

VPA Series

Analog Ferrous Metal Proximity Sensors

- Hall Effect Technology sensor for ferrous target detection
- Detection of ferrous metals (detects thru aluminum)
- Analog output
- Large detection gap (custom air gap ranges available for larger sensing distances)



CUSTOMER FOCUSED ENGINEERING + MODULAR DESIGN

Part Description:

M12-275VPA-5KSA5

Housing	Series	Electrical Option	Connection Type
See page 2-3	275VPA	See page 4	See page 5-6

Modify, update, or enhance any sensor with our modular features and functionality.

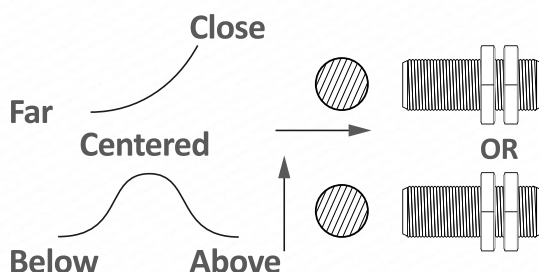
HOUSING -Aluminum, stainless steel, plastic, threaded, flange mount, customer specific

ELECTRICAL -Every sensor function available in various electrical options (NPN, PNP, TTL, etc.)

CONNECTION -Deutsch, Amphenol, many other brands, free end wires, pigtails, any length

Need a Custom Sensor Solution?... Send us your application specific requirements

'Analog Output Proportional to Ferrous Metal Proximity'



FEATURES

- Non-contact
- Easy to install
- Internal hysteresis
- Temperature stable
- Shock and vibration resistant

APPLICATIONS

- Inspect for steel components below aluminum extrusions
- Proximity feedback of components in automation
- Steel components position in engines and transmissions
- Alignment between assemblies

MARKETS

- Aerospace & Defense
- Medical Devices
- Agricultural Machinery
- Marine & Transportation

- Solid-state (no wearing parts)
- Precise and repeatable custom programming
- Detect non-standard steel targets
- Harsh environment durability
- Large detection gap (custom air gap ranges available)

- moving parallel to each other
- Component alignment in agricultural and heavy equipment
- Measuring steel shaft runout
- Counting steel components on conveyor systems
- Robotic systems position
- Ferrous metal verification
- Impact detection

- Automotive & Heavy Equipment
- Power Generation Systems
- Consumer Electronics
- Manufacturing & Industrial Automation

VPA Series

Analog Ferrous Metal Proximity Sensors



HOUSING TYPES AND CUSTOMIZATION OPTIONS

The VPA Series offers a wide range of housing styles, mounting types, and material options to cover a variety of application environments. If the housing style you need is not shown, Standex can work with you on your custom housing needs to fulfill your application requirements.

HOUSING MATERIALS

- Aluminum
- Plastic (Glass Filled Nylon)
- Stainless Steel

MOUNTING TYPE

- Threaded Barrel
- High Pressure

THREAD PITCH

- THREAD PITCH**
- 5/8-18
 - 7/16-20
 - M12x1
 - M18x1
- 1/2-20
 - 15/32-32
 - 3/4-20

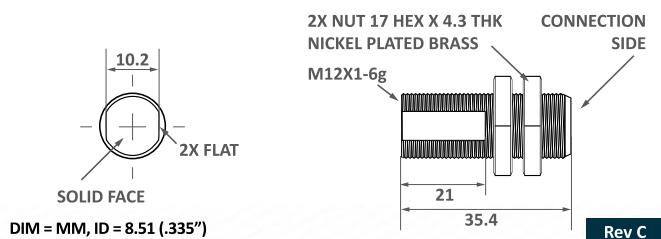
Plastic Glass Fill Nylon (150°C)

PART NUMBER **M 12 - 275 VPA - 5KSA5** — CONNECTION

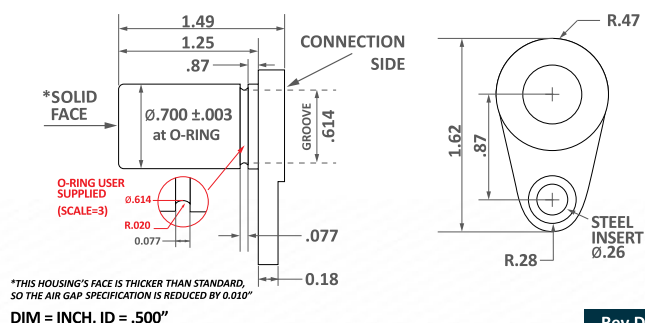
EXAMPLE

HOUSING ELECTRICAL

M12 Thread Mount M12x1mm, 35mm

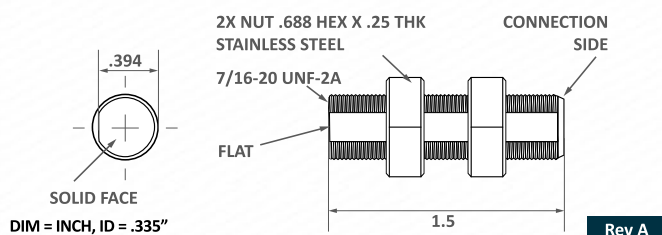


MFM7 Flange Mount



Aluminum Black Anodized

A44 Thread Mount 7/16, 1.5in



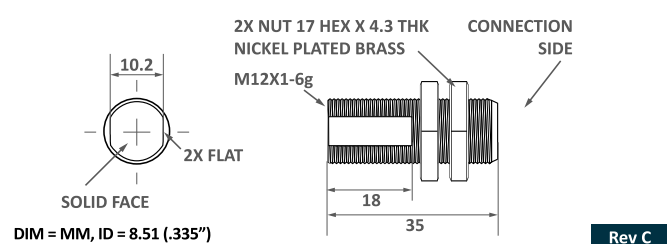
VPA Series

Analog Ferrous Metal Proximity Sensors

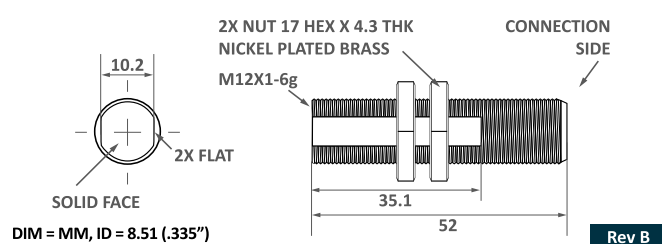
303 Stainless Steel

PART NUMBER EXAMPLE **M 1 2 - 2 7 5 V P A - 5 K S A 5** — CONNECTION
HOUSING ELECTRICAL

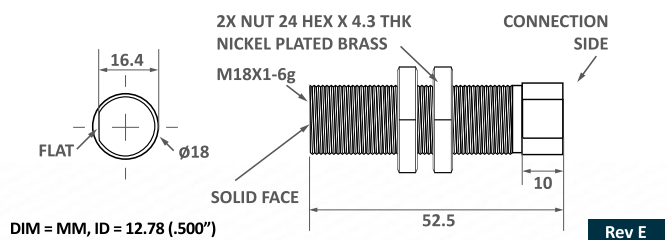
S12 Thread Mount M12x1mm, 35mm



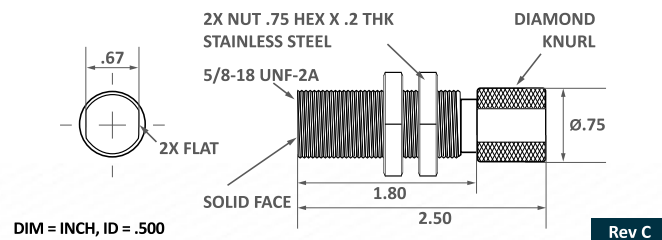
S12H Thread Mount M12x1mm, 52mm



S18 Thread Mount M18x1mm, 53mm



S63B Thread Mount MS Opt 5/8-18, 2.5in



VPA Series

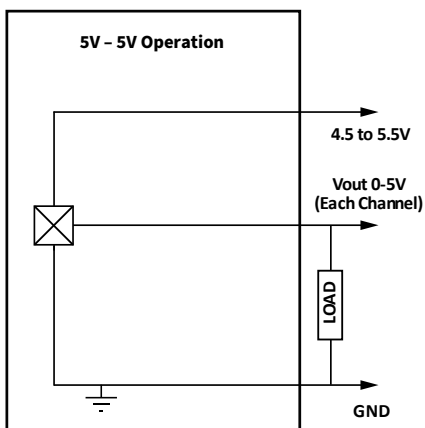
Analog Ferrous Metal Proximity Sensors

Electrical Output Logic Options

**PART
NUMBER
EXAMPLE**

M 1 2 - 2 7 5 V P A - 5 K S A 5 — CONNECTION
HOUSING ELECTRICAL

5V



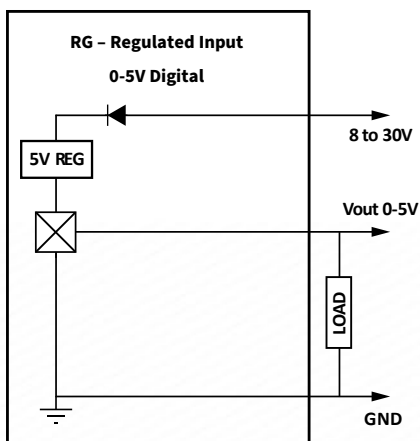
Electrical Specifications	Conditions	Min	Max	Unit
Temperature Range*	Operating	-40	+110*	Deg C
Supply Voltage, Vcc	Over temperature	+4.5	+5.5	Volts DC
Supply Current	Into Vcc	(typ 7)	+10	mA
Output Current	Continuous	-1	+1	mA
Load Capacitance	Cable and Load	n/a	+1.0	µF
Frequency Range **	Std Programmable	0	500	Hz
Frequency Range **	Max Programmable	0	2000	Hz
Digital Voltage Low Vol	I sink < 1.0 mA	0	(typ 0.2)	Volts
Digital Voltage High Voh	I source < 1.0 mA	(typ 4.8)	Vcc	Volts
Output Rise Time 10-90%	Ro=10k, C<100 pF	-	5	µS
Output Fall Time 90-10%	Ro=10k, C<100 pF	-	5	µS

* T max = 150°C is available, contact factory.

** Frequency, Detection and Hysteresis are Factory Programmable.

Rev D

RG



Electrical Specifications	Conditions	Min	Max	Unit
Temperature Range*	Operating	-40	+110*	Deg C
Supply Voltage, Vcc	Over temperature	+8.0	+30	Volts DC
Supply Current, Output Off	Into Vcc	(typ 8)	+12	mA
Output Current	Continuous	-1	+1	mA
Load Capacitance	Cable and Load	n/a	+1.0	µF
Frequency Range **	Std Programmable	0	500	Hz
Frequency Range **	Max Programmable	0	2000	Hz
Digital Voltage Low Vol	I sink < 1.0 mA	0	(typ 0.2)	Volts
Digital Voltage High Voh	I source < 1.0 mA	4.60	5.5	Volts
Output Rise Time 10-90%	Ro=10k, C<100 pF	-	5	µS
Output Fall Time 90-10%	Ro=10k, C<100 pF	-	5	µS

* T max = 150°C is available, contact factory.

** Frequency, Detection and Hysteresis are Factory Programmable.

Rev D

VPA Series

Analog Ferrous Metal Proximity Sensors

CONNECTION TYPES AND CUSTOMIZATION OPTIONS

The VPA Series offers a wide range of connection configurations to meet diverse installation and environmental requirements. Whether you need rugged connectors for industrial environments or flexible wiring for compact assemblies, Standex provides tailored solutions:



CONNECTOR OPTIONS

- Deutsch & Amphenol: Industry-standard sealed connectors for harsh environments
- Other Brands Available: Custom connector integration upon request
- Integral Connectors: Built directly into the sensor housing for streamlined installation
- Pigtail Connectors: Short lead wires with pre-installed connectors for plug-and-play use

FREE-END WIRE OPTIONS

- Free-End Jacketed: Durable, protective outer layer for added mechanical strength
- Free-End Ribbon Cable: Flat, flexible cable ideal for tight spaces
- Free-End Shielded: EMI-resistant for electrically noisy environments
- Free-End Wires: Standard stripped leads for direct wiring
- Wire Specifications
- Wire Gauges: 20 AWG and 22 AWG standard
- Lengths: Available in 0–6", 1–4', 5–9', or custom lengths to suit your application

INSULATION MATERIALS

- PVC: Economical and flexible
- Teflon: High-temperature and chemical-resistant
- XLPE: Cross-linked polyethylene for enhanced thermal and abrasion resistance
- High-Temp Options: For extreme operating conditions

Cable Harness & Connector Options

PART
NUMBER
EXAMPLE

M 1 2 - 2 7 5 V P A - 5 K S A 5 — CONNECTION
HOUSING ELECTRICAL

P21, Free End PVC 22 AWG Wires

Connections

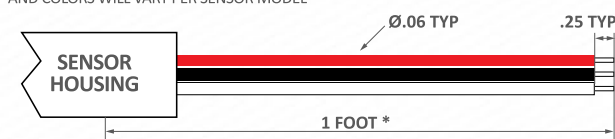
Red = Vcc

White = Vout

Black = Ground

FREE END WIRE LEADS
22 AWG, 7/30, PVC 80°C
3 WIRES SHOWN. THE NUMBER OF WIRES
AND COLORS WILL VARY PER SENSOR MODEL

OTHER STANDARD LENGTHS:
3", 6", 2', 5', 10', AND 20'



DIM = INCH

Rev A

P23, Free End PVC 22 AWG Wires

Connections

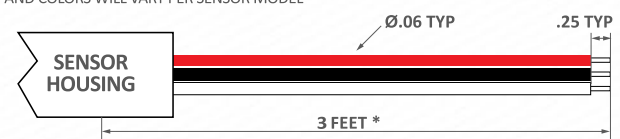
Red = Vcc

White = Vout

Black = Ground

FREE END WIRE LEADS
22 AWG, 7/30, PVC 80°C
3 WIRES SHOWN. THE NUMBER OF WIRES
AND COLORS WILL VARY PER SENSOR MODEL

OTHER STANDARD LENGTHS:
3", 6", 2', 5', 10', AND 20'



DIM = INCH

Rev A

VPA Series

Analog Ferrous Metal Proximity Sensors

Cable Harness & Connector Options

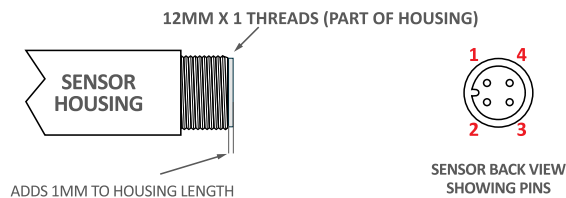
PART NUMBER M 1 2 - 2 7 5 V P A - 5 K S A 5 — CONNECTION
EXAMPLE HOUSING ELECTRICAL

CB2, Integral 4 Pin Male 12mm Micro Connector

Compatible with Housings – S12, S12H, M12 Only

Connections

Pin 1 = Vcc Pin 2 = Vout Pin 3 = Ground Pin 4 = Program, Leave Open

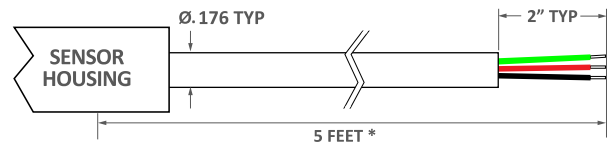


Rev A

JA5, Jacketed 3 Wire PVC 22 AWG Wires

Connections

Red = Vcc Green = Vout Black = Ground
 FREE END JACKETED 3 WIRE PVC, 22 AWG 7/30, RED, BLK, GRN, 80°C *OTHER STANDARD LENGTHS: 1', 2', 10', AND 20'



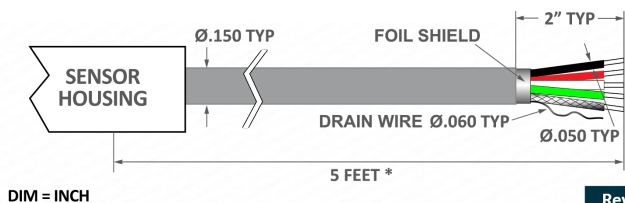
DIM = INCH

Rev C

SA5, Shielded 4 Wire PVC 22 AWG Wires

Connections

Red = Vcc Green = Program, Leave Open White = Vout Black = Ground
 SHIELDED 4 WIRE PVC 22 AWG, 7/30, PVC 80°C RBGW *OTHER STANDARD LENGTHS: 1', 2', 10', AND 20'



DIM = INCH

Rev D

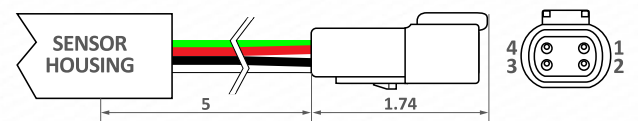
CD4, 4 Pin Deutsch DT04 TXL 20 AWG Wires

Connections

Pin 1 (Red) = Vcc Pin 2 (Black) = Ground Pin 3 (White) = Vout Pin 4 (Green) = Program, Leave Open

CONNECTOR: AMPHENOL AT04-4P-RD01 BODY OR DEUTSCH DT04-4P-C015 BODY
 CONTACTS: 4 DEUTSCH PINS, PN 1060-16-0622
 WIRE: 20AWG, 19/32, XLPE TXL, 125°C

PIN 1 = RED
 PIN 2 = BLACK
 PIN 3 = WHITE
 PIN 4 = GREEN



DIM = INCH

Rev B

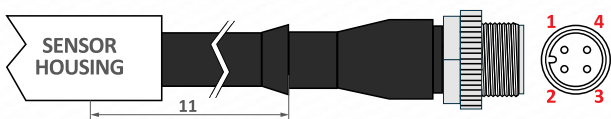
CB1E, 4 Pin Male 12mm Micro Connector w/11" Pur Cable

Compatible with Housings – S18 Only

Connections

Pin 1 = Vcc Pin 2 = Vout Pin 3 = Ground Pin 4 = Program, Leave Open

CONNECTOR: 4 PIN MALE M12 STRAIGHT OVERMOLD
 CABLE: 22AWG, STRANDED, PUR JACKET & INSULATION



DIM = INCH

Rev A

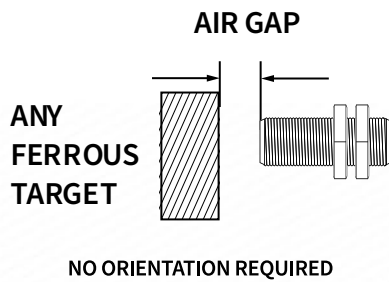
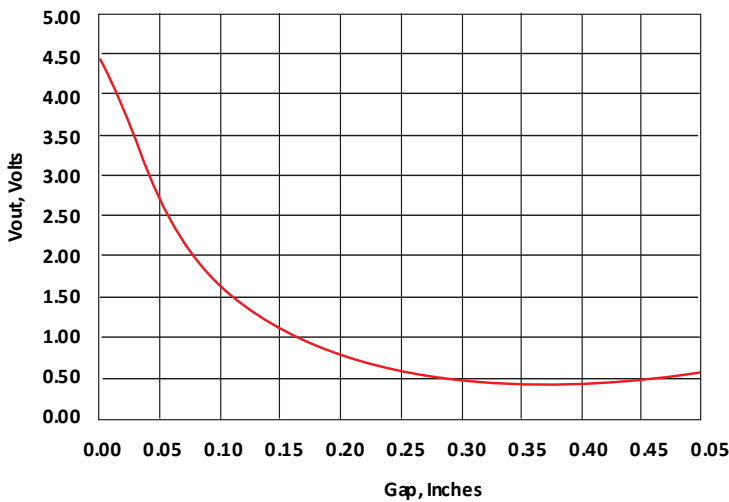
VPA Series

Analog Ferrous Metal Proximity Sensors

Environmental & Performance Specifications

Sensor Function

Typical 275VPA Output vs. Gap to Steel Plate

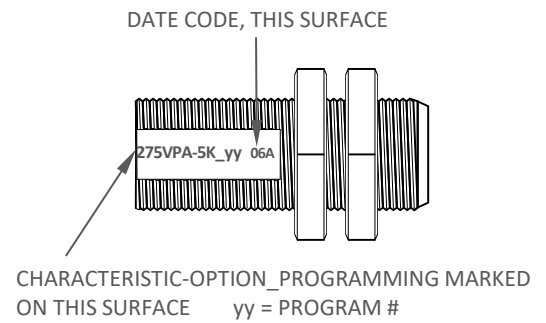


Functional Characteristics 900-12-000 w/Large Steel Target	Min	Typ	Max
<i>For Sensors with Custom Programming, these values may change</i>			
Voltage at Infinity	0.40V	0.50V	0.60V
Voltage at 0"	4.25V	4.50V	4.75V
Conformity to Curve	-250V	-	+250V

Environmental Specifications

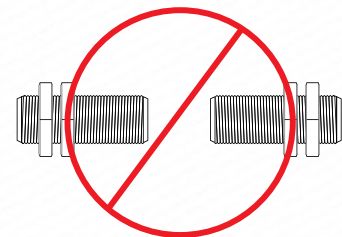
Corrosion Resistance	500 hours salt spray ASTM B-117
Installation Torque	13 Foot-Pounds Maximum
Enclosure	Nema 1,3,4,6,13 & IEC IP67
Vibration	10 G's 2 to 2000 Hz Continuous
Mechanical Shock	100 G's, 11 ms

Marking



Handling Instructions

DO NOT CONTACT FACE TO FACE



CONTACT WITH OTHER MAGNETS MAY REDUCE THE MAXIMUM OPERATING GAP

Please note: All technical specifications on this series datasheet refer to the standard product range. Modifications in the sense of technical progress are reserved. For general information only. For more specific information, please consult the product datasheet, available upon request.

This series datasheet could contain technical inaccuracies or typographical errors. Changes are periodically made to the information herein. These change will be incorporated in future revisions.

For deviating values, most current specifications and products please contact your nearest sales office.

S12-275VPD-5VCB2

Digital Ferrous Metal Detection Sensor

- Ferrous Metal Hall Proximity Sensor
- .375" detection gap
- 5V input voltage
- Stainless 12x1mm x 35mm housing
- Integral 4 pin male 12mm micro connector



CUSTOMER FOCUSED ENGINEERING + MODULAR DESIGN

Part Description: **S12-275VPD-5VCB2**

Housing	Sensor Type & Function	Electrical Option	Connection Type
S = Stainless Steel, Thread Pitch M12x1, 35mm Long	Digital Ferrous Metal Proximity Sensor	5V Operation	CB2 = Integral 4 Pin Male 12mm Micro Connector

Modify, update, or enhance any sensor with our modular features and functionality.

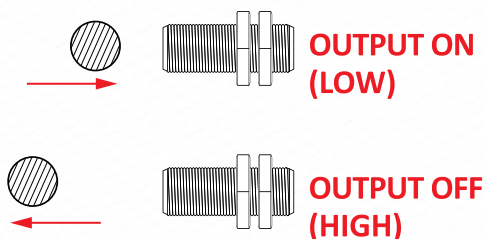
HOUSING - Aluminum, stainless steel, plastic, threaded, flange mount, customer specific

ELECTRICAL - Every sensor function available in various electrical options (NPN, PNP, TTL, etc.)

CONNECTION - Deutsch, Amphenol, many other brands, free end wires, pigtails, any length

Need a Custom Sensor Solution?... Send us your application specific requirements at sensorso.com

'Digital Output switches on when Ferrous Metal is present'



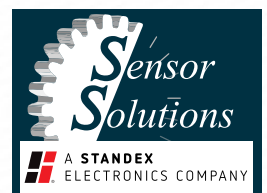
Type - DP

DESCRIPTION

- Digital output turns on when ferrous metal is detected
- Programmed to detect a large steel target at 0.375"
- Target detection gap is dependent on shape/size/ferrous content.
- Custom programming available for precision repeatable detection of targets, contact Sensor Solutions.
- Provided lock nuts used to set air gap from target.

FEATURES

- True Zero Speed
- Large Detection Gap
- Internal Hysteresis
- Detects Through Aluminum



S12-275VPD-5VCB2

Digital Ferrous Metal Detection Sensor

Note: Check our website or contact us for details on all our ferrous metal detection options.

Electrical Specifications	Conditions	Min	Max	Unit
Temperature Range*	Operating	-40	+110*	Deg C
Supply Voltage, Vcc	Over temperature	+4.5	+5.5	Volts DC
Supply Current	Into Vcc	(typ 7)	+10	mA
Output Current	Continuous	-1	+1	mA
Load Capacitance	Cable and Load	n/a	+1.0	µF
Frequency Range **	Std Programmable	0	500	Hz
Frequency Range **	Max Programmable	0	2000	Hz
Digital Voltage Low Vol	I sink < 1.0 mA	0	(typ 0.2)	Volts
Digital Voltage High Voh	I source < 1.0 mA	(typ 4.8)	Vcc	Volts
Output Rise Time 10-90%	Ro=10k, C<100 pF	-	5	µS
Output Fall Time 90-10%	Ro=10k, C<100 pF	-	5	µS

* T max = 150°C is available, contact factory.

** Frequency, Detection and Hysteresis are Factory Programmable.

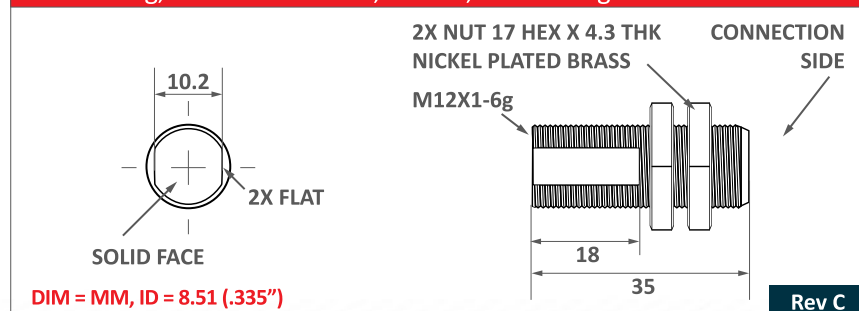
Rev D

Absolute Max Limits	Min	Max	Unit
Supply Voltage, Vcc	-24	+30	Volts DC
Voltage at Output	-5	+8.5	Volts
Reverse Supply Current	-	5.0	mA
Peak Output Current	-10	+10	mA
Vout Short Circuit Duration	-	10	Minutes

Environmental Specifications

Corrosion Resistance	500 hours salt spray ASTM B-117
Installation Torque	23 Foot-Pounds Maximum
Enclosure	Nema 1,3,4,6,13 & IEC IP67
Vibration	10 G's 2 to 2000 Hz Sinusoidal
Mechanical Shock	100 G's, 11 mS Half-Sine

S12 Housing, 303 Stainless Steel, M12X1, 35mm Long



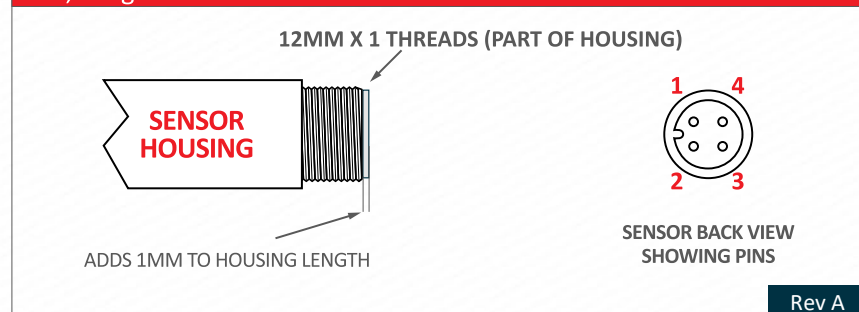
Rev C

Functional Characteristics @25°C

	Min	Typ	Max
<i>Sensor Programming + target ferrous content, shape, & size will affect gaps</i>			
Output State, No Target Present:			
Low (~0V)			
Detect Large Steel Target T=25C**	0.350"	0.375"	0.400"
Hysteresis, Large Steel Target T=25C**	.020"	.050"	.080"
Detect 0.5" ø Steel Target	-	.360"	-
Detect 0.1" ø Steel Target	-	.215"	-

** Frequency, Detection and Hysteresis are Factory Programmable and can be decreased upon request.

CB2, Integral 4 Pin Male 12mm Micro Connector



Rev A

Connections Chart

Pin 1	Vcc	Pin 3	Ground
Pin 2	Program/LEAVE OPEN	Pin 4	Digital Vout

CB2-275VPD



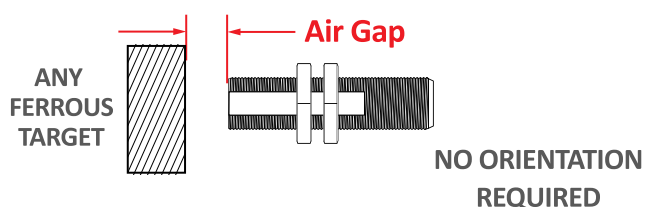
Caution: A short from the Pin 2 Program wire to either Pin 1 Vcc or Pin 3 Ground wire will cause component failure.

OTHER MATING CONNECTORS AND CABLES AVAILABLE

S12-275VPD-5VCB2

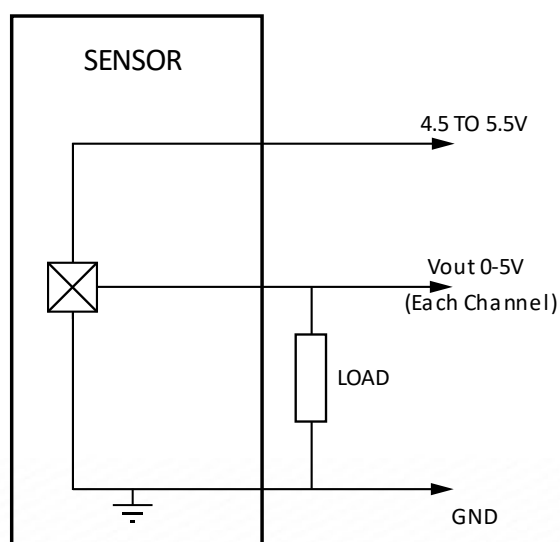
Digital Ferrous Metal Detection Sensor

Sensor Function



S12-275VPD

5V, 5V Operation



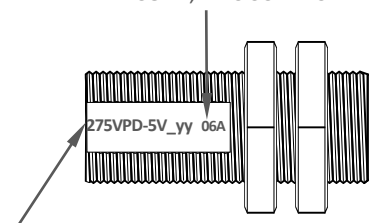
Date Code 'YYM'

YY = YEAR, M = MONTH

A JAN	D APR	H JUL	L OCT
B FEB	E MAY	J AUG	M NOV
C MAR	G JUN	K SEP	N DEC

Marking

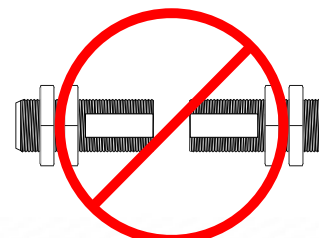
DATE CODE, THIS SURFACE



CHARACTERISTIC-OPTION_PROGRAMMING MARKED ON THIS SURFACE yy = PROGRAM #

Handling Instructions

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