

Installation and Setup for a Non-ISCO Pressure Transducer

On Teledyne ISCO Syringe Pumps



Syringe Pump Technical Bulletin TB12

Overview

For syringe pump applications requiring transducers with characteristics such as special ranges, differential pressure measurement, or greater accuracy than standard Teledyne ISCO pressure transducers, a user-provided pressure transducer may be used with Teledyne ISCO pumps.

When connected to the pump controller, the non-ISCO transducer overrides the factory transducer for normal operation. If an overpressure condition occurs, pressure is limited by the factory transducer for safety purposes. The external transducer is only for the pump connected to the “pump A” input, and is not for continuous flow systems.

Connecting to the Controller

Wiring connections are located on the rear panel of the pump controller. The ACCESSORY terminal strip allows connection of external input and output signals. The following section describes wiring connections for the three non-ISCO transducer types used most commonly with ISCO pumps.

☒ Note

For external devices to operate correctly, the ISCO transducer must remain connected to the pump.

The controller has three analog input connectors. Your controller must be both wired and programmed according to transducer type for proper operation:

- Analog Input #1: Either 0-50psi only, OR Custom 50-5,000psi range
- Analog Input #2: 500 psi only
- Analog Input #3: 5,000 psi only

☒ Note

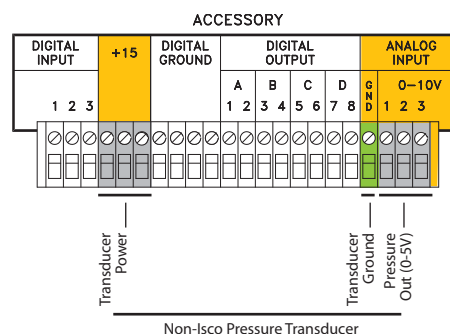
Transducers with a range greater than 0-5V may be used; however, the controller must still be programmed with maximum pressure at 5 volts.

Pressure units are in PSI for all entries and display values for non-ISCO transducers.

Three-Wire Transducer

Transducer	Controller
Transducer Power (15V / 1A max)	+15V
Transducer Ground	ANALOG INPUT GND
Pressure Out (0-5V)	ANALOG INPUT ^a 1, 2, or 3

a. Refer to Controller Setup in next section



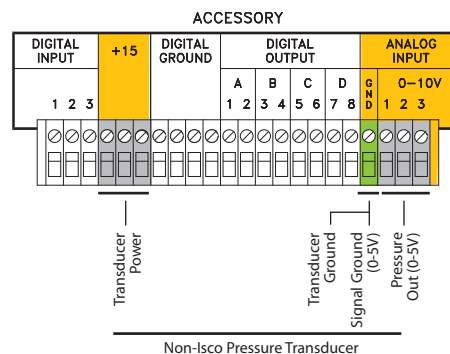
Four-Wire Non-Isolated Grounds

☒ Note

Transducer Signal ground and Transducer Power ground are tied together at the Analog Ground terminal.

Transducer	Controller
Transducer Power (15V / 1A max)	+15V
Transducer Ground	ANALOG INPUT GND
Transducer Signal Ground (0-5V)	
Pressure Out (0-5V)	ANALOG INPUT ^a 1, 2, or 3

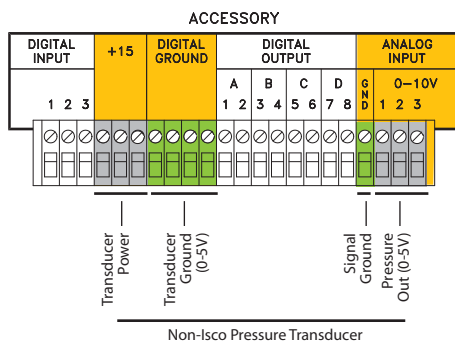
a. Refer to Controller Setup in next section



Four-Wire Isolated Grounds

Transducer	Controller
Transducer Power (15V / 1A max)	+15V
Transducer Ground	DIGITAL GROUND
Transducer Signal Ground (0-5V)	ANALOG INPUT GND
Pressure Out (0-5V)	ANALOG INPUT ^a 1, 2, or 3

a. Refer to Controller Setup in next section



Controller Setup

To program the controller for operation with a non-ISCO pressure transducer, access the Second Menu by pressing MENU (**MENU**) > MORE (**A**) > MORE (**A**).

- | | |
|-----------------------|--------------------|
| 1. POOR FILL | 4. DIFF. MODES |
| 2. DIAGNOSTIC MENU | 5. PRESS. INTEGRAL |
| 3. PRESS. CALIBRATION | |

A B C D

Press **4** to enter the DIFF. MODES menu.

Diff. Modes Options Menu

RANGE=00000 PSI AT 5V (1) ← mode indicator

- | | |
|------------------|---------------|
| 1. OFF | 4. 500 ANLG2 |
| 2. 0 TO 50 ANLG1 | 5. 5000 ANLG3 |
| 3. Custom ANLG1 | |

A B C D

From the DIFF. MODES menu, select the appropriate function.

Note that selections 2 through 5 are effectively “ON” functions for the desired mode, while selection 1 turns “OFF” any other mode previously activated.

OFF:

- 1** = OFF: Turn off DIFF. MODES.

ON:

- 2** = 0 TO 50 ANLG1: Use a 5-volt, 50psi transducer on analog input #1.
- 3** = CUSTOM ANLG1: Use a 5-volt, 0-50psi OR custom 50 to 5,000psi transducer on analog input #1. **Refer to the next section for custom range programming.**
- 4** = 500 ANLG2: Use a 5-volt, 500psi transducer on analog input #2.
- 5** = 5000 ANLG3: Use a 5-volt, 5,000psi transducer on analog input #3.

Custom Range Selection (Menu Item #3)

To enter a custom pressure range:

- Select CUSTOM ANLG 1 (**3**).

The mode number displayed at the top of the screen will change to (3).

- Select CHANGE VALUE (**C**).

At the top of the screen, the PSI value will go blank, and RANGE= will blink on and off.

- Use the numbered keypad to enter the top value of the pressure range at 5 volts (between 50 and 5,000psi), then press (**ENTER**).

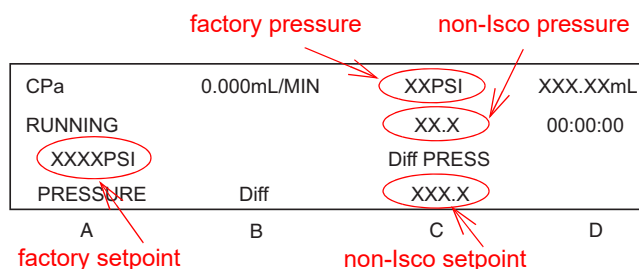
Diff. Modes Operating Screen

Pressure setpoints and readings for both the factory transducer and the non-ISCO transducer are displayed on the run screen. To adjust the factory transducer setpoint, press **PRESSURE** (**A**). The word **PRESSURE** will blink. To adjust the non-ISCO transducer setpoint, press **DIFF PRESS** (**C**). The words **DIFF PRESS** will blink.

For the blinking setpoint, use the numbered keypad to enter the desired value in PSI, then press

(**ENTER**).

The factory transducer setpoint can still be adjusted during normal operation. However, as previously stated, the non-ISCO transducer overrides the factory transducer for normal operation. If an overpressure condition occurs, pressure is limited by the factory transducer for safety purposes.



The Diff. Modes function can be toggled ON and OFF from the run screen by pressing **NORMAL/DIFF** (**B**). Toggling Diff. Modes ON will default to the last mode used.

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