**A Laboratory Instrument Online and On Site**

The CONG Prima 10 is a laboratory quality chilled-mirror hygrometer that is designed to be equally at home in the field. This automatic continuous-flow instrument measures the water dew point as well as the hydrocarbon condensation temperature with unequalled accuracy and repeatability. The CONG Prima-10 is suitable for a wide range of applications and features Vympel’s advanced **laser-based interferometric analysis technology**. With this technology the CONG Prima-10 can measure both the water dew point and the hydrocarbon condensation temperature with the same measurement cell. As a result, this analyzer can take measurements of the water dew point, the hydrocarbon condensation temperature, or both values alternately. In this way, the CONG Prima-10 provides a complete dew point solution!

**Inherently safe and robust**

The CONG Prima-10 is a two-component analyzer. The first component is the dew point transducer that features a monobloc construction comprising a sensor cell, an electronic unit, and an explosion-proof housing. The measurement cell is located exterior to the inner cavity of the housing. This placement ensures that no leakage of the sample gas can ever result in a dangerous over-pressurization of the analyzer as compared to competing designs.

The second component of the CONG Prima-10 is the central control unit. This unit is installed in an explosion safe zone and provides for operational control, diagnostics, and adjustment of the CONG Prima-10. In addition, the central control unit includes multiple digital and analogue data ports.

**Laser-based Analysis**

The CONG Prima-10 features laser-based interferometric analysis technology that takes advantage of the phenomenon of “total refraction” to achieve a previously unattainable level of sensitivity. Total refraction occurs when light from the polarized laser in the analyzer’s measurement cell strikes the surface of the condensation mirror at a specific angle. As a result, when no condensate is present, no light reaches the analyzer’s photo detectors.

**Measuring the water dew point**

When the mirror is cooled and water droplets begin to condense on the mirror’s surface, light from the laser is scattered, striking several photo receptors. This light is identified as being cause by water condensation. The CONG Prima-10 registers the temperature at which both water condensation and water evaporation occurs. The average of these two temperatures is reported as the water dew point, in accord with ISO 6327, and ASTM D 1142.

**Measuring the hydrocarbon condensation temperature**

Unlike water, hydrocarbons condense to form a reflective film. When hydrocarbons condense, light from the laser is partially reflected onto a single photo receptor. At the same time, some of the laser light passes through the film and is reflected by the mirror as well. When these two light signals reach the photo detector they produce a characteristic interference curve. Analysis of this curve allows the analyzer to register the hydrocarbon condensation temperature with unprecedented sensitivity, detecting a hydrocarbon film as thin as 5 – 10nm.

**Multiple installation Options**

CONG Prima 10 dew point analyzers offer a variety of options for installation. This instrument is ideal for installation as part of a gas preparation system and, like all Vympel online analyzers, it is equally well-suited for installation directly on the pipeline. On-the-pipeline installation, also known as “in situ” installation, is available either with or without filtration. In specific situations, in situ installation can be configured to provide sampling that results in **zero emissions**!

**Gas Preparation System**

The CONG Prima-10 can be delivered complete with one of several specially designed gas preparation systems. This system can include a built-in supplemental cooling unit that uses process gas as the refrigerant. With supplemental cooling the CONG Prima-10 measurement range can be extended down to -60 °C for low temperature dew point measurements. Vympel systems are designed to provide optimal sample gas preparation to the DPT, ensuring accurate and repeatable measurements of both the water dew point and hydrocarbon condensation temperature. These systems include pressure monitoring and control, flow control, and filtration.

**In situ**

In situ installation involves mounting the CONG Prima-10 onto a “pipeline module” that includes an insertable sampling probe. In situ installation of a chilled-mirror hygrometer for online dew point measurements is uniquely available from Vympel. In situ installation has the advantage of no delay in response time, providing up-to-the-minute information about the gas in the pipeline. Available with or without filtration, in situ is equally well-suited to indoor (closed room) and outdoor applications and can even be configured to provide **zero-emission sampling and analysis**.

**Features**

* Water dew point measurement in accord with DIN 51871, ISO 6327, and ASTM D 1142
* Hydrocarbon condensation temperature measurement in accord with ISO TR 11150, ISO TR 12148, and ASTM D 1142
* Registration of both the water dew point and hydrocarbon condensation temperature with one instrument
* First-principle measurement – no measurement drift
* Laser-based interferometric analysis
* Enhanced functionality provided by Central Control Unit
* RS-485, RS-232 digital, and 4…20mA analog data transfer
* Smart mirror cleaning mode
* Low maintenance
* No consumables
* Low power consumption
* In situ installation option

**Technical Data**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Measurement range** | Water |  | -30...+30 °C  -50...+10 °C\* | |
| HC |  | -30...+30 °C  -30...+10 °C | |
| **Absolute error** | Water |  | ±0.25 °C (-30 °C…+30 °C)  ±1.0 °C | |
| HC |  | ±1.0 °C | |
| **Measurement cycle rate** |  |  | 2...12 cycles/hr | |
| **Gas flow rate** |  |  | 1.0…2.0 Nl/min | |
| **Ambient temperature** |  |  | **-**40…+40 °C | |
|  | +10...+40 °C | |
| **Pressure measurement ranges** |  |  | 160bar  250 bar\*\* | |
| **Ingress protection rating** |  |  | IP54 | |
| **Explosion-proof rating (DPT)** | ATEX: |  | II 2G Ex IIA T5 Gb | |
| **Data Interfaces (CCU)** | Outputs |  | RS-485 ModBus / RTU  RS-232 ModBus / RTU  2 x 4...20 mA | |
|  |
|  |
| Inputs |  | 4...20 mA (thermometer)  4...20 mA (pressure transmitter) | |
| **Dimensions** | DPT |  | 207 x 112 x 235mm | |
| CCU |  | 483 x 320 x 128mm | |
| **Weight** | DPT |  | 6.5kg | |
| CCU |  | 6.5kg | |
| \* Supplemental cooling is necessary when measuring dew points < -30° C  \*\* Not including accessories | | | |

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**Please note:**

Product development and improvement are ongoing, therefore product data and speciﬁcations may be altered without prior notiﬁcation.