

# Pressure Transducers

## Specifications and Installation Information

### Description

This bulletin provides technical information about Copeland pressure transducers.

### Cautions, Warnings, and Notices

- CPC transducers require +5VDC power to operate. **DO NOT connect this transducer to +12VDC power. Doing so will damage the transducer and void the warranty.**
- Previous transducer models required installation techs to set the input type dip switch to the DOWN position on input boards. The below transducers require you to set the input type dip switch to the UP position.

### Part Numbers

Table -1 lists the part numbers for all pressure transducers currently available from Copeland, including the part numbers.

Part #	Transducer Type	Port	Status
800-2100	CPC 100PSI	1/8" Male NPT	Current
800-2101	CPC 100PSI	1/8" Female NPT	Current
800-2200	CPC 200PSI	1/8" Male NPT	Current
800-2201	CPC 200PSI	1/8" Female NPT	Current
800-2500	CPC 500PSI	1/8" Male NPT	Current
800-2501	CPC 500PSI	1/8" Female NPT	Current
800-2651	CPC 650PSI	1/8" Female NPT	Current
800-2711	CPC 1000PSI	1/8" Female NPT	Current
800-2721	CPC 2000PSI	1/8" Female NPT	Current

Table -1 - Transducer Part Numbers and Types

# Hardware Specifications

## Supply Voltage

Transducers (800-2100, 800-2101, 800-2200, 800-2201, and 800-2500, 800-2501, 800-2651, 800-2711, 800-2721) require an excitation voltage of +5 VDC. This is NOT the same voltage required by the old “standard” transducers, which required +12 VDC.

**Important! Do not connect the CPC transducer to +12 VDC. Doing so will damage the transducer and void the warranty.**

## Operating Temperature Range

The transducers are rated to withstand ambient temperatures from -22°F to 158°F (-30°C to +70°C), and media (refrigerant) temperatures from -40°F to 300°F (-40°C to 149°C).

In ambient temperatures from +90°F to +160°F (+32°C to +71°C), the maximum allowable media temperature is derated from +300°F (149°C) by 2° for every one degree that ambient temperature is above +90°F (+32°C).

## Output Signal

The transducer’s output signal voltage varies from 0.5 to 4.5 VDC as the pressure varies from zero to the transducer’s maximum value. When the transducer reads a pressure that is above 110% of its maximum rating, the signal voltage will stop at ~4.9 VDC.

The maximum error between the measured pressure and the pressure signified by the output signal voltage is ±1.5%. This means the output signal will have a maximum error of ±1.5 PSI for the 100PSI transducer, ±3 PSI for the 200PSI transducer, and ±7.5 PSI for the 500PSI transducer.

## Fittings

All transducer male and female models have 1/8” NPT fittings. If replacing a standard transducer with 1/4” SAE port and Schrader depressor, the valve fitting will have to be replaced by a female 1/8” NPT port.

**Note:** *On request, Copeland can supply replacements for “standard” transducers equipped with a female 1/4” SAE port with Schrader depressor. Contact Copeland if you require such a transducer.*

## Transducer Cable

Transducers are supplied with a 20’ cable for connecting the transducer to +5VDC power and an input board point. The cable plugs in to the top of the transducer using a Packard Metri-Pack 12065287 cable connector.

## Overpressure, Burst Pressure, and Vacuum Pressure

Table -2 gives the overpressure, burst pressure, and vacuum pressure PSI ratings for each transducer model.

The overpressure rating is the PSI which, when exceeded, will cause the transducer to function incorrectly.

The burst pressure rating is the highest PSI the transducer can withstand without leaking or breaking.

The vacuum pressure is the amount of vacuum the transducer can withstand before the transducer starts to read incorrectly.

**Note:** *The transducer will not be damaged by any amount of applied vacuum. There is no need to close transducer valves or remove transducers when applying vacuum.*

Model	Overpressure	Burst Pressure	Vacuum
CPC 100PSI	300 PSIG	1000 PSIG	-10 PSIG
CPC 200PSI	400 PSIG	1000 PSIG	-14.7 PSIG
CPC 500PSI	1000 PSIG	2500 PSIG	-14.7 PSIG

Table -2 - Overpressure, Burst Pressure, and Vacuum Ratings

## Installation

1. Wrap the transducer pipe fitting with Teflon tape to ensure a tight seal.
2. Screw the transducer on to the access valve. Tighten by using a wrench on the hex nut above the fitting. Do not use the transducer casing to apply torque.
3. Attach the connector of the cable harness to the port at the top of the transducer.
4. Connect the cable harness wires to the 16AI or 16AIE board as shown in *Figure 1*. **If connection to the input board requires more than the 20' of wire included with the cable harness, use Belden #8771 (shielded, 3 conductor, 22AWG) or equivalent to extend the cable.**
5. On switch S1 or S2 on the 16AI or 16AIE, set the input dip switch rocker corresponding to the input number to the UP position. This is different from the required input dip switch setting for all previous *transducers*. If replacing an old pressure transducer with the new pressure transducer, you must change the input dip switch setting from DOWN to UP.

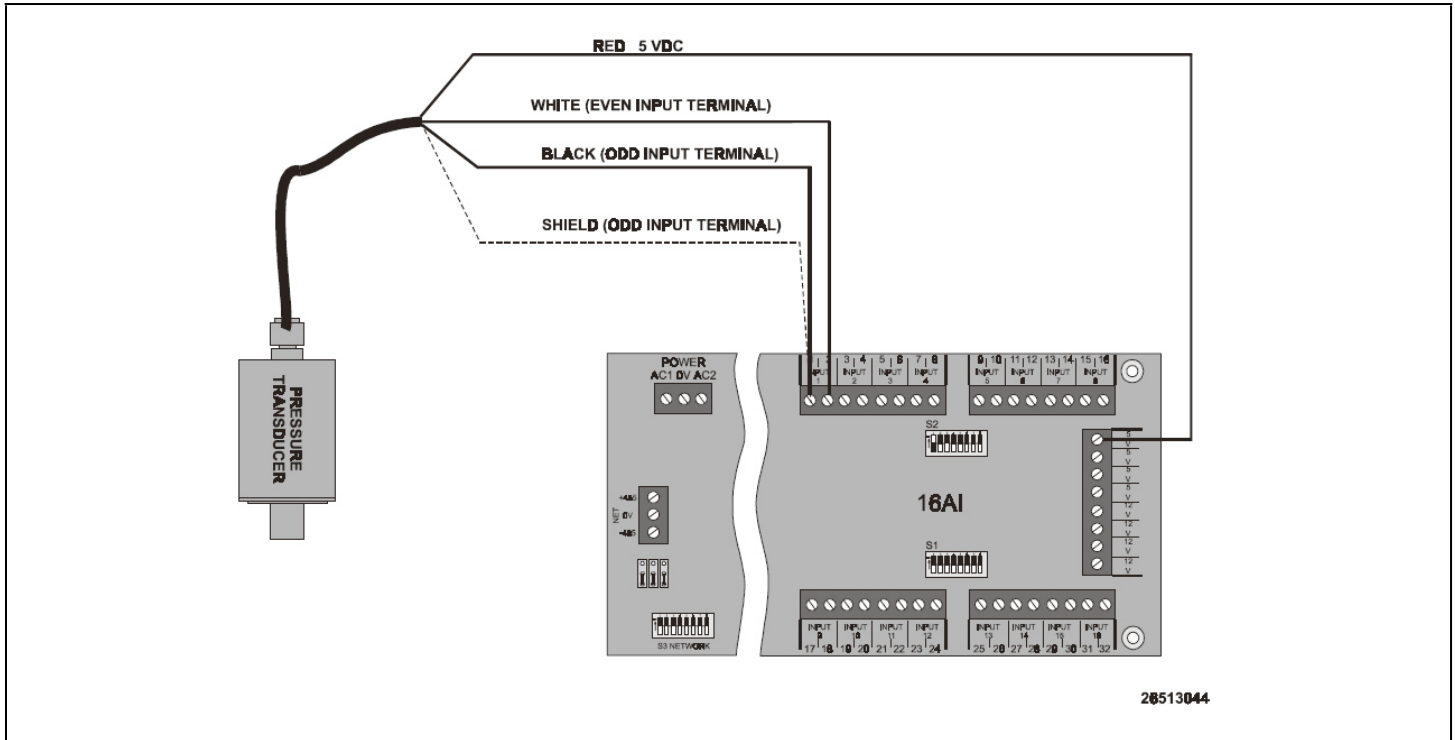


Figure 1 - Pressure Transducer Installation

## Controller Programming

When setting up pressure transducer inputs in E2, E3, or Site Supervisor, set the **Sensor Type** to **5v-100PSI, 5v-200PSI, 5v-500PSI, 5v-650PSI, 5v-1000PSI, or 5v-2000PSI**.

## Pressure Transducer Output Signal Voltages

Table -3 lists the transducer output voltages and their corresponding pressure readings.

Transducer Voltage	Pressure Value - 100PSI Transducer	Pressure Value - 200PSI Transducer	Pressure Value - 500PSI Transducer
0.5 V	0 PSI	0 PSI	0 PSI
0.7 V	5 PSI	10 PSI	25 PSI
0.9 V	10 PSI	20 PSI	50 PSI
1.1 V	15 PSI	30 PSI	75 PSI
1.3 V	20 PSI	40 PSI	100 PSI
1.5 V	25 PSI	50 PSI	125 PSI
1.7 V	30 PSI	60 PSI	150 PSI
1.9 V	35 PSI	70 PSI	175 PSI
2.1 V	40 PSI	80 PSI	200 PSI
2.3 V	45 PSI	90 PSI	225 PSI
2.5 V	50 PSI	100 PSI	250 PSI
2.7 V	55 PSI	110 PSI	275 PSI
2.9 V	60 PSI	120 PSI	300 PSI
3.1 V	65 PSI	130 PSI	325 PSI
3.3 V	70 PSI	140 PSI	350 PSI
3.5 V	75 PSI	150 PSI	375 PSI
3.7 V	80 PSI	160 PSI	400 PSI
3.9 V	85 PSI	170 PSI	425 PSI
4.1 V	90 PSI	180 PSI	450 PSI
4.3 V	95 PSI	190 PSI	475 PSI
4.5 V	100 PSI	200 PSI	500 PSI

Table -3 - Voltage to Pressure Chart for CPC Transducers