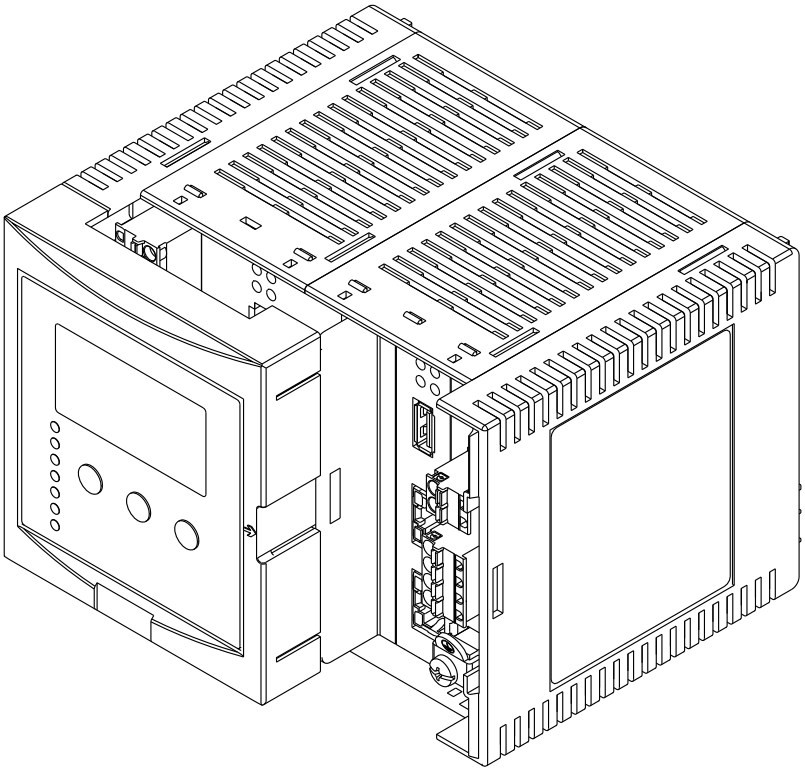
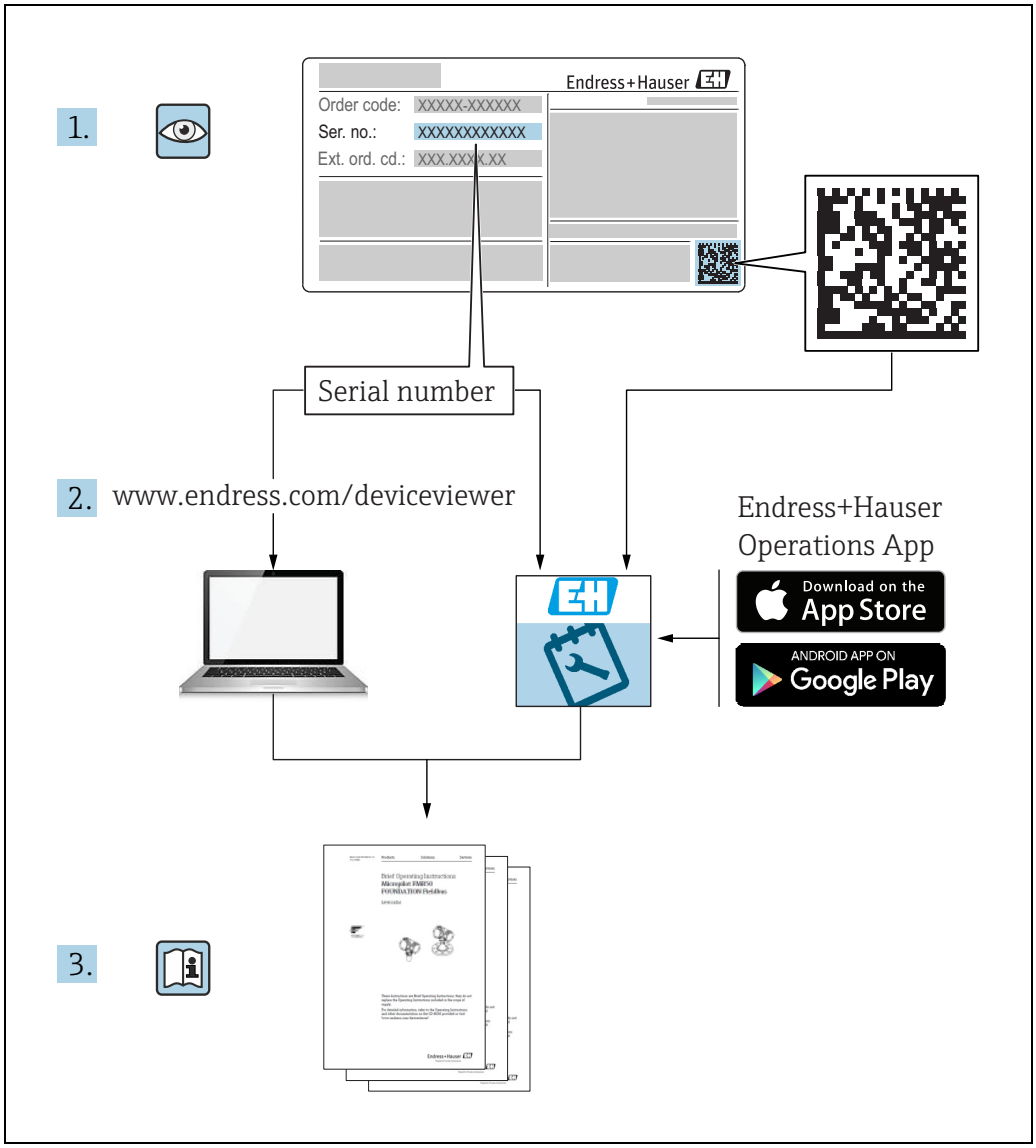
BA00340G/00/EN/17.18
71424920

Valid as of software version:
V 02.02.00

Operating Instructions
Tankvision
NXA820, NXA821, NXA822
Installation Instructions



Endress+Hauser
People for Process Automation



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.

Table of Contents

1 Document information

1.1 Target audience for this manual

This manual should support during the installation of the NXA82x units. It deals with the mechanical, electrical and signal line installation. The first commissioning steps are described as well.
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
BA00340F/00/en/04.08	01.00.00 to 01.01.01	Initial version
BA00340F/00/EN/12.09	01.02.00 to 01.04.00	Clarification, content revision, segmentation to BA00339F
BA00340G/00/EN/13.13	01.05.00	Introducing "Interface only" version, new layout
BA00340G/00/EN/14.15	01.06.00	Java applets replacement, new layout
BA00340G/00/EN/15.17	02.00.00	Introduced Temperature and Density Profile
BA00340G/00/EN/16.17	02.01.00	Introduced Floating Roof Weight Correction, Redundancy functionality with NXA820 Interface Only, CH alarm for Volume or Mass
BA00340G/00/EN/17.18	02.02.00	Introduced Switch by Gauge redundancy mode for NXA820 Interface Only

1.3 Document function

1.3.1 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.
 A0011190-EN	**WARNING!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
 A0011191-EN	**CAUTION!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
 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.
A0011198	**Alternating current** A terminal to which alternating voltage is applied or through which alternating current flows.
 A0011200	**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
 A0011187	**Hazardous area** Indicates a hazardous area.
 A0011188	**Indicates a non-hazardous location** Safe area (non-hazardous area)

1.4 Documentation

Document number	Instrument	Type of Document
BA00339G/00	▪ Tank Scanner NXA820 ▪ Data Concentrator NXA821 ▪ Host Link NXA822	Description of Instrument Functions
BA00340G/00		Installation Instructions
BA00424G/00		System Description
BA00426G/00		Operator Manual
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,

- Replace fuses only with fuses of the same type and value!
- Use only insulated tools when working on the device.
- 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.

2.6.1 Degree of protection

- IP20 (as per IEC/EN 60529)
- IK06 (as per IEC/EN 62262)

3 Identification

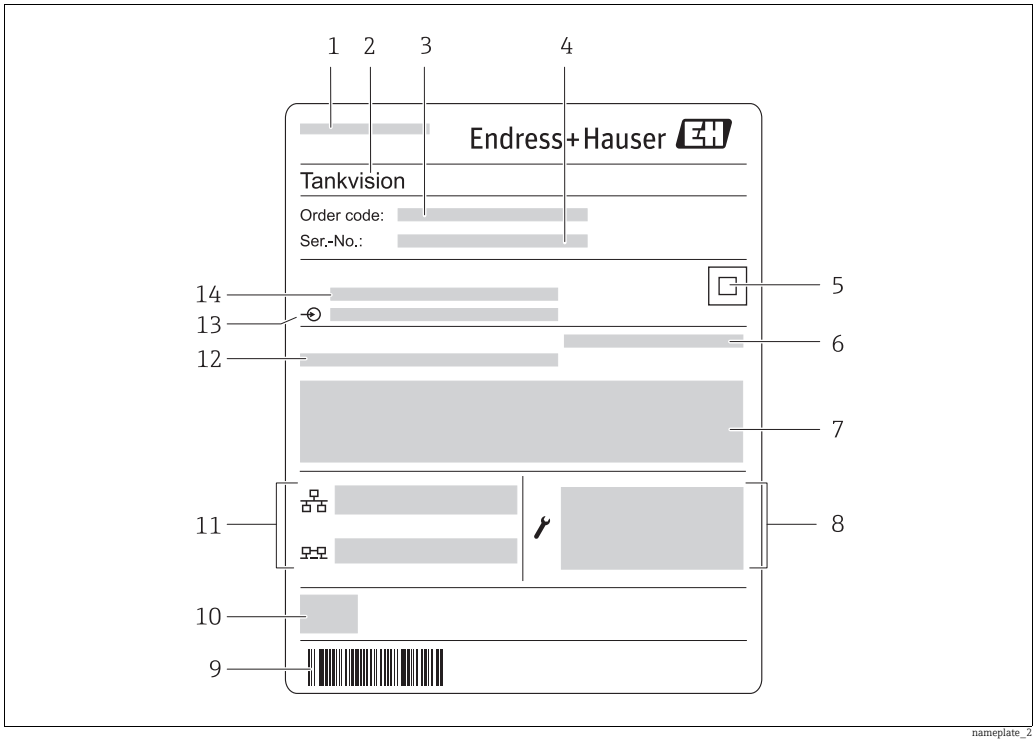
3.1 Product identification

The following options are available for identification of the measuring device:

- Nameplate specifications
- Order code with breakdown of the device features on the delivery note
- Enter serial numbers from nameplates in W@M Device Viewer (www.endress.com/deviceviewer): All information about the measuring device is displayed.

For an overview of the technical documentation provided, enter the serial number from the nameplates in the W@M Device Viewer (www.endress.com/deviceviewer)

3.2 Nameplate



1 *Address of manufacturer*
2 *Device name*
3 *Order code*
4 *Serial number (Ser. no.)*
5 *Data Matrix Code*
6 *Degree of protection*
7 *Certificate and approval relevant data*
8 *Technical data of the Service LAN port*
9 *Barcode*
10 *CE mark*
11 *MAC address of the System LAN port and Sync LAN port*
12 *Admissible ambient temperature*
13 *Type of fieldbus communication (only for Tank Scanner NXA820)*
14 *Supply voltage*

3.3 Order code and device version

To find out the version of your device, enter the order code indicated on the nameplate in the search screen at the following address: www.products.endress.com/order-ident

3.4 Device documentation

The information required to retrieve the documentation can be found on the nameplate of the device.

Technical documentation can also be downloaded from the Download Area of the Endress+Hauser web site: www.endress.com → Download. However this technical documentation applies to a particular instrument family and is not assigned to a specific device.

3.4.1 W@M Device Viewer

1. Launch the W@M Device Viewer: www.endress.com/deviceviewer
2. Enter the serial number (Ser. no.) of the device: see nameplate.
   ↳ All the associated documentation is displayed.

3.4.2 Endress+Hauser Operations App

The *Endress+Hauser Operations App* is available both for android smart phones (Google Play Store) and for iPhones and iPads (App Store).

Via the serial number:

1. Launch the *Endress+Hauser Operations App*.
2. Enter the serial number (Ser. no.) of the device: see nameplate.
   ↳ All the associated documentation is displayed.

Via the 2-D matrix code (QR code):

1. Launch the *Endress+Hauser Operations App*.
2. Scan the 2-D matrix code (QR code) on the nameplate.
   ↳ All the associated documentation is displayed.

3.5 Registered trademarks

Microsoft®, Windows® and Internet Explorer®
Registered trademarks of the Microsoft Corporation

Modbus™
Modbus is a registered trademark of Schneider Electric USA, Inc.

Java®
Registered trademark of Oracle® Corporation

Mozilla® Firefox®
Registered trademark of the Mozilla Foundation

4 Installation

4.1 Incoming acceptance, transport, storage

4.1.1 Incoming acceptance

Check the packing and contents for any signs of damage.
Check the shipment, make sure nothing is missing and that the scope of supply matches your order.

4.1.2 Delivery content

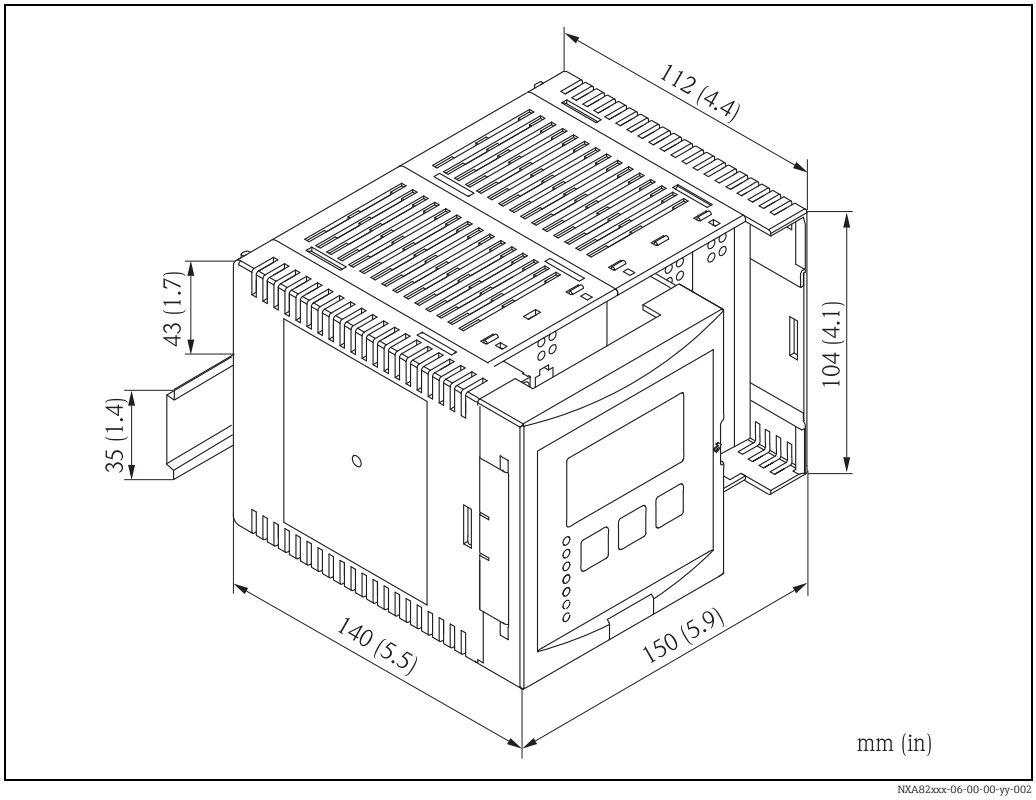
- Tankvision
- Ferrite for installation on the power supply cable
- Installation Instructions BA00340G/00
- Documentation CD-ROM

4.1.3 Transport, storage

Pack the measuring instrument so that it is protected against impacts for storage and transport. The original packing material provides the optimum protection for this.
Permissible storage temperature: −40 to +85 °C (−40 °F to +185 °F).

4.2 Mounting

4.2.1 Dimensions



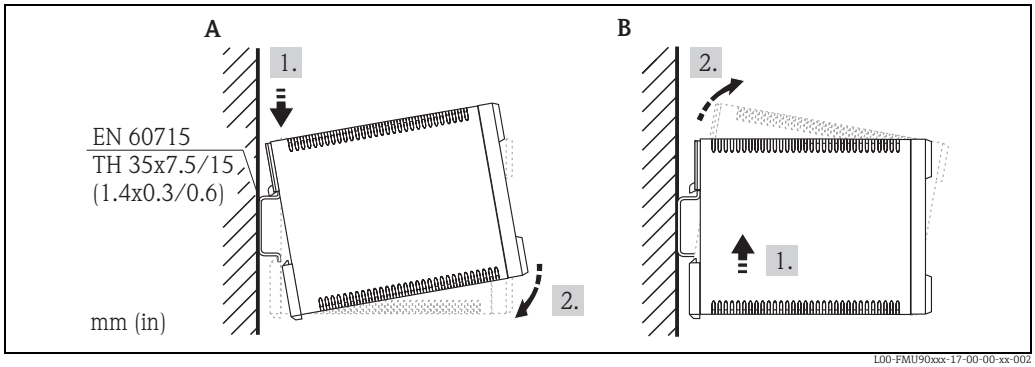
NXA82xxx-06-00-00-yy-002

4.2.2 Installation conditions

- Maximum installation height for the device is 2000 m above sea level.
- The DIN-rail housing must be mounted outside hazardous areas in a cabinet.
- The housing has to be on a DIN rail EN 60715 TH 35x7,5 or TH 37x15.
- Do not install the instrument in the vicinity of high-voltage lines, motor lines, contactors or frequency converters. The installation regulations for high-voltage lines, motor lines, contactors or frequency converters must be observed.
- To ensure easy mounting and opening of the housing, a distance of approx. 1 cm (0.39 in) should be kept between the instruments.

Warning!
Risk of electric shock due to open parts under voltage, if housing is damaged!
Housing is protection class IK06: Install device in a stable installation cabinet.

4.2.3 Mounting



A *Attaching the instrument to the rail*
B *Detaching the instrument from the rail*

4.3 Installation check

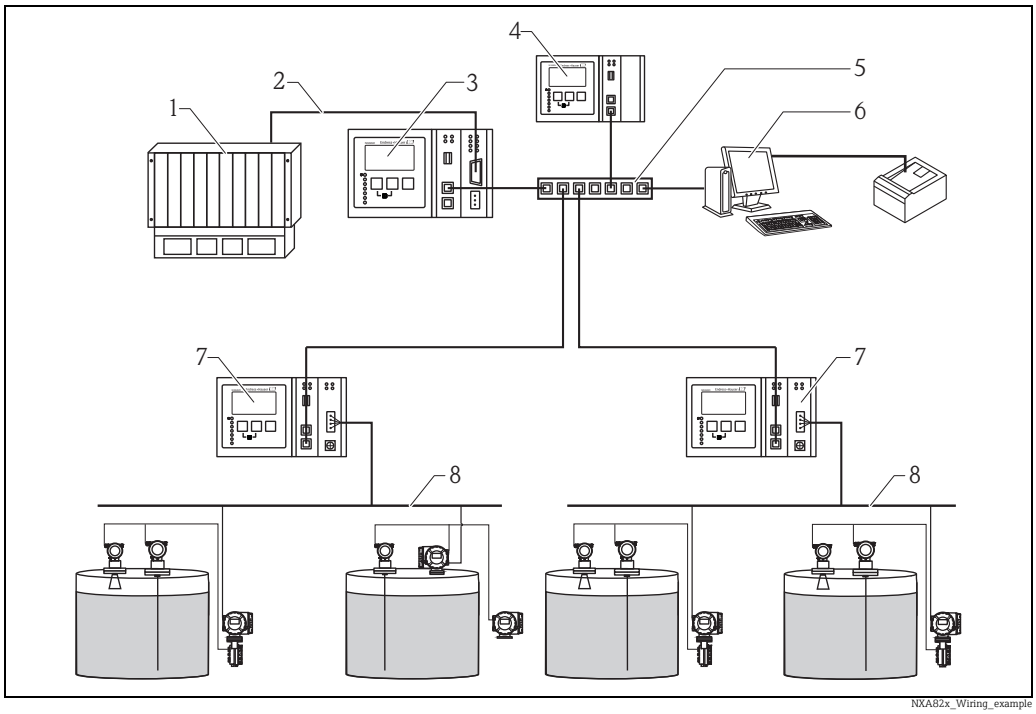
After installing the device, carry out the following checks:

- Is the device damaged (visual inspection)?
- Does the device correspond to the measuring point specifications such as ambient temperature etc?
- If available: Are the measuring point number and labelling correct?
- Is the instrument sufficiently protected against rainfall and direct sunlight?
- Is the instrument securely mounted to the DIN rail (visual inspection)?

5 Wiring

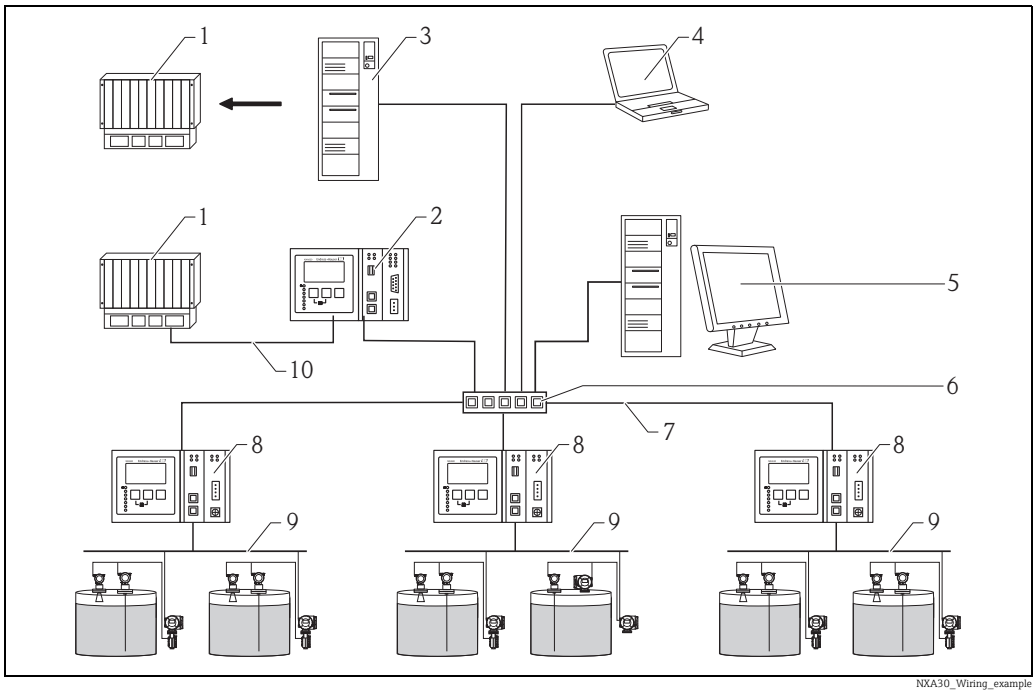
5.1 Wiring examples

5.1.1 Wiring example for NXA820/821/822



1 *DCS/PLC (Distributed control system/Programmable logic controlled)*
2 *Modbus*
3 *Host Link NXA822*
4 *Data Concentrator NXA821*
5 *Switch*
6 *Operator with Browser*
7 *Tank Scanner NXA820*
8 *Fieldbus protocol*

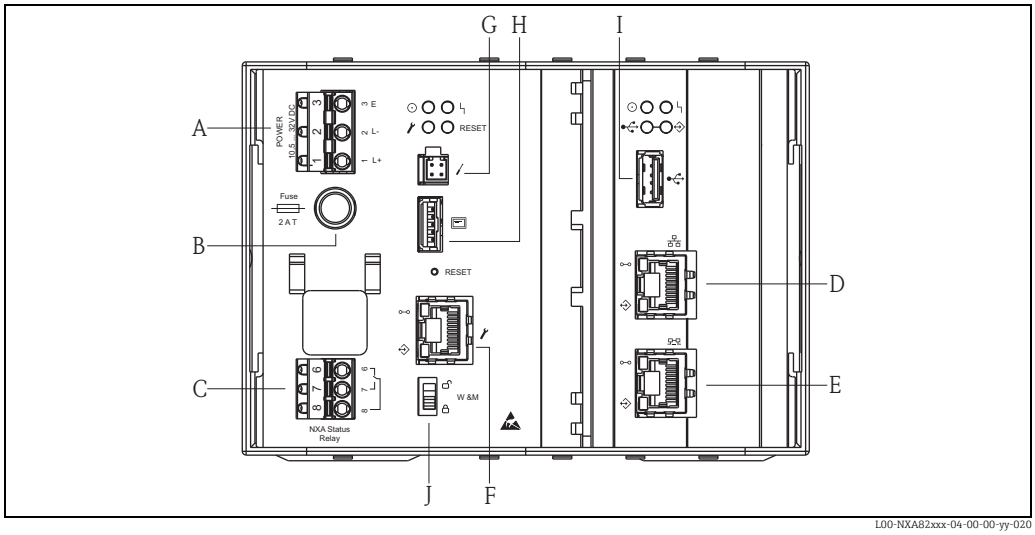
5.1.2 Wiring example for NXA820 "Interface only"



NXA30_Wiring_example

1 DCS / PLC (Distributed control system / Programmable logic controlled)
2 Host Link NXA822
3 OPC Server (Open Platform Communications)
4 FieldCare
5 Tankvision Professional NXA85 Workstation
6 Switch
7 Ethernet
8 Tank Scanner NXA820
9 Fieldbus protocol (Modbus, Sakura V1, Whessoe WM550)
10 Modbus RTU RS 232/485 or Modbus TCP

5.2 Terminal assignment



L00-NXA82xxx-04-00-00-yy-020

A Power supply
B Fuse
C Status relay
D System LAN port
E Sync Link LAN port
F Service LAN port
G Endress+Hauser CDI port
H Display port
I USB port
J Weights & Measures locking switch

5.2.1 Power supply

⚠ WARNING

When using the public supply mains, an easily accessible power switch must be installed in the proximity of the device. The power switch must be marked as a disconnector for the device (IEC/EN 61010)

Terminal Clamp	Meaning for AC version (90 to 250 VAC)	Meaning for DC version (10.5 to 32 VDC)
1	L	L+
2	N	L-
3	Potential equalization	Potential equalization
⏤	Fuse 400 mA T	Fuse 2 A T

⚠ WARNING

Replace fuses only with fuses of the same type and value!

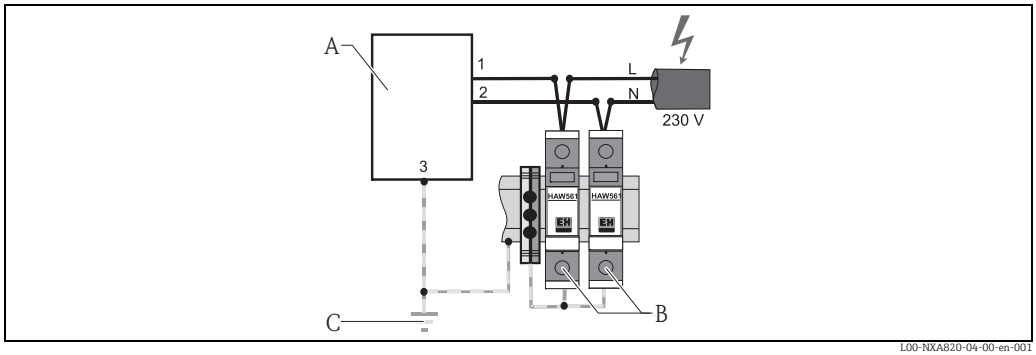
Please check the device designation on the nameplate.

Overvoltage Protection

Power supply: 2 x HAW561

Surge arrester HAW651K

- for low voltage users 24/48 V, single pole, requirement class C, basic component with plugged in protection unit, defect display, 18 mm (0.71 in) housing width. Order code: 51003569
- for standard voltage users 115/230 V, single pole, requirement class C, basic component with plugged in protection unit, defect display, 18 mm (0.71 in) housing width. Order code: 51003570



L00-NXA820-04-00-en-001

A Tankvision
B Power supply: 2 x HAW561
C Ground connection

NOTICE

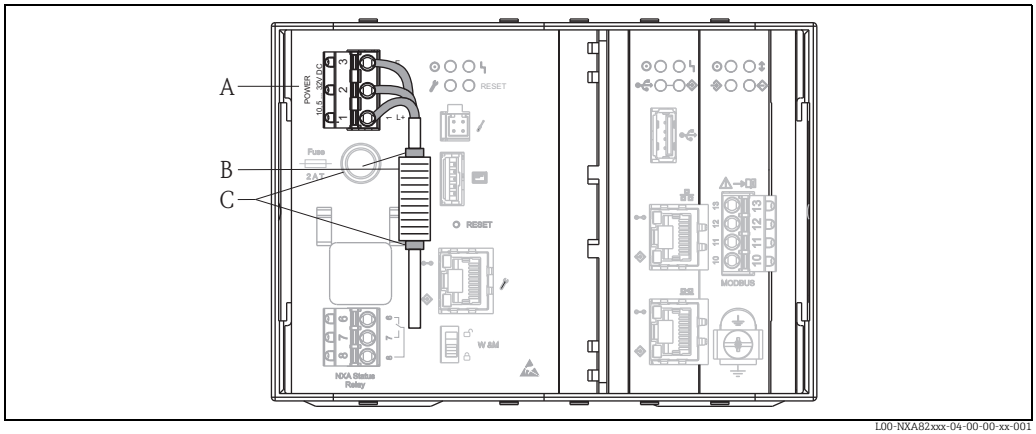
Signal input protection

Risk of overvoltage.

▶ The signal input with the NXA820 can be protected by a suitable overvoltage protection, additionally to the overvoltage protection which is integrated in the instrument.

Wiring of DC Variants

To meet the emission class A[1)], it is mandatory to install the enclosed ferrite as close as possible to the power supply connector of the device. If this is not possible an additional line filter can be installed.



A Terminal clamp
B Ferrite
C Fixation (e.g. cable straps)

The delivered ferrite must be installed as follows:

1. Put over the cable (prior installing the core cable ends).
2. The ferrite must be installed and secured against slipage next to the terminal clamp (e.g. with 2 cable straps).

5.2.2 Status Relay

Terminal Clamp	Meaning	Remarks
6	normally open contact	▪ NXA operating normally: terminals 7 & 8 are interconnected ▪ NXA powered off or fault status condition: terminals 6 & 8 are interconnected
7	normally closed contact	
8	switching contact	

The depicted switching state of the relay refers to the de-energized state.

5.2.3 LAN connection

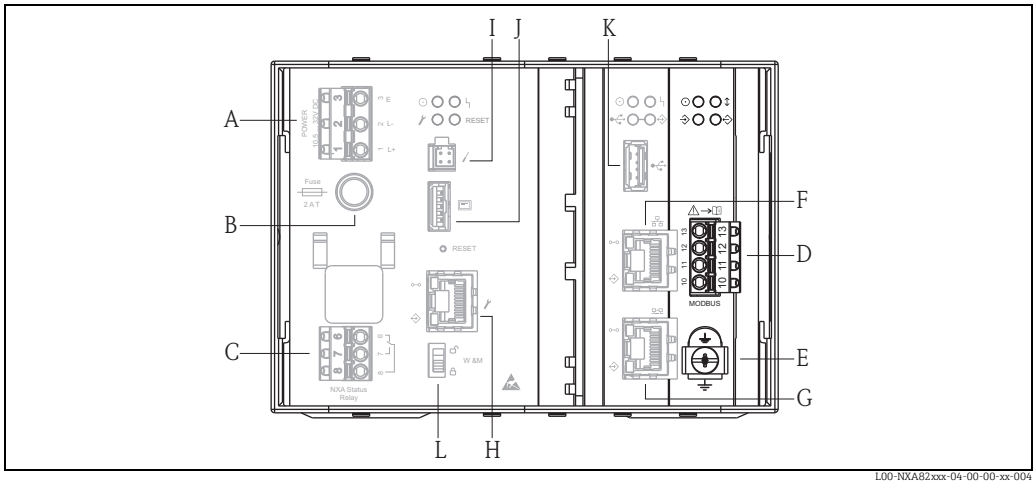
Socket	Meaning	Remarks
	System LAN port	Connects the instrument to the network.
	Sync Link LAN port (in preparation)	Used for connection to redundant unit. If the primary unit fails, its task is taken over by the redundant unit.
	Service LAN port	Connects the instrument to a computer locally for service purpose. Only this instrument can be configured. The Service LAN port does not allow access to the network.

1) DIN EN 55011: Industrial, scientific and medical (ISM) radio-frequenzy equipment - radio disturbance characteristics - limits and methods of measurements

5.2.4 Additional elements in the terminal compartment

Symbol	Meaning	Remarks
	Endress+Hauser CDI port	Not used in the Tankvision instrument.
	Display port	For the connection of the local display in the housing cover. Is connected on delivery.
	USB port	Reserved for future enhancements.
W&M	Weights & Measures Switch	▪ :W&M parameters are unlocked and can be changed. ▪ :W&M parameters are locked and cannot be changed.

5.3 Terminal assignment Field connection - Tank Scanner NXA820



A Power supply
B Fuse
C Status relay
D Fieldbus connection
E Ground
F System LAN Port
G Sync Link LAN port
H Service LAN port
I Endress+Hauser CDI port
J Display port
K USB port
L Weight & Measures locking switch

5.3.1 Field connection - Tankvision Tank Scanner

NOTICE

Noise and electrical interference

Prevent noise and electrical interference between the signal and power cables.

▶ Take care that the signal and power cables always are separated.

Terminal Clamp	Modbus RS485[1] NXA820 - *4*********		Sakura V1[2] NXA820 - *8*********		Whessoe WM550[3] NXA820 - *1*********	
10	A	Data signal (-)	B	Data signal (+)	-	Data signal (-)
11	B	Data signal (+)	A	Data signal (-)	+	Data signal (+)
12	C	Signal Common	Not connected		Not connected	

Terminal Clamp	Modbus RS485[1] NXA820 - *4*********		Sakura V1[2] NXA820 - *8*********		Whessoe WM550[3] NXA820 - *1*********
13	S	Capacitive Shield	S	Capacitive shield	Not connected
⏚	Ground		Ground		Ground

1) For details → 17

2) For details → 18

3) For details → 18

5.3.2 Additional information on Modbus RS485

Connection

As described in the “Modbus over serial line specification and implementation guide V1.02” published by the Modbus-IDA organisation (www.modbus.org) and based upon the EIA/TIA-485-A physical layer specification, Modbus two-wire serial requires the following four electrical connections between each of the devices on the bus.:

Terminal Clamp	Signal	Purpose	Remarks
10	A	Data signal (-)	These signals must be connected using a balanced twisted pair cable.
11	B	Data signal (+)	
12	C	Signal Common	Must interconnect all devices on the bus.
13	Shield	EMC Protection	Copper braided or combined foil and braided shielding.

Additional bus settings

- Bus biasing resistors (must be present at one point on the bus) (always enabled inside NXA820)
- Bus termination resistor (must be present at each end of the bus) (software selectable inside NXA820)

Cable Specification

Characteristic impedance	135 to 165 Ω at measuring frequency of 3 to 20 MHz
Cable capacitance	≤ 30 pF/m
Core cross-section	≥ 0.34 mm^2 (AWG 22) multi-strand cable is preferred
Cable type	Single twisted pair + third conductor (for common) or Dual twisted pair (common uses second pair with wire joined together)
Cable resistance	≤ 110 Ω/km
Signal damping	Max. 9 dB over the entire length of the cable cross-section
Shielding	Copper braided shielding or combined foil and braided shielding

5.3.3 Additional information on Sakura V1

Connection

Terminal Clamp	V1	Meaning	Remarks
13	S	Capacitive Shield	–
12	–	Not connected	
11	A	–	
10	B	–	
⏚	Ground	–	Must be independently connected directly to a primary grounding point using 4 mm^2 cable.

V1 Definition

V1 fieldbus is a voltage mode digital communication using up to ±30 V_{DC}, and requires the following three electrical connections between each of the devices on the bus:

Signal	Purpose	Remarks
A	Data signal (-)	These signals must be connected using a balanced twisted pair cable.
B	Data signal (+)	
Shield	EMC protection	Copper braided or combined foil and braided shielding

V1 Cable specification

Cable capacitance	≤ 50 nF/m
Core cross-section	≥ 0.9 mm^2 (AWG 17) multi-strand cable is preferred
Cable type	twisted pair
Cable resistance	≤ 30 Ω/km
Shielding	Copper braided shielding or combined foil and braided shielding
Insulation	≥ 60 V_{DC}

5.3.4 Additional information on Whessoe WM550

The WM550 communication protocol works using a current loop principle.

Connection

Please take into consideration that the principle of current loop connection works as follows:

The Tankvision (master) (-) signal point connects to slave 1 (+) signal point. Slave 1 (-) signal point connects to slave 2 (+) signal point until (the last) slave N (-) signal point connects back to the Tankvision (master) (+) signal point closing the current loop.

Terminal Clamp	Signal	Purpose	Remarks
10	-	Data Signal	Current Loop (-)
11	+	Data Signal	Current Loop (+)

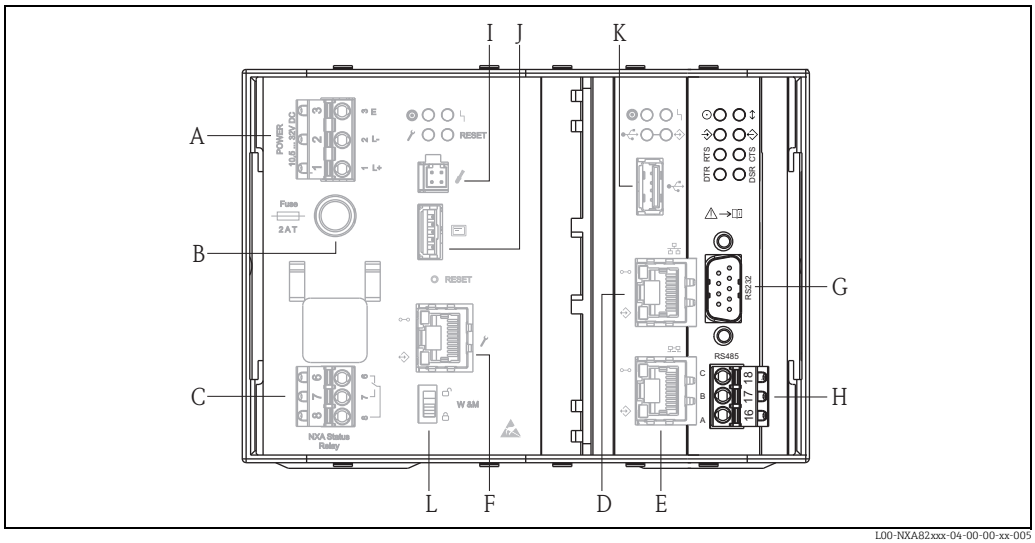
Cable specification

Please ensure to follow the following recommendations for field installation of the Tankvision with the WM550 protocol variant
- Cable with twisted and non-shielded pairs
- Cable with at least 0,5 mm² (20 AWG) section
- Maximum total cable resistance: 250 Ω
- Cable with low capacitance

	Cross section (mm² (AWG))	Resistance (Ω/km)	Capacitance (nF/km)
Cable 1	0,5 (20)	39.2	60
Cable 2	0,75 (18)	24.6	65
Cable 3	1,3 (16)	14.2	75

5.4 Terminal assignment host/printer connection - Host Link NXA822 / Data Concentrator NXA821

This chapter is valid for Tankvision Host Link and Tankvision Data Concentrator with Printer Port option.



L00-NXA82xxx-04-00-00-xx-005

A Power supply
B Fuse
C Status relay
D System LAN port
E Sync Link LAN port
F Service LAN port
G RS232 Host connection (Host Link or Printer Connection Data Concentrator
H RS485 Host connection
I Endress+Hauser CDI port
J Display port
K USB port
L Weights & Measures locking switch

5.4.1 Host connection: Modbus Serial, EIA/TIA-232 (RS232)

The NXA822 Host Link is defined as a Data Terminal Equipment (DTE) device, and provides EIA/TIA-232 (RS232) interface through a male DB9 connector whose pin out complies with the EIA/TIA-574 standard:

Pin	RS232	Name	Remarks
1	CD	Carrier Detect	Signal from connected device
2	RxD	Receive Data	Signal from connected device

Pin	RS232	Name	Remarks
3	TxD	Transmit Data	Signal to connected device
4	DTR	Data Terminal Ready	Signal to connected device
5	G	Signal Ground	Common connection
6	DSR	Data Set Ready	Signal from connected device
7	RTS	Request To Send	Signal to connected device
8	CTS	Clear To Send	Signal from connected device
9	RI	Ring Indicator	Signal from connected device
Case	Shield	Shield	–

Definition

EIA/TIA-232 (RS232) is a voltage mode digital communication using up to ±12 V_{DC}, and requires a variety of signals depending on the operating mode (software selectable):

Signal	Basic RS232	Fully RS232 with Hardware Handshaking (in preparation)	Remarks
Shield	Required	Required	Copper braided or combined foil and braided shielding
G	Required	Required	–
RxD	Required	Required	–
TxD	Required	Required	–
RTS	–	Required	Null Modem connection, these two pins can be linked together
CTS	–	Required	
DTR	–	Required	Null Modem connection, these three pins can be linked together
DSR	–	Required	
CD	–	Required	
RI	–	Optional	Not required

RS-232 Cable Specification

Cable capacitance	≤ 50 pF/m
Core cross-section	≥ 0.34 mm^2 (AWG 22) multi-strand cable is preferred
Cable type	Single cable or twisted pair
Cable resistance	≤ 110 Ω/km
Signal damping	Max. 9 dB over the entire length of the cable cross-section
Shielding	Copper braided shielding or combined foil and braided shielding

5.4.2 Host connection: Modbus Serial, EIA/TIA-485 (RS485)

Terminal Clamp	EIA/TIA-485 Modbus	Meaning	Remarks
18	C	Signal Common	Connector: Phoenix FKC 2,5HC/3-St-5,08
17	B	+ signal	
16	A	- signal	

Two-Wire Modbus Definition

As described in the “Modbus over serial line specification and implementation guide V1.02” published by the Modbus-IDA organisation (www.modbus.org) and based upon the EIA/TIA-485-A physical layer specification.

Modbus two-wire serial requires the following four electrical connections between each of the devices on the bus:

Signal	Purpose	Remarks
A	Data signal (-)	These signals must be connected using a balanced twisted pair cable.
B	Data signal (+)	
C	Signal Common	Must interconnect all devices on the bus.
Shield	EMC Protection	Copper braided or combined foil and braided shielding

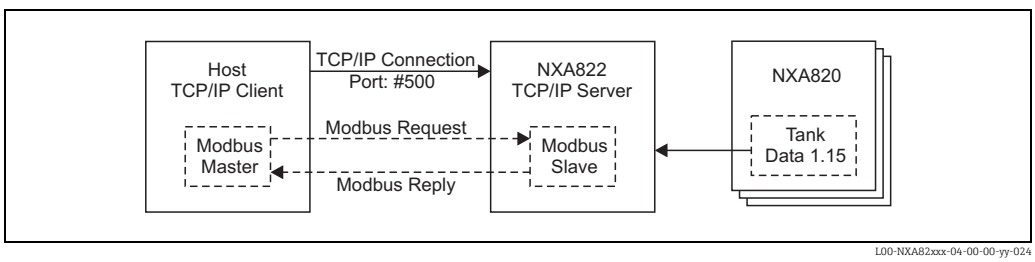
Additional EIA/TIA-485 bus settings

- Bus biasing resistors (must be present a one point on the bus) (software selectable inside NXA822)
- Bus termination resistor (must be present a each end of the bus) (software selectable inside NXA822)

Cable Specification

Characteristic impedance	135 to 165 Ω at measuring frequency of 3 to 20 MHz
Cable capacitance	≤ 30 pF/m
Core cross-section	≥ 0.34 mm^2 (AWG 22) multi-strand cable is preferred
Cable type	Single twisted pair + third conductor (for common) or Dual twisted pair (common uses second pair with wire joined together)
Cable resistance	≤ 110 Ω/km
Signal damping	Max. 9 dB over the entire length of the cable cross-section
Shielding	Copper braided shielding or combined foil and braided shielding

5.4.3 Host connection: Modbus TCP/IP (via System LAN port)



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6 Operation station settings

Before configuring and using Tankvision, the following settings are necessary on the operator's computer:

- Deactivate proxy server usage

6.1 Deactivate proxy server usage

Before configuring and using Tankvision it is necessary to deactivate the proxy server usage on the user's computer. This can be configured in the web browser.

After deactivating the proxy server usage, it is no longer possible to access the internet. Only the Tankvision pages are available. If you need internet access on the operation station, it is possible to configure the browser in a way that it uses the proxy server for internet pages but not for Tankvision.
For details please contact your local network administrator.

6.1.1 Microsoft Internet Explorer

1. Open the **Tools** menu.
2. Select **Internet Options**.
3. Select the **Connections** tab.
4. Select the **LAN Settings** button.
5. Deactivate the option **Use a proxy server for your LAN**.
6. Confirm the setting by clicking the **OK** button.

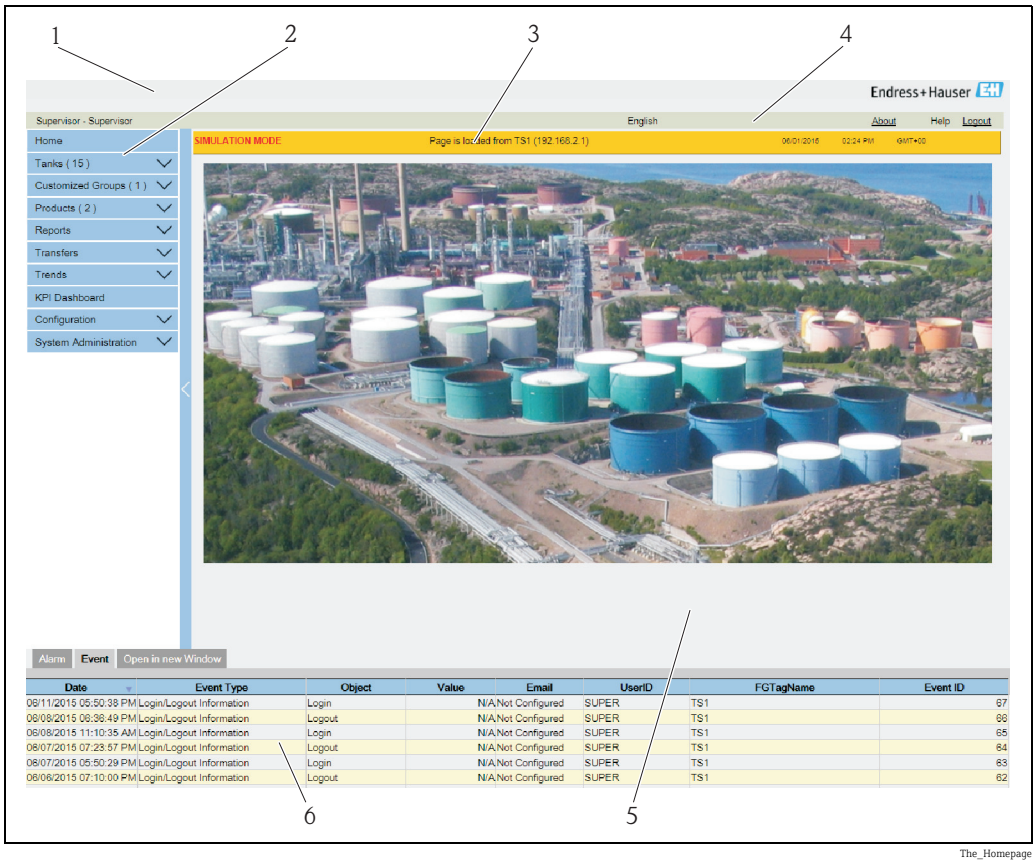
6.1.2 Mozilla Firefox

1. Open the **Tools** menu.
2. Select **Options**.
3. Open the **Advanced** menu.
4. Select the **Network** tab.
5. Click **Settings** to open the **Connection Settings** menu.
6. Activate the option **No proxy**.
7. Confirm the settings by clicking the **OK** button.

7 Tankvision NXA820/821/822 User Interface

Tankvision provides an intuitive user interface allowing the user to quickly navigate through the system. The following sections illustrate various parts of the Tankvision user interface and their usage.

Home Page (NXA820 with calculations/821/822)

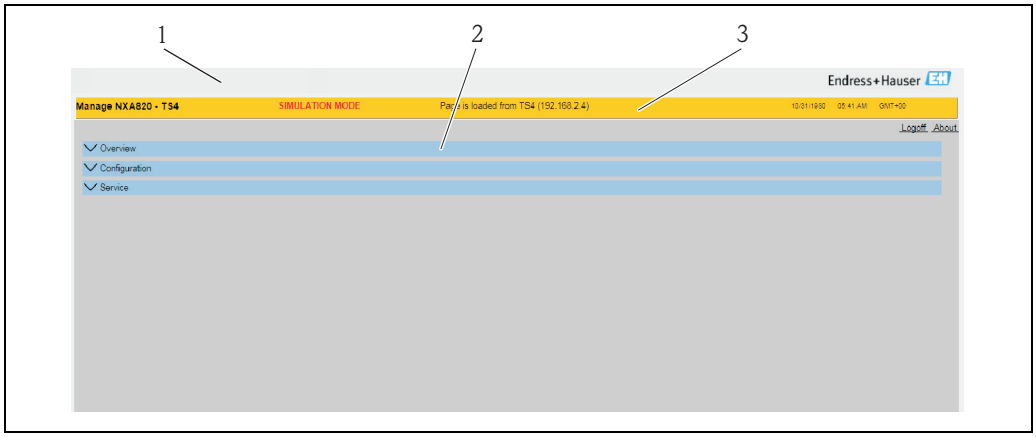


The_Homepage

Pos.	Field	Description
1	System Header	Displays the Customer Logo or Graphic.
2	Navigation Tree	Contains header bars corresponding to different functional objects or groups in the system. Refer to "Navigation Tree" (→ 24) for details.
3	Main Header	Displays the following information: ▪ The site name, tank name, Tankvision tag name or product name - depending on what is displayed in the Main View below the header ▪ The system date and time The main header is displayed with a background color depending on the access rights of the user logged into the system: ▪ Grey: the user does not have configuration rights and can only view non-real time data. ▪ Orange: the user has configuration rights and can view real time data.
4	Metadata Header	Displays the following information: ▪ The user name and the user type ▪ The language options link ▪ The help link ▪ The logout option
5	Main View	Displays the screens that the user has selected to configure the settings and view the operational information. Refer to "Main View Section - Colors in Edit Data" (→ 25) for details.

Pos.	Field	Description
6	Alarm and Event Panel	The Alarm and Event Panel displays the real time information about alarms and events. Refer to "Alarm and Event Panel Section" (→ 26) for details.

Home Page (NXA820 Interface only)

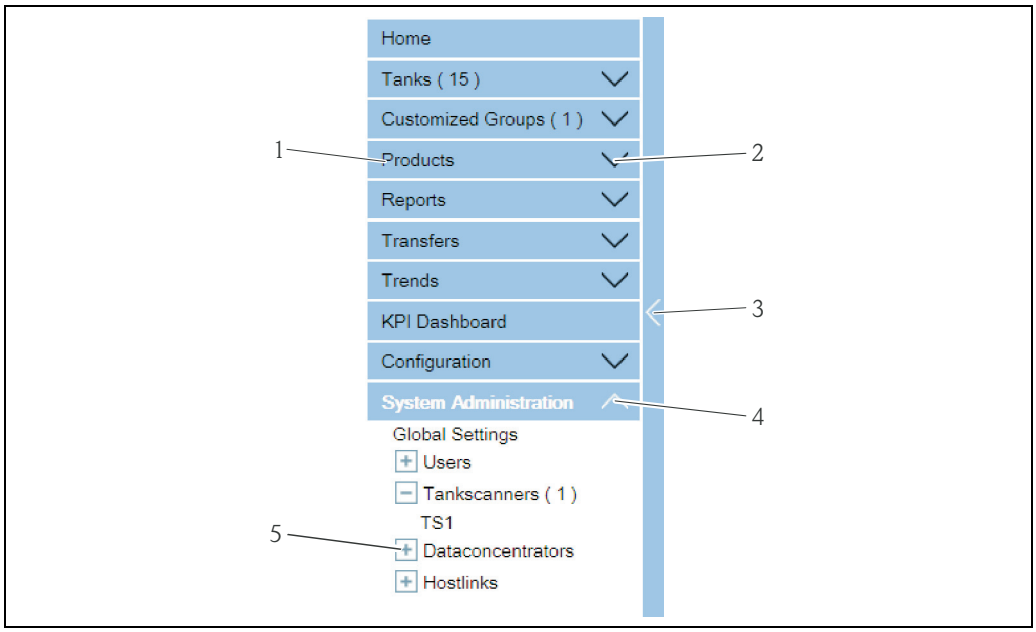


NXA30_Home_Page

Pos.	Field	Description
1	System Header	Displays the Customer Logo or Graphic.
2	Main Header	Displays the following information: ▪ The product name and Unit tag name ▪ The IP address of the Tank Scanner ▪ The system date and time The main header is displayed with a background color depending on the access rights of the user logged into the system: ▪ Grey: the user does not have configuration rights and can only view non-real time data. ▪ Orange: the user has configuration rights and can view real time data.
3	Main View	Displays the following information: ▪ The "About" link ▪ The logout option Displays the screens that the user has selected to configure the settings and view the operational information. Refer to "Main View Section- Colors in Edit Data" (→ 25) for details.

Navigation Tree (NXA820 with calculations/821/822)

The Navigation Tree is shown on the left side of the screen. Typically, the Navigation Tree allows the user to navigate down to the tanks. The image of the expanded Navigation Tree is as follows:

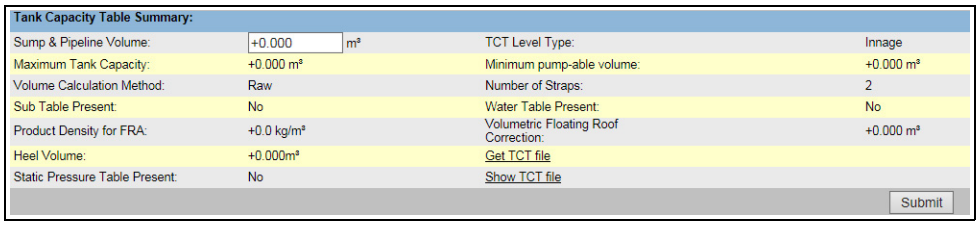


Pos.	Field	Description
1	Header	The user can click on the text or the arrow of the Header to expand or collapse the branch. The Header name shows a number, which is dynamically appended. The number states the following: ▪ Tanks: The number of tanks in the NXA820 ▪ Products: The number of products defined in the system ▪ Alarm Groups: The number of alarm groups defined in the system ▪ Customized Groups: The number of tank groups defined in the system ▪ Transfers: The number of product transfer stages (Waiting, In Progress, Finished, and Aborted) defined in the system ▪ Users: The number of users defined in the system The text will appear in bold and black when the header is in the expanded form.
2	Collapsed Arrow	This type of arrow is displayed when the Header is in the collapsed position. Click on the collapsed arrow to expand the Header.
3	Collapse/Expand Navigation Tree	The user can click on this arrow to collapse or expand the Navigation Tree.
4	Expanded Arrow	This type of arrow is displayed when the Header is in the expanded position. Click on the expanded arrow to collapse the Header.
5	Node	The user can click on the Node to view the operational information on the Main View section. If a Node is selected, it will appear in red color. The number of tanks in the group is appended to the Node name.

Main View Section - Colors in the Edit Data Area

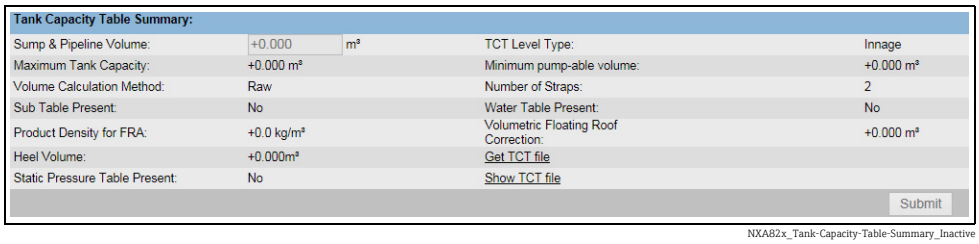
The system displays different colors in the Edit Data area, based on the access rights of the user:

1. If the user has access rights, then the edit data area has a light grey and light yellow background on alternate rows. The **Submit** button to save the settings is enabled.



NXA82x_Tank-Capacity-Table-Summary

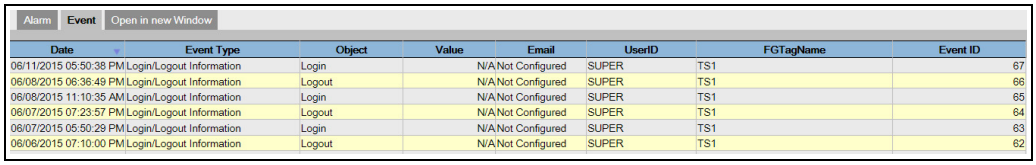
2. If the user does not have access rights, then the edit data area has a light grey and dark grey background on alternate rows. The **Submit** button to save the settings is disabled.



NXA82x_Tank-Capacity-Table-Summary_Inactive

Alarm and Event Panel (NXA820 with calculations/821/822)

The Alarm and Event Panel displays the alarm and event information, which is dynamically generated by the system.



Events (Overview)

Tab	Description
Alarm	Displays details of the alarms generated by the system.
Events	Displays details of the events generated by the system.
Alarm & Events	Displays details of the alarms and events generated by the system.

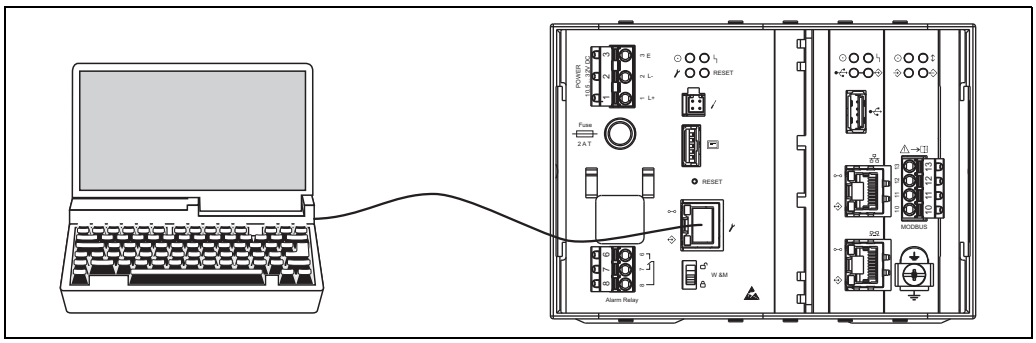
8 Tankvision NXA820/821/822 Configuration

This chapter refers to NXA820 with calculations. For Tank Scanner with "Interface only" option → 42.

8.1 Logging into the Tankvision NXA820/821/822 system

To integrate a Tankvision unit (i.e. a Tank Scanner NXA820, Data Concentrator NXA821 or Host Link NXA822) into the network, proceed as follows:

1. Connect a laptop to the service port of the Tankvision unit. Make sure that the laptop is configured to get a dynamic IP addresses from a DHCP server.



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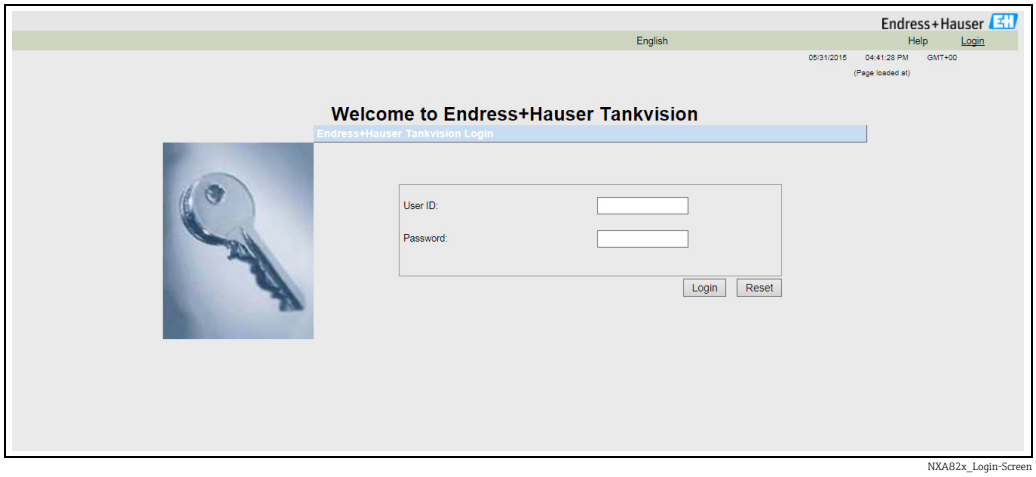
2. Open the internet browser and enter the following URL: http://192.168.1.1
The Tankvision login screen appears. The user ID (= User Login Name) and password are defined by the system administrator when adding a user to the system (see BA00339G/00/EN).
3. Login as Supervisor.



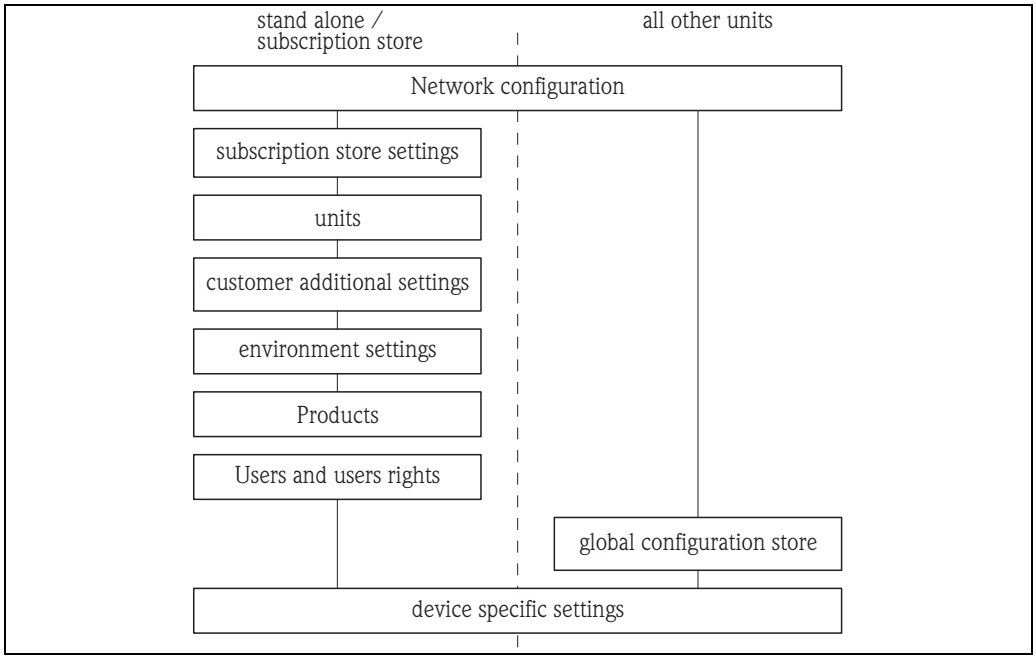
NXA82x_Login-Screen

Field	Description
User ID	Enter the appropriate user login name . The user login name is alphanumeric and case sensitive.
Password	Enter the appropriate password. The user password is alphanumeric and case sensitive. It consists of 3 to 8 characters.

- Enter **Super** into **User ID**.
- Enter **Super** into **Password**.
- Click the **Login** button.

Tankvision displays the Home Page.

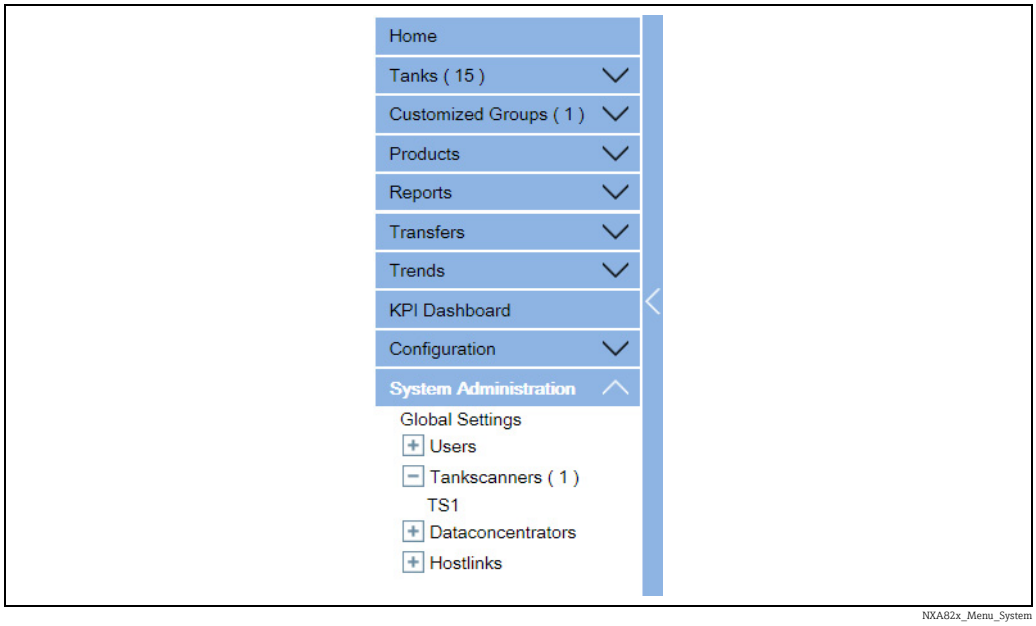
8.2 Common settings - Tankvision NXA820/821/822 system



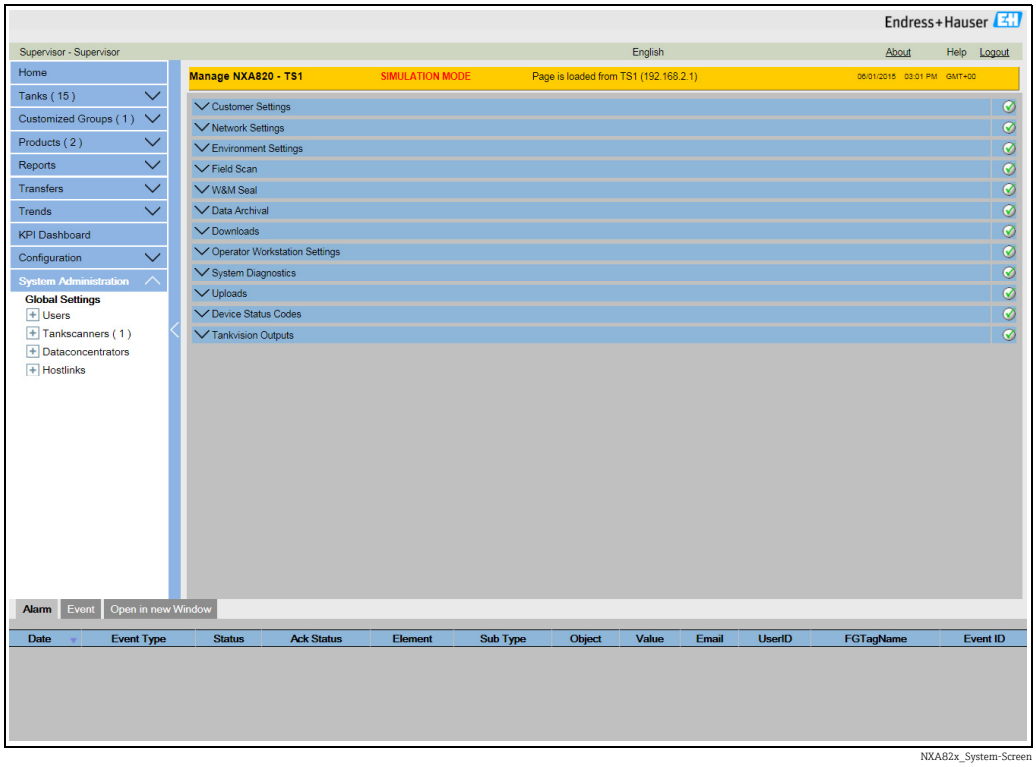
8.2.1 Network settings

You are logged in as "Supervisor".

1. In the navigation tree, click the **System Administration** Header. It expands as follows:

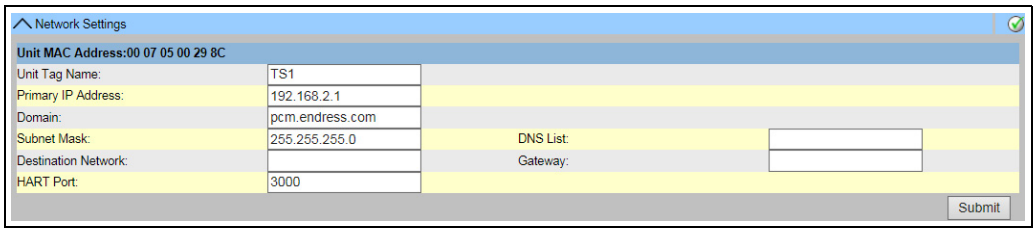


2. Click **Global Settings**. Tankvision displays the screen as follows:



NXA82x_System-Screen

3. Click ⌄ on **Network Settings** to unfold it. Click ⌄ again on the subentry **Network Settings**. Tankvision displays the screen as follows:

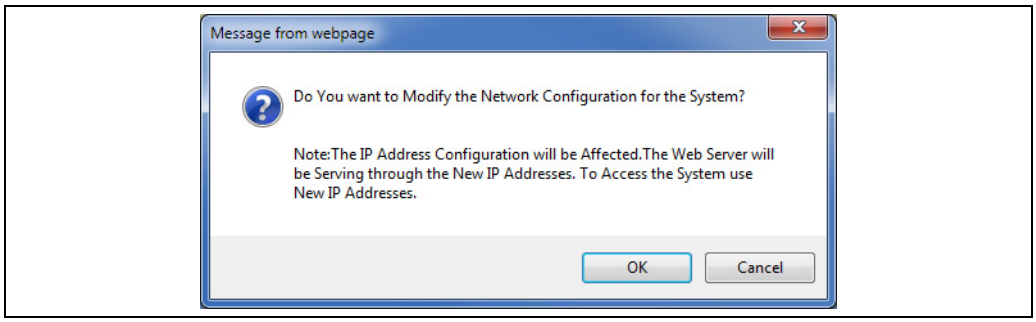


NXA82x_Network-Settings

4. Enter the appropriate information in the relevant fields.

- The following parameters are mandatory: Unit Tag Name, Primary IP Address, Domain, Subnet Mask and HART Port.
- The required values of the parameters depend on your local network configuration. For more information please contact your local network administrator.
- Detailed information on the individual fields can be found in BA00339G, "Tankvision NXA820, NXA821, NXA822 - Description of Instrument Functions".

5. Click the **Submit** button to proceed. The system displays a confirmation box as follows:



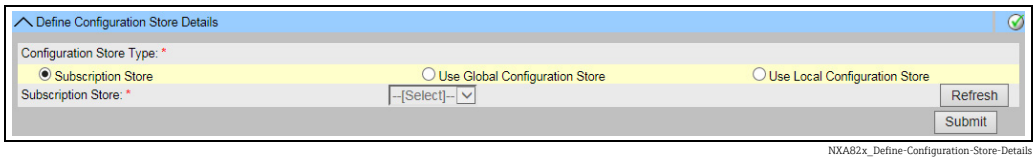
NXA82x_Network-Settings_Submit-Popup

6. Click the **OK** button to proceed, or click the **Cancel** button to exit.
7. After saving the settings, Tankvision displays a confirmation message.
8. Disconnect the laptop and connect the Tankvision unit to the network using the System LAN port. The Tankvision unit can now be operated from a computer within the LAN.

8.2.2 Subscription Store definition

In a typical Tankvision system, most configuration settings are common for all Tankvision units within the network. Therefore, the time required for the configuration of the system can be minimized by defining one of the units to be a Subscription Store. The configuration settings are only performed on this Subscription Store. These settings are then distributed to the other units within the network.
For each Tankvision unit (i.e. Tank Scanner NXA820, Data Concentrator NXA821 or Host Link NXA822) within the network it is necessary to define if it is a Subscription Store or if it receives its configuration from a Subscription Store.
To do so, proceed as follows:

1. Login to the Tankvision unit as "Supervisor" and navigate to the **Global Settings** screen (→ 28).
   Click on **Customer Settings**.
2. Click on **Define Configuration Store Details**. Tankvision displays the screen as follows:



NXA82x_Define-Configuration-Store-Details

3. **for the Subscription Store:**

– In **Configuration Store Type** select the option **Subscription Store** (Default)

for the other units:

– In **Configuration Store Type** select the option **Use Global Configuration Store**
– In **Subscription Store** select the Subscription Store to which this unit is to be linked

4. Click the **Submit** button to proceed, or click the **Refresh** button to reset the screen.
5. After saving the settings, Tankvision displays a confirmation message.

With the (recommended) use of global configuration store the following information is transfered to the subscription units:

- Customer settings like site information (without customer specific logo), unit, email server and day and time settings (configurations of languages and printer agent must be done for every single device)

- Environment settings
- Products
- Users incl. user access rights

Global settings could be changed later on, also after assigning other units. Its highly recommended to use a NXA820 as subscription store.

8.2.3 Further common steps (stand alone or subscription store)

Login to the Tank Scanner NXA820 as "Supervisor" and perform the following configurations (for details refer to BA00339G/00/EN "Tankvision NXA820, NXA821, NXA822 - Description of Instrument Functions"):

Customer Settings and Environment Settings

1. In the navigation tree, click the **System Administration** header.
2. Click **Global Settings** (below the **System Administration** header).
3. In the main screen click the **Customer Settings** header and configure the parameters. For a description of the parameters refer to BA00339G/00/EN. At least units, site information, day and time and Email server (if required).
4. In the main screen, click the **Environment Settings** header and configure the parameters. For a description of the parameters refer to BA00339G/00/EN.

Product Configuration

1. In the navigation tree, click the **Configuration** header. Click **Products**.
2. Click on **Configure New Products** to add a new product and define the product properties
3. Click on **Product Overview** to modify and delete Products.
   For a description of the parameters refer to BA00339G/00/EN.

Users and user access rights

1. In the navigation tree, click the **System Administration** header. Click **Users**.
2. Click on **Group Access Rights** to define the rights of the different users.
3. Click on **Manage Users** and create the required users.

8.2.4 Tank Scanner NXA820 specific settings

Login to the Tank Scanner NXA820 as "Supervisor" and perform the following configurations (for details refer to BA00339G "Tankvision NXA820, NXA821, NXA822 - Description of Instrument Functions"):

Field Scan Configuration

1. In the navigation tree, click the **System Administration** header.
2. Click **Global Settings** (below the **System Administration** header).
3. In the main screen, click the **Field Scan** header.
4. Click the individual headers of the **Field Scan** menu and configure the parameters[2)].
   For a description of the parameters refer to

– BA00339G, Chapter 16.4 (Modbus)
– BA00339G, Chapter 16.5 (V1)
– BA00339G, Chapter 16.6 (WM550)

2) The parameters can only be edited if the field scan is not currently active. If necessary, go to the 'Start/Stop Field Scan' tab and stop the field scan.

Tank Configuration

1. In the navigation tree, click the **Configuration** header.
2. Click **Tanks** (below the **Configuration** header).
3. In the main screen, select the tank you are going to configure and click the **Modify** button.
4. Click the individual headers of the tanks menu on the **Tank Details** tab (**General Details**, **Capacity Details**, ...) and configure the parameters. For a description of the parameters refer to BA00339G/00/EN.

Product-tank assignment

1. In the navigation tree, click the **Tanks** header.
2. In the list below the **Tanks** header select a tank.
3. In the main screen click the **Assign Product** tab.
4. Select the product from the drop-down list.
5. Click **Submit** to save the settings.

For details about tank-product assignment refer to BA00339G/00/EN.

Additional Settings

Depending on your requirements, you can perform numerous further settings. For details refer to BA00339G.

Start Field Scan

1. In the navigation tree, click the **System Administration** header.
2. Click **Global Settings** (below the **System Administration** header).
3. In the main screen, click the **Field Scan** header.
4. Click the **Start/Stop Field Scan** tab and then click on **Start**. Field Scanning is now active.

8.2.5 Data Concentrator NXA821 specific settings

Associate Tank Scanner

Assign the Tank Scanner NXA820 to the Data Concentrator NXA821:

1. Login to the Data Concentrator NXA821 as "Supervisor".
2. In the navigation tree, click the **System Administration** header.
3. Click **Global Settings** (below the **System Administration** header).
4. In the main screen, click the header **Tank Scanner Unit And Tank Assignment**.
5. Select all Tank Scanner units you want to assign to the Data Concentrator from the **Available Units** list and move them to the **Selected Units** list using the arrow buttons. All units in the "Selected Units" list will be assigned to the Data Concentrator.
6. Click the **Submit** button to save the settings.

Additional Settings (like groups)

Depending on your requirements, you can perform numerous further settings. For details refer to BA00339G/00/EN.

For details refer to BA00339G/00/EN, "Tankvision NXA820, NXA821, NXA822 - Description of Instrument Functions"

8.2.6 Host Link NXA822 specific settings

The Host Link NXA822 provides an interface for a host system to access inventory data from the NXA820 unit.
To configure the Host Link settings, proceed as follows:

1. Login to the Host Link NXA822 as "Supervisor".
2. In the navigation tree, click the **System Administration** header.
3. Click **Global Settings** (below the **System Administration** header).
4. In the main screen, click the **Field Scan** header.
   It contains the following subheaders which are used to configure the Host Link settings and to start the Host Link:

- Host Link Configuration
- Modbus TCP Configuration (if the Modbus TCP protocol has been selected).
- Modbus Serial Configuration (if the Modbus Serial protocol has been selected).
- Entis+ Configuration (if the Entis+ serial protocol has been selected)
- Start/Stop Host Link

For details please refer to BA00339G/00/EN, "Tankvision NXA820, NXA821, NXA822 - Description of Instrument Functions"

8.2.7 Configuration of W+M systems

Description of the sealing process

Locking mechanisms in Tankvision:

Connected PCs are registered in the system by assigning the MAC address. Once the system has been locked, only these PCs are accepted and can display calibrated data.
When the W+M switch is flipped, a checksum is calculated and set.
This calculation is repeated every 8 hours. If this checksum deviates from that at the time of sealing, changes have been made to the system. It is no longer possible to modify W+M parameters, such as tank tables, units and print templates, once the W+M switch has been flipped.

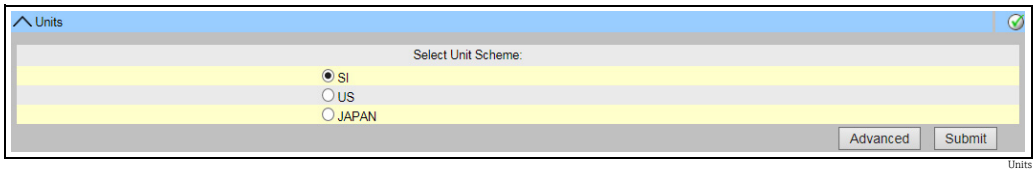
Recommended procedure:

It is recommended to start calibrating the tank gauging system from the field devices via possible protocol converters and finish the process with the Tankvision inventory management system. When calibrating the Tankvision Tank Scanner or Data Concentrator, it is recommended to start with the unit used as the Global Configuration Store since the engineering units are configured centrally here. These units would then not have to be checked separately in the boxes assigned (→ 33).

Initial calibration and system modifications

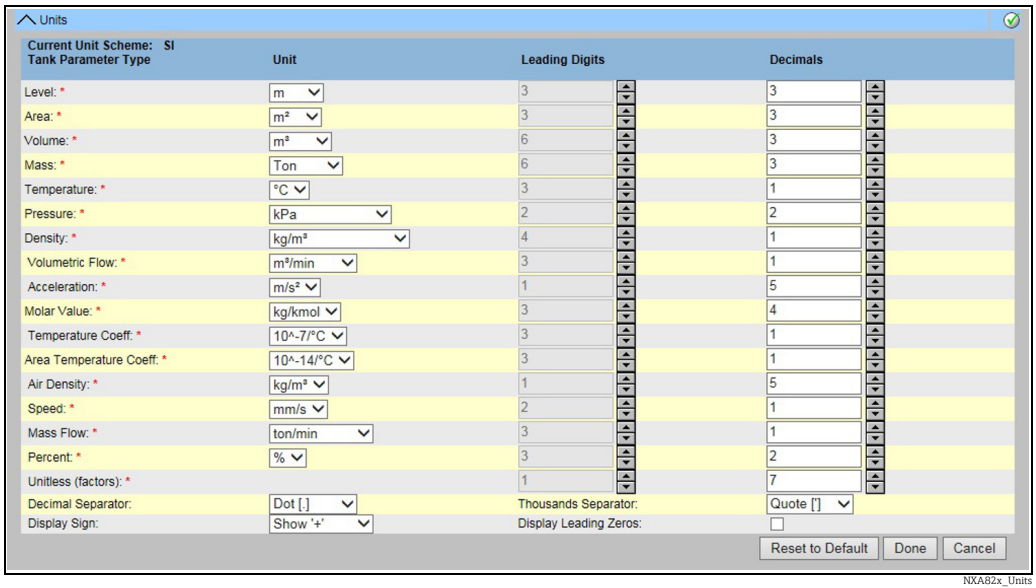
Units

The units do not have to be configured if **Use Global Configuration Store** is selected. The units can be checked under **System Administration** → **Tankscanners** → **Tank Scanner Unit** → **Customer Settings** → **Units**. This view allows the user to choose between the unit schemes.



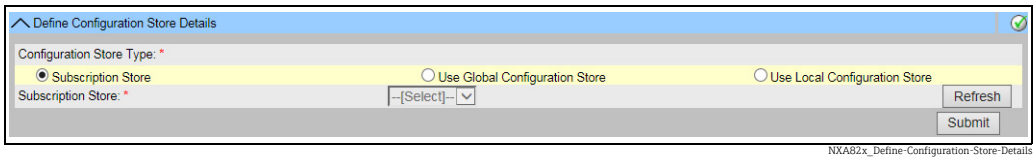
Selecting the Unit

The exact settings of the unit scheme selected can be checked under **Advanced**.



Checking the Units

- An apostrophe may not be chosen as the thousand separator for W&M applications.
- If the Tankvision device retrieves the basic settings from another Tankvision device (Global Configuration Store), the units of this Tankvision device do not have to be checked. The name of the box (Subscription Store) that provides the basic settings can be found under **System Administration** → **Global Settings** → **Customer Settings** → **Define Configuration Store Details**.

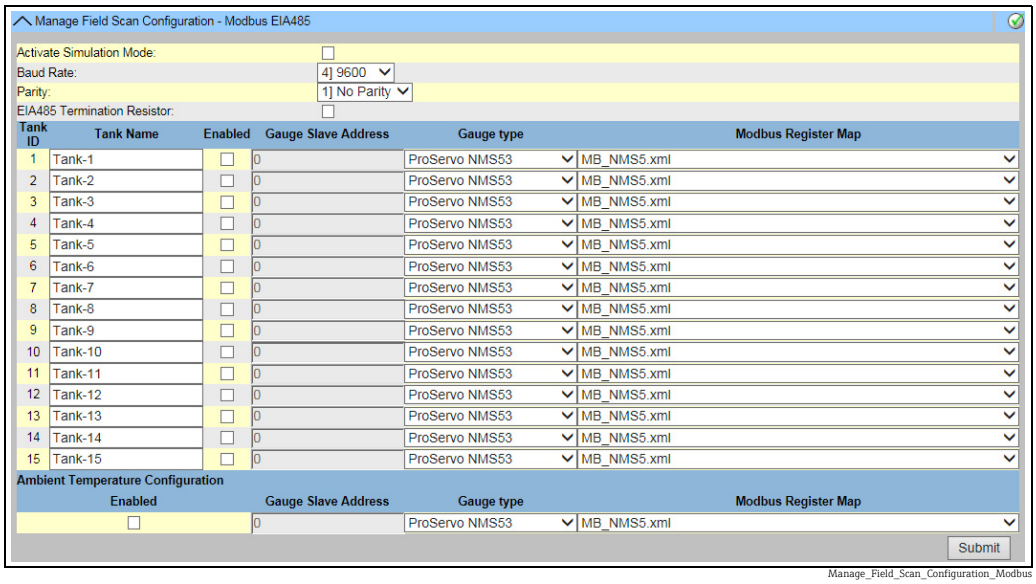


Configuration Store Details

Field device assignment

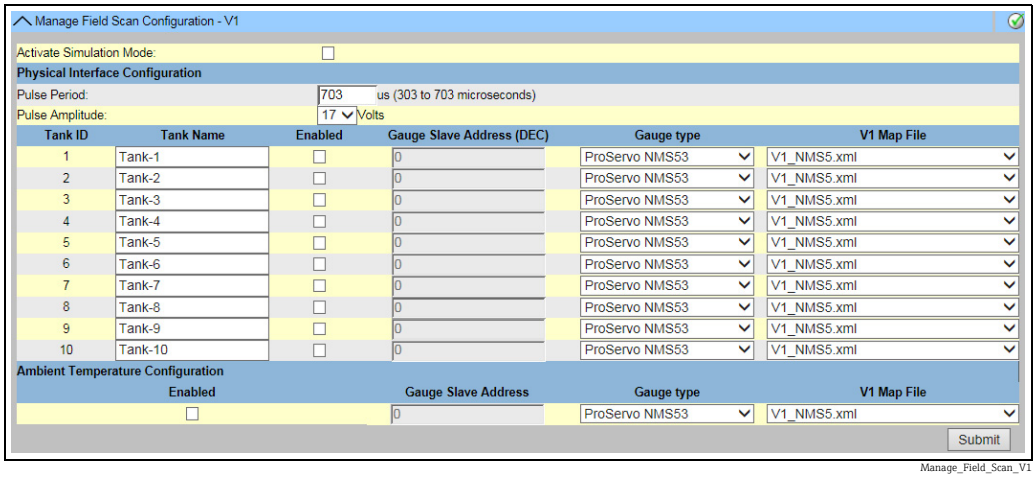
The field device assignment must be checked under **System Administration → Tank Scanner Unit → Field Scan → Manage Field Scan Configuration-Modbus EIA485**.

The following parameters have to be checked for Modbus EIA485:
- Baud rate
- Parity
- Gauge slave address: assignment to the tank ID/tank name
- Gauge type: assignment to the tank ID/tank name
- Modbus register map: assignment to the field device type (gauge type)



Field Scan Configuration - Modbus

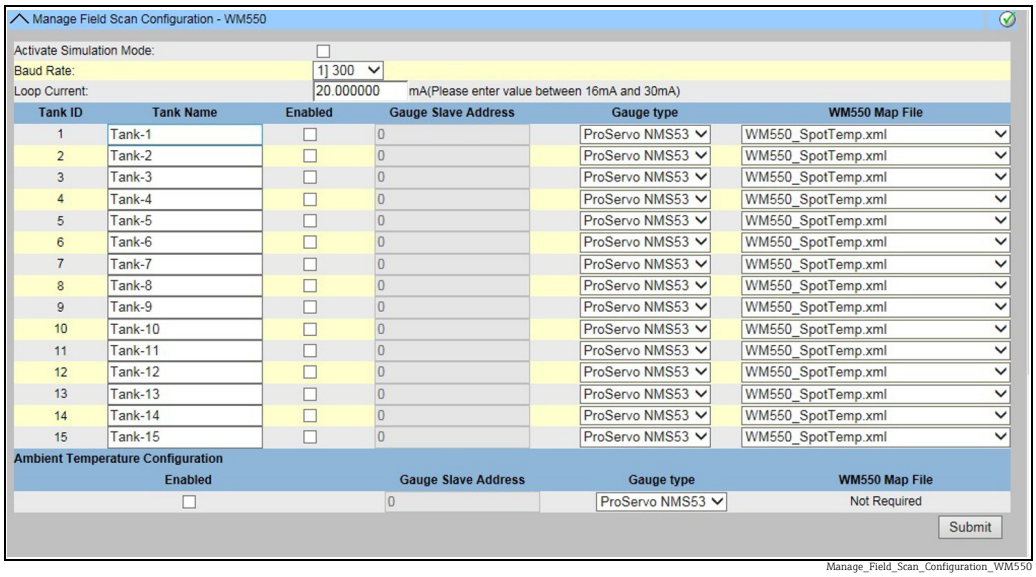
The following parameters have to be checked for the V1 protocol:
- Gauge slave address (DEC) assignment to the tank ID/tank name
- Gauge type assignment to the tank ID/tank name
- V1 map file assignment to the gauge type



Field Scan Configuration - V1 Protocol

The following parameters have to be checked for the WM550 protocol:
- Baud rate
- Loop current
- Gauge slave address assignment to the tank ID / tank name
- Gauge type assignment to the tank ID / tank name

- WM550 map file assignment to the field device type (gauge type)



Field Scan Configuration - WM550 Protocol

To activate the simulation mode

1. Download the "simConfig.xml" file under **Sytem Administration** → **Uploads** → **Generic Uploads**.
2. Modify the "simConfig.xml" file according to the desired simulation and rename it.
   Specify Tanks, Parameters, Units, Start, End and Step values.
   Specify the mode of simulation for the parameters:
   0: Parameter value equals Start value;
   1: Parameter value runs from Start value to End value in Step value per interval;
   2: Triangle wave simulation;
   3: Sine wave simulation
3. Download the modified and renamed file as a gauge map file (under **Sytem Administration** → **Global Settings** →**Field Scan** → **Add Gauge Map File**).
4. Enable the checkbox **Activate Simulation Mode** on the **Field Scan Configuration** page.
5. Activate the Field Scan.
   SIMULATION MODE is displayed in in red on the Main Header.

Tank table

The tank capacity details have to be loaded to check the tank table (**Configuration** → **Tanks** → Select the tank under **Select** - select and confirm with **Modify** (see Fig. "Tank Selection") → Select **Capacity Details** in the **Tank Details** tab (see Fig. "Tank Capacity Table Summary")).

Select	Tank Name	Location	Tank Shape	Product
◉	Tank-1	Terminal-1	Tank with Fixed Roof; without Stilling	Petrol
○	Tank-2	Terminal-1	Tank with Fixed Roof; without Stilling	Petrol
○	Tank-3	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-4	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-5	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-6	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-7	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-8	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-9	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-10	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-11	Terminal-1	Tank with Fixed Roof; without Stilling	Ethanol
○	Tank-12	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-13	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-14	Terminal-1	Tank with Fixed Roof; without Stilling	
○	Tank-15	Terminal-1	Tank with Fixed Roof; without Stilling	

Modify

Tank_configure

Tank Selection

Capacity Details

Import Tank Capacity Table:

Select TCT file to Download: Browse...

Download TCT XML File

Tank Capacity Table Summary:

Sump & Pipeline Volume:	+0.000 × m³	TCT Level Type:	Innage
Maximum Tank Capacity:	+0.000 m³	Minimum pump-able volume:	+0.000 m³
Volume Calculation Method:	Raw	Number of Straps:	2
Sub Table Present:	No	Water Table Present:	No
Product Density for FRA:	+0.0 kg/m³	Volumetric Floating Roof Correction:	+0.000 m³
Heel Volume:	+0.000m³	Get TCT file	
Static Pressure Table Present:	No	Show TCT file	

Submit

NXA82x_Capacity-Details

Tank Capacity Table Summary

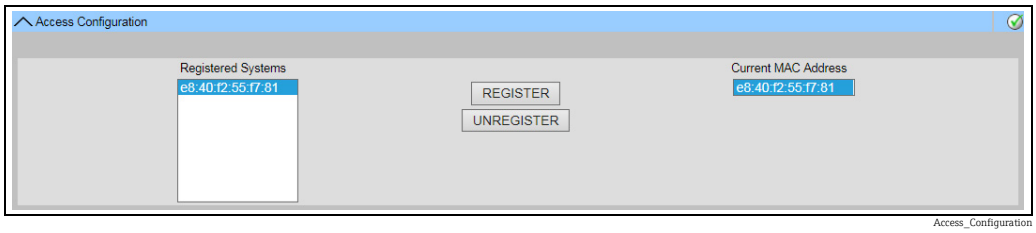
Steps for checking the tank table:

- Check that the information in the Tank Capacity Table Summary is correct for the selected tank.
- Check whether the TCT is suitable for the relevant tank.
  Clicking **Show TCT file** opens a browser window that shows the TCT in a tabular form (with the units in the configured format). Print by clicking **Print TCT**.
  To store the TCT file on a PC, click the **Get TCT file** link. The system will perform an export of the TCT in XML form as a compressed file (.gz). All units in the file are SI units (independent from the configured format). The data in the TCT XML file are displayed in the "Table in XML Format" graphic.

```
- <Tankvision CRC="12345">
  - <TCT VSP_TABLE="Y" WATER_TCT="Y" Sub_TCT="N" TCT_CalDate="3/28/2011" TCT_Date="3/28/2011">
      <Level_Type>Innage</Level_Type>
    - <Units>
        <Level>mm</Level>
        <Volume>m3</Volume>
        <P_Density_FRA_Unit>kg/m3</P_Density_FRA_Unit>
      </Units>
    - <FRA_TCT>
        <P_Density_FRA>1500</P_Density_FRA>
        <V_FRC>1</V_FRC>
      </FRA_TCT>
      <Heel_Volume>50</Heel_Volume>
```

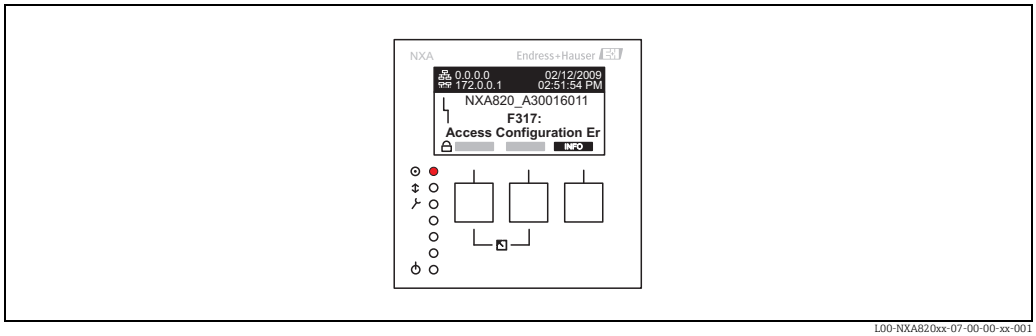
Table in XML Format

PC assignment



Tankvision Tank Scanner - PC Assignment

Every PC to be connected to the sealed system has to be registered. The PCs are registered under **System Administration → Global Settings → W&M Seal → Access Configuration**. The registered devices are listed with their MAC address in the column on the left. The MAC address of the PC currently used is displayed in the column on the right.
Each PC has to be registered individually on every Tankvision box. If no PC is registered in the system, an error message is shown on the display of the Tankvision box once the W+M switch has been flipped.

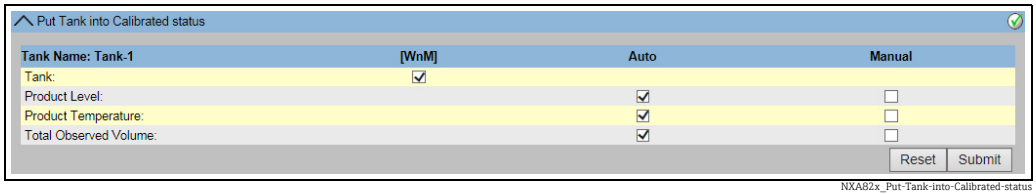


Error Message - No PC Registered in the System

During calibration acceptance, the list must be checked to ensure it only contains the MAC addresses of the Tankvision boxes and the PCs that should access the system. The PCs can be checked, for example, by loading the page above from every PC that should have access to the system and then comparing the MAC addresses (Registered Systems against Current MAC Address). The MAC addresses of the Tankvision box are provided on the nameplate.

Sealing tank data

The tank data are sealed individually for every tank. The W+M values are selected under **Configuration** → **Tanks** → Select the Tank (Select + Modify) → **Put Tank into Calibrated Status** in the **Tank Details** tab.

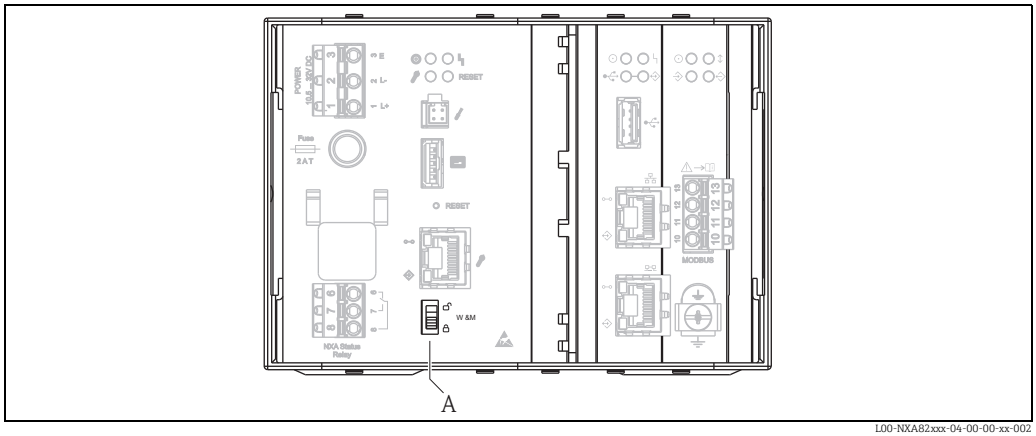


Sealing Tank Data

If the W+M switch is flipped, tanks can be removed from the calibrated status. This changes the calibration checksum. Removing a tank from the sealed system is equivalent to a system modification and must be accepted by an official from the Standards Authority.

Locking

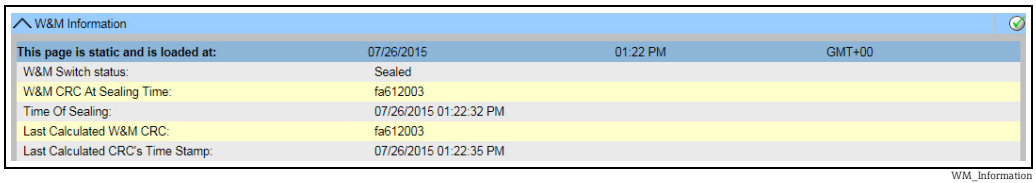
The unit is locked by flipping the W+M switch on the Tankvision Tank Scanner NXA820.



A Tankvision W+M Switch

Flipping the switch means that the settings checked under **Sealing Tank Data** (→ 39) are fixed and can no longer be modified, and that the values specified under **Sealing Tank Data** are displayed as calibrated values by the computers specified under **PC Assignment**. A master checksum is calculated approx. 2 minutes after the W+M switch is flipped. This master checksum can be called up under **System Administration** → **Tank Scanner Unit** → **W&M Seal**. After approximately 2 more minutes, the system performs the first check calculation. The subsequent calculations are then performed every 8 hours.

The following information is displayed:
- Date and time the page was loaded
- W&M switch status
- W&M CRC at sealing time
- Last calculated W&M CRC
- Last calculated CRC's time stamp



Tankvision W&M Seal

A modified checksum indicates that changes have been made to the system. The checksum must be documented (e.g. by printing out the screenshot, see Figure "Tankvision W&M Seal") and recorded in the acceptance report (e.g. by attaching the printout).

The checksum can be recalculated by switching the Field Scan off and then on again.

Checking the W&M display

The following steps must be taken to check the weights and measures display:
- The settings listed under **Sealing Tank Data** (→ 39) can no longer be modified.
- A **WM** in front of the values for the **Product Level**, **Product Temperature** and **Total Observed Volume** indicates that the values are calibrated.
- The level and temperature information has to match that of the field devices.

Checking the printouts

All printouts from connected printers that cannot be officially verified must bear the annotation **Measured values not calibrated** and no measured values may appear as calibrated.

Initial calibration and changes to the Tankvision Data Concentrator NXA821

Tank Scanner assignment

The assignment between the Tank Scanner units and the Data Concentrator must be checked under **System Administration** → **Dataconcentrators** → **Data Concentrator Unit** → **Tank Scanner Unit and Tank Assignment**.

Tankvision Data Concentrator - Tank Scanner Assignment

PC assignment

The locking procedure is the same as for the tank scanner (→ 39).

Stamp points for Tankvision Tank Scanner NXA820 and Data Concentrator NXA821

The stamp points are listed under Point 6 in type approval 4.454/08.10.

8.3 Exit the Tankvision system

The user can exit the Tankvision system from any screen.

The session ends automatically after 5 minutes of inactivity (session timeout).

To exit the Tankvision system

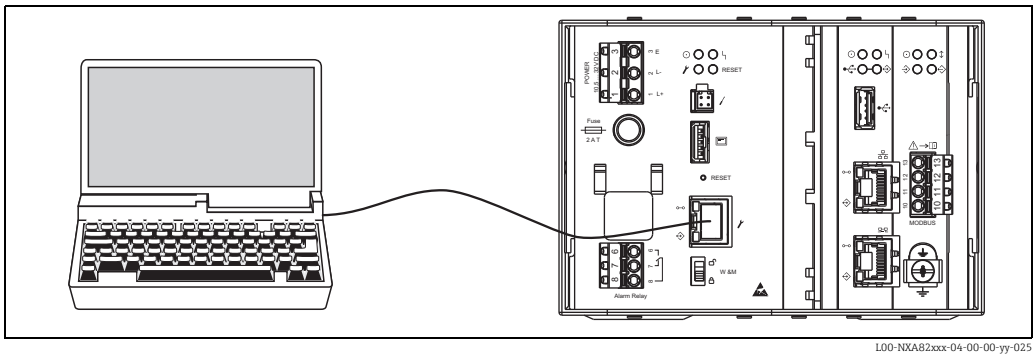
1. Click the **Logout** link on the Main View. Tankvision displays the login screen.

9 Tankvision NXA820 (Interface only) Configuration

9.1 Logging into the Tankvision NXA820 (Interface only) system

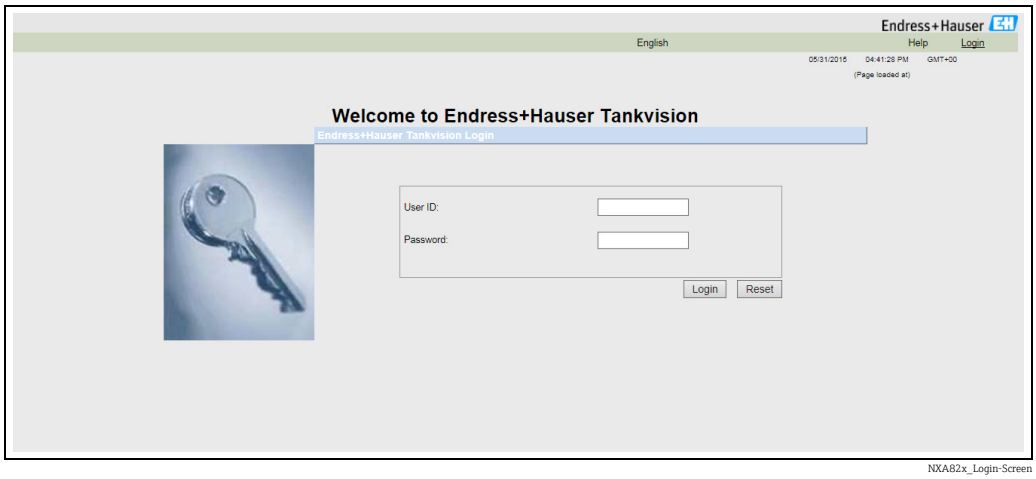
To integrate a Tankvision Tank Scanner NXA820 (Interface only) unit into the network, proceed as follows:

1. Connect a laptop to the service port of the Tankvision unit. Make sure that the laptop is configured to get a dynamic IP addresses from a DHCP server.



L00-NXA82xxx-04-00-00-yy-025

2. Open the internet browser and enter the following URL: http://192.168.1.1
   The Tankvision login screen appears. The user ID (= User Login Name) and password are defined by the system administrator when adding a user to the system (see BA00339G/00/EN).
3. Login as Supervisor.



NXA82x_Login-Screen

Field	Description
User ID	Enter the appropriate user login name. The user login name is alphanumeric and case sensitive.
Password	Enter the appropriate password. The user password is alphanumeric and case sensitive. It consists of 3 to 8 characters.

- Enter **Super** into **User ID**.

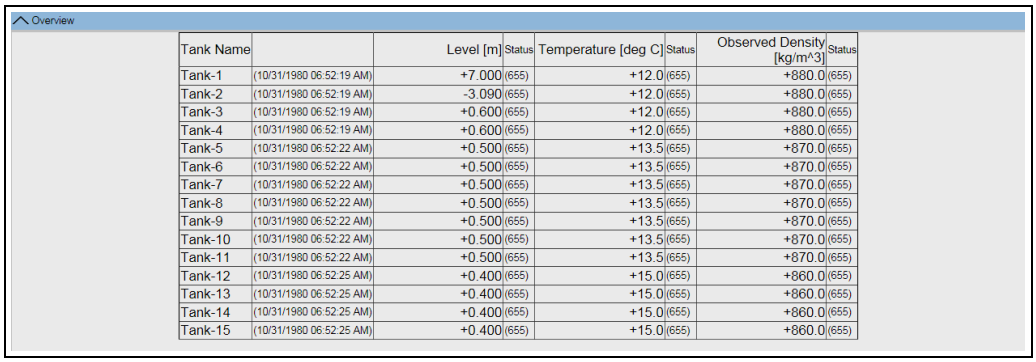
- Enter **Super** into **Password**.
- Click the **Login** button.

Tankvision displays the Home Page.

9.2 Overview - Tankvision NXA820 (Interface only) system

In the Overview screen, the primary values and the status information of the tanks connected to the Tank Scanner is displayed.

1. In the Main View, click **Overview**. It expands as follows:

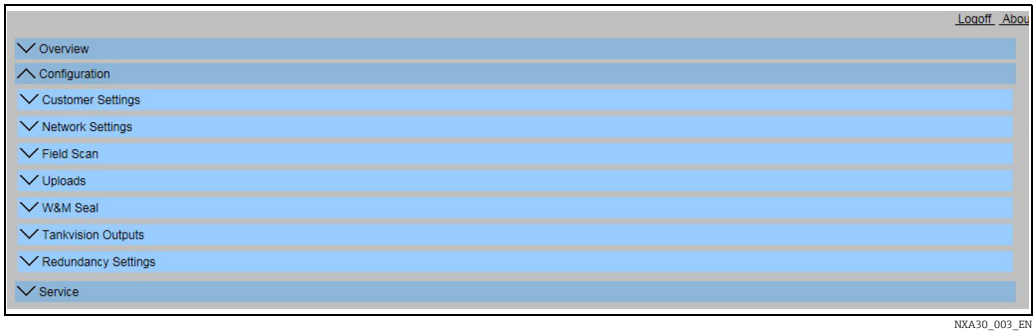


NXA30_034_EN

9.3 Configuration - Tankvision NXA820 (Interface only) system

Login to the Tank Scanner NXA820 (Interface only) with "Supervisor" rights to perform settings. To view the settings, "Operator" rights are sufficient.

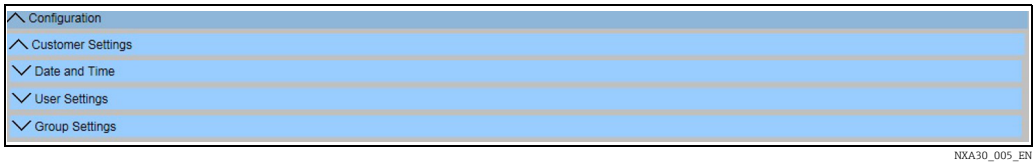
1. Click on **Configuration**. The following screen is displayed:



NXA30_003_EN

9.3.1 Customer settings

1. Click on **Customer Settings**. The following screen is displayed:



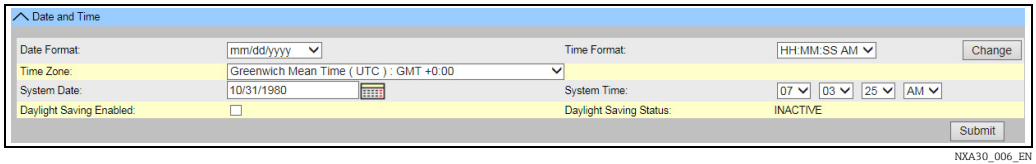
NXA30_005_EN

Date and Time

The system allows the user to configure date, time, time zone and the date-time formats.

To Configure Date and Time Settings

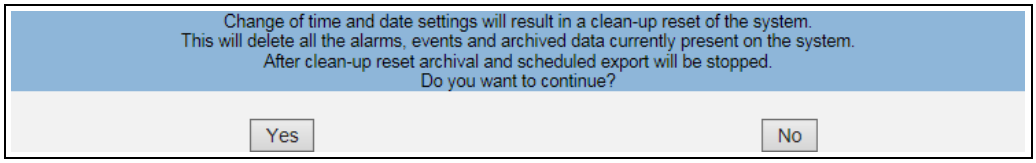
1. Click on **Date and Time**. Tankvision displays the screen as follows:



NXA30_006_EN

Field	Description
Date Format	Select the date format from the drop down list. This field allows you to set the required format for the date. This date format will be used to display the date.
Time Format	Select the time format from the drop down list. This field allows you to set the required format for the time. This time format will be used to display the time on all the Tankvision screens. Click **Change** to save the selected time format settings without causing a clean-up reset of the system.
Time Zone	Select the appropriate time zone from the drop-down list.
System Date	Enter the current date in the relevant date format. Alternatively, click on the calendar icon to choose the date.
System Time	Enter the current time in the relevant time format.
Daylight Saving Enabled	Select this check box to enable the user to enter the appropriate daylight saving details. Clear the check box to prevent the user from entering the daylight saving details.
Daylight Saving Status	This field displays the daylight saving status. The system displays the **ACTIVE** status, if the **Daylight Saving Enabled** check box is selected.

2. Enter the appropriate information in the relevant fields.
3. Click the **Submit** button. A dialog is displayed that the change of time and date settings will result in a clean-up reset of the system.



NXA30_007_EN

4. Click the **Yes** button to proceed, or click the **No** button to cancel.
5. After saving the settings, the Tankvision unit restarts automatically (wait approx. 3 min).

User and Group Settings

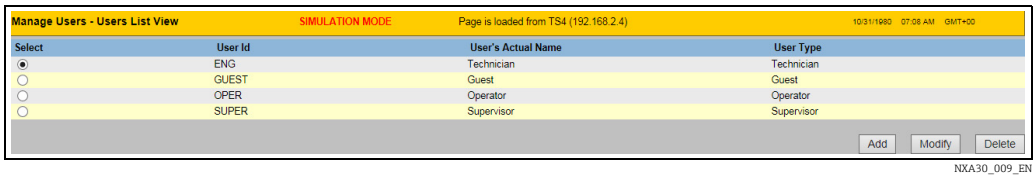
Login to the Tank Scanner NXA820 as "Supervisor" to perform the user and group settings.

To view the "Manage Users" screen

1. Click on **User Settings**. Tankvision displays the screen as follows:

NXA30_008_EN

2. Click the **User Settings** link. The **Manage Users – Users List View** screen is displayed.

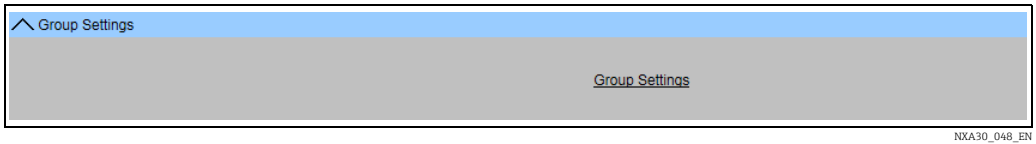


NXA30_009_EN

3. For details on how to perform the user and group settings, refer to BA00339G/00/EN.

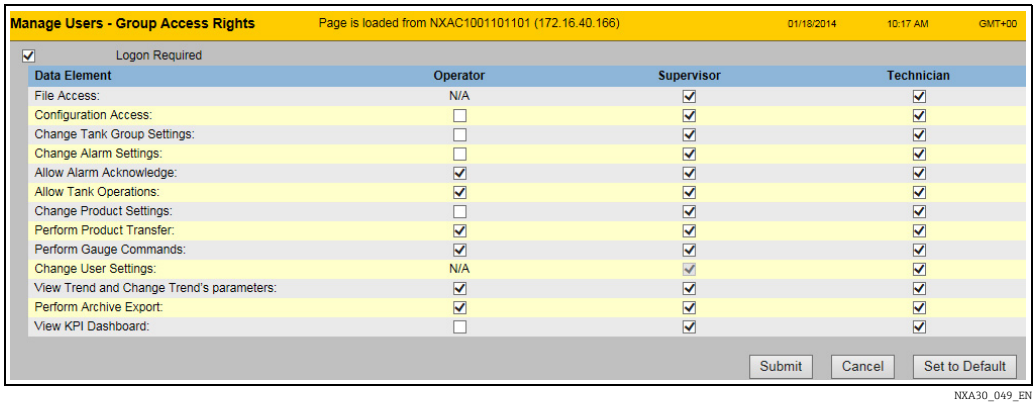
To view the "Group Rights" screen

1. Click on **Group Settings**. Tankvision displays the screen as follows:



NXA30_048_EN

2. Click the **Group Settings** link. The **Manage Users – Group Access Rights** screen is displayed.



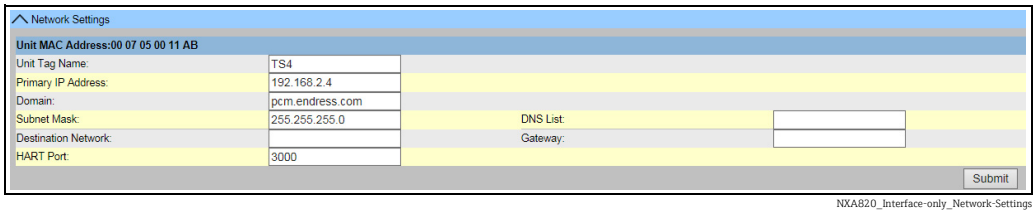
NXA30_049_EN

3. For details on how to perform the user and group settings, refer to BA00339G/00/EN.

9.3.2 Network settings

You are logged in as "Supervisor".

1. Click on **Network Settings**. Tankvision displays the screen as follows:

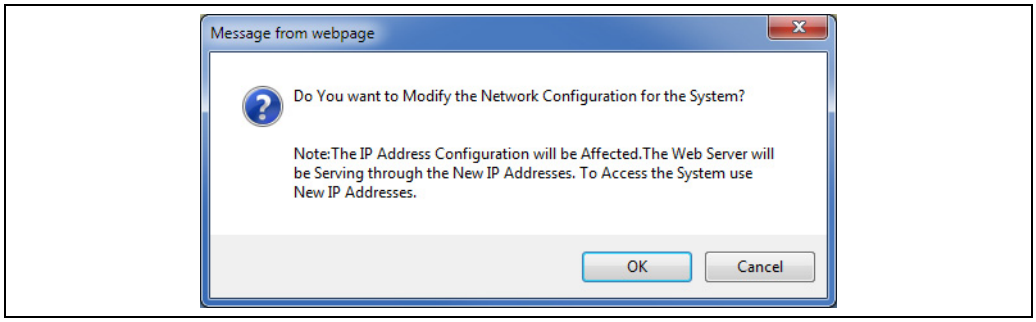


NXA820_Interface-only_Network-Settings

2. Enter the appropriate information in the relevant fields.

– The required values of the parameters depend on your local network configuration. For more information please contact your local network administrator.
– Detailed information on the individual fields can be found in BA00339G/00/EN, "Tankvision NXA820, NXA821, NXA822 - Description of Instrument Functions".

3. Click the **Submit** button to proceed. The system displays a confirmation box as follows:



NXA82x_Network-Settings_Submit-Popup

4. Click the **OK** button to proceed, or click the **Cancel** button to exit.
5. After saving the settings, the Tankvision unit restarts automatically (wait approx. 3 min).

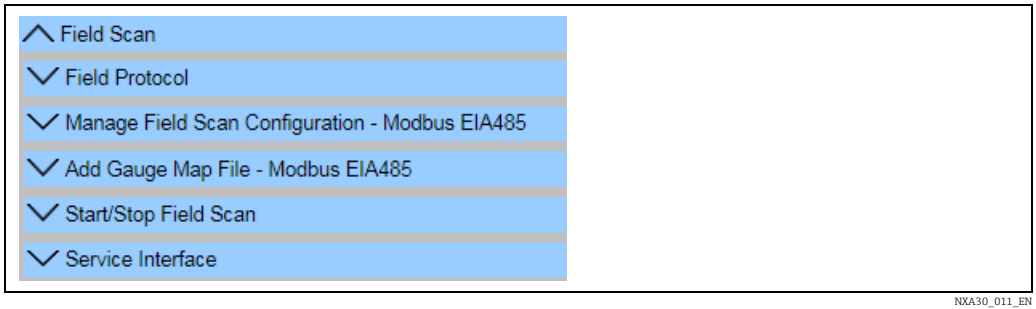
If you don't know the correct IP address, please contact your local network administrator. If you want to use an isolated LAN network, use the IP address 192.168.2.xxx and set the subnet mask to 255.255.255.0

9.3.3 Field Scan

The most important function of NXA820 is acquiring measured data from gauges installed in tanks. NXA820 receives measured data by means of field scanning. The measured data comprise tank parameters such as product level, product temperature, pressure, observed density, etc.

To Configure the Field Scan Settings

1. Click on **Field Scan**. Tankvision displays the screen as follows:



NXA30_011_EN

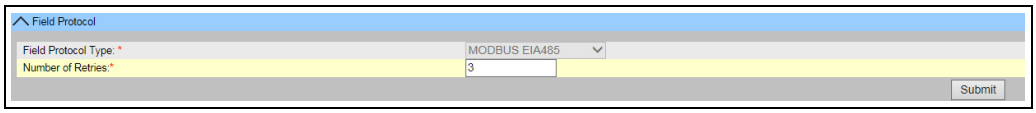
Manage Field Scan Configuration is device specific.

Field Protocol

In order to perform field scanning, the Field Protocol needs to be configured.

To configure the field protocol

1. Click on **Field Protocol**. Tankvision displays the screen as follows:



NXA30_012_EN

Field	Description
Field Protocol Type	Displays the field protocol.
Number of Retries	Type in the number of retries for the system to initiate Field Scanning. This field indicates the number of retries, before a field scan failure for a gauge is determined by the system. The data type used in this field is numeric. By default, the Tankvision system selects **3** as the Number of Retries.

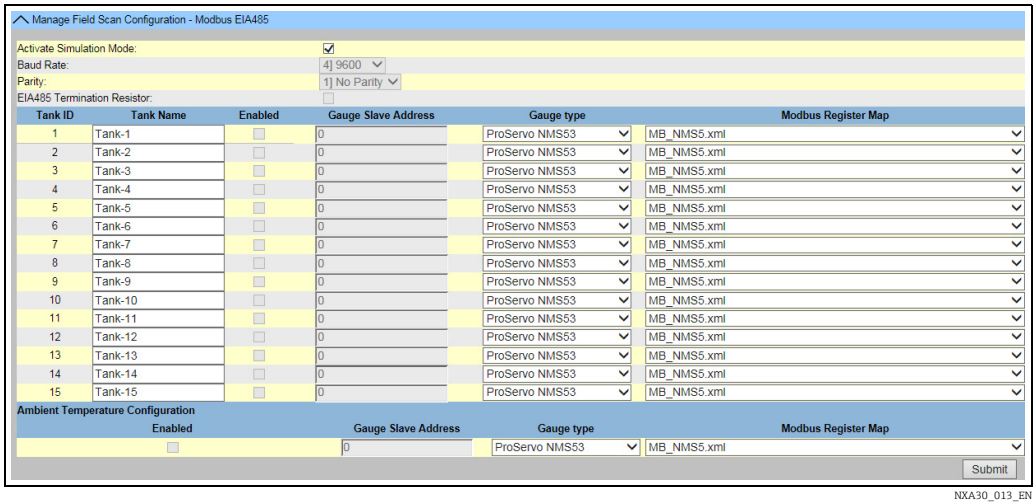
2. Enter the appropriate information in the relevant fields.
3. Click the **Submit** button.
4. After saving the settings, Tankvision displays a confirmation message.

Manage Field Scan Configuration – Modbus EIA 485

The **Manage Field Scan Configuration - Modbus EIA 485** screen displays serial configuration details and gauge configuration details.
In this screen it is possible to select the address and the Modbus map to be used for each gauge.
Before changing the field scan configuration it is necessary to stop the field scan (→ 51).

To Manage the Field Scan Configuration using Modbus EIA485

1. Click on **Manage Field Scan Configuration - Modbus EIA485**. Tankvision displays the screen as follows:



NXA30_013_EN

Field	Description
Baud Rate	Select the baud rate for Modbus communication from the drop down list. Default 9600
Parity	Select the parity of the Modbus signal from the drop-down list. Default no parity.
EIA485 Termination Resistor	Enables or disables the termination resistor on the fieldbus for RS485. Only needed for long fieldbus cables to reduce signal reflections.
Tank Configuration	

Field	Description
Tank ID	Each tank in the Tankvision system has a unique numerical value ranging from 1 to 15. This ID represents the network address used by NXA820 for scanning the Tank Data. Cannot be changed.
Tank Name	Actual tank name, which can be modified here.
Enabled	Select the check box to enable the field scanning of the respective tank.
Gauge Slave Address (DEC)	This field is enabled, if the "Enabled" check box is selected. Enter the gauge slave address, which is configured between the NXA820 system and the gauge for communication. The gauge slave address can be any number from 1 to 247.
Gauge type	Select the appropriate Gauge Type from the drop-down list. This field is mandatory.
Modbus Register Map	Select the appropriate register map file for tank and gauge (only Registermaps downloaded to Tankvision can be used, → 51).
Ambient Temperature Configuration	
Enabled	Select the check box to configure the ambient temperature.
Gauge Slave Address	Enter the slave address of the gauge providing the ambient temperature.
Gauge type	Select the appropriate Gauge Type from the drop-down list. This field is mandatory.
Modbus Register Map	Select the appropriate Modbus Map File from the drop-down list. If the appropriate Map File is not available it must be added by the **Add Gauge Map File** function (→ 51).

2. Enter the appropriate information in the relevant fields.
3. Click the **Submit** button.
4. After saving the settings, Tankvision displays a confirmation message.

To activate the simulation mode

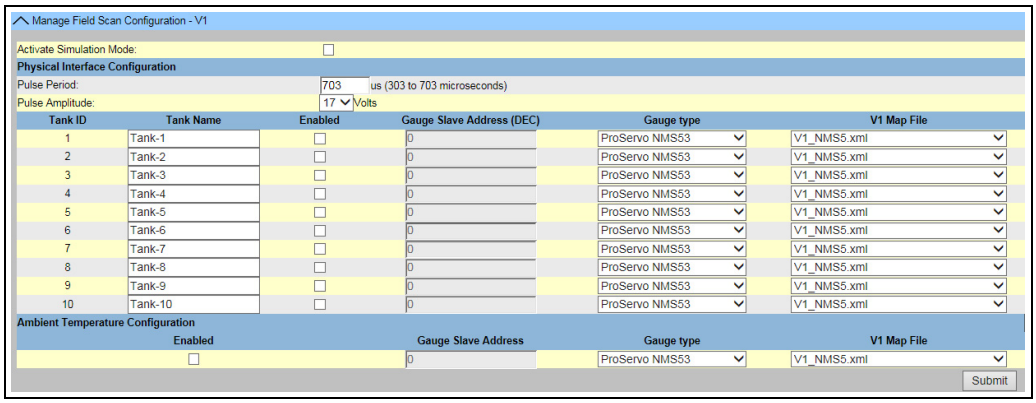
1. Download the "simConfig.xml" file under **Configuration** → **Uploads** → **Generic Uploads**.
2. Modify the "simConfig.xml" file according to the desired simulation and rename it.
   Specify Tanks, Parameters, Units, Start, End and Step values.
   Specify the mode of simulation for the parameters:
   0: Parameter value equals Start value;
   1: Parameter value runs from Start value to End value in Step value per interval;
   2: Triangle wave simulation;
   3: Sine wave simulation
3. Download the modified and renamed file as a gauge map file (under **Configuration** → **Field Scan** → **Add Gauge Map File**).
4. Enable the checkbox **Activate Simulation Mode** on the **Field Scan Configuration** page.
5. Activate the Field Scan.
   SIMULATION MODE is displayed in in red on the Main Header.

Manage Field Scan Configuration - V1

The **Manage Field Scan Configuration - V1** screen displays serial configuration details and gauge configuration details.
In this screen it is possible to select the address and the V1 map to be used for each gauge.
Before changing the field scan configuration it is necessary to stop the field scan (→ 51).

To Manage the Field Scan Configuration using Sakura V1

1. Click on **Manage Field Scan Configuration - V1**. Tankvision displays the screen as follows:



NXA30_019_EN

Field	Description
Physical Interface Configuration	
Pulse Period	Defines the pulse period (comparable to the baud rate).
Pulse Amplitude	Allows to amplify the signal in case of long cables or poor signal transmission.
Tank Configuration	
Tank ID	Each tank in the Tankvision system has a unique numerical value ranging from 1 to 10. This ID represents the network address used by NXA820 for scanning the Tank Data.
Tank Name	Enter the user defined tank name into this field.
Enabled	Select the check box to enable the field scanning of the respective tank.
Gauge Slave Address (DEC)	This field is enabled, if the **Enabled** check box is selected. Enter the gauge slave address, which is configured between the NXA820 system and the gauge for communication. The gauge slave address can be any number from 1 to 99.
Gauge type	Select the appropriate Gauge Type from the drop-down list. This field is mandatory.
V1 Map File	Select the appropriate V1 Map File from the drop-down list. If the appropriate Map File is not available it must be added by the **Add Gauge Map File** function (→ 51).
Ambient Temperature Configuration	
Enabled	Select the check box to configure the ambient temperature.
Gauge Slave Address	Enter the slave address of the gauge providing the ambient temperature.
Gauge type	Select the appropriate Gauge Type from the drop-down list. This field is mandatory.
V1 Map File	Select the appropriate V1 Map File from the drop-down list. If the appropriate Map File is not available it must be added by the **Add Gauge Map File** function (→ 51).

2. Enter the appropriate option in the relevant fields.
3. Click the **Submit** button.
4. After saving the settings, Tankvision displays a confirmation message.

To activate the simulation mode

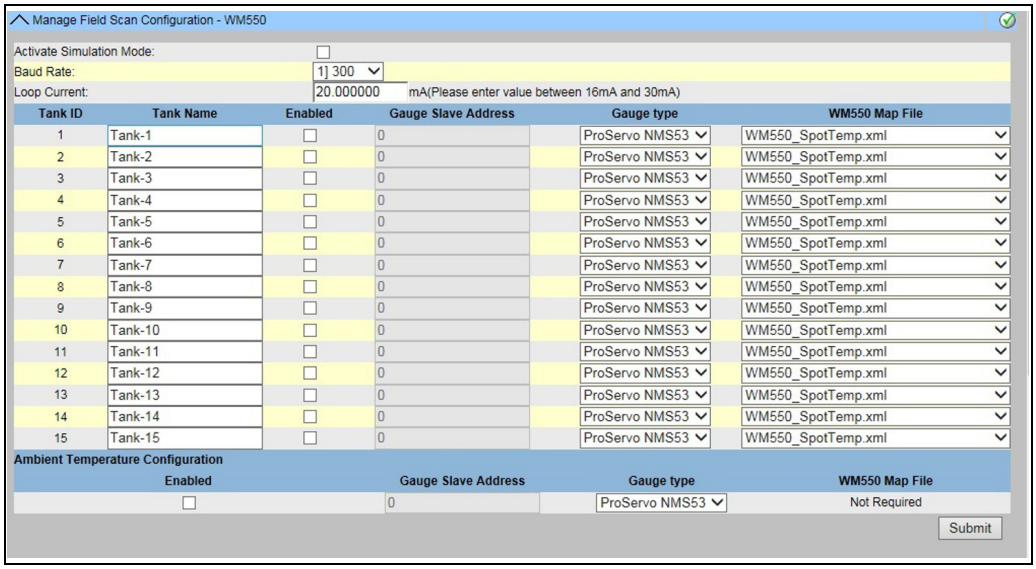
For a detailed description, → 48.

Manage Field Scan Configuration - WM550

The **Manage Field Scan Configuration - WM550** screen displays serial configuration details and gauge configuration details.
In this screen it is possible to select the address and the Whessoe WM550 map to be used for each gauge.
Before changing the field scan configuration it is necessary to stop the field scan (→ 51).

To Manage the Field Scan Configuration using Whessoe WM550

1. Click on **Manage Field Scan Configuration - WM550**. Tankvision displays the screen as follows:



Manage_Field_Scan_Configuration_WM550

Field	Description
Physical Interface Configuration	
Baud Rate	Defines the WM550 protocol baud rate. Possible values are 300, 600, 1200, 1800, 2400, 4800.
Loop Current	This field defines the current in the Whessoe WM550 loop to be set by the internal electronic. This current will be hold by the Master regardless the number of slaves that are connected. Possible values ranges between 16mA and 30mA.
Tank Configuration	
Tank ID	Each tank in the Tankvision system has a unique numerical value ranging from 1 to 15. This ID represents the network address used by NXA820 for scanning the Tank Data.
Tank Name	Enter the user defined tank name into this field.
Enabled	Select the check box to enable the field scanning of the respective tank.
Gauge Slave Address (DEC)	This field is enabled, if the **Enabled** check box is selected. Enter the gauge slave address, which is configured between the NXA820 system and the gauge for communication. The gauge slave address can be any number from 0 to 63 for the Whessoe WM550.
Gauge Type	Select the appropriate Gauge Type from the drop-down list. This field is mandatory.
WM550 Map File	Select the appropriate WM550 Map File from the drop-down list. If the appropriate map File is not available it must be added by the **Add Gauge Map File** function.

2. Enter the appropriate information in the relevant fields.
3. Click the **Submit** button.
4. After saving the settings, Tankvision displays a confirmation message.

To activate the simulation mode

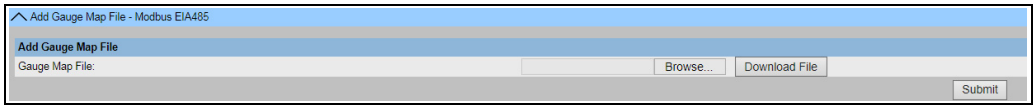
For a detailed description, → 48.

Add Gauge Map File

For each Modbus field device you need a special map to recognize the device in Tankvision. By default basic maps for Tank Side Monitor (NRF), Proservo NMS and Micropilot NMR are present on the Tankvision Tank Scanner unit. Ask your local Endress+Hauser service to provide the correct map file.

To add a Gauge Map File

1. Click on **Add Gauge Map File - Modbus EIA485/Add Gauge Map File - V1/Add Gauge Map File - WM550**. Tankvision displays the screen as follows:



NXA30_014_EN

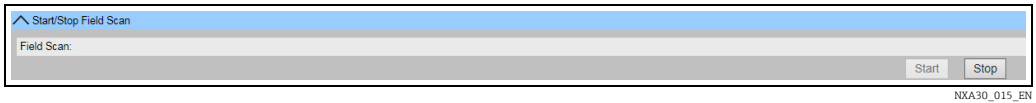
2. Click the **Browse** button and navigate to the required gauge file. Double-click the file name to enter it into the **Gauge Map File** field.
3. Click the **Download File** button to download the map file to the Tankvision unit.
4. Click the **Submit** button to activate the gauge map file.

Start/Stop Field Scan

This option allows the user to start the field scan after configuring the field scan. Similarly, the field scan can be stopped at any point of time by using this option.

To start or stop field scanning

1. Click on **Start/Stop Field Scan**. Tankvision displays the screen as follows:



NXA30_015_EN

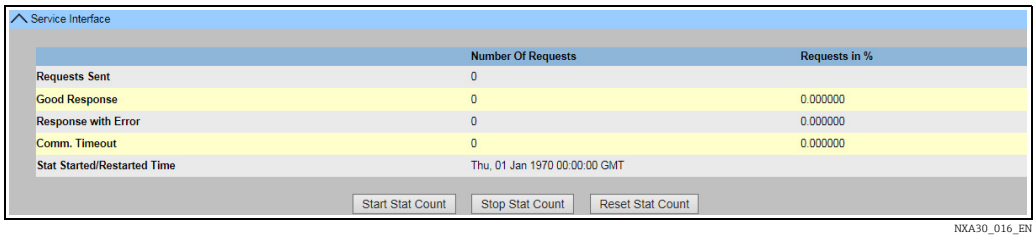
2. Click the **Start** button to start the field scanning. The **Start** button is enabled, if the field scan is not started. Once the field scan is started, the **Start** button is disabled, and the **Stop** button is enabled. To stop the field scanning, click the **Stop** button.

Service Interface

The requests from the Tank Scanner NXA820 and the ensuing responses from the field devices are evaluated in this screen. This screen is only for service purposes.

To display the service interface

1. Click on **Service Interface**. Tankvision displays the screen as follows:



NXA30_016_EN

Field	Description
Requests Sent	The number of total requests sent by the Tank Scanner NXA820.
Good Response	The number of requests / percentage of total requests that got a good response from the field device.
Response with Error	The number of requests / percentage of total requests that got a response with error from the field device.
Comm. Timeout	The number of requests / percentage of total requests that got no response from the field device.
Stat Started/ Restarted Time	Time at which the evaluation was started; i.e. the time at which the **Start Stat Count** or **Reset Stat Count** button was pressed. Press the **Stop Stat Count** button to stop the evaluation.

Alternatively, install the **Service Interface** application (refer to BA00339G).
Open the **Service Interface** application after successful installation and click the **Start Stat Count** button.
The application offers more detailed service information.

A separat operating manual for the Service Interface application is available and will be installed on the PC during the application installation process.
Click the Windows **Start** button and navigate to the **Tankvision ServiceIface** folder, where you will find the manual.

9.3.4 Uploads

Via the **Uploads** screen, additional apps can be installed and analysis logfiles can be copied to the PC.

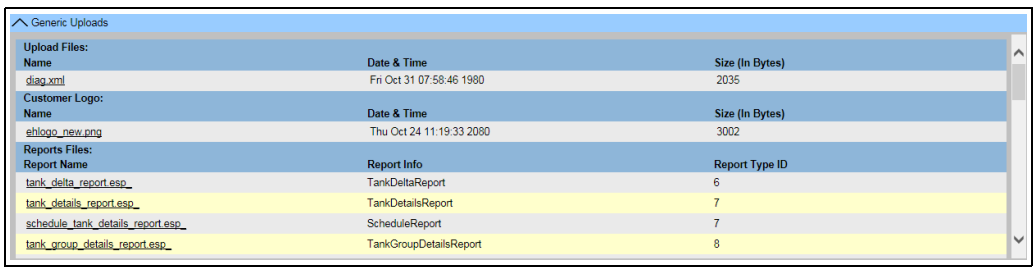
1. Click on **Uploads**. The following screen is displayed:

NXA820_Interface-only_Uploads

Generic Uploads

Contains generic data to be uploaded from the Tankvision unit, e.g. diagnostic files.

1. Click on **Generic Uploads**. Tankvision displays the screen as follows:



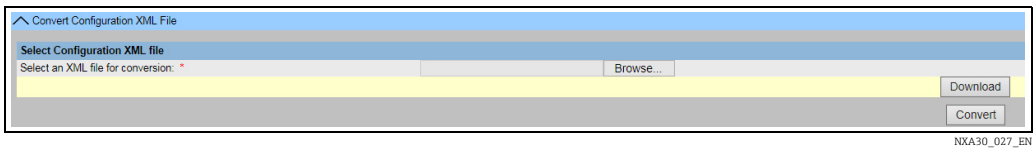
NXA820_Interface-only_Uploads_Generic-Uploads

Convert Configuration XML File

Converts XML files used in older versions of Tankvision to the latest structure.

To convert a Configuration XML file

1. Click on **Convert Configuration XML File**. Tankvision displays the screen as follows:



NXA30_027_EN

2. Click the **Browse** button and navigate to the required Configuration XML file. Double-click the file name to enter it into the **Select an XML file for conversion** field.
3. Click the **Download** button to download the XML file to the Tankvision unit.
4. Click the **Convert** button to convert the XML file.

Post Mortem Dumps

Post Mortem Dumps are log files generate when irregular behavior occurs.
Post Mortem Dumps are used for advanced service operations only and should not be used for normal operation.

1. Click on **Post Mortem Dumps**. Tankvision displays the screen as follows:

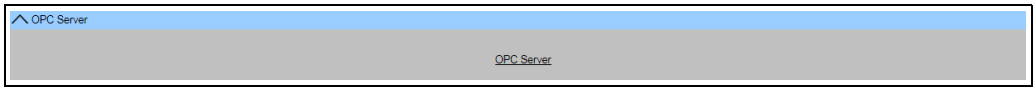
NXA30_028_EN

OPC Server

An OPC Server is an application running on a PC serving data to an according OPC Client.

To install the OPC Server application

1. Click on **OPC Server**. Tankvision displays the screen as follows:



NXA30_031_EN

2. Click the **OPC Server** link and execute the file. Follow the directions on the screen.

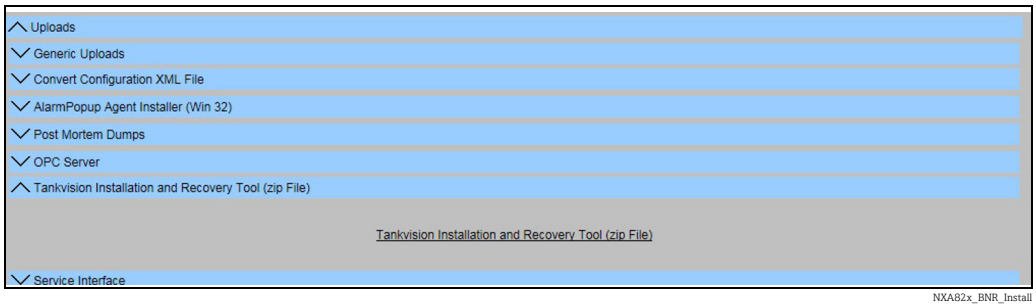
Tankvision Installation and Recovery Tool

The Tankvision Installation and Recovery Tool is an application running on a PC allowing the complete application and configuration of Tankvision unit to be saved as safety copy to a hard drive. It also enables the user to install an update to the latest version including the migration of the configuration.

The migration of the configuration is only possible when updating from version 01.06.00 onwards (version before update) to a later version.

Tankvision Installation and Recovery Tool

Click on Tankvision Installation and Recovery Tool (zip file) under **Configuration** → **Uploads** → **Tankvision Installation and Recovery Tool** and save the zip file to your PC.



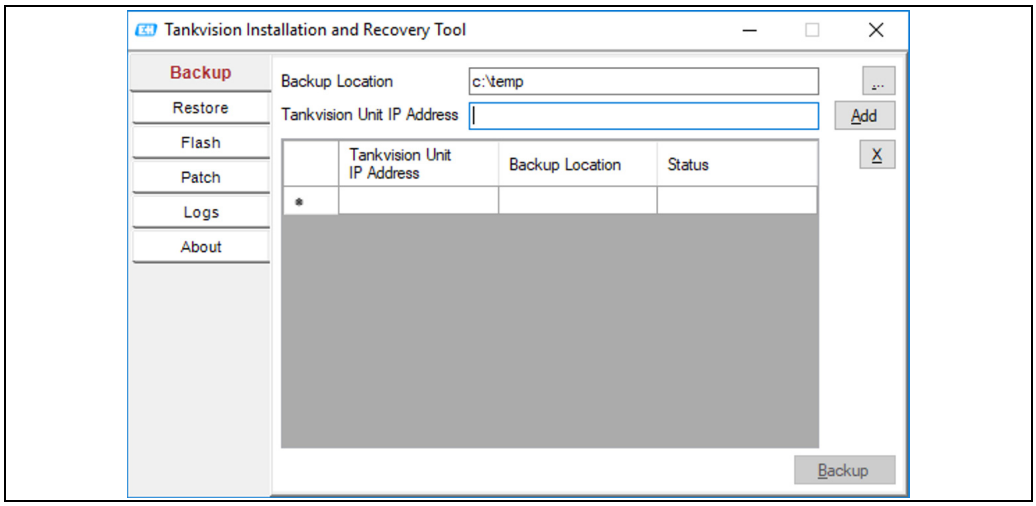
NXA82x_BNR_Install

The Tankvision Installation and Recover Tool requires no installation. Simply uncompress the Tankvision_Installation_and_Recovery_Tool.zip archive and copy the contents to your computer.

Use the Tankvision Installation and Recovery Tool

Backup

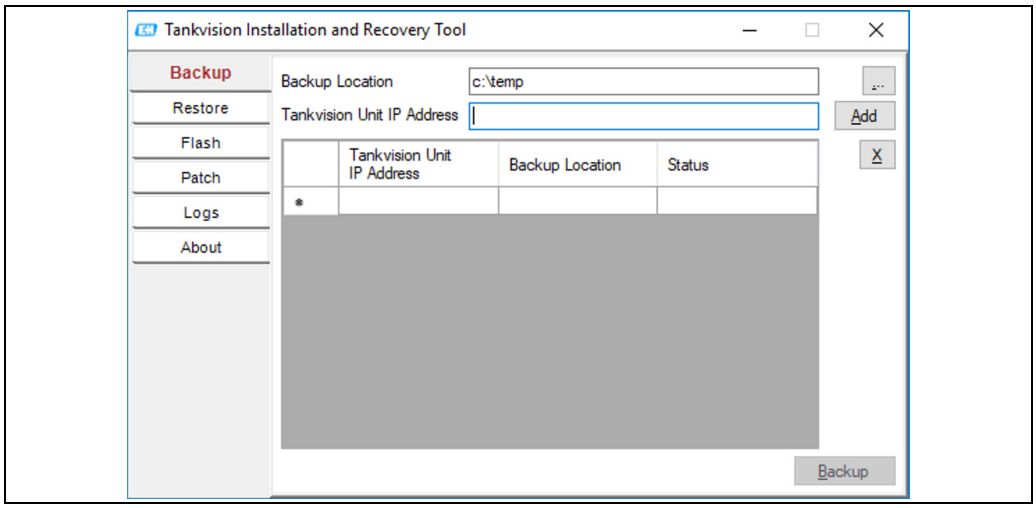
To create a backup job of a Tankvision unit, the Backup Location where it has to be saved must be selected with [...] (on the local PC or on a network drive) and the IP address must be filled. With **Add** the job will be added to the Job list. Multiple Tankvision backup jobs can be queued. Each job can be canceled by selecting the job line and use [X].
To start the backup jobs use **Backup**.



NXA82x_BNR_Backup

Restore

To create a restore job of a Tankvision unit, the Backup Location must be selected with [...] (on the local PC or on a network drive) and the IP address must be filled. With **Add** the job will be added to the Job list. Multiple Tankvision restore jobs can be queued. Each job can be canceled by selecting the job line and clicking the [X] button.
To start the restore jobs use **Restore**.



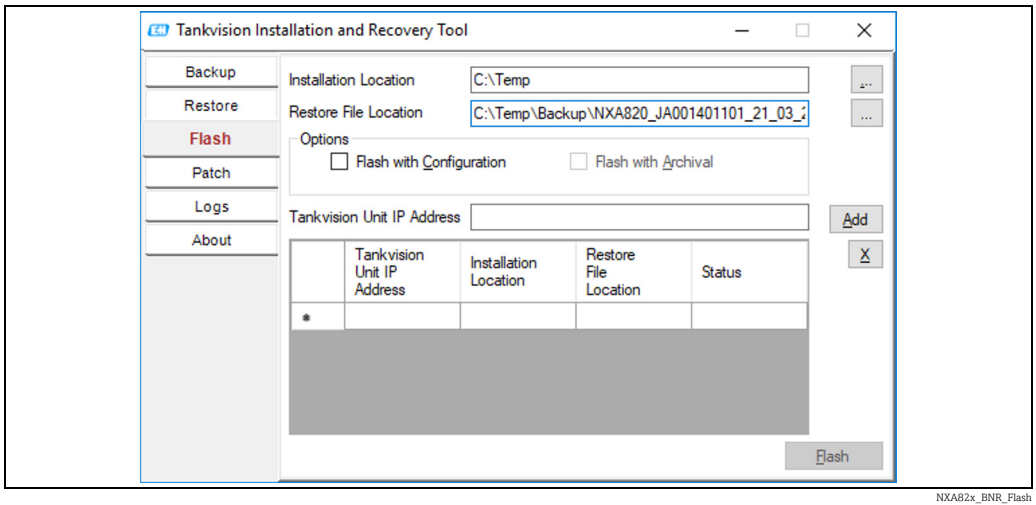
NXA82x_BNR_Restore

Flash

To create a flash job of a Tankvision unit, the location of the installation files must be selected with ... (on the local PC or on a network drive) and the IP address must be filled. With **Add** the job will be added to the Job list. Multiple Tankvision restore jobs can be queued. Each job can be canceled by selecting the job line and clicking the X button.
To start the restore jobs use **Flash**.
To update a Tankvision unit and keep the configuration a backup must be taken first. Then the Backup location must be selected with ... (on the local PC or on a network drive) in addition before adding the job. In this case the check box **Flash with configuration** must be active and if the archive data has to be transferred as well then the check box **Flash with Archival**.

The location where the backup is saved has to be unique for each Tankvision unit, if the same folder is selected the same backup would be used for each job and would lead to IP address conflicts in the network.

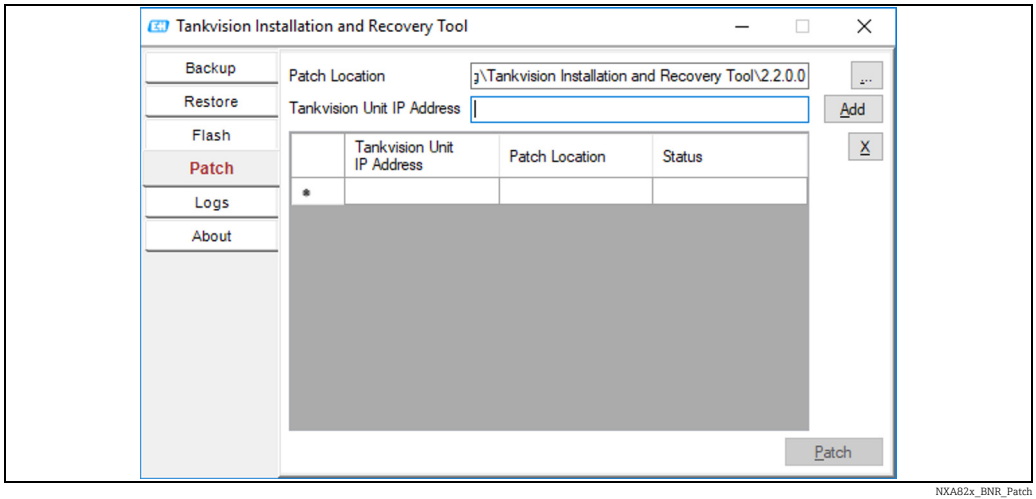
Flash with Archival can only be selected if **Flash with Configuration** is selected as well.



NXA82x_BNR_Flash

Patch

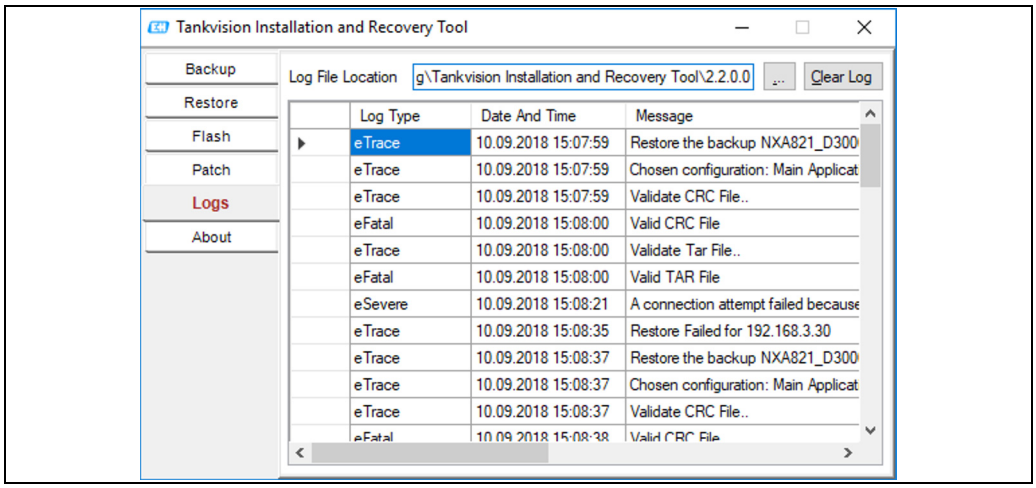
The Patch zip file contains some of the bug fixes binaries prepared for the specified software version. To apply the patch, the user must select the provided patch file and the Tankvision unit IP address.
By clicking the **Add** button, the job will be added to the Job list. Multiple Tankvision restore jobs can be queued. Each job can be canceled by selecting the job line and clicking the X button.
To start the patch jobs, click the **Patch** button.



NXA82x_BNR_Patch

Logs

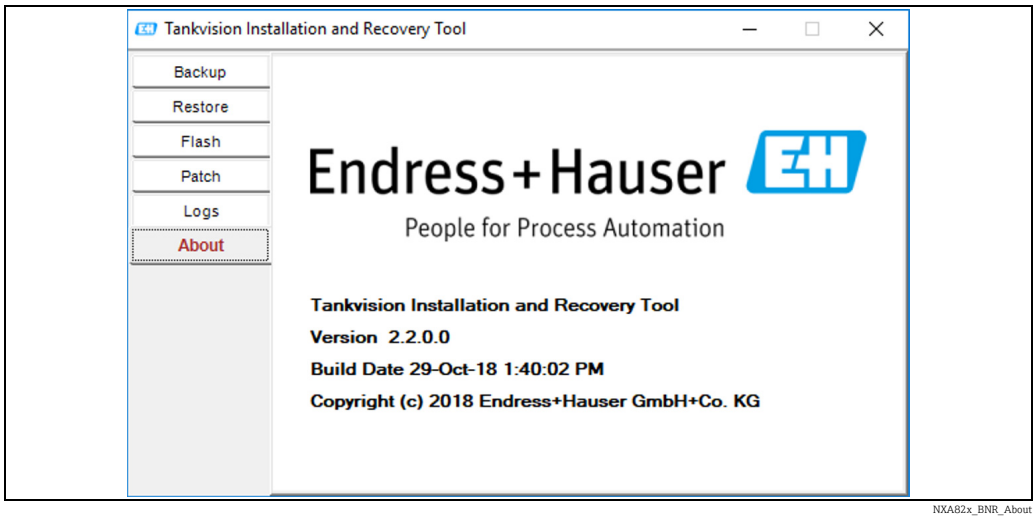
The log files register all actions made by this tool and are saved on the PC. It can be cleared with **Clear Log**. With ... the log file location can be changed.



NXA82x_BNR_Logs

About

About shows the version and the build date of the Tankvision Installation and Recovery Tool.



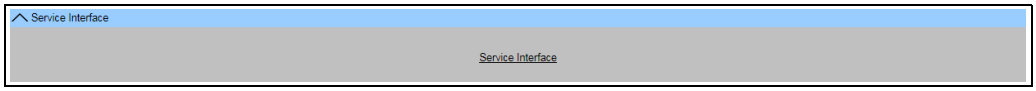
NXA82x_BNR_About

Service Interface

The Service Interface is an application running on a PC allowing the analysis of the field communication of the NXA820.

To install the Service Interface

1. Click on **Service Interface**. Tankvision displays the screen as follows:



NXA30_033_EN

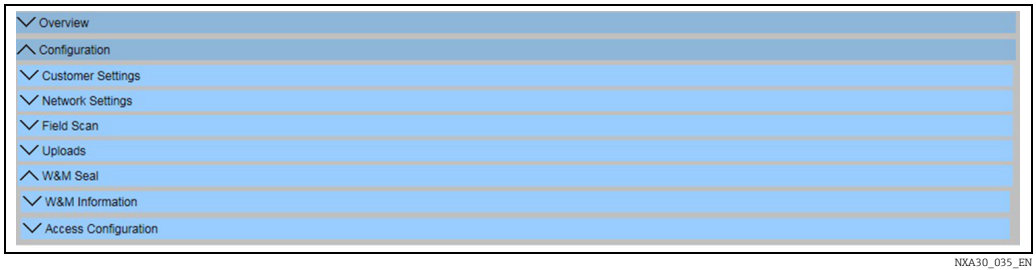
2. Click the **Service Interface** link and execute the file. Follow the directions on the screen.

9.3.5 W&M Seal

The W&M seal allows you to view the W&M sealing status and to perform the access configuration for W&M secured systems.

To Change the W&M Approved Status

1. Click on **W&M Seal**. Tankvision displays the screen as follows:

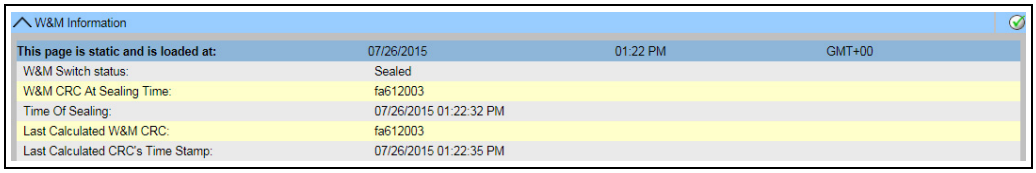


NXA30_035_EN

Field	Description
W&M Information	Shows detailed information of sealing status for a device: ▪ W&M Switch status ▪ W&M CRC at sealing time ▪ Time of sealing ▪ Last calculated W&M CRC ▪ Last calculated CRC's time stamp
Access Configuration	Registration page to configure access rights for a PC that can access the device after sealing.

W&M Information

1. Click on **W&M Information**. Tankvision displays the screen as follows:

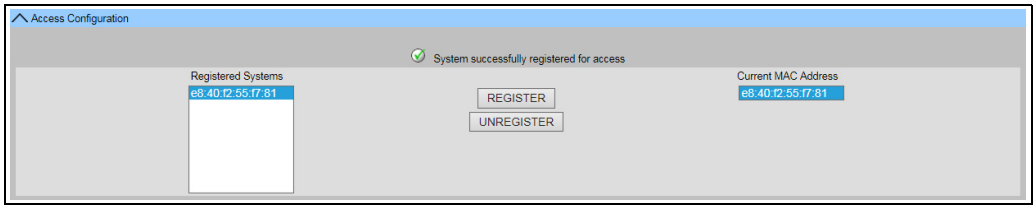


WM_Information

Field	Description
This page is static and is loaded at:	Displays the date and time when the screen was locked. This is a static page meaning no auto update is running.
W&M switch status	Displays the current W&M switch status. The status can be sealed (closed W&M switch) or unsealed (open W&M switch).
CRC at sealing time	A checksum is calculated with closing the W&M switch. This checksum is displayed in this field.
Time of sealing	Displays the date and time the sealing took place.
Last Calc. W&M CRC	Displays the latest calc. W&M checksum. The checksum is recalculated on a regular basis. In case of an mismatch of the recalculated checksum with the initial checksum, the system was manipulated.
Last Calc. W&M CRC time stamp	Displays date and time of the last calculated W&M checksum.

Access Configuration

In sealed systems only registered Users/PC's are allowed to have access to the system functionality. The access configuration provides the possibility to ensure the access. The access configuration is based on MAC Address.



NXA30_037_EN

Field	Description
Registered Systems	Displays the MAC Address of the currently registered PC. ▪ Registered: Registers the PC which is connected to the system (current workstation). The PC's must be in the same Network as Tankvision (no router / gateway in between). Registration must be performed from every PC which should have access to the system individually. ▪ Unregistered: To unregister PC(s) mark them in the list on the left hand side (select several by pressing **Ctrl** and marking them) and click unregister. The unregistered PC's will not have access to the system after sealing.
Current MAC Address	Displays the current MAC Address of the workstation.

This section is sealed for editing after switching the W&M switch to close.

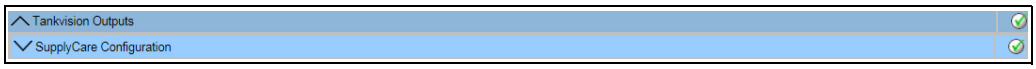
9.3.6 Configuration of W+M systems

See configuration of W+M systems (→ 33) and follow the required steps for NXA820 Interface only (Field Device assignment, PC assignment and Locking).

9.3.7 Tankvision Outputs

To set or manage the Tankvision Outputs

Click on **Tankvision Outputs**. Tankvision displays the screen as follows:



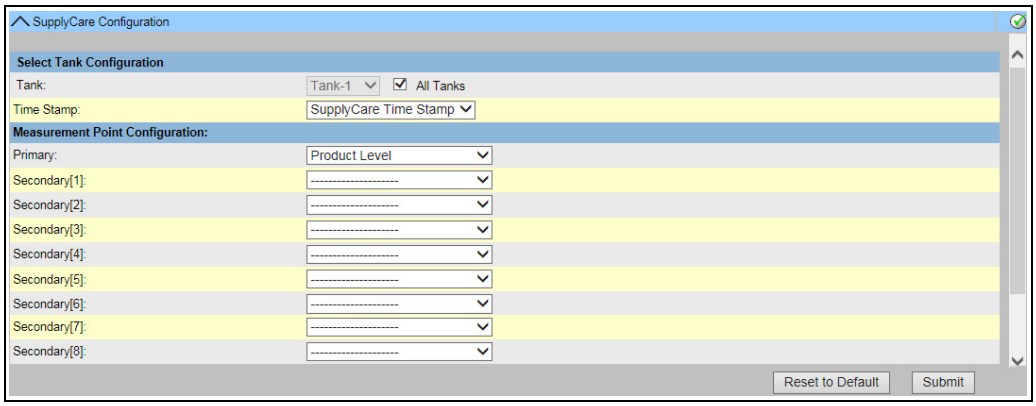
NXA82x_Tankvision-Outputs

SupplyCare Configuration

Configure the parameters that the Tank Scanner NXA820 provides when polled by SupplyCare Enterprise.

To set or mange the SupplyCare Configuration

1. Click on **SupplyCare Configuration**. Tankvision displays the screen as follows:



NXA82x_Tankvision-Outputs_SupplyCare-Configuration

Field	Description
Tank	Select the tank from the drop-down list for which to configure the parameters that are provided for SupplyCare. Either configure each tank individually or select the **All Tanks** check box to configure the same parameters for all tanks.
Time Stamp	Choose between the SupplyCare Time Stamp and the Tank Scanner NXA820 Time Stamp for the provided parameters.
Measurement Point Configuration	Configure the parameters for the tank(s) selected in the 'Tank' field, that are provided when polled by SupplyCare.

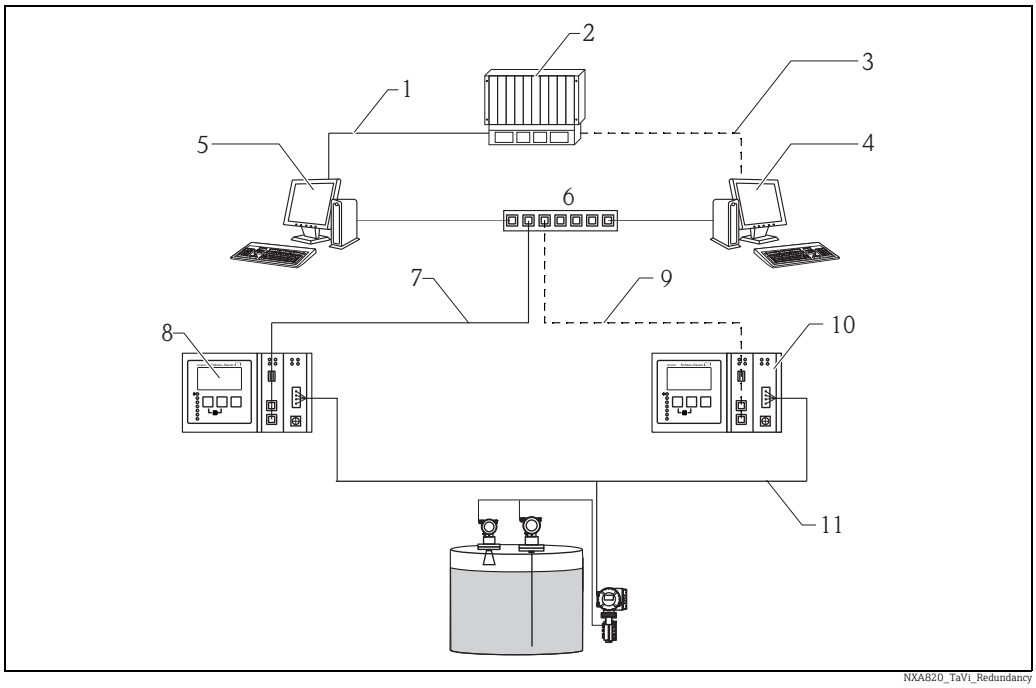
2. Enter the appropriate information in the relevant fields.
3. Click the **Submit** button to save the settings, or click the **Reset to Default** button to reset the screen to the default values.
4. After saving the settings, Tankvision displays a confirmation message, inculding the name of the .esp page which must be entered by the user in the Gateway configuration page of SupplyCare Enterprise.

An event is generated after setting the Tankvision Outputs. The event details can be viewed in the **Event** overview.

9.3.8 Redundancy configuration

Redundancy setting is activated via order code feature **090**.

The device **Tankvision NXA820 Interface only** provides a redundancy feature that works by means of the normal Ethernet as shown in below figure:



1 *Connection to PLC / Host (Serial / Ethernet)*
2 *PLC*
3 *Modbus TCP / Modbus Serial / Ethernet*
4 *NXA85 (secondary)*
5 *NXA85 (primary)*
6 *Switch*
7 *Primary Ethernet connection*
8 *NXA820i (primary)*
9 *Redundant Ethernet connection*
10 *NXA820i (secondary)*
11 *Fieldbus connection*

The primary and secondary NXA820 devices should have same protocol type. I.e. the user cannot configure a Modbus NXA820 as primary and a V1 NXA820 as secondary.

In a normal scenario, the primary device is active and field scan is on to acquire measured data. Information like configuration, measured data and Heartbeat signal are exchanged periodically between the primary and secondary NXA820 devices.
The secondary NXA820 field scan is normally in standby mode. The secondary NXA820 continuously monitors the health of the primary NXA820, and in case of a first-order failure, the secondary automatically takes over and starts scanning the field.

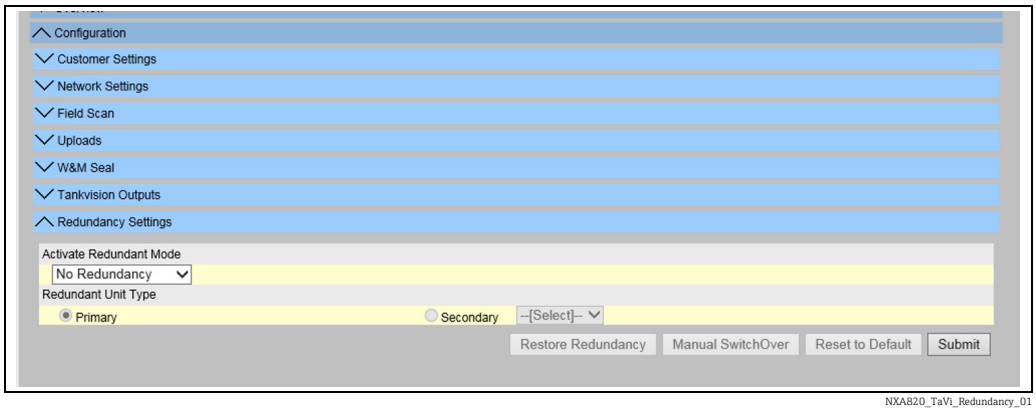
Some example of first-order failures are:

1. All connected gauges from the primary device fail
2. The primary device is not responding due to reasons like LAN failure, power failure and hardware damage
3. The primary device has a critical software failure like high CPU, crashed module, corrupted database, etc.

To configure the redundancy setting

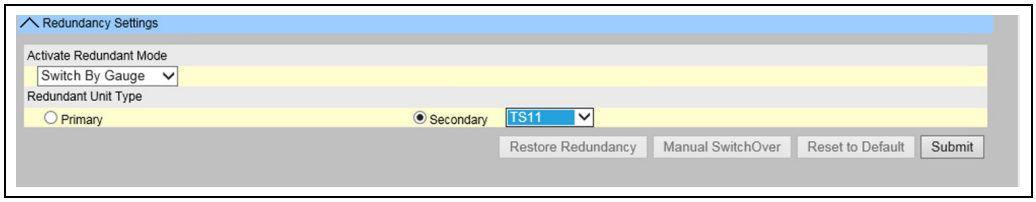
1. Configure the network settings on both NXA820 devices.
2. Perform an NND configuration and configure both NXA820 devices.
3. Configure Field scan only on this NXA820 device, which will be configured as **primary** NXA820 device by the user later on.

4. Click on **Redundancy Settings** from another NXA820, which will be configured as **secondary** NXA820 device by the user later on:



NXA820_TaVi_Redundancy_01

5. On the secondary NXA820: To activate the redundancy mode, select either option **Switch by Gauge** or option **Switch by Interface** from the dropdown list. Select **Redundant Unit Type** as **Secondary**. Select the associated primary NXA820 from the dropdown list.



NXA820_TaVi_Redundancy_02

6. Press the **Submit** button to activate redundancy.

Field	Description
Activate Redundancy Mode	**Switch by Interface** When all configured gauges fail, the system performs automatic switch-over. **Switch by Gauge** When one of the configured gauges fails, the system performs automatic switch-over.
Redundant Unit Type	Select the NXA820 unit type as primary or secondary. For the secondary NXA820, select the associated primary NXA820 from the dropdown list.
Restore Redundancy	Clicking the **Restore Redundancy** button configures the system back to the normal healthy state. Here, the primary NXA820 is active, scanning the field and the secondary is in standby mode.
Manual SwitchOver	The **Manual SwitchOver** button is useful to take control for performing maintenance activities. When clicking the **Manual SwitchOver** button redundancy is broken. This means, the redundant NXA820 devices do not observe each other, and no data are exchanged among them. Press the **Submit** button to activate redundancy again.
Reset to Default	Selecting the **Reset to Default** option configures the redundancy settings of both, primary and secondary NXA820, back to factory default.

9.4 Service - Tankvision NXA820 (Interface only)

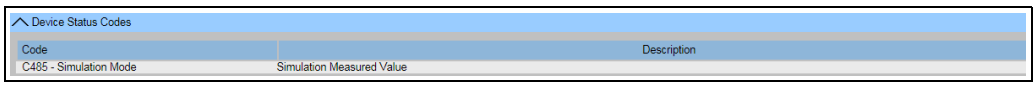
1. Click on **Service**. The following screen is displayed:

NXA820_Interface-only_Service

9.4.1 Device Status Codes

The Device Status Codes are intended only for service tasks. Refer to BA00339G/00/EN for a detailed list of the status codes.

1. Click on **Device Status Codes**. The following screen is displayed:

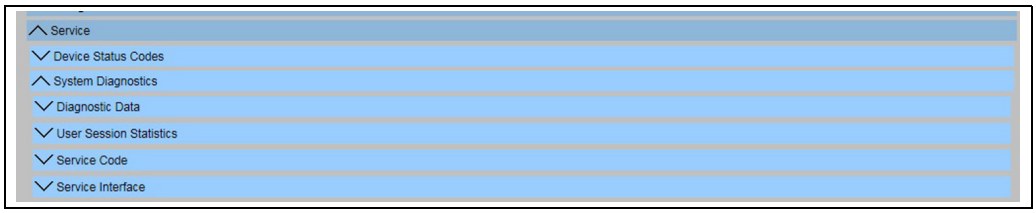


NXA30_040_EN

9.4.2 System Diagnostics

The system diagnostic tools are intended for service operations only and should not be used for standard operations of the Tankvision system.

1. Click on **System Diagnostics**. The following screen is displayed:

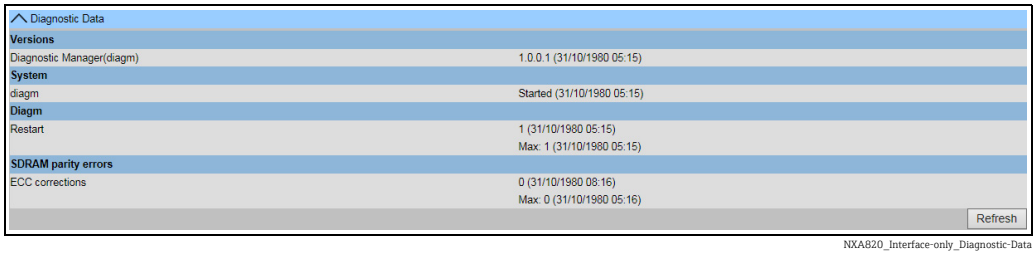


NXA30_042_EN

Diagnostic Data

Diagnostic data provides general status and diagnostic information like the number of times restarted and the temperature limits reached. This is a valuable tool to recognize unsafe conditions that could become a future failure.

1. Click on **Diagnostic Data**. The following screen is displayed:

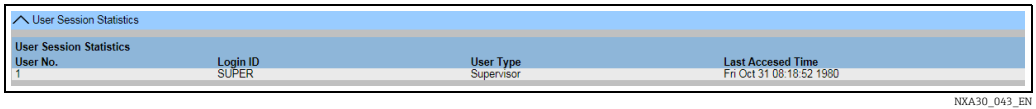


NXA820_Interface-only_Diagnostic-Data

User Session Statistics

Provides useful information of users and user login activities. It allows to know which user logged in last via a **Last Accessed Time** stamp.

1. Click on **User Session Statistics**. The following screen is displayed:

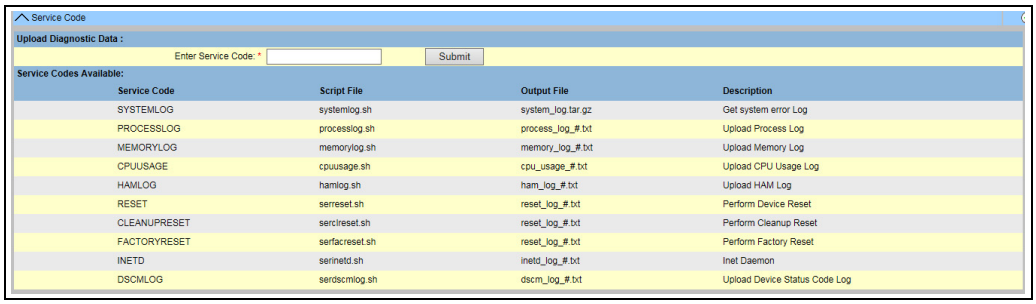


NXA30_043_EN

Service Codes

Service Codes is a service area that allows to execute predefined tasks by the operative system. As service codes are tasks like generate advanced diagnostic information, restart the unit, apply a historical archive clean up reset or execute a factory default settings reset.

1. Click on **Service Code**. The following screen is displayed:

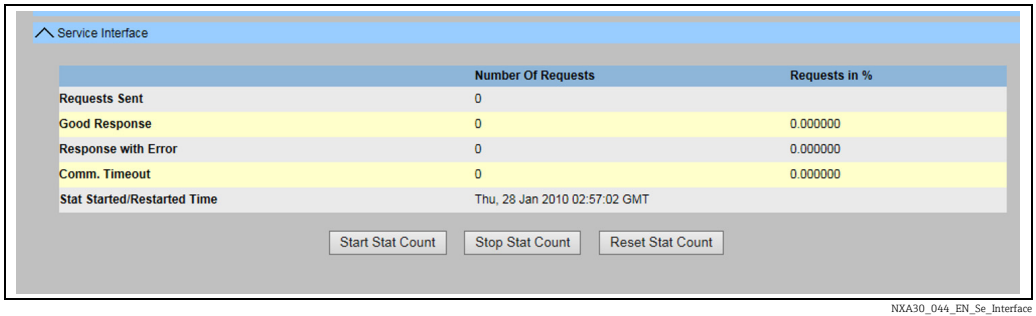


NXA30_044_EN

Service Interface

Service Interface helps users to check the field communication health status. This is a web version of the Service Interface application which users can install on their computers.

1. Click on **Service Interface**. The following screen is displayed:



NXA30_044_EN_Se_Interface

9.5 Exit the Tankvision system

The user can exit the Tankvision system from any screen.

The session ends automatically after 5 minutes of inactivity (session timeout).

To exit the Tankvision system

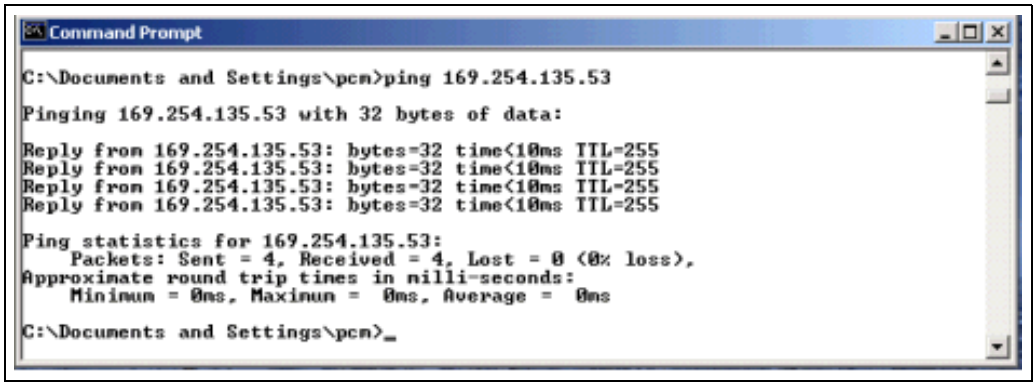
1. Click the **Logoff** link on the Main View. Tankvision displays the login screen.

10 Trouble shooting

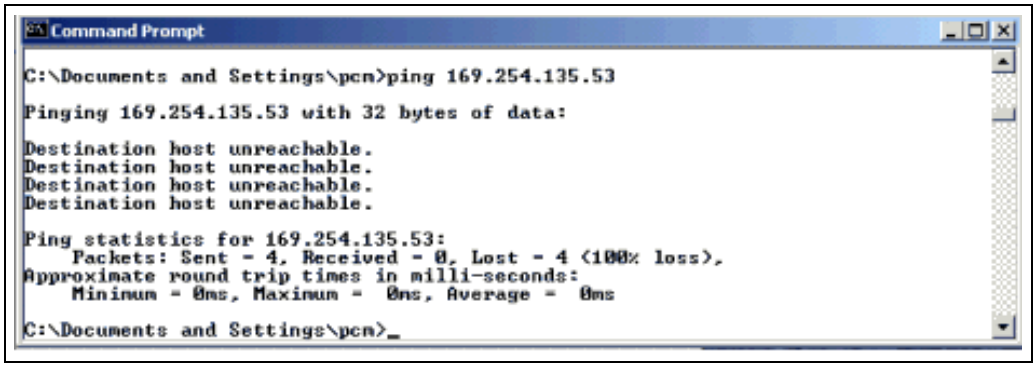
10.1 Test network connection

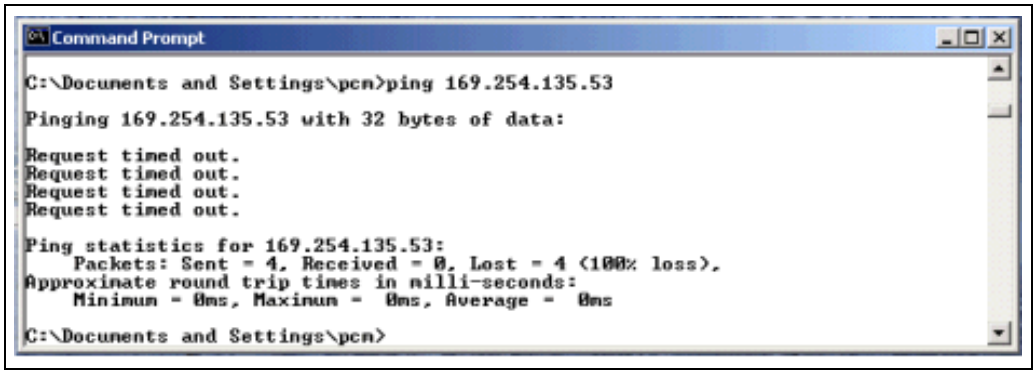
If a Tankvision unit can not be accessed from the operators computer you can test the network connection using the 'ping' command:

1. Click the Window **Start** button and select **Execute**. The **Run** dialog window appears.
2. Enter cmd into the **Open** field. The Windows Command Prompt window appears.
3. Try to ping the Tankvision until by typing the following into the command prompt line:
   ping xxx.xxx.xxx.xx
   Here xxx.xxx.xxx.xx is the IP address of the Tankvision unit.
4. If the pinging is successful and the computer receives an answer from the Tankvision unit, a message appears as follows:



5. If the pinging fails, the message "Destination host unreachable" or "Request timed out" will appear: This means that the network is not working properly.





Possible causes are:
- Wrong network settings (e.g. wrong IP address) in the Tankvision unit or the computer
- Hardware problems (e.g. cable break or improper plugging of the cables)
- Missing power supply of the Tankvision unit

10.2 Resets

10.2.1 Types of Resets

- Reset:
  Restart the system without any additional action.
- Cleanup:
  Resets archival data, alarms and events without changing the configuration.
- Factory:
  Resets the software to factory default settings, all data is getting lost including network settings.

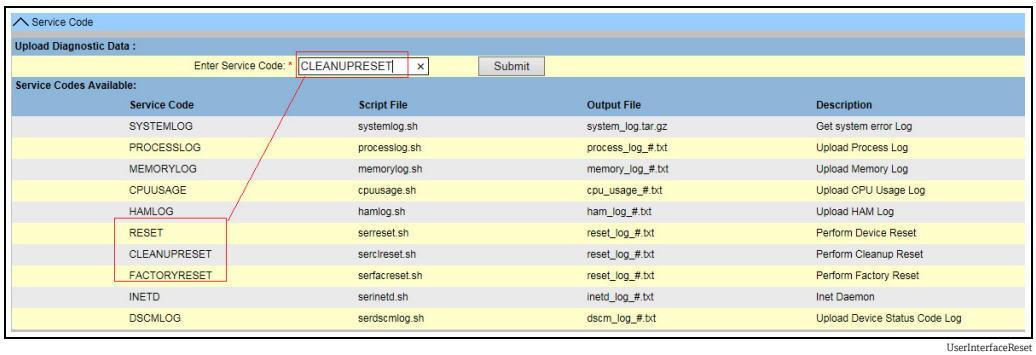
10.2.2 Hardware Reset

- Push the reset button on the front panel of the device and release it in one of the following specified reset windows indicated by the Reset LED.
- Releasing the button in a LED ON window has no effect at all, the system keeps on running.

Reset		Cleanup		Factory	
LED flash Hz	LED ON	LED flash 2,5 Hz	LED ON	LED flash 1,25 Hz	LED ON
0...5 sec	5...10 sec	10...15 sec	15...20 sec	20...25 sec	> 25 sec

10.2.3 User Interface Reset

- Use a Service Code script to perform a reset
- Path: Global Settings / System Diagnostics / Service Code
- Enter one of the given Service Codes and press submit



UserInterfaceReset

11 Return

The measuring device must be returned if repairs or a factory calibration are required, or if the wrong measuring device has been ordered or delivered. According to legal regulations, Endress+Hauser, as an ISO-certified company, is required to follow certain procedures when handling returned products that are in contact with medium. To ensure swift, safe and professional device returns, please read the return procedures and conditions on the Endress+Hauser website at www.services.endress.com/return-material

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