

Number **TC8732** revision 2
Project number 3516590
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Issued by

NMi Certin B.V.

In accordance with

The "Metrologiewet" (Stb. 2006, 137) and
the "Regeling nationaal autonoom geregelde meetinstrumenten"

Producer

Endress+Hauser SE+Co. KG
Hauptstrasse 1
79689 Maulburg
Germany

Part

A **calculating and indicating device**, intended for use as part of an
automatic level gauge for liquid level measurements

Manufacturer's mark or name : Endress+Hauser SE+Co. KG

Type designation : Tankvision Professional NXA85

Further properties are described in the annexes:

- Description TC8732 revision 2;
- Documentation folder TC8732-1.

Remarks

- This revision replaces the previous revisions;
- The documentation folder is not changed.

Issuing Authority

The Designated Body, NMi Certin B.V.
15 April 2022

Certification Board

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1 General information about the calculating and indicating device

All properties of the calculating and indicating device, whether mentioned or not, shall not be in conflict with the legislation.

This Test Certificate is the positive result of the applied voluntary, modular approach, for a component of a measuring instrument, as described in WELMEC 8.8, 2017.

The complete measuring instrument must be covered by relevant metrological certification that is valid in the country where the instrument is put into use.

Tankvision Professional is a scalable tank inventory management application suited for small terminals and depots to large refineries. The system can be provided on a standalone single user station or as a multi-user system configured as a client server architecture.

1.1 Essential parts.

1.1.1 Software modules

Tankvision Professional is composed of the following modules:

Version 18.0.3	
Module	Drive / Folder
DCCHost.exe	C:\Program Files\Common Files\Tank Farm Automation\Server
Hermes.exe	C:\Program Files\Common Files\Tank Farm Automation\Server
InventoryCalculator.dll	C:\Windows\system32
TankCapacityTables.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
TankCapacityTablesGUI.exe	C:\Program Files\Common Files\Tank Farm Automation\Common
Core.Library.dll	GAC (Global Assembly Cache)
Core.Enumerations.dll	GAC (Global Assembly Cache)
Enumerations.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
TankGauging.Library.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
Library.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
Library2.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
TankCharacteristics.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
DeviceConfig.exe	C:\Program Files\Common Files\Tank Farm Automation\Common Tank
Gauging.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
TankMimic.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
GridView.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
Single Tank.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
Multi Tank.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
CustomDesign.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
CustomRuntime.dll	C:\Program Files\Endress+Hauser\Tankvision Professional



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Version 18.0.3	
Module	Drive / Folder
Weights.And.Measures.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
Weights.And.Measures.Wrapper.dll	C:\Program Files\Common Files\Tank Farm Automation\Server
Reports (A4)\Inventory.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\SingleTankInventory.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\SingleTankOverview.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\GaugeConfigurationSeals.rpt	C:\Program Files\Common Files\Tank Farm Automation\Common\Reports (A4)
Reports (A4)\SoftwareSeals.rpt	C:\Program Files\Common Files\Tank Farm Automation\Common\Reports (A4)
Reports (A4)\TankCapacityTableSeals.rpt	C:\Program Files\Common Files\Tank Farm Automation\Common\Reports (A4)
Reports (A4)\WMAuditTrail.rpt	C:\Program Files\Common Files\Tank Farm Automation\Common\Reports (A4)
Tanks	SQL Datenbank
StrapTables	SQL Datenbank

Version 18.3.1	
Module	Drive / Folder
DCCHost.exe	C:\Program Files\Common Files\Tank Farm Automation\Server
TankGauging.Data.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
TankGauging.Interfaces.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
Olympus.TankGauging.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
InventoryCalculator.dll	C:\Windows\system32
RTDB_DotNET.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
NSPluginNet4.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
TankCapacityTables.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
TankCapacityTablesGUI.exe	C:\Program Files\Common Files\Tank Farm Automation\Common
Core.Library.dll	GAC
Core.Enumerations.dll	GAC
Enumerations.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
TankGauging.Library.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
Library.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
Library2.dll	C:\Program Files\Common Files\Tank Farm Automation\Common
ManualData.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
Tank Gauging.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
TankMimic.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
TFAConfiguration.exe	C:\Program Files\Common Files\Tank Farm Automation\Common
GridView.exe	C:\Program Files\Endress+Hauser\Tankvision Professional



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Version 18.3.1	
Module	Drive / Folder
Single Tank.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
Multi Tank.exe	C:\Program Files\Endress+Hauser\Tankvision Professional
CustomDesign.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
CustomRuntime.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
Weights.And.Measures.dll	C:\Program Files\Endress+Hauser\Tankvision Professional
Reports (A4)\Inventory.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\SingleTankInventory.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\SingleTankOverview.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\GaugeConfigurationSeals.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\TankConfigurationSeals.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\SoftwareSeals.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\TankCapacityTableSeals.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Reports (A4)\WMAuditTrail.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)
Tanks	SQL Database
TankFarmAutomation	SQL Database

Version 18.3.2		
Module	Drive / Folder	Client*
DCCHost.exe	C:\Program Files\Common Files\Tank Farm Automation\Server	
TankGauging.Data.dll	C:\Program Files\Endress+Hauser\Tankvision Professional	X
TankGauging.Interfaces.dll	C:\Program Files\Endress+Hauser\Tankvision Professional	X
Olympus.TankGauging.dll	C:\Program Files\Endress+Hauser\Tankvision Professional	
InventoryCalculator.Std.dll	C:\Windows\system32	X
InventoryCalculator.Std.Cpp.dll	C:\Windows\system32	
RTDB_DotNET.dll	C:\Program Files\Common Files\Tank Farm Automation\Common	X
NSPluginNet4.dll	C:\Program Files\Endress+Hauser\Tankvision Professional	
TankCapacityTables.dll	C:\Program Files\Common Files\Tank Farm Automation\Common	X
TankCapacityTablesGUI.exe	C:\Program Files\Common Files\Tank Farm Automation\Common	X
Core.Library.dll	GAC	X
Core.Enumerations.dll	GAC	X
Enumerations.dll	C:\Program Files\Common Files\Tank Farm Automation\Common	X
TankGauging.Library.dll	C:\Program Files\Common Files\Tank Farm Automation\Common	X
Library.dll	C:\Program Files\Common Files\Tank Farm Automation\Common	X
Library2.dll	C:\Program Files\Common Files\Tank Farm Automation\Common	X

Version 18.3.2		
Module	Drive / Folder	Client*
ManualData.exe	C:\Program Files\Endress+Hauser\Tankvision Professional	X
Tank Gauging.exe	C:\Program Files\Endress+Hauser\Tankvision Professional	X
TankMimic.dll	C:\Program Files\Endress+Hauser\Tankvision Professional	X
TFAConfiguration.exe	C:\Program Files\Common Files\Tank Farm Automation\Common	X
GridView.exe	C:\Program Files\Endress+Hauser\Tankvision Professional	X
Single Tank.exe	C:\Program Files\Endress+Hauser\Tankvision Professional	X
Multi Tank.exe	C:\Program Files\Endress+Hauser\Tankvision Professional	X
CustomDesign.dll	C:\Program Files\Endress+Hauser\Tankvision Professional	X
CustomRuntime.dll	C:\Program Files\Endress+Hauser\Tankvision Professional	X
Weights.And.Measures.dll	C:\Program Files\Endress+Hauser\Tankvision Professional	X
Reports (A4)\Inventory.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)	X
Reports (A4)\SingleTankInventory.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)	X
Reports (A4)\SingleTankOverview.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)	X
Reports (A4)\GaugeConfigurationSeals.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)	
Reports (A4)\TankConfigurationSeals.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)	
Reports (A4)\SoftwareSeals.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)	X
Reports (A4)\TankCapacityTableSeals.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)	
Reports (A4)\WMAuditTrail.rpt	C:\Program Files\Endress+Hauser\Tankvision Professional\Reports (A4)	X
Tanks	SQL Database	
TankFarmAutomation	SQL Database	

*From revision 18.3.2 only the modules marked with X are required in the client, all modules mentioned are required for the server.

Remark:

A single CRC checksum is calculated on legal relevant data as stated in the table above. This CRC will change by doing modification in the legal relevant binaries. See paragraph 1.2.5 for the approved software version and CRC checksum.

1.2 Essential characteristics

1.2.1 Temperature range ambient

- -5 °C / +40 °C

1.2.2 Electromagnetic environment class

- E2

1.2.3 Power supply

Tankvision Professional is a purely software-based part. Power supply will be dependent on the computer running the software.

1.2.4 Indication

The indication is presented in read-only mode.

- Scale interval of the indication, in m or mm, shall not be greater than 1 mm.
- Level indication information and gauge status (level balance, etc.).
- Indication of status messages, error messages and alarm messages.
- Indication of the device locking status.

Remark:

All legally relevant measuring values are stated with a # sign if the Tankvision Professional is sealed.

1.2.5 Software specification (refer to WELMEC 7.2)

- Software type U;
- Risk Class C;
- Extension T and S, while extensions L and D are not applicable.

Software version	Client/Server	Checksum
18.0.3	Client & Server	AF09D2F83D85200334E2C49900FC84FA043F24F3
18.3.1	Client & Server	5AheQN3oedGoZJeocQmlfc8uOCA=
18.3.2	Client	3ccq9dmYhxnBuiHOgebClhK8Ohs=
	Server	HRqeFCE3ft3bhkxUAmG2c5SyXuY=

Software version and belonging checksum can be viewed by the display as stated in paragraph 1.5.1.

1.2.6 Data communication

The calculating and indicating device is capable of indicating several quantities. Use for Weights and Measures related purposes is allowed for the following quantities:

- Level;
- Temperature;
- Mass;
- Uncorrected volume;
- Volume;
- Density.

The following input(s) can be used for legally relevant data:

- Ethernet.

The following output(s) can be used for legally relevant data:

- Display;
- Ethernet.

The following transmission protocols can be used for legally relevant data:

- TCP / IP

1.3 Essential shapes

1.3.1 Markings

On the calculating and indicating device, clearly visible, at least the following is inscribed:

- Test certificate number TC8732;
- Name or trade mark of the manufacturer;
- Serial number and year of manufacture.

1.4 Conditional parts

1.4.1 Ethernet switch (optional)

An ethernet switch can be used to combine multiple Tankvision (type NXA820) systems with Tankvision Professional. The ethernet switch shall be tested to ensure it meets safety requirements (e.g., UL 1604, CSA C22.2/213 (Class 1, Div. 2)).

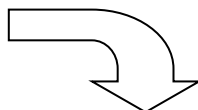
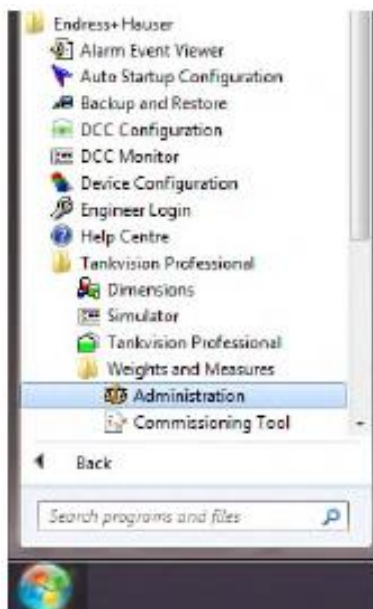
The power supply for the ethernet switch shall be tested to ensure it meets safety requirements (e.g., SELV).

1.5 Conditional characteristics

1.5.1 Programming

When the system is configured, the software can be sealed with a W&M certificate protected with a password. This password can be chosen by the authorizing body. If the software is sealed, no changes on the legally relevant configuration can be done. A change is rejected by the system or will end in an unsealed system.

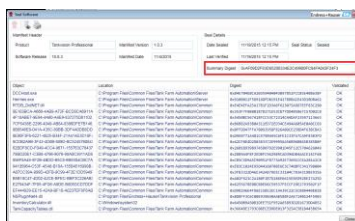
Below an overview is given on how the software version and checksum can be shown.



Select the 'Seal Software' icon from the view menu:



Herewith the software version and CRC can be found:



1.5.2 Printing

Printing of a report using the Printer Agent. Only a one-to-one print of a tank detail report is considered as being Weights & Measures approved.

1.5.3 Error messages

On the indication or indications a message is presented if the measured value is not legal and/or a technical problem occurs.

2 Seals

The following seals are applied:

- The data plate is fixed to the calculating and indicating device and secured against removal by seal or it will be destroyed when removed;
- The software is sealed with a W&M certificate protected with a password. This password can be chosen by the authorizing body. See Annex 1 for the procedure.

3 Conditions for conformity assessment

- The calculating and indicating device shall be constructed in conformity with the description and documentation folder that belong to this Test certificate;
- The seals shall be applied as described in chapter 2;
- Other parties may use this Test Certificate only with the written permission of the producer.

4 Reports

An overview of the performed tests is given in Evaluation Report ER8732 revision 2 issued together with this Test Certificate.

1 General information about the sealing

When the system is configured, the software can be sealed with a W&M certificate protected with a password. This password can be chosen by the authorizing body. If the software is sealed, no changes on the legally relevant configuration can be done. A change is rejected by the system or will end in an unsealed system.

Stand Alone system

To seal a Stand Alone system, follow the below steps.

- 2.1 New Certificate
- 2.2 Sealing Software
- 2.3 Sealing Tank Capacity Tables
- 2.4 Sealing Gauges

Client / Server System

To seal a Client / Server System the database communication needs to be encrypted first. Follow the below steps first before the Stand Alone steps are performed.

- 3.1 Create an SQL Certificate
- 3.2 Apply SQL Certificate to Server
- 3.3 Apply SQL Certificate to Client
- 3.4 W & M Administration in Client
- 3.5 Encrypting Connection

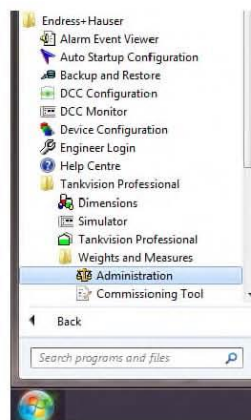
Remark:

Paragraph numbers correspond to the Weights & Measures Manual.

2.0 Configuration

Weights and Measures configuration is performed using the **Administration** tool found in the Start Menu in the following location:

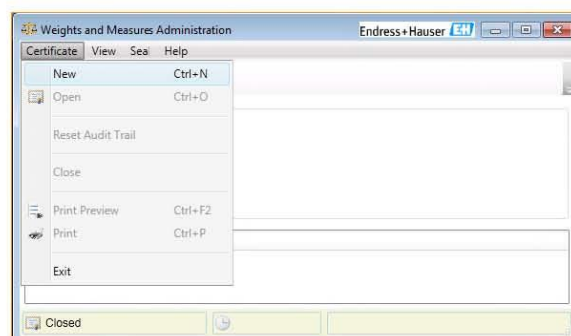
Start\Endress+Hauser\Tankvision Professional\Weights and Measures



This is protected by two levels of security. Initially a user must have "View" rights granted by Tankvision Professional security. In addition to the standard level of security, the W&M certificate can only be modified by entering a certificate password.

2.1 Certificate Configuration

This will normally be performed by the relevant authorizing body.

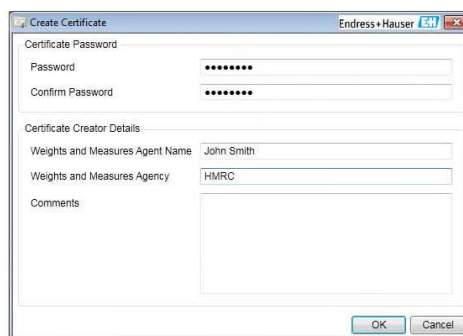


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2.1.1 New Certificate

The steps to create a certificate are as follows:

- 1) Open the administration screen and select **Certificate\New** from the menu bar.
- 2) In the “Create Certificate” window that opens enter and confirm the certificate password. Complete the fields for the Certificate Creator Details and click OK to create the certificate.

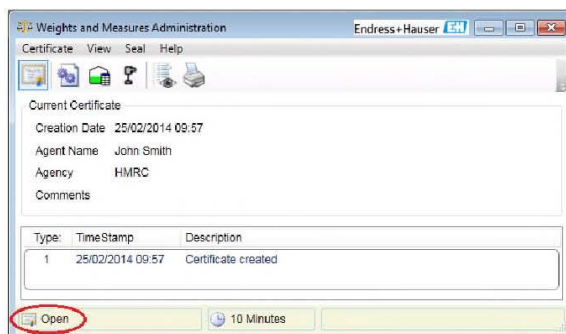


The "Create Certificate" dialog box contains the following fields:

- Certificate Password:**
 - Password: [masked]
 - Confirm Password: [masked]
- Certificate Creator Details:**
 - Weights and Measures Agent Name: John Smith
 - Weights and Measures Agency: HMRC
 - Comments: [text area]

Buttons: OK, Cancel

- 3) An **Open** certificate will be created.



The "Weights and Measures Administration" window displays the following information:

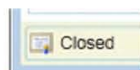
- Current Certificate:**
 - Creation Date: 25/02/2014 09:57
 - Agent Name: John Smith
 - Agency: HMRC
 - Comments: [text area]
- Table:**

Type	TimeStamp	Description
1	25/02/2014 09:57	Certificate created

Buttons: Open (highlighted with a red circle), 10 Minutes

W&M items can only be sealed whilst the certificate is open. The certificate will remain open for a period of 10 minutes with no activity before automatically closing.

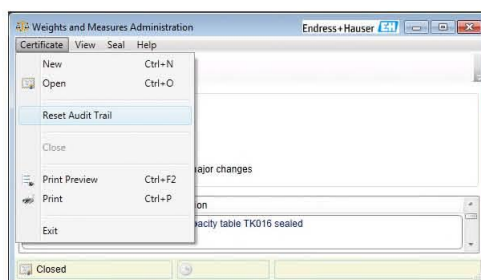
To manually close the certificate either close the window by clicking the cross in the top right corner, select **Certificate\Close** from the menu bar or click on the Certificate icon .



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2.1.2 Reset Audit Trail

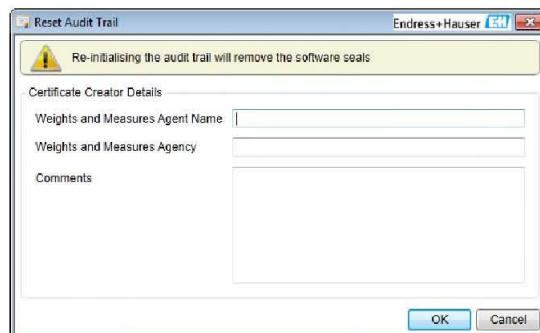
The Audit trail can be reset from **Certificate\Reset Audit Trail** in the menu bar.



The audit trail can only be reset whilst the certificate is Open. If not already open you will be prompted to enter the certificate password to continue.



A screen will open to enter the details of the agent resetting the audit trail.



Enter the details and any optional comments and click OK to continue. If any details are missing a reminder box will open, click OK to return and enter the missing details.

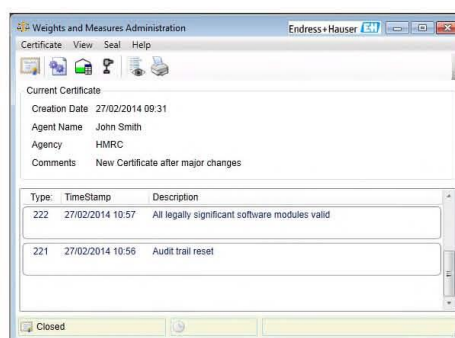


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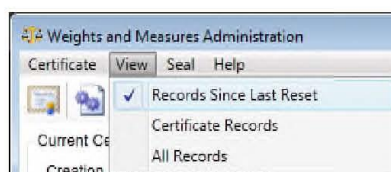
Ensure that this process takes no longer than 10 minutes or the open certificate will close and you will be prompted to re-enter your password.



A new entry will be made into the Audit Trail to record the reset and a check will be made to validate the legally significant software.



Audit entries are not deleted. A new option will be added to the View menu to display only the record entries made since the last reset. To view entries made prior to the reset select **View\Certificate Records**.



The final option in the View menu, **All Records**, is used to display historical records when subsequent New certificates have been created, records for any older certificates will not be deleted but they are no longer verifiable so will be hidden by default.




WARNING: Resetting the Audit Trail will remove all of the W&M seals from the software, Tank Capacity Tables and Gauges.

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2.2 Sealing Software

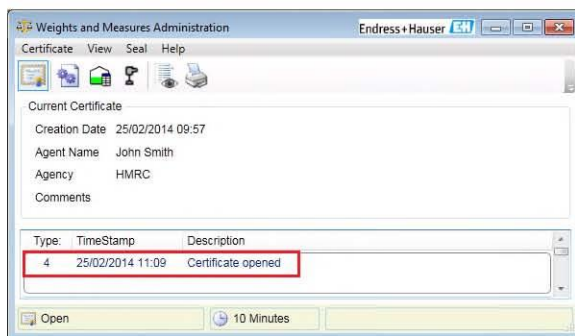
In order to seal the software the certificate must be Open.


Click the certificate icon  and enter the correct password to open the certificate.



Alternatively attempting to seal an item whilst the certificate is "Closed" will open the password entry box.

An entry will be made into the event log to indicate that the certificate has been opened.

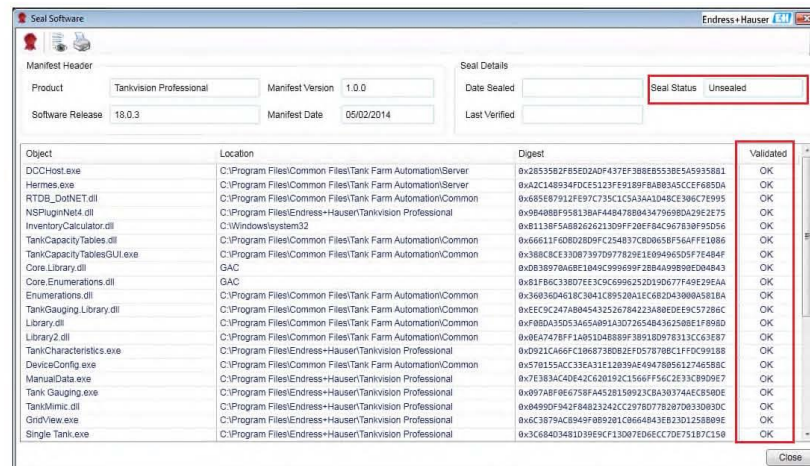


To check the status of the software seals click the Seal Software icon .



A window opens to show the seal status and validity of the legally significant software.

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The software can be sealed by clicking the Seal  icon.

The seal details will update with the new status and the seal icon will “grey out” to indicate that it will serve no further purpose whilst the seal is intact.



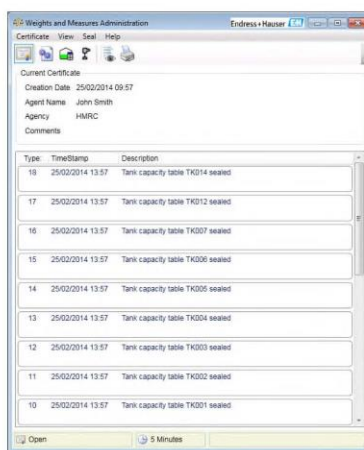
The window can be closed using the close window cross or the Close button.

An entry will be made into the Audit Trail to indicate that the software has been sealed.

Type:	TimeStamp	Description
8	25/02/2014 11:34	Legally significant software sealed

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The window can be closed using the close window cross or the Close button.
An entry will be made into the Audit log for each table that has been sealed.



2.3.1 TCT Locked Parameters


When a Tank Capacity Table is sealed the following items are locked and can no longer be edited.

Field	Description
TableID	User-readable table identifier
Role	Indicates the table's purpose (normal, water, hydrostatic deformation)
Type	Indicates the table's type (innage, ullage, delta, polynomial)
Valid From	The date from which the table is deemed valid
Reference Height	The defined reference height of the tank
Shell Capacity	The defined capacity of the vessel
Points Table	The table containing the level/volume data for the capacity table.
Polynomial Table	The table containing the polynomial data for the capacity table (if defined as a polynomial table)
P	Factor for the polynomial table

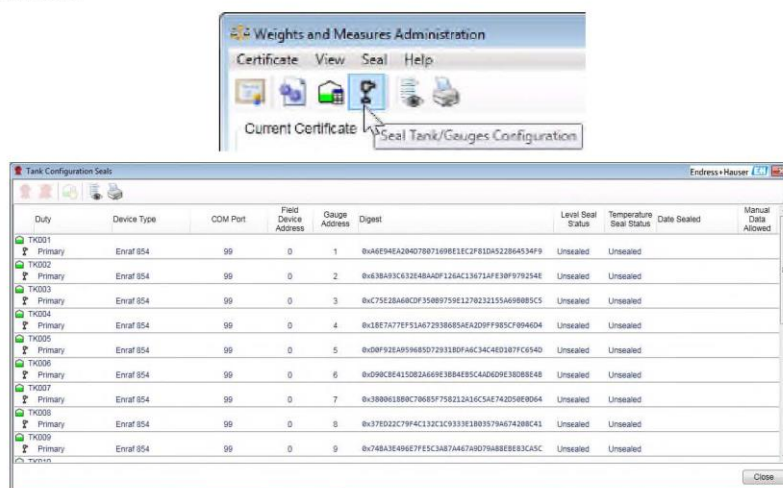
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2.4 Sealing Gauges

In order to seal the Tank Capacity Tables the certificate must be Open.

Click the certificate icon  and enter the correct password to open the certificate.

Click on the Seal Tanks/Gauges icon to open the "Tank Configuration Seals" window.



Select any number of devices to enable the seal icon and click the icon to seal the device(s).

Devices may be sealed for Level, Temperature or both.






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Task Configuration Seals

Endress + Hauser

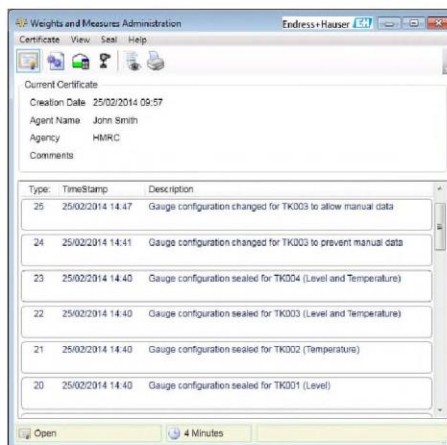
Duty	Device Type	COM Port	Field Device Address	Gauge Address	Digest	Level Seal Status	Temperature Seal Status	Date Sealed	Manual Data Allowed	
TK001	Primary	Enraf 054	99	0	1	0xE440852F56A70DCA3348E5232A48F8F385682	Sealed	Unsealed	25/02/2014 14:40	✓
TK002	Primary	Enraf 054	99	0	2	0x3ED1E4A4F17928118E9FC74C385F8A562AC1893	Unsealed	Sealed	25/02/2014 14:40	✗
TK003	Primary	Enraf 054	99	0	3	0x366008FC749FC332AB488648C9BA5147E1682F9	Sealed	Sealed	25/02/2014 14:40	✗
TK004	Primary	Enraf 054	99	0	4	0x88E661792833F426439982E16F1FE91876D08E2	Sealed	Sealed	25/02/2014 14:40	✓
TK005	Primary	Enraf 054	99	0	5	0x08F92E8559685D72933B0FABC34C4D187FC654D	Unsealed	Unsealed		
TK006	Primary	Enraf 054	99	0	6	0x090C8C4150B2A669E3884E85C4D6D9E3808E48	Unsealed	Unsealed		
TK007	Primary	Enraf 054	99	0	7	0x388861888C7868F758E212A3C5A8742D58E8D64	Unsealed	Unsealed		
TK008	Primary	Enraf 054	99	0	8	0x37ED2C79F4C132C3C933E1883579A67428C43	Unsealed	Unsealed		
TK009	Primary	Enraf 054	99	0	9	0x748A3E48687F5C3A874667A8D79A8D8E8E8CASC	Unsealed	Unsealed		

Close

The default setting for sealed devices is "Manual Data Allowed" . Devices can be toggled between manual data allowed and denied by selecting the device and clicking the  or  icon.

The window can be closed using the close window cross or the Close button.

An entry will be made into the Audit Trail for each device that has been sealed and each change to manual data permissions.



Type	TimeStamp	Description
25	25/02/2014 14:47	Gauge configuration changed for TK005 to allow manual data
24	25/02/2014 14:41	Gauge configuration changed for TK003 to prevent manual data
23	25/02/2014 14:40	Gauge configuration sealed for TK004 (Level and Temperature)
22	25/02/2014 14:40	Gauge configuration sealed for TK003 (Level and Temperature)
21	25/02/2014 14:40	Gauge configuration sealed for TK002 (Temperature)
20	25/02/2014 14:40	Gauge configuration sealed for TK001 (Level)

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2.4.1 Tank/Device Locked Parameters

When a Tank is sealed the following items are locked and can no longer be edited.

Field	Description
Tank Id	The name of the tank displayed in the UI
Tank Address	The address of the instrument if an intermediary Tankvision Multiscan is to be used to communicate with the field
Gauge Address	The address of the instrument in the field
CIU Address	The address of the field communications interface (if required by the field equipment)
COM Port	The port on the computer used to communicate with the field equipment
Backup CIU Address	The address of an alternative field communications interface when a deployed in a redundant configuration
Backup COM Port	The alternative communications port to be used when in a redundant configuration
Gauge Type ID	The type of instrument employed on the tank
Tank Capacity Table ID	The identity of the tank capacity table to be used to calculate volumes given a product level.

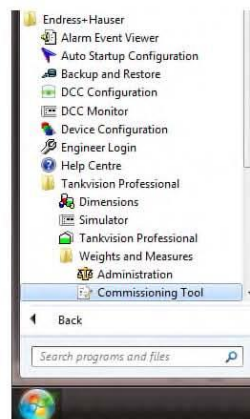
3.0 Client/Server Systems

Client PCs connected to a Weights and Measures sealed Server must have a secure, encrypted connection to the database on the server. In order to be valid for weights and measures the software on the client PC must also be sealed. In most cases the supplied commissioning tool can be used to set up the encrypted connection. However, in a few, advanced, cases it may be necessary to set the encrypted connection up manually. For details of how to set up a secure, encrypted connection manually see Appendix A.

3.1 Create an SQL Certificate

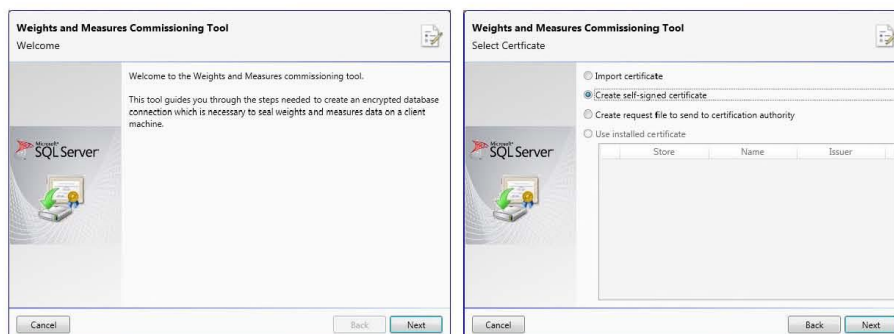
In order to encrypt the connection between the Server and the client an SQL database certificate will be created by the server and imported into the client. There is a tool to create the certificate in the Start menu

Start\Endress+Hauser\Tankvision Professional\Weights and Measures



Click to launch the commissioning tool then click Next to proceed.

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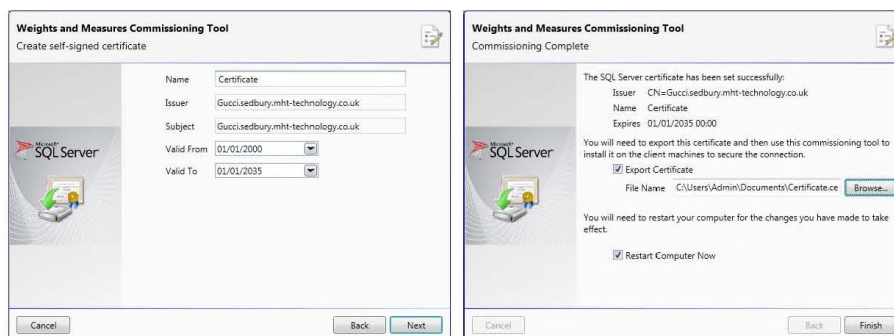


The easiest method is to create a self-signed certificate. Select the option and click Next.

Enter a certificate name and select validation dates, the issuer and subject will be completed automatically. Click Next to continue.

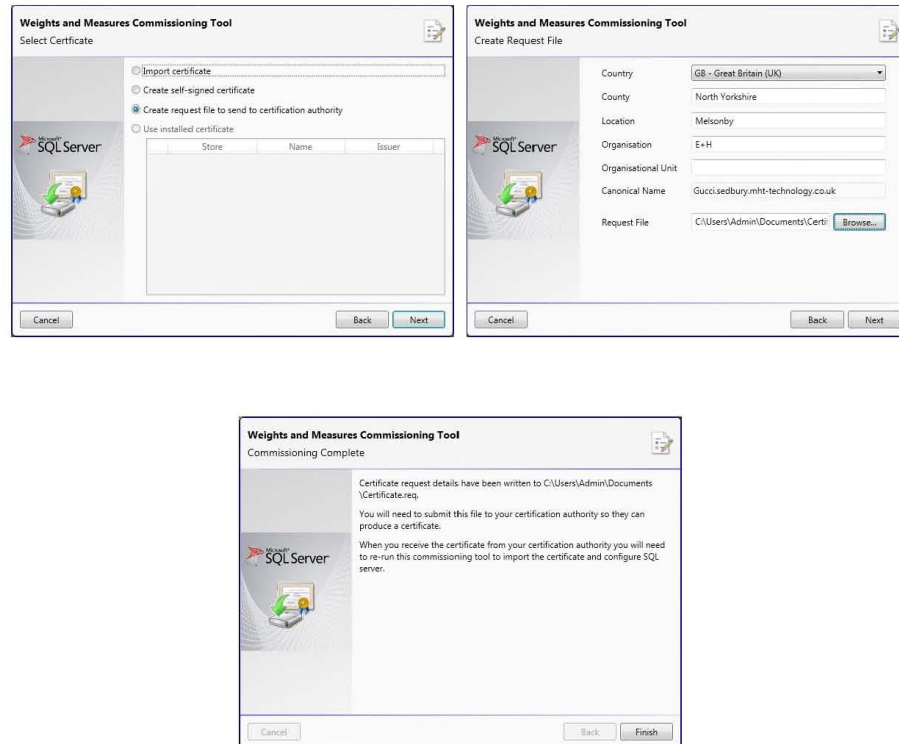
The certificate will be required by any client PCs that require a secure connection to the server.

Enter the location to export the certificate in the next screen. The Server PC will require a restart to complete the process. If you would like to restart the PC at a later time untick the "Restart Computer Now" box.



It may be necessary to have a relevant authority issue the certificate. In this case a request file can be created and sent to the certification authority. Select this option, complete the relevant fields and submit the request file to the certifying authority.

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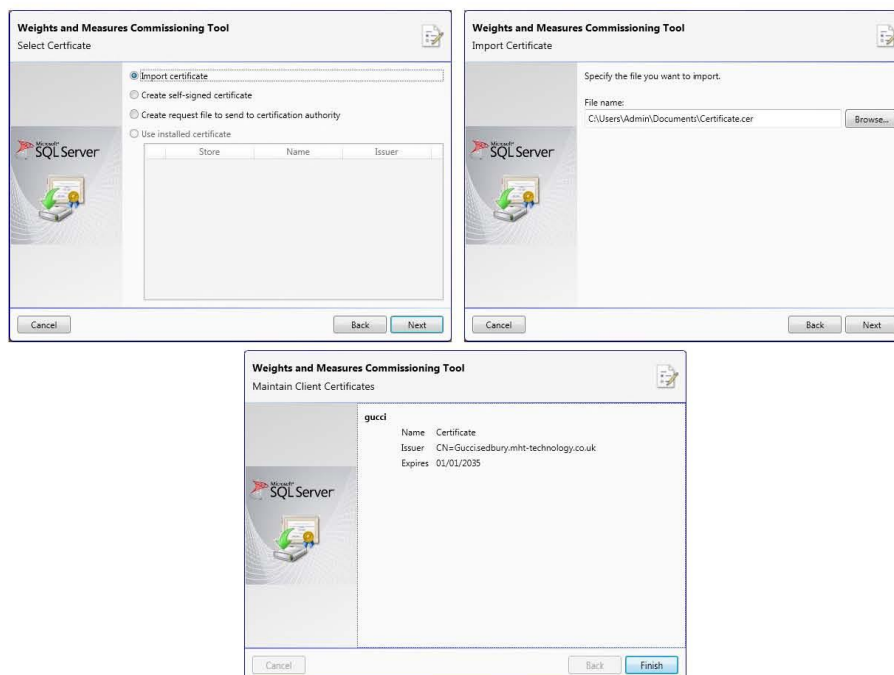


3.2 Apply SQL Certificate to Server

Once a certificate has been issued it must be imported to the server using the "Import Certificate" option

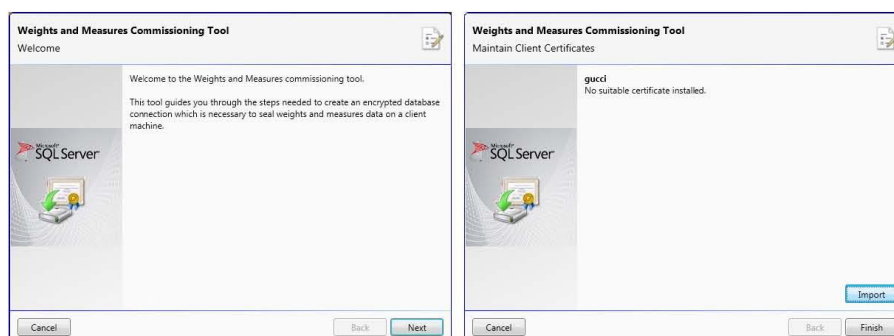
Select Import Certificate, specify the path and filename of the certificate and click Next and then Finish.

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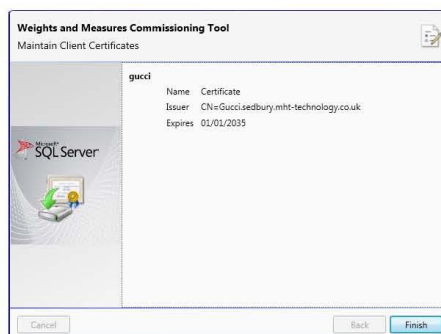


3.3 Apply SQL Certificate to Client

Once a certificate has been created for the server it must be imported to the Client. Open the weights and measures commissioning tool and click the Import button. Select the location of the stored Server certificate and click Finish to close the tool.



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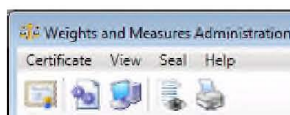
3.4 W & M Administration in Client

The weights and measures module on the client PC operates with a simplified set of controls.

As with the server PC the operator is able to Open and Close the Certificate, Preview and Print the Events report and seal the software for the client PC.

It is not possible to seal or unseal Devices and Tank Capacity Tables from a client PC, these functions are restricted to the Server.




One additional function, Server Connections () is added to the client Administration tool.



3.5 Encrypting Connection

Data displayed on a client PC can only be considered weights and measures compliant when the Server\Client connection is Encrypted.

Ensure the server certificate has been applied to the client PC and select the Server Connections option from the Weights and Measures Administration tool.

The following window will open. Select a server from those available and click  to toggle between encrypted  and unencrypted  connection.



Any weights and measures sealed data will display the appropriate indicator when the connection is encrypted. If the connection is not encrypted the indicators will not be present even if the data is W&M compliant.