

Technical Information

Experion HS Bundles Specification



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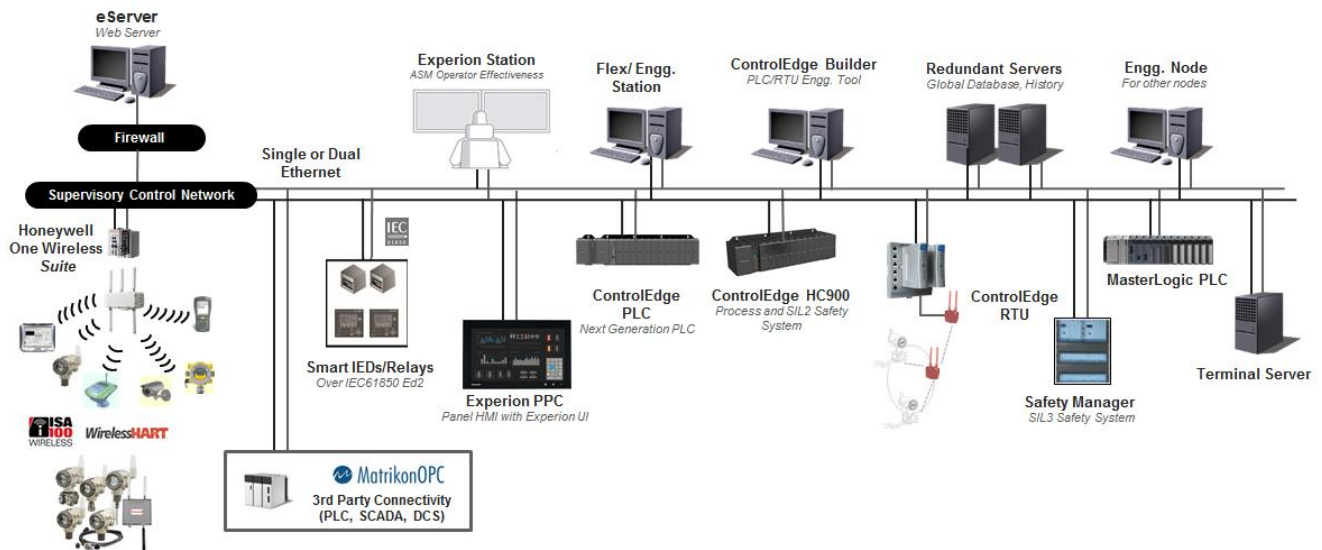
1. Introduction

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	
Description	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
Details	<ul style="list-style-type: none"> 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.

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. Model Numbers

2.1. Experion HS Bundle Software Model Numbers

Model Number	Description
EP-HROEMT ¹	Experion HS Bundle Package Runtime
EP-HMOEMD	Experion HS Development Package for use with Runtime
EP-HSBRT1	Experion HS Bundle Regular Non-Red
EP-HSBRD1	Experion HS Bundle Regular Red
EP-HSBRD2	Experion HS Bundle Max Pack
Note 1 – The HS runtime package doesn't include Experion Quick Builder and Display Builder functionalities. EP-HROEMT requires EP-HMOEMD model (minimum one quantity per project) for project development work and for performing engineering changes in a running runtime system.	

2.2. Experion HS Media Kit

Experion HS bundles covered in above section must be ordered with one of the media kits mentioned below.

Model Number	Description
EP-HME520 ¹	Experion HS Media Kit – Standard
EP-HME520-ESD ²	Experion HS Media Kit – Electronic
Note 1 – 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).	
Note 2 – 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.	

2.3. Microsoft OS and SQL

Below Microsoft models need to be considered for HS bundles.

Model Number	Description
MS-OSLW19 ¹	Windows 10 Enterprise LTSC 2019
EP-COAS19 ²	Windows Server 2019 64-bit
MZ-SQLCL4 ³	SQL Server 2019 CAL

Note 1 – Experion HS R520 uses Long Term Servicing Channel (LTSC) based Windows 10 operating system. Check the compatibility of computer platform with Win10 Ent LTSC 2019 OS before selecting computer hardware.

Note 2 – Starting HS R520, support for Windows Server OS is also available. Both Server and Station nodes are supported on Windows Server OS.

Note 3 – SQL CAL model is required for every Experion Station node connecting with SQL based Experion HS database

3. Experion HS Specifications

3.1. Experion HS Bundles Coverage

Below table summarizes various Experion capacity details and features offered for Experion HS bundles.

Feature/Capacity	EP-HROEMT (Runtime)	EP-HSBRT1 (Regular Non-Red)	EP-HSBRD1 (Regular Red)	EP-HSBRD2 (Max Pack)
Basic Features				
Number of SCADA Points	3,000	3,000	8,000	16,000
Number of Flex Stations	1	5	10	20
Engineering Options (Quick Builder, Display Builder)	No	Yes	Yes	Yes
Server Redundancy	No	No	Yes	Yes
Expansion and Upgrade	No	Yes	Yes	Yes
PLC Interfaces				
CE HC900 Interface	Yes	Yes	Yes	Yes
CE HC900 History Backfill	No	Yes	Yes	Yes
CE PLC Interface	Yes	Yes	Yes	Yes
CE RTU Interface	Yes	Yes	Yes	Yes
DNP3 History Backfill	No	Yes	Yes	Yes
Master Logic Interface	Yes	Yes	Yes	Yes
Allen Bradley Interface	Yes	Yes	Yes	Yes
GE Fanuc Series 90 PLC	Yes	Yes	Yes	Yes

S9000, 620LCS, RM7800, DPR	Yes	Yes	Yes	Yes
EFM Controllers- Enron Modbus Interface, ABB Totalflow, Fisher ROC, Omni, FlowX, Bristol Babcock OpenBSI and ControlEdge RTU)	Yes	Yes	Yes	Yes
Open Interfaces				
Modbus TCP/IP Interface	Yes	Yes	Yes	Yes
DNP3 Interface	Yes	Yes	Yes	Yes
DNP3 History Backfill	No	Yes	Yes	Yes
IEC 60870 Interface	No	Yes	Yes	Yes
IEC 61850 Interface	No	Yes	Yes	Yes
MQTT Interface	No	Yes	Yes	Yes
OPC DA Server	Yes	Yes	Yes	Yes
OPC DA Client	Yes	Yes	Yes	Yes
OPC A&E Server	No	No	Yes	Yes
OPC A&E Client	No	Yes	Yes	Yes
OPC HDA Server	No	No	Yes	Yes
OPC UA DA Server	No	Yes	Yes	Yes
OPC UA DA Client	Yes	Yes	Yes	Yes
OPC UA HA Server	No	No	Yes	Yes
Advanced HMI, Tools, and Communication Options				
Alarm Group	Yes	Yes	Yes	Yes
Alarm Pager	No	Yes	Yes	Yes
Alarm Tracker	No	No	Yes	Yes
Alarm Shelving	No	No	Yes	Yes
Dynamic Alarm Suppression	No	No	Yes	Yes
Pan and Zoom	No	Yes	Yes	Yes
Multi-Window	Yes	Yes	Yes	Yes

ODBC Driver	Yes	Yes	Yes	Yes
ODBC Data Exchange	No	Yes	Yes	Yes
Application Communication	No	Yes	Yes	Yes
Point Control Scheduler	No	Yes	Yes	Yes
DSA Server (Subscribe)	Yes	Yes	Yes	Yes
DSA Publish	No	No	Yes	Yes
EFM, Gas & Liquid Operations, Equipment Point				
EFM Export- Enron Modbus Interface, ABB Totalflow, Fisher ROC, Omni, FlowX, and Bristol Babcock OpenBSI, and ControlEdge RTU)	No	No	Yes	Yes
Gas/Liquid Operations Suite- Pipeline modeling, Flow meter reconciliation, Linepack calculation, Compressor performance monitoring	No	No	Yes	Yes
Gas/Liquid Leak Detection	No	No	Yes	Yes
Equipment Point	No	Unlimited	Unlimited	Unlimited
Regulatory Compliance & Miscellaneous				
Recipe Management	Yes	Yes	Yes	Yes
Electronic Signature	No	Yes	Yes	Yes
Excel Data Exchange	Yes (1)	Yes (3)	Yes (3)	Yes (3)
Virtualization	No	No	Yes	Yes
Experion App Clients	No	No	No	No

3.2. Special add-ons for Experion HS Runtime Bundles

3.2.1. Development option for Runtime package

The HS development model number (EP-HMOEMD) is required with Runtime bundle (EP-HROEMT) model (minimum one quantity per project) for project development work and for performing engineering changes in a running runtime system. The development option provides below functionality in demonstration mode.

Capacity/ Feature	Description
Number of SCADA points	8,050
Number of Flex Station	1
Engineering (Quick Builder, Display Builder)	1 Each
PLC Interface	<ul style="list-style-type: none"> ControlEdge PLC, HC900, RTU Master Logic, Allen Bradley RSLinx, S9000, 620LCS, RM7800, DPR and EFM Controllers- Enron Modbus Interface, ABB Totalflow, Fisher ROC, Omni, FlowX, Bristol Babcock OpenBSI and ControlEdge RTU)
Open Interface	<ul style="list-style-type: none"> Modbus TCP/IP Interface DNP3 Interface OPC DA Server OPC DA Client OPC UA DA Client
Advanced HMI, Tools, and Communication Options	<ul style="list-style-type: none"> Multi-Window ODBC Driver DSA Publish
Regulatory Compliance & Miscellaneous	<ul style="list-style-type: none"> Recipe Management Excel Data Exchange

3.2.2. SCADA point adder for Runtime Package

Experion HS Runtime package (EP-HROEMT) model can't be expanded or upgraded. However, the Runtime package can be expanded with additional 5,000 SCADA point using below model number. Note this model number is only applicable for Experion HS Runtime package (EP-HROEMT) and can't be used with any other Experion HS model.

Model Number	Description
EP-HOEMT5	5K SCADA point adder for HS Runtime Package

4. Experion HS Specifications

4.1. 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 ¹	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 ²	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.

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).

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.

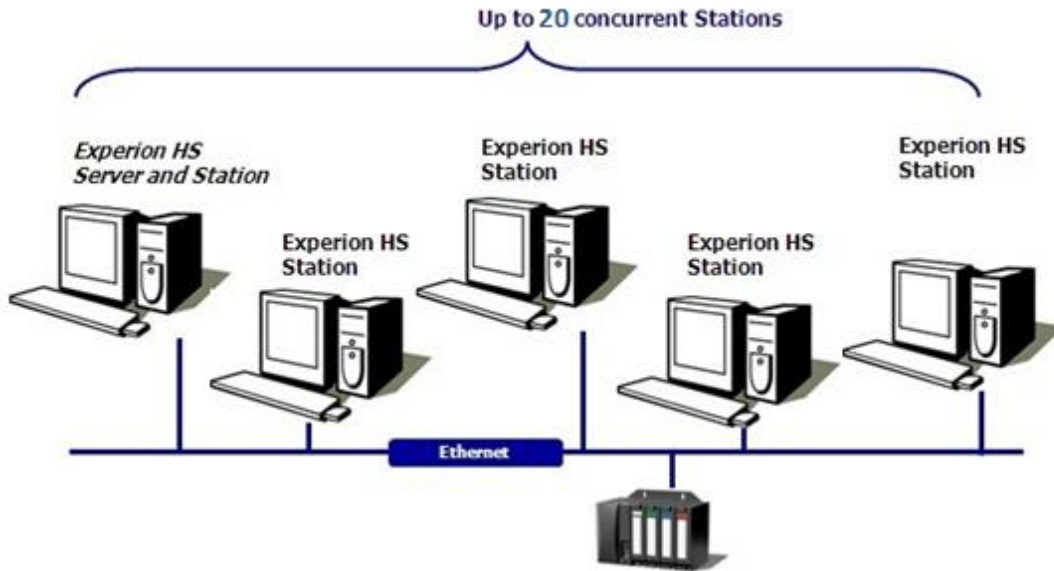


Figure 1 - Station sizing example 1 with HS Server and Station

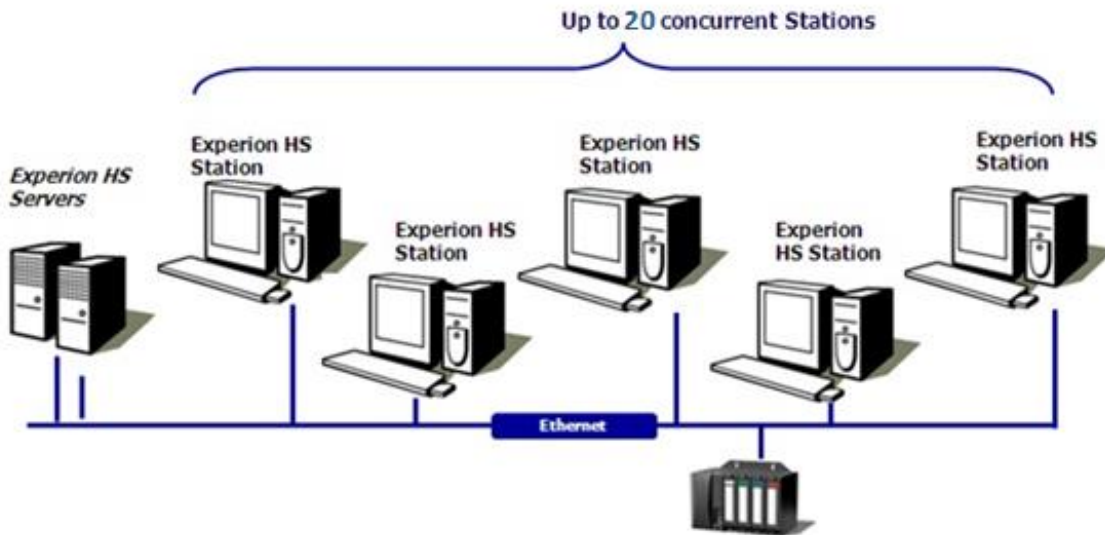


Figure 2 - Station sizing example 2 with HS Server and separate Station

4.2. Station Display Sizing and Performance

Station Display Performance Specifications	Specification
Display Parameters	
Number of dynamic parameters per display	350 or fewer
Number of dynamic parameters currently in view on a pan and zoom display ²	350 or fewer
Number of parameters per second (pps) per Station computer ⁴	500/sec
Number of dynamic parameters per Station computer ⁵	1,500 or fewer
Display Updates	
Typical non-complex display call up time with 100 or less parameters ¹	< 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 ^{1,2}	< 2 seconds
Equipment Display	
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 ³	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>	

4.3. Multi-Window Functionality

Multi-window functionality is provided as an option with Experion HS Flex Station. A multi-window Station uses SafeView to manage the placement of its windows. A separate model is introduced for this functionality in HS R520.

Server Type	Specification
Number of monitors	Up to 2
Number of windows ¹	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>	

4.4. 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

4.5. 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	$\Delta T = BS / (60 - ER)$ <p>Where: $\Delta T = \# \text{ of seconds required between bursts}$ BS = Burst Size (number of events in the burst) ER = Event Rate between bursts</p>	Examples: <ul style="list-style-type: none"> • 1,500 event burst and no events between bursts: $\Delta T = 1,500 / 60 = 25 \text{ seconds}$ 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.

4.6. Enterprise Model Sizing

4.6.1. 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.		

4.6.2. 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.		

4.7. History Sizing

4.7.1. Collection Rates

Items	Specifications	Comments
Standard history	<ul style="list-style-type: none"> Predefined collection rates of 1, 2, 5, 10 and 30 minutes 3 additional user defined collection rates can be defined. 	<ul style="list-style-type: none"> 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. 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. 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.
Fast history	<ul style="list-style-type: none"> Predefined collection rates of 5, 10, 15, 20 and 30 seconds. 3 additional user defined collection rates can be defined. 	<ul style="list-style-type: none"> A maximum of 8 collection rates can be defined choosing from the default intervals on the left Additional rates can be defined; however they must be in multiples of the base rates. 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.
Average (based on Standard History rates)	<ul style="list-style-type: none"> Predefined collection rates of 6, 60, 480 and 1440 minutes 	<ul style="list-style-type: none"> A maximum of 4 collection rates can be defined
Extended history	<ul style="list-style-type: none"> 1-hour snapshot 8-hour snapshot 24-hour snapshot 	<ul style="list-style-type: none"> When a point is configured for extended history collection, all of these intervals are stored. A maximum of 3 collection rates can be defined choosing from the default intervals on the left.
Exception history	<ul style="list-style-type: none"> 5, 10, 15, 30, and 60 seconds 5, 10, 15, 30, and 60 minutes 2, 4, 6, 8, 12, and 24 hours 	<ul style="list-style-type: none"> 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. Note that exception history only collects and stores string values. A maximum of 16 collection rates can be defined choosing from the default intervals on the left
To support daylight savings and time zones, all collected data is historized in Universal Time Coordinated (UTC) time.		

4.7.2. 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>				

4.7.3. Maximum Parameters Assigned to History

Items	Default ¹	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.

4.7.4. Calculating History Space Requirements

Items	Specifications	Comments
Maximum history file size	500 MB	<ul style="list-style-type: none"> 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. An individual history file should not exceed this size.
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.

4.8. Supervisory Control and Data Acquisition (SCADA)

4.8.1. 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"> • 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. • 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.
<p>Note 1 – The above Terminal Servers are tested to reconnect ports under the different planned and unplanned fail over scenarios.</p>	

4.8.2. 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 ²	Data Quality
	PV Algo & Action Algo ³	Alarm Enable & Status	Message Index
	Scan Address (PV SP MD Au)	Scan Period (PV SP MD Au)	Manual PV
	User Defined Parameters ⁴	Non-scanned Parameters ⁵	Point Script ⁶
Analog (Used for continuous analog values)	Process Variable (PV)	Output (OP)	Setpoint (SP)
	Mode (MD)	Up to 4 Auxiliary inputs (Au) ⁷	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 ⁸
	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 ⁹	

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 ⁴	OPC Parameters ¹⁰	Point Script ⁶
Container (Collates many related points into 1)	Point Name	Point Description	Item Name
	Parent Asset	Associated Display	Template Type
	Contained Points ¹¹		
<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 >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). Usefull 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., <Container>.<Alias>.PV</p>			

4.8.3. 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.

4.9. 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 ¹ 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	

4.10. Server Scripting

4.10.1. General Server Scripting Specification

Items	Specifications	Comments
Description		
<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>		
General Specifications		
Maximum script size	Short scripts only (typically less than 50 lines)	<ul style="list-style-type: none"> Server scripting has been optimized for relatively short scripts and is not designed for implementing control strategies. Where possible, existing server functionality should be used in preference to writing server scripts. Standard server functionality optimizes the task implementation.

4.11. Server Redundancy

Items	Specifications	Comments
Description		
<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>		
Details		
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.

4.12. 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.

4.12.1. General DSA Specifications and Performance

Items	Specification
Servers	
Maximum number of DSA connected servers ¹	11
DSA Data Publishing	
Maximum number of parameters/s to all remote servers ²	500
Maximum number of remote servers that can be published to	11
DSA Data Subscription	
Maximum number of parameters/s from each remote server ²	500
Maximum number of remote servers that this server can subscribe to	11
Total number of parameters/s from all remote servers	2500
DSA Request Response	
(Device read) Maximum number of list reads from DSA server per second	1
(Device read) Maximum number of items/list supported ^{2,3}	500
(Device read) Sustained read rate (items/second) ^{2,3}	250
DSA Trend	
Maximum number of Trend pens published to all remote servers ^{2,3,4}	20
Maximum number of Trend pens that this server can subscribe to from all remote servers ^{2,3,4}	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>	

4.12.2. DSA Interoperability –Between Experion HS and Experion LX/PlantCruise

Experion HS Release	Can interoperate with the following releases							
	Experion HS R520 (Subscribe)	Experion HS R51x (Subscribe)	Experion HS R50x (Subscribe)	Experion HS R43x (Subscribe)	Experion LX R520 ¹ (Subscribe)	Experion LX R51x ¹ (Subscribe)	Experion LX R500 ¹ (Subscribe)	Experion LX R12x ¹ (Subscribe)
HS R520 (Publish)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HS R51x (Publish)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HS R50x (Publish)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HS R43x (Publish)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LX R520 (Publish)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LX R51x (Publish)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LX R500 (Publish)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LX R12x (Publish)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note 1 – DSA capabilities shown above for Experion LX applies equally for respective PlantCruise by Experion releases

4.12.3. DSA Interoperability –Between Experion HS and Experion PKS

Experion HS Release	Can interoperate with the following releases				
	Experion PKS R520 (Subscribe)	Experion PKS R51x (Subscribe)	Experion PKS R50x (Subscribe)	Experion PKS R43x (Subscribe)	Experion PKS R41x (Subscribe)
R520 (Publish)	Yes	Yes	Yes	Yes	No
R51x (Publish)	Yes	Yes	Yes	Yes	No
R50x (Publish)	Yes	Yes	Yes	Yes	Yes
R43x (Publish)	Yes	Yes	Yes	Yes	Yes
R41x (Publish)	No	No	Yes	Yes	Yes
Data flow	<i>HS Can only Publish to Experion PKS.</i>				

4.12.4. DSA Interoperability –Between Experion HS and Experion Buildings Integrator / Experion Industrial Security

Experion HS Release	Can interoperate with the following releases				
	Enterprise Buildings Integrator and Experion Industrial Security R60x	Enterprise Buildings Integrator and Experion Industrial Security R500	Enterprise Buildings Integrator and Experion Industrial Security R43x	Enterprise Buildings Integrator and Experion Industrial Security R410.x	Enterprise Buildings Integrator R400.x
R520	Yes	Yes	No	No	No
R51x	No	Yes	Yes	No	No
R50x	No	Yes	Yes	No	No
R43x	No	Yes	Yes	Yes	No

4.13. OPC

OPC Component	Specifications
OPC Classic Client Interface	
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"> • Maximum number of third-party OPC DA servers supported: 5 • Time-stamping: Within the Experion Server • Alarming: Yes • Scannable parameters per point: (8 – Analog, 3 – Digital, 1 – Accumulator) • User Defined Scanned Parameters: 200 per point
OPC Groups and Items	<ul style="list-style-type: none"> • Maximum number of OPC controllers: 50 • Maximum OPC item name length: 80 character • Maximum number of items per OPC controller: 500 • Maximum number of OPC groups supported: 100 • OPC group update rates supported: 1 second and above
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"> • Number of item writes by OPC client interface per second (per channel): 1
OPC Advanced Data Client	
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"> • Maximum number of third-party OPC servers supported: 5 • Redundancy Supported- Yes <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"> • Alarming: No <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&E) server.)</p> <ul style="list-style-type: none"> • Maximum OPC item name length- 120 char • Scannable parameters per point: 400

OPC Groups and Items	<ul style="list-style-type: none"> • Maximum number of items per group supported: 500 • Maximum number of items across all groups: 10,000 • Group update rates supported: 1 second and above • Maximum number of OPC groups supported: 100 • OPC group update rates supported: 1 second and above
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"> • Number of item writes by OPC client interface per second: 1
OPC UA Client Interface DA	
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"> • Maximum number of OPC UA channels per server: 50 • Maximum number of OPC UA Controllers per Server: 500 • OPC Data Access Services: Read (Poll & Subscription) and Write <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"> • Redundancy Supported: Yes <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"> • OPC UA Data types supported- Numeric, Boolean, Date and String
OPC UA Client read/ write Support	<ul style="list-style-type: none"> • Sustained callback rate from all OPC Servers (values per second): 1,000 • Sustained callback rate per Channel (values per second): 400 • Subscription rates supported: 1sec and above • Experion Dynamic Scanning Support: Yes • Number of writes by OPC UA Client per second per OPC UA controller: 1
OPC UA Security Support	<ul style="list-style-type: none"> • Certificate Authority Topology Support: Experion or Customer provided CA • OPC UA Client certificate scope: Configurable to Server, Channel or Controller scope • Supported Security Modes: Sign and Encrypt, Sign Only, None • Supported Security Levels: BASIC256 SHA-256 or BASIC256 or BASIC128-RSA-15 <p>(Note- Certificates for OPC UA Security must be configured on both Servers in a redundant server pair.)</p>

OPC UA History Access Server	
Used for	<p>The OPC UA History 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.</p> <p>(Note- Numbers are not for the PHD Experion link. Experion link supports the same performance numbers as the history subsystem of the Experion Server.)</p>
General OPC Client Interface Specifications	<ul style="list-style-type: none"> • Maximum number of History Data Access Client Application Instances: 20 • Redundancy supported: Yes (through Redirection Manager) • Maximum number of concurrent OPC UA DA connections across all OPC clients <p>Supported aggregates: Interpolated, average, minimum and maximum</p>
OPC Performance and Throughput	<ul style="list-style-type: none"> • ReadRaw (average values per second): 3,500 <p>(A minimum of 10 point.parameters per call are required to achieve this performance. The specification for value/second is across all clients.)</p>
OPC Display Data Client	
Used for	<p>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.</p>
Supported Version	2.05a
General OPC Client Interface Specifications	<ul style="list-style-type: none"> • Maximum number of third-party OPC servers supported: 5 • Redundancy Supported- Yes <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"> • Alarming: No
OPC Performance and Throughput	<ul style="list-style-type: none"> • Maximum number of data values per display: 40 • Display rates supported: 1 second and above
OPC Client Callback Support	Sustained callback rate from all OPC servers (values per second): 100
OPC Data Access Server	
Used for	<p>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.</p>
Supported Version	1.0 and 2.05a
General OPC Client Interface Specifications	<ul style="list-style-type: none"> • Maximum number of OPC Data Access Client Application Instances (CAIs): 3 • Maximum number of concurrent OPC DA connections across all OPC clients: 20 • Redundancy supported: Yes (through Redirection Manager)

OPC Client Callback Support	Sustained callback rate from OPC server (items per second) to all OPC clients: 1,000
OPC Alarm and Event Server	
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"> • Maximum number of Alarm & Event Client Application Instances: 3 • Redundancy supported: Yes (through Redirection Manager) • Event types supported: Condition, tracking and simple • Experion alarm and event types published: Alarms, alerts, messages, events, SOE, operator changes
OPC Performance and Throughput	<ul style="list-style-type: none"> • Maximum notification rate to one OPC A&E client: 5,000/hour
OPC Historical Data Access Server	
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"> • Maximum number of History Data Access Client Application Instances: 3 • Redundancy supported: Yes (through Redirection Manager) • Supported aggregates: Interpolated, average, minimum and maximum
OPC Integrator	
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"> • Maximum number of OPC Integrator transfer groups supported: 20 • Maximum number of items per group: 500 • Transfer rates supported: 500ms and above

OPC Redirection Manager	
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"> • OPC DA versions: 1.0 and 2.05a • OPC A&E version: 1.1 • OPC HDA version: 1.2 <p>Experion HS supports Standalone Redirection Manager Redirection Manager (RDM)</p>

4.14. Interfaces

4.14.1. Honeywell Devices

Interface Software	Connection Type
Honeywell FSC and Safety Manager Integration ¹	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) ^{2, 3}	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>	

4.14.2. Industry Standard SCADA Interfaces

Interface Software	Connection Type
Modbus (RTU, ASCII & TCP) Interface	Serial, (RTU or ASCII), and Ethernet
Enron Modbus Interface ¹	Serial through Terminal Server (RTU or ASCII) and Ethernet
OPC Classic Client Interface ²	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
OPC UA Server HA	Provides OPC UA HA client(S) read/write access to Experion point parameters, licensed per Experion server
DNP3 Protocol Interface ³	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
MQTT Interface (Broker)	To connect with MQTT client devices, licensed per Experion server
<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>	

4.14.3. Third Party Devices

Interface Software	Connection Type
Allen-Bradley (Serial Interface and RSLinx ¹)	Serial, Ethernet, DH+ and ControlNet
Bristol Babcock RTU and OpenBSI ² 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

Interface Software	Connection Type
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 LTSB.</p>	

4.15. ControlEdge PLC Integration

Item	Specification
Description	
<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"> • Variable namespace addressing over OPC UA • Auto configuration of Experion Database for PLC points • Prebuilt PLC Diagnostics display and alarms • Secure IPsec based communication between CE PLC and Experion as per ISA99 Level 2 compliance (Optional) • DCS grade HMI integration- faceplates, detail displays and shape library • Use of Experion PPC (Panel PC) for field operations with consistent Experion HMI and tools 	
Details	
Maximum number of addressed variables per ControlEdge PLC controller in Experion	3000 ¹
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
<p>Note 1 – Additional logical Experion controllers can be configured for each ControlEdge PLC if required</p>	

4.16. Microsoft Excel Data Exchange

Item	Specification
Description	
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.	
Details	
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)

4.17. Application Development Toolkit

4.17.1. ODBC Driver

Item	Specification
Description	
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.	
Details	
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.

4.17.2. ODBC Data Exchange

Item	Specification
Description	
<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>	
Details	
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.

4.18. Application Enablers

4.18.1. Alarm Pager

Items	Specifications	Comments
Protocols		
	<ul style="list-style-type: none"> • Paging Entry Terminal (PET) • Telocator Alphanumeric Protocol (TAP) • UCP protocols • UCP 01 • UCP 30 • UCP 51 	<p>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.</p>
Sizing		
Number of pagers	50	<p>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.</p>

Number of email addresses	50	
Delays		
Configurable notification delays	0 - 60 minutes	

4.18.2. Point Control Scheduler

Item	Specification
Description	
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.	
Details	
Maximum number of point control schedules	100

4.18.3. Recipe Management

Items	Specifications	Comments
Description		
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. Recipe management is not related to Experion Batch Manager.		
Details		
Maximum number of recipes	100	This is the default limit. This number can be increased to 6,000 if required.

4.18.4. Batch Reporting

Items	Specifications	Comments
Description		
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. Batch reporting is not related to Experion Batch Manager.		
Details		
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.

4.18.5. Dynamic Alarm Suppression

Items	Specifications	Comments
Description		
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.		
Details		
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.

4.18.6. Gas Operations Suite with Pipeline Leak Detection

Item	Specification	Comments
Description		
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.		
Details		
Core Suite	<ul style="list-style-type: none"> Pipeline modeling 	Maximum 75 PIPE Segments (3 bundles of 25 Pipe Segment each)
	<ul style="list-style-type: none"> 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;
	<ul style="list-style-type: none"> Linepack calculation 	
	<ul style="list-style-type: none"> Compressor performance monitoring 	
Options	<ul style="list-style-type: none"> Leak Detection 	Maximum 75 PIPE Segments (3 bundles of 25 Pipe Segment each)

4.18.7. DNP3 History Backfill

Items	Specifications
Description	
<p>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.</p>	
Details	
<p>Experion DNP3 History backfill functionality has been qualified for the following devices:</p> <ul style="list-style-type: none"> • Honeywell RC500 RTU • Honeywell ControlEdge RTU (previously RTU 2020) • Foxboro SCADA RTU50 • Kingfisher CP21 	

4.18.8. HC900 Universal Modbus History backfill

Items	Specifications
Description	
<p>This option enables uploading the plant history data from HC900 controller into the Experion Server 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"> • The controller failing due to a communications failure • The controller being disabled (Out of Service) 	

4.18.9. Electronic Flow Measurement

Items	Specifications
Description	
<p>This option enables collecting the following data from flow meters:</p> <ul style="list-style-type: none"> • Historical flow logs (typically hourly and daily transaction records) • Meter configuration logs • Alarm/event/audit logs <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>	
Details	
Maximum number of EFM meters per server	100

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:

- * ABB Totalflow EFM Enabler
- * Enron Modbus EFM Enabler
- * Fisher ROC EFM Enabler
- * Omni EFM Enabler
- * FlowX EFM Enabler
- * Bristol Babcock OpenBSI EFM Enabler

4.18.10. IEC 61850

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

4.18.11. IEC 60870

Items	Specifications
Description	
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.	
Details	
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

4.18.12. Experion Reports

Items	Specifications
Description	
Starting Experion R511, a new report builder tool is introduced.	
Details	
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.	

4.18.13. MQTT Interface

Items	Specifications
Description	
The Experion MQTT Sparkplug interface supports these MQTT enables Experion server to act as MQTT Broker and allows Secure connection, user authentication with MQTT devices acting as clients.	
Details	
The server supports both single and redundant communications through Ethernet connections to the MQTT broker. Communication between the Experion MQTT Sparkplug client and the MQTT broker can be secured using TLS Security.	

4.19. Experion Backup and Restore (EBR)

Items	Specifications
Description	
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.	
Details and Limitations	
<ul style="list-style-type: none"> • Experion HS R520 is qualified with EBR R520 Physical Edition that is used for backup and restore of Physical platforms. EBR R520 package consists of Workstation and Server Agents, node-specific files, Recovery Disk, Management console, and a Manager component. As Experion HS now supports running on Windows workstation and Server OS, both EBR R520 Server and Workstation agent package can be utilized for backup and restore needs. • The EBR Management console is used to manage local and remote machines located in the same network. For installations with >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 R520 media kit package and not separately licensed. • EBR R501 and R520 both supports Experion HS R520. However, we recommend users to use the latest EBR R520. For more details, refer EBR Specification document- EP03-240-520 	

5. 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.

5.1. Experion HS Server

System Configuration	Windows Workstation Platform	Windows Server Platform
Processor	Single Intel 2.10GHz, Hex core processor or Equivalent	
RAM ¹	8GB	16GB
Networking	1 Gbps or 100 Mbps Ethernet	
Operating System (Physical)	Windows 10 Enterprise 2019 LTSC ²	Windows Server 2019 64-bit
Operating System (Virtual)	Microsoft Windows Server 2019 Standard Edition Microsoft Windows Server 2019 Datacenter Edition	
Browser type	Microsoft Internet Explorer 11	
Hard drive	250GB minimum	
Example Hardware	Dell Precision T5820XL, R7920XL, HP Z4 G4, Experion PPC ³	Dell T340, Dell R240XL, Dell R340 XL, Dell R740XL, HP DL360 G10, Dell XR2
<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 – For workstation grade machines, Honeywell recommends using either Honeywell supplied computer platforms or Platforms that are compatible with Windows 10 Enterprise LTSC 2019 Edition OS supported with Experion R52x</p> <p>Note 3 – 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>		

5.2. Experion HS Flex Station

System Configuration ¹	Specifications
Processor	Single Intel Xeon Processor E5-1620v3 3.50GHz (or equivalent)
RAM ¹	8GB
Networking	1Gbps or 100 Mbps Ethernet
Operating System	Windows 10 IoT Enterprise LTSC 2019 ³
Video resolution	1280x1024, 1600x1200, 1680x1050, 1920x1200, 1920x1080, 3840x2160; 65K colors
Browser type	Microsoft Internet Explorer 11
Hard drive	500GB (100GB for Virtual Machine)
Example Hardware	Dell Precision T5820XL, R7920XL, HP Z4 G4, Experion PPC ²
<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 – For workstation grade machines, Honeywell recommends using either Honeywell supplied computer platforms or Platforms that are compatible with Windows 10 Enterprise LTSC 2019 Edition OS supported with Experion R52x. Contact Honeywell representative before selecting other computer platform make/models.</p>	

5.3. Experion Backup and Restore (EBR)

Below list covers various licensed EBR components.

Model Number	Description
EP-BRSE06 ¹	Experion Backup-Restore R520 Server License
EP-BRWE06 ¹	Experion Backup-Restore R520 Workstation License
EP-BRM520	Experion Backup-Restore R520 Media Kit ²
EP-BRM520-ESD	Experion Backup-Restore R520 Media Kit (Electronic Delivery – Default)
<p>Note 1- One Server License is required for each computer with a server operating system that will be backed up in Physical environment. One Workstation License is required for each computer with a workstation operating system that will be backed up in Physical environment</p> <p>Note 2- One EBR Media Kit (physical or electronic delivery) is required with each EBR system.</p>	

6. 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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