the applied stress; changes in pressure cause a corresponding change in the transmitter output proportionally to the bridge unbalance.

A single circuit supplies power to sensor and receives its signal providing conversion into a standard 4÷20 mA 2 wires system or 3 wires for voltage output.

TECHNICAL FEATURES

Electrical parameters

Supply:	2 wires: 12 ÷ 30 Vdc 3 wires: 16 ÷ 26 Vdc
Output signal:	2 wires: 4 ÷ 20 mA 3 wires: 0 ÷ 10 Vdc (min 30 mVdc) 0 ÷ 5 Vdc (min 30 mVdc)
Input signals:	min: 0÷3 mbar max: 0÷16 bar
Current consumption:	2 wires: 4 ÷ 20 mA 3 wires: < 5mA @10 KΩ load
Load resistance:	2 wires: R_Ω = (U_{supply} - 12 V) / 0.02 A 3 fili \ 3 wires: $R_\Omega \geq$ 10 KΩ
Max load:	As per chart



Measurement performance

Total accuracy (*):	< ± 0.25 % FS
Zero offset:	< ± 1 % FS
Temperature zero drift:	< ± 0.025 % FS /°C (-10 ÷ 60°C)
Span thermal drift:	Piezo: < ± 0.02 % FS /°C Ceramic: < ± 0.01 % FS /°C
Long term stability:	< ± 0.15 % \ < ± 0.12 % FS / **year**
Response time (63% FS):	Piezo: 10 ms Ceramic: 5 ms
Allowable de-range:	Piezo Sensors: down to 4 times the Nominal Range Ceramic Sensors: down to 2.5 times the Nominal Range

Notes

(*) Including hysteresis, non-linearity and non-repeatability (IEC 60770).

ENVIRONMENTAL FEATURES

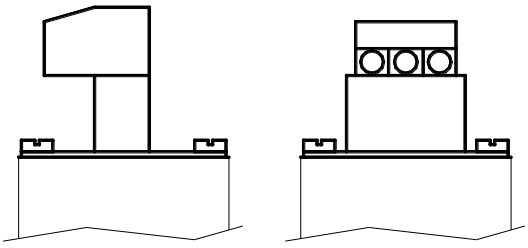
Environmental Conditions	
Ambient temperature:	-40 ÷ +85°C ATEX T6, T85°C: -40°C ≤ Tamb ≤ 55°C ATEX T5, T100°C: -40°C ≤ Tamb ≤ 70°C
Fluid temperature:	-40 ÷ +85°C
Storage temperature:	-40 ÷ +90°C
Ingress protection degree:	IP65
Vibration Test:	In accordance with IEC 60068-2-6
Shock Test:	In accordance with MIL-STD-202F Method 213B
Relative Humidity:	< 98% RH not condensing

APPROVALS

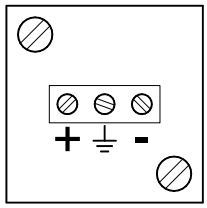
Type approvals		
Directive 2014/34/EU (ATEX)	Ⓔx II 2G Ex ia IIC T6, T5 Gb	
Directive 2014/30/EU (EMC)	Adequate level of electromagnetic compatibility	
Functional Safety	SIL2 SFF = 75.00 %	PFH [Hours^{-1}] = $9.8059 \cdot 10^{-8}$ DC = λ_{DD} / (λ_{DD} + λ_{DU}) = 82.5 %
Marine type approval	In compliance with applicable requirements of DNV GL type approval system	

ELECTRICAL WIRING

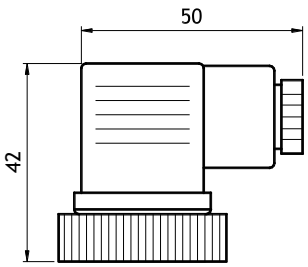
Converters are protected against reverse polarity. The recommended wiring cable is a screened signal cable, with wires of min. section area of 0.2 mm^2 (AWG24) and shielding > 80 %.



Code 11
Extractable terminals 3 poles

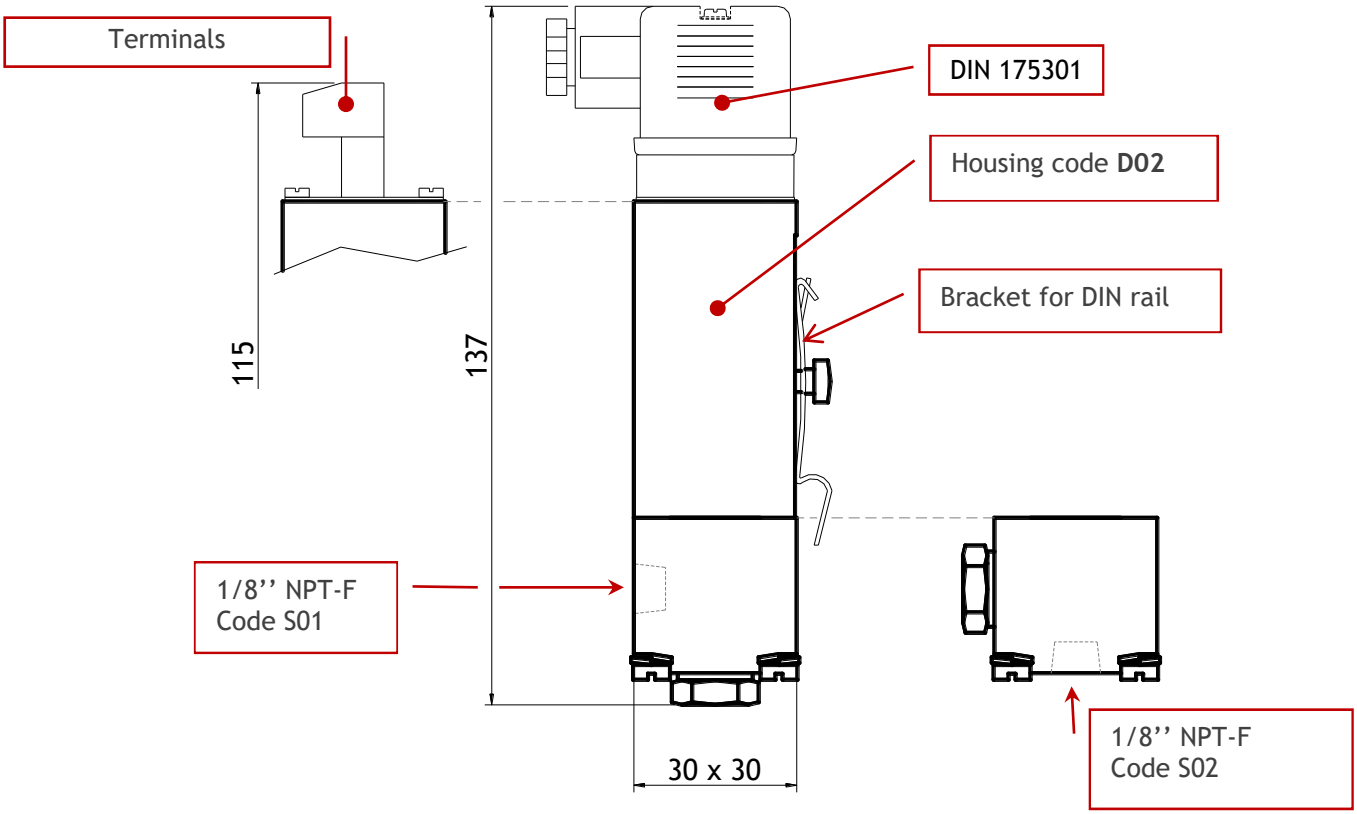


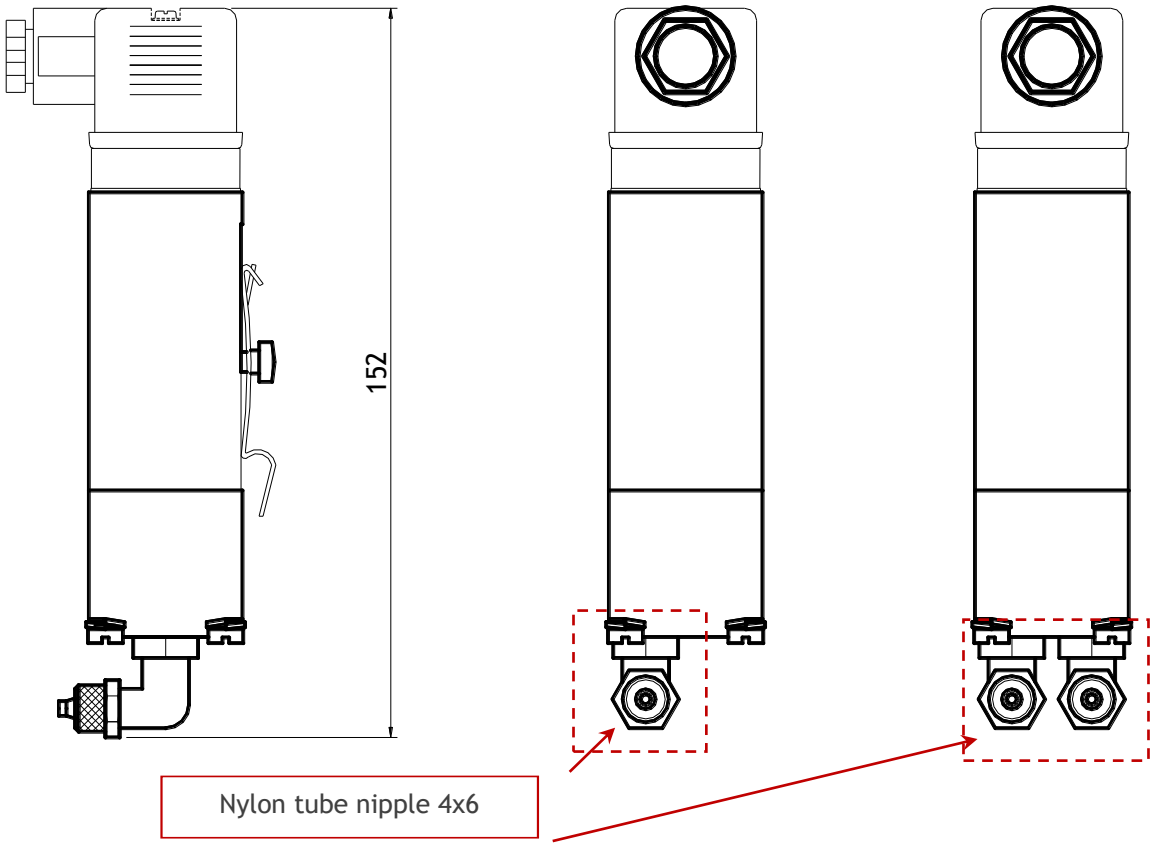
Code 10
Fixed terminals 3 poles



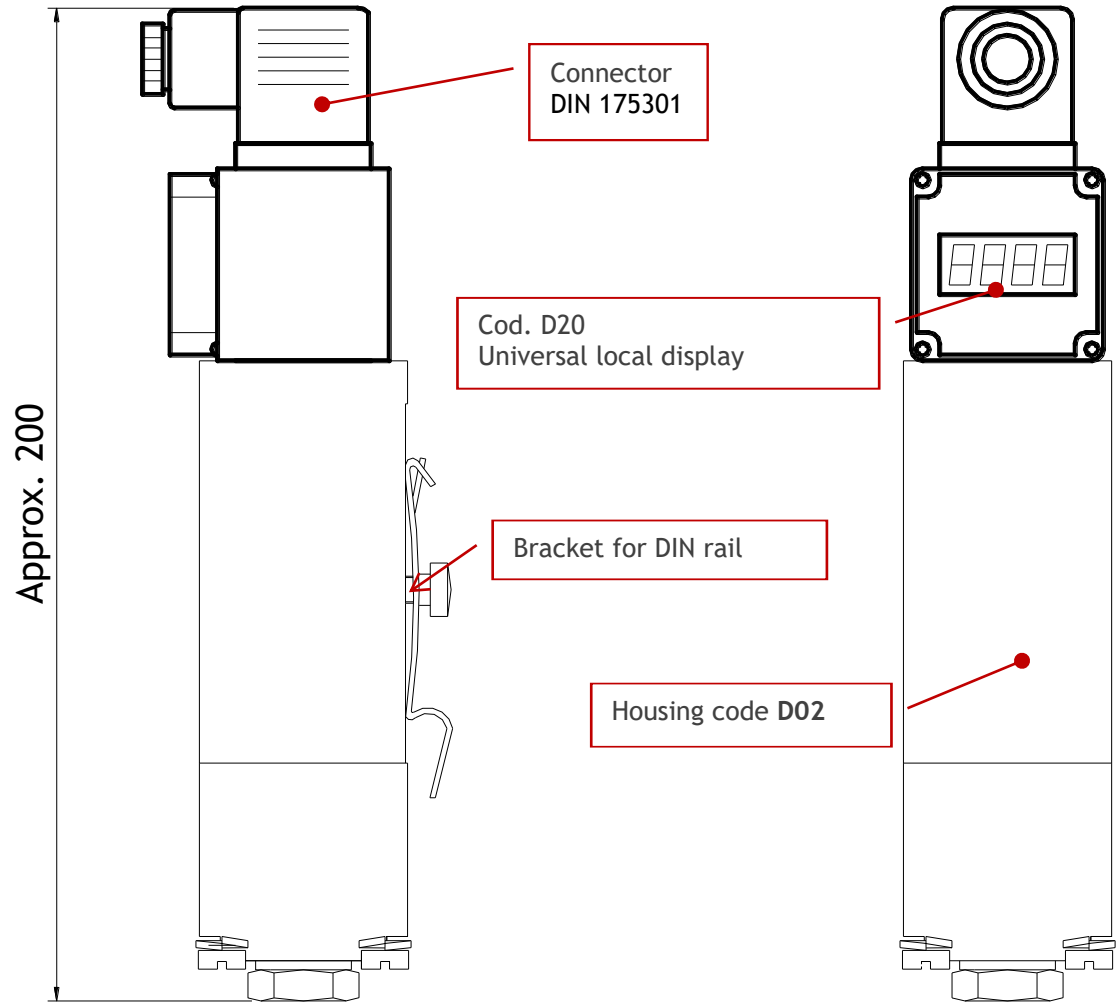
Code 04
DIN 175301 PG9/PG13 3+1 poles IP65

DIMENSIONAL DRAWINGS





DIMENSIONAL DRAWINGS



Example of optional installation of the Universal local display in order to visualize the output signal (No Atex). The 2-wire LED digital display can be programmed for every measuring span with readings between -1999 and 9999. Optionally, two alarm thresholds can be provided with solid state opto-isolated output.

ORDERING CODE

27M Pressure to current electronic converter

01 Type of measure

A	Absolute Pressure
C	Relative Pressure
D	Differential pressure

02 Sensor type

CI	Ceramic Integral
PI	Piezoresistive Integral

03 Measuring range

C01	1 bar	Ceramic	Overpressure: 2 bar
C02	2 bar	Ceramic	Overpressure: 4 bar
C03	5 bar	Ceramic	Overpressure: 10 bar
C04	10 bar	Ceramic	Overpressure: 15 bar
C05	20 bar	Ceramic	Overpressure: 35 bar
M01	0,35 bar	Piezo	Overpressure: 0.7 bar
M02	1 bar	Piezo	Overpressure: 2 bar
M03	2 bar	Piezo	Overpressure: 4 bar
M04	3.5 bar	Piezo	Overpressure: 7 bar
M05	10 bar	Piezo	Overpressure: 20 bar
M06	35 bar	Piezo	Overpressure: 70 bar
P51	0.01bar	Piezo	No overpressure
P52	0.055 bar	Piezo	No overpressure
P53	0.206 bar	Piezo	No overpressure
ZZZ	Special		

NOTES

1) Negative or compound ranges are possible

04 Filling oil

8	Siliconic Oil -40/+200°C
N	No filling

05 Process temperature limits

B	-40 ÷ 85°C

06 Housing material and type

D02	Aluminum anodized 30x30 mm

07 Process connection

S01	1 x Screwed 1/8" NPT-F front
S02	1 x Screwed 1/8" NPT-F bottom
S03	2 x Screwed 1/8" NPT-F bottom
Z99	Special

08 Extension length

N00	No extension

09 Sensor material (diaphragm)

A	AISI 316
E	Ceramic
X	No diaphragm (for air / non corrosive gas)
Z	Special

10 Process gasket material

D	FKM Viton
Z	Special

11 Wetted parts material

0	Not present

ORDERING CODE

12 Electrical connection		
	04	Connector DIN 175301 PG9/PG13 3+1 poles IP65
	10	Fixed terminals 3 poles
	11	Extractable terminals 3 poles
13 Electrical output		
	1	Current output 4÷20 mA 2 wires
	6	Voltage output 0÷5 V 3 wires (std 0,25% FS)
	7	Voltage output 0÷10 V 3 wires (std 0,25% FS)
14 Ex type approval		
	A3	ATEX Ex II 2 G (IIC T6, T5) digital display not applicable)
	N0	No EX certificate
15 Options and accessories		
	02	Marine type approval
	2\1	SIL Certificate
	10	5 points calibration report
	01	Test and material report according to EN 10204
	RC	Nickel plated brass nipple for 4x6 mm plastic pipe
	RD	Nickel plated brass nipple for 8x10 mm metallic pipe
	NN	No options

ACCESSORIES

Cod. D20
Universal local display

Cod. PR3
Air flow regulator

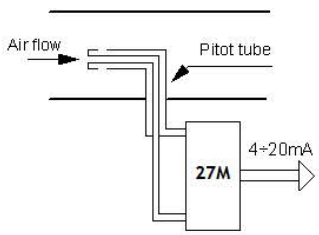
Cod. FR20
Air filter regulator

and MORE

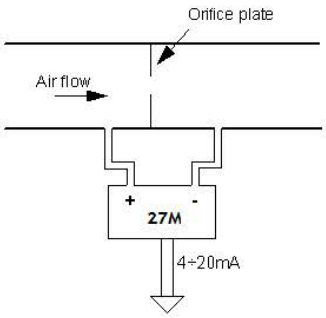
- DIN rail mounting bracket
- Complete control panel

APPLICATIONS

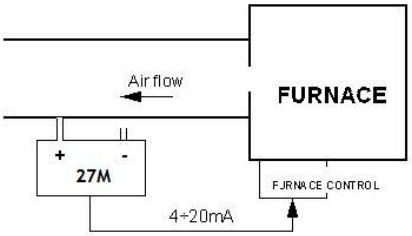
FLOW MEASUREMENT



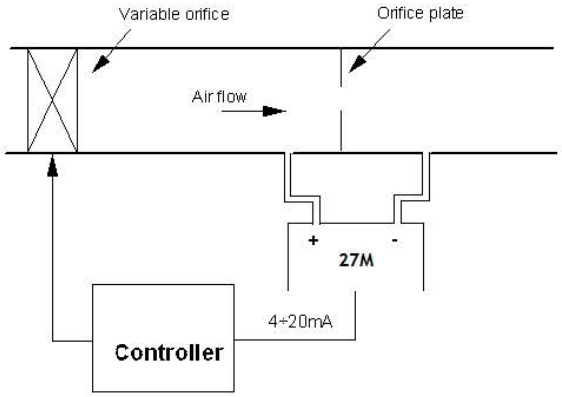
FLOW MEASUREMENT



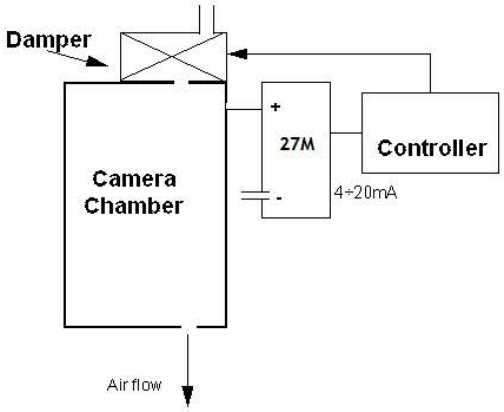
FLOW DETECTION FOR SAFETY SHUTDOWN



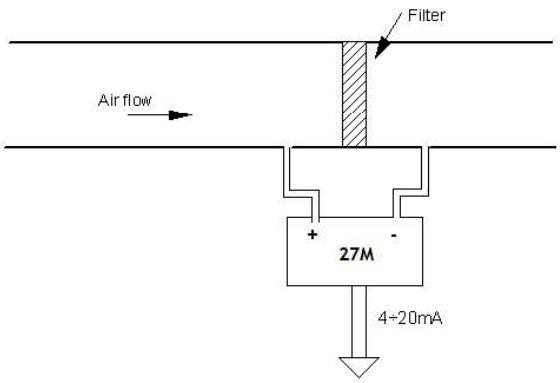
FLOW CONTROL IN DUCT



PRESSURE CONTROL FOR CLEAN ROOM APPLICATIONS



FILTER BLOCKAGE MONITORING



LEAK DETECTION IN PRESSURIZED CHAMBERS