


**KMC CONTROLS TPE-1483 Series Differential Pressure Transmitter**



# KMC CONTROLS TPE-1483 Series Differential Pressure Transmitter Instruction Manual

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**KMC CONTROLS TPE-1483 Series Differential Pressure Transmitter**



## Product Information

### Specifications

- **Model Numbers:** TPE-1483-10, TPE-1483-20, TPE-1483-30
- **Product:** Differential Pressure Transmitter
- **Pressure Range:** Up to 5 PSI to 500 PSI
- **Overload Pressure:** 2X the maximum fully scale range
- **Burst Pressure:** 5X the maximum full-scale range
- **Features:** Field selectable pressure ranges and output signal types, output reversal and slow damping, port swapping, bidirectional measurements
- **Calibration:** Factory calibrated and temperature compensated

### Product Usage Instructions

- **Installation**

The differential pressure transmitter is designed with dual remote sensors to accept high pressures. Follow the installation instructions carefully to ensure proper functionality.

- **Before Installation**

Read the provided instructions thoroughly before installing the transmitter. Avoid using it in hazardous environments or applications where product failure could result in personal injury. Take electrostatic discharge precautions.

- **Mounting**

Mount the transmitter on a vertical surface using the integrated mounting holes. Ensure proper spacing for electrical connections and remote sensor cables. Avoid locations with vibrations or moisture. Use weatherproof conduit or cable gland fittings for connections.

- **Plumbing**

Before installing the sensors, ensure the sensor port, fitting, or shutoff valve is free of any fluids to prevent damage during pressurization.

## FAQs

- **Q: What should I do if I exceed the individual port pressure limits?**

A: Exceeding the individual port pressure limits may damage the sensors and give erroneous readings. Ensure that the maximum individual port pressure does not exceed the highest pressure range of the unit.

- **Q: How should I secure the enclosure cover?**

A: Use the provided security screws to secure the cover once settings and wiring connections are complete.

## INTRODUCTION

- The differential pressure transmitter is designed with dual remote sensors that enable it to accept high pressure in ranges up from 5 PSI to 500 PSI. All models can handle overload pressure 2X the maximum full-scale range and burst pressure is 5X the maximum full-scale range.
- Features include field-selectable pressure ranges and output signal types, output reversal and slow damping, port swapping and bidirectional measurements for the most flexible applications. The output signal is factory calibrated and temperature compensated for the highest start-up accuracy.

### **WARNING:**

Ensure that the maximum individual port pressure does not exceed the highest pressure range of the unit. For example, the highest individual port pressure on a 02 Range Code is 100 PSI. Exceeding this may damage the sensors and give erroneous readings. See Figure 12 for ratings.

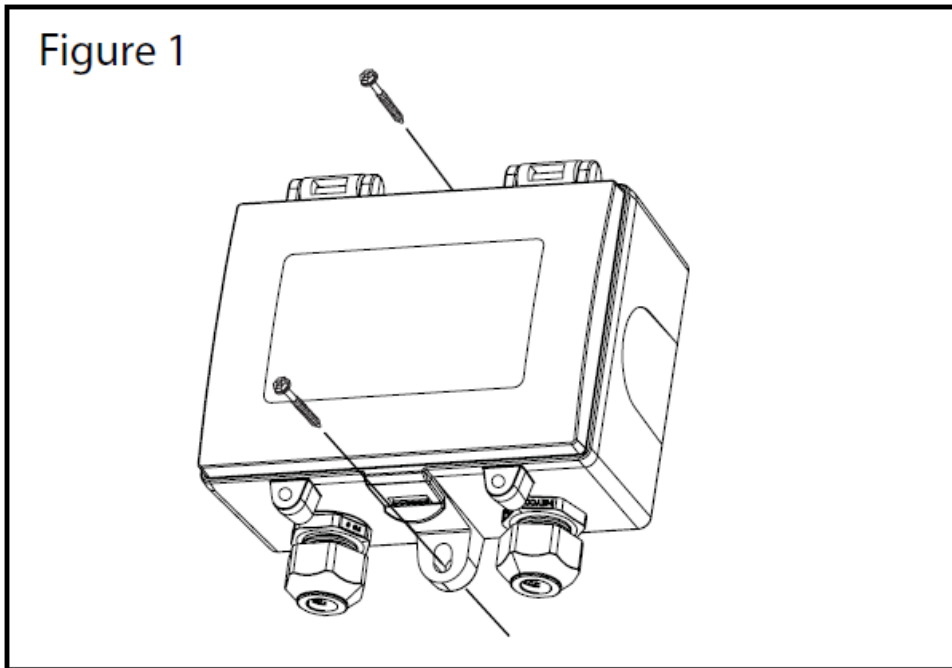
## BEFORE INSTALLATION

Read these instructions carefully before installing and commissioning the dewpoint transmitter. Failure to follow these instructions may result in product damage. Do not use in an explosive or hazardous environment, with combustible or flammable gases, as a safety or emergency stop device or in any other application where failure of the product could result in personal injury. Take electrostatic discharge precautions during installation and do not exceed the device ratings.

## MOUNTING

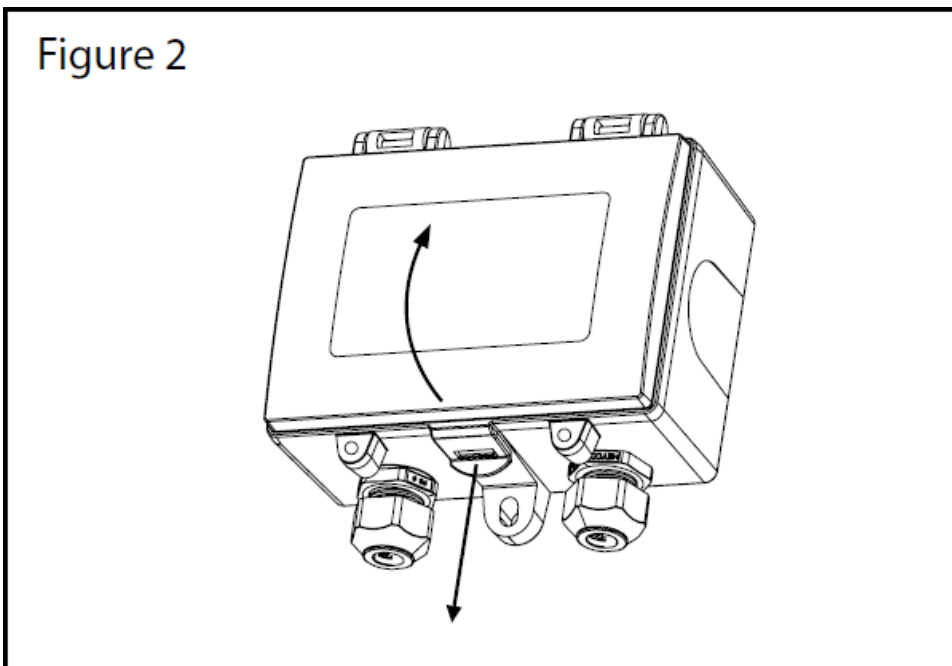
The transmitter mounts on a vertical surface using the two integrated mounting holes. The remote sensor cable connection should be located at the bottom of the enclosure. The two mounting holes will facilitate a #10 size screw (not supplied). See Figure 1. Ensure there is enough space around the unit to make the electrical connections and that it is within an acceptable distance for the length of remote sensor cables. Avoid locations with severe vibrations or excessive moisture. The enclosure has a standard opening for a conduit connector or cable gland-type fitting. In this position the High port is on the left and the Low port is on the right as shown on the PCB.

Figure 1



The enclosure has a hinged cover with a latch. Open the cover by pulling slightly on the latch on the bottom side of the enclosure and at the same time pulling on the cover, as illustrated in Figure 2.

Figure 2



A 1/2" NPT threaded connection hole is provided on the left side of the enclosure as shown in Figure 3. Screw the EMT connector or cable gland connector in until tight. See Figure 4. It is recommended that weatherproof conduit or cable gland fittings be used. The F-style enclosure includes a 1/2" NPT to M16 thread adapter and cable gland fitting. Two security screws are provided which can be installed to help secure the cover once settings and wiring connections are complete. See Figure 4.

Figure 3

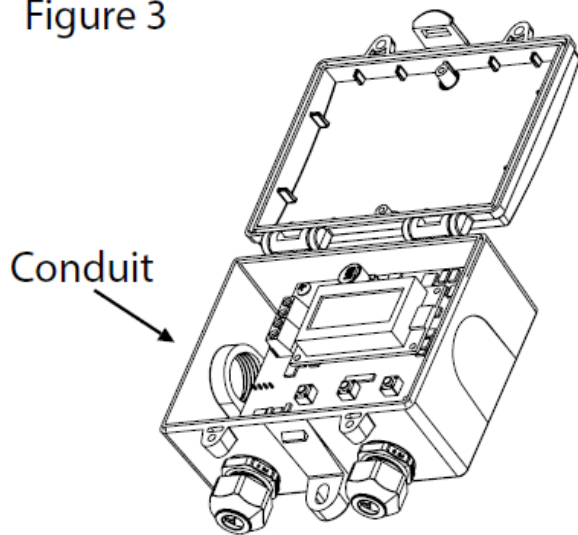


Figure 4

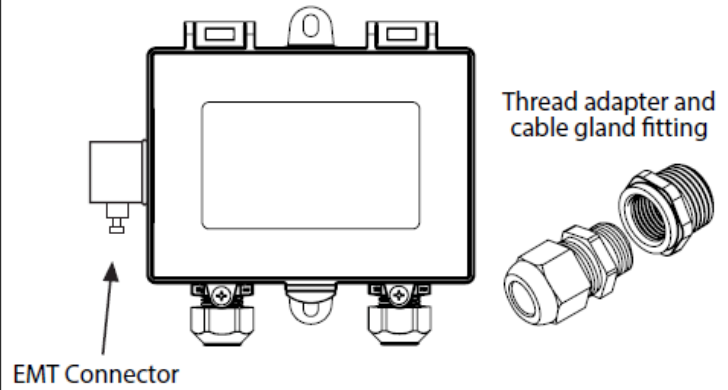
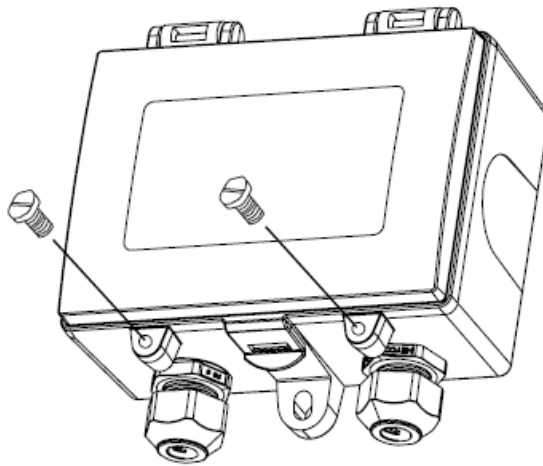


Figure 5



## PLUMBING

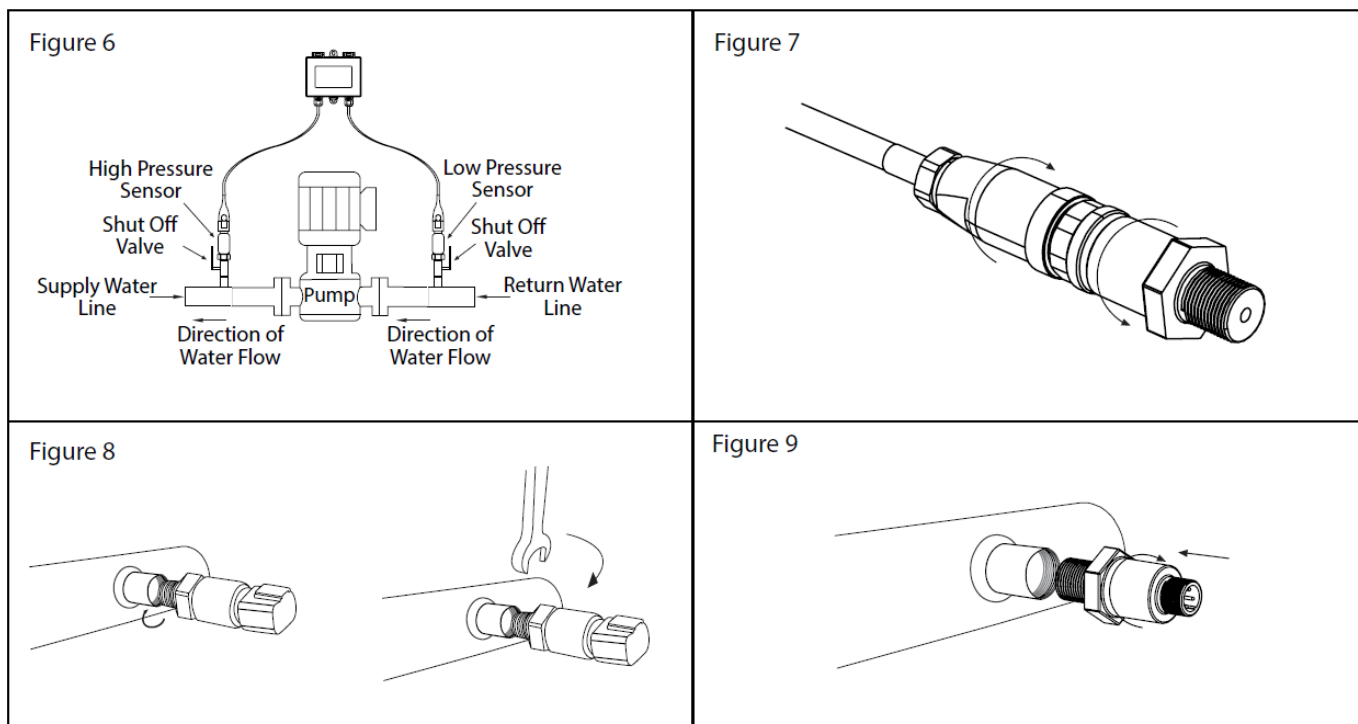
The two stainless steel pressure sensors are labelled High and Low. The output signal will indicate a positive value when the pressure applied to the High sensor is greater than the pressure applied to the Low sensor, so ensure the sensors are connected correctly as shown in a typical application in Figure 6. Both sensors incorporate 1/4" NPT male threads for connection to the pipe being monitored. Do not allow material to fall into the pressure ports as contamination could damage the sensors. It is recommended to use Teflon tape to prevent leaks.

### IMPORTANT:

Before installing the sensor(s) ensure the sensor port, fitting or shutoff valve is free of any fluids in the area where the sensor is being installed. Failure to remove excessive fluids may damage the sensor during pressurization.

Remove the pressure sensor from the remote cable by unscrewing and pulling it apart from the remote cable boot as shown in Figure 7. Wrap 1/4" NPT male sensor threads with Teflon tape. Screw into the sensor port on the pipe being monitored until finger tight. Use an appropriate size wrench to tighten the sensor until snug as shown in Figure 8. Reconnect the remote sensor cable you aligning the remote sensor cable boot and screwing it onto the sensor. See Figure 9.

Repeat for the Low-pressure sensor.



## CONFIGURATION

Most configuration is done using the User Menu setting with LCD and push buttons on PCB. See the User Menu section for details.

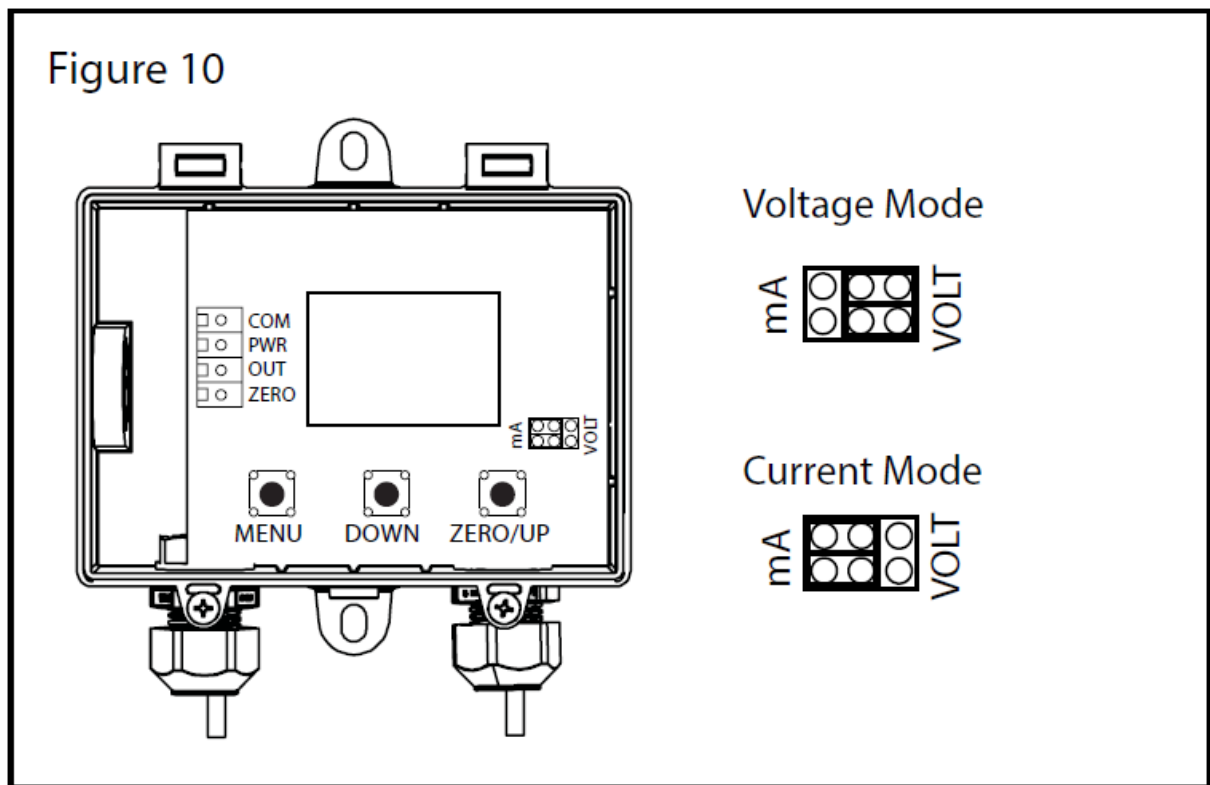
### Warning:

The transmitter must not have power applied during set-up or when making changes to the output signal.

### Output Selection:

- The transmitter features user-selectable output signals of 4-20 mA, 0-5 Vdc and 0-10 Vdc. It is factory-configured to operate in the Current (4-20 mA output) mode but can be changed to Voltage mode by sliding the output selection switch from the position marked mA to the position marked VOLT as shown in Figure 10.
- In Voltage mode, the output scale may be changed to either 0-5 or 0-10 Vdc by accessing under User Menu.

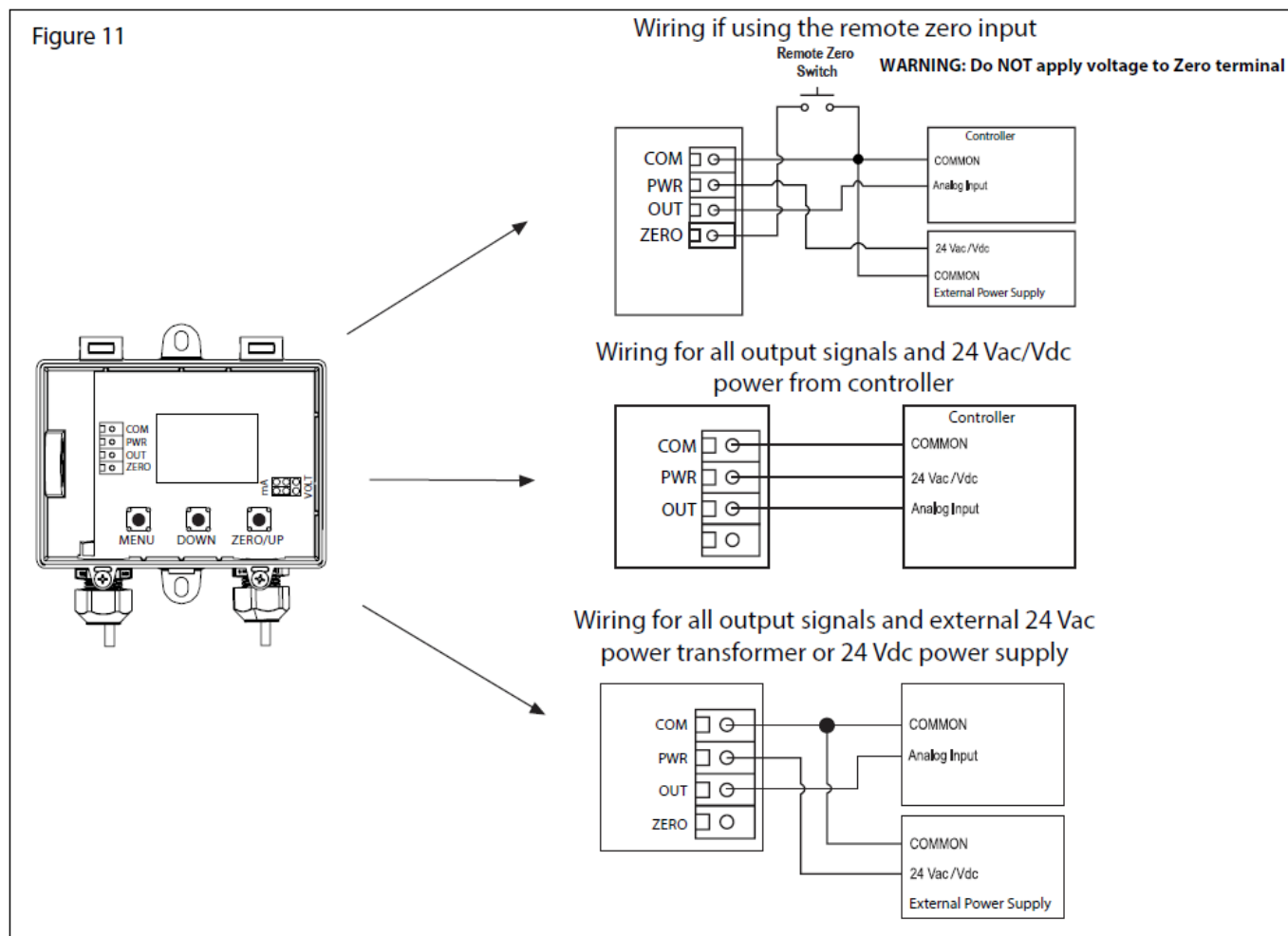
Figure 10



## WIRING

- Deactivate the 24 Vac/DC power supply until all connections are made to the device to prevent electrical shock or equipment damage.
- Use 14-22 AWG shielded wiring for all connections and do not locate the device wires in the same conduit with wiring used to supply inductive loads such as motors. Make all connections under national and local codes.
- Pull at least six inches of wire into the enclosure, then complete the wiring connection according to the wiring diagram for the applicable power supply and output signal type.
- Connect the plus DC or the AC voltage hot side to the PWR terminal. For voltage output or AC power, the supply Common is connected to the COM terminal. DO NOT connect power to the OUT terminals as the device will be damaged. It has a half-wave power supply so the supply Common is the same as the signal Common. See Figure 11.
- The analog output is available on the OUT terminal. Check the controller Analog Input to determine the proper connection before applying power.
- If using the Zero function, connect the Remote Zero Switch between the ZERO and COM terminals.

Figure 11



## STARTUP

Upon applying power to the device, it will enter the start-up mode. The LCD will display the current operating settings for 2 seconds each.

### 1. SOFTWARE VERSION NUMBER

Version 1.00

### 2. MODEL PRESSURE RANGE

P Range 50PSI

### 3. THE OUTPUT TYPE

Output 4-20mA

- At the end of start-up mode, the device will enter normal mode displaying pressure read from sensors.  
0.0 PSI

## USER MENU

- The User Menu can be accessed by pressing the <MENU> key at any time after the start-up mode. Note that the <ZERO> key function changes to an <UP> key function when a menu is active.
- The system suspends operation when in the menu and holds the last pressure value as the output value. If the User Menu is not active for 5 minutes (no key press), then the menu will exit and the device returns to normal operation.

The User Menu operation and parameters are explained below.



- **<MENU>** Press and release the **<MENU>** key to enter the User Menu

## 1. OUTPUT

- **Output 0-5 Vdc**

This item only appears if the PCB jumper is in the VOLT position. Use **<UP>** or **<DOWN>** to set the output signal type to 0-5 or 0-10 Vdc. The factory default is 0-5 Vdc.

- **<MENU>**

Press to save and advance to the next menu item

## 2. PRESSURE RANGE

- **P.Range 500 PSI**

The pressure range defaults to the largest range (1) of the device. Use **<UP>** or **<DOWN>** to step through the four available ranges specific to the model. Available options are shown below in Figure 12:

Figure 12	<b>PRESSURE RANGE</b>			
<b>Model</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>01</b>	50 PSI	25 PSI	10 PSI	5 PSI
<b>02</b>	100 PSI	50 PSI	20 PSI	10 PSI
<b>03</b>	250 PSI	125 PSI	50 PSI	25 PSI
<b>04</b>	500 PSI	250 PSI	100 PSI	50 PSI
<b>05</b>	5.0 Bar	2.5 Bar	1.0 Bar	0.5 Bar
<b>06</b>	7.0 Bar	3.5 Bar	1.4 Bar	0.7 Bar
<b>07</b>	10 Bar	5 Bar	2 Bar	1 Bar
<b>08</b>	35 Bar	17.5 Bar	7 Bar	3.5 Bar
<b>09</b>	500 kPa	250 kPa	100 kPa	50 kPa
<b>10</b>	700 kPa	350 kPa	140 kPa	70 kPa
<b>11</b>	1000 kPa	500 kPa	200 kPa	100 kPa
<b>12</b>	3500 kPa	1750 kPa	700 kPa	350 kPa

- **<MENU>**

Press to save and advance to the next menu item

## 3. PRESSURE SCALE

- **P Scale 0 – Max**

The default pressure scale is unidirectional 0 to full-scale (ex: 0 – 500 PSI). Use **<UP>** or **<DOWN>** to toggle the setting to a bi-directional scale (ex:  $\pm$  500 PSI). The setting changes from “0 – Max” to “+/- Max.”

- **<MENU>** Press to save and advance to the next menu item

#### 4. DAMPING

- **Damping 4 sec**

The pressure averaging time for surge damping defaults to 4 seconds. This can be changed from 1 to 60 seconds using <UP> or <DOWN>.

- <MENU> Press to save and advance to the next menu item

#### 5. OUTPUT

- **Output Direct**

The analog output defaults to Direct (4-20 mA, 0-5 Vdc or 0-10 Vdc). Use <UP> or <DOWN> to change it to Reverse (20-4 mA, 5-0 Vdc or 10-0 Vdc).

- <MENU> Press to save and advance to the next menu item

#### 6. PRESSURE PORT

- **P.Port Direct**

The Pressure Port defaults to Direct (HIGH Port = High Pressure, LOW Port = Low Pressure). Use <UP> or <DOWN> to change it to Reverse (HIGH Port = Low Pressure, LOW Port = High Pressure) if it is necessary to swap the ports due to a plumbing error.

- <MENU> Press to save and advance to the next menu item

#### 7. BACKLIGHT

- **Backlite Auto**

The backlight operation defaults to Auto operation. It can be set to Off or On Auto using <UP> or <DOWN>. Auto means the LCD backlight only lights when a menu is accessed, off means it never lights and on means it is always on.

- <MENU> Press to exit and return to normal operation.

### OPERATION

- During normal mode, the device reads the pressure sensors and calculates the pressure value depending on the selected range. The pressure value is displayed on the LCD and set as the output value for the analog output. The output value is updated once per second.
- For normal operations such as 0-100 PSI, the pressure applied to the High port must be higher than the pressure applied to the Low port. If the pressure connection is reversed then the transmitter will always output 4 mA. If the Low port is left open to ambient pressure, then the High port is used to measure a positive pressure and 0 PSI = 4 mA and 100 PSI = 20 mA.
- For bi-directional operation such as  $\pm 100$  PSI, the pressure applied to the High port should be higher than the pressure applied to the Low port for a positive output response. Negative pressure is indicated if the High pressure is less than the Low pressure. In this case -100 PSI = 4 mA and +100 PSI = 20 mA. Since the transmitter is linear 0 PSI = 12 mA.
- The output value may be affected by device settings such as the pressure damping time. The pressure averaging setting controls how many readings are averaged to form the output value. For example, if the pressure averaging value is set to 30 seconds then 30 one-second readings are stored and averaged to form the output value. The next second will add a new reading and delete the first to form a new 30-second average for output. The output gets updated every second with a new average reading. The averaging value can be set from 1 to 60 seconds via the User Menu.
- During normal mode, the device also monitors the <ZERO / UP>, <DOWN> and <MENU> keys and takes

appropriate action. The keys are used to access the User Menu. The device also monitors the Volt/mA jumper to determine the appropriate output scaling. The voltage span may be set via the User Menu to either 0-5 Vdc or 0-10 Vdc.

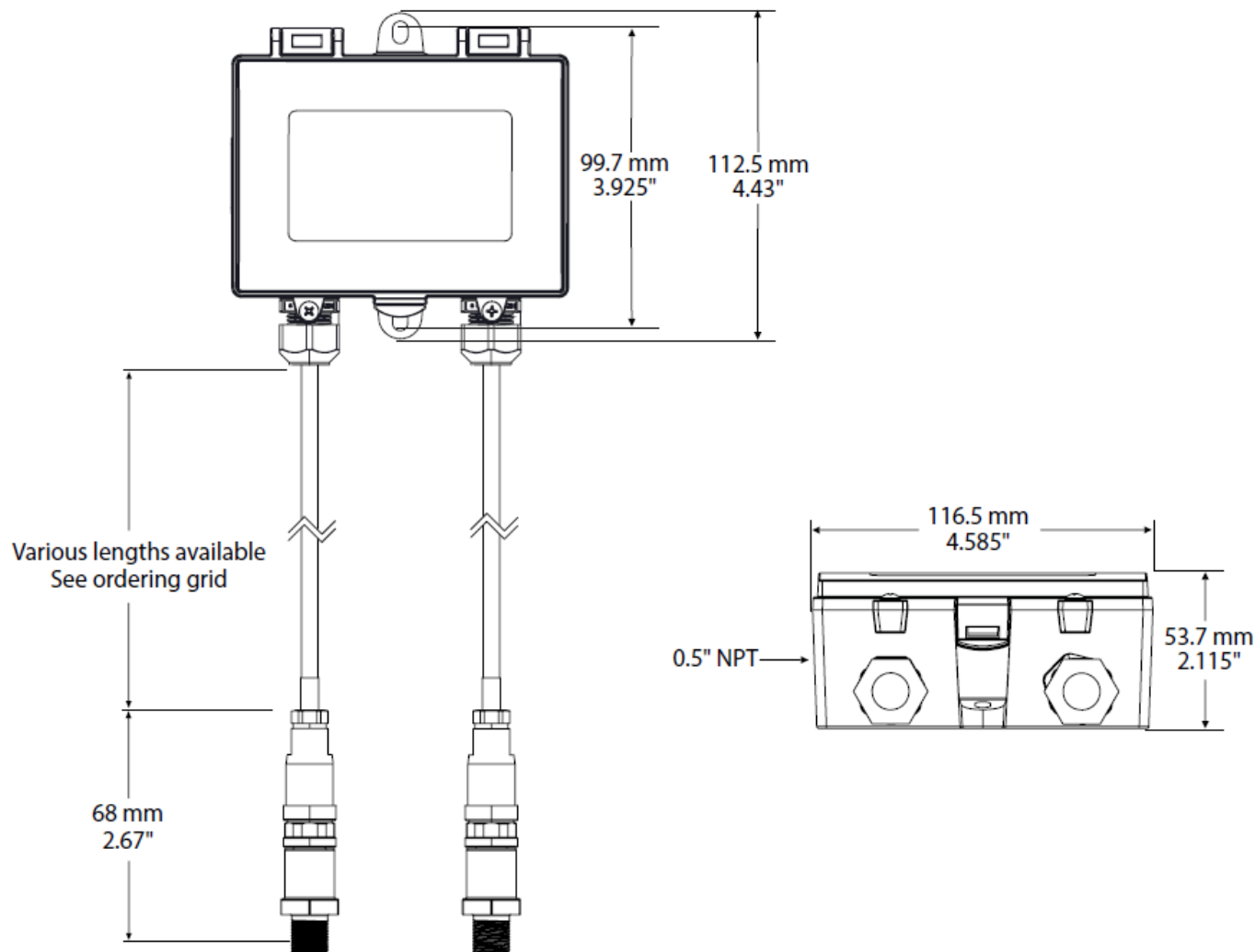
- **NOTE:** Both the low and high-pressure sensors must be open to the atmosphere to perform the auto-zeroing function. A sensor auto-zero can be initiated by pressing and holding the internal <ZERO> button for at least 3 seconds. If both pressure ports are close to zero pressure, then the device will calibrate with a new zero point. The auto-zero can also be initiated by holding the ZERO terminal low for 3 seconds.
- Generally, it is not recommended that a span calibration be performed in the field unless a high-quality calibrator with low differential pressure ranges is available and the temperature of the sensor can be maintained.

## SPECIFICATIONS

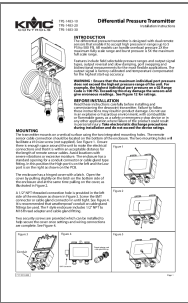
- Power Supply .....24 Vac/dc  $\pm$  10% (non-isolated half-wave rectified)
- Consumption .....75 mA max @ 24 Vdc
- Output Signal .....4-20 mA sourcing, 0-5/0-10 Vdc (switch selectable)
- Output Drive .....
  - **Current:** 500 ohms max
  - **Voltage:** 10K ohms min
- Protection Circuitry .....Reverse voltage protected, transient protected
- LCD .....35 x 15 mm (1.4 x 0.6"), 2-line x 8-character
- Accuracy ..... $\pm$  1% F.S. of selected range (range 4 is  $\pm$ 2% F.S.) @ 22°C (72°F) including hysteresis, non-linearity and repeatability
- Stability ..... $\pm$  0.25% FS typical (1 year)
- Pressure Ranges .....4 per model (menu selectable)
- Media Compatibility .....17-4 PH stainless steel
- Proof Pressure .....2X highest range per model
- Burst Pressure .....20X highest range per model
- Maximum Line Pressure .....= highest model range
- Pressure Cycles .....> 100 million
- Surge Damping .....1-60 seconds averaging (menu selectable)
- Zero Adjust ..... Push-button and remote input
- Sensor Operating Range .....-40 to 105°C (-40 to 221°F)
- Operating Environment .....0 to 50°C (32 to 122°F), 10 to 90 %RH non-condensing
- Pressure Connection .....1/4" NPT male
- Sensor Housing .....IP67
- Remote Sensor Cable .....
  - **S:** FT-6 plenum rated
  - **A:** Armored Flexible S/S
- Wiring Connection .....14-22 AWG screw terminal block
- Enclosure .....
  - Polycarbonate, UL94-V0, IP65 (NEMA 4X)
  - F style includes thread adapter (1/2" NPT to M16) and cable gland tting
- Dimensions .....

- 112.5 W x 116.5 H x 53.7 D mm
- (4.43" x 4.59" x 2.11")
- Weight .....650g (22.9 oz) – Including remote cables and sensors
- Country of Origin .....Canada

DIMENSIONS



Documents / Resources

	<p><a href="#">KMC CONTROLS TPE-1483 Series Differential Pressure Transmitter</a> [pdf] Instruction Manual</p> <p>TPE-1483-10, TPE-1483-20, TPE-1483-30, TPE-1483 Series Differential Pressure Transmitter, TPE-1483 Series, TPE-1483 Series Pressure Transmitter, Differential Pressure Transmitter, Pressure Transmitter, Transmitter</p>
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References

- [User Manual](#)

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