Honeywell

Technical Information

Experion EHM Specification

EP03-070-520, Rev 3.0

Release 110.2

July 2025

Table of Contents

1 About this Guide

1.1 Revision History

Revision	Date	Description
1.0	February 2023	Initial Release of Experion EHM
2.0	September 2024	R110 release of Experion EHM
3.0	December 2024	Added Data Licensing details

1.2 Reference Documents

Document Name	Document Number
Experion EHM User's Guide	34-VT-25-05
Honeywell Versatilis Transmitter User's Guide	34-VT-25-01

2 Experion EHM Overview

Experion® Equipment Health Monitoring (EHM) solution is based on proven Experion HS platform and can be used by plant managers and reliability engineers in process manufacturing facilities to monitor the health of rotating equipment. This enables maximizing equipment availability and reliability. Built on the proven Experion HS platform, it is reliable, flexible, easy to use, and scalable for any plant setup. Honeywell EHM solution enables collection, contextualization, and visualization of health-related parameters of industrial equipment.

Key features of Experion EHM solution include-

- Experion EHM connects to the LoRaWAN provider's application server using a secure MQTT interface.
- Supports LoRaWAN® communication technology through Industrial standard Gateways.
- Configure sensor devices with corresponding Assets in a Plant hierarchy using the Honeywell Versatilis Remote Configuration Manager tool.
- Sensor parameters data visualization using Summary view and Detailed device dashboards.
- FFT display based on the transmitter provided information that dynamically changes based on the frequency range published by the device firmware.
- Live and historical trends of Sensor parameters to troubleshoot issues.
- Displays equipment health alarms/ events when an alert is published by the transmitter.
- Generate, print and email the Site level and detailed Asset reports periodically on-demand based on the HVT device measurement and diagnostics data.
- Quick deployment in domain and workgroup environments with minimal engineering effort.
- ISO 10816 standard-based and custom limit based Vibration alarm indications.
- A secure solution including User and Asset-based Security.
- Processed HVT data is exposed through standard protocols such as OPC UA such that third-party software/SCADA/DCS can fetch this data.

3 Architecture Overview

Experion EHM solution uses proven Experion HS SCADA functionality to store and organize the data received from Honeywell Versatilis™ Transmitters. Experion EHM connects to the LoRaWAN provider's application server using secure MQTT interface. EHM uses web-clients for visualization of health data where the collected data is represented in the context of industrial equipment to which it is connected.

Web-clients ensure zero client deployment cost where any existing nodes within the network on customer's enterprise or OEM system can be used to access data on the go.

The collected Equipment health data can also be shared with existing supervisory control system and other enterprise level Management Information System (MIS) for improved decision making via OPC, thanks to open yet secure interfaces supported by Experion platform.

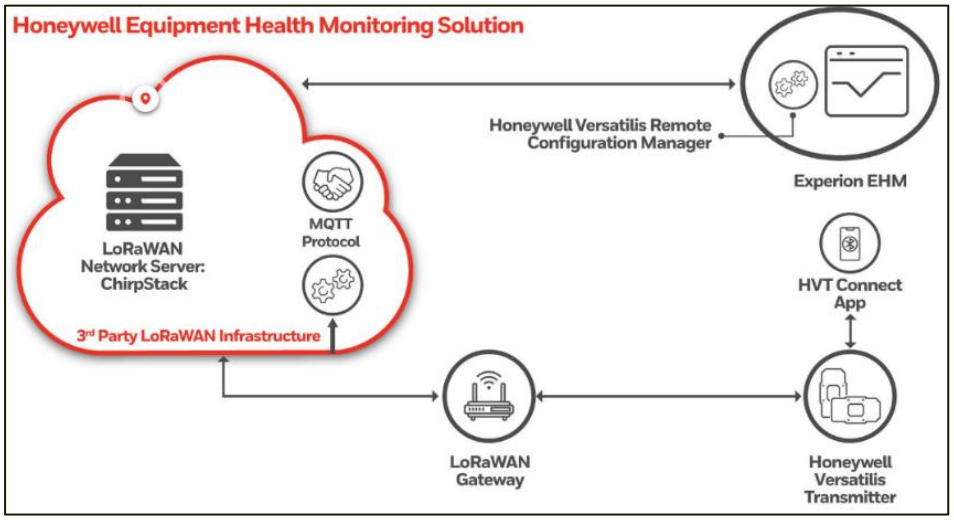


Figure 1 – Honeywell Versatilis Equipment Health Monitoring Solution Architecture

For information on HVT EHM integration with other SCADA systems, see *Integration with other Systems*.

3.1 Solution Components

The Honeywell Equipment Health Monitoring solution has three major solution components:

1. Honeywell Versatilis™ Transmitter measures Surface Temperature, Humidity, Ambient Pressure, Ambient Temperature, 3 Axis Vibration, and Acoustics of the equipment.
   Honeywell Versatilis™ Transmitter incorporates algorithms to infer the speed of rotating machines and can be viewed in the Experion EHM dashboard. It is also capable of calculating and transmitting statistical parameters which are very valuable for reliability engineers.
2. Secure communication gateway provider supporting LoRa wireless technology & LoRaWAN stack, connecting Versatilis™ Transmitters to Honeywell Versatilis™ Experion EHM.
3. Experion EHM provides web-based clients with intuitive visualizations of equipment health parameters, including both live and historical health trends.The Honeywell Versatilis Remote Configuration Manager application allows the user to configure the measurement parameters, retrieve data, and visually display the data on the Experion EHM dashboard.

3.1.1 Honeywell Versatilis™ Transmitter (HVT)

Honeywell Versatilis™ Transmitter is a multi-variant sensing offering based on the latest LoRaWAN® protocol communication technology. Its inherently low-power compact design coupled with quick and easy installation and commissioning help manufacturers to deploy them at scale with the lowest CAPEX and negligible OPEX.

The Honeywell Versatilis™ Transmitter offers multiple mounting options such as Screw, Magnetic, Epoxy, and Adhesive mount to suit the mounting surface of the target machine. Following measurement types are supported in the current R110 HVT release:

- Equipment – Vibration 3 axis, Audio Acoustics, and Surface Temperature.
- Environment – Ambient Temperature, Humidity, and Ambient Pressure.

Find more information, see *Honeywell Versatilis™ Transmitter Technical Specification, 34-VT-03-01.*

3.1.2 Industrial LoRaWAN Gateways and Service Provider

Honeywell EHM solution uses LoRaWAN gateways which wirelessly receive data from the battery-operated Honeywell Versatilis™ Transmitters. The Honeywell Versatilis™ Transmitter supports both OTAA and ABP activation modes for connecting with devices, thereby providing the required security and flexibility for project deployments. The gateways manage the device communications, aggregate the device data, and provide data to the LoRaWAN server.
Alongside the LoRaWAN gateways, the Experion EHM solution requires a LoRaWAN server that includes a Network Server and an Application Server. The network server would transmit data to Experion EHM via the MQTT protocol.

The LoRaWAN server can be provided in a Virtual machine. The use of LoRaWAN and MQTT protocols greatly enhances communication security and data integrity.

3.1.3 Honeywell Versatilis Remote Configuration Manager

The Honeywell Versatilis Remote Configuration Manager helps users create, modify, and add sites, assets, and transmitter details. It helps to view & update the configuration of the devices. It also helps to configure Experion to collect the data from the HVT devices, raise alarms and visualize them in the monitoring dashboards.

For more information, see Remote Configuration.

3.1.4 Experion EHM

Experion EHM solution used store and organize the data received from HVT devices through the LoRaWAN provider using a secure MQTT interface. The collected Equipment health data is arranged and presented using EHM web clients for visualization and represented in the context of the connected industrial equipment. Web clients ensure zero client deployment cost where any existing nodes on the customer's enterprise or OEM system can be used to access data on the go.

4 Features

4.1 Plant Hierarchy

The Honeywell Experion EHM plant hierarchy allows users to monitor the Sites > Assets > Devices (Versatilis™ Transmitter) in an Enterprise to assess the condition of the target machines to ensure that they are available for operation, detect any possible anomaly conditions and problems.
The below figure shows the sites, assets, and transmitters within an Enterprise level.

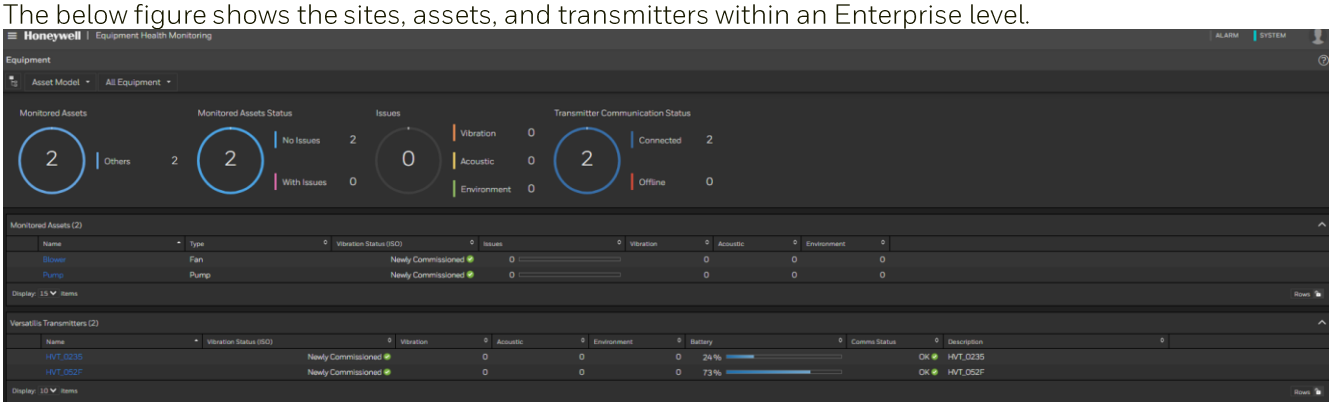


Figure 2 – Plant Hierarchy

4.2 Monitoring

4.2.1 Summary View

The Summary view provides an enterprise-wide summary of equipment, covering equipment health, and communication status.

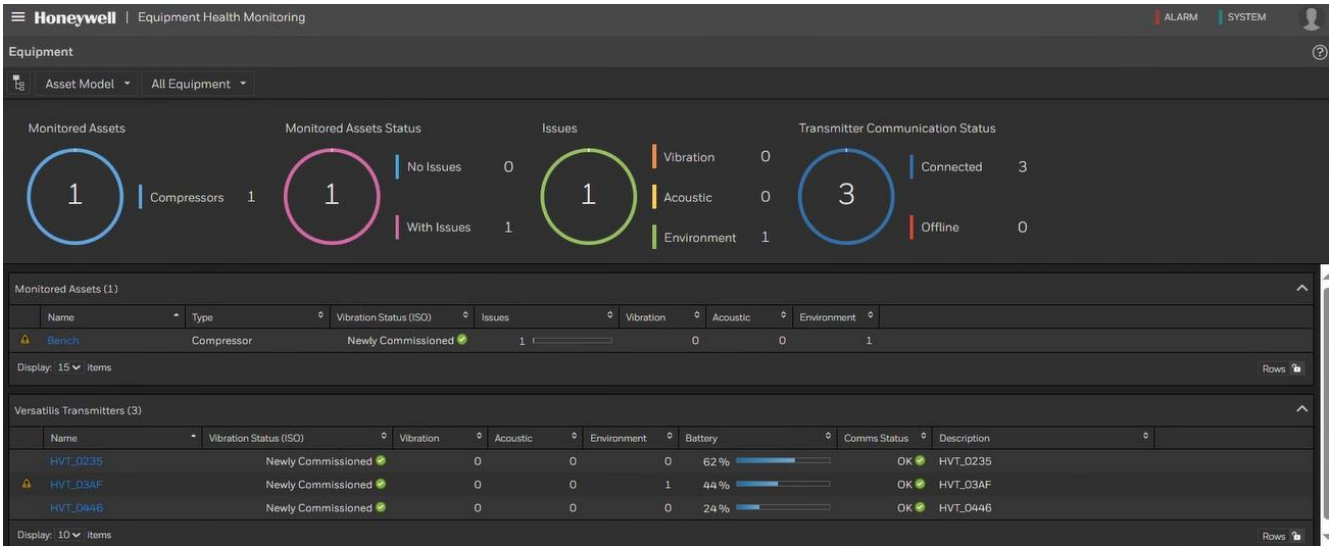
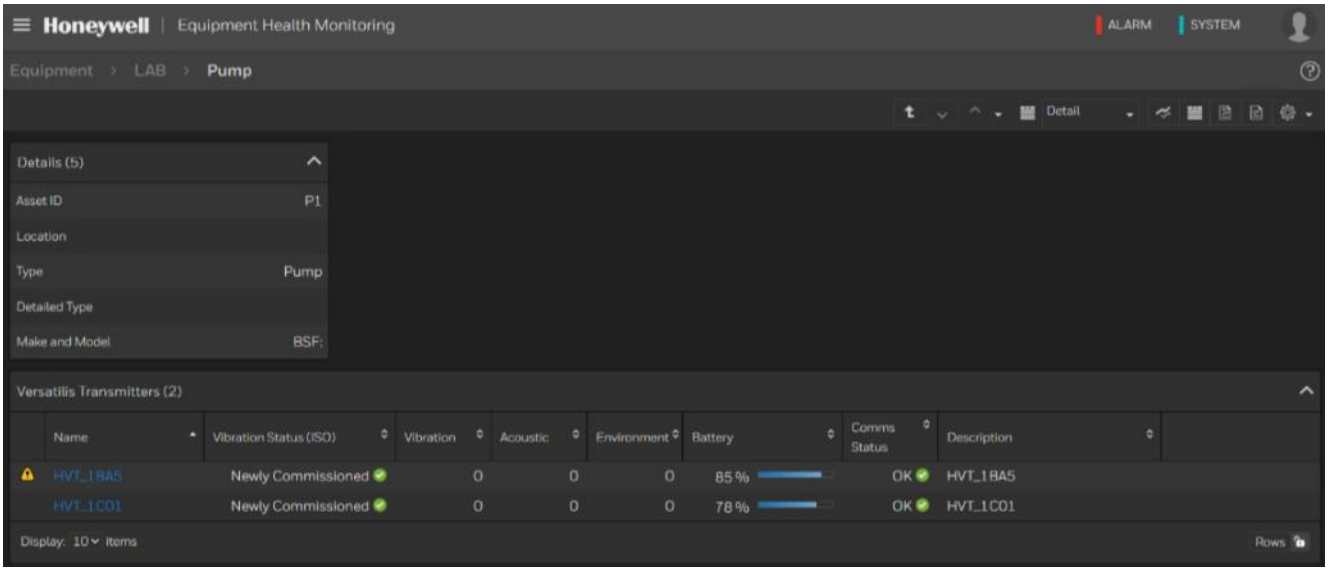


Figure 3 – Summary view dashboard

Select individual equipment assets for a detailed view and monitor the health of the target equipment.

4.2.2 Detailed View

The detailed view dashboards provide an elaborate view of the sensor parameters for an individual asset in a site.



Drill down the availble pull-down groups to view detailed measurements.

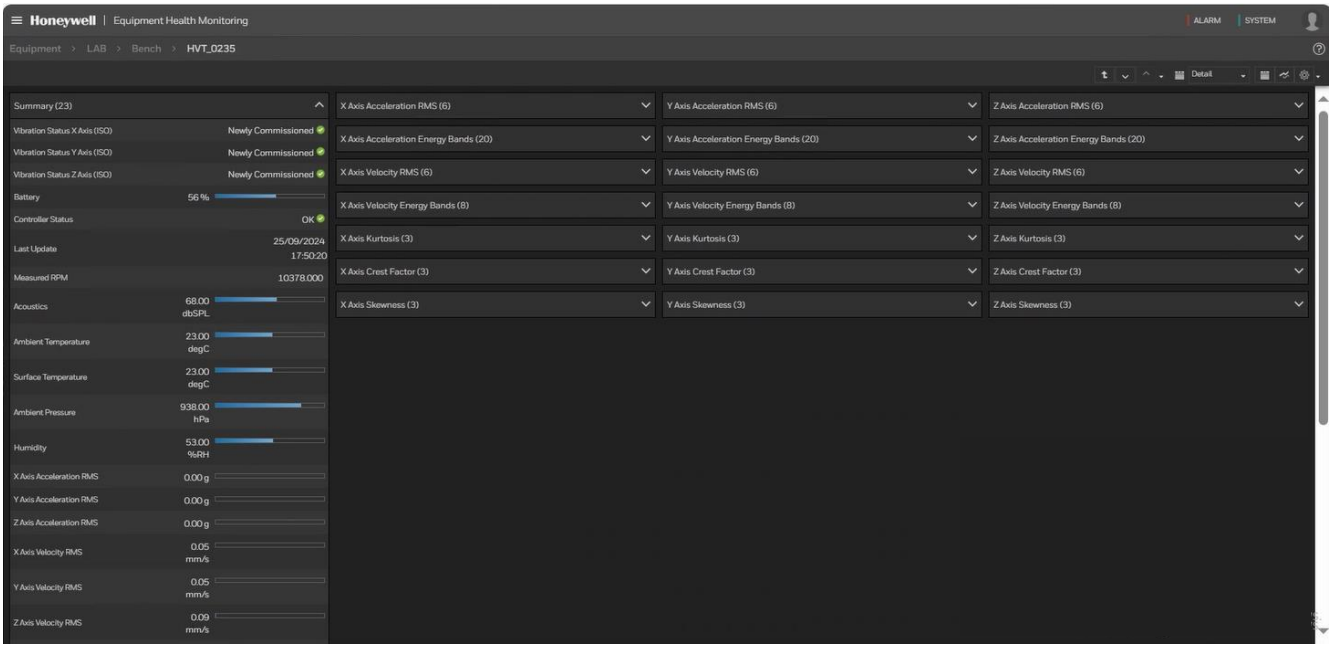


Figure 4 – Detailed view dashboard

4.3 FFT Visualization

FFT spectrum (Top 36 peaks) provides users the ability to analyze the amplitudes at various frequencies.

Figure 5 – High Energy FFT X-axis plot

Experion EHM offers markers that help reliability engineers quickly assess the presence of peaks at various harmonics of fundamental frequencies of the machine for quick diagnostics of rotating assets.

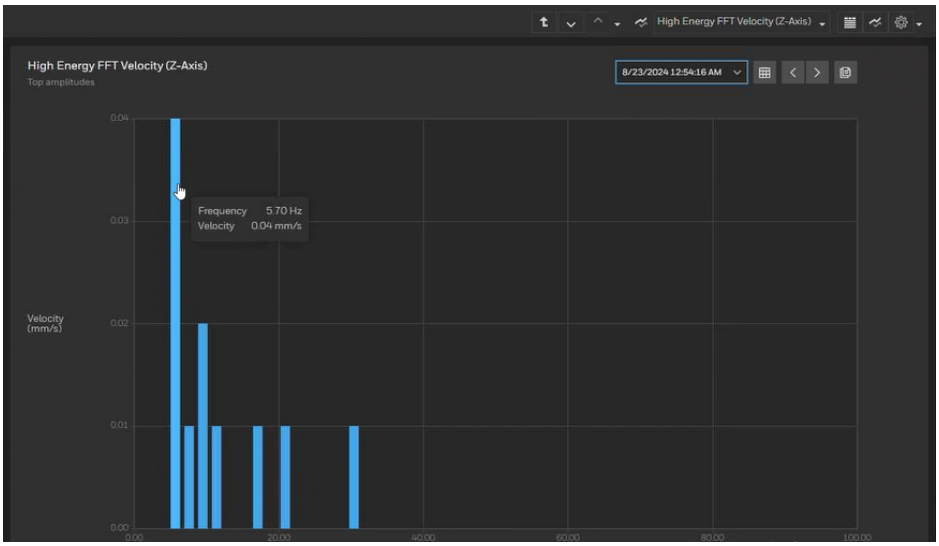


Figure 6 – Hairline function within the FFT spectrum

Experion EHM also allows you to compare the High Energy FFT plots at different points of time, select one of the Compare FFT options for X/Y/Z axes.

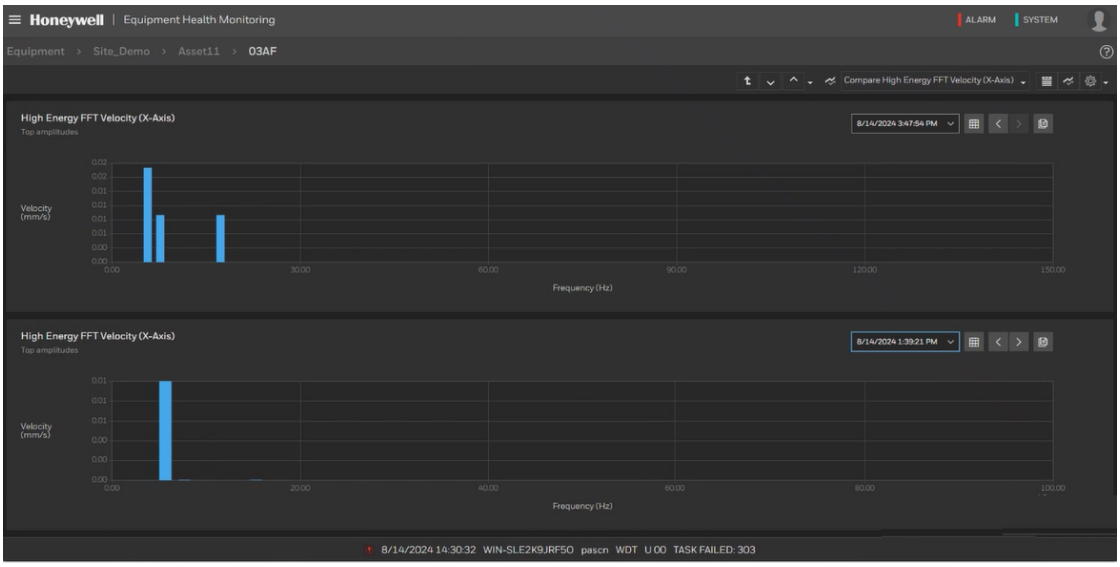


Figure 7 – Compare High Energy FFT X-axis

Similarly, you can view and compare High Energy FFT over the Y and Z peaks across different time frames.

4.4 Reports

Reports in the Experion EHM system are generated automatically based on predefined schedulesThese reports can be viewed within the Experion EHM dashboards or exported in PDF format for further analysis and sharing across the organization.

From the web browser, open the Honeywell Experion EHM dashboard > click ☰ > Reports to view the type of reports. The two types of reports are:

1. Detailed Assets Report
2. Site Summary Report

Detailed Assets Report

A detailed assets report provides the details of parameter values and diagnostics status of each/ individual equipment within that specific site.

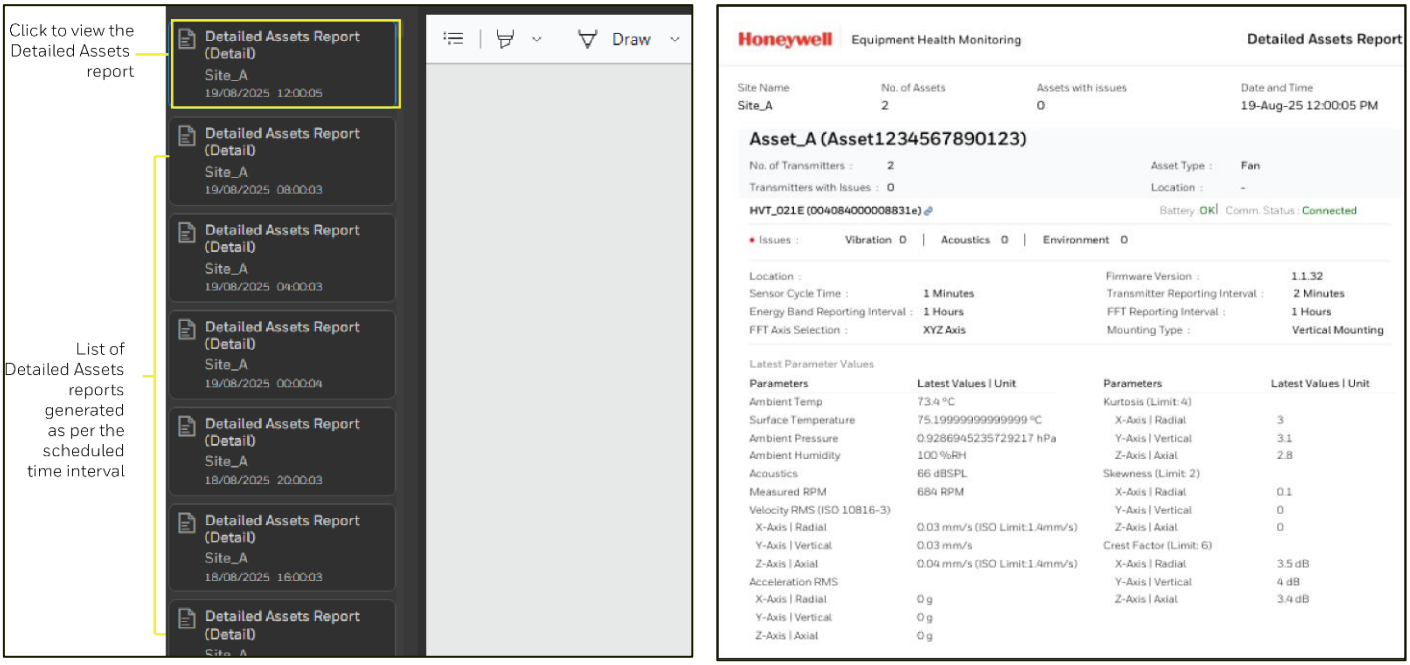


Figure 8 – Detailed Assets reports of an asset

Site Summary Report

The site summary report provides a high-level summary of the current state of the asset(s) and transmitter(s) within that specific site.

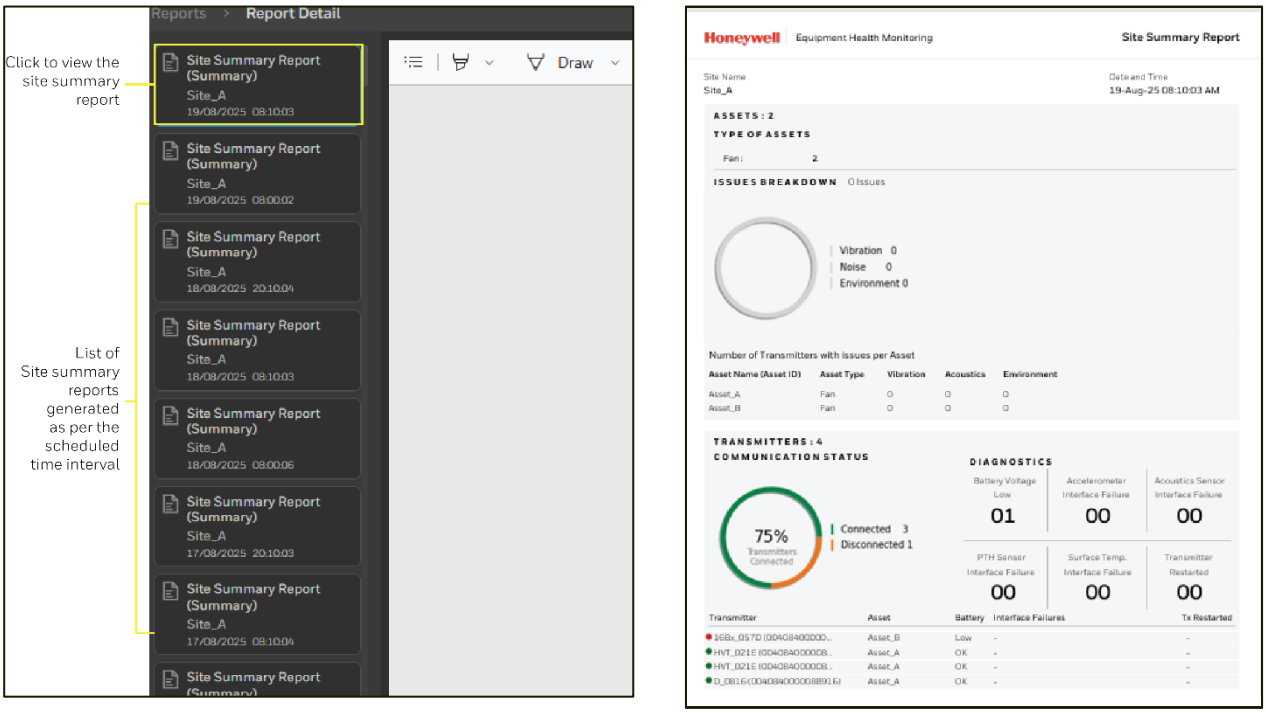


Figure 9 - Detailed Site Summary reports

4.5 Alarms

Alarms indicate unusual conditions in the system that require the user's attention. Alarms remain in the default view of the summary until the condition that triggered the alarm is acknowledged and returned to normal.

The following figure is an instance that shows triggered alarms of an asset.

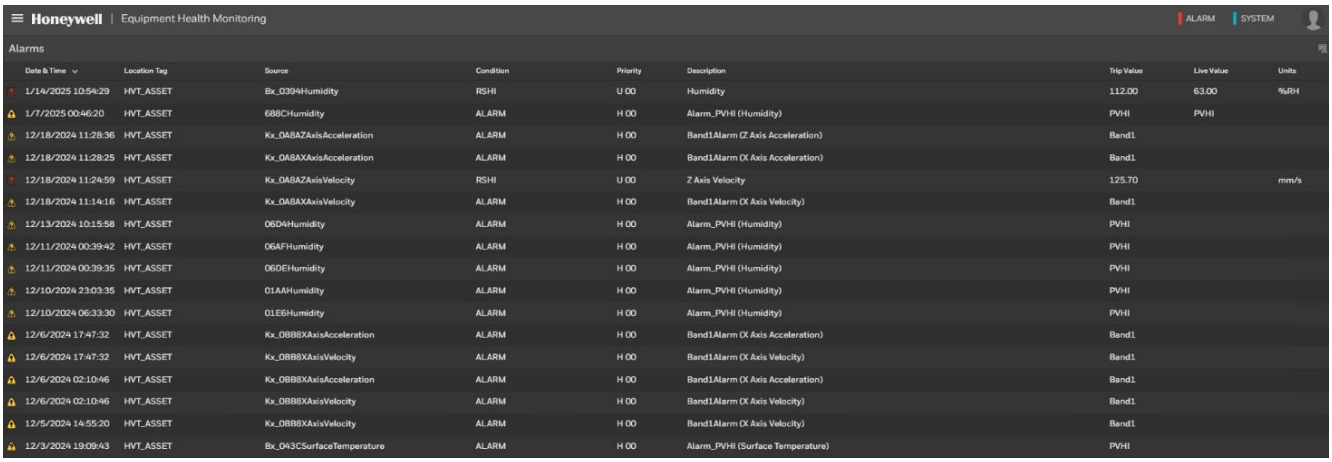


Figure 10 – Alarms of an Asset

The generated alarms can be configured to be received as emails to alert the site engineers even when the system is unmanned.

4.6 Integration with other Systems

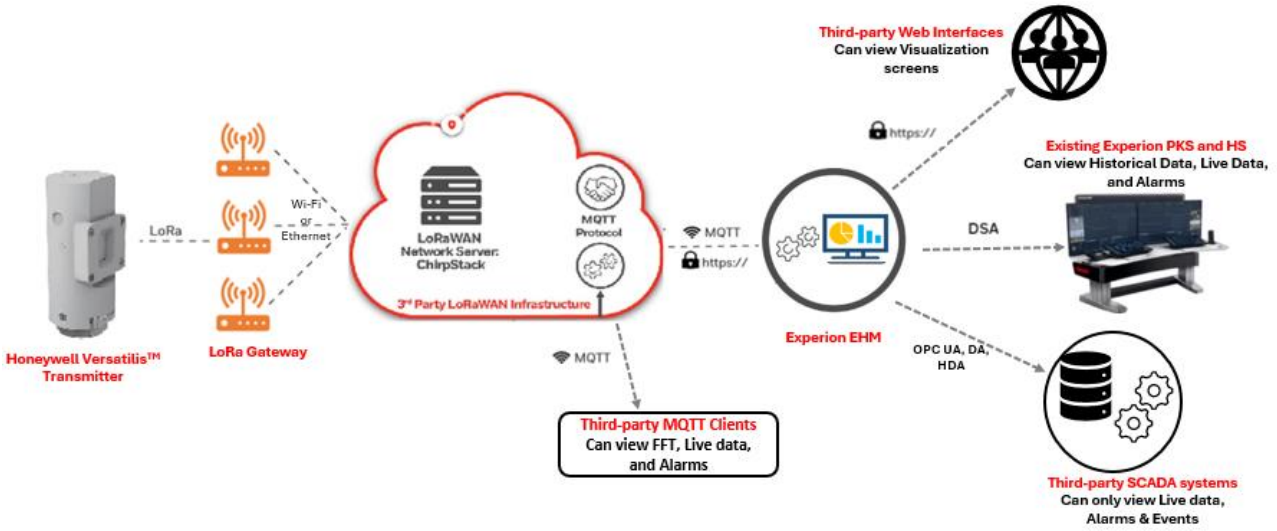


Figure 11 – Experion EHM Integration with other Systems

4.6.1 Existing Experion PKS and HS systems

DSA (Experion Distributed Server Architecture) provides a low-configuration tight integration option between Experion Systems, providing direct access from a Station connected to a Subscribing DSA Server to the current parameter values, historical parameter values, and alarms on a Publishing DSA Server.

In all cases below the EHM Server is an Experion HS R520 Server.

1. Access equipment display (EHM displays) on the Station connected to the external Experion Server.
2. Equipment HMI will NOT show correctly in the Station on the subscribing (external) server.
3. Access current parameter values on the external Experion Server
   a. Parameter values could be put on custom graphics on external Servers and will work.
   b. As above the EHM Equipment HMI will NOT show correctly in Station on subscribing (external) server.
4. Access historical parameter values on the external Experion Server
   a. EHM point parameters that are historized could be added to System Trends on the subscribing Server.
   b. The EHM Equipment HMI will NOT show correctly in Station on the subscribing (external) server so the pre-configured equipment trends may not be available.
5. Access alarms on the external Experion Server
   a. EHM alarms would be present in the Station Alarm Summary on the external Experion Server. Point detail on the alarms would be expected to bring up the default SCADA Point detail displays.

Use points configured on external Experion Server directly in Experion EHM displays.

This will ONLY work if the external Experion Server is an Experion HS Server, as HS cannot subscribe to Experion PKS Server points.

4.6.2 Integration with other systems

Experion EHM can be integrated to third party system using OPC. This significantly enhances the system's interoperability and flexibility.

EHM (Experion) Server Interface	Current Parameter Value	Historical Parameter Value	EHM Alarms
OPC Classic	Yes (DA)	Yes (HDA)	Yes (A&E)
OPC UA	Yes	Yes	Yes

- EHM Browser HMI can be called on the 3rd Party Console.
- Showing/processing/historizing/alerting/alarming in the 3rd Party System based on current and history parameter values in EHM.
    - OPC UA Server on EHM Experion Server exposes current, history parameter values, and alarms to 3rd Party OPC UA Client.
    - OPC Classic Data Access Server on EHM Experion Server exposes current parameter values to 3rd Party OPC Classic Data Access (DA) Client.
    - OPC Classic HDA (Historical Data Access) Server on EHM Experion Server exposes historical parameter values to 3rd Party OPC Classic HDA Client.
    - OPC Classic Alarm and Event (A&E) Server is the only Experion Server interface that exposes the current Experion Alarms, to a 3rd Party OPC Classic A&E Client.
- SCADA systems can fetch FFT data from Experion EHM using GraphQL interface.

For more information on how to integrate Experion EHM with other systems, contact Honeywell Technical Assistance at https://process.honeywell.com/us/en/contact-us.

5 Compatibility

5.1 R100 vs R110 Features

	R100	R110
Deployment Mode	2 Desktop virtual machines (Experion and LoRaWAN) in VMWare Workstation 17 Pro.	Installed directly on PC via Installer.
Hardware Specs	Server grade PC	Workstation PC (for smaller configurations) / Server grade PC (for larger configurations)
Operating System	Windows Server 2019 Windows Server/Client OS license for host PC	Windows 10 Enterprise LTSC 2019 Edition for smaller configurations or Windows Server 2019 64-bit for larger configurations
Number of HVT devices supported	250	4000
Deployment Complexity	High (Need to handle USB Pen drives and bigger size VMs)	Medium (Need to perform Experion installation manually)
Visualization	Summary and Detailed Views	Summary, Detailed, High Energy FFT plots, and Reports.
Alarms	ISO 10816-3 limit-based alarms	• ISO 10816-3 limit-based alarms. • Sub-band Energy Accel/Velocity values & Alarms.
Data	Collect, store and historize basic measurement data	Collect, store, and historize FFT data in addition to basic measurement and statistic parameters.

5.2 Migration and Interoperability

Configuration of existing HVT R100 devices can be migrated from Experion EHM R100 to Experion EHM R110. The R100 devices can co-exist with new HVT R110 devices in the site.

HVT Device	Experion EHM	Interoperability	Remarks
R100	R110	Supported	Experion EHM R110 would show the HVT R100 monitoring and configuration data.
R110	R100	Not Available	Experion EHM R100 does not support the HVT R110 device interfaces.

6 Remote Configuration

The Honeywell Versatilis™ Remote Configuration Manager helps users create, modify sites, assets, and transmitter details. This helps customers minimize field trips to modify device configurations, saving time and enhancing safety.The Honeywell Versatilis Remote Configuration Manager tool is installed as one of the solution components from the ESIS or DVD/media.

The hierarchy of adding and configuring a transmitter on an asset within a site is as follows:

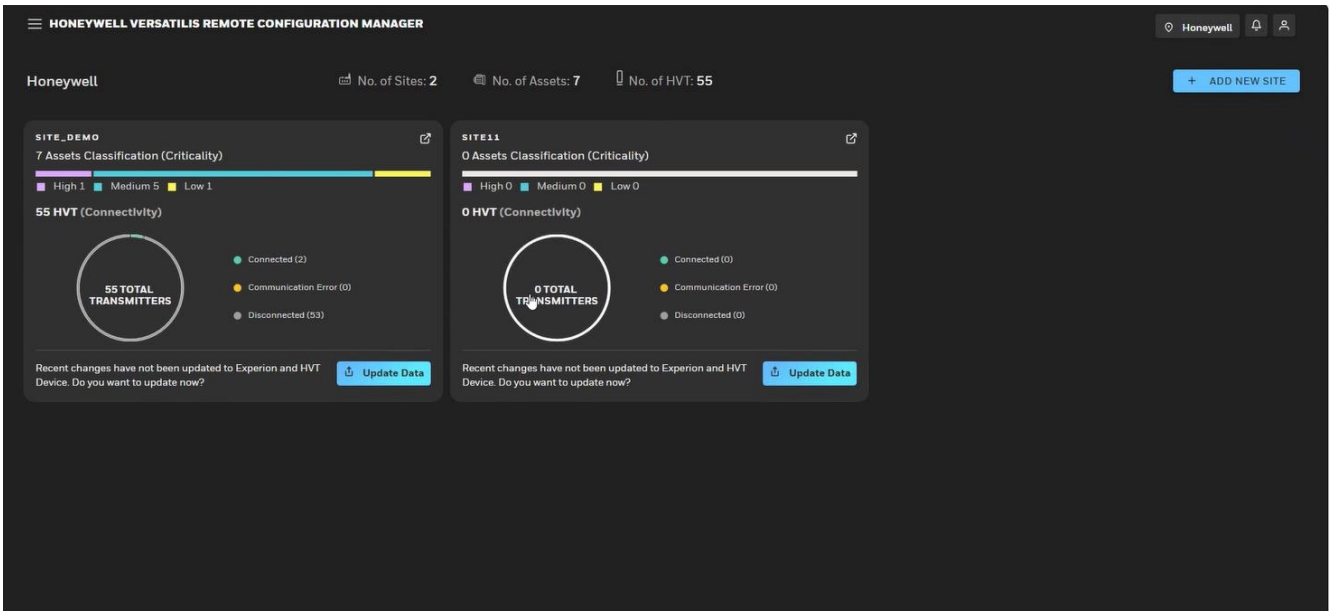


Figure 12 – Enterprise level dashboard

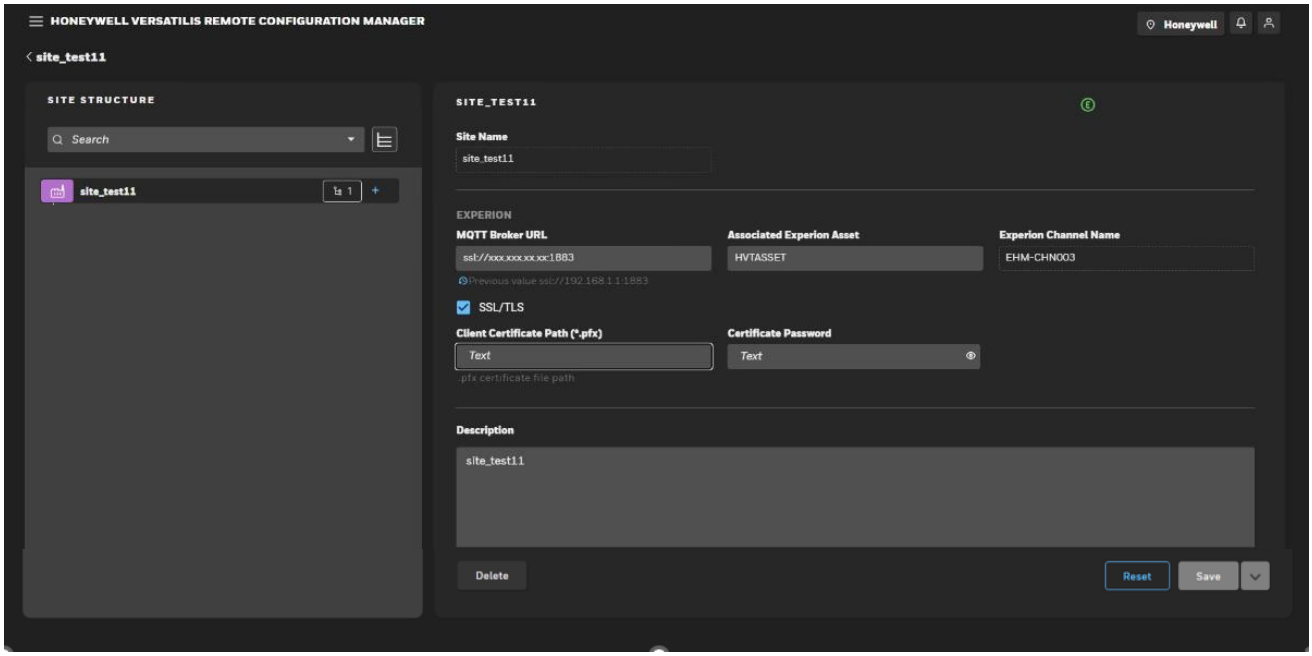


Figure 13 – Site Details

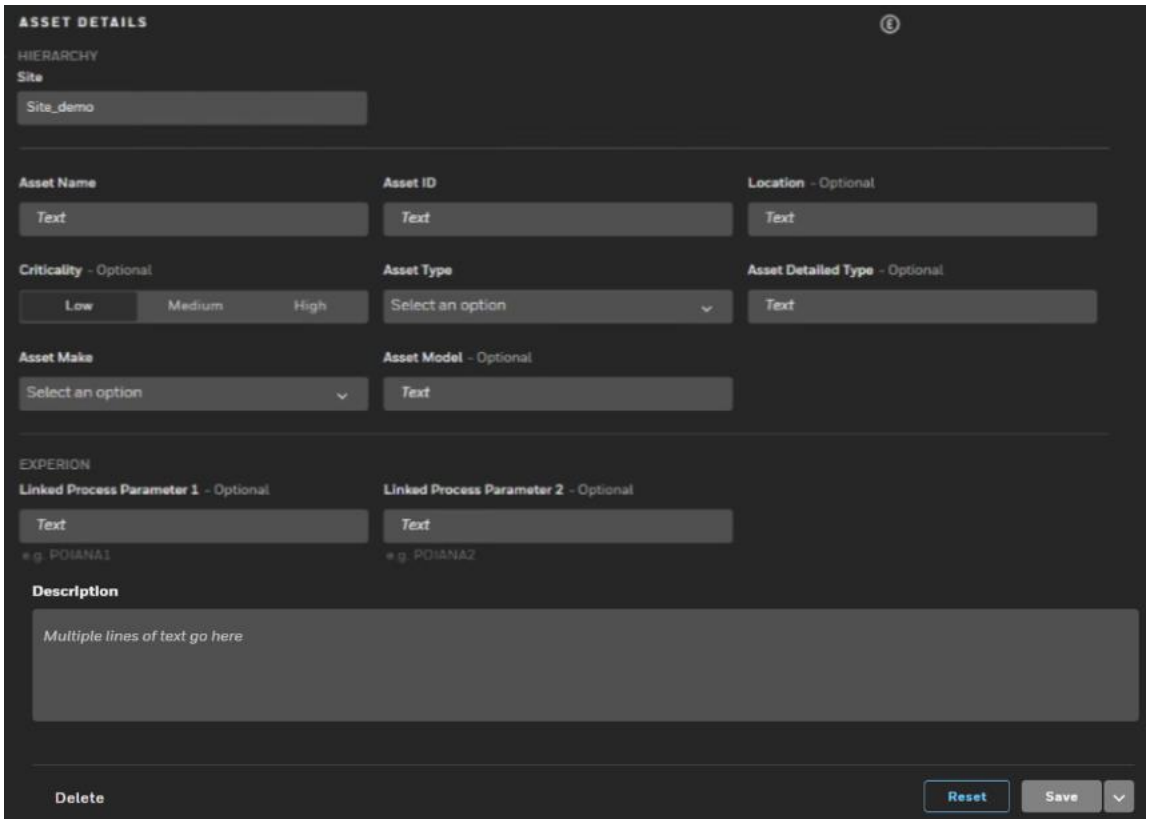


Figure 14 – Asset Details

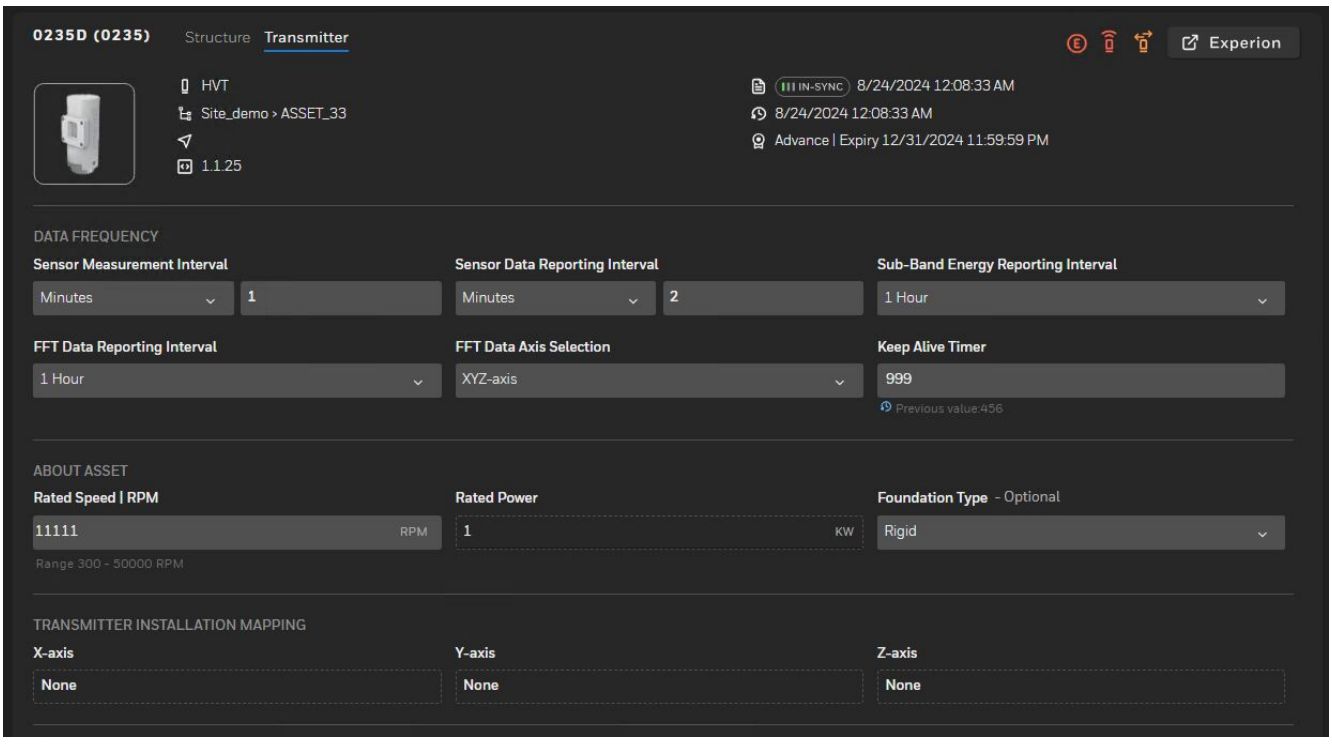


Figure 15 – transmitter Details

For more information on how to create enterprise, sites, assets, and transmitters, see the *"Remote Configuration"* chapter in the *Experion EHM User's Guide, #34-VT-25-05*.

7 Experion EHM Server Machine Requirements

Experion EHM SCADA server node is distributed as ready to deploy virtual machine. Below are the key resource requirements for the Experion EHM SCADA server machine.

7.1 Experion EHM Host Machine

System Configuration	Experion EHM Host Machine Specs	
	For Smaller Systems (up to 500 devices)	For Larger Systems (500 to 4000 devices)
Operating System	Windows 10 Enterprise LTSC 2019 Edition	Windows Server 2019 64-bit
Storage Space	250 GB SSD/HDD	500 GB SSD/HDD
RAM	32 GB	32 GB
Processor	2.5GHz Hexa core or greater	2.5 GHz Octa-core or greater
Networking	1GBps or 100 MBPS Ethernet	1GBps or 100 MBPS Ethernet

7.2 LoRaWAN Gateway and LoRaWAN Network Provider

Experion EHM uses industrial grade LoRaWAN Gateway & LoRaWAN Network Provider that are commercially available. The below specification covers the minimum specification. End users can procure commercially off-the-shelf (COTS) available certified LoRaWAN Gateway & Provider and deploy.

System Configuration	LoRaWAN Gateway
Purpose	Bridge between HVT devices and LoRaWAN Network Provider
Example Hardware	Multitech MTCDTIP-L4G1, Cisco Wireless Gateway for LoRaWAN. For more information, see *Recommended Gateways*.

System Configuration	LoRaWAN Network Provider
Purpose	Enabling management for gateways, applications, devices, users, and then providing the HVT device data to Experion EHM SCADA. Supports LoRaWAN Network server and Application server.
Supported Interface with Experion EHM SCADA	MQTT
Example Software	ChirpStack
Example resource requirements when deployed	2 CPU cores 6 GB RAM 60 GB Hard disk

7.3 Experion EHM Web Client

Below are the key requirements for the Experion EHM Web Client:

System Configuration	Experion EHM Web Client Specs
Purpose	To visualize the Experion EHM displays connecting to the Experion EHM PC.
Web browsers supported	Google Chrome version 110.0.5464.0 or later Microsoft Edge version 108.0.1462.15 or later
Minimum Recommended Display resolution	1280 x 1024

For more information on configuring the LoRaWAN Gateway and service provider, see the "*Configuration*" chapter in the *Experion EHM User's Guide, #34-VT-25-05.*

7.4 Recommended Gateways

Gateway Provider	Gateway Model	Region	Description
Multitech (Indoor)	MTCDT-L4G1-247A-868.R3-WW	Global	LTE Cat 4 mPower Programmable Gateway 8-channel, 868 MHz, Global GNSS+Wi-Fi/BT w/MTAC-003E00 mCard and Accessory Kit[1]
	MTCDT-L4G1-247A-915.R3-WW	Global	LTE Cat 4 mPower Programmable Gateway 8-channel, 915 MHz, Global GNSS+Wi-Fi/BT w/MTAC-003U00 mCard and Accessory Kit[1]
Multitech (Outdoor)	MTCDTIP-L4G1-267A-868.R3	Global	LTE Cat 4 mPower Conduit IP67 Base Station 8-channel, 868 MHz, GNSS+Wi-Fi/BT with MTAC-003E00 and Accessory Kit[2]
	MTCDTIP-L4G1-267A-915.R3	Global	LTE Cat 4 mPower Conduit IP67 Base Station 8-channel, 915 MHz, GNSS+Wi-Fi/BT with MTAC-003U00 and Accessory Kit[2]
Dragino (Indoor)	LG3081520638	China	Quectel EC25 LTE module Micro SIM Slot Internal 4G Antenna + External 4G Sticker Antenna. Up to 100Mbps downlink and 50Mbps uplink data rates Worldwide LTE,UMTS/HSPA+ and GSM/GPRS/EDGE coverage MIMO technology meets demands for data rate and link reliability in modem wireless communication systems.
	LPS8-868	India	10M/100M RJ45 Ports x 1 1 x 2.4G WiFi (802.11 bgn) 1 x USB host port Power Input via USB Type-C: 5V, 2A
Tektelic (Outdoor)	KONA-ENTERPRISE (MOEN1LEU868)*	India	Time Duplex 8 Rx / 1 Tx 3G/4G Cat-6 Modem -48v/802.3af POE Power IP67 Outdoor Design Built-in LoRaWAN, 3G/4G & GPS Antennas Optional external LoRaWAN and 3G/4G Antennas Pole, Wall, Tower, Building DIN Rail Mounting Options.

[1] Kit includes a Power supply with regional-specific blades (US, EU, GB, AU/NZ), appropriate antennas, an Ethernet cable, a USB cable, and a quick-start guide. GNSS Antenna is sold separately.
[2] Kit Includes Mounting bracket kit, 1 LoRa antenna, 2 cellular antennas, GNSS antenna, Wi-Fi/BT antenna.
* Validated but not qualified completely.

8 Model Numbers

8.1 Model Selection Guide

Honeywell

Section 1
Page: EHM - 1
Effective Date: July, 2025

Honeywell Proprietary

Experion EHM

Model Selection Guide
34-VT-16-02 Issue 1

Instructions

- Select the desired key number. The arrow to the right marks the selection available.
- Make the desired selections from Tables I through VI using the column below the proper arrow.
  A dot (*) denotes availability.

Key Number		I		II		III		IV		V		VI		VII
EHM100	-	_	-	_ _ _ _	-	_ _	-	_ _ _	-	_ _ , _	-	_ , _	-	_ _

KEY NUMBER - Experion EHM

Description	Selection	Availability	
Experion Equipment Health Monitoring System Software Incl…..	EHM100	▼	
TABLE I - Media Kit			
R520 Media kit, Electronic download	0	*	
R520 Media kit, Physical Delivery	1	*	
TABLE II - Number of Devices			
Up to 50 HVT Devices	0050	*	b
51 to 100 HVT Devices	0100	*	
101 to 300 HVT Devices	0300	*	
301 to 1000 HVT Devices	1000	*	
1001 to 2000 HVT Devices	2000	*	
2001 to 4000 HVT Devices	4000	*	
TABLE III - App support - Number of Users			
Web client Users - 1	01	*	b
Web client Users - 3	03	*	
Web client Users - 5	05	*	
Web client Users - 10	10	*	
TABLE IV - System Functionality			
Trend and Alarm Visualization and Equipment Reporting (*see notes) - Default selected	VRA	*	
TABLE V - Microsoft Software Licenses			
SQL CAL 2019 STD RUNTIME, EMB (Mandatory for every installation)	1_	*	
Windows Operating system			
NO	_ 0	d	
Windows 10 COA license (Optional)	_ 1	*	c
Windows Server 2019 OS (Optional)			
Windows Server 2022 OS (Optional)	_2	*	
TABLE VI - 3rd Party Integration			
Nil	N	e	
OPC, UA - Get Sensor measurement data from Experion EHM via OPC Unified Architecture (per connection)	A	*	c
SCADA Interfaces for access to machine process data (e.g. speeds, pressures)	B	*	
TABLE VII - Experion System Integration			
Nil	00	*	b
Integration with Experion - DSA	01	*	

Restriction Letter	Available Only with		Not Available with	
	Table	Selection	Table	Selection
b	Selection only one option from this group			
c	Selection one or more option from this group			
d			V.b	1,2
e			VI	A,B

Examples of Valid Long Model	
1	EHM100-0-0050-03-VRA-10-N-01
2	EHM100-0-0050-03-VRA-11-A-01
3	EHM100-0-0050-03-VRA-11,2-A,B-01

For More Information

Learn more about How Honeywell's Experion Equipment Health Monitoring can simplify maintenance, visit Honeywell Versatilis™ Experion EHM or contact your Honeywell Account Manager, Distributor or System Integrator.

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