## EU DECLARATION OF CONFORMITY

### Declaration No. 001006

This declaration of conformity is issued under the sole responsibility of the manufacturer. We, the undersigned:

Name of Manufacturer/
Authorised representative: Pulsar Measurement
Address: Cardinal Building
Enigma Commercial Centre
Sandys Road
Malvern
Worcestershire
WR14 1JJ
Country: UK

Declare under our sole responsibility that the following apparatus:

Apparatus: Ultrasonic Transducers, HART dBi range for measurement & process control.
Model or Type No.: dBi 3, dBi 6, dBi 10 & dBi 15 Ex ia & Ex mb versions
Brand name: HART dBi range

Are in conformity with the following relevant EU legislation:

| | Directives | Standards |
|---|---|---|
| Electrical Safety | 2014/35/EU | EN61010-1-2010 |
| EMC: | 2014/30/EU | EN61326-1:2013 |
| ATEX general | 2014/34/EU | EN60079-0:2012 |
| ATEX Exia (IS) | | EN60079-11:2012 |
| ATEX Exmb | | EN60079-18:2009 |
| RoHS | 2011/65/EU | |

**I declare that the apparatus named above has been tested and complies with the relevant sections of the above referenced standards & directives**

Notified Body: Element Materials Technology Rotterdam BV
Notified Body No.: 2812
Certificate Nos. EMT18ATEX0014X
IEC EMT18.0005X (Ex ia) &
TRAC12ATEX0023X (Ex mb).

ATEX coding: II 1 G Exia IIC T4 Ga & II 1 D Exia IIIC T130°C Da
Tamb -40°C to +80°C
II 2 G Exmb IIC T4 Gb & II 2 D Exmb IIIC T130°C Db
Tamb -40°C to +80°C

Name & position of person binding the manufacturer or authorised representative:

Signed:

Name: Tim Brown
Function: Electronics Engineer
Location: Pulsar Process Measurement Ltd.
WR14 1JJ, UK.
Issue date: 5th November 2020.

CE

## MAINTENANCE & DISPOSAL

Check the cable & enclosure are intact; splits or cracks render the equipment unsafe; remove it from service.
There are no user-serviceable parts.
Remove power before installation or decommissioning.

Dispose of the transducer and cable in accordance with regional environmental regulations for electronic equipment. e.g. WEEE regulations within the EU, directive 2012/19/EU.

## PULSAR MEASUREMENT CONTACT DETAILS


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pulsar MEASUREMENT

Free DTM now available
Contact Pulsar for more information

# dBi series HART COMMUNICATION PROTOCOL
# Intelligent Transducer

## INSTALLATION MANUAL

**Full dBi and Pulsar DTM manuals are available free for download @ www.pulsarmeasurement.com**

M-DBi—000-001-4P

## DESCRIPTION

The dBi HART transducer range has been specified and designed to meet the demanding requirements of today's process level measurement applications for liquids and solids.
All dBi transducers are 2 wire and can either be used in digital HART mode or as 4-20mA loop powered devices. The dBi transducers are set up using a hart modem with either proprietary HART software such as Pactware or Pulsar dBi HART PC software.
The dBi unit is based on a PZT ceramic transducer element. The nominal beam angle is 10 $^{0}$ @ -3 dB (depending on unit). When coupled with the DATEM® signal processing they provide unmatched performance in industrial process level measurement.

All dBi transducers include integral temperature compensation.
Optional submersion shield is available to prevent spurious signal if the transducer becomes submerged.
A range of flange mounting options (ANSI & EN1092) with or without a PTFE facing to give improved chemical resistance is available.
An aiming kit is recommended for solids level measurement to help focus on the material surface with the angle of repose.

| | |
|---|---|
| Standard cable lengths: | 5, 10, 20 or 30m. |
| Process Connection: | 1" BSP, M20 adapter option. |
| Operating Temperature: | -40 to +80°C |
| Ingress Protection: | IP68 |
| Enclosure material: | Valox 357 or PVDF. |

## GENERAL INSTALLATION

The dB transducer should be installed directly above the liquid or solid level with the transducer axis perpendicular to the surface to be measured.
The transducer can be installed using the 1" BSP thread on the top of the transducer or with the supplied 1" BSP to M20 thread adapter. See figure 1 for examples.
In some applications, it may not be possible to install the transducer using either a flange or the 1" BSP thread, in these circumstances it may be possible to suspend the transducer from its cable. In these installations, it is recommended that the transducer be secured using a chain fitted to one of the chain holes on the top of the transducer, see figure 2.
When installing the transducer avoid aiming the transducer directly at fixed obstructions as they may mask the required return echo from the liquid or solid level being monitored, see figure 3.

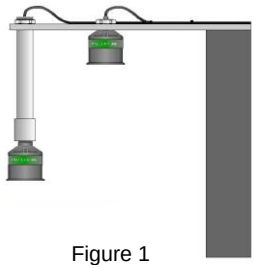


Figure 1

Figure 2

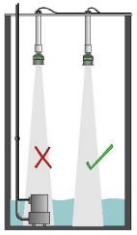
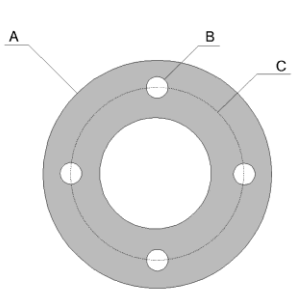
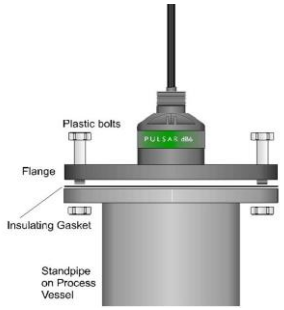



Figure 3

## dBi FLANGED VERSIONS




EN1092 (BS 4504) All dimensions in mm

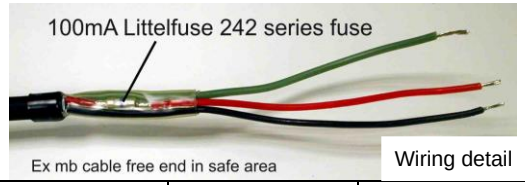
| Size | A | B | C | No. holes |
|---|---|---|---|---|
| 50 | 165 | 19 | 125 | 4 -18mm |
| 80 | 200 | 19 | 160 | 8 -18mm |
| 100 | 220 | 19 | 180 | 8 -18mm |
| 150 | 286 | 19 | 240 | 8 -23mm |
| 200 | 337 | 19 | 295 | 12 -23mm |

ANSI Class 150

| Size | A | B | C | No. holes |
|---|---|---|---|---|
| 2 | 165 | 19 | 121 | 4 -18mm |
| 3 | 200 | 19 | 152 | 4 -18mm |
| 4 | 220 | 19 | 190 | 8 -18mm |
| 6 | 286 | 19 | 241 | 8 -22mm |
| 8 | 343 | 19 | 298 | 8 -22mm |

Flanged versions of the transducer should be installed using plastic bolts with an insulating gasket between the transducer flange and the process vessel flange. The bolts should not be fully tightened as this may cause acoustic resonance that results in increased ring down. A typical flange application is shown above.

## HAZARDOUS AREA INSTALLATION




Wiring detail

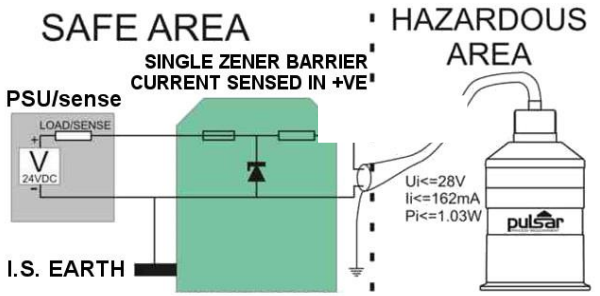
| Colour | Description | Limits |
|---|---|---|
| RED | DC Power +ve | 28V DC max. |
| BLACK | DC 0V | |
| GREEN | Cable Screen | |

**X Limitations on use:**

1. The transducers must be routinely inspected to avoid the build-up of a dust layer when installed in Zones 20, 21 & 22.
2. Electrostatic hazard – The transducers must only be wiped with a damp or anti-static cloth.
3. Only fuses listed on drawing D-804-0978 may be used with the Ex mb approved dBi transducers.

## HAZARDOUS AREA INSTALLATION, Exia

**Ex ia** (Intrinsically Safe) dBi transducers are certified for use in hazardous zones 0, 1, 2 (gas) & 20, 21, 22 (dust).
A certified safety barrier is required.




**Ex ia version, 4-20mA mode.**

Electrostatic Hazard - clean only with a damp cloth $T_{amb}$ = -40°C to +80°C

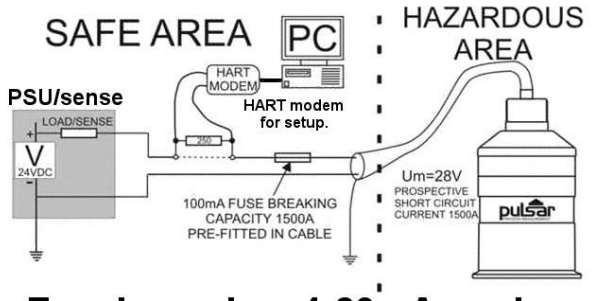
**IECEx EMT 18.0005X EMT 18ATEX0014X**

**II 1 G Ex ia IIC T4 Ga**
**II 1 D Ex ia IIIC T130°C Da**

**Ui=28V**
**Ii=162mA**
**Pi=1.03W**

## HAZARDOUS AREA INSTALLATION, Exmb

**Ex mb** (encapsulated) dBi transducers are certified for use in hazardous zones 1, 2 (gas) & 21, 22 (dust).
No barriers are required but they must be supplied from apparatus that provides protection from prospective short-circuit currents of at least 1500A.




**Ex mb version, 4-20mA mode.**

Electrostatic Hazard - clean only with a damp cloth $T_{amb}$ = -40°C to +80 °C

**TRAC 12ATEX0023X Um=28V** PROSPECTIVE SHORT CIRCUIT CURRENT 1500A

**II 2 G Ex mb IIC T4 Gb**
**II 2 D Ex mb IIIC T130°C Db**

**NOTE: Extension cables must use 2 or 3 core screened conductors. Capacitance must not exceed 100nF between conductor to screen. Resistance should not exceed 40Ω per conductor**