



## MICROTRANS DIFFERENTIAL PRESSURE AND AIRFLOW SIGNAL PROCESSOR

### DESCRIPTION

Paragon Controls Incorporated has raised the bar in differential pressure and airflow measurement accuracy. The **MicroTrans** signal processor utilizes current state-of-the-art digital microprocessor technology capable of producing overall  $\pm 0.1\%$  accuracy with unequaled 20-bit (1,048,576 steps) A/D and 12 bit (4,096 steps) D/A signal conversion resolution. Having a twelve-point linearization capability, the **MicroTrans** can accurately determine true airflow rates even when the primary airflow measurement stations do not meet their minimum installation requirements.

The ultra low 0.04" w.c. differential pressure, 800 fpm full scale operating ranges and the auto zeroing function of the **MicroTrans** provides accurate airflow measurement down to 100 fpm.

The **MicroTrans** accepts a temperature input signal for air temperature indication, temperature signal transmission for remote readout, and air density compensation for standard or actual airflow calculations.

A password protected configuration menu provides quick and simple field configuration by authorized personnel. Field configuration of engineering units, process noise filtering, operating range, alarm set points, etc, are performed via user friendly menus and a six button touch pad.

### Features

- $\pm 0.25\%$  full scale accuracy (standard)  
 $\pm 0.10\%$  full scale accuracy (optional)
- Full scale ranges as low as 0.04" w.c. (9.96 Pa) differential pressure or 800 fpm (4.06 m/s) velocity
- Excellent AD/DA resolution:  
20 bit (1,048,576 steps) A/D  
12 bit (4,096 steps) D/A
- Twelve point linearization capability
- Four point flow correction
- Large back lit LCD for configuration and local indication of the measured process
- Simple field configuration menus
- Controlled access to configuration menus
- Capable of receiving external temperature input for standard and actual air calculations
- Outputs and displays measured value in "w.c. differential pressure, velocity or flow
- Field configurable for either English or SI engineering units
- Auto zeroing function (optional)
- High and low airflow alarms (optional)
- Remote alarm (optional)
- Integral power switch
- NEMA 12 rated enclosure (standard)  
NEMA 4 rated enclosure (optional)

## MicroTrans Technical Specifications

### Signal Processor

#### 1. Transducer Natural Spans

0 to 0.10"w.c. (24.91 Pa)  
 0 to 0.25"w.c. (62.27 Pa)  
 0 to 0.50"w.c. (124.54 Pa)  
 0 to 1.00"w.c. ( 249.09 Pa)  
 0 to 2.00"w.c. (498.18 Pa)  
 0 to 3.00"w.c. (747.27 Pa)  
 0 to 5.00"w.c. (1.245 KPa)  
 0 to 10.0"w.c. ( 2.49 KPa)

#### 2. Accuracy

0.25% of full scale (standard)  
 0.10% of full scale (optional),  
 including linearity, hysteresis,  
 deadband and repeatability

#### 3. Operating Range

The operating range is calculated using 40% to 110% of the transducer natural span. The operating value entered will represent full scale output of 5 VDC, 10 VDC, or 20 mA

#### 4. Temperature Effect

Zero: 0.025% of transducer full span per °F (with auto zero option there is no zero effect with temperature)  
 Span: 0.025% of transducer full span per °F

#### 5. Temperature Limits

Operating: 32 to 122°F (0 to 50°C)  
 Storage: -20 to 158°F (-29 to 70°C)

#### 6. Overpressure Limits

Proof Pressure: 5 psid (0.3447 bar)  
 Burst Pressure: 10 psid (0.689 bar)

#### 7. Humidity Limits

0 to 95% RH, non-condensing

#### 8. Mounting Position Effect

Below 0.5"w.c. (124.5 Pa): ≤ 0.25% full scale  
 Above 0.5"w.c. (124.5 Pa): ≤ 0.10% full scale

#### 9. Span and Zero Adjustments

Performed by internally mounted push buttons

#### 10. Auto Zero Option

Frequency is menu selectable between 1 and 24 hours on 1 hour intervals

#### 11. Display Low Pass Filter

Response time to reach 98% of a step change is adjustable in 11 increments from 2 to 60 seconds

#### 12. Output Low Pass Filter

Response time to reach 98% of a step change is adjustable in 11 increments from 2 to 90seconds

#### 13. Programmable Constants

When an external temperature signal is unavailable, temperature and barometric pressure can be entered as constants

### Indication

#### 14. Display

A backlit, graphical LCD providing 8 lines of data display. Also used for programming

### Inputs/Outputs

#### 15. Analog Temperature Input

0 to 10 VDC or 4 to 20 mA 2-wire internally or externally loop powered temperature signal

#### 16. Analog Outputs

Process output signal and optional temperature output signal are jumper selectable 0 to 5 VDC, 0 to 10 VDC, or 4-20 mA.

*Note:* 0-5 VDC voltage output must be the same for process and temperature

#### 17. Digital Inputs

Digital contact for display and process output hold during a high pressure purge cycle or other external events

#### 18. Digital Outputs

Remote Alarm: single (1 form C) dry contacts rated for 2 amps at 30 VAC/DC and 0.6 amps at 120 VAC/110 VDC resistive load  
 Optional Hi/Lo Alarm: two single (1 form C) dry contacts rated for 2 amps at 30 VAC/DC and 0.6 amps at 120 VAC/110 VDC resistive load

### Power

#### 19. Power Supply

20 to 28 VAC/DC

#### 20. Power Consumption

Standard Unit: 4.6 VA at 24 VAC, 2.7 VA at 24 VDC  
 Full Options: 10 VA at 24 VAC, 5.5 VA at 24 VDC

#### 21. Circuit Protection

Power input is isolated, reverse polarity protected and supplied with an easily accessible PICA fuse

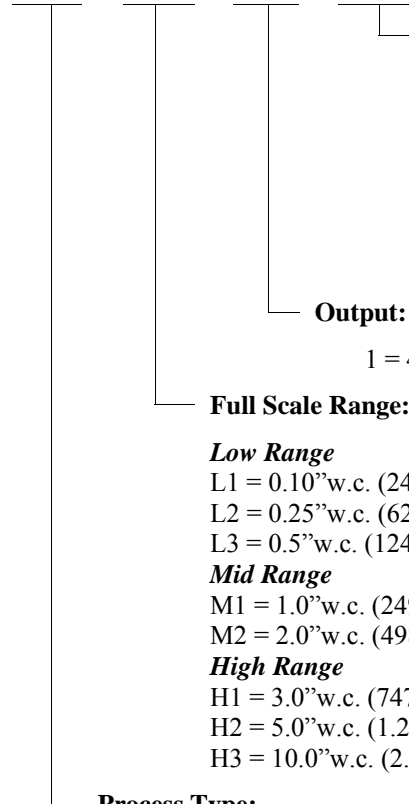
### Enclosure

#### 22. UL & CSA Rating

NEMA 12 (standard)  
 NEMA 4x (optional)  
 Material: impact and corrosive resistant  
 Dimensions: 6.65"H x 4.69"W x 2.72"D

## MicroTrans Ordering Information

MT-



**Options:**

- AZ = Auto Zero
- TC = Temperature Compensation
- RA = Remote Alarm
- HLA = High/Lo Alarm
- OAC = Optional 0.1% Accuracy
- N4 = NEMA 4X

*Notes For multiple options, separate each option code with a dash*

**Output:**

- 1 = 4-20 mA
- 2 = 0-5 VDC
- 3 = 0-10 VDC

**Full Scale Range:**

**Low Range**

- L1 = 0.10”w.c. (24.91 Pa)/1,266 fpm (6.43 m/s)
- L2 = 0.25”w.c. (62.27 Pa)/2,001 fpm (10.17 m/s)
- L3 = 0.5”w.c. (124.54 Pa)/2,830 fpm (14.38 m/s)

**Mid Range**

- M1 = 1.0”w.c. (249.09 Pa)/4,002 fpm (20.33 m/s)
- M2 = 2.0”w.c. (498.18 Pa)/5,660 fpm (28.75 m/s)

**High Range**

- H1 = 3.0”w.c. (747.27 Pa)/6,932 fpm (35.21 m/s)
- H2 = 5.0”w.c. (1.245 KPa)/8,949 fpm (45.46 m/s)
- H3 = 10.0”w.c. (2.49 KPa)/12,656 fpm (64.29 m/s)

**Process Type:**

- 1 = Flow
- 2 = Velocity
- 3 = Pressure

## MicroTrans Specification Guide

### Electronic Transducers

Airflow transducers for operating velocities Below 1,266 fpm shall provide the following features:

1. Local electronic indication of the measured airflow rate. The indicating meter shall have a large backlit LCD and shall indicate the measured air volume in engineering units such as W.C., SCFM, ACFM, Etc.
2. Automatic zeroing circuit that shall be capable of maintaining the transducer output to within [0.25%] [0.10%] of operating span, and shall be field configurable for frequency of activation between one and twenty four hours on 1 hour intervals. The transducer output shall be locked and maintained at the last given output value during the automatic zeroing period so as not to interrupt the automatic control process. The meter shall be auto calibrated to an accuracy of ± 1 count.
3. A signal processor utilizes current state-of-the-art digital microprocessor technology producing overall [±0.25%] [±0.10%] accuracy with a minimum of 20-bit (1,048,576 steps) A/D and 12 bit (4,096 steps) D/A signal conversion resolution.
4. Twelve-point linearization capability, and shall accurately determine true airflow rates even when the primary airflow measurement stations do not meet their minimum installation requirements.
5. On/Off integral power switch

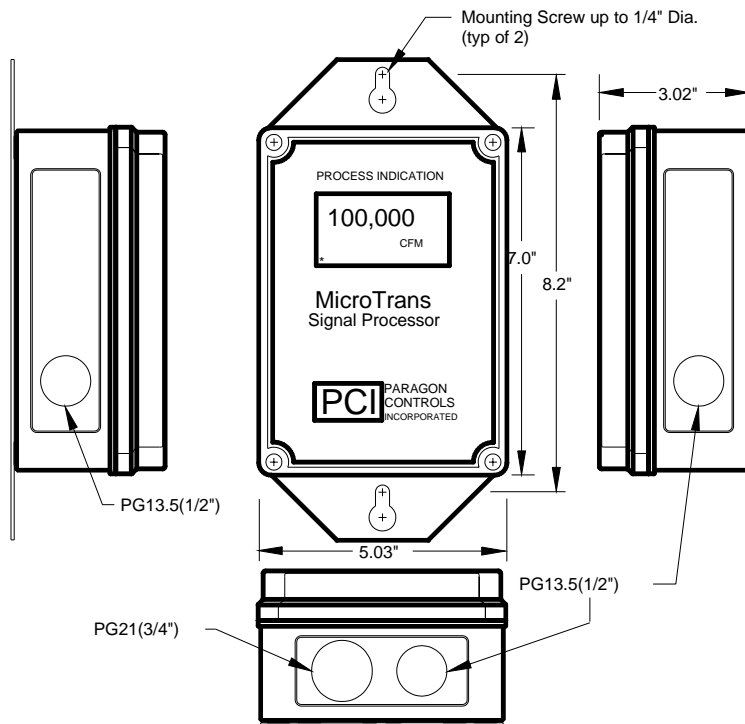
### Installation Considerations

1. An identification label shall be placed on the side of each airflow indicating transducer listing the work order number, flow or pressure elements served, full scale values, and identifying tag number.

### Manufacturer

1. Signal processors shall be Paragon Controls Inc. MicroTrans or equal as approved by the Engineer.
2. Naming of a manufacturer does not automatically constitute acceptance of this standard product nor waive the responsibility of the manufacturer to comply totally with all requirements of the proceeding specification.

## MicroTrans Dimensions



## MicroTrans Field Connections

