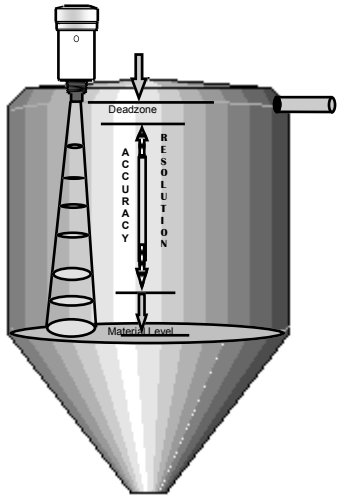
Ultrasonic Non Contact Sensors

Measuring Principle - An ultrasonic pulse is transmitted from the ABM sensor . The pulse 25 - 148 KHz travels to the surface being monitored and is reflected off this surface back to the sensor face. The time of flight is divided in half, corrected with temperature and converted to an output current directly proportional to the material level . Due to sensor's dead band, don't get closer than minimum distance with material. ABM sensors monitor environmental conditions and adjust sensor's transmitters and receivers to match the sensors to any condition, to receive one echo only from measured material and to eliminate any false echoes. No other brands of level measurement devices offer this feature.

Applications -

Monitoring Liquid Levels - Page 5 & 6

To monitor Stable liquids with no gases or volatile surfaces.
Pick a sensor with the range for your application. This will determine the Frequency of your sensor. For corrosive applications the Sensor's material can be chosen that is compatible with the liquid.

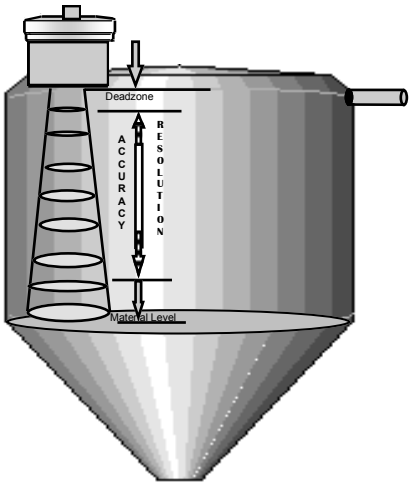


Monitoring Solid Material Levels - Page 7 & 8

To monitor Solid material; the lower operating frequency helps to penetrate dusty atmosphere found in solids level storage vessels, tanks & bins. They are usually larger in size and require the larger and more powerful Transducers for reliable measurement.

High Temperature Applications - Page 9

To monitor applications with elevated temperatures sensor material selection is important. Special sensor design with Thermal isolation is required. Temperature in environment does not effect the ABM sensors performance, because of special and innovative construction of the sensor's drivers.



Sanitary Applications - Page 10

Monitoring sanitary applications with sanitary ferrule mounting sensors with continuous ultrasonic transmitter are available. ABM Offers 1 1/2" and 2" tri-clamp mounting. For the food industry the sensor's must withstand steam cleaning and be quickly removable and easy to re-install. For high pressure and /or temperature applications special material mtg. sensors are available.

Belt Conveyor and Motion Tracking Applications -

Monitoring fast moving objects is possible with the revolutionary " Fast Response Time Design". ABM Ultrasonic Sensors are the fastest response sensors in the market. This allows measurement of any solid material profile.

Ultrasonic Guided Contact Sensors - Page 11

Can be used on very narrow tanks, and also where no blanking inside tank is required.

Overview

ABM Sensor	Max. Measuring Range -in Liquids (Solids x .5) Accuracy : +/- 0.1% Range (max.)	Mounting Fitting - Male thread	Temperature Range for Sensor	Pressure Rating @ Sensor Face
ABMXXX-YYY  Liquid Range to 50 Ft. - Sensor Frequency 148 KHz Sensor 081 " " 080 " " 070 " " 052 " "	Sensor 148 KHz : 9 ft (0.4 m) " 081 " : 16 ft (4.9 m) " 080 " : 20 ft (6.1 m) " 070 " : 30 ft (9.1 m) " 052 " : 50 ft (15.2 m)	3.0 " / 1.0" NPT 3.0 " / 1.5" NPT 3.0 " / 2.0" NPT 3.0 " / 2.0" NPT 3.0 " / 2.0" NPT **Note - Sanitary Ferrule Mtg. Is available for all except 052**	PVC : - 40 -140 °F (-40 to 60°C) Teflon : - 40 - 266°F (-40 to 130°C) S.S.316L: - 40 - 266°F (-40 to 130°C)	PVC Max. 2 bar S.S.316L Max. 5 bar
ABMXXX-YYY  Liquids and Bulk Solids in all industries -Sensor Frequency 045 KHz Sensor 025 KHz Sensor	Sensor 045 KHz : 60 ft (18.2 m) " 025 " : 90 ft (27.4 m)	3.0 " NPT 6.0 " / 1.0" NPT	PVC : - 40 -140 °F (-40 to 60°C) Teflon : - 40 - 266°F (-40 to 130°C) (for 45 KHz only)	PVC Max. 2 bar Teflon " "
ABMXXX-YYY  Bulk Solids in Large containers -Sensor Frequency 025 KHz Sensor	Sensor 025 KHz : 100 ft (30 m)	6.0 " / 1.0" NPT	PVC : - 40 -140 °F (-40 to 60°C)	PVC Max. 2 bar
ABMXXX-YYY - Pipe 	Sensor 148 KHz : 9 ft (0.4 m) " 081 " : 16 ft (4.9 m) " 080 " : 20 ft (6.1 m) " 070 " : 30 ft (9.1 m) " 052 " : 50 ft (15.2 m) " 045 " : 60 ft (18.2 m)	3.0 " / 1.0" NPT 3.0 " / 1.5" NPT 3.0 " / 2.0" NPT 3.0 " / 2.0" NPT 3.0 " / 2.0" NPT 3.0" NPT	PVC : - 40 -140 °F (-40 to 60°C) Teflon : - 40 - 266 °F (-40 to 130°C)	PVC Max. 2 bar Teflon " "

Approvals - For ABM200/ABM300 Ultrasonic Sensors:

FM(USA):

FM3810 (2005) Electrical Electronic Test,
Mearuring and Process Control Equipment
ANSI/NEMA 250 (1991) :Enclosures for Electrical Equipment

FM(CAN.):

CSA C22.2 No. 1010.1 (2004)
Safety Requirements for Electrical Equipment for
Measurement, Control and Labatory Use -
Part 1: General Requirements
CSA C22.2 No. 94 (2011) Special Purpose Enclosures

Ultrasonic Non Contact Sensors
For Liquid Applications

Model - ABMXXX - YYYUC - HS

Applications -
This range of sensors are used in liquid applications such as Food & Beverage processing. It is also ideal for Water/ Wastewater due to their maintenance free nature, any build up on the Transducer face is being eliminated (continously cleaned). False echoes from tanks walls are eliminated by automatic adjustment of power and sensitivity.Other ideal applications are Pharmaceutical and Chemical as the Sensors adapt to any condition automatically without user involvment.

Benefits -
- Enclosures are suitable for IP68 environmental conditions.
- Self adjusting, Monitors inside tank's environment and adjusts power and sensitivity.
- Self cleaning due to its non contact measuring operation.
- One echo system for measured material. No list of hundreds of parameters to be downloaded.
- Enclosures are avaliable in different materials to withstand any environment.
- Works At any Temperature.
- Fits to Any Mounting and no mounting influence even at very low temperatures.
- Sanitary mounting, 1 1/2" and 2" Tri-clamp very short blanking.

Mini Sensor 2 Wire Sensor 3/4 Wire Sensor

Technical data -
Measuring Range : 0.4 to 50 Ft (0.12 to 15.2 m)
Temperature : PVC - 40 to 140°F (-40 to 60 °C)
Teflon/ SS316L - 40 to 266°F (-40 to 130°C)
Pressure Rating :1 to 2 bar Std.Sensor for 5 bar SS316L Ferrule or Special Sensor (HP) in PVC Enclosure
Mounting Thread :1" - 6" NPT Male Thread (Std. Mtg. Sensors)

Catalogue # Ordering -
Supply Voltage:
XXX = 2 Wire (loop powered with HART)
3 Wire 24 Vdc
4 Wire 120 Vac or 230 Vac

Operating Frequency:
YYY = 148 — 148 KHz
080 — 80 KHz
081 — 81 KHz
070 — 70 KHz
052 — 52 KHz

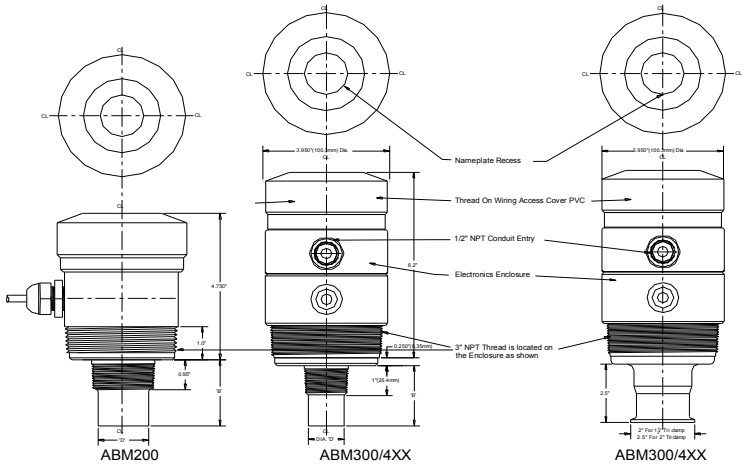
Operating Mode:
U = UL - Ultrasonic Sensor
UM - Mini Sensor

Communication:
C = C4 - RS485
C2 - RS232
CH - Hart (2 Wire only)
C0 - No Communications

PCB Housing Material:
H = PV — PVC Std. Enclosure Housing
HP — PVC Special Enclosure Housing
AL — Aluminum Enclosure Housing
SS. — SS 316L Enclosure Housing

Sensor Material: Std. Thread Mtg. Sensor
S = PVC — PVC Sensor
TEF — Teflon Sensor

Sanitary Mtg. Sensor: 316 SS. Tri-Clamp Mtg.
S15 — 1.5" Sanitary Sensor
S20 — 2" Sanitary Sensor
S15- HTP — 1.5" High Temp./High Pressure
S20- HTP — 2" High Temp./High Pressure



ABM200 ABM300/4XX ABM300/4XX

Order from: **C A Briggs Company;** 622 Mary Street; Suite 101 - Warminster, PA 18974
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Mini Ultrasonic Non Contact Sensors
For Liquid Applications

Model - ABM300 - 148UMC4 - HS - R

Applications -
The ultrasonic Mini sensors are used in liquid applications such as Food & Beverage processing, and in small tanks such as barrels due to their mounting and maintenance free nature. Any build up on Transducer face is being eliminated (continously cleaned). False echoes from tanks walls are eliminated by automatic adjustment of power and sensitivity.Other ideal applications are Pharmaceutical and Chemical as the Sensors adapt to any condition automatically without user involvment.

Benefits -
- Enclosures are suitable for IP68 environmental conditions.
- Self cleaning due to its non contact measuring operation.
- One echo system for material. No list of hundreds of parameters to be downloaded.
- Very small enclosure, no need for big overhead.
- Works At any Temperature.
- Mounting 1" NPT with adaptor to 3/4" or 1/2" NPT.
- Mounting 1 1/2" or 2" Sanitary tri-clamp.
- Belt conveyors, with fast response measures material profile.
- Pump control, Alarm in models with Relay.
- Extremely short blanking.

Mini Sanitary Sensor

Technical data -
Measuring Range : 0.4 to 6 Ft (0.12 to 1.8 m), custom design to 30 FT (9 m)
Temperature : PVC - 40 to 140°F (-40 to 60°C)
TEFLON / SS316L - 40 to 266°F (-40 to 130°C)
Pressure Rating : 1 to 2 bar (Std. Sensor) for 5 bar (SS316L Ferrule)
Mounting Thread : 1" NPT Male Thread

Catalogue # Ordering -
Supply Voltage:

XXX = 3 Wire 24 Vdc

Operating Frequency:

YYY = 148 — 148 KHz (standard)
080 — 80 KHz } custom
070 — 70 KHz } design

Operating Mode:

U = UM - Mini Sensor

Communication:

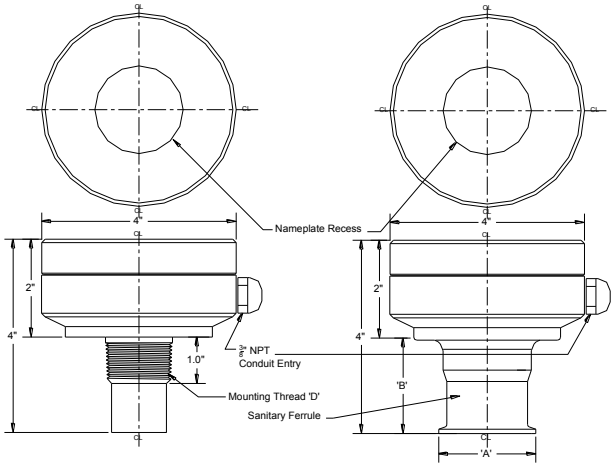
C = C4 - RS485

Housing Material:

H = PV — PVC Enclosure Housing

Sensor Material: Std. Thread Mtg. Sensor
S = PVC — PVC Sensor
TEF — Teflon Sensor
Sanitary Mtg. Sensor: 316 SS. Tri-Clamp Mtg.
S15 — 1.5" Sanitary Sensor
S20 — 2" Sanitary Sensor
S15- HTP — 1.5" High Temp./High Pressure
S20- HTP — 2" High Temp./High Pressure

Relay: relay with a form C contact, 8A at 240 Vac



Mini Std. Mounting
ABM300- 148 NPT Mtg. Thread 1"
ABM300- 080 NPT Mtg. Thread 2"
ABM300- 070 NPT Mtg. Thread 2"

Mini Sanitary Mounting
ABM300/148/080/070
'A' - 1 1/2" Ø = 1.978" 'B' - 2.17"
'A' - 2" Ø = 2.516" 'B' - 2.31"

Order from: **C A Briggs Company;** 622 Mary Street; Suite 101 - Warminster, PA 18974
Phone: 267-673-8117 - 800-352-6265 - Fax: 267-673-8118; E-Mail: Sales@cabriggs.com - www.cabriggs.com

Ultrasonic Non Contact Sensors
For Liquids and Solids Applications

Model - ABMXXX - 045VW - HS

Applications -
Solids/Liquids materials, liquids up to 60 Ft. tanks height, solids with low dust (plastic pellets) up to 50 FT, high dust up to 30 Ft.

Benefits -
- Enclosures are suitable for IP68 environmental conditions.
- Works in any conditions, in narrow tanks.
- On materials with steep angle of repose.
- No dust influence.
- Works at any temperature (- 40°C to 130°C)
- Very short blanking.
- TEFLON, PVC transducer materials.
- No influence of mounting and tank's walls (self adjusting mode).

Technical data -

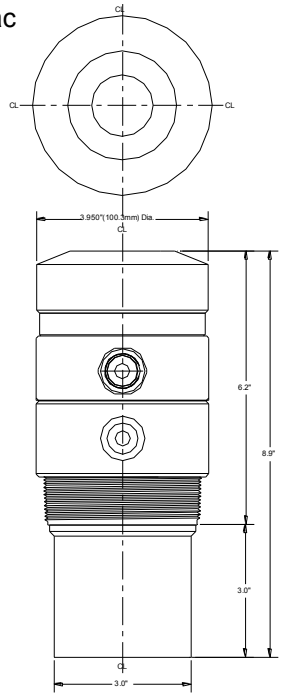
Measuring Range : 1.0 to 60 Ft (0.3 to 18.2 m)
Temperature : PVC - 40 to 140°F (-40 to 60°C),
TEFLON - 40 to 266°F (-40 to 130°C)
Pressure Rating : 1 to 2 bar Std.Sensor
Mounting Thread : 3" NPT Male Thread

45 KHz Sensor

Catalogue # Ordering -

Supply Voltage:
XXX = 2 Wire (loop powered with HART)
3 Wire 24 Vdc
4 Wire 120 Vac or 230 Vac

Operating Frequency:
YYY = 045 — 45 KHz



2/3/4 Wire 45 KHz Sensor

Operating Mode:
V = UL - Ultrasonic Sensor

Communication:
C = C4 - RS485
C2 - RS232
CH - Hart (2 Wire only)
C0 - No Communications

Housing Material:
H = PV — PVC Enclosure Housing

Sensor Material:
S = PVC — PVC Sensor
TEF — Teflon Sensor

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Ultrasonic Non Contact Sensors
For Solid Material Applications

Model - ABMXXX - 025VW - HS

Applications -

Solids/Liquids materials, liquids up to 100 Ft. tanks height, solids with low dust up to 80 FT (plastic pellets), high dust up to 50 Ft.

Benefits -

- Enclosures are suitable for IP68 environmental conditions.
- Works in any conditions, narrow tanks.
- Very narrow radiating beam (it can work in narrow tanks, close to tank walls).
- No dust influence.
- Works on materials with steep angle of repose.
- Short blanking, self adjusting mode - no influence of mounting and tank's walls.

Technical data -

Measuring Range : 1.4 to 100 Ft (0.4 to 30 m)
Temperature : PVC - 40 to 140°F (- 40 to 60°C)
Pressure Rating : 1 to 2 bar Std.Sensor
Mounting Thread : 1" - 6" NPT Male Thread

25 KHz Sensor

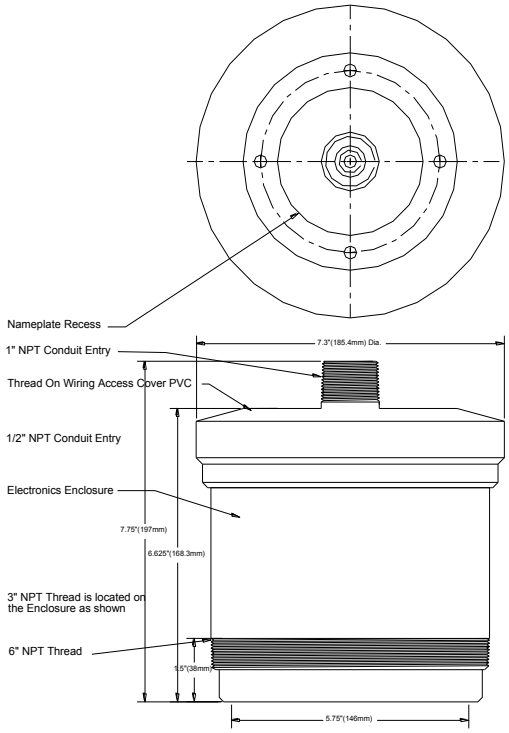
Catalogue # Ordering -

Supply Voltage:

XXX = 2 Wire (loop powered with HART)
3 Wire 24 Vdc
4 Wire 120 Vac or 230 Vac

Operating Frequency:

YYY = 025 — 25 KHz



2/3/4 Wire 25 KHz Sensor

Operating Mode:

V = UL - Ultrasonic Sensor

Communication:

C = C4 - RS485
C2 - RS232
CH - Hart (2 Wire only)
C0 - No Communications

Housing Material:

H = PV — PVC Enclosure Housing

Sensor Material:

S = PVC — PVC Sensor

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Phone: 267-673-8117 - 800-352-6265 - Fax: 267-673-8118; E-Mail: Sales@cabriggs.com - www.cabriggs.com

Ultrasonic Non Contact Sensors with
Remote Sensor for Liquids & Solids High Temp. Application

Model - ABMXXX - YYYULC - HS (TEF)

Applications -
These sensors with de-tachable TEFLON transducers operate in very high temperature environments for Liquids and Solids.

Benefits -
- Enclosures are suitable for IP68 environmental conditions.
- Self adjusting monitors inside tanks environment and adjusts power and sensitivity.
- Self cleaning due to its non contact measuring operation.
- One echo system for measured material. No list of hundreds of parameters to be downloaded.
- Enclosures are avaliable in different materials to withstand any environment.
- Works at very high temperatures.
- De-tachable TEFLON transducer with short blanking and narrow beam which can work on Liquids amd Solids.
- very short blanking.

Technical data -
Measuring Range : 0.4 to 60 Ft (0.12 to 18 m)
Temperature :Teflon - 40 to 266°F (-40 to 130°C)
Pressure Rating : 1 to 2 bar Std.
Mounting Thread : 1" - 2" NPT Male Thread

Catalogue # Ordering -

Supply Voltage:

XXX = 2 Wire (loop powered with HART)
3 Wire 24 Vdc
4 Wire 120 Vac or 230 Vac

Operating Frequency:

YYY = 148 — 148 KHz
080 — 80 KHz
081 — 81 KHz
070 — 70 KHz
052 — 52 KHz
045 — 45 KHz

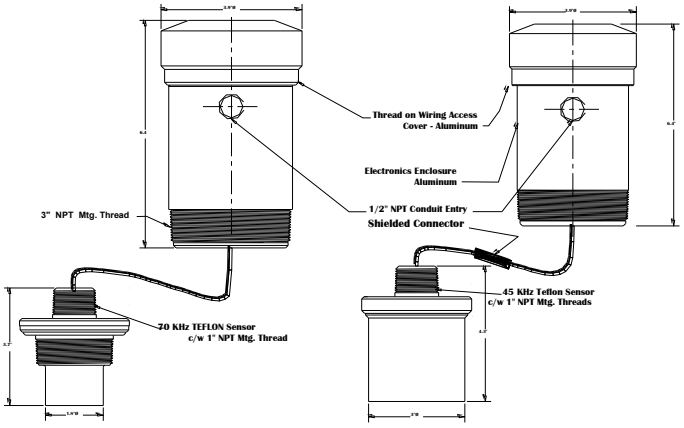
Operating Mode:
V = UL - Ultrasonic Sensor

Communication:
C = C4 - RS485
C2 - RS232
CH - Hart (2 Wire only)
C0 - No Communications

Housing Material:
H = PV — PVC Enclosure Housing
AL — Aluminum Enclosure Housing
S.S. — SS 316L Enclosure Housing

Sensor Material: Std. Thread Mtg. Sensor
S = TEF — Teflon Sensor

TEFLON Cable Length: As Required



Ultrasonic Sensor c/w Remote 70 KHz Xducer.

Ultrasonic Sensor c/w Remote 45 KHz Xducer.

Order from: **C A Briggs Company;** 622 Mary Street; Suite 101 - Warminster, PA 18974
Phone: 267-673-8117 - 800-352-6265 - Fax: 267-673-8118; E-Mail: Sales@cabriggs.com - www.cabriggs.com

Ultrasonic Non Contact Sensors
For Sanitary Applications

Model - ABMXXX - YYYUMC4 - HS

3/4 Wire Sanitary Sensor

Applications -
The Sanitary Sensors are used in liquid applications such as Food & Beverage processing. Where Food Grade Antenna and Mounting base are required.Also in small tanks such as barrels due to their mounting and maintenance free nature. Any build up on Transducer face is being eliminated (continously cleaned). False echoes from tanks walls are eliminated by automatic adjustment of power and sensitivity.Other ideal applications are Pharmaceutical and Chemical as the Sensors adapt to any condition automatically without user involvment.

Benefits -
- Enclosures are suitable for IP68 environmental conditions.
- Self cleaning due to its non contact measuring operation.
- One echo system for measured material. No list of hundreds of parameters to be downloaded.
- Works At any Temperature.
- Mounting 1**1/2"** or 2" Sanitary tri-clamp.
- Extremely short blanking.

Technical data -
Measuring Range : 0.4 to 30Ft (0.12 to 9 m)
Temperature :
Std. Sanitary Sensor :- 40 to 140°F (- 40 to 60°C)
No Steam Cleaning (CIP)
SS316L Sanitary Sensor :- 40 to 266°F(- 40 to 130°C) for 1/2 Hr.
Steam Cleaning. Removed sensor for longer Cleaning cycle ,recommended.
Not for Continuous Operation
Pressure Rating : 5 bar Max. using High Temperature and High Pressure Sensor
Mounting : 1 1/2 " or 2" Tri –Clamp

Mini Sanitary Sensor

Catalogue # Ordering -
Supply Voltage:
XXX = 2 Wire (Loop Powered)
3 Wire 24 Vdc
4 Wire 120 Vac or 230 Vac

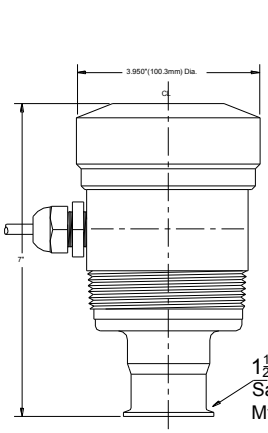
Operating Frequency:
YYY = 148 — 148 KHz
081 — 81 KHz
080 — 80 KHz
070 — 70 KHz

Operating Mode:
U = UL - Ultrasonic Sensor
UM - Mini Sensor

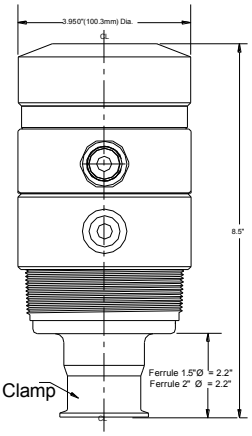
Communication:
C = C4 - RS485
C3 - RS232
CH - HART
C0 - No Communications

Housing Material:
H = PV — PVC Enclosure Housing
AL — Aluminum Enclosure Housing

Sensor Material:
Sanitary Mtg. Sensor: 316 SS Tri-Clamp Mtg.
S15 — 1.5" Std. Temp. PVC c/w SS316L Face
S20 — 2" Std. Temp. PVC c/w SS316L Face
S15- HTP — SS316L 1.5" High Temp./High Pressure
S20- HTP — SS316L 2" High Temp./High Pressure



2 Wire Sanitary Sensor



3/4 Wire Sanitary Sensor

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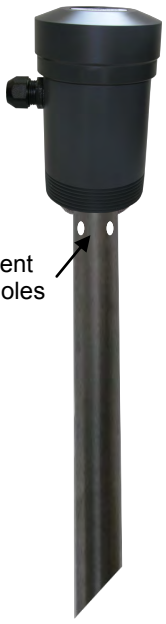
Ultrasonic Guided Contact Sensors
For Liquid Applications

Model - ABMXXX - YYYVW - HS - Pipe

Applications -

ABM ultrasonic sensors due to advanced ultrasonic transducer designing, can propagate an ultrasonic wave inside Plastic or Metal pipes. Termination of 45°on the pipes allows perfect (no-missmatch) transition between pipe's environment and open space environment. All ABM non-contact sensors can be used to propagate the ultrasonic wave inside pipes. Pipe's I.D. has to be at least 1/4" inch bigger than the transducers nozzle.Ultrasonic with pipes are recommended for liquids in environment with obstacles such as a ladder, cross beams and wires.



Benefits -

- Enclosures are suitable for IP68 environmental conditions.
- Works in any conditions, no influence of tank's environments.
- Very narrow radiating beam, the ultrasonic wave propogates inside the pipe.
- No waves/turbulences influence.
- Short blanking, self adjusting mode - no influence of mounting in small pipes.
- 45° pipe termination at any length inside tank.

Technical data -

Measuring Range : 0.4 to 50 Ft (0.12 to 15.2 m)
Temperature : PVC - 40 to 140°F (- 40 to 60°C)
TEFLON - 40 to 266°F (- 40 to 130°C)
Pressure Rating : 1 to 2 bar Std.Sensor
Mounting Thread : 1" - 3" NPT Male Thread

Catalogue # Ordering -

Supply Voltage:
XXX = 2 Wire (loop powered with HART)
3 Wire 24 Vdc
4 Wire 120 Vac or 230 Vac

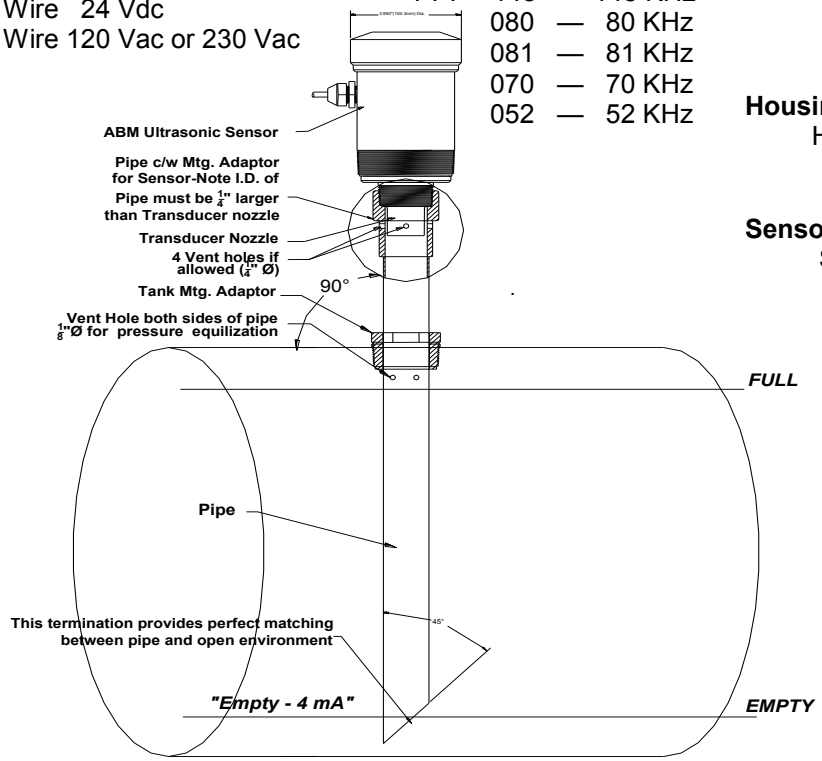
Operating Frequency:
YYY = 148 — 148 KHz
080 — 80 KHz
081 — 81 KHz
070 — 70 KHz
052 — 52 KHz

Operating Mode:
V = UL - Ultrasonic Sensor
UM - Mini Ultrasonic

Communication:
C = C4 - RS485
C2 - RS232
CH - Hart (2 Wire only)
C0 - No Communications

Housing Material:
H = PV — PVC Enclosure Housing
AL — Aluminum Enclosure Housing
SS — SS316L Enclosure Housing

Sensor Material: Std. Thread Mtg. Sensor
S = PVC — PVC Sensor
TEF — Teflon Sensor



Typical Pipe Installation c/w Ultrasonic Sensor

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CATALOGUE NUMBER STRUCTURE - Ultrasonic Sensors

ABM	1) XXX	2) -XXX	3) YY	4) CX	5) - XX	6) YYY	- IP68	7) - XXXX	8) - Pipe

1) Supply Voltage - 200/300/400/430 (Note #1)

2) Ultrasonic Frequency - 148/081/080/070/052/045/025 (KHz)

3) Operating Mode - UL (Ultrasonic)/UM (Mini Ultrasonic)

4) Communications - 4 (RS485)/ 2 (RS232)/ 0 (None)/ H (Hart - 2 Wire only)

5) Electronics Body Material - PV (PVC)/ AL (Aluminum)/ SS (stainless steel)

6) Transducer Sensor Material - PVC (PVC)/ TEF (Teflon)* STM / S15 (Sanitary Mtg.)
/S20 (Sanitary Mtg.)/S15-HTP / S20-HTP (High Temp./Press. San.) / HP (PVC High Pressure)

X) Ingress Protection - IP68 for Submersible

7) Swivel Aiming Mount / Flange Mounting - AIM3 (Swivel Mounting)

8) Pipe Mtg.

Note 1) ABM Code 200 = 12-30 Vdc
300 = 12-30 Vdc
400 = 115 Vac
430 = 230 Vac

* STM = Standard Thread Mounting Sensors