Temposonics®

Magnetostrictive, Absolute, Non-contact
Linear-Position Sensor Accessories

MTS® SENSORS

Includes Installation, Mounting and Application References

Current Production and Retrofit Options for R-Series, G-Series and E-Series Sensors

Document Part Number
550929 Revision D

Contents

Model RH Rod-Style sensor mounting

The position magnet requires minimum distances away from ferrous metals to allow proper sensor output. The minimum distance from the front of the magnet to the cylinder end cap is 15 mm (0.6 in.).

The minimum distance from the back of the magnet to the piston head is 3.2 mm (0.125 in.). However, a minimum distance of at least 5 mm (0.197 in.) is preferred for added performance margin.The non-ferrous spacer (part no.: 400633) provides this minimum distance when used along with the standard ring magnet (part no.: 201542-2), as shown in 'Figure 1'.

For applicable magnet selections, refer to *'Magnet Selections'*.

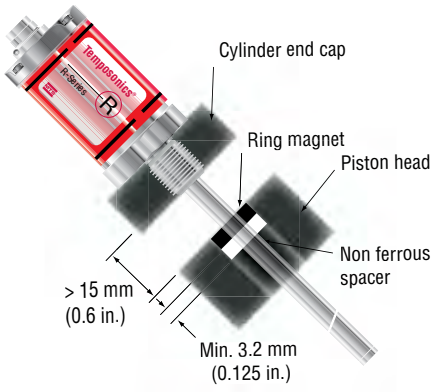


Figure 1. Model RH rod-style mounting

MODEL RH CYLINDER INSTALLATION

When used for direct-stroke measurement in fluid cylinders, the sensor's high pressure, stainless steel rod installs into a bore in the piston head/rod assembly as illustrated. This method guarantees a long-life and trouble-free operation.

The sensor cartridge can be removed from the flange and rod housing while still installed in the cylinder. This procedure allows quick and easy sensor cartridge replacement, without the loss of hydraulic pressure.

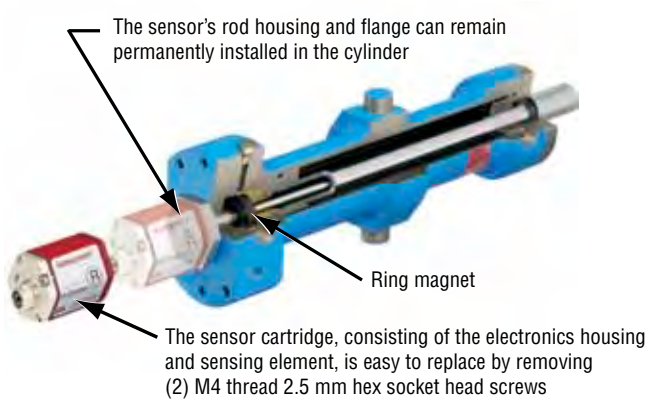


Figure 2. Fluid cylinder installation

Model GH rod-style sensor mounting

The position magnet requires minimum distances away from ferrous metals to allow proper sensor output. The minimum distance from the front of the magnet to the cylinder end cap is 15 mm (0.6 in.).

The minimum distance from the back of the magnet to the piston head is 3.2 mm (0.125 in.). However, a minimum distance of at least 5 mm (0.197 in.) is preferred for added performance margin.The non-ferrous spacer (part no.: 400633) provides this minimum distance when used along with the standard ring magnet (part no.: 201542-2), as shown in 'Figure 3'.

For applicable magnet selections, refer to *'Magnet Selections'*.

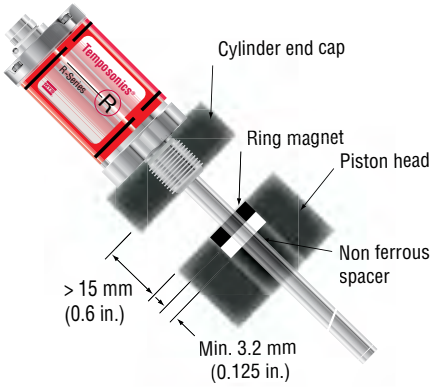


Figure 3. Model GH rod-style mounting

MODEL GH CYLINDER INSTALLATION

When used for direct-stroke measurement in fluid cylinders, the sensor's high pressure, stainless steel rod installs into a bore in the piston head/rod assembly *(See 'Figure 4')*. This method guarantees a long-life and trouble-free operation.

The sensor cartridge can be removed from the flange and rod housing while still installed in the cylinder. This procedure allows quick and easy sensor cartridge replacement, without the loss of hydraulic pressure.

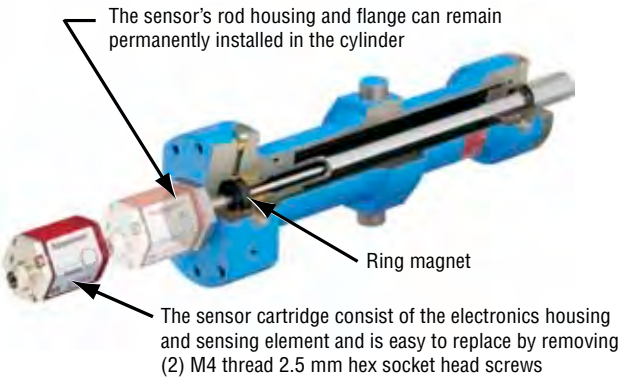
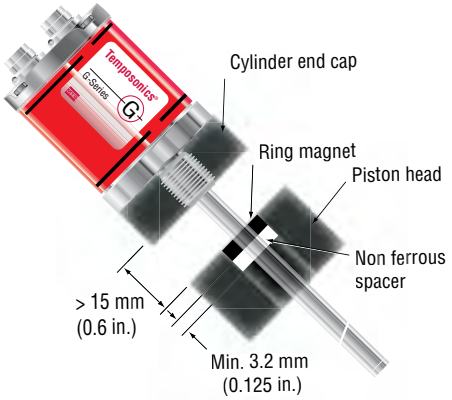


Figure 4. Fluid cylinder installation

Models GT2/GT3 rod-style sensor mounting

The position magnet requires minimum distances away from ferrous metals to allow proper sensor output. The minimum distance from the front of the magnet to the cylinder end cap is 15 mm (0.6 in.).

The minimum distance from the back of the magnet to the piston head is 3.2 mm (0.125 in.). However, a minimum distance of at least 5 mm (0.197 in.) is preferred for added performance margin. The non-ferrous spacer (part no.: 400633) provides this minimum distance when used along with the standard ring magnet (part no.: 201542-2), as shown in *'Figure 5'*.



For applicable magnet selections, refer to *'Magnet Selections'*.

Figure 5. Models GT2/GT3 rod-style mounting

MODELS GT2/GT3 CYLINDER INSTALLATION

When used for direct-stroke measurement in fluid cylinders, the sensor's high pressure, stainless steel rod installs into a bore in the piston head/rod assembly *(See 'Figure 6')*. This method guarantees a long-life and trouble-free operation.

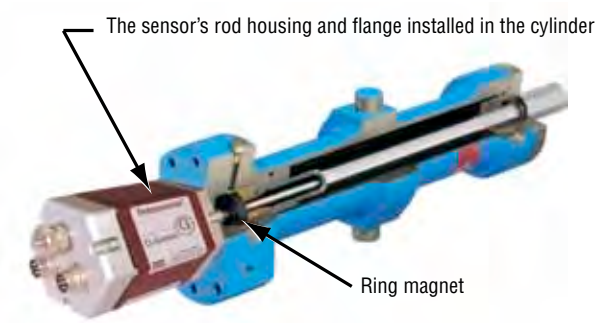


Figure 6. Fluid cylinder installation example

Note:

Unlike the G-Series Model GH sensor (shown in figure 4), GT2/GT3 redundant sensor models do not have a replaceable sensor cartridge feature.

Models RP and GP sensor mounting references

PROFILE-STYLE SENSOR MOUNTING

Temposonics models RP and GP profile-style sensors offer two basic mounting methods; side grooves for use with mounting feet or a bottom groove that accepts a special T-Slot nut (part no.: 401602). Both the mounting feet and T-Slot nuts can be positioned along the sensor extrusion to best secure the sensor for each particular application.

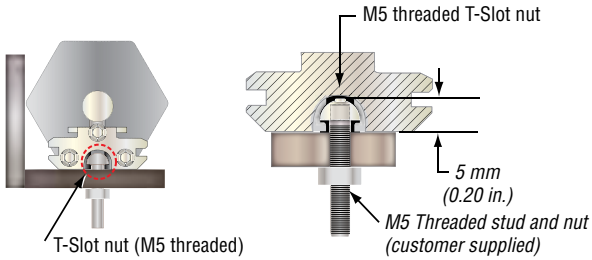
Notes:

1. Models RP and GP sensors include two mounting feet, (part no. 400802) for sensors stroke lengths up to 1250 mm (50 in.)
2. One additional mounting foot is included for stroke lengths over 1250 mm (50 in.) and for each additional 500 mm (20 in.), thereafter.
3. MTS recommends using 10-32 cap screws (customer supplied) at a maximum torque of 44 in. lbs. when fastening mounting feet.
4. The T-Slot nut (part no.: 401602) requires a ***customer supplied*** M5 threaded stud and nut.

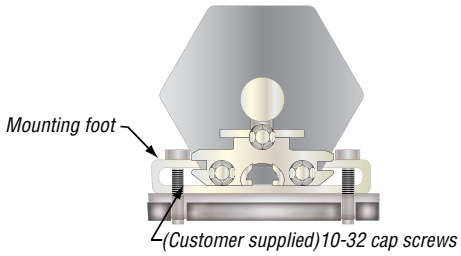
For applicable magnet selections, refer to *'Magnet Selections'*.

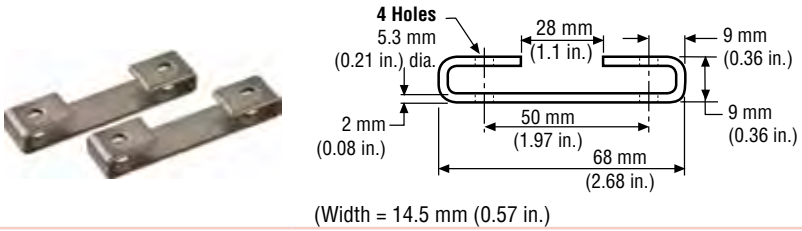
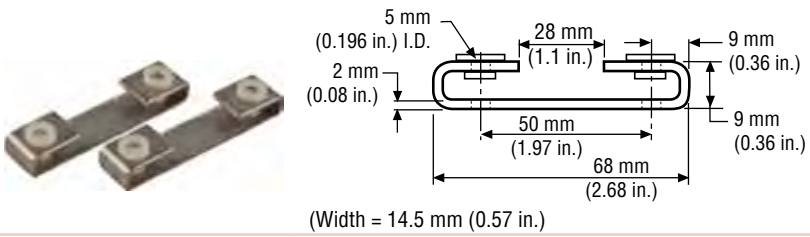
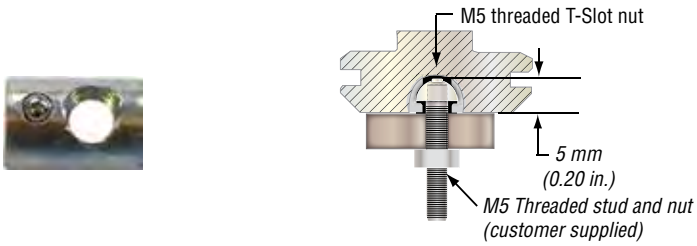
Models RP and GP profile-style sensor mounting and installation references

T-Slot nut (M5 threaded)
Nut for mounting model RP and GP sensors.



Mounting feet and screws



Models RP and GP sensor mounting and installation accessory reference	Description	Part number
	**Mounting feet, standard (304 SS)** Profile-style sensor mounting for sensor models RP and GP	400802
	**Mounting feet, Insulated (304 SS)** Profile-style sensor mounting for sensor models RP and GP. Nylon washers and cloth tape on the bottom provide electrical isolation.	252004
	**T-Slot nut (M5 threaded)** Nut for mounting model RP and GP sensors.	401602

Model EH Rod-Style sensor mounting

MODEL EH SENSOR MOUNTING

The model EH sensor is designed for direct stroke measurement inside prepared hydraulic cylinders. At the head of the sensor, a threaded flange and O-Ring provides for mounting and sealing the sensor into a port opening in the cylinder end cap. The sensor's pressure resistant rod fits into a bore drilled through the center of the piston head and rod assembly. The sensor's position magnet is mounted on the top of the piston head or installed in a shallow counter-bore inside the piston head.

The position magnet requires minimum distances away from ferrous metals to allow proper sensor output. The minimum distance from the front of the magnet to the cylinder end cap is 15 mm (0.6 in.).

The minimum distance from the back of the magnet to the piston head is 3.2 mm (0.125 in.). However, a minimum distance of at least 5 mm (0.197 in.) is preferred for performance margin. The non-ferrous spacer (part no. 400633), provides this minimum distance when used along with the standard ring magnet (part no. 201542-2), as shown in *'Figure 7'*.

The magnet is usually secured using non-ferrous fastening material (customer supplied). Screws must be made of nonmagnetic stainless steel or brass. In the event that a ferrous circlip or retaining ring will be used to secure the magnet in a counter-bore then an additional non-ferrous spacer (> or = 3.2 mm) must be placed between the circlip or retaining ring and the front side of the magnet.

The cylinder's design ratings for hydraulic pressure and piston velocity will determine the appropriate size for the bore that is drilled through the center of the piston head and rod assembly. The recommended minimum size for this bore is 10 mm (0.39 in.) when using the 7 mm (0.27 in.) diameter sensor rod.

Likewise, the recommended minimum size of 13 mm (0.51 in.) should be used when installing the 10 mm diameter sensor rod. Some applications using long sensor rods may benefit by adding a bushing (e.g. made of flourelastomer material) to prevent wear on the magnet and sensor rod (customer supplied).

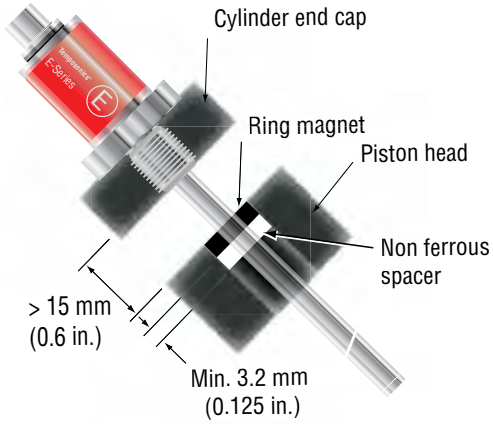


Figure 7. Model EH rod-style mounting

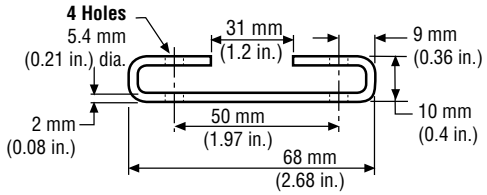
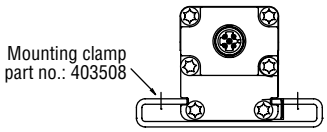
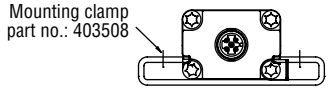
Sensor mounting (Models EP and EL)

SENSOR MOUNTING CLAMPS

E-Series models EP and EL sensors are mounted onto the machine with moveable mounting clamps. Mounting clamps slide into side grooves and should be evenly distributed along the sensor extrusion to best secure the sensor for each particular application.

Notes:

1. Models EP and EL sensors include two mounting clamps, (part number 403508), for stroke lengths up to 1250 mm (50 in.). One additional mounting clamp is included for longer stroke lengths.
2. MTS recommends using 10-32 cap screws (customer supplied) at a maximum torque of 44 in. lbs. when fastening mounting clamps.

Models EP and EL sensor mounting and installation reference	Mounting method	Part number
  ***Mounting clamp width:*** *14.6 mm (0.57 in.)*	**Mounting clamp** Sensor mounting for sensor models EP and EL	403508
Model EP mounting  *Model EL mounting* 	**Mounting configuration using mounting clamp and screws**	*Mounting clamp, part number 403508*

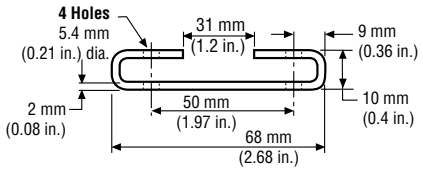
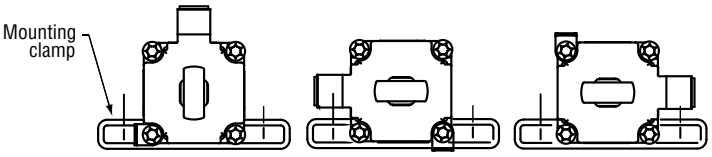
Sensor mounting (Model ER)

SENSOR MOUNTING CLAMPS

The E-Series model ER sensor is mounted onto the machine with moveable mounting clamps. Grooves for mounting clamps are available on three sides of the sensor housing, allowing versatile mounting orientations for the sensor's connector and extension cable. The rod is then attached to the moving machine part. Optional rod ends can be used to simplify sensor installation design and facilitate articulated motion sensing. Using dual rod ends the model ER sensor can be mounted between two independent moving points, such as swinging door applications. Please note for model ER sensors having stroke lengths over 750 mm (30 in.) only the first 90% of the stroke length can be used for articulated type applications when the weight of the sensor is supported only by rod ends.

Notes:

1. Mounting clamps are ordered separately. Two mounting clamps, (part number 403508) are required for stroke lengths up to 750 mm (30 in.). A least one additional mounting clamp is required for longer stroke lengths.
2. MTS recommends using 10-32 cap screws (customer supplied) at a maximum torque of 44 in. lbs. when fastening mounting clamps.

Model ER sensor mounting and installation reference	Mounting method	Part number
  ***Mounting clamp width:*** *14.6 mm (0.57 in.)*	**Mounting clamp** Sensor mounting for sensor model ER	403508
	**Three possible mounting configuration using mounting clamp and screws**	*Mounting clamp, part number 403508*

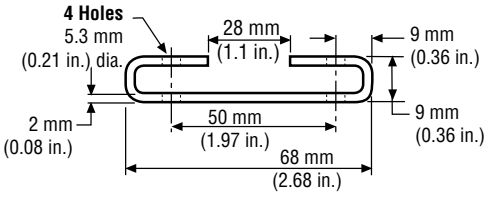
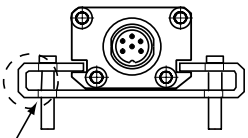
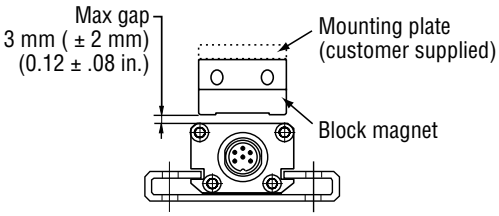
Sensor mounting

MODEL EP2 SENSOR MOUNTING

Temposonics model EP2 profile-style sensors are mounted onto a flat straight surface of the machine with moveable mounting feet. A pair (2) mounting feet are provided with each sensor. Two additional mounting feet (part no. 400802) are included for measurement stroke lengths greater than 48 inches. Mounting feet slide into side grooves and should be evenly distributed along the sensor extrusion to best secure the sensor for each particular application.

Notes:

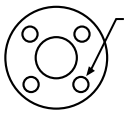
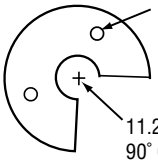
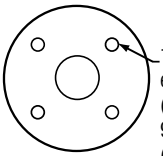
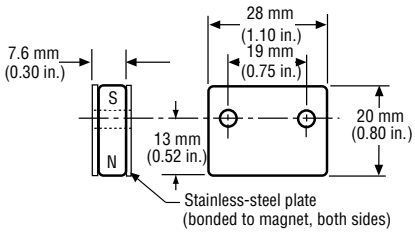
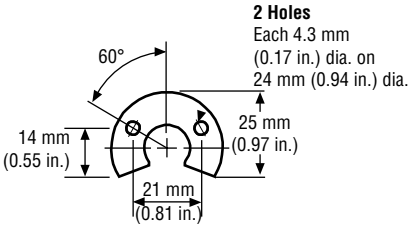
1. Additional mounting feet can be ordered separately.
2. MTS recommends using 10-32 cap screws (customer supplied) at a maximum torque of 44 in. lbs. when fastening mounting feet.

Profile-Style sensor mounting and installation reference	Mounting method	Part number
 	**Mounting feet, standard (304 SS)** Profile-style sensor mounting for sensor model EP2 (Width = 14.5 mm (0.57 in.)	400802
 	**Mounting feet and screws** Profile-style sensor foot installation *Secure mounting feet with customer supplied 10-32 Cap screws. (recommended)* **Block magnet, Style L mounting** Magnet installs on a mounting plate (customer supplied) or flat surface of the machine's moving part.	*Mounting feet , part number 400802* *Block magnet, style L part number 252887*

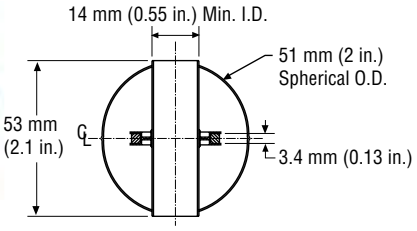
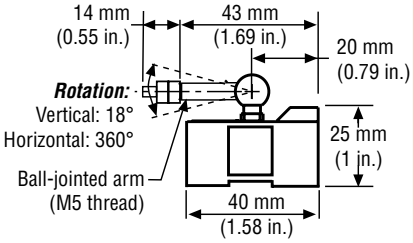
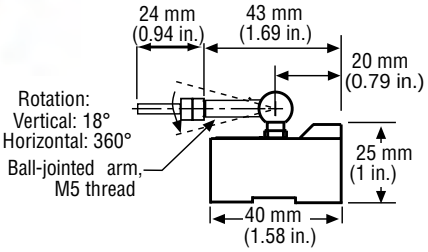
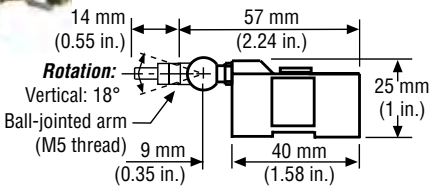
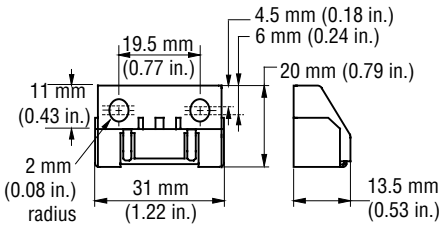
Magnet selections

The standard ring magnet (part number 201542-2) is suitable for most applications.

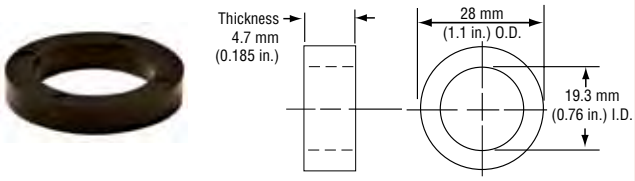
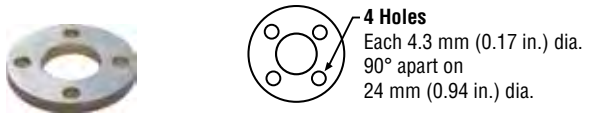
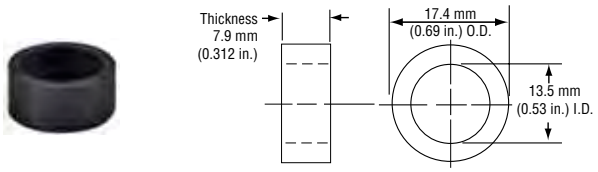
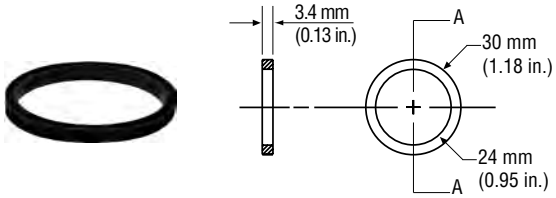
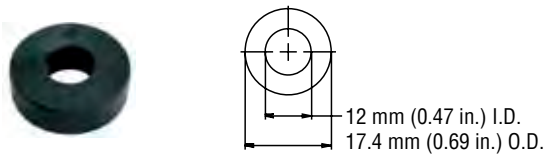
POSITION MAGNET SELECTIONS (Magnet must be ordered separately) *(Drawing dimensions are for reference only)*

Magnet and magnet dimensions	Description and specifications	Sensor model reference			Part number
  **4 Holes** Each 4.3 mm (0.17 in.) dia. 90° apart on 24 mm (0.94 in.) dia.	**Standard ring magnet** **Material:** Composite PA ferrite GF20 **I.D.:** 13.5 mm (0.53 in.) **O.D.:** 33 mm (1.3 in.) **Thickness:** 8 mm (0.3 in.) **Weight:** Approx.. 14g **Operating temperature:** - 40 °C to +100 °C	RH RF RD4	GH GT	EH	201542-2
  1 of 2 holes each, 4.5 mm (0.18 in.) dia. 120˚ apart on 41.3 mm (1.625 in.) dia. 11.2 mm (0.44 in.) opening 90˚ Cut out	**Large open-ring magnet** **Material:** PA 66-GF30 Magnet slugs potted with epoxy. **I.D.:** 15.9 mm (0.625 in.) **O.D.:** 63.25 mm (2.49 in.) **Thickness:** 9.5 mm (0.375 in.) **Weight:** Approx. 26g **Operating temperature:** - 40 °C to +75 °C	RH RF RD4	GH GT	EH	201553
  1 of 4 holes each 4.6 mm (0.18 in.) dia. 90˚ apart on 41.3 mm (1.625 in.) dia.	**Large ring magnet** **Material:** PA 66-GF30 Magnet slugs potted with epoxy. **I.D.:** 19.05 mm (0.75 in.) **O.D.:** 63.25 mm (2.49 in.) **Thickness:** 9.3 mm (0.375 in.) **Weight:** Approx. 35g **Operating temperature:** - 40 °C to +75 °C	RH RF RD4	GH GT	EH	201554
 	**Bar magnet, Style L** **Material:** Stainless-steel plate Plates bonded to both magnet sides. Magnet installs on a mounting plate (customer supplied) or flat surface of the machine's moving part. This magnet may influence the sensor performance specifications for some applications.	RH RP RF RD4	GH GP GT	EP EH EL	251298-2
 	**Open-ring magnet, Style M** **Material:** Composite PA ferrite GF20 **I.D.:** 13.5 mm (0.53 in.) **O.D.:** 33 mm (1.3 in.) **Thickness:** 8 mm (0.3 in.) **Weight:** Approx. 11g **Operating temperature:** - 40 °C to +100 °C This magnet may influence the sensor performance specifications for some applications.	RH RF RD4 RP	GH GT GP	EP EH EL	251416-2

POSITION MAGNET SELECTIONS (Magnet must be ordered separately) *(Drawing dimensions are for reference only)*

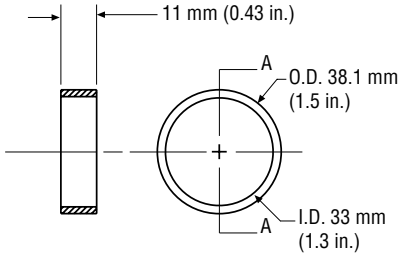
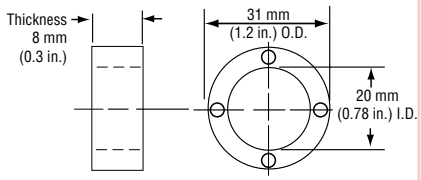
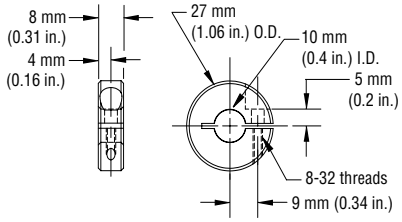
Magnet and magnet dimensions	Description and specifications	Sensor model reference			Part number
 	**Magnet float** **(Level sensing applications)** **Material:** Stainless steel **Weight:** Approx. 42 ± 3g **Density:** 720 kg/m3 **Specific gravity:** 0.70 maximum **Pressure:** 870 psi maximum *(This float is used with Rod-style sensors for hydraulic fluid or fresh water applications only)*	RH RD4	GH GT	EH	251447
 	**Captive-sliding magnet, Style S** **Material:** GFK, magnet hard ferrite **Weight:** Approx. 30g **Operating temperature:** -40 °C to +75 °C	RP	GP	EP EL	252182
 	**Captive-sliding magnet, Style N with longer ball-jointed arm** **Material:** GFK, magnet hard ferrite **Weight:** Approx. 30g **Operating temperature:** -40 °C to +75 °C	RP	GP	EP EL	252183
 	**Captive-sliding magnet, Style V** **Material:** GFK, magnet hard ferrite **Weight:** Approx. 30g **Operating temperature:** -40 °C to +75 °C	RP	GP	EP EL	252184
 	**Block magnet, Style L** **Material:** Magnet hard ferrite with stainless -steel carrier **Weight:** Approx. 20g ± 2g **Operating temperature:** -40 °C to +100 °C This magnet may influence the sensor performance specifications for some applications.	RP RH RD4 RF	GH GP GT	EP EP2 EL EH	252887

POSITION MAGNET SELECTIONS (Magnet must be ordered separately) *(Drawing dimensions are for reference only)*

Magnet and magnet dimensions	Description and specifications	Sensor model reference			Part number
	**Large Ring magnet** **Material:** Composite PA ferrite GF20 **I.D.:** 19.3 mm (0.76 in.) **O.D.:** 28 mm (1.1 in.) **Thickness:** 4.7 mm (0.185 in.) **Weight:** Approx. 11g **Operating temperature:** - 40 °C to +100 °C	RF RH RD4	GH GT	EH	400424 Replaces 401467
	**Small ring magnet** **Material:** PA ferrite coated **Weight:** Approx. 10g **I.D.:** 13.5 mm (0.53 in.) **O.D.:** 25.4 mm (1 in.) **Thickness:** 8 mm (0.3 in.) **Operating temperature:** - 40 °C to +100 °C	RH RF RD4	GH GT	EH	400533
	**Magnet spacer (Non-ferrous, use with ring magnet part no.: 201542-2)** **I.D.:** 14 mm (0.56 in.) **O.D.:** 32 mm (1.25 in.) **Thickness:** 3.2 mm (0.125 in.)	RH RD4	GH GT	EH	400633
	**Small ring magnet** **Material:** PA surface coated **Weight:** Approx. 10g **I.D.:** 13.5 mm (0.53 in.) **O.D.:** 17.4 mm (0.69 in.) **Thickness:** 7.9 mm (0.312 in.) **Operating temperature:** - 40 °C to +100 °C	RH RD4	GH GT	EH	401032
	**Large ring magnet** **Material:** PA ferrite **Weight:** Approx. 10g **I.D.:** 24 mm (0.95 in.) **O.D.:** 30 mm (1.18 in.) **Thickness:** 3.4 mm (0.13 in.) **Operating temperature:** - 40 °C to +100 °C Contact applications engineering for handling guidelines				401467 Replaced with 400424
	**Ring magnet** **(Use with Model EH sensors having a 7 mm O.D. rod)** **I.D.:** 12 mm (0.47 in.) **O.D.:** 17.4 mm (0.69 in.) **Thickness:** 10.5 mm (0.41 in.) **Operating temperature:** - 40 °C to +100 °C			EH 7 mm O.D. pipe	253572

Magnet Selections

POSITION MAGNET SELECTIONS (Magnet must be ordered separately) *(Drawing dimensions are for reference only)*

Magnet and magnet dimensions	Description and specifications	Sensor model reference			Part number
 	**Large ring magnet** **Material:** PA ferrite **Weight:** Approx. 10g **I.D.:** 33 mm (1.3 in.) **O.D.:** 38.1 mm (1.5 in.) **Thickness:** 3.4 mm (0.13 in.) **Operating temperature:** - 40 °C to +100 °C Contact applications engineering for handling guidelines	RH RF RD4	GH GT	EH	401468
 	**Ring magnet** **Material:** **Weight:** **I.D.:** 19.8 mm (0.78 in.) **O.D.:** 31 mm (1.2 in.) **Thickness:** 8 mm (0.3 in.)	RH RF RD4	GH GT	EH	402316
 	**Collar** Provides end of stroke stops for magnet float (part no.: 251447)	RH RD4	GH GT	EH	560777

Notes:

If your application requires a magnet that is not shown, contact the Factory and consult Applications Engineering for custom or additional non-standard magnet options.

Cable length limitations (bus and serial communications industry standards)

Please apply good industry practices for long cable runs. Cables must be kept away from high-power AC lines and all motor drive cables.

R-SERIES SENSORS




SSI	CANbus	DeviceNet	Profibus	Baud rate	Maximum cable or bus length	
●				1.0 MBd	10 ft.	3 m
●				400 kBd	160 ft.	50 m
●				300 kBd	320 ft.	100 m
●				200 kBd	650 ft.	200 m
●				100 kBd	1300 ft.	400 m
	●			1.0 MBd	80 ft.	25 m
	●			500 kBd	320 ft.	100 m
	●			250 kBd	820 ft.	250 m
	●			125 kBd	1640 ft.	500 m
		●		500 kBd	420 ft.	130 m
		●		250 kBd	800 ft.	270 m
		●		125 kBd	1730 ft.	530 m
			●	12 MBd	330 ft.	100 m
			●	1.5 MBd	650 ft.	200 m
			●	500 kBd	1300 ft.	400 m
			●	187.5 kBd	3280 ft.	1000 m
			●	≤ 93.75 kBd	3940 ft.	1200 m

G-SERIES SENSORS

Analog (Voltage/Current) Outputs	Digital (PWM or Start/Stop) Outputs	Neuter (Start/Stop) Output	Maximum Cable Length	
●			150 ft.	45 m
	●		300 ft. Δ	90 m
		●	250 ft. †	75 m

Δ 300 ft.. maximum when using the ± differential pair for the interrogation or **Start** signal and for the gate or **Stop** signal.

† 250 ft. maximum when using the single-ended interrogation or **Start** signal. The unused differential signal **MUST** be terminated to ground at the control box.

EXTENSION CABLE OPTION AND SENSOR MODEL COMPATIBILITY REFERENCE

Extension Cable with Connection types	R-Series	G-Series	E-Series
Standard 6-pin (D60)	**Analog, CANbus**	**Analog, Digital-pulse**	
6-pin (D63)	**Profibus**		
7-pin DIN (D70)	**SSI**		
10-pin MS (MS0)	**SSI**	**Analog, Digital-pulse**	

Continued on next page

Extension Cable with Connector / Ordering Information
D6 (D60) Connection Type Options

Extension Cable with Connection types	R-Series	G-Series	E-Series
5-pin M12 (D54)	CANbus		
5-pin M12 (D53)	Profibus		
4-pin M12 (D56)	EtherCAT, EtherNet/IP		
5-pin M12 (D34)			Analog
8-pin M12 (D84)			Digital-pulse

EXTENSION CABLE WITH CONNECTORS FOR D6 (D60) CONNECTION TYPES (R-SERIES AND G-SERIES SENSORS)

Extension Cable and Connector	Description	Connection type
	**Female Connector, Straight Exit with Standard PVC Jacket Cable** *(Assembly Includes D6 Connector, Part No.: 560700 and Cable, Part No.:530026)*	D6
	**Female Connector, 90° Exit with Standard PVC Jacket Cable** *(Assembly Includes D6 Connector, Part No.: 560778 and Cable, Part No.:530026)*	DA
	**Female Connector, Straight Exit with Black Polyurethane Jacket Cable (for higher resistance to moisture, oil and cold temperatures)** *(Assembly Includes D6 Connector, Part No.: 560700 and Cable, Part No.:530052)*	DJ
	**Female Connector, 90° Exit with Black Polyurethane Jacket Cable (for higher resistance to moisture, oil and cold temperatures)** *(Assembly Includes D6 Connector, Part No.: 560778 and Cable, Part No.:530052)*	DK

Ordering Information
Extension Cable with Connector for D6 (D60) Connection Types

D							
1	2	3	4	5	6	7	8

SENSOR CONNECTION TYPES = D _ **1 - 2**

- **D6** = Female connector, straight exit (part no. 560700), and PVC jacket cable (part no. 530026)
- **DA** = Female connector, 90° exit (part no. 560778), and PVC jacket cable (part no. 530026)
- **DJ** = Female connector, straight exit (part no. 560700), and black polyurethane jacket cable (part no. 530052)
- **DK** = Female connector, 90° exit (part no. 560778), and black polyurethane jacket cable (part no. 530052)

CABLE LENGTHS = _ _ _ **3 - 5**

For standard length cables up to 100 ft.

- **005** = 5 ft.
- **015** = 15 ft.
- **025** = 25 ft.
- **050** = 50 ft.
- **100** = 100 ft.

For custom length cables over 100 ft.

_ _ _ = Cable length (maximum cable length is dependent on the output selected; consult MTS Applications Engineering)

CABLE TERMINATION = _ _ _ **6 - 8**

- **P0** = Pigtail cable without connector (2 digit code)
- **D6M** = D6 male connector (straight exit). Only available with the **D6** option above.
- **D6F** = D6 female connector (straight exit). Only available with the **D6** option above.
- **DAF** = D6 female connector (90° exit). Only available with the **DA** option above.

EXTENSION CABLE WITH CONNECTORS FOR R-SERIES PROFIBUS SENSORS WITH (D63) CONNECTION TYPES

Extension cable and connector assemblies	Description	Connection type
	**Hybrid Profibus Bus Cable, straight exit, 6-pin DIN female connector, with PG9 strain relief for (D63) sensor connection types** *(Assembly Includes D63 Connector, Part no.: 370423 and Cable, Part no.:530040)*	DF
	**Hybrid Profibus Bus Cable, straight exit, 6-pin DIN male connector with PG9 strain relief for (D63) sensor connection types** *(Assembly Includes D63 Connector, Part no.: 370427 and Cable, Part no.:530040)*	DG

ORDERING INFORMATION - EXTENSION CABLE WITH CONNECTORS FOR R-SERIES PROFIBUS SENSORS WITH (D63) CONNECTION TYPES

D							
1	2	3	4	5	6	7	8

SENSOR CONNECTION TYPES = D _ **1 - 2**

DF = Female connector, straight exit (part no. 370423), and Profibus cable *(part no.: 530040) with (D63) type connector*

DG = Female connector, 90° exit (part no. 560778), and Profibus cable *(part no.: 530040)* with (D63) type connector

CABLE LENGTHS = _ _ _ **3 - 5**

For standard length cables up to 100 ft.

005 = 5 ft.
015 = 15 ft.
025 = 25 ft.
050 = 50 ft.
100 = 100 ft.

For custom length cables over 100 ft.

— — — = Cable length (maximum cable length is dependent on baud rate).

CABLE TERMINATION = _ _ _ **6 - 8**

P0 = Pigtail cable without connector (2-digit code)

DFM = Male connector, (Straight exit). For daisy-chain connections of Profibus sensors with D63 connector.

DGM = Male connector, (90° exit). For daisy-chain connections of Profibus sensors with D63 connector.

Extension Cable with the Standard 7-pin DIN Connector / Ordering Information
R-Series SSI D7 (D70) Connection Type Options

EXTENSION CABLE WITH CONNECTORS FOR R-SERIES SENSORS WITH THE 7-PIN DIN (D70) CONNECTION TYPE

Extension cable and connector assemblies	Description	Connection Type
	**Female Connector, Straight Exit and Orange Polyurethane Jacket Cable with High-Performance Shielding** *(Assembly Includes D7 Connector, Part No.: 560701 and Cable, part no.: 530029)*	D7
	**Female Connector, 90° Exit and Orange Polyurethane Jacket Cable with High-Performance Shielding** *(Assembly Includes D7 Connector, Part No.: 560779 and Cable, part no.: 530029)*	DR
	**Female Connector, Straight Exit and Standard PVC Jacket Cable** *(Assembly Includes D7 Connector, Part No.: 560701 and Cable, part no.: 530026)*	DS
	**Female Connector, 90° Exit and Standard PVC Jacket Cable** *(Assembly Includes D7 Connector, Part No.: 560779 and Cable, part no.: 530026)*	DT
	**Female Connector, Straight Exit and Black Polyurethane Jacket Cable (for higher resistance to moisture, oil and cold temperatures)** *(Assembly Includes D7 Connector, Part No.: 560701 and Cable, part no.: 530052)*	DU
	**Female Connector, 90° Exit and Black Polyurethane Jacket Cable (for higher resistance to moisture, oil and cold temperatures)** *(Assembly Includes D7 Connector, Part No.: 560779 and Cable, part no.: 530052)*	DV

ORDERING INFORMATION - EXTENSION CABLE WITH CONNECTORS FOR R-SERIES SENSORS WITH THE (D70) CONNECTION TYPE

D					P	0
1	2	3	4	5	6	7

SENSOR CONNECTION TYPES = D _ (1 - 2)

- **D7** = Female connector, straight exit (part no. 560701), and orange polyurethane jacket cable *(part no.: 530029)*
- **DR** = Female connector, 90° exit (part no. 560779), and orange polyurethane jacket cable *(part no.: 530029)*
- **DS** = Female connector, straight exit (part no. 560701), and PVC jacket cable *(part no. 530026)*
- **DT** = Female connector, 90° exit (part no. 560779), and PVC jacket cable *(part no.: 530026)*
- **DU** = Female connector, straight exit (part no. 560701), and black polyurethane jacket cable *(part no. : 530052)*
- **DV** = Female connector, 90° exit (part no. 560779), and black polyurethane jacket cable *(part no.: 530052)*

CABLE LENGTHS = _ _ _ (3 - 5)

For standard length cables up to 100 ft.

- **005** = 5 ft.
- **015** = 15 ft.
- **025** = 25 ft.
- **050** = 50 ft.
- **100** = 100 ft.

For custom length cables over 100 ft.

— — — = Cable length (maximum cable length is dependent on baud rate).

CABLE TERMINATION = P 0 (6 - 7)

- **P0** = Pigtail cable without connector

EXTENSION CABLE WITH CONNECTORS FOR G-SERIES AND R-SERIES (SSI OUTPUT) SENSORS WITH MS (MS0), CONNECTION TYPES

Extension cable and connector assemblies	Description	Connection Type
	**Female Connector, Straight Exit and Black Polyurethane Jacket Cable (for higher resistance to moisture, oil and cold temperatures)** *(Assembly Includes MS Connector with adapter and boot, Part No.: 370418 and Cable, part no.: 530052)*	MF

ORDERING INFORMATION - EXTENSION CABLE WITH CONNECTORS FOR G-SERIES RETROFITS AND R-SERIES SENSORS (SSI OUTPUT) WITH THE (MS0) CONNECTION TYPE

M	F				P	0
1	2	3	4	5	6	7

SENSOR CONNECTION TYPES = D — 1 - 2

MF = Female connector, straight exit with adapter and boot (part no. 370418), and black polyurethane jacket cable (part no. 530052)

CABLE LENGTHS = ___ — 3 - 5

For standard length cables up to 100 ft.

005 = 5 ft.
015 = 15 ft.
025 = 25 ft.
050 = 50 ft.
100 = 100 ft.

For custom length cables over 100 ft.

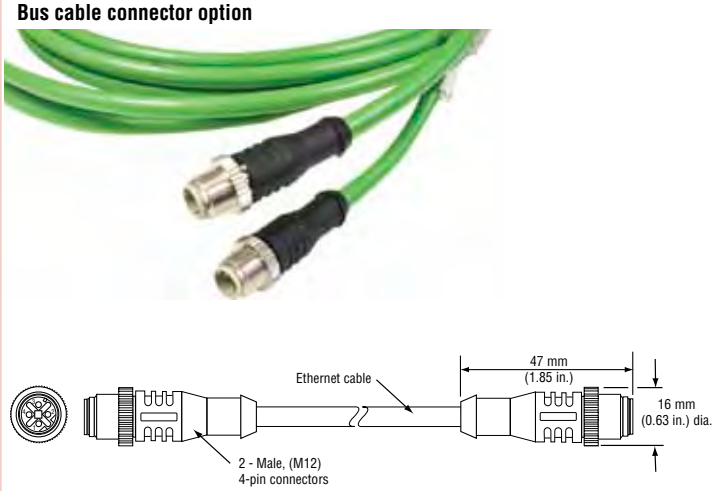
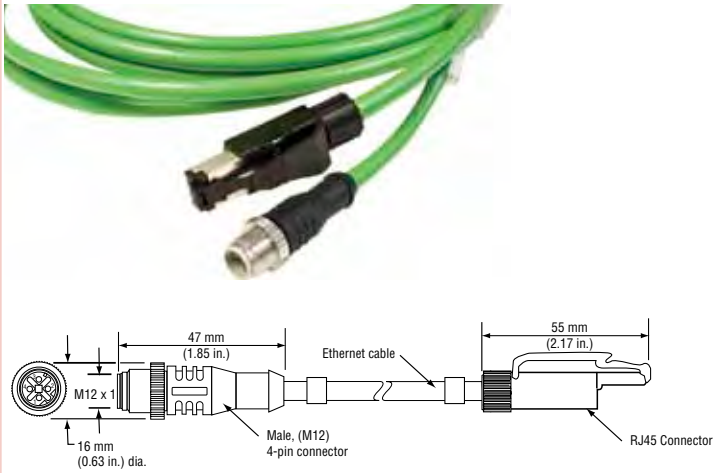
— — — = Cable length (maximum cable length is dependent on baud rate).

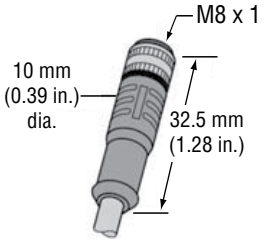
CABLE TERMINATION = P 0 — 6 - 7

P0 = Pigtail cable without connector

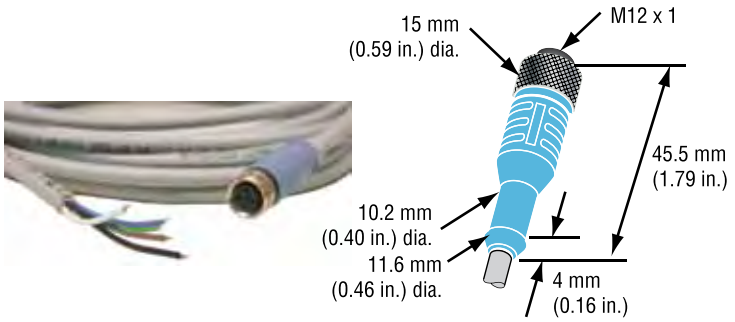
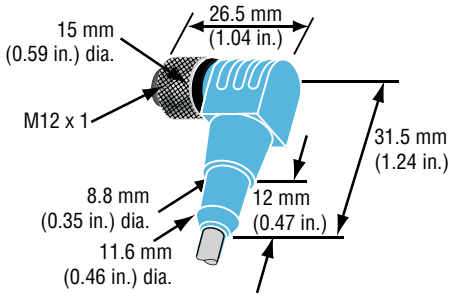
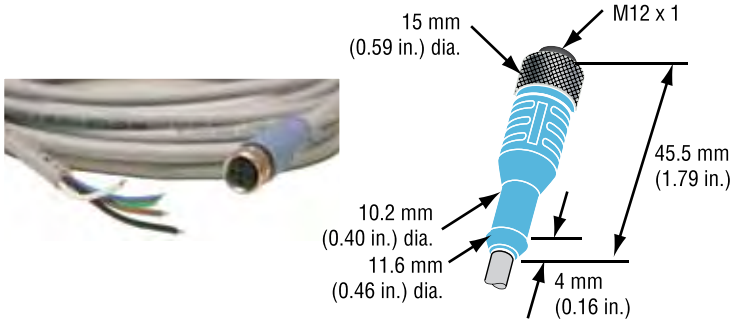
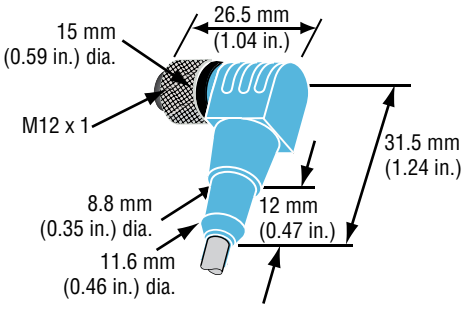
Connector and Bus Cable Assembly Options For Industrial Ethernet Sensors

BUS CABLE WITH CONNECTORS FOR R-SERIES ETHERNET SENSOR MODELS WITH (D56) CONNECTION TYPES

Bus Cable Connector and Dimensions *(Drawing dimensions are for reference only)*	Description / Specifications	Sensor Model	Cable Length	Part number
Bus cable connector option 	**Industrial Ethernet cable (Cat 5e Es) D-Coded** **Connector type:** Two Male, 4-pin (M12) **Cable jacket:** PUR cable jacket (green **Installation:** Field installable	RP/RH RF, RD4 EtherCAT EtherNet/IP	5 m	530064
	**Industrial Ethernet cable (Cat 5e Es) D-Coded** **Connector type:** One RJ45 connector and one male, 4-pin (M12) **Cable jacket:** PUR cable jacket (green) **Installation:** Cables using the RJ45 connector provide convenient sensor connection to a PC for setup and programming but are not recommended for factory floor installations.	RP/RH RF, RD4 EtherCAT EtherNet/IP	5 m	530065

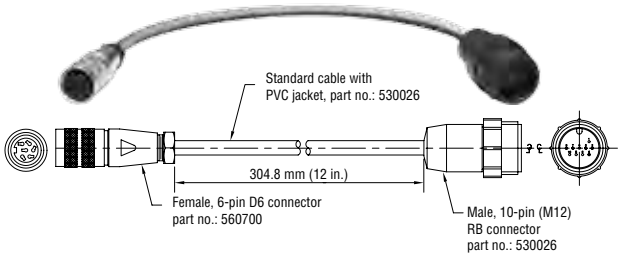
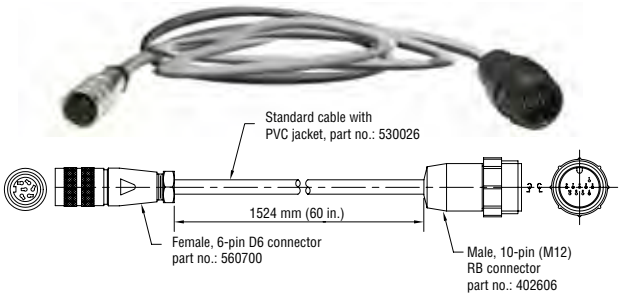
Power Cable Connector and Dimensions *(Drawing dimensions are for reference only)*	Power cable, Female 4-pin (M8) and cable with pigtail termination	RP/RH RF, RD4	Cable Length	Part number
 	**Input:** 24 Vdc **Wire gage:** 4x0.25 mm² shielded **Cable jacket:** PUR	EtherCAT EtherNet/IP	5 m 10 m 15 m	530066 530096 530093

M12 CORD SETS AND (M16) ADAPTER CABLE OPTIONS *(Photo and drawing dimensions are for reference only)*

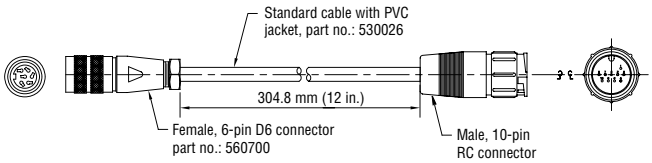
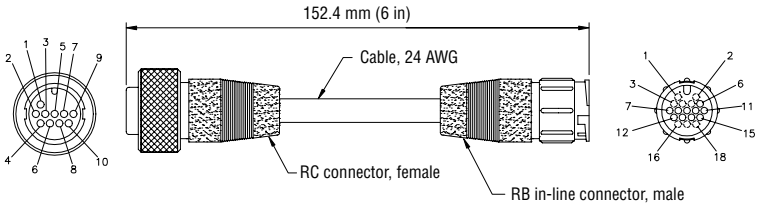
Cord set and dimensions	Description	Sensor Model	Part number
	**M12 Cord set, female connector, Straight exit** 5-Pin (M12) mates with standard male (D34) integral connector **Ingress protection:** IP67 **Cable:** 5 m, shielded, pigtail end	EH EP EL ER Analog	370673
(Image not available) 	**M12 Cord set, female connector 90° exit** 5-Pin (M12) mates with standard male (D34) integral connector **Ingress protection:** IP67 **Cable:** 5 m, shielded, pigtail end	EH EP EL ER Analog	370675
	**M12 Cord set, female connector, straight exit** 8-Pin (M12) mates with standard male (D84) integral connector **Ingress protection:** IP67 **Cable:** 5 m, shielded, pigtail end	EH EP EL ER Start/Stop	370674
(Image not available) 	**M12 Cord set, Female, Connector 90° Exit** 8-Pin (M12) mates with standard male (D84) integral connector **Ingress protection:** IP67 **Cable:** 5 m, shielded, pigtail end	EH EP EL ER Start/Stop	370676

Adapter Cable Retrofit Options
Temposonics® I and II, L-Series Sensor

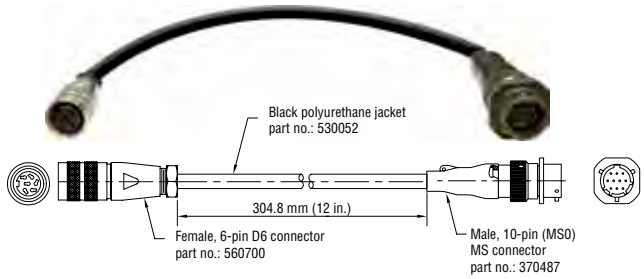
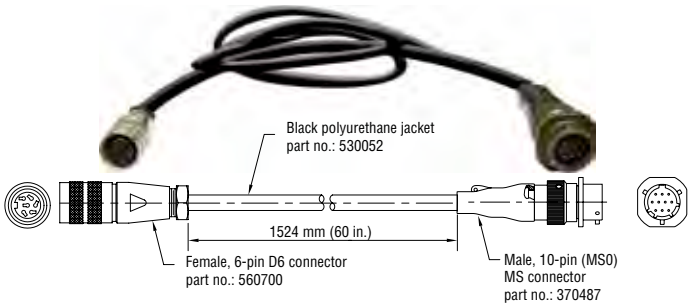
CABLE RETROFITS WHEN REPLACING TEMPOSONICS II AND L-SERIES MODEL LH SENSORS WITH INTEGRAL RB CONNECTORS

Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 1 ft.	Cable Length 5 ft.	Part number
Female, straight exit D6 to male RB cable connections 	**GH/GP** Analog	●		253243-1
	GH/GP Digital-pulse or Neuter	●		253243-2
Female, straight exit D6 to male RB cable connections 	**GH/GP** Analog		●	253244-1
	GH/GP Digital-pulse and Neuter		●	253244-2

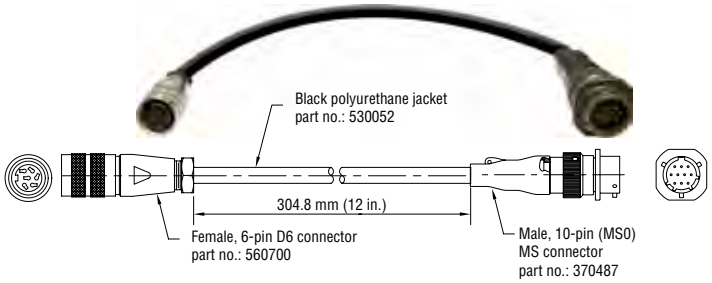
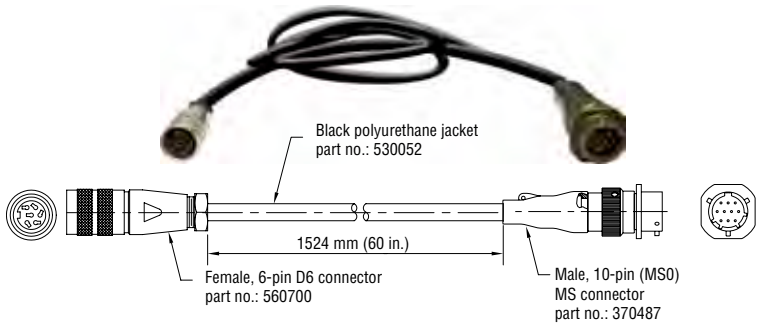
CABLE RETROFITS WHEN REPLACING TEMPOSONICS II SENSORS WITH INTEGRAL RC CONNECTORS

Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 1 ft.	Cable Length 5 ft..	Part number
Female, straight exit D6 to male RC cable connections  	**GH/GP** Analog	●		201612-1
	GH/GP Digital-pulse and Neuter	●		201612-2
Male RC to female RB cable connections  	**Adapter RC to RB**	6 in.		401327

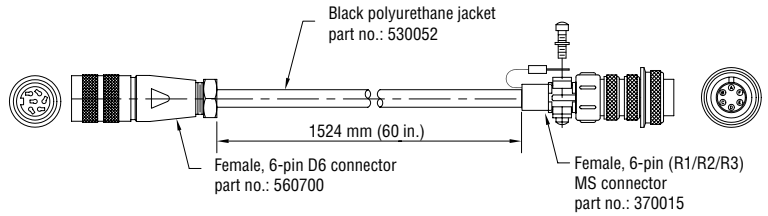
CABLE RETROFITS WHEN REPLACING MODEL LH SENSORS WITH IN-LINE 10-PIN MS CONNECTORS

Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 1 ft.	Cable Length 5 ft.	Part number
Female, straight exit D6 to male MS cable connections 	**GH/GP** Analog	●		253245-1
	GH/GP Digital-pulse and Neuter	●		253245-2
	**GH/GP** Analog		●	253246-1
	GH/GP Digital-pulse or Neuter		●	253246-2

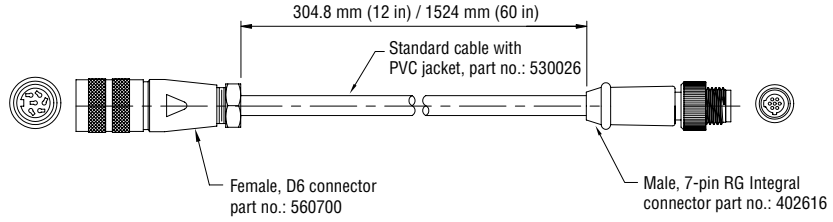
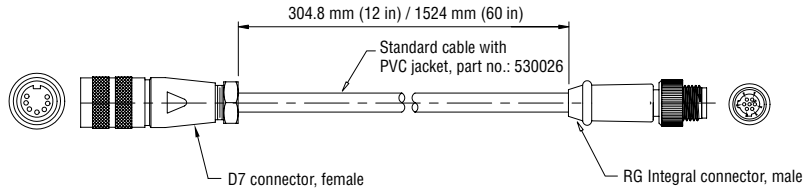
CABLE RETROFITS WHEN REPLACING TEMPOSONICS II AND L-SERIES MODEL LH SENSORS WITH IN-LINE 10-PIN MS CONNECTORS WIRED FOR R1, R2 OR R3 CONNECTION TYPES

Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 1 ft.	Cable Length 5 ft.	Part number
Female, straight exit D6 to MS (R1, R2 or 10-pin male) cable connections 	**10-pin R3 Connection using GH/GP** Digital-pulse	●		253245-3
	**10-pin R3 Connection using GH/GP** Digital-pulse		●	253246-3

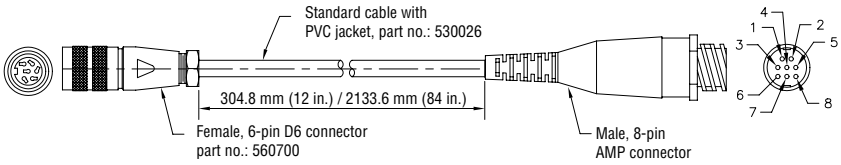
CABLE RETROFITS WHEN REPLACING TEMPOSONICS II AND L-SERIES MODEL LH SENSORS WITH IN-LINE 10-PIN MS CONNECTORS WIRED FOR R1, R2 OR R3 CONNECTION TYPES

Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 1 ft.	Cable Length 5 ft.	Part number
	**R1 Connection using GH/GP** with Positive interrogation		●	253302-1
	R2 Connection for GH/GP with negative interrogation		●	253302-2

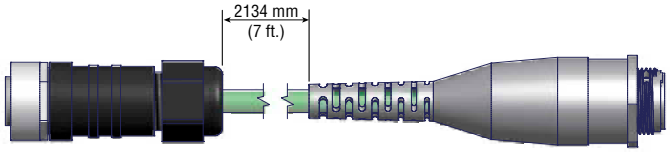
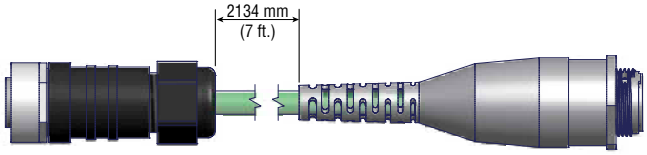
CABLE RETROFITS WHEN REPLACING R-SERIES AND L-SERIES SENSOR MODELS LH AND LP WITH INTEGRAL RG CONNECTORS

Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 1 ft.	Cable Length 5 ft.	Part number
Female, straight exit D6 to male RG cable connections 	**RH/RP** Analog **GH/GP** Analog and Digital-pulse	●		253248-1
	RH/RP Analog **GH/GP** Analog and Digital-pulse		●	253248-2
Female, straight exit D7 to male RG cable connections 	**RH/RP** SSI	●		253315-1
	RH/RP SSI		●	253315-2

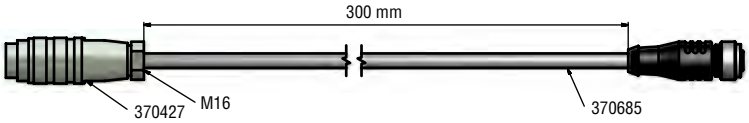
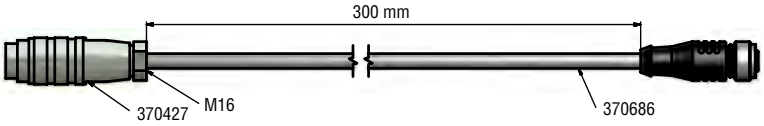
CABLE RETROFITS WHEN REPLACING MODEL LP SENSORS WITH INTEGRAL C-STYLE OR IN-LINE H OR J STYLE CONNECTORS

Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 1 ft.	Cable Length 7 ft.	Part Number
Female, straight exit D6 to male AMP cable connections 	**GH/GP** Analog	●		253247-1
	GH/GP Digital-pulse	●		253247-2
	**GH/GP** Analog		●	253247-3
	GH/GP Digital-pulse		●	253247-4
	GH/GP Reverse-acting Analog	●		253710-1

CABLE RETROFITS WHEN REPLACING MODEL LP SENSORS WITH INTEGRAL C-STYLE OR IN-LINE H OR J STYLE CONNECTORS

Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 1 ft.	Cable Length 7 ft.	Part Number
5-pin Female (M12) to 8-pin male AMP cable connections 	**EP/ER** Analog		●	254259
8-pin Female (M12) to 8-pin male AMP cable connections 	**EP/ER** Start/Stop		●	254261

CABLE RETROFITS WHEN REPLACING E-SERIES WITH INTEGRAL 6-PIN (D60) CONNECTORS

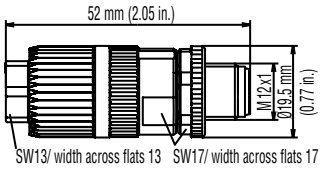
Adapter Cable Description and Specifications	Sensor Replacement	Cable Length 300 mm	Part number
5-pin female (M12) to 6-pin male D60 cable connections 	**E-Series 2011**	●	254257
8-pin female (M12) to 6-pin male D60 cable connections 	**E-Series 2011**	●	254258

CABLE RETROFIT WHEN REPLACING L-SERIES SENSORS WITH REVERSE-ACTING OUTPUT

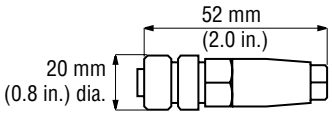
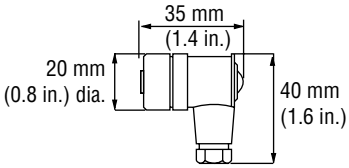
Adapter Cable Description and Specifications	Sensor Replacement	Cable Length	Part number
Female, straight exit D6 to male D6 cable connections 	**GH/GP** Reverse-acting Analog	1 ft.	253411

Adapter Cable Retrofit Options

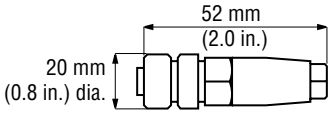
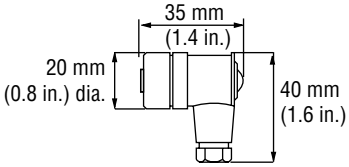
4-PIN STYLE CABLE CONNECTOR FOR R-SERIES INDUSTRIAL ETHERNET SENSOR CONNECTIONS

Cable Connector and Dimensions	Description / Specifications	Sensor Model Reference	Part number
Female, straight exit cable connections  	**Bus Cable Connector, Male** **Style:** 4-pin (M12) **Housing:** Zinc nickel plated **Termination:** D-coded with insulation displacement technology **Installation:** Field installable	**RP/RH** EtherCAT EtherNet/IP	370523
	**Connector end cap** (Unused connectors should be covered by this protective cap)	**RP/RH** EtherCAT EtherNet/IP	370537

MATING CABLE CONNECTOR OPTIONS FOR (D34) CONNECTOR TYPES *(Photo and drawing dimensions are for reference only)*

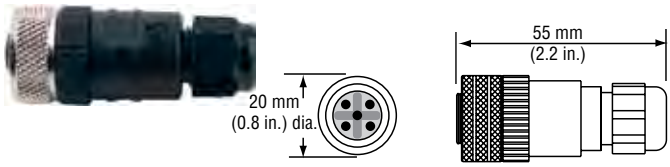
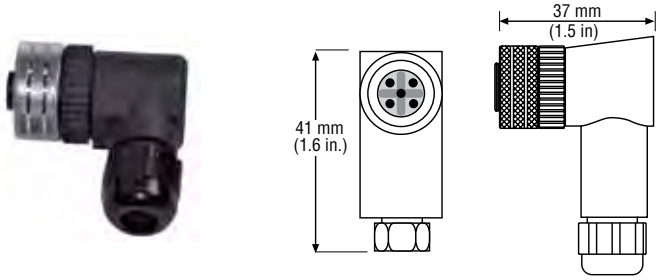
Connector and dimensions	Description	Sensor Model Reference	Part number
 	**Female cable connector, straight exit (Field installable)** 5-Pin (D34) Mates with standard male (M12) integral connector **Termination:** Screw terminals **Cable gland:** PG9 for 6-8 mm dia. cable **Ingress protection:** IP67	**EP/ER/EH/EL** Analog	370618
 	**Female cable connector, 90° exit (Field installable)** 5-Pin (D34) Mates with standard male (M12) integral connector **Termination:** Screw terminals **Cable gland:** PG9 for 6-8 mm dia. cable **Ingress protection:** IP67	**EP/ER/EH/EL** Analog	370619

MATING CABLE CONNECTOR OPTIONS FOR (D84) CONNECTOR TYPES *(Photo and drawing dimensions are for reference only)*

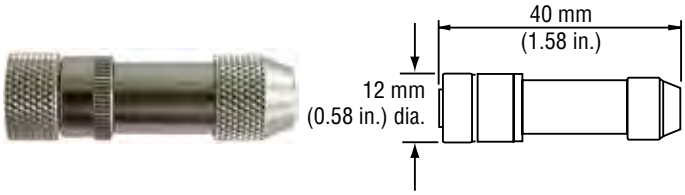
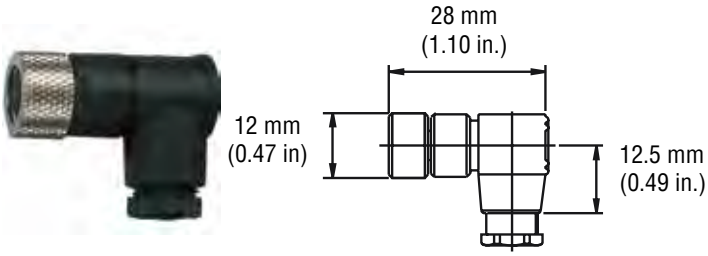
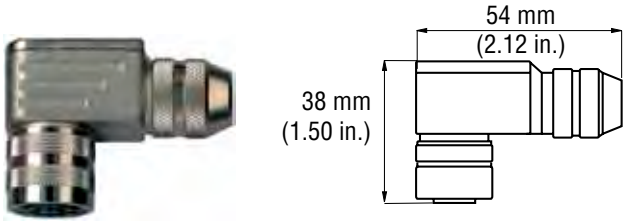
Connector and dimensions	Description	Sensor Model Reference	Part number
 	**Female cable connector, straight exit (Field installable)** 8-Pin (D84) Mates with standard male (M12) integral connector **Termination:** Screw terminals **Cable gland:** PG9 for 6-8 mm dia. cable **Ingress protection:** IP67	**EP/ER/EH/EL** Start/Stop	370671
 	**Female cable connector, 90° exit (Field installable)** 8-Pin (D84) Mates with standard male (M12) integral connector **Termination:** Screw terminals **Cable gland:** PG9 for 6-8 mm dia. cable **Ingress protection:** IP67	**EP/ER/EH/EL:** Start/Stop	370672

Connectors

5-PIN STYLE CONNECTOR OPTIONS FOR R-SERIES DEVICENET SENSORS WITH (D51) CONNECTION TYPES

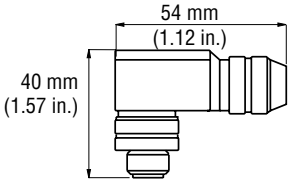
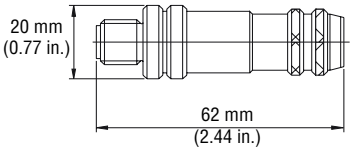
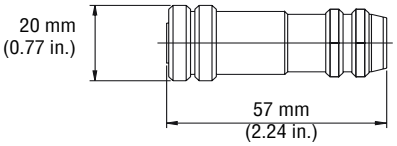
Connector and Dimensions *(Drawing dimensions are for reference only)*	Description and Specifications	Sensor Model Reference	Part Number
	**Cable connector, female, straight exit** **Style:** 5-pin (D51) **Installation:** Field installable	**RP/RH** DeviceNet	370375
	**Cable connector, female,90° exit** **Style:** 5-pin (D51) Field installable	**RP/RH** DeviceNet	370376

5-PIN CABLE CONNECTOR OPTIONS FOR R-SERIES PROFIBUS SENSORS WITH (D53) CONNECTION TYPES

Connector and Dimensions *(Drawing dimensions are for reference only)*	Description and Specifications	Sensor Model Reference	Part Number
	**Cable connector, female, straight exit** **Style:** 4-pin (M8) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Input Power:** 24 Vdc **Installation:** Field installable, (D53) connection types	**RP/RH** Profibus	370504
	**Cable connector, female, 90° exit** **Style:** 4-pin (M8) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Input voltage:** 24 Vdc **Installation:** Field installable, (D53) connection types	**RP/RH** Profibus	560886
	**Cable connector, female, 90° exit** **Style:** 5-pin (M12) **Housing:** Zinc nickel plated **Termination:** Screw **Contact insert:** Silver plated **Installation:** Field installable, (D53) connection types	**RP/RH** Profibus	370514

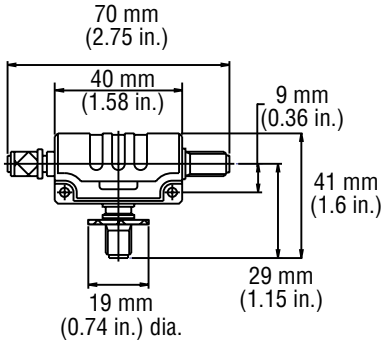
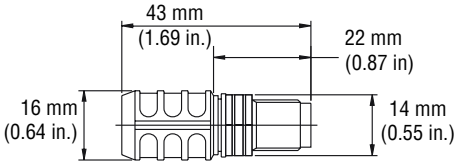
Connectors

5-PIN CABLE CONNECTOR OPTIONS FOR R-SERIES PROFIBUS SENSORS WITH (D53) CONNECTION TYPES

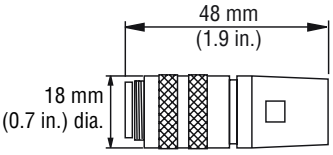
Connector and Dimensions *(Drawing dimensions are for reference only)*	Description and Specifications	Sensor Model Reference	Part number
 	**Cable connector, male, 90° exit** **Style:** 5-pin (M12) **Housing:** Zinc nickel plated **Termination:** Screw **Contact insert:** Silver plated **Installation:** Field installable, (D53) connection types	**RP/RH** Profibus	370515
 	**Cable connector, male, straight exit** **Style:** 5-pin (M12) **Housing:** Zinc nickel plated **Termination:** Screw **Contact insert:** Silver plated **Installation:** Field installable, (D53) connection types	**RP/RH** Profibus	560884
 	**Cable connector, female, straight exit** **Style:** 5-pin (M12) **Housing:** Zinc nickel plated **Termination:** Screw **Contact insert:** Silver plated **Installation:** Field installable, (D53) connection types	**RP/RH** Profibus	560885

Connectors

5-PIN CABLE CONNECTOR OPTIONS FOR R-SERIES PROFIBUS SENSORS WITH (D53) CONNECTION TYPES

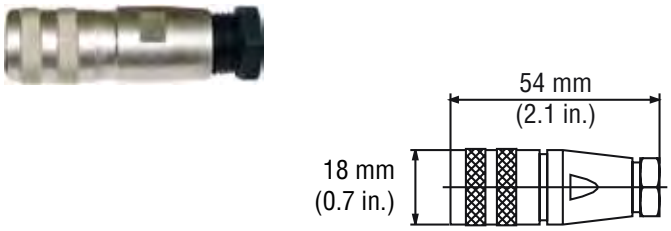
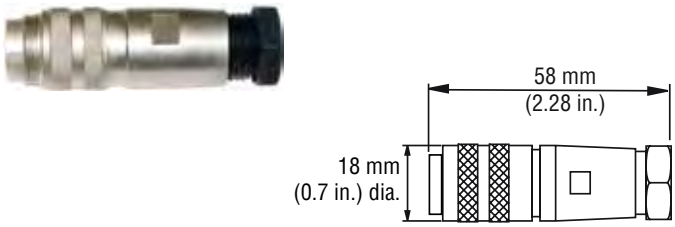
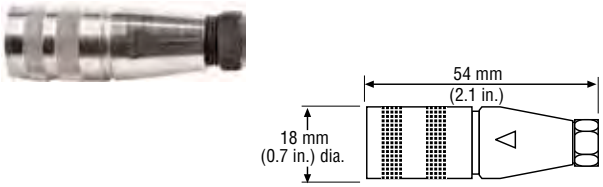
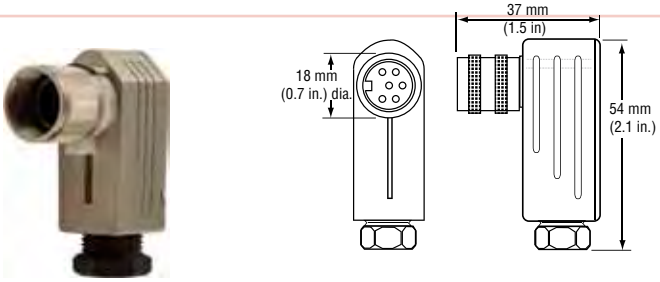
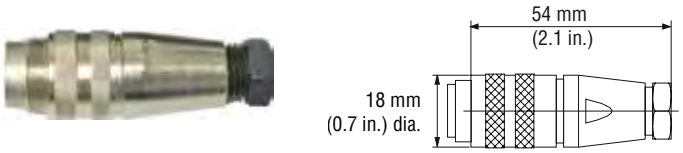
Connector and Dimensions *(Drawing dimensions are for reference only)*	Description and Specifications	Sensor Model Reference	Part Number
 	**5-pin Profibus (M12) T connector** **Style:** 5-pin (M12) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Installation:** Field installable, (D53) connection types	**RP/RH** Profibus	560887
 	**Profibus Bus Terminator, male, straight exit** **Style:** 5-pin (M12) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Installation:** Field installable, (D53) connection types	**RP/RH** Profibus	560888

6-PIN DIN (D60) STYLE CABLE CONNECTOR OPTIONS

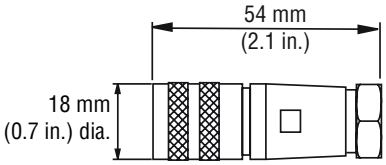
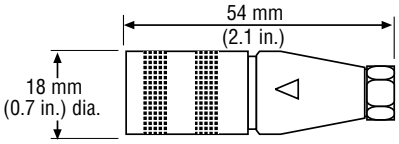
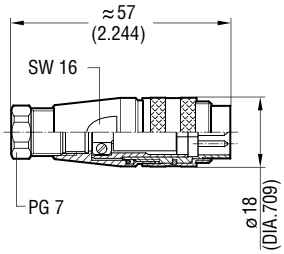
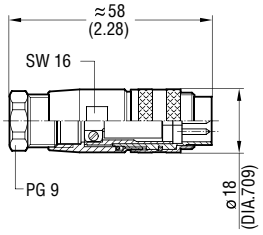
Connector and Dimensions *(Drawing dimensions are for reference only)*	Description / Specifications	Sensor Model Reference	Part number
 	**Profibus bus terminator for male cable connector type** **Style:** (STA09131H06) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Installation:** Field installable, Mates with standard male connector	**RP/RH** Profibus	252347

Connectors

6-PIN DIN (D60) STYLE CABLE CONNECTOR OPTIONS

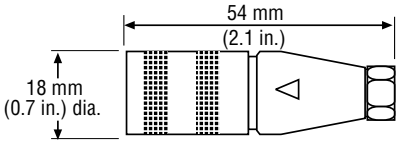
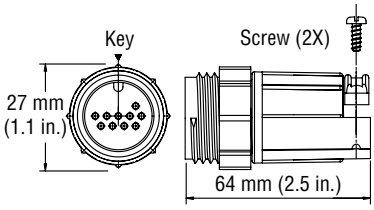
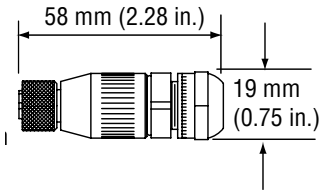
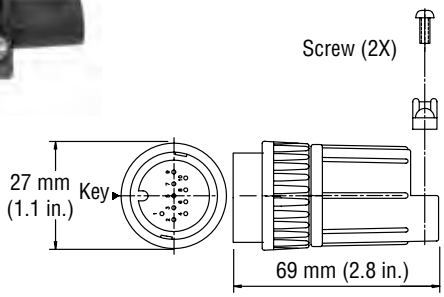
Connector and Dimensions *(Drawing dimensions are for reference only)*	Description and Specifications	Sensor Model Reference	Part number
	**Cable connector, female, straight exit** **Style:** 6-pin DIN (D6) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG9 **Installation:** Field installable (D63) connection types. Cable dia. 8 mm max.	**RP/RH** Profibus	370423
	**Cable connector, male, straight exit** **Style:** 6-pin DIN (D6) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG9 **Installation:** Field installable (D63) connection type Cable dia. 8 mm max.	**RP/RH** Profibus	370427
	**Cable connector, male, 90° exit** **Style:** 6-pin DIN (D6) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG9 **Installation:** Field installable (D63) connection types. Cable dia. 8 mm max.	**RP/RH**	370460
	**Cable connector, female, straight exit** **Style:** 6-pin DIN (D6) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable, Mates with standard male (D60) integral connector	**RP/RH** **GP/GH**	560700
	**Cable connector, female,90° exit** **Style:** 6-pin DIN (D6) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable, Mates with standard male (D60) integral connector	**RP/RH** **GP/GH**	560778
	**Cable connector, male, straight exit** **Style:** 6-pin DIN (D6) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable	**RP/RH** **GP/GH**	370372

7-PIN STYLE CABLE CONNECTOR OPTIONS FOR R-SERIES SENSORS WITH (D70) CONNECTION TYPES

Cable Connector and Dimensions	Description and Specifications	Sensor Model Reference	Part number
 	**Cable connector, female, straight exit** **Style:** 7-pin (D7) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG9 **Installation:** Field installable for (D70) connection types. Cable dia. 8 mm max.	**RP/RH** SSI	370516
 	**Cable connector, female, straight exit** **Style:** 7-pin (D7) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable (D70) connection types. Cable dia. 6 mm max.	**RP/RH** SSI	560701
 	**Cable connector, male, straight exit** **Style:** 7-pin (D7) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable for (D70) connection types. Cable dia. 6 mm max.	**RP/RH** SSI	370565
 	**Cable connector, male, straight exit** **Style:** 7-pin (D7) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG9 **Installation:** Field installable (D70) connection types. Cable dia. 8 mm max.	**RP/RH** SSI	370566

Connectors

CABLE CONNECTOR OPTIONS FOR R-SERIES G-SERIES AND L-SERIES LEGACY SENSOR MODELS

Cable Connector and Dimensions	Description and Specifications	Sensor Model Reference	Part number
 	**Cable connector, female, straight exit** **Style:** (D8) **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable for (D80) connection types.	L-SERIES	370391
 	**Cable connector, male, RB straight exit** **Style:** 10-pin **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable	GP/GH	370486
 	**Cable connector, female, RG straight exit** **Style:** RG **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable	RP/RH L-SERIES	401366
 	**Cable connector, female, RB/RC straight exit** **Style:** RB/RC retrofit **Housing:** Zinc nickel plated **Termination:** Solder **Contact insert:** Silver plated **Cable clamp:** PG7 **Installation:** Field installable	GP/GH	400755-3

Legacy Connectors

H	H						
1	2	3	4	5	6	7	8

SENSOR MODELS RH AND GH = H H **1-2**

PRESSURE PIPE AND FLANGE STYLES = ☐ **3**

T = US customary threads, raised-faced flange and pressure pipe, standard

S = US customary threads, flat-faced flange and pressure pipe, standard

M = Metric threads, flat-faced flange and pressure pipe, standard

STROKE LENGTH = ☐☐☐☐☐ **4-8**

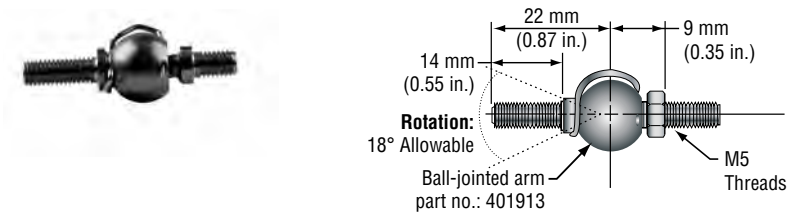
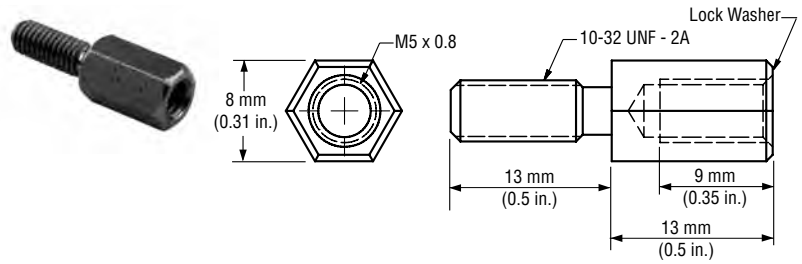
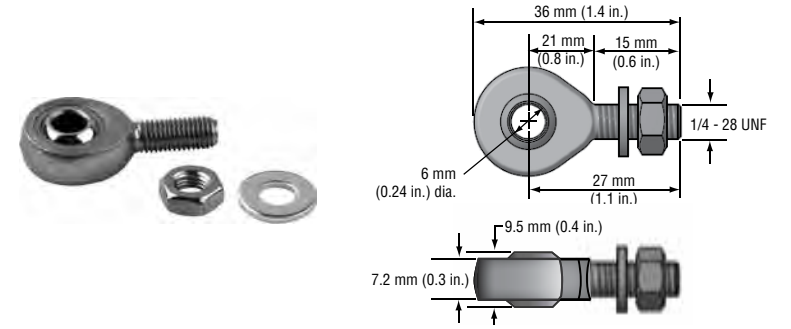
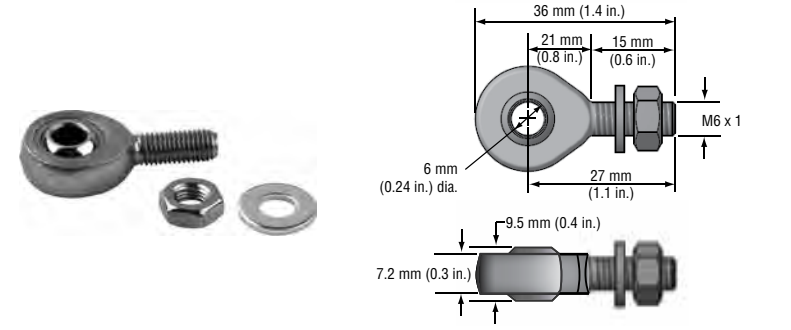
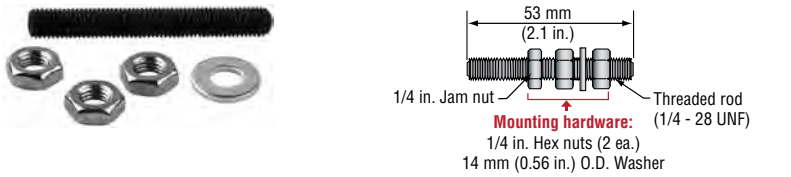
_ _ _ _ **M** = Millimeters
(Encode in 5 mm increments)

_ _ _ . _ **U** = Inches and tenths
(Encode in 0.1 in. Increments)

Stroke Length Notes:

1. R-Series RH stroke length = 25 mm (1 in.) to 7620 mm (300 in.)
2. G-Series GH stroke length = 50 mm (2 in.) to 7620 mm (300 in.)

MECHANICAL-END CONNECTOR SELECTIONS

Cable Connector and Dimensions	Description and Specifications	Sensor Model Reference	Part number
	**Joint-rod sleeve**	RP/GP EP/EL	401603
	**Ball-jointed arm**	RP/GP EP/EL	401913
	**Threaded adapter** Female M5 to male 10 - 32	RP/GP EP/EL	402849
	**Rod end** US customary measurement Optional, male 1/4 - 28 threads	ER	254235
	**Rod end** Metric measurement Optional, male M6 threads	ER	254210
	**Stud end** Optional mounting hardware kit Hex nuts (2 pcs.), jam nut and washer	ER	251975

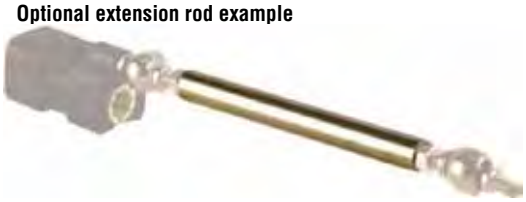
Installation Hardware

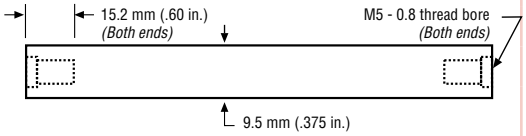
Optional extension rod quick reference chart

Sensor models with captive-sliding magnet

RP	GP	EP	Extension rod length	Part number
●	●	●	60.3 mm (2.375 in.)	401768-2
●	●	●	85.7 mm (3.375 in.)	401768-3
●	●	●	111.1 mm (4.375 in.)	401768-4
●	●	●	161.9 mm (6.375 in.)	401768-6
●	●	●	187.3 mm (7.375 in.)	401768-7
●	●	●	212.7 mm (8.375 in.)	401768-8
●	●	●	238.1 mm (9.375 in.)	401768-9
●	●	●	263.5 mm (10.375 in.)	401768-10
●	●	●	314.3 mm (12.375 in.)	401768-12
●	●	●	365.1 mm (14.375 in.)	401768-14
●	●	●	390.5 mm (15.375 in.)	401768-15
●	●	●	466.7 mm (18.375 in.)	401768-18
●	●	●	517.5 mm (20.375 in.)	401768-20
●	●	●	542.9 mm (21.375 in.)	401768-21
●	●	●	619.1 mm (24.375 in.)	401768-24
●	●	●	771.5 mm (30.375 in.)	401768-30
●	●	●	923.9 mm (36.375 in.)	401768-36
●	●	●	1076.3 mm (42.375 in.)	401768-42
●	●	●	1228.7 mm (48.375 in.)	401768-48
●	●	●	1533.5 mm (60.375 in.)	401768-60

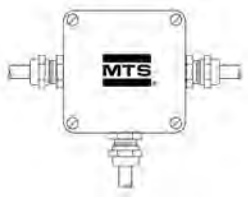
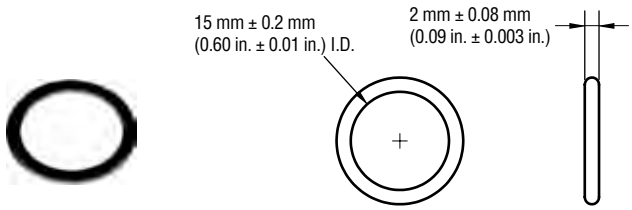
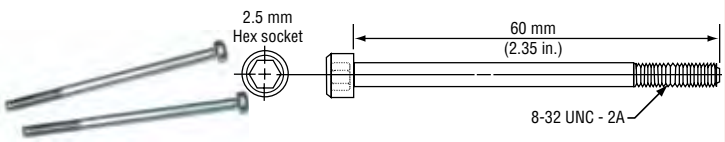
Optional extension rod example



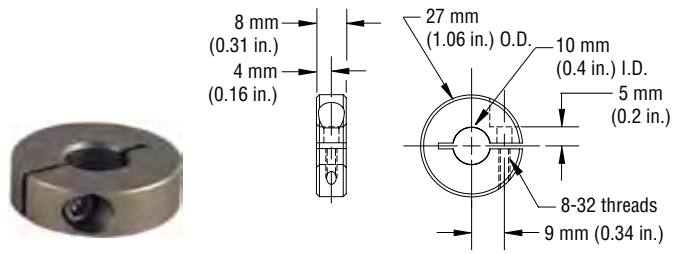
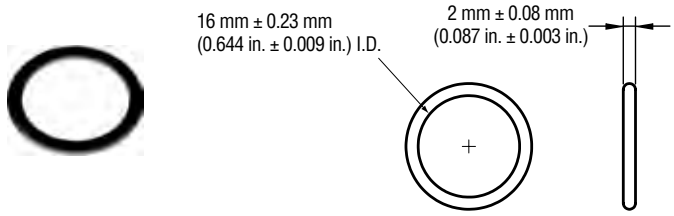
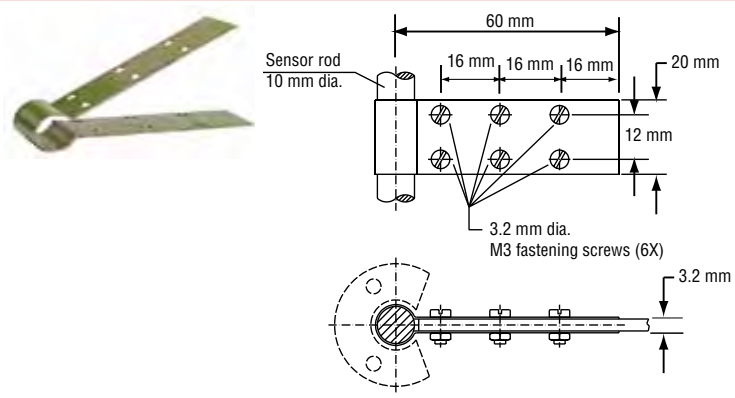


Installation Hardware

OPTIONAL INSTALLATION HARDWARE

Hardware and Dimensions	Description and Specifications	Sensor Model Reference	Part number
	**Profibus filter box** **Dimensions:** 80 mm (3.5 in.) X 75 mm (2.95 in.) 58 mm (2.28 in.) **Application:** EMC conformal feeding of 24 Vdc supply voltage into the Profibus-DP hybrid cable	**RP/RH** Profibus	252916
	**O-Ring** **Material:** Fluoroelastomer 75 ± 5 durometer **Dimensions:** Metric flange with M18 X 1.5 threads **Application:** Use with style M housings	**GH/RH/EH**	401133
	**Electronics housing screw** **Type:** 8-32 UNC - 2A **Application:** -Used to install sensor cartridge (RHB or GHB) into old LH or old RH pressure pipe/ flange	**GHB/RHB**	402617
	**Hex-jam nut** **Type:** 3/4-16 UNF **Material:** Stainless steel with nylon insert **Application:** T and S style housings	**GH/RH/EH**	500015
	**Hex-jam nut** **Type:** M18 X 1.5 threads **Material:** Stainless steel **Application:** Use for M style housing	**GH/RH/EH**	500018

OPTIONAL INSTALLATION HARDWARE

Hardware and Dimensions	Description and Specifications	Sensor Model Reference	Part number
	**Collar** **Material:** 304 Stainless steel **Application:** Pressure housing and float 251447	GH/RH /EH	560777
	**O-Ring** **Material:** Fluoroelastomer 75 ± 5 durometer **Dimensions:** Std. flange with 3/4-16 UNF threads **Application:** T and S style housings	GH/RH/EH	560315
	**Magnet mounting screws** **Type:** 6-32 X 7/8 Material: Stainless steel **Application:** Standard ring magnet mounting (part no,: 201542-2) 4 required or open-ring magnet mounting (part no.: 251416-2) 2 required	RH/RP GH/GP EH/EP/EL	560357
	**Fixing clip** Material: Brass, non magnetic **Application:** Used to secure sensor rod when using open-ring magnet	RH/GH/EH	561481

Installation Hardware

Field Programming Accessories

PROGRAMMING TOOLS

Programming selections	Description and Specifications	Sensor Model Reference	Part number
	**R-Series Analog hand-held Programmer** **Application:** Adjusting setpoints 1 and 2 for R-Series Analog output sensor models with single magnets	**RP/RH** Analog	253124
	**R-Series Analog Cabinet Programmer** **Application:** Adjusting setpoints 1 and 2 for R-Series Analog output sensor models with single magnets and features snap-in mounting on standard 35 mm DIN rail. This programmer can be permanently mounted in a control cabinet and includes a program/run switch.	**RP/RH** Analog	253408
	**R-Series Analog Programming Kit** Kit includes: Interface converter box, power supply, setup software and cabling. **Application:** Programming software for R-Series Analog output sensor models	**RP/RH** Analog	253309-1
	**R-Series SSI Programming Kit** Kit includes: Interface converter box, power supply, setup software and cabling. **Application:** Programming software for R-Series SSI output sensor models	**RP/RH** SSI	253310-1
	**R-Series Profibus Node Address Programmer kit** **Application:** Node address Programming for R-Series Profibus output sensor models	**RP/RH** Profibus	280640

PROGRAMMING TOOLS

Programming selections	Description and Specifications	Sensor Model Reference	Part number
	**R-Series CANbus Field Address Programmer** **Application:** Field address Programming for R-Series CANopen output sensor models	**RP/RH** CANopen	252382-D62
	**G-Series Analog Hand-held Programmer** **Application:** Programming for G-Series Analog output sensor models	**GP/GH** Analog	253853
	**G-Series Analog PC Programming Kit** Kit includes: Interface converter box, power supply, setup software and cabling. **Application:** Programming software for G-Series Analog output sensor models	**GP/GH** Analog	253311-1
	**G-Series Digital-pulse PC Programming Kit** Kit includes: Interface converter box, power supply, setup software and cabling. **Application:** Programming software for G-Series Digital-pulse output sensor models	**GP/GH** Digital-Pulse (PWM) (Start/Stop)	253312-1
	**Profibus master simulator**. **Application:** Function and diagnostic data verification and to perform slave address adjustments for R-Series Profibus output sensor models	**RP/RH** Profibus	401727