DESCRIPTION

The MicroTransEQ signal processor utilizes current state-of-the-art digital microprocessor technology capable of producing overall ±0.1% accuracy with unequaled 24-bit (16,777,216 steps) A/D and 12 bit (4,096 steps) D/A signal conversion resolution. Having a twelve-point linearization capability, the MicroTransEQ can accurately determine true airflow rates even when the primary airflow measurement stations do not meet their minimum installation requirements. The ultra low 0.03”w.c. differential pressure (693 fpm) full scale operating range and the auto zeroing function of the MicroTransEQ provides accurate airflow measurement down to 100 fpm.

The MicroTransEQ accepts a temperature input signal for air temperature indication 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. Device monitoring and configuration can also be performed by a building management system through LonWorks®, BACnet-MS/TP® Master or Modbus RTU Slave communication network.

Features

- ±0.25% full scale accuracy (standard)
- ±0.10% full scale accuracy (optional)
- Full scale ranges as low as 0.03”w.c. (7.47 Pa) differential pressure or 693 fpm (3.52 m/s) velocity
- Excellent resolution:
  - 24 bit (16,777,216 steps) A/D
  - 12 bit (4,096 steps) D/A
- Modbus RTU Slave & BACnet® Master Communication
- LonWorks® certified
- Twelve point linearization capability
- Four point flow correction
- 4 Line 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 differential pressure, velocity or flow
- Field configurable for either English or SI engineering units
- Auto zeroing function
- High and low airflow alarms (optional)
- Integral power switch
- NEMA 1 rated enclosure (standard)
- NEMA 4X rated enclosure (optional)
MicroTransEQ Technical Specifications

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. (1245.27 Pa)
   - 0 to 5.00" w.c. (1245.27 Pa)
   - 0 to 10.0" w.c. (2490.9 Pa)

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 30% to 100% of the value entered as full scale range at factory calibration. The operating value entered will represent full scale output of 5 VDC, 10 VDC, or 20 mA

4. **Temperature Effect**
   - Zero: 0.03% of transducer full span per °F (with auto zero option there is no zero effect with temperature)
   - Span: 0.03% of transducer full span per °F

5. **Temperature Limits**
   - Operating: 32 to 122°F (0 to 50ºC)
   - Storage: -20 to 158°F (-29 to 70ºC)

6. **Overpressure Limits**
   - Proof Pressure: 15 psid
   - Burst Pressure: 25 psid

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 via display menus

10. **Auto Zero Interval**
    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 menu adjustable from 0 to 200 seconds

12. **Output Low Pass Filter**
    Response time to reach 98% of a step change is menu adjustable from 0 to 200 seconds

13. **Programmable Constants**
    Constants such as temperature, barometric pressure (altitude), area factor etc. can be easily entered via display menu's

14. **Display**
    A backlit, graphical LCD providing 4 lines of data display. Also used for programming

15. **Network**
    - LonWorks®
    - BACnet MS/TP® Master
    - Modbus® RTU Slave

16. **Analog Temperature Input**
    0 to 10 VDC or 4 to 20 mA 2-wire internally or externally loop powered temperature signal

17. **Analog Outputs**
    Process output switch selectable 0 to 5 VDC, 0 to 10 VDC, or 4-20 mA (Max. load 700Ω)

18. **Digital Inputs**
    Purge Hold

19. **Digital Outputs**
    Optional Hi/Lo Alarm: two single (1 form C) dry contacts rated for 5 amps at 30 VAC/VDC and 10 amps at 120 VAC resistive load

20. **Power Supply**
    20 to 28 VAC/DC

21. **Power Consumption**
    - Standard Unit: 5.2 VA at 24 VAC
    - 3.6 VA at 24 VDC
    - Full Options: 6 VA at 24VAC
    - 4.2 VA at 24VDC

22. **Circuit Protection**
    Power input is isolated, reverse polarity protected and supplied with a resettable fuse

23. **UL & CSA Rating**
    - NEMA 1 (standard)
    - Material: Flame retardant ABS plastic
    - Dimensions: 4.625"H x 8.750"W x 2.265"D
    - NEMA 4X (optional)
    - Material: Impact and corrosive resistant
    - Dimensions: 9.56"H x 5.0"W x 3.12"D

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MicroTransEQ Ordering Information

**Options:**
- 1 = Auto Zero
- 2 = Temperature Compensation
- 3 = High/Lo Alarm
- 4 = Optional 0.1% Accuracy
- 5 = NEMA 4X Enclosure
- 6 = 1/4" Compression Fittings (NEMA 4X Enclosure Only)
- 7 = LonWorks® Communication with BMS
- 8 = BACnet MS/TP® Communication with BMS
- 9 = Modbus Communication with BMS

**Process Type:**
- 1 = Flow
- 2 = Velocity
- 3 = Pressure

**Full Scale Range:**
- 1 = Low Range (0.03 to ≤ 1.0" w.c.)
- 2 = High Range (>1.0" w.c.)

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

Note: For multiple options, separate each option code with a dash.
MicroTrans\textsuperscript{EQ} NEMA 1 Dimensions

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MicroTrans\textsuperscript{EQ} NEMA 4 Dimensions

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MicroTransEQ Field Connections

- POWER SWITCH
  - ON
  - OFF

- ESC
- S1
- TEMP INPUT
- mA
- 10V
- S2
- S4
- mA
- V
- PROC OUTPUT
- mA
- V

- ENTER
- LON

- J1
  - 1 2 3
  - 4 5 6
  - 7 8 9
  - 10 11 12
  - 13 14 15
  - 16 17 18

- J2
- J3 (ALARM OPTION)
- 11 12 13 14 15 16 17 18

- POWER SUPPLY (24VAC/DC)
- RECEIVING DEVICE (PROCESS)

- REFER TO FIGURES BELOW FOR PROPER TEMPERATURE TRANSMITTER CONNECTION

- TOTAL (HIGH) PRESSURE CONNECTION
- STATIC (LOW) PRESSURE CONNECTION

- TYPICAL FLOW ELEMENT CONNECTION
- TP CONNECTION
- FE-1000
- SP CONNECTION

- J1
  - 1 2 3
  - 24VAC/DC
  - EARTH GROUND

- J2
  - 4
  - 24VDC LOOP POWER
  - + TEMPERATURE INPUT
  - - TEMPERATURE INPUT (GND)
  - 5
  - + PROCESS OUTPUT
  - - PROCESS OUTPUT (GND)
  - 6
  - + NETWORK COMMUNICATIONS
  - - NETWORK COMMUNICATIONS
  - 7
  - 8
  - 9
  - 10

- J3 (ALARM OPTION)
  - 11
  - PURGE HOLD
  - 12
  - COM
  - 13
  - NO HIGH ALARM
  - 14
  - NC
  - 15
  - 16
  - COM
  - 17
  - NO LOW ALARM
  - 18
  - NC

- REFER TO FIGURES BELOW FOR PROPER TEMPERATURE TRANSMITTER CONNECTION
4-20mA Loop Powered Temperature Transmitter Field Connection

(Note: Verify S1 switch is in the mA position)

0-10vdc 3-wire Temperature Transmitter Field Connection

(Note: Verify S1 switch is in the V position)
MicroTrans\textsuperscript{EQ} Specification Guide

Digital Airflow Signal Processors

1. Basis-of-Design Product: Subject to compliance with requirements, provide Paragon Controls Inc.; MicroTrans\textsuperscript{EQ} or equal as approved by the Engineer.
2. Span: Factory calibrated to match the application.
3. Accuracy: [0.25\%] [0.10\%] of full scale including non-linearity, hysteresis, deadband and non-repeatability.
4. Signal Conversion Resolution: 24-bit A/D and 12 bit D/A.
5. Temperature Effects: Less than 0.03 percent full scale per deg F (Less than 0.045 percent full scale per deg C).
7. Noise Filtration: Response time to reach 98 percent of a step change adjustable from 0 to 200 seconds in 1 second increments.
8. Output: [4-20 mA] [0-5 Vdc] [0-10 Vdc].
9. Enclosure: [NEMA 1 rated flame retardant ABS plastic] [NEMA 4X rated impact and corrosive resistant]
10. Capable of twelve-point linearization and four-point flow correction.
11. Large backlit LCD for configuration and local indication of measured process.
12. Six button touch pad and password protected menus for field configuration of engineering units, process noise filtering, operating range, and alarm set points.

Retain optional features in first four subparagraphs below if required.

13. Automatic Zeroing Circuit: For operating velocities below 1,266 fpm, include an automatic zeroing circuit that is field configurable for frequency of activation between one and twenty four hours on 1-hour intervals. Signal processor output shall be locked and maintained at last given output value during automatic zeroing period so as not to interrupt automatic control process. Meter shall be auto calibrated to accuracy of plus or minus 1 count.
14. Capable of accepting temperature input signal for air temperature indication and air density compensation for standard or actual airflow calculations.
15. High/Lo Alarm: Contacts indicating low and/or high airflow conditions. Dry contacts shall be rated for 5 amps at 30VAC/VDC and 10 amps at 120 VAC resistive load.
16. Monitoring and configuration shall be performed through [LonWorks\textsuperscript{®}] [BACnet\textsuperscript{®}-MS/TP] or [Modbus\textsuperscript{®}] communication network.