

# dB ULTRASONIC TRANSDUCER SERIES

Compact, low-power design that gives exceptional results even in challenging situations.

## Non-contact ultrasonic transducers to create the perfect solution for your application.

Previously, users had a choice between high-voltage, frequency-dependent transducers that were susceptible to electrical noise and needed special, protected interconnecting cables, and weak, low-power transducers that had good hazardous area performance but performed poorly in any but the simplest application.

The dB ultrasonic transducer range has changed all of that, creating a compact, low power transducer design that can be Intrinsically Safe certified and uses standard interconnecting cables, yet produces extremely high acoustic power to give exceptional results in a wide variety of applications.

### Features & Benefits

Combine a dB ultrasonic transducer with any of Pulsar's Ultra, FlowCERT, Zenith, Quantum, or Blackbox control units to create the perfect solution for your application. All transducers have flammable atmosphere approval as standard.

Standard transducer bodies are made from Valox 357 PBT with a special foam radiating face. Some are available with both body and sealed front face in PVDF for corrosive applications.

### Flanged Transducers

Flange options are available for dB3, dB6, dB10, and dB15 transducers, ANSI or DIN specification, all featuring full PTFE



## THE RIGHT METER FOR

- Wet Well Level Measurement
- Tank Level Measurement
- Silo Level Measurement
- Pump Control Applications
- Shaft Tank Monitoring
- Digester Levels

coating on the process wetted side. Various flange sizes are available. The maximum vessel pressure on flanges is 0.5 bar (7 psi). These incorporate the performance features of the standard products but additionally offer a front thread mount option to suit threaded nozzles or flanged tank entries.

These integral flange options are available with the standard family of transducers, up to the dB15 size.

### Foam Face

A foam faced option is available for all the standard range transducers to provide more acoustic power



dB15 with Submergence Shield

output in dry, dusty environments. This higher acoustic power output increases return echo strength in these dry applications.

### **Submergence Shield**

A shield can be fitted to keep the transducer face clean and dry in applications at risk of submergence. In the case of submergence, the controller can be asked to fail high, low, or hold the last reading. When the level drops back below the shield, it allows the controller to resume operation with a clean transducer face. The shield can be fitted to the dB3, dB6, dB10, dB15, and dB25 standard transducers.

### **dBMACH3: High Accuracy Open Channel Flow Transducer**

Featuring unique sun and submergence shields, the dBMACH3 transducer is designed specifically for open channel flow applications and is the first ultrasonic transducer with zero effective blanking distance beyond the nose cone, allowing it to be sited as little as a few mm from the high-flow level. One of the critical factors affecting ultrasonic accuracy is the measurement distance, so by minimizing the distance, accuracy is maximized. Operating at 125kHz frequency the transducer provides high resolution and accuracy. Essential in open channel

flow applications. The dBMACH3 is used with the Ultra 4 or 5 and TWIN when in open channel flow mode, or can be paired with FlowCERT all of which provide a typical accuracy of  $\pm 1$  mm (0.04 in).

### **Sanitary Flanged Transducers**

For standard transducer from dB3 to dB10 an option of a sanitary flange construction exists. The flange has a full face PTFE (dB3) or PVDF seal for use in hygienic applications. The flange is available in 2" or 3" (on dB3) and 3" on the dB6 and dB10 units. These flanges allow Tri-Clamp fittings to be used on tanks or vessels.

### **Cable Options**

Transducer cable lengths are supplied as standard 5 m, 10 m, 20 m, or 30 m (16 ft, 32 ft, 65 ft, 98 ft). Longer lengths can be supplied as required in 10 m (32.8 ft) steps. It is important to note that the supplied transducer cable may be extended by using standard 2 or 3 core screened cables for up to 1,000 m (3,280 ft) or beyond if needed. No separation is required between the transducer and other cables as they are not susceptible to crosstalk and significant costs can be saved on-site.

### **Aiming Kit**

Pulsar Measurement's robust and effective aiming kit allows the transducer to be aimed towards the material draw off point at the bottom of the silo or tank, ensuring that the returning echo is as strong as possible and that the ultrasonic system can measure right down to the true empty point of the silo. The location of the aiming kit should be as far away from the fill point as possible to avoid seeing falling material. It should be aimed to coincide with the material's angle of repose, ensuring a more powerful signal return to the transducer. The rotational ball mechanism allows up to 20 degrees of vertical and 360 degrees of rotation.

### **Blind Flanges**

A range of blind PVC flanges with central 1" BSP or NPT hole is available. These are for mounting transducers within a standpipe or tank using rear thread or dB3 front thread mounting. These are available in 2", 3", 4", and 6" ANSI or DIN 80, DIN 100, DIN 150, and DIN 200 patterns.



dBMACH3 High Accuracy Open Channel Flow Transducer

## Technical Specifications

### PHYSICAL: TRANSDUCER SPECIFIC

Model:	Dimensions:	Dia Face:	Weight:	Measurement Range:	Frequency:	Beam Angle:
<b>dB3</b>	78 (D) mm x 115 (H) mm (3.1 in x 4.5 in)	19 mm (0.7 in)	1.1 kg (2.4 lb)	125 mm to 3 m (4.9 in to 9.8 ft)	125kHz	<10°
<b>dB6</b>	86 (D) mm x 106 (H) mm (3.4 in x 4.2 in)	30 mm (1.2 in)	1.1 kg (2.4 lb)	300 mm to 6 m (11.8 in to 19.7 ft)	75kHz	<10°
<b>dB56</b>	86 (D) mm x 106 (H) mm (3.4 in x 4.2 in)	45 mm (1.8 in)	1.1 kg (2.4 lb)	200 mm to 6 m (7.9 in to 19.7 ft)	50kHz	<10°
<b>dB10</b>	86 (D) mm x 106 (H) mm (3.4 in x 4.2 in)	45 mm (1.8 in)	1.1 kg (2.4 lb)	300 mm to 10 m (11.8 in to 32.8 ft)	50kHz	<10°
<b>dB15</b>	86 (D) mm x 122 (H) mm (3.4 in x 4.8 in)	60 mm (2.4 in)	1.2 kg (2.6 lb)	500 mm to 15 m (19.7 in to 49.2 ft)	41kHz	<8°
<b>dB25</b>	105 (D) mm x 142 (H) mm (4.1 in x 5.6 in)	78 mm (3.1 in)	1.4 kg (3.1 lb)	600 mm to 25 m (23.6 in to 82 ft)	30kHz	<6°
<b>dB40</b>	205 (D) mm x 223 (H) mm (8.1 in x 8.8 in)	160 mm (6.3 in)	6 kg (13.2 lb)	1.2 m to 40 m (3.9 ft to 131.2 ft)	20kHz	<5°
<b>dB50</b>	205 (D) mm x 223 (H) mm (8.1 in x 8.8 in)	160 mm (6.3 in)	6 kg (13.2 lb)	2 m to 50 m (6.5 ft to 164 ft)	20kHz	<5°

### PHYSICAL: ALL TRANSDUCERS

<b>Sensor Body Material:</b>	Valox 357 U and syntactic foam face
<b>Cable Lengths:</b>	Standard = 5 m, 10 m, 20 m, or 30 m (16.4 ft, 32.8 ft, 65.6 ft, or 98.4 ft). Optional: up to 150 m (492 ft) maximum (increments of 10 m (32.8 ft) only)
<b>Maximum Separation:</b>	500 m (1,640 ft)
<b>Mounting Connection:</b>	BSP or 1" NPT

### ENVIRONMENTAL

<b>Enclosure Protection:</b>	IP68 / NEMA 6P
<b>Max. and Min. Temperature (Electronics):</b>	Standard: -40° C to +90° C (-40° F to +194° F) Hazardous area versions: -40° C to +75° C (-40° F to +167° F)

### APPROVALS

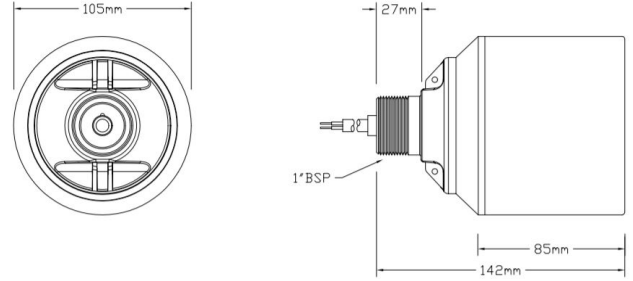
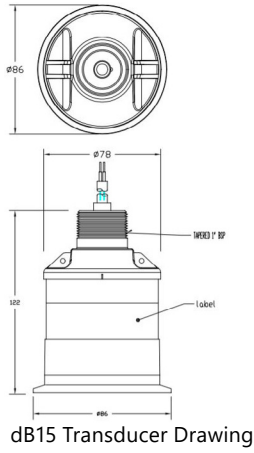
<b>CE Approval:</b>	2014/30/EU to EMC & 2014/34/EU ATEX Directives. Standards applied: EN 60079-0:2012+A11:2013/ EN 60079-11:2012 / EN 60079-18:2009 / EN 60079-26:2007 / EN 61326-1:2013
<b>ATEX Approval:</b>	Standard ATEX EEx m II T6 or optional EEx ia IIC T6. FM/FMC approval. (dB50 not approved)

### TRANSDUCER OPTIONS

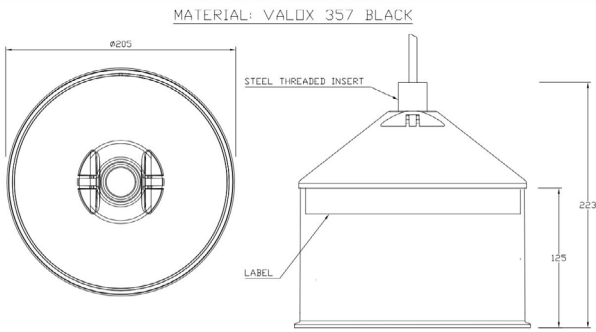
Model:	dB3	dB56	dB6	dB10	dB15	dB25	dB40	dB50
<b>PVDF</b>		✓	✓	✓				
<b>Front Threaded / PVDF</b>	✓	✓	✓	✓				
<b>Submergence Shield</b>	✓	✓	✓	✓	✓	✓		
<b>Flanged DIN/ANSI</b>		✓	✓	✓	✓			
<b>Foam Face</b>		✓		✓	✓	✓	✓	✓
<b>Sanitary Flange</b>		✓	✓	✓				
<b>Intrinsically Safe of All the Above</b>	✓	✓	✓	✓	✓	✓	✓	✓

## PERFORMANCE

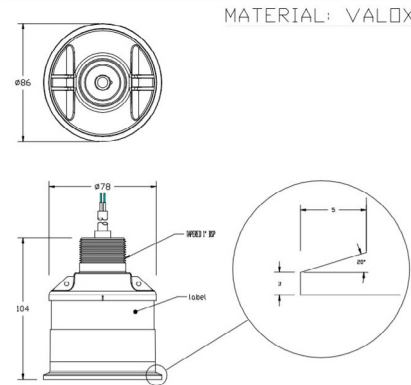
<b>Accuracy:</b>	0.25% or 6 mm (0.2 in) whichever is greater
<b>Resolution:</b>	0.01% or 2 mm (0.08 in) whichever is greater



dB25 Transducer Drawing



dB40 Transducer Drawing



dB6 & 10 Transducer Drawing



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