Engineering Note: EN0124 Sensor Analogue Output Test Procedure

Summary:	Procedure for testing Hydronix sensor analogue outputs to determine whether the outputs are operating correctly or non-responsive.
Products affected:	All sensors, Hydro-Com, Hydro-View / Hydro-Hub.
Revision Date:	08/05/2026 Author: D. Pearce

1 Introduction

This document defines the procedure for verifying sensor analogue output operation. Verification is by multimeter measurement of output voltage and current.

This document applies only to testing in a safe environment outside of a control cabinet.

2 Test Methods

2.1 Using Hydronix software - Functional Test

Each analogue output is forced individually to known current values using Hydronix software, then measured with a multimeter to verify that the output current matches the set value.

This method verifies whether the analogue outputs are operating correctly.

2.2 Without Hydronix software - Indicative Only Test

Where software connection to the sensor is not available, each analogue output is checked for response to a change at the sensor face.

This method is suitable only for identifying a non-responsive output. Output accuracy and correct output operation are not verified using this test.

3 Equipment

The following equipment is required to conduct the test:

- 0975A sensor cable (where applicable)
- Sensor Interface Module (SIM) + PC running Hydro-Com; or Hydro-View / Hydro-Hub
- Digital multimeter capable of measuring DC voltage and DC current
- Suitable power supply for the sensor

4 General Test Conditions

- Ensure the sensor is powered.
- Ensure the analogue output under test is disconnected from the control system.
- Ensure the multimeter leads are connected to the correct terminals for the selected measurement function before switching between voltage and current measurement.

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5 Output Wiring Identification

Output	*Sensor wiring*	*Software Control Name*
Analogue Output 1	Blue + Black (twisted pair)	Current Loop 1
Analogue Output 2	Brown + Black (twisted pair)	Current Loop 2

(See document HD0678 Sensor Electrical Installation Guide for further sensor electrical information).

6 Test Steps

1. Connect the 0975A cable to the sensor and apply power.

6.1 Method 1 - Functional Test

1. Connect the multimeter to Analogue Output 1: Blue + Black (twisted pair).
2. Set the multimeter to 'DC voltage'. Measure the voltage across the output wires. Record the value.
3. Set the multimeter to 'DC current'.
4. Establish sensor connection in Hydronix software and open the Hardware Test page in the selected Hydronix software: Hydro-Com (see Figure 1) or Hydro-Net (Hydro-View / Hydro-Hub, see Figure 2 and Figure 3)
5. Set Current Loop 1 to 5 mA, 10 mA, 15 mA, and 20 mA in sequence. Record the multimeter reading at each step.
6. Disconnect the multimeter from Analogue Output 1 and connect it to Analogue Output 2: Brown + Black (twisted pair).
7. Repeat Steps 2 to 5 for Current Loop 2.

Outputs are operating correctly if both of the following conditions are met:

- The voltage (step 2) is 15.0 VDC, ±1.0 V.
- Each recorded current value (step 5) matches the set current loop value ±0.05 mA.

6.2 Method 2 - Indicative Only Test

1. Ensure the sensor ceramic face is clean and dry.
2. Connect the multimeter to Analogue Output 1: Blue + Black (twisted pair).
3. Set the multimeter to 'DC voltage'. Measure the voltage across the output wires. Record the value.
4. Set the multimeter to 'DC current'.
5. Record the output current with the sensor ceramic face:
    a. Exposed to air.
    b. Covered by hand.
6. Disconnect the multimeter from Analogue Output 1 and connect it to Analogue Output 2: Brown + Black (twisted pair).
7. Repeat Steps 3 to 5 for Analogue Output 2.

Outputs are operating correctly if both of the following conditions are met:

- The voltage (step 3) is 15.0 VDC, ±1.0 V.
- The current (step 5) changes between the two conditions by at least 3mA.

Note: This method confirms output response only. It does not verify output accuracy or correct output operation.

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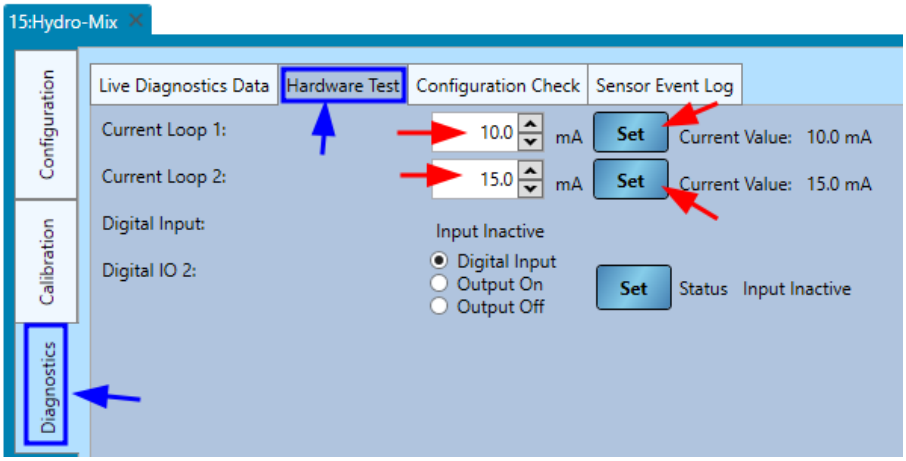

Figure 1: Hardware Test Page - Hydro-Com

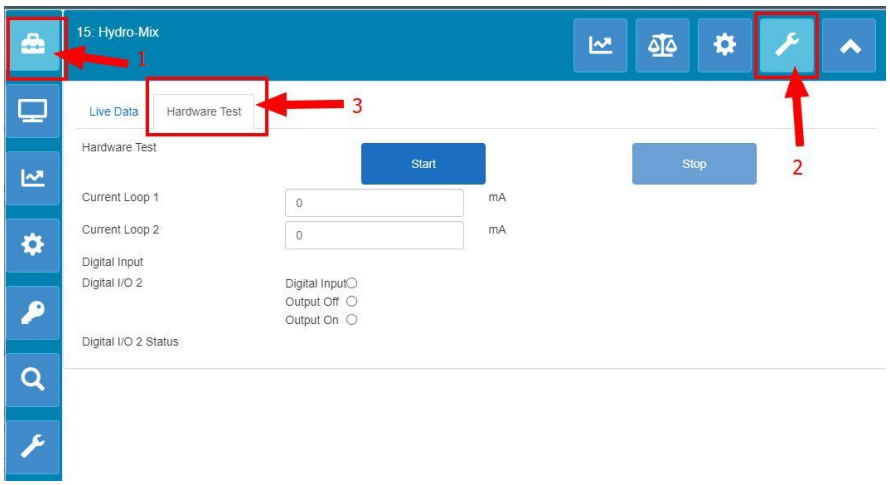

Figure 2: Hardware Test Page, navigation – Hydro-Net

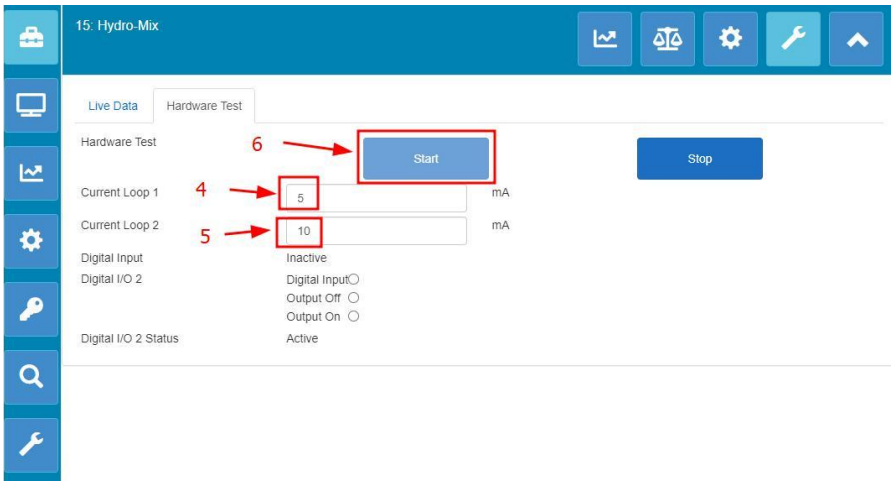

Figure 3: Hardware Test Page, output activation – Hydro-Net

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