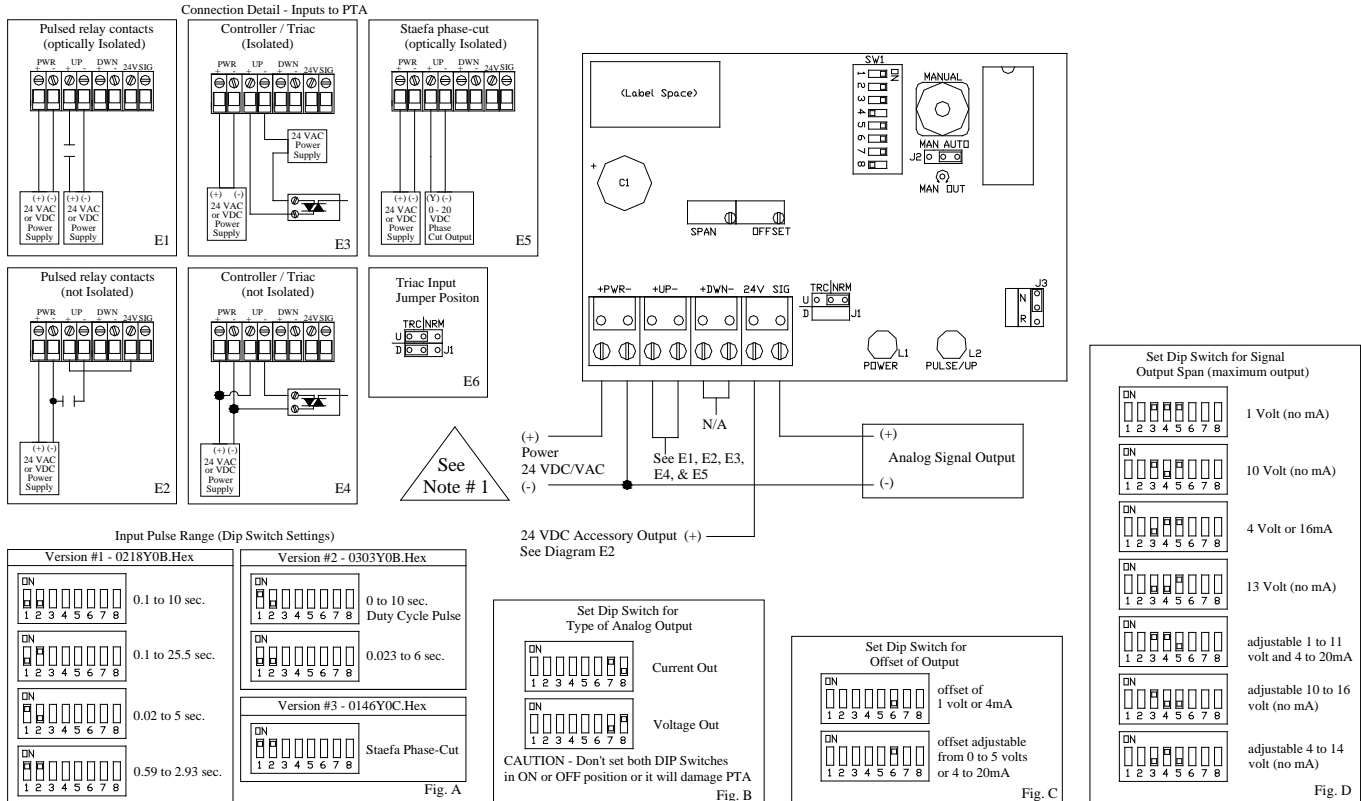




# Installation and Operation Instructions PTA

## Pulse Width Modulated Input to Analog Current or Voltage Output Versions 1, 2 and 3



**MAKE DIP SWITCH SETTINGS WITH POWER OFF**

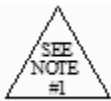
### INSTALLATION

#### READ THESE INSTRUCTIONS BEFORE YOU BEGIN INSTALLATION.

Ground yourself before touching board. Some components are static sensitive.

#### Mounting:

Circuit board may 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 against side of snap track and lift that side of the circuit board to remove. Do not flex board. Use no tools.



#### POWER CONNECTIONS: – THIS PRODUCT ACCEPTS 24 VDC OR 24 VAC POWER.

Be sure to follow all local electrical codes. Refer to wiring diagram for connection information. Make all connections with the power off.

- 1.) **24 VDC** – with power off, connect 24VDC 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. Connect the other transformer secondary leg to PWR (-). Check the wiring configuration of any other loads that may be connected to this transformer.  
 If required by BAS or controller specification, the 24 VAC neutral can 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 transformer for isolation.
- 2.) **If the 24 volt DC or AC power is shared** with other devices that have coils such as relays,

solenoids, or other inductors, each coil must have a diode or DC Tranzorb (if DC) a MOV, AC Tranzorb (if AC), 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.) 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

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**SIGNAL INPUTS:** See Figures E1, E2, E3, E4 or E5 for wiring detail. The PTA is jumper selectable (jumper J1) for NORM setting for pulse input at 5 – 26.4 VDC/VAC (See Fig. E2), relay or SSR, or TRIAC setting for triac (9 – 26.4 VAC/VDC) input (See Fig. E6).

**Version #1** offers 4 jumper selectable pulse width modulated signal ranges.

**Version #2** accepts:

- 1.) The Solidyne PWM signal or
- 2.) A continuous pulse signal command string, sampled in a 10 second window (No pulse within a 10 second window = minimum percent output, a ten second pulse or continuous pulse = 100% output).

**Version #3** is the Staefa™ 0 -20 V Phase Cut output. Trigger level is detected only above 5% (approx.) and below 95% of phase cut waveform (nothing is detected in the lower 5% or upper 5% of maximum detection band).

### DIP SWITCH SELECTION (WITH POWER OFF):

- 1.) Select the input pulse range by setting the DIP switch as shown in Figure A.
- 2.) Select current or voltage output using the two switches as shown in Figure B. **NEVER have both switches on or off** at the same time when powered, or chip failure may occur.
- 3.) Select offset by setting the switch as shown in Figure C. If you chose adjustable offset, adjust the "OFFSET" trim pot, when powered, to the desired offset or starting point (covered below).
- 4.) Select the desired span and set the three switches as shown in Figure D. If you chose an adjustable span, you can adjust the "SPAN" trim pot, when powered, to the desired signal span (covered below). Turning the "SPAN" potentiometer counterclockwise will increase span.

### JUMPER SHUNT POSITIONS (WITH POWER OFF):

- 1.) J1 See SIGNAL INPUTS above and chart on page 1.
- 2.) J2 See MANUAL OVERRIDE below.
- 3.) J3 jumper shunt selects a normal (N) or reverse acting ( R ) output.  
**After all selections have been made, activate the power source.** The "POWER" LED should light. The "PULSE" LED will light when the PTA is receiving an input signal.

### SETTING ADJUSTABLE "OFFSET" POTENTIOMETER:

If you desire to set your own minimum and maximum output (not use any of the preset selections) then set the Offset DIP switches (Figure C) for adjustable.

- 1.) Place Man/Auto jumper in the Manual position. Power up the PTA.
- 2.) Turn Offset Potentiometer Counterclockwise to Decrease or Clockwise to Increase.
- 3.) Turn the override potentiometer counterclockwise until it stops (it is a ¼ turn pot).
- 4.) **Adjust the Offset** trimmer potentiometer to the minimum output level desired, measured between terminals PWR (-) and SIG, as read on meter. Power down the PTA.

### SETTING ADJUSTABLE "SPAN" POTENTIOMETER:

The Span DIP switches (Figure D) should be set for the span desired.

- 1.) Man/Auto jumper should be in the Manual position. Power up the PTA (power-up required after any DIP switch change).
- 2.) Turn the SPAN potentiometer counterclockwise to increase, clockwise to decrease.
- 3.) Turn the override potentiometer clockwise until it stops.
- 4.) Adjust SPAN potentiometer until the desired maximum output signal is read on the meter between terminals PWR (-) and SIG.

The input signal will NOT cause "wrap around" or start over if the upper range limit is exceeded. Example: With the 0.02 to 5 second range selected, a pulse longer than 5 seconds will be ignored. 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 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 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.

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

**MANUAL OVERRIDE** – The manual override potentiometer overrides the output of the processor when J2 jumper shunt is in MANUAL position. **Always return jumper shunt J2 to AUTO when finished with adjustments.**

## TROUBLE SHOOTING AND TESTING

- 1.) Apply 24 VAC/VDC to "PWR" terminal, confirm power LED is on and measure voltage to confirm proper voltage.
- 2.) Check the DIP settings. "ON" is closest to the Man/Auto potentiometer. Reset power if DIP switch changes are made.
- 3.) Testing the output. Connect power. Place MAN/AUTO jumper to Manual.  
**Voltage Out:** Confirm DIP setting to "Voltage Out". With meter only connected to the SIG and PWR (-), turn the manual potentiometer full left and then full right. The output should vary from 0 to 100% of calibrated or set range.  
If no change is seen, contact ACI 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 for a possible ground loop problem and/or call ACI tech support.  
If yes, voltage output is functioning properly.  
**Current Out:** Confirm DIP setting to "Current Out". With meter only connected to the SIG and PWR (-) and set to current out, turn the manual potentiometer full left and then full right. The output should vary from 0 to 100% of calibrated or set range.  
If no, measure the voltage and turn the Manual override potentiometer clockwise.  
Is voltage present?  
If no, contact an ACI tech support person. A voltage between 15 – 39 VDC indicates the PTA 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 VDC @ 4mA and 5 VDC @ 20mA. Using the 500 Ohm will give 2 VDC @ 4mA and 10 VDC @ 20mA.  
Does the unit function as stated above?  
If no, contact ACI tech support.  
If yes, current output is functioning properly.
- 4.) **Testing the Input.**  
To manually test the input apply 24 VAC/VDC to the PWR terminals. Connect your meter to the SIG and PWR (-) terminal. Set meter to match output ranges selected by 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 a timed pulse signal. For testing purposes, select 0.1 to 10 seconds range. Be sure to reset power to allow the PTA to recognize new DIP switch settings. Take the free end of the jumper wire from PWR (-) and connect by holding wire to the UP (-) terminal. Count to 5 seconds (or the time = to 50% of timing range) and remove. Verify the pulse LED indication. Read output. Has the output changed? The output should be close to 50% of set output.  
If no, change the TRC/NRM to the opposite setting and repeat test.  
Has the output changed? If no, contact an ACI tech support person.  
If yes, unit is functioning properly.  
Remove all temporary jumpers and wires before putting in service.

EU Commission Directive 2002/95/EC (RoHS) Compliant

<b>Power Supply Voltage:</b> 24 to 35VDC or 21.6 to 26.4 VAC, 50/60 Hz	<b>Output Load Impedance:</b> Voltage – 3,300 Ohms (min.) at 20 volts ± 10% Voltage – 400 Ohms (min.) at 10 volts ± 10% Current – 0 to 750 Ohms (max.)
<b>Supply Current:</b> 240mA maximum if using 24V output terminal 125mA maximum if not using 24V output terminal	<b>Regulated Power Output (for user):</b> 24 VDC @ 48mA maximum
<b>Trigger Level:</b> Normal Mode: 5 to 26.4 VDC 5 to 26.4 VAC Triac Mode: 9 to 26.4 VAC	