

## Calibrating HART Temperature Transmitters; Active Calibrator Settings

**Problem:** Some HART temperature transmitters use pulsed excitation to power RTD elements. This technique works well for the RTD measurement but can actually cause problems when electronic RTD calibration standards are used to check the condition of a temperature transmitter. “Active” calibration standards provide a simulated resistance using electronic techniques; i.e. the simulation is powered by the calibration standard. Connecting this type of simulation equipment to some pulsed excitation temperature transmitters will create a conflict that results in FALSE “out of tolerance” conditions for As Found and As Left checks.

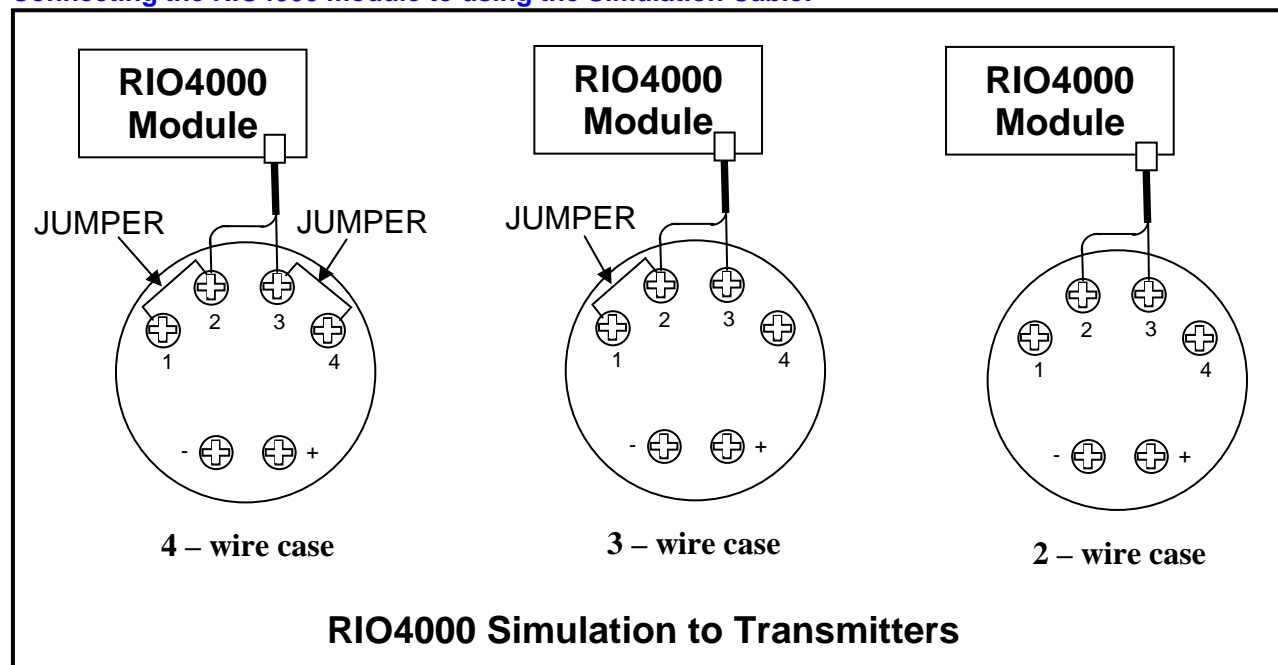
HART temperature transmitters known to be involved:

- Rosemount Models 248, 644 and 3144
- Yokogawa Models YTA110 & 310

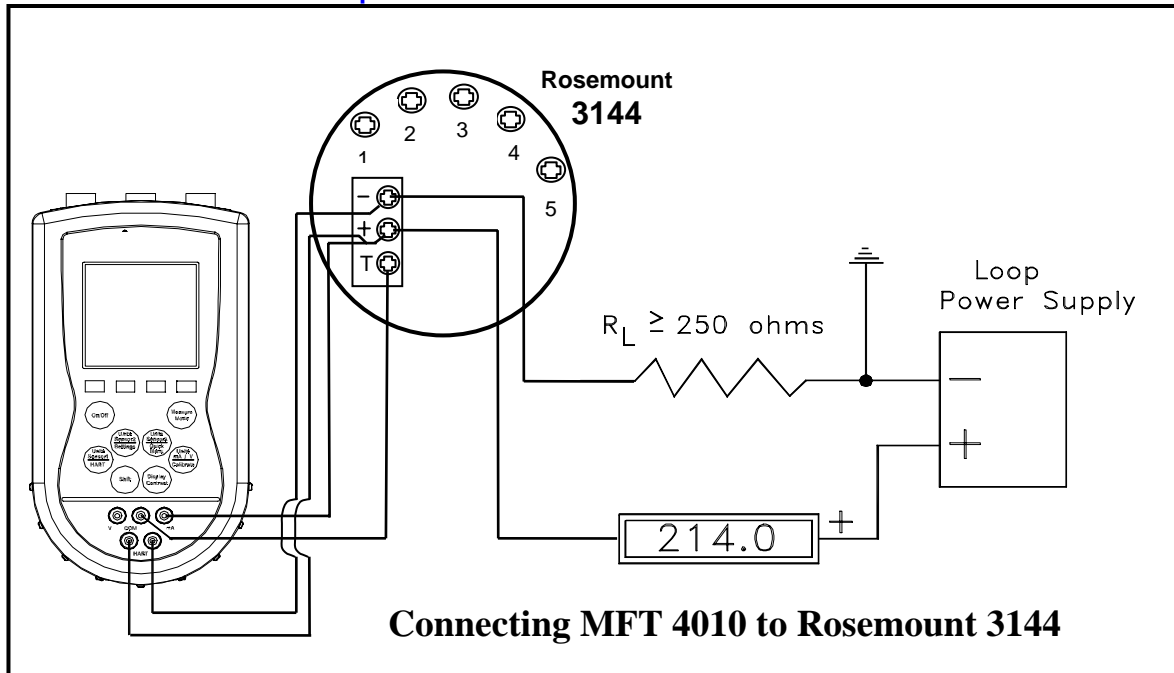
**Solution:** The above HART temperature transmitters have a parameter called “Active Calibrator” (Rosemount) or “Snsr Trim Act” (Yokogawa). User manuals instruct users to turn the Active Calibrator parameter value from Off (Normal) to On. Meriam’s RIO4000 RTD measure and simulation module with the MFT 4010 is an Active Calibrator. To successfully use the MFT & RIO module to check calibration of these HART temperature transmitters, use the MFT’s HART communication feature to turn the Active Calibrator setting to On. Then use the MFT with RIO module to document As Found condition, trim the transmitter, and document the As Left condition. After calibration documentation activities are completed, use the MFT’s HART communication feature to return the Active Calibrator setting to Off (Normal). This returns the transmitter to the RTD measurement mode with pulsed excitation.

Note: During Lower & Upper Sensor trims of Rosemount temperature transmitters, the MFT automatically sets the Active Calibrator value to On. Upon completion of trim activities, the MFT returns the Active Calibrator value to its original value. Do not confuse calibration documentation with sensor trim functions.

### Connecting the RIO4000 module to using the Simulation Cable:



**Connecting the MFT 4010 to the Rosemount 3144 HART Temperature Transmitter for HART Communication and current loop measurement:**



For a complete Power Point example for using the MFT and RIO module to calibrate a Rosemount 3144 HART temperature transmitter, please access the Rep Download area of the Meriam web site ([www.meriam.com](http://www.meriam.com)) and download the Training Presentation named "MFT 4010 & RIO4000 for Rosemount 3144.ppt".