

SERIES T72



T72 series are Smart electronic transmitters with 4 ÷ 20 mA output and HART® digital communication protocol.

Sensors are always calibrated individually together with their own seal.

These transmitters allow the measurement of pressure (absolute, relative or differential), vacuum and level in industrial, marine and off-shore.

Configurations and adjustments can be made remotely using HART® protocol compatible communicators.

The transmitters are intended for direct mounting on pipe or tank.

For remote sensor version and when remote seal and capillary are supplied, a stainless steel bracket for wall mounting is also available.

APPLICATION FIELDS

- Absolute, relative or differential pressure, level and vacuum measurement;
- Installation on chemical, Oil & Gas, pharmaceutical, alimentary, marine plants etc;
- Installation in areas with persistence of potentially explosive mixtures.

SCIGATE AUTOMATION (S) PTE LTD
No.1 Bukit Batok Street 22 #01-01 Singapore 659592
Tel: (65) 6561 0488 Fax: (65) 6562 0588
Email: sales@scigate.com.sg Web: www.scigate.com.sg
Business Hours: Monday - Friday 8.30am - 6.15pm

TECHNICAL FEATURES

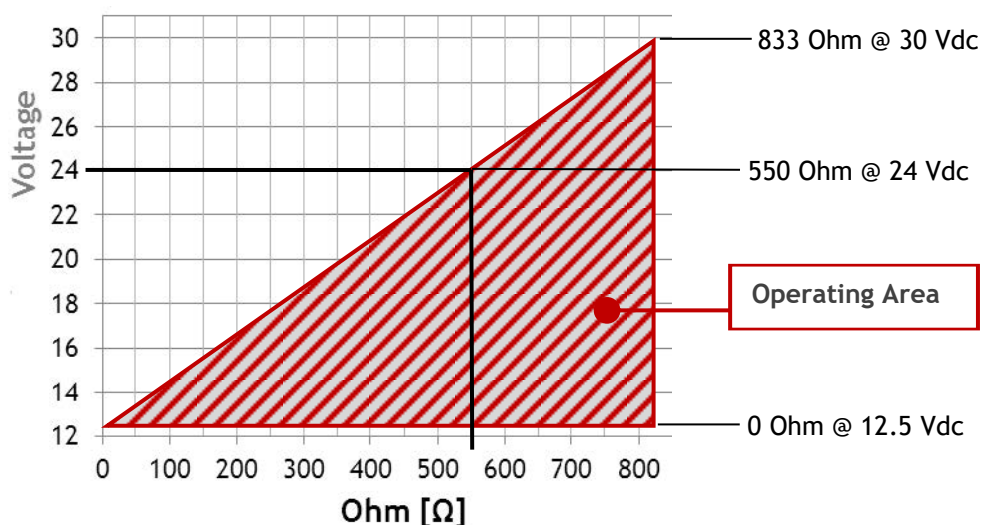
Electrical parameters

Supply: 12.5 ÷ 30 Vdc

Output signal: 4 ÷ 20 mA + Hart® Rev6

Alarm values: 3.85 mA \ 21 mA

Maximum load: As per chart
220 Ω < R_L < 600 Ω (Hart®)



Measurement performance

Total accuracy (*): < 0.20 % FS (-25 ÷ 0 °C)
< 0.07 % FS (0 ÷ 80 °C)

Measured value update frequency: 4 ÷ 20 mA + Hart®: ≈ 1 s
Hart®: ≈ 500 ms (On request)

Polling time: 4 ÷ 20 mA + Hart®: ≈ 800 ms
Hart®: ≈ 500 ms (On request)

Response time: < 256 ms (Standard Hart®)

Allowable de-range: Down to 30 times the Nominal Range

Damping: 0 ÷ 60 s

Long term stability: < 0.1 % FS for year

Notes

(*) Including hysteresis, non-linearity, non-conformity and non-repeatability (IEC 60770) Accuracy and drifts are given for instruments with integral sensor and diaphragm; they may vary according to sensor type and diameter, thickness and material of the diaphragm.





ENVIRONMENTAL FEATURES

Environmental Conditions

Temperature class:	-40 ÷ +85 °C T6, T85 °C: -40 °C ≤ Tamb ≤ 60 °C T5, T100 °C: -40 °C ≤ Tamb ≤ 75 °C
Process temperature:	-40 ÷ +85 °C Finned body: -40 ÷ 130 °C Capillary: -40 ÷ 280 °C
Storage temperature:	-40 ÷ +90 °C
Ingress protection degree:	Ø 27 and Ø 50 Housing: IP65 Ø 35 and Ø 55 Housing: IP67 Titanium Ø 27 Housing: IP65 Titanium Ø 35 Housing: IP67 Titanium Ø 50 Housing: IP65 Titanium Ø 55 Housing: IP67 Aluminium Ø 30 Housing: IP65
Vibration Test:	in accordance with IEC 60068-2-6
Relative Humidity:	< 98% RH not condensing

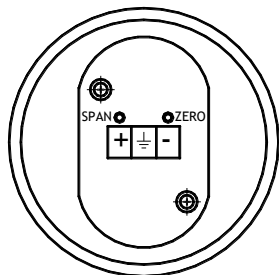
APPROVALS

Type approvals

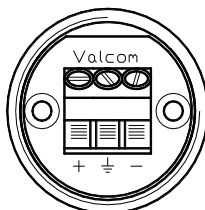
Directive 2014/34/EU (ATEX)	 II 1G Ex ia IIC T6, T5 Ga and  II 1D Ex ia IIIC T85 °C, T100 °C Da or  II 1G Ex ia IIC T6, T5 Ga or  II 2G Ex ia IIC T6, T5 Gb
Directive 2014/68/EU (PED)	Up to Category II, for fluids in Group 1
Directive 2014/30/EU (EMC)	Adequate level of electromagnetic compatibility
Functional Safety	SIL2 SFF = 76.67 % PFH [Hours ⁻¹] = 8.6644 · 10 ⁻⁸ DC = λ _{DD} / (λ _{DD} + λ _{DU}) = 82.9 %
Marine type approval	In compliance with applicable requirements of RINA type approval system

ELECTRICAL WIRING

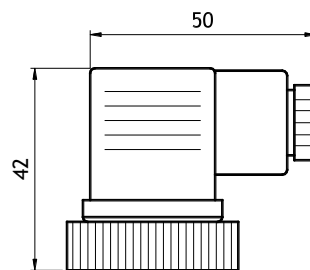
Transmitters are protected against reverse polarity. The recommended wiring cable is a twisted and screened signal cable, with wires of minimum section area of 0.2 mm² (AWG24) and shielding > 80 %.



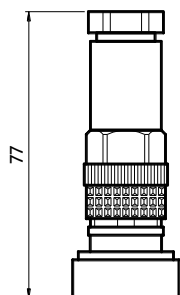
Code 10
For Ø50 and 55 housing IP65/IP67



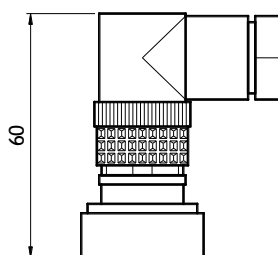
Code 10
For Ø35 housing IP67



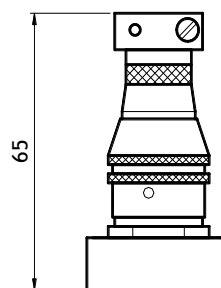
Code 04
DIN 175301 PG9/PG13 3+1 poles IP65



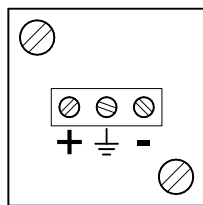
Code 01
Plug connector M12 IP67
straight



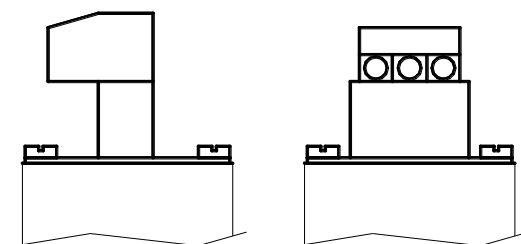
Code 02
Plug connector M12 IP67 90° angle



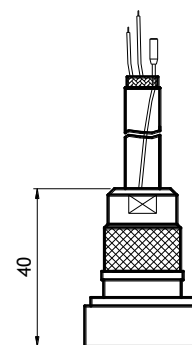
Code 08
MIL connector



Code 10
Fixed terminals 3 poles

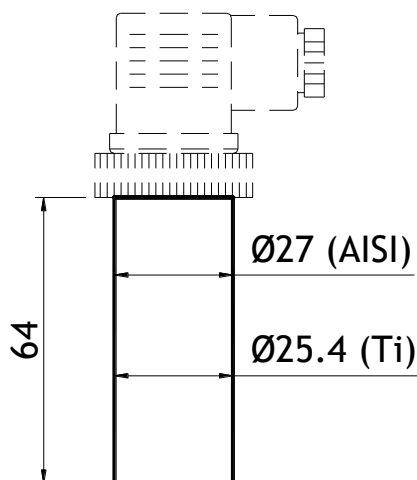


Code 11
Extractable terminals 3 poles



Code 16
AISI 316 Cable gland for output
standard sealing IP67

HOUSING MATERIAL AND TYPE

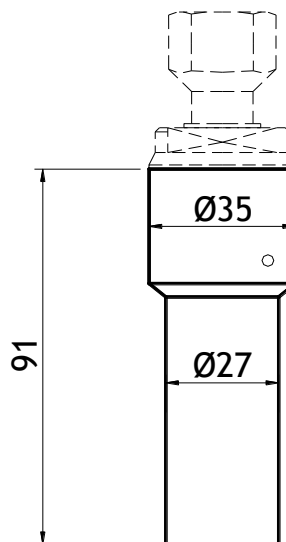


Code A04 - AISI 316

- **Material:** AISI 316 (Ø 27)
- **Zone:** Ex II 1G
- **Protection Degree:** IP65

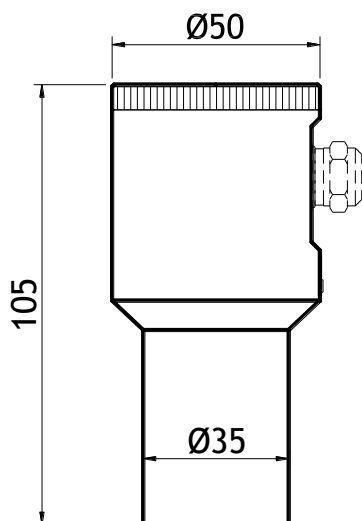
Code T04 - Titanium

- **Material:** Titanium (Ø 25,4)
- **Zone:** Ex II 2G
- **Protection Degree:** IP65

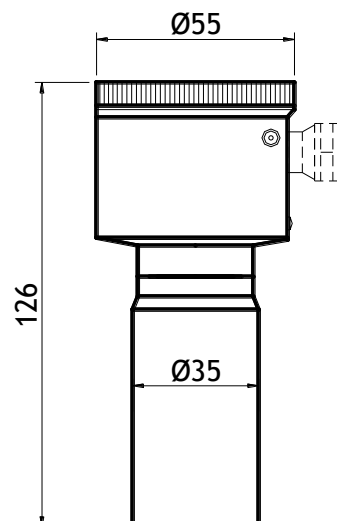


Code A05 - AISI 316

- **Material:** AISI 316 (Ø 35)
- **Zone:** Ex II 1GD
- **Protection Degree:** IP67

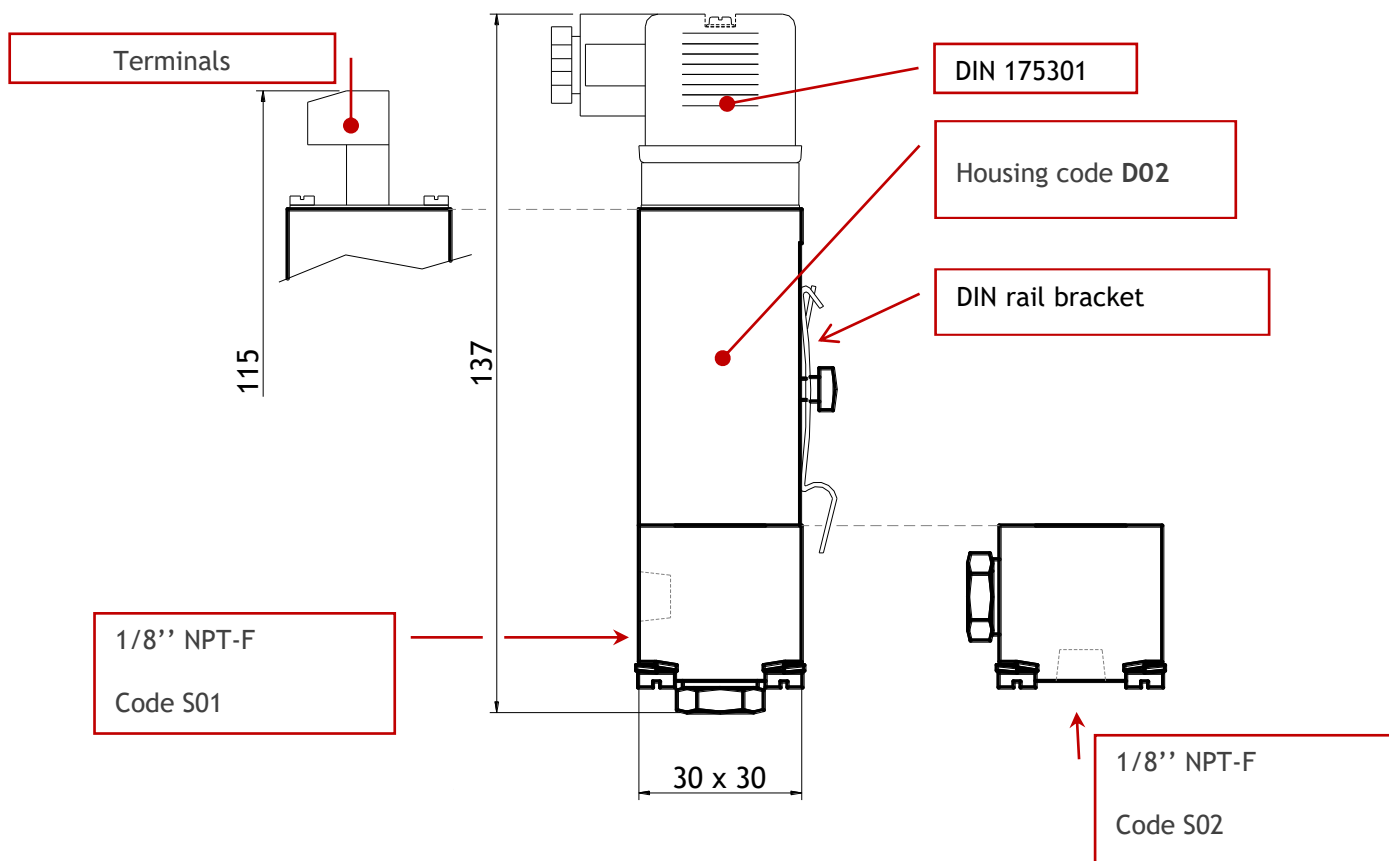


- **Code A06 - AISI 316**
- **Material:** AISI 316 (Ø 50)
- **Protection Degree:** IP65



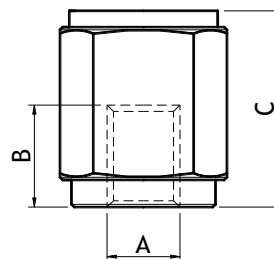
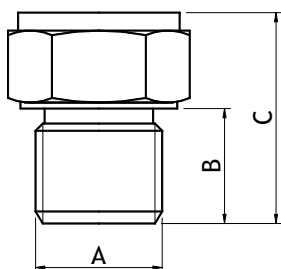
- **Code A08 - AISI 316**
- **Material:** AISI 316 (Ø 55)
- **Zone:** Ex II 1GD
- **Protection Degree:** IP67

HOUSING MATERIAL AND TYPE



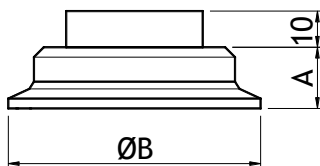
PROCESS CONNECTIONS

Standard screws



Code	A	B [mm]	C [mm]	Ex. Ch.
S06	1/4" G-M	14	38	27
S07	1/4" G-F	14	35	27
S08	1/4" NPT-M	14	39	27
S09	1/4" NPT-F	14	35	27
S22	3/8" G-M	16	41	27
S26	1/2" G-M	18	45	27
S28	1/2" G-F	20	41	27
S30	1/2" NPT-M	20	45	27
S31	1/2" NPT-F	20	43	27
S39	1/2" G-M Flush diaphragm Ø18.5	16	32	27
S51	3/4" G-M	20	48	32
S52	3/4" G-M Flush diaphragm	20	48	32
S56	1" G-M Flush diaphragm	20	33.5	41
S58	1" G-M	20	32	41
S81	2" G-M	25	44	41

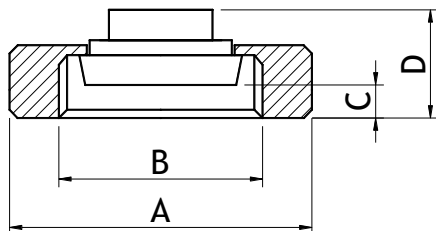
Triclamp



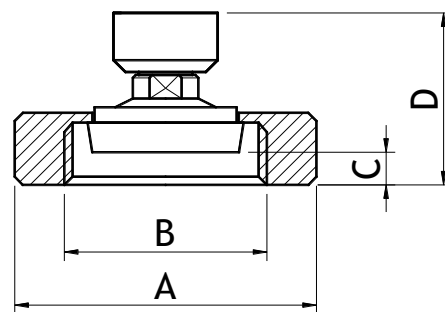
Code	DN	A [mm]	B [mm]
T00	1"	15.5	50.4
T02	1" 1/2	15.5	50.4
T03	2"	15.5	64
T04	2" 1/2	15.5	77.4
T05	3"	15.5	91
T06	4"	15.5	119

PROCESS CONNECTIONS

Welding Nuts



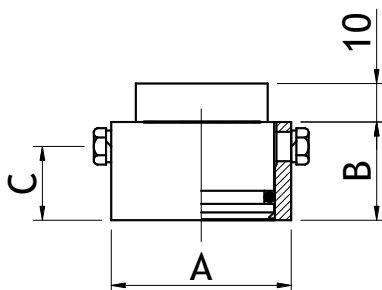
G01, G04, G06, G08



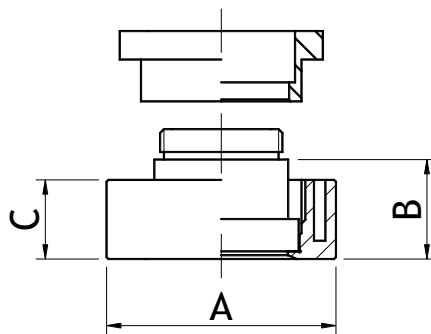
G03, G21, G23

Code	A [mm]	B	C [mm]	D [mm]
G01	Ø63	DIN DN25	8	31
G03	Ø70	DIN DN32	8	53.5
G04	Ø78	DIN DN40	8	37
G06	Ø92	DIN DN50	8	34
G08	Ø112	DIN DN65	9	36
G21	Ø74	SMS DN38	17	62.5
G23	Ø84	SMS DN51	26	62.5

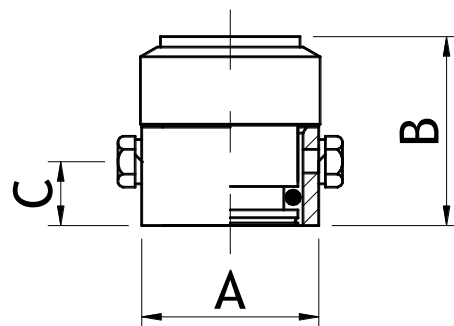
Welding Rings



E01, E03, E05, E07, E09, E13



E14, E15

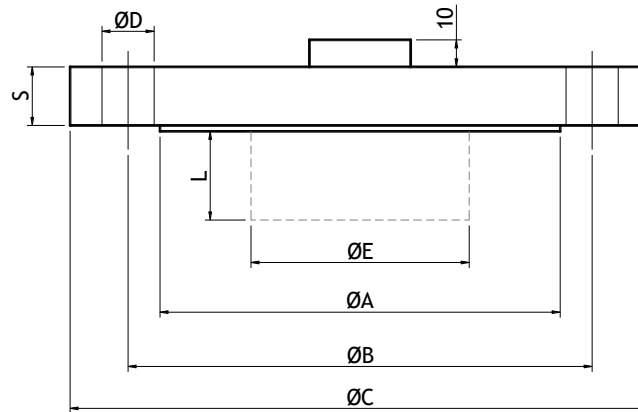


E11

Code	A [mm]	B [mm]	C [mm]
E01	Ø60	30	22.5
E03	Ø55	30	22.5
E05	Ø55	25	19
E07	Ø45	30	22.5
E09	Ø45	25	19
E11	Ø34	43.5	18
E13	Ø48.3	25	18
E14	Ø60	27	21
E15	Ø79	27	21

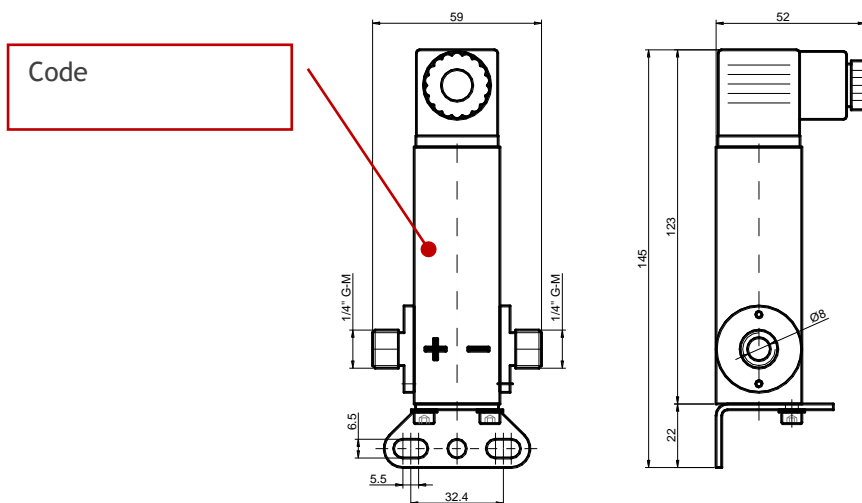
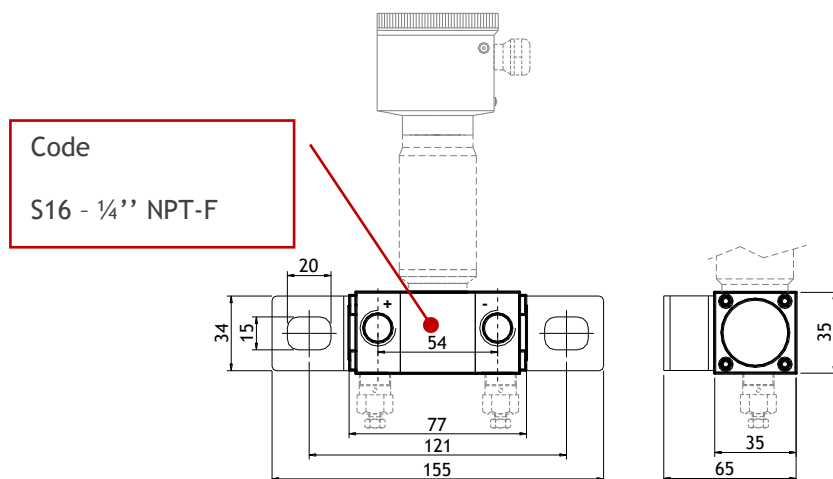
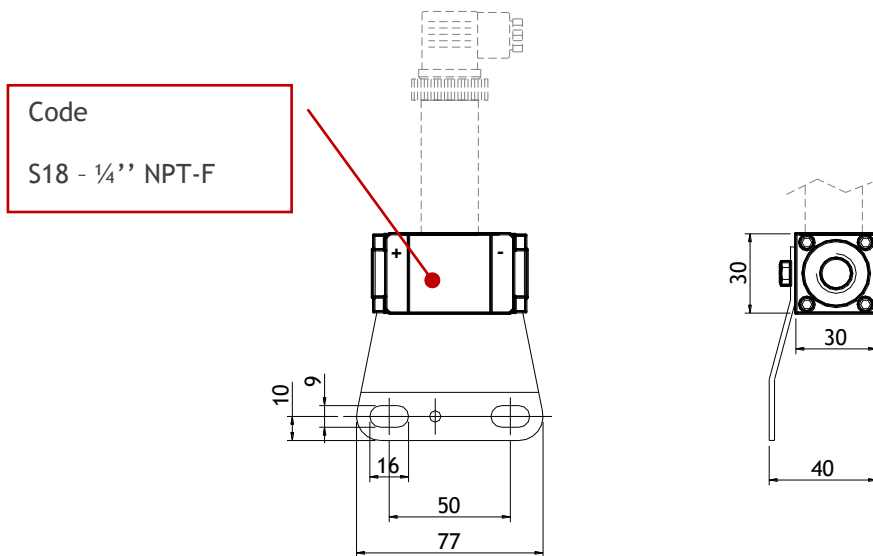
PROCESS CONNECTIONS

Standard flanges



Code	DN	PN	ØA [mm]	ØB [mm]	ØC [mm]	ØD [mm]	S [mm]
F21	15	10/16	45	65	95	14	14
F22	15	25/40	45	65	95	14	16
F23	20	10/40	58	75	105	14	18
F24	25	10/16	68	85	115	14	16
F26	25	25/40	68	85	115	14	18
F29	40	10/16	88	110	150	18	16
F32	40	25/40	88	110	150	18	18
F33	50	10/16	102	125	165	18	18
F35	50	25/40	102	125	165	18	20
F36	50	10/25	102	125	165	18	20
F41	65	10/40	122	145	185	18	22
F42	80	6	128	150	190	18	16
F43	80	10	138	160	200	18	20
F44	80	10/16	138	160	200	18	20
F49	80	25/40	138	160	200	18	24
F52	100	16	158	180	220	18	20
F55	100	40	162	190	235	22	24
F57	100	64	170	200	250	25	30
F71	1"	ANSI 150	51	79.5	108	16	14.5
F73	1" 1/2	ANSI 150	73	98.5	127	16	17.5
F75	2"	ANSI 150	92	120.5	152	19	19
F79	3"	ANSI 150	127	152.5	191	19	24
F83	3"	ANSI 300	127	168.3	210	22	28.6
F85	4"	ANSI 150	157.2	190.5	228.6	19	23.8
F87	4"	ANSI 300	157.2	200	254	22	31.7
F89	6"	ANSI 150	215.9	241.3	279.4	22	25.4

DIFFERENTIAL CELLS



ORDERING CODE

T72 Smart pressure, level, vacuum transmitter

01 Type of measure

- A Absolute Pressure
- B Barometric Pressure
- C Relative Pressure
- D Differential Pressure

02 Sensor type

- CI Ceramic Integral
- CR Ceramic Remote
- PI Piezoresistive Integral
- PR Piezoresistive Remote

03 Measuring range

P01	0,35 bar	Piezo	Overpressure: 0.5 bar
P02	0.7 bar	Piezo	Overpressure: 1.4 bar
P03	2 bar	Piezo	Overpressure: 4 bar
P04	3.5 bar	Piezo	Overpressure: 7 bar
P05	10 bar	Piezo	Overpressure: 20 bar
P06	20 bar	Piezo	Overpressure: 40 bar
P21	0.06 bar	Piezo	Overpressure: 4 bar
P22	0.35 bar	Piezo	Overpressure: 10 bar
P23	1 bar	Piezo	Overpressure: 20 bar
P24	2.5 bar	Piezo	Overpressure: 40 bar
P25	5 bar	Piezo	Overpressure: 50 bar
P26	10 bar	Piezo	Overpressure: 60 bar
P27	30 bar	Piezo	Overpressure: 150 bar
P28	100 bar	Piezo	Overpressure: 200 bar
P29	200 bar	Piezo	Overpressure: 600 bar
P30	400 bar	Piezo	Overpressure: 800 bar
P51	0.01 bar	Piezo	No overpressure
P52	0.055 bar	Piezo	No overpressure
P53	0.206 bar	Piezo	No overpressure
N01	0.35 bar	Piezo	Overpressure: 0.7 bar
N02	1 bar	Piezo	Overpressure: 2 bar
N03	3.5 bar	Piezo	Overpressure: 7 bar
N04	10 bar	Piezo	Overpressure: 20 bar
N05	35 bar	Piezo	Overpressure: 70 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
M07	100 bar	Piezo	Overpressure: 150 bar
M08	350 bar	Piezo	Overpressure: 700 bar
M09	1000 bar	Piezo	Overpressure: 1500 bar
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
C06	60 bar	Ceramic	Overpressure: 100 bar
C07	100 bar	Ceramic	Overpressure: 200 bar
C08	400 bar	Ceramic	Overpressure: 650 bar
H01	0.35 bar	Piezo	Overpressure: 0.7 bar
H02	1 bar	Piezo	Overpressure: 2 bar
H03	3.5	Piezo	Overpressure: 7 bar
H04	10	Piezo	Overpressure: 20 bar
H05	20	Piezo	Overpressure: 40 bar
ZZZ	Special		

NOTES

- 1) Negative or compound ranges are possible.
- 2) In case of vacuum applications must be necessary to use P01 ÷ P06 sensors.

ORDERING CODE

04 Filling oil

- 1 Siliconic Oil for high temperature -40/+308°C
- 6 Fluoride and Inert Oil -40/+200°C
- 8 Standard siliconic Oil -40/+200°C
- 9 Oil for food use -10/+220°C
- N No filling

05 Process temperature limits

- B -40 ÷ 85°C Standard
- D -40 ÷ 120°C Finned body for piezoresistive sensor
- F -40 ÷ 130°C Finned body for ceramic sensor
- H -40 ÷ 280°C Capillary
- I -20 ÷ 80°C

06 Housing material and type

- A04 AISI 316 Ø 27 mm
- A05 AISI 316 Ø 35 mm
- A06 AISI 316 Ø 50 mm
- A08 AISI 316 Ø 55 mm
- D02 Aluminium anodized Ø 30 mm
- Z99 Specia

07 Process connection

- S01 Screwed 1/8" NPT-F front
- S02 Screwed 1/8" NPT-F bottom
- S03 Screwed 2 X 1/8" NPT-F bottom
- S16 Screwed 1/4" NPT-F x 2 distance between axes 54 mm
- S17 Screwed 1/4" G-F x 2 distance between axes 54 mm
- S18 Screwed 1/4" NPT-F x 2 in line on body square 30
- S19 Screwed 1/4" G-F x 2 in line on body square 30
- S25 Screwed 1/2" G/BSP/PF-M IN PVDF
- S54 Screwed 3/4" G-M front diaphragm
- ... See section "Process connections"
- Z99 Special

08 Extension length

- L04 Diaphragm extension < 200 mm
- L10 Diaphragm extension < 500 mm
- Z99 Special

09 Sensor material (diaphragm)

- A AISI 316
- E Ceramic
- K Hastelloy C
- Q Titanium
- Z Special

10 Process gasket material

- C EPDM
- D FKM Viton
- G PTFE
- T All welded

11 Wetted parts material

- A AISI 316
- I Aluminium anodized
- L Titanium
- N Hastelloy C
- R Brass
- V PTFE coating

ORDERING CODE





12 Electrical connection

- 01 Plug connector M12 IP67 straight
- 02 Plug connector M12 IP67 90° angle
- 04 Connector DIN 43650 PG9 3+1 poles IP65
- 08 MIL Connector
- 09 RSF Lumberg Connector 4 poles
- 10 Fixed terminals 3 poles
- 11 Extractable terminals 3 poles
- 19 AISI 316 Cable gland PG9 IP67 for cable $\varnothing 5 \div 7$ mm
- 20 AISI 316 Cable gland PG13 IP67 for cable $\varnothing 8 \div 12$ mm
- 36 AISI 316 nipple 1/2" G-F
- 37 AISI 316 nipple 1/ 2" NPT-F
- 39 AISI 316 nipple M20x1.5-F
- 99 Special

13 Electrical output

- A Current output 4÷20 mA 2 wires + HART

14 Ex type approval

- A1  II 1G Ex ia IIC T6, T5 Ga and  II 1D Ex ia IIIC T85°C, T100°C Da
- A2  II 1G Ex ia IIC T6, T5 Ga
- A3  II 2G Ex ia IIC T6, T5 Gb
- N0 No Ex certification

15 Options and accessories

- 02 Marine type approval
- 22 PED Certificate
- 21 SIL Certificate
- 10 5 points calibration report
- 01 Test and material report according to EN 10204
- 12 Degreasing
- R4 Finned pipe HTx4 (T<150°C)
- R7 Cooling syphon Sch Std in AISI 316 Tmax=235°C
- 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. R7/R8
Cooling Syphon



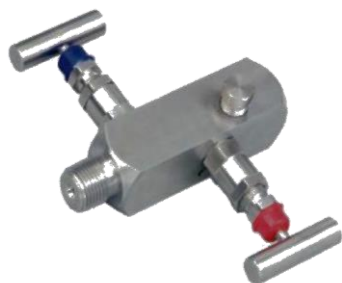
Cod. S3
Pulsation dampener



Cod. OV
Overpressure protection



Cod. N0/N1/N2
Welding nipple



Cod. M2
2 ways and 1 or 2 valves manifold



Cod. Z9
Clamp bracket for wall mounting



Series T7V
Field digital indicator

and MORE

- Wall mounting bracket
- SS 316 capillary L=...m
- Armoured capillary



SCIGATE AUTOMATION (S) PTE LTD
No. 1 Bukit Batok Street 22 #01-01 Singapore 659592
Tel: (65) 6561 0488 Fax: (65) 6562 0588
Email: sales@scigate.com.sg Web: www.scigate.com.sg
Business Hours: Monday - Friday 8.30am - 6.15pm