



FMS-1630B Isolation Room Monitor Installation & Setup Guide BACnet Addendum

REV 2 12312007



2976 Pacific Drive • Norcross, GA 30071
Phone: 770-242-1922 • Fax: 770-242-1944 • www.triatek.com

Due to continuous product improvement, TRIATEK reserves the right to change product specifications without notice.

FMS-1630B Isolation Room Monitor Installation & Setup Guide

BACnet Addendum

Setting Unit Address (page 52)

The BACnet FMS unit must be set to an address that falls within the range of 0 to 127 (required for BACnet master nodes). This range is further limited by the reservation of addresses 0 to 3 for Johnson Controls BACnet master nodes. Therefore, when connecting the BACnet FMS-1630B unit to a Johnson Controls BACnet MS/TP network, the network address must be set to an address between 4 and 127, inclusive.

Point Map for FMS-1630B Series (pages 53-54)

The BACnet FMS unit provides the same availability of points or objects as the N2-compatible FMS-1630 unit. The following table itemizes the points available on the BACnet FMS with the corresponding N2-compatible protocol points. In addition to the original N2 points, there are two (2) additional analog input values that are represented by *Analog Inputs 2* and *3*, and five (5) additional floating point values that are represented by *Analog Values 6* through *10*.

| OBJECT NAME | N2 PT | BACnet OBJECT | ACCESS | DESCRIPTION & UNITS | VALUE RANGE |
|------------------|-------|---------------------|------------|--------------------------------|--|
| ROOM PRESSURE | AI 1 | Analog Input 1 | Read-Only | Room pressure in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| SCALED ANALOG IN | n/a | Analog Input 2 | Read-Only | Scaled analog input in "WC | |
| SCALED SENSOR IN | n/a | Analog Input 3 | Read-Only | Scaled sensor input in "WC | |
| ANALOG OUTPUT | AO 1 | Analog Output 1 | Read-Only | Room pressure control signal % | 0.00000 ≤ AO ≤ 100.0000 |
| RELAY 1 STATUS | BO 1 | Binary Output 1 | Read-Only | Relay 1 output | 0 = normal, 1 = alarm |
| RELAY 2 STATUS | BO 2 | Binary Output 2 | Read-Only | Relay 2 output | 0 = normal, 1 = alarm |
| n/a | ADI 3 | n/a | Read-Write | Relay 1 polarity | 0 = normal operation, 1 = reverse operation |
| n/a | ADI 4 | n/a | Read-Write | Relay 2 polarity | 0 = normal operation, 1 = reverse operation |
| PID SETPOINT | ADF 1 | Analog Value 1 | Read-Write | Room pressure setpoint in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| RELAY 1 HIGH | ADF 2 | Analog Value 2 | Read-Write | Relay 1 high setpoint in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| RELAY 1 LOW | ADF 3 | Analog Value 3 | Read-Write | Relay 1 low setpoint in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| RELAY 2 HIGH | ADF 4 | Analog Value 4 | Read-Write | Relay 2 high setpoint in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| RELAY 2 LOW | ADF 5 | Analog Value 5 | Read-Write | Relay 2 low setpoint in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| LOW ALARM | n/a | Analog Value 6 | Read-Write | Low pressure alarm in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| LOW WARNING | n/a | Analog Value 7 | Read-Write | Low pressure warning in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| HIGH WARNING | n/a | Analog Value 8 | Read-Write | High pressure warning in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| HIGH ALARM | n/a | Analog Value 9 | Read-Write | High pressure alarm in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| DIFFERENTIAL | n/a | Analog Value 10 | Read-Only | Pressure differential in "WC | -0.05000 ≤ AI ≤ -0.00001 (Negative Isolation) 0.00001 ≤ AI ≤ 0.05000 (Positive Isolation) |
| ISOLATION | ADI 1 | Multistate Output 1 | Read-Write | Isolation mode selection | 1 = positive, 2 = negative, 3 = none |
| UNIT STATUS | ADI 2 | Multistate Output 2 | Read-Only | Room pressure status | 1 = normal, 2 = warning, 3 = alarm |

NOTE: The range and units shown in VALUE RANGE column are for a unit calibrated for -0.05 to +0.05 inches of water column. The value range here is factory default setup. It can be custom configured to any value in the range of -99999 to 99999.

The polarity of relays 1 and 2, which used to be configured through points ADI 3 and 4, now may be configured through the POLARITY property of the Binary Output objects RELAY 1 STATUS and RELAY 2 STATUS.

FMS-1630B Isolation Room Monitor Installation & Setup Guide

BACnet Addendum

Testing Procedure

There is a 10-second power-up delay during which the FMS-1630B performs a complete initialization of the hardware. Following this power-up delay, confirm that the FMS-1630B is configured with a network address in the range of 4 to 127 (see notes on SETTING UNIT ADDRESS above). The FMS-1630B is immediately available to be discovered by the BACnet Operator Workstation or any other network master using the 'WHO-IS' service request.

The FMS-1630B responds with the following:

1. Device object name of ***FMS-1630B_xxxxxxx***, where *xxxxxx* corresponds to the current BACnet Device Identifier (default Device ID offset is 85000)
2. Device object identifier of ***xxxxxxx***, which corresponds to the current BACnet Device Identifier (default Device ID offset is 85000)
3. Vendor name of ***TRIATEK, Inc.***
4. Vendor identifier of ***59 (0x3B hex)***
5. Model name of ***FMS-1600B***
6. Firmware revision of ***1.30*** or later

The ***FMS-1630B_xxxxxxx*** device object contains the following list of objects:

1. Analog Input Objects (3)
2. Analog Output Objects (1)
3. Analog Value Objects (10)
4. Binary Output Objects (2)
5. Multistate Output Objects (2)

Writable Properties

The *Present_Value* property of *Analog_Value*[1..9] and *Multistate_Output*[1], as well as several properties of the Device object are writable and may be modified using the appropriate 'WRITE-PROPERTY' BACnet service request.

Device Object Properties

The *Location*, *Description*, *Max_Master*, and *Max_Info_Frames* properties of the Device Object are writable and may be modified using the appropriate 'WRITE-PROPERTY' service request. The *Location* property is a string of printable characters that may be used to specify the physical location of the device, while the *Description* property is a string of printable characters that may be used to describe the application being carried out by the device.

FMS-1630B Isolation Room Monitor Installation & Setup Guide

BACnet Addendum

The *Max_Master* property may be set to any value less than or equal to 127; the default value for this property is 127. This specifies the highest possible address for BACnet master nodes. The *Max_Info_Frames* property specifies the maximum number of information frames the node may send before passing the token to the next master. The default value for this property is one.

Isolation Mode Selection

The Isolation Mode may be changed by writing one of three valid values to the *Present_Value* property of Multistate Output[1]: 1 = positive isolation, 2 = negative isolation, 3 = no isolation. Any values outside of this range will be rejected. Changing the mode of isolation results in a corresponding change to the visibility of the various setpoints represented by Analog_Value[1..9]. For example, while the unit is in positive isolation mode, the PID setpoint visible through Analog_Value[1] is the positive isolation setpoint for the device. Changing the isolation mode to negative results in the negative isolation setpoint being visible through Analog_Value[1].

Relay Polarity Selection

The operational mode of each relay may be changed by writing to the *Polarity* property of Binary_Output[1..2]: 0 = normal operation, 1 = reverse operation.

Terminal Mode

The FMS-1630B provides a terminal mode that allows several configuration settings to be modified by the user. User-configurable settings include MS/TP baud rate, Device ID offset, and pass-through mode. Five (5) baud rates are supported by the FMS-1630B: 9600 bps, 19.2 kbps, 38.4 kbps, 57.6 kbps, and 76.4 kbps. The Device ID offset setting is used by the FMS-1630B to determine its unique BACnet Device Object Identifier. The unique Device Object Identifier is calculated as the sum of the Device ID offset and the MAC address setting.

Terminal Mode Access

Terminal mode access requires the use of an RS-485 data cable and a computer with a terminal program such as Microsoft® HyperTerminal. Prepare for terminal mode access by powering down the FMS-1630B and connecting the RS-485 data cable to the serial connections on the terminal strip. In HyperTerminal, configure the appropriate COM port with the current baud rate of the FMS-1630B, 8 data bits, no parity, one stop bit, and no flow control. Power up the FMS-1630B, wait 10 seconds, and type **TRIA TEK** in all caps at the HyperTerminal screen, followed by the ENTER key. Following the 10-second power-up delay, a 15-second window is provided for entering terminal mode. Upon successful access to terminal mode, a list of menu options is displayed in the HyperTerminal window, followed by a command prompt (see sample screen below). Terminal mode will timeout after a period of 30 seconds of inactivity at the command prompt. Terminal mode may also be exited manually by pressing **X** at the command prompt, upon which the FMS-1630B returns to BACnet mode.

FMS-1630B Isolation Room Monitor Installation & Setup Guide

BACnet Addendum

```
<< Welcome to BACnet FMS-1630B Terminal Mode v1.3x >>

0 - Display current configuration settings
1 - Set BACnet MS/TP baud rate to 9600 bps
2 - Set BACnet MS/TP baud rate to 19.2 kbps
3 - Set BACnet MS/TP baud rate to 38.4 kbps
4 - Set BACnet MS/TP baud rate to 57.6 kbps
5 - Set BACnet MS/TP baud rate to 76.8 kbps
6 - Set Device ID Offset for BACnet node
7 - Set Host service period in milliseconds
8 - Toggle Stand-Alone operational mode
9 - Set Power-up Delay period in seconds
N - Enable Metasys N2 Pass-Thru mode
X - Exit terminal mode & return to BACnet mode
? - Display list of available commands

BACnet_FMS-1630B>
```

Baud Rate Selection

The FMS-1630B supports five (5) standard baud rates for communications on the BACnet MS/TP network. The FMS-1630B is factory-configured with the default baud rate setting of 38.4 kbps. To change the current baud rate setting, press the key corresponding to the desired baud rate. The new baud rate setting takes effect immediately upon exiting terminal mode.

NOTE: While the FMS-1630B fully supports 76.8 kbps, note that HyperTerminal does not support this baud rate and therefore cannot be used to regain access to terminal mode once selected.

Device ID Offset Setting

The BACnet standard uses a 22-bit number referred to as the Device ID to uniquely identify each device within the BACnet control system network. To ensure that the FMS-1630B can be uniquely identified, it calculates the Device ID by summing the current MAC address setting with the Device ID offset. The FMS-1630B comes from the factory with a default Device ID offset of 85000. Therefore, the default Device ID for an FMS-1630B at MAC address 76 is 85076. The Device ID offset may be set to any value from zero to 4,194,048.

ADDITIONAL NOTES:

Since the network address of the FMS-1630B may be changed through the user interface, and this address corresponds to the MAC address used with the BACnet MS/TP network, there may be a delay of up to 20 seconds before the device will reappear under the new MAC address.