



RPS-409A-IS2

Intrinsically Safe ultrasonic sensor with ANZEx, ATEX, C-UL-US, & IECEx approvals for use in Explosive Atmospheres / Hazardous Locations.

Features

- Intrinsically Safe "ia"
- Various Sensing Ranges
- Temperature Compensation
- Wide Temperature Range
- LED Indicator
- Analog Voltage Output
- PPS or PVC Enclosure
- Sync/Tx Input Line

ANZEx



The RPS-409A-IS2 is an intrinsically safe analog ultrasonic sensor available in a variety of ranges. The RPS-409A-IS2 has ANZEx, ATEX, & IECEx approval for use in mines susceptible to firedamp (Group 1 protection level Ma), explosive gas atmospheres (Group 2 protection level Ga Zones 0, 1, & 2), and explosive dust atmospheres (Group 3 protection level Da Zones 20, 21, & 22). The RPS-409A-IS2 also has C-UL-US approval for use in Class I, II, and III Division 1 hazardous locations.

The sensor comes in a 30mm enclosure, and is powered by 16 - 30 V dc with reverse polarity protection.

The RPS-409A-IS2 has a short circuit protected analog voltage output. The analog voltage is a fixed volts per inch based on the

maximum range of the sensor. For example when using the RPS-409A-80-IS2, the output is a linear 0.125 V per inch. A target placed 6 inches from the sensor will result in an output of 0.75 V or a target placed at 80 inches from the sensor will result in an output of 10 V.

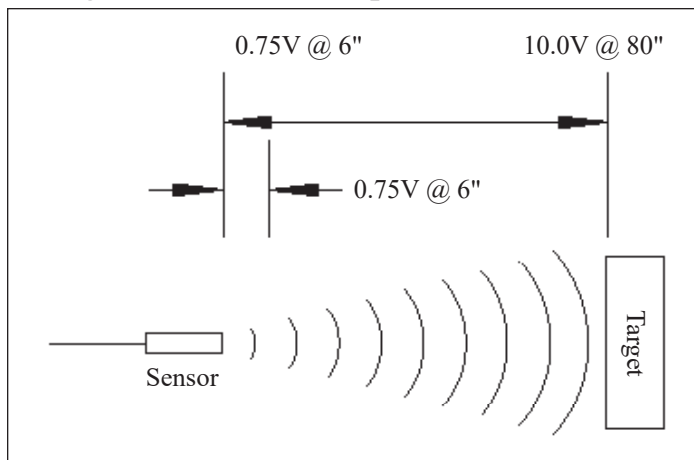
The RPS-409A-IS2 has built-in temperature compensation to provide accurate readings throughout the entire operating temperature range.

An LED indicator is provided. The LED is green with no target detected and changes to red when a target is detected.

The sensor is completely sealed and the connection must be made with a cable having a rating of IP67 or greater.

In addition to the analog voltage output line the sensor also has a Sync/Tx line. This line can be used for connecting multiple sensors together (Sync) to prevent cross talk, or to control when the sensor transmits (Tx).

The RPS-409A-IS2 is designed to take advantage of today's PLC and computer analog input cards. The numerical values that are programmed into the PLC or computer will determine the zero and span of the sensor.



Specifications:

Model Number	Sensor Range*	Response Time	Transducer Frequency
RPS-409A-40-IS2	4 - 40"	100ms	175kHz
RPS-409A-80-IS2	6 - 80"	100ms	135kHz
RPS-409A-40P-IS2	4 - 40"	100ms	175kHz
RPS-409A-80P-IS2	6 - 80"	100ms	135kHz
RPS-409A-144P-IS2	10 - 144"	200ms	70kHz
RPS-409A-216P-IS2	12 - 216"	200ms	70kHz

* Contact Migatron for other sensor ranges.

Entity Parameters: See Control Drawing No. Ex05021114

Power Input: 16 - 30VDC Reverse Polarity Protected
(A minimum of 24VDC must be applied to the safety barrier)

Input Current: 24mA maximum with 24VDC applied to the safety barrier

Ambient Temperature: -40 to +60°C or -40 to +140°F

Humidity: 0 - 95% Non-Condensing

Output: Analog Voltage Output
(Load 100k Ohms to infinity)
Short Circuit Protected

Echo loss: 10.5 - 11.5V

Sensor Range	Volts Per Inch	Voltage Output
4 - 40"	0.250	1V @ 4" to 10.0V @ 40"
6 - 80"	0.125	0.75V @ 6" to 10.0V @ 80"
10 - 144"	0.069	0.69V @ 10" to 10.0V @ 144"
12 - 216"	0.046	0.55V @ 12" to 10.0V @ 216"

Enclosure Material: Polyphenylene Sulfide (PPS)
Enclosure with PPS and PTFE sensing face, or
Polyvinyl Chloride (PVC)
Enclosure with PVC sensing face

Enclosure Rating: IP67 (Mating cable must be rated IP67 or higher.)

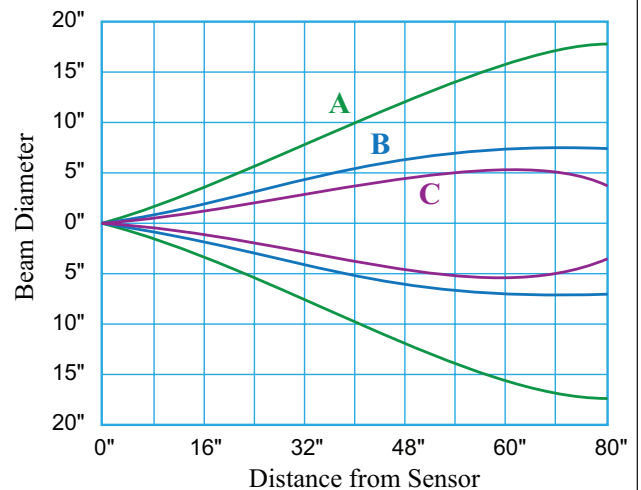
Connections: M12 A-coded 4-Pin Receptacle
Maximum torque 2 Nm or 18 lbf-in

Weights:

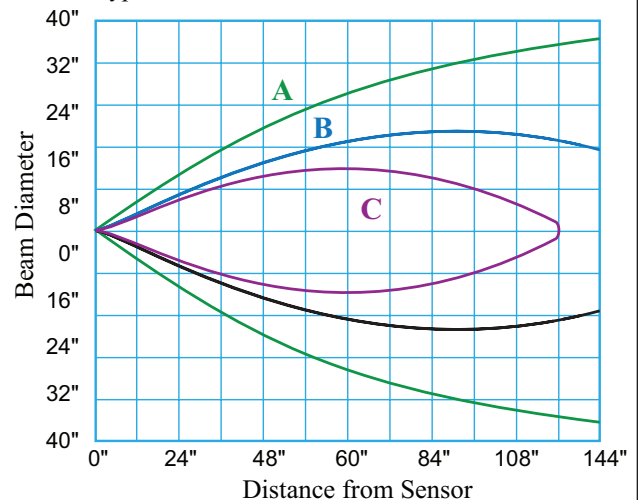
Sensor: 3.7 ounces (105 grams)

Sensor with Jam Nuts: 4.2 ounces (118 grams)

Typical Beam Pattern for RPS-409A-40/80-IS2



Typical Beam Pattern for RPS-409A-144/216-IS2



Beam Pattern Legend

- A- 4" x 4" Flat Target Perpendicular to Beam
- B- 3" Diameter Rod
- C- 0.625" Diameter Rod

M12 Receptacle Pin Out

(shown with European Color Code)

**Maximum Torque
2 Nm or 18 lbf-in**



- Pin 1 - Brown - Power
- Pin 2 - White - Analog Output
- Pin 3 - Blue - Ground
- Pin 4 - Black - Sync/Tx





Specifications (continued):

Approvals:

Australia & New Zealand:

ANZEx 13.3010X
Ex ia I Ma
Ex ia IIC T4 Ga
Ex ia IIIC T101°C Da
 $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

Canada & USA:

C-UL-US; UL File # E226209
Temperature Code T4
Class I, Division 1, Groups A, B, C, & D,
Class II, Division 1, Groups E, F, & G,
and Class III, Division 1

Europe (CENELEC):

DEMCO 12 ATEX 1103028X
 I M1 / II 1 GD
Ex ia I/IIC T4 Ma/Ga
Ex ia IIIC T101°C Da

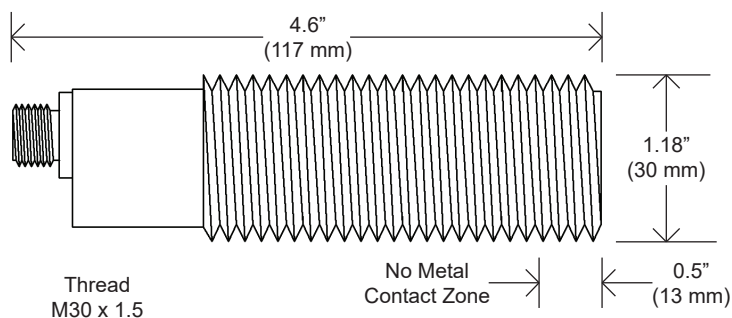
International (IECEX):

IECEX UL 12.0001X
Ex ia I/IIC T4 Ma/Ga
Ex ia IIIC T101°C Da
 $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

Mounting Consideration

The performance of this sensor can be influenced by direct metal contact.
This zone is 13 mm / 0.50" measured from the sensor face.

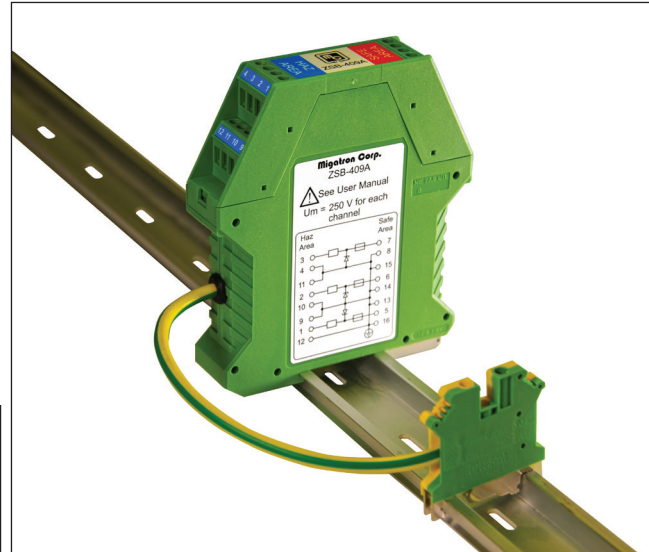
Mounting Dimensions



Sensor & Accessories:



RPS-409A-IS2 with PVC Enclosure



ZSB-409A with Grounding Block



M12 Cables

IECEX UL 12.0001X $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
Ex ia I/IIC T4 Ma/Ga Warning: See User Manual
Ex ia IIIC T101°C Da IP67
DEMCO 12 ATEX 1103028X
 0539  I M1 S/N: ###
II 1 GD ANZEx 13.3010X  TCode T4
US LISTED
Exia 4LA1
Proc. Cont. Eq. for use in CL I, GPS A,B,C,D; CL II, GPS E,F,G; CL III hazardous
locations. Intrinsically Safe when installed per Control Dwg. No. Ex05021114

Marking Label Example

Ordering Information:

PART NUMBER	RANGE*	OUTPUT / DESCRIPTION
RPS-409A-40-IS2	4 - 40"	Analog Voltage Output with PPS Enclosure
RPS-409A-80-IS2	6 - 80"	Analog Voltage Output with PPS Enclosure
RPS-409A-40P-IS2	4 - 40"	Analog Voltage Output with PVC Enclosure
RPS-409A-80P-IS2	6 - 80"	Analog Voltage Output with PVC Enclosure
RPS-409A-144P-IS2	10 - 144"	Analog Voltage Output with PVC Enclosure
RPS-409A-216P-IS2	12 - 216"	Analog Voltage Output with PVC Enclosure
F32-5496302		2 meter Cable, M12 4-Pin IP67 18 AWG - Sold Separately
F32-5496305		5 meter Cable, M12 4-Pin IP67 18 AWG - Sold Separately
F32-5496318		6 meter Cable, M12 4-Pin IP67 18 AWG - Sold Separately
F50-9240905		ZSB-409A Safety Barrier - Sold Separately
F33-5441504		DIN Rail Grounding Block - Sold Separately
F50-9211600, PD6000-6R4		1/8 DIN Digital Panel Meter with 4 Relays

* Contact Migatron for other sensor ranges.

Notes:

