Analog Output Modules

Installation and Operating Instructions

Overview

The Resistance Output Module (ROM) converts the communication data from a Wireless Receiver or a Washdown Wall Plate Unit into a Resistance for the DDC controller. The unit can be factory calibrated to output either a 10K-2 thermistor curve or a 10K-3 thermistor curve for temperature signals, please consult the product label for the exact type.

The Voltage Output Module (VOM) converts the communication data from the Wireless Receiver or a Washdown Wall Plate Unit into a linear 0-5 volt or 0-10 volt signal for the DDC controller. The unit can be factory calibrated for temperature or humidity, please consult the product label for the exact type.

The loop powered Current Output Module (COM) converts the communication data from the Wireless Receiver or a Washdown Wall Plate Unit into a linear 4-20mA signal for the DDC controller. The unit can be factory calibrated for temperature or humidity, please consult the product label for the exact type.

The Setpoint Output Module (SOM) converts the communication data from a Wireless Receiver into a resistance, voltage or current depending on model. The unit can be factory calibrated to output a setpoint signal from a wireless room transmitter, please consult the product label for the exact type.

Analog output modules receive data from a BAPI 418, 900 MHz Receiver or a Washdown Wall Plate Unit through a four-wire bus. Up to 127 different Output Modules can be connected on the data bus to send multiple variables to the controller.

All analog output modules are easily trained or bound to a single transmitted variable with a pushbutton and LED. (Training or binding is described in the wireless transmitter or wash down wall plate installation instructions) Analog output modules are surface mount, 2.75" snaptrack or 35mm din rail.

Note The installation process requires that each transmitter or wash down wall plate and its associated output module or modules be trained in a binding process. This teaches each output module to receive communications from the correct transmitter or wash down wall plate. The binding process is easiest to do on a test bench so that the transmitter and receiver/output module or wash down wall plate and power supply/output module are within arm's reach of each other. Pushing buttons in a defined sequence on the transmitter and associated output module or wash down wall plate and associated output module will bind the two units together in non-volatile memory. Binding the units together is easiest when the units are within arm's reach of each other but can be done in the field. Field binding will require two people and a set of walkie talkies or cell phones. (Binding (training) is described in the wireless transmitter or wash down wall plate installation instructions) Be sure to place a unique identification mark on the transmitter/wash down wall plate and associated output module or modules after they have been trained so that they can be matched together at the job site.

If more than one variable is transmitted, each variable requires a separate output module. Perform the binding sequence for each output module. Any transmitted variable can be bound to more than one output module.

Product Identification

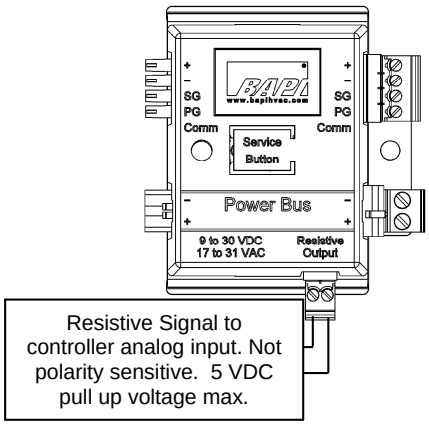


Figure 1: Resistive Output Module **BA/ROM** or **BA/SOM**-50 through 85

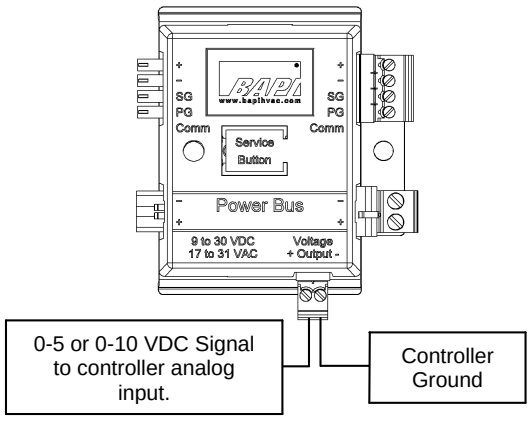


Figure 2: Voltage Output Module **BA/VOM** or **BA/SOM**-00 through 11

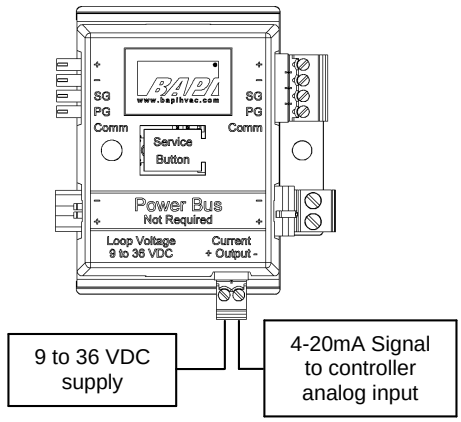


Figure 3: Current Output Module **BA/COM** or **BA/SOM-16**

Specifications subject to change without notice.

Customer Provided Tools and Materials

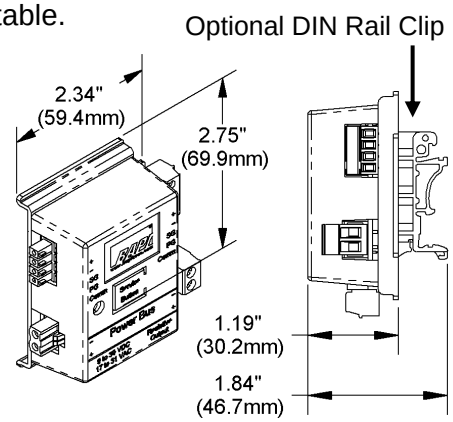
#2 Philips Screwdriver, 1/8" Screwdriver with 1/16" Allen wrench (BA/116W), Drill, Wire

Mounting and Termination

Analog output modules are surface, 2.75” snaptrack or 35mm din rail mountable.

For wireless systems see either the 418MHz receiver Installation & Operation sheet (17613_ins_wireless_418_rcvr.pdf) or the 900MHz receiver Installation & Operation sheet (17614_ins_wireless_900_rcvr.pdf). These files are available from your BAPI representative or our website www.bapihvac.com on the bottom of the wireless receiver page.

For Washdown Wall Plate Unit systems see the Washdown Wall Plate Power Supply Installation & Operation sheet (17785_ins_vps.pdf). This file is available from your friendly BAPI representative or our website www.bapihvac.com on the bottom of the Washdown Wall Plate Power Supply Page.



Operating Notes

1. If you need to bind any temperature, humidity, setpoint or override value from a single transmitter to more than one controller, you may train multiple output modules to that value.
2. If an output module does not receive data from its assigned transmitter for 15 minutes the red LED on the output module will blink rapidly. The module output signals will react as follows;
    - Voltage output modules calibrated for temperature will set their output to zero volts.
    - Current output modules calibrated for temperature will set their outputs to 4 milli-Amps
    - Resistance output modules calibrated for temperature will set their outputs to their highest resistance, lowest temperature, values.
    - Voltage output modules calibrated for humidity will set their outputs to 5/10 volts.
    - Current output modules calibrated for humidity will set their outputs to 20 milli-Amps.
    - Setpoint output modules will hold their last values indefinitely.
    - Relay output modules will go to their normal output.
    - When transmitted data is restored the output modules will revert to normal operation in 30 seconds or less.
3. Output modules are trained to a transmitter simulator during BAPI’s final test. When you receive them they will not be trained to any of the transmitters in your shipment. Do not be alarmed if the output module’s LED blinks rapidly upon power up or shortly thereafter, just train the output module to a transmitter and all will be OK.
4. The BA/RCV receivers and BA/xOM output modules are inter-connected and require module power along the power bus on the two bottom terminals. The bus can be powered from either the receiver end (left side) or the last output module (right side). Be sure you have enough DC current or AC VA for all the devices on the bus.
5. The BA/COM-a or BA/SOM-16 (Current Analog Output Module) signal is **LOOP POWERED** and must be externally powered (9-36 VDC) so that the BAS input receives the analog current signal. Other Analog Output Modules source the analog output from the power bus.
6. The printed lines on the BA/RCV receivers represent the power buss flow and are just there for appearance. They **do not** represent an electrical wire connection. Always be sure to follow the polarity (+ or –) listed on each module to maintain communication and power buss integrity.

Diagnostics

Possible Problems:	Possible Solutions:
Temperature or Humidity is reading its low or high limit	- 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 Check the associated transmitter and receiver for proper operation Retrain the output module If there are repeaters in the data stream, check for proper operation.
Temperature or Humidity reading is coming out the wrong output module	- Retrain the modules.
Temperature or Humidity is reading incorrectly	- Check wire from output modules to controller for proper connections and polarities. - Check to see if the controller's software is configured properly. - Check to see if the correct output module is connected to the correct controller.

Specifications

Common Specifications

Communications Protocol: Proprietary RS485

Communications Cable Distance: 4,000 ft with shielded, twisted pair cable (Belden 9841, Belden 8132 or equivalent)

Environmental Operation Range:

Temp: 0° to 60°C

Humidity: 5% to 95% RH non-condensing

Material: ABS Plastic

Material Rating: UL94, V-0

Resistance Output Module (ROM)

Resolution: ~0.5ºF

10K-2 Unit: 35ºF to 120ºF (1ºC to 50ºC)

10K-3 Unit: 32ºF to 120ºF (0ºC to 50ºC)

Supply Bus Power: 14 to 30 VDC or 6 to 31 VAC

Power Consumption: 3 mA max. DC, .1 VA max AC

Output Resolution: 10 bit

Setpoint Output Module (SOM)

Setpoint Output Ranges: See data sheet

Supply Bus Power: 14 to 30 VDC or 6 to 31 VAC

Power Consumption: 3 mA max. DC, .1 VA max AC

Output Resolution: 10 bit

Voltage Output Module (VOM)

Supply Bus Power:

0 to 5VDC output: 9 to 30 VDC or 17 to 31 VAC

0 to 10VDC output: 14 to 30 VDC or 17 to 31 VAC

Output Voltage Range: 0-5 volts or 0-10 Volts (model specific)

Output Current: 1 mA

Power Consumption: 3 mA max. DC, .1 VA max AC

Output Resolution: 10 bit

Current Output Module (COM)

External Loop Power Supply Required: 9-35VDC at 25mA min

Output Current Range: 4-20 mA (factory calibrated)

Supply Bus Power: Not used by module but feed through only

Output Resolution: 12 bit

Specifications subject to change without notice.