

# Product Specification

FOUNDATION™ Fieldbus

**FBT-3**

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.

## Benefits

The Fieldbus Monitor 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.

## Features

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.

## 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 9 volts are OK.

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

**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".



## Device (continued)

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, the display shows "-". 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 150 mV 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 75 mV 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 150 mV are OK. The address (in hexadecimal) of the new device is also displayed.

## Specifications

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

Operating temperature range: 0-50°C

Dimensions: 12.9cm x 7.0cm x 3.1cm (5.1" x 2.8" x 1.2")

Weight: 150 g

## Caution:

**The FBT-3 must not be used in hazardous areas or be connected to wiring that runs into hazardous areas.**

Product specifications are subject to change without notice.