MIRION TECHNOLOGIES

SUPERVISORY SYSTEM

HORIZON®

Real-time data acquisition and control system

FEATURES

- Comprehensive supervision for your radiological instrument network
- Built-in support for the Mirion Environmental and Radiation Monitoring Systems as well as Personnel/Object Contamination Monitors
- Flexible client configuration allows creation of situational and navigation screens specific to your site
- Robust, platform neutral SCADA tools provide advanced graphic controls for visualizing your data
- Instrument screens are tailored for each device ensuring access to monitor setpoint and operation information
- Fully integrated design tool and reporting function
- Audible and visual alarms with advanced event and alarm management screens make viewing and responding to important events quick and easy
- Consolidation of data from instruments throughout the site and creation of a historical database
- Rich interactive display of data through plots and trending including historical data from each device
- Web-based technologies provide easy access to monitor data from anywhere on your network
- Support for industry standard OPC-UA protocols opens the system to a wide range of instruments and connectivity

DESCRIPTION

Horizon system is a real-time data acquisition and control system that provides supervisory oversight of your radiological instruments. It combines the Mirion radiological monitoring expertise with industry leading technology for SCADA (Supervisory Control and Data Acquisition) applications. The result is software that delivers an easy to use, reliable, high performance monitoring and control solution for nuclear facilities. It gives you a clear vision of the instruments throughout your site, work areas and environment.

A site can have a complex set of instrumentation to monitor personnel for contamination as well as to monitor areas for radiation. It is important that a supervisory solution provide real-time tracking of all the instrument data and help you interpret the information in an efficient manner. Being alerted to key events quickly means you can respond rapidly and with appropriate actions.

Horizon system puts the information you need at your fingertips making your workplace more efficient and safe. The interactive and user-friendly interface alerts users to key alarms and events while also providing advanced management of all your instruments and the data they produce.

Overview screens, site maps and situation screens are easy to customize and can be done right within the user interface by your administrative users. Having screens that depict the actual areas being monitored provides users with an intuitive way to see what's happening and navigate to specific areas or instruments.

The scalable architecture makes Horizon system suitable for everything from small radiological networks consisting of just a few instruments up to networks containing over 200 personnel contamination and environmental monitoring devices.

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DEVICE DETAILS

Besides having an overview of your site, Horizon system also lets you drill down to detailed information about any individual device. When an important event occurs, you need to get at the details quickly to better understand the situation and react. Access to device details is only one or two clicks away. If you see a device alarming in an overview screen, you can simply click the icon to jump right to the details for that device.

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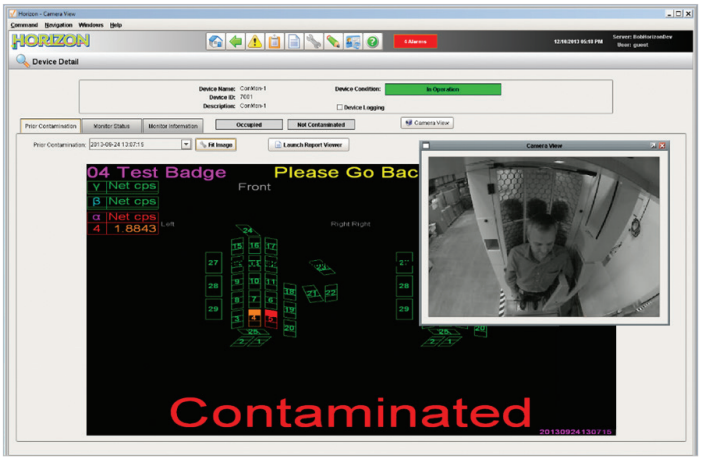
Horizon software has individual device screens that are tailored to each instrument. They enable viewing individual channel readings for each instrument including its alarm states, device conditions and status. Each Mirion instrument will have its own specialized screen developed within Horizon software. Each specialized screen not only lets you view detailed instrument data, it also lets you interact with the device. With proper system privileges, you are able to manage alarms or alarm settings, view a live camera feed from your personnel contamination monitor, or perform a variety of other functions a device might support.

Device detail screens for area and air monitors contain graphical gauges which are used to display the current value as compared to the warning and alarm setpoint values. The device detail screen for the personnel contamination monitors gives access to all contaminated events, provides detailed status and information about the monitors, provides access to key monitor reports, and acts as a direct link to the WebRemote® interface for the monitor. Other tabs for each device display trend plots and other information, as well as provide the ability to modify settings. The Horizon system server stores and backs up this information.

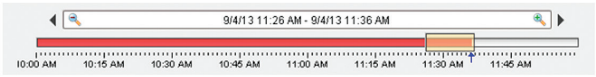


Contamination Monitor Device Detail Screen

Data Trending

Each device screen includes a powerful data trending control that lets you visually see the data from your instruments. By default the main channel data is displayed along with the alarm setpoints.

In addition, the same trending component can be used to display historical data. Simply enter the date range you want to view and the plot will contain data from that range. Of course you can also zoom, print and view your data in a variety of ways.



Historical Data Selection

In the trend plot, the current values of each sensor are shown along with the setpoint values.

If you want to see the actual data values within the trend plot, the Data Table tab will give you access to view the data in a grid/table format. This data can be copied to the clipboard or saved to a file so you can analyze the data further in other applications.

The alarm status and settings tabs provide detailed information on the alarm states for each channel and let you clear any alarms if you have the appropriate access.

Enhanced Plot Control

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Alarm and Event Logging

The ability to monitor and record alarms and events is a very important aspect of a supervisory system. Horizon system provides both audible and visible alarms and keeps alarms visible at all times so that you are always aware of important events as they occur. If an alarm occurs from any instrument the system is monitoring the alarm status will be announced by a sound played through the computer speaker. An alarm will also be displayed at the top of the screen. Clicking on the alarm indicator will display an alarm window at the bottom of the screen. New alarms appear at the top of the list. This enables the user to spot issues immediately and react.

In addition, a full alarm and event window enables users to view all system events. Seeing events and alarms for all instruments in one consolidated view enables users to retrace steps. Device events give visibility to changes in the instrument as well as local diagnostic operations such as taking the instrument offline for maintenance. Alarms can be marked as acknowledged from this screen to indicate that someone is aware of the situation.

The alarm and event list can be sorted, grouped and filtered to help find and organize the data being viewed. Historical data can also be retrieved for viewing via the Alerts and Events Report. Selecting the Reports Window enables a user to specify a date range to view alarms and events. All of these records are available on demand and managed automatically by the system. Use them any time you need to reconstruct events and activities for your instruments.

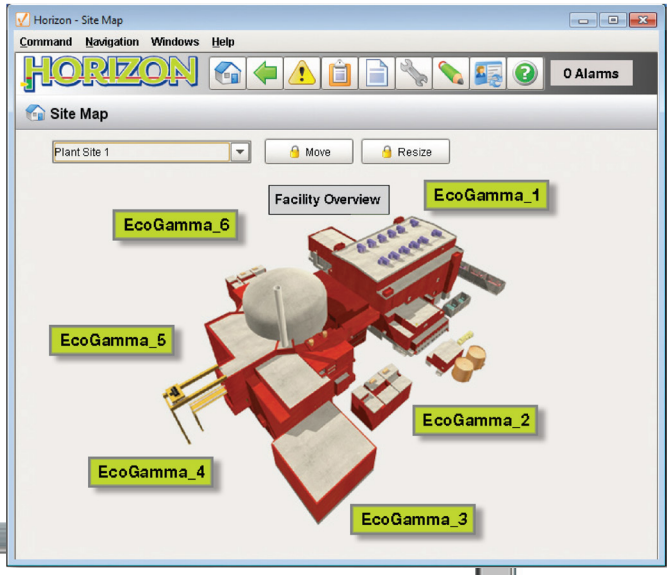
Report Viewer

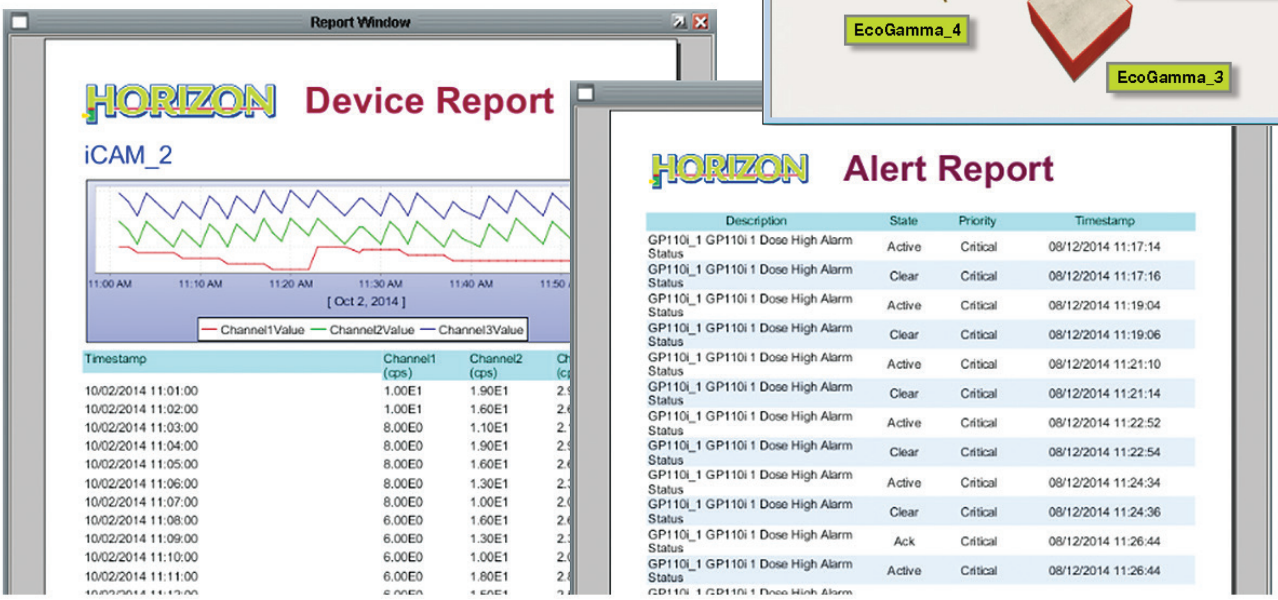
A report viewer is available to provide access to detailed data for instrument information, events and alarms. Some default reports are provided to filter and find the data you need. In addition the reporting engine can be used to create custom reports.

Comprehensive Supervisory Solutions

Horizon system's powerful networking capabilities and preconfigured screens enable Mirion to provide complete supervisory solutions for a variety of devices including the Mirion environmental and radiation monitoring systems as well as its personnel contamination monitors.

The straightforward deployment of the Horizon system lets you begin monitoring and maintaining your devices right away. Horizon system's open and scalable platform ensures your system can always be expanded to include additional instruments or be customized for future needs.





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Horizon Architecture Layers

There are three main layers in the Horizon architecture.

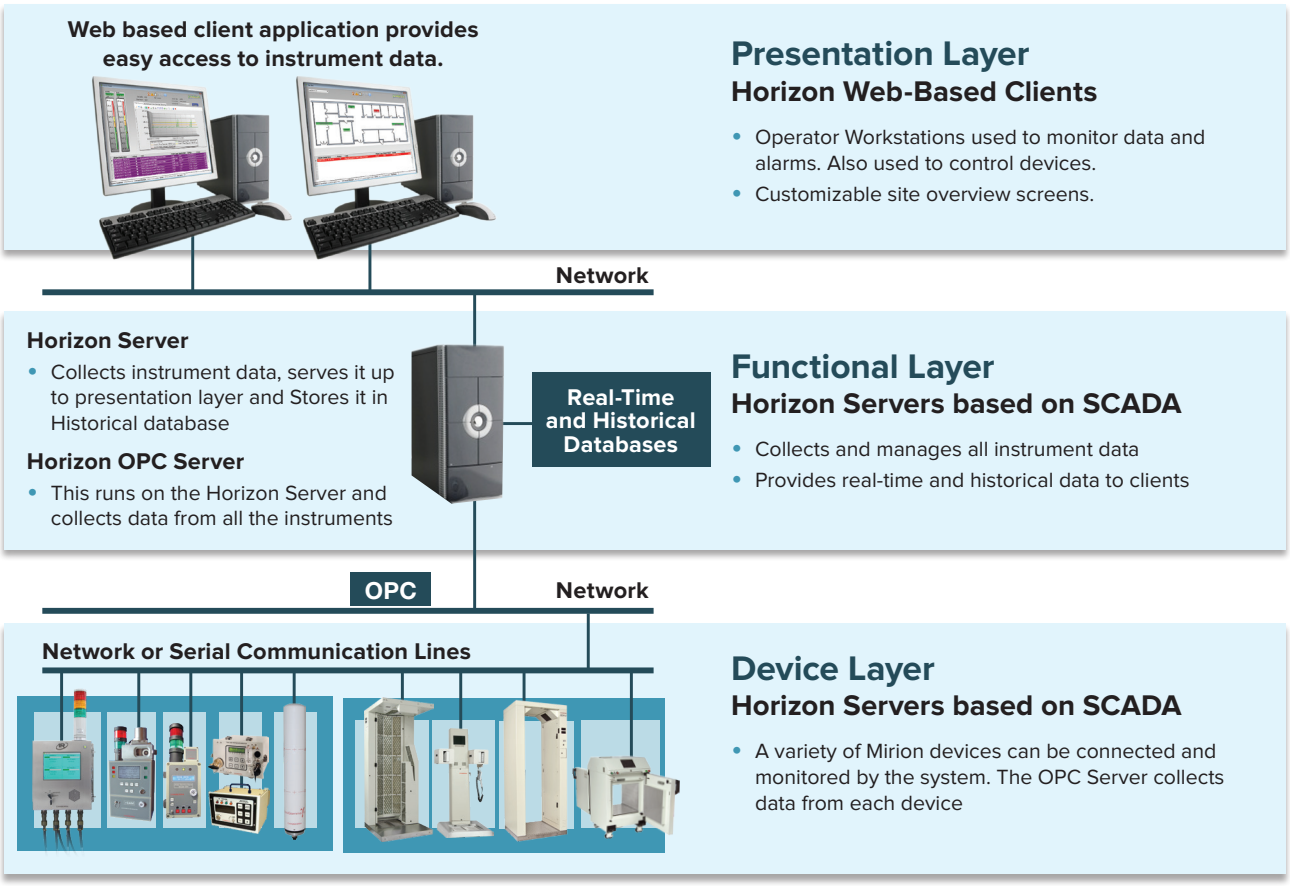
1. The Presentation Layer presents data, alarms and events to users in a graphical and interactive format. Together these layers provide a flexible yet powerful supervisory system.
2. The Functional Layer receives data and records it in its historical databases. It responds to all requests for real time or historical data.
3. The Device Layer consists of all the instruments that will be monitored by the system.

Horizon system leverages industrial SCADA (Supervisory Control and Data Acquisition) tools for real time data collection, storage, and visualization. SCADA systems provide excellent connectivity to a wide variety of devices through the use of standard communication protocols such as OPC-UA. Using industry standard protocols ensures interoperability with a variety of instruments and prevents closed proprietary systems. In addition, both real time and historical data can be easily shared with other management systems.

Ignition by Inductive Automation are the SCADA tools used for Horizon system's screen design and reporting engine, as well as for other configuration tools. These tools are platform neutral, enabling simple web deployment to any client computer on the network and provide Horizon system with a strong and secure foundation utilizing SSL technology and client authentication.

The Horizon Server and client are also built using the Ignition toolkit. This simplifies server installation and makes the system less vulnerable to conflicts with other applications, assuring the stability and long-term support of your Horizon system. The client software runs entirely in the Java runtime environment. You can access it from any client by simply pointing your browser to the Horizon server and launching the client application. IT personnel are not required to setup Horizon clients. This makes deployment easier and provides flexibility on how you gain access to instrument data.

Horizon system brings together OPC-UA and SCADA technologies to provide a robust and open platform that can meet your supervisory needs today and well into the future. Horizon system is not just a product, it's an open platform for Mirion's specialized radiological instrumentation which can be used to create a variety of solutions for our customers.



SPECIFICATIONS

SYSTEM REQUIREMENTS

The following are the platform requirements for the Horizon system:

Horizon Server and OPC Server:

- Dual-core processor (Intel i7 or better is recommended).
- 8 GB RAM or better recommended.
- 500 MB hard drive or larger is recommended. For systems with 25 or more instruments, we recommend 1TB drive or larger so the system has enough room to store data for 10 or more years. In addition, we recommend a computer with two drives configured with RAID 1 (mirrored) to ensure no loss of historical data occurs if a hard drive fails.
- 1024 x 768 minimum resolution, 1280 x 1024 or better recommended.
- Windows 10, Windows Server 2016 64-bit, Windows Server 2019 64-bit.

Horizon Client:

- The client is a web-based Java based application.
- Dual core processor, 2 GB RAM, 250 MB disk or better is recommended.
- 1280 x 1024 or better recommended.
- Web browser support for Google Chrome, Microsoft Internet Explorer, and Mozilla Firefox.

Database:

- Microsoft SQL Server 2016 and 2017.

BUILT-IN SUPPORT FOR THE FOLLOWING INSTRUMENTS

- EcoGamma™ Environmental Gamma Radiation Monitor (and legacy GP110i).
- iR7040™ Intelligent Ratemeter (and related products).
- iCAM™ Intelligent Alpha/Beta Continuous Air Monitor.
- ADM606™ Portable Ratemeter.
- G64™ Area Gamma Monitor.
- Argos™ Gas Flow & TPS contamination monitors.
- Sirius™-5 Hand Cuff & Foot monitor.
- GEM™-5 Gamma Exit Monitor.
- Cronos® Gamma Object/Tool Monitor.

ORDERING INFORMATION

All Horizon Server models include 1 Horizon OPC Server license and 1 Client license for use on the Server only. Includes 1 year warranty and maintenance contract.

- HORIZON-5: Horizon 5 Instrument License, 1 Client.
- HORIZON-5-C5: Horizon 5 Instrument License, 5 Clients.
- HORIZON-5-CU: Horizon 5 Instrument License, Unlimited Clients.
- HORIZON-10: Horizon 10 Instrument System, 1 Client.
- HORIZON-10-C5: Horizon 10 Instrument System, 5 Clients.
- HORIZON-10-CU: Horizon 10 Instrument System, Unlimited Clients.
- HORIZON-25: Horizon 25 Instrument System, 5 Clients.
- HORIZON-25: Horizon 25 Instrument System, Unlimited Clients.
- HORIZON-50: Horizon 50 Instrument System, Unlimited Clients.
- HORIZON-100: Horizon 100 Instrument System, Unlimited Clients.
- HORIZON-200: Horizon 200 Instrument System, Unlimited Clients.

Horizon clients enable viewing of instrument data from computers other than the Horizon server.

- HORIZON-C1: Horizon Single Client License.
- HORIZON-C5: Horizon Five Client Licenses.

The following expansion models enable a system to be extended to support additional instruments in the future. These are available to contract customers only.

- HORIZON-5-10-E: Expansion from 5 to 10 Instruments.
- HORIZON-10-25-E: Expansion from 10 to 25 Instruments.
- HORIZON-25-50-E: Expansion from 25 to 50 Instruments.
- HORIZON-50-100-E: Expansion from 50 to 100 Instruments.
- HORIZON-100-200-E: Expansion from 100 to 200 Instruments.

Please contact your sales representative for non-contract pricing for the expansion of your Horizon system. Pricing is also available for customized systems or support for devices other than those listed.

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