RUSKIN

Air Quality Solutions

Installation & Maintenance Manual

Model: DPT-IQ

Flow Meter with Backlit Display

II-DPT-IQ-1218/Replaces II-DPT-IQ-818

TABLE OF CONTENTS

! WARNING

READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO INSTALL, OPERATE OR SERVICE THIS DEVICE.

THIS ACCESSORY IS TO BE INSTALLED BY A QUALIFIED SERVICE TECHNICIAN. TO AVOID UNSATISFACTORY OPERATION OR DAMAGE TO THE PRODUCT AND POSSIBLE UNSAFE CONDITIONS, INCLUDING ELECTRICAL SHOCK AND FIRE, THE INSTALLATION INSTRUCTIONS PROVIDED WITH THIS ACCESSORY MUST BE STRICTLY FOLLOWED AND THE PARTS SUPPLIED USED WITHOUT SUBSTITUTION. DAMAGE TO THE PRODUCT RESULTING FROM NOT FOLLOWING THE INSTRUCTIONS OR USING UNAUTHORIZED PARTS MAY BE EXCLUDED FROM THE MANUFACTURER'S WARRANTY COVERAGE.

! WARNING

DISCONNECT ELECTRICAL POWER PRIOR TO SERVICING THIS UNIT. FAILURE TO DO SO CAN RESULT IN ELECTRICAL SHOCK RESULTING IN PERSONAL INJURY OR DEATH. TO AVOID POTENTIAL FIRE AND/OR EXPLOSION DO NOT USE IN POTENTIALLY FLAMMABLE OR EXPLOSIVE ATMOSPHERES.

Primary Application

The Flow Meter (DPT-IQ) measures airflow, velocity and differential pressure. It is designed to be used in combination with any Ruskin velocity pressure air measuring probe (AMP series), air measuring louver (AML series), or air measuring station (AMS series & CDRAMS) product.

It is designed to be used in any commercial application that requires accurate airflow measurement. Unit may be used in combination with Ruskin Air Measurement Stations to measure outside air, supply air, return air, discharge air or exhaust air flows into or out of a building or air handling unit.

Key Features

- Two-line backlit display shows flow and pressure in either IP (English) or SI (Metric) units. Scalable, linear output can be either Voltage or mA signal.

Key Benefits

- Contributes to earning required Indoor Environmental Quality (EQ) and Energy and Atmosphere (EA) LEED prerequisites.
- Save energy dollars by measuring the minimum ventilation airflow to within ±3% accuracy. Control the amount of unconditioned air into the space.
- Meet International Building Code (IBC) and International Energy Conservation Code (IECC) requirements.
- Maintain proper ventilation to dissipate dangerous indoor contaminants such as mold spores, bacteria and chemicals.
- Create a healthy indoor environment to reduce absenteeism, increase productivity, improve comfort and reduce the risk of litigation

DIMENSIONAL DATA

Figure 1

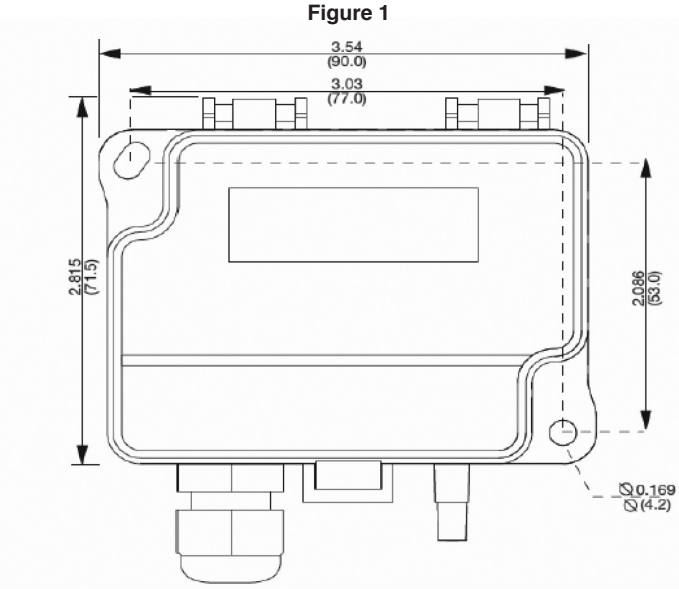
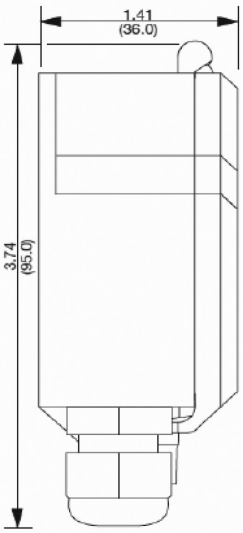


Figure 2



INSTALLATION INSTRUCTIONS

1) Mount the device in desired location (see step 1)
2) Open the lid and route cable through strain relief and connect the wires to terminal block (see step 2).
3) The device is now ready for configuration

WARNING! Apply power after the device is properly wired.

STEP 1 MOUNTING THE DEVICE

1) Select mounting location (duct, wall, panel) within 120 feet of the air measurement station.
2) Use the device as a template and mark the screw holes, then drill holes.
3) Mount with appropriate screws (not included)

Figure 3A - Surface Mounting

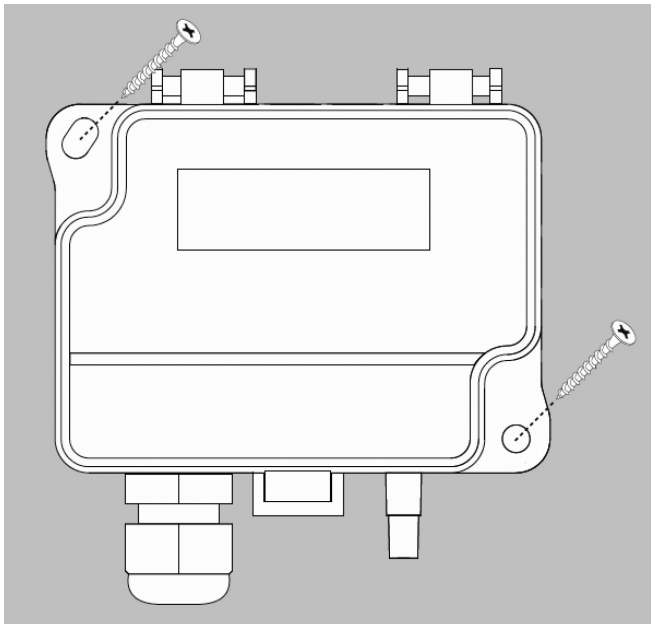
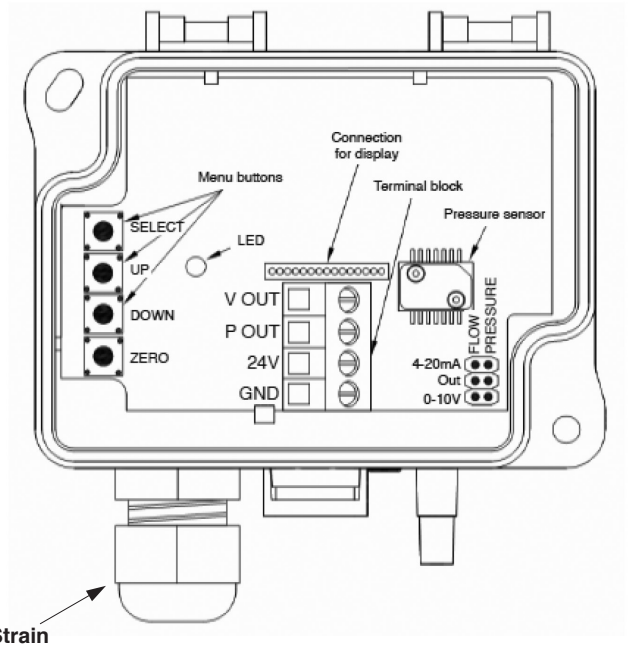


Figure 3B



Strain Relief

STEP 2 WIRING DIAGRAM

For CE compliance, a properly grounded shielded cable is required.

1) Unscrew strain relief and route cable
2) Connect the wires as shown in figure 4a and 4b.
3) Tighten the strain relief.

Figure 4a - Wiring Diagram: Volume Flow Output

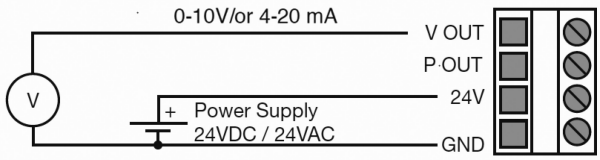
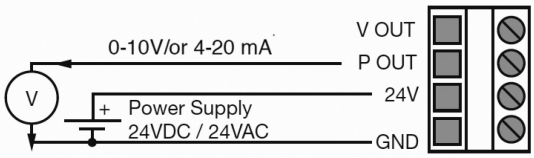


Figure 4b - Wiring Diagram: Pressure Output



Application Connections

The pressure tubes are connected from the ports on the bottom of the DPT-IQ (Figure 5) to a flow measurement probe, or to the measurement station ports as specified by Ruskin. Please see the installation guide or the technical specifications for the specific air measurement station.

Figure 5 - Pressure Ports

STEP 3 CONFIGURATION

To configure the Output signals (0-10V or 4-20mA) for Pressure and Flow (Velocity or Volume), install jumpers on the 6-pin set of Output Jumpers for Flow and Pressure, located on the right side of the open device (see Figure 3B). The configuration options for the jumpers are shown to the right (Figure 6 jumper installed).

For 0-5V, set jumpers same as for 0-10V and change selection in menu (Mode) to 0-5V.

Output Signal (0-10V or 4-20mA) Jumper Positions

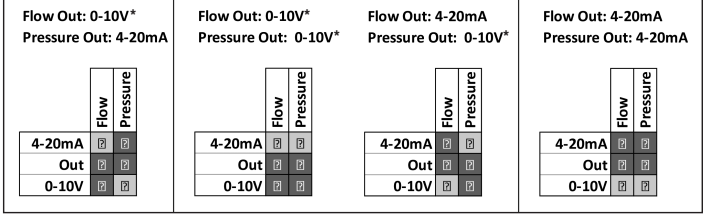


Figure 6

CONFIGURATION MENU.

Selection convention used to input information into DPT-IQ

Entering information into the DPT-IQ is accomplished with three (3) Menu buttons (see Figure 3B). The Menu buttons are labeled as follows:

Button 1: SELECT. Pressing down or tilting button 1 serves two functions:

A. *Highlight Submenus*: When a submenu is available, pressing down or tilting button 1 will activate the submenu, causing it to blink.
B. *Confirm Selection*: When the proper choice is shown on the screen, pressing down or tilting button 1 will select and store that value.

Button 2: UP. *Cycle Up:* Pressing down or tilting button 2, will cycle up through the menu choices. If you cycle past your desired choice, the menu cycles through all the choices and returns to the beginning of the list.

Button 3: DOWN. *Cycle Down:* Pressing down or tilting button 3, will cycle down through the menu choices. If you cycle past your desired choice, the menu cycles through all the choices and returns to the beginning of the list.

Push down on button 1 (see Figure 3B Schematic for location of button 1, 2, and 3) for 2-5 seconds to enter the CONFIGURATION MENU.

STEP 3 CONFIGURATION (continued)

									Size		
DPT-IQ Options	**Model**	**Response Time**	**Mode**	**V Output Max**	**P Output Max**	**Line 1 Unit**	**Line 2 Unit**	**Gain**	**Area**	**Duct Height**	**Duct Width**
Default	AMS	1 Sec	Voltage 0-10V	0-Max CFM corresponds to 0-10VDC	0-1 inwc corresponds to 0-10VDC	CFM	Inwc	1.0	SqFt	In	In
Options	**Options**	**Options**	**Options**	**Options**	**Options**	**Options**	**Options**	**Options**	**Options**	**Options**	**Options**
	AMS050	1-20 Sec	Voltage 0-5V	l/s	Pa	l/s	FPM	0.2 to 5.0			
	CDRAMS		Current 4-20mA	m/s		m/s	m/min		***Diameter for CDRAMS***		
	AML3			FPM		FPM	Pa				
	AML6			m/min		m/min	m3/s				
	CCUV*			m3/s		Pa	CFM				
	AMP001					inwc	l/s				
	AMP002					m3/s	m/s				
	AMP003										
	AMP015										
	AMP025								***Diameter for AMP025***		
Notes	1	2	3	4	5	6	7	8	9	10	11

Note

1	**Model**	Choose the Ruskin Model that is piped to the DPT-IQ. (Or CCUV if not listed)
2	**Response Time**	The Ruskin DPT-IQ enables you to set the Response Time from 1 – 20 seconds with 1 second increments. Increasing the Response Time can reduce the influence of air turbulence.
3	**Mode**	Use jumpers to complete, as described in Step 3 above.
4	**V output Max**	The Ruskin DPT-IQ enables you to set the Velocity or Volume Output Maximum, to improve resolution of the flow reading, by limiting the range. NOTE: Output Units can be different from Display Units.
	CFM	50 Min to 100,000 Max - 1 CFM increments
	l/s	25 Min to 50,000 Max - 1 l/s increments
	m/s	1 Min to 100 Max - 1 m/s increments
	FPM	2,000 Min to 20,000 Max - 10 FPM increments
	m/min	60 Min to 6000 Max - 1 m/min increments
	m3/s	0.025 Min to 50 Max - 0.001 increments
		EXAMPLE: The DPT-IQ has an effective range of 50 – 100,000 CFM. If Flow Volume readings are expected below 12,000 CFM, adjust the V Output Maximum to 12,000 CFM, to improve resolution. The DPT-IQ can have the V Output Maximum set between 50 – 100,000 CFM, to improve resolution.
5	**P output Max**	Set the Pressure Output Maximum, to improve resolution of the Pressure reading, by limiting the range. NOTE: Output Units can be different from Display Units.
	inwc	0.10 inwc Min to 4.0 inwc Max - 0.01 inwc increments
	Pa	100Pa Min to 1000Pa Max - 50Pa increments
		EXAMPLE: The DPT-IQ has a capable range of 0 – 4.0 inwc. If pressure readings are expected below 1.00 inwc, adjust the Pressure Output Maximum to 1.00 inwc, to improve resolution. The DPT-IQ can have the Pressure Output Maximum set between 0.1 – 4.0 inwc, to improve resolution.
6	**Line 1 Unit**	Choose which SI unit (inwc, FPM, CFM) or UI unit (m3/s, Pa, m/min. m/s, l/s) you will use.
7	**Line 2 Unit**	Choose which SI unit (inwc, FPM, CFM) or UI unit (m3/s, Pa, m/min. m/s, l/s) you will use.
8	**Gain**	The GAIN feature is designed to allow modification to the reported output. The number shown is a multiplier. Increase the reported output by increasing the GAIN number above 1.000. (To increase reported output by 5%, adjust number to 1.050. Decrease the reported output by decreasing the GAIN number to less than 1.000. (To decrease reported output by 5%, adjust number to 0.950. The range is from 0.200 to 5.000 with 0.001 increments.
9	**Area**	Area is computed when you enter duct height and width for rectangular units, and diameter for round units. The computed value can be over-ridden if you enter an area (in square feet) in this selection.
10	**Duct Height**	Enter in inches
11	**Duct Width**	Enter in inches

* CCUV (Custom Configurable Universal Values) allows for Ka values and exponent values to match any device not listed in the Model column. Default value is Ka = 4005 and exponent 1/m = 0.5

STEP 4 ZERO THE DEVICE

1) Manual Pushbutton Auto Zero

   NOTE: Supply voltage must be connected at least one hour prior to zero point adjustment.

   a) Disconnect both pressure tubes from the pressure ports labeled + and –, and install short tube connecting + to - ... (see Figure 5).

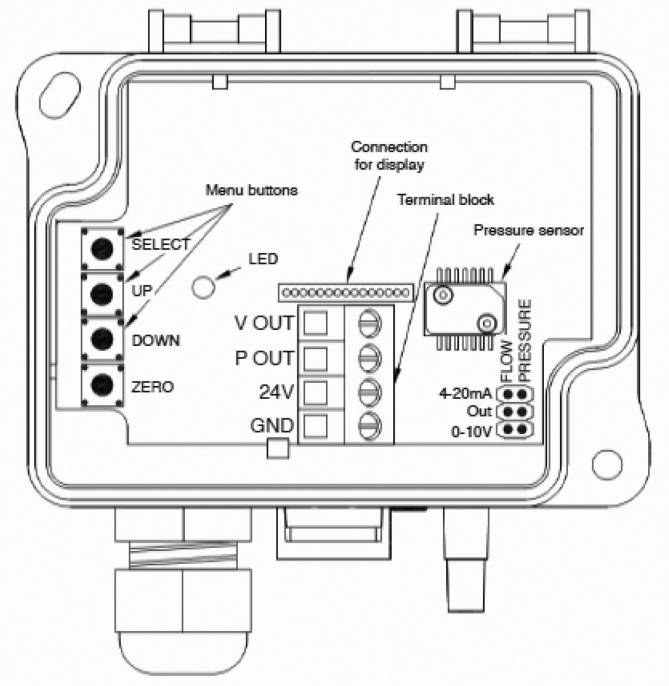
   b) Push down the zero button (see Figure 7) until the LED light (red) turns on and the display reads “zeroing”

   c) The zeroing of the device will proceed automatically. Zeroing is complete when the LED turns off, and the display reads 0. Press zero button again if zero is not displayed.

   d) Reinstall the pressure tubes, ensuring the High pressure tube is connected to the port labeled +, and the Low pressure tube is connected to the port labeled. (see Figure 5)

   NOTE: The zero point should be calibrated via manual auto zero, one hour after installation and at least every 12 months during normal operations.

Figure 7



Operation

1) The device requires 24VDC/VAC power at terminals 24V & GND.

2) With no air flowing through the AMS and power applied to the controller, the DPT-IQ will generate a Vout 0V or 0mA signal between Vout and GND.

SPECIFICATIONS

INSTALLATION

Supply Voltage	24VDC/VAC ± 10%
Voltage Output	0-5V, 0-10V, Power Consumption <1.0W
Current Output	4-20 mA, Power Consumption <1.2W

OUTPUTS

Flow and Pressure	0-5V, 0-10V or 4-20mA linear signal

FLOW UNITS

Volume:	m3/s, m3/hr, cfm, l/s (selectable)
Velocity:	m/s, ft/min (selectable)

PRESSURE UNITS

Pa, kPa, mbar, inwc, mmwc (selectable)

RESPONSE TIME

1.0 to 20 Sec selectable via menu

DISPLAY

$3^1/_2$ Digit LCD	1.81" x 0.57" (46 x 14.5mm)

ENCLOSURE

ABS (UL94 V-1) NEMA 3	3.54" x 3.74" x 1.4" (90.0 x 95.0 x 36.0 mm)

MEASURING ELEMENT

Piezoresistive

OPERATING RANGE

Air temperature	Range of 14º F to 122º F (-10 to 50°C)
Storage Temperature	-4º F to 158º F (-20 to 70C)
Humidity	0-95% relative humidity (non-condensing)

CONFORMANCE

Meets requirements for CE marking:
- EMC Directive 2004/108/EY
- RoHS Directive 2002/95/EY

MEDIA COMPATIBILITY

Dry air or non-aggressive gases

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