



Wireless Analog or Digital Input Transmitter, 418MHz

BA/(WAI, WDI, WTS) Installation and Operating Instructions

24227_ins_wireless_input_xmtr

rev.07/15/10

Product Identification

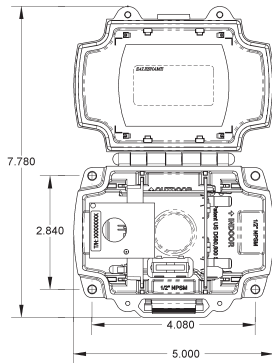


Fig. 1: Open Input Transmitter w/Termination Board

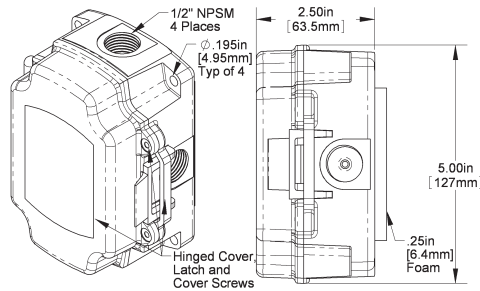


Fig. 2: Closed Input Transmitter

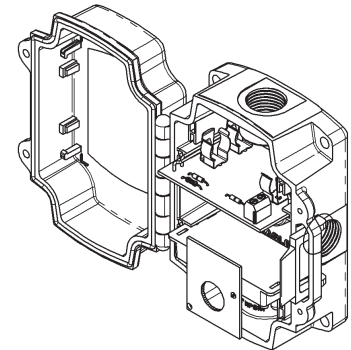


Fig. 3: Battery and Sensor Termination Board

Application Overview

The Wireless Analog Input Transmitter (BA/WAI) is designed to monitor 0-5VDC, 0-10VDC or 4-20mA signals and transmit that analog value to the receiver. The Digital Input Transmitter (BA/WDI) monitors any dry contact status input and transmits that On/Off status to the receiver. The Thermistor Temperature Input Transmitter (BA/WTS) takes any 10K-2 thermistor sensor and transmits it to any BAPI receiver. All models transmit their data every 10-17 seconds at 418MHz and can reach line of site distances of 100 feet. The units are battery operated and only require wiring from the remote input sensor. The estimated battery life is 2 years using two high capacity 3.6V lithium batteries. Each transmitter has a unique address and is trained to an individual output module for use at the BAS controller.

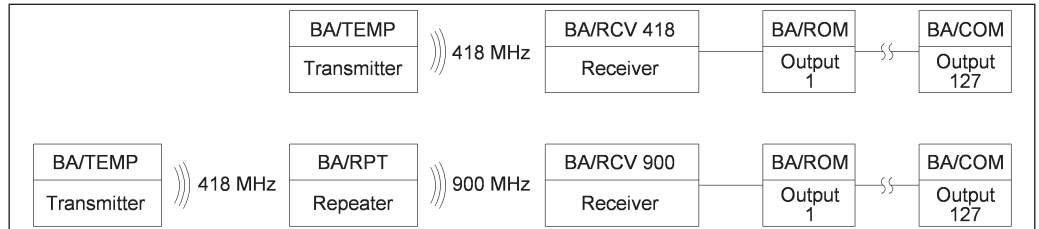


Fig. 4: Overall System Layout

Operation

The analog input (AI) voltage or current is connected at the \pm terminals on the battery board. The signal is transmitted to the receiver and outputs to the associated trained output module as the full scale range of the original signal. In other words the AI is duplicated at the output module as a volt or current output for the BAS controller to use.

The 10K-2 thermistor temperature sensor is connected at the \pm terminals on the battery board. The sensor value (any 10K-2 thermistor) is transmitted to the receiver and outputs to the associated trained output module as a resistance (BA/ROM), voltage (BA/VOM) or a current (BA/COM) temperature, scaled according to the output module selected.

The digital input (DI) is connected at the \pm terminals on the battery board. The digital input (open or closed) is transmitted to the receiver and outputs to the associated trained output module as open or closed. In other words the DI is duplicated at the output module as a digital output for the BAS controller to use.

See table below for further operational details

Input Transmitter	Output Module	Fail Safe (After 15 min of wireless signal loss. The LED shows a fast flash)
BA/WAI-05	BA/VOM-05-AO-EZ	0 volts
BA/WAI-10	BA/VOM-10-AO-EZ	0 volts
BA/WAI-420	BA/COM-AO-EZ	4 mA
BA/WAI-05	BA/VOM-05-M-EZ	5 volts (Remove J4 under the output module cover)
BA/WAI-10	BA/VOM-10-M-EZ	10 volts (Remove J4 under the output module cover)
BA/WAI-420	BA/COM-M-EZ	20 mA (Remove J4 under the output module cover)
BA/WTS	BA/ROM-XXX	High resistance >35K Ω
BA/WTS	BA/VOM-X-XX-EZ	0 volts
BA/WTS	BA/COM-X-XX-EZ	4 mA
BA/WDI	BA/RVOL-NO-EZ	Normally Open
BA/WDI	BA/RVOL-NC-EZ	Normally Closed

Specifications subject to change without notice.



Wireless Analog or Digital Input Transmitter, 418MHz

BA/(WAI, WDI, WTS) Installation and Operating Instructions

24227_ins_wireless_input_xmtr

rev.07/15/10

Set-up & Commissioning

Note: It is easier to perform this procedure before mounting and wiring the transmitters.

1. Apply power to the receiver and output modules.
2. The power LED on the Receiver should light and remain lit. The powered analog output module's LED should flash and go out. (The flash is very quick.)
3. Open the cover of the transmitter and install the batteries, observe polarity. You may have done this in the wiring step. The transmitter LED, next to the Transmitter Training Button in Figure 5, should flash approximately once every 10-17 seconds. (The flash is very quick.)
4. Pick the transmitter and an output module you want to train to recognize one another. Press and hold the plastic service button on the top of the Output Module, at the same time press for one second and release the training button on the transmitter. When the LED on the output module lights, release its button (The LED will go out when you release the button). The output module will now start to report the conditions from the input transmitter its trained to. The output module's LED will quickly flash whenever it receives an update from the transmitter, approximately every 10-17 seconds.
5. Close the cover and mount the transmitter at the desired location. If needed, remove the batteries to do so. The units will remain trained to one another through power failures and battery replacement.

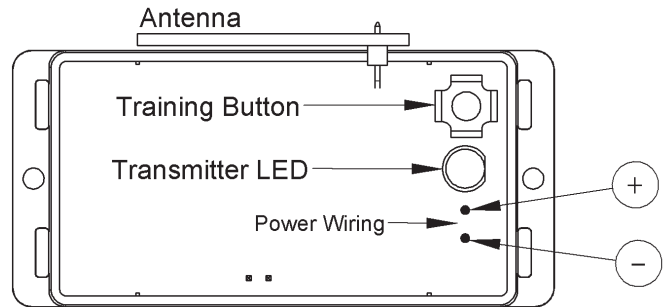


Fig. 5: Transmitter Module Control Identification

Mounting

- 1 It is easier to first train the modules as shown in the "set up & commissioning" section.
- 2 Mount the unit to its mounting surface with four ¾ inch long #8 screws through the holes in the mounting feet.
- 3 Make sure that all screws are started in their holes before tightening. Tighten evenly.
- 4 Only squeeze the base foam gasket to about 1/2 of its original thickness.
- 5 If NEMA 4(IP66) is required, install the supplied lid screws on each site of the lid latch.

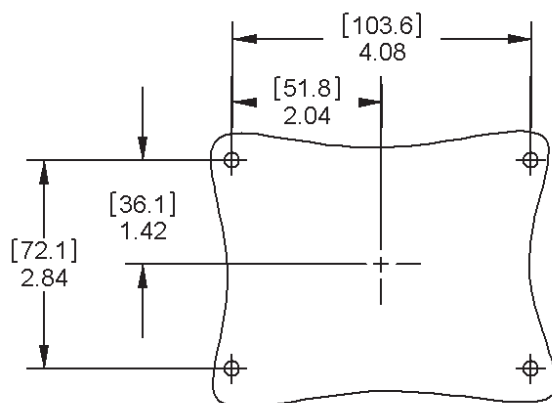


Fig. 6: BAPI Box Mounting template dimensions

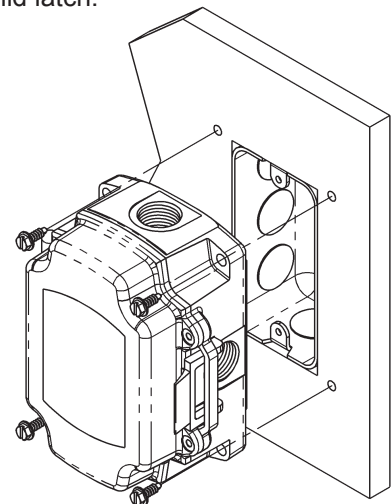


Fig. 7: BAPI-Box Vertical mount

Specifications subject to change without notice.



Wireless Analog or Digital Input Transmitter, 418MHz

BA/(WAI, WDI, WTS) Installation and Operating Instructions

24227_ins_wireless_input_xmtr

rev.07/15/10

Wiring and Termination

Battery Installation:

Battery supplied: Two-3.6 VDC Lithium batteries
(Figure 8) Install both batteries per the + / - indication on the battery holder board.
Note: Both batteries face the same way. (Unit will run on one battery if needed)

Input Sensor Wiring Description:

Voltage:
(Figure 9) Wire the + signal to the + terminal on the battery board.
(Figure 9) Wire the - signal to the - terminal on the battery board.
Current (sync):
(Figure 10) Wire the 4-20mA current signal (-) from the sensor to + terminal on the battery board.
(Figure 10) Wire the - of the power supply feeding the sensor to the - terminal on the battery board.
(Figure 10) Wire the + of the power supply feeding the sensor to the + of the sensor.
Current (source):
(Figure 11) Wire the + signal to the + terminal on the battery board.
(Figure 11) Wire the - signal to the - terminal on the battery board.
(Figure 11) Provide + power to sensor
(Figure 11) Provide - power to sensor
Thermistor Sensor:
(Figure 12) Wire either lead to the + terminal of the battery board. (Non-Polar)
(Figure 12) Wire the other lead to the - terminal of the battery board (Non-Polar)
Contact Input:
(Figure 13) Wire either lead to the + terminal of the battery board. (Non-Polar)
(Figure 13) Wire the other lead to the - terminal of the battery board (Non-Polar)

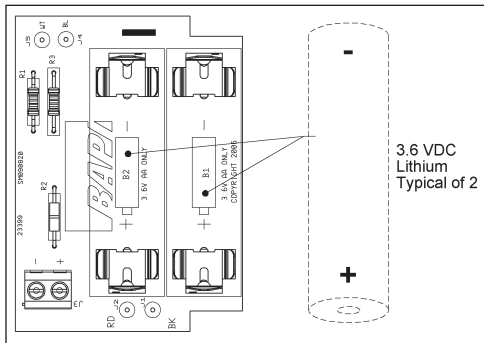


Fig 8: Battery installation

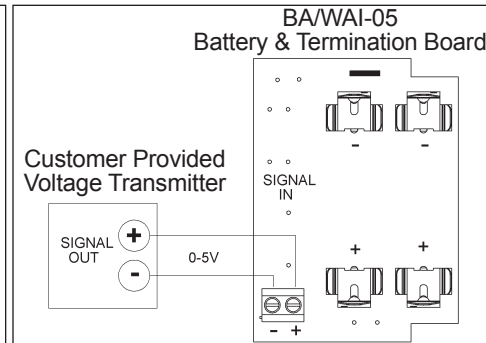


Fig 9a: 0-5V Transmitter Termination

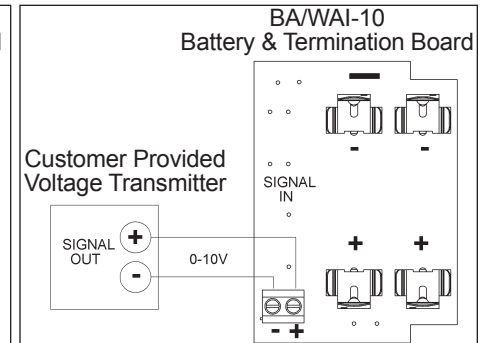


Fig 9b: 0-10V Transmitter Termination

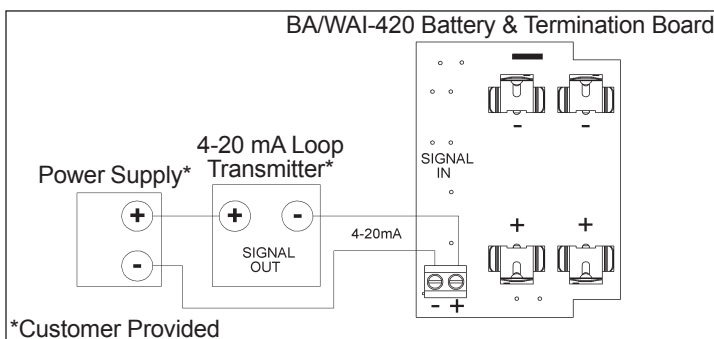


Fig. 10: 4-20mA Loop Powered Transmitter Termination

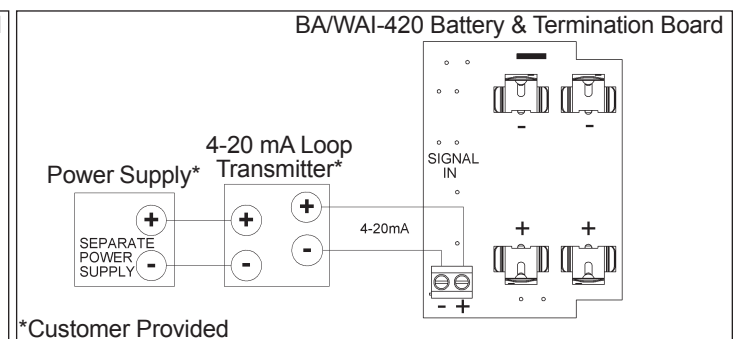


Fig 11: 4-20mA 4-wire Transmitter Termination

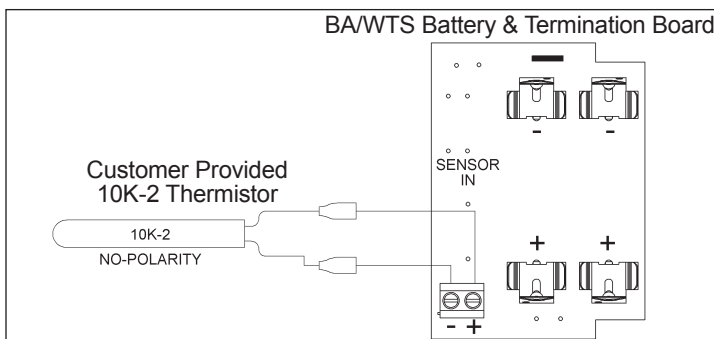


Fig. 12: 10K-2 Thermistor Termination

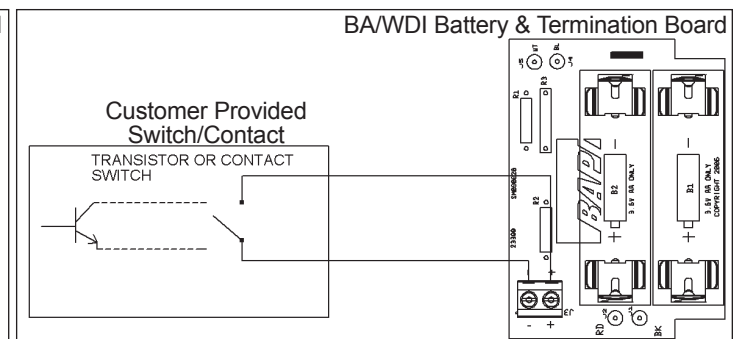


Fig. 13: Digital Input (DI) Termination

Specifications subject to change without notice.



24227_ins_wireless_input_xmtr

Wireless Analog or Digital Input Transmitter, 418MHz

BA/(WAI, WDI, WTS) Installation and Operating Instructions

rev.07/15/10

Diagnostics

Possible Problems:

Signal reading is incorrect

Possible Solutions:

Check wire from output modules to controller for proper connections and polarities.

Check to see if the controller's software is configured properly.

Check transmitter to see if its LED flashes about every 10 seconds.

If not replace the batteries.

Check power to the receiver and output module.

Check output modules LED, if it is blinking fast

If so, check the associated transmitter as described above and retrain the modules

Signal reading is coming out

the wrong output module

Retrain the modules

Specifications

Supply Power:

3.6 Lithium, 2-AA Batteries (Included)

Battery life:

8 years @ 10 second intervals

Battery Ambient:

-55° to 85°C (-67° to 185°F)

Analog Input:

2-terminals

BA/WAI-05

0-5VDC, Imp. > 30KΩ

BA/WAI-10

0-10VDC, Imp. > 50KΩ

BA/WAI-420

4-20mA, Imp. = 100Ω

Digital Input:

2-terminals

BA/WDI

Dry contact, held >20 seconds

Contact resistance,

< 10Ω closed, >250Ω open

Thermistor Input:

2-terminals

BA/WTS

Any 10K-2 thermistor

Temperature range,

-40 to 185°F, (-40 to 85°C)

Mounting:

Four corner mounting feet

Radio Frequency:

418 MHz @ 1mW

Transmitter Interval:

~10-17 sec.

Antenna:

Built inside enclosure

Transmission Range:

Up to 100 feet direct

Up to 1,000 feet with a repeater

Dimensions:

5.0"W x 4.1"H x 2.5"D

Environmental Operating Range:

Temperature

32°F to 140°F (0°C to 60°C)

Humidity

5 to 95% RH, Non-condensing

Case Material:

Polycarbonate, UL94V-0

FCC ID:

T4F060811TEMP

Compliance:

This device complies with Part 15 of the FCC rules

Operation is subject to the following conditions

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Radio Frequency Interference Statement:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B, of the FCC Rules. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications.

Related Products

BA/VOM-05-AO-EZ

0-5VDC volts output module

BA/VOM-10-AO-EZ

0 -10 VDC volts output module

BA/COM-AO-EZ

4 -20 mA current output module

BA/ROM-XX

Thermistor output module, (select type)

BA/RVOL-NO-EZ

Digital output module (Normally Open)

BA/RVOL-NC-EZ

Digital output module (Normally Closed)

Specifications subject to change without notice.