



RPS-409A-IS

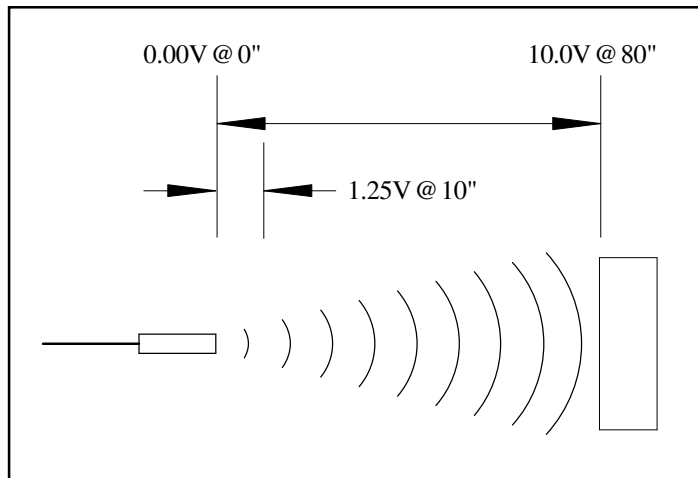
Intrinsically Safe for use in Hazardous (Classified) Locations when used with approved Safety Barriers. UL Listed: File # E226209

Features

- Intrinsically Safe
- UL Listed
- Input Voltage 24VDC
- Reverse Polarity Protected
- Analog Voltage Output
- Short Circuit Protected
- Sync/Tx Input Line
- Various Sensing Ranges
- Wide Temperature Range
- Temperature Compensation
- LED Indicator
- Self Contained Sensor
- PVC Housing
- Quick Disconnect Connector

The RPS-409A-IS is an intrinsically safe, analog ultrasonic sensor. It is a self-contained sensor in a 30mm PVC barrel housing. It is powered by 16 - 30VDC with reverse polarity protection.

The RPS-409A-IS has a short circuit protected analog 0 - 10VDC output. The analog voltage is a fixed volts per inch based on the maximum range of the unit. For example using the RPS-409A-80-IS, the output is a linear 0.125V per inch. A target placed 10 inches from the sensor will result in an output signal of 1.25V or a target placed at 80 inches from the sensor will result in an output of 10V.



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

An LED indicator is provided. The LED is green when not detecting and changes to red when a target moves into place. The sensor is completely sealed and the connection is made by way of IP and NEMA rated cables.

Besides the input and output lines there is a sync/Tx line provided. This can be used for connecting multiple sensors together to prevent cross talk, or to force the sensor to transmit at a particular time.

The RPS-409A-IS 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.

If a set point or set points are required in the application, please refer to the Migatron SPC-701, SPC-704, or M-1000 control products. Both the SPC-704 and M-1000 can also provide excitation power to drive the sensor.

Specifications:

| Model Number: | Sensor Range: | Transducer Frequency: | Response Time: | Volts Per Inch: |
|-----------------|---------------|-----------------------|----------------|-----------------|
| RPS-409A-40-IS | 4 - 40" | 175kHz | 85ms | 0.250 |
| RPS-409A-80-IS | 6 - 80" | 135kHz | 85ms | 0.125 |
| RPS-409A-144-IS | 10 - 144" | 70kHz | 175ms | 0.069 |
| RPS-409A-216-IS | 12 - 216" | 70kHz | 175ms | 0.046 |

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

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

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

Humidity: 0 - 95% Non-Condensing

Housing: PVC Housing with PVC sensing face

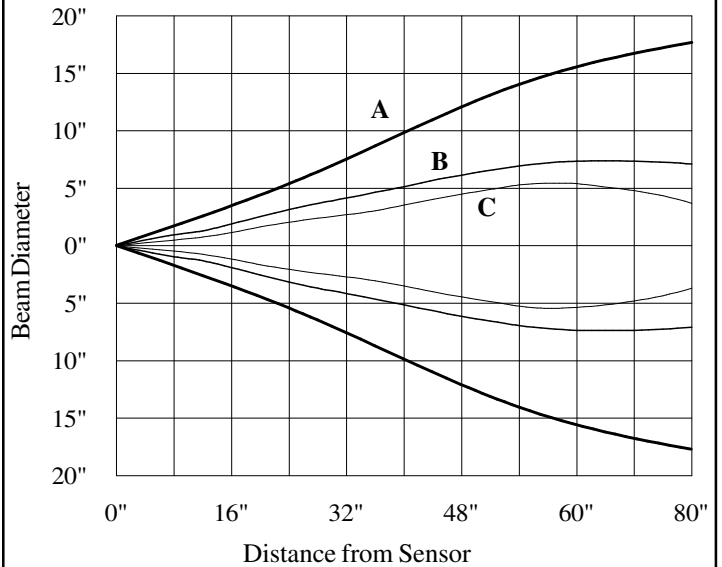
Output: Analog Voltage Output 0 - 10V (Load 100k Ohms to infinity) Short Circuit Protected

Weight: Sensor 4 ounces

Mounting Consideration:

The performance of this sensor can be influenced by direct metal contact. This zone is 12mm/0.50" measured from the sensor face. See Fig. D

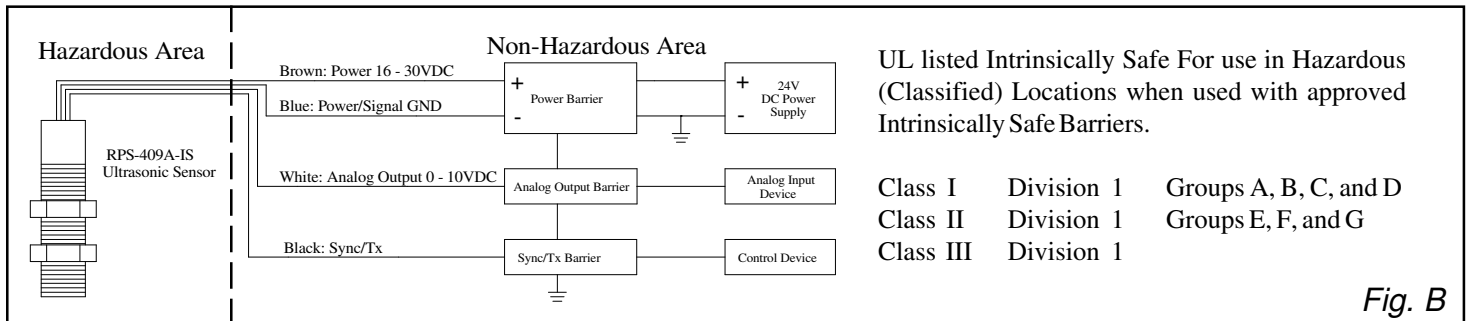
Typical Beam Pattern for RPS-409A-40-IS and RPS-409A-80-IS



Beam Pattern Legend

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

Fig. A



UL listed Intrinsically Safe For use in Hazardous (Classified) Locations when used with approved Intrinsically Safe Barriers.

- Class I Division 1 Groups A, B, C, and D
- Class II Division 1 Groups E, F, and G
- Class III Division 1

Fig. B

Figure:

- A - Beam Spread
- B - Wiring Diag. RPS-409A-IS
- C - Connector Diagram
- D - Mounting Dimensions

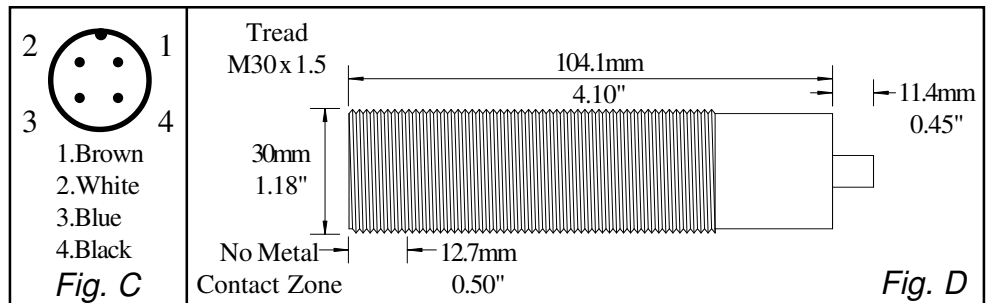


Fig. D

| PART NUMBER | RANGE | OUTPUT / DESCRIPTION |
|-----------------|-----------|--|
| RPS-409A-40-IS | 4 - 40" | 0 - 10VDC Analog Output |
| RPS-409A-80-IS | 6 - 80" | 0 - 10VDC Analog Output |
| RPS-409A-144-IS | 12 - 144" | 0 - 10VDC Analog Output |
| RPS-409A-216-IS | 12 - 216" | 0 - 10VDC Analog Output |
| F32-5496302 | | 6' Cable, 4-PIN, IP68 / NEMA-6P, 18 AWG - Sold Separately |
| F32-5496305 | | 16' Cable, 4-PIN, IP68 / NEMA-6P, 18 AWG - Sold Separately |
| F33-5007728 | | Power Safety Barrier - Sold Separately |
| F33-5007764 | | Analog Output & Sync/Tx Safety Barrier - Sold Separately |

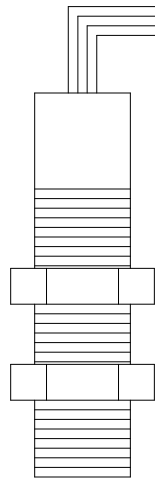


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Wiring for Intrinsically Safe Applications

Hazardous Area



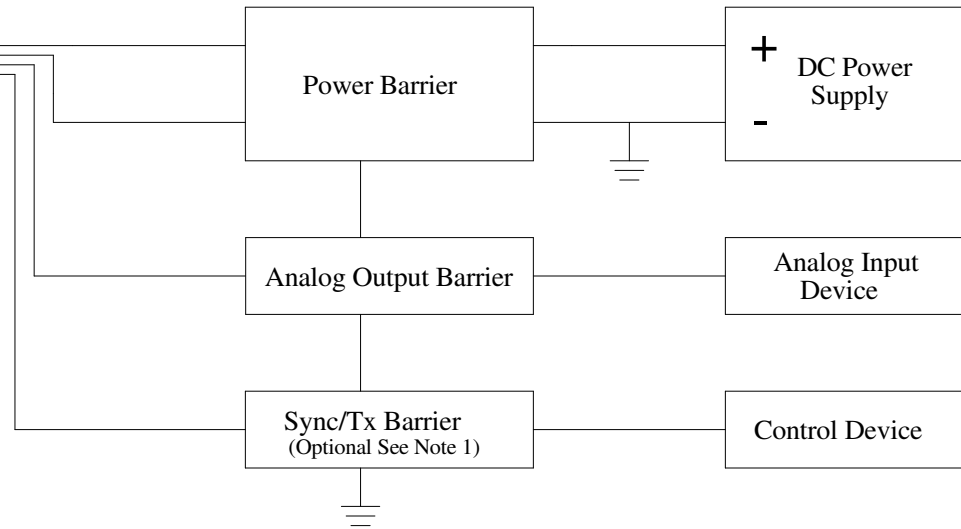
RPS-409A-IS
Ultrasonic Sensor

| Sensor Entity Parameters | | | | | |
|--------------------------|------------|------------------|------------------|----------------|----------------|
| Circuit | Wire Color | V _{max} | I _{max} | C _i | L _i |
| Power | Brown | 30V | 100mA | 0.0uF | 0.28mH |
| | Blue | | | | |
| Analog Output | White | 16V | 16mA | 0.0uF | 0.0mH |
| Sync/Enable | Black | 16V | 16mA | 0.0uF | 0.0mH |

Notes:

- UL listed Intrinsically Safe for use in Hazardous (Classified) Locations when used with approved Intrinsically Safe Barriers.
Class I, Division 1, Groups A, B, C, and D.
Class II, Division 1, Groups E, F, and G.
Class III, Division 1.
- Maximum Ambient Temperature 60 C.
- The installation must be in accordance with the National Electric Code, NFPA70, Article 504, and ANSI/ISA/RP12.06.01.

Non-Hazardous Area



| Barrier Entity Parameters | | | | |
|---------------------------|-------------------|-------------------|-------------------------------------|-------------------------------------|
| Circuit | V _{oc} ≤ | I _{sc} ≤ | C _a ≥ | L _a ≥ |
| Power | 30V | 100mA | C _i + C _{cable} | L _i + L _{cable} |
| Analog Output | 16V | 16mA | C _i + C _{cable} | L _i + L _{cable} |
| Sync/Enable | 16V | 16mA | C _i + C _{cable} | L _i + L _{cable} |

Notes:

- The Sync/Tx line is not required for operation of the sensor.
If not used the Sync/Tx line may be left open, or tied to ground.
- Selected barriers must be installed in accordance with the barrier manufacturers' control drawing.
- If cable capacitance and inductance are unknown the following values may be used:
C_{cable} = 60pF/foot
L_{cable} = 0.2uH/foot

Migatron Corp

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Title: RPS-409A-IS Control Drawing

Size: A | Drawing No.: 02260209 | Rev.: B

Date: January 23, 2007

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