MICHELL Instruments

Easidew PRO I.S.
Process Dew-Point Transmitter
User's Manual

97130 Issue 13.4
March 2016

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

Use this information when contacting Michell Instruments for service purposes.

Transmitter	
Code	
Serial Number	
Invoice Date	
Location of Instrument	
Tag No	

Transmitter	
Code	
Serial Number	
Invoice Date	
Location of Instrument	
Tag No	

Transmitter	
Code	
Serial Number	
Invoice Date	
Location of Instrument	
Tag No	

Easidew PRO I.S.

For Michell Instruments' contact information please go to
www.michell.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.

Pressure Safety

DO NOT permit pressures greater than the safe working pressure to be applied to the instrument. The specified safe working pressure is 45 MPa (450 barg / 6500 psig). Refer to Appendix A, Technical Specifications.

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. Refer to www.michell.com for details of Michell Instruments' worldwide offices contact information.

Calibration

The recommended calibration interval for the Easidew PRO I.S. is 12 months. The instrument should be returned to Michell Instruments or one of their accredited service agents for re-calibration.

Safety Conformity

This product meets the essential protection requirements of the relevant EU directives. Further details of applied standards may be found in the Technical Specifications, Appendix A.

Abbreviations

The following abbreviations are used in this manual:

bara	bar absolute
barg	pressure unit (=100 kP or 0.987 atm) gauge
°C	degrees Celsius
°F	degrees Fahrenheit
DC	direct current
µm	micro-meter
lbf-ft	pound foot
Nl/min	normal liters per minute
mA	milliampere
Mpa	megapascal
m/sec	meters per second
mW	milli Watts
nF	nano-Farad
Nm	Newton meter
ppm_v	parts per million by volume
RH	relative humidity
scfh	standard cubic feet per hour
scfs	standard cubic feet per second
V	Volts

Warnings

The following general warning listed below is applicable to this instrument. It is 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 Easidew PRO I.S. has been manufactured, tested and calibrated to the highest available standards and should arrive in perfect working order, ready for installation into a gas or liquid measurement application.

For questions about the instrument or how to install and operate it, contact your local representative. Refer to www.michell.com for details of Michell Instruments' worldwide offices' contact information.

1.1 Features

The Easidew PRO I.S. is a continuous, on-line, 4-20 mA transmitter for the measurement of moisture content in air, other non-corrosive gases and non-polar liquids. It is designed specifically for use within Zone 0, 1 & 2 hazardous areas.

Its key features are:

- Measurement range -110 to +20°Cdp (-166 to +68°Fdp)
- Moisture in gases (ppm_V) or liquids (ppm_W)
- Hazardous area certifications (ATEX, IECEx, FM, CSA, GOST)
- Calibration certificate (UKAS and NIST)
- Accuracy ±1°Cdp
- 2-wire and linear 4-20 mA output
- Non-standard outputs configurability

2 INSTALLATION

2.1 Unpacking the Instrument

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

- Easidew PRO I.S. Transmitter
- Bonded seal
- Certificate of calibration
- 3 off cable crimps
- Mounting bracket (optional)

The Easidew PRO I.S. is protected within the main packaging by a blue cap covering the transmitter connector and a small desiccant capsule installed inside the plastic protective transit cover. Neither of these items is required for the operation of the Easidew PRO I.S.

Prior to installation of the Easidew PRO I.S., unscrew and remove the plastic protective transit cover and retain for future use. Take care to prevent any contamination of the transmitter before installation. **NOTE: Do not handle the sintered guard.**

2.2 Transmitter Mounting

The Easidew PRO I.S. Transmitter can be mounted either in a flow-through sampling block (optional extra) or directly inserted into a pipe or duct and can be operated at pressures up to 45 MPa (450 barg / 6500 psig) when fitted with the bonded seal provided.

For mounting instructions see Sections 2.2.2 or 2.2.3.

When installed, fully tighten using a wrench until the seal is fully compressed and to the following torque settings:

- 5/8" - 18 UNF 30.5 Nm (22.5 ft-lbs)

The recommended fluid flow rate, when mounted in the optional sampling block, is 1 to 5 Nl/min (2.1 to 10.6 scfh). However, for direct insertion applications, fluid flow can be from static to 10 m/sec (32.8 fps).

After installation into the flow stream, the Easidew PRO I.S. housing (provided it is not mounted onto a wall bracket) may be positioned at any angle, through approximately 330º of rotation, to allow for the cable gland positioning. To position the housing - loosen the large clamping nut sufficiently to allow free rotation of the sensor assembly within the transmitter body.

The Easidew PRO I.S. is fitted with a mechanical stop to prevent over-rotation of the sensor assembly within the transmitter body - this could damage the sensor wires.

Rotate the sensor housing until the cable gland is in the desired position. While firmly holding the housing in position, re-tighten the large clamp nut up against the housing seal using a spanner/wrench of the correct size. **NOTE: Do not apply excessive force.**

2.2.1 Wall Mount Bracket

The Easidew PRO I.S. can be supplied with an optional wall-mounting bracket. This allows the customer to physically support the transmitter, ensuring that the stress on the mounting flange is kept to a minimum.

The bracket needs to be attached to the Easidew PRO I.S. (see *Figure 1)* using the hex screws provided. It can be fitted either horizontally or vertically and can then be attached to a wall or plate to provide support for the transmitter.

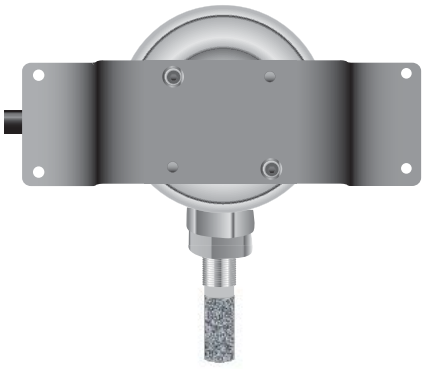


Figure 1 *Wall-Mount Bracket*

2.2.2 Transmitter Mounting - Sample Block (Optional)

The following procedure must be carried out by a qualified installation engineer.

To mount the transmitter into the sensor block (preferred method), proceed as follows, refer to *Figure 2.*

1. Remove the protective cover (2) (and its desiccant capsule) from the tip of the transmitter (1).
2. Fit the seal (4) over the threaded part of the transmitter body.

WARNING: Under no circumstances should the sensor guard be handled with the fingers.

3. Screw the transmitter (1) into the sample block (3) and tighten to the recommended torque setting (see Section 2.2). **NOTE**: **Use the flats of the hexagonal nut and not the sensor body.**
4. Connect a cable (5) to the connector terminal block (see Section 2.3).

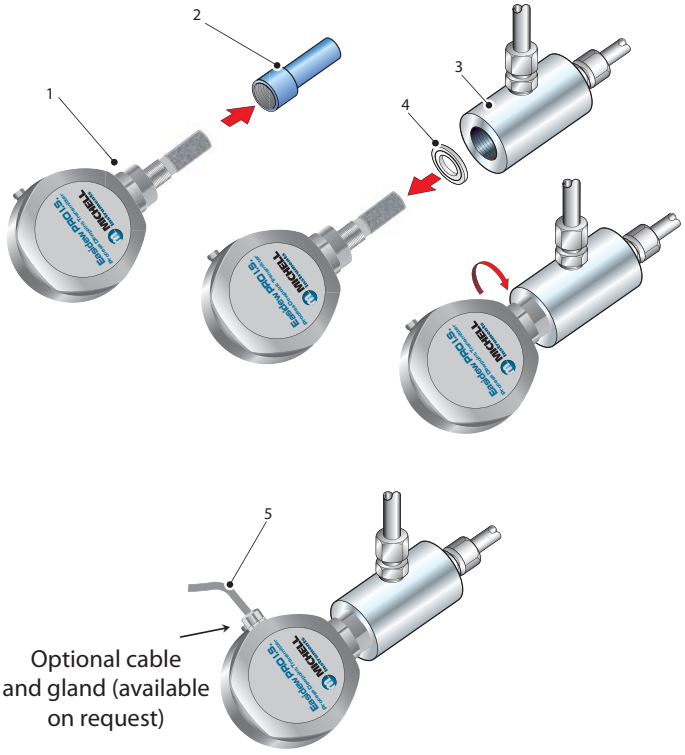


Figure 2 *Transmitter Mounting - Sensor Block*

2.2.3 Transmitter Mounting - Direct Pipeline Connection

The transmitter may be directly mounted into a pipe or duct as shown in *Figure 3.*

CAUTION: Do not mount the transmitter too close to the bottom of a bend where any condensate in the pipeline might collect and saturate the probe.

The pipe or duct will require a thread to match the transmitter body thread. Fixing dimensions are shown in *Figure 3.* For circular pipework, to ensure the integrity of a gas tight seal, a mounting flange will be required on the pipework in order to provide a flat surface to seal against.

The following procedure must be carried out by competent personnel.

1. Ensure that the protective cover (and its desiccant capsule) has been removed from the tip of the transmitter.

WARNING: Under no circumstances should the sensor guard be handled with the fingers.

2. Fit a bonded seal (2) over the threaded part of the transmitter body.
3. Screw the transmitter into the pipe (1). Tighten enough to obtain a gas tight seal. (Torque will depend upon the pipeline material.) **NOTE: Do not overtighten or the thread on the pipework may be stripped.**

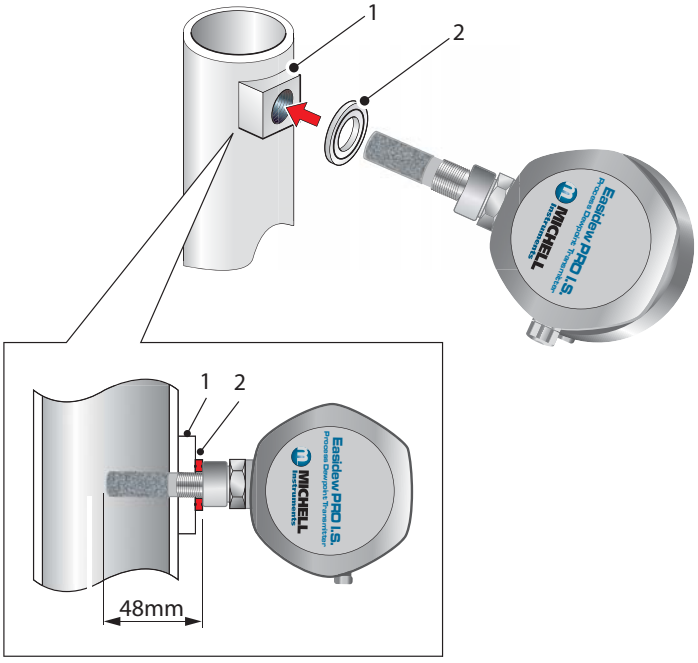


Figure 3 *Transmitter Mounting - Pipe or Duct*

2.2.4 Transmitter Mounting - With Additional Process Connection Adapter

The following procedure must be carried out by a qualified installation engineer.

To mount the adapter into the transmitter, proceed as follows (see *Figure 4)* :

1. Ensure that the protective cover (2), and its desiccant capsule (2a), have been removed from the tip of the transmitter.
2. Fit the bonded seal (3) over the threaded part of the transmitter body.
3. Screw the adapter (4) onto the threaded part of the transmitter and tighten to 30.5 Nm (22.5 ft-lbs). **NOTE: Use the flats of the hexagonal nut and not the sensor body.**

WARNING: Under no circumstances should the sensor guard be handled with the fingers.

4. Screw the transmitter (1) with its seal (3) and adapter (4) into the sample block (see Section 2.2.2) or pipeline (see Section 2.2.3) and fully tighten using a wrench until the seal is fully compressed and to the following torque settings:

G 1/2" BSP	56 Nm (41.3 ft-lbs)
3/4" - 16 UNF `	40 Nm (29.5 ft-lbs)
1/2" NPT	Use a suitable sealant e.g. PTFE tape using correct taping procedures

NOTE: **Use the flats of the hexagonal nut and not the sensor body.**

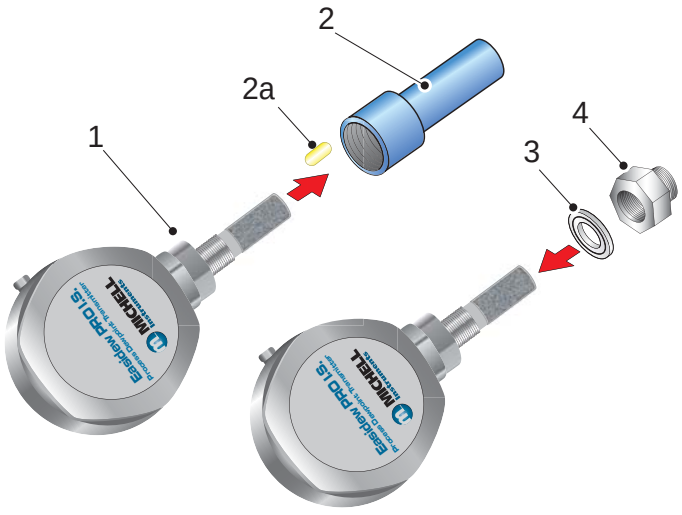


Figure 4 *Transmitter Mounting with Adapter*

2.3 Preparation of the Sensor Cable

The sensor cable is NOT supplied as standard.

The crimps supplied must be fitted onto any cable installed into the connector in order to comply with Hazardous Area Certification of the product.

When making a cable assembly it is important that the cable is correctly terminated (see below).

NOTE: *Figure 5* shown below, should be followed in detail. The crimps should be applied such that there is no possibility of a conductor strand of a core becoming free.

When the crimp is made it should have a minimum of 2 positions of crimping. After the crimp is made it should be trimmed to a length of 5mm.

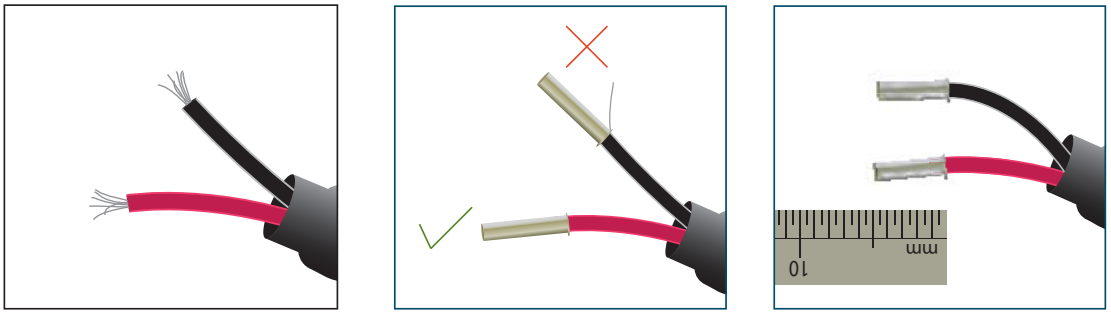


Figure 5 *Wire and Crimp Details*

Cable connection to the Easidew PRO I.S. is made via the connector terminal block.

When the crimps are installed into the connector terminal block ensure they are fully inserted, before tightening the terminal clamping screws.

NOTE: Ensure the assembled green wire in terminal 3 remains connected.

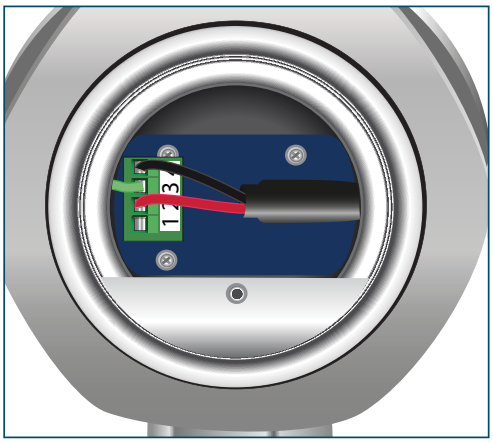


Figure 6 *Terminal Block Connection*

When all wire connections are made, ensure that there is a minimum clearance distance and a minimum creepage distance in air of 2mm (0.8") between each terminal.

2.4 Electrical Schematic

NOTE: The screen / shield should be connected for maximum performance and to avoid interference.

Always connect the 4-20 mA return signal to a suitable load (see *Figure 7)* before the power is applied. Without this connection, the transmitter may be damaged if allowed to operate for prolonged periods.

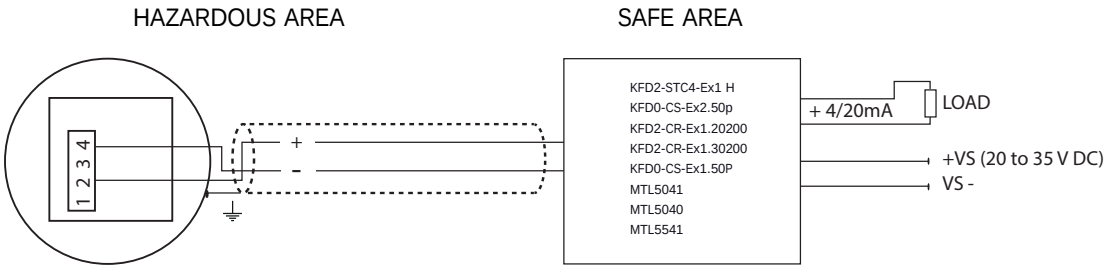


Figure 7 *Hazardous Area Connection*

1. Connect cable screen to cable gland.
2. Refer to system drawing in Appendix B.

2.4.1 Electrical Boundaries

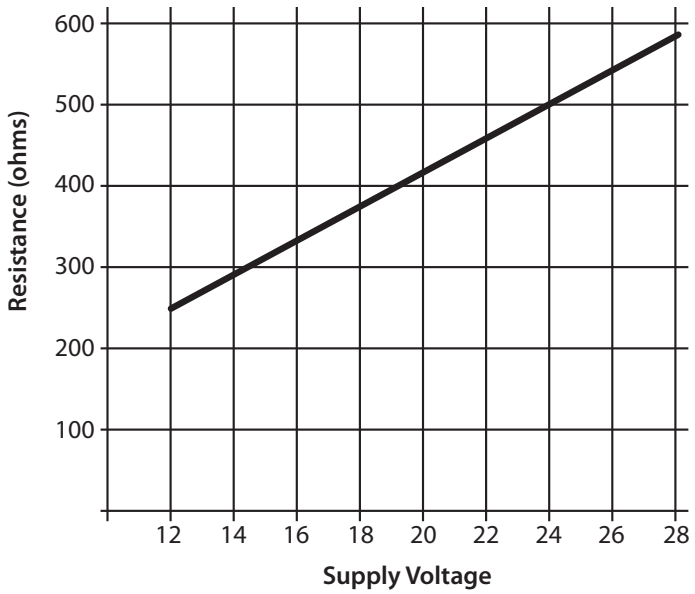


Figure 8 *Maximum Load of Easidew PRO I.S. - Including Cable Resistance*

3 OPERATION

3.1 Measurement and Configuration

The Easidew PRO I.S. can be configured to provide an output of 4-20 mA (2-wire connection) for the following:

Dew point	-110 to +20°C (-166 to +68°F)
Moisture content in gas	0 - 3000 ppm_V
Moisture content in liquids	0 - 3000 ppm_W

The Easidew PRO I.S. can be purchased factory configured as required. Alternatively, the Easidew PRO I.S. can be configured by the customer, using the Easidew Communications Kit (EPR-CK) and Easidew Application Software. The Easidew Communications Kit can be purchased from Michell Instruments or a local representative. For a free copy of the Application Software contact Michell Instruments' UK office (see www.michell.com for details of Michell's contact information).

For moisture content in gas, the calculation from the measured dew point is assumed to be at atmospheric pressure. Alternatively, a fixed gas pressure needs to be programmed into the Easidew PRO I.S.

For moisture content measurement in liquid, the Easidew PRO I.S. requires the saturation constant of the liquid to be programmed into the transmitters, either at the factory or by the customer using the Application Software.

The transmitter requires a 6-point look-up table for saturation constants up to 3000 ppm_W over the temperature range 0 to +50°C (+32 to +122°F). Saturation constants for 8 common liquids can be programmed into the Easidew PRO I.S. via the Application Software. Alternatively, the user can program saturation constants manually. The Application Software Help file provides detailed instructions on how to perform this task.

3.2 Sampling Hints

Operation is very simple, assuming the following installation techniques are adhered to:

Be Sure the Sample is Representative of the Gas Under Test:

The sample point should be as close to the critical measurement point as possible. Also, never sample from the bottom of a pipe as entrained liquids may be drawn into the sensing element.

Minimize Dead Space in Sample Lines:

Dead space causes moisture entrapment points, increased system response times and measurement errors, as a result of the trapped moisture being released into the passing sample gas and causing an increase in partial vapor pressure.

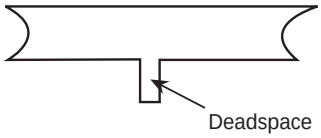


Figure 9 *Indication of Dead Space*

Remove Any Particulate Matter or Oil from the Gas Sample:

Particulate matter at high velocity can damage the sensing element and similarly, at low velocity, they may 'blind' the sensing element and reduce its response speed. If particulate, such as degraded desiccant, pipe scale or rust is present in the sample gas, use an in-line filter, as a minimum level of protection. For more demanding applications Michell Instruments offers a range of sampling systems (for more information contact www.michell.com).

Use High Quality Sample Tube and Fittings:

Michell Instruments recommends that, wherever possible, stainless steel tubing and fittings should be used. This is particularly important at low dew points since other materials have hygroscopic characteristics and adsorb moisture on the tube walls, slowing down response and, in extreme circumstances, giving false readings. For temporary applications, or where stainless steel tubing is not practical, use high quality thick walled PTFE tubing.

Position Transmitter away from Heat Source:

It is recommended, as good instrumentation practice, that the transmitter is placed away from any heat source to avoid adsorption/desorption.

4 MAINTENANCE

Calibration

Routine maintenance of the Easidew I.S. is confined to regular re-calibration by exposure of the transmitter to sample gases of known moisture content to ensure that the stated accuracy is maintained. Calibration services traceable to the UK *National Physical Laboratory* (NPL) and the US *National Institute of Standards and Technology* (NIST) are provided by Michell Instruments.

Michell Instruments offers a re-calibration service to suit specific needs. A Michell representative can provide detailed, custom advice (for Michell Instruments' contact information go to www.michell.com).

Sensor Guard Replacement

The sensor is supplied with a stainless steel sintered guard.

The stainless steel guard provides <80µm protection to the dew-point sensor. It is designed to show any contamination and the guard should be changed if the surface becomes discolored.

When replacing the guard, care should be taken to handle the guard by the bottom part only. A replacement guard (SSG) can be obtained by contacting Michell Instruments (www.michell.com) or your local distributor.

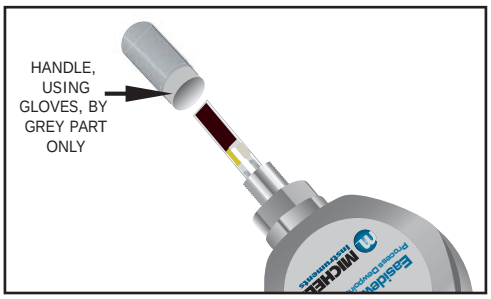


Figure 10 *Replacement of Sensor Guard*

Bonded Seal

If the installed bonded seal gets damaged or lost, a pack of 5 replacement bonded seals can be obtained by contacting Michell Instruments, or your local distributor, and quoting part number 5/8-BS.

Appendix A

Technical Specifications

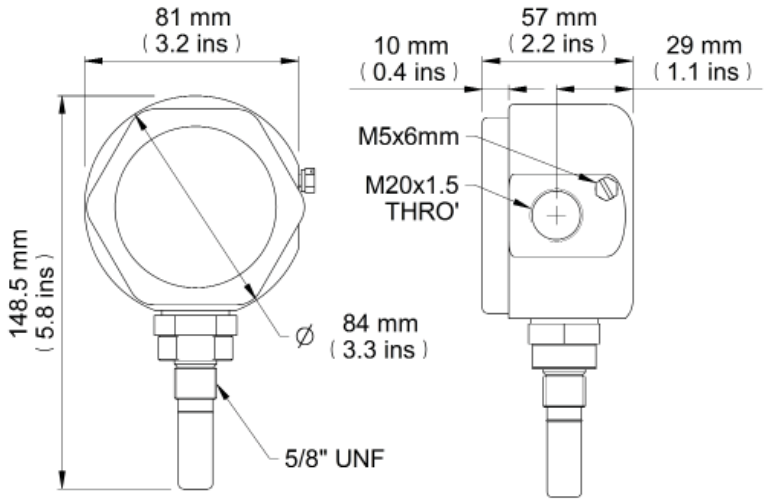
Appendix A Technical Specifications

Performance		
	Easidew PRO I.S. for Gases	**Easidew PRO I.S. for Liquids**
Measurement Range (dew point)	-110 to +20°Cdp (-166 to +68°Fdp) OR -100 to +20°Cdp (-148 to +68°Fdp)	0 to 3000 ppm_w
Accuracy (dew point)	±1°Cdp (±1.8°Fdp) (+20 to -60°C (+68 to -76°F)) ±2°Cdp (±3.6°Fdp) (-60 to -110°C (-76 to -166°F))	
Response Time	5 mins to T95 (dry to wet)Harl	
Repeatability	0.5°Cdp (±0.9°Fdp)	
Calibration	Traceable 13-point calibration	
Electrical Specifications		
Output Signal	4-20 mA (2-wire connection current source) User-configurable over range	
Output	Dew point or moisture content	Moisture content
Analog Output Scaled Range	Dew point -110 to +20°Cdp (-166 to +68°Fdp) OR -100 to + 20°C (-148 to +68°F) Moisture content in gas: 0–3000 ppm_v Non-standard available on request	Moisture content in liquid: 0 – 3000 ppm_w Non-standard available on request
Supply Voltage	12 to 28 V DC	
Load Resistance	Max 250 Ω @ 12 V (500 Ω @ 24 V)	
Current Consumption	23 mA max (depending on signal output)	
Saturation Constants (for moisture in liquids measurements only)		6-point look-up table for saturation constants up to 3000 ppm_w over the temperature range 0 to +50°C (+32 to +122°F); Saturation constants for 8 common liquids can be programmed into the Easidew PRO I.S. via the Application Software; Alternatively, the user can program saturation constants manually
Operating Specifications		
Operating Temperature	-40 to +70°C (-40 to +158°F)	
Operating Pressure	45 MPa (450 barg / 6500 psig) max	
Flow Rate	1 to 5 Nl/min (2.1 to 10.6 scfh) mounted in standard sampling block 0 to 10 m/sec (0 to 32.8 fps) direct insertion	
Temperature Coefficient	Temperature compensated across operating temperature range	
Mechanical Specifications		
Ingress Protection	IP66 in accordance with standard BS EN 60529:1992 NEMA 4 in accordance with standard NEMA 250-2003	
Housing Material	316 stainless steel	
Filter (Sensor Protection)	Standard: 316 stainless steel sintered guard >80 µm Optional: HDPE Guard (for protection against fine particulate >10µm)	
Process Connection & Material	5/8" - 18 UNF 316 stainless steel	

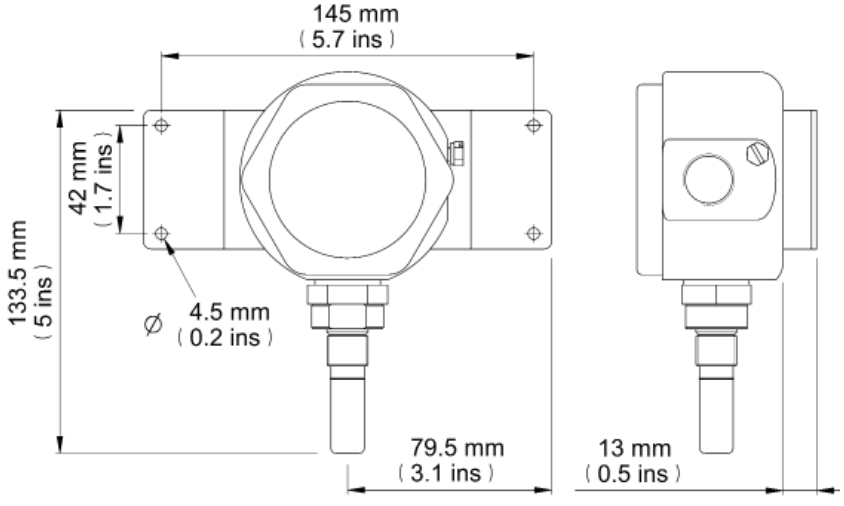
Weight	1.27kg (2.8lbs)
Electrical Connections	Screw terminal via female M20 x 1.5mm gland thread
Diagnostic Conditions (factory programmed)	**Condition** **Output** Sensor fault 23mA Under-range dew point 4mA Over-range dew point 20mA
Approved Galvanic Isolators	KFD2-CR-EX1.20200 / KFD2-CR-EX1.30200 KFD0-CS-EX1.50P / KFD0-CS-EX2.50P KFD2-STC4-EX1.H / MTL5041, MTL5040, MTL5541
Hazardous Area Certification	
Certification Codes	**ATEX** II 1 G Ex ia IIC T4 Ga (-20°C to +70°C) **IECEx** Ex ia IIC T4 Ga (-20°C to +70°C) **TC TR Ex** 0Ex ia IIC T4 Ga (-20°C to +70°C) **FM** Class I, Division 1, Groups A B C D, T4 **CSA** Class I, Division 1, Groups A B C D, T4

A.1 Dimensions

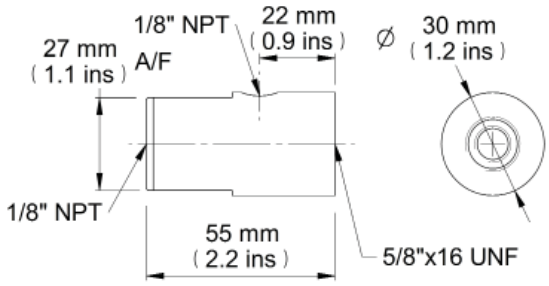
Transmitter for Cable Gland Installation



Transmitter with Wall Mount Bracket



Optional Sample Block



Bonded Seal

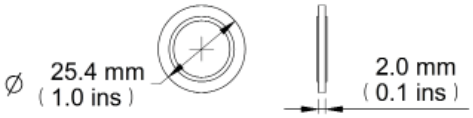


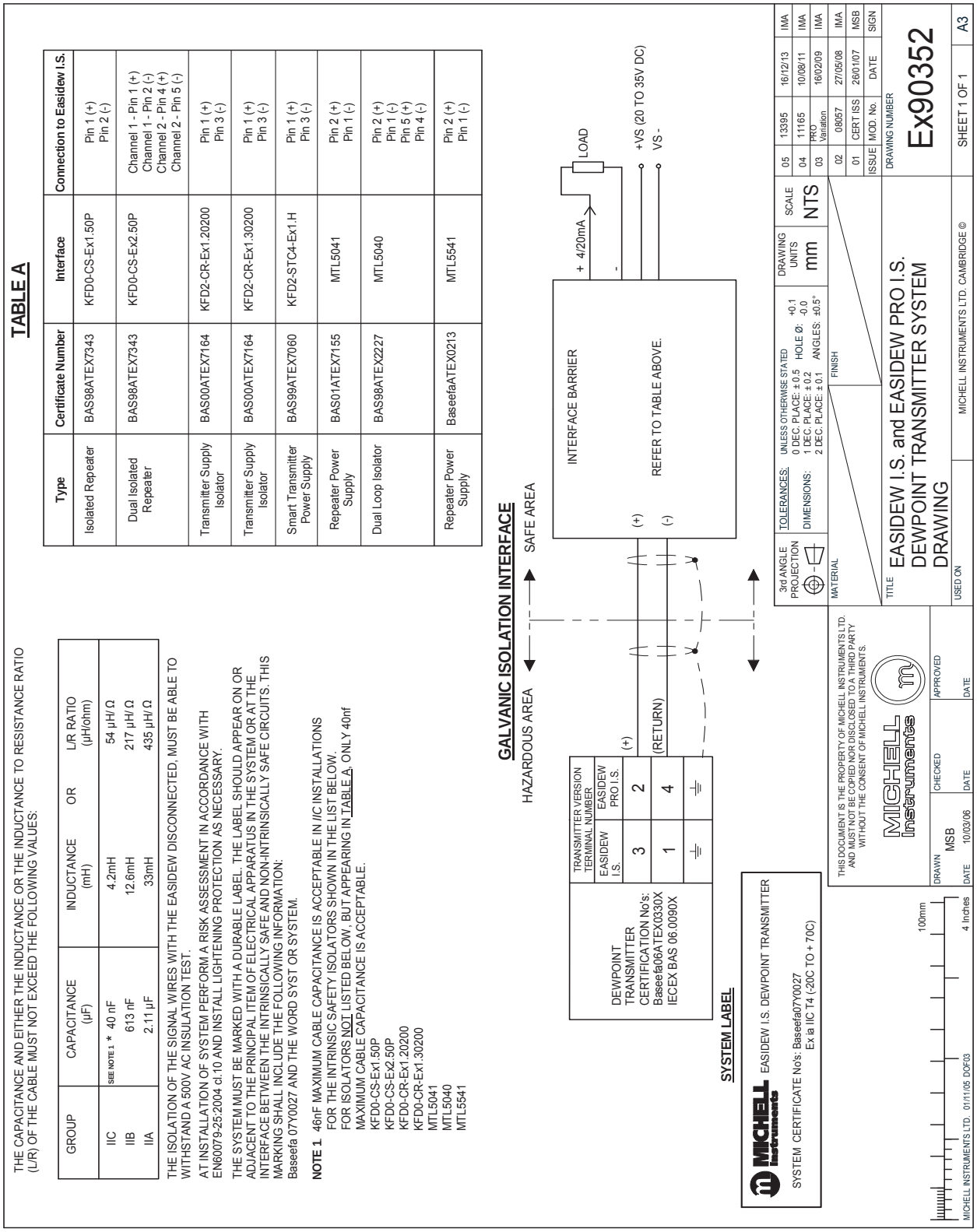
Figure 11 *Dimensions*

Appendix B

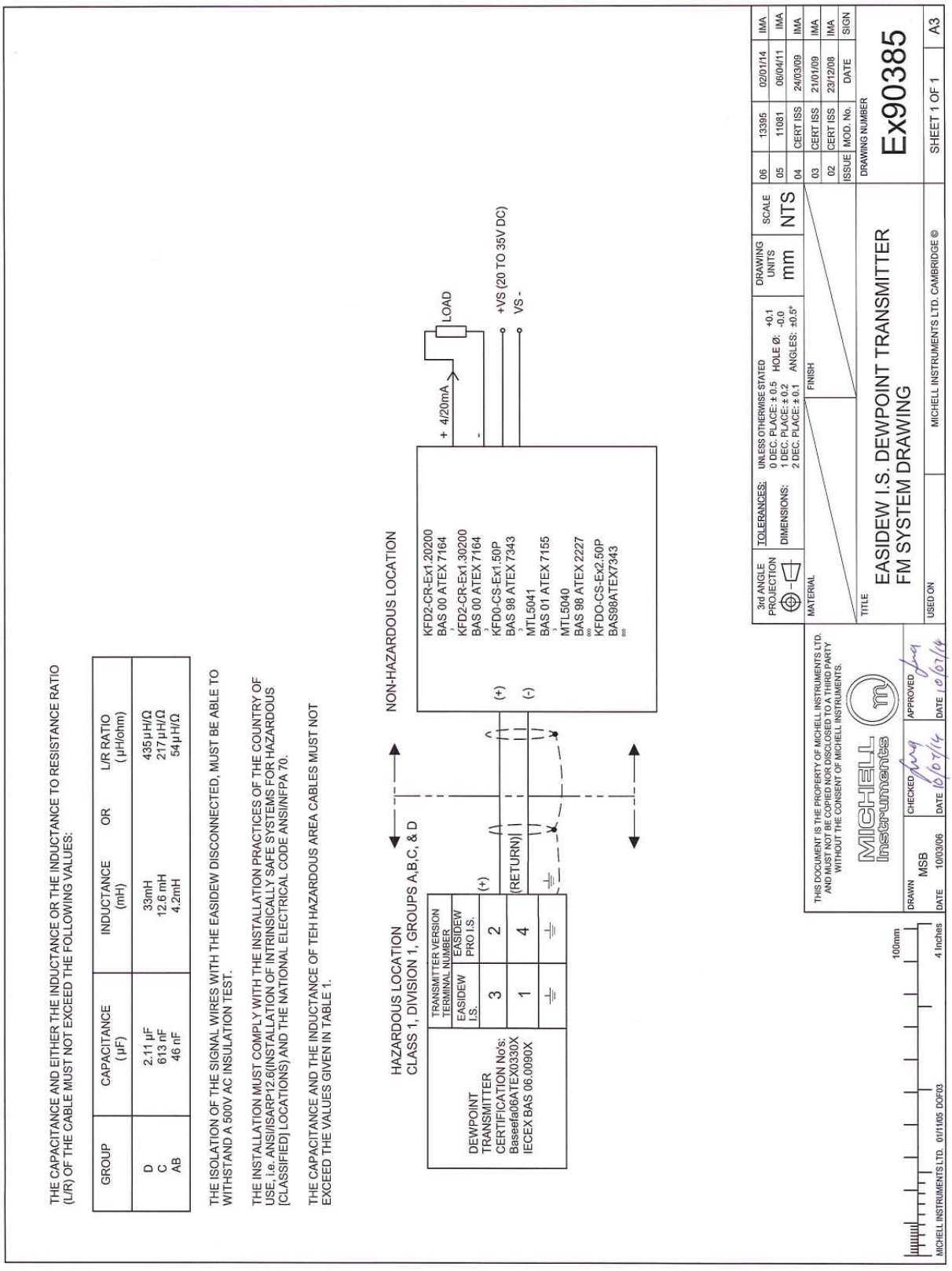
System Drawings

Appendix B System Drawings

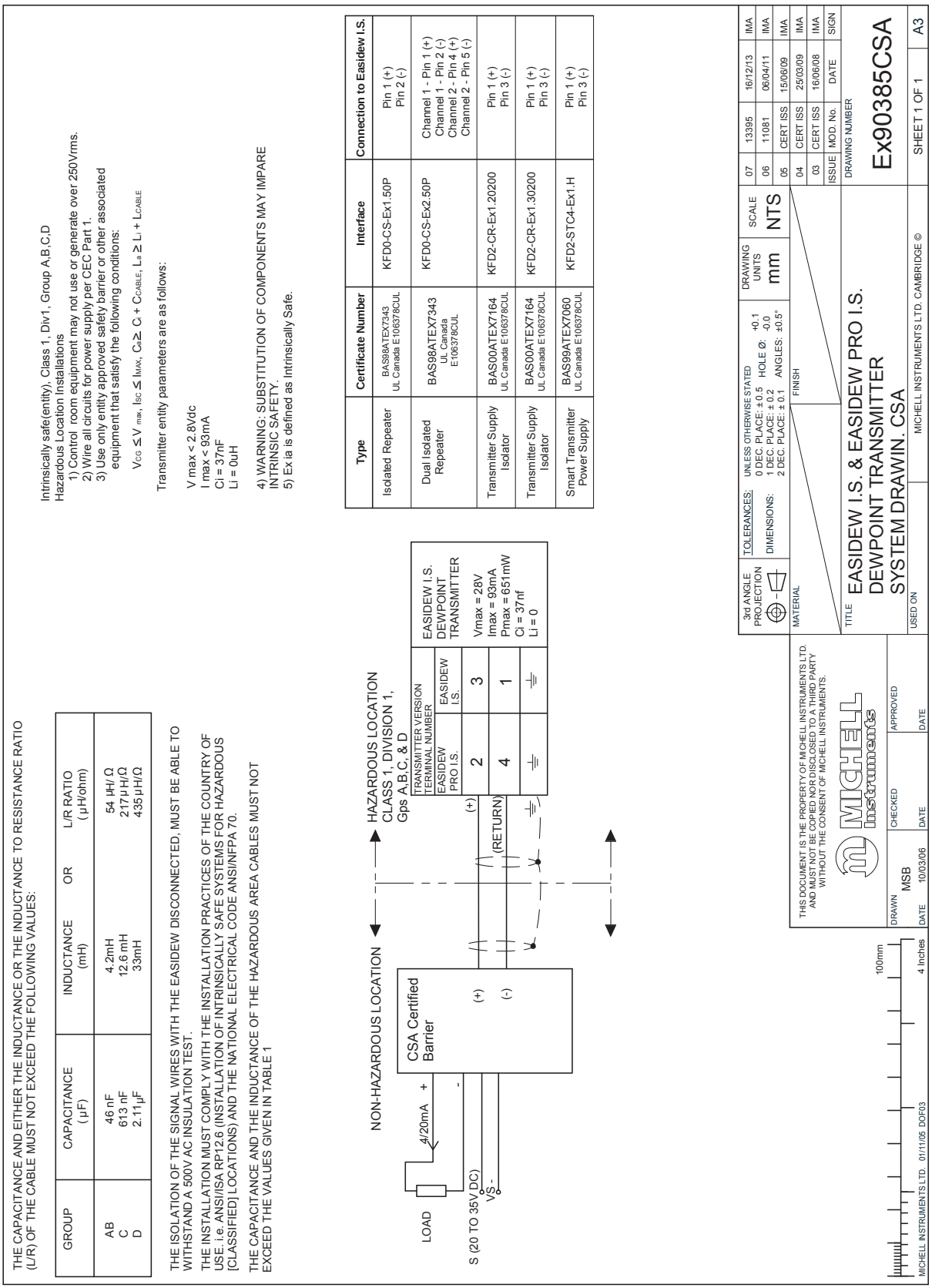
B.1 Baseefa Approved System Drawing



B.2 FM Approved System Drawing



B.3 CSA Approved System Drawing



Appendix C

Hazardous Area Certification

Appendix C Hazardous Area Certification

The Easidew PRO I.S is certified compliant to the ATEX Directive (94/9/EC), and IECEx for use within Zone 0, 1 and 2 hazardous areas and has been assessed so by Baseefa Ltd (Notified Body 1180).

The Easidew PRO I.S is certified compliant to the North American Standards (USA and Canada) for use within Class I, Division 1, Groups A, B, C & D hazardous locations and has been assessed so by CSA and FM.

C.1 Product Standards

This product conforms to the Standards:

EN60079-0:2012	IEC60079-0:2011
EN60079-11:2012	IEC60079-11:2011
FM Class 3600:1998	CAN/CSA-C22.2 No. 0-10
FM Class 3610:2007	CAN/CSA-C22.2 No. 157-92
FM Class 3810:2005	C22.2 No 142-M1987

C.2 Product Certification

This product is attributed with the product certification codes:

ATEX & IECEx
II 1G Ex ia IIC T4 Ga (-20°C to +70°C)

North American
IS, Class I, Division 1, Groups A, B, C & D, T4

C.3 Global Certificates/Approvals

ATEX	Baseefa 06ATEX0330X
ATEX System	Baseefa 07Y0027
IECEx	IECEx BAS 06.0090X
CSA	2013218
FM	3030238
TC TR Ex	RU C-GB. ГБ05.В.00229

These certificates can be viewed or downloaded from our website at:
http://www.michell.com

C.4 Terminal Parameters

Ui	= 28 V
Ii	= 93 mA
Pi	= 651 mW
Ci	= 37 nF
Li	= 0

C.5 Special Conditions

1. The wiring connections to the free socket must be made via crimped connectors in such a way that all the strands of the wire used are held securely by the crimp.
2. The plastic plug and socket create a potential for electrostatic discharge so must not be rubbed with a dry cloth or cleaned with solvents.
3. The Easidew PRO I.S Dew-Point Transmitter does not withstand the 500 V AC insulation test to frame. This must be taken into account when installing the equipment.

C.6 Maintenance and Installation

The Easidew PRO I.S. must only be installed by suitably qualified personnel and in accordance with the instructions provided and the terms of the applicable product certificates.

Maintenance and servicing of the product must only be carried out by suitably trained personnel or returned to an approved Michell Instruments' Service Center.

Appendix D

EU Declaration of Conformity

Appendix D EU Declaration of Conformity

MICHELL Instruments

EU Declaration of Conformity

Manufacturer: Michell Instruments Limited

Address: 48 Lancaster Way Business Park
Ely, Cambridgeshire
CB6 3NW. UK.

CE

Equipment Type: **Easidew PRO I.S. Dew-point Transmitter**

Directive 94/9/EC ATEX & **Directive 2014/34/EU ATEX** (effective date 20th April 2016)

Provisions of the Directive fulfilled by the Equipment:

Group II Category 1G Ex ia IIC T4 -20°C ≤ Ta ≤ +70°C

Notified Body for EC-Type Examination and Production (QAN):

Baseefa, Buxton. UK. Notified Body No. 1180

EC-Type Examination Certificate:

Baseefa06ATEX0330X

Standards used:

EN 60079-0:2012
EN 60079-11:2012

IECEx

Certificate of Conformity No.

IECEx BAS 06.0090X Ex ia IIC T4 (-20°C ≤ Ta ≤ +70°C)

IEC60079-11:2011
IEC60079-0:2011

Other Directives

2004/108/EC EMC Directive & **2014/30/EU EMC Directive** (effective date 20th April 2016)
Is in conformity with the following Standard(s) or Normative Document(s):
EN61326-1:1997 *Electrical equipment for measurement, control and laboratory use - EMC requirements. Class B (emissions) and Industrial Locations (immunity).*

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).

On behalf of the above named company, I declare that, on the date 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.

Andrew M.V. Stokes, Technical Director
April 2016

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Appendix E

Quality, Recycling & Warranty Information

Appendix E Quality, Recycling & Warranty Information

E.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.

E.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.

E.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

E.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

E.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.

E.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

E.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.

E.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.

E.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.

E.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 F

Return Document & Decontamination Declaration

Appendix F 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

F0121, Issue 2, December 2011

http://www.michell.com