



OUTPUT TRANSDUCERS

UNIVERSAL ELECTRONIC / PNEUMATIC TRANSDUCERS MODELS UCP-522, UCP-622



DESCRIPTION

The **Models UCP-522 and UCP-622 Universal Electronic/ Pneumatic Transducers** provide precision pneumatic control of valves, dampers, and other pneumatic devices. These transducers are well suited for the control of small and large volume loads, such as small and large pneumatic actuators. The **Model UCP-522** is furnished in a unique slim-line design housing, which saves panel space, and can be ordered with an optional DIN rail mounting adapter. The **Model UCP-622** is a snap-track mounted version of the universal electronic/pneumatic transducer. Its operation is identical to the **Model UCP-522**.

OPERATION

Models UCP-522 and UCP-622 convert a jumper-selectable analog, pulse-width modulated (PWM), or optional tri-state input to a 0-20 psig (0-137.9 kPa) adjustable output. The transducers are powered with 24 VAC/DC. Upon a loss of power, the UCP air valves will remain closed. A Model EP3 air valve may be used to exhaust branch pressure on a power loss. **Models UCP-522 and UCP-622** may be operated in a multiplexed PWM mode so that one BAS output may control up to eight transducers individually.

FEATURES

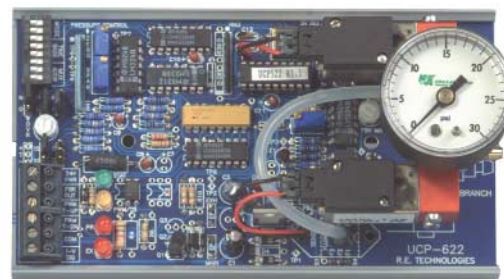
- **Adjustable zero and span**
- **Voltage, current, PWM universal inputs standard**
- **Optional tri-state control**
- **1/4" (0.64 cm) barbed tube connectors**

- **Feedback**
- **No position sensitivity**
- **No air consumption**
- **Manual control of output**
- **Multiplex mode**



UCP-522

SHOWN WITH OPTIONAL PRESSURE GAUGE



UCP-622

SHOWN WITH OPTIONAL PRESSURE GAUGE

SPECIFICATIONS

| | | | |
|---|--|--|---|
| Supply voltage | 24 VDC $\pm 10\%$ @ 112 mA max 24 VAC $\pm 10\%$ @ 225 mA max | Max main air pressure | 30 psig (206.8 kPa) |
| Output | Adjustable 0-20 psig (0-137.9 kPa) | Air capacity | 1100 scim @ 20 psig (300 cm ³ /sec @ 137.9 kPa) |
| Input | 0-20 mA, 4-20 mA, 0-5V, 1-5V, 0-10V, 2-10V, 0-15V, 3-15 VDC or PWM, jumper selectable or optional tri-state | Air consumption | None in steady state |
| PWM time base | 0.1-2.65, 5.2, 12.85, 25.6, or 0.59-2.93 sec, DIP switch selectable | Linearity | 1% of span @ 77°F (25°C) |
| Tri-state time base (option) | 2.55, 5.1, 12.75, 25.5 sec, DIP switch selectable | Hysteresis | 1% of span @ 77°F (25°C) |
| Input impedance | 250Ω (current), 49.9 kΩ min (voltage) | Humidity | 5% to 95% noncondensing |
| Feedback signal | 4-20 mA/0-20 psig (0-137.9 kPa) nonadjustable, 650Ω max load | Operating temp | 32° to 122°F (0° to 50°C) |
| | | Dimensions | |
| | | UCP-522 | 3.4"H* x 2"W x 4.8"D (8.6 x 5.1 x 12.4 cm) |
| | | UCP-622 | 3.25"H x 6"W x 1.75"D** (8.3 x 15.2 x 4.4 cm) |
| | | Weight | 1.32 lb (0.6 kg) |
| | | *Add 1.2" (3.0 cm) for mounting tabs; add 2.3" (5.8 cm) for optional gauge assembly. | |
| | | **Add 1.25" (3.2cm) to depth for optional gauge assembly. | |

OUTPUT TRANSDUCERS



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MANUAL CONTROL (ALL MODELS)

For manual control of the output, the 24V power supply must be connected and the N/O jumper moved to the override O position. The manual adjustment potentiometer can then be used to vary the output.

CURRENT OR VOLTAGE ANALOG CONTROL (ALL MODELS)

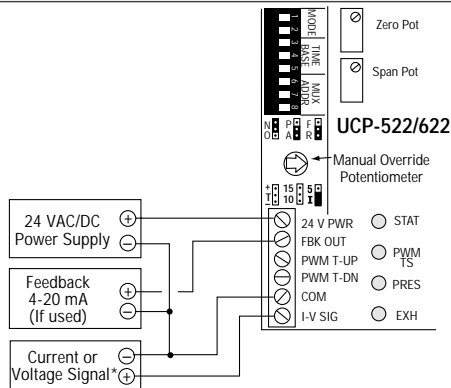
JUMPER SETTINGS For current or voltage analog control, set jumpers for required input signal as shown below.

| <p>N P F 15 5 O A R 10 I</p> <p>Jumpers shown for 4-20 mA input</p> | <table border="1"> <tr> <th>Desired Input Signal</th> <td>0-20 mA</td> <td>4-20 mA</td> <td>0-5V</td> <td>1-5V</td> <td>0-10V</td> <td>2-10V</td> <td>0-15V</td> <td>3-15V</td> </tr> <tr> <th>Set Jumpers On</th> <td>N,A,F,I</td> <td>N,A,R,I</td> <td>N,A,F,5</td> <td>N,A,R,5</td> <td>N,A,F,10</td> <td>N,A,R,10</td> <td>N,A,F,15</td> <td>N,A,R,15</td> </tr> </table> | Desired Input Signal | 0-20 mA | 4-20 mA | 0-5V | 1-5V | 0-10V | 2-10V | 0-15V | 3-15V | Set Jumpers On | N,A,F,I | N,A,R,I | N,A,F,5 | N,A,R,5 | N,A,F,10 | N,A,R,10 | N,A,F,15 | N,A,R,15 |
|---|---|----------------------|---------|---------|----------|----------|----------|----------|-------|-------|----------------|---------|---------|---------|---------|----------|----------|----------|----------|
| Desired Input Signal | 0-20 mA | 4-20 mA | 0-5V | 1-5V | 0-10V | 2-10V | 0-15V | 3-15V | | | | | | | | | | | |
| Set Jumpers On | N,A,F,I | N,A,R,I | N,A,F,5 | N,A,R,5 | N,A,F,10 | N,A,R,10 | N,A,F,15 | N,A,R,15 | | | | | | | | | | | |

DIP SWITCH SETTINGS

| OPERATING MODE | SWITCH | | | | | | | |
|-----------------|--------|-----|-----|-----|-----|-----|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Current Voltage | Off | Off | Off | Off | Off | Off | Off | Off |

ANALOG CONTROL WIRING



*Input Signal Notes:

1. If input is voltage, multiple **UCP-522/UCP-622s** may be powered from the same power supply or transformer.
2. If input signal is current from a current sourcing controller, multiple units may be powered from the same power supply or transformer.
3. If input is current from a current sinking controller, each **UCP-522/UCP-622** must have a separate power supply or transformer.

PWM & MULTIPLEXED PWM CONTROL (UCP-522/UCP-622 ONLY)

JUMPER SETTINGS For single unit PWM or multiplexed PWM control, set jumpers for N, P, F. All other jumpers are unused and ignored.

N P F
O A R

Jumpers shown for PWM input

| Desired Input Signal | PWM | MUX PWM |
|----------------------|---------|---------|
| Set jumpers On | N, P, F | N, P, F |

DIP SWITCH SETTINGS

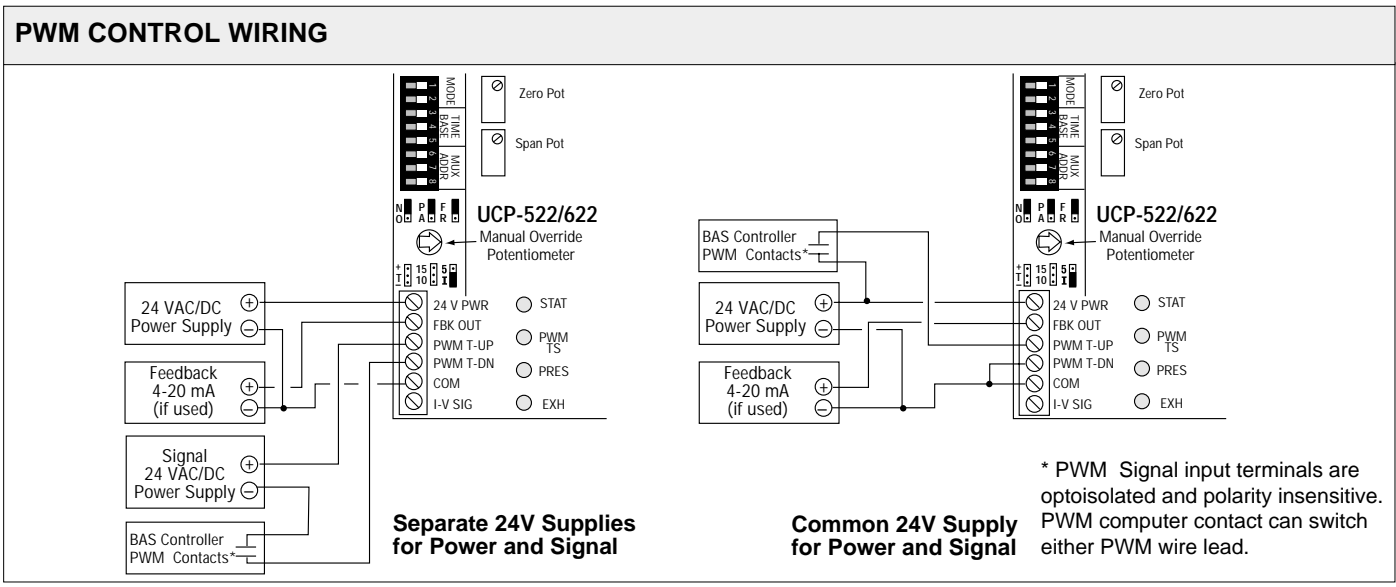
| OPERATING MODE | SWITCH | | PWM TIME BASE (sec) | SWITCH | | | OPERATING MODE | SWITCH | | |
|-------------------------|--------|-----|---------------------|--------|-----|-----|-------------------------|---|-----|-----|
| | 1 | 2 | | 3 | 4 | 5 | | 6 | 7 | 8 |
| Single Unit PWM Control | Off | Off | 0.1-2.65 | Off | Off | Off | Single Unit PWM Control | Off | Off | Off |
| Multiplexed PWM Control | Off | On | 0.1-5.2 | Off | Off | On | Multiplexed PWM Control | Refer to the Multiplexed PWM Operation page at the beginning of this section. | | |
| | | | 0.1-12.85 | Off | On | Off | | | | |
| | | | 0.1-25.6 | Off | On | On | | | | |
| | | | 0.59-2.93 | On | Off | Off | | | | |

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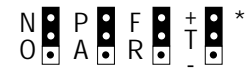
OUTPUT TRANSDUCERS

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TRI-STATE CONTROL (UCP-522T / UCP-622T ONLY)

JUMPER SETTINGS For tri-state control, set jumpers for N, P, F. * Select T+ or T-, depending on the signal wiring connection, to the power supply. The other jumpers are unused and ignored. Note: Current and voltage inputs are also operational with the UCP-522T/UCP-622T.



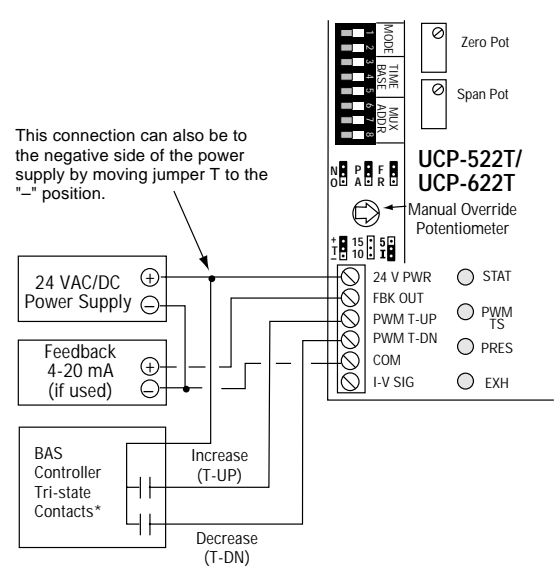
DIP SWITCH SETTINGS

| OPERATING MODE | SWITCH | |
|------------------------------------|--------|-----|
| | 1 | 2 |
| Tri-State (UCP-522T/UCP-622T only) | Off | Off |

| TRI-STATE TIME BASE (sec) | SWITCH | | |
|---------------------------|--------|-----|-----|
| | 3 | 4 | 5 |
| 2.55 | Off | Off | Off |
| 5.1 | Off | Off | On |
| 12.75 | Off | On | Off |
| 25.5 | Off | On | On |

| SWITCH | | |
|--------|-----|-----|
| 6 | 7 | 8 |
| Off | Off | Off |

TRI-STATE CONTROL WIRING



The **UCP-522T/UCP-622T** provides a 0-20 psig (0-137.9 kPa) output proportional to the length of time an increase or decrease signal is held. A contact closure wired in series with the T-UP terminal will increase the output signal (psig) proportional to the length of the signal given. A contact closure wired in series with the T-DN terminal will decrease the output signal (psig) proportional to the length of the signal given.

Tri-state example: Using a standard **UCP-522T/UCP-622T** with a 25.5-sec time base and a 0-20 psig (0-137.9 kPa) span with output currently at 0 psig, pulsing would operate as follows:

1. A 5.1-sec increase pulse issued; output increases 20% to 4 psig (27.6 kPa).
2. Another 5.1-sec increase pulse issued; output increases another 20% to 8 psig (55.2 kPa).
3. A 5.1-sec decrease pulse issued; output decreases 20% to 4 psig (27.6 kPa).

OUTPUT TRANSDUCERS



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CHECKOUT/RECALIBRATION

Tools required: multimeter, Model CLC-100-PW1 signal analyzer, pressure gauge.

The **UCP-522/UCP-622** are factory-calibrated for an output span of 0-20 psig (0-137.9 kPa). For a tighter span, adjust the zero and span potentiometers. The feedback signal will not change if the calibration is changed. The feedback signal is always 4-20 mA over 0-20 psig (0-137.9 kPa).

1. Verify that 24 VAC/DC is present at the 24V PWR and COM terminals.
The green status LED will be on continuously (see Figure 1).
2. Verify that the input signal is present and that the input signal jumpers and DIP switches are set for the input signal being used.
3. Verify that 20-30 psig (137.9-206.8 kPa) main air is present. Main air should be at least 3 psig (20.7 kPa) higher than the maximum required output.
4. Apply minimum input signal. For Tri-state models, apply a contact closure equal to the selected time base (such as 25.5 sec) to the T-DN terminal. Branch pressure should go to approximately 0 psig. Feedback signal should be approximately 4 mA.
5. If another low pressure is needed, adjust the zero potentiometer until the desired output pressure is reached.
6. Apply maximum input signal. For Tri-state models, apply a contact closure equal to the selected time base (such as 25.5 sec) to the T-UP terminal. Branch pressure should go to approximately 20 psig (137.9 kPa). Feedback signal should be approximately 20 mA.
7. If another high pressure is needed, adjust the span potentiometer until the desired output pressure is reached.
8. Repeat as necessary to achieve accurate results.

Note: This is a rough functional check. The **UCP-522/622** is a highly accurate device, and laboratory-quality meters and gauges are required to properly check calibration.

FIGURE 1. LED INDICATION

| STAT (GREEN) | PWM/TRI-STATE (YELLOW) | PRESSURE (RED) | EXHAUST (RED) |
|--|---|---|---|
| Steady Green Power on | Steady Yellow PWM or tri-state signal present | Steady Red Increasing pressure in branch line | Steady Red Exhausting pressure in branch line |
| Slow Green Blink Attention mode (Multiplex Mode) | | | |
| Rapid Green Blink Select mode (Multiplex Mode) | | | |

ORDERING INFORMATION

| MODEL | DESCRIPTION |
|----------------|--|
| UCP-522 | Universal Electronic/Pneumatic Enclosed Transducer |
| UCP-622 | Universal Electronic/Pneumatic Snap-Track Mounted Transducer |
| OPTIONS | |
| T | Tri-state input (current & voltage inputs also operational) |
| 43* | Pressure gauge indication, 0-30 psig |
| 47 | DIN rail mounting adapter (UCP-522, 522T only) |

* 0-200 kPa gauge available

UCP-522 - **43** - **47** *Example: UCP-522-43-47 Universal electronic/pneumatic transducer with pressure gauge indication and DIN rail mounting*

Related Products - EP3 - Air Valve (to provide control from a back-up controller on loss of computer control or other failure)
22-170 - Volume tank (to increase branch line volume)