



Easidew/Pura Universal Comms Kit Service Manual



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Easidew/Pura Universal Comms Kit



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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 details of Michell Instruments' worldwide offices contact information please go to www.michell.com.

Safety Conformity

This product meets the essential protection requirements of the relevant EU directives.

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 configured 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 calibration table may also be modified (see Section 4.5).

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 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 XP or higher. If installation is not successful please refer to Appendix A for driver installation instructions.

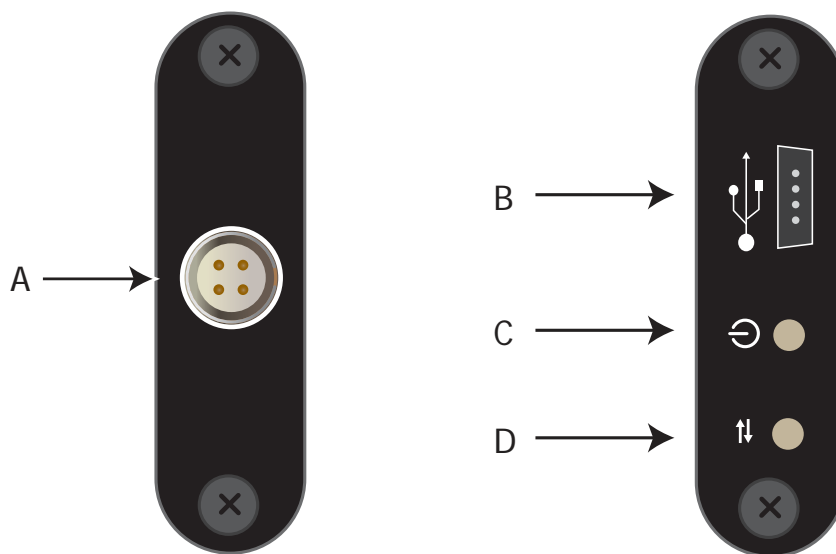
The minimum PC requirements for the configuration software are:

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

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*

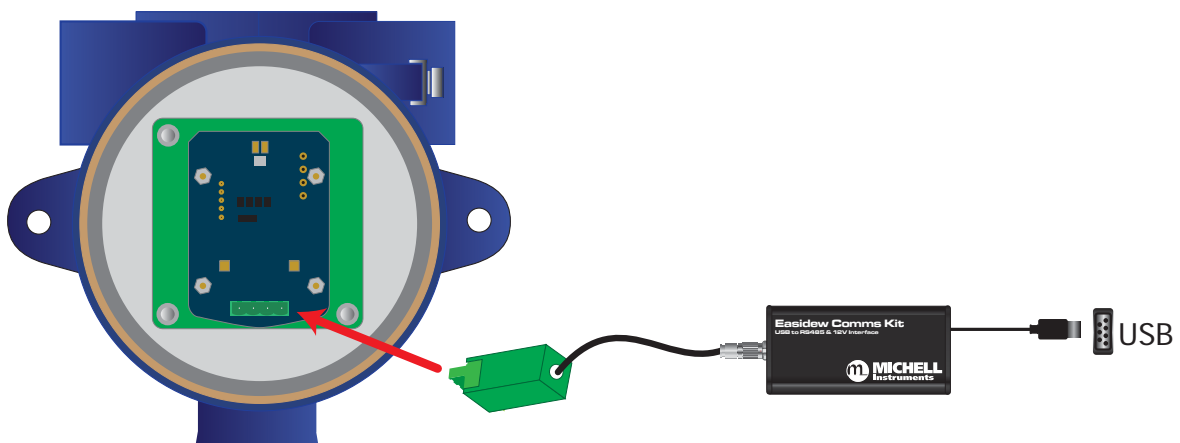


Figure 3 *Connection to Easidew PRO XP*

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.

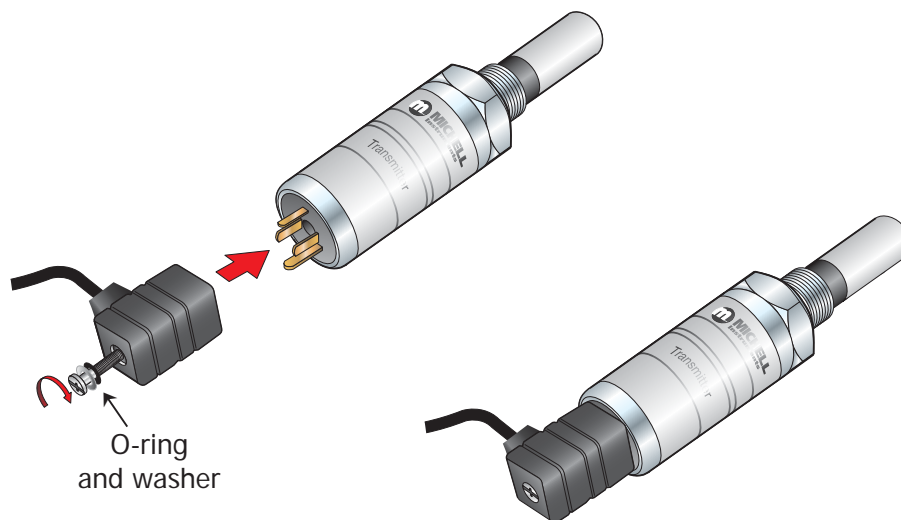


Figure 4 Connector Installation

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 the Easidew application software has installed, follow the list of prompts below:

Start > All Programs > Michell Instruments > Easidew (2 wire)
Configuration Software > Easidew Configuration Software

3.3 Product software structure

The main configuration software screen will open when the software first loads (Figure 5). It is divided into five main sections:

- Options (see section 3.3.1)
- Communications setup (see section 3.3.2)
- Parameter modification (see section 3.3.3)
- Measured parameter display (see section 3.3.4)
- Progress and status bar (see section 3.3.5)

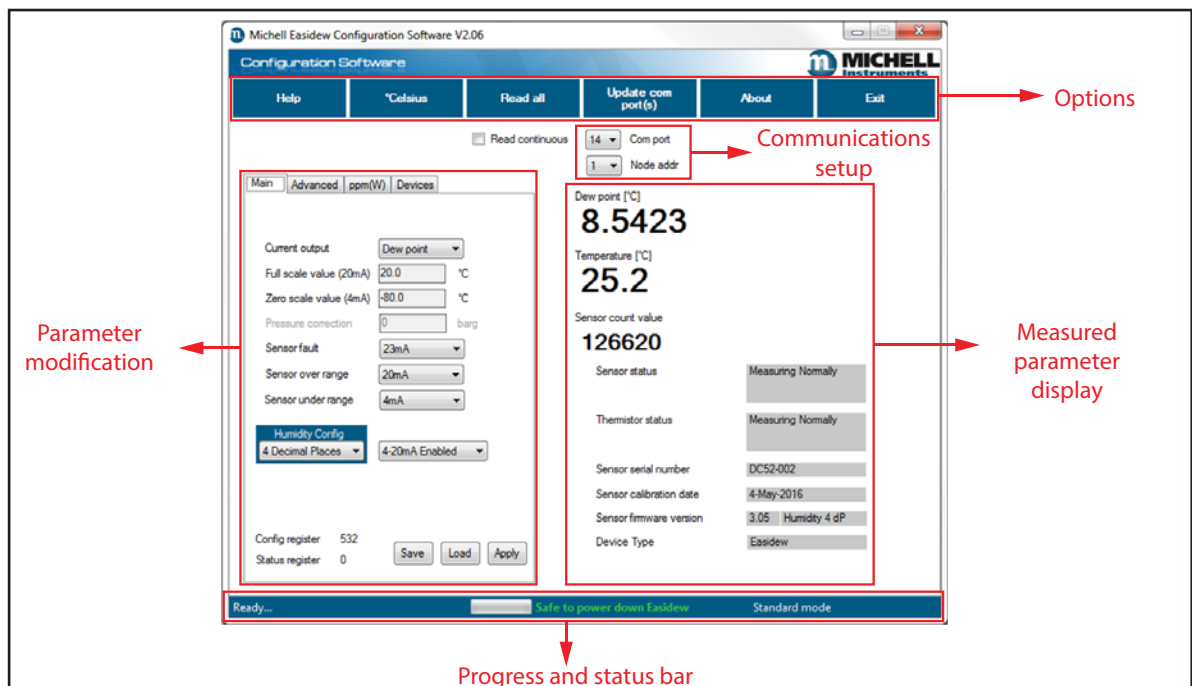


Figure 5 Configuration software screen

3.3.1 Options

The options bar allows control of various software features.



Figure 8 Options

Parameter	Descriptions
Help	Opens the software help screen
Celsius / Fahrenheit	Toggle between degrees C and degrees F temperature measurement
Read all	Reads and displays the transmitter information on the Configuration Software Screen. There is a tick box option which enables the software to update the readings every 3 seconds
Update com port(s)	Reads all currently open comm ports. Use this to refresh the list if Comms Kit is connected when software is already open.
About	Displays information about the software
Exit	Closes the application software

Table 1 Options

3.3.2 Communication setup

To connect a new transmitter, select the communications port number that the comms kit is connected to. Unless the Modbus Node address of the sensor to be tested has been changed previously, it will be set to 1 by default.

Changing the Node address in the Register map screen allows up to 31 devices to be connected to the same com port. Each address can only be assigned to 1 device

If Windows is unable to install the Comms Kit please refer to Appendix A. If you are unsure which communications port number the Comms Kit is connected to, please refer to Appendix B.

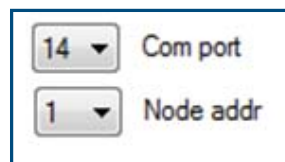


Figure 9 Communications Setup

3.3.3 Parameter Modification

Parameter modifications are possible in four separate tabs:

- Main Tab
- Advanced Tab
- ppm_w (moisture in liquids) Tab
- Devices

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 value which has been modified will turn red in colour to indicate that a modification is required. Click on **Apply** to initialise the change.

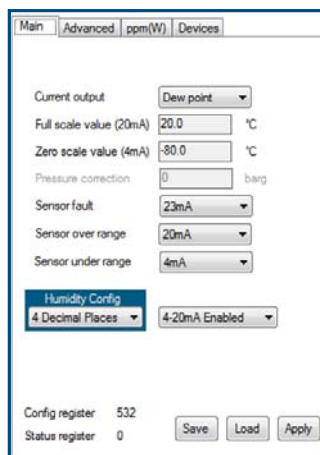


Figure 11 Main Tab

Parameter	Available values	Description
Current output	Dew point, ppm _v , ppm _w , temperature, lb/MMscf	Changes the parameter in which the sensor will provide its primary current output Note: ppm_w & lb/MMscf options are only available in sensor firmware version 2.0 and above
Full scale value (20mA)	Numerical	The measured value corresponding to a 20mA output signal
Zero scale value (4mA)	Numerical	The measured value corresponding to a 4mA output signal
Pressure correction	Numerical	This determines the pressure used in the calculation of ppm _v Note: only active when current output = ppm_v
Sensor Fault	3mA, 4mA, 20mA, 23mA	Determines the output state used to indicate a sensor fault
Sensor over range	3mA, 4mA, 20mA, 23mA	Determines the output state used to indicate over range
Sensor under range	3mA, 4mA, 20mA, 23mA	Determines the output state used to indicate under range
Humidity config	1 decimal place, 4 decimal places	Determines the number of decimal places displayed by the digital output
4-20mA Enabled/ Disabled	4-20mA Enabled, 4-20mA Disabled	Enables or disables the current output

Table 2 Configuration software screen

3.3.3.2 Advanced Tab

From this tab it is possible to modify the sensor calibration table (see Section 4.4.1).

Target dp	Actual dp	Count
-120	-120.0	7100
-110	-110.0	7276
-100	-100.0	7515
-90	-89.1	7635
-80	-79.5	7873
-70	-69.6	8210
-60	-58.7	8794
-50	-49.1	9521
-40	-39.1	10765
-30	-29.0	13404
-20	-19.0	20177
-10	-8.9	31867
0	-0.3	59736
10	12.7	181551
20	21.0	240013
30	30.0	330000

Buttons: Save, Load, Apply

Figure 12 Advanced Tab



As a precaution, it is advisable that the calibration table be saved to disk before proceeding with any editing. The saved table can be recalled and programmed back into the transmitter at a later date should it be required.

3.3.3.3 ppm_w Tab

From this tab it is possible to change the saturation constants used for the calculation of ppm_w in liquids. The Predefined list allows the choice of Cs values for a variety of common liquid process media.

Temperature	CS values
0 (32)	6
+10 (50)	16
+20 (68)	40
+30 (86)	81
+40 (104)	137
+50 (122)	210

Predefined: Methane

Not Available with this version of Easidew Firmware

Apply

Figure 13 ppm_w Tab

3.3.3.4 Devices tab

This tab allows the software to identify all Easidew sensors connected. Click **Scan** to initiate a poll of each Modbus node from 1-31. The list will be populated with the serial number of each sensor connected. A tick box next to each sensor toggles whether or not data from this sensor will be logged.

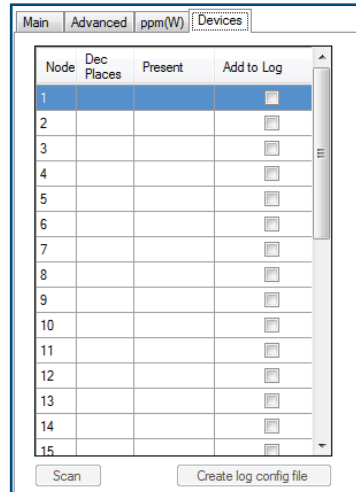


Figure 14 *Devices Tab*

Note: A scan must have been completed to enable data logging

Once the scan has completed, the option of saving a custom datalogging configuration file becomes available. This file will allow the headers of any logging file created to contain sensor serial numbers rather than node addresses. Clicking **Create a log config file** will bring up a prompt to save the file.

3.3.4 Measured Parameter Display

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

- Humidity value
- Temperature value
- Humidity Sensor count value

Below this is information about the humidity sensor, thermistor and firmware version.

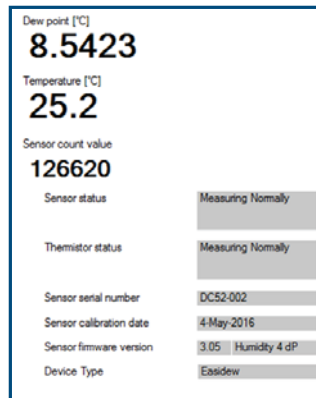


Figure 15 Measured Parameter Display

3.3.5 Progress and Status Bar

The progress and status bar gives details of general information and warnings. Always ensure that 'Safe to power down Easidew' is displayed before disconnecting the sensor.

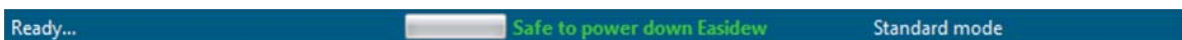


Figure 16 Progress and Status Bar

3.3.6 Advanced mode

To access the Advanced mode options, click on the Michell Instruments logo in the top right side of the Configuration software screen. A password prompt will appear, the password to which is **7316**.

Upon successful password entry the advanced screen will appear, which has two tabs:

- Register Map
- Logging

3.3.6.1 Register map



Be aware that any alterations made to the contents of the Register Map may affect the transmitter functionality. Take great care when altering the contents of any register

This screen allows the editing of the contents of any register in the transmitter's memory.

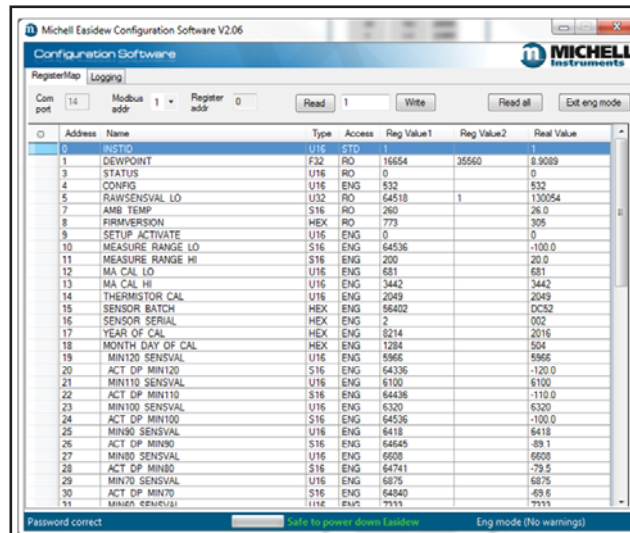


Figure 17 Register Map

Parameter	Available values	Description
Modbus addr	Dropdown 1-31	Changes the Modbus address being read from/written to
Register addr	Not editable	Shows the address of the currently selected register
Read	Click	Reads the currently selected register for the currently selected sensor
Register Contents	Numerical value	On selecting registers from the list, this pane shows the 'real value'. This value can be edited manually
Write	Click	After selecting a register and editing the value in Register Contents, this command writes the contents of the Register Contents to the selected register
Read all	Click	Reads the entire register map for the currently selected sensor
Exit eng mode	Click	Returns to the Configuration software screen

Table 3 Register Map

3.3.6.2 Logging

On selecting the Logging tab, a browse prompt opens to choose a previously saved Log Config File. Opening a file will populate the screen with serial numbers of the sensors identified when that scan was run.

If no Log Config File has been created, choose one of the default config files, which will allow up to 31 sensors to be logged.

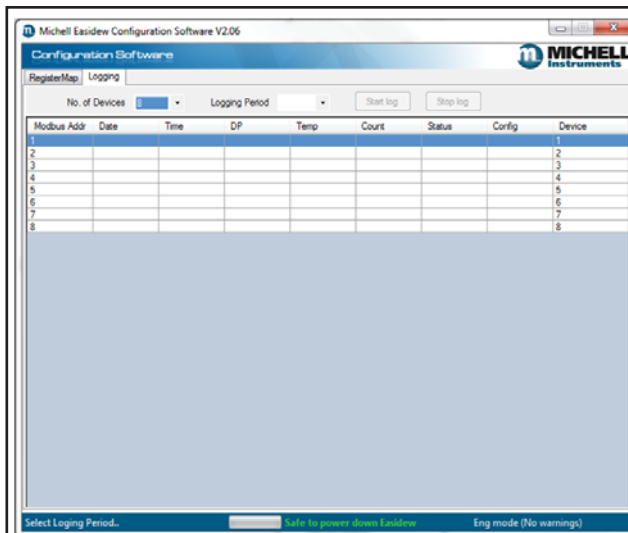


Figure 18 Logging

Parameter	Available values	Description
No. of devices	Dropdown: 1-31	Choose number of devices to be logged
Logging period	Dropdown: 10, 15, 20, 30, 60, 120, 300, 600	Interval in minutes between collection of data
Start log	Click	Starts the logging procedure
Stop log	Click	Stops the logging procedure

Table 4 Logging

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 10°C 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 -100°Cdp before commencing the calibration.

Increase the generator set point in steps of 10°Cdp, moving sequentially up the Easidew transmitter measurement range from -100 to +20°Cdp. 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 °Cdp	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 5 Humidity Settling Times

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

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

The purge gas should be as dry as possible and ideally 10°Cdp 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 All** button (middle of the Options Bar). All transmitter information is displayed on the Configuration Software Screen.

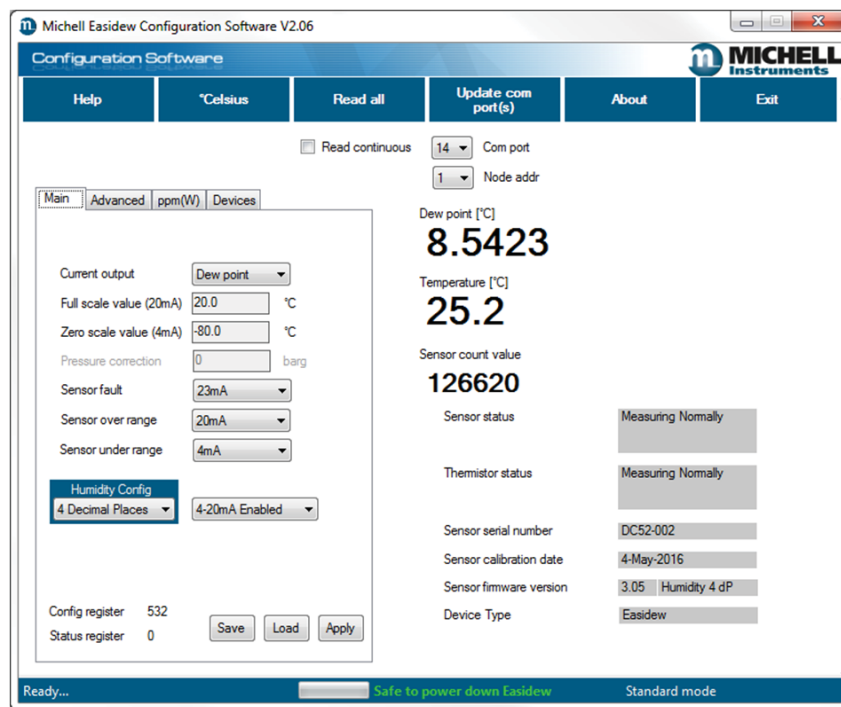


Figure 19 Configuration Software Screen

NOTE: After power-up, allow at least 10 seconds for the transmitter to stabilize before recording the sensor count value. However, if the transmitter is continually powered then it can be recorded immediately.

4.4 Modifying the Calibration Tables



As a precaution, it is advisable that the calibration table be saved to disk before proceeding with any editing. The saved table can be recalled and programmed back into the transmitter at a later date, should it be required.

To save the calibration table to disk, click on the **Advanced** tab on the Configuration Software Screen.

Target dp	Actual dp	Count
-120	-120.0	7100
-110	-110.0	7276
-100	-100.0	7515
-90	-89.1	7635
-80	-79.5	7873
-70	-69.6	8210
-60	-58.7	8794
-50	-49.1	9521
-40	-39.1	10765
-30	-29.0	13404
-20	-19.0	20177
-10	-8.9	31867
0	-0.3	59736
10	12.7	181551
20	21.0	240013
30	30.0	330000

Figure 20 Calibration Table Screen

Click the **Save** button to save the calibration table to disk (the files are saved with an extension of .EasiTable).

To load a calibration table from disk into the software, click the **Load** button.

NOTE: The first time an attempt is made to edit the calibration table, the software will ask you to provide the activation password 7316.

1. Enter the password **7316**.
2. Create a new password, following the instructions on the screen. Once created, subsequent attempts to edit the table will require the new password to be entered before changes can take place. The user-defined password protects the transmitter against any unauthorized calibration table editing.

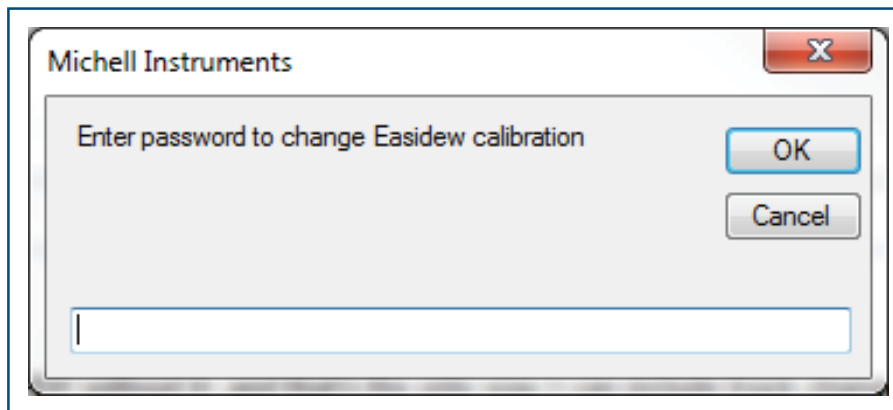


Figure 21 Password Screen

4.4.1 Dew-Point Calibration Table

To modify a value, click on it and type in the new value.

The text of a dew point or count value which has been modified will turn red in color to indicate that a modification has occurred on-screen and is pending an upload to the sensor.

Target dp	Actual dp	Count
-120	-120.0	7100
-110	-110.0	7276
-100	-100.0	7515
-90	-89.1	7635
-80	-79.5	7873
-70	-69.6	8210
-60	-58.7	8794
-50	-49.1	9521
-40	-39.1	10765
-30	-29.0	13404
-20	-19.0	20177
-10	-8.9	31867
0	-0.3	59736
10	12.7	181551
20	21.0	240013
30	30.0	330000

Save Load Apply

Figure 22 Calibration Table with a Modified -100dp

4.5 Rules on Modifying the Calibration Table

By modifying the calibration table it is possible to extrapolate the dew-point settings outside of the transmitter's standard operational range.

For example - standard ranges for Easidew Transmitter -100 to +20°Cdp or Pura Transmitter -120 to -40°Cdp.

The calibration table values must conform to a set of rules. The rules are as follows:

- The transmitter is designed to work most accurately with a calibration table consisting of 'actual dew-points' being as close to the 'target dew-points' as possible. Target dew points are from -120 to +30°Cdp in exactly 10°Cdp steps.
- Actual dew-points other than exact multiples of 10 may be applied, but, for best results, use calibration points as near to the respective targets as possible.
- Dew-points MUST go from dry to wet from the top of the table to the bottom.
- Adjacent count values must be different by at least 100 counts over the dew-point range -80 / +30°Cdp and at least 10 counts different from -120 / -80°Cdp.
- Count values must go from lowest to highest from the top of the table to the bottom.
- Count values MUST NOT be less than 2800 (12800 for sensors that have firmware versions of <= 1.2).
- If the (-100) count value is to be modified, then the (-110) and (-120) point count values need to be adjusted as follows:

$$x = ((-90 \text{ count value}) - (-100 \text{ count value})) / 1.5$$

and

$$y = x / 1.5$$

$$\text{New } (-110) \text{ count value} = (-100) \text{ count value} - x$$

$$\text{New } (-120) \text{ count value} = \text{new } (-110) \text{ count value} - y$$

Example:

Target dp	Actual dp	Count
-120	-120.0	7100
-110	-110.0	7276
-100	-100.0	7515
-90	-89.1	7635
-80	-79.5	7873
-70	-69.6	8210

$$x = (2793 - 2717) / 1.5 \quad x = 51$$

$$y = 51 / 1.5 \quad y = 34$$

$$\text{New } -110 \text{ count} = 2717 - 51 = 2666$$

$$\text{New } -120 \text{ count} = 2666 - 34 = 2632$$

Putting this procedure into words:

To obtain a new (-110) count value, take the count difference of (-100) and (-90), divide it by 1.5 and subtract the answer from the (-100) count value.

To obtain a new (-120) count value, take the count difference of (-100) and (-90), divide it by 1.5, then divide it by 1.5 again and subtract the answer from the new (-110) count value.

If the +20 count value is to be modified, then the +30 count value needs to be adjusted as follows:

$$x = ((+20 \text{ count value}) - (+10 \text{ count value})) * 1.5 \quad \text{New } +30 \text{ count} = (+20 \text{ count}) + x$$

4.6 ppm(W) Moisture in Liquids

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

The Cs (Solubility characteristic) value which has been modified will turn red 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 +50°C (+32 to +122°F).

Temperature	CS values
0 (32)	6
+10 (50)	16
+20 (68)	40
+30 (86)	81
+40 (104)	137
+50 (122)	210

Predefined
Methane

Not Available with this version of Easidew Firmware

Apply

Figure 23 Solubility Characteristics Table

5 TROUBLESHOOTING

5.1 Connection Error



Figure 24 *Connection Error Message*

Possible Causes:

- Incorrect port number chosen
- Port does not exist
- Port is being used by another application
- Faulty hardware

5.2 Read All Error

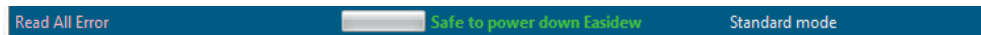


Figure 25 *Sensor Read Error Message*

Possible Causes:

- 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 (www.michell.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

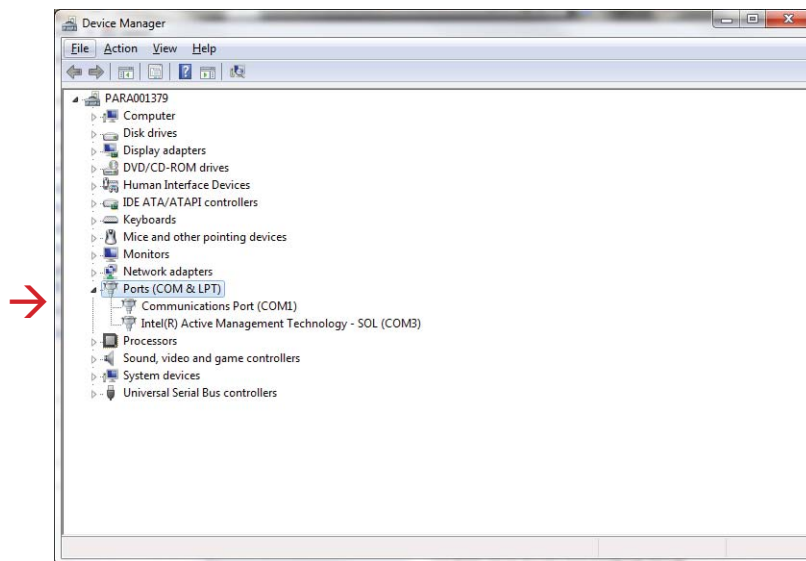
Communications Port Connections

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

EU Declaration of Conformity

Appendix C EU Declaration of Conformity

EU Declaration of Conformity



Manufacturer: **Michell Instruments Limited**
 48 Lancaster Way Business Park
 Ely, Cambridgeshire
 CB6 3NW. UK.



On behalf of the above named company, I declare that, on the date that the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives.

Easidew Comms Kit

complies with all the essential requirements of the EU directives listed below.

2004/108/EC EMC Directive

and (effective from 20th April 2016)

2014/30/EU EMC Directive

and (effective from 22nd July 2017)

2011/65/EU Restriction of Hazardous Substances Directive (RoHS2)

RoHS2 EU Directive 2011/65/EU (Article 3, [24]) states, "*industrial monitoring and control instruments means monitoring and control instruments designed exclusively for industrial or professional use*". (mandatory compliance effective date 22nd July 2017).

and has been designed to be in conformance with the relevant sections of the following standards or other normative documents.

EN61326-1:2013 Electrical equipment for measurement, control and laboratory use – EMC requirements – Class B (emissions) and Industrial Locations (immunity).

EN61010-1:2010 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements

Andrew M.V. Stokes, Technical Director

Date of Issue: Jan 2016

EUD EAComm Issue 01

Appendix D

Quality, Recycling & Warranty Information

Appendix D Quality, Recycling & Warranty Information

D.1 Pressure Equipment Directive (PED) 97/23/EC

The above Directive has been implemented in United Kingdom Law by the Pressure Equipment Regulations 1999.

The Regulations require that all pressure equipment and assemblies within the scope of the Pressure Equipment Directive must be safe when placed on the market or put into service.

Michell Instruments' products have been assessed and, as referenced against the Classification Charts detailed in Annex II of the Directive, do not fall into the requirements for CE marking compliance with the Pressure Equipment Directive.

Article 3, paragraph 3 states that any product containing a pressurized fluid that does not qualify for compliance should, nevertheless, be constructed with Sound Engineering Practice (SEP).

Michell Instruments attests here that its products have been designed, manufactured & tested to assure safe operation, and in accordance with Sound Engineering Practices.

D.2 Recycling Policy



Michell Instruments is concerned with the protection of the environment. It is our commitment to reduce and eliminate from our operations, wherever possible, the use of substances which may be harmful to the environment. Similarly, we are increasingly using recyclable and/or recycled material in our business and products wherever it is practical to do so.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle responsibly. If batteries are not properly disposed of, these substances can cause harm to human health and the environment.

The product that you have purchased may contain recyclable and/or recycled parts and we will be happy to provide you with information on these components if required. For further information please see the following sections.

D.3 WEEE Compliance

Directive 2012/19/EU 4 July 2012 on Waste Electronic and Electrical Equipment (WEEE)

The Waste Electronic and Electrical Equipment (WEEE) Directive places rules upon European manufacturers of electrical and electronic equipment. The directives' aim is to reduce the impact that electronic devices have on the environment.

Michell Instruments is in full compliance with the WEEE Directive and is registered with an approved recycler (Registration No. WEE/JB0235YW) and treats the requirement of the directive and the protection of the environment with the utmost importance. All Michell Instruments' products are appropriately marked indicating their requirement for recycling.

It may be required to return certain instruments for treatment at the end of their working life.

Feb 2013

D.4 RoHS2 Compliance

Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011

The Restriction of Hazardous Substances (RoHS) Directive places rules upon European manufacturers of electrical and electronic equipment. The directives' aim is to reduce the impact that electronic devices have on the environment.

According to the EC Directive 2002/95/EC, Michell Instruments' products qualify as Category 9, Control and Monitoring Equipment. Under the 2002/95/EC Directive, Category 9 products are exempt from compliance with the Directive.

However, the careful design of all Michell Instruments' products takes into consideration the requirements of the Directive and, wherever possible, compliance is achieved. All future products will be developed entirely using compliant materials. Furthermore, Michell Instruments is taking active steps to remove non-compliant materials and components from existing products wherever these may occur. Presently, none of the non-compliant materials are known to occur in Michell Instruments' products.

The new Directive 2011/65/EU (RoHS2) entered into force on 21 July 2011 and required all Member States to transpose the provisions into their respective national laws by 2 January 2013.

Under the provisions of the RoHS2 EU Directive 2011/65/EU (Article 3, [24]) defines 'Control and Monitoring Equipment' specifically as 'monitoring and control instruments designed exclusively for industrial or professional use'.

RoHS2 EU Directive 2011/65/EU states the closing date for compliance of any Control and Monitoring Equipment product sold into the EU market place as 22nd July 2017.

However, the careful design policy of all Michell Instruments' products continues to attain compliance in the shortest practical timescales and strives to ensure that less than 0.1% of total mass per product, of all non-compliant materials, appear within them. Michell Instruments continues to monitor suppliers and material sources to ensure that compliance of goods provided is maintained.

January 2013

D.5 Warranty

Unless otherwise agreed, the Supplier warrants that, as from the date of delivery for a period of 12 months, the goods and all their component parts, where applicable, are free from any defects in design, workmanship, construction or materials.

The Supplier warrants that the services undertaken shall be performed using reasonable skill and care, and be of a quality conforming to generally accepted industry standards and practices.

Except as expressly stated, all warranties whether express or implied, by operation of law or otherwise, are hereby excluded in relation to the goods and services to be provided by the Supplier.

All warranty services are provided on a return to base basis. Any transportation costs for the return of a warranty claim shall reside with the Customer.

D.6 REACH Compliance

Regulation (EC) No. 1907/2006

Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Michell Instruments is a manufacturer of moisture measurement and gas analysis instrumentation and is a 'downstream' user of chemicals, as described by the EU Council Directive 76/769/EEC. The products we supply are not raw chemical products (goods).

Under normal and reasonably foreseeable circumstances of application, the goods supplied to you shall not contain or release any prohibited chemicals. No listed SVHC (Substances of Very High Concern) appear within products manufactured by Michell Instruments. Therefore the 0.1% mass per product, or total usage of 1 tonne/year, will never be exceeded. For these reasons we are neither required by obligation for registration nor for the creation of material safety data sheets (MSDS) for our products.

Our continued review of the SVHC Candidate List and latest additions is to ensure we remain compliant.

Michell Instruments maintains a hazardous material register in which MSDS data sheets are collated, and we will check that our suppliers will comply to REACH requirements for all materials and substances we use in the processes of our manufacturing.

In the unlikely event that any chemicals of concern appear in our products in quantities greater than 0.1% of total mass per product we will immediately inform you by correspondence according to the REACH Article 33 requirements. Our current appraisal is, however, that we do not expect or foresee such an incidence.

January 2013

D.7 Return Policy

If a Michell Instruments' product malfunctions within the warranty period, the following procedure must be completed:

1. Notify a Michell Instruments' distributor, giving full details of the problem, the model variant and the serial number of the product.
2. If the nature of the problem indicates the need for factory service then the instrument should be returned to Michell Instruments, carriage prepaid, preferably in the original packaging, with a full description of the fault and the customer contact information.
3. Upon receipt, Michell Instruments will evaluate the product to determine the cause of the malfunction. Then, one of the following courses of action will be taken:
 - If the fault is covered under the terms of the warranty, the instrument will be repaired at no cost to the owner and returned.
 - If Michell Instruments determines that the fault 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 product will be repaired and returned.

D.8 Calibration Facilities

Michell Instruments' calibration facilities are among the most sophisticated in the world and have been recognized for their excellence.

Traceability to the National Physical Laboratory (NPL) UK is achieved through our UKAS Accreditation (Number 0179). This covers dew point over the range -90 to +90°C (-130 to +194°F) and also Relative Humidity.

Dew-point calibrations are also traceable to the National Institute for Standards & Technology (NIST) USA over the range -75 to +20°C (-103 to +68°F).

NOTE: Standard traceable calibration certificates for instruments and sensors are not issued under our UKAS accreditation. UKAS certificates are usually to special order and are clearly identified.

D.9 Manufacturing Quality

Michell Instruments is registered with the British Standards Institute for Quality Assurance to:

BS EN ISO 9001: 2008

Rigorous procedures are performed at every stage of production to ensure that the materials of construction, manufacturing, calibration and final test procedures meet the requirements laid down by our BSI approved Quality System.

Please contact Michell Instruments (www.michell.com) if the product does not arrive in perfect working order.

D.10 FCC (EMC Requirements for North America)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. This product must be operated as per the operating instructions provided. Do not make any alterations or modifications to the product. Any unauthorized alterations or modifications made to this product may require you to stop operating the product.

Canadian Radio Interference Regulations.

This Class A digital product complies with Canadian ICES-001. Règlement canadien sur les interférences radio. Ce produit numérique de classe A est conforme à la norme NMB-001.

Appendix E

Return Document & Decontamination Declaration

Appendix E 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	



<http://www.michell.com>