ANALOG TO RELAY INTERFACE SERIES

Installation & Operation Instructions

AAR

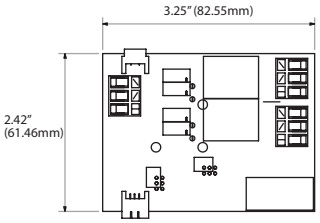
Phone: 1-888-967-5224
Website: workaci.com

GENERAL INFORMATION

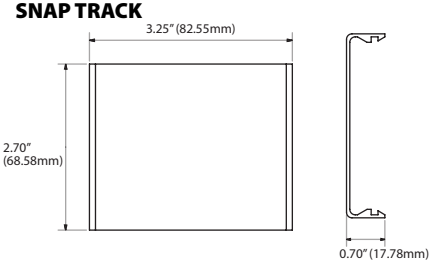
The AAR is controlled by a single analog input signal with two potentiometers controlling each output relay. The two 10 amp output relays can be independently set to fixed or adjustable deadband. "Fixed", the relay will turn "ON" at the level set by the Low pot and will turn "OFF" at a fixed 3% of the input signal below the turn-on level. "Adjustable" allows a flexible range of deadband adjustment using both the High and Low potentiometer. The edge-connector feature allows signal and power connections to be extended to the next board. This allows the installer to wire the first unit, then slide additional units together by plugging into a power, and signal bus without the need to strip and terminate additional wires. The AAR is field calibratable, however, factory calibration is available upon request for an additional charge. Relay trip points can be factory calibrated, saving installation time and expense.

FIGURE 1: DIMENSIONS

BOARD



SNAP TRACK



MOUNTING INSTRUCTIONS

The interface device can be mounted in any position. If circuit board slides out of snap track, a non-conductive "stop" may be required. Use only fingers to remove board from snap track. Slide out of snap track or push up against side of snap track and lift that side of the circuit board to remove. **Do not flex board or use tools.**

WIRING INSTRUCTIONS

PRECAUTIONS

- **Remove power before wiring. Never connect or disconnect wiring with power applied.**
- **When using a shielded cable, ground the shield only at the controller end. Grounding both ends can cause a ground loop.**
- **It is recommended you use an isolated UL-listed class 2 transformer when powering the unit with 24 VAC. Failure to wire the devices with the correct polarity when sharing transformers may result in damage to any device powered by the shared transformer.**
- **If the 24 VDC or 24VAC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, DC/AC Transorb, Transient Voltage Suppressor (ACI Part: 142583), or diode placed across the coil or inductor. The cathode, or banded side of the DC Transorb or diode, connects to the positive side of the power supply. Without these snubbers, coils produce very large voltage spikes when de-energizing that can cause malfunction or destruction of electronic circuits.**
- **All wiring must comply with all local and National Electric Codes.**

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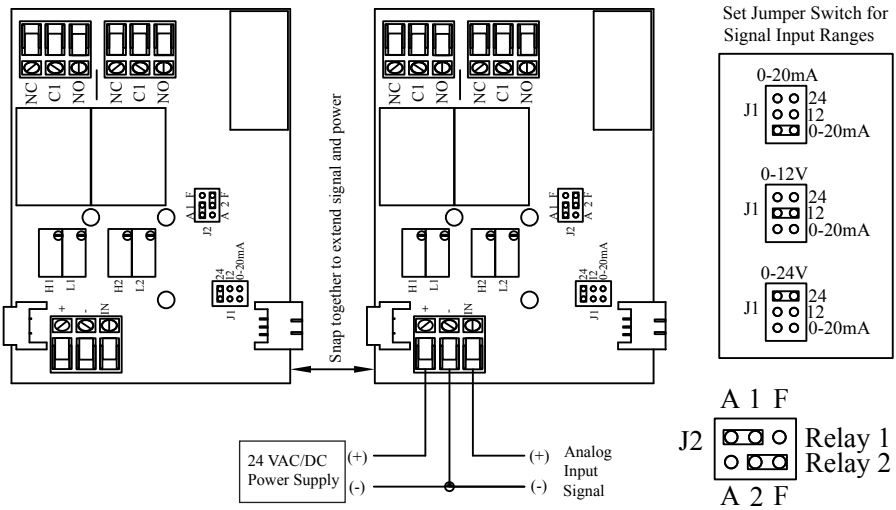
FIGURE 2: WIRING



Calibration

1. Each relay can be individually set for a Fixed or Adjustable deadband. Place jumper shunts for relay 1 or 2 on A for adjustable or F for fixed (or a combination of each).

   Example: Relay 1 is set for an adjustable deadband. The turn on level is set with the High (H1) potentiometer. The turn off level is set set wit the Low (L1) potentiometer (see Figure 2 for locaion of H1 and L1).

   Relay 2 is set for a fixed deadband, which allows a deadband of 3% of the input signal between the turn on and turn off signal levels. Use the Low (L1) potentiometer to set the turn off level of the fixed deadband (the High potentiometer is out of the circuit).

2. Three input signal ranges can be selected. Set J1 to the desired type.

   Note: If the first board is to receive a 0-20 mA signal, then any attached boards must be set at the 0-12 VDC signal mode to operate correctly.

   If the input signal is voltage, then set attached boards to same voltage as the first board. Up to 6 boards may be cascaded from same power supply. More can be connected if external power connection is jumpered to every sixth board.

3. After jumpers are placed in the desired setting, turn on 24 volt power supply.
4. Turn all four potentiometers counterclockwise (these are approx. 20 turn pots).
5. Provide an input signal level equal to the desired turnoff point.
6. Adjust the L (low) potentiometer clockwise until the LED for the relay just turns OFF.
7. Turn the H (high) potentiometer for the relay clockwise (these are approx. 20 turn pots).
8. Provide an input signal level equal to the desired turn-on point.
9. Adjust the H potentiometer counterclockwise until the LED for that relay just turns ON.
10. Repeat steps 5 through 9 for each relay.

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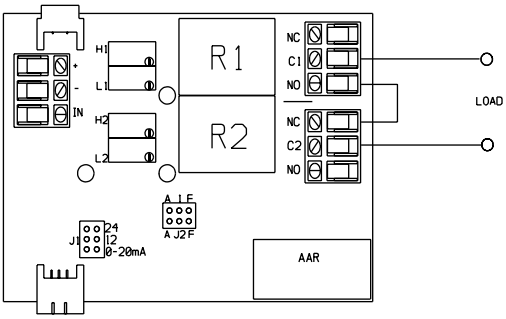
APPLICATION NOTES

Two unique uses for the AAR that may solve a problem for you.

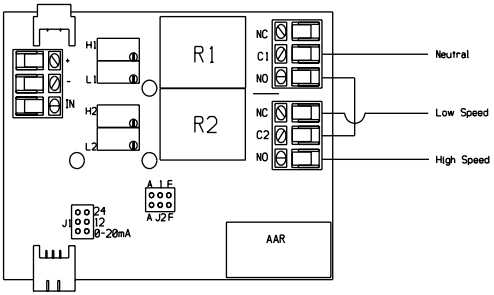
Problem: From one analog signal I want to turn ON a load when the analog signal increases to a certain value, and if it continues to increase, OFF again.



Solution: Set R1 to turn ON at 6 mA.
Set R2 to turn OFF at 10 mA.

As the signal input to the AAR increases to 6 mA the load will turn ON. As the signal input to the AAR continues to increase to 10 mA, the load will turn OFF.

Problem: From one analog signal I want to turn a motor ON at low speed when the signal increases to a certain value, and to high speed if the signal continues to increase above the certain value.



Solution: Set R1 to turn ON at 6 mA.
Set R2 to turn ON at 10 mA.

When relays R1 and R2 are off, High and Low speed are OFF.

When relay R1 is energized, Low speed is ON.

When R1 and R2 are ON, High speed is ON, Low speed is OFF.

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PRODUCT SPECIFICATIONS

NON-SPECIFIC INFORMATION	
Supply Voltage:	24 VAC or 24VDC, (+/- 10%), 50/60 Hz
Supply Current:	45 mA maximum
Input Voltage Signal Range (@ Impedance):	0 to 12 VDC @ 1MΩ, 0 to 24 VDC @ 20,000Ω
Input Current Signal Range (@ Impedance):	0-20 mA @ 499Ω
Deadband:	Fixed or Adjustable – Jumper Selectable
Digital Output Type:	Two SPDT Form "C" Relays
Relay Contact Rating:	10A @ 120 VAC / 24VAC, 5A @ 240VAC
Relay Electrical Life:	100,000 operations minimum
Relay Mechanical Life:	10,000,000 operations
Connections:	90° Pluggable Screw Terminal Blocks
Wire Size:	16 (1.31 mm²) to 26 AWG (0.129 mm²)
Terminal Block Torque Rating:	0.5 Nm (Minimum); 0.6 Nm (Maximum)
Edge Connector:	Connect six AARs together using one connection, more if power is jumpered to every sixth AAR
Operating Temperature Range:	35 to 120°F (1.7 to 48.9°C)
Operating Humidity Range:	10 to 95% non-condensing
Storage Temperature:	-20 to 150°F (-28.9 to 65.5°C)
Snaptrack Material:	Polyvinyl Chloride (PVC)
Snaptrack Flammability Rating:	UL94 V-0

WARRANTY

The ACI AAR Series is covered by ACI's Two (2) Year Limited Warranty, which is located in the front of ACI'S SENSORS & TRANSMITTERS CATALOG or can be found on ACI's website: www.workaci.com.

W.E.E.E. DIRECTIVE

At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with household waste. Do not burn.

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