Performus X Pressure and Timer Validation

Instructions

Introduction

These instructions provide the procedure for verifying the accuracy of the pressure and time outputs of Performus™ X15 and X100 fluid dispensers.

NOTE: The Performus X Series pressure transducers and timer cannot be field-calibrated. If these components do not meet the accuracy tolerances specfied in these instructions, they must be returned to Nordson EFD for factory calibration or replacement.

Pressure Reading Accuracy

The Performus X Series digital pressure readings are referenced to a calibrated pressure standard. The standard used is at least four times more accurate than the point of greatest accuracy of the transducer being tested. The pressure readings of the Performus X Series are verified at two points within the specified range of the model. The accuracy of each reading is verified against the pressure standard.

The required pressure accuracy for Performus X Series dispensers is shown in the following table.

Model	Verification Points	Tolerance
X100	• 20.0 psi (1.4 bar) • 80.0 psi (5.5 bar)	+/-2 psi (0.02 bar)
X15	• 3.0 psi (0.2 bar) • 12.0 psi (0.83 bar)	+/-0.3 psi (2.07 kPa)

Timer Accuracy

The Performus X Series timer accuracy shall be within +/-0.00005 seconds at a 10-second setting. The accuracy of the Performus X Series timer iss determined by measuring the End-of-Cycle Feedback pulse. The width of this will confirm that the dispense time accuracy is within +/-0.00005 seconds.

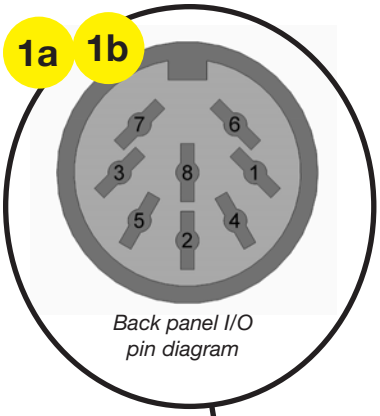
Required Tools and Supplies

The following equipment is required for the performance of the validation procedure:

- 24 VDC power pack and foot pedal
- 10K, 1/4 W 5% resistor
- Oscilloscope

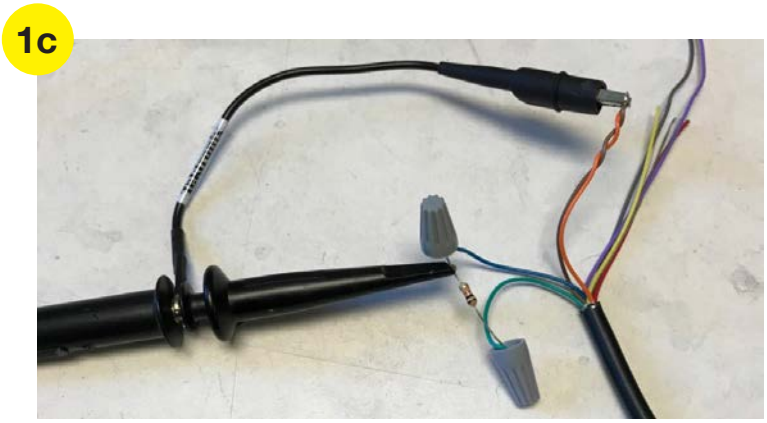
Performus X Validation Procedure

1. Connect the resistor and oscilloscope to the 8-pin I/O connector on the back panel of the Performus X dispenser as follows:
   a. Connect the resistor to pins 3 and 5.
   b. Use a piece of bus wire to short out pins 4 and 6.
   c. Connect the oscilloscope probe to pin 3 and the ground probe to pin 6.



Back panel I/O pin diagram

Cable Wire Color	Pin #	Function
Red	1	Voltage initiate +, 5–24 VDC (19 mA maximum)
Yellow	2	Voltage initiate -
Blue	3	End-of-cycle feedback output +, 5–24 VDC (100 mA maximum)
Orange	4	End-of-cycle feedback output -
Green	5	24 VDC supply + (100 mA maximum)
Brown	6	24 VDC supply -
Grey	7	Contact closure +, 24 VDC @ 19 mA
Purple	8	Contact closure -



Oscilloscope connection example

2. Power on the test equipment and configure the oscilloscope for positive pulse measurement using 50% of the signal level as the trigger point.

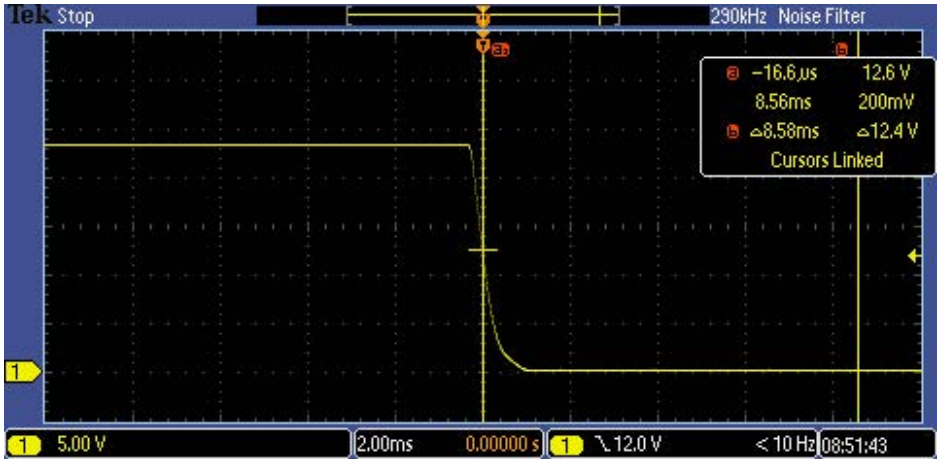
3. Set the Performus X dispenser to a time interval of 10 seconds.

Performus X set to 10 seconds

Performus X Validation Procedure (continued)

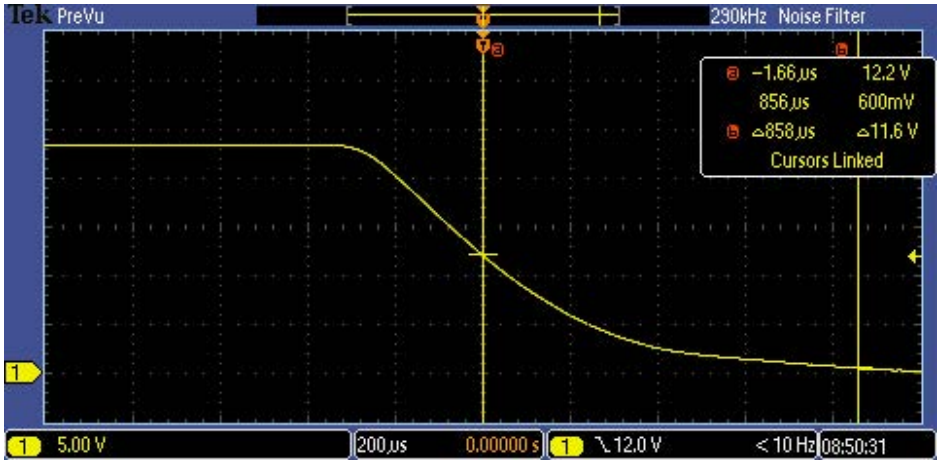
4. Configure the oscilloscope to perform a delayed trigger measurement as follows:
   a. Set the delayed trigger 10.0 seconds with 2 ms per division resolution
   b. Set the trigger slope to rising (positive) with a hold-off time of 10 seconds.

5. Depress the dispenser foot pedal and observe the pulse width displayed on the oscilloscope. Depress the foot pedal several more times, noting the pulse width. The pulse width accuracy should be +/-0.00005 seconds.



Oscilloscope Output for 2 ms per division

6. Increase the oscilloscope resolution to 200 µsec per division. Maintain the 10.0 second delayed trigger. Adjust the delay setting to center the rising edge or falling edge or falling edge of the pulse. The pulse width accuracy should continue to be +/-0.00005 seconds.



Oscilloscope output for 200 µsec per division

Nordson EFD

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