

# QMA2030

## Process Moisture Analyzer

A high-precision, fast-responding analyzer with automatic calibration for a wide range of applications from high purity industrial gases to catalyst bed protection.



# QMA2030

### Highlights

- High accuracy: 5% in the range 0.5 to 500 ppm<sub>v</sub>
- Wide operating range: 0.1 to 2000 ppm<sub>v</sub>
- Extremely fast: less than 2 minutes for 63% response to a step change in either direction
- Advanced Quartz Crystal Microbalance technology for drift-free measurements with low sensitivity to contamination
- Automatic calibration for measurement confidence
- Ease of use with intuitive touch-screen display
- Simple maintenance for low cost of ownership

### Applications

- High purity gas production
- Industrial gas production
- Electronic gases
- Air separation plants
- Catalyst bed protection
- Semiconductor grade gases
- Cylinder gases
- Specialty gases
- Process dryers
- Hydrocarbon gases
- And many more...

## QMA2030 Process Moisture Analyzer

The QMA2030 Process Moisture Analyzer is designed to provide highly reliable, fast and accurate measurement of trace levels of moisture content (ppb<sub>v</sub> and ppm<sub>v</sub>) in a wide variety of industrial applications where the direct measurement of true concentration of water molecules is of concern. The applied quartz crystal microbalance technology can directly measure the volume concentration of water as an impurity in a process gas.

For self-verification and diagnostics the analyzer incorporates automatic calibration using an internal reference source. The intuitive touch screen control panel provides easy operation. In addition, live measurement data and system information is always on view and the analyzer also has a data logging facility that allows trend data to be downloaded to an external USB storage device for analysis. On-screen alarms can be set at user defined levels. Alarm contacts, and a 4-20mA analogue output are provided for connection to external monitoring.

### Features

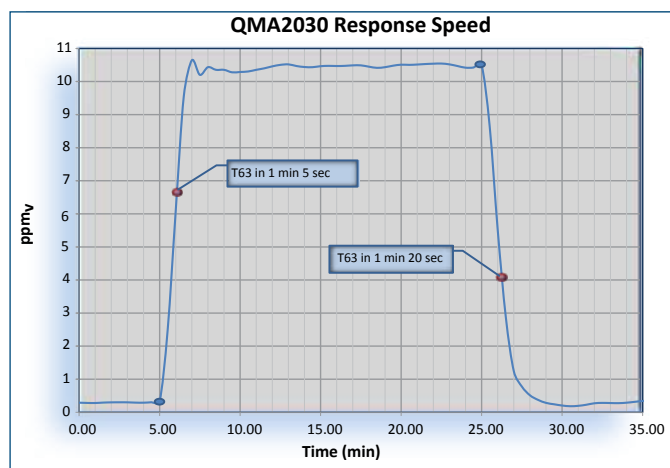
#### Wide operating range helps control processes

The wide operating range – from 0.1 to 2000 ppm<sub>v</sub> – and fast response of the QMA2030 helps users to monitor and protect processes. A high moisture event can damage processing tools or finished products. It can indicate a failure upstream in air and gas separation plants. The QMA2030 can track high moisture events in real time and help quantify the size and duration of a moisture excursion, provide important information on gas delivery systems and even help prevent moist gas from reaching critical parts of the process.

#### Outstanding accuracy

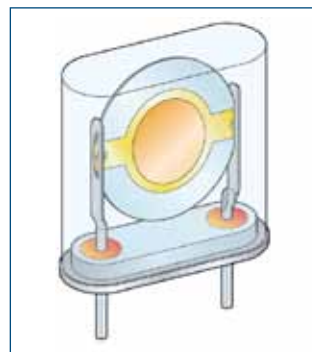
Michell's advanced quartz crystal technology, developed and refined over many years, produces a highly reproducible and linear response to changes in moisture content. This allows the QMA2030 to deliver class-leading accuracy of 5% of measured value in the range 0.5 to 500 ppm<sub>v</sub>.

#### Excellent response speed through innovative engineering



Traditional sensor technologies are slow to respond in the trace moisture region. The QMA2030 is different. The highly responsive sensor, coupled with a volume-optimized internal sampling system means that the QMA2030 will give a 63% response to a step change in moisture in less than 2 minutes, more than twice the speed of comparable QCM analyzers. 95% response is achieved in less than 5 minutes, as the graph below left demonstrates.

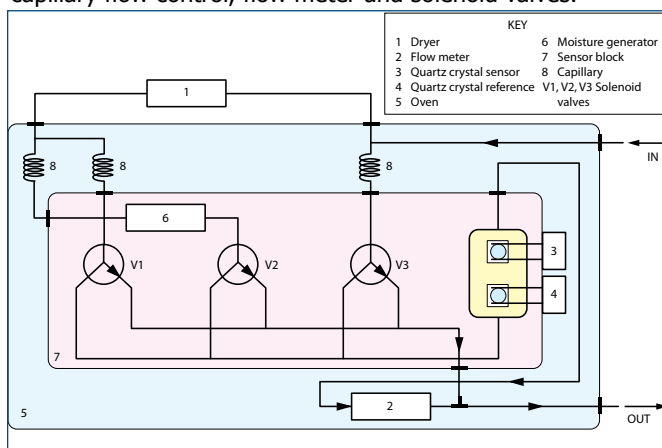
#### Advanced quartz crystal microbalance technology



Our engineers have spent many years developing and optimizing the performance of the Michell QCM sensor. This new generation sensor provides improved response, reproducibility and lower sensitivity to contamination than other available trace moisture analyzers. Water molecules are adsorbed into the moisture sensitive layer deposited on the crystal surface and the resulting change in mass modifies, in a very precise and repeatable manner, the frequency of oscillation. The design and manufacturing quality of the Michell QCM sensor is the key to the high performance level of the QMA2030.

#### Automatic calibration for complete measurement confidence

The QMA2030 incorporates a fully automatic, self-contained calibration system for complete user confidence. The internal gas handling circuit comprises a gas dryer, moisture generator, sensor block sample housing and sensor cell, along with capillary flow control, flow meter and solenoid valves.



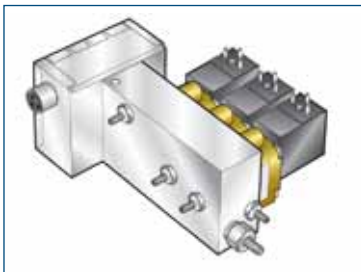
The critical components – moisture generator, sensor and flow parts – are precisely temperature-controlled. Periodic calibration checks of sensor performance can be initiated automatically (at user defined intervals and time of day) or manually on demand, providing a zero and span verification of instrument performance and automatically adjusting out any change. The moisture generator is calibrated traceable to NPL and NIST.

**User friendly operation – precision made easy**

Michell Instruments continues to stretch the boundaries in moisture measurement technology, providing innovative solutions that improve process efficiency and are simple to use. The QMA2030 touch-sensitive LCD display has been tested and endorsed by leading industrial gas manufacturers who value the easy set-up, control, display and datalogging options of the instrument. Not only can users view live data and graphical trends on screen, up to 14,000 measurement points, with varying time intervals, can be logged and downloaded to a PC via USB for further analysis.



**Simple maintenance – reduced lifetime cost**



Sophisticated instruments are often complicated and require experience and special care in use, increasing cost of ownership. Michell Instruments cares not only about ease of operation, but also about ease and cost-effectiveness of maintenance. The

QMA2030 is designed such that the integrated sensor block, shown here, can be replaced in just a few simple steps, even by less experienced staff, in the event that it needs to be factory calibrated to maintain traceability to NPL and NIST.

**QMA solutions for hazardous area and specialist applications**

Specific applications require specialized analyzer solutions. The QMA2020 provides all the functionality and performance of the QMA2030 and is ATEX approved for operation in hazardous area applications. Other specialist solutions are available – consult your Michell representative for further information.



**Ordering information**

Order code	Description
QMA-2030	QMA2030 base unit with LCD display and inbuilt datalogging

Accessories	
Order code	Description
QMA-BFM	Flow meter calibration kit (for optimum measurement accuracy)
QMA-VCR-8th	Inlet adapter: ¼ VCR to ⅛" adapter
QMA-IPR	Inlet pressure regulator

## Technical Specifications

### Performance

<b>Measurement technology</b>	Quartz Crystal Microbalance
<b>Range</b>	0.1 to 2000ppm <sub>v</sub> , Calibrated range 0.5 to 500ppm <sub>v</sub> with trend indication above and below calibration range
<b>Accuracy</b>	±5% for 0.5 to 500 ppm <sub>v</sub> or 0.1 ppm <sub>v</sub> whichever is greater
<b>Repeatability</b>	±5% of the reading from 0.5 to 1000ppm <sub>v</sub>
<b>Sensitivity</b>	0.1ppm <sub>v</sub> or 1% of the reading, whichever is the greater
<b>Response time</b>	<2 minutes for 63% response to a step change in either direction <5 minutes for 95% response to a step change in either direction
<b>Automatic calibration</b>	Internal moisture generator source calibrated traceable to NPL and NIST

### Electrical output/input

<b>Analog output</b>	4–20mA for moisture (max load 500Ω) User-configurable range
<b>Analog output resolution</b>	16 bit
<b>Supply voltage</b>	110V (90 to 115) or 240V (220 to 245) switch selectable, 50-60Hz
<b>Alarms</b>	3 Alarms: Volt free contact, rating 3A@250 VAC

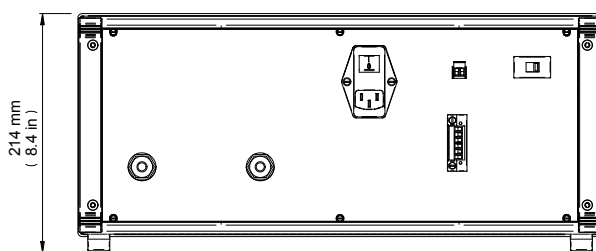
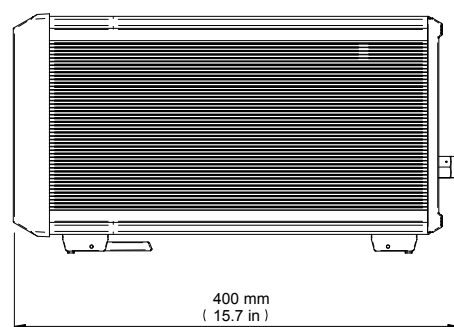
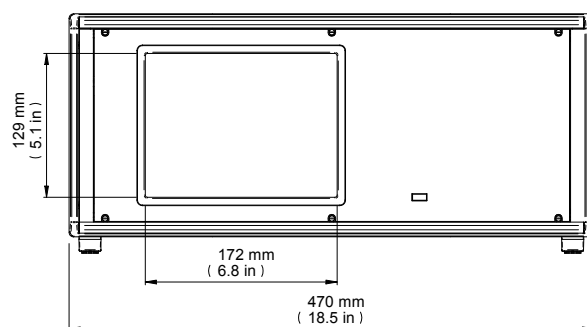
### Operating conditions

<b>Inlet pressure</b>	1 barg (Adjusted to achieve the correct exhaust flow, up to 200 barg with optional pressure regulator)
<b>Outlet pressure</b>	Atmospheric
<b>Sample flow requirement</b>	300ml/min
<b>Sample gas temperature</b>	0°C to 100°C / 32°F to 212°F
<b>Operating environment</b>	15°C to 40°C / 59°F to 104°F , 90%RH max

### Mechanical specification

<b>Display</b>	8.4 inch LCD touch-screen
<b>Dimensions (WxHxD)</b>	470mm x 214mm x 400mm – allow extra 200mm for clearance at back (w x h x d) 18.5 inches x 8.4 inches x 15.7 inches – allow extra 7.5 inches for clearance at back (w x h x d)
<b>Net weight</b>	15kg / 33lbs

## Dimensions



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Michell Instruments adopts a continuous development programme which sometimes necessitates specification changes without notice.  
Issue no: QMA2030\_97148\_V2\_UK\_0709