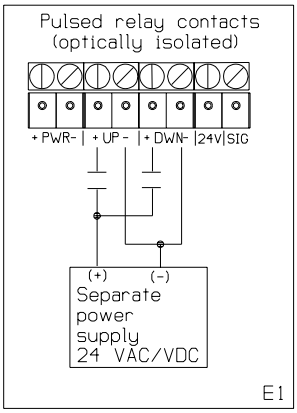
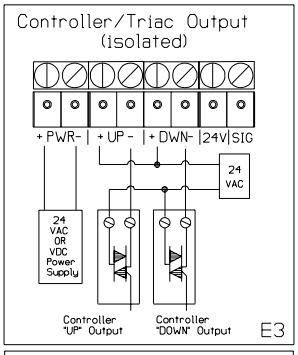
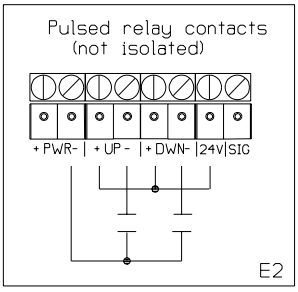
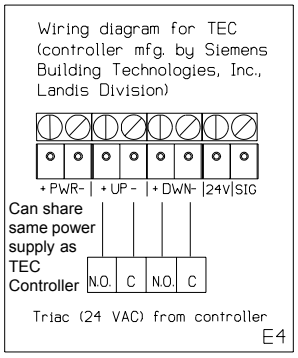
AUD

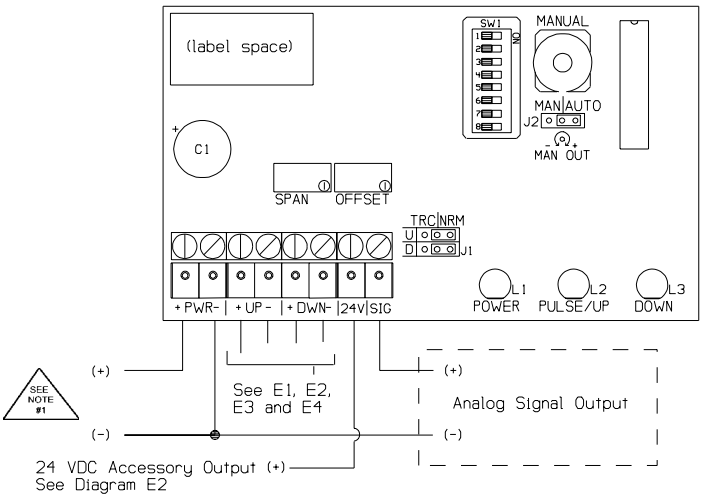
Floating Point or Tri-State Input to Analog Current or Voltage Output
Versions 1, 2, 3 and 4

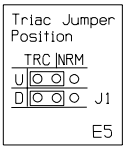












OUTPUT	
Voltage Output	7 OFF 8 ON
Current Output	7 ON 8 OFF
Caution: Don't set both switches in the ON position or the OFF position when powered, or the AUD may be damaged.	

Fig. B

OFFSET	
Offset of 1 volt or 4 mA	6 OFF
Offset adjustable between 0 and 5 volts or 0 to 20 mA	6 ON

Fig. C

TIMING				
Program #	1 OFF 2 OFF	1 ON 2 OFF	1 OFF 2 ON	1 ON 2 ON
Ver. 1 0008Y0A.HEX	5 sec.	15 sec.	30 sec.	90 sec.
Ver. 2 0244Y0A.HEX	45 sec.	60 sec.	120 sec.	240 sec.
Ver. 3 0256Y0A.HEX	30 sec.	60 sec.	120 sec.	240 sec.
Ver. 4 0537Y0A.HEX	5 sec.	n/a	n/a	360 sec.

Fig. A

SPAN			
Signal Span Output	Switch Positions	Signal Span Output	Switch Positions
1 volt (no mA)	3, 4 & 5 ON	Adjustable 1 to 9.5 volts & 4 to 20 mA	3 & 4 ON, 5 OFF
10 volts (no mA)	3 & 5 ON, 4 OFF	Adjustable 10 to 20 volts (no mA)	3 ON, 4 & 5 OFF
4 volts or 16 mA	3 OFF, 4 & 5 ON	Adjustable 4 to 14 volts (no mA)	4 ON, 3 & 5 OFF
13 volts (no mA)	3 & 4 OFF, 5 ON		

Fig. D

MAKE DIP SWITCH SETTINGS WITH POWER OFF

INSTALLATION

READ THESE INSTRUCTIONS BEFORE YOU BEGIN INSTALLATION.

NOTE #1

Ground yourself to discharge static electricity before touching any electronic equipment, as some components are static sensitive. The interface device can be mounted in any position. If circuit board slides out of snap track, a nonconductive "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. Use no tools.

This product operates on 24 VDC or 24 VAC, 50/60 Hz. Be sure to follow all local and electrical codes. Refer to wiring diagram for connection information.

1) **24 VDC** - with power off, connect 24 volt DC power supply to terminals PWR (+) and PWR (-) on the board.

   24 VAC - with power off, connect one transformer secondary leg to the PWR (-) on the board, along with signal output common (-). Connect the other transformer secondary leg to PWR (+). Check the wiring configuration of any other loads that may be connected to this transformer. The secondary supply voltage to the interface should be isolated from earth ground, chassis ground, and neutral leg of the primary winding. Any field device connected to this transformer must use the same common. If you are not sure of other field device configurations, use separate transformers.

2) **If the 24 volt AC or DC power is shared** with other devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV (if AC), a diode (if DC), AC or DC Transorb, or other spike snubbing device across each of the shared coils. Without these snubbers, coils produce very large voltage spikes when de-energizing that can cause malfunction or destruction of electronic circuits.

3) It is highly suggested that the 24 VAC neutral of all transformers be earth grounded at the transformer. Analog input, digital input, and analog output circuits should not be earth grounded at two points. Any field device connected to this transformer must use the same common. If you are not sure of other field device configuration, use separate transformers.

4) You should measure the actual voltage output of the secondary. If the output is not fully loaded you may read a higher voltage than the circuit board can handle.

CALIBRATION AND CHECKOUT

SIGNAL INPUTS: See figures E1, E2, E3, and E4 for wiring details. The AUD accepts pulsed relay contact inputs, pulsed DC, or pulsed AC voltage inputs (see E5 for triac jumper position)

DIP SWITCH PROGRAMMING:

1) Select the rate of change by setting the DIP switch as shown in Figure A. The rate of change is the time it takes for the analog output to go from minimum to maximum. Rate of change selections are as follows:

   Version 1: 5, 15, 30 and 90 seconds.

   Version 2 & 3: 45, 60, 120, and 240 seconds (Version 3 differs in that it will reset to maximum on start-up, or if both inputs pulse 3.5 seconds).

   Version 4: 5 and 360 seconds. Changing the timing range with power on will result in reset to minimum on Versions 1, 2 and 4.

Verify chip number on AUD corresponds to version ordered.

VERSION	CHIP PROGRAM NUMBER
Version # 1	0008Y0A.HEX
Version # 2	0244Y0A.HEX
Version # 3	0256Y0A.HEX
Version # 4	0537Y0A.HEX

2) Select either current or voltage output with the two switches shown in Figure B. **NEVER have both switches on or off at the same time while powered, or chip failure may occur.**

3) Select offset of 1 volt / 4 mA or adjustable offset by switch 6 as shown in Figure C. With the adjustable offset setting, you can adjust the ìOFFSETî trim pot as desired. For offset higher than 5 volts contact customer service.

4) Select the desired span by setting the three switches as shown in Figure D. If you chose an adjustable span, you can adjust the ìSPANî trim pot , as necessary. After all connections have been made, activate the power source. The ìPOWERî LED should light. The ìUPî and ìDOWNî LEDís will light when the AUD is receiving input signals.

ADJUSTABLE OFFSET AND SPAN. If you do not wish to use any of the preset selections and desire to set your own minimum and maximum output, you must make potentiometer adjustments

to the AUD. The OFFSET DIP switch (shown in Figure C) should be set for adjustable offset and the SPAN DIP switches (shown in Figure D) should be set for the span desired.

The minimum output signal will be equal to the offset. The maximum output signal will be equal to the offset plus the span. Examples:

If the Span is set at 4 VDC and the Offset is set at 0 VDC
Minimum Output will be 0 VDC, Maximum Output will be 4 VDC
If the Span is set at 16 mA and the Offset is set at 4 mA
Minimum Output will be 4 mA, Maximum Output will be 20 mA

To Set an Adjustable Offset:

Turn power OFF, set DIP switch 6 for adjustable offset (see figure C, page 1), connect multimeter to the output and turn on power.

Place Man/Auto jumper in the Manual position.

Turn the Manual Override potentiometer counter clockwise until it stops. It is a 3/4 turn pot.

Offset Pot turns counter clockwise to Decrease and clockwise to Increase.

Turn the Offset potentiometer until the desired minimum output is read on meter

To Set an Adjustable Span:

Turn the power OFF, set DIP switches 3, 4 and 5 for one of the 3 desired adjustable ranges (see figure D, page 1). Connect multimeter to the output and turn power ON.

Place (or leave) the Man/Auto jumper in the manual position.

Turn the override potentiometer clockwise until it stops.

Turn the Span potentiometer until the desired maximum output is read on meter (turn counter clockwise to increase and clockwise to decrease).

Check full range and repeat if needed. (Note: If powered when making DIP switch settings, power must be reset to allow DIP switch settings to be recognized.

When power is first applied or restored after power interruption, the AUD automatically resets to the minimum output signal as defined by the output DIP switch settings or the adjusted minimum.

Triac input - Follow wiring example in Figure E3 or E4, page 1.

Manual Override Potentiometer - If you want to manually increase and decrease the output (to test the hookup to the actuator) within the selected signal span, place Jumper J2 in MAN (manual) position, and turn the manual potentiometer. ***Be sure to return Jumper J2 to AUTO position after testing.***

TROUBLESHOOTING AND TESTING

1. Apply 24 VAC or 24 VDC to ìPWRî terminal, confirm power LED is on and measure voltage to confirm proper voltage.
2. Check the DIP settings. Depressing the switch closest to the MAN/AUTO pot selects the ON position. You must reset power if switch changes are made with power on or they will not be recognized.
3. **Testing the output**. Connect power. Place MAN /AUTO jumper to Manual.

   Voltage out:

   Confirm DIP switch setting for ìVoltage Outî (See Figure B, page 1). With meter only connected to the SIG and PWR (-), turn the manual pot full left and then full right. The output should vary from 0 to 100 % of calibrated or jumper selected range.

   If no change is seen, contact ACT Tech Support.

   If yes, connect load/device and meter to SIG and PWR (-) terminals. Turn override pot and measure voltage. Do the readings match the no load test?

   If no, check load impedance mismatch or a possible ground loop problem and/or call ACT Tech Support.

   If yes, voltage output is functioning properly.

Current out:

Confirm DIP Switch setting for ìCurrent Outî (See Figure B). With meter only connected to the SIG and PWR (-) turn the manual pot full left and then full right. The output should vary from 0 to 100 % of calibrated or jumper selected range. If no, measure the **voltage** and turn the Manual override pot clockwise. Is voltage present? If no, contact ACT Tech Support.

A voltage between 15-39 VDC indicates the AUD is attempting to generate the desired mA. Load or meter may have an open, blown fuse or connected improperly. A 250 or 500 ohm resistor will also work to test the output. Connect the resistor to the SIG and PWR (-) terminal. With 250 ohms on the output the voltage from one side of the resistor to the other will be 1 V @ 4 mA and 5 VDC @ 20 mA. Using the 500 ohm will give 2 VDC @ 4 mA and 10 VDC @20 mA. Does the unit function as stated above?

If no, contact ACT Tech Support.

If yes, current output is functioning properly.

4. **Testing the input**. To manually test the input.

Apply 24 VAC or 24 VDC to the PWR terminal. Connect your meter to the SIG and PWR (-) terminal. Set meter to match output DIP switch settings. Place MAN/AUTO jumper to AUTO. Connect a jumper wire from UP + to the PWR (+). Connect a jumper wire to the PWR (-) only. You are now ready to simulate an input pulse signal.

For testing purposes, select the 15 second range (DIP switch 1 ON, DIP switch 2 OFF). Be sure to reset power to allow the AUD to recognize new settings.

Take the free end of the jumper wire from ìPWRî (-) and connect by holding wire to the ìUPî (-) terminal. Verify the pulse LED indication. Read output. Has the output changed? The output should be increasing and stop when maximum span is reached.

Placing the wires on the DWN + and - terminals should decrease the output signal. If no, change the TRC/NRM to the opposite setting and repeat test. Has the output changed?

If no, contact ACT Tech Support.

If yes, unit is functioning properly.

Power Supply : 24 VAC/VDC, 50/60 Hz		Output Load Impedance@20 Volts (+/- 10%):	3300 ohms minimum. Note: If the output is limited to 18 volts, the DC power supply can be 24 VDC -10%
Power Consumption:	208 mA maximum		
Trigger Level: Normal Mode:	5 to 26.4 VDC 24 to 26.4 VAC	Output Load Impedance@10 Volts (+/- 10%):	400 ohms minimum.
Triac Mode:	24 to 26.4 VAC	Output Load Impedance, Current:	0 to 750 ohms maximum. Note: If the load is 700 ohms or less, the DC supply can be 24 VDC -10%
Regulated Power Output (for user):	24 VDC (+/-10%) 48mA maximum		