

# AX-ADPT-DA-VI

Advanced Multi Range Air Differential Pressure Transmitter

# AXIO



## Product Overview

The AX-ADPT-DA-VI multi range differential pressure transmitters are a cost effective solution for air flow monitoring applications.

The units are available in a number of pressure ranges and can be used for static pressure monitoring applications by simply allowing one of the ports to remain open to normal atmospheric pressure. AX-ADPT-DA-VI units are suitable for use with air, non aggressive and non-combustible gases.

Options for LCD, Modbus and BACnet communications complete an impressive range of options.

## Features

- Cost-Effective Solution
- Multiple ranges in a single unit
- 4-20mA, 0-5Vdc and 0-10Vdc
- Can calculate Air Velocity automatically (-L)
- BACnet and Modbus variants (-B / -M)

## Product Specifications

Maximum Pressure:	6.89kpa, burst 68.9kpa
Output / Display:	Pascals, kPascals, mm W.C or inches W.C.
Pressure Connection:	Plastic pipe suitable for use with 5mm ID plastic tube.
Electrical Connection:	Screw terminals suitable for use with cable up to 1.5mm <sup>2</sup>
Output: selectable:	4-20mA
Voltage	2 wire loop powered - Loop resistance 0-1250Ω
Power Supply:	4-20mA
Voltage	3 wire - Load resistance 1KΩ min
Current Consumption:	10 to 35Vdc
Accuracy:	21.6 to 33Vac or 17-36Vdc at 40mA max
Response time:	40mA Max
Zero & Span adjustment:	+/- 1% for 50pa to 6975pa. +/- 2% for 25pa only
Supported Baud Rates:	Adjustable 0.5s - 15s time constant, provides 95% response time of 1.5s - 45s
Stability:	Digital push button
Display (optional):	9600, 19200, 38400, 57600, 76800, 115200
Protection:	< ±1% FS/Year
Ambient Temp range:	5 digit LCD
Weight & Dimensions:	IP66
Country of Origin:	-18°C to 66°C

## Order Codes

AX-ADPT-DA1-VI	ADPT 0-25Pa, 0-40Pa, 0-50Pa, 0-125Pa, voltage and current output
AX-ADPT-DA2-VI	ADPT 0-250Pa, 0-500Pa, 0-750Pa, 0-1250Pa, voltage and current output
-B	Bacnet Communications (please consult sales)
-M	Modbus Communications (please consult sales)
-L	LCD Display

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Advanced Multi Range Air Differential Pressure Transmitter

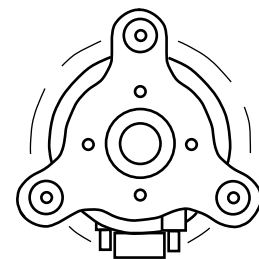
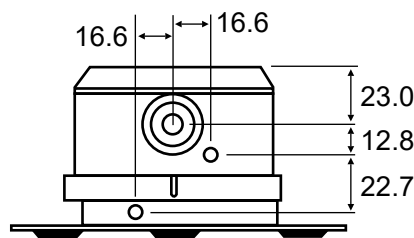
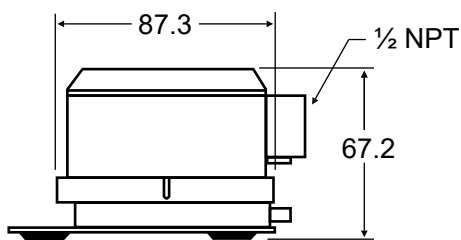


## Installation

The AX-ADPT-DA-VI should be installed by a suitably qualified technician in accordance with prevailing regulations and any guidelines for the equipment to which it is to be connected. The AX-ADPT-DA-VI is not suitable for use with mains Voltage.

The AX-ADPT-DA-VI has three fixing lugs moulded into the base for use with screws up to 4mm in diameter. When fixing the switch, care should be taken not to stress the unit. The switch is designed to be mounted on a vertical plane

## Dimensions (mm)



Mounting: 3 off 4.8mm dia holes  
equi-spaced on 105mm diameter

## Connections

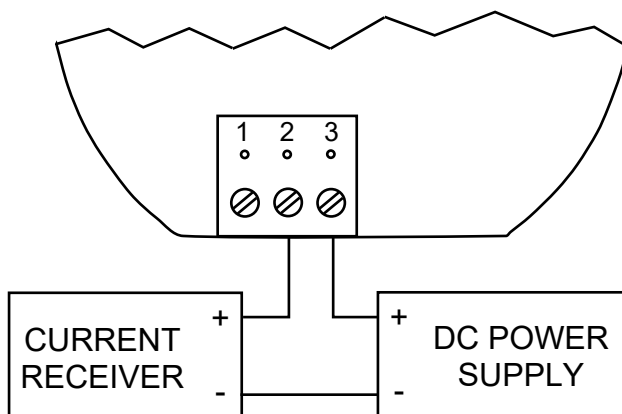
### Pressure:

Pressure connections are made by pushing 6mm PVC tube over the pressure pipes behind the cable gland. Connect the high pressure side to the inlet pipe marked +.

### Electrical:

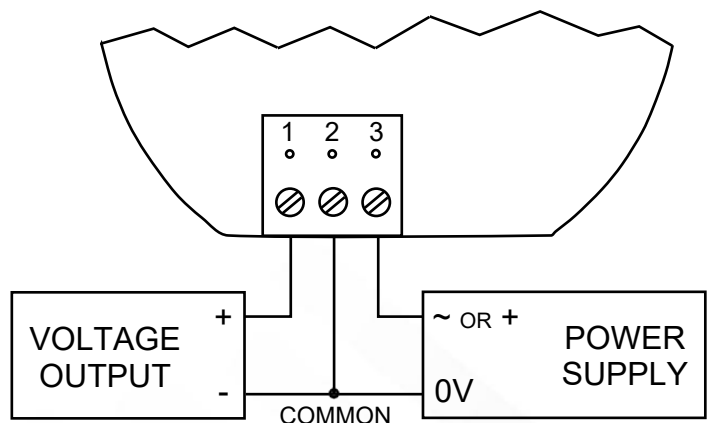
The sensor should be wired as per the appropriate diagram below. The terminal block is a push-fit removable type for ease of wiring. Note the correct jumper setting - see page 3

2-Wire 4-20mA connection



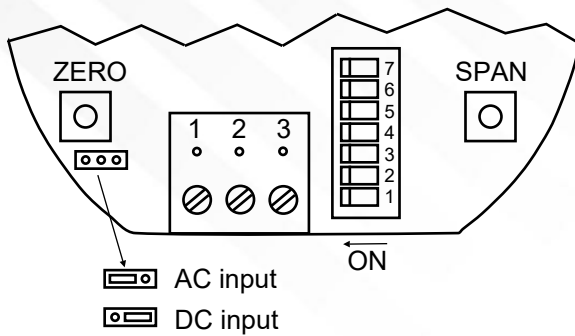
Set the jumper for DC operation

3-Wire 0-10V and 0-5V connection



Powering the unit with AC when the jumper is set for DC will permanently damage the transmitter

### Jumper and Switch Settings



Ensure jumper is in the correct position for the voltage being applied

### Setting the Pressure Range

DIP Switch		Full scale range Pa	
1	2	-DA1-VI	-DA2-VI
OFF	OFF	25	250
OFF	ON	40	500
ON	OFF	50	750
ON	ON	125	1250

### Setting the Measurement Units

DIP Switch		Units
4	5	
OFF	OFF	KPa
OFF	ON	mm w.c.
ON	OFF	Pa
ON	ON	inches w.c.

### Setting the Output Range

DIP switch 6 OFF = 0 to 5V output

DIP switch 6 ON = 0 to 10V output

### Setting the Output Action

DIP switch 7 OFF = reverse output (output signal decreases as the input pressure increases)

DIP switch 7 ON = normal output (output signal increases as the input pressure increases)

### Zero Calibration

The zero calibration can be set by applying zero pressure to both pressure ports and holding the zero button for 3 seconds. If the LCD is present, the display will show ZERO temporarily, then revert to the home display.

### Span Calibration

The span calibration can only be set after setting the zero calibration and must be completed within 5 minutes of the zero calibration.

Apply pressure to the port chosen for maximum output. Press and hold the span button for 3 seconds. If the LCD is present, the display will show SPAN then revert to the home display. If span calibration is attempted before zero calibration, the display will flash FAIL.

### Display Error Messages

OVER: The applied pressure is greater than the maximum span value causing an Over Range Error.

UNDER: The applied pressure is less than the minimum span value causing an Under Range Error.

FAIL: When the span or zero buttons are pressed, the pressure value is out of the range to allow a correct setting. This may be due to a sensor failure or incorrect pressure being applied.

ERR1: The sensor is damaged.

### Programming Menus

#### Menu Access Security

From the home display, press and hold Zero and Span simultaneously until SECUR appears on the display, in order to access other menus. When Zero and Span are released, the display will show the current security level.

If the current security level is the desired level, press and hold Span for 3 seconds to enter the Pressure, Velocity or Flow menu.

If the current security level is not the desired level, the level can be changed by pressing the Zero button. A security code will be displayed and can be changed to one of the codes below. The Span button chooses the digit and the Zero button increments the value of the chosen digit. Press and hold Span to store the value.

The level of access to the programming menus and the calibration is limited based on the security level.

### Setting the Measurement Units

Security Level	Setting	Access			
		View Menu	Edit Menu	Span	Zero
0	000	Yes	Yes	Yes	Yes
1	111	Yes	No	No	Yes
2	222	No	No	No	Yes
3	333	No	No	No	No

### Mode Selection and Digital Dampening

From the home display, press and hold Zero and Span simultaneously until SECUR appears on the display. If the level is set to 0 or 1, press and hold Span for 3 seconds to access Mode Selection. The display will default to Pressure when first powered up. Pressing Zero will cycle to Velocity and Flow.

Once the desired setting is displayed, hold the Span button to store the value. The display will then switch to the digital dampening or averaging parameter, which stabilises output and display by averaging the readings.

2.5 readings are taken each second and the number of seconds to average can be modified up to 240 seconds.

### Pressure Mode

If Pressure Mode was selected, after adjusting the digital dampening, hold Span to enter the Pressure menu. The maximum output pressure (POH) can be adjusted to any pressure between the highest and lowest dip switch range. If the dip switch settings are preferred, the POH parameter can be set to OFF.

### Velocity Mode

#### K-Factor Adjustment

If Velocity Mode was selected, after adjusting the digital dampening, hold Span to enter the Velocity menu and the display will show the units selected by the dip switch. Hold Span for 3 seconds to enter K-Factor adjustment. The K-Factor adjustment ranges from 0.001 to 9.999.

To adjust the K-Factor, press Span to select digits sequentially and Zero to increment the chosen digit. Hold Span for 3 seconds to store the chosen value and progress to Max Output Adjustment.

#### Maximum Output Adjustment

The maximum output can be equivalent to a velocity or a pressure. After adjusting the K-Factor, the display will indicate if the adjustment is set for pressure or velocity. Pressing Zero will toggle between selections. Hold Span for 3 seconds to enter maximum output adjustment.

The maximum output is then adjusted by pressing Span to select each digit sequentially and Zero to increment the chosen digit. Once the desired value is reached, hold Span for 3 seconds to store the value. The display will revert to the Security Update menu.

### Flow Mode

#### K-Factor Adjustment

If Velocity Mode was selected, after adjusting the digital dampening, hold Span to enter the Velocity menu and the display will show the units selected by the dip switch. Hold Span for 3 seconds to enter K-Factor adjustment. The K-Factor adjustment ranges from 0.001 to 9.999.

To adjust the K-Factor, press Span to select digits sequentially and Zero to increment the chosen digit. Hold Span for 3 seconds to store the chosen value and progress to Max Output Adjustment.

#### Area Adjustment

In flow applications, the area is multiplied by the velocity to determine volumetric air flow. The area will be displayed in either feet or meters, depending on the dip switch setting and will be indicated on the display at the time of adjustment. The value is adjusted by pressing Span to select each digit sequentially and Zero to increment the chosen digit. Hold Span for 3 seconds to store the value. The display will then enter Maximum Output Adjustment.

#### Maximum Output Adjustment

The maximum output can be equivalent to a velocity or a pressure. After adjusting the K-Factor, the display will indicate if the adjustment is set for pressure or velocity. Pressing Zero will toggle between selections. Hold Span for 3 seconds to enter maximum output adjustment.

The maximum output is then adjusted by pressing Span to select each digit sequentially and Zero to increment the chosen digit. Once the desired value is reached, hold Span for 3 seconds to store the value. The display will revert to the Security Update menu.

### **Security Update / Save Changes**

The security update menu allows the security level to be set either higher or lower than the current level. This security level will be displayed the next time the menus are accessed from the home screen. The Zero button cycles through the security levels. Holding Span for 3 seconds will set the chosen level and presents the option to save all the menu changes. Pressing the Zero button cycles between yes or no. This will accept or discard changes made to all menu options. When yes is displayed, hold Span for 3 seconds to store all menu changes and revert to the home screen.

### **Datasheet Contents**

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