797PCP-2K Modular Manifolds
Instructions

Introduction

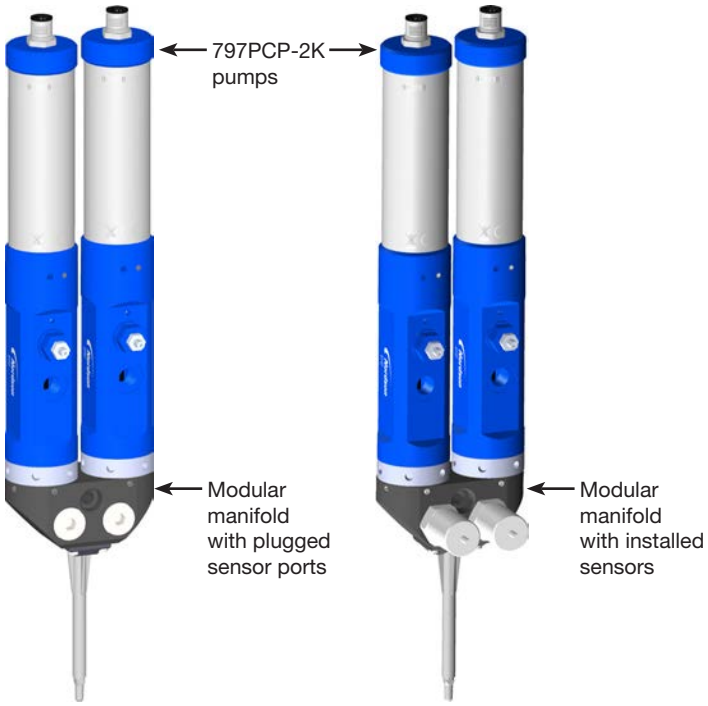
These instructions provide installation and connection procedures for the modular manifolds and pressure sensors designed for use with 797PCP-2K progressive cavity pumps.

The flush-diaphragm pressure sensor can be installed in a two-component (2K) modular manifold and connected via signal conditioner to a control system, typically a programmable logic controller (PLC).

Pressure sensor

Signal conditioner

The sensor monitors the fluid pressure (not the flow rate) of the Part A and / or Part B fluids flowing through the modular manifold, allowing you to quickly identify an increase or decrease in pressure that could affect the mix ratio in a 2K application.



NOTES:

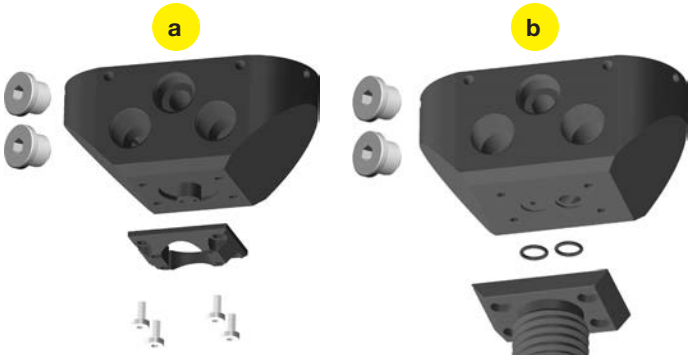
- A pressure sensor monitors increases or decreases in fluid pressure. It does not monitor flow rate.
- The modular manifold can be used with or without sensors. Unused sensor ports are plugged.

Configuration Options

The following 797PCP-2K modular manifold options are available:

a. Manifold for use with bayonet mixers

b. Manifold for use with standard bell mixers with a retaining nut



Modular manifold for bayonet mixers

Modular manifold for standard bell mixers

Specifications

NOTE: Specifications and technical details are subject to change without prior notification.

Modular Manifold

Item	Specification
Number of sensors	1 or 2 (empty sensor ports are plugged)
Sensor port size	1/2-20 UNF x 10.5 mm (0.400") thread depth
Sensor geometry	Flush diaphragm sensor, face-mounted
Manifold outlet	Bayonet or bell
Material	Anodized aluminum
Approvals	RoHS, REACH

Pressure Sensor

Item	Specification
Pressure sensing capability	0–20.7 bar (0–300 psi)
Accuracy	1.0% linearity and hysteresis combined
Repeatability	±0.1% of full-scale output
Balance	±2.0% of full-scale output
Compensated temperature range	16–71° C (60–160° F)
Thermal effects	Zero: ±0.01% FS/°F Span: ±0.02% FSO/°F
Proof pressure	150% of capacity
Burst pressure minimum	300% of capacity or 30,000 psi, whichever is less
Electrical connections	4-conductor cable
Pressure connection	1⁄2-20 UNF-2A
Wetted parts	17-4 PH stainless steel

Signal Conditioner

Item	Specification
Output	4–20 mA or 0–10 V (USB configurable)
Supply	24 VDC (typical)

797PCP-2K Modular Manifold Components

a. Modular manifold, port plugs, and retainer for bayonet or bell mixers (bayonet manifold shown)

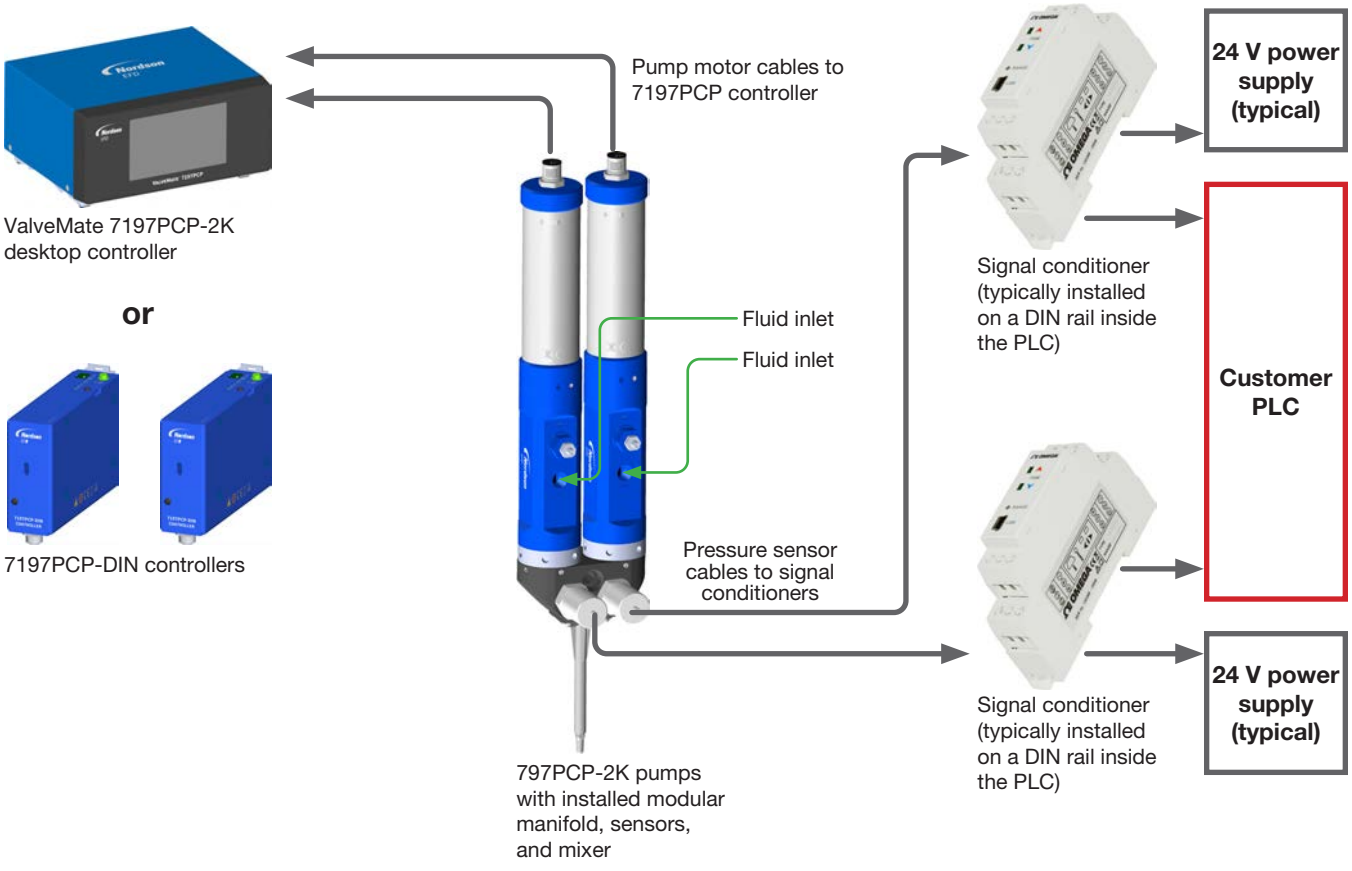
b. Pressure sensor(s) with attached cable, 1.5 m (59") long

NOTE: Cables not shown.

c. Signal conditioner(s)

Typical System Layout

NOTE: This system layout illustration is for reference purposes only to show the connections in a typical 797PCP-2K system with a modular manifold and two pressure sensors.



Installing the Modular Manifold

Follow this procedure to install the modular manifold.

NOTE: During disassembly, observe the position of the pump components in relation to each other. Nordson EFD recommends marking the position of the components and numbering them consecutively.

Required Tools

- M3 hex wrench 

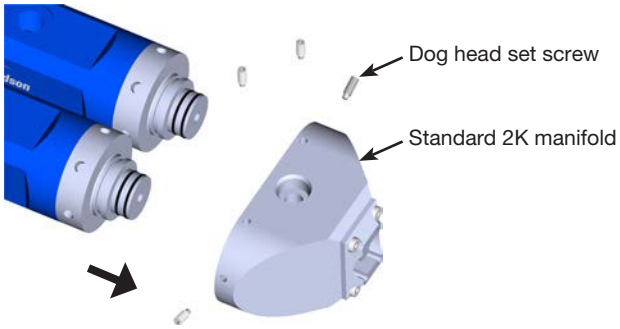
Preparation

Perform these steps as needed based on the installation / operational status of your fluid dispensing system.

1. Shut off the air supply to the system.
2. Stop the fluid supplies to the pumps and disconnect fluid supply tubing.
3. Disconnect the pump motor cables from the controllers.
4. Remove the pumps from the pump bracket.
5. Remove the mixer.

Manifold Installation

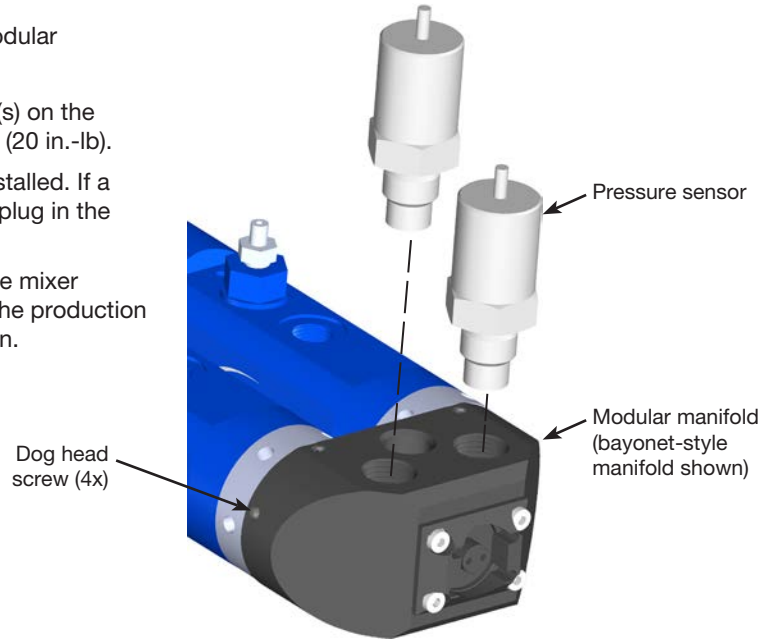
1. Use an M3 hex wrench to loosen the dog head set screws that secure the manifold, then remove the standard 2K manifold.



2. Use the dog head screws supplied with the modular manifold to install it on the pumps.
3. Thread the pressure sensor(s) into the M8 port(s) on the modular manifold and tighten them to 2.3 N•m (20 in.-lb).

   NOTE: One or two pressure sensors can be installed. If a second pressure sensor is not used, leave the plug in the unused pressure sensor port.

   Manifold installation is now complete. Install the mixer retainer and the mixer, reinstall the pumps on the production line, and restore the system to normal operation.



Making the System Connections

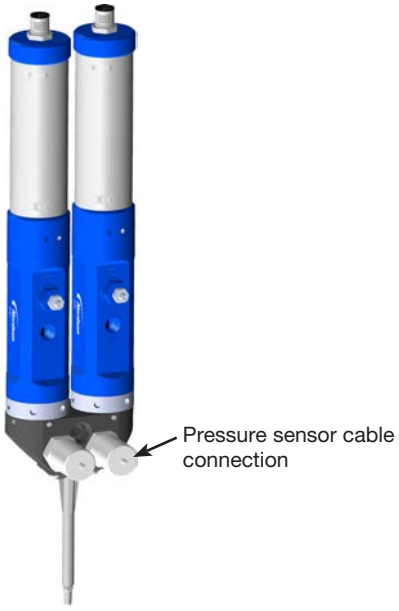
The pressure sensors require a 5 V power supply connection to the inputs. Because the sensor output at its maximum is 10 mV, a signal conditioner is used to amplify the output to 0–10 V (typical for PLC voltage inputs). A power supply set to 24 V is required to power the signal conditioner.

Customer-Supplied Items

- 5 V power supply for each pressure cable
- 24 V power supply for each signal conditioner
- Mounting hardware for the signal conditioner

Connect the Pressure Sensor Cables and Mount the Signal Conditioner

1. Connect each pressure sensor cable to the pressure sensor installed on the manifold.



2. Mount the signal conditioner for each pressure sensor cable in a suitable location, ensuring that the pressure sensors cable wiring can be easily connected to the signal conditioner.

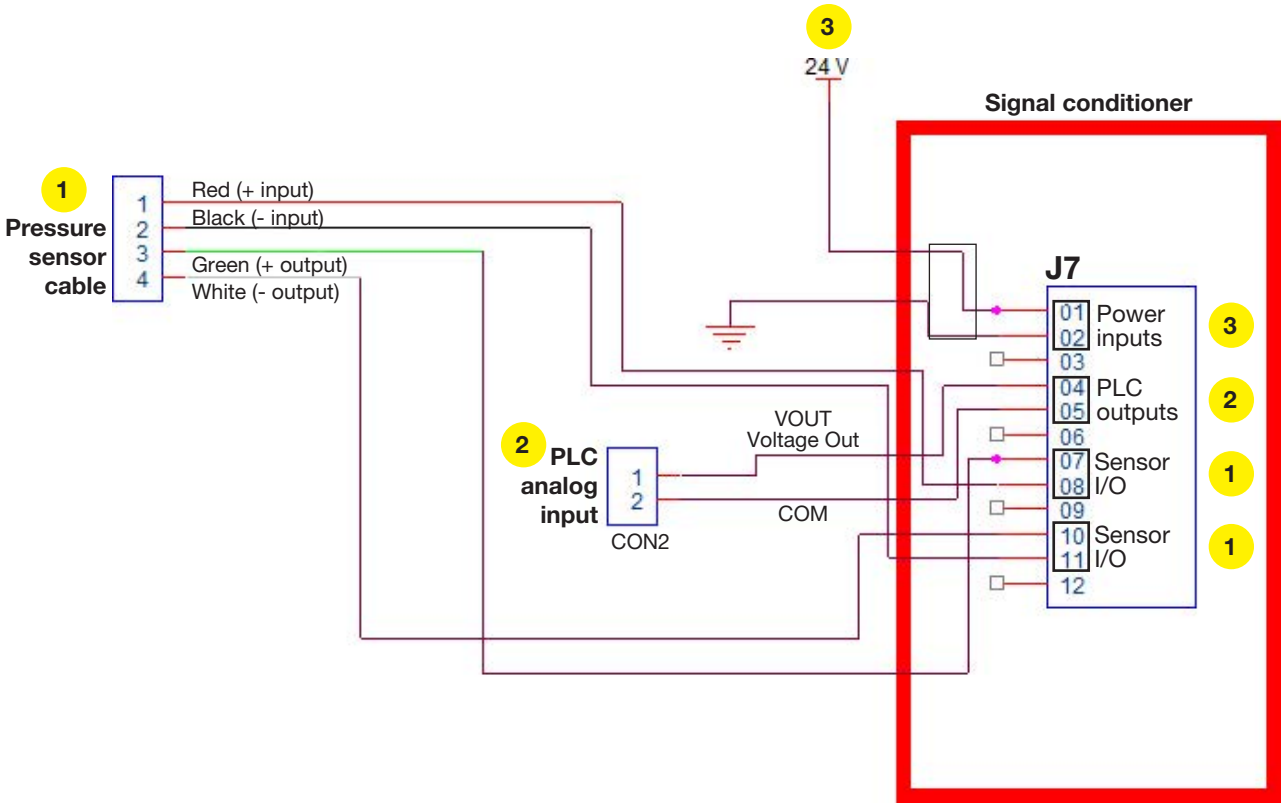
Connect the Wiring

⚠ CAUTION

Risk of equipment damage. Do not reverse the positive and negative connections of the sensor. Doing so will damage the sensor beyond repair.

1. For each connected pressure sensor cable, connect the following wires to the signal conditioner inputs:
   - Red wire to J7:08 on the signal conditioner
   - Black wire to J7:11 on the signal conditioner
   - Green wire to J7:07 on the signal conditioner
   - White wire to terminal J7:10 on the signal conditioner
2. Connect the signal conditioner outputs to the PLC analog inputs:
   - J7:04 to the PLC CON2:1 input
   - J7:05 to the PLC CON2:2 input

   NOTE: If the default VOUT (Voltage Output) connection causes a voltage drop error across the cable length, use the IOUT (Current Output) connection instead. Refer to “Optional Wiring Configuration: IOUT (Current Output)” on page 7. The IOUT output from the signal conditioner is 4–20 mA.
3. Connect the signal conditioner power inputs to a 24 V power supply:
   - J7:01 to +24 V on the power supply
   - J7:02 to the negative (ground) terminal on the power supply



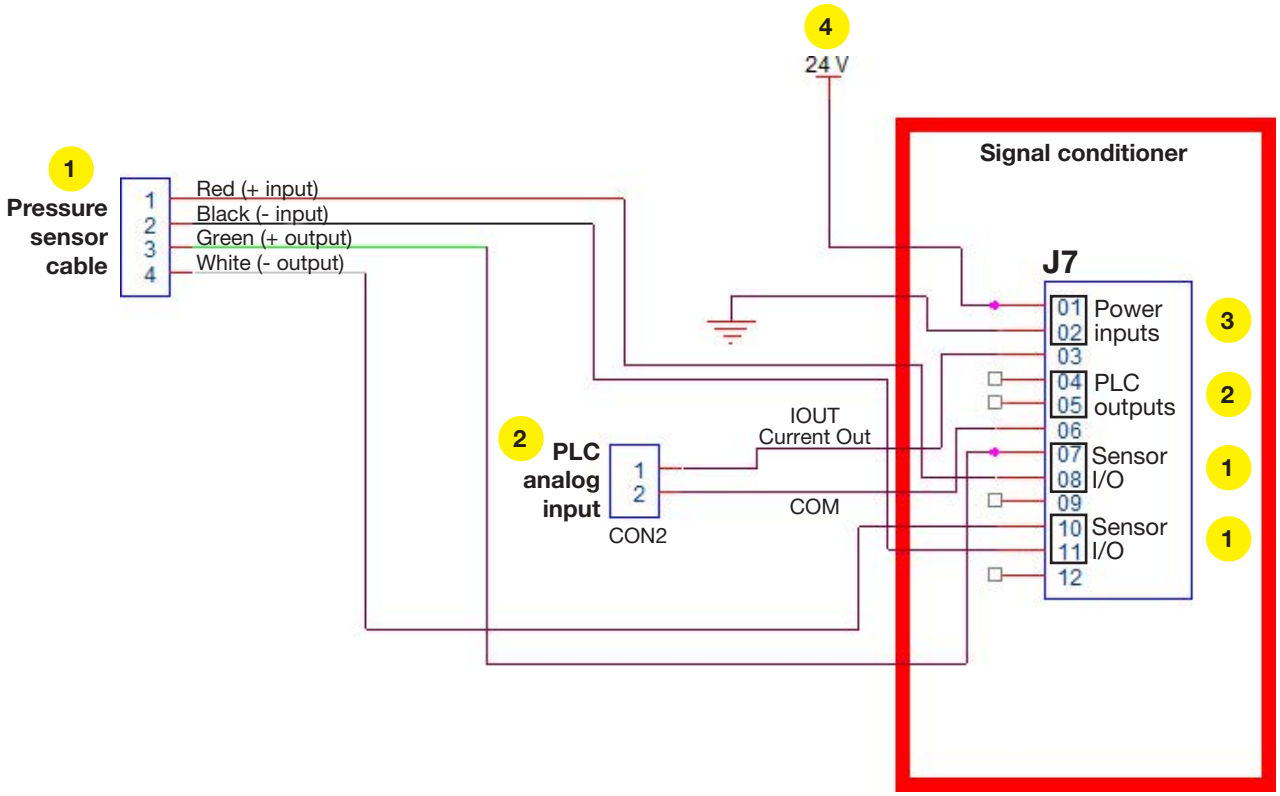
Wiring connections using the VOUT terminals of the PLC and signal conditioner

NOTE: If the VOUT (Voltage Output) connection causes a voltage drop error across the cable length, use the IOUT (Current Output) terminals instead. Refer to “Optional Wiring Configuration: IOUT (Current Output)” on page 7. The IOUT output from the signal conditioner is 4–20 mA.

Connect the Wiring (continued)

Optional Wiring Configuration: IOUT (Current Output)

To use this optional wiring configuration, you must configure the signal conditioner for current output (mA). Continue to “Configure the Signal Conditioner” on page 8 to select the current output setting.



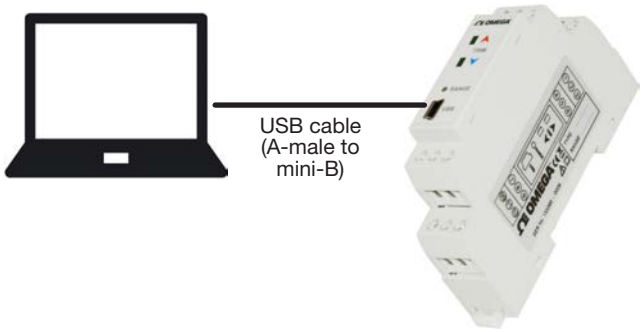
Optional: Wiring connections using the IOUT terminals of the PLC and signal conditioner

Configure the Signal Conditioner

Use the signal conditioner software to configure the signal condition for voltage output (V) (the default configuration) or current output (mA).

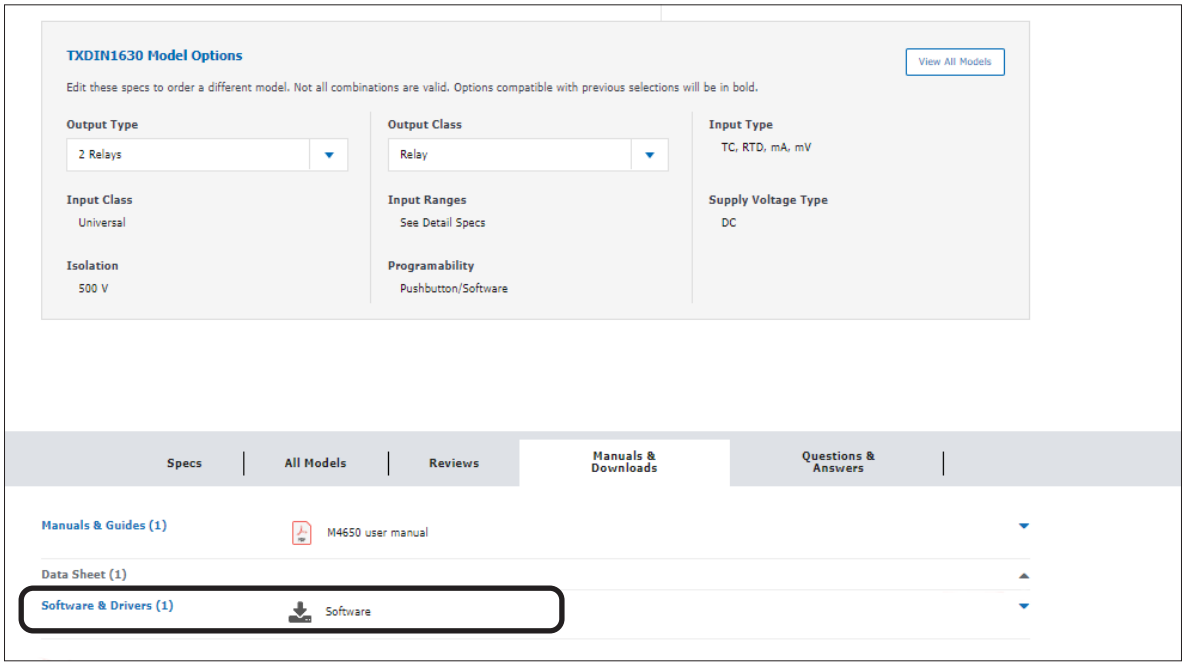
1. Connect a USB cable (A-male to mini-B) between the signal conditioner and the PC.

   NOTE: Use a cable length that is appropriate for your setup.



2. Download the signal conditioner software. Go to the URL below, find the signal conditional model (TXDIN1600S), and obtain the software from the Manals & Downloads tab.

   https://www.omega.com/en-us/data-acquisition/signal-conditioners/din-rail-signal-conditioners/p/TXDIN1600-Series-Tx



3. Install the application on your PC and open the application.

Configure the Signal Conditioner (continued)

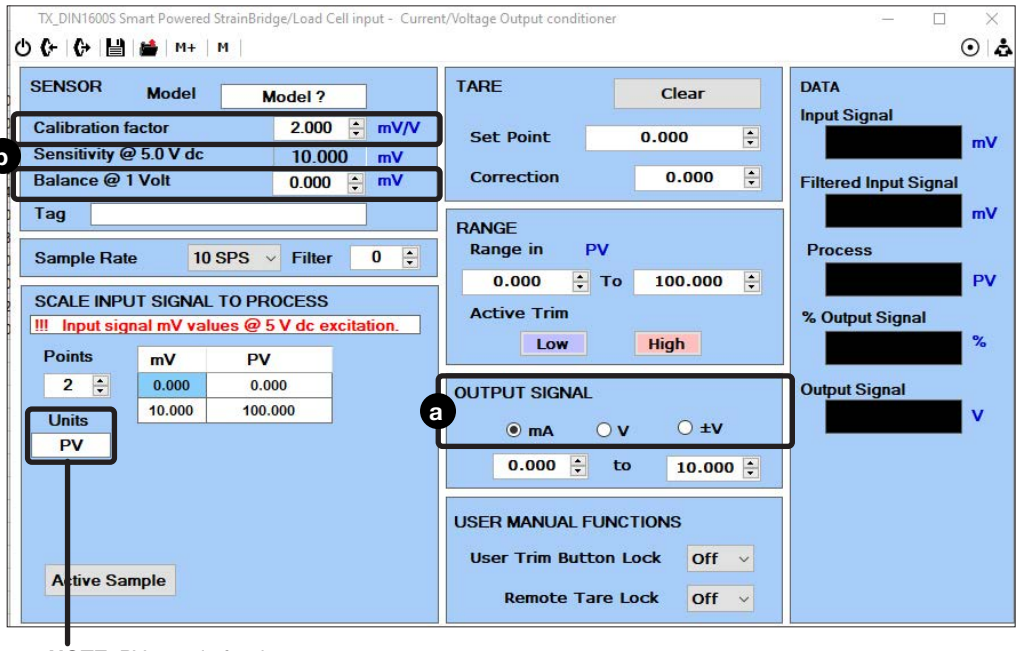
4. In the signal conditioner software, do the following:
   a. Under **Output Signal**, select the correct radio button:
      - If you used the voltage output (VOUT) connections: Select **v**
      - If you used current output connections (IOUT): Select **mA**

⚠ CAUTION

If calibration certificate values are entered incorrectly, the accuracy of the measurement will be compromised.

   b. Under **Calibration factor**, enter the **exact values** from the Calibration Certification for the following:
      - **Calibration Factor**
      - **Balance**

      Refer to “Calibration Certification” on page 10 for a copy of the Calibration Certification.



NOTE: PV stands for the pressure range of the sensor.

Configure the Signal Conditioner (continued)

Calibration Certification

O M E G A E N G I N E E R I N G I N C.

PRESSURE TRANSDUCER
FINAL CALIBRATION

0.00 - 300.00 PSIG
Excitation 5.000 Vdc

Job: WHS0069829 Serial: 740832
Model: PX61V0-300GV Tested By: CMD
Date: 8/9/2023 Temperature Range: +60 to +160 F
Calibrated: 0.00 - 300.00 PSIG Specfile: PX61V+=100

Pressure PSIG	Unit Data mVdc
0.00	0.081
150.00	5.227
300.00	10.474
150.00	5.233
0.00	0.088

Balance	0.081	mVdc
Sensitivity	10.393	mVdc
IN Resist	377.20	Ohms
Out Resist	352.30	Ohms

Enter this value for **Balance**

Callibration Factors: Sensitivity = 2.079 mV/V

Enter this value for **Calibration factor**

ELECTRICAL LEAKAGE: PASS
RESSURE CONNECTION/FITTING: 1/2-20 UNF-2A
LECTRICAL WIRING/CONNECTOR: RED = +INPUT (EXC)
BLACK = -INPUT (EXC)
GREEN = +OUTPUT
WHITE = -OUTPUT

This Calibration was performed using Instruments and Standards that are traceable to the United States National Institute of Standards Technology.

S/N	Description	Range	Reference	Cal Cert
41000891/6	AUTO Mensor 1500PSI	0 - 1500.00 PSIG	C-3034	C-3034
JS37046202	AT34970 DMM	Unit Under Test	C-1315	C-1315
MY44002077	AT34970 DMM	Unit Under Test	C-1284	C-1284

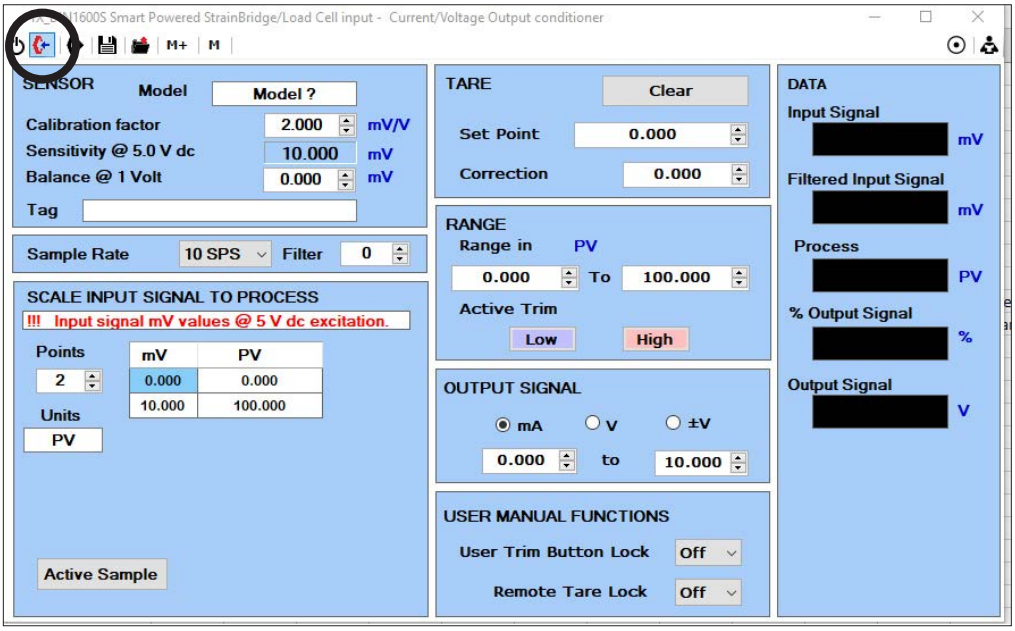
Q.A. Representative : *Chris Diaz* Date: 8/9/2023

This transducer is tested to & meets published specifications. This product is controlled in a bonded storage location until sold. The recalibration date of this product should not exceed either (A) one year from the date of shipment or (B) five years from the date on this certificate, whichever is less. Calibration cycles less than the provided guidelines should be managed per the customer's quality management system.

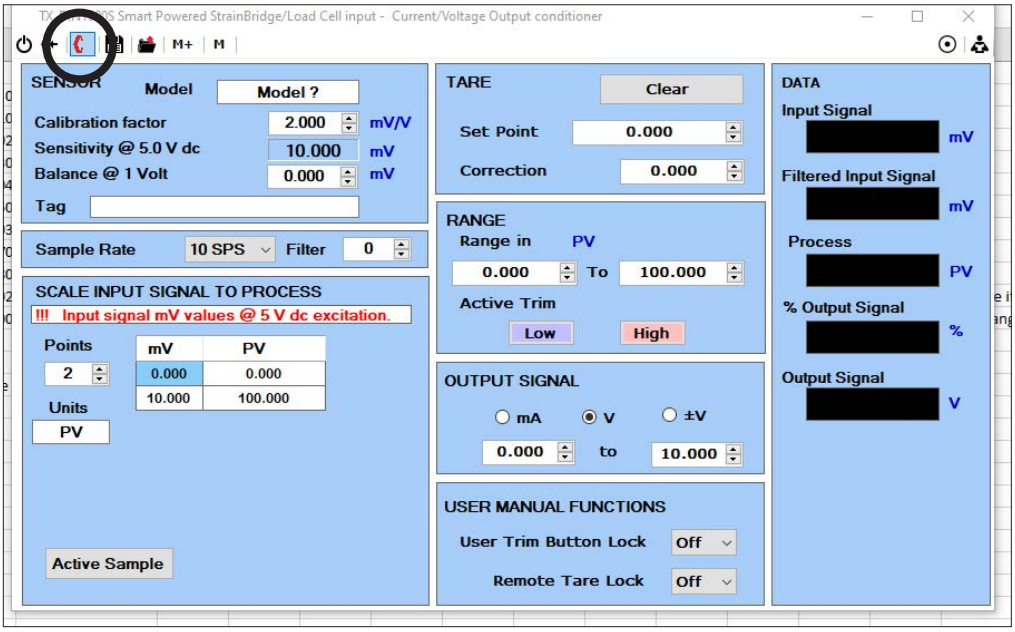
US: Omega Engineering Inc. | 800 Connecticut Ave, Norwalk, CT 06854
Web: http://www.omega.com | email: info@omega.com | phone: +1 888 826 6342
UK: Omega Engineering Ltd. | One Omega Drive, Northbank Irlam, Manchester M44 5BD
EU: Omega Engineering GmbH | Daimlerstrasse 26, Deckenpfronn, Germany 75392

Configure the Signal Conditioner (continued)

5. Click the SEND icon to send the setting to the signal conditioner.



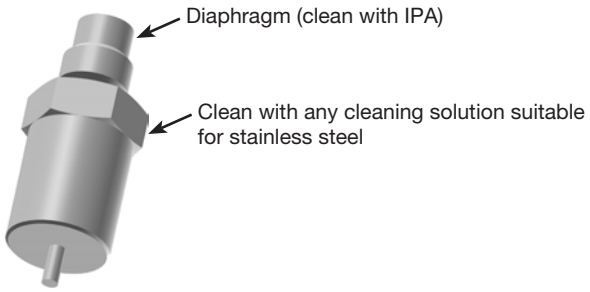
6. Click the READ icon to read the current configuration of the connected signal conditioner.



Cleaning a Pressure Sensor

Cleaning is needed after every use, as well as anytime a pump is fully disassembled. Because the sensors are a flush-diaphragm type, there is no orifice.

Carefully clean the stainless steel diaphragm using isopropyl alcohol (IPA) and clean rag or a brush. The remainder of the sensor can be cleaned using any cleaning solution suitable for stainless steel.



⚠ CAUTION

Risk of equipment damage. Do not submerge a pressure sensor, insert anything inside a sensor, or use compressed air to clean a sensor. Doing so can damage the sensor.

Part Numbers

The modular manifold options are based on viscosity / mix ratio. Examples are provided below:

- For a 1:1 fluid ratio mix, use a 2 mm x 2 mm bayonet manifold or 5 mm x 5 mm bell manifold.
- For a 4:1 or 10:1 fluid ratio mix, use a 2 mm x 4 mm bayonet manifold or 2 mm x 5 mm bell manifold.

NOTE: If the viscosity of a Part B fluid is much lower than a Part A fluid, Nordson EFD recommends using a 2 mm x 4 mm bayonet manifold or a 2 mm x 5 mm bell manifold to provide an offset orifice, thus creating a pressure differential for sensor function / sensitivity.

Pressure Sensor

Order pressure sensors separately. Each pressure sensor includes a signal conditioner.

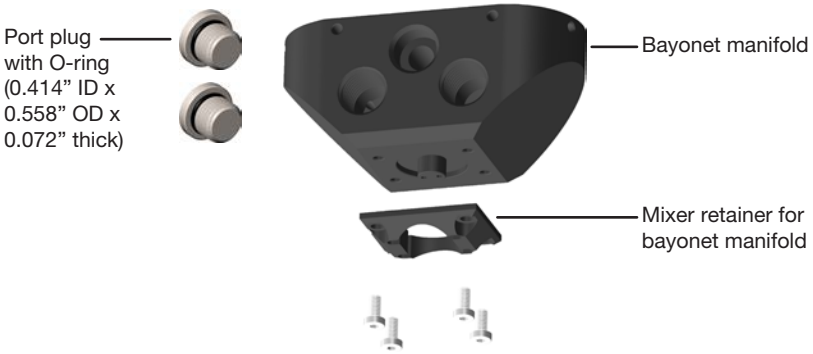
Part #	Description
7365999	Kit, pressure sensor with signal conditioner **NOTE:** The pressure sensor cable is 1.5 m (59”) long.

Bayonet Manifolds

This manifold type is for use with bayonet mixers. Each manifold kit includes the following components:

- Modular manifold for bayonet mixers
- Mixer retainer and screws
- Two (2) sensor port plugs with O-rings

Part #	Manifold Type	Manifold Option (mm)	Sensor Port Size
7365963	Bayonet	2 x 2	1/2-20 UNF x 10.5 mm (0.400") thread depth
7365965	Bayonet	2 x 4	1/2-20 UNF x 10.5 mm (0.400") thread depth

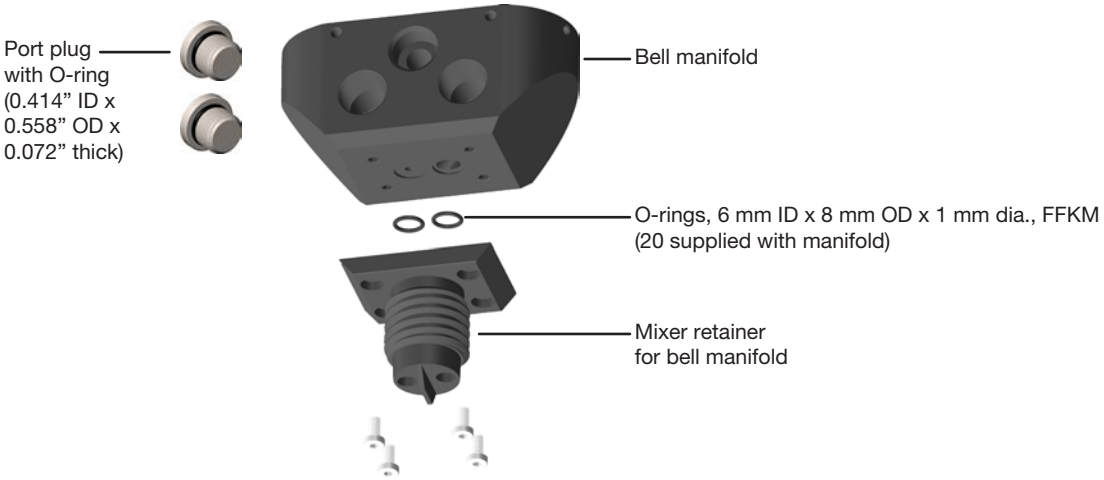


Bell Manifolds

This manifold type is for use with standard bell mixers with a retaining nut. Each manifold kit includes the following components:

- Modular manifold for bell mixers
- Mixer retainer and screws
- Two (2) sensor port plugs with O-rings
- 20 FFKM O-rings (installed between the manifold and the mixer retainer)

Part #	Manifold Type	Manifold Option (mm)	Sensor Port Size
7365983	Bell	2 x 5	1/2-20 UNF x 10.5 mm (0.400") thread depth
7365985	Bell	5 x 5	1/2-20 UNF x 10.5 mm (0.400") thread depth



Nordson EFD

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