

# Technical Data Sheet

## Non-Contact, Multiple-Point Measurement

The 3DLevelScanner is a non-contact, dust-penetrating bin measurement device that measures and maps irregular surfaces in powder or solid materials and then calculates highly accurate bin volume estimates.



## 3DLevelScanner™ Level Sensor

# Overview

## Accurate Volume Measurement

The BinMaster 3DLevelScanner uses non-contact, dust-penetrating technology to provide unsurpassed bin volume accuracy. Unlike conventional single point devices, it works by measuring multiple points within the bin. The 3DLevelScanner uses a very low frequency acoustical signal to penetrate dust and take measurements which are determined by how long the signal takes to “travel to” solid or powder material and “return to” the device. This technology is proven to perform in powders and bulk solids, determining a highly accurate volume of materials contained in tanks, silos, and warehouses.



## Key Specifications

Preferred Applications	Powders and Solids
Measuring Range	200 feet (61 meters)
Process Fitting	Thread, Flange, Mounting Strap
Process Temperatures	-40° to +185°F (-40° to +85°C) Standard -40° to +356°F (-40° to +180°C) High Temperature
Process Pressure	-0.2 – 3 bar (-2.9 to 41.5 psi)
Signal Output	4-wire 4 - 20 mA/HART/RS-485/Modbus
Emitting Frequency	3 KHz to 10 KHz



Display

Easy navigation  
LCD with 4-button operation

Same housing  
for all versions

4-wire  
4 - 20 mA/HART/  
RS-485/Modbus



## Materials, Non-Wetted Parts

Housing	Painted aluminum die casting
Inspection Window in Housing Cover	Polycarbonate
Antenna	Painted aluminum die casting
Flange	Steel

## Weight

12.3 lb (5.6 kg)	Thread version
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## Output Variable

Output Signal	4 - 20 mA/HART, RS-485, Modbus RTU, TCP/IP
Resolution	10 $\mu$ A
Fault Signal	Current output unchanged, 22 mA > 3.6 mA (adjustable)
Current Limitation	22 mA

## Load

4-wire sensor	Max. 500 Ohm
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## Ambient Conditions

Ambient, storage and transport temperature	-40° to +185°F (-40° to 85°C) Standard, -40° to +356°F (-40° to 180°C) High Temperature
Relative humidity	20% to 85%
Altitude	16,400 ft (5,000 m)

## Process Conditions

Vessel Pressure	-0.2 to 3 bar (-2.9 to 41.5 psi or -20 to 100 kPa)
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## Process Temperature

Measured on the Process Fitting	-40° to +185°F (-40° to 85°C) Standard, -40° to +356°F (-40° to 180°C) High Temperature
Vibration Resistance	Mechanical vibrations with 2 g and 5 to 200 Hz

## Electromechanical Data

Cable Entry/Plug	1 x cable entry M20x1.5 (cable- $\varnothing$ 8 to 12mm)
	1 x blind stopper M20x1.5
	OR 2 x cable entry 1/2 NPT

## Display Panel

LCD	4 lines x 20 characters
Adjustment Elements	4 keys
Protection	IP67

## Power supply - 4-wire instrument (Active) 4 - 20 mA / HART

Supply Voltage	20 to 32 VDC
Power Consumption	Max. 1.5 W @ 24 VDC

## Electrical Protective Measures

Protection	IP67 according to IEC 60529
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## Approvals

Hazardous Locations	CFM Intrinsically Safe Class I, II, Division I, Groups C, D, E, F, G (US & Canada)
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## CE

EMC	
Emission	EN 61326:1997 (Class B)
Susceptibility	IEC / EN 61326:1997 + A1:1998 + A2:2001 + A3:2003
NSR (73/23/EWG)	EN 61010-1:2001

## FCC

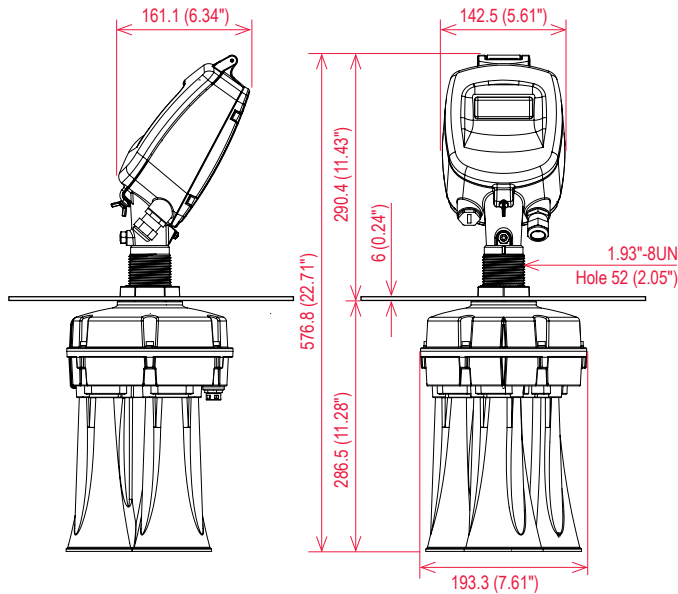
Conformity	To part 15 of the FCC regulations
	FCC 47 CFR part 15:2007, subpart B, class A

## Measurement Characteristics

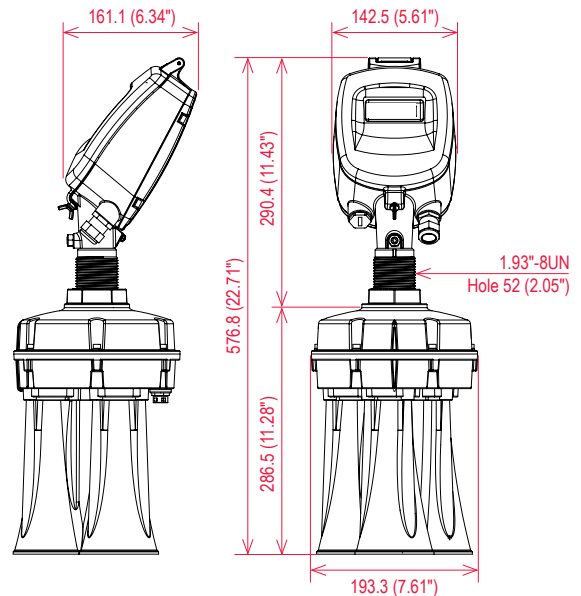
Frequency	2 to 10 kHz
Beam angle	30 to 70 degrees

# Dimensions

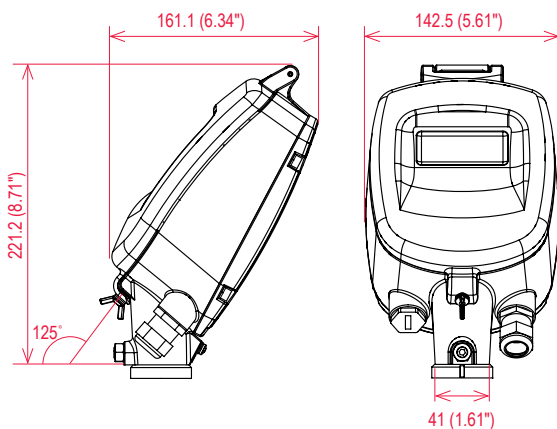
## 3DLevelScanner II with horn antenna in flange version



## 3DLevelScanner II with horn antenna in threaded version



## 3DLevelScanner II Housing



### Dimensions in mm (inches)

# BINMASTER®

Shipping Address:  
7201 N. 98th St.  
Lincoln, NE 68507

Mailing Address:  
P.O. Box 29709  
Lincoln, NE 68529

800.278.4241 | 402.434.9102  
Fax: 402.434.9133  
www.binmaster.com  
info@binmaster.com

## Electrical Connection & Wiring

### General Requirements

The power supply range can differ depending on the instrument version. See the Technical Data section for full details. In hazardous areas, take note of the appropriate regulations, conformity and type of approval certificates for the sensors and power supply units.

### Power Supply

Power supply and signal current are carried on two separate connection cables. The 4 - 20 mA output signal is active. Hence, the PLC must be configured passive.

### Connection Cable

An outer cable diameter of 0.31" - 0.47" (8 - 12 mm) ensures the seal effect of the cable entry. If electromagnetic interference is expected, the use of screened cable for the signal lines is recommended.