AD-8122, AD-8123, AD8124

Signal Adaptor for Dual Output Sequenced Control General Instructions

GENERAL INFORMATION

The Signal Adaptors for Dual Output Sequenced Control are used as add-ons to the output of standard TAC System 8000 Solid State Controllers.The input voltage, as applied to the signal adaptor from the controller, is distributed to each of the two control output ramps. A controller output change of 1.5 volts will produce a 3 volt change in each of the outputs of the signal adaptor.

The two outputs make it possible to establish a temperature span between heating and cooling control from one controller setpoint. Proportional or two- position control is available from the adaptors depending on what TAC System 8000 controlled device you are controlling with the 6-9 volt dc output.

FEATURES

Three models, AD-8122, two direct acting outputs (DA-DA); AD-8123, one direct and one reverse acting output (DA-RA); and AD-8124, one reverse and one direct acting output (RA-DA), are available. The AD-8122 (only) outputs have different operating sequences depending on whether the controller output is direct-acting or reverse-acting. AD-8123 and AD-8124 are for DA input only. See the Adaptor Control Outputs section.

The compact design permits mounting on the back of the TP-8101 thermostat, on a track mounting in a panel or separately. Wiring and system span setting is shown on the face of the adaptors. Color coding is compatible with Series 8000 devices. The two slope control output with adjustable span conforms with ASHRAE 90-75 Standards.

PERFORMANCE

Ambient operating temperature: 18° to 60°C (0° to 140°F).
Ambient storage temperature: -40° to 71°C (-40° to 160°F).
Power supply input: -12MA @ 20 Vdc maximum ±2.
Input signal: 2 to 15 Vdc as produced by TAC System 8000 controllers or any 2 to 15 Vdc source.
Adaptor output signal: Two outputs each producing a control signal of 5.5 to 9.5 Vdc as the controller signal changes from 6 to 9 Vdc.
Total system throttling range: Determined by T.R. setting on controller times the span setting of the signal adaptor.
Deadband between adaptor outputs: Equal to the total throttling range (T.R.) minus the T.R. of the controller.
Mounting dimensions: 95 mm (3-3/4") high x 38 mm (1-1/2") wide x 16 mm (5/8") deep.

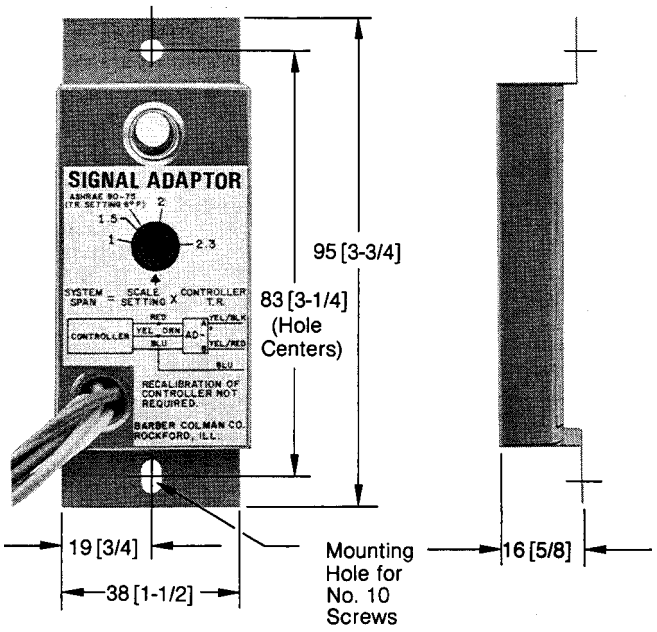

Figure-1

CONSTRUCTION AND USE

The adaptor with 228 mm (9 inch) pigtail leads is housed in a stainless steel mounting bracket suitable for attachment to the back of a TP-8101, screw or tape mounting to a panel, or snapping into a standard TAC System 8000 plastic track.

The adaptors can be used with any TAC System 8000 device which has a proportional 2-15 volt dc output. Some of the controllers that can be used with the AD-81XX Series are CP-8102, CC-8104 and TP-8101.

OPERATION

The two adaptor outputs operate in sequence. When the controller is at setpoint with a controller output of 7.5 volts, one output may be completely through its control range (depends on span setting) and the other not yet entering its control range. The second output will begin control as soon as the input voltage has covered the established span or deadband. The deadband or span between the output ramps is controlled by the controller T.R. setting and the adaptor span pot setting. It will not allow control action to begin until a programmed temperature differential has been met. Control span may be adjusted from 1 to 2.3 times controller T.R.; separation will be reasonably symmetrical about the center value. The total system throttling range between the full heating and full

© Copyright 2008 TAC All Rights Reserved.

cooling control point is found by multiplying the controller throttling range by the span pot scale setting on the signal adaptor, i.e., T.R. on a TP-8101 is set at 3.4°C (6°F) times 1.7 on signal adaptor setting for (ASHRAE 90-75) to = 5.5°C (10°F). System span would be 5.5°C (10°F) less controller T.R. of 3.4°C (6°F) which equals 2.2°C (4°F) span or deadband.

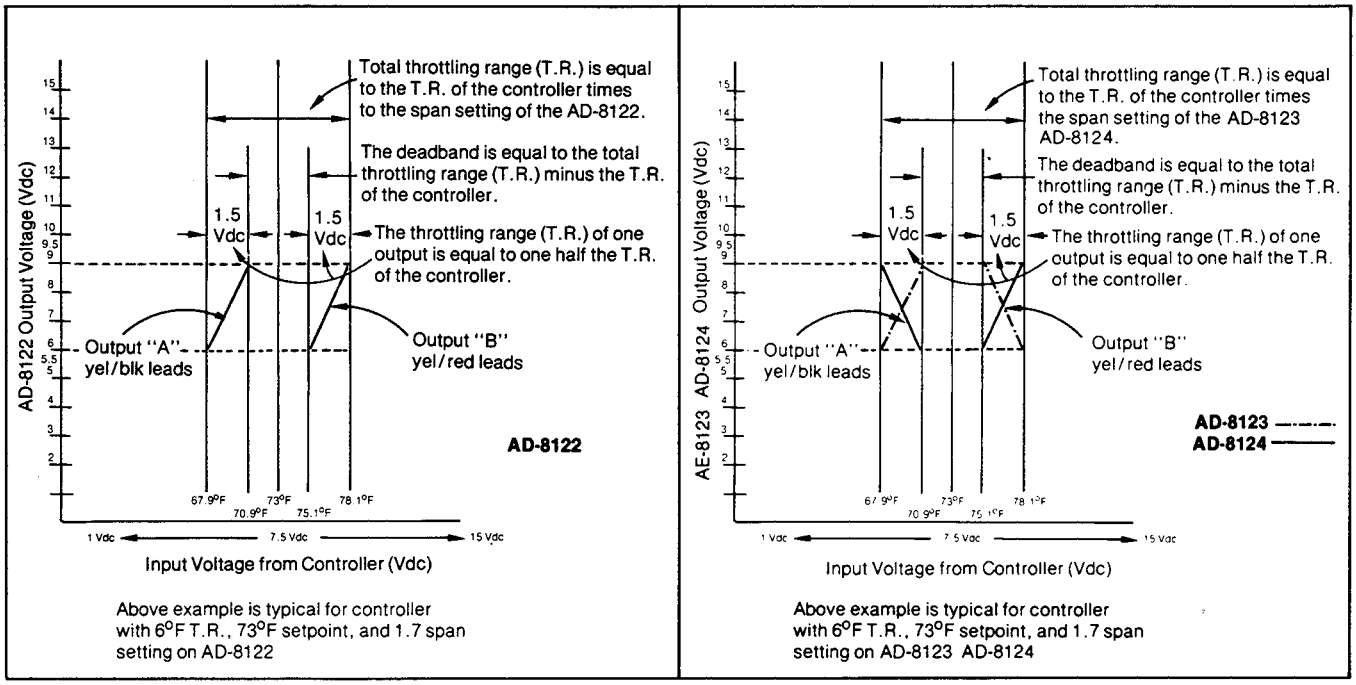

Figure-2

Three models are available:

AD-8122 (DA-DA)

AD-8123 (DA-RA)

AD-8124 (RA-DA)

Note:

1. A DA output is direct acting with respect to a Direct Acting input voltage.
2. A RA output is reverse acting with respect to a Direct Acting input voltage.

A wiring schematic is shown on the face of the signal adaptor.

Color coding is compatible with TAC System 8000 devices.

Blue is common.

Red is +20 Vdc power supply.

Yellow is output (two separate wires): output A - yellow with a black stripe; output B - yellow with a red stripe.

Orange is input to the signal adaptor and is connected to the yellow wire of a TP-8101 or to the output (OP1) of a controller.

© Copyright 2008 TAC All Rights Reserved

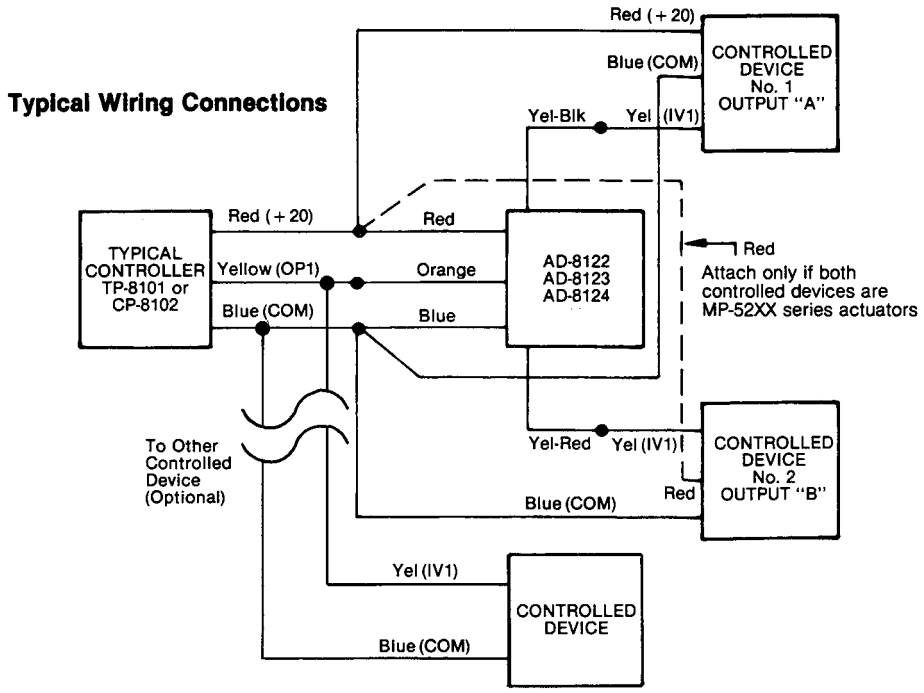

Figure-3 AD-8122, AD-8123, AD-8124 Field Wiring Diagram.

ADAPTOR CONTROL OUTPUT

The outputs action shown for all three signal adaptors is based on having a direct acting input from the controller. One adaptor AD-8122 (DA-DA) can be used with a reverse-acting controller input to obtain a reverse action output on both adaptor outputs. When using a reverse action input the "A" and "B" outputs of the adaptor will change authority positions, i.e., "A" output is first energized with direct action input and "B" output is first energized with reverse action input.

Note: AD-8123 and AD-8124 can be used only with direct acting controller input.

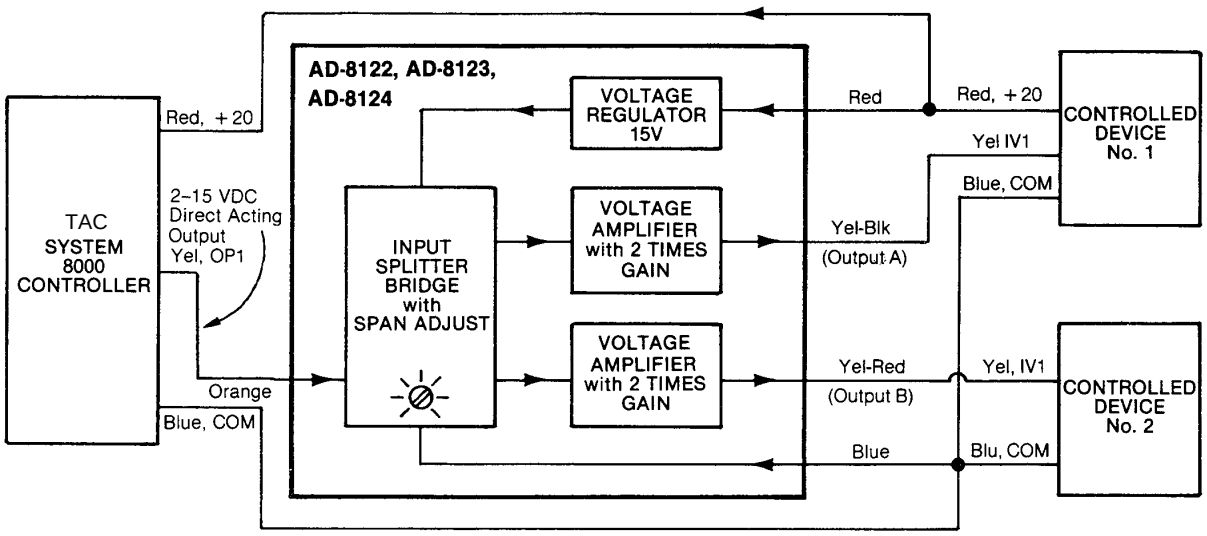

Figure-4 Basic System and Adaptor Block Diagram.

© Copyright 2008 TAC All Rights Reserved

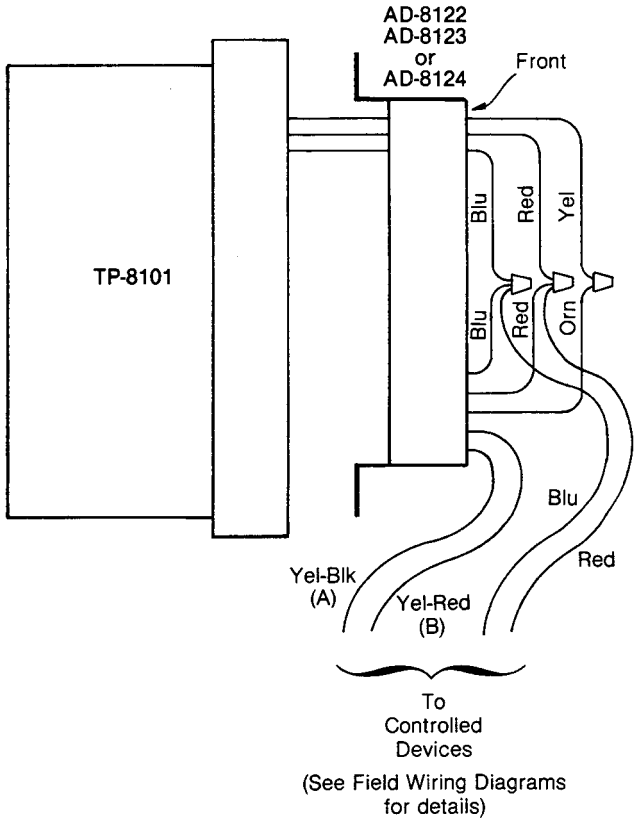

Figure-5

MOUNTING AND WIRING TO TP-8101

1. Mounting on TP-8101

Push the three wires of the TP-8101 through the round hole in the adaptor from the back to the front. See picture.

2. Wiring to TP-8101

a. Connect the blue wire from the TP-8101, the blue wire from the adaptor and the blue wires from the controlled devices together.

b. Connect the red wire from the TP-8101, to the red wire from the adaptor and the red wire from one of the controlled devices together. (THE RED WIRE ON THE OTHER CONTROLLED DEVICE(S) SHOULD BE TAPED IF NOT USED ELSEWHERE.) Connect all red wires if controlled device is Series MP-52XX.

c. Connect orange wire from adaptor to yellow wire from TP8101.

d. Connect the yellow adaptor wire with the black stripe (output A) to its control device and the yellow adaptor wire with the red stripe (output B) to its control device. This completes system connections. Set system span to desired setting and check operating sequences.

e. Except for T.R. selection, the thermostat does not require special or further calibration simply because this adaptor is being used.

TRACK MOUNTING AND WIRING TO OTHER TAC SERIES 8000 DEVICES

1. Connecting to Other 8000 Series Devices

Snap the signal adaptor into plastic track or mount with screw holes, #10 screws.

2. Wiring to Other Devices

a. Connect the blue adaptor wire and blue wires from controlled devices to controller common (COM).

b. Connect the red wire of adaptor and red wire from one controlled device to the +20 terminal on controller. (THE RED WIRE ON THE OTHER CONTROLLED DEVICE(S) SHOULD BE TAPED IF NOT USED ELSEWHERE.)

c. Connect the orange wire from adaptor to OP1 terminal of controller.

d. Connect the yellow adaptor wire with the black stripe (output A) to its control device and the yellow adaptor wire with the red stripe (output B) to its control device. This completes system connections. Set system span to desired setting and check operating sequences.

e. Except for T.R. selection, the controller does not require special or further calibration simply because this adaptor is being used.

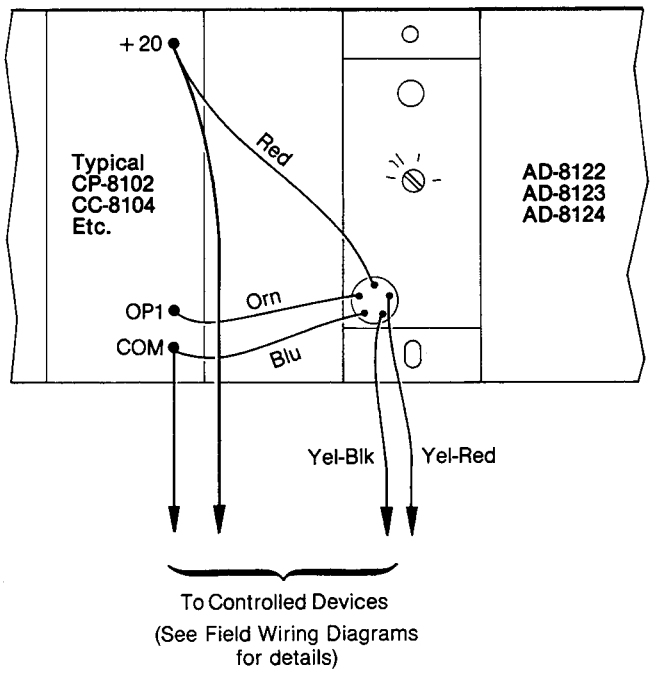

Figure-6

Copyright 2008, TAC
All brand names, trademarks and registered trademarks are the property of their respective owners. Information contained within this document is subject to change without notice.

F-16770-2

TAC
1354 Clifford Avenue
P.O. Box 2940
Loves Park, IL 61132-2940
www.tac.com

t.a.c® by Schneider Electric