



**Service Bulletin: #002**

**Date: September 2012**

## **Pressure Transducer Verification and Calibration** **Sentinel I28 and Blackbelt**

**Summary** – This Bulletin will give a short synopsis of the purpose of verifying and calibrating the pressure transducer in an instrument (hereafter, it will be referred to simply as the transducer.) It will also give instructions on how to conduct a pressure verification and pressure calibration of the Sentinel I28 and Blackbelt instruments.

### What is Transducer Calibration and Verification?

Calibration must be performed on the transducer to ensure that the accuracy of pressure measurement of the instrument. Without this calibration the test data would be inaccurate. The transducers have been pressure calibrated at the factory for full range using six distinct pressures at equal intervals through the transducers range as reference points.

Once an instrument has been calibrated, transducer verification is used to check the accuracy of the pressure calibration data. The procedure for transducer verification is very similar to transducer calibration however the primary difference is that calibration will overwrite the existing calibration data and verification will only record the transducer reported results vs. external gauge reported results and not alter or change the existing calibration data in any way. As the factory calibration (NIST traceable) will be void if the user performs any recalibration of the transducer, *it is strongly suggested to begin with transducer verification rather than calibration.*

**If a transducer verification is first performed and the results indicate an out of tolerance condition at any of the six reference points, the transducer must be recalibrated.**

Prior to performing any pressure calibration, it is also strongly suggested to first perform a system back-up (see instrument manual for details). Doing so will allow a simple reset to the previous calibration should any error occur during the recalibration process by simply restoring the backed-up settings (again, see instrument manual for details).

A verification of the transducer should be done periodically according to the quality standards at your facility. At minimum, CTS recommends performing a transducer verification (and recalibration if out of tolerance) on an annual basis.

**A calibrated master pressure gauge is needed, in order to correctly verify or calibrate the transducer.**

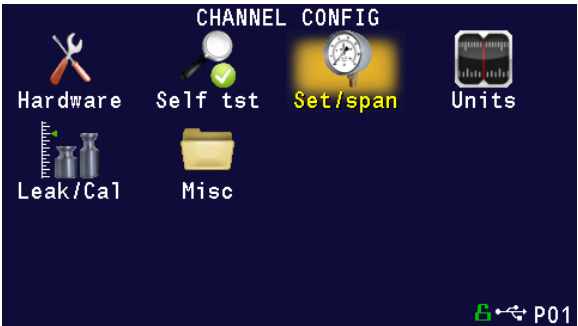
# Pressure Transducer Verification Instructions:

The process to verify the transducer is very similar to the above process for calibration; however it will not overwrite the existing calibration data.

From Main Menu - Choose **Channel Config**



Choose **Set/span**



Choose **Pressure Select**

Select which transducer you would like to calibrate

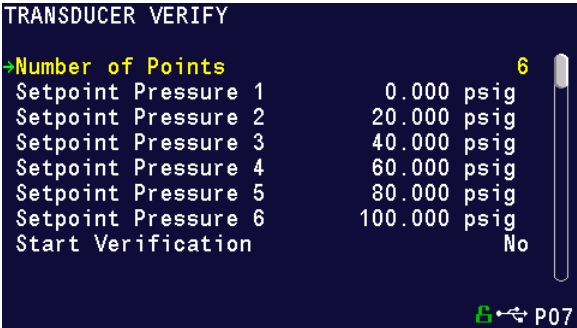


Choose **Transducer Verify**

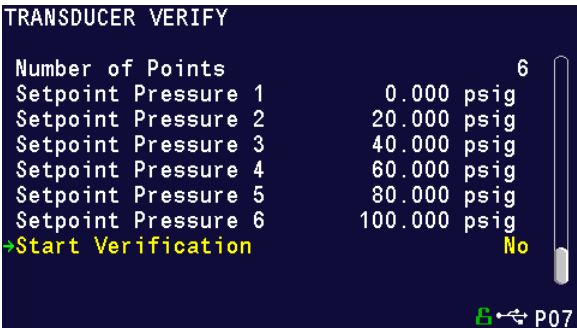
Select **Yes**

### Choose Number of Points

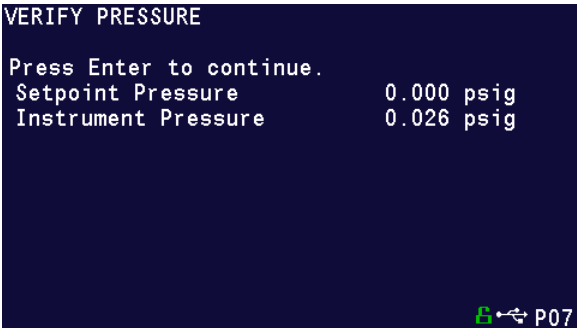
The instrument is capable of doing a multiple point calibration. The number of points is determined by the user. You may select up to 32 points for calibration.



### Choose Start Verification Select Yes



The instrument will then direct you to attach a master gauge to the test port and the screen will take you to your first setpoint.



Adjust your regulator until the gauge is identical to the setpoint pressure. *Use the instrument pressure reading as a reference only.* Once the gauge and the setpoint

pressures are identical or as close as possible, **note the pressure on the master gauge and press enter.**

You will now be directed to input the actual pressure reading from the master gauge.

### Choose **Master Gauge Press**

Input master gauge pressure.

```
VERIFY PRESSURE
Press enter to edit master gauge pressure
Setpoint Pressure      0.000 psig
Instrument Pressure    0.107 psig
→Master Gauge Press   0.000 psig

E ↩ P07
```

Note – During this step, an isolation valve is activated so there can be a drop in the pressure reading on the master gauge. Be sure to input the pressure as read just before you pressed enter.

Input the subsequent setpoint pressures in the same manner until the verification is complete.

## Pressure Calibration Instructions:

From Main Menu - Choose **Channel Config**



Choose **Set/span**



Choose **Pressure Select**

Select which transducer you would like to calibrate



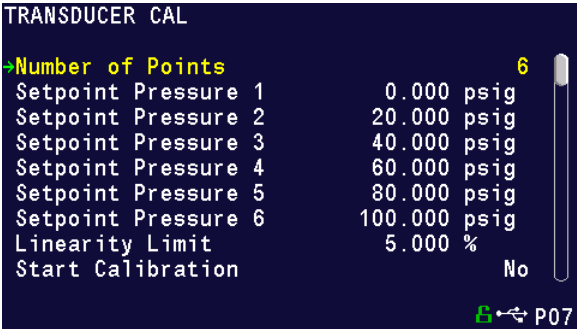
Choose **Transducer Cal**

Select **Yes**

Choose **Number of Points**

NOTE: The instrument is capable of doing a multiple point calibration. The number of points is determined by the user. You may select up to 32 points for calibration.

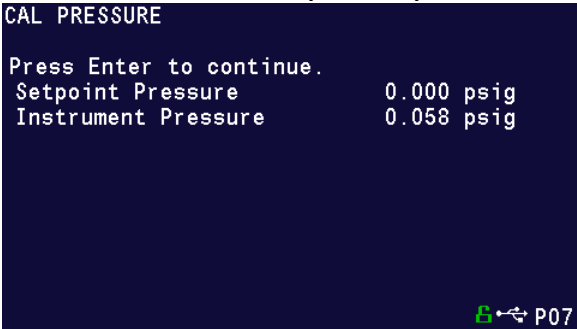
Input the Setpoint Pressures that you have chosen.



Choose **Start Calibration**

Select **Yes**

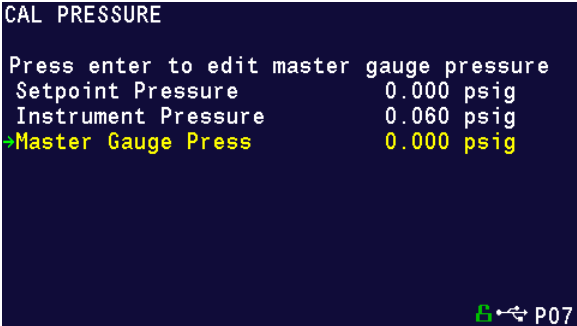
The instrument will then direct you to attach a master gauge to the test port and the screen will take you to your first setpoint.



Adjust your regulator until the gauge is identical to the setpoint pressure. *Use the instrument pressure reading as a reference only.* Once the gauge and the setpoint pressures are identical or as close as possible, **note the pressure on the master gauge** and **press enter**.

You will now be directed to input the actual pressure reading from the master gauge.

**Choose Master Gauge Press**  
Input master gauge pressure.



Note – During this step, an isolation valve is activated so there can be a drop in the pressure reading on the master gauge. Be sure to input the pressure as read just before you pressed enter.

Input the subsequent setpoint pressures in the same manner until the calibration is complete.