

Installation Instructions

Transmitter PCA Installation Kits

Attention: DO NOT break the seal on the PCA Kit box until you verify the Part Number and Serial Number on your flow meter matches with the Part Number and Serial Number on the PCA Kit.
If the Part Numbers and Serial Numbers do not match, contact Max Machinery, Inc.



PCA board and packaging shown as supplied by Max Machinery, Inc. Flow meter not included. Customer must provide part number and serial number for their existing meter(s) when quoted to receive a correctly programmed PCA Kit.

max

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Transmitter PCA Installation Kit Instructions - Precautions



Never run the meter dry or blow compressed air through the meter. Damage will occur.



Never steam clean the meter. Damage will occur. (Bypass or remove the meter if necessary).



Do not run water or aqueous solutions through Max meters (except P234).



P234 meters are the only Max meters designed for water or aqueous solutions.



Do not disassemble the mechanical fluid side of the meter. No serviceable parts inside.



Do not over pressurize the meter or apply excessive differential pressure across the meter. Damage may occur.



Do not exceed maximum flow rates. Damage may occur.



Do not allow materials to cure and solidify in meter.



Attention: Observe Precautions for Handling Electrostatic Sensitive Devices



Warning: Electrical shock hazard. Serious or fatal injury may occur. Disconnect power before performing field maintenance.



Read the entire manual before installing and operating the meter.



Purge all air bubbles from meter before operating your system.



Verify the PCA Kit Serial Number matches the meter.



Filter your fluid to prevent damage from debris and foreign materials.



Install bypass plumbing around the flowmeter.



Remeltable solid materials must fully liquify before pumping through your meter.



Follow all local regulations and your company safety procedures when installing, operating, servicing, and maintaining your flow meter.

Tools Required:

You will need the following tools to complete these instructions:



2.5 mm Flathead Screwdriver



3/32 inch Hex Head Driver



Phillips Head Screwdriver



Internal Snap Ring Tool

Transmitter PCA Installation Kit Instructions

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Transmitter Examples



PCA Kit by Meter Type
295-PCA
P213, P214, P215
H-Series (All)
296-PCA
P001, P002
G-Series (All)
234-PCA
P234

Options:

Thank you for purchasing a Max Precision Flow Meters PCA Kit. For installation instructions, match your transmitter type with the selections below and then go to the specific page:

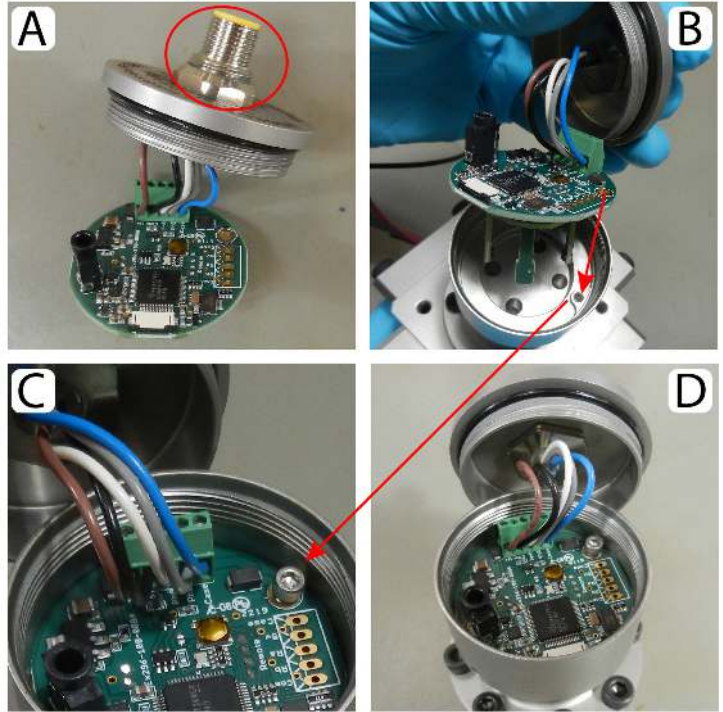
- Industrial Transmitters 295 / 296 for P,G,H Series Meters - Page 4
- Remote Transmitter Boxes - Page 5
- Hall Sensor / Sender Units for Industrial Transmitters - Page 7
- P234 Water Meter Transmitters - Page 8
- Hazardous Location / Ex-Proof Instructions - Page 9
 - Transmitters EX295 / EX296 for P,G,H Series Meters - Page 10
 - Hall Sensor / Sender Units for Hazardous Location / Ex-Proof Transmitters - Page 11

Industrial 295/296 PCA Kit Installation

1. Do not break the seal on the PCA Kit box until you verify the Part Number and Serial Number on your flow meter matches with the Part Number and Serial Number on the PCA Kit.

If the Part Numbers and Serial Numbers do not match, contact Max Machinery, Inc.

2. Remove transmitter lid. Unscrew by hand, ¼ turn. Wires are attached to lid.
3. Do not remove Turck connector from transmitter lid (Pic. A). Damage will occur.
4. To remove existing green PCA board (Pic B) from casing:
 - a. Use hex driver to remove 4-40 screw securing PCA with Lid to housing (Pic C).
 - b. Save 4-40 screw for reuse.
 - c. Loosen screws on PCA terminal block (Pic A) with flat head screwdriver.
 - d. Remove Lid with wires.



5. Set aside existing PCA board.
6. Break the seal and remove the new PCA board from PCA Kit box.
7. Connect Lid wires to PCA terminal (Pic A). Wire per Diagram 4.1 for frequency transmitters or Diagram 4.2 for analog transmitters. Tighten terminal screws with flat head screwdriver.
8. To install new PCA board with Lid:
 - a. Align screw hole to housing threaded hole (Pic B).
 - b. Align hall sensor legs to housing wells (Pic B).
 - c. Slide PCA into housing.
9. Install 4-40 screw with hex driver (Pic C).
10. Close transmitter lid. Rotate lid with attached wires up to 180° counter clockwise to align lid threads to housing. Tighten lid by hand to compress the O-ring seal.

Diagram 4.1: Frequency Transmitters (PN ending N/- or S/-)

PCA Label	Turck® Connector	
	Pin #	Mating Cable Wire Color
Power (+5 to 26 Vdc)	V+	1 Brown
Common	Com	4 Black
Pulse Output	Ph A	2 White
Output Phase B (Quad only)	Ph B	5 Grey
Case Ground	Case	3 Blue

Diagram 4.2: Analog Transmitters (PN ending A/-, B/-, C/-, D/-)

PCA Label	Turck® Connector	
	Pin #	Mating Cable Wire Color
Power *	V+	1 Brown
Common	Com	4 Black
Signal Output (+)	Sig	5 Grey
Signal Output (-)**	Ret	2 White
Case Ground	Case	3 Blue

Remote Transmitter Boxes 295/296 PCA Kit Installation

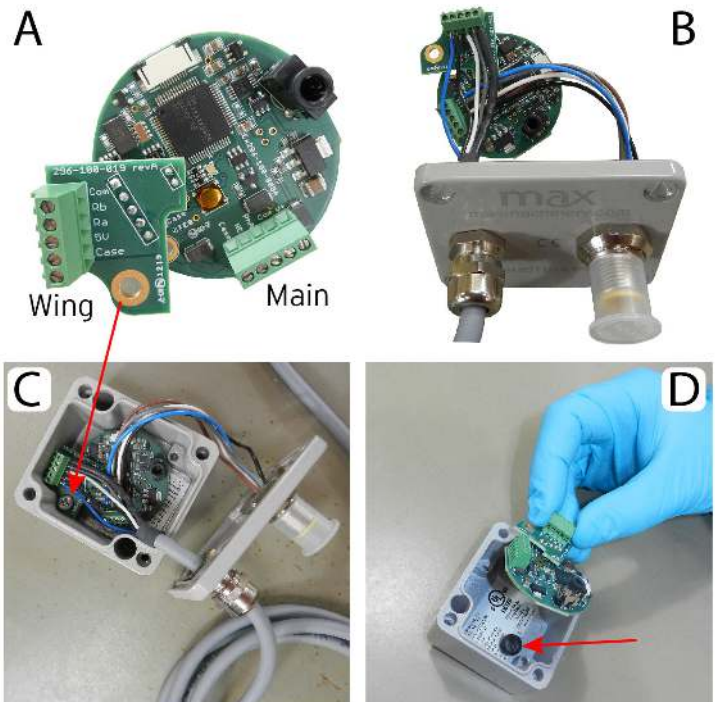
1. Do not break the seal on the PCA Kit box until you verify the Part Number and Serial Number on your flow meter matches with the Part Number and Serial Number on the PCA Kit.

If the Part Numbers and Serial Numbers do not match, contact Max Machinery, Inc.

2. Remove four (4) phillips screws and remove remote box lid. Wires are attached to lid.
3. Do not remove connectors from remote box lid (Pic. 5.1). Damage will occur.
4. To remove existing green PCA board (Pic C) from casing:
 - a. Use phillips screwdriver to remove screw securing PCA with Lid to housing (Pic C).
 - b. Save phillips screw for reuse.
 - c. Note color/order of all wires going to both PCA terminal blocks.
 - d. Loosen screws on PCA terminal blocks (Pic A) with flat head screwdriver.
 - e. Remove Lid with wires and PCA attached.
 - f. Ensure black adhesive remains with box (Pic D).
5. Set aside existing PCA board.



Picture 5.1



Continued on Page 6.

Remote Transmitter Boxes 295/296 PCA Kit Installation

6. Break the seal and remove the new PCA board from PCA Kit box.
7. Connect Lid wires to PCA terminal blocks (Pic A). Wires must be connected to the correct PCA terminal block for transmitter to function.
 - a. See Diagrams for proper wiring:
 - b. Required Step: Diagram 6.1 shows wiring for the squeeze tight fitting coming from the Hall Sensor Unit mounting to the Wing board (Pic A).
 - c. Option A: Diagram 6.2 for wiring Frequency Output Transmitters. Wires mount to Main board (Pic A).
 - d. Option B: Diagram 6.3 for wiring Analog Output Transmitters. Wires mount to Main board (Pic A).
8. Tighten terminal screws with flat head screwdriver.
9. To install new PCA board with Lid:
 - a. Align screw hole to housing threaded hole (Pic A/C).
 - b. Position RCA port over black adhesive. (Pic D).
 - c. Slide PCA into housing.
10. Install phillips screw with screwdriver (Pic C).
11. Close remote box lid and secure with four (4) phillips screws. Tighten lid to compress the O-ring seal.

Diagram 6.1: Squeeze Tight Cable for Remote Transmitter Boxes

Squeeze Tight Connector	PCA Label	Mating Cable Wire Color
Common	Com	Brown
Signal Output	Rb	Grey
Signal Output	Ra	White
Power	5V	Black
Case Ground	Case	Blue

Diagram 6.2: Frequency Transmitters (PN ending N/- or S/-)

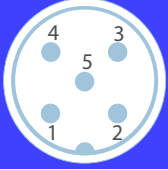
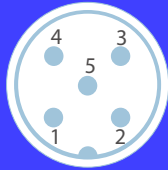
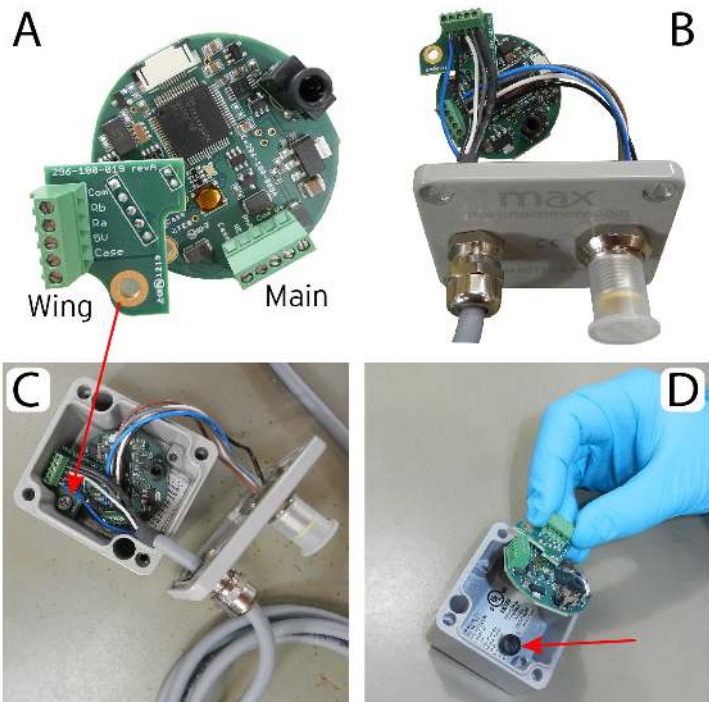
	Turck® Connector		
	PCA Label	Pin #	Mating Cable Wire Color
Power (+5 to 26 Vdc)	V+	1	Brown
Common	Com	4	Black
Pulse Output	Ph A	2	White
Output Phase B (Quad only)	Ph B	5	Grey
Case Ground	Case	3	Blue

Diagram 6.3: Analog Transmitters (PN ending A/-, B/-, C/-, D/-)

	Turck® Connector		
	PCA Label	Pin #	Mating Cable Wire Color
Power *	V+	1	Brown
Common	Com	4	Black
Signal Output (+)	Sig	5	Grey
Signal Output (-)**	Ret	2	White
Case Ground	Case	3	Blue



Hall Sensor Units for 2-Part Transmitter PCA Kit Installation

1. Do not break the seal on the PCA Kit box until you verify the Part Number and Serial Number on your flow meter matches with the Part Number and Serial Number on the PCA Kit.

If the Part Numbers and Serial Numbers do not match, contact Max Machinery, Inc.
2. Remove hall sensor unit lid. Unscrew by hand, ¼ turn. Wires are attached to lid.
3. Do not remove Turck connector from hall sensor unit lid (Pic. A). Damage will occur.
4. To remove existing green PCA board (Pic B) from casing:
 - a. Use hex driver to remove 4-40 screw securing PCA with Lid to housing (Pic C).
 - b. Save 4-40 screw for reuse.
 - c. Loosen screws on PCA terminal block (Pic A) with flat head screwdriver.
 - d. Remove Lid with wires.
5. Set aside existing PCA board.
6. Break the seal and remove the new PCA board from PCA Kit box.
7. Connect Lid wires to PCA terminal (Pic A). Wire per Diagram 7.1. Tighten terminal screws with flat head screwdriver.
8. To install new PCA board with Lid:
 - a. Align screw hole to housing threaded hole (Pic B).
 - b. Align hall sensor legs to housing wells (Pic B).
 - c. Slide PCA into housing.
9. Install 4-40 screw with hex driver (Pic C).
10. Close hall sensor unit lid. Rotate lid with attached wires up to 180° counter clockwise to align lid threads to housing. Tighten lid by hand to compress the O-ring seal.

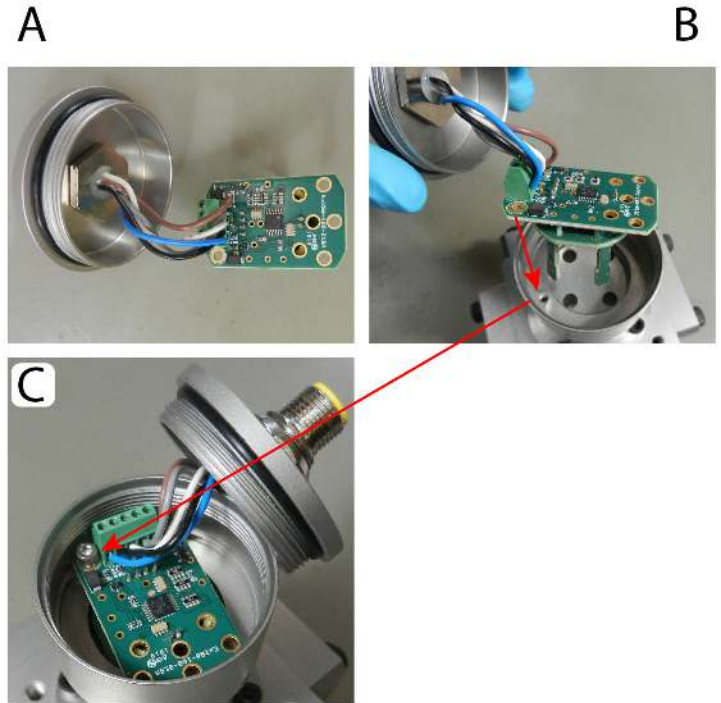


Diagram 7.1: Hall Sensor Sending Unit (for Remote Transmitter PNs only)

PCA Label	Turck® Connector		
	Pin #	Mating Cable Wire Color	
Common	Com	1	Brown
Power (+5 to 26 Vdc)	V+	4	Black
Pulse Output	Ph A	2	White
Output Phase B (Quad only)	Ph B	5	Grey
Case Ground	Case	3	Blue

P234 Water Meter PCA Kit Installation

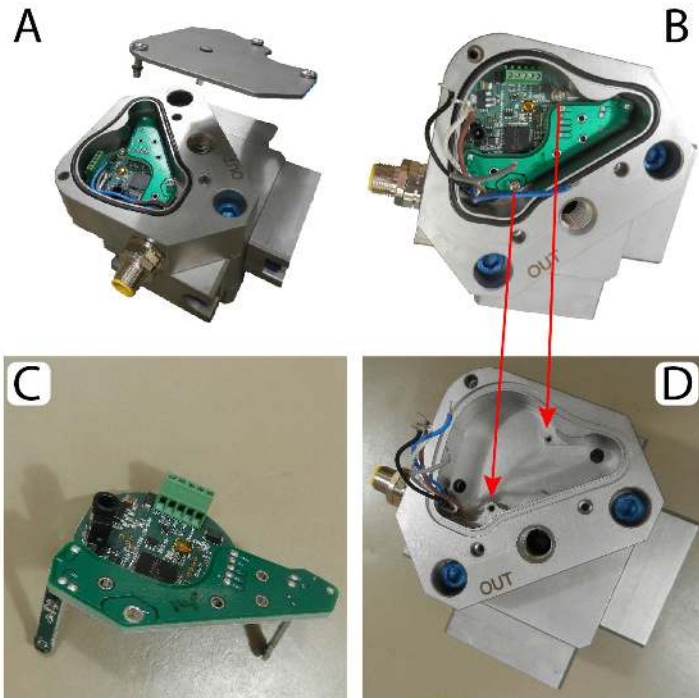


Diagram 8.1: Frequency Transmitters (PN ending N/- or S/-)

	Turck® Connector		
	PCA Label	Pin #	Mating Cable Wire Color
Power (+5 to 26 Vdc)	V+	1	Brown
Common	Com	4	Black
Pulse Output	Ph A	2	White
Output Phase B (Quad only)	Ph B	5	Grey
Case Ground	Case	3	Blue

Diagram 8.2: Analog Transmitters (PN ending A/-, B/-, C/-, D/-)

	Turck® Connector		
	PCA Label	Pin #	Mating Cable Wire Color
Power *	V+	1	Brown
Common	Com	4	Black
Signal Output (+)	Sig	5	Grey
Signal Output (-)**	Ret	2	White
Case Ground	Case	3	Blue

1. Do not break the seal on the PCA Kit box until you verify the Part Number and Serial Number on your flow meter matches with the Part Number and Serial Number on the PCA Kit.

If the Part Numbers and Serial Numbers do not match, contact Max Machinery, Inc.

2. Remove the P234 meter from service. Unplumb, drain, and dry the meter prior to opening the transmitter cover. DO NOT use shop air to spin the flow meter. Failure to follow these instructions may result in immediate damage to the meter and/or long term corrosion to the electrical components.
3. Remove transmitter lid. Unscrew the three (3) philips screws. These screws are captured on the plate.
4. There is no need to remove the Turck connector from meter body (Pic. A).
5. To remove existing green PCA board (Pic B) from casing:

a. Loosen screws on PCA terminal block (Pic A) with flat head screwdriver.

b. Note routing, then remove wires and push away from PCA board.

c. Use hex driver to remove both 4-40 screws securing PCA to housing (Pic C).

d. Save 4-40 screws for reuse.

e. Pull PCA board vertically out of housing. Long hall sensor tabs are recessed in narrow, deep holes.

6. Set aside existing PCA board.
7. Break the seal and remove the new PCA board from PCA Kit box.

8. To install new PCA board into housing:

a. Align hall sensor legs to housing wells (Pic B).

b. Slide PCA into housing.

c. Install both 4-40 screws with hex driver (Pic C).

9. Wire per Diagram 8.1 for frequency transmitters and Diagram 8.2 for analog transmitters. Tighten terminal screws with flat head screwdriver.
10. Route wires as shown in Pic A.
11. Replace O-ring in lid groove, if removed.
12. Close transmitter lid. Tighten phillips screws to compress the O-ring seal.
13. Follow the P234 Manual for re-installation instructions.

Installation Instructions

Hazardous Location / ExProof Transmitter PCA Installation Kits

Attention: DO NOT break the seal on the PCA Kit box until you verify the Part Number and Serial Number on your flow meter matches with the Part Number and Serial Number on the PCA Kit.
If the Part Numbers and Serial Numbers do not match, contact Max Machinery, Inc.

- Repairs should be performed in accordance with IEC 600079-19.
- Replacement PCA's are the only repairable item.
- Any damage to the metal housing or other components requires factory refurbishment. To have your meter calibrated or refurbished, go to www.maxmachinery.com/service-request/
- Full schedule drawings are available from the factory.
- Paper instructions were included with the original meter and may be found online at <https://www.maxmachinery.com/downloads/installation-sheets/>

Diagram HL1: Wiring for Hazardous Location Transmitters

'Installation Instructions - Hazardous Locations'. Paper instructions were included with the original meter and may be found online at <https://www.maxmachinery.com/downloads/installation-sheets/>

Pulse Output Wiring	Pulse PCB Label	Analog Output Wiring	Analog PCB Label	Wiring Adaptor Pin #	Two Part Transmitter Wiring	
					Ex-Proof Sender (Example: EX29x-051-000)	Remote Receiver (Example: EX296-x8x-xxx)
Power *	V+	Power	V+	1	Case	Case
Common	Com	Common	Com	2	5V	5V
Signal Output	PhA	Signal Output (+)	Sig	3	Ra	Ra
(Quad only)	PhB	Signal Output (-)	Ret	4	Rb	Rb
Case Ground	Case	Case Ground	Case	5	Com	Com

Diagram HL2: Wiring Reference for Hazardous Location Hall Sensor Units for 2-Part Transmitters

Adapted from 'Installation Instructions - Hazardous Locations'. Paper instructions were included with the original meter and may be found online at <https://www.maxmachinery.com/downloads/installation-sheets/>

Hall Sensor Wiring	Wiring Adaptor Pin #	Two Part Transmitter Wiring	
		Ex-Proof Sender (Example: EX29x-051-000)	Remote Receiver (Example: EX296-x8x-xxx)
Case Ground	1	Case	Case
Power	2	5V	5V
Signal Output	3	Ra	Ra
(Quad only)	4	Rb	Rb
Common	5	Com	Com

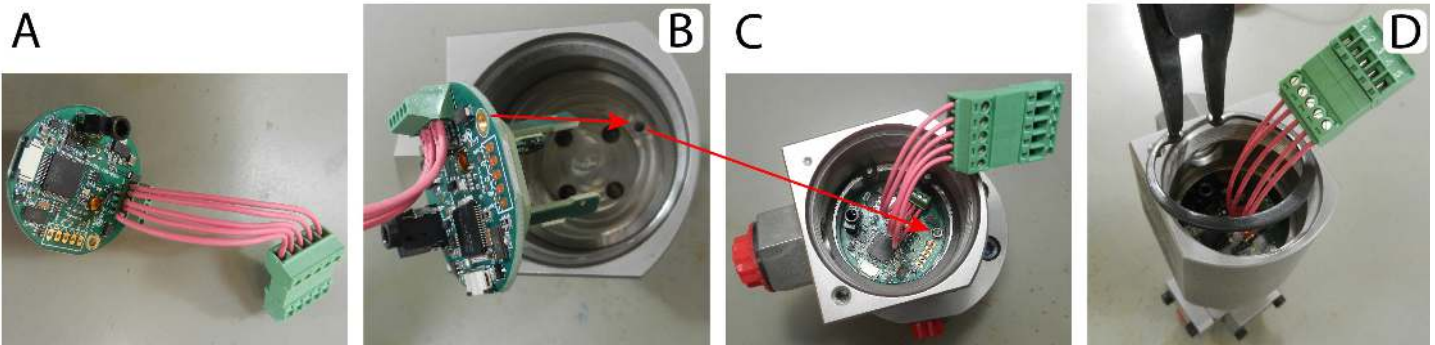
Hazardous Location 295/296 PCA Kit Installation

Follow all local regulations and your company safety procedures when installing, operating, servicing, and maintaining your flow meter. Use the Hazardous Location paper instructions included with the original meter or found online at

<https://www.maxmachinery.com/downloads/installation-sheets/> .

1. Do not break the seal on the PCA Kit box until you verify the Part Number and Serial Number on your flow meter matches with the Part Number and Serial Number on the PCA Kit.

If the Part Numbers and Serial Numbers do not match, contact Max Machinery, Inc.
2. Remove locking screw and unscrew transmitter lid per 'Installation Instructions - Hazardous Locations'. See link above.
3. Remove snap ring with internal snap ring pliers (Pic D).
4. To remove existing green PCA board (Pic B) from casing:
 - a. Use hex driver to remove 4-40 screw securing PCA with connector terminal to housing (Pic C).
 - b. Save 4-40 screw for reuse.
 - c. Loosen screws on PCA terminal block (Pic A) with flat head screwdriver.
 - d. Remove connector terminal with wires.
5. Set aside existing PCA board.
6. Break the seal and remove the new PCA board from PCA Kit box.
7. Connect wires from connector terminal to PCA terminal (Pic A). Wire per Diagram HL1 on page 9. Tighten terminal screws with flat head screwdriver. Torque to 28 in-oz (0.2 Nm).
8. To install new PCA board with connector terminal:
 - a. Align screw hole to housing threaded hole (Pic B).
 - b. Align hall sensor legs to housing wells (Pic B).
 - c. Slide PCA into housing.
9. Install 4-40 screw with hex driver (Pic C). Torque to 6 in-lbs (0.7 Nm).
10. Reinstall snap ring with internal snap ring pliers (Pic D). Check that the snap ring is fully seated in it's groove. Once properly installed the snap ring can be rotated easily with minimal drag. This **must be verified** as an improperly installed snap ring could compromise the integrity of the flame protection of this device.
11. To reinstall your meter in your system, follow 'Installation Instructions - Hazardous Locations'. See link above.



Hall Sensor Units for Hazardous Location PCA Kit Installation

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1. Do not break the seal on the PCA Kit box until you verify the Part Number and Serial Number on your flow meter matches with the Part Number and Serial Number on the PCA Kit.

If the Part Numbers and Serial Numbers do not match, contact Max Machinery, Inc.
2. Remove locking screw and unscrew transmitter lid per 'Installation Instructions - Hazardous Locations'. See link above.
3. Remove snap ring with internal snap ring pliers (Pic D).
4. To remove existing green PCA board (Pic B) from casing:
 - a. Use hex driver to remove 4-40 screw securing PCA with connector terminal to housing (Pic C).
 - b. Save 4-40 screw for reuse.
 - c. Loosen screws on PCA terminal block (Pic A) with flat head screwdriver.
 - d. Remove connector terminal with wires.
5. Set aside existing PCA board.
6. Break the seal and remove the new PCA board from PCA Kit box.
7. Connect wires from connector terminal to PCA terminal (Pic A). Wire per Diagram HL2 on page 9. Tighten terminal screws with flat head screwdriver. Torque to 28 in-oz (0.2 Nm).
8. To install new PCA board with connector terminal:
 - a. Align screw hole to housing threaded hole (Pic B).
 - b. Align hall sensor legs to housing wells (Pic B).
 - c. Slide PCA into housing.
9. Install 4-40 screw with hex driver (Pic C). Torque to 6 in-lbs (0.7 Nm).
10. Reinstall snap ring with internal snap ring pliers (Pic D). Check that the snap ring is fully seated in it's groove. Once properly installed the snap ring can be rotated easily with minimal drag. This **must be verified** as an improperly installed snap ring could compromise the integrity of the flame protection of this device.
11. To reinstall your meter in your system, follow 'Installation Instructions - Hazardous Locations'. See link above.

