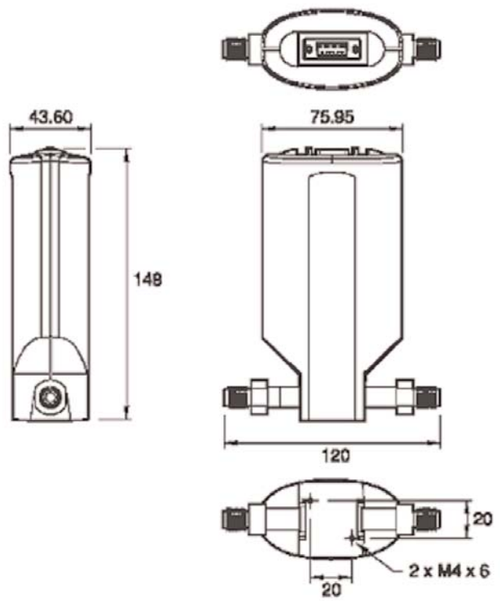
PURA *plus*

In-Line Trace Moisture Event Sensor

Technical Specifications

Response speed	<1 minute for a 20 ppb moisture event in 1 ppb base
Moisture range	1 ppb to 20,000 ppm
Pressure range	0 to 10 Barg absolute
Pressure rating	300 Barg absolute
Leak tested to	0-9 mbar ls^{-1}
Operating flow range	1 to 10 l min^{-1}
Operating temperature	5 to 40°C
Storage temperature	30 to 70°C
Power supply	20 to 28 volts d.c.
Power consumption	5 watts max.
Fus rating for any external fuse	500 mA Quickblow
Data output	Modbus ASCII on 2-wire RS-485
Warning and alarm outputs	2 open-collector transistors
Maximum voltage	40 volts d.c.
Maximum current	100 mA
Materials exposed to gas	
Housing material	Stainless steel AISI316L VAE, electropolished <10 Ra surface finish
Sensor construction	Aluminium oxide dielectric, gold upper plate, aluminium lower plate
Internal volume	4.4 cm^3
Weight	450 g
Gas connections	1/4" male VCR
Electrical connections	9-pin D-type male connector
Electro-magnetic compatibility	EN50081-2 and EN50082-2

Dimensions



1. 9-way D-type connector for all electrical interface.
2. 1/4" VCR Male plumbing connections.
3. Warning and Alarm LEDs.
4. Inlet label.

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Please contact us for latest version: PURA *plus*: Ref: PPL-0707

PURA *plus*

Dew-Point Transmitters

PURA *plus*

In-Line Trace Moisture Event Sensor

The New Real Time In-line Trace Moisture Event Sensor for UHP & Semiconductor Applications

Features

- Rapid response to ppb level moisture events
- Low ppb sensitivity (<1 ppb)
- Innovative concept for multiple measurement point installations
- Low maintenance
- Traffic light status indicator
- Programmable warning and alarm setpoints
- Modbus network compatible
- Multi-channel software for remote interface PC
- Ultra-high purity (UHP) gas line specification

Applications

- Semiconductor manufacture
- Ultra high purity gases
- Semiconductor tools

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PURA *plus*

Dew-Point Transmitters

PURA *plus*

In-Line Trace Moisture Event Sensor

Background

The wafer fabrication industry is continuing to push the technical boundaries in terms of device size and packing density. New, larger wafers as well as high cost value per wafer put pressure on wafer fabrication plants to increase yield by reducing wastage caused by contamination.

Gas quality, particularly reduction of contaminant levels is a highly critical issue for the semiconductor industry. Effective contamination monitoring is required to maximise yield. The contaminants include: oxygen, particulate matter, hydrocarbons, and moisture. Moisture is the chief contaminant in many gases with the lowest permissible ppb levels. It causes oxidation, particle formation and leads to variable layer characteristics and reduced yield. Particles result in need for chamber clean and hence tool downtime.

The current specification for moisture contaminant level in bulk inert gases e.g. N2, Ar is less than 10 ppb while there is a pressure on in the industry to reduce this specification to less than 1 ppb.

PURA *plus* Benefits

The new **PURA** *plus* is Michell Instruments response to latest changes in the wafer fabrication industry requirements for device size and specification.

The **PURA** *plus* is an on-line trace moisture event sensor designed for U.H.P. inert gas applications in semiconductor fabs to allow installation at multiple locations at the final point of entry to the process tool. In the complex distribution system of a fab involving many branches, joints and points of use moisture ingress often takes place downstream of the conventional moisture monitoring point through small leaks, insufficient system design, component failure or via a procedural failures. Installed in the distribution system the **PURA** *plus* provides rapid indication (less than 1 minute) of a moisture event as small as 20 ppb at 1 ppb baseline.

Unique detection algorithm and new sensor design

To achieve this superior speed of response while maintaining the extreme sensitivity Michell have invented a unique detection algorithm and combined it with a new developed UHP suitable ceramic sensor design. The high requirements of the UHP applications for extremely low moisture content measurement pushed Michell R&D team to develop the existing pure gas industry proven ceramic sensor to its current and most sophisticated development stage. Besides other benefits it allows the **PURA** *plus* to meet the particulate shedding performance required by the semiconductor industry.

High reliability and maintenance free

The **PURA** *plus* meets the highest quality standards for material and surface finish. It is assembled and packed in a class 100 clean room environment. Prior to packaging Michell leak tests **PURA** *plus* to 10^{-9} bar / sec.

PURA *plus* is designed to operate reliably and without any maintenance for a minimum of two years.

Traffic Lights Indication

To provide instant indication of the status of the moisture content the **PURA** *plus* utilises a unique "traffic light status indicator". LEDs built into the body of the **PURA** *plus* will show: -

Green = "O.K.", steady state, moisture level meets or exceeds required ppb specification

Amber = "Warning", rising moisture level – below critical level

Red = "Alarm", rising moisture level - above critical level

The RS-485 digital communications replicates these indications as well as providing detailed information on the moisture content levels and other information.

Remote Interface / Software

To compliment the **PURA** *plus*, Michell Instruments can offer a the Remote Interface This rack mounted unit provides graphical and digital indication of the moisture content and status for up to eight **PURA** *plus* instruments as well as providing data logging and configuration programming. Communication between the Remote Interface and the **PURA** *plus* is through the MODBUS RTU.

Related Products

Cermet II | Cermax | S4000 TRS | Pura Online

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Please note: Michell Instruments adopts a continuous development program which sometimes necessitates specification changes without notice.