Product Specification

FOUNDATION™ Fieldbus Profibus PA

FBT-5

Fieldbus wiring can be tested using the **FBT-5 Wiring Validator**. It puts a DC voltage and fieldbus signals on the wire pair. A Relcom Fieldbus Monitor, FBT-6 (or FBT-3), is used to test the DC voltage, signal levels and noise on the wiring. These tests can be performed on existing instrumentation wiring, newly installed fieldbus cable, or a fieldbus wiring system with wiring blocks and terminators already installed. However, no Host, Fieldbus devices, or Power Conditioners may be connected to the FBT-5 / FBT-6 combination while testing.

Connection

Connect the FBT-5 using the clip leads at one end of the cable. Connect the Terminator (FBT-5T) using the clip leads to the other end of the cable. Connect the FBT-6 to the Terminator. The red clips should connect to the positive Fieldbus wire and the black clips to the negative Fieldbus wire. If the wires are reversed, the Monitor will not turn on.

Operation

The Wiring Validator has a push-button Power switch that turns it on or off. If the Wiring Validator is turned on with a single click of the Power button, it stays on for about 5 minutes and then turns itself off to save battery power. If the Wiring Validator needs to be on indefinitely, push and hold down the Power button for about 3 seconds.

The Green light shows that the Wiring Validator is on.

- If the Green light blinks rapidly (about three times per second) the Wiring Validator or the Monitor is not attached to the wire pair being tested or the connection is backwards.
- If the Green light blinks slowly (about once a second) there is a good connection to the wire pair, the Wiring Validator is in the battery save mode and will automatically power down in five minutes.
- If the Green indicator light is on continuously there is a good connection and the Wiring Validator will stay on until it is manually turned off.

When the Wiring Validator is turned on, the Monitor powers up and shows the following readings.

- Voltage should be between 9 and 10 Volts
- Push the Monitor's mode button once to get to the LAS function. The LAS signal level reading should say "OK" and show the signal level.

Signal Level (mV)	Wire Condition
350 or more	Excellent
200-350	Good
150-200	Marginal
150 or less	Not Good

- Push the Monitor's mode button three time to get the NOISE AVerage function. The reading should say "OK" and show a noise reading.

Noise Level (mV)	Wire Condition
25 or less	Excellent
25-50	Good
50-75	Marginal
75 or more	Not Good

Wire System Testing

A fieldbus wire system with two terminators and other wiring blocks installed can be tested before devices are connected. This is done the same way as the wire testing described above. The only difference is that the Test Terminator is not used.

Note: The wiring system cannot have fieldbus devices attached to it during the test. The Wiring Validator can not power the fieldbus devices and its signal generator will interfere with any data transmission that the fieldbus devices might initiate.

If the wiring system has the two terminators required for fieldbus operation, the wiring system test will have results comparable to the testing the wire by itself. If, however, not enough terminators or too many terminators have been installed, the measured signal levels will be different. The chart below shows the relative changes:

Terminators	LAS Signal (mV)
0	999
1	961
2 (correct number)	760
3	637

Error Conditions

If the outputs of the Wiring Validator are shorted, the Red Low Battery light blinks on and off. (As the Wire Validator is attached to wires, the Low Battery indicator may blink on momentarily). If the battery is low, the Red light is on continuously.

Product specifications are subject to change without notice.

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Self Test

To check if the Wiring Validator and the Monitor are working correctly, connect them to each other through the Test Terminator.

Additional Wiring Tests

To get a complete characterization of the fieldbus wire, test the resistance between wires in the cable with an ordinary ohmmeter:

- The resistance between the two twisted-pair wires
- The resistance between each of the wires and the drain/shield (if any)
- The resistance between the drain/shield and instrument ground bar.

Readings of 100K ohms or higher are acceptable.

Specifications: CE

The Wiring Validator requires four (4) AA alkaline batteries. Instructions are provided with the FBT-5 for changing the batteries.

Under continuous use, the Wiring Validator's batteries last about 12 hours. When the batteries are low, the Red LED is lit continuously.

Operating temperature range: 0 to 50°C

Caution:

The FBT-5 must not be used in hazardous areas or to power wiring that runs into hazardous areas.

Requirements:

The FBT-5 requires four (4) AA Alkaline batteries. They are installed at the factory for customer convenience.

Mechanical Dimensions