



Condumax II (Class 1 Division 1) Hydrocarbon Dew-Point Analyzer Sampling System Installation, Operation & Maintenance Manual



**97525, Issue 1
November 2016**

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Condumax II

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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. The input power supply voltage limits are 110 to 120 V AC, 60 Hz or 220 to 240 V AC, 50 Hz.

Pressure Safety

DO NOT permit pressures greater than the safe working pressure to be applied to the instrument. The specified safe working pressure is 100 barg (1450 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.

Safety Conformity

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

Abbreviations

The following abbreviations are used in this manual:

AC	alternating current
barg	pressure unit (=100 kP or 0.987 atm)
°C	degrees Celsius
°F	degrees Fahrenheit
lbs	pound(s)
kg	kilogram(s)
HCdp	hydrocarbon dew-point
NI/min	normal liters per minute
m	meter(s)
mA	milliampere
max	maximum
m ³ /hour	cubic meters per hour
mm	millimeters
%	percentage
psig	pounds per square inch
temp	temperature
V	Volts
W	Watts

Warnings

The following 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.



Where this symbol appears in the following sections it is used to indicate areas of potential risk of electric shock.

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1 INTRODUCTION

1.1 General

The Condumax II Hydrocarbon Dew-Point Analyzer Sampling System is specifically designed for the measurement of hydrocarbon and water dew-point in natural gas. The addition of water dew-point is optional to factory order. The system is configured with the necessary pressure letdown and flow control required for measurement at pressure before finally venting to an atmospheric or a low pressure flare line system. A fast-loop bypass flow arrangement is included to reduce sample flow response time lag and to enable the filter to be drained automatically of any potential hydrocarbon liquids and hydrates formed. Tube and process connections are 1/4" OD.

HC dew-point analysis pressure is adjusted by a heated pressure regulator in the range up to 35 barg (500 psig). However, it is typical for measurements to be made at the cricondenthem condition of 27 barg (400 psig), where the highest HC dew-point temperature will be detected on the retrograde phase envelope.

The water dew-point (where fitted) is measured at full pipeline pressure, to determine the highest water dew-point for the gas sample being analyzed.

The complete Condumax II Hydrocarbon Dew-Point Analyzer Sampling System can be located close to the gas sample take-off point in a potentially explosive environment - designated Class 1 Division 1 hazardous area.

The indoor version Sampling System gas handling components are assembled on a stainless steel plate suitable for wall mounting within a temperature controlled analyzer house.

The outdoor version Sampling System is housed within a stainless steel enclosure (304 or 316) for direct field installation next to the process line (with overall environmental protection to IP66).

The Sampling System must be located in a constant temperature controlled environment of at least +10°C (+18°F) above the highest envisaged dew-point temperature.

All sample gas wetted metallic parts are in AISI 316L stainless steel with Viton® soft parts that comply with the NACE standard MR-01-75 (latest edition). Tube fittings are twin ferrule compression type. All gas and cable entries are located in the base of the enclosure.

The sample flow gas handling components are as follows:

- **Gas Inlet Isolation Valve (BV1):**
 Allows user to manually isolate the system from the process sample gas supply line for maintenance or servicing.
- **Coalescing & Membrane Filter (F1):**
 Provides system protection from contamination of liquid carry-over of hydrocarbon / glycol mist particles using membrane filtration.

- **Line Pressure Gauge (PG1):**
Indicates the sample gas line pressure.
- **HCdp Pressure Regulator (PR1):**
Allows the user to manually set the sample gas analysis pressure for hydrocarbon dew-point measurement.
- **HC and H₂O Dew-Point Analyzer (Condumax II):**
Provides measurement and output of hydrocarbon & water dew point of the sample gas.
- **Non Return Valve (NRV1):**
Provides system protection from back pressure of vent gas when sample gas is not flowing.
- **HCdp Flow Metering Valve (FV1):**
Allows the user to manually set the sample gas flow rate across the hydrocarbon dew-point sensor.
- **HCdp Flowmeter (FM1):**
Provides indication of the sample gas flow rate across the hydrocarbon dew-point sensor.
- **H₂Odp Letdown Pressure Regulator (PR3) {if fitted}:**
Provides pressure letdown from line pressure to a lower vent pressure.
- **Non Return Valve (NRV3) {if fitted}:**
Provides system protection from back pressure of vent gas when sample gas is not flowing.
- **H₂Odp Flowmeter/Metering Valve (FM3) {if fitted}:**
Allows the user to manually set and provide indication of the sample gas flowrate across the water dew-point sensor.
- **Gas Outlet Isolation Valve (BV2):**
Allows the user to manually isolate the system from the gas outlet line for maintenance or servicing.

The bypass flow gas handling components are as follows:

- **Bypass Flow Letdown Pressure Regulator (PR2):**
Provides pressure letdown from sample line pressure to a lower vent pressure.
- **Non Return Valve (NRV2):**
Provides system protection from back pressure of vent gas when sample gas is not flowing.
- **Bypass Flowmeter & Valve (FM2):**
Allows the user to manually set and provide indication of the bypass gas flow rate across the membrane filter.
- **Letdown Gas Vent Isolation Valve (BV3):**
Allows the user to manually letdown the sample gas pressure trapped in the system for maintenance or servicing.

2 INSTALLATION

The Condumax II Hydrocarbon Dew-point Analyzer Sampling System gas handling components are assembled onto a stainless steel mounting plate suitable for wall mounting.

The indoor version Sampling System should be located in a constant temperature controlled environment of at least +10°C (+18°F) above the highest envisaged dewpoint temperature at a point as close to the sample gas take-off point as possible. This will minimize sample line response time lag in a designated IEC Zone 1 and Zone 2 hazardous area and NEC Class 1, Group B (for CSA Version Sampling System).

The outdoor version Sampling System provides environmental ingress protection to IP66 and should be mounted vertically, free of any appreciable vibration, in a permanently shaded position to prevent heating effects through sun radiation. The Sampling System enclosure has thermostatically controlled heating (fixed set point, optional adjustable). Enclosure cooling, using a compressed-air-driven vortex tube and adjustable thermostat, is recommended for installation in hot climates.

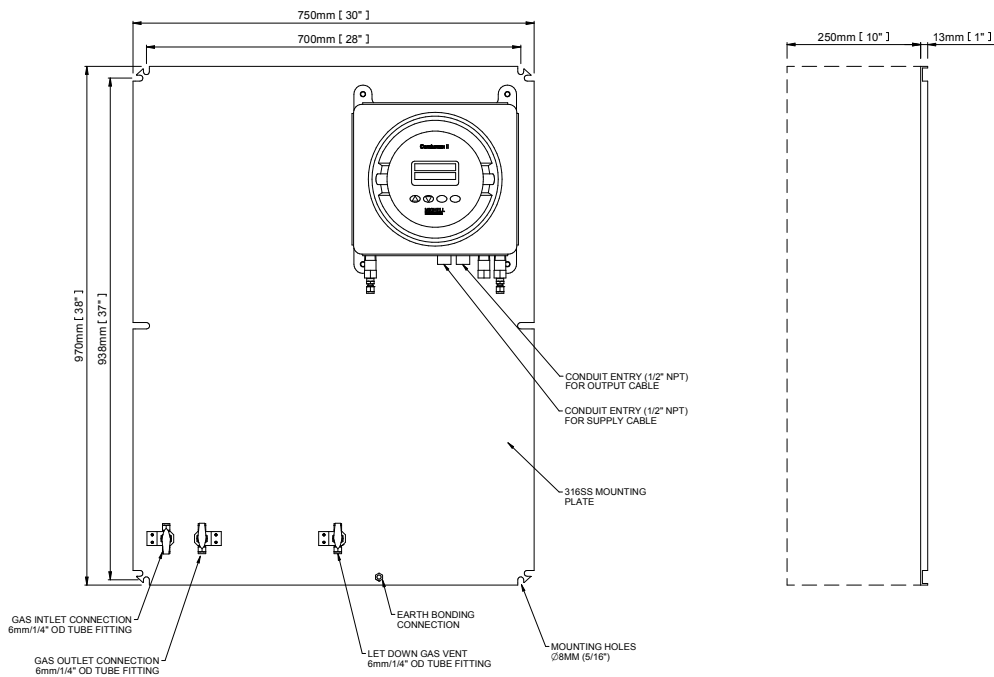


Figure 1 Condumax II Sampling System - Indoor Version

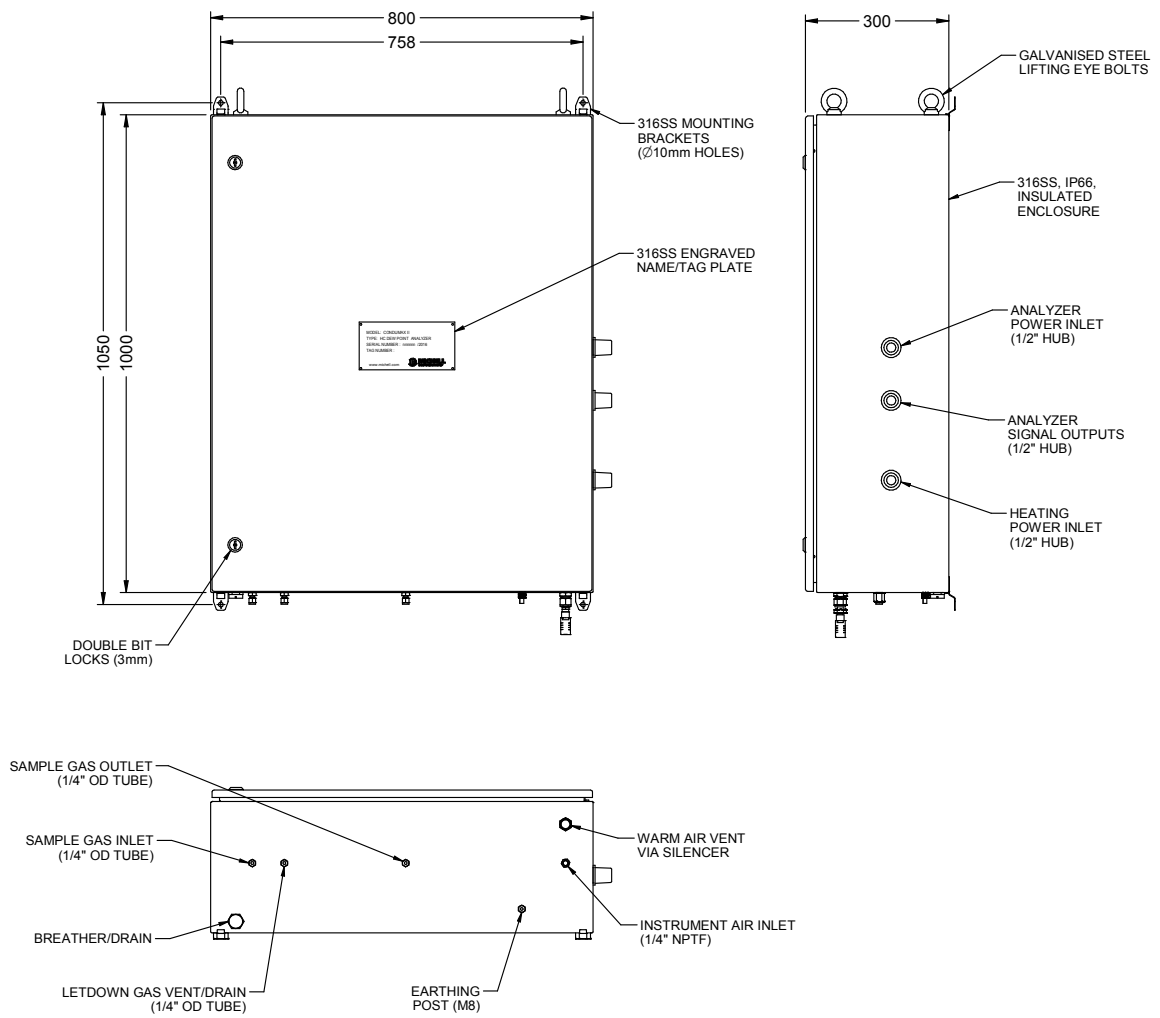


Figure 2 *Condumax II Sampling System - Outdoor Version*

2.1 Gas Connections



Ensure that the process sample gas supply line is well flushed through to clear any liquids and debris present, prior to connection to the Sampling System.

Connections are as follows:

1. Sample Gas Inlet

1/4" OD Swagelok® tube fitting
(100 narg (1450 psig) maximum supply pressure)

2. Sample Gas Outlet

1/4" OD Swagelok® tube fitting
(Vent to atmosphere/low pressure flare. 7 barg (101 psig) maximum back pressure)

3. Letdown Gas Vent

1/4" OD Swagelok® tube fitting (NEC version)
(Vent to atmosphere)

NOTE: All tube fitting connections are made directly onto the isolation ball valves.

2.2 Power Supply Connection

A single-phase AC mains power supply is required to operate the Sampling System.

The factory-set power supply voltage is indicated on a yellow label located on the rear panel. **NOTE: The user cannot change the specified power supply voltage.**

The Condumax II analyzer is powered via the mains from the analyzer conduit.

Wire Color	Power Connection
Brown	Line Voltage
Blue	Neutral
Green/Yellow	Earth

Table 1 Wire colors

Wiring connections, for power to heater circuit and heated regulator are made onto terminals within the Power Circuits conduit box.

Terminals are marked:


Terminal No.	Power Connection
1	Line Voltage
4	Neutral
	Ground / Earth

Table 2 Terminal marks

NOTE: A ground/earth stud is provided in the base of the enclosure. This must be used to earth bond the Sampling System.

A local power isolator switch **MUST BE** provided on the Power Circuit to the Condumax II Hydrocarbon Dew-Point Analyzer for maintenance or servicing. **Note: This switch only isolates power to the analyser NOT any other circuits.**

Minimum Cable Requirements	
Power Cable	3 core, 0.75mm ² conductor area (6A)

Table 3 Minimum cable requirements, power connectors

2.3 Output Wiring Connections

Two analog 4-20 mA outputs and a Modbus RS485 digital interface are available.

Connections are made onto wires from the Outputs conduit.

Wires are marked:

HC Dew-Point Version

Wire No.	Output
1	Modbus RS485 digital comms Earth
2	Modbus RS485 digital comms A
3	Modbus RS485 digital comms B
4	Pressure measurement current - mA2
5	Pressure measurement current + mA2
6	Hydrocarbon dew-point measurement current - mA1
7	Hydrocarbon dew-point measurement current +mA1

Table 4 Wire Numbers, HC Dew-Point Version

HC and Water Dew-Point Version

Wire No.	Output
1	Modbus RS485 digital comms Earth
2	Modbus RS485 digital comms A
3	Modbus RS485 digital comms B
4	Water dew-point measurement current - mA1
5	Water dew-point measurement current + mA1
6	Hydrocarbon dew-point measurement current - mA1
7	Hydrocarbon dew-point measurement current + mA1

Table 5 Wire Numbers, HC and Water Dew-Point Version

Recommended Minimum Cable Requirements	
Communications Cable	For use with 4-20mA only or Modbus only 1 pair individually and overall screened, 0.5mm ² conductors
Communications Cable	For use with 4-20mA and Modbus 2 pair individually and overall screened, 0.5mm ² conductors

Table 6 Minimum cable requirements, wire connectors

3 OPERATION

Operation of the Condumax II Sampling System should be carried out in conjunction with, and referring to, the Condumax II Hydrocarbon Dew-Point Analyzer User Manual prior to commencing the System Start-Up Procedure (Section 3.1).

Before commencing the start-up procedure it is essential to ensure that the installation conforms to the correct hazardous area and local plant standards.

Before any gas pressure is applied, check that all gas inlet & outlet connections are fully tightened up and that all valves and regulators are in the closed position.

Additionally, for the outdoor version, the heater/thermostat circuit will need to achieve the set-point temperature.



BEFORE power is applied to the Sampling System check that the Condumax II Power Isolator switch is set to the OFF position.

Apply power to the Sampling System and allow the pressure regulator temperature to stabilize. This will prevent the possibility of condensation occurring within the gas handling components during start-up.



There is a mandatory purge procedure stipulated as part of the certification of the Condumax II product. This procedure must be fully carried out prior to any power or signal connections to the Condumax II being energized.

This procedure must also be carried out at any time following service or maintenance periods that cause any of the Condumax II or associated gas handling equipment sample lines to be disconnected.

It is not necessary to carry out this procedure of, during a shut down period, the sample lines have not been disconnected or of the power or signal connections only have been connected.

Before commencement of the start-up procedure ensure that all power and signal connections to the Condumax II are fully isolated and if necessary observe the stipulated de-energization period of 45 minutes.

3.1 System Start-Up Procedure

Proceed as follows:

1. Unscrew and remove the Condumax II flameproof enclosure cover after first loosening the hex grub screw.
2. The user interface/display assembly uses two ¼-turn bayonet style fasteners to secure it and are finger operated - clockwise to lock, counter-clockwise to release. Temporarily, the user interface/display once disconnected from the two ¼-turn fasteners, can be re-positioned on the instrument by securing the right-hand fastener in the left-hand fastener position. This will situate the user interface/display assembly in an overhanging position outside of the enclosure, allowing greater access. If there is insufficient space to accommodate the overhanging user interface/display assembly on the left-hand side then it can be fully disconnected from the instrument by disconnecting the ribbon cable connection to the main processor PCB.
3. Locate the solenoid valve and the manual override operating adjuster (brass screw handle) mounted on the base of the solenoid valve body.
4. Adjust the solenoid valve to the **PURGE POSITION** (fully screwed in clockwise) as shown on the label attached to the solenoid valve.
5. Ensure the Letdown Gas Vent Isolation Valve (BV3) is **CLOSED**.
6. **OPEN** the Gas Outlet Isolation Valve (BV2).
7. Slowly **OPEN** the Gas Inlet Isolation Valve (BV1) to allow sample gas to enter the Sampling System.
8. Fully **OPEN** the Bypass Flow Letdown Pressure Regulator (PR2).
9. Adjust the Bypass Flow Flowmeter/Metering Valve (FM2) to indicate a gas flow rate of approximately 0.4m³/hour (6.7 NI/min) (full-scale).
10. Slowly **OPEN** the HCdp Pressure Regulator (PR1) to provide a purge flow through the Condumax II (2 full turns).
11. Adjust the HCdp Flow Metering Valve (FV1) to indicate a sample gas flow rate of approximately 0.12m³/hour (2 NI/min) (full-scale) on the HCdp Flowmeter (FM1).
12. Fully **OPEN** the H₂Odp Letdown Pressure Regulator (PR3) {if fitted}.
13. Adjust the H₂Odp Flowmeter/Metering Valve (FM3) {if fitted} to indicate a sample gas flowrate of approximately 0.2 to 0.3m³/hour (3.3 to 5 NI/min) mid to three-quarters full scale).
14. Allow the sample gas to purge the system for a minimum period of 3 minutes.
15. Re-adjust the solenoid valve to the **Normal Operating Position** (fully unscrewed counter-clockwise) as shown on the label attached to the solenoid valve.
16. Re-fit the Condumax II user interface/display assembly and flameproof enclosure cover.

17. After the flameproof enclosure cover has been refitted the Condumax II is ready for power up.
18. Switch on the power to the Condumax II using the Condumax II Power Isolator switch located on the Power Circuits junction box.
19. Re-adjust the HCdp Pressure Regulator (PR1) to set the HCdp gas analysis pressure. Pressure is indicated on the main display of the Condumax II. It is normal practice for an analysis pressure of 391 psig (27 barg) to be set for the analysis of hydrocarbon dew point, as it is the recognized cricondentherm condition (pressure at which the highest hydrocarbon dew-point temperature will exist).

NOTE: The water dew-point gas analysis pressure is set at full line pressure and has no adjustment.

20. Re-adjust the hydrocarbon dew-point sample gas flow rate to approximately 0.06m³/hour (1 NI/min) using the HCdp Flow Metering Valve (FV1).
21. Re-adjust the water dew-point sample gas flowrate to approximately 0.2m³/hour (3.3 NI/min) using the H₂Odp Flowmeter/Metering Valve (FM3) {if fitted}.
22. Re-adjust the bypass flow rate to approximately 0.4m³/hour (6.6 NI/min) using the Bypass Flow Flowmeter/Metering Valve (FM2).
23. Close the cabinet door and allow the temperature to stabilize for at least one hour before monitoring a measurement.

Refer to the Condumax II Hydrocarbon Dew-Point Analyzer User's Manual for further operating instructions.

3.2 System Shut-Down Procedure



There is a mandatory de-energization time period of 45 minutes stipulated in the certification of the Condumax II product. This special condition must be fully carried out prior to removing the cover of the Condumax II flameproof enclosure.

Proceed as follows:

1. Isolate the Sampling System from the sample gas supply line by **CLOSING** the Gas Inlet Isolation Valve (BV1).
2. Allow a short time for the Sampling System to vent/depressurize before attempting to carry out any work on the system.
3. Depressurize the Sampling System by **CLOSING** the Gas Outlet Isolation Valve (BV2) and **OPENING** the Letdown Gas Vent Isolation Valve (BV3).
4. Ensure the Condumax II Power Isolator switch is in the **OFF** position.
5. After power down a minimum period of 45 minutes must be observed before removing the cover of the Condumax II.

3.3 Pressure Regulator Temperature Control



WARNING
This operation will expose electrical parts operating at high voltage. Therefore, isolate the power supply from the Sampling System before making adjustments.

The heated pressure regulator contains an adjustment for the temperature control set point (factory-set to approximately +40°C (+104°F)). It may need adjustment to increase/decrease the heat requirements to the regulator dependent on the high/low inlet gas pressure.

This can be identified by the manufacturer markings:

CSA version

GO HPR-2 markings

CSA Version - GO HPR-2 Pressure Regulator

To adjust the setting proceed as follows:

1. Unscrew and remove the cover of the junction box after first loosening the hex grub screw.
2. Adjust the heater output by turning the potentiometer clockwise to increase and anti-clockwise to decrease.
3. The seven markings around the potentiometer equate to an approximate temperature value for the heater of:

1 = +75°F (+24°C)	Recommended setting
2 = +80°F (+27°C)	
3 = +85°F (+29°C)	Other settings may be advised by Michell Instruments, dependent upon application
4 = +95°F (+35°C)	
5 = +110°F (+43°C)	
6 = +130°F (+54°C)	Should not be set
7 = +175°F (+79°C)	

Table 7 Potentionmeter markings - CSA Version

4. Screw back the junction box cover and tighten the hex grub screw.

4 OPTIONS

4.1 Enclosure Heater Temperature Control

Sampling systems can be fitted with temperature control, to maintain a constant temperature environment of at least 10°C (18°F) above the highest envisaged dew-point temperature, independent of surrounding temperature variations. The temperature control system, consists of a heater controlled by a fixed preset thermostat to provide internal ambient air temperature control of >+15°C (>+59°F) or >+35°C (>+95°F).

4.2 Enclosure Cooling

A sampling system enclosure cooling kit can be fitted to the stainless steel enclosure. The cooling device is a Vortex tube driven by instrument grade (liquid and particulate-free) compressed air. A mechanical thermostat controls the air flow through the vortex tube and is factory set, to maintain an internal ambient <+40°C (104°F). A manifold (clear plastic pipe) positioned around the internal walls of the enclosure distributes the cooling air throughout.

5 MEMBRANE AND PARTICULATE FILTER ELEMENT REPLACEMENT

5.1 Service Intervals

The life expectancy of the filter elements is dependent upon operating conditions in each specific application. As a minimum it is recommended that the filter elements be changed every 12 months. If inspection of a removed element shows that it is in poor/good condition after 12 months of operation then the operating period between replacements may be reduced/increased accordingly.

The disposable microfiber filter element cannot be cleaned as the solids are trapped within the depth of the element not on the surface. Also ensure that all O-rings are changed at regular intervals, preferably at the same time as the filter elements.

5.2 Installing the Filter Element and Membrane



Warning

The filter housing is a pressure vessel; it must never be used above its stated maximum allowable working pressure and must be used within its stated temperature range. Ensure that these items are used in well-designed piping systems with suitable indicators to warn users and servicing personnel of the presence of pressure and high temperatures. Wherever possible use pressure limiting or safety devices. Remember that the pressure rating is reduced at high temperatures. Consult Michell Instruments for guidance.

It is the responsibility of the user to ensure that the materials of construction of the filter housing, gasket and filter media are suitable for the intended application. During every servicing, a visual inspection must be made of the surfaces of the housing for signs of corrosion, erosion or general wear. The housing must be removed from service if any of these signs are evident as there are no corrosion allowances used in the design of these filters. It is not recommended that these filters be used on unstable fluids.

The following items have not been taken into account during the design of the filter housing:

1. Static pressure and mass of contents
2. Traffic, wind and earthquake loading
3. Reaction forces and moments resulting from mounting
4. Corrosion, erosion and fatigue
5. Decomposition of unstable fluids
6. External fire

Installing the Filter Housing

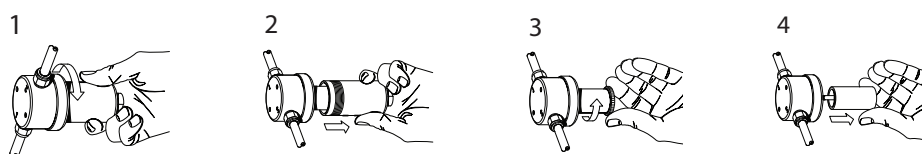
As the filter housing is a pressure vessel the system connections and accessory outlets must be leak tight. It is good practice to use a pipe sealant on the fittings prior to connecting to the filter housing ports. This will allow disassembly at a later time, if required. Any sealant such as PTFE tape, paste or other compound may be used if compatible with the filtered media. The torque value of the fittings will depend upon the quality of the fittings and the type of sealant used but should typically be between 40Nm and 75Nm. Ensure the fittings get inspected during servicing and re-tightened if necessary. It is not recommended that heads and bowls from different filter assemblies are swapped.

When installing filter housing and elements care should be taken to ensure the head and bowls are kept as a pair. It is not recommended that heads and bowls from different filter assemblies be swapped.

Wherever possible, installation of filter housings should be made using an appropriate mounting bracket to avoid excessive loads on the piping.

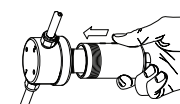
Changing the Filter Element

Ensure there is no pressure in the housing. Remove the bowl, element retainer and filter element.



The disposable coalescing filter element is sealed by compression against a flat surface. Gaskets are not required between the filter element and components of the housing. The element is located by guides which fit the inside diameter of the tube at each end. The element is sealed by tightening a threaded element retainer.

Before replacing the housing bowl ensure that the mating threads and sealing faces are clean and damage free. It is recommended that the threads and sealing faces are lubricated with a small amount of silicone grease before assembly. In the case of 'S' type stainless steel housings fitted with a solid PTFE gasket the bowl should be tightened to a torque of between 30Nm and 40Nm.



Membrane Replacement

The membrane is held in place by the O-ring. The whole membrane holder unit comes free from the housing leaving the filter housing /body still intact with the process lines with no need to loosen connections. The membrane can then be replaced on a work bench using a round nose pair of tweezers - the old O-ring is removed with the old membrane. The sintered disc should be removed and cleaned or replaced. Drag a new membrane over the sintered disc carefully as not to cause damage, until centralized over the sintered disc and O-ring groove. Place the new O-ring over/around the new membrane and gently push into the O-ring groove. Replace the coalescing filter element where applicable with a new element and screw/locate the whole membrane holder back into the filter housing/body. The inlet is stamped no.1 and the outlet is stamped no.2, the other two ports are drain ports. Both can be used or one drain may be blanked off with a plug.

Service Intervals

A disposable microfiber filter element continues to filter at its original efficiency as long as it is kept in service. The life of the element is determined by the increase in flow resistance caused by trapped solids in the element. The element should be changed when the flow falls below an acceptable level, or the pressure drop becomes too high. In any case the element should be replaced before the pressure drop across it reaches 0.7 bar. The disposable microfiber filter elements cannot be cleaned as the solids are trapped within the depth of the element, not on the surface.

Ensure that gaskets are changed at suitable intervals. The interval time will depend on service and operating conditions, but it should be at least every three months.

Appendix A

Technical Specifications

Appendix A Technical Specifications

General	
Gas Wetted Materials	316L stainless steel with Viton® soft parts
Sample Gas	Hydrocarbon/Natural Gas
Sample Gas Pressure	10 to 100 barg (145 to 1450 psig)
Sample Gas Flow rate	HCdp range = 0.02 to 0.13 m ³ /hour (0.3 to 2.2 NI/min) (nominal setting = 0.06 m ³ /hour (1 NI/min)) H ₂ Odp range = 0.04 to 0.4 m ³ /hour (0.6 to 6.6 NI/min) (nominal setting = 0.2 m ³ /hour (3.3 NI/min))
Bypass Gas Flow Rate	Range = 0.04 to 0.4 m ³ /hour (0.6 to 6.6 NI/min) (nominal setting = 0.2 m ³ /hour (3.3 NI/min))
Filters	Coalescing & membrane filter
Enclosure	304/316 stainless steel fitted with wall-mounting brackets (Ingress protection rated to IP66)
Sample Gas Connections	¼" OD Swagelok® twin ferrule tube fittings
Cable Entries	Conduit with individual wires
Power Supply	110 to 120 V AC 60 Hz
Power Consumption	400 W max
Operating Temperature	-20 to +60°C (-4 to +140°F) <95%RH (+40°C (+104°F) max continuous operation)
Weight	75kg (165lbs) max
Optional	
Enclosure Cooling (Optional)	Compressed air via Vortex tube controlled by a mechanical thermostat. Maximum cooling capacity = 410W @ internal temp of +35°C (+95°F) and external temp of +55°C (+131°F) with maximum air input temp of +40°C (+104°F)
Enclosure Heating	100 W Heater with fixed preset +20°C or +40°C set-point thermostat

Appendix B

Quality, Recycling & Warranty Information

Appendix B Quality, Recycling & Warranty Information

B.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.

B.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.

B.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

B.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

B.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. owner's approval to proceed, the product will be repaired and returned.

B.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.

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B.7 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.

B.8 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.

B.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.

Appendix C

Analyzer Return Document & Decontamination Declaration

Appendix C Analyzer 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>