

SERIES T7N



T7N 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, vacuum and level in industrial, marine and off-shore.

Configurations and adjustments can be made locally by means of push buttons and display or 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 bracket for wall or for 2" stand pipe mounting is also supplied.

APPLICATION FIELDS

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

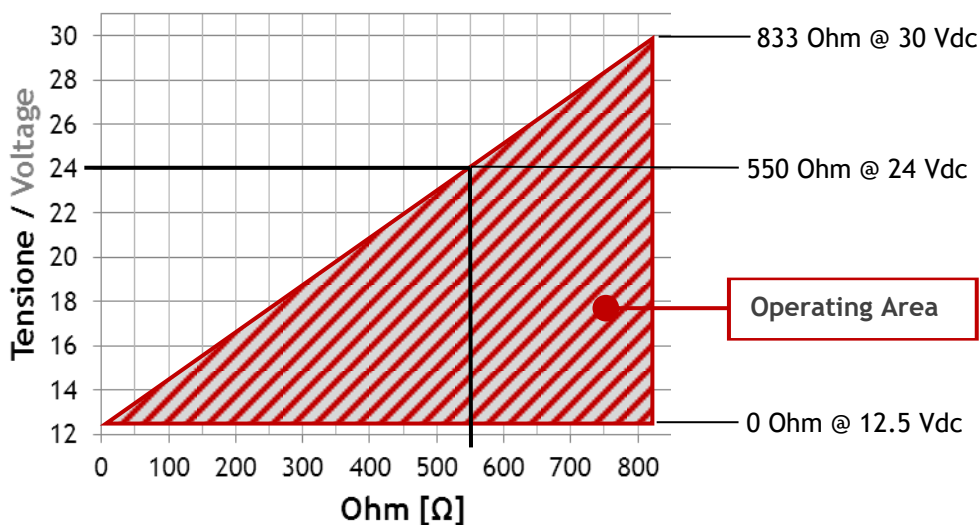


SCIGATE AUTOMATION (S) PTE LTD
No.1 Bukit Batok Street 22 #01-01 Singapore 659592
Tel: (65) 6561 0488 Fax: (65) 6562 0588
Email: sales@scigate.com.sg Web: www.scigate.com.sg
Business Hours: Monday - Friday 8.30am - 6.15pm

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
LCD working temperature:	-10 ÷ +65 °C
Storage temperature:	-40 ÷ +90 °C
Ingress protection degree:	AISI 316 Housing: IP67 Aluminum Housing: IP66
Vibration Test:	in accordance with IEC 60068-2-6
Relative Humidity:	< 98% RH not condensing

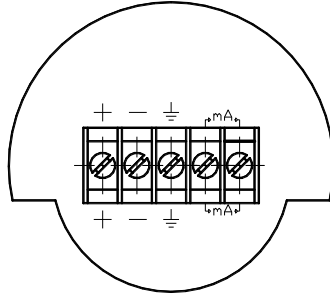
APPROVALS

Type approvals

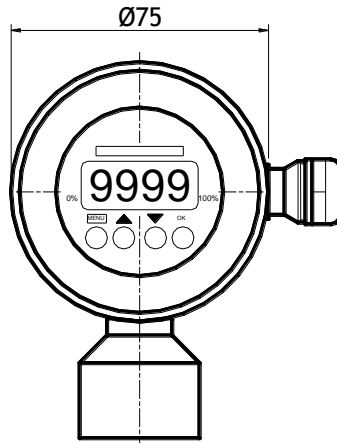
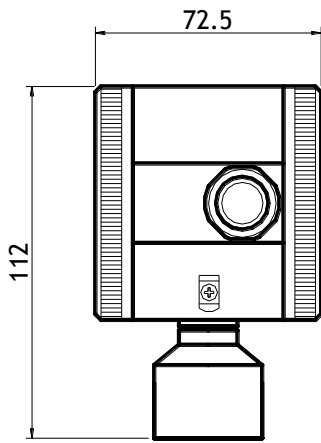
Directive 2014/34/EU (ATEX)	 II 1G Ex ia IIC T6, T5 Ga and  II 1D Ex ia IIIC T85 °C, T100 °C Da or  II 1/2G Ex ia IIC T6, T5 Ga/Gb	
Directive 2014/68/EU (PED)	Up to Category II, for fluids in Group 1	
Directive 2014/30/EU (EMC)	Adequate level of electromagnetic compatibility	
Functional Safety	SIL2 SFF = 78.13 %	PFH [Hours ⁻¹] = 9.2352 · 10 ⁻⁸ DC = λ _{DD} / (λ _{DD} + λ _{DU}) = 83.7 %
Marine type approval	In compliance with applicable requirements of RINA type approval system	

ELECTRICAL WIRING

Transmitters are protected against reverse polarity.

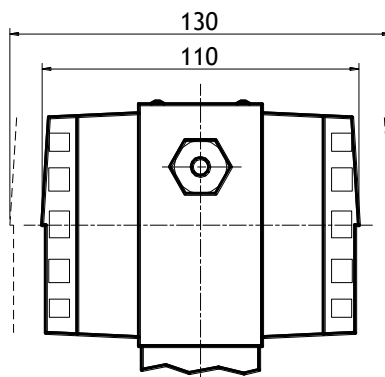
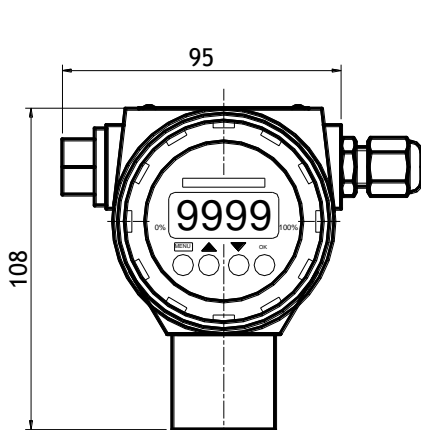


HOUSING MATERIAL AND TYPE



- Material: AISI 316
- Zone: II 1GD
- Degree: IP67

- A16 - Fixed head
- A17 - Rotating head
- A20 - With Gore reference IP65 (*)
- A21 - With Gore reference rotating head IP65 (*)

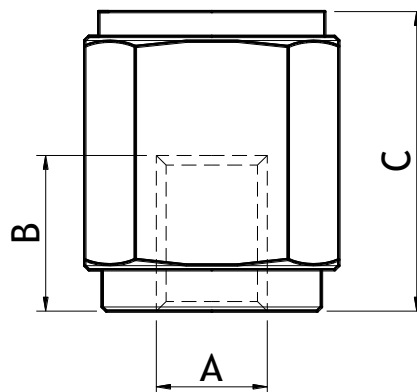
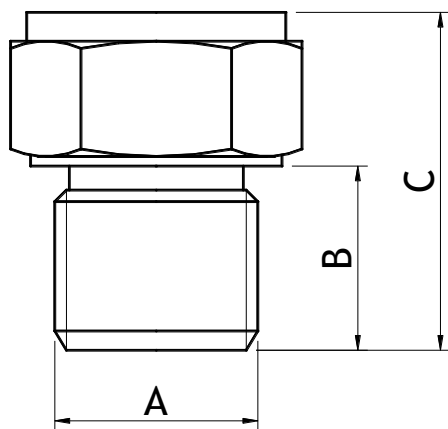


- Material: Aluminum
- Zone: II 1/2G
- Protection Degree: IP66

- D04 - Aluminum housing
 - D10 - With Gore reference IP65 (*)
- (*): Atmospheric reference for ranges < 10 bar

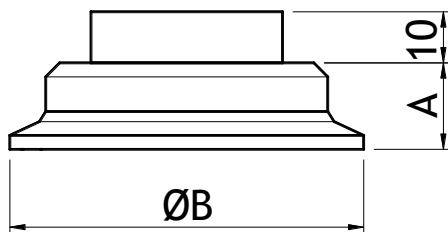
PROCESS CONNECTIONS

Standard screws



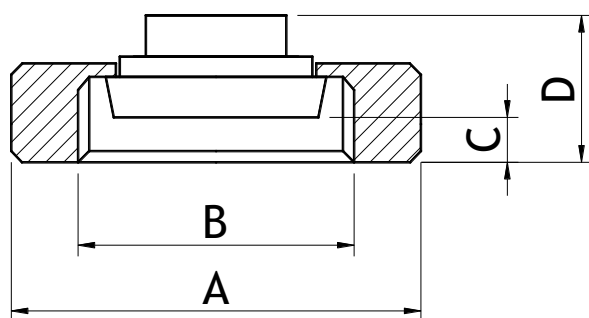
Code	A	B [mm]	C [mm]	Ex. Ch.
S06	1/4" G-M	14	38	27
S07	1/4" G-F	14	35	27
S08	1/4" NPT-M	14	39	27
S09	1/4" NPT-F	14	35	27
S22	3/8" G-M	16	41	27
S26	1/2" G-M	18	45	27
S28	1/2" G-F	20	41	27
S30	1/2" NPT-M	20	45	27
S31	1/2" NPT-F	20	43	27
S39	1/2" G-M Ø18.5 Flush diaphragm Ø18.5	16	32	27
S51	3/4" G-M	20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

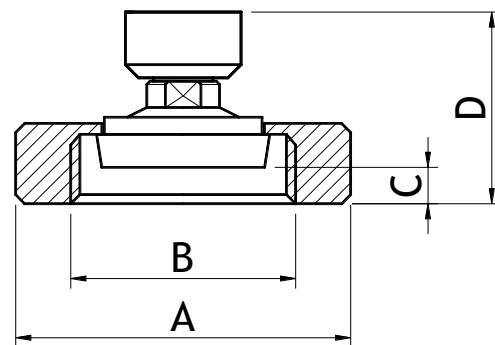


Code	DN	A [mm]	B [mm]
T00	1"	15.5	50.4
T02	1" 1/2	15.5	50.4
T03	2"	15.5	64
T04	2" 1/2	15.5	77.4
T05	3"	15.5	91
T06	4"	15.5	119

Welding Nuts



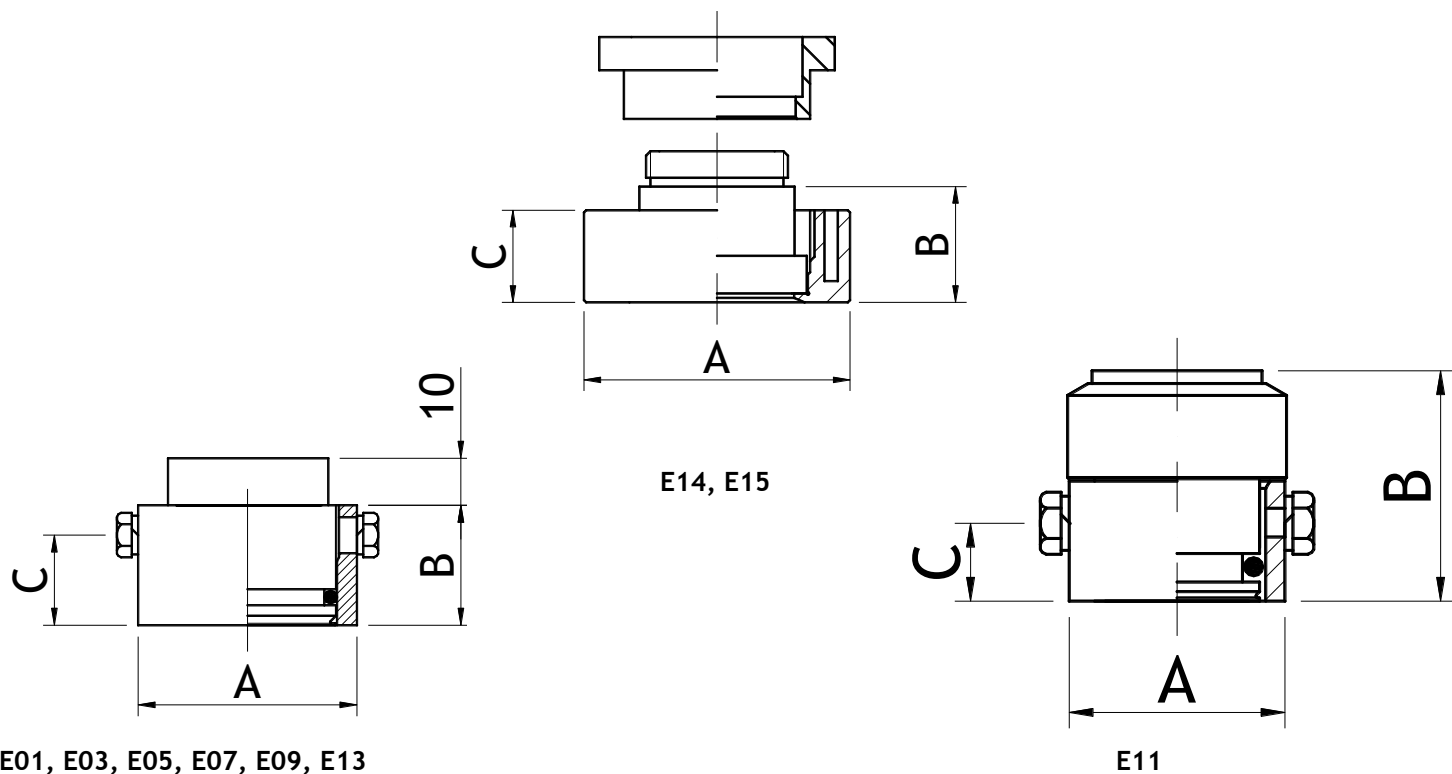
G01, G04, G06, G08



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

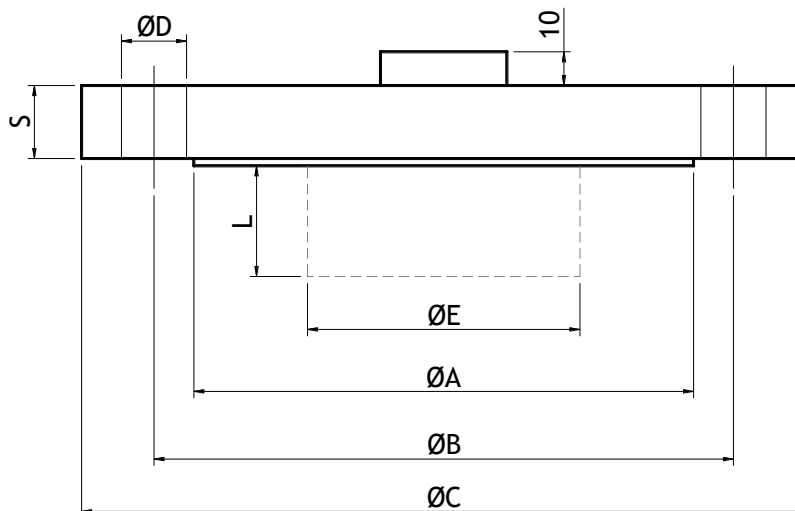
Welding Rings



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

ORDERING CODE

T7N Electronic Smart pressure, level, vacuum transmitter

01 Type of measure

- A** Absolute Pressure
- B** Barometric Pressure
- C** Relative 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
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	50 bar	Ceramic	Overpressure: 100 bar
C07	100 bar	Ceramic	Overpressure: 200 bar
C08	400 bar	Ceramic	Overpressure: 650 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
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
P51	0.01 bar	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.
- 2) In case of vacuum applications must be necessary to use P01 ÷ P06 sensors.

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
- D -40 ÷ 120°C Finned body for piezoresistive sensor
- F -40 ÷ 130°C Finned body for ceramic sensor
- H -40 ÷ 280°C Capillary

06 Housing material and type

- A16 AISI 316 Fixed head
- A17 AISI 316 Rotating head
- A20 AISI 316 With Gore reference
- A21 AISI 316 With Gore reference rotating head
- D04 Aluminum housing
- D10 Aluminum housing with Gore reference

07 Process connection

- S25 Screwed 1/2" G/BSP/PF-M IN PVDF
- S54 Screwed 3/4" G-M front diaphragm
- ... See "Process connections" section
- Z99 Special

08 Extension length

- L01 Diaphragm extension < 50 mm
- L02 Diaphragm extension < 100 mm
- N00 No extension

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
- L Titanium
- N Hastelloy C
- V PTFE coating




12 Electrical connection

- 19 AISI 316 Cable Gland PG9 IP67 cable ø 5 ÷ 7 mm
- 20 AISI 316 Cable Gland PG13 IP67 for cable ø 8 ÷ 12 mm
- 36 Nipple AISI 316 1/2" G-F
- 37 Nipple AISI 316 1/2" NPT-F
- 39 Nipple AISI 316 M20 x 1.5 F
- 81 Screwed M20 x 1.5

13 Electrical output

- J 4 ÷ 20 mA 2 fili + HART (0.2 % FS) With LCD and blind cover
- K 4 ÷ 20 mA 2 fili + HART (0.2 % FS) With LCD and transparent cover
- R 4 ÷ 20 mA 2 fili + HART (0.1 % FS) With LCD and blind cover
- S 4 ÷ 20 mA 2 fili + HART (0.1 % FS) With LCD and transparent cover

14 Ex type approval

- A1  II 1G Ex ia IIC T6, T5 Ga and  II 1D Ex ia IIIC T85°C, T100°C Da
- A5  II 1/2G Ex ia IIC T6, T5 Ga/Gb
- N0 No Ex certification

15 Options and accessories

- 02 Marine type approval
- 22 PED Certificate
- 21 SIL Certificate
- 10 Calibration report on 5 points
- 01 Test and material report according to EN 10204
- 12 Degreasing
- R4 Finned pipe HTx4 (T<150°C)
- R5 Finned pipe HTx11 (T<280°C)
- R7 Cooling syphon Sch Std in AISI 316 Tmax=235°C
- NN No options

ACCESSORIES



Cod. R7/R8
Cooling Syphon



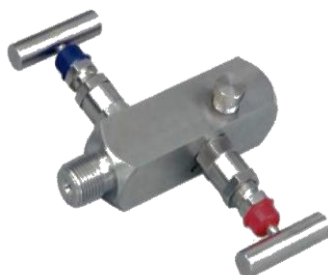
Cod. S3
Pulsation dampener



Cod. OV
Overpressure protection



Cod. N0/N1/N2
Welding nipple



Cod. M2
2 ways and 1 or 2 valves manifold



Cod. R4/R5
Finned pipe with 4 or 11 fins



Mod. 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