


Compact 30 mm Diameter Analog and Digital, RS232/RS485 Interface

FEATURES

- Programmable
- RS232 or RS485 interface
- 0 - 10 VDC/4 - 20 mA output
- Two N.O. PNP outputs or one N.O. PNP/one N.C. PNP output

ORDER GUIDE

Sensor Package Style	Sensing Range* mm (in.)	Analog Output	Digital Output	Interface	Catalog Listing
30 mm dia. Stainless Steel  272,1g (9.6 oz)	300 - 3000 (11.8 - 118)	0 - 10 V	PNP, N.O./N.C.	RS232	942-A4N-2D-1C1-130E
		4 - 20 mA	PNP, N.O./N.C.	RS232	942-A4N-2D-1D1-130E
		0 - 10 V	PNP, N.O./N.C.	RS485	942-A4N-2D-1E1-130E
		4 - 20 mA	PNP, N.O./N.C.	RS485	942-A4N-2D-1F1-130E
	150 - 1500 (5.9 - 59.1)	0 - 10 V	PNP, N.O./N.C.	RS232	942-A4N-2D-1C1-220S
		4 - 20 mA	PNP, N.O./N.C.	RS232	942-A4N-2D-1D1-220S
		0 - 10 V	PNP, N.O./N.C.	RS485	942-A4N-2D-1E1-220S
		4 - 20 mA	PNP, N.O./N.C.	RS485	942-A4N-2D-1F1-220S
	100 - 600 (3.94 - 23.6)	0 - 10 V	PNP, N.O./N.C.	RS232	942-A4N-2D-1C1-300E

* Standard target is 120 mm square of mild steel perpendicular to ultrasonic beam.

SPECIFICATIONS

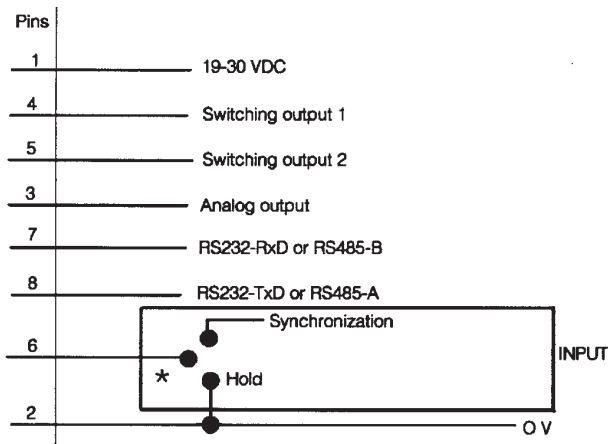
Catalog Listings	942-A4N-2D-1C1-130E 942-A4N-2D-1D1-130E 942-A4N-2D-1E1-130E 942-A4N-2D-1F1-130E	942-A4N-2D-1C1-220S 942-A4N-2D-1D1-220S 942-A4N-2D-1E1-220S 942-A4N-2D-1F1-220S	942-A4N-2D-1C1-300E
Max. Sensing Distance	3000 mm (118 in.)	1500 mm (59.1 in.)	600 mm (23.6 in.)
Min. Sensing Distance	300 mm (11.8 in.)	150 mm (5.91 in.)	100 mm (3.94 in.)
Beam Angle	8°	10°	8°
POWER SUPPLY			
Supply Voltage	19 - 30 VDC		
Supply Current	< 30 mA without load		
Circuit Protection	Reverse Polarity		
OUTPUT CHARACTERISTICS (DIGITAL)			
Load Current	0 - 100 mA		
Hysteresis	Programmable (0 - 255 mm)		
Switching Frequency	Programmable 5-30 Hz	Programmable 5-30 Hz	Programmable 5-50 Hz
Repeatability	±2 mm or ±0.4% of reading		
Setpoint Adjust	Programmable within sensing range		
Circuit Protection	Short circuit		
OUTPUT CHARACTERISTICS (ANALOG)			
Switching Frequency	Programmable 5-30 Hz	Programmable 5-30 Hz	Programmable 5-50 Hz
Repeatability	±2 mm or ±0.4% of reading		
Linearity	3 mm or ±0.5%		
Output Adjust	Programmable		
Circuit Protection	Short circuit		
ENVIRONMENTAL			
Operating Temperature	-15 to 70°C (5 to 150°F)		
Storage Temperature	-25 to 85°C (-13 to 185°F)		
Sealing	IP 65		
SPECIAL FEATURES			
Hold Input	Stops transmission and reception when input is connected to 0 VDC. Analog output would be zero.		
Synchronization input	Avoids mutual interference from several sensors by interconnecting the Hold input from each sensor.		
LED Indicator	Illuminates when sensor detects target		
Programmable Parameters	Analog Output: Span, Offset, Positive or Negative slope Digital Output: Hysteresis, N.O./N.C.		

Ultrasonic Sensors

942 Series

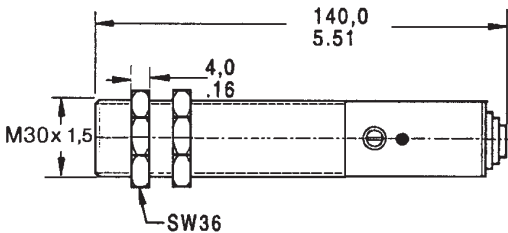
Compact 30 mm Diameter Analog and Digital, RS232/RS485 Interface

WIRING DIAGRAM



*Normal operation with no connection

MOUNTING DIMENSIONS (For reference only)



ACCESSORIES

	Catalog Listing	Features
Mounting clamp	43178389-030	Allows mounting to flat surface
Beam deflector	43192871-001	Allows right angle mounting (approx. dim. 50 x 170 mm)
Focusing beam deflector	43192871-002	Reduces beam angle by approximately 50%
Compact deflector	66195116-001	Allows right angle mounting (approx. dim. 35 x 52 mm)
Programming adapter	55000005-002	Allows sensor programming via RS232 interface
RS232/RS485 converter	55000003-001	Converts RS232 interface to RS485 interface
24 VDC Power supply, relay output, 110 VAC input	FF-MADB24RB	See page B102 more information
24 VDC Power supply, On/Off delay, 110 VAC input	FF-MADC24RB	See page B102 more information
Software package (disk, manual, cable + 1 sub min D9 connector)	55195101-101	Allows programming of sensor
Software package (disk, manual, cable + 2 sub min D9 connectors)	55195101-102	Allows programming of sensor
Straight connector	66195126-001	Used for wiring to connector
2 meter cable with straight connector	55195126-001	Used for wiring to connector

Proximity


2-Piece 30 mm Diameter

Precision Switching, Analog, Digital BCD, Hexadecimal Outputs

FEATURES

- **Background suppression**
- Sensor sealed to IP 65
- Amplifier sealed to IP 54
- DIN rail mounting
- Compensated over 0 to 50°C (32 to 120°F)
- Amplifier provides analog, digital switching, BCD or hexadecimal outputs

ORDER GUIDE

Sensor Package Style	Sensing Range* mm (in.)	Digital Output**	Multiplex Digital Output	Analog Output	Catalog Listing***
30 mm (1.18 in.) Stainless steel sensor head  272g (9.6 oz)	150 - 1500 (5.9 - 59.0)	Two PNP N.O. or N.C.	BCD/HEX	0 - 10 VDC 4 - 20 mA	942-M3A-2D-1G1-220S *Standard target: 120 mm thick square of mild steel perpendicular to ultrasonic beam. **N.O./N.C. output selectable ***Includes stainless steel sensor head, cable, straight connector and amplifier.

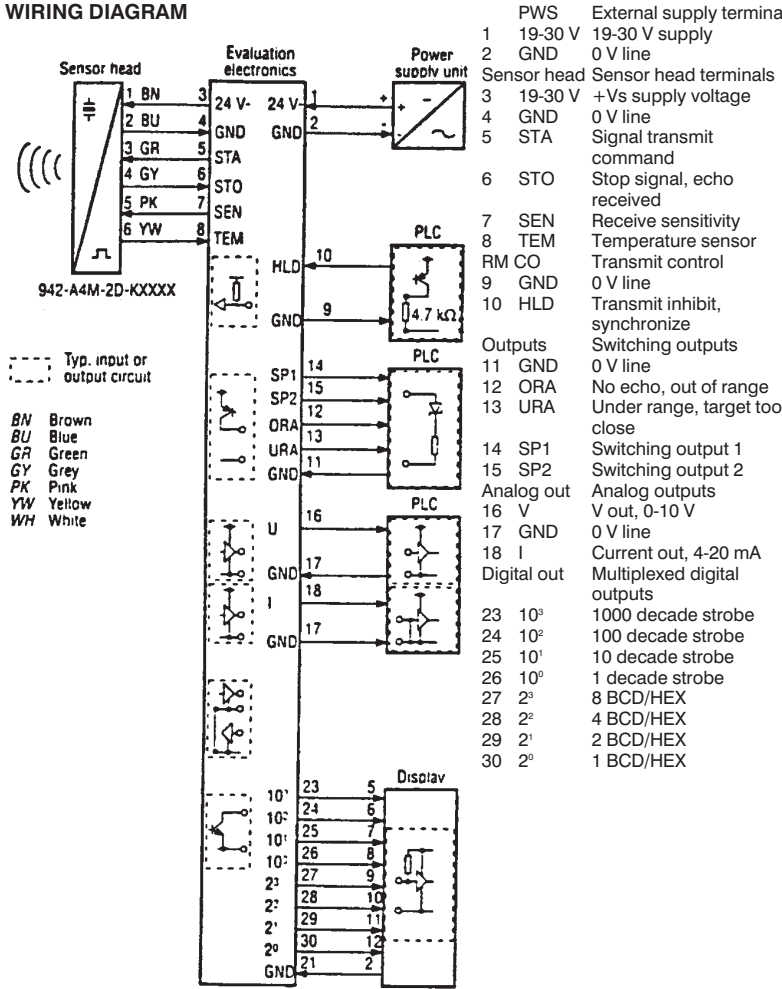
SPECIFICATIONS

Max. Sensing Distance	1500 mm (59.1 in.)
Min. Sensing Distance	150 mm (5.91 in.)
Beam Angle	10°/5°
POWER SUPPLY	
Supply Voltage	19-30 VDC
Supply Current	<130 mA without load
Circuit Protection	Reverse polarity
OUTPUT CHARACTERISTICS (DIGITAL)	
Load Current	0-100 mA
Hysteresis	±1% of setpoint
Switching Frequency	8 Hz
Repeatability	±1 mm or 0.2% of reading
Setpoint Adjustment	Digital switches
Output Adjustment	Beam angle 10° w/max. sensitivity or beam angle 5° w/min. sensitivity
Circuit Protection	Short circuit
OUTPUT CHARACTERISTICS (MULTIPLEX DIGITAL)	
Resolution	1 mm
Information Output	Bit Parallel/Word Serial
Setpoint Adjustment	Beam angle 10° w/max. sensitivity or beam angle 5° w/min. sensitivity
OUTPUT CHARACTERISTICS (ANALOG)	
Switching Frequency	8 Hz
Repeatability	±1 mm or 0.2% of reading
Linearity	±2 mm or 0.3%
Output Range Adjustment	Digital switches
Output Adjustment	Beam angle 10° w/max. sensitivity or beam angle 5° w/min. sensitivity
Min. Load Resistance (VDC)	1000 Ohms (0-10 VDC output)
Max. Load Resistance (mA)	250 Ohms (4-20 mA output)
Slope of Output	Positive or Negative via switch
ENVIRONMENTAL	
Operating Temperature	Sensor head: 0 to 70°C (32 to 158°F)/Amplifier: 0 to 50°C (32 to 122°F)
Storage Temperature	Sensor head/Amplifier: -25 to 85°C (-13 to 185°F)
Sealing	Sensor Head: IP 65/Amplifier: IP 54
SPECIAL FEATURES	
LED Indicators	RED - Under Range/ RED - Over Range: illumination dependent on analog range chosen and target position with respect to sensor YELLOW - Setpoint: illuminates when target reaches setpoint 1 or setpoint 2
Hold Input	Stops transmission and reception when input is connected to 0 VDC. Last output stored until input is disconnected
Synchronization Input	Avoids mutual interference from several sensors by interconnecting the hold input from each sensor

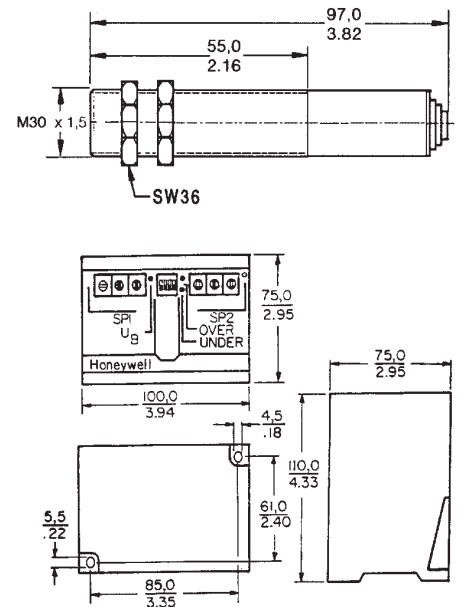
2-Piece 30 mm Diameter

Precision Switching, Analog, Digital BCD, Hexadecimal Outputs

WIRING DIAGRAM



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REPLACEMENT LISTINGS

Sensor Head	942A4M-2D-K220S
Amplifier	942-M0A-2D-1G1-220S
Straight Connector (cable not included)	66195074-001

942 SERIES ULTRASONIC CROSS REFERENCE

Obsolete Listing	Replacement Listing	Comments
942-M88 942-M88-LF	942-M96	Sensor head, includes connector
942-M3A-2D-1G1	942-M0A-2D-1G1-220S	Amplifier