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](image1)  
![Signal conditioner](image2)  
![Modular manifold](image3)

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
### Specifications

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

#### Modular Manifold

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sensors</td>
<td>1 or 2 (empty sensor ports are plugged)</td>
</tr>
<tr>
<td>Sensor port size</td>
<td>1/2-20 UNF x 10.5 mm (0.400&quot;) thread depth</td>
</tr>
<tr>
<td>Sensor geometry</td>
<td>Flush diaphragm sensor, face-mounted</td>
</tr>
<tr>
<td>Manifold outlet</td>
<td>Bayonet or bell</td>
</tr>
<tr>
<td>Material</td>
<td>Anodized aluminum</td>
</tr>
<tr>
<td>Approvals</td>
<td>RoHS, REACH</td>
</tr>
</tbody>
</table>

#### Pressure Sensor

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

#### Signal Conditioner

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>4–20 mA or 0–10 V (USB configurable)</td>
</tr>
<tr>
<td>Supply</td>
<td>24 VDC (typical)</td>
</tr>
</tbody>
</table>
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

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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.

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


3. Install the application on your PC and open the application.
Configure the Signal Conditioner (continued)

4. Under Output Signal, select mA (for current output / IOUT).

5. Click the SEND icon to send the setting to the signal conditioner.
Configure the Signal Conditioner (continued)

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

![Signal Conditioner Configuration](image)

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.

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7365999</td>
<td>Kit, pressure sensor with signal conditioner</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Part #</th>
<th>Manifold Type</th>
<th>Manifold Option (mm)</th>
<th>Sensor Port Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>7365963</td>
<td>Bayonet</td>
<td>2 x 2</td>
<td>1/2-20 UNF x 10.5 mm (0.400&quot;) thread depth</td>
</tr>
<tr>
<td>7365965</td>
<td>Bayonet</td>
<td>2 x 4</td>
<td>1/2-20 UNF x 10.5 mm (0.400&quot;) thread depth</td>
</tr>
</tbody>
</table>

Port plug with O-ring (0.414" ID x 0.558" OD x 0.072" thick)
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)

<table>
<thead>
<tr>
<th>Part #</th>
<th>Manifold Type</th>
<th>Manifold Option (mm)</th>
<th>Sensor Port Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>7365983</td>
<td>Bell</td>
<td>2 x 5</td>
<td>1/2-20 UNF x 10.5 mm (0.400&quot;) thread depth</td>
</tr>
<tr>
<td>7365985</td>
<td>Bell</td>
<td>5 x 5</td>
<td>1/2-20 UNF x 10.5 mm (0.400&quot;) thread depth</td>
</tr>
</tbody>
</table>

Port plug with O-ring (0.414" ID x 0.558" OD x 0.072" thick)

Bell manifold

O-rings, 6 mm ID x 8 mm OD x 1 mm dia., FFKM (20 supplied with manifold)

Mixer retainer for bell manifold