

**Electronic-Pneumatic Transducer  
General Instructions**

**APPLICATION**

Unit consists of three separate transducers with a single, common electronic power supply and a single main air supply. Each transducer receives a 6 to 9 Vdc, 0 to 10 Vdc or 1 to 11 Vdc input signal and produces a 3 to 13 psig (21 to 90 kPa) output signal for 6 to 9 Vdc input signal and 3 to 15 psig (21 to 103 kPa) output signal for 0 to 10 Vdc or 1 to 11 Vdc input signal.

**SPECIFICATIONS**

**Input Signal:** 6 to 9 Vdc; 0 to 10 Vdc; 1 to 11 Vdc.

**Output Signal:** Three (3). 3 to 13 psig (21 to 90 kPa) for 6 to 9 Vdc input signal and 3 to 15 psig (21 to 103 kPa) for 0 to 10 Vdc or 1 to 11 Vdc input signal.

**Adjustments:**

**Calibration,** Factory set for 6 to 9 Vdc operation, 3 potentiometers for adjusting each branch pressure output.

**Action,** DA factory set or RA by pin selection (DA = Direct Acting, branch pressure rises as input increases. RA = Reverse Acting, branch pressure falls as input increases).

**Power Requirements:** 24 Vac (50/60 Hz), 6.0 VA.

**Power Supply Available:** 20 (+1, -1.5) Vdc, 15 mA.

**Air Supply Required:** 20 psig (138 kPa) nominal, 30 psig (207 kPa) maximum. Clean, dry, oil free air required (reference EN-123).

**Air Consumption for Sizing Air Compressor:** 0.024 scfm (11.3 ml/s) at 20 psig (138 kPa) supply.

**Air Capacity for Sizing Air Mains:** 48 scim (13.1 ml/s).

**Maximum Air Capacity (each output):** 515 scim (141 ml/s) at 20 psig (138 kPa) supply.

**Operating Characteristics:**

**Linearity,**  $\pm 1\%$  of span.

**Hysteresis,** 0.75% of span.

**Environment:**

**Ambient Temperature Limits,**

**Shipping and Storage** -40 to 160°F (-40 to 71°C).

**Operating** -20 to 140°F (-29 to 60°C).

**Humidity,** 5 to 95% RH, non-condensing.

**Locations,** NEMA Type 1 indoor only.

**Wiring Connections:** Coded screw terminals.

**Air Connections:** (One main and three branch) barbed fittings for 1/4" O.D. plastic tubing.

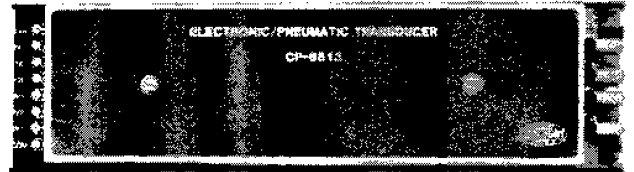
**Cover:** Aluminum.

**Mounting:** Upright position. Unit is provided with a section of plastic track for panel mounting.

**Dimensions:** 3-7/8" high x 13-3/8" wide x 2-5/8" deep (93 mm x 340 mm x 67 mm).

**ACCESSORIES**

AD-8916	16" (406 mm) enclosure kit
AL-431	In-line air filter
TOOL-87	Needle adaptor (include in TOOL-95)
TOOL-95	Pneumatic calibration tool kit
TOOL-202	Calibration box



**PRE-INSTALLATION**

**Inspection**

Visually inspect the carton for damage. If damaged, notify the appropriate carrier immediately. Visually inspect the device for obvious defects. Return damaged or defective products. Remove cover, remove shipping spacers on transducer coils, and reinstall cover.

**Required Installation Items**

**Note:** The CP-8513 is a highly accurate device. System control accuracy will depend on the accuracy of the equipment used for setup. For applications requiring a high degree of accuracy, such as pneumatic setpoint adjustment; the use of laboratory quality meters and gauges is required.

- Wiring diagrams
- Tools (not provided):  
DVM (digital voltmeter)  
Appropriate screwdriver for mounting screws and terminal connections  
Appropriate drill and drill bit for mounting screws
- Appropriate accessories
- Mounting screws (not provided)

**INSTALLATION**

**Caution:**

1. Installer must be a qualified, experienced technician.
2. Disconnect power supply before installation to prevent equipment damage.
3. Make all connections in accordance with the wiring diagram, and in accordance with national and local electrical codes. Use copper conductors only.
4. Do not exceed ratings of the device.

# Clean, Dry, Oil Free Air Supplies for Pneumatic Systems

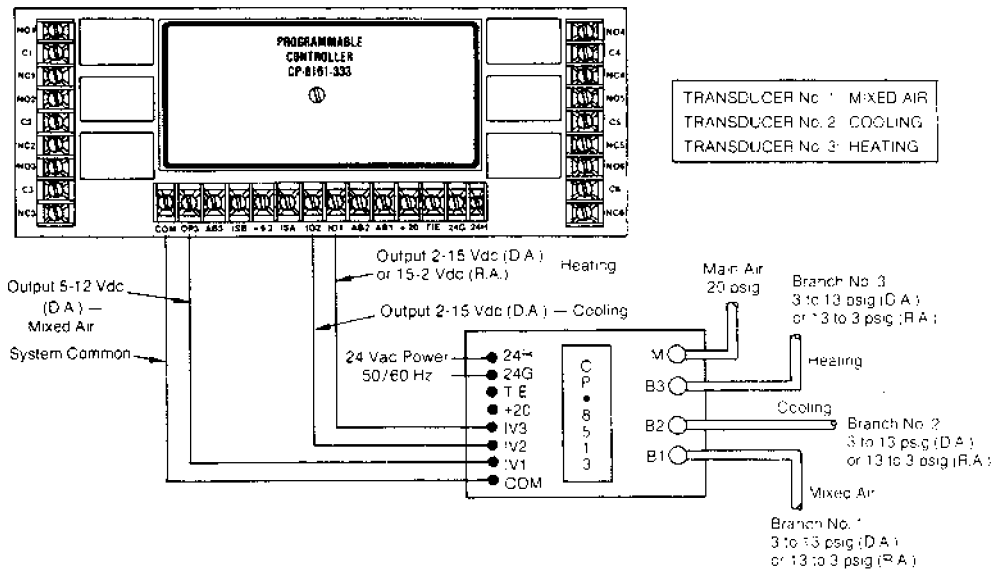


Figure-1 Typical CP-8513 Used with CP-8161-333 or CP-8261-333.

**Note:** Cut red jumper wire for 0 to 10 Vdc or 1 to 11 Vdc operation. (On CP-8513-0-0-0 models, cut brown wire loop from DA/DA to either DA or RA above resistor.)

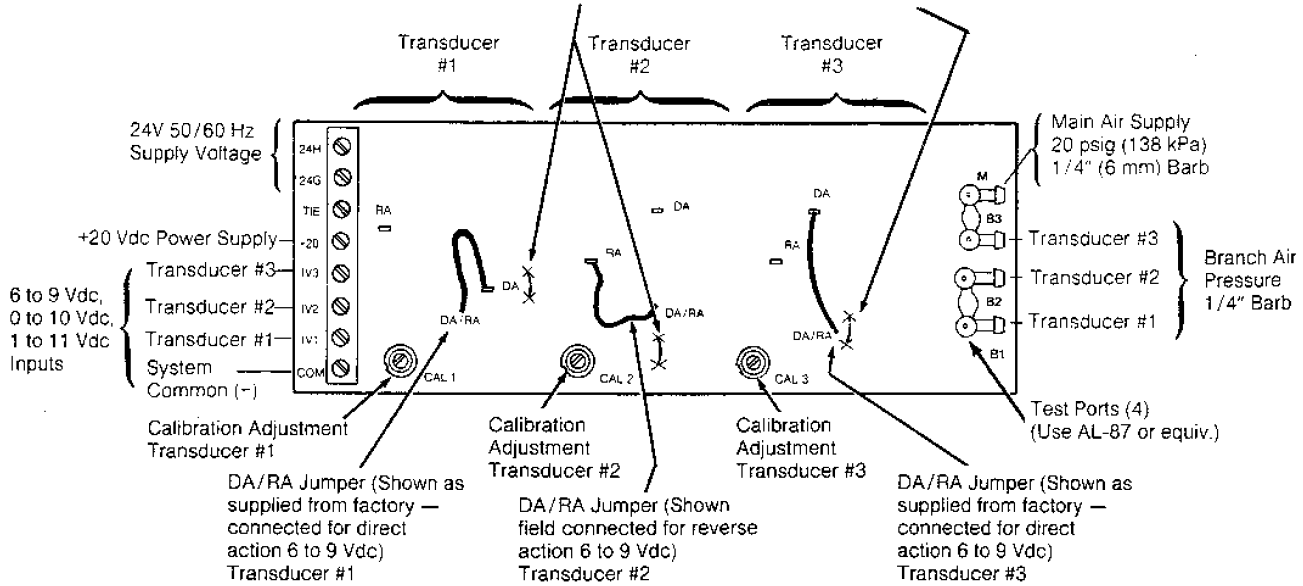
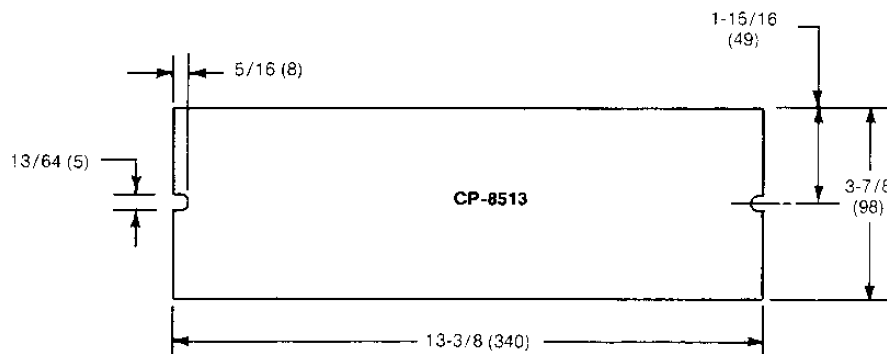


Figure-2 CP-8513 Terminal, Calibration Adjustments and DA/RA Jumper Designations.



All Dimensions Are in Inches with Millimeters in Brackets

Figure-3 CP-8513 Mounting Dimensions.

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**Caution:**

Transducer reliability/life will be affected if the air supply has particles larger than 0.03 microns. If air supply quality is questionable, install an AL-431 filter between the main air supply and the main air port of the CP-8513.

A refrigerated air dryer, particulate filter and a coalescing filter will provide this quality air (reference EN-123).

Compressor oil must be non-paraffin mineral base or naphtha base. Synthetic or paraffin base oils will destroy pneumatic controls and void the warranty.

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**Mounting**

The CP-8513 must be mounted in an upright position (refer to arrow on cover).

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**Caution:** The unit must be mounted within 5° of the upright position. Avoid locations where severe shock or vibration, excessive moisture, or corrosive fumes are present. NEMA Type 1 covers are intended for indoor use primarily to provide a degree of protection against contact with the enclosed components.

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The CP-8513 is supplied with a piece of mounting track; refer to Figure 3 for mounting dimensions.

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**Wiring**

Make all electrical connections in accordance with job wiring diagrams and in compliance with national and local electrical codes. Refer to Figure 2 for terminal designations.

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**CHECKOUT (See Figure 2)**

The CP-8513 is supplied by the factory set up for 6 to 9 Vdc input, direct acting 3 to 13 psig output. No field adjustment or calibration is required for unit used with factory settings or modified (jumper cut) to accept 0 to 10 Vdc input(s). Refer to ADJUSTMENTS if reverse action, 1 to 11 Vdc input(s) or calibration is required.

**Supply Voltage and Pressure**

Verify that supply voltage to terminals "24H" and "24G" is 24 volts AC ( $\pm 10\%$ ). If supply voltage is not present, check the power source for problems. Verify that 20 psig main air is present.

**Auxiliary Power Supply**

Check the 20 (+1, -1.5) Vdc power supply by measuring with a DVM between the +20 (+) and COM (-) terminals. If the 20 Vdc is not present or is out of tolerance, then:

1. Check to see if the 20 Vdc supply is not overloaded externally (15 mA DC maximum).
2. Check to see if an external device is shorting the 20 Vdc supply.
3. If neither 1 nor 2, consider the transducer defective and replace.

**Transducer Operation for 6 to 9 Vdc Input Signal**

For each transducer:

1. Verify that internal jumper connection for direct or reverse action is correct.
2. Adjust the input signal to obtain maximum value of 9 Vdc. If the transducer is set up direct acting, branch pressure should be 13 psig. For reverse acting transducer, branch pressure should be 3 psig.
3. Adjust the input signal to obtain the minimum value of 6 Vdc. For direct acting transducers, branch pressure should be 3 psig. For reverse acting transducers, branch pressure should be 13 psig.

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**Note:** This is a rough functional check only. The CP-8513 is a highly accurate device, and laboratory quality meters and gauges are required to properly check calibration.

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**ADJUSTMENTS****Modification of CP-8513 to Accept 0 to 10 Vdc Input or 1 to 11 Vdc Input**

See Figure 2.

1. Remove cover.
2. Cut red jumper wire(s) on printed circuit board for selected transducer(s) only.
3. Replace cover. No calibration is required for 0 to 10 Vdc range. Recalibration is required for 1 to 11 Vdc range.

**Set Up Any One Transducer for Reverse Action**

See Figure 2.

1. Determine which transducer(s) (#1, #2 or #3) from system requirements that requires reverse action.
2. Connect the DA/RA jumper for selected transducer(s) to pin "RA".
3. Calibration check or recalibration required.

**CALIBRATION CHECK OR RECALIBRATION PROCEDURE****For 6 to 9 Vdc Operating Range**

Normally no recalibration is required. If a calibration check or recalibration becomes necessary, then:

1. Equipment:
  - a. TOOL-202. TOOL-202 is a 1 to 15 Vdc signal source.
  - b. DVM (digital voltmeter) with a 15 to 20 Vdc range.
  - c. TOOL-95. TOOL-95 is pneumatic test and calibration kit.

2. Method:

- a. Connect TOOL-202 as follows:

TOOL-202 to CP-8513	
Red	+20
Yel	IV1, IV2 or IV3
Blue	COM

- b. Connect DVM to IV1, IV2 or IV3 (+) terminal and COM (-) terminal on CP-8513.

- c. Connect pressure gauge (from TOOL-95) to the branch port of the transducer being calibrated (B1, B2 or B3).
- d. DA/RA jumper can be connected for direct or reverse acting.
- e. Adjust TOOL-202 until the DVM reads  $7.5 \pm 0.05$  Vdc.
- f. Adjust calibration potentiometer (1,2,or 3) until the branch pressure reads 8.0 psi.
- g. Calibration is complete. Repeat steps a thru f for other transducers.

### For 0 to 10 Vdc Operating Range

Normally no recalibration is required. If a calibration check or recalibration becomes necessary, then:

1. Equipment:
  - a. TOOL-202. TOOL-202 is a 1 to 15 Vdc signal source.
  - b. DVM (digital voltmeter) with a 15 to 20 Vdc range.
  - c. TOOL-95. TOOL-95 is pneumatic test and calibration kit.
2. Method:
  - a. Connect TOOL-202 as follows:

TOOL-202 to CP-8513	
Red	+20
Yel	IV1, IV2 or IV3
Blue	COM

- b. Connect DVM to IV1, IV2 or IV3 (+) terminal and COM (-) terminal on CP-8513.
- c. Connect pressure gauge (from TOOL-95) to the branch port of the transducer being calibrated (B1, B2 or B3).
- d. DA/RA jumper can be connected for direct or reverse acting.
- e. Adjust TOOL-202 until the DVM reads  $5.0 \pm 0.05$  Vdc.
- f. Adjust calibration potentiometer (1, 2 or 3) until the branch pressure reads 8.0 psi.
- g. Calibration is complete. Repeat steps a thru f for other transducers.

### For 1 to 11 Vdc Operating Range

Normally recalibration is required:

1. Equipment:
  - a. TOOL-202. TOOL-202 is a 1 to 15 Vdc signal source.
  - b. DVM (digital voltmeter) with a 15 to 20 Vdc range.
  - c. TOOL-95. TOOL-95 is pneumatic test and calibration kit.

### 2. Method:

- a. Connect TOOL-202 as follows:

TOOL-202 to CP-8513	
Red	+20
Yel	IV1, IV2 or IV3
Blue	COM

- b. Connect DVM to IV1, IV2 or IV3 (+) terminal and COM (-) terminal on CP-8513.
- c. Connect pressure gauge (from TOOL-95) to the branch port of the transducer being calibrated (B1, B2 or B3).
- d. DA/RA jumper can be connected for direct or reverse acting.
- e. Adjust TOOL-202 until the DVM reads  $6.0 \pm 0.05$  Vdc.
- f. Adjust calibration potentiometer (1, 2 or 3) until the branch pressure reads 8.0 psi.
- g. Calibration is complete. Repeat steps a thru f for other transducers.

## MAINTENANCE

Regular maintenance of the total system is recommended to assure sustained optimum performance. No routine maintenance of the CP-8513 is required if the system is properly maintained.

## WARRANTY

Contamination in transducer voids the warranty.

## REPAIR

The CP-8513 is not field repairable. Factory repair is available.

Before replacing a transducer:

1. Verify that the unit is mounted upright (refer to arrow on cover) and wired per the job wiring diagram.
2. Check input signal (6 to 9 Vdc, 0 to 10 Vdc or 1 to 11 Vdc) and supply voltage.
3. Check main air pressure, and check for foreign material (dirt, oil, etc.) in the air supply. This is the most likely cause of any apparent miscalibration. If the air supply is found to be contaminated, remedy this before replacing the transducer.