

Technical Information

Experion HS Specification



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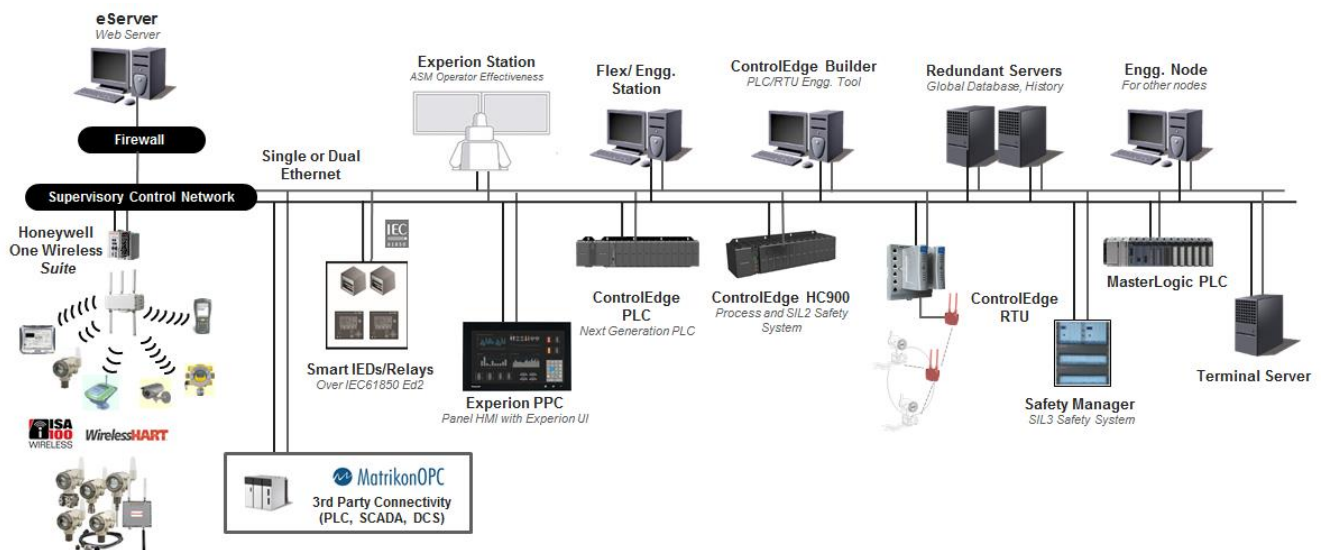
# 1. Introduction

## 1.1. Experion HS System

Experion® HS is a powerful software platform that incorporates innovative applications for Human Machine Interface applications (HMI) and supervisory control and data acquisition (SCADA). It is comprised of a subset of Experion PKS components specifically packaged to provide a targeted and robust system for small to medium automation projects.

Various brands of controllers are brought together into a single operator environment where plant visualization, history, trending, alarming and reporting are performed in a simple, consistent fashion. Experion HS is easy and intuitive, and can be used by plant managers, plant maintenance engineers, process engineers and operators in many industries to improve efficiency and productivity.

## 1.2. Architecture Overview



The Experion HS system comprises several different integrated hardware and software solutions depending upon the needs of the application. The architecture below represents a subset of the possible nodes and controllers. Note that Experion HS architecture is highly scalable and not all nodes and controllers are necessary or required.

### 1.3. Experion HMI Overview

The Experion HS HMI consists of an optionally redundant set of servers where each server or redundant server pair supports a number of connected Stations. Such Experion HS systems can be integrated with other Experion systems using Experion Distributed System Architecture (DSA)

### 1.4. Experion HS Station

The Experion HS Flex Station is the human machine interface (HMI) that can be utilized for different functions around a plant or mill including operations, monitoring, maintenance and engineering. Experion HS station can be implemented on COTS hardware platforms and newly introduced Experion PPC (Panel PC) hardware. The following table describes additional functionality of Experion HS Flex Station.

Experion HS Station – Flex	
<b>Description</b>	Experion HS Flex Station is a versatile operator interface that uses an efficient caching mechanism to present process data to the operator. It is suitable for full-time operations and can also be used as engineering or panel Stations
<b>Details</b>	<ul style="list-style-type: none"> <li>HS Flex Stations can be configured with a static or rotary connection. The static connection provides a permanent, dedicated link. The rotary connection provides an “as required” connection, enabling numerous casual users to access the Experion HS system as needed, which is advantageous from a licensing point of view. For example when 5 Station connections are configured, 5 connections can be established at one time but the software could be installed and be available for use by many more than 5 individuals.</li> </ul>

### 1.5. Experion HS Server

Experion HS supports redundant and non-redundant server topologies. The Experion HS server or redundant server combination functions as a system-wide historian and global database.

The Experion HS server also supports communication to SCADA point sources, DSA point sources, OPC clients/servers and holds the system event journal, system configuration files, custom applications and server scripts. The server is the source for data, alarms, events, etc. for the client-connected applications the Experion HS Flex Station(s). The Experion HS Server is a workstation based computer and operating system node that supports the Station and Server functions. Experion HS Server can be used as an operator or an engineering station. For redundant Experion HS Server system it is recommended to use the backup Server as the engineering station.

## 2. Experion HS Specifications

### 2.1. Database and Station Sizing

Limits shown here apply to a single Experion HS Server system. Multiple Experion HS Servers can be combined into a single operational system using DSA.

Item	Specification	Comments
Maximum number of composite SCADA points <sup>1</sup>	16,050	The database starts at a minimum of 50 points with increments of 100 points up to 16,050 points
Maximum number of Stations	20	Stations can be configured with a static or rotary connection. Any mix of Desktop and Panel PC Stations can be used within this limit.
Maximum number of SCADA channels	50	
Maximum number of SCADA controllers	500	
Maximum number of User Defined Scanned Parameters per Analog or Status SCADA Point <sup>2</sup>	200	
Maximum number of scanned parameters per server	100,000	This includes fixed scanned parameters (such as PV, SP, OP, A1 – A4), user defined scanned parameters (UDSP), and any parameters configured with a 0 second or DEMAND scan period
Maximum pps from all configured SCADA devices	Limited by device	
Maximum number of local equipment points	500	Maximum limit is set to 5 bundles of 100 Equipment Point Adders to Database size.
<p>Note 1- Points have a composite data structure that can represent several field values. For example, you only need one analog point for a control loop that maintains the temperature of a furnace or reactor because the point's data structure can include the process variable (PV), output variable (OP), setpoint (SP) and mode (MD).</p> <p>Note 2- Analog or Status type user defined scanned parameters (UDSP) may be added to Analog and Status SCADA Points in any combination up to a combined total of 200 UDSP per point. Alarming on user defined scanned parameters is not supported.</p>		

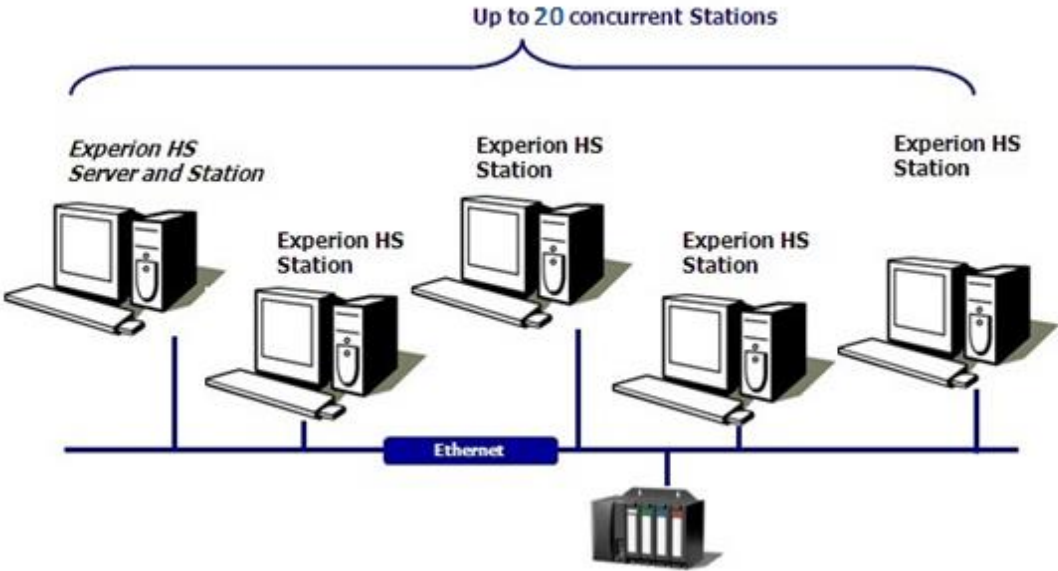


Figure 1 - Station sizing example 1 with HS Server and Station

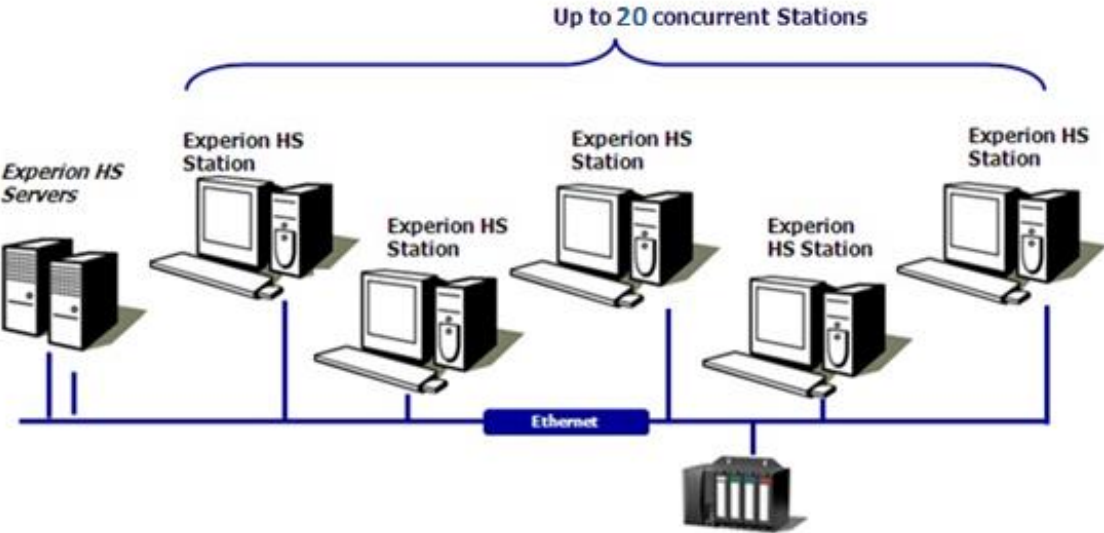


Figure 2 - Station sizing example 2 with HS Server and separate Station



## 2.2. Station Display Sizing and Performance

Station Display Performance Specifications	Specification
<b>Display Parameters</b>	
Number of dynamic parameters per display	350 or fewer
Number of dynamic parameters currently in view on a pan and zoom display <sup>2</sup>	350 or fewer
Number of parameters per second (pps) per Station computer <sup>4</sup>	500/sec
Number of dynamic parameters per Station computer <sup>5</sup>	1,500 or fewer
<b>Display Updates</b>	
Typical non-complex display call up time with 100 or less parameters <sup>1</sup>	< 1 seconds
Typical field change to display update time with 300 or less parameters per display	< 2 seconds
Typical complex display call up time with 200 or less parameters <sup>1,2</sup>	< 2 seconds
<b>Equipment Display</b>	
Maximum number of Equipment Summary Display tables expanded simultaneously in a cluster	50
Maximum number of System Status Dashboard shapes per Dashboard	48
Maximum number of Station instances per computer <sup>3</sup>	2
<p>Note 1 – Call up time depends on display complexity: specification is based on a non-complex custom display using standard HMIWeb Display Builder objects with limited use of scripts. This excludes the first initial call up and is based on a client node running a single instance of Station.</p> <p>Note 2 – Complex displays are defined by the number of data bound objects identified, large amount of total objects on the display, and some amount of scripting.</p> <p>Note 3 – This is the default limit. The number can be increased to a maximum of 4 instances; however the recommended limit is 2 Station instances per computer. Only 1 Station license is required per computer, regardless of how many instances of Station are running on that computer.</p>	

## 2.3. Multi-Window Functionality

Multi-window functionality is provided with the Experion HS Flex Station as a standard. A multi-window Station uses SafeView to manage the placement of its windows.

Server Type	Specification
Number of monitors	Up to 2
Number of windows <sup>1</sup>	Up to 16
Number of concurrent faceplates	Up to 8
<p>Note 1 – Number of windows includes faceplates, custom displays, Experion System displays etc.</p> <p>Note 2 – Number of windows includes faceplates, custom displays, Experion System displays etc. For backward compatibility reasons, the multi-window option for ES-F supports the configuration of multiple instances of Station (Multiple Static Station Option) as an alternative to a multi-window implementation.</p>	

## 2.4. Trends

Item	Specification	Comments
Trend pens per set	32	Trends can be preconfigured or configured online as necessary by browsing the database and selecting the desired point and parameter
Trend periods	1, 5, 20 minutes 1, 2, 4, 8, 12 hours 1, 2, 5 days, 1, 2, 4 weeks 3, 6 months, 1 year	Any of the standard history collection intervals may be used as the basis for the real-time and historical trends.
Points per operating group	8	Each group has three standard views available including faceplate, group trend (with control parameters accessible) and numeric trend.
Number of Trends	500	Per Experion HS Server

## 2.5. Alarm, Event, Alert, Message and Notification Lists

Items	Specification	Comments
Maximum number of active alarms	500	Every alarm and event that occurs is saved in the online event database for a configurable period.
Maximum number of active messages	500	Number of messages that appear in the Message summary. Messages can be generated to provide additional information to an operator; for example, when a point goes into alarm, a message can provide an explanatory note or a procedure.
Maximum number of events (burst condition)	500	The Experion HS Server alarm system will handle an event burst of up to 500 events, with a minimum time between consecutive bursts. An "event burst" is defined as a group of events greater than 40/sec, received from all connected event servers in a period of less than 3 seconds.
Formula to calculate the time period required between consecutive bursts, to allow for event processing	$\Delta T = BS / (60 - ER)$ Where: $\Delta T = \# \text{ of seconds required between bursts}$ $BS = \text{Burst Size (number of events in the burst)}$ $ER = \text{Event Rate between bursts}$	Examples: <ul style="list-style-type: none"> <li>1,500 event burst and no events between bursts: <math>\Delta T = 1,500 / 60 = 25 \text{ seconds}</math></li> </ul> 500 event burst with 30 events/sec between: $\Delta T = 500 / 30 = 17 \text{ seconds}$
Maximum number of sustained alarms/second	20/sec	
Maximum number of sustained events	2500/Hour	
Maximum number of events in online events database	1.2 million	All alarms, login actions, operator actions, and configuration changes are logged in the online event file. Up to two events are generated for every alarm, including one event for entering the alarm condition and one for return to normal.  Event archiving can be used to access older events. Approximately 60 MB of hard disk space is required for every 100,000 events archived.

## 2.6. Enterprise Model Sizing

### 2.6.1. Assets

Items	Specification	Comments
Assets	1,000	The asset model represents the organization of items in the enterprise, for example, process units, individual pieces of equipment or facilities, etc. The relationship or hierarchy between assets and entities forms the asset model. The primary relationship in the asset model is that of asset containment, where one asset contains another.
Assignable assets	500 per Flex Station	Assignable assets provide a way to assign assets to an operator's scope of responsibility. An assigned asset includes all asset children of the assigned asset including any points associated with those assets or any alarm groups that have been designated by that asset for scope of responsibility purposes. The number of assignable assets is a subset of the total number of assets.
One enterprise model is defined per system and a system can comprise multiple servers. These figures apply to the system.		

### 2.6.2. Alarm Groups

Items	Specifications	Comments
Alarm groups	500	Alarm Groups present alarm state/status for a disparate group of points and assets that are not represented by a single asset in the asset model.
Children per alarm group	500	
Nesting depth for alarm group hierarchies	5	
Maximum number of system alarm groups defined in a system	200	
One enterprise model is defined per system and a system can comprise multiple servers. These figures apply to the system.		

## 2.7. History Sizing

### 2.7.1. Collection Rates

Items	Specifications	Comments
Standard history	<ul style="list-style-type: none"> <li>Predefined collection rates of 1, 2, 5, 10 and 30 minutes</li> <li>3 additional user defined collection rates can be defined.</li> </ul>	<ul style="list-style-type: none"> <li>When you configure a point parameter for standard history collection, Experion also collects 4 different standard history averages, based on the standard history snapshot rate that you choose for standard history collection.</li> <li>The default standard history snapshot rate is 1 minute and the collection rates for averages are 6-minute, 1-hour, 8-hour and 24-hour averages.</li> <li>The averages are calculated using the 1-minute base interval. That is, 6-minute averages are calculated on six 1-minute values. If you change the 1-minute base interval the averages are still calculated from the base interval. For example, if you change the base interval to 30 seconds, 6-minute averages are calculated on twelve 30-second values.</li> </ul>
Fast history	<ul style="list-style-type: none"> <li>Predefined collection rates of 5, 10, 15, 20 and 30 seconds.</li> <li>3 additional user defined collection rates can be defined.</li> </ul>	<ul style="list-style-type: none"> <li>A maximum of 8 collection rates can be defined choosing from the default intervals on the left</li> <li>Additional rates can be defined; however they must be in multiples of the base rates.</li> <li>The 5 second base rate can be configured to 1 second. The 5 second default collection rate for Fast History can be changed to 1 second, and the 1 minute collection for Standard History can be changed to 30 seconds if necessary. Note, however, that changing the collection rates in this way can place an additional load on the process control network.</li> </ul>
Average (based on Standard History rates)	<ul style="list-style-type: none"> <li>Predefined collection rates of 6, 60, 480 and 1440 minutes</li> </ul>	<ul style="list-style-type: none"> <li>A maximum of 4 collection rates can be defined</li> </ul>
Extended history	<ul style="list-style-type: none"> <li>1-hour snapshot</li> <li>8-hour snapshot</li> <li>24-hour snapshot</li> </ul>	<ul style="list-style-type: none"> <li>When a point is configured for extended history collection, all of these intervals are stored.</li> <li>A maximum of 3 collection rates can be defined choosing from the default intervals on the left.</li> </ul>
Exception history	<ul style="list-style-type: none"> <li>5, 10, 15, 30, and 60 seconds</li> <li>5, 10, 15, 30, and 60 minutes</li> <li>2, 4, 6, 8, 12, and 24 hours</li> </ul>	<ul style="list-style-type: none"> <li>Whereas standard, fast, and extended history collect and store point parameter values periodically, exception history collects values at the rate configured for that point parameter but only stores them if the value or quality of that point parameter has changed since it was last stored.</li> <li>Note that exception history only collects and stores string values.</li> <li>A maximum of 16 collection rates can be defined choosing from the default intervals on the left</li> </ul>
To support daylight savings and time zones, all collected data is historized in Universal Time Coordinated (UTC) time.		

### 2.7.2. Default History Files Sizes

Items		Specifications		Comments
		Time	Samples	
Standard history	1-minute snapshot	24 hours	1,442	
	6-minute average	7 days	1,682	The averages are calculated using the 1-minute base interval. That is, 6-minute averages are calculated on six 1-minute values.
	1-hour average	7 days	170	The averages are calculated using the 1-minute base interval.
	8-hour average	3 months	280	The averages are calculated using the 1-minute base interval.
	24-hour average	1 year	368	The averages are calculated using the 1-minute base interval.
Fast history	1- to 30-second snapshot	2 hours – 72 hours	8,652	
Extended history	1-hour snapshot	3 months	746	
	8-hour snapshot	1 year	281	
	24-hour snapshot	3 years	368	
<p>The number of samples in each history file can theoretically be increased to 100,000 samples. If the size of the history file is increased beyond the default qualified size, care should be taken not to exceed the maximum history file size constraints. (See section 2.7.4). History archiving is available to store the history files for later retrieval. Experion history data is seamlessly available for use across every Experion Station for trend displays, a, custom displays, applications, spreadsheets and ODBC compliant databases.</p>				

### 2.7.3. Maximum Parameters Assigned to History

Items	Default <sup>1</sup>	Maximum	Comments
Standard history	2,000	10,000 at 60sec	Double, Float, Integer and Time data can be stored.
Fast history	1,000	1,000	Double, Float, Integer and Time data can be stored.
Extended history	2,000	2,000	
Exception history	2,000	2,000	
Note 1 – Default limit that Experion is shipped with it can be changed by a database initialization up to a maximum.			

### 2.7.4. Calculating History Space Requirements

Items	Specifications	Comments
Maximum history file size	500 MB	<ul style="list-style-type: none"> <li>Each type of history sample is stored in a separate history file. For example, there are five history files for standard history, one each for: 1-minute snapshot, 6-minute average, and so on.</li> <li>An individual history file should not exceed this size.</li> </ul>
History formula	History file size in bytes = $2 * N * ((P*3) + 8)$ Where: N = number of samples P = number of parameters	Example: Number of parameters P assigned to standard history is 50,000. Number of samples N for standard 24 hours one minute snapshot is 1,442. History file size = $2 * 1,442 * ((50,000*3)+8) = 432,623,072$ bytes/ 1,048,576 bytes/megabyte = 413 MB.

## 2.8. Supervisory Control and Data Acquisition (SCADA)

### 2.8.1. Terminal Servers

The SCADA controller or RTU connection to the Experion Server depends on several factors, including the plant's layout, the type of interface used and the controller's communication port(s). For those using a serial interface, controllers can be directly connected to the server's serial ports but would typically only be used on small systems. For larger systems, more serial ports can be added through the use of a Terminal or Device server.

Terminal Servers also provide a means of connecting serial port SCADA controllers to redundant Experion Servers. They can be deployed on network topologies using single Ethernet, and dual Ethernet, (two subnets. There can be single or dual connections to controllers, (when supported). A dual connection would require two Terminal Servers and be configured as a redundant SCADA channel in Experion.

Items	Qualified Devices
Terminal Servers	<ul style="list-style-type: none"><li>• Systech NDS/5000 Series Network Device servers: Built for industrial requirements, these RJ45 based terminal servers come in a range of 8 and 16 port models, all with a built in 3 port Ethernet switch as well as rack mount versions.</li><li>• Systech NDS/6000 Series Network Device servers: Built for industrial requirements, these DB9 based terminal servers come in a range of 2, 4 and 8 port models, some with a built in 4 port Ethernet switch and some rack mountable.</li></ul>
Note 1 – The above Terminal Servers are tested to reconnect ports under the different planned and unplanned fail over scenarios.	



## 2.8.2. Real Time Database SCADA Point Structures

Point Structure	Standard Parameter		
Common Parameters (Analog, Status and Accumulator)	Point Name	Point Description	Item Name
	Parent Asset	Associated Display	Point & Group Displays
	Scan Enable & Status	PV Last Processed Date/Time <sup>2</sup>	Data Quality
	PV Algo & Action Algo <sup>3</sup>	Alarm Enable & Status	Message Index
	Scan Address (PV SP MD Au)	Scan Period (PV SP MD Au)	Manual PV
	User Defined Parameters <sup>4</sup>	Non-scanned Parameters <sup>5</sup>	Point Script <sup>6</sup>
Analog (Used for continuous analog values)	Process Variable (PV)	Output (OP)	Setpoint (SP)
	Mode (MD)	Up to 4 Auxiliary inputs (Au) <sup>7</sup>	Engineering Units (EU)
	0% & 100% EU Range	Drift Deadband	PV Clamp
	PV Bias & Scale	Normal Mode	OP Low & High Limits
	SP Low & High Limits	Reverse Output	Operator Control Level
	Control Inhibit	Control Confirmation	Control Deadband
	PV Fail Alarm	PV Control Timeout	PV Control Fail Alarm
	External Change Alarms	Unreasonable PV Alarm	Up to 8 PV Alarm types <sup>8</sup>
	Alarm Deadband		
Status (Used for digital values. PV can range from 1 bit to 3 bits, allowing up to 8 states.)	Process Variable	Output	Mode
	Normal Mode	Number of Input States	Number of Output States
	State Descriptor 0 to 7	InState Flags	Target PV for OP States
	Reverse Output	Output Pulse Width	Operator Control Level
	Control Inhibit	Control Confirmation	PV Control Timeout
	PV Control Fail Alarm	Alarm States (0 to 7)	Re-Alarm between states
	External Change Alarms		
Accumulator (Used to totalize a pulsed input)	Process Variable	Engineering Units (EU)	100% EU Range
	Meter Factor	Scale Factor	Roll Over Value
	Raw PV	Up to 4 PV Alarm types <sup>9</sup>	

Point Structure	Standard Parameter		
OPC Advanced (to link complex OPC data structures)	Point Name	Point Description	Item Name
	Parent Asset	Associated Display	Point & Group Displays
	User Defined Parameters <sup>4</sup>	OPC Parameters <sup>10</sup>	Point Script <sup>6</sup>
Container (Collates many related points into 1)	Point Name	Point Description	Item Name
	Parent Asset	Associated Display	Template Type
	Contained Points <sup>11</sup>		
<p>Note 1 – Each of the configured alarms can be assigned a priority ranging from Journal, Low, High to Urgent. An alarm sub-priority (0 to 15) can also be assigned to further differentiate alarms.</p> <p>Note 2 – Each time the PV is polled from the RTU, Experion will track the time/date of when the value was last processed. If the Analog point in Experion has a drift deadband of 1%, then the last processed time is not updated until the PV moves by &gt;1%. Similarly, if the drift deadband is 0%, then the last processed time is not updated until the PV moves slightly.</p> <p>Note 3 – Experion supports additional data processing through the use of standard algorithms that may be attached to analog, status or accumulator points. Functions provided by these algorithms include: Arithmetic calculation; Boolean calculation; Maximum/minimum value; Integration; Run hours totalization; Group alarm inhibit; Report request; Application program request;</p> <p>Note 4 – For each of the point types it is possible to add user-defined parameters to the existing pre-built parameters. This enables points to be extended to contain free format values, constant values, or values used by applications and scripts to store calculated or derived plant information. User-defined parameters can be assigned to history collection.</p> <p>Note 5 – Only relevant for OPC Client type controllers: Non-scanned parameters are similar to user defined parameters except they link to a controller OPC item. These parameters are only requested on demand, (not scanned). Useful to access related information stored in the controller.</p> <p>Note 6 – Point Script: Custom VBScript executed based on triggers. Available triggers: OnAlarm; OnNormal; OnAcknowledge; OnTimer; OnChange (by parameter); OnOperChange (by parameter). See server Scripting section below.</p> <p>Note 7 – Auxiliary Inputs are typically used for PID tuning constants but may have other uses.</p> <p>Note 8 – Supported alarms include: PV Hi, PV Lo, PV HiHi, PV LoLo, Deviation Hi, Deviation Lo, Transmitter Hi, Transmitter Lo, Rate of Change.</p> <p>Note 9 – Supported alarms include: PV Hi, PV HiHi, Rate of Change.</p> <p>Note 10 – OPC Parameters: Each OPC parameter has a parameter name and associated OPC item definition.</p> <p>Note 11 – Each contained, (or child), point of a Container point has an alias that becomes the first part of the Container point parameter. E.g., &lt;Container&gt;.&lt;Alias&gt;.PV</p>			

### 2.8.3. Algorithm Blocks

Experion supports additional data processing through the use of standard algorithms that may be attached to analog, status or accumulator SCADA points. Functions provided by these algorithms include: Arithmetic calculation; Boolean calculation; Maximum/minimum value; Integration; Run hours totalization; Group alarm inhibit; Report request; Application program request; Some of these require the use of Algorithm Blocks.

Items	Specifications	Comments
SCADA Point Algorithm Blocks	16,000	This is the maximum number of algorithm blocks for a given server. Algorithms are optionally attached to SCADA points. Some algorithm types require the use of an algorithm block.

## 2.9. Equipment Templates

Equipment is a licensed point type that provides simplified engineering and enhanced Station visualization of similar pieces of physical equipment, (such as Gas Wellheads). Equipment is created in Quick Builder and automatically builds underlying SCADA points, Controllers and Station visualizations based on a configured template.

Item	Specification
Maximum Equipment Templates	200 (20 types with 10 variants each)
Maximum Equipment Template inheritance <sup>1</sup> depth	4
Note 1 – Inheritance is about a variation or specialization of a piece of equipment. For example: 1) Pumping Well and Flowing Well both inherit from Well – this is an inheritance level of 1 2) Turbo Pumping Well inherits from Pumping Well which inherits from Well – inheritance level of 2	

## 2.10. Server Scripting

### 2.10.1. General Server Scripting Specification

Items	Specifications	Comments
<b>Description</b>		
<p>Server scripting extends the behavior of the server-resident subsystems and its run time objects. Examples of server objects are points and parameters, reports, assets and tasks (application programs). Scripts can run by the server either periodically or when a specified event occurs. Standard displays support the monitoring of the status of running scripts.</p>		
<b>General Specifications</b>		
Maximum script size	Short scripts only (typically less than 50 lines)	<ul style="list-style-type: none"> <li>Server scripting has been optimized for relatively short scripts and is not designed for implementing control strategies.</li> <li>Where possible, existing server functionality should be used in preference to writing server scripts. Standard server functionality optimizes the task implementation.</li> </ul>

## 2.11. Server Redundancy

Items	Specifications	Comments
<b>Description</b>		
<p>Server redundancy provides a high availability platform by enabling a pair of similarly configured servers to support each other in a primary/backup fashion.</p>		
<b>Details</b>		
Redundancy fail-over conditions	Should the primary server fail, a fully functioning backup assumes the primary role.	Primary refers to the specific server that is actively acquiring data from the controllers/RTUs and serving data to the clients. The primary server propagates all database transactions to the backup to enable both databases to remain synchronized.

## 2.12. Distributed Systems Architecture (DSA)

Distributed System Architecture (DSA) is an option that enables multiple Experion Server systems to share data, alarms, events (both publisher and subscriber from HS R430 onwards), alerts, messages, and history without the need for duplicate configuration on any server. DSA interoperability does not include interoperability of Configuration Studio engineering tools such as Control Builder, Quick Builder and Enterprise Model Builder.

### 2.12.1. General DSA Specifications and Performance

Items	Specification
<b>Servers</b>	
Maximum number of DSA connected servers <sup>1</sup>	11
<b>DSA Data Publishing</b>	
Maximum number of parameters/s to all remote servers <sup>2</sup>	500
Maximum number of remote servers that can be published to	11
<b>DSA Data Subscription</b>	
Maximum number of parameters/s from each remote server <sup>2</sup>	500
Maximum number of remote servers that this server can subscribe to	11
Total number of parameters/s from all remote servers	2500
<b>DSA Request Response</b>	
(Device read) Maximum number of list reads from DSA server per second	1
(Device read) Maximum number of items/list supported <sup>2,3</sup>	500
(Device read) Sustained read rate (items/second) <sup>2,3</sup>	250
<b>DSA Trend</b>	
Maximum number of Trend pens published to all remote servers <sup>2,3,4</sup>	20
Maximum number of Trend pens that this server can subscribe to from all remote servers <sup>2,3,4</sup>	100
<p>Note 1 – This is the total number of Experion Servers on the network. They do not all need to be connected to each other via DSA or be in the same Enterprise Model system. Experion HS can only publish to Experion PKS.</p> <p>Note 2 – Ability to deliver published data rate depends upon throughput of underlying process control network.</p> <p>Note 3 – Device reads should be used with caution. It is possible to overload the underlying process control network if too many device reads are done.</p> <p>Note 4 – These values are based upon the standard history configuration settings</p>	

## 2.12.2. DSA Interoperability –Between Experion HS and Experion LX

Experion HS Release	Can interoperate with the following releases							
	Experion HS R51x (Subscribe)	Experion HS R50x (Subscribe)	Experion HS R43x (Subscribe)	Experion HS R41x <sup>1</sup> (Subscribe)	Experion LX R51x <sup>2</sup> (Subscribe)	Experion LX R500 <sup>2</sup> (Subscribe)	Experion LX R12x <sup>2</sup> (Subscribe)	Experion LX R11x <sup>2</sup> (Subscribe)
<b>HS R51x (Publish)</b>	Yes	Yes	Yes	No	Yes	Yes	Yes	No
<b>HS R50x (Publish)</b>	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
<b>HS R43x (Publish)</b>	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
<b>HS R41x (Publish)</b>	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
<b>LX R51x (Publish)</b>	Yes	Yes	Yes	No	Yes	Yes	Yes	No
<b>LX R500 (Publish)</b>	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
<b>LX R12x (Publish)</b>	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
<b>LX R11x (Publish)</b>	No	No	No	No	No	Yes	Yes	Yes
Note 1 – DSA subscription is not a supported feature in Experion HS R41x and R40x								
Note 2 – DSA capabilities shown above for Experion LX applies equally for respective PlantCruise by Experion releases								

## 2.12.3. DSA Interoperability –Between Experion HS and Experion PKS

Experion HS Release	Can interoperate with the following releases				
	Experion PKS R51x (Subscribe)	Experion PKS R50x (Subscribe)	Experion PKS R43x (Subscribe)	Experion PKS R41x (Subscribe)	Experion PKS R40x (Subscribe)
<b>R51x (Publish)</b>	Yes	Yes	Yes	Yes	No
<b>R50x (Publish)</b>	Yes	Yes	Yes	Yes	Yes
<b>R43x (Publish)</b>	Yes	Yes	Yes	Yes	Yes
<b>R41x (Publish)</b>	Yes	Yes	Yes	Yes	Yes
<b>R40x (Publish)</b>	No	Yes	Yes	Yes	Yes
<b>Data flow</b>	<i>HS Can only Publish to Experion PKS.</i>				

## 2.13. OPC

OPC Component	Specifications
<b>OPC Classic Client Interface</b>	
Used for	The OPC Client Interface is designed primarily for robust integration of low complexity subsystems such as Programmable Logic Controllers (PLCs) and Remote Terminal Units (RTUs). It provides an open method for connecting a wide range of devices for supervisory monitoring, alarming and control.
Supported Version	1.0a and 2.05a
General OPC Client Interface Specifications	<ul style="list-style-type: none"> <li>Maximum number of third-party OPC DA servers supported: 5</li> <li>Time-stamping: Within the Experion Server</li> <li>Alarming: Yes</li> <li>Scannable parameters per point: (8 – Analog, 3 – Digital, 1 – Accumulator)</li> <li>User Defined Scanned Parameters: 200 per point</li> </ul>
OPC Groups and Items	<ul style="list-style-type: none"> <li>Maximum number of OPC controllers: 50</li> <li>Maximum OPC item name length: 80 character</li> <li>Maximum number of items per OPC controller: 500</li> <li>Maximum number of OPC groups supported: 100</li> <li>OPC group update rates supported: 1 second and above</li> </ul>
OPC Client Callback Support	Sustained callback rate from all OPC servers (values per second): 500
OPC client write support	<ul style="list-style-type: none"> <li>Number of item writes by OPC client interface per second (per channel): 1</li> </ul>
<b>OPC Advanced Data Client</b>	
Used for	The Experion OPC Advanced Data Client is designed to facilitate the efficient reading of data between Experion and OPC Data Access servers that have very complex point structures. These point structures typically would have a large number of parameters per point and many different point types. The Experion OPC Advanced Data Client is bundled with Experion HS base license.
Supported Version	2.05a
General OPC Client Interface Specifications	<ul style="list-style-type: none"> <li>Maximum number of third-party OPC servers supported: 5</li> <li>Redundancy Supported- Yes</li> </ul> <p>(Note- The OPC Display Data Client has no native redundancy like the OPC Client Interface; however, Redirection Manager can be used to provide redundancy support)</p> <ul style="list-style-type: none"> <li>Alarming: No</li> </ul> <p>(Unlike the OPC Client Interface, the OPC Advanced Data Client relies on the OPC Advanced Alarm and Event client for alarming capabilities. It has no native ability to alarm without the presence of an OPC Alarm and Event (A&amp;E) server.)</p> <ul style="list-style-type: none"> <li>Maximum OPC item name length- 120 char</li> <li>Scannable parameters per point: 400</li> </ul>



OPC Groups and Items	<ul style="list-style-type: none"> <li>Maximum number of items per group supported: 500</li> <li>Maximum number of items across all groups: 10,000</li> <li>Group update rates supported: 1 second and above</li> <li>Maximum number of OPC groups supported: 100</li> <li>OPC group update rates supported: 1 second and above</li> </ul>
OPC Client Callback Support	Sustained callback rate from all OPC servers (values per second): 500
OPC client write support	<ul style="list-style-type: none"> <li>Number of item writes by OPC client interface per second: 1</li> </ul>
<b>OPC UA Client Interface DA</b>	
Used for	The Experion OPC UA Client allows information from an OPC UA data access server to be mapped into Experion SCADA points. This information can then be displayed, alarmed, historized and controlled. The Experion OPC UA Data Client is bundled with the Experion HS base license.
Supported Version	OPC UA v1.03
General OPC UA Client Specifications	<ul style="list-style-type: none"> <li>Maximum number of OPC UA channels per server: 50</li> <li>Maximum number of OPC UA Controllers per Server: 500</li> <li>OPC Data Access Services: Read (Poll &amp; Subscription) and Write</li> </ul> <p>(Note- In Experion R51x the OPC UA Client interface does not support AE (Alarm and Events), HA (historical access), the 'Method' service set, or file access.)</p> <ul style="list-style-type: none"> <li>Redundancy Supported: Yes</li> </ul> <p>(Note- Redundant channel configuration required in Experion. If supported Experion OPC UA client will attempt to transfer subscriptions between the two OPC UA Servers.)</p> <ul style="list-style-type: none"> <li>OPC UA Data types supported- Numeric, Boolean, Date and String</li> </ul>
OPC UA Client read/ write Support	<ul style="list-style-type: none"> <li>Sustained callback rate from all OPC Servers (values per second): 1,000</li> <li>Sustained callback rate per Channel (values per second): 400</li> <li>Subscription rates supported: 1sec and above</li> <li>Experion Dynamic Scanning Support: Yes</li> <li>Number of writes by OPC UA Client per second per OPC UA controller: 1</li> </ul>
OPC UA Security Support	<ul style="list-style-type: none"> <li>Certificate Authority Topology Support: Experion or Customer provided CA</li> <li>OPC UA Client certificate scope: Configurable to Server, Channel or Controller scope</li> <li>Supported Security Modes: Sign and Encrypt, Sign Only, None</li> <li>Supported Security Levels: BASIC256 SHA-256 or BASIC256 or BASIC128-RSA-15</li> </ul> <p>(Note- Certificates for OPC UA Security must be configured on both Servers in a redundant server pair.)</p>

<b>OPC Display Data Client</b>	
Used for	Primarily targeted as a convenient method of getting OPC Data into displays. Designed for situations where you need to bring data into the Experion displays via OPC and no additional processing needs to be done on the server e.g. no need for alarming, historization, point detail, group, etc. The Experion OPC Display Data Client is bundled with the Experion base software.
Supported Version	2.05a
General OPC Client Interface Specifications	<ul style="list-style-type: none"> <li>Maximum number of third-party OPC servers supported: 5</li> <li>Redundancy Supported- Yes</li> </ul> <p>(Note- The OPC Display Data Client has no native redundancy like the OPC Client Interface; however, Redirection Manager can be used to provide redundancy support)</p> <ul style="list-style-type: none"> <li>Alarming: No</li> </ul>
OPC Performance and Throughput	<ul style="list-style-type: none"> <li>Maximum number of data values per display: 40</li> <li>Display rates supported: 1 second and above</li> </ul>
OPC Client Callback Support	Sustained callback rate from all OPC servers (values per second): 100
<b>OPC Data Access Server</b>	
Used for	The Experion OPC Data Access server provides OPC Data Access Clients with the capability to view Experion point data for the purposes of control and plant-wide historization.
Supported Version	1.0 and 2.05a
General OPC Client Interface Specifications	<ul style="list-style-type: none"> <li>Maximum number of OPC Data Access Client Application Instances (CAIs): 3</li> <li>Maximum number of concurrent OPC DA connections across all OPC clients: 20</li> <li>Redundancy supported: Yes (through Redirection Manager)</li> </ul>
OPC Client Callback Support	Sustained callback rate from OPC server (items per second) to all OPC clients: 1,000
<b>OPC Alarm and Event Server</b>	
Used for	The OPC Alarm and Event server is a simple and convenient mechanism for publishing Experion alarms and events to client applications. It provides a rich range of different Experion alarm and event data in an efficient manner, using the latest version of OPC specification.
Supported Version	1.1
General OPC Client Interface Specifications	<ul style="list-style-type: none"> <li>Maximum number of Alarm &amp; Event Client Application Instances: 3</li> <li>Redundancy supported: Yes (through Redirection Manager)</li> <li>Event types supported: Condition, tracking and simple</li> <li>Experion alarm and event types published: Alarms, alerts, messages, events, SOE, operator changes</li> </ul>
OPC Performance and Throughput	<ul style="list-style-type: none"> <li>Maximum notification rate to one OPC A&amp;E client: 5,000/hour</li> </ul>

<b>OPC Historical Data Access Server</b>	
Used for	The OPC History Data Access server presents Experion history data in an open manner to client applications. Whether archived or online, the Experion OPC history data is able to retrieve and publish data timely and efficiently. A range of aggregate functions are provided to reduce the processing load on the client.
Supported Version	1.2
General OPC Client Interface Specifications	<ul style="list-style-type: none"> <li>• Maximum number of History Data Access Client Application Instances: 3</li> <li>• Redundancy supported: Yes (through Redirection Manager)</li> <li>• Supported aggregates: Interpolated, average, minimum and maximum</li> </ul>
<b>OPC Integrator</b>	
Used for	OPC Integrator allows bi-directional data transfer between two or more OPC Data Access servers for the purposes of supervisory monitoring, alarming and control. As a fully integrated part of Experion, it provides integrated diagnostic, configuration and operational experiences that are consistent with other Experion operations. Additionally OPC Integrator leverages Experion's advanced redundancy features for improved reliability.
Supported Version	2.05a
General OPC Client Interface Specifications	<ul style="list-style-type: none"> <li>• Maximum number of OPC Integrator transfer groups supported: 20</li> <li>• Maximum number of items per group: 500</li> <li>• Transfer rates supported: 500ms and above</li> </ul>
<b>Redirection Manager</b>	
Used for	Redirection Manager (RDM) provides OPC server redundancy to OPC Data Access, Alarm and Event, and History Data Access Clients that may not support this capability by transparently redirecting client requests to a secondary OPC server when the primary OPC server is unavailable.
Supported Version	<ul style="list-style-type: none"> <li>• OPC DA versions: 1.0 and 2.05a</li> <li>• OPC A&amp;E version: 1.1</li> <li>• OPC HDA version: 1.2</li> </ul> <p>Experion HS supports Standalone Redirection Manager Redirection Manager (RDM)</p>

## 2.14. Interfaces

### 2.14.1. Honeywell Devices

Interface Software	Connection Type
Honeywell FSC and Safety Manager Integration <sup>1</sup>	Serial and Ethernet
Honeywell ControlEdge PLC Integration	Ethernet (OPC UA)
Honeywell S9000 Integration	Ethernet
Honeywell 620 LCS Serial and Ethernet Interface	Serial and Ethernet
Honeywell UDC 3000/5000/6300 Integration	Serial ASCII
Honeywell DPR Recorders (DPR 100, 180, 250, 3000)	Serial
Honeywell RM7800 Flame Safeguard	Serial (to Q7700 Network Interface)
Honeywell Universal Modbus Interface (HC900, UMC800, DPR180/250, UDC2300/3300, DR4300/4500, X-Series) <sup>2, 3</sup>	Serial and Ethernet
Honeywell MasterLogic Integration (ML200 and ML200R)	Ethernet
<p>Note 1 – The Honeywell FSC and Safety Manager Serial and Ethernet Integration is standard included with the Experion base software.</p> <p>Note 2 – Please refer to the Honeywell Universal Modbus Interface Reference for more details.</p> <p>Note 3 – Comes with a history backfill option.</p> <p>Note 4 – Standard Modbus interface is available in ControlEdge PLC using the Experion Modbus interface. Advanced integration features such as system built diagnostics and point generation are supported only over OPC UA</p>	

### 2.14.2. Industry Standard SCADA Interfaces

Interface Software	Connection Type
Modbus (RTU, ASCII & TCP) Interface	Serial, (RTU or ASCII), and Ethernet
Enron Modbus Interface <sup>1</sup>	Serial through Terminal Server (RTU or ASCII) and Ethernet
OPC Classic Client Interface <sup>2</sup>	Classic OPC DA client to OPC DA server
OPC Advanced Data Client Interface	Classic OPC DA client to OPC DA server with complex point structure
OPC UA Client Interface DA	OPC UA DA client to third party OPC UA DA server
UPC UA Server DA	Provides an OPC UA client read/write access to Experion point parameters, licensed per client basis

Interface Software	Connection Type
DNP3 Protocol Interface <sup>3</sup>	Serial and Ethernet (TCP/IP & UDP/IP)
IEC 60870 protocol Interface	Serial (IEC 60870-5-101) and Ethernet (IEC 60870-5-104)
IEC 61850 protocol Interface	Ethernet
<p>Note 1 – Comes with an EFM custody transfer data option. Requires the use of EFM meter points.</p> <p>Note 2 – Numerous third party devices are supported using the OPC Client Interface in combination with MatrikonOPC drivers.</p> <p>Note 3 – Comes with a history backfill option.</p>	

### 2.14.3. Third Party Devices

Interface Software	Connection Type
Allen-Bradley (Serial Interface and RSLinx <sup>1</sup> )	Serial, Ethernet, DH+ and ControlNet
Bristol Babcock RTU and OpenBSI <sup>2</sup> Interface	Serial and Ethernet, (using the OpenBSI API)
GE Fanuc Series 90 PLC	Ethernet
Fisher ROC Interface	Serial, Ethernet
Omni Interface	Serial, Ethernet
FlowX Interface	Ethernet
ABB Totalflow Interface	Serial, Ethernet
<p>Note 1 – Includes the Allen-Bradley Serial Interface, the Allen-Bradley RSLinx interface and Allen-Bradley Integration. When the RSLinx interface is used, RSLinx is required and can be purchased from Honeywell or a Rockwell Automation distributor. Consider using the OPC Client Interface with the Allen Bradley OPC server from MatrikonOPC instead.</p> <p>Note 2 – When OpenBSI is utilized, OpenBSI is required and can be purchased from an Emerson distributor. OpenBSI support is dependent upon third party OpenBSI software support of Windows 10 Enterprise 2016 LTSC.</p>	

## 2.15. ControlEdge PLC Integration

Item	Specification
<b>Description</b>	
<p>Experion HS provides integration with ControlEdge PLC in a fast, easy and secure way. Key integration features include-</p> <ul style="list-style-type: none"> <li>• Variable namespace addressing over OPC UA</li> <li>• Auto configuration of Experion Database for PLC points</li> <li>• Prebuilt PLC Diagnostics display and alarms</li> <li>• Secure IPsec based communication between CE PLC and Experion as per ISA99 Level 2 compliance (Optional)</li> <li>• DCS grade HMI integration- faceplates, detail displays and shape library</li> <li>• Use of Experion PPC (Panel PC) for field operations with consistent Experion HMI and tools</li> </ul>	
<b>Details</b>	
Maximum number of addressed variables per ControlEdge PLC controller in Experion	3000 <sup>1</sup>
Maximum number of ControlEdge PLC controllers	50 per Experion HS Server
Supported ControlEdge PLC releases for Advanced Integration over OPC UA	ControlEdge PLC R140 and later
Note 1 – Additional logical Experion controllers can be configured for each ControlEdge PLC if required	

## 2.16. Microsoft Excel Data Exchange

Item	Specification
<b>Description</b>	
<p>Enables capture of real-time point parameter and history information, and displays the data in a Microsoft Excel spreadsheet, using cell formulas or the Microsoft Excel Data Exchange Wizard.</p>	
<b>Details</b>	
Access to real-time point.parameter values	Read or Read/write access (configurable)
Access to historical point.parameter values	Read only
Access to database files (user tables)	Read or Read/write access (configurable)
Supported Microsoft Excel versions	Excel 2010 SP2, Excel 2013 SP1 and Excel 2016 (and any future service pack releases from Microsoft)

## 2.17. Application Development Toolkit

### 2.17.1. ODBC Driver

Item	Specification
<b>Description</b>	
<p>Primarily intended for reporting, the ODBC driver enables an ODBC-compliant application to access data in the Experion database, such as history, event, and point parameter values. With the ODBC Driver, the Experion Server acts as a server application (contrast this with ODBC Data Exchange, where the Experion Server acts a client application). The ODBC Driver allows the server database to be queried using SQL commands from ODBC client applications. Additionally, custom applications written in Visual Basic or C++ can also access the server database via the ODBC driver.</p>	
<b>Details</b>	
Access to real-time point.parameter values	Read only
Access to historical point.parameter values	Read only
Access to events	Read only
Configuration	Optimized for Microsoft Access and other ODBC ad hoc query/report applications.

### 2.17.2. ODBC Data Exchange

Item	Specification
<b>Description</b>	
<p>Enables two-way exchange of data between the Experion Server database and an ODBC-compliant local or network third-party database. It uses standard Structured Query Language (SQL) commands. The Experion Server acts as a client application in this configuration, in contrast with the ODBC Driver option where the Experion Server acts a server application. Data from an Experion Server database can be transferred to a third-party database, and data from a third-party database can be transferred into the Experion Server database.</p>	
<b>Details</b>	
Access to real-time point.parameter values	Read/write access
Access to historical point.parameter values	Read only
Access to database files (user tables)	Read/write access
Databases that include ODBC drivers examples	Microsoft SQL server, Oracle 7, Microsoft Access, and Sybase 10.
Configuration options	Can be configured to periodically exchange data or exchange on request.

## 2.18. Application Enablers

### 2.18.1. Alarm Pager

Items	Specifications	Comments
<b>Protocols</b>		
	<ul style="list-style-type: none"> <li>Paging Entry Terminal (PET)</li> <li>Telocator Alphanumeric Protocol (TAP)</li> <li>UCP protocols</li> <li>UCP 01</li> <li>UCP 30</li> <li>UCP 51</li> </ul>	Service providers in North America generally use the PET or TAP protocols whereas the UCP protocols are mainly used in Europe. The 2-digit suffixes refer to the EMI command numbers used by the provider.
<b>Sizing</b>		
Number of pagers	50	Each pager and email address can be configured with an individual schedule of operation so that users are only paged when they are on call.
Number of email addresses	50	
<b>Delays</b>		
Configurable notification delays	0 - 60 minutes	

### 2.18.2. Point Control Scheduler

Item	Specification
<b>Description</b>	
The Scheduler option allows point supervisory control to be automatically scheduled to occur at a specified time. This may occur on a "one-shot" basis, daily, workday, weekend, holiday, or a day of the week.	
<b>Details</b>	
Maximum number of point control schedules	100



### 2.18.3. Recipe Management

Items	Specifications	Comments
<b>Description</b>		
<p>Recipe Management provides facilities to create recipes and download them to nominated process units. Each recipe may have up to 30 items and recipes can be chained together to form larger recipes, if required. Recipe items may be used to set ingredient targets, set alarm limits, set timers and place equipment into correct operating state. Items may be individually enabled for scaling.</p> <p>Recipe management is not related to Experion Batch Manager.</p>		
<b>Details</b>		
Maximum number of recipes	100	This is the default limit. This number can be increased to 6,000 if required.

### 2.18.4. Batch Reporting

Items	Specifications	Comments
<b>Description</b>		
<p>Batch reporting enables integrated reporting of batches or lots of a production process run, to be compiled and archived automatically by the Experion Server. This feature is standard included in the Experion base software.</p> <p>Batch reporting is not related to Experion Batch Manager.</p>		
<b>Details</b>		
Maximum number of history samples per batch report	65,000	A batch report can collect one type of history sample (such as 5-second samples or 1-hour averages) for up to 50 points.

### 2.18.5. Dynamic Alarm Suppression

Items	Specifications	Comments
<b>Description</b>		
<p>Dynamic alarm suppression enables a user to reduce alarm floods or the number of standing alarms by removing an alarm or group of alarms from the summary when an initiating alarm has occurred.</p>		
<b>Details</b>		
Maximum number of triggers across all groups per server	700 triggers	
Maximum number of suppressible alarms across all groups per server	3000 alarms	Suppression groups are configured at a system level and downloaded to all servers. Each server and console station applies the suppression to their alarms independently.

### 2.18.6. Gas Operations Suite with Pipeline Leak Detection

Item	Specification	Comments
<b>Description</b>		
Gas Operations Suite is an Experion license option that allows organizations in the gas transmission pipeline industry to monitor the quality and linepack of gas flow, as well as compressor performance.		
<b>Details</b>		
Core Suite	• Pipeline modeling	Maximum 75 PIPE Segments (3 bundles of 25 Pipe Segment each)
	• Flow meter reconciliation	Calculations supported: AGA 3 orifice flow meter; AGA 5 heating value; AGA 7 turbine flow meter; AGA 8 and NX-19 supercompressibility; AGA 9 ultrasonic; Wobbe Index;
	• Linepack calculation	
	• Compressor performance monitoring	
Options	• Leak Detection	Maximum 75 PIPE Segments (3 bundles of 25 Pipe Segment each)

### 2.18.7. DNP3 History Backfill

Items	Specifications
<b>Description</b>	
DNP3 History Backfill makes use of the time stamped values reported by the RTU after recovery from a communications failure to backfill data into Experion history. This functionality depends on the ability of the DNP3 controller to report time stamped values.	
<b>Details</b>	
Experion DNP3 History backfill functionality has been qualified for the following devices:	
<ul style="list-style-type: none"> <li>• Honeywell RC500 RTU</li> <li>• Honeywell ControlEdge RTU (previously RTU 2020)</li> <li>• Foxboro SCADA RTU50</li> <li>• Kingfisher CP21</li> </ul>	

## 2.18.8. HC900 Universal Modbus History backfill

Items	Specifications
<b>Description</b>	
<p>This option enables uploading the plant history data from HC900 controller into the Experion Server</p> <p>History Backfill functionality is initiated when the HS 900 controller comes back online after it has been disconnected with the Experion Server for more than one minute. This disconnection could be due to:</p> <ul style="list-style-type: none"> <li>• The controller failing due to a communications failure</li> <li>• The controller being disabled (Out of Service)</li> </ul>	

## 2.18.9. Electronic Flow Measurement

Items	Specifications
<b>Description</b>	
<p>This option enables collecting the following data from flow meters:</p> <ul style="list-style-type: none"> <li>• Historical flow logs (typically hourly and daily transaction records)</li> <li>• Meter configuration logs</li> <li>• Alarm/event/audit logs</li> </ul> <p>The data collected is automatically exported to text (CSV) / binary FLOWCAL® CFX file formats for use by third-party gas measurement and/or billing systems.</p>	
<b>Details</b>	
Maximum number of EFM meters per server	100
<p>Honeywell RTU2020 EFM collection and export support over DNP3 protocol is enabled by default. Any other EFM collection and export requires the EFM Export Option for each protocol to be used for EFM collection, including:</p> <ul style="list-style-type: none"> <li>* ABB Totalflow EFM Enabler</li> <li>* Enron Modbus EFM Enabler</li> <li>* Fisher ROC EFM Enabler</li> <li>* Omni EFM Enabler</li> <li>* FlowX EFM Enabler</li> <li>* Bristol Babcock OpenBSI EFM Enabler</li> </ul>	

## 2.18.10. IEC 61850

Items	Specifications
<b>Description</b>	
This option enables support for IEC-61850 Edition 2 Protocol SCADA interface. This included support for new PRP and HSR communication protocols.	
<b>Details</b>	
Maximum number of IED devices that can be supported per Experion HS Server	100
Maximum number of IED's per System Interface	20

## 2.18.11. IEC 60870

Items	Specifications
<b>Description</b>	
The IEC 60870 protocol is prevalent in the energy and utilities sector. The protocol is used for real-time communication with telecontrol equipment and systems. The protocol is also used for monitoring and controlling geographically distributed processes.	
<b>Details</b>	
The IEC-60870 interface makes use of the IEC 60870-5-101 and 60870-5-104 protocols for connecting Experion to an RTU (Remote Terminal Unit). IEC 60870-5-101 is a protocol based on RS-232 while IEC 60870-5-104 is based on Ethernet. The Experion Server provides a software framework called the "point server" to integrate new devices with the Experion Server.	
Maximum number of RTUs	64 each for -101 and -104 networks

## 2.18.12. Experion Reports

Items	Specifications
<b>Description</b>	
Experion R511 been updated for Experion PKS R511 with the introduction of a new builder tool.	
<b>Details</b>	
The tool allows users to build and modify reports in a simple and intuitive way. The builder tool allows customization based on numerous filters like date and time, specific events, and priorities. The reports can be generated as HTML or PDF files, allowing easy portability to share outside of Experion.	

## 2.19. Experion Backup and Restore (EBR)

Items	Specifications
<b>Description</b>	
Starting release R510, Experion HS supports using Experion Backup and Restore (EBR) for creating backup and restoring Experion HS nodes from the EBR created backup.	
<b>Details and Limitations</b>	
<ul style="list-style-type: none"><li>• Experion HS is qualified with EBR R501 Physical Edition that is used for backup and restore of Physical platforms. EBR R501 package consists of Workstation and Server Agents, node-specific files, Recovery Disk, Management console, and a Manager component. However, as Experion HS supports running on Windows workstation OS, only the EBR R501 Workstation agent package is utilized for backup and restore needs.</li><li>• The EBR Management console is used to manage local and remote machines located in the same network. For installations with &gt;4-5 HS nodes are recommended to run EBR management console on a separate server grade machine. EBR Management Console comes with the base EBR R501 media kit package and not separately licensed.</li><li>• For more details, refer EBR Specification document- EP03-240-501</li></ul>	

### 3. Experion HS Hardware and Software Requirements

A computer platform must meet the following specifications to be used for Experion HS. These guidelines are intended to provide a minimum baseline. The actual hardware requirements will depend on the system configuration. Computers platforms should meet or exceed these specifications.

#### 3.1. Experion HS Server

System Configuration	Specifications
Processor	Single Intel Xeon Processor E5-1620v3, 3.50GHz (or equivalent)
RAM <sup>1</sup>	8GB
Networking	100 Mbps Ethernet
Operating System	Microsoft Windows 10 Enterprise 2016 LTSC (64bit) <sup>3</sup>
Video resolution	1280x1024, 1600x1200, 1680x1050, 1920x1200, 1920x1080, 3840x2160; 65K colors
Browser type	Microsoft Internet Explorer 11
Hard drive	500GB GB (100GB for Virtual Machine)
Example Hardware	Dell Precision T5820, R7920 and HP Z440 or equivalent <sup>3</sup> , Experion PPC <sup>2</sup>
<p>Note 1 – Experion platforms may require additional memory due to the installation of other supported Experion and 3rd party advanced applications, and platform memory should be increased as necessary to ensure that Experion applications performs at the optimal level</p> <p>Note 2 – The above hardware configuration needs to be referred for Panel PC platform when used as Experion HS Server with Station mode. Honeywell offers Experion PPC (Panel PC) which is highly recommended for field operations. Please refer Experion PPC hardware specification for more details.</p> <p>Note 3 – Windows 10 Ent 2016 LTSC (previously called LTSCB) operating system is based on Microsoft Redstone1 (RS1) release and is supported on selected new computer platforms. Honeywell supplied workstation platforms are compatible and should be considered. Contact Honeywell representative before selecting other computer platform make/models.</p>	

#### 3.2. Experion HS Flex Station

System Configuration <sup>1</sup>	Specifications
Processor	Single Intel Processor i3-4330, 3.50GHz (or equivalent)
RAM <sup>1</sup>	8GB (4GB for Virtual Machine)
Networking	100 Mbps Ethernet
Operating System	Microsoft Windows 10 Enterprise 2016 LTSC (64bit) <sup>3</sup>
Video resolution	1280x1024, 1600x1200, 1680x1050, 1920x1200, 1920x1080; 65K colors

Video Memory	512MB VRAM per channel
Browser type	Microsoft Internet Explorer 11
Hard drive	500GB (100GB for Virtual Machine)
Example Hardware	Dell Precision T5820, R7920 and HP Z4 G4 or equivalent <sup>3</sup> , Experion PPC <sup>2</sup>
<p>Note 1 – Experion platforms may require additional memory due to the installation of other supported Experion and 3rd party advanced applications, and platform memory should be increased as necessary to ensure that Experion applications performs at the optimal level</p> <p>Note 2– The above hardware configuration needs to be referred for Panel PC platform when used as remote station of Experion HS system. Honeywell offers Experion PPC (Panel PC) which is highly recommended for field operations. Please refer Experion PPC hardware specification for more details.</p> <p>Note 3 – Windows 10 Ent 2016 LTSC (previously called LTSB) operating system is based on Microsoft Redstone1 (RS1) release and is supported on selected new computer platforms. Honeywell supplied workstation platforms are compatible and should be considered. Contact Honeywell representative before selecting other computer platform make/models.</p>	

### 3.3. Experion HS eServer

System Configuration	Specifications
Processor	Single Intel 2.10GHz, Hex core processor or Equivalent
RAM	16GB (8GB for Win10 OS)
Networking	100 Mbps Ethernet
Operating System	Microsoft Windows Server 2016 standard Edition (64-bit) OR Microsoft Windows 10 Enterprise 2016 LTSC (64bit) <sup>3</sup>
Video resolution	1280x1024, 1600x1200, 1680x1050, 1920x1200, 1920x1080; 65K colors
Browser type	Microsoft Internet Explorer 11
Hard drive	500GB (160GB for Virtual Machine)
Software protection device	Requires free USB port on the computer hosting the Server components
Example Hardware	Dell T340XL, Dell R230XL Server and HP DL360p Gen 9 Server OR Dell Precision T5820, R7920 and HP Z4 G4 or equivalent <sup>3</sup>
<p>Note 1 - The eServer Standard Access client can be of any type of hardware and operating system including office desktops, off-the-shelf PDAs, hand-held and mobile devices etc, making eServer Standard the most versatile Experion client.</p> <p>Note 2 – The eServer Premium Access client computer platform requirement is same as Experion HS Flex Station covered in above section.</p> <p>Note 3 – Windows 10 Ent 2016 LTSC (previously called LTSB) operating system is based on Microsoft Redstone1 (RS1) release and is supported on selected new computer platforms. Honeywell supplied workstation platforms are compatible and should be considered. Contact Honeywell representative before selecting other computer platform make/models.</p>	

## 4. Model Numbers

### 4.1. Experion Server Database Software

Model Number	Description
EP-HMBASE <sup>1</sup>	Database Base Software
EP-HME511 <sup>2</sup>	Experion HS Media Kit – Standard
EP-HME511-ESD	Experion HS Media Kit – Electronic
<p>Note 1 – Experion HS bases software includes 50 SCADA points, 1 Flex Station license, 1 Display Builder license, 1 Quick Builder license, Display Versioning Control, DSA enabling License, Recipe Management, ODBC Driver, Network Server, User Scan task, Batch Report, Honeywell ControlEdge PLC Integration, Allen-Bradley integration, Allen Bradley Serial Interface, Allen Bradley RSLinx Interface, Modbus interface, Honeywell S9000 interface, Honeywell 620 LCS interface, Honeywell RM7800 Flame Safeguard, Honeywell DPR Recorders interface, DNP3 interface, Honeywell Safety Manager and FSC interface, Interface to various EFM controllers/ protocols (Enron Modbus Interface, ABB Totalflow, Fisher ROC, Omni, FlowX, and Bristol Babcock OpenBSI), GE Fanuc Series 90 PLC via Ethernet, Server peer responder, cross reference report, alarm groups, OPC Classic Client Interface, OPC UA Client Interface, OPC Advanced Data Client Interface, OPC Display Data Client, 3 Excel Data Exchange Users, and OPC Data Access Server with 3 Client Access Instances.</p> <p>Note 2 – The media kit doesn't include hardware security key (dongle). The Hardware security key is required only for select countries and this can be purchased separately using following models. EP-DONUSB (Hardware Security key) and EP-DONENB (Software Protection Enabler).</p> <p>Note 3 – When selected, this option will enable electronically distributed media kit in place of physical media kit delivery. Recipients (as specified in ordering instructions) will receive e-mail with web links to download the media ISOs.</p>	

### 4.2. Database Size Expansions

Model Number	Description
EP-HME100	Experion HS 100 Points Adder
EP-HME01K	Experion HS 1,000 Points Adder
EP-HME02K	Experion HS 2,000 Points Adder
EP-HME05K	Experion HS 5,000 Points Adder
EP-HME08K	Experion HS 8,000 Points Adder
EP-HME16K	Experion HS 16,000 Points Adder
Note 1 – Up to 16,000 additional Points can be ordered for a maximum of 16,050 Points per Server	



### 4.3. Server Redundancy

Model Number	Description
EP-HMRBAS <sup>1</sup>	Experion HS Redundancy Base Software
EP-HMR100	Experion HS 100 Points Redundancy Adder
EP-HMR01K	Experion HS 1,000 Points Redundancy Adder
EP-HMR02K	Experion HS 2,000 Points Redundancy Adder
EP-HMR05K	Experion HS 5,000 Points Redundancy Adder
EP-HMR08K	Experion HS 8,000 Points Redundancy Adder
EP-HMR16K	Experion HS 16,000 points redundancy adder
<p>Note 1 – Redundancy software follows the same methodology as selecting the database size from the previous step. Start by selecting the redundancy base software, EP-HMRBAS. This option includes server redundancy for 50 SCADA points. This option does not include an additional Experion Station connection license. Next, choose the equivalent point adders for redundancy that were chosen for the database. The point count has to exactly match that of the database point count.</p>	

### 4.4. Distributed System Architecture

Model Number	Description
HS-XRESR1 <sup>1</sup>	DSA Remote Server Enabler
<p>Note 1 – Each Experion HS Server is enabled to publish data in a DSA design. HS-XRESR1 is required once for a server or redundant server pair that needs to subscribe to data. One DSA remote server license is required to subscribe to up to the maximum number of 11 servers.</p>	

### 4.5. Station Expansions

Model Number	Description
EP-HSTA01 <sup>1, 2</sup>	Experion HS Station
<p>Note 1 – Up to 19 additional Stations can be ordered for a maximum of 20 Stations per Server. EP-HSTA01 can also be used with Experion PPC (Panel PC) connecting to Experion HS server as a remote station.</p> <p>Note 2 – Two instances of Station can be run on the same computer. This consumes a single Station license. This feature is not available with Experion PPC.</p>	

## 4.6. HMI Tools

Model Number <sup>1</sup>	Description
EP-HSQBLD <sup>2</sup>	Experion HS Quick Builder
EP-HSDSBD <sup>3</sup>	Experion HS Display Builder
Note 1 – One of each of Quick Builder and Display Builder are included with the Base Server Software. Additional licenses can be ordered when a base software license is present. These tools can be used off-line. Note 2 – Concurrent use of Quick Builder is supported starting Experion HS R500, with a maximum limit of 4 instances. Note 3 – Includes HMIWeb Display Builder and Display Builder	

## 4.7. Microsoft Windows 10 Operating System

Model Number	Description
MS-OSLW10 <sup>1,2,3</sup>	Windows 10 Enterprise 2016 LTSC
Note 1 – Experion HS R5xx uses Long Term Service Branch (LTSC) based Windows 10 operating system. Note 2 – This is an optional model in case a Honeywell supplied Win10 OS is required. Note 2 – Based on Redstone1 (RS1) release, check the compatibility of computer platform with Win10 Ent LTSC 2016 OS before selecting computer hardware.	

## 4.8. Virtualization

Virtualization is the creation of a virtual version of an Operating System / Server / Storage Device / Network Resource. There are many different types of virtualization. With Experion HS, Honeywell uses a type called Platform Virtualization. Platform virtualization refers to the abstraction or separation of computer hardware resources from one or more operating systems. Refer Virtualization Planning and Implementation Guide for Experion HS.

To read more about our use of virtualization technology, refer to Experion Virtualization Spec document: EP03-700-100

Following Virtualization CAL is needed for Experion HS Server and Station nodes when running in a Virtualized environment.

Model Number	Description
EP-HSCVMS	Experion HS Virtualization CAL
Note- HS Virtualization CAL Quantity should be equal to total number of Server and Workstation machines in your HS system.	

## 4.9. SCADA Interfaces and Data Exchange Options

Below list covers various licensed interface and data exchange options. This is in addition to the interfaces and options that are included in Experion HS base software EP-HMBASE, please refer [section 4.1](#) for more details.

Model Number	Description
<b>Industry Standard Interfaces</b>	
EP-HDNPHB <sup>1</sup>	DNP3 History backfill functionality
HS-I60870	IEC 60870 Protocol SCADA Interface
HS-I61850	IEC 61850 Protocol SCADA Interface

<b>Honeywell Device Interfaces</b>	
EP-HSUMOD	Honeywell Universal Modbus Interface
EP-HSMLSR	Honeywell Master Logic Integration
HS-IADDVM	DVM Integration (Via Point Server)
EP-HHWUMH	HC900 Universal Modbus History Backfill
HS-IADDVM	DVM Integration (Via Point Server)

<b>Third Party Devices</b>	
EP-HBBREF	Bristol Babcock Open BSI, EFM Export Option <sup>4</sup>
EP-HEMBOE	Enron Modbus Interface, EFM Export Option <sup>4</sup>
EP-HFLXEF	Flow-X Flow Computer, EFM Export Option <sup>4</sup>
EP-HOMNEF	HS Omni SCADA, EFM Export Option <sup>4</sup>
EP-HROCEF	HS Fisher ROC SCADA, EFM Export Option <sup>4</sup>
EP-HTFLEF	ABB Totalflow SCADA, EFM Export Option <sup>4</sup>

<b>OPC and Data Exchange <sup>5</sup></b>	
EP-HMOHDA	Experion HS OPC History Data Access CAI <sup>2</sup>
HS-OPCINT	Experion HS OPC Integrator SAI <sup>3</sup>
HS-OPCSAE	Experion HS OPC Alarm and Event Server CAI <sup>2</sup>
EP-HODBCD	Experion HS ODBC Data Exchange
EP-HOPUDA	Experion HS OPC UA DA Server, Per Client

Note 1 – DNP3 interface is included in the HS database license

Note 2 – CAI stands for Client Application Instance

Note 3 – SAI stands for server Application Instance

Note 3 – EFM protocol interface is included in the HS base software. This license is needed for EFM export feature

Note 5– Refer [section 4.1](#) for various OPC options included with HS database license

## 4.10. Application Development Tools and Enablers

Below list covers various licensed interface and data exchange options. This is in addition to the interfaces and options that are included in Experion HS base software EP-HMBASE, please refer [section 4.1](#) for more details.

Model Number	Description
<b>Application Development Tools</b>	
EP-HASHED	Experion HS Point Control Scheduler
EP-HMESAO	Honeywell Application Communication
EP-HMDEV1 <sup>1 2</sup>	Experion HS 16050 Pt Off-Process Development License
<b>Application Enablers</b>	
EP-HSIG01 <sup>3,4</sup>	Experion HS Electronic signature option
HS-DEQ100	100 Equipment Point Adders to Database Size
EP-AGBP25 <sup>5</sup>	GAS OPS CORE, 25 PIPE SEGMENTS <sup>7</sup>
EP-APLP25 <sup>6</sup>	GAS OPS LEAK DETECT, 25 PIPE SEGMENTS <sup>7</sup>
<p>Note 1 – This license is sold for demonstration purposes and is not intended for on-process use. Security is provided by a 5 hour time-out. No hardware security key (dongle) is required when using this license.</p> <p>Note 2 – This license is also sold for development of run-time only systems</p> <p>Note 3 – Provides Electronic Signatures on SCADA points, Electronic Signatures on Point Scheduler and the ability to securely enable and disable Electronic Signatures by asset.</p> <p>Note 4 – Provides the necessary functions, such as Electronic Signature support, for regulated industries. The Experion Server provides enhanced capabilities to support the Pharmaceutical industry and other FDA regulated industries and their unique requirements related to regulations such as 21 CFR Part 11. These features may be employed in any industry but are specifically designed to meet the guidelines of 21 CFR Part 11.</p> <p>Note 5 – Requires equipment Points</p> <p>Note 6 – Can only be ordered in combination with an equivalent number of EP-AGBP25</p> <p>Note 7 – Definitions:</p> <p>Pipe Segment: The smallest building block of a pipeline. A length of pipeline with the same physical characteristics. E.g., diameter, material, coating. A segment is bound by two pipeline nodes.</p> <p>Node: The beginning or end of a segment. A node is a unique point on the pipeline where something of interest is located. For example, Meter Station, Tee/Lateral, Compressor Station, Valve Stations, Reducer, etc. A node will have instrumentation connected to the SCADA system that affect SCADA application calculations.</p>	

## 4.11. Advanced Alarm and HMI Features

Below list covers various licensed interface and data exchange options. This is in addition to the interfaces and options that are included in Experion HS base software EP-HMBASE, please refer [section 4.1](#) for more details.

Model Number	Description
EP-HAPAGE	Experion HS Alarm Pager
HS-DASENB	Dynamic Alarm Suppression
HS-ALMTND	Alarm Tracker
EP-HSVALG	Alarm Shelving
EP-HPZE00	Station Pan and Zoom, Per Server
EP-HADSP1	Advanced HMIWeb Solution Pack

## 4.12. Runtime only Packages

Below list covers various runtime only licenses. A run-time only system does not contain any engineering tools.

Model Number	Description
EP-HRB350	Experion HS 350 Pt Runtime only software
EP-HRB650	Experion HS 650 Pt Runtime only software
EP-HRB01K	Experion HS 1050 Pt Runtime only software
EP-HRB02K	Experion HS 2050 Pt Runtime only software
EP-HRB04K	Experion HS 4050 Pt Runtime only software
EP-HRB08K	Experion HS 8050 Points Run Time Base
EP-HRB16K	Experion HS 16050 Points Run Time Base
EP-HRBEX2	Experion HS 350 Pt to 650 Pt Runtime expansion
EP-HRBEX3	Experion HS 650 Pt to 1050 Pt Runtime expansion
EP-HRBEX4	Experion HS 1050 Pt to 2050 Pt Runtime expansion
EP-HRBEX5	Experion HS 2050 Pt to 4050 Pt Runtime expansion
EP-HRBEX6	Experion HS 4050 pt to 8050 pt Runtime expansion
EP-HRBEX7	Experion HS 8050 pt to 16050 pt Runtime expansion

### 4.13. Experion Backup and Restore (EBR)

Below list covers various licensed EBR components.

Model Number	Description
EP-BRWE05 <sup>1</sup>	Experion Backup-Restore R501 Workstation License
EP-BRM501	Experion Backup-Restore R501 Media Kit <sup>2</sup>
EP-BRM501-ESD	Experion Backup-Restore R501 Media Kit (Electronic Delivery – Default)
Note 1- One Workstation License is required for each computer with a workstation operating system that will be backed up in Physical environment Note 2- One EBR Media Kit (physical or electronic delivery) is required with each EBR system.	

### 4.14. Migration Paths and Upgrade Options

Experion HS offers off-line migration path from previous Experion HS, PlantScape SCADA and PlantScape Vista releases. Below list covers various upgrade units that are required in appropriate quantities along with necessary Experion Media kit(s) [depending on number of migration steps], Operating System and Microsoft SQL licenses. Please contact your Honeywell account manager for more details.

Model Number	Description	Used for
EP-HMUPR1	Experion HS Upgrade Unit – Release minus 1	Upgrades from Experion HS R50x to R51x
EP-HMUPR2	Experion HS Upgrade Unit – Release minus 2	Upgrades from Experion HS R43x to R51x
EP-HMUPR3	Experion HS Upgrade Unit – Release minus 3	Upgrades from Experion HS R41x to R51x
EP-HMUPR4	Experion HS Upgrade Unit – Release minus X	Upgrade from HS R40x, R31x, 301, PS Vista R400 IM&C, PS R400/R500, PlantScape R3xx or older

## 5. Glossary

Term or Acronym	Description
DSA	Distributed System Architecture
Experion HS Server	The node at the heart of Experion HS. The servers encompasses a wide range of subsystems including history collection, SCADA interfaces, alarm/event, etc.
FSC	Fail Safe Controller
HC900	Honeywell process automation controller
I/O	Input / Output
LAN	Local area network based on Ethernet technology
MD	Mode
ODBC	Open DataBase Connectivity
PV	Process Variable
SCADA	Supervisory control and data acquisition
SM	Honeywell Safety Manager
SP	Setpoint
SQL	Structured Query Language
UTC	Universal Coordinated Time
USB	Universal Serial Bus
HMI	Human machine interface
HMIWeb	Human machine interface based on Web Technology
HTML	Hypertext Markup Language
OPC	Series of standard specification for open connectivity in industrial automation originally based on Microsoft's OLE COM and DCOM technologies.
pps	Parameters per second
RTU	Remote Terminal Unit
EBR	Experion Backup and Restore
OPC UA	OPC Unified Architecture

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Learn more about how Honeywell's Experion HS can improve your HMI and SCADA experience, visit [honeywellprocess.com](http://honeywellprocess.com) > [Experion HS](#) or contact your Honeywell Account Manager, Distributor or System Integrator.

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