Technical Note

Serial Output

Testing with a Multi-Meter

Description of How to Test Serial Transmission with a Multi-Meter

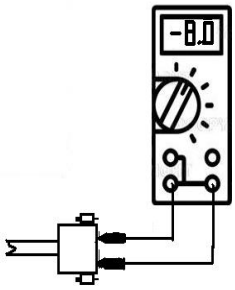
When troubleshooting communication problems between a transmitting device (scale, indicator), and a receiving device (printer, scoreboard), a quick way to determine if the transmitting device is really transmitting is to use a meter to measure fluctuations in the voltage or current during transmission. These readings can be made at the transmitting device's port, or the receiving device's end of the interconnect cable.

The best way to verify good transmission is to set the transmitting device (scale, indicator) to transmit on demand at the lowest selectable Baud Rate. This allows for longer fluctuation of the meters display. If the transmitting device is programmed to transmit in continuous, the meters display will fluctuate constantly.

Testing RS232:

If testing at the transmitting device, place the red meter lead on transmit (TXD) and the black lead on signal ground (GND). If testing at the receiver end of the cable, put the red meter lead on receive (RXD) and the black lead on ground (GND).

Set the meter to read DC volts. The meter's display should read between -3 to -25 VDC. Press the print button on the transmitting device and the meters display will fluctuate between the original voltage reading, and 0 volts. When transmission is complete, the meter display should read the original -3 to -25 VDC.



Testing RS422 and RS485:

If testing at the transmitting device, place the red meter lead on + transmit (TXD +, sometimes labeled Com B) and the black lead on -transmit (TXD -, sometimes labeled Com A). If testing at the receiver end

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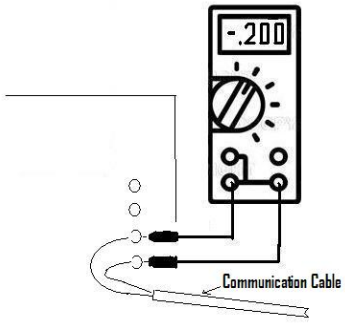
of the cable, put the red meter lead on + receive (RXD +) and the black lead on -receive (RXD -). When ever possible, leave the interconnect cable connected to both devices.

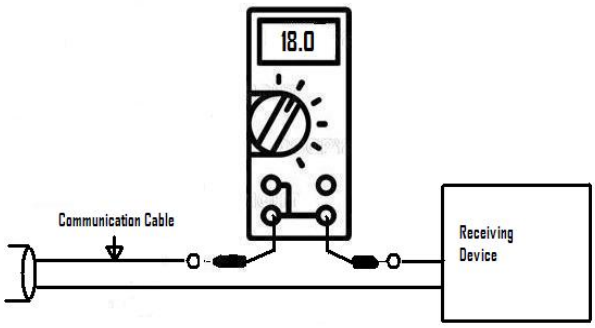
Set the meter to read DC volts. The meter's display should read between -.2 to -7 VDC (space), or +.2 to +7 VDC (mark). Press the print button on the transmitting device and the meters display will fluctuate between the original voltage reading and 0 volts. When transmission is complete, the meter display should read the original voltage reading.



Testing 20 Milliamp Current Loop:

If testing at the transmitting device with an active port (device is supplying current), disconnect the interconnect cable and place your black meter lead on ground (GND) and the red meter lead on transmit (CLTXD). If testing at the receiver end of the cable, disconnect the interconnect cable and place the black lead on ground, and the red lead on receive (CLRXD).

Set the meter to read DC milliamps. The meter's display should read approximately 18 mA. Press the print button on the transmitting device and the meters display will fluctuate between 9 mA and 18 mA. When transmission is complete, the meter display should read the original 18 mA.



Mettler-Toledo, Inc.
1900 Polaris Parkway
Columbus, Ohio 43240

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