MISURA & AUTOMAZIONE

Panametrics
a Baker Hughes business

DewPro® MMY30

User's Manual

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Panametrics
a Baker Hughes business

DewPro® MMY30

Trace Moisture Transmitter

User's Manual

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Information Paragraphs

Note: *These paragraphs provide information that provides a deeper understanding of the situation, but is not essential to the proper completion of the instructions.*

IMPORTANT: *These paragraphs provide information that emphasizes instructions that are essential to proper setup of the equipment. Failure to follow these instructions carefully may cause unreliable performance.*

CAUTION! **This symbol indicates a risk of potential minor personal injury and/or severe damage to the equipment, unless these instructions are followed carefully.**

WARNING! **This symbol indicates a risk of potential serious personal injury, unless these instructions are followed carefully.**

Safety Issues

WARNING! **It is the responsibility of the user to make sure all local, county, state and national codes, regulations, rules and laws related to safety and safe operating conditions are met for each installation.**

Auxiliary Equipment

Local Safety Standards

The user must make sure that he operates all auxiliary equipment in accordance with local codes, standards, regulations, or laws applicable to safety.

Working Area

WARNING! **Auxiliary equipment may have both manual and automatic modes of operation. As equipment can move suddenly and without warning, do not enter the work cell of this equipment during automatic operation, and do not enter the work envelope of this equipment during manual operation. If you do, serious injury can result.**

WARNING! **Make sure that power to the auxiliary equipment is turned OFF and locked out before you perform maintenance procedures on the equipment.**

Qualification of Personnel

Make sure that all personnel have manufacturer-approved training applicable to the auxiliary equipment.

Personal Safety Equipment

Make sure that operators and maintenance personnel have all safety equipment applicable to the auxiliary equipment. Examples include safety glasses, protective headgear, safety shoes, etc.

Unauthorized Operation

Make sure that unauthorized personnel cannot gain access to the operation of the equipment.

Environmental Compliance

Waste Electrical and Electronic Equipment (WEEE) Directive 2012/19/EU

Panametrics is an active participant in the European Union's (WEEE) take-back initiative, directive 2012/19/EU.

The equipment that you bought has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems. Those systems will reuse or recycle most of the materials of your end life equipment in a sound way.

The crossed-out wheeled bin symbol invites you to use those systems.

If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration.

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Appendix A. User Interface Matrix Input

Warranty

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Chapter 1. General System Information

1.1 Unpacking and Inspection

Upon receipt of the DewPro MMY30 transmitter, examine the shipping carton for broken or open packing, distortion, or any other evidence of mishandling. If an examination indicates there is damage to the unit or any of its components, notify the carrier (within 15 days of delivery) and request an inspection.

Move the carton to a clean work area and unpack it. The carton should contain:

- DewPro MMY30
- User's Manual
- Calibration Certificate

Compare the last five characters (numbers or letters) of the *model number* on the product label (see *Figure 1* below) with the product ordering string in *Table 1 on page 2* to ensure you have received the proper instrument.

Figure 1: DewPro MMY30 Product Label

1.2 Product Order String

Table 1: Product Order String

Category	Digit	Description
Certification/ Approvals	R	Safe area
	A	IS: CL I/II/III, Div 1, GP ABCDEFG
	B	XP-IS: CL I, Div 1, GP ABCD
	C	NI: CL I, DIV 2, GP ABCD and DIP: CL II/III, DIV 1, GP EFG
	F	II 3 G, Ex nA IIC T4 (Manufacturer's ATEX declaration)
	S	Other
Process Connection	1	½" MNPT (1/4" tube fitting if B, C or D is selected below)
	2	G ½ (6 mm tube fitting if B, C or D is selected below)
	S	Other
Orifice Configuration	A	Inlet: None; Outlet: Orifice, with ¼" FNPT
	B	Inlet: None; Outlet: Orifice, with (6 mm) ¼" tube fitting
	C	Inlet: None; Outlet: None, with (6 mm) ¼" tube fitting
	D	Inlet: Orifice; Outlet: None, with (6 mm) ¼" tube fitting
	S	Other
Enclosure Conduit	1	M20 X 1.5 F with cable gland
	2	1/2" FNPT adaptor
	S	Other
Output Configuration/ Dewpoint Range	A	Td -90°C to +10°C (-130°F to +50°F), no display, error 22 mA
	B	Td -90°C to +10°C (-130°F to +50°F), no display, error Hold
	C	Td -90°C to +10°C (- 130°F to +50°F), no display, error 3.6 mA
	D	0-100 ppm_V 1 bar, no display, error 22 mA
	E	0-100 ppm_V 1 bar, no display, error Hold
	F	0-100 ppm_V 1 bar, no display, error 3.6 mA
	G	With integral display/user interface
	H	With integral display/user interface, includes moisture units lbs/MMSCF, natural gas
	S	Other

1.3 Introduction

1.3.1 Unit Description

The DewPro MMY30 trace moisture transmitter (shown in *Figure 2* below) is a loop-powered dewpoint measuring device. The transmitter includes a sensor element, a flow chamber, a weather-proof enclosure, microprocessor electronics, and assorted fittings, all in a compact assembly. In most cases, either the inlet or outlet port includes an orifice to regulate the flow. The placement of this orifice determines whether the dewpoint measurement is done at process (line) pressure (outlet orifice), or at atmospheric pressure (inlet orifice). A 2 micron sintered inlet filter prevents solid particles from entering the device.

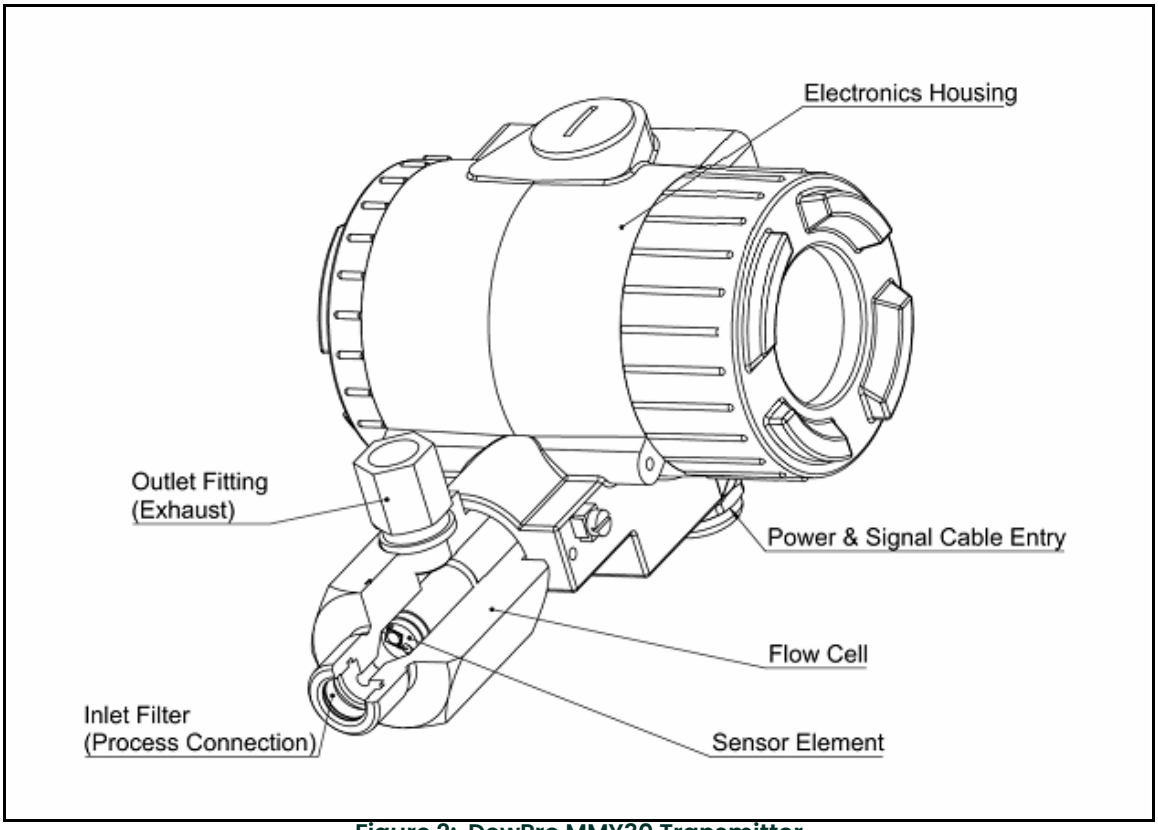


Figure 2: DewPro MMY30 Transmitter

1.3.2 Optional Display/User Interface

The optional display/user interface feature allows the MMY30 to be configured to the user's specifications. See *Chapter 4* for more information.

1.4 Theory of Operation

1.4.1 4 to 20 mA Loop

The DewPro MMY30 transmitter is powered by a DC voltage supply from 12 to 28 VDC. At the nominal 24 VDC supply, the maximum loop resistance is 600 ohms. The signal is represented by the 4 to 20 mA loop current and is directly proportional to the dewpoint range in °C or °F. In the standard range, 4 mA corresponds to –90°C (–130°F) and 20 mA to +10°C (+50°F) dewpoint temperature. The optional unit of measure is ppm_V with a standard range 0-100 ppm_V.

1.4.2 Bypass

In dryer applications, the moisture sensor performs best when mounted in a bypass. The built-in bypass of the DewPro MMY30 eliminates costly hardware associated with traditional sampling methods. The DewPro MMY30 installs simply into the process with its G½ or ½" MNPT threaded connection.

1.4.3 Planar Sensor

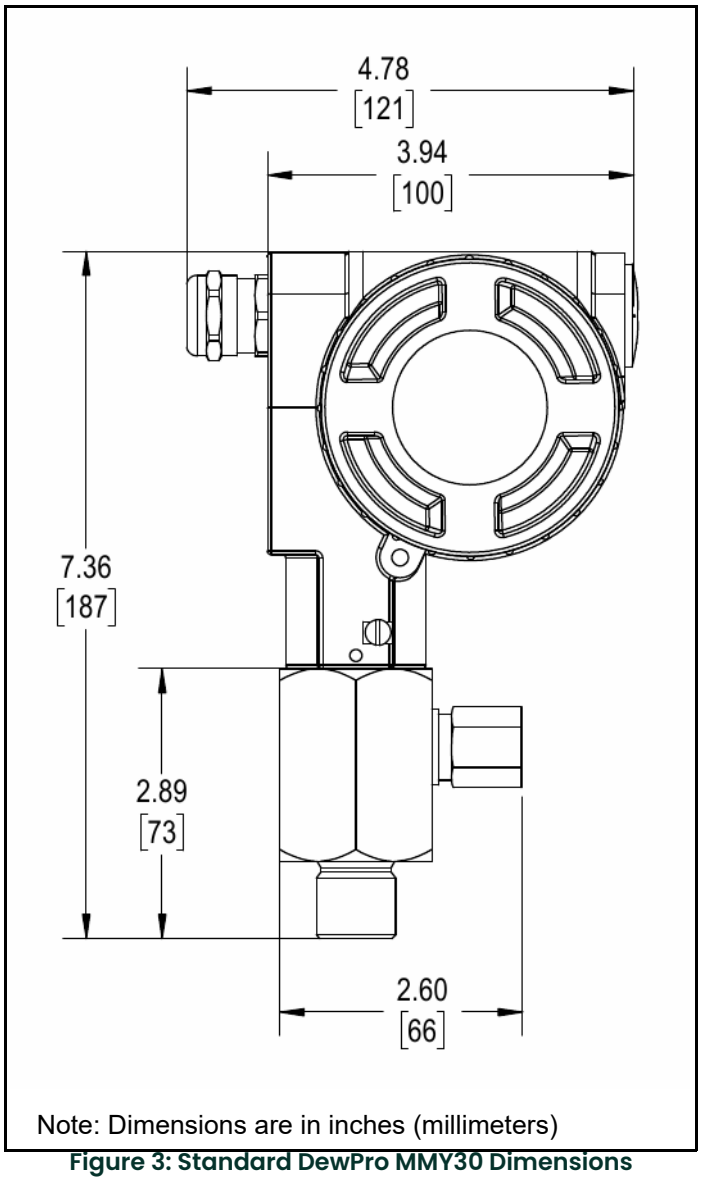
The heart of the DewPro MMY30 transmitter is the planar aluminum oxide sensor that provides longer calibration stability, excellent corrosion resistance, and improved speed of response. The sensor is mounted on a ceramic substrate, giving a reduced temperature coefficient.

1.4.4 Calibration

Each DewPro MMY30 is factory calibrated against precise NIST certified moisture references and has an accuracy of ±2°C dewpoint at 25°C temperature.

1.5 Dimensions

Choose a mounting location which allows enough clearance for the use of tools and for connection of the field validator. *Figure 3* below shows the dimensions of the standard DewPro MMY30, and *Figure 4 on page 6* shows the DewPro MMY30 with the optional display/user interface.



Note: Dimensions are in inches (millimeters)

Figure 3: Standard DewPro MMY30 Dimensions

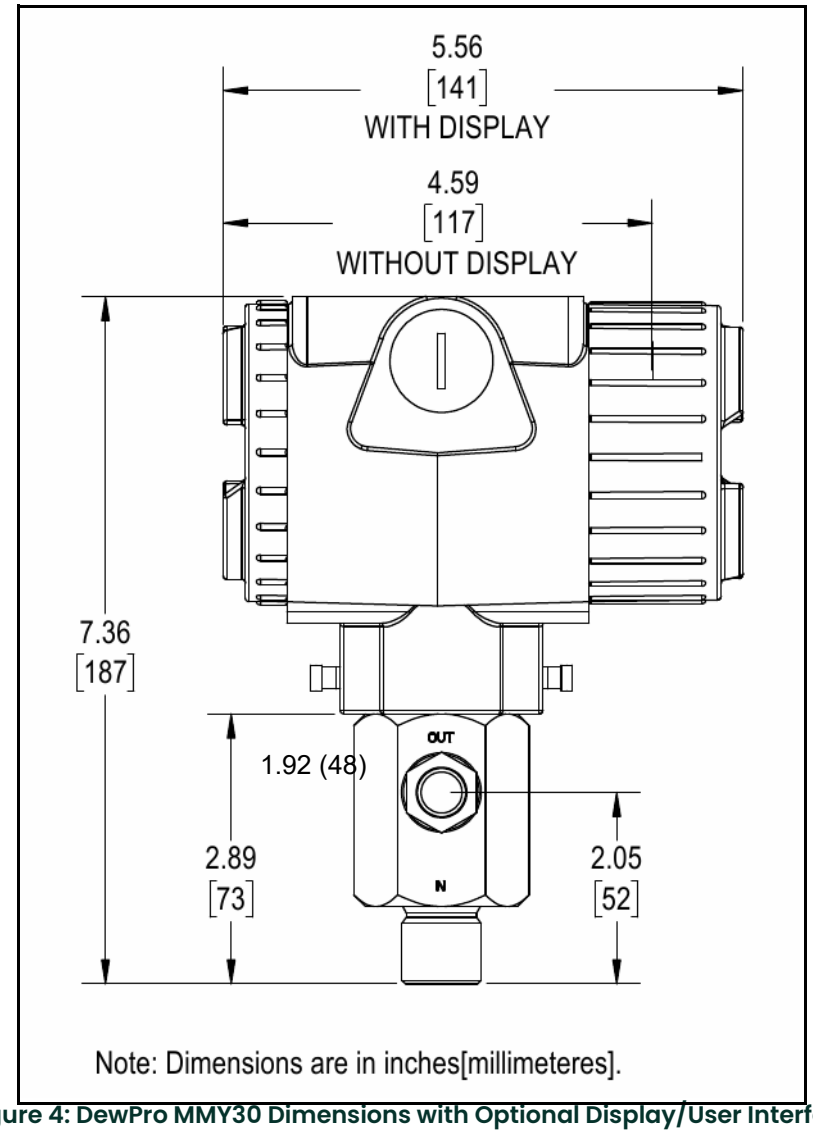


Figure 4: DewPro MMY30 Dimensions with Optional Display/User Interface

Chapter 2. Installation Guidelines

2.1 General Hints

CAUTION! **Before installation, please read all instructions. The DewPro MMY30 is designed to be mounted on pressurized systems. Take all necessary precautions when mounting or removing the DewPro MMY30.**

- Mount the DewPro MMY30 vertically whenever possible to prevent solid particles or condensation from entering the bypass line.
- Mount the DewPro MMY30 downstream from a shut-off valve to depressurize the DewPro MMY30 when removing it from the process pipe for maintenance or field compensation.

CAUTION! **Do not over-tighten the DewPro MMY30 connections! The outlet fitting is connected to the bypass block with a gasketed G 1/4 straight thread which will seal properly if the fitting is simply hand-tightened. When connecting an external device, hold the fitting with a second wrench when tightening the connection. If the inlet is equipped with a gasketed G 1/2 straight thread, the seal is obtained by simply hand-tightening the DewPro MMY30.**

CAUTION! **If you are installing the DewPro MMY30 into a pressurized system (up to 10 bar), depressurize the system before installing or removing the sensor. Pressurized systems require stainless steel compression fitting.**

2.2 Method I - Orifice at Outlet

Figure 5 below illustrates installation of the DewPro MMY30 at the outlet orifice.

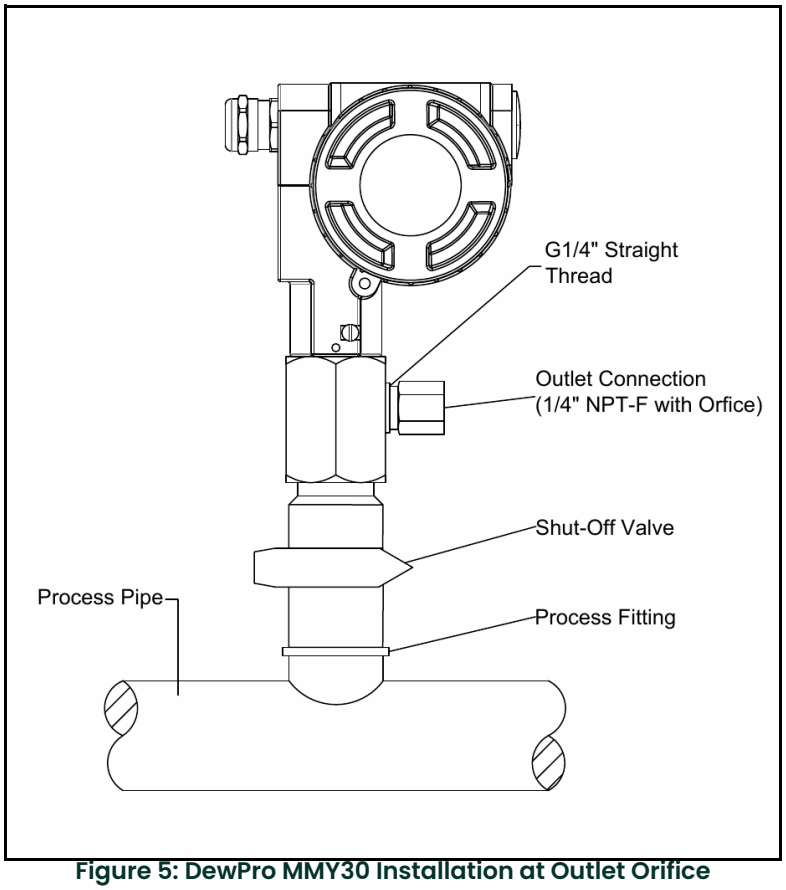


Figure 5: DewPro MMY30 Installation at Outlet Orifice

2.2.1 Pressure Dewpoint

Air dryers producing general instrument air are typically specified with a pressure dewpoint rating. The majority of dryers operate in a dewpoint range between –40°C and –75°C (–40°F and –100°F). A pressure of 7-8 bar (100 psig) is very common.

2.2.2 Air Flow

The DewPro MMY30 is designed to measure the pressure dewpoint. By restricting the flow at the outlet of the integral bypass with an orifice, the sensor monitors the dewpoint at process pressure. The flow rate of the bleed-off air to the atmosphere at 7-8 bar (100 psig), is approximately 70 cc/min (28 L/h / 1.0 SCFH). For smaller dryers with flow rates of 3m^3/min (100 ft^3/min) the air loss is only 0.002% of the air production and is negligible. Despite the very low flow rate through the bypass, the air sample in the DewPro MMY30 bypass chamber is refreshed every second due to the small hold-up volume design of the chamber. As a result, the sensor responds to changes in moisture content instantaneously. Due to the low flow rate, the flow velocity is also very low at <0.01 m/sec (34 m/h).This low flow velocity prevents the inlet filter from clogging since there is not enough kinetic energy to push dust particles into the filter.

2.3 Method II - Orifice at Inlet

Figure 6 below illustrates installation of the DewPro MMY30 at the inlet orifice.

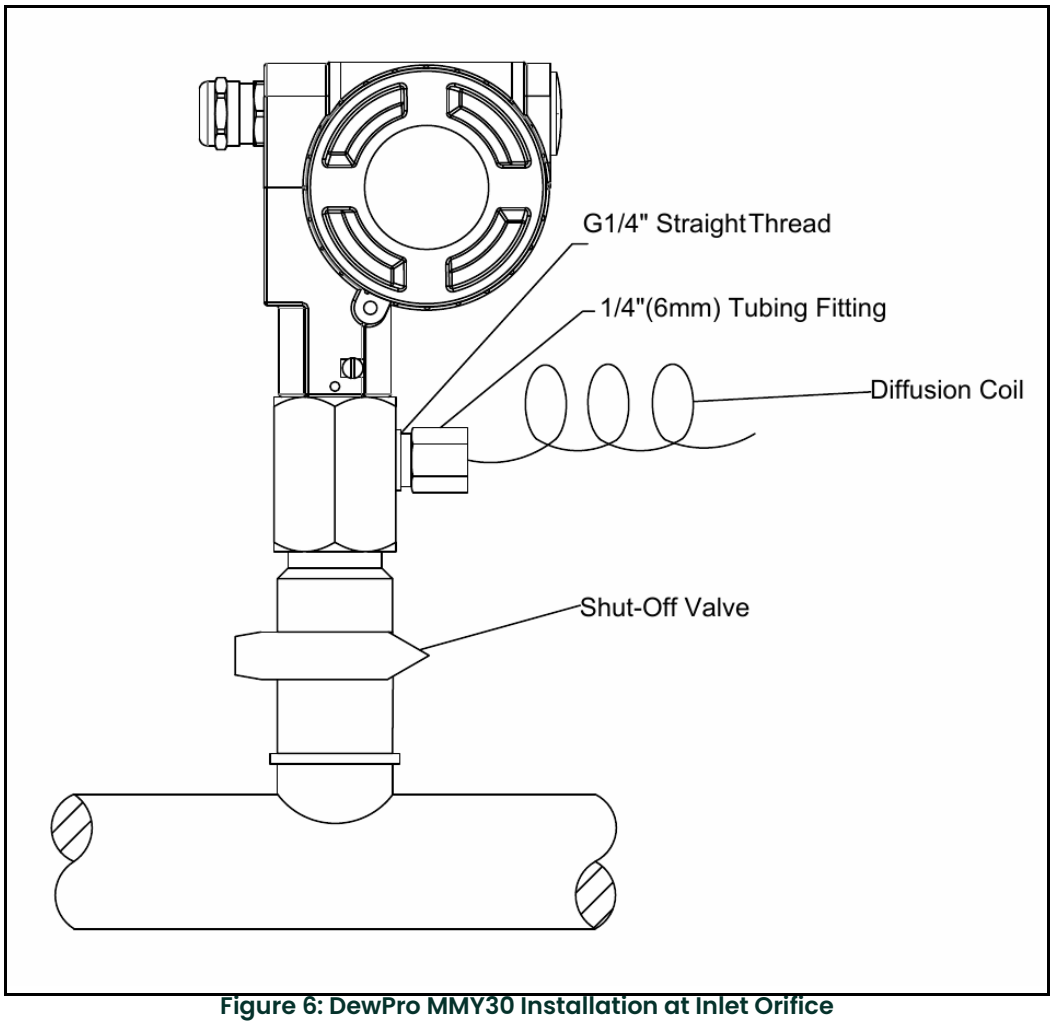


Figure 6: DewPro MMY30 Installation at Inlet Orifice

2.4 Method III - No Flow Restriction

Low-pressure, closed-loop drying systems, which are very common with hopper dryers in the plastics industry, operate at very low pressures of a few inches of water. The air passing through the DewPro MMY30 bypass line is fed back to the main stream after a pressure drop in the main line. In this configuration, the DewPro MMY30 bypass has no flow restriction at either the inlet or the outlet.The outlet is equipped with a 1/4" (6 mm) tube fitting to allow simple connection of the loop tubing.

Figure 7 below illustrates installation of the DewPro MMY30 with no flow restrictions.

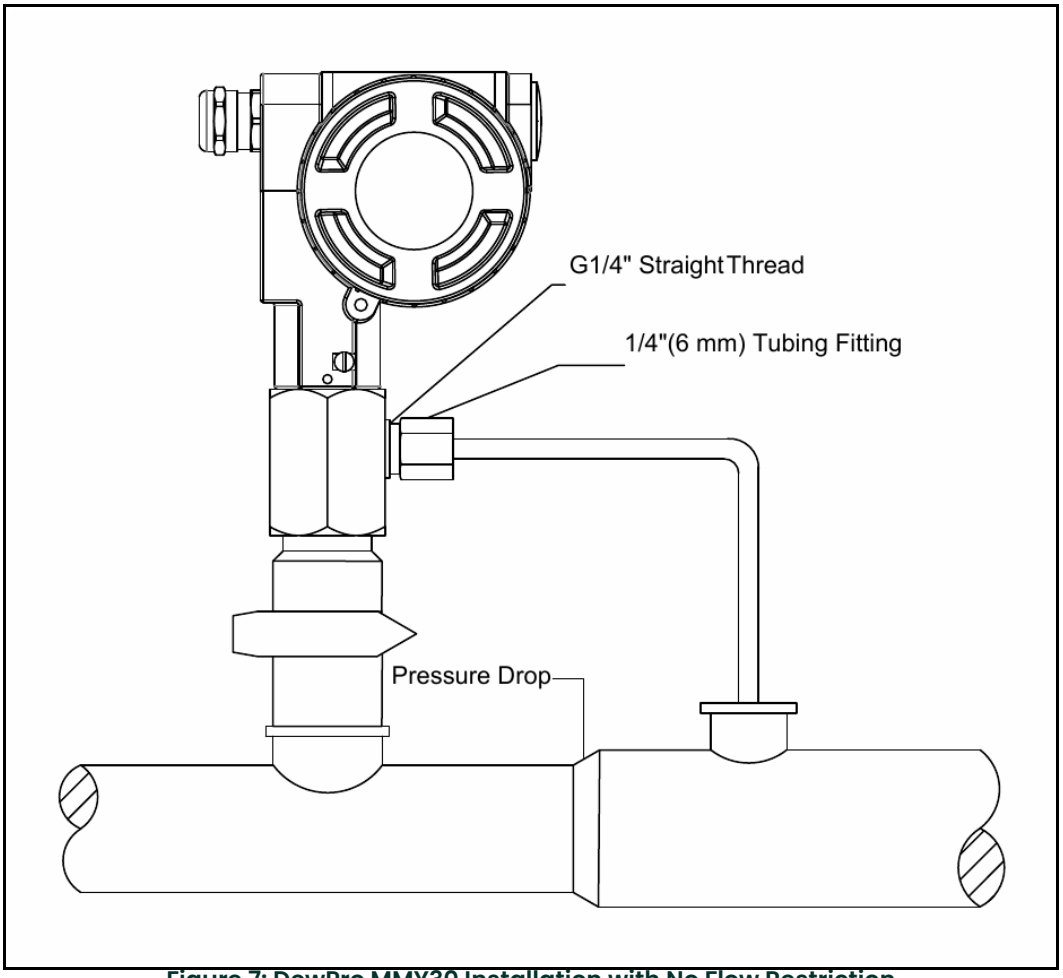


Figure 7: DewPro MMY30 Installation with No Flow Restriction

2.5 Method IV - Bypass Installation

In some cases there may not be enough room to install the DewPro MMY30 directly to the process pipe. The tube connection at the inlet enables mounting the DewPro MMY30 at a remote location. Any of the functions described for Methods I-III can be selected. The DewPro MMY30 can be mounted on a wall or a plate using the optional mounting bracket, as shown in *Figure 9 on page 12*.

Figure 8 below illustrates installation of the DewPro MMY30 with a bypass line.

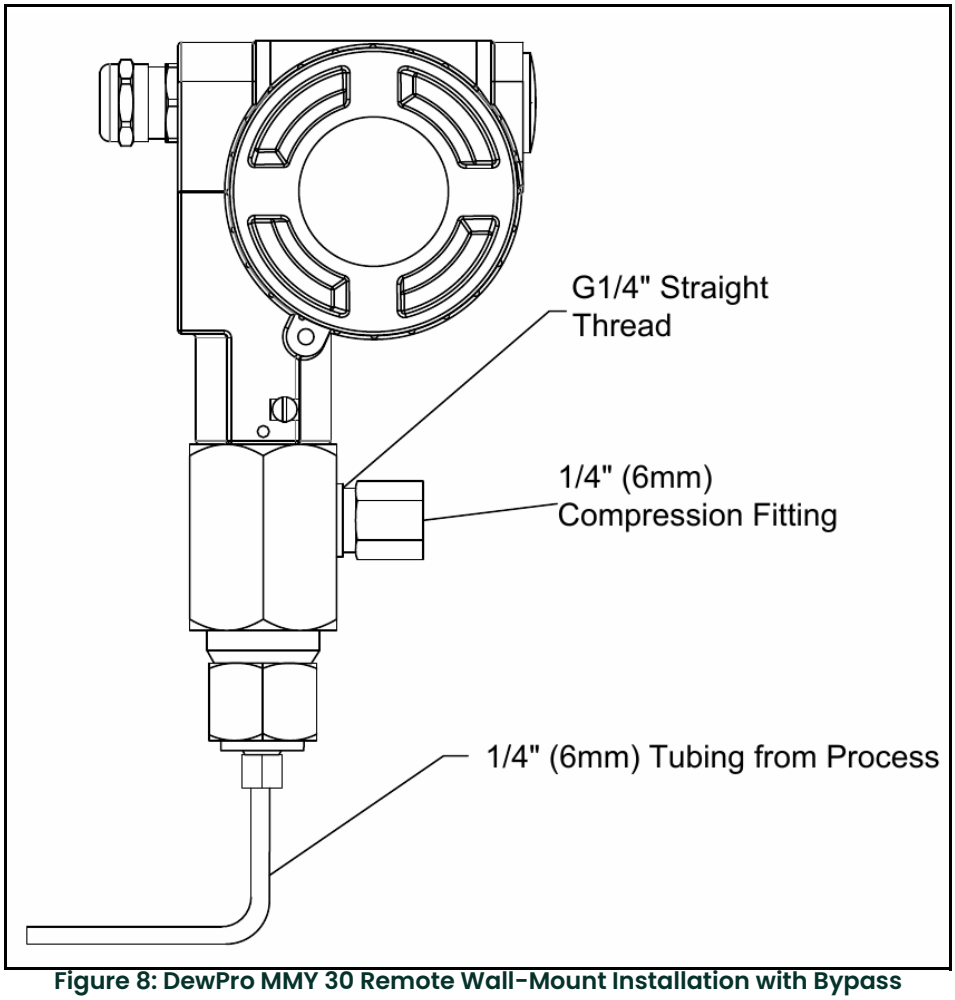


Figure 8: DewPro MMY 30 Remote Wall-Mount Installation with Bypass

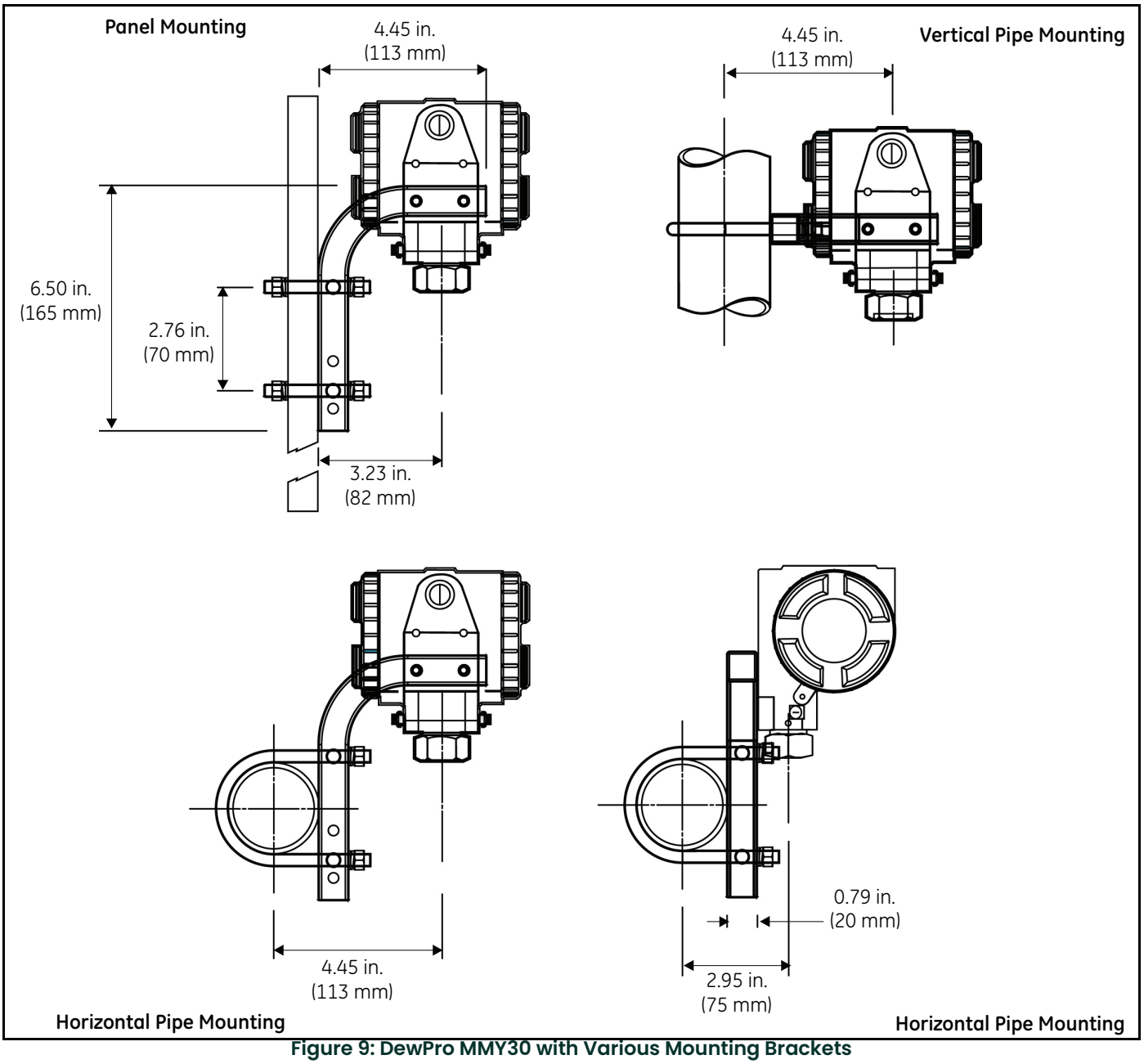


Figure 9: DewPro MMY30 with Various Mounting Brackets

Chapter 3. Wiring Instructions

3.1 General Guidelines

CAUTION! **The DewPro MMY30 system contains electronic components that are susceptible to damage by static electricity. Proper handling procedures must be observed during the removal, installation, or other handling of internal circuit boards or devices.**

Note: *If the* DewPro MMY30 *is equipped with an optional display/user interface, refer to Chapter 4.*

3.2 System Configuration

3.2.1 Various Power Supplies

Figure 10 below illustrates various power supplies and displays for use with the DewPro MMY30.

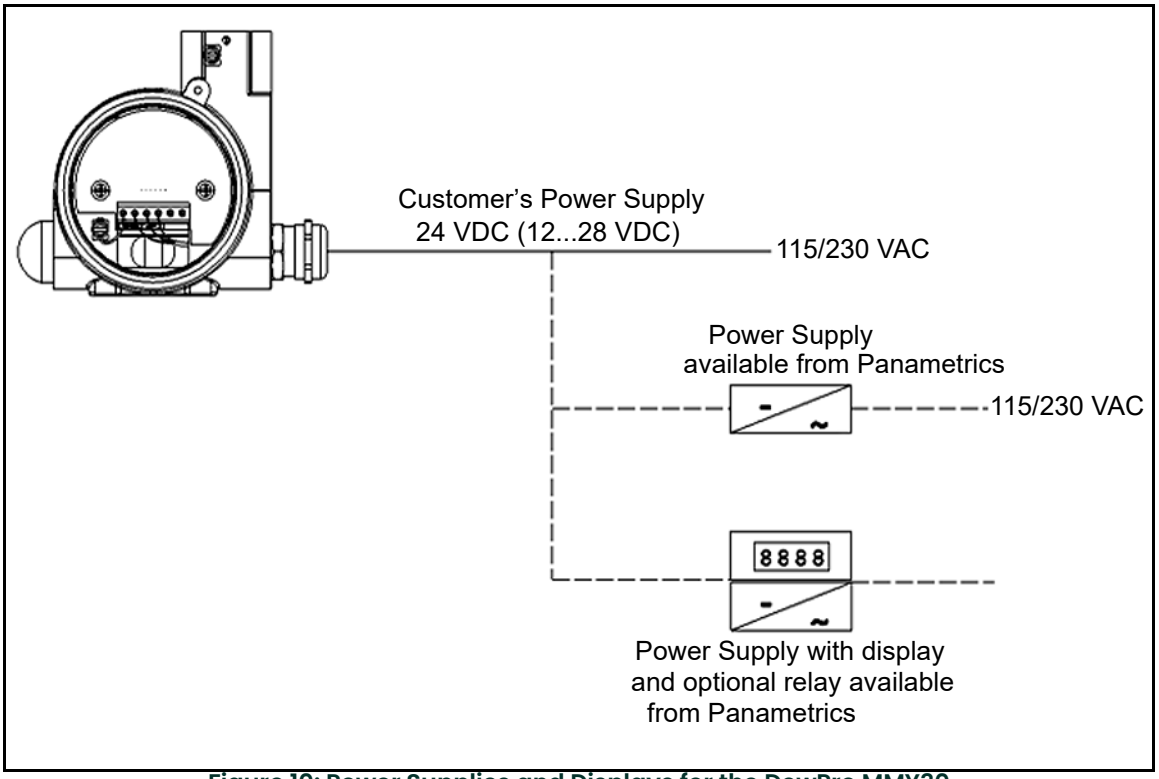


Figure 10: Power Supplies and Displays for the DewPro MMY30

3.2.2 Designing the Loop

When selecting a power supply, please note that the voltage at the +/- terminal of the DewPro MMY30 should not fall below 12 VDC. The maximum loop resistance is an important parameter for selection of the supply voltage. Each device connected to the loop causes a voltage drop. For instance, Ohm's law indicates that using a loop-powered display with an input impedance of 50 Ohms will cause a voltage drop of 1 VDC at 20 mA. Likewise, connecting the loop to a PLC (Programmable Logic Controller) will cause a voltage drop across the input.

When designing your loop, add up all voltage losses across the devices connected to the loop and add 12 V. Then, add a 20% safety factor and the sum will be the minimum supply voltage required from the power supply.

3.3 Mounting in Normal Environments

A standard two-wire, stranded cable (as shown in *Figure 11* below) can be used to interconnect the DewPro MMY30 with the power source.

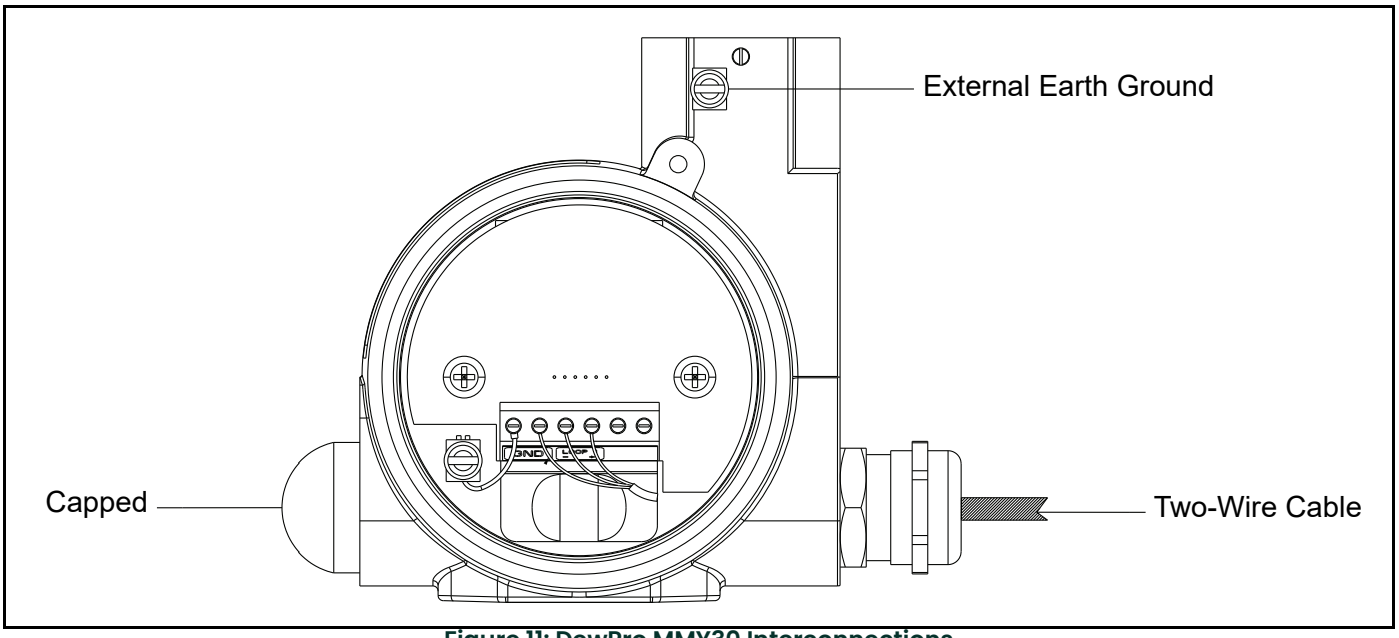


Figure 11: DewPro MMY30 Interconnections

3.4 Mounting in Environments with Severe Electrical Noise

IMPORTANT: *For use of the* DewPro MMY30 *in environments with severe electrical noise, refer to the specifications in* Chapter 6.

A shielded, two-wire cable (as shown in *Figure 12* below) can be used to interconnect the DewPro MMY30 with the power source.

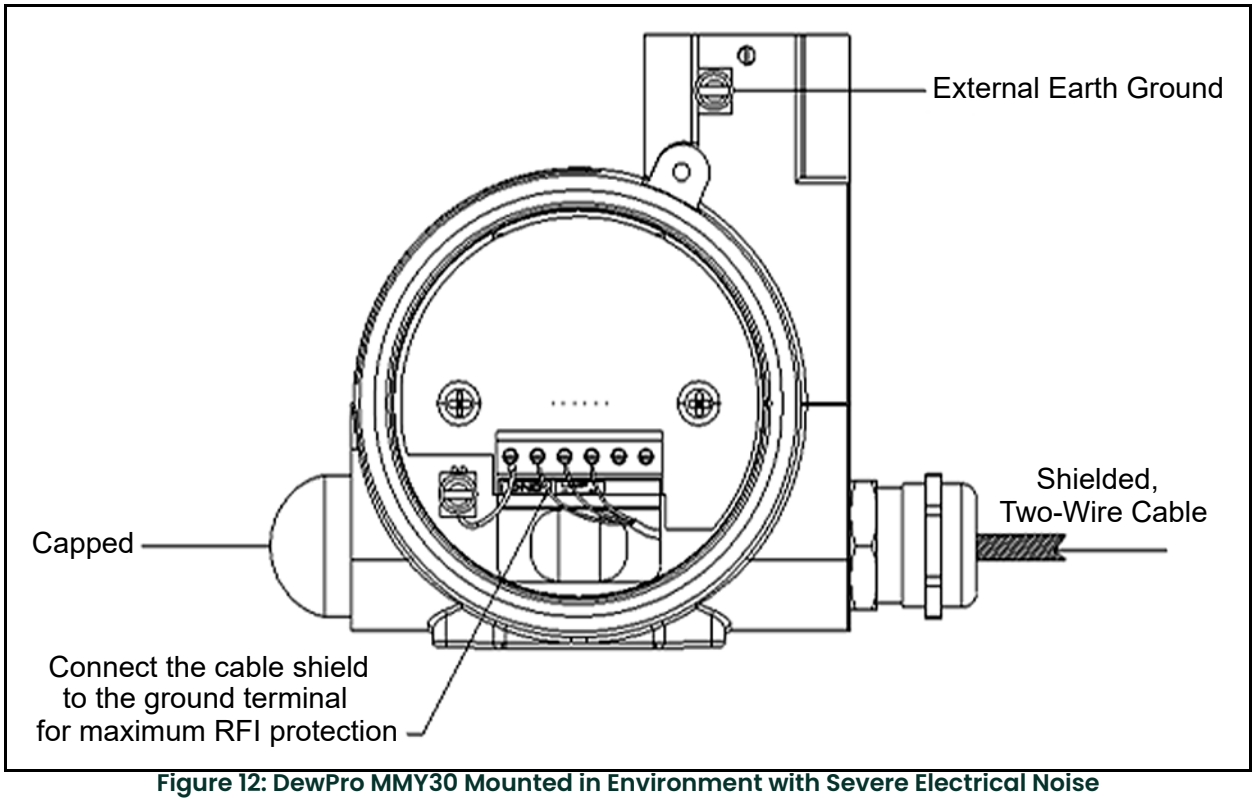


Figure 12: DewPro MMY30 Mounted in Environment with Severe Electrical Noise

3.5 Electrical Connections

Figure 13 below shows the electrical connections for the DewPro MMY30.

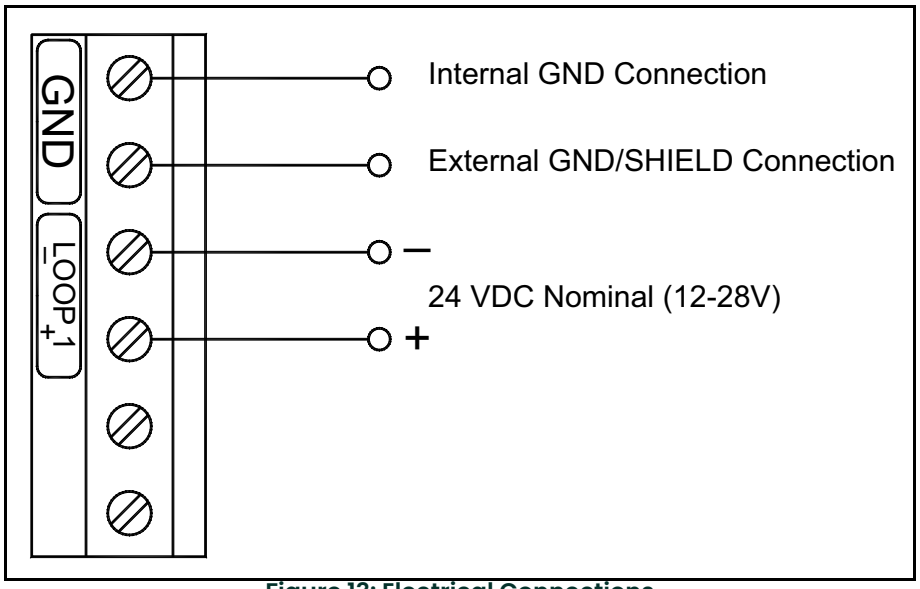


Figure 13: Electrical Connections

3.6 General Installation Instructions

Complete the following steps to make the DewPro MMY30 wiring connections:

1. Unscrew the cap on the terminal side of the unit.
2. Loosen the cable gland located on the side of the unit.
3. Using a signal cable with standard conductor size, feed the signal cable through the conduit opening.
4. To relieve any stress on the cable, retighten the metal cable gland to meet IP 67 requirements.
5. Verify that a voltage between 12 and 28 VDC is present across the terminals marked + and -.

Note: *Because of voltage loss in the wire length, the displays, the indicators, etc., this is the voltage that appears across the DewPro MMY30 terminals and does not necessarily equal the power supply voltage.*

6. To meet EMI/RFI immunity requirements, a two-wire shielded cable with a common foil shield layer must be used to power the MMY30. Remove 3" of the cable insulation and pull back the foil so that it is clamped in the metal cable gland. The ground wire must be connected to the internal DewPro MMY30 grounding screw.

Chapter 4. Optional Display/User Interface (Option G or H)

4.1 Installation

If the DewPro MMY30 is equipped with an optional display/user interface, follow the procedures in this section to access the programming buttons.

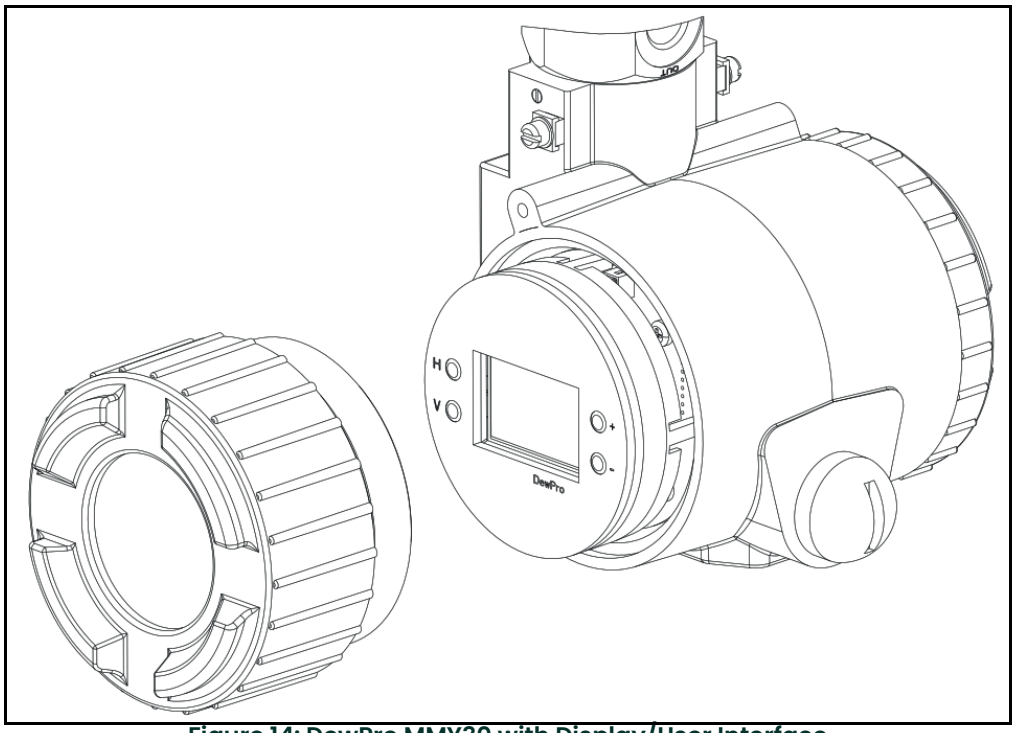


Figure 14: DewPro MMY30 with Display/User Interface

4.1.1 DewPro MMY30 with Display Assembly

1. Unscrew and remove the protective lid from the top of the DewPro MMY30 (as shown in *Figure 14* above), exposing the display module below. The buttons V, H, + and – are now accessible.

4.1.2 Replacing the Display

2. The display unit snaps onto the printed circuit board, resting on four posts. When removing the display, push one post to the outside, using a small screwdriver, and pull the display out.
3. Then, unplug the display cable.

4.2 Description of the DewPro MMY30 Programming Matrix

In the DewPro MMY30 trace moisture transmitter with display option, a matrix-style input is used for programming the unit of measure, measuring range, error status of the output, and the output adjustment. Each option is assigned coordinates on a 10 x 10 matrix, specified with a **V** (vertical row) address and an **H** (horizontal column) address, with a number of 1-10 for each location. You select the desired option by entering the matrix position.The following sections describe the features and usage of the various matrix locations as they apply to the DewPro MMY30.

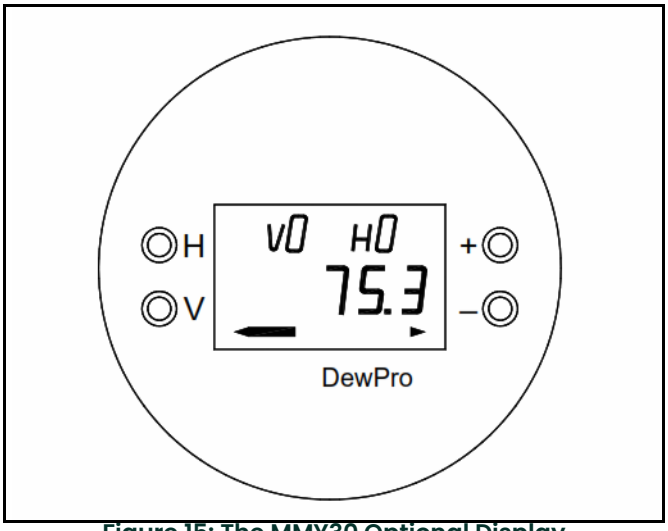


Figure 15: The MMY30 Optional Display

The display of the DewPro MMY30 continuously shows the current matrix location using the vertical (**V**) and horizontal (**H**) coordinates to designate the row and column, respectively. The bar graph represents the output current in an analog fashion (see *Figure 15* above). See *Appendix A* or *Table 2* below for a list of the matrix functions.

Table 2: Programming Matrix User Inputs*

Address	Function	Address	Function
VH 00	Display Moisture Value	VH 39	Output D/A, Cal 20 mA
VH 01	Select Units: 0 = °C, 1 = °F, 35 = ppm_v	VH 89	Input Locking (50 = Unlock)
VH 07	Loop #1 at Fault: 0 = -10%, 1 = 110%, 2 = Hold	VH 90	Current Error Code
VH 10	Dewpoint °C, at 4 mA	VH 91	Previous Error Code
VH 11	Dewpoint °C, at 20 mA	VH 92	Device ID
VH 12	ppm_v, at 20 mA	VH 93	Software Version
VH 30	Pressure ppm_v Constant (bar)	VH 95	Set to Default Values (50 = Set Default)
VH 38	Output D/A, Cal 4 mA	VH 99	Reset Device (50 = Reset After Calibration)
*This table only lists the *user inputs*. See *Appendix A* for a complete matrix.			

4.3 Matrix Programming

Navigating through the matrix is accomplished by using the **"V"** and **"H"** buttons to move to another row or column, as shown in the example below. At any location where a value may be changed by the user, the desired value is programmed using the **"+"** and **"–"** buttons. During this procedure, the digit to be changed flashes.

Example:

To set the dew point value to –10°C for 20 mA (V1 H1 on matrix), proceed as follows:

1. Press the **V** key until the display shows V1.
2. Press the **H** key until the display shows H1.
3. Use the **+** or **–** key to change the numeric value to –10.
4. Proceed to any other part of the matrix.

4.4 Special Functions of the Push Buttons

1. **Reset to Normal Display:** Pressing the **V** and **H** buttons simultaneously returns the user to VH 00 (normal display).
2. **Display Only:** Note that five matrix locations are for display only and may not be changed by the user (refer to *Table 2 on page 18* or to *Appendix A*). The *"display only"* fields are as follows:
   - VH 00 = normal display (in dewpoint °C)
   - VH 90 = during a system alarm, displays the error code for the fault encountered
   - VH 91 = during normal operation, the previous error code is displayed for reference
   - VH 92 = displays the factory issued identification number
   - VH 93 = displays the factory issued reference number designating the device type and software version
3. **Default Values:** A default value is assigned to each programmable matrix field. The values are present after a reset to factory programmed data has been executed (see VH 95).
4. **Changing Values:** When unlocked (VH89=50), values in certain matrix locations can be changed using the **+** and **–** buttons. During this process, the changeable digit flashes.

4.5 Functions of the Matrix

Note: *Refer to* Table 2 on page 18 *or to* Appendix A.

This section describes the functions available to the user through the programming matrix, grouped by common function areas. The function is accessed by selecting the specified location within the matrix.

4.5.1 Display and Output Mode

4.5.1.1 Dew Point Display

VH 00	This is the normal display of the transmitter when in operation. The dewpoint is shown in °C or °F, or ppm_V as selected under VH 01.

4.5.1.2 Selecting the Unit of Measure

VH 01	Selects the units to be displayed. Changing from °C to °F does not change the current loop. Changing from dewpoint to ppm_V does change the current loop. **Note:** *When switching to ppm_V, the display may indicate an error "3" if the dewpoint reading is above –20°C. (e.g., the DewPro MMY30 is exposed to ambient air.)*

4.5.1.3 Loop at Fault

VH 07	If any fault malfunction occurs, the loop can be set to either "–10%" (= 3.6 mA), to "110%" (= 22 mA) or to "Hold" (keeps at the last valid value).

4.5.1.4 Selecting the Analog Output Offset (4 mA)

VH 10	The dewpoint value corresponding to the analog output offset (4 mA) is entered here. Default: -90°C

CAUTION! **Ensure that the dewpoint value in VH10 is always at least 20°C below the value assigned to the 20 mA value (next section below).**

4.5.1.5 Selecting the Analog Output Span (20 mA)

VH 11	The dewpoint value corresponding to the analog output span (20 mA) is entered here. Default: +10°C.

CAUTION! **Ensure the value in VH11 is always at least 20 °C above the value assigned to 4 mA.**

4.5.1.6 Setting the Span Value for the ppm_V Range

VH 12	Selection of this field sets the span value for the ppm-v range. Default: 100. **Note:** *The offset is always 0 ppm_V. Do not exceed 1000 ppm_V.*

4.5.2 Special Calibration

4.5.2.1 Adjusting the Pressure Constant

VH 30	The process pressure constant is entered in bar (absolute), which is used to calculate ppm_V. The moisture unit ppm_V is the ratio of water vapor pressure to the total process pressure and is, therefore, independent of the process pressure. The reason is that when compressing a gas (process pressure) all partial pressures increase by the same factor (Dalton's Law). The gold/aluminum oxide sensor is selective to water vapor pressure, monitoring a higher vapor pressure when the total pressure (process pressure) increases. The formula utilized by the analyzer scaled to a total pressure of 1 bar. An elevated process pressure above 1 bar requires compensation by programming the actual process pressure in bar absolute to the matrix field VH 30. The system should be designed to maintain a constant pressure, by using a pressure regulator in a bypass system. Default: 1 bar (absolute)

4.5.2.2 Adjusting the Current Loop Hardware at 4 mA

VH 38	By connecting an ammeter in the loop, the correct current value (4 mA) can be adjusted by increasing or decreasing the displayed digits. **Note:** *If the matrix input is locked (VH89), the calibration values are displayed but the current output is unaffected. To enable adjustments, VH89 has to be unlocked by entering* **"50"** *into this field.*

4.5.2.3 Adjusting the Current Loop Hardware at 20 mA

VH 39	Selection of this field assists during calibration, generating a nominal 20 mA signal. However, the actual value must be 21.92 mA, an over range value to a dewpoint reading of 22°C. By connecting an ammeter in the loop, the correct current (21.92 mA) can be adjusted by increasing or decreasing the displayed digits. **Note:** *If the matrix input is locked (VH89), the calibration values are displayed but the current output is unaffected. To enable adjustments, VH89 has to be unlocked by entering* **"50"** *into this field.*

4.5.3 Mode of Operation

4.5.3.1 Input Locking

VH 89	Any number other than **"50"** will lock the instrument settings from inadvertent or unauthorized changes. (The instrument is only unlocked at a value of **"50."**)

4.5.3.2 Displaying the Present Error Code

VH 90	In the event of a system fault, this field displays the diagnostic error code for the fault encountered.	
	Error Code	Description
	0	No error.
	1	Dewpoint underrange. The current output has fallen below 4.00 mA.
	2	Dewpoint overrange. The current output has exceeded 21.92 mA.
	3	The instrument is no longer reading between –90 and –20°C dewpoint while in ppm_V mode and outside the range of the internal vapor pressure table.
	4	ppm_V overrange. The current output has exceeded 20 mA. Change the ppm_V upper scaling limit in V1H2 to keep this error from occurring.
	5	Sensor is shorted.
	6	Sensor is open.

4.5.3.3 Displaying the Previous Error Code

VH 91	When a system fault condition is cleared, the value of the error code is stored in this location. During normal operation, the most recent error code is displayed for reference.

4.5.3.4 Instrumentation Identification Number

VH 92	The instrument identification number should always read **"100."**

4.5.3.5 Identification Field

VH 93	This field indicates the software version, for versions 2.02 or higher.

4.5.3.6 Set to Default Values

VH 94	This field resets all factory defaults. **Note:** *Anything that has been calibrated will not be reset.*

4.5.3.7 Resetting the Device

VH 99	The device is reset in this field by entering a value of **"50."** **Note:** *Reset the device only after field calibration.*

[no content intended for this page]

Chapter 5. Troubleshooting

5.1 Problems and Recommended Solutions

Problem 1: The loop current is outside the range of 4-20 mA, as shown on display or current meter. In some cases, 22 mA can be ordered as the fault current.

Solution 1: The process dewpoint is out of range. If the dewpoint is above +10°C (+50°F), the current will go to 22 mA. Apply dry air for 20 minutes. If the dewpoint doesn't decrease, contact Panametrics.

If the dewpoint is below –90°C (–130°F), the current will go below 4 mA and then to 22 mA as the fault current. Expose the DewPro MMY30 to ambient air for several minutes. If the error remains, the cause may be a defective sensor assembly or an electronics malfunction. Contact Panametrics.

Problem 2: There is no current.

Solution 2: Check the voltage and polarity across the +/– terminals with a DC voltmeter. If the voltage is between 12 VDC and 28 VDC, contact Panametrics.

Problem 3: The response time is very slow.

Solution 3: Verify the flow with an air flowmeter. If the orifice is at the outlet of a 7 to 8 bar (100 psig) process pressure, the air flow should indicate 20 to 30 l/h (500 cc/min.). If the flow is significantly lower, the inlet filter may be clogged. Remove the 2-micron filter and clean it with a solvent or replace the filter.

5.2 Removing the Filter

Refer to *Figure 16* below to remove the filter for cleaning or replacement.

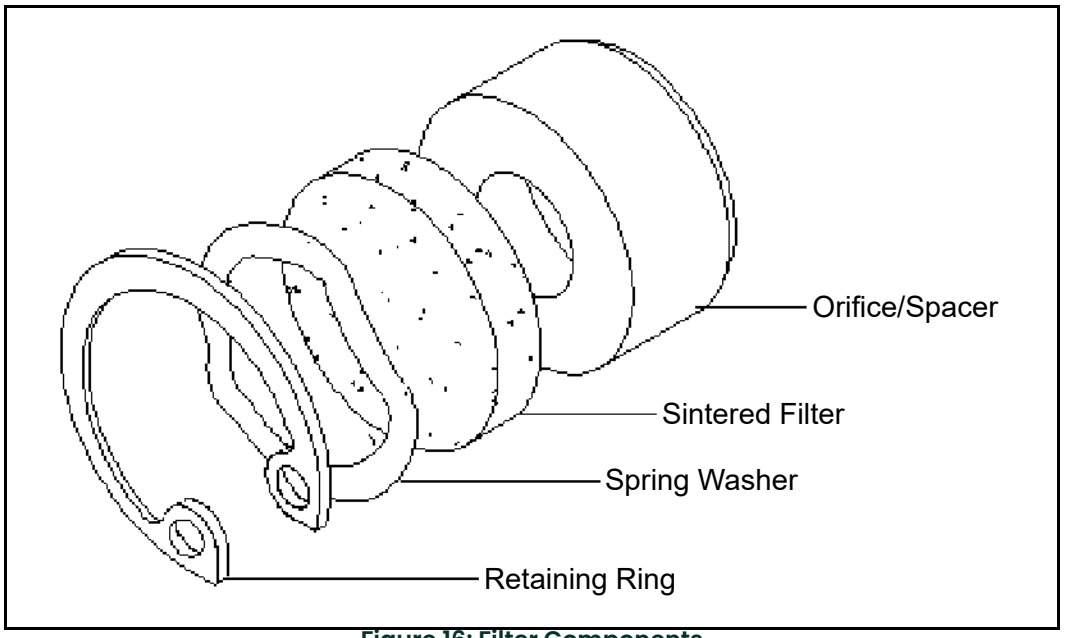


Figure 16: Filter Components

[no content intended for this page]

Chapter 6. Technical Specifications

6.1 MMY30 Specifications

Sensing Element

capacitive measurement, planar aluminium oxide sensor

Measurement Range

–90°C to +10°C DP (dewpoint temperature)
–130°F to +50°F DP
0 to 1000 ppm_v H_2O
(fully adjustable with integral display option)

Recommended Recalibration Cycle

12 months, depending on the application

Calibration Accuracy

±2°C (±3.6°F) dew point at 25°C (77°F)

Maximum Sensor Relative Humidity

50% at dewpoint temperatures greater than 0°C / 32°F

Operating and Storage Temperature

-40°C to +50°C (-40°F to +122°F)

Air Bleed Off at 7 bar (100 psig)

Approximately 28 L/h (1 SCFH)

Maximum Operating Pressure

31 bar, 3.1 MPa (450 psig)

Helium Leak-Rate

$<10^{-6}$ L/s

Output

4 to 20 mA, 16 µA resolution

Flow Block

316 stainless steel with G ½ thread (DIN ISO 228) or ½" (12.7 mm) MNPT thread

Wrench Width for Flow Block

42 mm (1 5/8")

Electronics

Microcontroller operated

Moisture Unit

Dew point temperature in °C or °F or ppm_v

Power Supply

24 VDC nominal, 12 to 28 VDC range

Protection

Type 4X (IP 67)

Weight

1.5 kg (3.2 lb)

European Union Compliance (CE)

CE

Hereby, Panametrics / Baker Hughes, declares that this equipment is in compliance with EU Directives 2014/30/EU & 2014/34/EU.

The full text of the EU declaration of conformity is available at the following internet address: https:www.bakerhughes.com/downloads and search for MMY30.

This equipment may be operated in all EU and EEA countries (more relevant for RED).

6.2 Optional Onboard Display with User Interface

The optional onboard display with user interface uses a matrix configurator for:

- Range changes
- Unit of measure selection
- Current loop adjustment
- Error diagnostics
- Current value selection for fault conditions
- Entering a pressure constant for ppm_v

6.3 EMC

Performance Criterion A:

1. Conducted Emission Test as per CISPR 11 Class A, 2004
2. Radiated Emission Test as per CISPR 11 Class A, 2004
3. Radiated Susceptibility Test as per IEC 61000-4-3, 2002
4. Electrostatic Discharge Test as per IEC 61000-4-2, 2001
5. Electrical Fast Transient Test as per IEC 61000-4-4, 2004
6. High Energy Surge Immunity Test as per IEC 61000-4-5, 2001
7. Power Frequency Magnetic Field Test as per IEC 61000-4-8, 2001
8. IEC 61326, Industrial Locations

6.4 Hazardous Area Approvals (Optional)

- MMY30-Axxxx:

Intrinsically safe, Class I, II & III, Division 1, Groups A, B, C, D, E, F & G,

Type 4X, T5 Ta = 60°C, Entity, per drawing FM-IS-Dewpro

(FM Approvals)

- MMY30-Bxxxx:

Explosionproof with intrinsically safe sensor, Class I, Division 1, Groups A, B, C & D, Type 4X, T5 Ta = 60°C, per drawing FM-XP-Dewpro

(FM Approvals)

- MMY30-Cxxxx:

Non-incendive, Class I, Division 2, Groups A, B, C & D, Type 4X, T4A Ta = 60°C;

Dust-ignitionproof, Class II and III, Division 1,Groups E, F and G, Type 4X, T5 Ta = 60°C

(FM Approvals)

- MMY30-Fxxxx:

Non-Sparking apparatus for ATEX Zone 2, II 3 G Ex nA IIC T4

(ATEX declaration by the manufacturer (Panametrics)

[no content intended for this page]

Appendix A. User Interface Matrix Input

Table 3 on page 32 shows the complete DewPro MMY30 programming matrix.

Table 3: Matrix Input for Programming

MMY30	H0	H1	H2	H3	H4	H5	H6	H7	H8	H9
V0	Display Moisture Value	Select Units 0 = °C 1 = °F 35 = ppm_v						Loop #1 at Fault 0 = -10% 1 = 110% 2 = Hold		
V1	Dewpoint °C at 4 mA	Dewpoint °C at 20 mA	ppm_v at 20 mA							
V2										
V3	Pressure ppm_v Constant (bar)								Output D/A Cal 4 mA	Output D/A Cal 20 mA
V4										
V5										
V6										
V7										
V8										Input Locking (50 = Unlock)
V9	Current Error Code	Previous Error Code	Device ID	Software Version		Set to Default Values (50 = Set Default)				Reset Device (50 = Reset After Calibration)

Warranty

Each instrument manufactured by Panametrics is warranted to be free from defects in material and workmanship. Liability under this warranty is limited to restoring the instrument to normal operation or replacing the instrument, at the sole discretion of Panametrics. Fuses and batteries are specifically excluded from any liability. This warranty is effective from the date of delivery to the original purchaser. If Panametrics determines that the equipment was defective, the warranty period is:

- one year from delivery for electronic or mechanical failures
- one year from delivery for sensor shelf life

If Panametrics determines that the equipment was damaged by misuse, improper installation, the use of unauthorized replacement parts, or operating conditions outside the guidelines specified by Panametrics, the repairs are not covered under this warranty.

The warranties set forth herein are exclusive and are in lieu of all other warranties whether statutory, express or implied (including warranties or merchantability and fitness for a particular purpose, and warranties arising from course of dealing or usage or trade).

Return Policy

If a Panametrics instrument malfunctions within the warranty period, the following procedure must be completed:

1. Notify Panametrics, giving full details of the problem, and provide the model number and serial number of the instrument. If the nature of the problem indicates the need for factory service, Panametrics will issue a Return Material Authorisation (RMA), and shipping instructions for the return of the instrument to a service center will be provided.
2. If Panametrics instructs you to send your instrument to a service center, it must be shipped prepaid to the authorized repair station indicated in the shipping instructions.
3. Upon receipt, Panametrics will evaluate the instrument to determine the cause of the malfunction.

Then, one of the following courses of action will then be taken:

- If the damage is covered under the terms of the warranty, the instrument will be repaired at no cost to the owner and returned.
- If Panametrics determines that the damage is not covered under the terms of the warranty, or if the warranty has expired, an estimate for the cost of the repairs at standard rates will be provided. Upon receipt of the owner's approval to proceed, the instrument will be repaired and returned.

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