

TA12 Explosion Proof

Non-contact, wear-free magnetostrictive technology for long MTBF



TA12 Explosion Proof Transducer

The best of all worlds - accuracy, long life and fast replacement

In the petrochemical and process industries, uptime is critical. Component failure must be a rare event. When it does occur, repairs need to be fast and easy.

Balluff's TA12 explosion-proof transducer is specifically designed to meet these stringent oil and gas industry requirements for high reliability and fast and easy field maintenance. It is optimized for accurate and continuous feedback on hydraulically and pneumatically actuated valves for refining, storage, transport, and handling.

Balluff Micropulse® non-contact magnetostrictive technology provides superior long-term reliability and service life over competing contact sensors such as linear or rotary potentiometers. In addition, our cutting edge explosion proof housing design incorporates a quick-change replaceable electronics module to get you up and running fast in the unlikely event repair is ever necessary.

Field repairs in minutes, not hours

Held in by two retaining screws, the electronics module is simple and fast to remove and install. If the unit ever needs repair, the entire electronics module and sensing element can be removed and replaced in a matter of minutes – the pressure tube stays in place, and the hydraulic seal is never broken. Getting back on line is simple, fast, and easy.



A simple, complete, approved solution

The TA12 linear position transducer is a complete, approved solution for linear feedback in hazardous locations. The replaceable electronics cartridge is integrated into the rugged stainless steel housing, and the completed transducer is fully tested at the factory prior to shipment to your facility.



Non-contact magnetostrictive transducer technology means a long, highly accurate maintenance-free service life

Advanced magnetostrictive technology is superior to obsolete resistive element construction. That's because resistive element technology features wear-prone electro-mechanical contacts that degrade with use, resulting in erratic or lost position signals and the need for periodic replacement. Balluff's non-contact transducer technology ensures high accuracy and clean feedback signals over the life of the product.



Balluff's TA12 gets the job done in hazardous area applications

Whether the need is for high accuracy, high reliability, ultra safe operation, or all three, the TA12 is at home no matter what the application.



Advanced Balluff transducer design enhances operational performance

Patented Balluff auto-tuning allows the use of a wide range of cylinder position magnets, including those already installed in existing operational equipment. Balluff's TA12 also compensates for performance changes caused by temperature fluctuations, allowing it to provide consistent, stable accuracy over a temperature range of -40 to 176°F. Additionally, the TA12's enhanced wave guide construction provides a high level of resistance to shock and vibration.

TA12 Explosion Proof Transducer

Certifications

At home in any control network anywhere around the globe

Operating on 24 Vdc or 10...30 Vdc power, Balluff's Micropulse® TA12 offers a greatly expanded array of control signal interface options, including analog voltage and current, start/stop pulse digital, synchronous serial digital, digital quadrature, and digital field buses such as Profibus and CANopen. On all analog voltage and analog current versions, the linear stroke range and the location of the zero and span points can be user-adjusted in the field using a simple two-button removable programming tool. This feature allows the unit to be quickly fine-tuned to the exact requirements of the application without the need for delicate screwdriver-adjusted zero and span potentiometers.

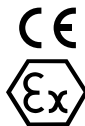


Worldwide certifications

Balluff Micropulse® TA12 offers the widest range of hazardous location explosion proof and flameproof certifications available.



Class I, Division 1, Groups A, B, C, and D
Class II, Division 1, Groups E, F, and G; Class III
T6 Ta=65°C, T5 Ta=80°C Type 4X/6P; IP68
Class I, Zone 1 AEx d IIC T6 Ta=65°C, T5 Ta=80°C
Class I, Zone 1 Ex d IIC T6 Ta=65°C, T5 Ta=80°C
SIRA 11ATEX1104X
IECEx SIR 11.0048X



Ex II 1/2GD
Ex d IIC T6/T5 Ga/Gb Ta +65°C (T6) +80°C (T5)
Ex t IIIC T85/T100°C Da IP68 Ta +65°C (T85) +80°C (T100)
CE 0518 Ex

TA12 Explosion Proof Transducer

Ordering code

Replacement Module Only **B T L 5 - A 1 1 - M 0 3 0 5 - J - M 0 1 - T A**

Complete Transducer **B T L 5 - A 1 1 - M 0 3 0 5 - J - D E X C - T A 1 2 - E 4 / U S**

Balluff

Linear Transducer

Generation 5

Output Type

A = 0 to 10 Vdc Q = Quadrature*

B = -5 to +5 Vdc I = Differential start/stop with tri-state

C = 0 to 20 mA K = Differential stop – leading edge active

E = 4 to 20 mA L = Differential pulse – width modulated

G = -10 to +10 Vdc M = Differential start/stop – leading edge active

S = SSI* N = Single ended start/stop – leading edge (add /US)

T = Profibus* P = Differential start/stop – trailing edge active

H = CANopen* R = Differential pulse-width – recirculated

Supply Voltage

1 = 24 Vdc ±20%

5 = 10...30 Vdc (Not available for T & H output types; not available for SSI "B")

Analog Output Operation (blank for digital)

Voltage output (Output type A, B & G)

1 = User selectable rising or falling

Current output (Output type C & E)

0 = Minimum output at connector end (rising towards opposite end)

7 = Maximum output at connector end (falling towards opposite end)

Stroke Length

0 3 0 5 = active stroke length

Housing Style

J = Rod Style, Smooth Flange, O-ring seal

Supplied with (6) M6 x 45 stainless steel mounting screws

Rating Code

D E X = Explosion-Proof, **C** = Universal end plug

Electrical Connection Style

T A 1 2 = Terminal block connection, 1/2"-14 NPT conduit entry

Interrogation (only valid if output type = R, otherwise leave blank)

I = Internal interrogation, E = External interrogation

Recirculation (only valid if output type = R, otherwise leave blank)

1=1 circulation, 2 = 2 circulations, 3 = 3 circulations, 4 = 4 circulations, 6 = 6 circulations, 8 = 8 circulations, 10 = 10 circulations, 16 = 16 circulations

***See additional ordering information in full line catalog**

Notes:

– Conduit adapter 1/2" - 14 NPT to M20 metric **BTL-A-AD09-M-00EX**

– Replacement metric mounting screw kit: **BTL5-A-FK01-E-J-DEX**

– Analog Programming Tool: **BTL5-A-EH03**

– Replacement electronics and waveguide module: Substitute "J-M01-TA" for "J-DEXC-TA12" in part number of complete unit

Standard Stroke Lengths, Inches (mm) (consult factory for additional lengths)

1 (0025)	9 (0230)	22 (0560)	48 (1220)	89 (2261)	156 ^A (3962)	192 (4877)
2 (0051)	10 (0254)	24 (0610)	50 (1270)	98 (2490)	160 (4064)	196 (4978)
3 (0076)	11 (0280)	26 (0661)	54 (1372)	108 (2743)	164 (4166)	200 (5080)
3.5 (0090)	12 (0305)	28 (0711)	60 (1524)	118 (2997)	168 (4267)	
4 (0102)	13 (0330)	30 (0762)	66 (1676)	126 (3200)	172 (4369)	
5 (0127)	15 (0381)	32 (0813)	69 (1753)	140 (3556)	175 ^B (4445)	
6 (0152)	16 (0407)	36 (0914)	72 (1829)	144 (3658)	180 (4572)	
7 (0178)	18 (0457)	40 (1016)	78 (1981)	148 (3759)	184 (4674)	
8 (0203)	20 (0508)	42 (1067)	84 (2134)	152 (3861)	188 (4775)	

^A Maximum length for SSI, Profibus, CANopen = 156 inches.

^B Maximum length for analog outputs = 175 inches.

N output only

/US = single ended Start/Stop - leading edge (US Standard)

Blank = single ended Stop only - leading edge (European Standard)

TA12 Explosion Proof Transducer

Dimensions and general specifications



Series	Explosion Proof, Flame Proof
Approvals	North American, ATEX, IECEx
Output signals	Analog & Digital Pulse
Part Number	BTL 5 _ _M _ _ _J-DEXC-TA12
Measurement type	Linear displacement
Measurement range	51mm (2 in) to 5080mm (200 in) (max. length output independent)
Shock rating	100g for 6ms (100g for 2ms continuous) per IEC 68 2-27
Vibration rating	12g, 10 to 2000 Hz per IEC 68-2-6
Environmental protection	IP68
Housing material	316 stainless steel; cover 304 stainless steel
Pressure rating (rod)	600 bar (8700 PSI) max
Operating temperature	-40 to + 176°F
Storage temperature	-40 to + 212°F
Humidity	<90% non-condensing
Connection type	Terminal block via rigid conduit 1/2"-14 NPT
Compatible magnets	See page 7 for float and magnet options

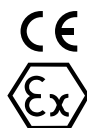
For electrical options, see full line Micropulse catalog.

Warning:

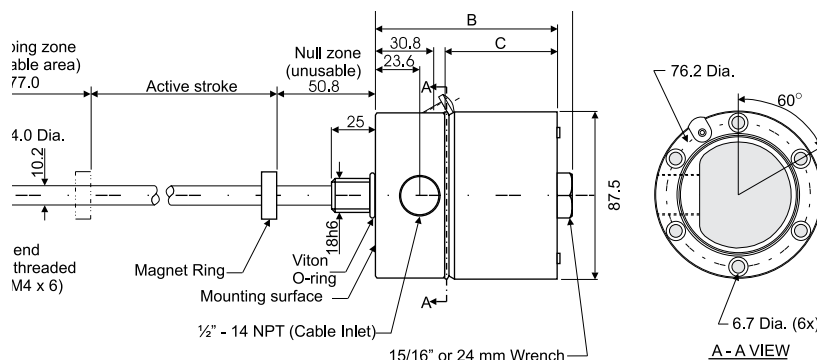
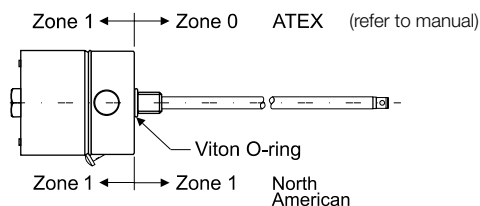
Proper installation of the Micropulse Ex is essential. Follow all installation instructions and precautions are outlined in the Micropulse Ex manual, provided with every unit. These products are not rated for personnel safety applications.



Class I, Division 1, Groups A, B, C, and D
 Class II, Division 1, Groups E, F, and G; Class III
 T6 Ta=65°C, T5 Ta=80°C Type 4X/6P; IP68
 Class I, Zone 1 AEx d IIC T6 Ta=65°C, T5 Ta=80°C
 Class I, Zone 1 Ex d IIC T6 Ta=65°C, T5 Ta=80°C
 SIRA 11ATEX1104X
 IECEx SIR 11.0048X



Ex II 1/2GD
 Ex d IIC T6/T5 Ga/Gb Ta +65°C (T6) +80°C (T5)
 Ex t IIIC T85/T100°C Da IP68 Ta +65°C (T85) +80°C (T100)
 CE 0518 Ex



Mounting is accomplished using six M6x45 A2 (stainless) socket-head cap screws (supplied with transducer) or six 1/4"-20x1-3/4" socket-head cap screws (user-supplied)

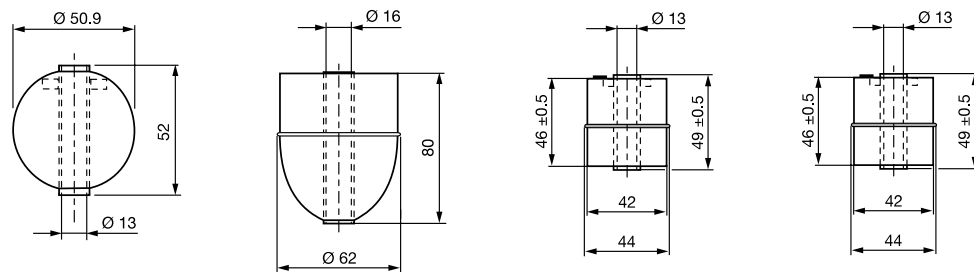
Electrical Interface	Dim. A (mm)	Dim. B (mm)	Dim. C (mm)
Analog, Digital, SSI, Quadrature	104.12	96.12	59.5
Profibus, CANbus	135.62	127.62	91

Metric conduit adapter:
 BTL-A-AD09-M-00EX (order separately)

TA12 Explosion Proof Transducer Accessories

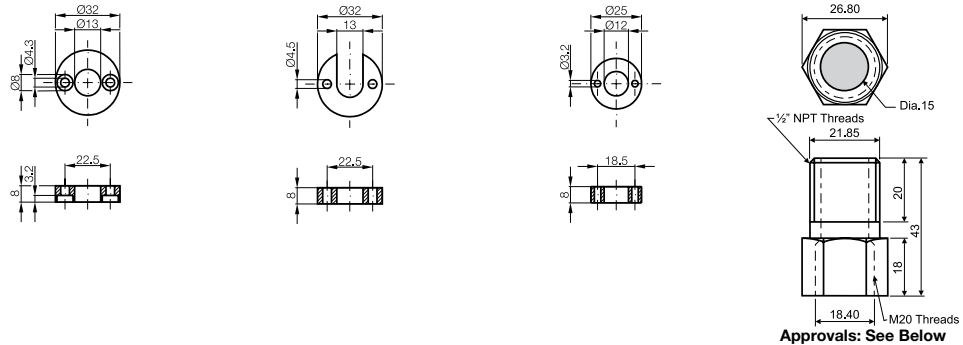


Product Type	Ex Rated Float Magnet Sphere	Ex Rated Float Magnet Bullet	Ex Rated Float Magnet Barrel	Ex Rated Float Magnet Barrel
Order Code	BAM014A	BAM014E	BAM014B	BAM0147
Part Number	BTL2-S-5113-4K-EX	BTL2-S-6216-8P-EX	BTL2-S-4414-4Z01-EX	BTL2-S-4414-4Z-EX
Minimum Density	0.7 g/cm ₃	0.6 g/cm ₃	0.85 g/cm ₃	0.7 g/cm ₃
Immersion Depth in 1 g/cm ₃ (H ₂ O)	26	41	45	30
Immersion Depth in 0.7 g/cm ₃	40	57	sinks	39
Material	Stainless 316	Stainless 316	Stainless 316	Stainless 316



Product Type	Magnet, Spacer Ø32 Ring	Magnet Ø32 Open Ring	Magnet Ø25 Ring	Adapter Rigid Conduit Adapter
Order Code	BAM013L	BAM013P	BAM013J	BAM011T
Part Number	BTL-P-1013-4R*	BTL-P-1013-4S*	BTL-P-1012-4R*	BTL-A-AD09-M-00EX

*Spacer is included with these magnets



Approvals for BTL-A-AD09-M-00EX:



ATEX
SIRA 00A TEX1094
EEx de I & IIC
I M2, II 2 GD



CSA/IEC
AEx de Class I, Zone I, Groups I & IIC
Class I, Division 1 & 2, Groups A, B, C, D
Class II & III, Groups E, F, G



Systems and Services



Industrial Networking and Connectivity



Industrial Identification



Object Detection



Linear Position Sensing and Measurement



Condition Monitoring and Fluid Sensors



Accessories

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