



RPS-429A-IS

Intrinsically Safe ultrasonic sensor with 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
- 4-20mA 2-Wire Current Loop Version
- 1-5V Analog Voltage Output Version
- PVC Enclosure



The RPS-429A-IS is an intrinsically safe analog ultrasonic sensor available in a variety of ranges. The RPS-429A-IS has 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-429A-IS 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 14 - 30 V dc with reverse polarity protection.

The RPS-429A-IS is available in two output versions. Analog current 4-20 mA 2-wire

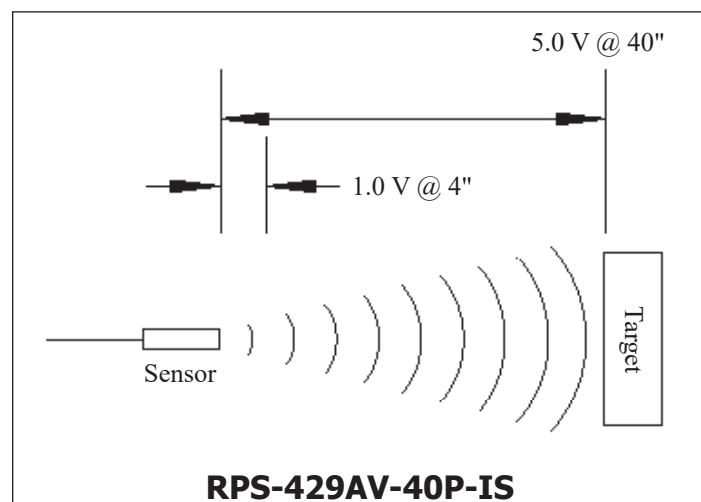
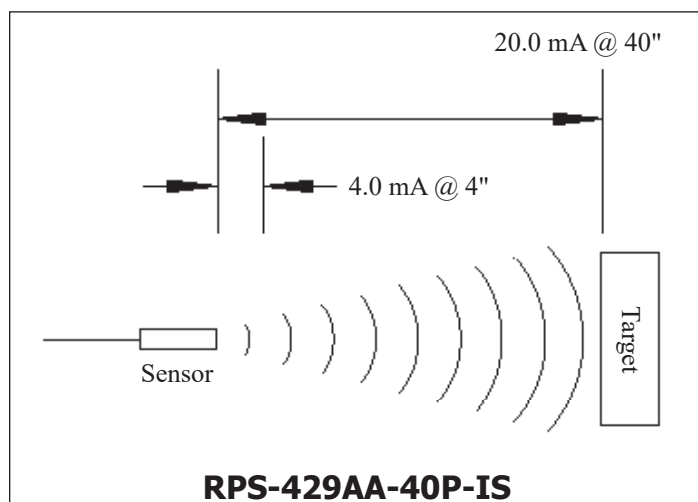


RPS-429A-IS with PVC Enclosure

current loop version or analog voltage 1-5 V 4-wire voltage output version. The analog current or analog voltage are a fixed mA or V per inch based on the maximum range of the sensor. For example when using the RPS-429AA-40P-IS the output is a linear 0.444 mA per inch, and when using the RPS-429AV-40P-IS the output is a linear 0.111 V per inch. See diagrams below.

The RPS-429A-IS has built-in temperature compensation to provide accurate readings throughout the entire operating temperature range.

The sensor is completely sealed and the connection must be made with a cable having a rating of IP66 and/or IP67 or greater.



Specifications:

Model Number	Sensor Range*	Response Time	Transducer Frequency
RPS-429A-40-IS	4 - 40"	100ms	175kHz
RPS-429A-80-IS	6 - 80"	100ms	135kHz

* Contact Migatron for other sensor ranges.

Entity Parameters: See Control Drawing No. Ex202303060

Power Input: 14 - 30VDC Reverse Polarity Protected
 Note 1: A minimum of 24VDC must be applied to the safety barrier.
 Note 2: 14.0VDC, minimum voltage at sensor terminals.

Input Current: RPS-429AA-IS: 22mA maximum
 RPS-429AV-IS: 5mA maximum

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

Humidity: 0 - 96% Non-Condensing

Output: RPS-429AA-IS
 Analog Current Output 4-20mA
 (Maximum Loop Resistance with 24VDC = 510 Ohms @ 21mA)
 Reverse Polarity Protected
 Echo Loss: 20.5 - 21.5mA

Sensor Range	mA Per Inch	Current Output
4 - 40"	0.444	4.0mA @ 4" to 20.0mA @ 40"
6 - 80"	0.216	4.0mA @ 6" to 20.0mA @ 80"

Output: RPS-429AV-IS
 Analog Voltage Output 1-5V
 (Load 100k Ohms to infinity)
 Short Circuit Protected
 Echo Loss: 5.1 - 5.2V

Sensor Range	Volts Per Inch	Voltage Output
4 - 40"	0.111	1.0V @ 4" to 5.0V @ 40"
6 - 80"	0.054	1.0V @ 6" to 5.0V @ 80"

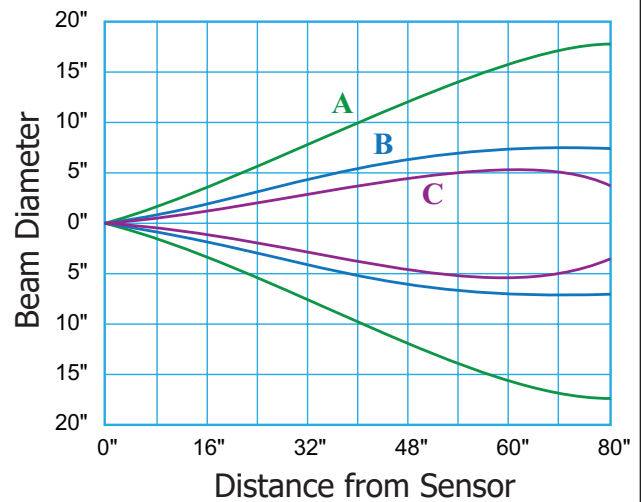
Enclosure Material: Polyvinyl Chloride (PVC)
 Enclosure with PVC sensing face

Enclosure Rating: IP66/IP67

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

Weights: Sensor 3.7 ounces (105 g)
 Sensor w/Jam Nuts 4.2 ounces (118 g)

Typical Beam Pattern for RPS-429A-40/80-IS



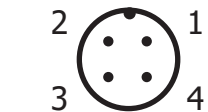
Beam Pattern Legend

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

M12 Receptacle A-coded

(Wire color based on cables purchased from Migatron.)

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



2 Conductor Cable

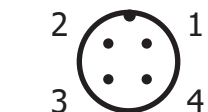
Pin 1 - N/C
 Pin 2 - N/C
 Pin 3 - Brown - Loop +
 Pin 4 - Blue - Loop -

RPS-429AA-40P-IS

M12 Receptacle A-coded

(Wire color based on cables purchased from Migatron.)

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



4 Conductor Cable

Pin 1 - Brown - Power
 Pin 2 - White - Analog Out
 Pin 3 - Blue - Ground
 Pin 4 - Black - Ground

RPS-429AV-40P-IS





Specifications (continued):

Approvals:
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
Ex ia I M1 / II 1 GD
Ex ia I/IIC T4 Ma/Ga
Ex ia IIIC T101°C Da

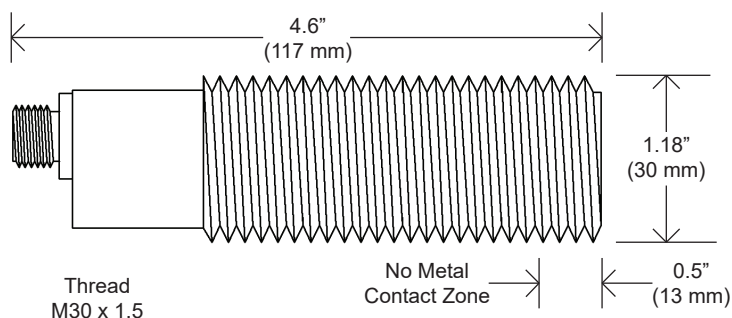
International (IECEx):

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

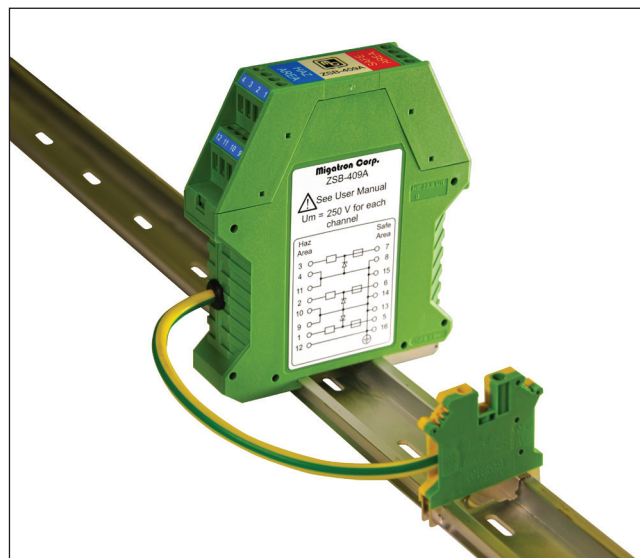
Mounting Consideration

The performance of this sensor can be influenced by direct metal contact.
This zone is 13 mm / 0.5" measured from the sensor face.

Mounting Dimensions



Accessories:



ZSB-409A and Grounding Block



M12 Cables 2 and 4 Conductor



Digital Panel Meter

IECEx UL 12.0001X $-40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ **Migatron Corp.**
Ex ia I/IIC T4 Ma/Ga Warning: See User Manual **RPS-429AA-40P-IS2**
Ex ia IIIC T101°C Da IP66/IP67
DEMKO 12 ATEX 1103028X S/N: ### Exia **UL** TCode T4
CE 0539 Ex ia I M1 II 1 GD **US LISTED**
E226209
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. Ex202303060

Marking Label Example

Ordering Information (RPS-429AA-IS Models):

PART NUMBER	RANGE*	OUTPUT / DESCRIPTION
RPS-429AA-40P-IS2	4 - 40"	4-20mA Current Loop (IS2) ATEX, C-UL-US, & IECEx
RPS-429AA-40P-IS3	4 - 40"	4-20mA Current Loop (IS3) C-UL-US
RPS-429AA-80P-IS2	6 - 80"	4-20mA Current Loop (IS2) ATEX, C-UL-US, & IECEx
RPS-429AA-80P-IS3	6 - 80"	4-20mA Current Loop (IS3) C-UL-US
RPS-429AA-IS Accessories		
F32-5429202		2 meter Cable, M12 2-Pin IP69 20 AWG - Sold Separately
F32-5429205		5 meter Cable, M12 2-Pin IP69 20 AWG - Sold Separately
F32-5429210		10 meter Cable, M12 2-Pin IP69 20 AWG - Sold Separately
F33-5007787		MTL7787+ Zener Safety Barrier - Sold Separately
F50-9211600, PD6000		1/8 DIN Digital Panel Meter with 4 Relays - Sold Separately

* Contact Migatron for other sensor ranges.

Ordering Information (RPS-429AV-IS Models):

PART NUMBER	RANGE*	OUTPUT / DESCRIPTION
RPS-429AV-IS Models:		
RPS-429AV-40P-IS2	4 - 40"	1-5V Analog Voltage Output (IS2) ATEX, C-UL-US, & IECEx
RPS-429AV-40P-IS3	4 - 40"	1-5V Analog Voltage Output (IS3) C-UL-US
RPS-429AV-80P-IS2	6 - 80"	1-5V Analog Voltage Output (IS2) ATEX, C-UL-US, & IECEx
RPS-429AV-80P-IS3	6 - 80"	1-5V Analog Voltage Output (IS3) C-UL-US
RPS-429AV-IS Accessories		
F32-5496302		2 meter Cable, M12 4-Pin IP69 18 AWG - Sold Separately
F32-5496305		5 meter Cable, M12 4-Pin IP69 18 AWG - Sold Separately
F32-5496318		6 meter Cable, M12 4-Pin IP69 18 AWG - Sold Separately
F50-9240905		ZSB-409A Zener Safety Barrier - Sold Separately
F33-5441504		DIN Rail Grounding Block - Sold Separately
F50-9211600, PD6000		1/8 DIN Digital Panel Meter with 4 Relays - Sold Separately

* Contact Migatron for other sensor ranges.

