

Multi-Channel Process Monitor

Process Moisture Analyzer

This flexible multi-channel analyzer is designed to provide real-time, multi-parameter displays for our industrial hygrometer systems for measurement of high pressure, process gases and vaporized liquids on natural gas platforms and terminals, petrochemical plants and industrial gas manufacturing facilities. Optional oxygen electrochemical sensors offer additional capability for percentage and ppm_v O₂ measurements. Combined with a choice of PST sensors and proven sample conditioning system design engineering capabilities, the system provides a multi-channel online instrument for both flammable and non-flammable gases, that is reliable and easy to operate.



Highlights

- Enhanced functionality 6-channel capable process monitor, utilizing a single 7" touchscreen HMI
- Provides up to six independent measurement channels with any combination of moisture in gas, moisture in liquids or oxygen
- 7" color touchscreen LCD, displaying moisture content/dew point or O₂ and analysis pressure, with configurable, on-display, tag names/numbers
- Integrated galvanic isolation-type barriers
- Three 4...20 mA configurable outputs per channel
- Modbus RTU over RS485 and Modbus TCP/IP communication
- Alarm indicators based on the NAMUR 102 standard
- Two alarm relays with user-programmable set points per channel, with additional system alarm
- Data logging to SD card, including measurement parameters and error codes

Applications

- Natural gas production and processing
- Pipeline drying
- Offshore export pipeline natural gas
- Transmission pipeline monitoring
- Fiscal metering/custody transfer of gas
- Gas storage facilities
- Hydrogen production, storage and transportation including natural gas injection
- LNG production processing and receiving terminals
- Gas generation industries
- Refining, including ethylene/polyethylene plants

Multi-Channel Process Monitor

The rack-mounted monitor and control unit provides real-time display of moisture content/dew point or O₂ and analysis pressure, user-settable alarms together with configurable analog outputs and digital communications, conveniently located in a safe area. Intrinsically safe sensors, with a sampling system, are installed in the hazardous zone to minimize sample transportation time and ensure fast response to process parameter changes.

Features

Flexibility

The Multi-Channel Process Monitor (MCPM) supports 4, 5 or 6 channels in a single 19" rack-mountable unit. It supports any combination of moisture in gas measurement using Promet I.S moisture sensors, moisture in liquid analysis with Liquidew I.S moisture sensors or oxygen measurement function using the Minox-i O₂ Transmitter.

Each measurement channel functions totally independently, so any maintenance on one channel will not affect the others. Customers can also order blank channels for future expansion, if required.

Ease of use

A single 7" color touchscreen with an intuitive user interface displaying moisture content/dew point (user selectable) and analysis pressure along with alarm status, with a choice of ISO or IGT#8 calculations. The display also gives the user the following:

- Choice of units for moisture, pressure and temperature, plus % or ppm_v O₂
- Alarm indicators based on the NAMUR 102 standard
- User-configurable analog and digital outputs
- Per channel configurable, on-display tag numbers



Integral database of Henry's Law Constants along with the ability to enter and store user-defined saturation constants for moisture in liquid measurements.

Comprehensive data logging is available (stored on an SD card) and includes all measurement parameters, plus instrument error messaging.

The rear panel has segregated hazardous and non-hazardous area connections and a single RS485 port for ease of connection, with an additional ethernet port for Modbus TCP/IP connectivity. Both 85...264 V AC and 20...28 V DC power options are available.



Rear panel input/output connections

The MCPM supports the following PST sensors:

Michell Promet I.S. Process Moisture Analyzers are heavy-duty industrial hygrometer systems for measurement of high-pressure process gases and vaporized liquids on natural gas platforms and terminals, petrochemical plants and industrial gas manufacturing facilities. Promet I.S. combines Michell's proven ceramic metal-oxide moisture sensor with sample-conditioning system design engineering capabilities to provide a multi-channel online instrument for both flammable and non-flammable gases, that is both reliable and easy to operate.

Michell Liquidew I.S. Moisture in Liquid Analyzer provides accurate, fast and reliable online measurement of moisture content in liquids. A wide variety of non-polar liquids can be measured continuously online, including flammable liquids and hazardous area applications, petrochemicals and petroleum refineries.



PST Minox-i is a highly reliable and cost-effective two-wire, loop-powered transmitter with a linearized 4...20 mA output. The standard offering has a detection measurement range of 0...25 % oxygen. This compact transmitter utilizes advanced galvanic fuel-cell technology that provides a long sensor life with a high level of accuracy and stability.

As well as the choice of intrinsically safe sensors, there are other options to give users support for a range of applications. For example, in applications where pressure varies, a real-time pressure sensor signal provides more accurate, active compensation for moisture content conversion (using an optional pressure sensor).

In addition, sampling systems designed for measurement of flammable and non-flammable gas and complete packages can be supplied for use in explosive atmospheres in accordance with the requirements of ATEX/IECEX/UKCA or meeting the equivalent NEC HazLoc requirements for Class I Div 1 and Class I Zones.

See the Michell ES70 Sampling System datasheet for full details.



Minox-i Intrinsically Safe Oxygen Transmitter



ES70 Sampling System examples

Technical Specifications

Process Monitor	
Display	7" color touchscreen LCD, displaying moisture content/dew point or O ₂ and analysis pressure or temperature and process tag names/numbers
Analog Output	Three 4...20 mA (max. load 500 Ω) per channel User configured for parameter, unit and range
Digital Output	RS485 Modbus RTU plus Ethernet port for Modbus TCP/IP
Data Logging	SD card (Max. 32Gb FAT16/FAT32) All measurement parameters (DP, temperature, pressure, %/ppm O ₂ , plus basic fault-finding data
Display Mode	Moisture content (ppm _v) Moisture content in natural gas (ppm _v , LBMMSCF, mg/m ³) Dew point (°C or °F) Pressure (psig, barg) % or ppm _v O ₂
Pressure Compensation	Fixed value (user programmed) or dynamic input from optional pressure sensor

Display Resolution	0.1 °Cdp, 0.1 °Fdp, 0.1...0.001 ppm _v ideal gas (adjustable), 0.01 ppm _v natural gas, 0.01 mg/m ³ , 0.01 LBMMSCF, 1 psig, 0.1 barg, 0.01 %/0.5 ppm _v O ₂
Alarms	Two alarm relays with user-programmable set points per channel, with additional system alarm Two Form C contacts rated 30 V DC, 5A Non-inductive load
I.S. barriers	Galvanic isolation type, integrated to process monitor
Power Supply	85...264 V AC 47/63 Hz or 20...28 V DC 30 V A maximum power consumption
Operating Environment	Indoor, safe area, 0...+50 °C (+32...+122 °F) < 90 %rh
Interconnection Cable	General instrument type, twisted pair, screened, single pair (two pairs with pressure sensor)
Enclosure	19" sub rack unit Dimensions: 132 x 483 x 375 mm (5 x 19 x 14.75") (h x w x d) (100 mm/4" min. rear clearance depth for cables and vents)

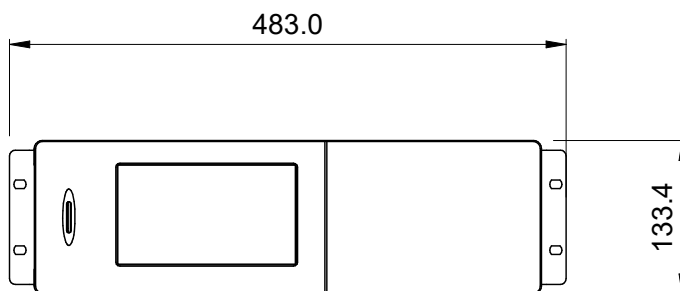
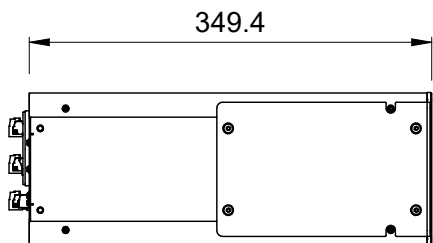
For technical specifications for the sensors, refer to the appropriate product datasheet:

- Promet I.S. 97150 Datasheet
- Liquidew I.S. 97152 Datasheet
- Minox i Oxygen Transmitter Datasheet

For technical specifications for the sample system, refer to the following datasheet:

- ES70 97550 Datasheet

Product Dimensions



Related Products



XTP601
Process Oxygen Analyzer



Multi-Channel Unit
Promet I.S. / Liquidew I.S Moisture Analyzer

Michell Instruments adopts a continuous development programme which sometimes necessitates specification changes without notice.
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