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Operating Instructions **Tankvision NXA820 OPC Server**

User Manual







Make sure the document is stored in a safe place such that it is always available when working on or with the device.

To avoid danger to individuals or the facility, read the "Basic safety instructions" section carefully, as well as all other safety instructions in the document that are specific to working procedures.

The manufacturer reserves the right to modify technical data without prior notice. Your Endress+Hauser distributor will supply you with current information and updates to these Instructions.

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1 Document information

1.1 Target audience for this manual

This documents describes installation and user guide for configuration and usage of Tankvision OPC DA 3.0 Server.

This guide is for users of the Tankvision system and OPC Servers and OPC Clients. The intended audience includes Project Engineers and System Administrators.

Beside basic PC operating knowledge no special training is needed to perform the Tank Gauging System operations. Nevertheless it is recommended receiving a training on the system by Endress+Hauser.

1.2 Version history

Document version	Valid for SW version	Changes to the previous version	
BA01137G/00/EN/01.13	01.05.00	Initial version	
BA01137G/00/EN/02.17	02.00.00	Added Temperature and Density Profile parameters	
BA01137G/00/EN/03.17	02.01.00	Introduced Floating Roof Weight Correction, Redundancy functionality with NXA820 Interface Only, CH alarm for Volume or Mass	
BA01137G/00/EN/04.18	02.02.00	Introduced Switch by Gauge redundancy mode for NXA820 Interface Only	
BA01137G/00/EN/05.20	02.3.00	Introduced Tank Comment opc element	

1.3 Acronyms, Abbreviation and Definition

Abbreviation	Meaning			
OPC OLE for Process Control Open Interoperability standards developed by OPC Foundation				
OPC DA 3.0	OPC Data Access specification version 3.0 specification			
СОМ	Component Object Model			
DCOM Distributed Component Object Model				

1.4 Document function

1.4.1 Symbols

Safety symbols

Symbol	Meaning
A0011189-EN	DANGER! This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.
	WARNING! This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

Symbol	Meaning
	CAUTION! This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
NOTICE A0011192-EN	NOTICE! This symbol contains information on procedures and other facts which do not result in personal injury.

Electrical symbols

Symbol	Meaning
A0011197	Direct current A terminal to which DC voltage is applied or through which direct current flows.
~ 	Alternating current A terminal to which alternating voltage is applied or through which alternating current flows.
	Ground connection A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.
A0011199	Protective ground connection A terminal which must be connected to ground prior to establishing any other connections.

Symbols for certain types of information

Symbol	Meaning
A0011193	Tip Indicates additional information.
A0011195	Reference to page Refers to the corresponding page number.
1. , 2. , 3	Series of steps
A0018373	Result of a sequence of actions

Symbols in graphics

Symbol	Meaning
1, 2, 3	Item numbers
1. , 2. , 3	Series of steps
A, B, C	Views
EX 40011187	Hazardous area Indicates a hazardous area.
A0011188	Indicates a non-hazardous location Safe area (non-hazardous area)

1.5 Documentation

1.5.1 Operating instructions

Document number Instrument		Type of Document		
BA01137G/00 Tankvision NXA820 OPC Server		User Manual		

2 Basic safety instructions

2.1 Requirements for the personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:

- Trained, qualified specialists: must have a relevant qualification for this specific function and task
- Are authorized by the plant owner/operator
- Are familiar with federal/national regulations
- Before beginning work, the specialist staff must have read and understood the instructions in the Operating Instructions and supplementary documentation as well as in the certificates (depending on the application)
- Following instructions and basic conditions

The operating personnel must fulfill the following requirements:

- Being instructed and authorized according to the requirements of the task by the facility's owner operator
- Following the instructions in these Operating Instructions

2.2 IT security

We only provide a warranty if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

IT security measures in line with operators' security standards and designed to provide additional protection for the device and device data transfer must be implemented by the operators themselves.

Endress+Hauser can be contacted to provide support in performing this task.

2.3 Designated use

2.3.1 Application

Tankvision is a dedicated tank inventory management system. Components:

- Tankvision Tank Scanner NXA820
- scans parameters from tank gauges and performs tank calculations • Tankvision Data Concentrator NXA821
- summarizes data from various Tank Scanners NXA820
- Tankvision Host Link NXA822

provides data to host systems (such as PLC or DCS) via Modbus

The above mentioned components are operated via a standard web browser. It does not require any proprietary software. Tankvision is based on a distributed architecture on a Local Area Network (LAN). Due to its modular structure it can be adjusted to any application. It is ideally suited for small tank farms with only a couple of tanks, but also for large refineries with hundreds of tanks.

2.4 Workplace safety

For work on and with the device:

- Wear the required personal protective equipment according to federal/national regulations.
- Switch off the supply voltage before connecting the device.

2.5 Operational safety

Risk of injury!

- Operate the device in proper technical condition and fail-safe condition only.
- The operator is responsible for interference-free operation of the device.

Conversions to the device

Unauthorized modifications to the device are not permitted and can lead to unforeseeable dangers

• If, despite this, modifications are required, consult with Endress+Hauser.

Repair

To ensure continued operational safety and reliability,

- Carry out repairs on the device only if they are expressly permitted.
- Observe federal/national regulations pertaining to repair of an electrical device.
- Use original spare parts and accessories from Endress+Hauser only.

2.6 Product safety

The device is designed to meet state-of-the-art safety requirements, has been tested and left the factory in a condition in which it is safe to operate. The device complies with the applicable standards and regulations as listed in the EC declaration of conformity and thus complies with the statutory requirements of the EG directives. Endress+Hauser confirms the successful testing of the device by affixing to it the CE mark.

3 Installation

3.1 Required files

TankvisionOPCServer_Installer.msi: This file contains complete installable for Tankvision OPC Server application.

3.2 Supported Windows version

- Windows XP (Service Pack 3)
- Windows 7 (32 bit / 64 bit)
- Windows 10 (32 bit / 64 bit)

On 64-bit machines OPC Server will be installed and run in 32-bit compatibility mode. I.e. OPC Server will be installed in **C:\Program Files(x86)** or equivalent location.

3.3 Installation

You need to have administrator access right to install the software.

Install Microsoft .NET Framework 4 or higher before installation.

3.3.1 Install Microsoft .NET Framework 4

Web Installer http://www.microsoft.com/en-us/download/details.aspx?id=17851
Standalone Installer

http://www.microsoft.com/en-in/download/details.aspx?id=17718

3.3.2 Install Tankvision OPC Server

Windows 7

Open Command prompt in Administrator mode as shown in below figure:



Go to directory where **TankvisionOPCServer_Installer.msi** is located and type **TankvisionOPCServer_Installer.msi**.



Installation

Follow the below instructions to install.

Welcome to the Ta Wizard	nkvision OPC	C Server Setup		
The installer will guide you throu computer.	igh the steps required	to install Tankvision OP	C Server on your	
VARNING: This computer prog Jnauthorized duplication or dist r criminal penalties, and will be	ram is protected by co ribution of this program	opyright law and internat n, or any portion of it, ma wimum extent possible u	ional treaties. Ny result in severe civil Inder the Jaw	
o cinina portaktos, ana vin bo				
	C	-I Davis	Nauka	

Press **Next** to continue.

🛃 Tankvision OPC Server	-		×
Select Installation Folder			-
The installer will install Tankvision OPC Server to the following folder. To install in this folder, click "Next". To install to a different folder, enter it below	ow or click	:k "Brow:	se".
Eolder: C:\Program Files (x86)\Endress+Hauser SE+Co. KG\Tankvision OPC {	E	Browse.	
Install Tankvision OPC Server for yourself, or for anyone who uses this co	D omputer:	lisk Cost	t
 Everyone Just me 			
Cancel < Back	:	Ne	xt >



闄 Tankvision OPC Server	
Installing Tankvision OPC Server	
Tankvision OPC Server is being installed.	
Please wait	
Cancel < Back	Mext >

B Tankvision OPC Server	
Installation Complete	
Tankvision OPC Server has been successfully installed.	
Click "Close" to exit.	
Please use Windows Update to check for any critical updates to the .NET Framework.	
Cancel < Back Close	

4 Configuration

This section explains some of the basic settings required to configure OPC server.

Windows 10 / Windows 7

Configuration files are stored at **%ALLUSERSPROFILE%\Endress+Hauser SE+Co.** KG\Tankvision OPC Server\Version_Number \PluginData location. and can also be access from Start Menu \rightarrow All Programs \rightarrow Tankvision-OPCServer \rightarrow Configuration.

To change any configuration file user has to follow below steps to make file writable:

•Right click on any configuration file and select **Properties**. Select **Security** tab and press **Edit** Button.

Object name: C:\ProgramData\Endr	ess+Hauser GmbH+Co. KG\`		
Group or user names:			
SYSTEM			
& Administrators (C20682\Administra	tors)		
Users (C20682\Users)			
T			
To change permissions, click Edit.	💮 <u>E</u> dit		
Permissions for Users	Allow Denv		
Full control			
Modify			
Modify Read & execute	1		
Modify Read & execute Read	1		
Modify Read & execute Read	~		
Modify Read & execute Read Write	<i>~ ,</i>		
Modify Read & execute Read Write Special permissions	~		
Modry Read & execute Read Write Special permissions	~ ~		
Modry Read & execute Read Write Special permissions For special permissions or advanced as	√ √		
Modry Read & execute Read Write Special permissions For special permissions or advanced se	ttings, Advanced		
Modry Read & execute Read Write Special permissions For special permissions or advanced se click Advanced.	ttings, Ad <u>v</u> anced		
Modry Read & execute Read Write Special permissions For special permissions or advanced se click Advanced.	ttings. Advanced		

• Select **Users** from **Group or User Names** tab and press select **Full control** from **Permissions for Users** and press **OK**.

Security			1		
Object name: C:\ProgramData	\Endress+Hauser Gr	mbH+Co. KG\'			
Group or user names:					
SYSTEM					
& Administrators (C20682\Adm	ninistrators)				
Users (C20682\Users)					
	Add	Remove			
	A <u>d</u> d	Remove			
Permissions for Users	Add	<u>R</u> emove Deny			
Permissions for Users Full control	Add	Remove Deny			
Permissions for Users Full control Modify	Add	Remove Deny			
Permissions for Users Full control Modify Read & execute	Add	Bemove Deny			
Permissions for Users Full control Modify Read & execute Read	Add	Remove Deny			
Permissions for Users Full control Modify Read & execute Read Write	Add	Remove Deny			
Permissions for Users Full control Modify Read & execute Read Write	Add	Remove Deny			
Permissions for Users Full control Modify Read & execute Read Write Learn about access control and p	Add	Remove Deny E E E			
Pemissions for Users Full control Modify Read & execute Read Write Learn about access control and p	Add	Bemove Deny			

Windows XP

Configuration file are stored at **%ALLUSERSPROFILE%\Application** Data\Endress+Hauser GmbH+Co. KG\Tankvision OPC Server\Version_Number\PluginData.

4.1 Basic OPC Server Configuration

Different NX820 unit can be configured by modifying the configuration file **TankvisionOPC.config**. A connection can be added using the form of key value pairs as shown in below example:

In above example, 3 NX820 devices are added to OPC server using key UNITIP_.

Valid values for the item **UnitIP** are **UnitIP**1 to **UnitIP**15 is allowed. The current version supports up to 15 NXA820 devices connected to one OPC server.

4.2 Start OPC Server

OPC server will be automatically started after installation. User can also manually start/ restart OPC server by executing **RegServer.exe**.

4.3 Stop OPC Server

OPC server can be stopped by executing **UnregServer.exe**.

For Windows 7, to start/stop server open command prompt in Administrator mode, go to project install directory and type **RegServer.exe** or **UnRegServer.exe**.

5 OPC Data Structure

Below diagram shows Tankvision OPC elements view from OPC Client. Here, text mentioned in blue color are dynamic text and value will be received from Tankvision Tankscanner. Texts in red color are static text.

\- Device Name	1				
1	I — Device Parameter 1				
1	I— Device Parameter 2				
1	- Device Parameter N				
1	– Tank-1				
1	I— Fast View Parame	ter 1			
1	I— Fast View Parame	ter 2			
1	I— Fast View Parame	terN			
1	– Tank-2				
1	I— Fast View Parame	ter 1 N			
1	∖— TankN				
1	I— Fast View Parame	ter 1 N			
1	-TANKS				
1	\— Tank-1				
T	I— Tank Parameter 1				
1	I— Tank Parameter .	. N			
1	\-MEASURED_PA	RAMS			
I	I — Measu	red Parameter 1			
I	I I Measu	red Parameter N			
I	\-CALCULATED_	PARAMS			
1	I — Calcul	ated Parameter 1			
1	I — Calcul	ated Parameter N			
1	$- Tank \dots N$				
1	I— Tank Parameter 1				
1	I— Tank Parameter .	. N			
	\-MEASURED_PA	RAMS			
	I — Measu	red Parameter 1			
	I — Measu	red Parameter N			
	\-CALCULATED_I	ARAMS			
	I — Calcul	ated Parameter 1			
	I — Calcul	ated Parameter N			
\- Device Name					
\− Device Name	N				

OPC-Data-Structure

6 Tankvision OPC Parameter

Device Parameters (NXA820-01.Device Status Code)

No	Item Name	Comm ID	Туре	Default Value	Unit
1	Device Status Code	5009	String	0	NA
2	Device Connection Active	5010	String	0	NA
3	Last Heart Beat Time	5011	Datetime	01.01.1970 00:00	NA
4	IP Address	5012	String	0.0.0.0	NA
5	Device Name *	5013	String	0	NA
6	Order Code *	5014	String	0	NA
7	Serial Number *	5015	String	0	NA
8	Firmware Version *	5016	String	0	NA
9	Redundancy Mode **	5017	unsigned long	0	NA
10	Redundancy Unit Type **	5018	unsigned long	0	NA
11	Redundancy State **	5019	unsigned long	0	NA
12	Redundancy Manual SwitchOver **	5020	unsigned long	0	NA

Tank Parameter (NXA820-01.TANKS.Tank-1.Tank Name)

No	Item Name	Comm ID	Туре	Default Value	Unit
1	Tank Name	5000	String	TankName	NA
2	Tank Shape	5520	unsigned long	0	NA
3	Tank Status	5516	unsigned long	0	NA
4	Tank Location	5515	String	0	NA
5	Transfer State	5519	unsigned long	0	NA
6	Product Code	5517	unsigned long	0	NA
7	Gauge Command ^{\$}	5514	unsigned long	0	NA
8	Gauge Communication Status	5004	unsigned long	0	NA
9	Product Name	5518	String	No Product	NA
10	Tank Comment	5522	String	-	NA

Measured Parameter (NXA820-01.Tanks.Tank-1.MEASURED_PARAMS.Free Water Level)

No	Item Name	Comm ID	Туре	Default Value	Unit
1	Free Water Level	624	Double Float	0	m
2	Vapour Temperature	626	Double Float	0	С
3	Vapour Pressure	627	Double Float	0	KPa
4	Product Temperature	625	Double Float	0	С
5	Sample Temperature	1551	Double Float	0	С
6	Product Pressure	692	Double Float	0	КРа
7	Product Level	622	Double Float	0	m
8	Water Dip	1594	Double Float	0	m
9	Dip Temperature	1595	Double Float	0	С
10	Dip Product Level	1593	Double Float	0	m

No	Item Name	Comm ID	Туре	Default Value	Unit
11	Dip Observed Density	1596	Double Float	0	kg/m ³
12	Lab Reference Density	2887	Double Float	0	kg/m ³
13	Reference Density	661	Double Float	0	kg/m ³
14	Observed Density	628	Double Float	0	kg/m ³
15	Ambient Temperature	660	Double Float	0	С
16	Alcohol Content in Volume	2102	Double Float	0	%
17	Alcohol Content in Mass	2101	Double Float	0	%
18	Secondary Level	623	Double Float	0	m
19	Gauge Status	2756	Double Float	0	NA
20	Gauge Error	2755	Double Float	0	NA
21	Analog Input *	2841	Double Float	0	%
22	Percentage Level	2654	Double Float	0	%
23	Temperature Element 1 to 16	1634 to 1649	Double Float	0	С
24	Temperature Element 17 to 24	1652 to 1659	Double Float	0	С
25	Temperature Element position 1 to 24	1660 to 1683	Double Float	0	m
26	Density Element 1 to 50	3001 to 3050	Double Float	0	kg/m³
27	Density Position 1 to 50	3051 to 3100	Double Float	0	m
28	FRT Level 1 **	3111	Double Float	0	m
29	FRT Level 2 **	3112	Double Float	0	m
30	FRT Level 3 **	3113	Double Float	0	m

No	Item Name	Comm ID	Туре	Default Value	Unit
1	Usable Volume	719	Double Float	0	m ³
2	Floating Roof Correction	762	Double Float	0	m ³
3	Floating Roof Position	763	Double Float	0	NA
4	Free Water Volume	725	Double Float	0	m ³
5	Gross Observed Volume	726	Double Float	0	m ³
6	Gross Standard Volume	727	Double Float	0	m ³
7	Liquid in Vapour Volume	1561	Double Float	0	m ³
8	Vapour Mass	756	Double Float	0	kg
9	Net Standard Volume	728	Double Float	0	m ³
10	Net Standard Weight	761	Double Float	0	kg
11	Net Standard Flowrate	723	Double Float	0	m³/min
12	Volume Flow Rate	722	Double Float	0	m³/min
13	Product Level Change Rate	721	Double Float	0	mm/sec
14	Product Mass	729	Double Float	0	kg
15	Dead Stock	718	Double Float	0	m ³
16	Sediment and Water Volume	720	Double Float	0	m ³
17	Tank Shell Correction Factor	774	Double Float	0	m ³
18	Total Observed Volume	717	Double Float	0	m ³
19	Total Mass	730	Double Float	0	kg
20	Mass Flow Rate	724	Double Float	0	kg/min
21	Total Standard Volume	752	Double Float	0	m ³
22	Vapour Density	1591	Double Float	0	kg/m ³
23	Vapour Room Volume	1592	Double Float	0	m ³
24	Volume Correction Factor	754	Double Float	0	NA
25	Calculated Reference Density	661	Double Float	0	kg/m ³
26	Calculated Observed Density	628	Double Float	0	kg/m ³
27	HTMS Product Temperature	2201	Double Float	0	С
28	FRT Delta Level	3114	Double Float	0	m
29	FRT Delta Mass	3115	Double Float	0	m

Calculated Parameter (NXA820-01.Tanks.Tank-1.CALCULATED_PARAMS.Dead Stock)

Fast View Parameter (NXA820-01.Tank-1.Dead Stock)

No	Item Name	Comm ID	Туре	Default Value	Unit
1	Alcohol Content in Mass	2101	Double Float	0	%
2	Alcohol Content in Volume	2102	Double Float	0	%
3	Ambient Temperature	660	Double Float	0	С
4	Analog Input *	2841	Double Float	0	%
5	Dead Stock	718	Double Float	0	m ³
6	Dip Observed Density	1596	Double Float	0	kg/m ³
7	Dip Product Level	1593	Double Float	0	m

No	Item Name	Comm ID	Туре	Default Value	Unit
8	Dip Temperature	1595	Double Float	0	С
9	Water Dip	1594	Double Float	0	М
10	Floating Roof Correction	762	Double Float	0	m ³
11	Floating Roof Position	763	Double Float	0	NA
12	Free Water Level	624	Double Float	0	m
13	Free Water Volume	725	Double Float	0	m ³
14	Gauge Command ^{\$}	5514	unsigned long	0	NA
15	Gauge Error	2755	Double Float	0	NA
16	Gauge Status	2756	Double Float	0	NA
17	Gross Observed Volume	726	Double Float	0	m ³
18	Gross Standard Volume	727	Double Float	0	m ³
19	Liquid in Vapour Volume	1561	Double Float	0	m ³
20	Mass Flow Rate	724	Double Float	0	kg/min
21	Net Standard Flowrate	723	Double Float	0	m ³ /min
22	Net Standard Volume	728	Double Float	0	m ³
23	Net Standard Weight	761	Double Float	0	kg
24	Observed Density	628	Double Float	0	kg/m ³
25	Percentage Level	2654	Double Float	0	%
26	Product Code	5517	unsigned long	0	NA
27	Product Level	622	Double Float	0	М
28	Product Level Change Rate	721	Double Float	0	mm/sec
29	Product Mass	729	Double Float	0	kg
30	Product Name	5518	String	No Product	NA
31	Product Pressure	692	Double Float	0	KPa
32	Product Temperature	625	Double Float	0	С
33	Reference Density	661	Double Float	0	kg/m ³
34	Sample Temperature	1551	Double Float	0	С
35	Secondary Level	623	Double Float	0	m
36	Sediment and Water Volume	720	Double Float	0	m ³
37	Tank Location	5515	String	0	NA
38	Tank Name	5000	String	TankName	NA
39	Tank Shape	5520	unsigned long	0	NA
40	Tank Shell Correction Factor	774	Double Float	0	NA
41	Tank Status	5516	unsigned long	0	NA
42	Temperature Element 1 to 16	1634 to 1649	Double Float	0	С
43	Temperature Element 17 to 24	1652 to 1659	Double Float	0	С
44	Total Observed Volume	717	Double Float	0	NA
45	Total Standard Volume	752	Double Float	0	NA
46	Transfer State	5519	unsigned long	0	NA
47	Usable Volume	719	Double Float	0	NA
48	Vapour Density	1591	Double Float	0	kg/m ³
49	Vapour Mass	756	Double Float	0	kg

No	Item Name	Comm ID	Туре	Default Value	Unit
50	Vapour Pressure	627	Double Float	0	КРа
51	Vapour Temperature	626	Double Float	0	С
52	Volume Correction Factor	754	Double Float	0	NA
53	Volume Flow Rate	722	Double Float	0	m ³ /min
54	Lab Reference Density	2887	Double Float	0	kg/m ³

Note!

- * Read/writable OPC Parameter.
- * OPC Parameters available only in software version V01.05.00 and onwards.
- ** New parameters available only from Software Version 02.01.00 onwards

6.1 Tank Parameter Reference

6.1.1 Device Status Codes

Diagnostic Code	Short Text	Cause
F101	NXA 820 Conn. Lost	Unable to Communicate with NXA820
F301	Data Mem. Fault	Failed to Detect or Initialize Data Flash Memory
F302	LAN Fault	LAN Cable Disconnected or Failed
F303	SYNC Fault	SYNC Link Cable Disconnected or Failed
F304	FPGA Error	Unable to access FPGA
F305	NV Data Error	The data in the NV memory does not match the RAM copy
F306	Order Code Error	The factory set order code is invalid, NXA is unable to startup
F307	Expansion Board Fault	Expansion board type does not match expected protocol type or failed to program FPGA
F308	Watchdog Error	Software Watchdog Error
F309	FS Security Error	Security policy compromised due to file-system error
F310	High CPU Load	High CPU Utilization
F311	Low Disk Space	Low Disk Space
F312	Low RAM	Low RAM
F313	Bad Thread	Bad Thread Status
F314	Reset by WD	Hardware reset by WatchDog
F315	CheckSum Error	CheckSum Error
F316	Language Error	Language Installation Error
F317	Access Cnfg Err	Access Configuration Error: No machines registered for access
F318	FPGA Config Err	fpga.conf file is corrupted or not available
F319	RTC LowVolt Err	Real Time Clock Battery Low voltage Detected
F320	Time Read Err	Real Time Clock Read Error
F321	Time maybe bad!	Time maintained by the RTC might be wrong
F322	RTC Nvmgr Err	RTC could not access NV memory to store or retrive time
C324	Archive Export Started	-
F325	NAND not accessible	NAND Flash damaged

Diagnostic Code	Short Text	Cause
F326	NAND Write exceeded	NAND Flash Write operation exceeded
F327	NAND Write stop exceeded	NAND Flash Write operation stop exceeded
F328	Database corrupted	Configuration database corrupted
F329	All Gauges failed	All connected gauges are failed. Valid only when redundancy is activated and redundancy is configured as Switch by Interface
F330	Connection lost with Primary unit	Secondary redundant unit lost the connection with Primary redundant unit
F331	Connection lost with Secondary unit	Primary redundant unit lost the connection with Secondary redundant unit
F332	Module restarted often	Module is restarted more 5 times
F333	One or more Gauges failed	One or more connected gauges have failed. Valid only when redundancy is activated and redundancy is configured as Switch by Gauge
C485	Simulation Mode On	Field scan simulation mode is activated
C486	Manual Switch Over ON	Redundancy Manual Switch Over is activated.
C487	Redundancy activated	Redundancy feature is activated.
C488	Unit is active	Redundant unit is active. i.e. field scan is active.
C489	Unit is passive	Redundant unit is passive. i.e. field scan is in standby mode
F501	Database Fault	Database Failure
F502	Not Configured	LAN Has Not Been Configured
C503	HART Tunneling	Gauge Configuration In Progress
F504	Subscrip. Store	Subscription Store Cannot Be Found
M505	Time Server	-
C506	Field Scan Off	The field scan has been stopped
C507	Interface Off	The hostlink interface has been stopped

6.1.2 Tanks Status

Status Code	Meaning
646	In Maintenance
647	Locked
648	Manual
649	In Operation

6.1.3 Product Transfer State

Status Code	Meaning	Description
0	None	Transfer not started
1	Armed	Transfer initialized
2	Active	Transfer is in progress
3	Completed	Transfer completed , here product transfer is within defined min, max batch size
4	Finished	Transfer finished by user by pressing Finish button
5	Aborted	Transfer aborted by user
6	Paused	Transfer is paused

6.1.4 Tank Parameter Status

Status Code	Meaning	Description
655	ОК	Valid data is received from connected gauge
656	FAIL	Communication error on field protocol of device configuration
657	MANUAL	Value set to manual
675	INIT	Field Scan started, value not yet received and processed
676	NODATA	Calculation not configured, Field Scan is off
677	INVALIDDATA	Calculation is out of boundaries
680	LAST VALID VALUE	Value is set on HOLD, need additional servo configuration

6.1.5 Gauge Command Status

Status Code	Meaning
1	Gauge command OK
2	Gauge command Fail

6.1.6 Tank Shape

Status Code	Meaning
1	Tank with Fixed Roof; without Stilling
2	Tank with Fixed Roof; with Stilling well
3	Tank with External Floating Roof; without Stilling
4	Tank with External Floating Roof; with Stilling
5	Tank with Internal Floating Roof; without Stilling
6	Tank with Internal Floating Roof; with Stilling
7	Open Tank
8	Spherical Tank
9	Bullet Tank

6.1.7 Redundancy Manual SwitchOver

Value	Meaning
0	Redundancy Manual Switch Over deactivated
1	Redundancy Manual Switch Over activated

6.1.8 Redundancy Mode

Value	Meaning
0	Redundancy Mode deactivated
1	Redundancy Mode: Switch by Interface
2	Redundancy Mode: Switch by Gauge

6.1.9 Redundancy State

Value	Meaning
0	Redundant unit is active
1	Redundant unit is passive

6.1.10 Redundancy Unit Type

Value	Meaning
0	Primary Redundant unit
1	Secondary Redundant unit

7 Advanced OPC Server Configuration

7.1 TankvisionOPC.config

7.1.1 Communication Timeout

The communication time out is defined by the following key:

```
<add key="CommunicationTimeOut" value="5000" />
```

OPC_Communication-Timeout-F

Timeout value is in milliseconds, user can set it between 1000 to 10000 ms. '-1' means infinite timeout.

7.1.2 TVOPCUnits.xml

Separate tanks can also be configured in Tankvision Device using **TVOPCUnits.xml** file. For each Tankvision device a block **<TVOPCUnitInfo>** needs to be defined. Each block can contain individual configuration.

Sample file:

```
<mark>?</mark>xml version="1.0" encoding="utf-8"<mark>?></mark>
<ArrayOfTVOPCUnitInfo xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"</pre>
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  <TVOPCUnitInfo
    <IPAddress>172.16.40.154</IPAddress>
    <TankScanList>
      <int>1</int>
      <int>0</int>
      <int>1</int>
      <int>1</int>
    </TankScanList>
  </TVOPCUnitInfo>
</ArrayOfTVOPCUnitInfo>
```

Sub Block <IPAddress>

This block defines the IP address of each NXA820 connected, which must be present in the **TankvisionOPC.config** file to set individual configurations for this device.

Sub Block <TankScanList>

Consists of a "Boolean" list of max 15 items called **<int>**. Allowed values are '1' and '0'. 1st item is the corresponding entry for Tank 1 of this device. Entry 7 is linked to Tank 7.

Here the internal Tank ID is used not the configured Tank Name!

'1' set the OPC Server to scan the values from this Tank. '0' configures the OPC Server to skip this Tank from scanning.

7.1.3 TVOPCIN.xml

This file contains list of OPC elements as mentioned in parameter table.

It is advisable not to change this file if user is not familiar or comfortable with changing xml file.

Example

If user needs to display different name for OPC Elements. For example if user wants to display **Product Level** as **P_LEVEL** then user has to change only parameter string as shown below:

From

```
<OpcElement>
  <FASTVIEWPARAM>Product Level</FASTVIEWPARAM>
  <AccessRights>READABLE</AccessRights>
  <DataType xmlns="">float</DataType>
  <Value xsi:type="xsd:float">0</Value>
  <PARAMDATANODEID>622</PARAMDATANODEID>
  <PropertyId>NoProperty</PropertyId>
</OpcElement>
```

То

```
<OpcElement>
  <FASTVIEWPARAM>P_LEVEL</FASTVIEWPARAM>
  <AccessRights>READABLE</AccessRights>
  <DataType xmlns="">float</DataType>
  <Value xsi:type="xsd:float">0</Value>
  <PARAMDATANODEID>622</PARAMDATANODEID>
  <PropertyId>NoProperty</PropertyId>
</OpcElement>
```

OPC_TVOPCIN-XML_To

OPC TVOPCIN-XML From

7.1.4 TVOPCLOGGERCONF.xml

Tankvision OPC Server provides different level of log level to capture variety of messages. OPC Server supports mainly seven user log level:

Log Level	Messages captured
FATAL	All Exception and critical messages
ERROR	Error messages and exception messages
WARNING	Warning messages and captures more messages than FATAL or ERROR
INFO	Information messages and captures more messages as compared to above
DEBUG	All debug information
OFF	No user log
ALL	Captures all messages

In normal operation it is not required to change user log level but if OPC server is not working properly then user can change log level to analyse the problem.

```
<logger name="OPC.DA.AppPlugin"> <level value="WARN"/> </logger>
<logger name="OPC.DA.TankvisionOPCPlugin"><level value="WARN"/></logger>
```

OPC_TVOPCLoggerConf-XML

Windows XP:

For windows XP user has to do below changes to enable logger:

1. **DANSrvNet4.exe.config**: Change Logger configuration location as mentioned below:

```
<add key="LoggerConfiguration" value="C:\Documents and Settings\All Users\Application Da-
ta\Endress+Hauser GmbH+Co. KG\Tankvision OPC Serer\version_number\PluginData\ TVOPCLog-
gerConf.xml"/>
```

OPC_TVOPCLoggerConf-XML_XP

7.1.5 Un-Installation

Go to Control Panel \rightarrow Programs \rightarrow Uninstall program and select Tankvision OPC Server.

	Programs Programs and Features		▼ ♦↑ Searc	h Programs and	Features	
Control Panel Home	Uninstall or change a program					
View installed updates	To uninstall a program, select it from the list and then click Uninstall, Chang	e, or Repair.				
Turn Windows features on or						
on Install a program from the network	Organize 🕶 Uninstall Change Repair 🛛 🔠 🕶					
	Name	Publisher	Installed On	Size	Version	
	Silicon Laboratories CP210x USB to UART Bridge (Driver Removal)	Silicon Laboratories	27.09.2012			
	Silicon Laboratories CP210x VCP Drivers for Windows XP/2003 Server/Vista/7	Silicon Laboratories, Inc.	27.09.2012		6.5	
	Silverlight 4.0.50917.0	Microsoft	19.09.2012		4.0.50917.0	
	Tankvision OPC Server	Endress+Hauser GmbH+Co. KG	03.04.2013	3,33 MB	1.0.0	1
	Tankvision ServiceInterface	Endress+Hauser GmbH+Co. KG	12.02.2013	1,03 MB	0	3
	C Tankvision ServiceTechTool	Endress+ Hauser GmbH+ Co. KG	12.02.2013	34,1 MB	1.0.0	
	Endress I Jawas Cabl J. Co. KC. Participation 100	Commenter Marriage 1.0	0			

7.1.6 Tankvision OPC Version

Tankvision OPC Server version can be found from **Control Panel** \rightarrow **Programs** \rightarrow **Uninstall program** as shown in above figure. Here OPC Server version 1.0.0.



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