Allen-Bradley

1442 Eddy Current Probe Systems Specifications

Catalog Numbers 1442-PS series, 1442-PR series, 1442-EC series, 1442-DR series

The 1442 series of eddy current probe systems serve applications with measurement ranges from 0.1...29 mm (4...1142 mils). 1442 series probe systems fully satisfy the requirements of API 670 and are suitable for any type of dynamic or static displacement measurement, including vibration, speed/acceleration, rotor/position, and differential expansion measurements.

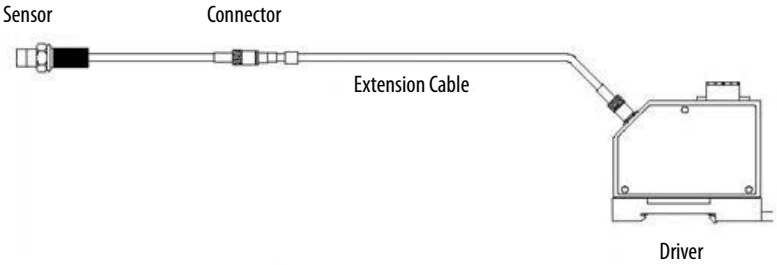
Summary of Changes

This manual contains new and updated information. Changes throughout this revision are marked by change bars, as shown to the right of this paragraph.

Topic	Page
Corrected wire sizes	3, 5
Corrected temperature ranges for CSA and ATEX	5
Corrected c-CSA-us and Ex certification information	6

Non-contact Pick-up Probe System

A non-contact pick-up probe system is composed of three components.



Component	Description
Non-contact pick-up probe	The non-contact pick-up probe is an encapsulated wire configuration that reads the relative position of the equipment by introducing eddy currents into the target material and measuring the change in the current as the target surface moves. The energy loss into the target increases or decreases as the target moves nearer to or farther away from the probe. The change in energy loss is detected as a change in the modulated signal. This change provides a voltage proportional to the gap between the probe tip and the target. This signal is fed to the monitoring system, providing a continuous and very accurate measure of the relative distance to the target surface. The tip diameter characterizes the probe. In general, the wider the tip, the greater the range that the probe can sense. Choose other characteristics, such as the body length and the thread size, based on the application.
Extension cable	The extension cable provides flexibility for placement of the probe by allowing extended lengths between the driver and the non-contact pick-up. A variety of Teflon-insulated and Armor-coaxial extension cables adapt the sensor system to most installations. The extension cables are electrically matched to the selected probe system.
Driver	The driver systems are case isolated and can be DIN-rail or panel mounted. The stainless-steel probe drivers provide the radio frequency that powers the probe system. The driver is the primary component responsible for signal conditioning, providing accurate linearity over the operating range of the system.

Wiring Guidelines

When wiring the probe driver to a monitor, consider the following recommendations:

- Use a good quality instrumentation cable with three-conductor stranded wire and shield. Also consider the following:
  - Use wire rated with a maximum capacitance of 60 pF/ft (197 pF/m) and inductance of 0.3 µH/ft (1 µH/m).
  - Use wire with insulation suitable for the environment and with adequate tensile strength and flexibility for the application.
  - Use wire with a foil shield for use in environments where radio frequency interference (RFI) can be present.
  - Use wire with a braid shield for environments where electromagnetic interference (EMI) can be present.
  - Use 0.75...1.25 mm^2 (18...16 AWG).
- Make sure the wire is isolated from power cables and any other wiring that can be transmitting high voltage power or control signals.
- Isolate any cable transmitting pulse-type vibration signals, such as a phase marker or speed pulse, from displacement and vibration signals.
- Run wire within conduit and cable trays and as per any local electrical codes.
- Do not exceed 500 m (1640 ft). However, limiting the length to 300 m (984 ft) guarantees that vibration signals in the 0…10 kHz frequency range are transmitted with minimal attenuation. When longer lengths are needed, the capacitance of the cable and the desired frequency response of the system must be considered.
- In most cases, make sure that the cable shield is grounded at only one point, generally at the monitor.

Match System Components by Color

The 1442 probe systems use color-coded bands to match probes and extension cables with the appropriate driver. The color-coded bands provide a system to identify the length of the extension cable and the length of the probe so that the total system length, 5 or 9 m (16 or 29 ft), can be matched to the appropriate driver. When a system is properly sized, the color bands on either side of the connectors between the probe, extension cable, and driver will match.

Table 1 - 1442 Series Color Bands

Sensor		Extension Cable			Driver	
Cable Length	**Color Band**	**Length**	**Probe End Color Band**	**Driver End Color Band**	**System Cable Length**	**Color Band**
0.5 m (1.64 ft)	Yellow	4.0 m (13.12 ft)	Black	Blue	5.0 m (16.40 ft)	Blue
1.0 m (3.28 ft)	Black	4.5 m (14.76 ft)	Yellow	Blue	9.0 m (29.53 ft)	Red
		8.0 m (26.25 ft)	Black	Red		
		8.5 (27.89 ft)	Yellow	Red		

1442 Series Probe System Specifications

Table 2 - Individual Technical Specifications

Attribute	5 mm (0.20 in.)	8 mm (0.31 in.)	11 mm (0.43 in.)	18 mm (0.71 in.)	25 mm (1 in.)	50 mm (1.97 in.)
Applications (typical)	Vibration, speed, or thrust			Differential expansion		
Linear range, approx(1)	2 mm (80 mils)		4.5 mm (180 mils)	6.0 mm (246 mils)	13.5 mm (532 mils)	26 mm (1024 mils)
Linear range from sensor tip, approx(1)	0.25…2.25 mm (9.8…88.6 mils)		0.5…5.0 mm (20…200 mils)	0.5…6.5 mm (20…256 mils)	3…16.5 mm (118…650 mils)	3…29 mm (118…1142 mils)
Sensitivity(1)	7.87 V/mm (200 mV/mil)		3.94 V/mm (100 mV/mil)	2.5 V/mm (63.5 mV/mil)	0.8 V/mm (20.3 mV/mil)	0.4 V/mm (10.15 mV/mil)
Frequency response	DC to 10 kHz (-3 dB)		DC to 10 kHz (-3 dB)		DC to 200 Hz (-3 dB)	
5 m (16 ft) System Length						
Scale factor error(1) (2)	Within 7.87 V/mm ±5%		Within 3.94 V/mm ±10%	—		
Linearity (2)	Within ±25 µm (±1 mil) for a straight line of 7.87 V/mm		Within ±100 µm for a straight line of 3.94 V/mm	Within ±90 µm for a straight line of 2.5 V/mm	Within ±270 µm for a straight line of 0.8 V/mm	Within ±400 µm for a straight line of 0.4 V/mm
9 m (29 ft) System Length						
Scale factor error(1) (2)	Within ±6.5% of 7.87 V/mm (200 mV/mil)		Within ±10% of 3.94 V/mm (100 mV/mil)	—		
Operating temperature characteristics(3)						
Sensor(4)	< ±3% of F.S.					
Extension cable(4)	< ±4% of F.S.		< ±3% of F.S.			
Driver(4)	< ±3% of F.S.					
Apply with gap	2 mm (0.08 in.)		4 mm (0.16 in.)	5 mm (0.20 in.)	14 mm (0.55 in.)	25 mm (0.98 in.)

(1) Applies at 25 °C (77 °F) with -24V DC power supply, load resistance 10 kΩ, and AISI 4140 (JIS SCM440) steel flat surface target (thickness ≥ 5 mm).

(2) Includes interchangeability errors.

(3) Applies when target is AISI 4140 (JIS SCM440) steel, flat, and with a thickness of >= 5mm (0.2 in.).

(4) Applies at temperatures from 0...80 °C (176 °F) and is 0 % F.S. at standard 20 °C (68 °F).

Table 3 - Common Technical Specifications

Attribute	1442 Series Probe Systems
Standard calibration	AISI 4140 (JIS SCM440) steel flat surface
Maximum output voltage, approx(1)	-23V DC
Sensor abnormal output voltage, approx(1)	-0.6V DC (sensor OPEN or SHORT)
Current consumption (10 kΩ load), max	-15 mA
Output noise, approx(1)	20 mV peak-to-peak + power supply noise
Cable diameter, approx	2.7 or 3.6 mm (0.11 or 0.14 in.)
Connector diameter, approx	7.1 mm (0.28 in.)
Connector diameter (armored), approx	5.8 mm (0.23 in.)
System cable length	5 or 9 m (16.40 or 29.53 ft) nominal
Probe integral cable variance	+30% / -0%

Table 3 - Common Technical Specifications

Attribute	1442 Series Probe Systems
Extension cable variance	+20% / -0%
Power supply	-24V DC
Driver insulation resistance	Between terminals and mounting plate: ≥ 100 MΩ @ 500V DC
Terminal block	Spring lock terminal
Isolation voltage (driver)	50V (continuous), Basic Insulation Type, terminals to mounting plate Type tested at 500V AC for 60 s
Wiring category(2)	2 - on signal ports
Wire size (driver)	0.75…1.25 mm^2 (18…16 AWG) shielded stranded-copper wire rated at 90 °C (194 °F), or greater, 1.2 mm (3/64 in.) insulation max
Driver mass, approx	200 g (7.0 oz.)

(1) Applies at 25 °C (77 °F) with -24V DC power supply, load resistance 10 kΩ, and AISI 4140 (JIS SCM440) steel flat surface target (thickness ≥ 5 mm).

(2) Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Table 4 - Environmental Specifications

Attribute	1442-P*x* Probe	1442-DR*x* Driver	1442-EC*x* Extension Cable
Temperature, operating (Hazardous Area)	ATEX applications: -35…80°C (-31…176 °F) CSA applications: -35…85°C (-31…185 °F)		
Temperature, operating IEC 60068-2-1 (Test Ad, Operating Cold), IEC 60068-2-2 (Test Bd, Operating Dry Heat), IEC 60068-2-14 (Test Nb, Operating Thermal Shock)	-35…177°C (-31…350 °F)	-30…80 °C (-22…176 °F)	-35…177 °C (-31…350 °F) Connector: -35…125 °C (-31…257 °F)
Relative humidity IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)	30…95% RH (noncondensing, nonsubmerged) Sensor body: 100% RH		
Vibration IEC 60068-2-6 (Test Fc, Operating)	1 g @ 10…150 Hz		
Emissions CISPR11 (IEC 61000-6-4)	Class A	Class A Ferrite required	—
ESD immunity IEC 61000-4-2	6 kV contact discharges 8 kV air discharges Metal enclosure required	6 kV contact discharges 8 kV air discharges Metal enclosure required Ferrite required	—
Radiated RF immunity IEC 61000-4-3	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 3V/m with 1 kHz sine-wave 80% AM from 1400…2000 MHz 1V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz Metal enclosure required	10V/m with 1 kHz sine-wave 80% AM from 80…2000 MHz 3V/m with 1 kHz sine-wave 80% AM from 1400…2000 MHz 1V/m with 1 kHz sine-wave 80% AM from 2000…2700 MHz Metal enclosure required Ferrite required	—
EFT/B immunity IEC 61000-4-4	±1 kV at 5 kH on shielded signal ports Metal conduit required	±1 kV at 5 kH on shielded signal ports Metal conduit required Ferrite required	—

Table 4 - Environmental Specifications

Attribute	1442-P*x* Probe	1442-DR*x* Driver	1442-EC*x* Extension Cable
Surge transient immunity IEC 61000-4-5	±1 kV line-earth (CM) on shielded signal ports	±1 kV line-earth (CM) on shielded signal ports Ferrite required	—
Conducted RF immunity IEC 61000-4-6	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz Metal conduit required	10V rms with 1 kHz sine-wave 80% AM from 150 kHz…80 MHz Metal conduit required Ferrite required	—
Magnetic field immunity IEC 6100-4-8	30 A/m long duration at 50 Hz		—
Enclosure type rating	None (open-style)		
North American temp code	T4		
IEC temp code	T4		

Table 5 - Certifications

Certification(1)	1442 Series Probe Systems
c-CSA-us	CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for US and Canada. See CSA File 216284. CSA Certified Process Control Equipment for Class I, Division 1, Group A,B,C,D Hazardous Locations, certified for US and Canada. See CSA File 216284. • Ex/AEx ia IIC T4, Tamb ≤ +85 °C • Vmax or Ui=26.6V, Imax or Ii=138 mA, Pmax or Pi=0.824 W, Ci=70 nF, Li=0.2 mH
CE	European Union 2004/108/EC EMC Directive, compliant with: • EN 61326-1; Meas./Control/Lab., Industrial Requirements • EN 61000-6-2; Industrial Immunity • EN 61000-6-4; Industrial Emissions • EN 61326-2-3; Transducers
C-Tick	Australian Radiocommunications Act, compliant with: • AS/NZS CISPR 11; Industrial Emissions
Ex	European Union 94/9/EC ATEX Directive, compliant with: • EN 60079-11; Explosive Atmospheres, Protection "i" • EN 60079-0; General Requirements • II 1 G Ex ia IIC T4 Ga, -30 °C ≤ Tamb ≤ +80 °C • Ui: 26V, Ii: 138 mA, Pi: 0.81 W, Ci: 70 nF, Li: 0.06 mH

(1) When marked. See the Product Certification link at http://www.ab.com for Declarations of Conformity, Certificates, and other certification details.

1442 Series Catalog Numbers

Catalog numbers consist of various characters that identify a specific option for the probe system. Use the following tables to determine the catalog number for your probe system.

1442 Series Standard Mount Probes

$$1442\text{-}PS - \frac{05}{a}\,\frac{03}{b}\,\frac{M}{c}\,\frac{00}{d}\,\frac{10}{e}\,\frac{N}{f}$$

a	
Probe Diameter	
Code	**Description**
05	5 mm (0.20 in.)
08	8 mm (0.31 in.)
11	11 mm (0.43 in.)
18	18 mm (0.71 in.)
25	25.4 mm (1.00 in.)
50	50 mm (1.97 in.)

b			
Body Length[(1)]			
Metric		**Imperial**	
Code	**Description**	**Code**	**Description**
03	30 mm	12	1.2 in
04	40 mm	15	1.5 in
05	50 mm	16	1.6 in
07	70 mm	20	2.0 in
09	90 mm	30	3.0 in
12	120 mm	40	4.0 in
15	150 mm	50	5.0 in
		60	6.0 in

(1) When a body length of 12 is specified, the thread specification of 120 mm (1.2 in.) qualifies the length.

c	
Thread	
Code	**Description**
M	Metric M8x1 thread (5 mm probe) M10x1 thread (8 mm probe)
E	Imperial 1/4-28 UNF thread (5 mm probe) 3/8-24 UNF thread (8 mm probe)
N	Not threaded (flange mount)

d	
Unthreaded Length	
Code	**Description**
00	Standard mount probes with a specified unthreaded length are not available.

e	
Cable Length	
Code	**Description**
10	1.0 m (3.28 ft)
05	0.5 m (1.64 ft)

f	
Armored Cable Option	
Code	**Description**
N	No armor
A	Armored cable

Table 6 - Standard Mount 5 mm Probes with 1/4-28 UNF Thread and 1.0 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-0512E0010N	5 mm probe tip, standard cable, 1/4-28 UNF thread, 1.2 in. length
1442-PS-0512E0010A	5 mm probe tip, armored cable, 1/4-28 UNF thread, 1.2 in. length
1442-PS-0516E0010N	5 mm probe tip, standard cable, 1/4-28 UNF thread, 1.6 in. length
1442-PS-0516E0010A	5 mm probe tip, armored cable, 1/4-28 UNF thread, 1.6 in. length
1442-PS-0520E0010N	5 mm probe tip, standard cable, 1/4-28 UNF thread, 2 in. length
1442-PS-0520E0010A	5 mm probe tip, armored cable, 1/4-28 UNF thread, 2 in. length
1442-PS-0530E0010N	5 mm probe tip, standard cable, 1/4-28 UNF thread, 3 in. length
1442-PS-0530E0010A	5 mm probe tip, armored cable, 1/4-28 UNF thread, 3 in. length
1442-PS-0540E0010N	5 mm probe tip, standard cable, 1/4-28 UNF thread, 4 in. length
1442-PS-0540E0010A	5 mm probe tip, armored cable, 1/4-28 UNF thread, 4 in. length
1442-PS-0550E0010N	5 mm probe tip, standard cable, 1/4-28 UNF thread, 5 in. length
1442-PS-0550E0010A	5 mm probe tip, armored cable, 1/4-28 UNF thread, 5 in. length
1442-PS-0560E0010N	5 mm probe tip, standard cable, 1/4-28 UNF thread, 6 in. length
1442-PS-0560E0010A	5 mm probe tip, armored cable, 1/4-28 UNF thread, 6 in. length

Table 7 - Standard Mount 5 mm Probes with M8x1 Metric Thread and 1.0 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-0512M0010A	5 mm probe tip, armored cable, M8x1 thread, 120 mm length
1442-PS-0512M0010N	5 mm probe tip, standard cable, M8x1 thread, 120 mm length
1442-PS-0515M0010A	5 mm probe tip, armored cable, M8x1 thread, 150 mm length
1442-PS-0515M0010N	5 mm probe tip, standard cable, M8x1 thread, 150 mm length
1442-PS-0503M0010A	5 mm probe tip, armored cable, M8x1 thread, 150 mm length
1442-PS-0503M0010N	5 mm probe tip, standard cable, M8x1 thread, 150 mm length
1442-PS-0505M0010A	5 mm probe tip, armored cable, M8x1 thread, 50 mm length
1442-PS-0505M0010N	5 mm probe tip, standard cable, M8x1 thread, 50 mm length
1442-PS-0507M0010A	5 mm probe tip, armored cable, M8x1 thread, 70 mm length
1442-PS-0507M0010N	5 mm probe tip, standard cable, M8x1 thread, 70 mm length
1442-PS-0509M0010A	5 mm probe tip, armored cable, M8x1 thread, 90 mm length
1442-PS-0509M0010N	5 mm probe tip, standard cable, M8x1 thread, 90 mm length

Table 8 - Standard Mount 8 mm Probes with 3/8-24 UNF Thread and 1.0 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-0812E0010A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 1.2 in. length
1442-PS-0812E0010N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 1.2 in. length
1442-PS-0816E0010A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 1.6 in. length
1442-PS-0816E0010N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 1.6 in. length
1442-PS-0820E0010A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 2 in. length

Table 8 - Standard Mount 8 mm Probes with 3/8-24 UNF Thread and 1.0 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-0820E0010N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 2 in. length
1442-PS-0830E0010A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 3 in. length
1442-PS-0830E0010N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 3 in. length
1442-PS-0840E0010A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 4 in. length
1442-PS-0840E0010N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 4 in. length
1442-PS-0850E0010A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 5 in. length
1442-PS-0850E0010N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 5 in. length
1442-PS-0860E0010A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 6 in. length
1442-PS-0860E0010N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 6 in. length

Table 9 - Standard Mount 8 mm Probes with 3/8-24 UNF Thread and 0.5 m (1.64 ft) Cable

Cat. No.	Description
1442-PS-0812E0005A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 1.2 in. length
1442-PS-0812E0005N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 1.2 in. length
1442-PS-0816E0005A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 1.6 in. length
1442-PS-0816E0005N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 1.6 in. length
1442-PS-0820E0005A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 2 in. length
1442-PS-0820E0005N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 2 in. length
1442-PS-0830E0005A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 3 in. length
1442-PS-0830E0005N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 3 in. length
1442-PS-0840E0005A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 4 in. length
1442-PS-0840E0005N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 4 in. length
1442-PS-0850E0005A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 5 in. length
1442-PS-0850E0005N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 5 in. length
1442-PS-0860E0005A	8 mm probe tip, armored cable, 3/8-24 UNF thread, 6 in. length
1442-PS-0860E0005N	8 mm probe tip, standard cable, 3/8-24 UNF thread, 6 in. length

Table 10 - Standard Mount 8 mm Probes with M10x1 Metric Thread with 1.0 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-0812M0010A	8 mm probe tip, armored cable, M10x1 thread, 120 mm length
1442-PS-0812M0010N	8 mm probe tip, standard cable, M10x1 thread, 120 mm length
1442-PS-0815M0010A	8 mm probe tip, armored cable, M10x1 thread, 150 mm length
1442-PS-0815M0010N	8 mm probe tip, standard cable, M10x1 thread, 150 mm length
1442-PS-0803M0010A	8 mm probe tip, armored cable, m10x1 thread, 30 mm length
1442-PS-0803M0010N	8 mm probe tip, standard cable, M10x1 thread, 30 mm length
1442-PS-0805M0010A	8 mm probe tip, armored cable, M10x1 thread, 50 mm length
1442-PS-0805M0010N	8 mm probe tip, standard cable, M10x1 thread, 50 mm length
1442-PS-0807M0010A	8 mm probe tip, armored cable, M10x1 thread, 70 mm length

Table 10 - Standard Mount 8 mm Probes with M10x1 Metric Thread with 1.0 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-0807M0010N	8 mm probe tip, standard cable, M10x1 thread, 70 mm length
1442-PS-0809M0010A	8 mm probe tip, armored cable, M10x1 thread, 90 mm length
1442-PS-0809M0010N	8 mm probe tip, standard cable, m10x1 thread, 90 mm length

Table 11 - Standard Mount 8 mm Probes with M10x1 Metric Thread with 0.5 m (1.64 ft) Cable

Cat. No.	Description
1442-PS-0812M0005A	8 mm probe tip, armored cable, M10x1 thread, 120 mm length
1442-PS-0812M0005N	8 mm probe tip, standard cable, M10x1 thread, 120 mm length
1442-PS-0815M0005A	8 mm probe tip, armored cable, M10x1 thread, 150 mm length
1442-PS-0815M0005N	8 mm probe tip, standard cable, M10x1 thread, 150 mm length
1442-PS-0803M0005A	8 mm probe tip, armored cable, M10x1 thread, 30 mm length
1442-PS-0803M0005N	8 mm probe tip, standard cable, M10x1 thread, 30 mm length
1442-PS-0805M0005A	8 mm probe tip, armored cable, M10x1 thread, 50 mm length
1442-PS-0805M0005N	8 mm probe tip, standard cable, M10x1 thread, 50 mm length
1442-PS-0807M0005A	8 mm probe tip, armored cable, M10x1 thread, 70 mm length
1442-PS-0807M0005N	8 mm probe tip, standard cable, m10x1 thread, 70 mm length
1442-PS-0809M0005A	8 mm probe tip, armored cable, m10x1 thread, 90 mm length
1442-PS-0809M0005N	8 mm probe tip, standard cable, M10x1 thread, 90 mm length

Table 12 - Standard Mount 11 mm Probes with 1 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-1116E0510N	11 mm probe tip, standard cable, 1/2-20 UNF thread, 40 mm length
1442-PS-1116E0510A	11 mm probe tip, armored cable, 1/2-20 UNF thread, 40 mm length
1442-PS-1104M0510N	11 mm probe tip, standard cable, M14x1.5 thread, 40 mm length
1442-PS-1104M0510A	11 mm probe tip, armored cable, M14x1.5 thread, 40 mm length

Table 13 - Standard Mount 18 mm Probes with 1 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-1820E0510A	18 mm probe tip, armored cable, 7/8-14 UNF thread, 50 mm length
1442-PS-1805M0510A	18 mm probe tip, armored cable, M20x1.5 thread, 50 mm length

Table 14 - Standard Mount 25.4 mm Probes with 1 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-2520E0510A	25.4 mm probe tip, armored cable, 1 1/4-12 UNF thread, 50 mm length
1442-PS-2505M0510A	25.4 mm probe tip, armored cable, M30x1.5 thread, 50 mm length
1442-PS-2507N0010A	25.4 mm probe tip, armored cable, 4-M6 depth 14 thread, 76 mm length

Table 15 - Standard Mount 50 mm Probes with 1 m (3.28 ft) Cable

Cat. No.	Description
1442-PS-5020E0010A	50 mm probe tip, armored cable 1-12 UNF thread, 50 mm length
1442-PS-5005M0010A	50 mm probe tip, armored cable, M24x1.5 thread, 50 mm length

1442 Series Reverse Mount Probes

$$1440\text{-}PR - \frac{08}{a}\frac{30}{b}\frac{M}{c}\frac{05}{d}\frac{05}{e}\frac{N}{f}$$

a	
Probe Diameter	
Code	Description
08	8 mm (0.31 in.)

b			
Body Length			
Metric		Imperial	
Code	Description	Code	Description
03	30 mm	12	1.2 in.

c	
Thread	
Code	Description
M	Metric M10x1 thread
E	Imperial UNF thread 3/8-24

d	
Unthreaded Length	
Code	Description
02	5.0 mm (0.2 in.)
05	5.0 mm (0.2 in.)

e	
Cable Length	
Code	Description
05	0.5 m (1.64 ft)
10	1.0 m (3.28 ft)

f	
Armored Cable Option	
Code	Description
N	No armor
A	Armored cable

Table 16 - Reverse Mount Probes with M10x1 Metric Thread

Cat. No.	Description
1442-PR-0803M0505N	8 mm probe tip, 0.5 m (1.64 ft) integral cable, M10x1 thread, 30 mm length
1442-PR-0803M0510N	8 mm probe tip, 1.0 m (3.28 ft) integral cable, M10x1 thread, 30 mm length

Table 17 - Reverse Mount Probes with 3/8-24 UNF Thread

Cat. No.	Description
1442-PR-0812E0205N	8 mm probe tip, 0.5 m (1.64 ft) integral cable, 3/8-24 UNF thread, 1.2 in. length
1442-PR-0812E0210N	8 mm probe tip, 1.0 m (3.28 ft) integral cable, 3/8-24 UNF thread, 1.2 in. length

1442 Series Extension Cables

$$1442\text{-}EC\text{-}\frac{58}{a}\frac{40}{b}\frac{A}{c}$$

a	
Probe Tip Diameter	
Code	**Description**
58	5 mm (0.20 in.) and 8 mm (0.31 in.)
11	11 mm (0.43 in.)
18	18 mm (0.71 in.)
25	25.4 mm (1.00 in.)
50	50 mm (1.97 in.)

b	
Cable Length	
Code	**Description**
40	4.0 m (13.12 ft)
45	4.5 m (14.76 ft)
80	8.0 m (26.25 ft)
85	8.5 m (27.89 ft)

c	
Armored Cable Option	
Code	**Description**
N	No armor
A	Armored cable

Table 18 - Extension Cables for Use with 5 mm and 8 mm Probe Tips

Cat. No.	Description
1442-EC-5840N	4 m (13.12 ft) length
1442-EC-5840A	4 m (13.12 ft) length, armored
1442-EC-5845N	4.5 m (14.76 ft) length
1442-EC-5845A	4.5 m (14.76 ft) length, armored
1442-EC-5880N	8 m (26.25 ft) length
1442-EC-5880A	8 m (26.25 ft) length, armored
1442-EC-5885N	8.5 m (27.89 ft) length
1442-EC-5885A	8.5 m (27.89 ft) length, armored

Table 19 - Extension Cables for Use with 11 mm Probe Tips

Cat. No.	Description
1442-EC-1140N	4 m (13.12 ft) length
1442-EC-1140A	4 m (13.12 ft) length, armored
1442-EC-1180N	8 m (26.25 ft) length
1442-EC-1180A	8 m (26.25 ft) length, armored

Table 20 - Extension Cables for Use with 18 mm Probe Tips

Cat. No.	Description
1442-EC-1840A	4 m (13.12 ft) length, armored
1442-EC-1880A	8 m (26.25 ft) length, armored

Table 21 - Extension Cables for Use with 25.4 mm Probe Tips

Cat. No.	Description
1442-EC-2540A	4 m (13.12 ft) length, armored
1442-EC-2580A	8 m (26.25 ft) length, armored

Table 22 - Extension Cables for Use with 50mm Probe Tips

Cat. No.	Description
1442-EC-5040A	4 m (13.12 ft) length, armored
1442-EC-5080A	8 m (26.25 ft) length, armored

1442 Series Probe Drivers

$$1442\text{-}DR\text{-}\frac{58}{a}\frac{50}{b}$$

a	
Probe Tip Diameter	
Code	**Description**
58	5 mm (0.20 in.) and 8 mm (0.31 in.)
11	11 mm (0.43 in.)
18	18 mm (0.71 in.)
25	25.4 mm (1.00 in.)
50	50 mm (1.97 in.)

b	
System Length	
Code	**Description**
50	5.0 m (16.40 ft)
90	9.0 m (29.53 ft)

IMPORTANT The sensor cable length and the extension cable length, when added together, must equal the probe system total length.

Sensor Cable Length + Extension Cable Length = System Length

See the following table for examples.

Sensor		Extension Cable		System Cable Length		Driver[1]
0.5 m (1.64 ft)	+	4.5 m (14.76 ft)	=	5.0 m (16.40 ft)	→	1442-DR-*xx*50
1.0 m (3.28 ft)	+	4.0 m (13.12 ft)	=	5.0 m (16.40 ft)	→	1442-DR-*xx*50
0.5 m (1.64 ft)	+	8.5 m (27.89 ft)	=	9.0 m (29.53 ft)	→	1442-DR-*xx*90
1.0 m (3.28 ft)	+	8.0 m (26.25 ft)	=	9.0 m (29.53 ft)	→	1442-DR-*xx*90

(1) Where *xx*= appropriate code for probe size.

Table 23 - Probe Drivers for Use with 5 mm and 8 mm Probe Tips

Cat. No.	Description
1442-DR-5850	Use with 5 m (16.40 ft) total length systems
1442-DR-5890	Use with 9 m (29.53 ft) total length systems

Table 24 - Probe Drivers for Use with 11 mm Probe Tips

Cat. No.	Description
1442-DR-1150	Use with 5 m (16.40 ft) total length systems
1442-DR-1190	Use with 9 m (29.53 ft) total length systems

Table 25 - Probe Drivers for Use with 18 mm Probe Tips

Cat. No.	Description
1442-DR-1850	Use with 5 m (16.40 ft) total length systems
1442-DR-1890	Use with 9 m (29.53 ft) total length systems

Table 26 - Probe Drivers for Use with 25.4 mm Probe Tips

Cat. No.	Description
1442-DR-2550	Use with 5 m (16.40 ft) total length systems
1442-DR-2590	Use with 9 m (29.53 ft) total length systems

Table 27 - Probe Drivers for Use with 50 mm Probe Tips

Cat. No.	Description
1442-DR-5050	Use with 5 m (16.40 ft) total length systems
1442-DR-5090	Use with 9 m (29.53 ft) total length systems

Accessories

The following accessories are available.

Cat. No.	Description
EK-15629	Cam (valve) position detector rotary potentiometer
EK-44395	Hall-effect speed sensor, magnetic, zero velocity
EK-47774	4.88 m (16 ft) connector cable for hall-effect speed sensor

Rotary Potentiometer

The rotary potentiometer is used to provide accurate measures of governor valve, cams, and gear positions as part of a turbine-generator supervisory instrumentation system.

Catalog number EK-15629 is a direct replacement for GE catalog number 9888323 or equivalent cam position detectors.

The potentiometer operates over a full 360° mechanical (300° electrical) range. The arm of the detector rotates in either direction and can be mounted at either end of the cam.

Attribute	Rotary Potentiometer
Input signals, max	3-wire, 0…28V AC or DC, 0.42 A
Range	360° mechanical, 300° electrical
Dimensions, approx	152 mm (6 in.) diameter body 9.5 mm (3/8 in.) diameter shaft 51 mm (2 in.) extension
Terminals	Screw
Resistance	1400 Ω
Installation	Replacement for GE 9888323 or equivalent, Two mounting holes on two 60.3 mm (3/8 in.) centers ¼-20 UNF thread
Weight	2.27 kg (5 lb)
Construction	Ceramic body, wire-wound steel mounting bracket and aluminum shaft

Hall-effect Speed Sensor

Catalog number EK-44395 is an Airpax Model H1512-005 hall-effect sensor designed to generate a steady pulse train in response to movement of a target surface.

Cat. No.	Description
EK-44395	Hall-effect speed sensor, magnetic, zero velocity
EK-47774	4.88 m (16 ft) connector cable for hall-effect speed sensor

Attribute	Hall-effect Speed Sensor
Frequency range	Near 0…15 kHz
Power supply voltage	4.5…24V DC
Reverse voltage protection	Up to -30V DC
Temperature range	-40…125 °C (-40…257 °F)
TTL compatible logic	50% ±30% duty cycle
Housing material	300 series stainless steel
Target air gap	0.005…0.020 in. (01.27…0.508 mm) with 20 diametric pitch gear
	0.005…0.045 in. (01.27…1.143 mm) with 12 diametric pitch gear
	0.005…0.060 in. (01.27…1.524 mm) with 8 diametric pitch gear

Notes:

Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication SGI-1.1 available from your local Rockwell Automation sales office or online at http://www.rockwellautomation.com/literature/) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

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