

Condumax II Transportable Hydrocarbon & Water Dew-Point Analyzer

Transportable natural gas dew-point analyzer system for operation in the field. Suitable for IEC Zone 1 or 2 hazardous area, NEC Class I, Division 1 Groups B, C, D.



A complete transportable natural gas dew-point analysis system for field spot-check measurements. Periodic online operation when located in a temperature maintained analyzer house. Measurements and functionality are instantly accessible through integrated alphanumeric display and touch-glass HMI interface including log of dew-point readings for operator review.

Highlights

- Field transportable self-contained dew-point analyzer system
- Simultaneous HC and water dew-point measurements in a single analyzer
- Automatic objective measurements by industry proven principles
- Parameter specific sensors ensure continuity of HC and water dew-point readings
- Self-contained sample handling, conditioning and analysis package
- 0.5°C (0.9°F) HC dew-point accuracy
- Fundamental cooled mirror principle

Applications

- Spot-check measurements of HC and water dew point
- Field verification of installed on-line dew-point analyzers
- Flexibility for periodic measurements at any gas source
- Producer process stage profiling to optimize efficiency



The Industry Standard HCDP/WDP Analyzer

The Condumax II fulfills the demands of natural gas producers and pipeline transmission companies for reliable on-line monitoring of natural gas hydrocarbon and water dew point.

Condumax II is the industry's analyzer of choice to ensure conformance of these key gas quality parameters, from production processing, through trans-continental pipeline networks into final distribution and utilization by major consumers such as power generators. Throughout the midstream industry Michell hydrocarbon dew-point analyzers are installed as permanent analyzers, providing measurements six times every hour 24/7/365.



Transportable Condumax II for Field Validation

The Condumax II Transportable addresses the further needs of natural gas users as the industry evolves. With an increased proportion of alternative fuel sources such as biogas, and greater reliance on LNG imports into gas networks which traditionally received gas solely from fixed upstream producers, the attention to ensuring accurate measurement of dew point has never been more critical. This increased complexity of supply chains has expanded the number of potential measurement points each requiring conformity to specification. The Condumax II Transportable offers the flexibility to make investigative spot-check measurements at any location, to even the smallest and most remote gas source. Furthermore, for the gas producer, the Condumax II Transportable can be used to profile individual process stages to ensure optimum efficiency.

Quality Assurance with a New Transfer Standard

The Condumax II Transportable also enables established users of permanent on-line dew-point analyzers to carry out periodic comparative measurements in the field to verify measurement performance against the certified factory laboratory calibration of the Condumax II to all users.

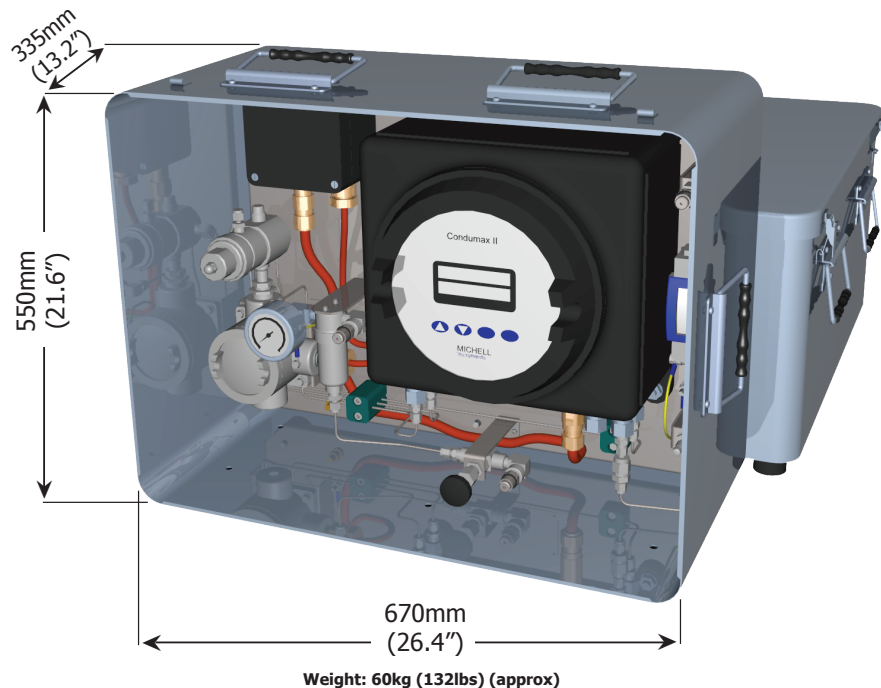
The Condumax II Transportable offers automatic measurements of high sensitivity and objectivity wherever they are needed in a simple to use, self-contained, sample handling, conditioning and analysis package.

Sample Conditioning System

- Complete integration of Condumax II Main Unit
- System configuration for connection direct to transmission pipeline natural gas at typically 70 barg (1015 psig) pressure
- Simultaneous water dew-point measurement at process pressure. Integration of water dew-point sample flow in series for analysis at full line pressure
- Process pressure gauge, 100 barg (1450 psig) scale
- Coalescing filter with by-pass needle valve and system drain
- Sample gas pressure reduction via electrically-heated regulator for analysis of HC dew point at intermediate pressure (cricondenthem condition), adjustment range up to 35 barg (507 psig) fitted (analysis pressure indicated by Condumax II Main Unit)
- Sample flow control with armored rotameter

****To assure correct measurement performance of this system in outdoor field use, the ambient air temperature must be at least 5°C (9°F) above both the hydrocarbon dew-point temperature of the process gas sample at the cricondenthem condition, typically 27 barg (391 psig), and water dew-point at full process line pressure.***

Dimensions



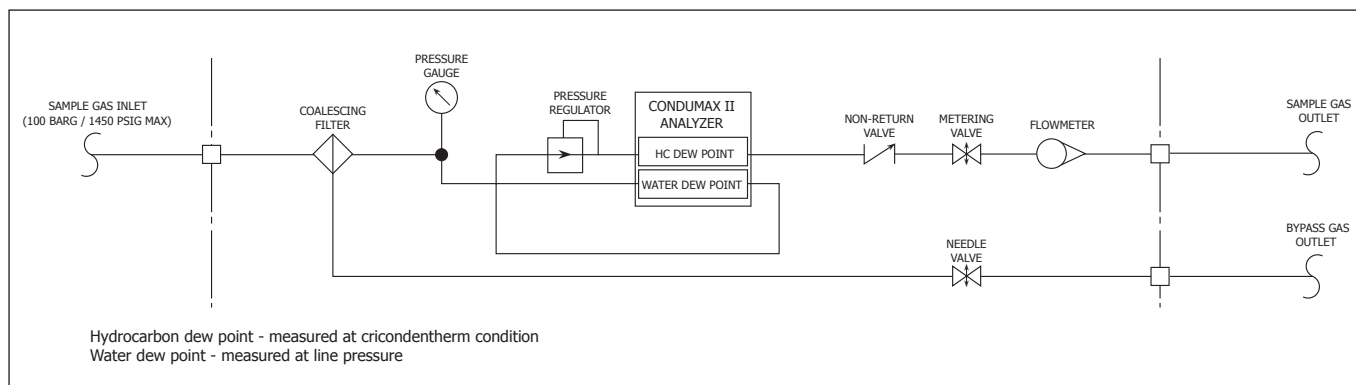
System Package

- Custom designed and built carry case of heavy duty construction in 316 stainless steel with six vibration absorbing feet on base (for transportation) and on one edge (for upright analyzer system operation)
- Removable case lid secured by four toggle latches. Six carry handles for ease of mobility by two persons and transportation between sites by automobile
- Power consumption: <300 W, 110 V, 60 Hz or 230 V, 50 Hz (dependent on unit purchased)
- Power Connection: Junction box provided with M20 or 1/2" NTP gland entry. Local AC connection to by customer's site electrician in accordance with local codes of practice
- Weight (inclusive of Condumax II Main Unit): 60kg (132lbs) approximately

System Connections

- Minimesse® stainless steel braided, micro-bore hoses
- Sampling system connection: Minimesse® quick connect
- Set of 3 hoses: Sample inlet, coalescing filter drain / by-pass and sample gas exhaust
- Length: 3m (9.8ft) (each hose)
- Process connection: 316 stainless steel, 1/4" NPT male
- Gas wetted bore: PTFE, 2mm internal diameter

Condumax II Flow Schematic



Technical Specifications

Condumax II Main Unit Analyzer

Hydrocarbon Dew-Point Measurement	
Measuring technique	Dark Spot™ fixed sample analysis; Direct photo-detection of hydrocarbon condensate at hydrocarbon dew-point temperature
Sensor cooling	Automatic via 3-stage Peltier effect electronic cooler under adaptive control
Maximum range	Up to Δ 55°C (131°F) measurement depression from main unit operating temperature
Resolution	0.1°C, 0.1°F
Accuracy	±0.5°C (±0.9°F) hydrocarbon dew point (single and multiple condensable component analysis)
Sample flow	0.03 to 0.06 m ³ /hr (0.5 to 1.0 NI/min / 1.05 to 2.11 scfh) - low flow alarm standard
Measurement frequency	6 cycles/hour (recommended) 12 cycles/hour (maximum)
Water Dew-Point Measurement	
Measuring technique	Michell Ceramic Metal-Oxide Moisture Sensor
Unit selection	
Dew point	°C and °F water dew point
Moisture content	lbs/MMscf; mg/m ³ , ppm _v (conversion method IGT#8 or ISO18453)
Resolution	0.1°C, 0.1°F dew point 0.1 lbs/MMscf, 1 mg/m ³ ppm _v
Range	Calibrated from -100 to +20°C (-148 to +68°F) dew point
Accuracy	±1°C (±1.8°F) from -59 to +20°C (-74 to +68°F) dew point ±2°C (±3.6°F) from -100 to -60°C (-148 to -76°F) dew point
Pressure Measurement(s)	
Hydrocarbon dew-point analysis pressure	
Units	MPa, barg, psig
Resolution	0.1 MPa and barg, 1 psig
Accuracy	
Hydrocarbon dew point	±0.25 barg
Water dew point	±0.5 barg
Hydrocarbon and Water Dew-Point Analyzer	
Sample gas supply	Natural gas up to 100 barg (1450 psig), pressure regulated in sampling system
Enclosure	Travel case is stainless steel 316 material construction with removable lid for access and rubber feet for transportation / operation; Instrument is EExd cast enclosure with removable viewing port: internally heated for condensation protection
Gas connections	Sample inlet, filter by-pass outlet, system drain. Sample system for: 1/4" NPT female ports, Quick connect Minimesse® hoses, Process connections: 1/4" NTP male

Operating environment	Indoors/outdoors 0 to +40°C (+32 to +104°F); Max 95% rh <i>*See cautionary note on page 2</i>
Power supply	110 or 230 V AC, 50/60 Hz, 300 W
Weight	60kg (132lbs) (approx)
Logged data	150 data logs, sufficient for minimum 24 hour period (stored in volatile memory); Each log HC dew point and analysis pressure, water dew point and process line pressure; Visual review HMI display with automatic statistical analysis; maximum, minimum, average values for duration of log period
Integrated display/ keyboard	Touch screen with vacuum fluorescent display
Outputs	Modbus RTU, RS485 @ 9600 baud rate; Two 4-20 mA linear (non-isolated) outputs, user configurable for any combination of dew point or pressure parameters; Additional connection junction box required externally
Alarms	Process and analyzer status via software register and display annotation. Integrated low flow alarms for each sample flow Analyzer status fault flag 23 mA on mA output 1; Comprehensive analyzer status messages appear on HMI display; Additional connection junction box required externally
Certification	
Hazardous area certification	ATEX: II 2G Ex d e IIB+H2 T3 Gb Ta= -20°C to +40°C IECEX: Ex d e IIB+H2 T3 Gb Ta= -20°C to +40°C

*Available to customer specific order — consult Michell Instruments.

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