MICHELL Instruments
a DwyerOmega brand

Easidew/Pura Universal Communications Kit Service Manual

97524 Issue 2
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Please fill out the form(s) below for each instrument that has been purchased.

Use this information when contacting Michell Instruments for service purposes.

Instrument	
Code	
Serial Number	
Invoice Date	
Location of Instrument	
Tag No	

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Serial Number	
Invoice Date	
Location of Instrument	
Tag No	

Instrument	
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Serial Number	
Invoice Date	
Location of Instrument	
Tag No	

Easidew/Pura Universal Comms Kit

For Michell Instruments' contact information please go to www.processsensing.com

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Safety

The manufacturer has designed this equipment to be safe when operated using the procedures detailed in this manual. The user must not use this equipment for any other purpose than that stated. Do not apply values greater than the maximum value stated.

This manual contains operating and safety instructions, which must be followed to ensure the safe operation and to maintain the equipment in a safe condition. The safety instructions are either warnings or cautions issued to protect the user and the equipment from injury or damage. Use competent personnel using good engineering practice for all procedures in this manual.

Electrical Safety

The instrument is designed to be completely safe when used with options and accessories supplied by the manufacturer for use with the instrument.

Toxic Materials

The use of hazardous materials in the construction of this instrument has been minimized. During normal operation it is not possible for the user to come into contact with any hazardous substance which might be employed in the construction of the instrument. Care should, however, be exercised during maintenance and the disposal of certain parts.

Repair and Maintenance

The instrument must be maintained either by the manufacturer or an accredited service agent. For contact information visit the website at www.ProcessSensing.com.

Safety Conformity

This product meets the essential protection requirements of the relevant EU & UK directives. Further details of applied standards may be found in Appendix C.

Abbreviations

The following abbreviations are used in this manual:

°C	degrees Celsius
°F	degrees Fahrenheit
deg	degrees
dp	dew point
ft-lbs	pounds per foot
Nm	Newton meter
mA	milliampere
MHz	megahertz
mm	millimeter
ppmV	parts per million by volume
ppmW	parts per million by weight
RS485	serial data transmission standard
USB	Universal Serial Bus

Warnings

The general warnings listed below are applicable to this instrument. They are repeated in the text in the appropriate locations.

Where this hazard warning symbol appears in the following sections it is used to indicate areas where potentially hazardous operations need to be carried out.

1 INTRODUCTION

The Comms Kit provides the hardware necessary to allow digital communication between a PC (running configured software) and a Michell Instruments' 2-wire dew-point transmitter.

Using the Comms Kit and configuration software allows for a variety of ways to reconfigure the transmitter. These are:

- Adjusting the transmitter current output for fault conditions
- Changing the output and their configuration range, i.e. dew-point, ppm_V, ppm_W (for moisture in liquids) or temperature
- Changing the pressure (for ppm_V if different than atmospheric pressure)

The Comms Kit and software can be used on all the following instruments:

Easidew 2-wire Transmitter

Easidew 34

Easidew I.S. Transmitter

Easidew PRO I.S.

Easidew PRO XP

Pura 2-wire Transmitter

Pura I.S. Transmitter

NOTE: A cable set is available on request from Michell Instruments to allow communication with Easidew 3-wire and PURA 3-wire transmitters.

2 INSTALLATION

2.1 Installation of the USB Comms Kit

The installation of the Easidew/Pura Universal Comms Kit should be automatic on a computer running Windows 10 or higher. If installation is not successful please refer to Appendix A for driver installation instructions.

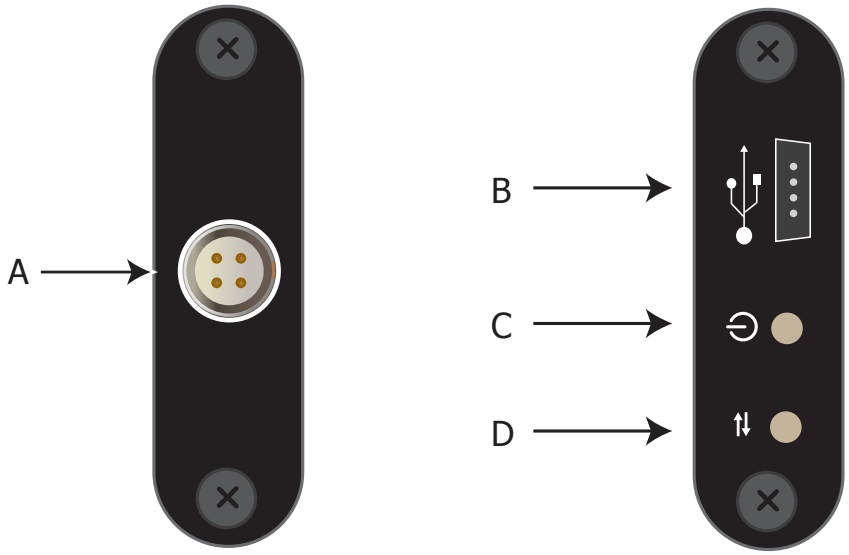
The minimum PC requirements for the configuration software are:

- 600 MHz Pentium-III, 256Mb RAM (or better) PC running Windows 10 or higher with a spare USB 2.0 port or higher

On delivery, check that all the following standard components are in the packing box:

- Communication cable (up to three may be included)
- USB cable
- Easidew/Pura Universal Comms Kit
- USB flash drive (contains driver and application software)

2.2 Connections



A	Communications cable connection
B	USB connection
C	Power (lights up blue when on)
D	Data transfer (flashes red when communicating)

Figure 1 *Connections*

2.3 System Connections

Connect the system as follows:

Figure 2 *Connection to Easidew Transmitter*

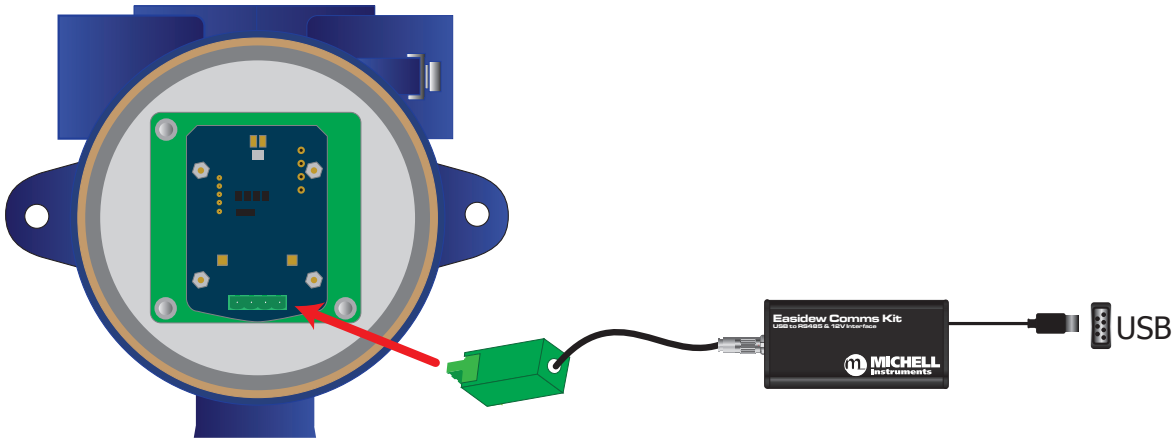


Figure 3 *Connection to Easidew PRO XP*

2.4 Connecting the Transmitter

When installing the connector, and to ensure that full ingress protection is achieved, the securing screw (with the O-ring and washer) must be tightened to a minimum torque setting of 3.4 Nm (2.5 ft-lbs). The sensor cable used must be a minimum diameter of 4.6mm (0.2”).

Caution: When removing the central screw ensure that the small sealing O-ring is retained on the screw and is present during re-installation.

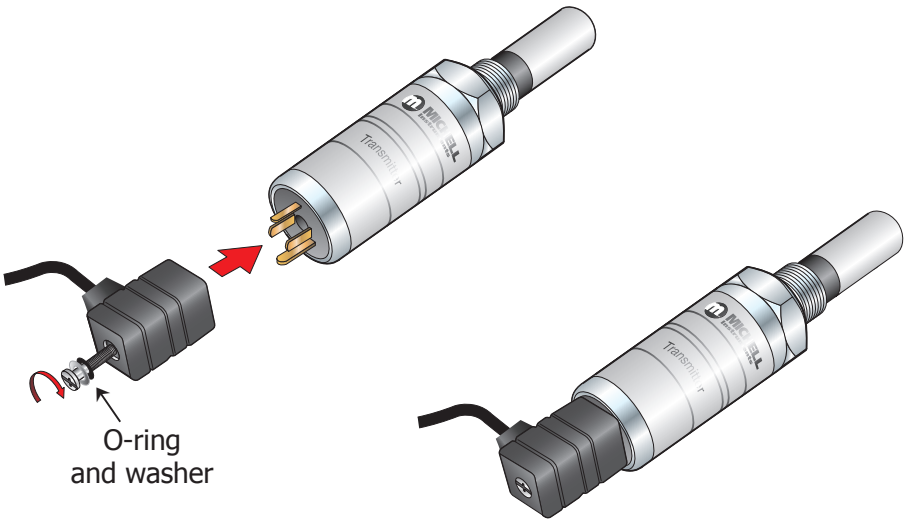


Figure 4 *Connector Installation*

When re-installing the connector, and to ensure that full ingress protection is achieved, the securing screw must be tightened to a minimum torque setting of 0.34 Nm (0.25 ft-lbs).

3 OPERATION

Make sure all running Windows applications are closed before inserting the Product Application Software USB flash drive into the computer.

The application software installer should automatically start. If it does not open the USB drive and run setup.exe.

Follow the instructions below to set up the software.

3.1 Setting up the Application Software

- Read and accept the agreement
- Choose the software which is needed for the specific product
- Press **Install** to initiate the process

3.2 Launching the Application Software

Once installed, Easidew configuration software can be found in the start menu as follows:

Start > Michell Instruments > Easidew Configuration Software > Easidew Configuration Software

3.3 Product Software Structure

The Easidew Configuration Software main screen is shown below.

- Temperature unit and sensor read options (see Section 3.3.1)
- Communication setup (see Section 3.3.2)
- Parameter modification (see section 3.3.3)
- Measured parameter display (see section 3.3.4)

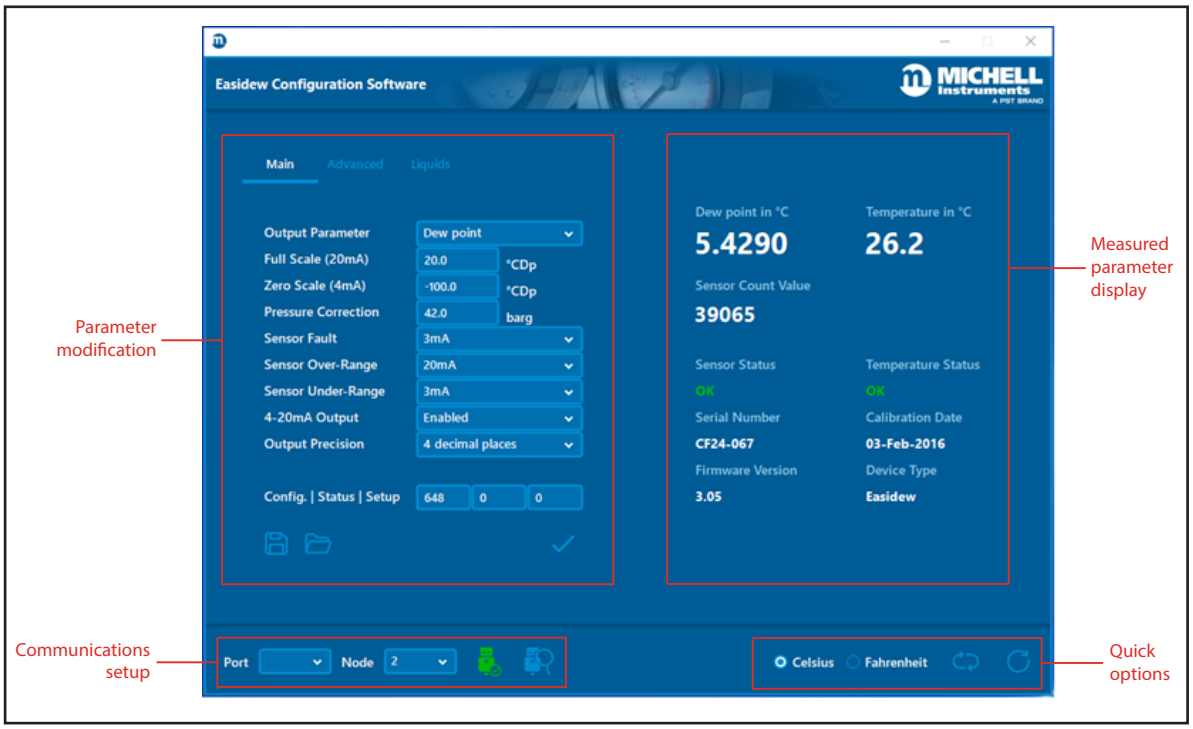


Figure 5 *Configuration software screen*

To view software information, click on the Michell Instruments logo in the top right corner.

3.3.1 Temperature Unit and Sensor Read Options

The options bar allows control of various software features.

Figure 6 *Temperature Unit and Read Options*

Temperature Unit

The fundamental Easidew 2-Wire Transmitter temperature unit is °C. This applies to both dew-point and temperature readings. However, the Configuration Software provides a °F option for viewing the temperatures in °F, where the software performs the °C to °F conversion.

Select the °C radio button to view temperature values in °C, or the °F radio button to view temperature values in °F.

Sensor Read

There are two read (refresh values) options: single or continuous. Clicking the Single Read button performs a single read; the Continuous Read button latches on or off. A continuous read refreshes the on-screen values around every 1.5 seconds.

3.3.2 Communication setup

There are two ways to connect to the Easidew 2-Wire Transmitter: manually or automatically.

To connect manually, select the serial port, enter the node and click the Manual Connect button.

To connect automatically, click the Automatic Connect button.

NOTE: An automatic connection simultaneously scans Modbus nodes 1 to 32 on all existing serial ports until a response is received.

Please disconnect all other Modbus devices from the PC when performing an automatic connection.

Manual Connection Button

Automatic Connection Button

3.3.3 Parameter Modification

Parameter modifications are possible in four separate tabs:

- Main Tab
- Advanced Tab
- Liquids Tab

3.3.3.1 Main Tab

To modify a parameter, either enter a new value or select a predefined value from the drop-down boxes. The parameter which has been modified will turn orange to indicate that a change has been made. Click **Apply** (below left) to apply the change.

For convenience, the Easidew main configuration can be saved to and loaded from a file.

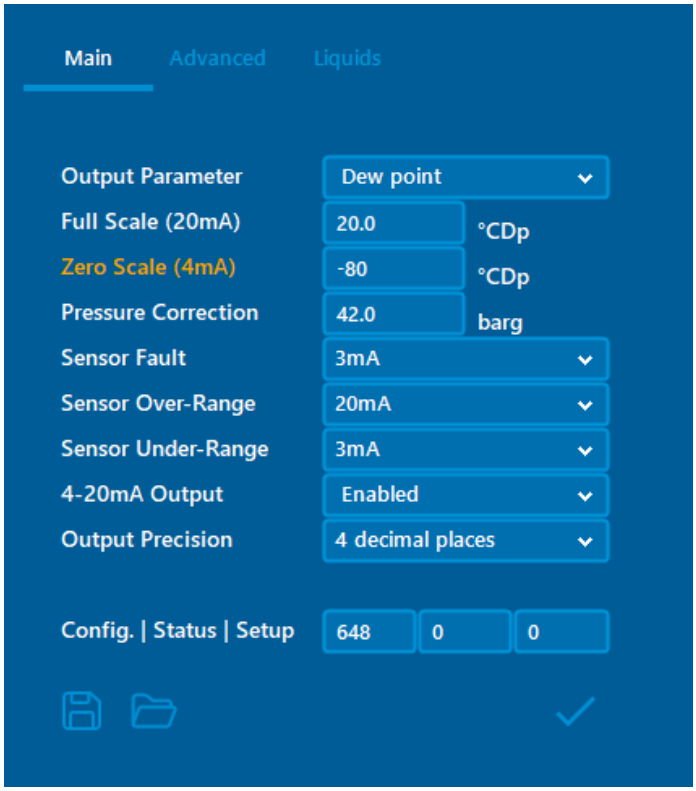


Figure 7 *Main Tab*

Parameter	Available values	Description
Current Output	Dew point, ppm_V, ppm_W, temperature, lb/MMscf, mg/m^3	Changes the parameter in which the sensor will provide its primary current output
Full scale (20 mA)	Numerical	The measured value corresponding to a 20 mA output signal
Zero scale (4 mA)	Numerical	The measured value corresponding to a 4 mA output signal
Pressure Correction	Numerical	This determines the pressure used in the calcualtion of ppm_V **Note: only active when current output = ppm_V**
Sensor Fault	3 mA, 4 mA, 20 mA, 23 mA	Determines the output state used to indicate a sensor fault
Sensor Over-Range	3 mA, 4 mA, 20 mA, 23 mA	Determines the output state used to indicate over range
Sensor Under-Range	3 mA, 4 mA, 20 mA, 23 mA	Determines the output state used to indicate under range
4...20 mA Output	Enabled, Disabled	Enables or disables the current output
Output Precision	1 or 4 decimal places precision	Determines the number of decimal places displayed by the digital output

Table 1 Configuration software screen

3.3.3.2 Advanced Tab

From this tab, the sensor calibration table can be modified (see Section 4.4.1). This is password protected (see Section 3.3.6).

Figure 8 *Advanced Tab*

3.3.3.3 Liquids Tab

In the Liquids tab, saturation constants used to calculate ppm_W in liquids can be viewed and modified.

There is a list of common liquid process media to choose from.

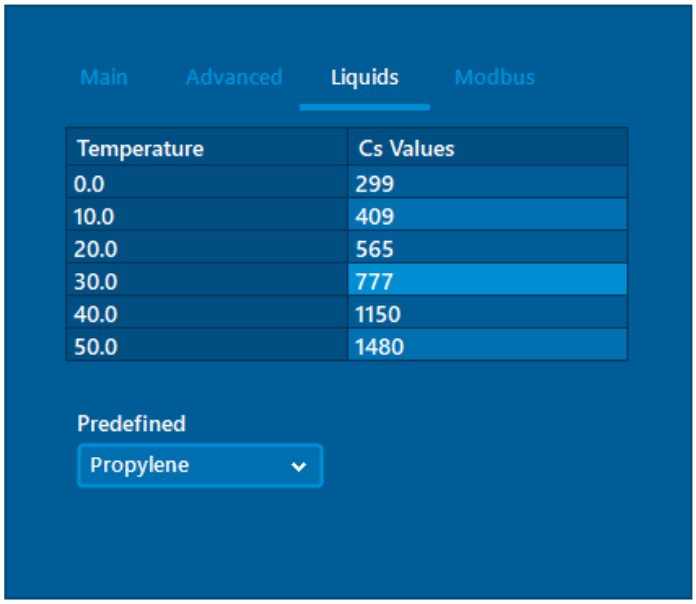


Figure 9 *Liquids Tab*

3.3.4 Measured Parameter Display

The Measured Parameter Display on the right-hand side of the Configuration Software screen contains three main indicators:

- Output parameter
- Temperature value
- Sensor count value

Figure 10 below is an example of the Measured Values section of the software, which details live main parameters, status, serial number, firmware version and calibration date.

The sensor count is a value which represents the working state of the humidity sensor element. The dryer the sample gas, the lower the count value. This can be useful for diagnostics purposes.

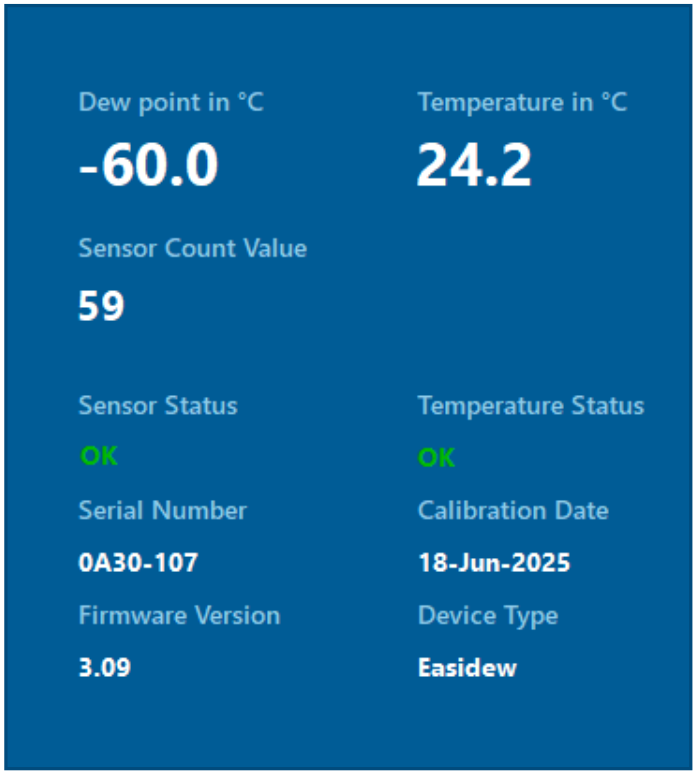


Figure 10 *Measured Parameter Display*

3.3.5 Password-Protected Menu and Advanced Mode

When you access the Advanced tab, a password prompt will appear. Please contact the Michell Application Support team for the password. Click **Apply** to initialize any changes.

This will also allow access to a new Modbus tab. The Modbus tab allows basic registry readings and modifications.

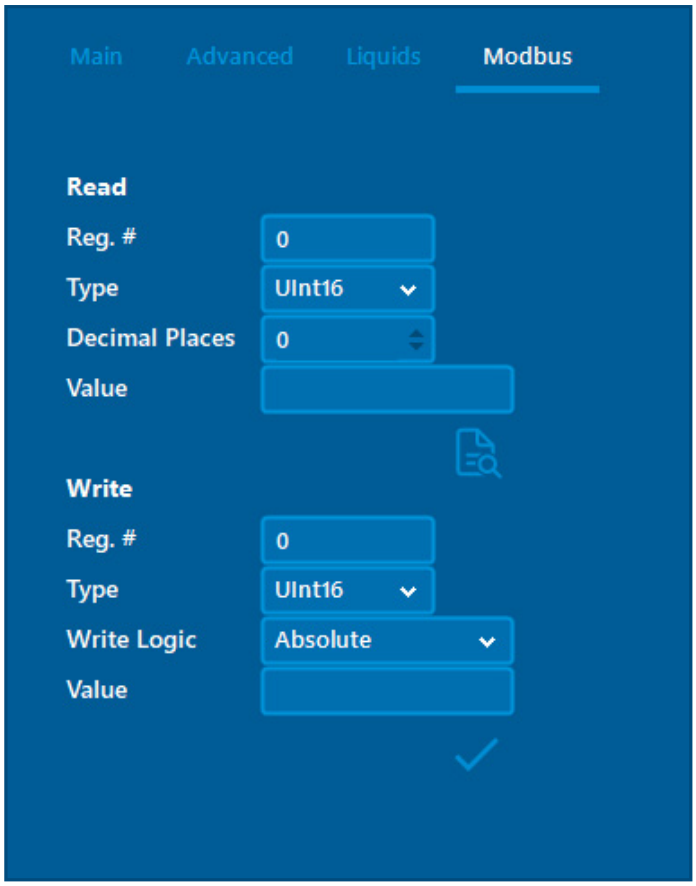


Figure 11 *Modbus Tab*

4 CALIBRATION

Be aware that any adjustments made to the calibration table may affect the transmitter function and accuracy. Special care must be taken when modifying the calibration table.

It is necessary to first understand the calibration method of the Easidew transmitter:

4.1 Transmitter Calibration

The sensor element of an Easidew Transmitter is used as a timing component in a counting circuit. As the dew-point changes, the characteristics of the sensing element change. This, in turn, changes the amount of 'counts' of the counting circuit. Therefore, the sensor's count value is proportional to dew point.

To calibrate the Easidew transmitter it needs to be exposed to a number of reference dew points at around 10ºC steps. The counting circuit will produce different count values at these dew points, producing an overall table of count values versus dew -point for the specific transmitter. Once acquired, the table is programmed into the transmitter's flash memory, which it uses to calculate and produce a dew-point output when in normal operation.

4.2 Humidity Settling Times

Connect the Easidew transmitter to a suitable dew-point generator with reference hygrometer (preferably chilled-mirror type with traceable calibration). Purge the Easidew transmitter for a minimum of 5 days with air that is dryer than –100ºCdp before commencing the calibration.

Increase the generator set point in steps of 10ºCdp, moving sequentially up the Easidew transmitter measurement range from –100 to +20ºCdp. Suitable stabilization periods should be allowed between changing the generator setting and taking the final sensor count and reference hygrometer values. Actual stabilization times will depend to a degree on the type of generator used, the gas flow rate and the integrity of the pipe work and sensor manifold. As a rule of thumb it is strongly suggested that the following stabilization times are taken as a minimum requirement:

Dew-Point Temperature ºCdp	Minimum Stabilization Time
-100	5 days
-90	12 hours
-80	10 hours
-70	8 hours
-60	4 hours
-50	2 hours
-40	1 hour
-30	1 hour
-20	1 hour
-10	1 hour
0	1 hour
+10	1 hour
+20	1 hour

Table 2 Humidity Settling Times

If calibration is being carried out over a range wetter than -100ºCdp then the purge times can be reduced:

Drier than -70ºCdp	5 days
-41ºCdp to -69ºCdp	64 hours
+20ºCdp to -40ºCdp	16 hours

The purge gas should be as dry as possible and ideally 10ºCdp drier than the driest dew point calibrated at. The recommended stabilization times listed in Table 2 should still be followed when changing from one dew point to the next.

The application software allows both reading and writing of the transmitter calibration table, as well as reading a live count value. Therefore all the features of a manual calibration facility are present.

4.3 Sensor Count Value

Click the **Read and Display** button (bottom right-hand corner). The Configuration Software screen displays all transmitter information.

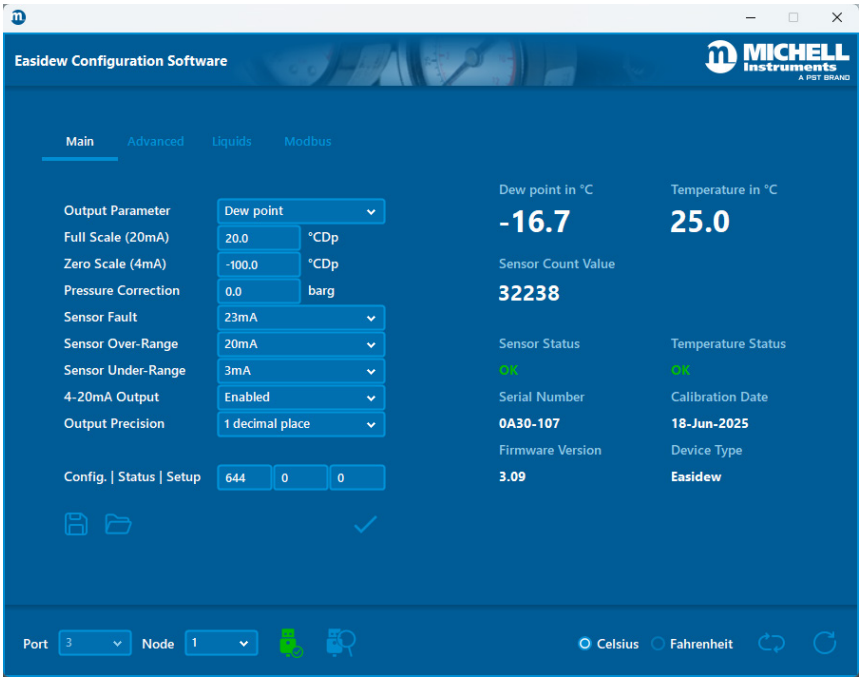


Figure 12 *Configuration Software Screen*

4.4 ppm(W) Moisture in Liquids

To modify a value, click on the required cell in the table and type in the modification.

The Cs (Solubility characteristic) value which has been modified will turn orange in color to indicate that a modification has occurred on-screen and is pending an upload to the sensor.

Either, choose a predefined setting (for some common liquids) or enter a user-defined solubility characteristic value in ppm_W over the temperature range 0 to +50ºC (+32 to +122ºF).

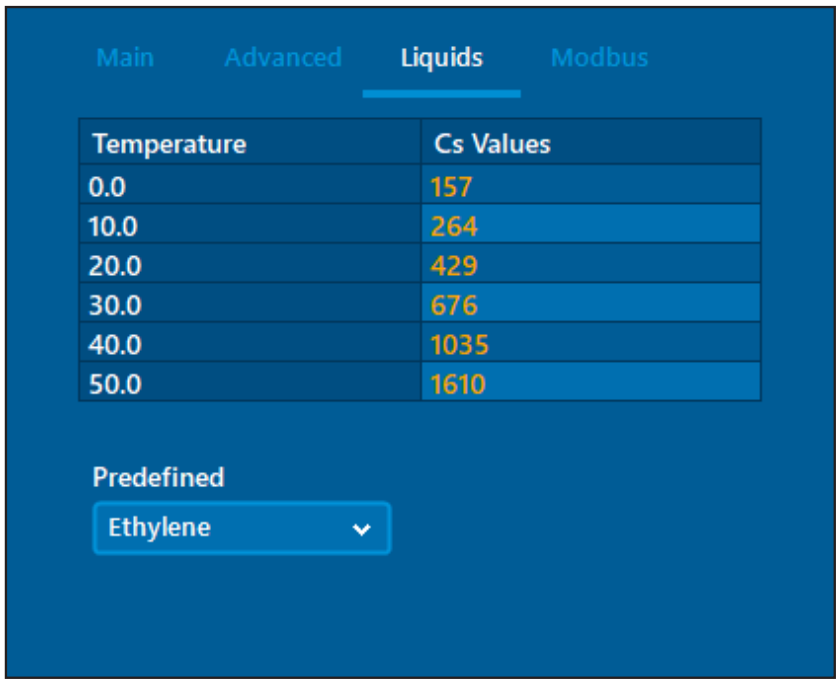


Figure 13 *Solubility Characteristics Table*

5 TROUBLESHOOTING

5.1 Connection Error

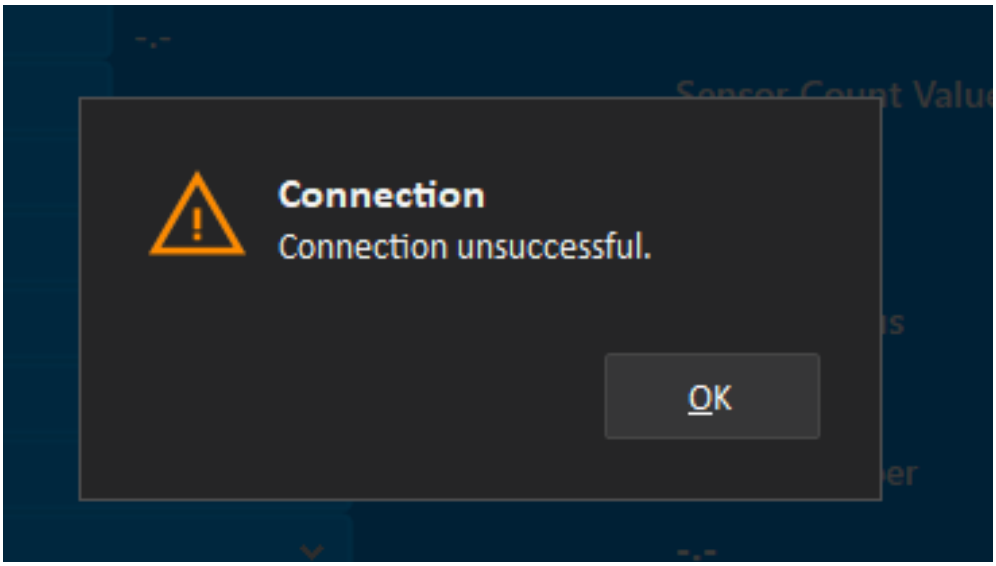


Figure 14 *Connection Error Message*

Possible Causes:

- Transmitter not connected
- The transmitter is not a 2-wire transmitter
- Incorrect port number chosen
- Port does not exist
- Port is being used by another application
- Faulty hardware

NOTE: If any of the information above does not solve the problem, please contact Michell Instruments' technical support team at www.ProcessSensing.com).

Appendix A

Driver Installation Instructions

Appendix A Driver Installation Instructions

The Comms Kit should automatically install upon connection with a computer. However, if there are any difficulties or the driver cannot be found the latest versions of drivers are available from:

http://www.ftdichip.com/Drivers/VCP.htm

Installation procedures for a specific version of Windows may also be found at

http://www.ftdichip.com/Support/Documents/InstallGuides.htm

The Comms Kit should appear in Windows Device Manager after successful installation.

Appendix B

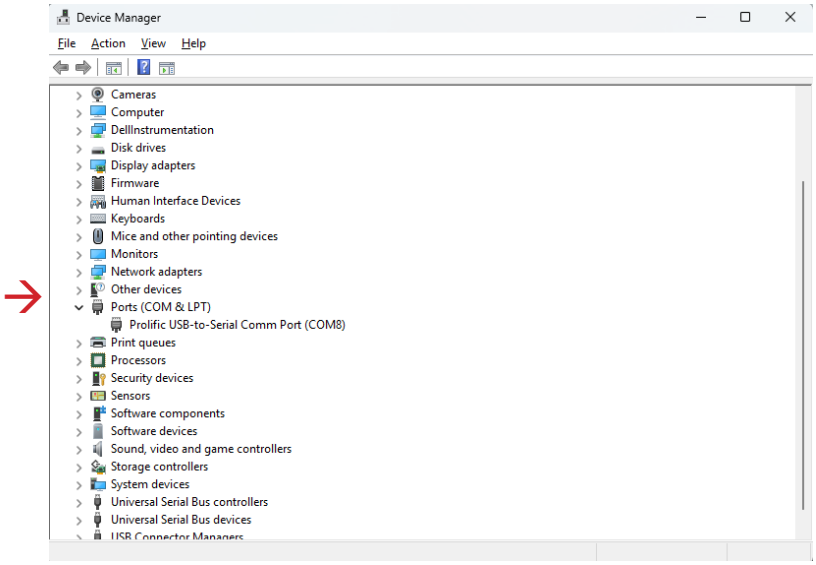
Communications Port Connections

Appendix B Communications Port Connections

The communications port that the Comms Kit is associated with can be located by going to:

Windows Device Manager

1. Click Start, and then click Control Panel.
2. Click Hardware and Sound.
3. Click Device Manager



4. Note Comm number for application software.

Appendix C

Quality, Recycling Compliance & Warranty Information

Appendix C Quality, Recycling, Compliance & Warranty Information

Michell Instruments is dedicated to complying to all relevant legislation and directives. Full information can be found on our website at:

www.ProcessSensing.com/en-us/compliance/

This page contains information on the following directives:

- Anti-Facilitation of Tax Evasion Policy
- ATEX Directive
- Calibration Facilities
- Conflict Minerals
- FCC Statement
- Manufacturing Quality
- Modern Slavery Statement
- Pressure Equipment Directive
- REACH
- RoHS
- WEEE
- Recycling Policy
- Warranty and Returns

This information is also available in PDF format.

Appendix D

Return Document & Decontamination Declaration

Appendix D Return Document & Decontamination Declaration

Decontamination Certificate

IMPORTANT NOTE: Please complete this form prior to this instrument, or any components, leaving your site and being returned to us, or, where applicable, prior to any work being carried out by a Michell engineer at your site.

Instrument			Serial Number	
Warranty Repair?	YES	NO	Original PO #	
Company Name			Contact Name	
Address				
Telephone #			E-mail address	
Reason for Return /Description of Fault:				

Has this equipment been exposed (internally or externally) to any of the following? Please circle (YES/NO) as applicable and provide details below		
Biohazards	YES	NO
Biological agents	YES	NO
Hazardous chemicals	YES	NO
Radioactive substances	YES	NO
Other hazards	YES	NO

Please provide details of any hazardous materials used with this equipment as indicated above (use continuation sheet if necessary)		
Your method of cleaning/decontamination		
Has the equipment been cleaned and decontaminated?	YES	NOT NECESSARY

Michell Instruments will not accept instruments that have been exposed to toxins, radio-activity or bio-hazardous materials. For most applications involving solvents, acidic, basic, flammable or toxic gases a simple purge with dry gas (dew point <-30°C) over 24 hours should be sufficient to decontaminate the unit prior to return.
Work will not be carried out on any unit that does not have a completed decontamination declaration.

Decontamination Declaration

I declare that the information above is true and complete to the best of my knowledge, and it is safe for Michell personnel to service or repair the returned instrument.

Name (Print)		Position	
Signature		Date	

MICHELL Instruments

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