

VAISALA

# Monitoring systems and instruments

Life science, pharmaceutical  
& biotechnology applications



# Monitoring & mapping: laboratories, cleanrooms, warehouses



## Continuous Monitoring System (CMS)

The Vaisala viewLinc CMS is designed for GxP-regulated environments. The system combines Vaisala's viewLinc Enterprise Server software with Vaisala data loggers, smart probes, transmitters, and third-party Modbus-enabled devices.

Vaisala offers optional documentation and services, including: IQOQ protocols, a GxP documentation package to help you implement your system according to GAMP guidance, and services for field calibration, installation, and validation in selected regions.

## Validation/Mapping System

Designed for the most demanding validation applications, the Vaisala mapping system comprises vLog software and Vaisala's data loggers for downloading, displaying, analyzing and reporting. Fully encrypted and validatable, vLog produces tabular and graphical reports that are easy to customize to your documentation needs.

## viewLinc CMS Features and Benefits

- Validatable software and data loggers meet 21 CFR Part 11 and Annex 11
- Simple installation & validation, with optional IQOQ protocols
- Easy network connectivity with Ethernet, PoE, Wi-Fi, or VaiNet wireless technology
- Web-based interface for remote monitoring
- Alarm notifications through email, text, phone, PC display, signal tower and annunciator
- Secure audit trail and customizable reporting
- viewLinc validated monitoring data can integrate with other systems via Vaisala's OPC UA or the viewLinc API
- Allows inputs from Modbus-enabled devices

## Validation/Mapping system Features and Benefits

- Stable and reliable hardware minimize sensor accuracy drift
- Compact data loggers are easy to place and less disruptive operations
- Easy-to-use vLog software provides detailed, customizable reports
- Comprehensive IQ/OQ protocol available
- Three levels of security to control access: Windows, domain level, and local account authentication
- Security status of data on reports for compliance with 21 CFR Part 11/Annex 11
- Audit trail ensures all system actions are recorded

# viewLinc data loggers

## VaiNet Wireless RFL100 Data Loggers

Vaisala's proprietary VaiNet wireless technology is based on the LoRa® spread spectrum modulation technique. VaiNet provides low power, long range, secure data transmission that is extremely reliable in complex environments.

- RFL-series data loggers and AP10 network access points eliminate the need for repeaters
- Set-up is easy; access points are pre-programmed to establish communication with RFL100 data loggers
- Each AP10 access point can host up to 32 RFL-series data loggers; detachable probes for easy calibration
- Parameters: temperature only (2 channels), temperature and relative humidity, CO<sub>2</sub>%, with or without temperature/RH (1 - 3 channels)
- Signal strength ≥100 meters, even in obstructed environments
- Battery-powered data loggers with on-board memory provide gap-free point-of-measurement reliability



VaiNet RFL100 data logger



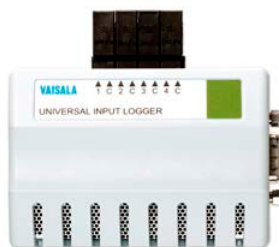
## AP10

The VaiNet AP10 access point connects RFL100 wireless data loggers to the viewLinc Enterprise Server software. In a typical system, the AP10 can be installed within 100 meters of an RFL100 data logger. Installation is easy; the AP10 identifies loggers automatically as soon as they are turned on. AP10 access points and the viewLinc software verify measurement data before sending to viewLinc's secure database, safeguarded from tampering and loss.



AP10 Network Access Device

# DL-series data loggers

 <p><b>DL1016 temperature data loggers</b></p> <p>The DL1016 and DL1000 series temperature data loggers have up to four channels and a wide temperature measurement range.</p>	 <p><b>DL2000 relative humidity and temperature data logger</b></p> <p>The DL2000 data logger combines internal temperature and relative humidity sensors with optional external channels for current or voltage inputs for recording parameters such as differential pressure, CO<sub>2</sub>, level, particles, or conductivity.</p>	 <p><b>DL4000 universal input data logger</b></p> <p>The DL4000 Universal Input data logger is a simple solution for recording and monitoring pressure, flow, fluid level, pH, electrical properties, moisture and gas concentrations.</p>
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# Vaisala Indigo products



## Measure with Intelligence and Insight

Designed for use with Vaisala's smart probes, Indigo transmitters provide a simple interface for a wide range of measurements, including temperature, humidity, dew point, barometric pressure, carbon dioxide (CO<sub>2</sub>), moisture in oil, and vaporized hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>). Typical applications include compressed air drying, incubators, cold storage, isolators, transfer hatches, and demanding HVAC such as animal laboratories and housing.

The Vaisala Indigo family includes intelligent, interchangeable measurement probes, optional host devices and Vaisala's Insight PC Software. **Indigo200** series transmitters are lightweight, easy-to-install host devices for Vaisala Indigo-compatible probes. **Indigo300** transmitters feature a corrosion-resistant metal housing and are pre-configured for up to three analog outputs (mA, V, or both). **Indigo500** series transmitters are industrial-grade, robust devices that accommodate up to two Vaisala Indigo-compatible probes.

Indigo transmitters provide easy visualization of data, versatile mounting options for simple installation, and plug-and-play connection with probes. Enclosures are rated IP65 (Indigo200 and Indigo300 Series); or IP66 and NEMA 4 rated (Indigo500 Series), safe for harsh environments, and resistant to dust and most chemicals. Transmitters feature local display options and connection to automation systems through analog signals, relays, or Modbus TCP/IP protocol.

## Insight PC Software

Field calibration is a quick way to check and verify measurement accuracy. With Indigo compatible probes, calibration can be performed using Vaisala's Insight PC software. Insight software automatically detects and connects to up to six probes. The software provides an intuitive graphical user interface, easy access to diagnostics data and device-specific advanced features, such as event logs, parameter backup copy, or electronic copies of calibration certificates. Data can be exported to a spreadsheet. Insight software is downloadable at: [www.vaisala.com/insight](http://www.vaisala.com/insight).



Indigo500 Series Transmitters for Humidity, Temperature, Dew Point, Barometric Pressure, Moisture in Oil, CO<sub>2</sub> and H<sub>2</sub>O<sub>2</sub> probes



Indigo300 Series Transmitters for Humidity, Temperature, Dew Point, Moisture in Oil, CO<sub>2</sub> and H<sub>2</sub>O<sub>2</sub> probes

# Incubators

Incubators require precise control of temperature, relative humidity and carbon dioxide. The patented Vaisala CARBOCAP® carbon dioxide sensor has become a standard for use in incubators. With excellent long-term stability, Vaisala CO<sub>2</sub> devices are ideal as a reference measurement. Each sensor features built-in temperature/pressure compensations and operates reliably in high humidity environments.



Indigo80 with GMP251 carbon dioxide probe and HMP110 humidity and temperature probe. The HMP110 probe offers measurement accuracy from ±1.0 °C and ±1.5 %RH (0–90 %RH) with higher accuracies available. The GMP251 CO<sub>2</sub> probe provides accuracy from ±0.1%CO<sub>2</sub> depending on operating conditions.



## Indigo80 Handheld Indicator

Ideal for spot-checking, process monitoring, calibrating, and adjusting Vaisala Indigo-compatible probes and transmitters, the Indigo80 enables measurements for multiple parameters.

- Log up to a month's worth of measurement data
- USB-C interface for data uploads and battery charging
- Multilingual, menu-based user interface available in 10 languages
- View live measurement data as numbers or graphs



## Vaisala CARBOCAP® GMP251 CO<sub>2</sub> probe

- Can be used as a standalone instrument or with Indigo transmitters
- Measurement range of 0-20%CO<sub>2</sub>
- Operating range -40 to +60°C with built-in temperature compensation
- Sensor heating to prevent condensation
- Calibration certificate included



## Vaisala HUMICAP® HMP110 humidity and temperature probe

- Can be used as a standalone instrument or with a transmitter
- Measurement range of -40 to +80°C, 0 - 100% RH
- Voltage and digital output options

# Demanding HVAC and cleanrooms



## CAB100 Industrial Cabinets

The **CAB100** is designed for continuous monitoring in cleanrooms and industrial areas. The cabinets provide centralized integration of transmitters with the viewLinc continuous monitoring system software. A simple, pre-configured instrument panel for monitoring humidity, temperature, differential pressure and many other parameters, the CAB100 is configurable to your application requirements. Options include large or small size cabinets, analog inputs for remote transmitters, and safety barriers for areas that require Intrinsically Safe devices. Cabinet devices can be changed or expanded as needed.



## PDT101 differential pressure transmitter

The **PDT101 differential pressure transmitter** is designed for demanding cleanroom applications. The sensor integrates with the viewLinc monitoring system and the CAB100 industrial cabinets to monitor pressure differentials in regulated environments. Ideal for high-performance cleanrooms.

- Available with voltage output (3-wire) or current output (2-wire)
- DIN rail, panel or wall mountable
- 2 pressure ranges (Pa and in H<sub>2</sub>O)
- Accessible zero and span adjustment potentiometers
- ¼" brass tubing connections
- LED status indicator
- Traceable calibration to national standards (certificate included)



## HMT120/130 Humidity and Temperature Transmitter

The Vaisala **HUMICAP® HMT120/130** Humidity and Temperature Transmitters were designed specifically for clean rooms with rounded edges for easy wipe down. They can be mounted on a wall, or with a remote probe for measurement in ducts.

- Interchangeable remote or local probes
- 2-wire loop-powered or 3-wire voltage output configurations
- Removable probe for easy field calibration
- Optional LCD display and easy USB connectivity to PC
- Wall-mounted or remote options available

**Vaisala HUMICAP® HMW90** measures relative humidity and temperature in indoor environments. The HMW90 is a flexible product family with a variety of options and features, both analog and digital output models are available. The sensors are exceptionally easy to configure, install, and adjust in the field. Calculated parameters include temperature dew point, enthalpy, and wet bulb temperature.



## HMW90 Humidity and Temperature Transmitter



## HMD60 Humidity and Temperature Transmitter

Vaisala **HUMICAP® HMD60** Humidity and Temperature Transmitters mount easily on walls or ducts for monitoring HVAC applications.

# Industrial drying & compressed air



**Indigo520 Transmitter**

Ideal for applications like tablet coating, fluid bed dryers, and dry rooms, the Vaisala HUMICAP® and DRYCAP® sensor technologies offer many solutions to reliably measure humidity, temperature and/or dew point and barometric pressure. With our newest Indigo family of products, probes can be used independently or combined with a transmitter for additional capabilities.

The DRYCAP® products provide stable measurement in extremely



**Dew point and temperature probe DMP8**

dry conditions such as in compressed air, glove boxes, and dry rooms. Features include:

- Dew point range down to -80°C (-112°F)
- Fittings for elevated pressure up to 725 psia
- Patented auto-calibration technology allows for calibration intervals up to two years

The HUMICAP® products provide exceptional stability over a wide range of temperature and humidity

conditions, making them ideal for applications such as tablet coating and fluid bed dryers. Features include:

- Temperature range optimized for processes ranging from -70 ...+180°C (-94...+356°F) and humidity 0...100%
- Purge cycles for chemical contaminants

\*Probe warming in near-condensing conditions for long-term measurement stability

## Dew point Measurement Solutions

- Spot-checking with the Vaisala Indigo80 handheld indicator in combination with DMP80 Probe
- Inline process measurement with Vaisala DRYCAP® dew point probe DMP7
- Original equipment manufacturing with Vaisala DRYCAP® dew point probes DMT132, DMT143, DMT143L, DPT146, and DMT152
- Sample cells can be used with various Vaisala DRYCAP® dew point instruments



**Indigo80 Meter, DMP80 Probe, DSC74 Sample Cell with quick connect**



**DMT143 Probe with optional sample cell**

# Bio-decontamination & sterilization

## Hydrogen Peroxide Vapor Bio-Decontamination

The HPP270 series probes use PEROXCAP® technology to provide repeatable, stable, and accurate measurements in isolator, transfer hatch, and room bio-decontaminations. The basic probe option HPP271 measures H<sub>2</sub>O<sub>2</sub> vapor concentration (ppm) and dew point; the HPP272 measures hydrogen peroxide vapor concentration, temperature, and humidity (relative saturation and relative humidity), dew point, and vapor pressure. For use as a standalone probe or with Indigo transmitters.

- Traceable calibration certificate
- Corrosion-resistant stainless steel probe housing (IP65)
- Integrable with control systems
- Excellent long-term stability and negligible hysteresis



Vaisala PEROXCAP® HPP272 with Indigo201

## Intrinsically Safe Humidity and Temperature Transmitter HMT370EX with HMP378 Probe

- HMT370EX Series Intrinsically Safe Humidity and Temperature Transmitters can be used in a variety of ETO gas mixtures
- Measures humidity and temperature, dew point, mixing ratio, absolute humidity and wet bulb temperature
- Safe operation with the entire transmitter in hazardous areas
- Features high accuracy, excellent long-term stability and negligible hysteresis



HMT370EX with HMP378 Probe





# Liquid concentration measurements



Polaris process refractometer installation

The Vaisala Polaris™ PR53AC Sanitary Compact Process Refractometer is used for inline concentration measurements in various upstream and downstream chemical and biological pharmaceutical manufacturing processes.

Ideal for demanding process conditions, including high temperatures and sticky processes, the PR53AC Sanitary Compact Process Refractometer is compatible with sterilization-in-place (SIP) systems. Connectivity options include mA, HART, and Modbus RTU as a standard.

The PR53AC refractometer is a perfect Process Analytical Technology (PAT) tool. Reduce sample-based measurements, ensure quality, and improve process efficiency with real-time continuous data on liquid concentrations.

## Features:

- Designed to meet different requirements related to instruments in Good Manufacturing Practice (GMP) environments.
- Compatibility with sterilization-in-place (SIP), hygienic design according to 3-A (46-04) and EHEDG
- Medical grade stainless steel wetted parts and USP Class VI biocompatible and Animal Derived Ingredients (ADI) free gasket materials.
- The Polaris™ PR53AC Sanitary Compact Process Refractometer data sheet complies with critical product specifications.



Vaisala PR53AC



# Life cycle services



As a manufacturer, Vaisala is dedicated to offering comprehensive customer care throughout the entire life cycle of your measurement devices and systems. Using our calibration services is the most convenient way to ensure your measurement data is accurate and your calibration records are compliant. Calibration options are available 24/7 from our online store. We are at your service worldwide with four global service centers and local field service options.

## Life Cycle Services:



**MAINTENANCE AGREEMENT**



**INSTALLATION & CONFIGURATION**



**VALIDATION**



**CALIBRATION SERVICES**



**TRAINING**



**MAPPING/ VALIDATION**



**TECHNICAL SUPPORT**

## Calibration Services:

- Calibrations meeting Accredited ISO/IEC 17025 or ISO 9001 quality standards
- Traceable calibration according to specification
- Customized calibration points available
- Adjustment possibility
- Calibration certificate always included
- Repair and modification services available as needed
- Delivery ways: Service center and On-site calibrations available

### SERVICE CENTER CALIBRATION

ISO 9001 or Accredited ISO/IEC 17025 calibration performed at Vaisala's calibration laboratories

- Wide calibration ranges and options
- Calibration in multiple points
- Adjustment included and repair services available as an option
- Includes calibration certificate with as-found and as-left results

### ON-SITE CALIBRATION

ISO 9001 or Accredited ISO/IEC 17025 calibration performed at customer site by Vaisala experts

- Single and multi-point calibration options
- No system downtime or lost data
- Carefree and convenient – saves in-house resources
- Includes Calibration Certificate



Visit our online store at [store.vaisala.com](http://store.vaisala.com)

Contact Vaisala HelpDesk: [www.vaisala.com/en/support-portal](http://www.vaisala.com/en/support-portal)

# Monitoring Systems Instruments

viewLinc Software



Dew point



Indigo300



Indigo200



Data loggers



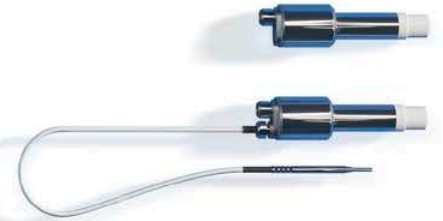
Humidity and temperature



Carbon dioxide



Hydrogen peroxide vapor



Moisture in oil



Insight PC Software



Indigo500



Indigo80





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