



TOTALFLOW

Technical Bulletin 113

Tuning ABB's Modbus Multivariable's Static Pressure Response Time

Totalflow Technical Bulletin

Version 1.0, Revision AD (7 January 2004)

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ABB modbus multivariables, Totalflow part numbers 1641020-xxx (with keys and display) and 1641021-xxx (without keys and display) shipped prior to December 31, 2003 could have a slower than normal static pressure reaction time. These particular units took about 100 seconds for the modbus output to reach the applied pressure value.

The following procedure describes how to reduce the reaction time significantly while maintaining the proper amount of filter.

This procedure is used, when a customer has one or more transmitters connected at a field site and wants to change the static pressure measurement response time at the site.

Wiring Communications and Power


1. One or more 2010TC transmitters (Totalflow part numbers 1641020-xxx and 1641021-xxx) must be connected together on the RS-485 bus.
2. **Disconnect the transmitter's RS-485 bus from the Flow Computer or RTU.**
3. Connect the PC to an RS-485 interface cable. Totalflow part numbers 2100241-002 and 2100248-001 combined provides a suitable RS-232 to RS-485 converter for this purpose. Connect the RS-232 end of the converter cable to one of the Com ports of the PC and connect the red (+) and black (-) alligator clips to Comm (+) and (-) respectively. The B&B Electronics RS-485 converter is an equivalent substitute for the cable, TD(A) – and TD(B)+, to the transmitter communication terminals (-) and (+), respectively.
4. It may be necessary to connect a 9 volt battery to the cable or B&B Electronics RS-485 Converter +12V and GND.
5. Connect 12 volts to all the transmitter power terminals (+) and (-).

Keeping the Transmitter in Operate Mode*

1. All transmitters on the RS-485 bus must in the Operate mode, which is the normal mode of operation. Normally, the transmitter should already be in Operate mode and the following 6 steps can be skipped. Use the following six steps to determine if any of the transmitters are in the Configuration mode.
2. Using the Local Key Pad, depress the M key. Display shows EXIT.
3. Repeated depress the + key until display shows Device Mode.
4. Depress the M key to select Device Mode. The display shows Operate.
5. Depress M key to select Configure. Display show ok.
6. Repeated depress the +key until display show EXIT.
7. Depress M key. Display shows User-Text.

Executing the AD Trim program

1. Determine which communications port the RS-485 cable or B&B converter is connect to on the computer. Go into the Windows Setting for the Com port that will communicate with the transmitters and turn off FIFO.
2. For Windows 2000 perform the following procedure to turn off the Com Port FIFO buffer.
 - a. Right mouse click My Computer.
 - b. Then left mouse click the following buttons.
 - c. Properties
 - d. Hardware
 - e. Device Manager
 - f. Ports (Com & LPT)
 - g. Communications Port (Com 2), select the com port that the RS-485 cable is connected to.
 - h. Port Settings
 - Bits per second: 9600
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: None
 - i. Advanced
 - j. Use FIFO Buffer, **NOT Checked**.
 - k. Mouse click OK on the various window associated with turning off the FIFO Buffer.
3. For Windows NT perform the following procedure to turn off the com port FIFO buffer. Left mouse click the following buttons.
 - a. Start
 - b. Settings
 - c. Control Panel
 - d. Communications ports
 - e. Ports
 - f. Com 1, Com2, select the com port that the RS-485 cable is connected to.

- g. Settings
 - h. Port Settings
 - Bits per second: 9600
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: None
 - i. Advance
 - j. FIFO Buffer, **NOT CHECKED**
 - k. Mouse click OK on the various window associated with turning off the FIFO Buffer.
4. Run the AD Trim 2_0_2 program downloaded from ABB's Web Site. **File name - ADTrim_2_0_2.exe**
 5. Select the Com port, connected to the RS-485 cable.
 6. Enter the Modbus address (defaults to 247) of the transmitter, that the Response Time will be read and modified.
 7. With the mouse pointer, select **Connect**. The current static pressure time constant is displayed. Repeat this step if communications is not successful. If the reading is 0.25, then select **Exit without saving**.
 8. Enter 0.25 in the Time constant Static pressure window. If the unit has a display it should have a clock symbol  on the left hand side. **Power must remain on the unit for at least 60 seconds after entering the .25 value. The value is being written to memory for the duration that the clock symbol is visible (about 50 seconds). If you do not have a display, wait at least 60 seconds before removing power!!!**
 9. With the mouse pointer, select **Save and Exit**. Occasionally, this communications shows error. However, the value should be in the transmitter.
 10. The AD Trim program should display, Update Successful.
 11. Select OK.
 12. The AD Trim program should display, Device back in operate mode.
 13. Select OK and the program will terminate.
 14. Using the Local Key Pad, depress the M key. Display shows EXIT.
 15. Repeated depress the + key until display scrolls through all the options until it shows the word "Exit".



16. Depress M key to exit setup mode. Display should not be displaying pressure and engineering units.
17. Turn power off (wait 10 seconds) and back on to the transmitter and Repeat steps 4, 5, 6, and 7 to verify, that the 0.25 was accepted by the transmitter.
18. Go back to either step 2 (for Windows 2000) or 3 (for Windows NT) and **check** FIFO buffer to reset your computer to its factory settings.

Removing Communications and Power

1. Disconnect the RS-485 cable from the transmitter RS-485 bus.
2. Connect the RS-485 transmitter bus to the flow computer or RTU.

Conclusion

ABB will provide an RS-232 to RS-485 loaner cable pair (Totalflow part numbers 2100241-002 and 2100248-001 combined provides a suitable RS-232 to RS-485 converter for this purpose) to anyone needing an interface cable. . The B&B Electronics RS-485 converter is an equivalent substitute for the cable, TD(A) – and TD(B)+, to the transmitter communication terminals (-) and (+), respectively.

If you have questions please contact our Customer Service Department at 800-442-3097 option 1,1 and reference ABB Technical Bulletin # 113.