



technical datasheet

## FBT-3

live troubleshooting for fieldbus H1 networks

- Bus-powered fieldbus monitor for monitoring:

LAS  
Packet traffic  
Device counts  
Framing errors

- Monitor also measures:

Signal levels  
Noise levels  
DC power



The Fieldbus Monitor, FBT-3 is used to examine the operation of a live FOUNDATION™ fieldbus network without interfering with its operation. The monitor is intended for maintenance personnel to verify network operation or to troubleshoot an errant network.

It allows the user to quickly assess the health of a fieldbus network segment by providing measurements of bus power level, minimum signal level, and peak and average noise level. It also displays the number of devices present on the segment and indicates when devices are added or removed from the network.

The Fieldbus Monitor is palm-sized for portability and is powered by the fieldbus so that no batteries or external power source is required. It includes color-coded test leads and an LCD display.

**Caution:**

The FBT-3 must not be used in a hazardous area without a gas clearance certificate. If connected to an IS trunk, even in a safe area, the gas clearance must cover the whole system.

## Operation

The FBT-3 can be connected to the network using the clip leads. The test leads are polarity sensitive and the Monitor will not operate if they are reversed. When first connected to a fieldbus, a Version number is displayed for 1 second. The MODE button is used to select from several network parameters that can be examined with the Monitor. When a function is selected, the LCD display reads “- -” until the monitor has collected and processed the data. After that, the measured value is shown. The indication “OK” is shown if the measured value is within the acceptable range (as defined by the fieldbus specification). The rotating symbol in the lower right corner of the display indicates that there is network activity. A horizontal bar under the rotating symbol indicates that a frame was detected, but could not be decoded. This is not a maintained function. I.e., if a single “bad” frame is detected, the horizontal underbar will only be on the display for a short time. Periodic “bad” frames will cause the underbar to blink. Following are more detailed explanations of each of the monitor’s modes:

### Power

The DC voltage on the network is shown. Measurements over 9V are OK. The maximum displayed value is 25.5V.

### LAS

If there is any activity on the network, the Link Active Scheduler (LAS) should be sending out Probe Node frames. The Monitor measures the signal level of the Probe Node frame. The signal level is in millivolts.

### Device

If there are fieldbus devices active on the network, the Monitor counts them. If the count has remained the same since the Device function was selected, the display shows “OK”. Note that the LAS is considered a device and as such is included in the count. Devices are counted by watching their response to a Pass Token. If a device does not respond to the Pass Token, it is taken off an internal list and the count will be reduced. The device may still show up on PC monitoring software because the LAS will not take it off of the Live List until it has failed to respond to a Pass Token three times in a row. If a device leaves the network, “-” is displayed. If a new device is added, the display shows “+”

### Low

The signal level of the device with the weakest signal is shown. The device's address (hexadecimal) is displayed behind the word “LOW”. This will be the lowest signal level reading from a device since the tester was connected to the fieldbus. Measurements greater than 150mV are OK

### Noise Av

The noise on the network is measured during the silence between frames. The value is averaged over 10 measurements. Measurements of less than 75mV are OK.

### Noise Pk

The peak noise recorded since this function was started is displayed. Measurements of less than 75 mV are OK.

### New

If a new device is to be added to the network, it must respond to the Probe Node frame sent by the LAS. The Monitor measures the signal level of the new device's response. Measurements greater than 150mV are OK. The address (in hexadecimal) of the new device is displayed also.

## SPECIFICATION

The Monitor is powered by the fieldbus and draws approximately 10mA of current from the network (depending on bus voltage and ambient temperature).

### Operating temperature range

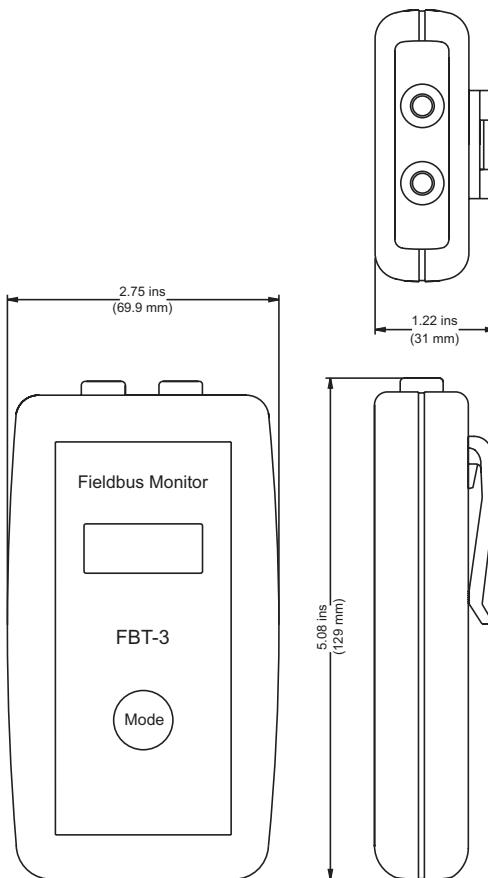
0 – 50°C

### Dimensions

12.9 x 7.0 x 3.1cm

### Weight

150g



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