



## Basic trouble shooting of a GP:50 pressure transmitter.

Below are basic troubleshooting techniques for any of the GP:50 pressure transmitters.

This procedure assumes a basic understanding of how to hook up a 4-20mA current loop device or VDC output device with a power supply and multi-meter.

### Is the unit reading a good zero?

Typically, a functioning 4-20mA pressure transmitter will read 4 mA or within a designated tolerance per the data sheet for that product. This is known as zero balance. Fixed range devices that don't have any zero or span adjustment have a tolerance on the zero reading. Some are +/-0.2%, some +/-0.5% and some +/-1% of the FSO. So, for a 4-20mA device with a 0.5% zero balance, the zero could read +/-0.08 mA ( $4-20\text{ mA} = 16\text{ mA span} \times \pm 0.5\% = \pm 0.08\text{mA}$ ). This unit should read between 3.92 mA to 4.08 mA and in specification and typically is functioning if reading within this range.

On 0-5 VDC output units the same tolerance on the zero applies. With no pressure applied, depending on the range, the zero reading with a +/-0.5% tolerance should read between -0.025 VDC and +0.025 VDC. Because these units read 0 vdc it's difficult to determine whether a unit is functioning properly with a 0 reading, it may or may not be functioning properly.

### If not:

If the unit is not reading as indicated above or its operation is in question in your system, it's always best to remove the unit from your system and test with a separate power supply and multi-meter to determine whether the transmitter is at fault and not a power supply or reading device issue.

With the device powered and connected to a multi-meter or other reading device, here are some steps to troubleshoot the unit:

1. Ensure you have the proper VDC applied to the unit. Most units will operate from 9-36 VDC but some special options may change this.
2. Ensure the multi-meter or reading device is set to read mA or VDC in accordance with the unit type.
3. In order to do a simple check, some sort of pressure source is required. It doesn't need to be the max pressure of the device but at least enough to get a response from the unit. Typically, 10% of the pressure range is enough to determine if the unit is responding and at least functioning.
4. With the unit hooked up to the power supply and multi-meter and reading within the limits mentioned above, apply a small amount of pressure to the device.

**NOTE: It is NOT advisable to mechanically apply pressure into the sensing diaphragm. Depending on the sensor type and range, mechanical force applied to the sensor could damage the sensing diaphragm.**

5. With even a small percent of the pressure range applied, the unit should respond to pressure by elevating the output. This will indicate that the unit is at least responding to pressure and the electronics are active. If the unit responds, the next step is to apply the full-scale pressure for which the unit is rated and check the full-scale reading. For example, if it's a 0-100 psi unit with 4-20mA, with 100 psi applied it should read 20 mA or within the full-scale reading tolerance, similar to the zero-reading tolerance.

6. If the unit responds to pressure, this usually indicates the unit is functioning. It's rare to have a good zero reading and the unit responds to pressure but it isn't working properly, not impossible but very rare.

7. If the unit reads a high zero or low, typically 3.2 mA or less or 23 mA or higher, it's a good indication the electronics have failed or the sensor is damaged and the unit would need to be sent back to the factory.

7b. If the zero reads between 4 mA and 20 mA but out of the tolerance specification, that typically indicates a sensor issue and the unit would need to be sent back to the factory.

7c. If the unit reads properly outside the system you run this in, it may indicate that something other than the transmitter is at fault. In rare cases a grounding issue could cause the unit to read good out of the system but bad when installed in the system. It is best to perform a ground test if this occurs.

### **Ground Check:**

If a unit has become grounded internally, either thru internal contamination or a damaged wire, it can cause the system to read improperly. A simple check is to do a continuity test between the power wires and case ground and then the signal wires and case ground.

- On 4-20mA units, with the multi-meter set to read ohms/ continuity, attach one side of your leads to the red wire or whichever pin is + Pwr/sig and the other to the case of the transmitter. If there is any ohm reading there is a short somewhere in the system. If not, do the same between the black wire and the case. Any reading indicates a short and the unit needs to be repaired by the factory.
- On a 0-5 VDC unit, attach one meter lead to one of the power or signal leads and the other to the unit's case and check for any ground/ reading. Perform this with each wire to case ground individually. There should be no ohm reading between any wire and the case, unless there is a drain/ ground wire provided.

These are some basic trouble shooting techniques that will determine whether it is the transmitter or something in the system at fault. Determining this avoids unnecessary cost and time in retuning devices that operate properly.

When in doubt, it's always best to contact the factory and speak with one of our qualified inside technical salespeople. We can provide guidance on testing your instrument to avoid unnecessary returns.

Email: [sales@gp50.com](mailto:sales@gp50.com)

Phone: 716-773-9300 Ask for Technical sales

Repairs should only be done by GP:50. Repairs done by the customer may void warranties and could cause permanent damage to the unit or cause an issue in the system. Repairs done by the customer on Intrinsically Safe units will void the approvals and are a potential explosion hazard. Returned products that have been exposed to hazardous substances should be cleaned prior to return and should include the Material Safety Data Sheet for all substances.

### **RMA Process**

Repair cost is determined after evaluation of the damaged product. Costs vary depending on the work required. The repair department will provide an estimate of the repair cost and turnaround time. There is an inspection repair charge if the unit is found to be outside the warranty period. Repair inspection charges may be used towards the repair cost or towards a replacement unit if purchased. Inspection charges vary depending on the model being returned but typically run around \$50.00. A repaired unit carries a 6-month warranty. If it is determined that the transmitter cannot be repaired, or the repair cost outweighs the value of the unit, a 10% discount for a new replacement unit will be extended. New replacement transmitters carry a full, 1-year manufacturer's warranty.

For an example of repair costs, below are budgetary prices for repairs on the WECO® Union style transmitters, Model Series 170/270/370 & 271/371. These are only guidelines and each unit would need to be evaluated by the factory to determine the failure mode and what would be required to return to service:

1. Basic recalibration- No Parts required: \$125.00
2. Replace Connector and Recalibrate: \$150.00 (cost may vary depending on connector type)
3. Replace upper housing, electronics & recalibrate: \$325.00
4. Replacement sensor & recalibrate: \$525.00

**Return Procedure:**

Prior to returning any equipment to GP:50, please obtain a Return Material Authorization (RMA) number.

An RMA can be obtained by either contacting our Sales Department at 716-773-9300, an email to [gp50service@gp50.com](mailto:gp50service@gp50.com), or you can fill out an RMA form via our web site at:

<https://www.gp50.com/resources/repairs-returns-rma/> and a Repair Representative will issue you an RMA number.

In order to service you more quickly and accurately, packages being returned to GP:50 should be marked with the RMA number on the outside of the package and include the following information:

- Company Name
- Return Address
- Telephone and Fax Numbers
- Model Number
- Serial Number
- Note the reason for return or repair