

Technical Information

ENTIS R130.2 Specification



ETDOC-X618-en-R130.2

Release 130.2

Version 8.0

Revision History

Revision	Date	Description
1.0	September 2019	Release version
1.1	October 2019	Text corrections
2.0	December 2019	Release version R110.1 updates
3.0	June 2020	Release version R120.1 updates
4.0	July 2020	Maximum number of tanks updated
5.0	September 2020	Release version R121.1 updates
6.0	June 2021	Release version R122.1 updates
7.0	December 2022	Release version R130.1 updates
8.0	April 2023	Release version R130.2 updates

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1. Introduction

1.1. ENTIS

ENTIS's unique, flexible system architecture ensures robust operation as a Windows 10 Enterprise 2019 LTSC Version 1809 application. ENTIS integrates with the dedicated Communication Interface Unit, CIU 888 via OPC UA. The CIU 888 retrieves and processes data from field devices and systems by constantly scanning, calculating, and monitoring. Reliable data is continuously provided to a wide range of applications to support operators with dedicated tasks in ENTIS. This allows users to operate the tank farm safely and efficiently.

A variety of displays are available for inventory management, movement (simple and advanced), including but not limited to, bar graphs, tabular data, iconized tanks, and a whole range of optional modules such as trending, report printing, and a what if...tank calculator.

ENTIS screens are displayed in the Experion Station environment.

1.2. 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.

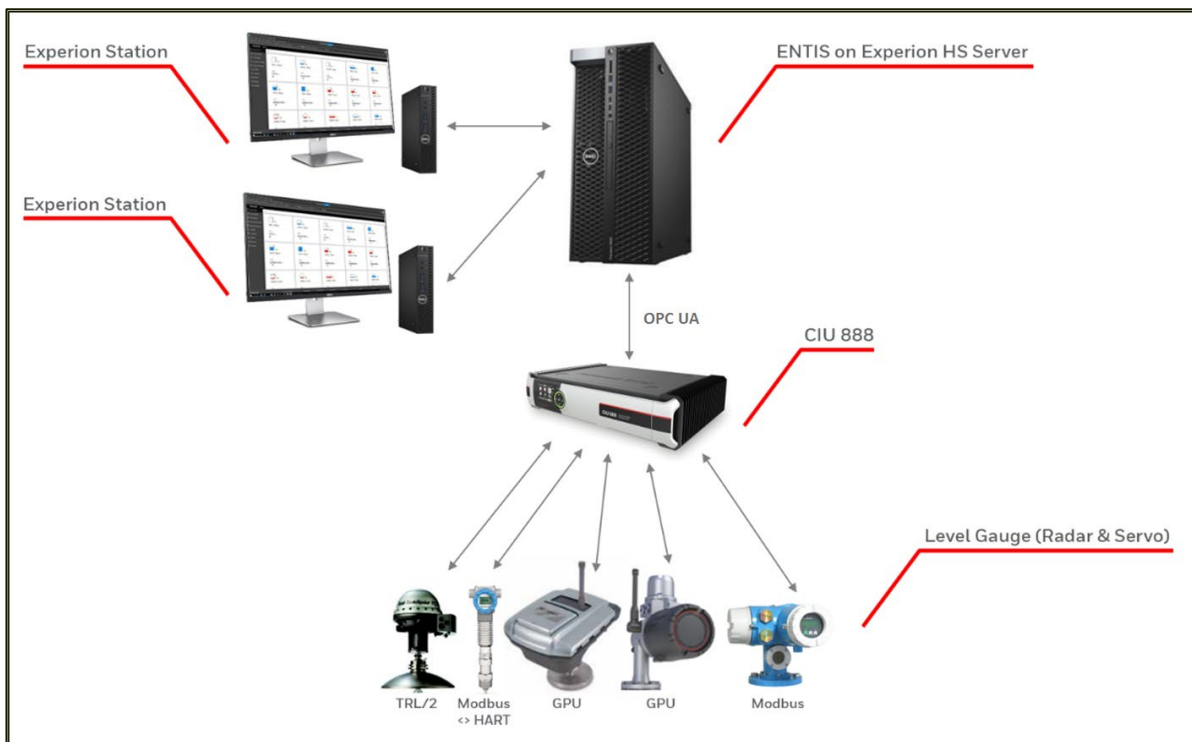


Figure 1 – Architecture Overview

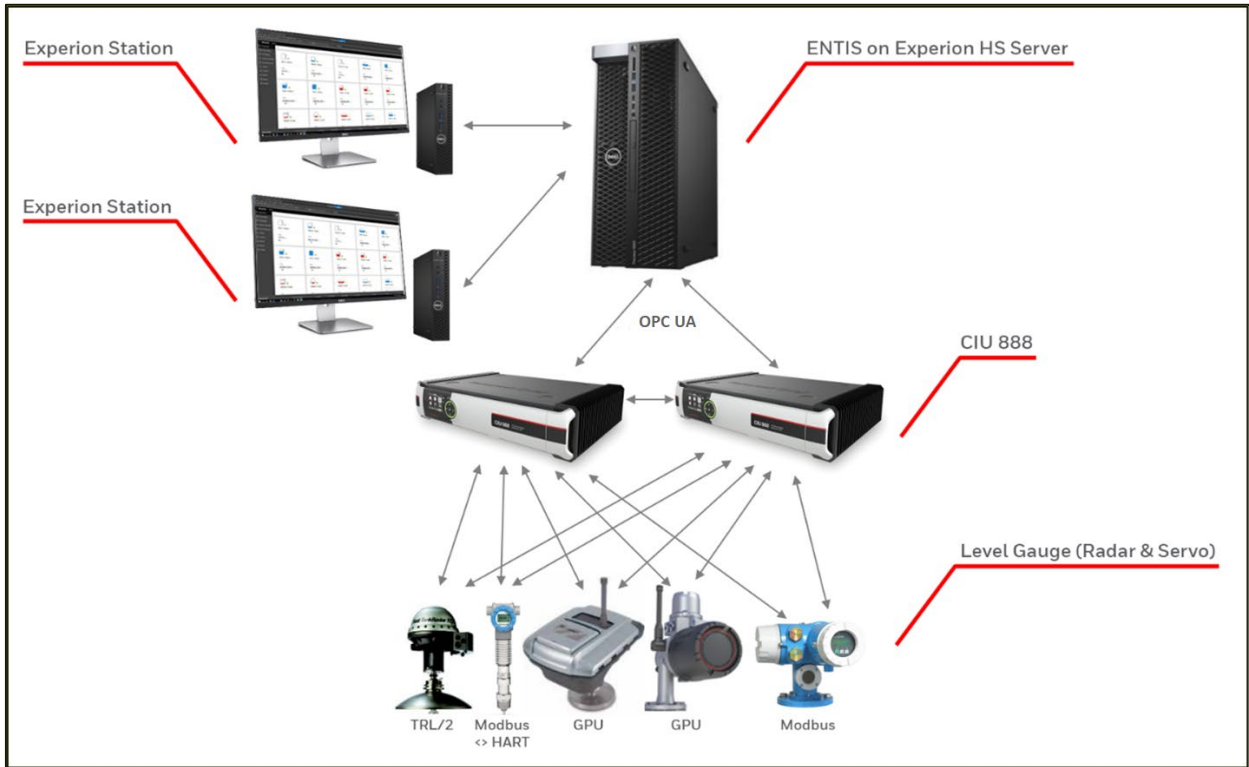


Figure 2 – CIU Hot Standby Architecture

ENTIS requires a Experion HS server to run the ENTIS package. The ENTIS package will be installed next to Experion HS and uses Experion functionality but has its own scanning mechanism to collect tank data from the field. The ENTIS software will connect to the CIU 888 via OPC UA connection to get tank records that contain the inventory data of the different connected storage tanks. The CIU 888 will scan the data from the Level Gauges on top of the tanks. These Level Gauges will measure the product level and are also used as data concentrator for other sensors like temperature and pressure.

1.3. CIU 888

The CIU 888 is a Communication Interface Unit. The CIU 888 is the crucial link between tank gauging instruments and the ENTIS control room systems. It provides operators with reliable and accurate real-time tank inventory data every couple of seconds, 24 hours a day, 7 days a week.

1.4. Level Gauges

The level gauge will measure the tank level via a radar gauge or a servo gauge. Level gauges are also used as a data concentrator on the tank to connect a Vito multi spot temperature sensor and pressure sensors. ENTIS will support all Honeywell Enraf gauges and several third-party gauges.

1.5. Experion HS Flex Station

The Experion HS Flex Station is the Human Machine Interface (HMI) that can be utilized for different functions around a plant including operations, monitoring, maintenance, and engineering.

1.6. Experion HS Server

The Experion HS 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 application Experion HS Station(s). The Experion HS Server is an Experion system node that supports the Station and Server functions. Experion HS Server can be used as an operator or an engineering station. For a redundant Experion HS Server system, it is recommended to use the backup Server as the engineering station.

1.7. Experion HS / ENTIS Redundancy

ENTIS Redundancy will follow the same principal of Experion HS Redundancy with server A and server B. Figure 3 shows the redundant ENTIS/Experion HS architecture and Figure 4 show the combination of CIU 888 redundancy and ENTIS/Experion HS redundancy.

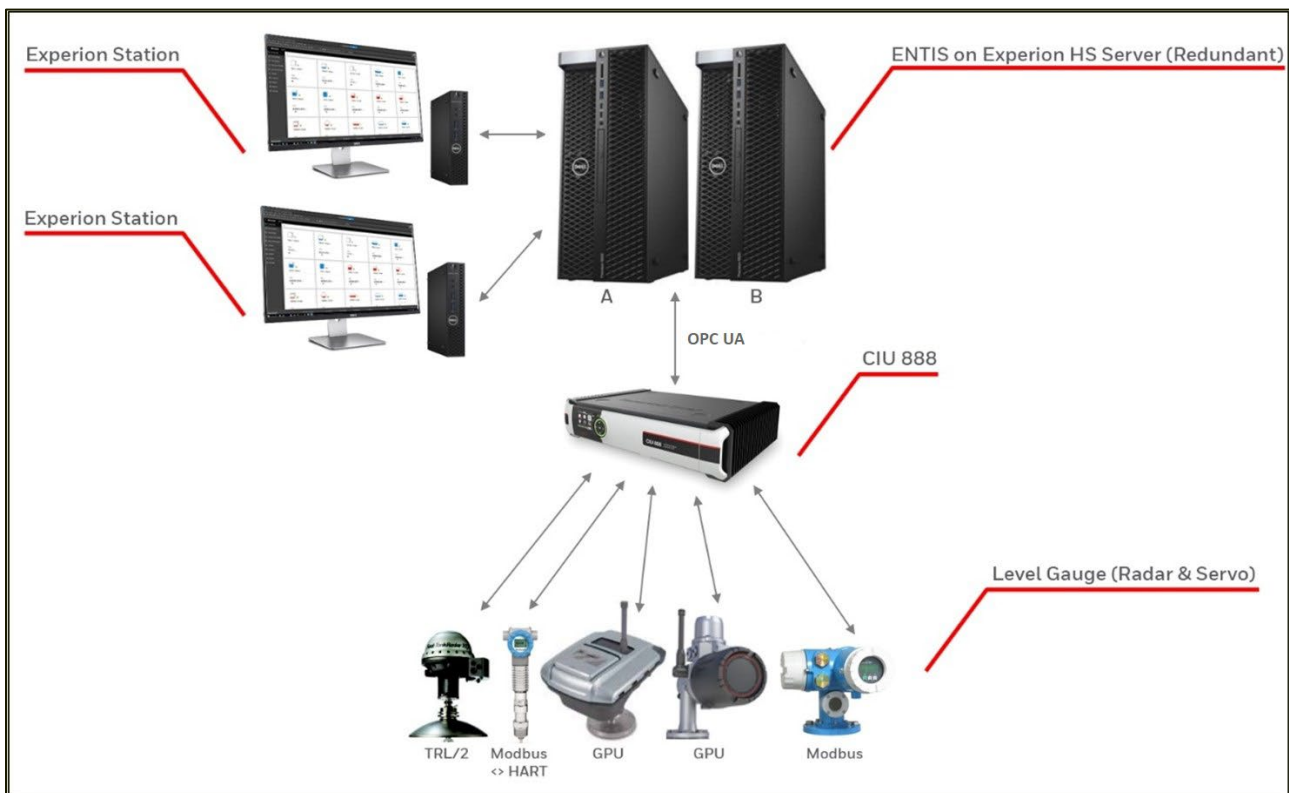


Figure 3 - Redundant Architecture Overview

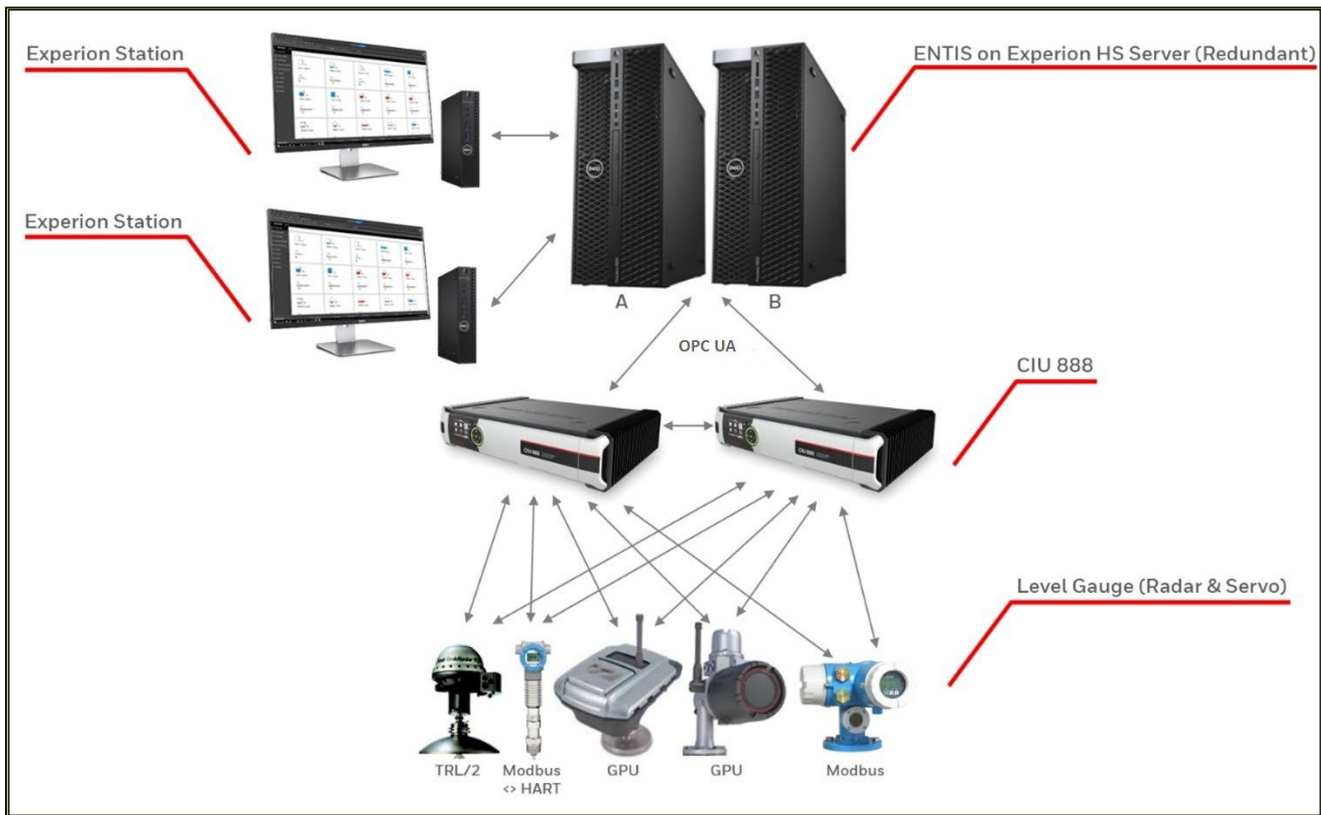


Figure 4: CIU Hot Standby Architecture in combination with ENTIS/Experion HS redundancy

Notes:

- Experion HS does not support Fault-Tolerant-Ethernet but supports dual networks.
- Entis has been qualified for single redundancy only.
- For simplicity, switches needed to connect multiple CIU’s and PC’s and or create network separation to respect the Purdue layers are not visualized.

2. Specifications

2.1. ENTIS license specifications

Item	Specification	Comments
Maximum number of tanks	400 (5 CIU's, 80 Tanks)	The ENTIS license will give you the option to start with 5, 10, 15, 20... 310, 315, 320...400 400 Tank License is needed to support 400 tanks.
Maximum number of CIU 888s supported	8 (non-redundant)	ENTIS will support 8 CIU's. Each CIU can support up to 80 tanks.
Maximum number of redundant CIU 888 pairs supported	8 (16 CIU's)	ENTIS will support 8 primary CIU 888 devices and 8 secondary CIU 888 devices.

Maximum number of Tanks with Dual Gauges	320 (8 CIU's, 40 Tanks)	<p>Since the number of points are based on the tank, having a second gauge on the tank lowers the maximum number of tanks.</p> <p>1 gauge on a tank = 1 tank (80 in total) 2 gauges on a tank = Claims the space of 2 tanks (40 + 40 in total) 320 Tank License is needed. Gauge commands to execute on second gauge are limited.</p>
Minimum required CIU 888 version	R210.1	<p>ENTIS is using the CIU 888 OPC UA connection and the Profiles interface.</p> <p>CIU 888 version R150.1 and onwards supports 50 density points and dual gauges.</p> <p>CIU 888 210.1 has been qualified for Legal Metrology (previously known as Weight & Measures).</p>
Experion HS version	R520.2	Experion HS R520.2 release with HMI Web Update 5 is required for ENTIS.
Legal Metrology	Yes	ENTIS R130.2 has been qualified for Legal Metrology (previously known as Weight & Measures).

2.2. Experion license HS specifications

ENTIS uses Experion HS to run ENTIS. The following Experion specifications, shown in the table below, are required. For more information on Experion HS refer to Experion HMI Specification (EP03-200-520).

Item	Specification	Comments
Maximum number of composite SCADA points for Experion HS is 16,500. For ENTIS we require the following range	5 tanks = 215 points 80 tanks = 3440 points 160 tanks = 6880 points 240 tanks = 10320 points 320 tanks = 13760 points 400 tanks = 17200 points	The database starts at a minimum of 50 points, with increments of 100 points up to 16,500 points. For 1 Tank in ENTIS we need 43 points, the possible number of tanks in ENTIS ranges from 5 to 400 tanks. Note: 4 points need to be added for each CIU.
Maximum number of Stations	20	ENTIS can have multiple stations, supporting the same number of stations as Experion HS
Maximum number of SCADA channels in Experion HS is 50	1	ENTIS is using 1 SCADA channel
Maximum number of SCADA controllers in Experion HS is 500	8	ENTIS is using 1 - 8 SCADA controllers. Each CIU 888 gets its own controller. A redundant CIU 888 setup will use only 1 controller per CIU 888 pair in Experion.

2.3. ENTIS Compatibility Matrix

ENTIS	Experion-HS	CIU888
R130.2	R520.2	R210.1
R130.1	R511.5	R210.1
R121.2	R511.3	R150.1
R121.1	R511.3	R150.1
R120.1	R511.2	R150.1
R110.1	R510.2	R150.1

2.4. ENTIS SCADA points specifications

ENTIS SCADA Points are shown in below table:

The following points will be available from ENTIS R130.2.

Each CIU takes 4 SCADA Points:

Entity	SCADA Point name	Param	Link Type	Value Type	HISTLOW	Point description
CAL	[Controller]_CAL	OP				The communication alarm from ENTIS system to CIU
CCAL	[Controller]_CCAL	OP				The checksum status from ENTIS system to CIU is wrong
SSAL	[Controller]_SSAL	OP				The scan process fail status from Entis system
HAL	[Controller]_HAL	OP				CIU 888 Hot Standby Alarm

The next table show the 43 points for which most of them contain a user defined parameter which holds the SV (Status/Validity) value.

EntityID	Entity	SCADA Point name	Param	Point description
933	AALB	[Tank]_AALB	OP	Background age alarm
932	AALF	[Tank]_AALF	OP	Foreground age alarm
939	DAL	[Tank]_DAL	OP	Product Level Difference alarm
38	DisplacerPosition	[Tank]_DisplacerPosition	A1	The displacer position in the tank
39	DisplacerPositionStatus	[Tank]_DisplacerPosition	Status	The displacer position in the tank
250	DObs (calculated)	[Tank]_DObs	A1	The product density
251	DObsStatus	[Tank]_DObs	Status	The product density
37	EXT	[Tank]_EXT	OP	External contacts Alarm (default not enabled)

74	FlowTOV	[Tank]_FlowTOV	A1	The Total Observed Volume (TOV) of the product per time unit
99	FlowTOV	[Tank]_FlowTOV	Status	The Total Observed Volume (TOV) of the product per time unit
931	GAL	[Tank]_GAL	StateStringPV	The gauge level alarm
40	Gauge2Level	[Tank]_Gauge2Level	A1	The product level 2 in the tank
58	GOV	[Tank]_GOV	A1	The Gross Observed Volume is total volume of all petroleum liquids, sediment, water excluding free water at observed temp and pressure
59	GOVStatus	[Tank]_GOV	Status	The Gross Observed Volume is total volume of all petroleum liquids, sediment, water excluding free water at observed temp and pressure
60	GSV	[Tank]_GSV	A1	The Gross Standard Volume is total volume of all petroleum liquids, sediment, water excluding free water corrected by appropriate CTL
61	GSVStatus	[Tank]_GSV	Status	The Gross Standard Volume is total volume of all petroleum liquids, sediment, water excluding free water corrected by appropriate CTL
1060	MovementStartLevel	[Tank]_MovementStartLevel	A1	Movement start level
1062	MovementStatus	[Tank]_MovementStatus	OP	The tank movement function status
3	MovingStatus	[Tank]_MovingStatus	OP	The Tank level moving status alarm
68	NSM	[Tank]_NSM	A1	The Nett Standard Mass of the product (NSM)

69	NSMStatus	[Tank]_NSM	Status	The Nett Standard Mass of the product (NSM)
1080	PAT1	[Tank]_PAT1	OP	Movement pre-alert 1
1082	PAT2	[Tank]_PAT2	OP	Movement pre-alert 2
1084	PAT3	[Tank]_PAT3	OP	Movement pre-alert 3
1086	PAT4	[Tank]_PAT4	OP	Movement pre-alert 4
943	PCAL	[Tank]_PCAL	OP	Product configuration checksum mismatch
1070	PlannedVolume	[Tank]_PlannedVolume	A1	Movement planned volume
30	ProductDRef	[Tank]_ProductDRef	A1	The reference density for the product in the tank
31	ProductDRefStatus	[Tank]_ProductDRef	Status	The reference density for the product in the tank
198	ProductLevel	[Tank]_ProductLevel	A1	The corrected product level in the tank
199	ProductLevelStatus	[Tank]_ProductLevel	Status	The corrected product level in the tank
44	ProductTemp	[Tank]_ProductTemp	A1	The product temperature
45	ProductTempStatus	[Tank]_ProductTemp	Status	The product temperature
1078	TargetLevel	[Tank]_TargetLevel	A1	Movement target level
9362	TCAL	[Tank]_TCAL	OP	Checksum calculated over tank related parameters by the CIU
66	TGSV	[Tank]_TGSV	A1	The Total Gross Standard Volume (TGSV)
67	TGSVStatus	[Tank]_TGSV	Status	The Total Gross Standard Volume (TGSV)
1088	TimeToTarget	[Tank]_TimeToTarget	A1	Time for the movement to complete.
72	TNSM	[Tank]_TNSM	A1	The Total Net Standard Mass of the product (TNSM)

73	TNSMStatus	[Tank]_TNSM	Status	The Total Net Standard Mass of the product (TNSM)
54	TOV	[Tank]_TOV	A1	The Total Observed Volume (TOV)
55	TOVStatus	[Tank]_TOV	Status	The Total Observed Volume (TOV)
1090	TransferredVolume	[Tank]_TransferredVolume	A1	Movement transferred volume
941	UFLAL	[Tank]_UFLAL	OP	Unplanned flow level alarm
944	UFMAL	[Tank]_UFMAL	OP	Unplanned flow mass alarm
942	UFVAL	[Tank]_UFVAL	OP	Unplanned flow volume alarm
48	VapRoomPress	[Tank]_VapRoomPress	A1	The product vapor pressure
49	VapRoomPressStatus	[Tank]_VapRoomPress	Status	The product vapor pressure
46	VapRoomTemp	[Tank]_VapRoomTemp	A1	The product vapor temperature
47	VapRoomTempStatus	[Tank]_VapRoomTemp	Status	The product vapor temperature
1092	VolumeLeft	[Tank]_VolumeLeft	A1	Movement volume left
42	WaterLevel	[Tank]_WaterLevel	A1	The water level in the tank
43	WaterLevelStatus	[Tank]_WaterLevel	Status	The water level in the tank
264	WaterVol	[Tank]_WaterVol	A1	The water volume
265	WaterVolStatus	[Tank]_WaterVol	Status	The water volume status

The next table show the 42nd SCADA Point of a tank which contains the remaining values published as User Defined Parameters of a point named **[Tank]_Common**

EntityID	Entity	SCADA Point name	Param
933	AALB	[Tank]_Common	AALB
932	AALF	[Tank]_Common	AALF
103	AmbientTemperature	[Tank]_Common	AmbientTemperature
104	AmbientTemperatureStatus	[Tank]_Common	AmbientTemperatureStatus

75	AvailableRoom	[Tank]_Common	AvailableRoom
100	AvailableRoomStatus	[Tank]_Common	AvailableRoomStatus
76	AvailableGOV	[Tank]_Common	AvailableGOV
101	AvailableGOVStatus	[Tank]_Common	AvailableGOVStatus
53	BackgroundTimeStamp	[Tank]_Common	BackgroundTimeStamp
935	CCAL	[Tank]_Common	[ENTISTANKCONTROLLER]_C CAL
298	Concentration	[Tank]_Common	Concentration
299	ConcentrationStatus	[Tank]_Common	Concentration
262	CTL	[Tank]_Common	CTL
263	CTLStatus	[Tank]_Common	CTLStatus
107	CTSH	[Tank]_Common	CTSH
108	CTSHStatus	[Tank]_Common	CTSHStatus
939	DAL	[Tank]_Common	DAL
37	EXT	[Tank]_Common	EXT
940	FlowDirection	[Tank]_Common	FlowDirection
52	ForegroundTimeStamp	[Tank]_Common	ForegroundTimeStamp
931	GAL	[Tank]_Common	GAL
2600	Gauge2Status	[Tank]_Common	Gauge2Status
6	GaugeStatus	[Tank]_Common	GaugeStatus
226	GRH	[Tank]_Common	GRH
227	GRHStatus	[Tank]_Common	GRH
300	GSM	[Tank]_Common	GSM
301	GSMStatus	[Tank]_Common	GSM
302	GSW	[Tank]_Common	GSW
303	GSWStatus	[Tank]_Common	GSWStatus
88	HydrometerCorr	[Tank]_Common	HydrometerCorr

154	HydrometerCorrStatus	[Tank]_Common	HydrometerCorrStatus
198	Innage	[Tank]_Common	Innage
199	InnageStatus	[Tank]_Common	InnageStatus
64	LiqInVap	[Tank]_Common	LiqInVap
65	LiqInVapStatus	[Tank]_Common	LiqInVapStatus
25	MassCalcType	[Tank]_Common	MassCalcType
141	MassCalcTypeStatus	[Tank]_Common	MassCalcTypeStatus
70	MassVap	[Tank]_Common	MassVap
71	MassVapStatus	[Tank]_Common	MassVapStatus
3	MovingStatus	[Tank]_Common	Tank_MovingStatus
62	NSV	[Tank]_Common	NSV
63	NSVStatus	[Tank]_Common	NSVStatus
238	NSW	[Tank]_Common	NSW
239	NSWStatus	[Tank]_Common	NSWStatus
1068	PlannedQuantity	[Tank]_Common	PlannedQuantity
260	ProductTC	[Tank]_Common	ProductTC
261	ProductTCStatus	[Tank]_Common	ProductTCStatus
1072	QuantityLeft	[Tank]_Common	QuantityLeft
1074	QuantityTransferred	[Tank]_Common	QuantityTransferred
32	SedAndWater	[Tank]_Common	SedAndWater
143	SedAndWaterStatus	[Tank]_Common	SedAndWaterStatus
190	SedAndWaterVol	[Tank]_Common	SedAndWaterVol
191	SedAndWaterVolStatus	[Tank]_Common	SedAndWaterVolStatus
2	TankStatus	[Tank]_Common	TankStatus
1076	TargetDirection	[Tank]_Common	TargetDirection
936	TCAL	[Tank]_Common	TCAL

230	TNSW	[Tank]_Common	TNSW
231	TNSWStatus	[Tank]_Common	TNSWStatus
118	TObs	[Tank]_Common	TObs
119	TObsStatus	[Tank]_Common	TObsStatus
196	Ullage	[Tank]_Common	Ullage
197	UllageStatus	[Tank]_Common	UllageStatus
140	VolumeCorrections	[Tank]_Common	VolumeCorrections

3. ENTIS & Experion HS Hardware and Software Requirements

A computer platform must meet the following specifications to be used for ENTIS & 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. ENTIS as a Server

System Configuration	Specifications
Processor	Single Intel Xeon Processor E5-1620v3, 3.50GHz (or equivalent)
RAM ¹	8GB
Networking	100 Mbps Ethernet
Operating System	Microsoft Windows 10 Enterprise 2019 LTSC 1809 (64bit)
Video resolution	1600x1200, 1680x1050, 1920x1200, 1920x1080; 65K colors
Hard drive	500 GB (100 GB for Virtual Machine)
Example Hardware	Dell T5820XL Tower Workstation ¹
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	

3.2. ENTIS as a Client (User Interface)

System Configuration ¹	Specifications
Processor	Single Intel Processor i3-4330, 3.50GHz (or equivalent)
RAM ¹	8GB
Networking	100 Mbps Ethernet
Operating System	Microsoft Windows 10 Enterprise 2019 LTSC 1809 (64bit)
Video resolution	1600x1200, 1680x1050, 1920x1200, 1920x1080; 65K colors
Video Memory	512MB VRAM per channel
Hard drive	500GB
Example Hardware	Dell OptiPlex XE2, OptiPlex 3040, Dell T5820XL Tower Workstation, HP 400G3 or equivalent ¹
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	

4. Model number

4.1. Model numbers for ENTIS R130.2

Model Number	Description
EN-BASESW ¹	ENTIS Base Software License
EN-R1302SW	ENTIS Software Media Kit - Standard
EN-R1302ED	ENTIS Software Media Kit - Electronic Delivery
EN-TANKS5 ²	ENTIS Tanks (multiples of 5)
EN-REDUND ³	ENTIS Redundancy
EN-CUSTWM ⁴	ENTIS Custody Transfer - LM
EN-UPGRAD	ENTIS upgrade License
EN-BASMNT ⁵	ENTIS Simple Movement
EN-ADVMT ⁶	ENTIS Advanced Movement
EN-INFMNT ⁷	ENTIS Advanced Movement Infrastructure pipeline
EN-LANG-EN ⁸	ENTIS Language in English
EN-LANG-FR ⁹	ENTIS Language in French
EN-LANG-IT ¹⁰	ENTIS Language in Italian
EN-LANG-NL ¹¹	ENTIS Language in Dutch
EN-LANG-ES ¹²	ENTIS Language in Spanish
EN-LANG-CH ¹³	ENTIS Language in Simplified Chinese
EN-LANG-PL ¹⁴	ENTIS Language in Polish
EN-LANG-DE ¹⁵	ENTIS Language in German
<p>Note 1 – ENTIS bases software includes all ENTIS functions.</p> <p>Note 2 – ENTIS Tanks includes the number of tanks that is available in ENTIS the maximum number of tanks is 400.</p> <p>Note 3 – ENTIS Redundancy will enable ENTIS server redundancy.</p> <p>Note 4 – ENTIS Custody Transfer includes Legal Metrology for the ENTIS system.</p> <p>Note 5 – ENTIS Simple Movement will enable the simple movement functionality.</p> <p>Note 6 -- ENTIS Advanced Movement will enable the advance movement functionality.</p> <p>Note 7 -- ENTIS Infrastructure Movement will enable the infrastructure pipelines in advanced movement functionality.</p> <p>Note 8 -- ENTIS EN enables English Language.</p> <p>Note 9 -- ENTIS FR enables French Language.</p> <p>Note 10 -- ENTIS IT enables Italian Language.</p> <p>Note 11 -- ENTIS NL enables Dutch Language.</p> <p>Note 12 -- ENTIS ES enables Spanish Language.</p> <p>Note 13 -- ENTIS CH enables Chinese Language.</p> <p>Note 14 -- ENTIS PL enables Polish Language.</p> <p>Note 15 -- ENTIS DE enables German Language.</p>	

4.2. Experion HS R520.2 minimum required model numbers for ENTIS R130.2

ENTIS uses Experion HS to run ENTIS, the following Experion specifications, shown in the table below, are required. For more information on Experion HS refer to Experion HS technical specification (EP03-200-520)

<https://www.honeywellprocess.com/experion-hs.aspx>.

Model Number	Description
HS-DEQ100 ¹¹	100 Equipment Adders to Database Size
EP-HMBASE ¹	Database Base Software
EP-HME520 ²	Experion HS Media Kit - Standard
EP-HME520-ESD ³	Experion HS Media Kit - Electronic Delivery
EP-HME100 ^{4 5 6}	Experion HS 100 Points Adder
EP-HME01K ^{4 7}	Experion HS 1,000 Points Adder
EP-HME02K ^{4 8}	Experion HS 2,000 Points Adder
EP-HME05K ^{4 12}	Experion HS 5,000 Points Adder
EP-HME08K ^{4 13}	Experion HS 8,000 Points Adder
EP-HME16K ⁴	Experion HS 16,000 Points Adder
EP-HSTA01 ^{9 10}	Experion HS Station
MZ-SQLCL4	SQL Server 2019

- 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.
- 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).
- 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.
- Note 4 – Up to 16,000 additional Points can be ordered for a maximum of 16,500 Points per Server For a system.
- Note 5 – For each CIU 888 you need 4 points.
- Note 6 – For 5 tanks in ENTIS you need 215 point (43 points per tank). So, that means you need to order 3 times EP-HME100. For every additional 5 tanks you need to order more points.
- Note 7 – For 40 tanks in ENTIS you need 1720 point (43 points per tank). So, that means you need to order 2 times EP-HME01K.
- Note 8 – For 80 tanks in ENTIS you need 3440 point (43 points per tank). So, that means you need to order 2 times EP-HME02K.
- Note 9 – 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.
- Note 10 – 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.
- Note 11 – Every tank = 1 equipment and every CIU 888 = 1 equipment. If you are above 100 equipment's you need to add an additional HS-DEQ100. So, the maximum number is 8 CIU's and 400 tanks (408 equipment's) so consider ordering the total of 500 equipment's (5 times HS-DEQ100).
- Note 12 – For 119 tanks need 4879 points so you can select EP-HME05K with 5000b points. For more tanks, you can combine this with EP-HME100, EP-HME01K or EP-HME02K or you can select EP-HME08K
- Note 13 – For 185 tanks need 7585 points so you can select EP-HME08K with 8000b points. For more tanks, you can combine this with EP-HME100, EP-HME01K or EP-HME02K. The maximum number of tanks is 400 this is 16400 points

4.3. Experion HS Server Redundancy

ENTIS uses Experion redundancy model, For more information on Experion HS refer to Experion HMI Specification (EP03-200-520) <https://process.honeywell.com/content/process/us/en/support/technical-publication>

Model Number	Description
EP-HMRBAS ^{1 2}	Experion HS Redundancy Base Software
EP-HMESAO ²	Experion HS Server Automation Object
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
Note 1 – Redundancy software follows the same methodology as selecting the database size.	
Note 2 – When the ENTIS redundancy option EN-REDUND is selected this Experion redundancy option should be enabled.	

4.4. Microsoft Windows 10 Operating System

Model Number	Description
MS-OSLW19 ^{1 2 3}	Windows 10 Enterprise LTSC 2019
EP-COAS19 ⁴	Windows Server 2019 64-bit
Note 1 – This is an optional model for Honeywell's supplied Win10 OS.	
Note 2 – Check the compatibility of your computer platform with Win10 Enterprise LTSC 2016 OS before selecting computer hardware.	
Note 3 – Starting with HS R520, support for Windows Server OS is also available.	

4.5. Panel PC

Model Number	Description
MZ-PRCT01	Experion Panel PC, Standard 19 inch

4.6. EBR Software

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

4.7. Email/SMS Software

Model Number	Description
EP-HAPAGE	Experion HS Alarm Pager

4.8. Virtual Environment

Model Number	Description
EP-HSCVMS	Experion HS Virtualization Server Cal
EP-VVCSB7	VMWare vCenter 7 Standard
EP-VESPB7	VMWare Essentials Plus 7
EP-COADC5	WIN Server 2019 Datacenter COA 20-CORE
EP-COAS16	Windows Server 2016 Standard OS COA
<p>Note 1 – HS Virtualization CAL Quantity should be equal to the total number of Server and Workstation machines in your HS system.</p>	

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