HART PRESSURE TRANSMITTERS CALIBRATION

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Verifying and documenting the performance and adjustment of a HART pressure transmitter (Highway Addressable Remote Transducer) can require many tools; however, this task can be simplified through the use of multifunctional calibrators compatible with this type of device, which can be accompanied by a pressure adapter module and a hand pump; this will allow changing modules for different pressure ranges and it will not be necessary to use additional tools.

To get a greater precision when calibrating these transmitters, it is necessary to match the standard pressure measurement range as close as possible to the device to be calibrated; for example, if desire to calibrate a transmitter whose pressure range oscillates within 100 psi, it is suggested to use a pressure module with the same range. Industry standards suggest that the standard measurement should be 4-10 times more accurate than the device being tested, so it will be necessary the best quality of accuracy. Calibrators that document these types of processes typically use a pressure module, and have built-in HART functionality that allows smart trimming on the transmitters; in turn, they can document transmitter performance before and after tuning, and calculate errors/failures.

To carry out the test, the following standard steps should be followed:

1. Isolate the transmitter from the process to be measured and calibrated; as well as the loop wiring. If the mA signal is measured at the transmitter's test diode, the wiring should remain intact; however, note that this method is not the most accurate for measuring mA.
2. Connect to the transmitter the mA measurement connectors from the multifunction calibrator.
3. Connect the pressure module cable to the multifunction calibrator and connect the hand pump transmitter test hose to the transmitter.
4. Press the HART button on the calibrator to view the transmitter configuration.
5. Press HART again and the calibrator will display the correct measurement/source combination for the test. If desire to record or document the calibration process, it will be necessary to enter the transmitter tolerance test and follow the instructions on the screen. If the mA signal measurement at the test points is within tolerance, the test is complete. Otherwise, it is necessary to make adjustments to obtain the desired calibration.
6. Select, adjust, and set zero pressure, mA output signal, and sensor input.
7. After the fit is selected, the status of the transmitter must be recorded or documented, and after the fit, if the test is successful, then it is completed.