

## **94X Series (942-04N-2D-1A1/1A2-80E, 943-04V-2D-001/002/1C0/1D0-80E, 947-04V-2D-1C0/1D0-80E)**

### **Ultrasonic Distance Sensors**



#### **DESCRIPTION**

This collection of ultrasonic devices offers enhanced sensing range capability in a square plastic housing. Available sensor types include programmable, Teach-In, and analogue and fixed output versions.

#### **FEATURES**

- Non contact distance sensing for use in non invasive measurement
- Reduced sensitivity to light intensity/reflectivity/opacity of target for enhanced flexibility and certainty of measurement
- Detects over much longer distance than other detection methods reducing the need for close proximity to the target
- Extremely long sensing distance (up to 6 m [19.65 ft]) reducing the need for close proximity measurement which can be critical for some applications

#### **POTENTIAL APPLICATIONS**

- Level measurement
- Presence/absence detection
- Distance measurement

# 943 Series (942-04N-2D-1A1/1A2-80E, 943-04V-2D-001/002/1C0/1D0-80E, 947-04V-2D-1C0/1D0-80E)

## Specifications

Parameter	942-04N-2D-1A1-80E	942-04N-2D-1A2-80E	943-04V-2D-001-80E	943-04V-2D-002-80E	943-04V-2D-1C0-80E	943-04V-2D-1D0-80E	947-04V-2D-1C0-80E	947-04V-2D-1D0-80E
Max. sensing distance	6000 mm [236.22 in]						5000 mm [196.85 in]	
Min. sensing distance	600 mm [23.62 in]						500 mm [19.69 in]	
Expected response time 90% of final value	250 ms/prog		-		700 ms		400 ms	
Beam angle	8°						10°	
Switching frequency	7 Hz/prog		0.5 Hz		7 Hz/prog			
Linearity error	<0.3%		-		<0.5 %			
Hysteresis	prog		~1%		-			
Repeatability of measured distance	0.2%		-		0.2% ±2 mm [0.08 in]		0.2%	
Temperature range	-15 °C to 70 °C [-5 °F to 158 °F]							
Temperature compensation	yes							
Operating voltage	15 Vdc to 30 Vdc		12 Vdc to 30 Vdc		15 Vdc to 30 Vdc		24 Vdc ±20%	
Expected current consumption	100 mA		<80 mA		<35 mA		<40 mA	
Analogue output	0 V to 10 V/4 mA to 20 mA		-		0 V to 10 V   4 mA to 20 mA		0 V to 10 V   4 mA to 20 mA	
Analogue output selection by load	load >2 kOhm Uout load <500 Ohm Iout		-					
Switching outputs	2 PNP NO/NC   2 NPN NO/NC		2 PNP NO/NC   2 NPN NO/NC		-			
Expected output current	100 mA max.		500 mA max.		-			
Adjustment	programming		Teach-In		-			
Alignment LED			green (1)		-			
Status switching output 1			yellow (2)		-			
Status switching output 2			yellow (3)		-			
Control input			-					
Inhibit connect to:	Pin 6 → 0 V				Pin 2 → 0 V			
Synchronisation connect to:	Pin 6 ↔ Pin 6				Pin 2 ↔ Pin 2			
Enable connect to:	Pin 6 → NC				Pin 2 → NC			
Interface	RS232		-					
Plastic housing	PBPT							
Sealing*	IP65							
Connector	8 pin M16x0.75				5 pin M12x1			

\*Attention! Do not expose sensor head to hot water >50 °C or steam vapour.

### Accessories: 942-04N-2D-1A1/1A2-80E

Catalog Listing	Description
66195126-001	Mating connector straight
55000005-002	Programming adaptor
55000010-001	Software programming adaptor and PC connection cable
55000018-001	Programming cable

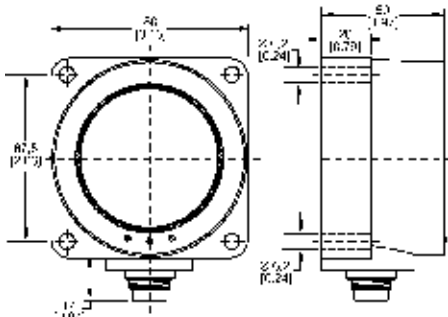
### Accessories: 943-04V-2D-001/002-80E, 943-04V-2D-1C0/1D0-80E, 947-04V-2D-1C0/1D0-80E

Catalog Listing	Description
66195044-001	Mating connector straight
66195045-001	Mating connector angled
66195214-001	Straight cable/connector 2 m
66195216-001	Right-angle cable/connector 2 m

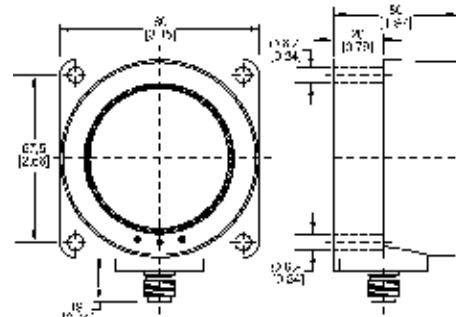
# Ultrasonic Distance Sensors

## Mounting Dimensions (For reference only, mm/[in])

942-O4N-2D-1A1/1A2-80E



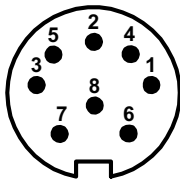
943-O4V-2D-001/002/1C0/1D0-80E,  
947-O4V-2D-1C0/1D0-80E



## Wiring

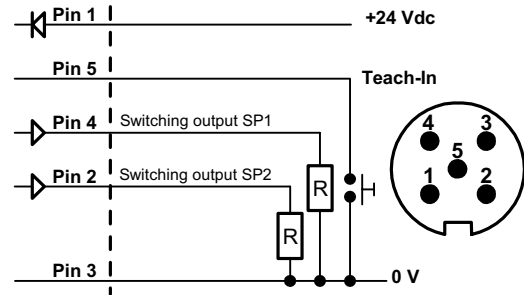
P42-O4N-2D-1A1/1A2-80E

View to solder pins of connector

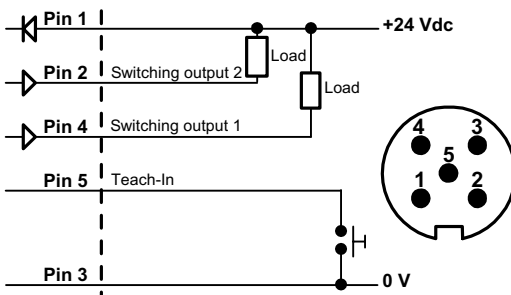


- Pin 1: + 24 Vdc
- Pin 2: GND
- Pin 3: U/I
- Pin 4: SP1
- Pin 5: SP2
- Pin 6: Hld/Sync
- Pin 7: RxD
- Pin 8: TxD

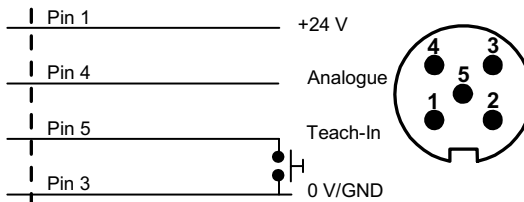
943-O4V-2D-001-80E



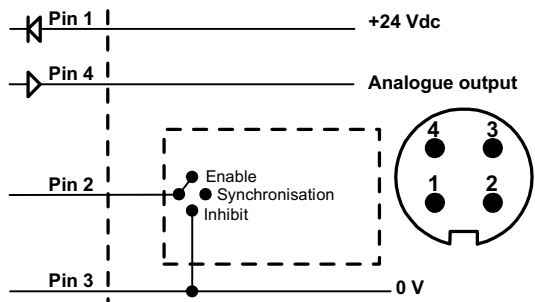
943-O4V-2D-002-80E



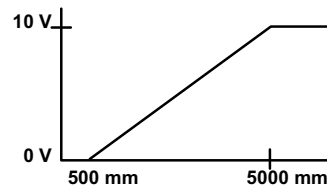
943-O4V-2D-1C0/1D0-80E



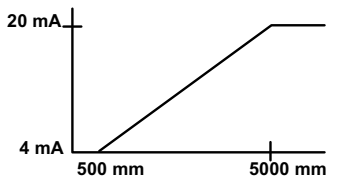
947-O4V-2D-1C0/1D0-80E



947-O4V-2D-1C0-80E

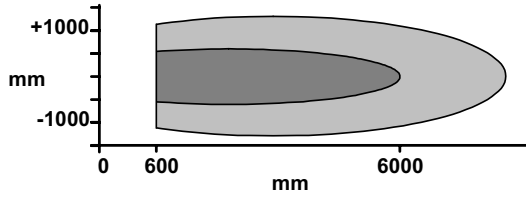


947-O4V-2D-1D0-80E



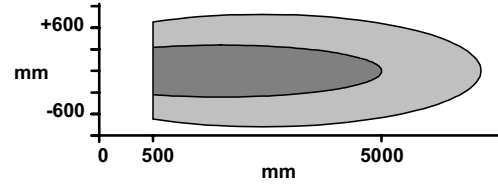
## Detection Range

942-O4N-2D-1A1/1A2-80E,  
943-O4V-2D-001/002/1C0/1D0-80E



Enhanced detection of a target 100 mm<sup>2</sup> x 100 mm<sup>2</sup>  
Possible detection of a large target

947-O4V-2D-1C0/1D0-80E



Enhanced detection of a target 100 mm<sup>2</sup> x 100 mm<sup>2</sup>  
Possible detection of a large target

### **WARNING**

#### **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### **WARNING**

#### **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

#### **WARRANTY/REMEDY**

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