



PARAGON  
CONTROLS  
INCORPORATED



# FT-1005

*Air Volume/Velocity Transducer*

*Operation & Maintenance Manual*

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*Engineered for accuracy, applicability,  
durability and simplicity*



## TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
1. INTRODUCTION .....	1
1.1. DESCRIPTION.....	1
1.1.1. Specifications.....	1
1.1.2. Installation Setup .....	1
1.1.3. Component Locations .....	1
2. DPT CALIBRATION.....	2
2.1. DPT ZERO CALIBRATION .....	2
2.2. DPT SPAN CALIBRATION.....	2
3. OUTPUT CALIBRATION.....	3
3.1. OUTPUT SPAN CALIBRATION .....	3
3.1.1. 0-5vdc Output Procedure .....	3
3.1.2. 0-10vdc Output Procedure .....	3
3.1.3. 4-20mA Output Procedure.....	3
4. TROUBLESHOOTING GUIDE .....	4

# 1. INTRODUCTION

This user manual provides information on product features and guides you through all basic functions.

## 1.1. DESCRIPTION

The **FT-1005** Air Volume transducer sensor operates on the capacitance principal and is capable of sensing ultra low differential pressures. In the capacitance cell, a very lightweight, responsive diaphragm deflects a small amount when pressure is applied. This deflection results in a change in capacitance, which is then detected and processed electronically into an output signal linear to the velocity pressure. The electronic signal is then sent to the square root extractor/multiplier, which converts the velocity pressure signal into an analog output signal (4-20mA / 0-5vdc / 0-10vdc) linear to velocity (fpm) or volume (cfm). An integral green Power Indicator illuminates when power is applied.

### 1.1.1. Specifications

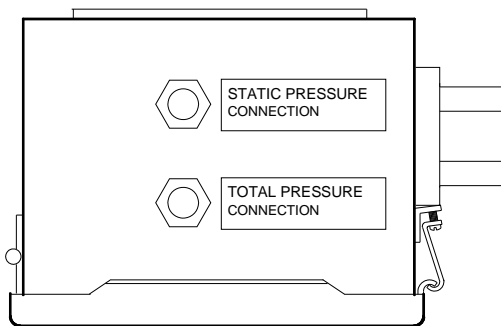
Power Requirements: 18 to 28VAC/DC (150mA)

Output Options: 0-10vdc / 4-20mA (500 max. load) Standard  
 0-5vdc / 0-10vdc Optional

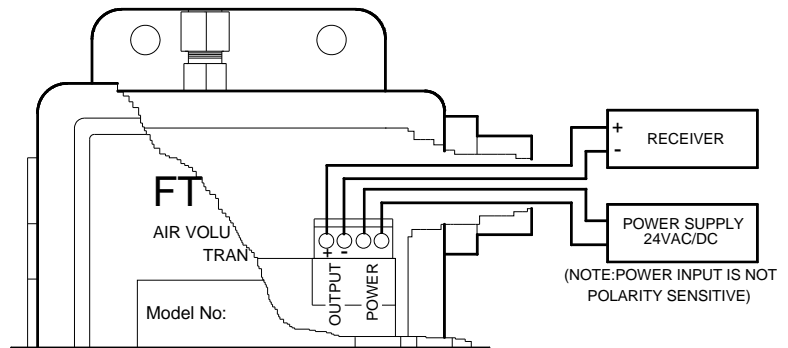
### 1.1.2. Installation Setup

Refer to figures below for pressure and electrical connections.

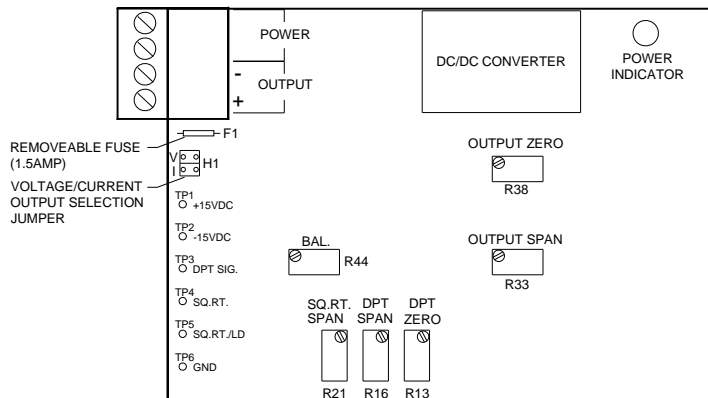
**PRESSURE CONNECTIONS**



**ELECTRICAL CONNECTIONS**



### 1.1.3. Component Locations



## 2. DPT CALIBRATION

It is recommended that the DPT ZERO Calibration be performed upon installation. Span Calibration is not affected by the Zero Calibration. The Span of the unit has been factory calibrated and should only be adjusted using high accuracy test equipment. **Refer to sections 1.1.2 and 1.1.3.**

Zero Calibration Equipment Required:

- DMM (Digital Multi Meter)

Span Calibration Equipment Required:

- Low pressure air source (Paragon PS-100 or equivalent)
- Manometer for measuring low pressure
- DMM (Digital Multi Meter)

### 2.1. DPT ZERO CALIBRATION

The following zero calibration procedure can be performed without the need to perform a span calibration.

- Step 1. Apply power to the FT-1005 transducer.
- Step 2. Verify the green power LED (LED1) is illuminated.
- Step 3. Verify zero pressure is applied to the transducer.
- Step 4. With the DMM, monitor the voltage between TP6 (GND) and TP3 (DPT SIG.). Adjust R13 (DPT ZERO) potentiometer for a reading of  $0.0 \pm 0.001$ vdc.

### 2.2. DPT SPAN CALIBRATION

- Step 1. Apply power to the FT-1005 transducer.
- Step 2. Connect the DMM between TP6 (GND) and TP3 (DPT SIG.).
- Step 3. Apply full scale pressure (Value shown on the transducer label) to the Total (High) Pressure port and adjust R16 (DPT SPAN) potentiometer for a reading of  $10 \pm .01$ vdc.

## 3. OUTPUT CALIBRATION

### 3.1. OUTPUT SPAN CALIBRATION

Check the transducer label to determine the output signal type (0-5vdc, 0-10vdc or 4-20mA) and perform the appropriate output procedure.

*Note: Section 2 DPT Calibration must be completed before performing an Output Calibration.*

Equipment Required

- Low pressure air source (Paragon PS-100 or equivalent)
- Manometer for measuring low pressure
- DMM (Digital Multi Meter)

#### 3.1.1. 0-5vdc Output Procedure

(Note: If 0-5vdc option is installed, output selects are 0-5vdc & 0-10vdc only)

- Step 1. Connect the DMM to the output terminals and configure the DMM to measure voltage.
- Step 2. Apply power to the FT-1005 transducer.
- Step 3. With no pressure applied, adjust R38 (OUTPUT ZERO) potentiometer for a reading of  $0.0\text{vdc} \pm 0.01\text{vdc}$ .
- Step 4. Apply full scale pressure (Value shown on the transducer label) to the Total (High) Pressure port and adjust R33 (OUTPUT SPAN) potentiometer for a reading of  $5 \pm 0.01\text{vdc}$ .

#### 3.1.2. 0-10vdc Output Procedure

- Step 1. Connect the DMM to the output terminals and configure the DMM to measure voltage.
- Step 2. Apply power to the FT-1005 transducer.
- Step 3. No Zero adjustment required, output is in Zero Lockdown.
- Step 4. Apply full scale pressure (Value shown on the transducer label) to the Total (High) Pressure port and adjust R16 (DPT SPAN) potentiometer for a reading of  $10 \pm 0.01\text{vdc}$ .

#### 3.1.3. 4-20mA Output Procedure

(Note: 4-20mA output not available with 0-5vdc option)

- Step 1. Connect the DMM to the output terminals and configure the DMM to measure current.
- Step 2. Apply power to the FT-1005 transducer.
- Step 3. With no pressure applied, adjust R38 (OUTPUT ZERO) potentiometer for a reading of  $4.0 \pm 0.01\text{mA}$ .
- Step 4. Apply full scale pressure (Value shown on the transducer label) to the Total (High) Pressure port and adjust R33 (OUTPUT SPAN) potentiometer for a reading of  $20 \pm 0.01\text{mA}$ .

## 4. TROUBLESHOOTING GUIDE

<b>TROUBLESHOOTING TABLE</b>	
<b>SYMPTOM</b>	<b>SOLUTION</b>
1. Power Indicator not illuminated	1. Verify power to device is within specifications
	2. Remove Power and verify F1 fuse with a DMM (See section 1.1.3)
	3. Contact Factory Service Department.
2. Incorrect output signal reading	1. Verify correct H1 output jumper selection (See section 1.1.3)
	2. Verify Static (Low) Pressure and Total (High) Pressure signal lines are connected correctly (See section 1.1.2).
	3. Verify receiving device is configured correctly
	4. Measure Input Differential Pressure with a manometer and verify the correct pressure.
	5. Contact Factory Service Department.

