



# RPS-409A-IS2

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

## Features

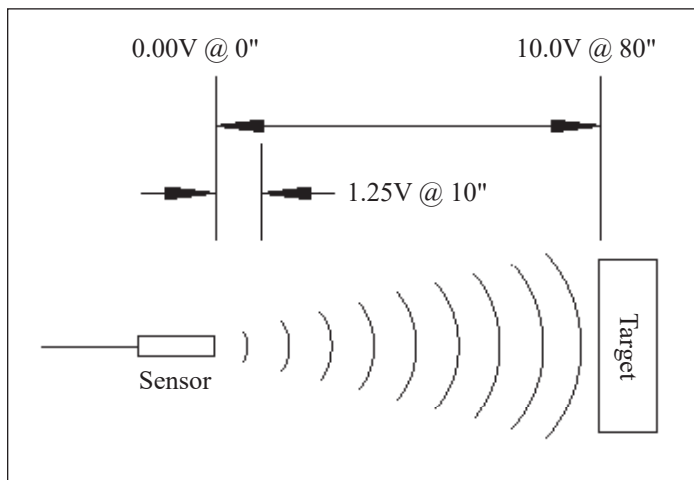
- Intrinsically Safe "ia"
- Various Sensing Ranges
- Temperature Compensation
- Wide Temperature Range
- LED Indicator
- Analog Voltage Output
- PPS or PVC Enclosure
- Sync/Tx Input Line



The RPS-409A-IS2 is an intrinsically safe analog ultrasonic sensor available in a variety of ranges. The RPS-409A-IS2 sensors can be used in hazardous gas or dust environments classified as Zone 0, 1, 2, 20, 21, or 22 for ATEX/IECEx, and Class I, II, or III for C-UL-US when used with approved intrinsic safety barrier(s). See the RPS-409A-IS2 User Manual and Control Drawing No. Ex05021114 for further information on installation in hazardous locations.

The sensor is self-contained in a 30mm barrel style 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 10 inches from the sensor will result in an output of 1.25 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

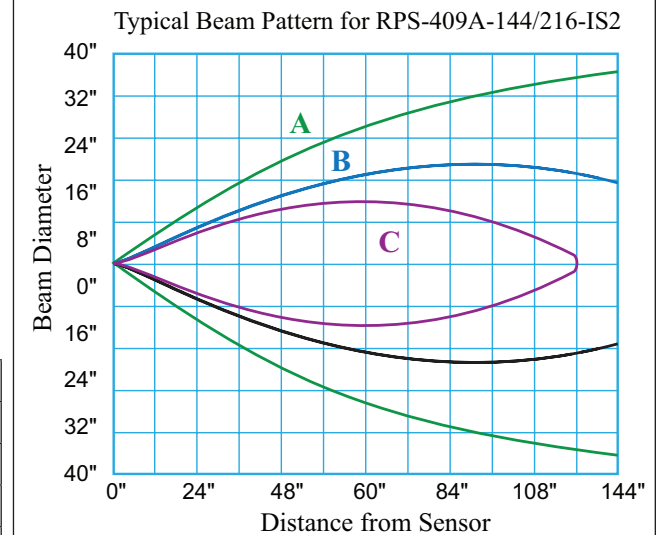
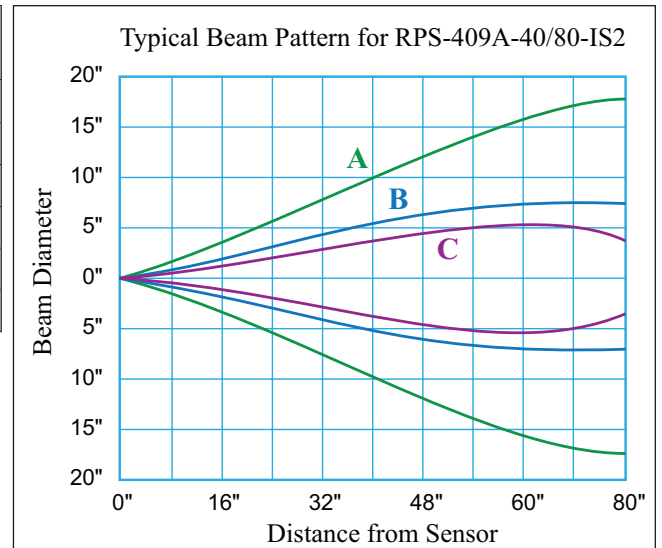
Output: Analog Voltage Output  
(Load 100k Ohms to infinity)  
Short Circuit Protected

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.)

Weights:  
Sensor: 3.7 ounces (105 grams)  
Sensor with Jam Nuts: 4.2 ounces (118 grams)



### 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)



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



ExRPS409AIS2DS Rev. 5, 03-16-2022

Phone: (815) 338-5800 / Fax: (815) 338-5803

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## Specifications (continued):

### Approvals:


Australia & New Zealand:

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

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):

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

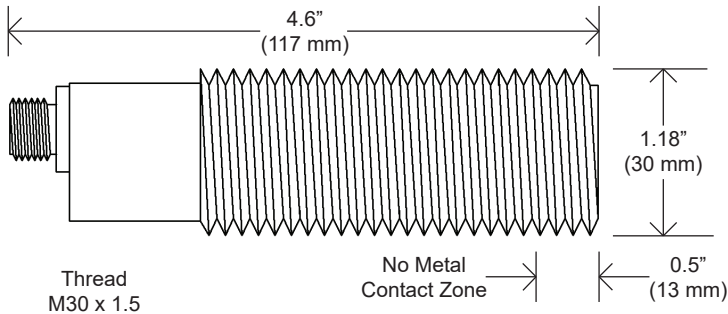
International (IECEX):

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

### 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.

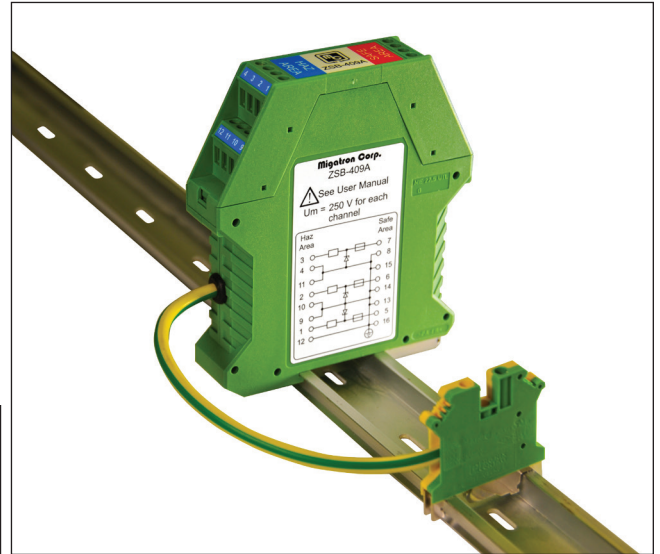
### Mounting Dimensions



## Sensor & Accessories:



RPS-409A-IS2 with PVC Enclosure






ZSB-409A with Grounding Block



M12 Cables

IECEX UL 12.0001X  $-40^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$   
 Ex ia I/IIC T4 Ma/Ga Warning: See User Manual  
 Ex ia IIIC T101°C Da IP67  
 DEMKO 12 ATEX 1103028X

**Migatron Corp.**  
**RPS-409A-40-IS2**

 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 RPS-409A-80-IS2	4 - 40" 6 - 80"	Analog Voltage Output with PPS Enclosure Analog Voltage Output with PPS Enclosure
RPS-409A-40P-IS2 RPS-409A-80P-IS2 RPS-409A-144P-IS2 RPS-409A-216P-IS2	4 - 40" 6 - 80" 10 - 144" 12 - 216"	Analog Voltage Output with PVC Enclosure Analog Voltage Output with PVC Enclosure Analog Voltage Output with PVC Enclosure Analog Voltage Output with PVC Enclosure
F32-5496302 F32-5496305 F32-5496318		2 meter Cable, M12 4-Pin IP67 18 AWG - Sold Separately 5 meter Cable, M12 4-Pin IP67 18 AWG - Sold Separately 6 meter Cable, M12 4-Pin IP67 18 AWG - Sold Separately
F50-9240905 F33-5441504		ZSB-409A Safety Barrier - Sold Separately DIN Rail Grounding Block - Sold Separately

\* Contact Migatron for other sensor ranges.

## Notes:



**Migatron Corp.**

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