BA00393G/00/EN/21.22-00
71566149
2022-04-21
Valid as of software version:
18.3.2

Products   Solutions   Services

Operating Instructions
Tankvision Professional NXA85
Tankvision LMS NXA86B
Terminalvision NXS85
Maintenance

Endress+Hauser
People for Process Automation
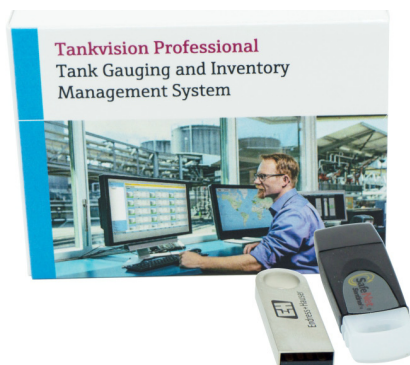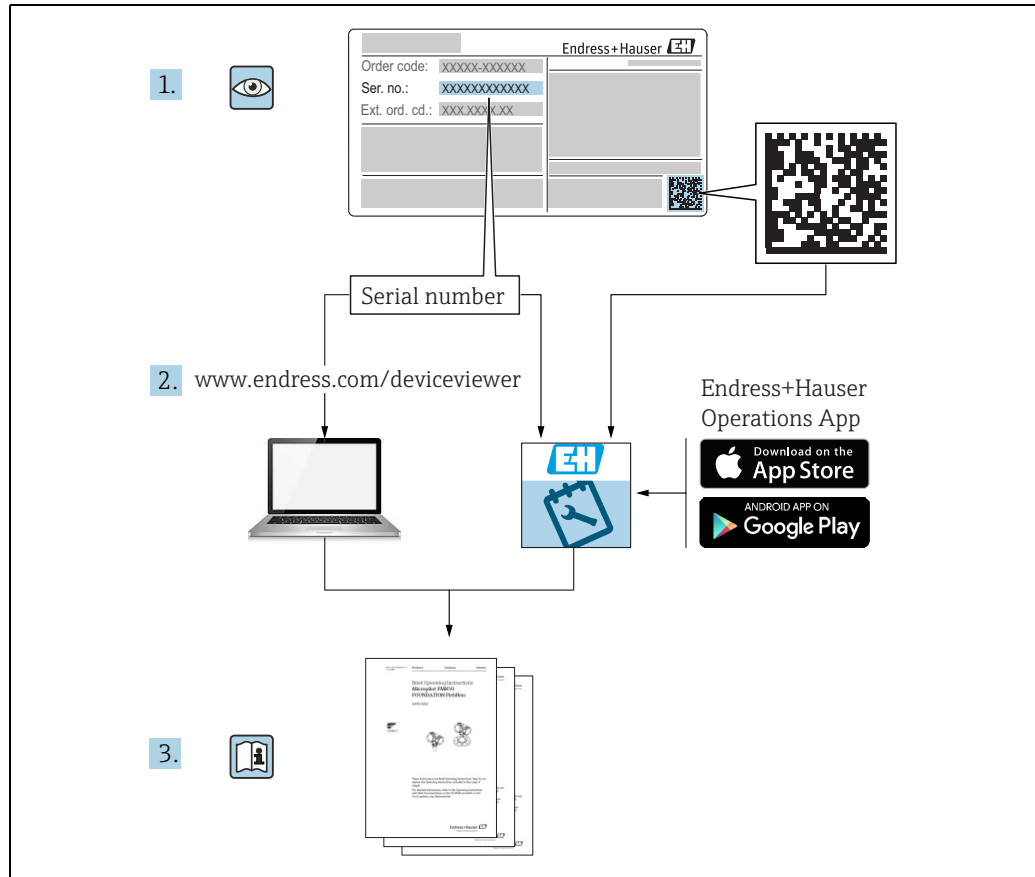
A0023555

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.

Change history

Document version	Valid for SW version	Changes to the previous version
BA00393G_17.17	18.1.1	Unification of the W&M and the non W&M software packages.
BA00393G_18.18	18.1.1	Compatibility with Windows 10 and Windows Server 2016
BA00393G_19.19	18.2.5	Version number updated
BA00393G_20.20	18.3.1	Document maintenance and version number updated.
BA00393G_21.22	18.3.2	Enhanced Backup and Restore utility, featuring scheduled backups.

Table of Contents

1 About this document

1.1 Document function

This manual should support during the configuration of the tank gauging and terminal management softwares Tankvision Professional NXA85, Tankvision LMS NXA86B and Terminalvison NXS85.
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 Software versions and certification

Due to the certification process with weights and measures agencies, the latest software version might only be certified at a later stage. Also some features might be incompatible with the weights and measure regulations and can therefore not be combined.

1.3 Symbols

1.3.1 Safety symbols

Symbol	Meaning
⚠ DANGER A0011189-EN	**DANGER!** This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.
⚠ WARNING A0011190-EN	**WARNING!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.
⚠ CAUTION A0011191-EN	**CAUTION!** This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.
NOTICE A0011192-EN	**NOTICE!** This symbol contains information on procedures and other facts which do not result in personal injury.

1.3.2 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.

1.3.3 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

1.3.4 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

The following documentation types are available in the Downloads area of the Endress+Hauser website: www.endress.com/downloads

For an overview of the scope of the associated Technical Documentation, refer to the following:

- *W@M Device Viewer:* www.endress.com/deviceviewer - Enter the serial number from the nameplate

- *Endress+Hauser Operations App*: Enter the serial number from the nameplate or scan the matrix code on the nameplate

1.5 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 Sun Microsystems, Inc.

Mozilla® Firefox®
Registered trademark of the Mozilla Foundation

Enraf, Honeywell, Rosemount, Emerson, Saab, L&J, VAREC, GPE are registered trademarks and trademarks of these organizations and companies.

All other marks are property of their respective owners.

2 Basic safety instructions

2.1 Requirements for the personnel

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

- Trained, qualified specialists: must have a relevant qualification for this specific function and task
- Are authorized by the plant owner or operator
- Are familiar with federal or national regulations
- Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application)
- Follow instructions and comply with basic conditions

The operating personnel must fulfil the following requirements:

- Are 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 Intended use

2.2.1 Application

Tankvision Professional NXA85

Tankvision Professional is specifically designed for operators of bulk storage facilities, marketing terminals, refineries and pipelines. It is designed to handle all the data acquisition, supervisory control and monitoring required in a single fully integrated solution.

Tankvision Professional integrates all major types of tank measurement instruments into one system.

All measured and calculated tank parameters are accessible to your tank farm and terminal operators as well as to connected host systems.
Multi-user operation is provided by the inbuilt Web Server offering the opportunity to access data at any connected location (local or remote) e.g. for administrative and accounting purposes.

Tankvision LMS NXA86B

Tankvision LMS is a total LNG Tank Storage and Management solution for Peak Shaving, Receiving and Production LNG facilities. The LMS system has been designed to interface to all instruments commonly found on LNG storage tanks, and to collect and present the instrument data through a range of intuitive graphical user interfaces. A typical LNG Tank will have a wide range of measurement instruments to measure Liquid Level, Liquid Density, Liquid and Vapour Temperature, Liquid and Vapour Pressure, Skin Temperature and much more.

Typically each tank would be fitted with an LTD gauge, two further level gauges configured as a Primary and Secondary, and an Alarm Gauge. The LTD gauge is a servo operated unit mounted on the tank roof. The purpose of the LTD gauge is to take accurate profiles of temperature and density throughout the liquid, and whilst not profiling provide continuous liquid level, temperature and density measurement. The Primary and Secondary gauges can be either servo and or radar operated units also mounted on the tank roof. The purpose of

these gauges is to provide continuous liquid level measurement, and average liquid temperature measurement. They provide redundancy on the measurement of level and temperature. The average liquid temperature is derived from a multi-point temperature sensor device. The alarm gauge is often a servo or radar based gauge configured to provide volt free contact alarm status to an independent system.

An LMS system can operate in a simple standalone configuration or as a fully redundant system where security and integrity are of paramount importance. The LMS system has a flexible and scalable architecture allowing it to be tailored to a number of different applications easily.

Terminalvision NXS85

Terminalvision is a terminal management and loading monitoring software designed to meet the requirements of depots and terminals. Interfacing to most vendor devices used for access control, batch controllers, flow computers, and weighbridges, Terminalvision provides a secure and controlled loading and off-loading procedure for all movement types. Terminalvision also enables site control and overview, allowing operators to access details of all gantries, loading arms, vehicles, drivers, and products in use on site.
Terminalvision can be provided as a simple standalone station for small depots, or be configured on larger sites as a full Client/Server system where multiple operator stations are required. Printers can be distributed throughout the system, for example placed within the terminal control room and control rooms for internal reporting, as well as at the exit gate for the automatic printing of BOLs.

2.3   IT security

A warranty on our part can only be provided if the software application is installed and used as specified in the operating manual. The software application contains safety mechanisms to protect it against inadvertent changes to the software settings.
IT security measures that are in accordance with the operator's safety and security standards and designed to additionally protect the software application and the transfer of data must be implemented by the operator.

3   Identification

3.1   Product identification

The following options are available for identification of the software:

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

3.2   Nameplate
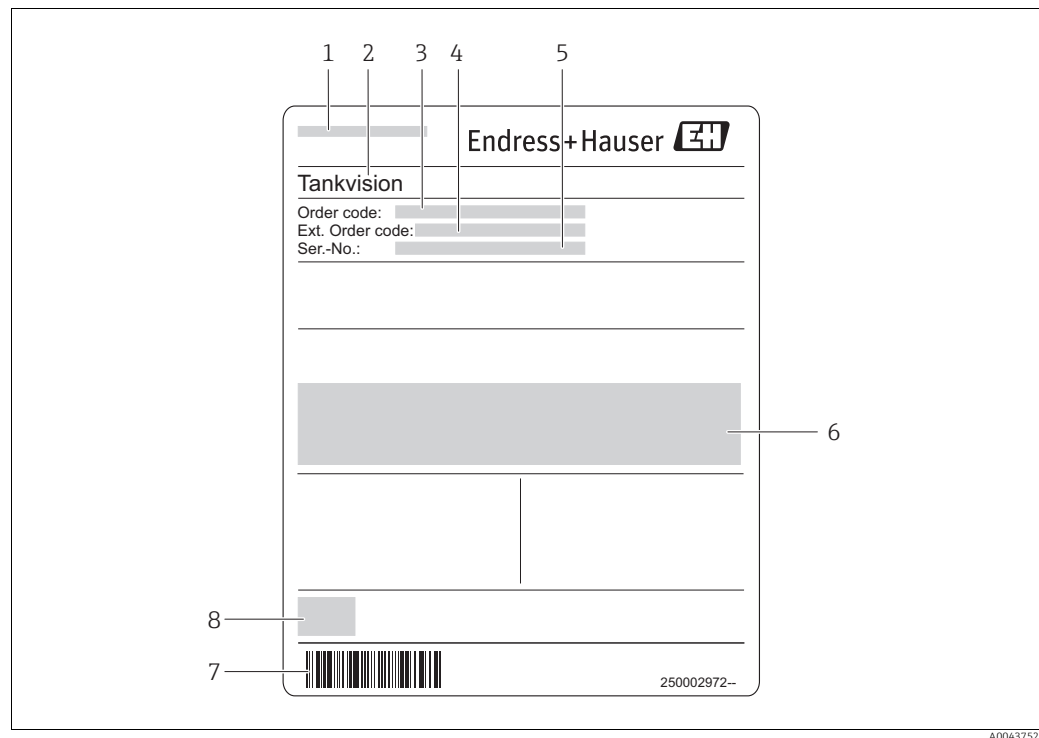
A0043752

1   Address of manufacturer
2   Product name
3   Order code
4   Extended order code (Ext. ord. cd.)
5   Serial number (Ser. no.)
6   Certificate and approval relevant data
7   Barcode
8   CE mark

3.3   Order code and device version

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

4   Introduction

The likely maintenance tasks that will have to be carried out are:
- Regular Backups of the database and configuration files
- Restoring the database and configuration files in the event of a system problem
- Applying Service Pack updates

ℹ️   Maintenance of the system should be carried out using the administrator account and appropriate password – failure to do so will cause problems.

Frequency of backups

Like any information system the most important maintenance task is performing regular backups. The regularity should be determined by the user; it generally depends on the criticality of the system to your operation. It also has some dependency on which features of the tank gauging or terminal management software are enabled on your system.
The modules that potentially generate large quantities of data are the trending and movement modules. Where heavy use of these features is made it is recommended that backups are performed weekly as a minimum.

Hardware inspection

Clearly the hardware on which the tank gauging or terminal management software itself is running may require periodic inspection and maintenance such as checking integrity of cables, making sure fan filters are free of dust and indeed cooling components are indeed operational. Storage medium used for backup purposes should also be maintained regularly.

Software updates

Updates to the tank gauging software may be periodically issued, in the form of service packs. These updates may add new functionality or fix existing issues and should be installed as and when they are issued.

5 Backup

The user configured data for tank gauging or terminal management software is stored in a number of different locations, depending on the type of data and which sub-system it is used for. These include:

- **SQL Server** - the main tank gauging or terminal management software databases are stored within SQL server.
- **Files** - some of the communications and system services within tank gauging or terminal management software system store their configuration data within XML format files.
- **Trend Data** - stored trend data files. This' feature is only valid for Tankvision Professional NXA85 and Tankvision LMS NXA86B.

The system provides a utility, **Backup**, to simplify the backup procedure and make it easy to restore from a previous backup in the event of a system problem.
During a backup, the utility will automatically save all required files to a compressed file in a user specified folder. The user requires no knowledge of which files are required for the backup. The name of the backup file is automatically generated using the current date and an index number, e.g: **Backup_22Apr21#1**. If more than one backup file is created on a given day in that folder the backup can be identified by the index number which is incremented each time.

5.1 Starting the Backup utility

To run the **Backup** utility, use the Windows Start button to select the menu option:
Start → Endress+Hauser → Backup
The **Backup** utility can only be run if the current user access rights allow it, otherwise access will be denied. If no user is currently logged in then a dialog will be displayed prompting the login.
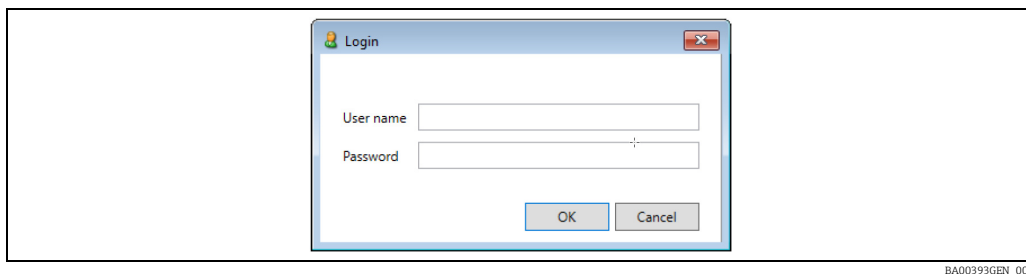
BA00393GEN_001

When a valid account has been entered, the utility will be displayed.
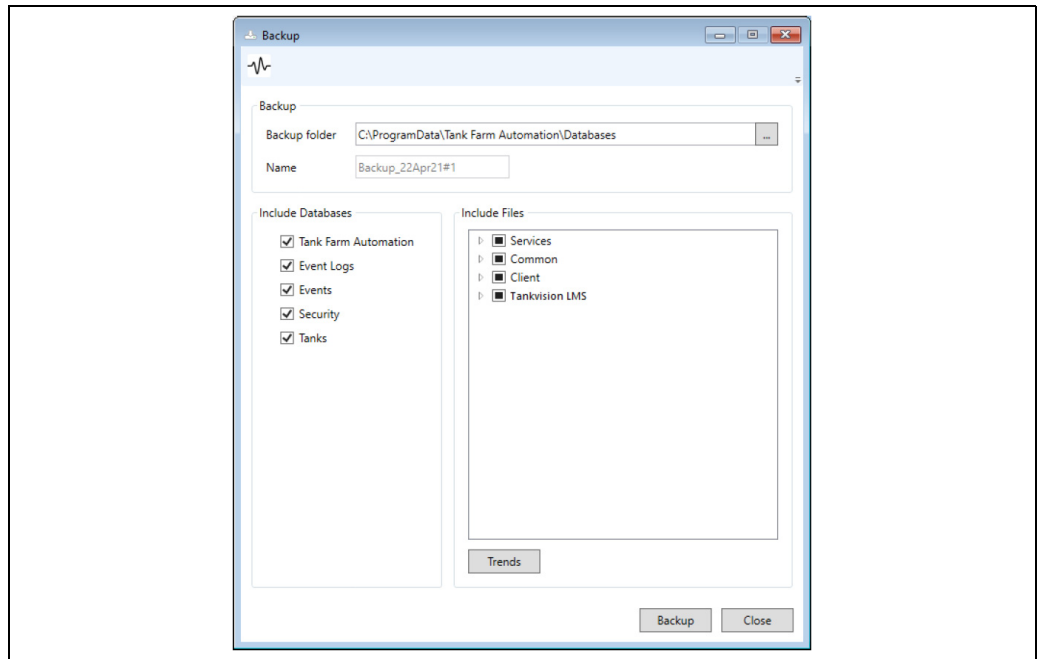
BA00393GEN_002

The toolbar on this window will only be visible if the license for tank gauging or terminal management software includes **Scheduled Backups**.

5.1.1 Backup

NXA85 and NXA86B

The options within the **Backup** section will vary depending upon the installation of tank gauging or terminal management software. The options shown above are for a **Standlone System** or a single **Server installation**. For a redundant **Server** or **Client** installation there is the option of backing up either the local machine or a remote server.
In these cases there are some additional options in the **Backup** section:
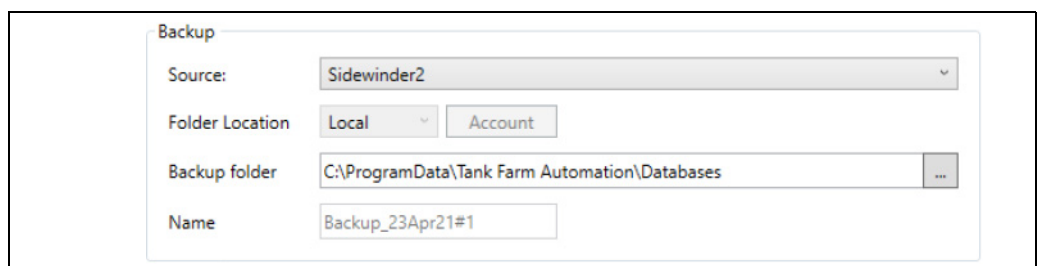
BA00393GEN_022

NXS85

The options within the **Backup** section will vary depending upon the installation of Terminalvision. The options shown above are for a **Standlone System** or a **Server installation**. For a **Client** installation there is the option of backing up either the local machine or a remote server.

The **Source** field is a list of machines that can be backed up.
The **Folder Location** fields are used to determine the location where the backup will be created. If it is the local machine which is being backed up then these options are unavailable as the backup must always be created on that machine. However, if it is a remote server which is being backed up then there is the option to either create the backup on the machine from which the backup utility is being run **Local**, or on the server itself as **Remote**. If the

backup is to be created on the server, then it may be necessary to enter credentials to allow access to the folder in which the backup is to be created. To change the credentials used to access the file system on the server, click on the **Account** button. The following screen will be displayed:

BA00393GEN_006
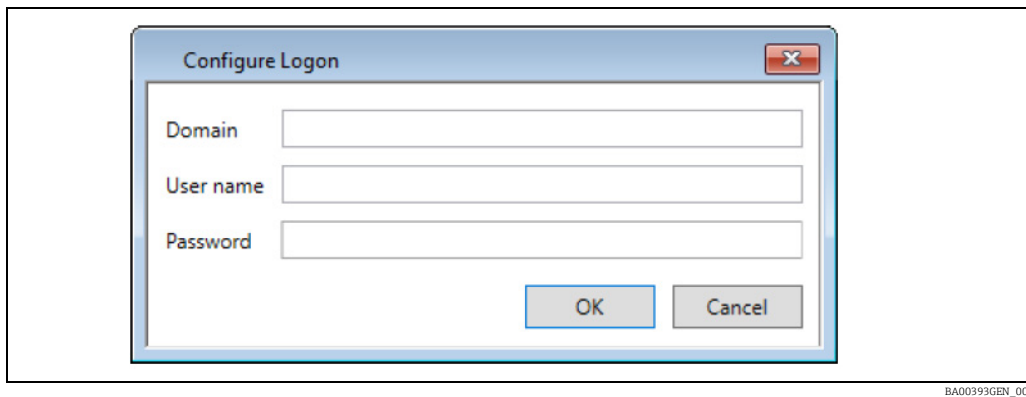
Enter the account details to be used to access the file system on the server and then click **OK**. The **Backup Folder** field is used to enter the folder in which the backup is to be created. It is possible to browse for a folder by clicking the browse button **[...]**. If the machine being backed up is the machine on which the backup utility is being run, then the standard Windows Browse for Folder screen will be displayed:
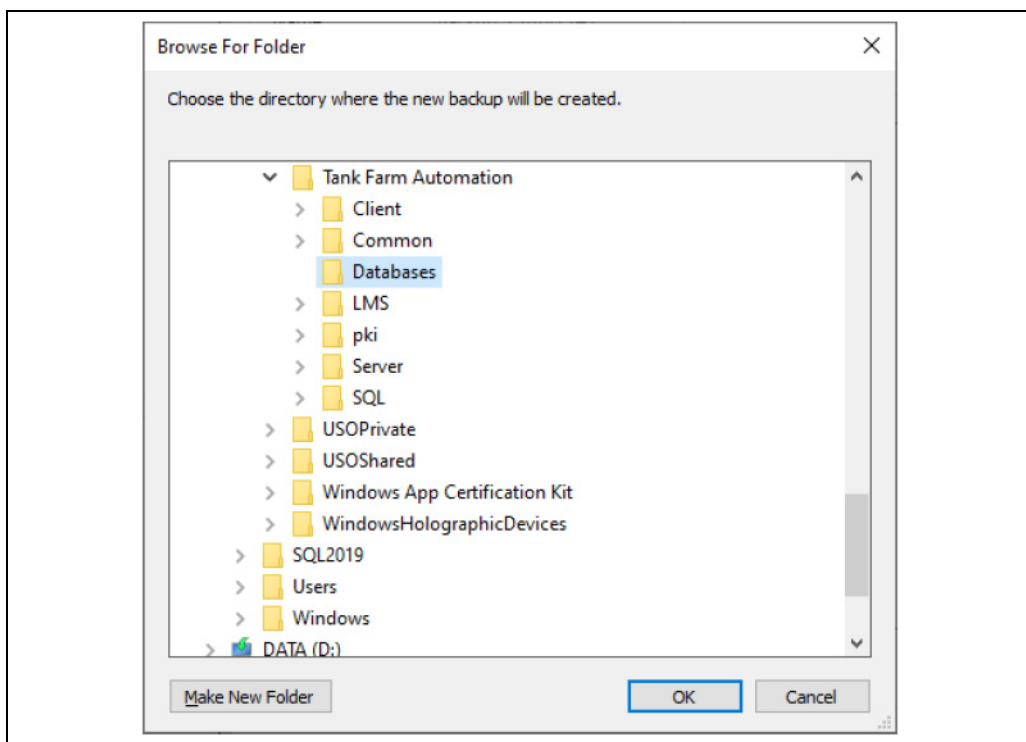
BA00393GEN_027

If it is a remote server which is being backed up, then a customised **Browse for Folder** screen will be displayed allowing selection of a folder on the remote server:
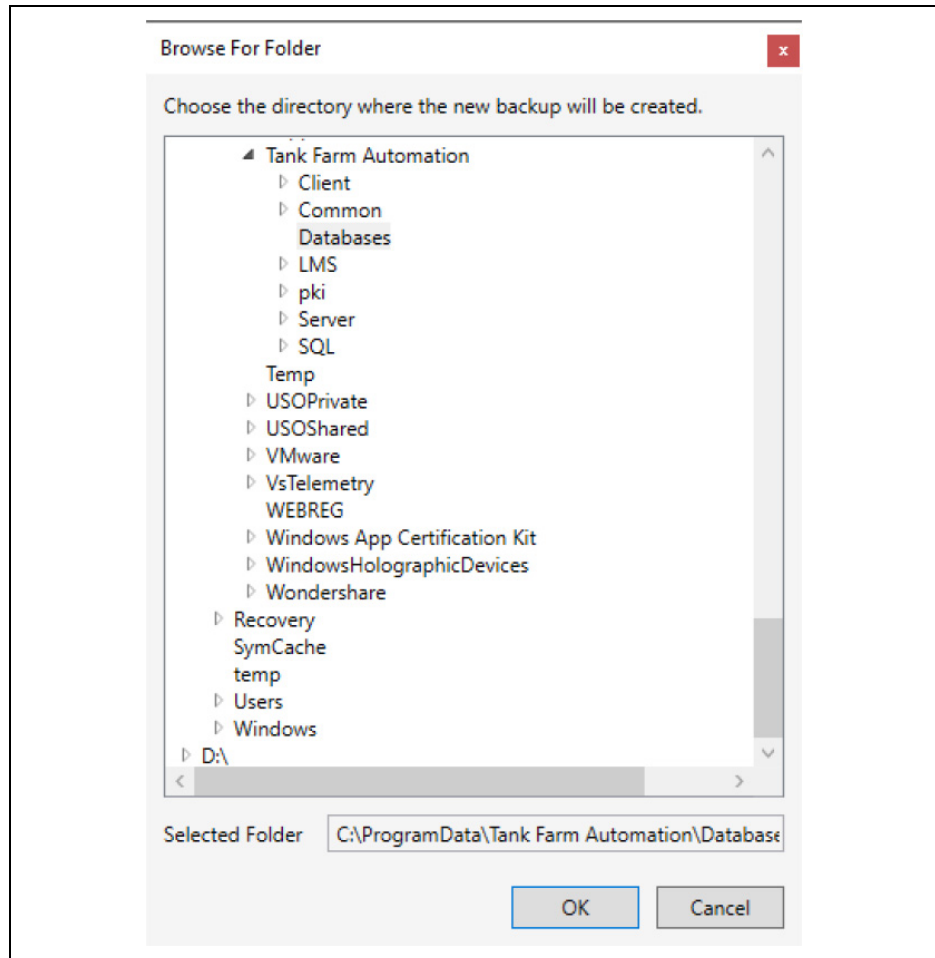
BA00393GEN_028

If the required folder cannot be seen it may be necessary to configure the user account used to access the server as described above.
The **Name** field shows the name of the backup file that will be created. This is for information only and cannot be changed.

5.1.2 Databases

The **Include Databases** section allows selection of the databases to be backed up. By default all available databases will be selected. To select or deselect a database click on the name of the database. Databases that will be backed up are indicated with a tick ☑.
If it is a client machine which is being backed up this section will not be displayed.

5.1.3 Files

To select or deselect a configuration file, click on the name of the configuration file.

If **Trend Files** are to be included in the backup it is necessary to select them by clicking the **Trends button**. The following screen will be displayed:

BA00393GEN_029
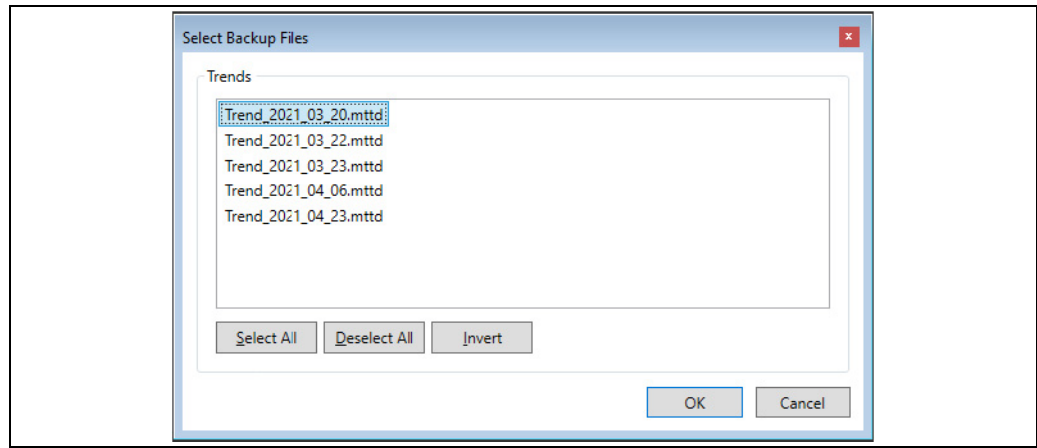
The **Include Files** section allows selection of the configuration files to be backed up. If the required configuration file is not visible, expand the required area, e.g: Services, Common, Client or Tankvision Professional. Configuration files that will be backed up are indicated with a tick ✔ .

To select a **Trend file** click on the trend file name. To select multiple trend files hold the **Ctrl** key down and click on each required trend file.

To select a block of trend files click on the first required trend file name and then hold the **Shift** key down and click on the last required trend file.

To select all of the trend files click on the **Select All** button.

To clear the current selection click on the **Deselect All** button.

To invert the current selection (i.e. deselect the selected trend files and select the unselected trend files) click on the **Invert button**.

Once all of the required trend files to be backed up are highlighted click the **OK** button.

5.1.4   Save/Discard Changes

To save the changes to the scheduled backup configuration and close the configuration window, click **OK**.
To save the changes and leave the window open, click the **Apply** button.
To discard the scheduled backup configuration changes, click the **Cancel** button.

5.2　Creating the Backup

Once the location of the backup has been entered and the required databases and configuration files selected, click the **Backup** button. The screen will change to indicate the progress of the backup:
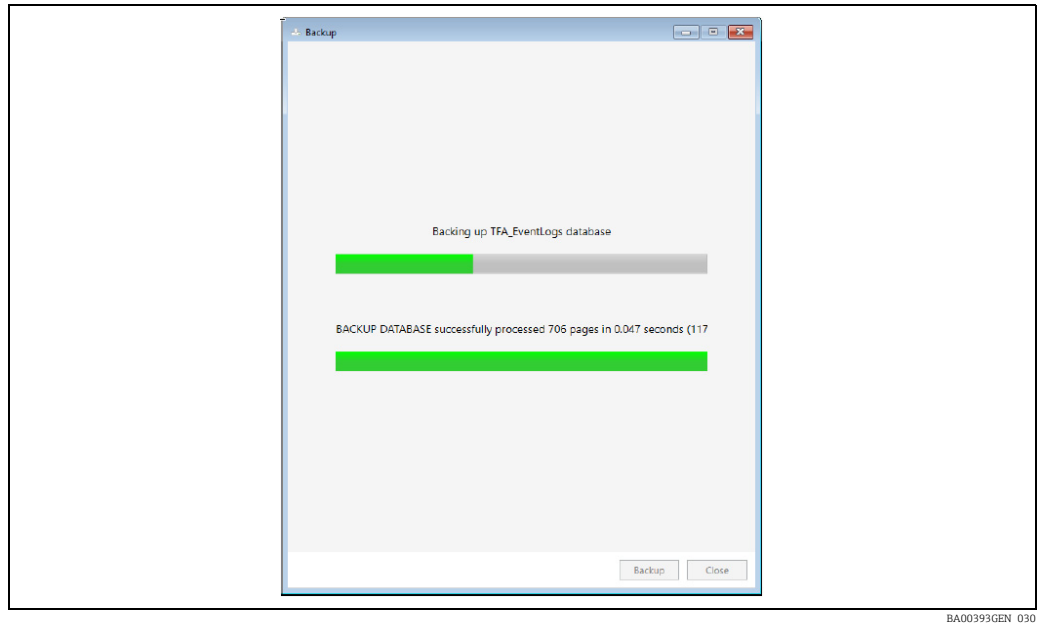
BA00393GEN_030

Once the backup has completed the screen will change again to give some options on what can be done next:

BA00393GEN_031
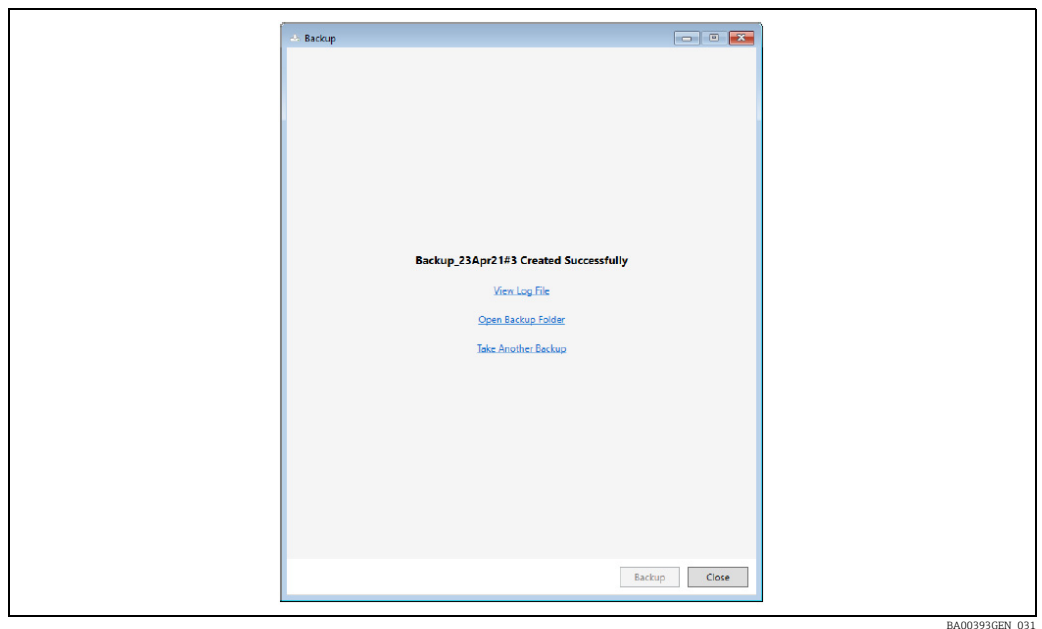
View Log File
Opens the log file taken during the backup in the default text editor.

Open Backup Folder
Opens Windows file explorer displaying the folder in which the backup was created.

Take Another Backup
Changes the screen back to the original state allowing a further backup to be configured.

5.3   Scheduled Backups

It is possible to schedule backups to take place on a regular basis.

ℹ️   Scheduled Backups are a licensable option. If this option is not available please contact your supplier for details.

To configure details of scheduled backups, click on the **Schedule Backups** button 〜 on the toolbar. The following screen will be displayed:
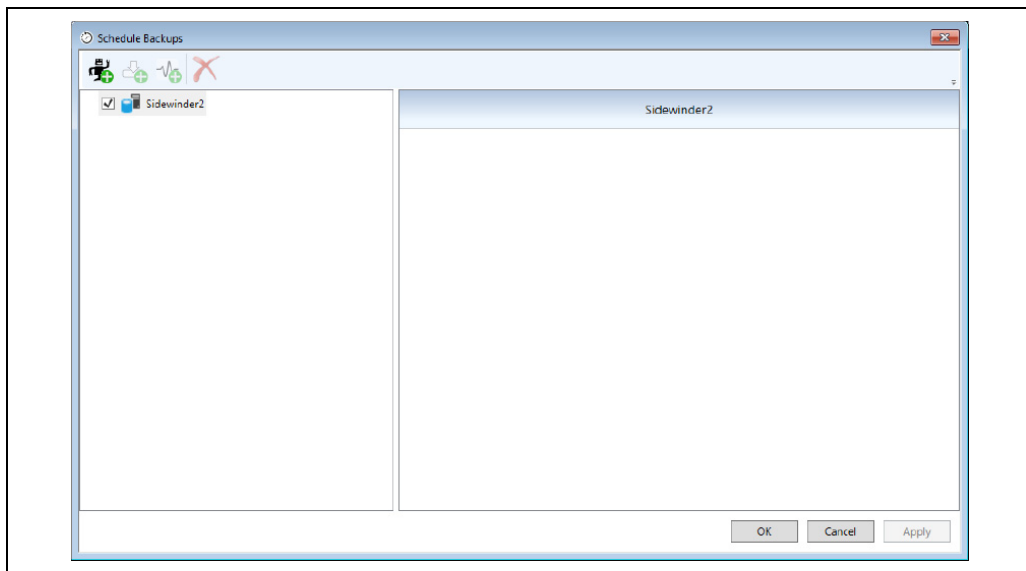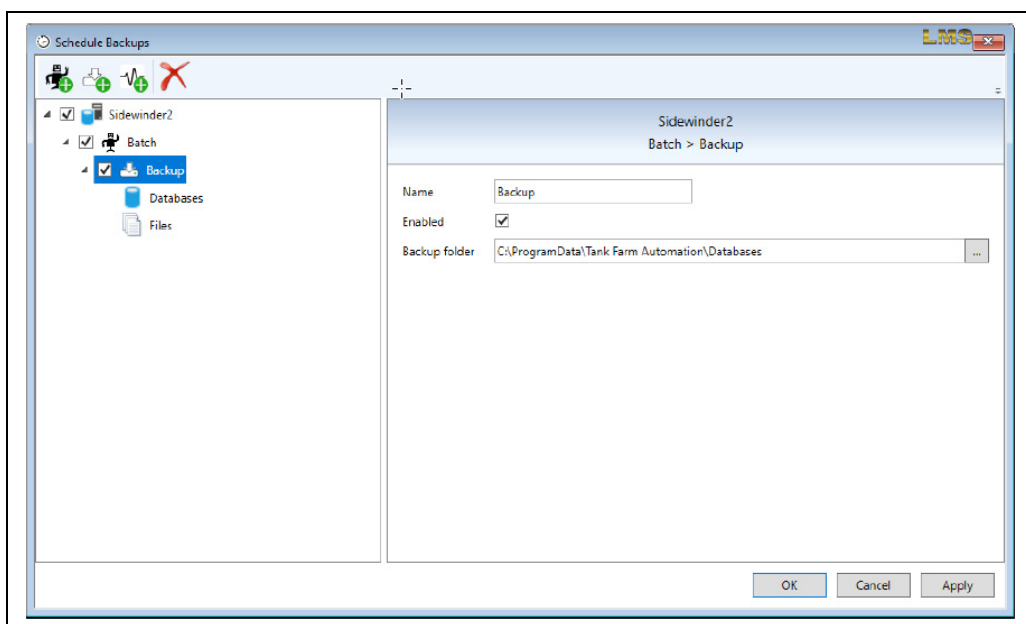

BA00393GEN_032

There will be an entry in the list on the left for each tank gauging software server.

ℹ️   Client machines cannot be backed up on a scheduled basis. If it is necessary to take regular backup of the configuration files on a client it is recommended that this is done using a batch file run from the Windows Task Scheduler.
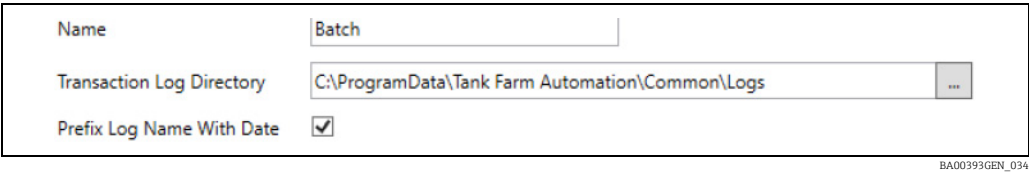
To create a new backup task for a server, select the required server and then click the **Add Batch** button 🖧 on the toolbar. A new batch will be created for that server including a default backup task:

BA00393GEN_033

5.3.1 Batch

To edit details of the batch, click on the batch entry in the list on the left hand side. Details of the batch will be displayed in the right hand panel:

Name	Batch
Transaction Log Directory	C:\ProgramData\Tank Farm Automation\Common\Logs
Prefix Log Name With Date	☑

BA00393GEN_034

Name
The text used to identify the batch.

Transaction Log Directory
The folder to which the transaction log will be written when a scheduled backup is performed. To browse to a folder, click the browse button **[...]**.

Prefix Log Name With Date
If this option is selected then the date when the backup is performed will be prepended to the transaction log file name. N.B. If this option is not selected then the same name will be using for the transaction log file each time, overwriting the previous log file.

5.3.2 Backup task

To edit details of the backup task, click on the backup task entry in the list on the left hand side. Details of the backup task will be displayed in the right hand panel:

Name	Backup
Enabled	☑
Backup folder	C:\ProgramData\Tank Farm Automation\Databases

BA00393GEN_035

Name
The text used to identify the backup task.
This is not the name of the backup file that will be created. The name of the backup file will be automatically generated as described in section **Backup**.

Enabled
Indicates whether the backup task should be performed as part of the batch. This allows backup tasks to be temporarily disabled instead of needing to delete them and create a new one when they are required again.

Backup Folder
The path to the folder in which the scheduled backups are to be created. To browse to a folder, click the browse button **[...]**.

If additional backup tasks are required, they can be added by selecting the batch (or one of its components) in the list on the left hand side and then clicking the **Add Backup** button on the toolbar.

5.3.3 Databases

To select which databases will be backed up as part of a backup task, click on the **Databases** entry under the corresponding backup task in the list on the left hand side. The databases that can be backed up are displayed in the right hand panel.

5.3.4   Files

To select which configuration files will be backed up as part of a backup task, click on the **Files** entry under the corresponding backup task in the list on the left hand side. The configuration files that can be backed up are displayed in the right hand panel.

5.3.5   Triggers

To add a new trigger to a batch, select the batch (or one of its components) in the list on the left hand side and then click the **Add Trigger** button ⌁ on the toolbar.
A list of available triggers will be displayed:

BA00393GEN_036
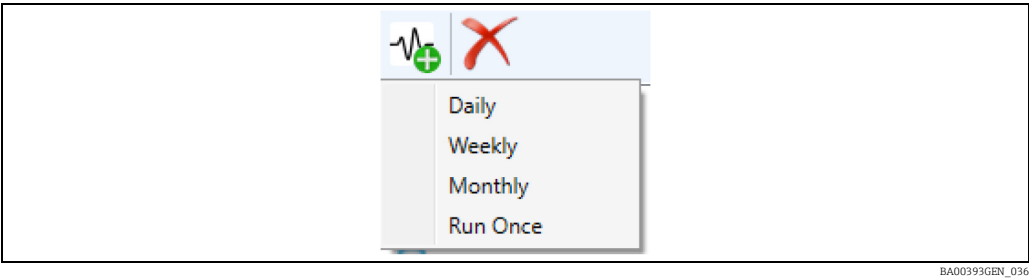
Click on the type of trigger required to add it to the batch.

5.3.6   Daily Trigger

To edit details of a **Daily Trigger**, click on the trigger in the list on the left hand side. Details of the trigger will be displayed in the right hand panel:

BA00393GEN_037

Name
The text used to identify the daily trigger.

Enabled
Indicates whether this trigger should be used to trigger a scheduled backup. This allows the trigger to be temporarily disabled instead of needing to delete it and create a new one when it is required again.

Time
The time of day at which the scheduled backup is to be run.

5.3.7   Weekly Trigger

To edit details of a **Weekly Trigger**, click on the trigger in the list on the left hand side..
Details of the trigger will be displayed in the right hand panel:

BA00393GEN_043

Name
The text used to identify the weekly trigger.

Enabled
Indicates whether this trigger should be used to trigger a scheduled backup. This allows the trigger to be temporarily disabled instead of needing to delete it and create a new one when it is required again.

Day Of Week
The day of the week on which the scheduled backup is to be run.

Time
The time of day at which the scheduled backup is to be run.

5.3.8   Monthly Trigger

To edit details of a **Monthly Trigger**, click on the trigger in the list on the left hand side. Details of the trigger will be displayed in the right hand panel:

Name	Monthly Trigger
Enabled	✔
Day	First Day
Day Of Month	0
Time	0:00

BA00393GEN_038

Name
The text used to identify the monthly trigger.

Enabled
Indicates whether this trigger should be used to trigger a scheduled backup. This allows the trigger to be temporarily disabled instead of needing to delete it and create a new one when it is required again.

Day
The day of the month on which the scheduled backup is to be run. Select from **First Day**, **Last Day** or **Specified Day**.

Day Of Month
Can only be entered when **Day** is set to **Specified Day**. The ordinal day of the month on which the scheduled backup is to be run.
If the day does not exist in a month then no scheduled backup will be taken for that month.

Time
The time of day at which the scheduled backup is to be run.

5.3.9   Run Once Trigger

To edit details of a **Run Once Trigger**, click on the trigger in the list on the left hand side. Details of the trigger will be displayed in the right hand panel:

Name	Run Once Trigger
Enabled	✔
Time	27/04/2021 14:19

BA00393GEN_039

Name

The text used to identify the run once trigger.

Enabled

Indicates whether this trigger should be used to trigger a scheduled backup. This allows the trigger to be temporarily disabled instead of needing to delete it and create a new one when it is required again.

Time

The date and time at which the scheduled backup is to be run.

6   Restore

The data for the tank gauging or terminal management software configured by the user is located in different locations depending on the type of data and which sub-system it is used for.
The data includes:

SQL Server
The main the tank gauging or terminal management software databases are stored within SQL server.

Files
Some of the communications and system services within the tank gauging or terminal management software store their configuration data in XML format files.

Trend Data
Stored trend data files.
This feature is only valid for Tankvision Professional NXA85 and Tankvision LMSNXA86B.

The system provides a utility, **Restore**, to restore a backup for the system. See **Backup** chapter.

6.1   Starting the Restore utility

To run the **Restore** utility, use the Windows Start button to select the menu option:

Start → Endress+Hauser → Restore

The **Restore** utility can only be run if the current user access rights allow it, otherwise access will be denied. If no user is currently logged in then a dialog will be displayed prompting the login:
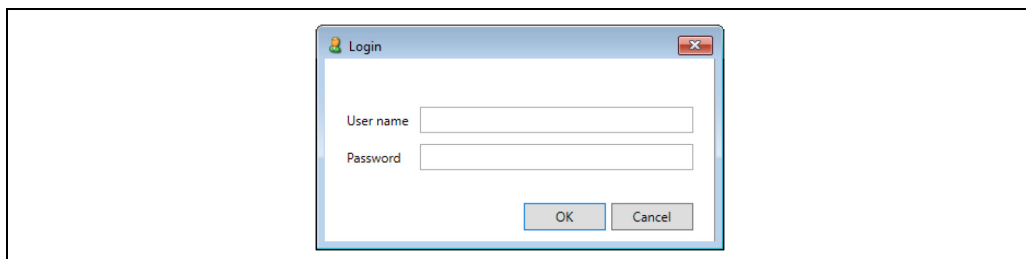
BA00393GEN_023

If the valid user name and password is entered the next window will appear:
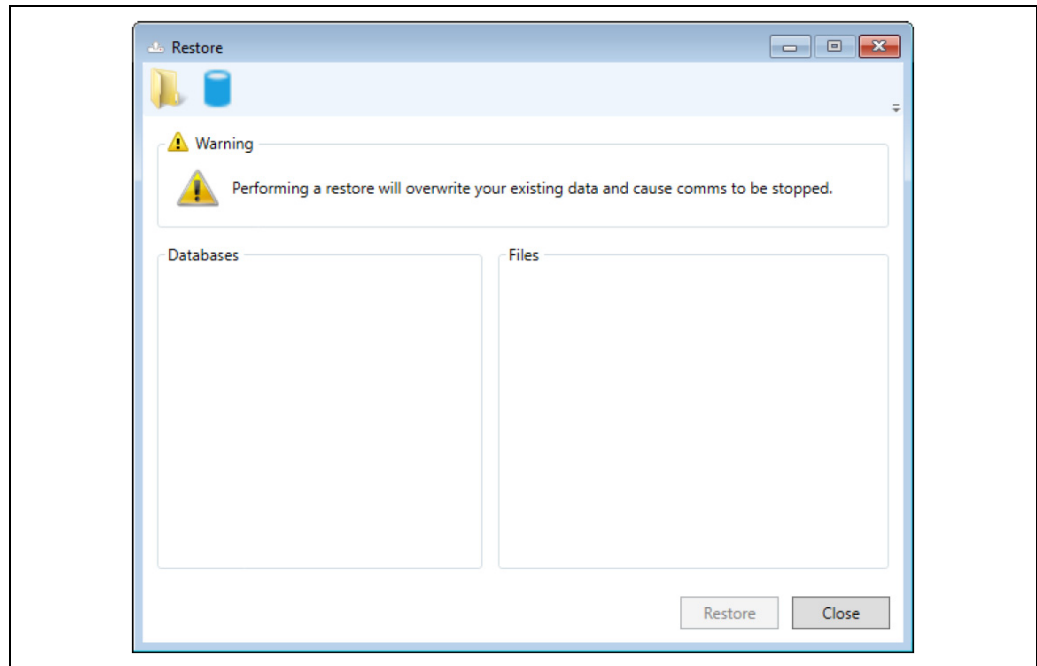
BA00393GEN_024

6.1.1   Open Existing Backup

To open an existing backup, click on the **Existing Backup** button 📁 on the toolbar.
The standard Windows **Open File** screen will be displayed to allow selection of the existing backup to be opened:
Select the backup file to be opened and then click the **Open** button.
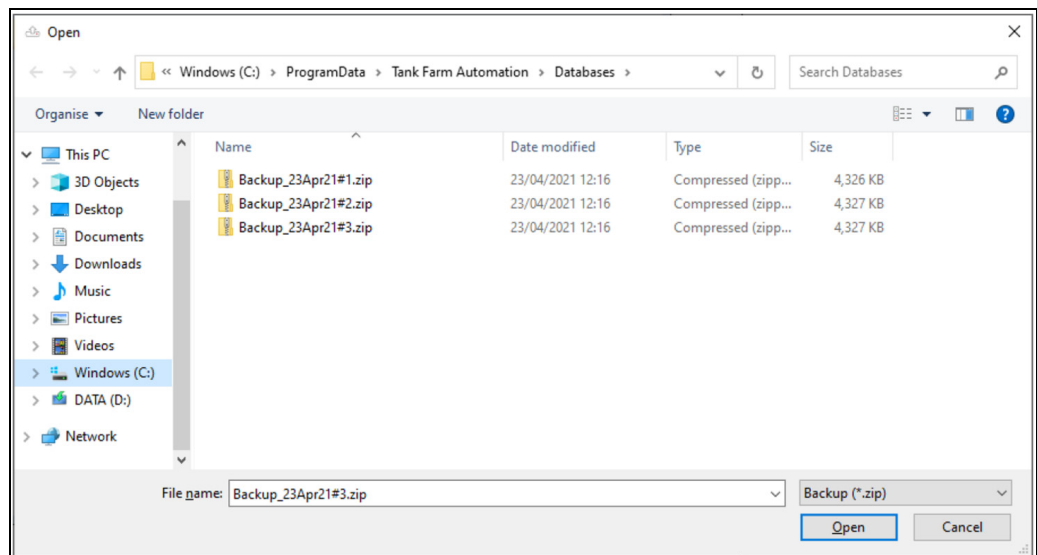
BA00393GEN_008

6.1.2   Preconfigured Database

To select a preconfigured database to restore, click on the Preconfigured Database button 🛢 on the toolbar. A list of available preconfigured databases will be displayed:
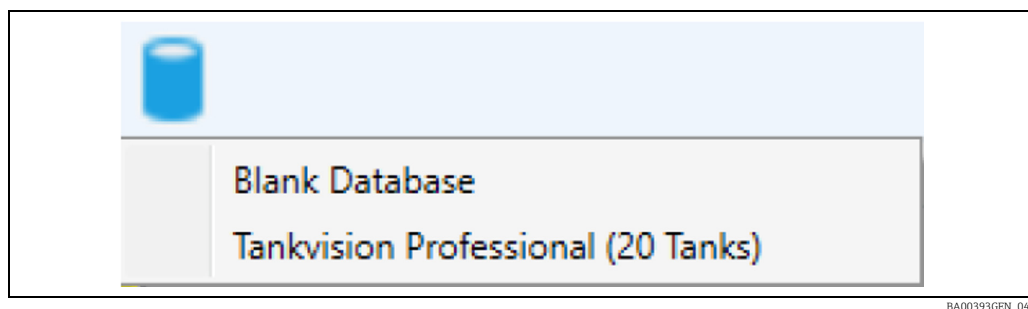
BA00393GEN_040

Select the required preconfigured database to open it.

6.1.3   Selecting Items to Restore

Once a backup has been selected, either by opening an existing backup or by selecting a preconfigured database, the items to restore from the backup can be selected.

Databases
The list of databases that are available to restore are displayed in the **Databases** section:
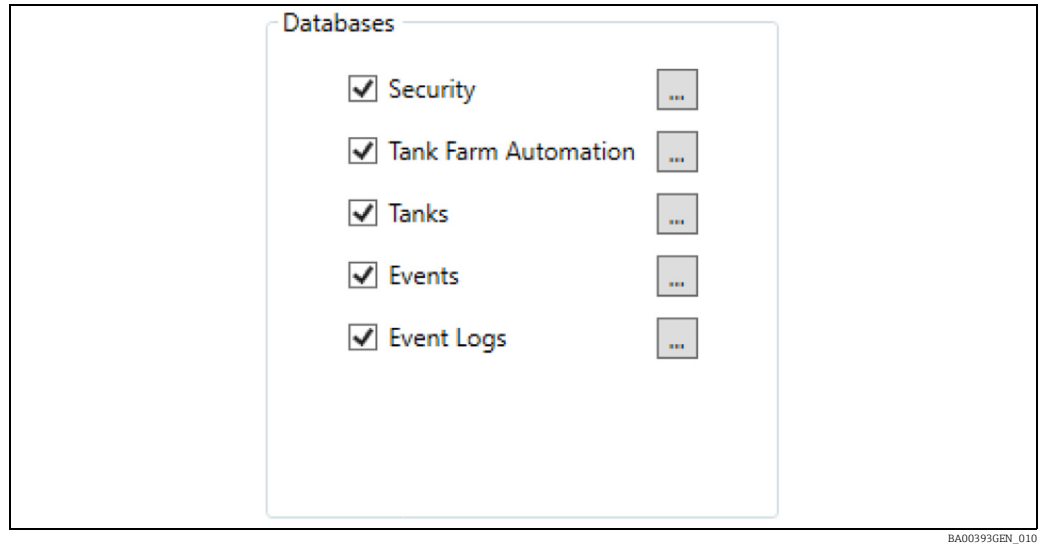
BA00393GEN_010

This section will not be displayed if the Tankvision Professional installation is **Client Only**. To select or deselect a database click on the database name. The databases that will be restored are indicated with a tick ☑.
To change the file paths where the databases will physically reside on the computer, click on the browse button **[...]**. A screen will be displayed allowing the file paths to be modified:
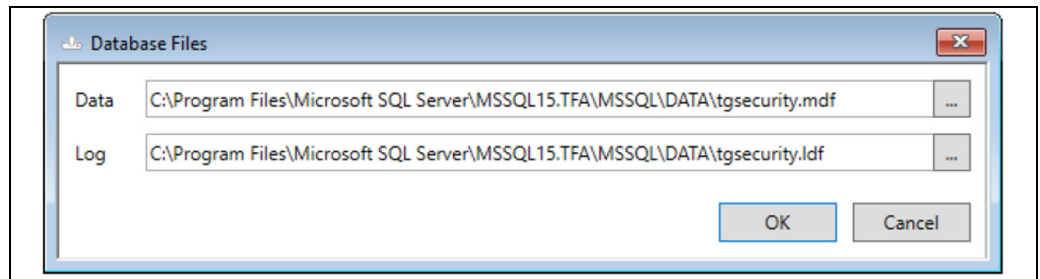
BA00393GEN_010

Files
The list of configuration files that are available to restore are displayed in the **Files** section:
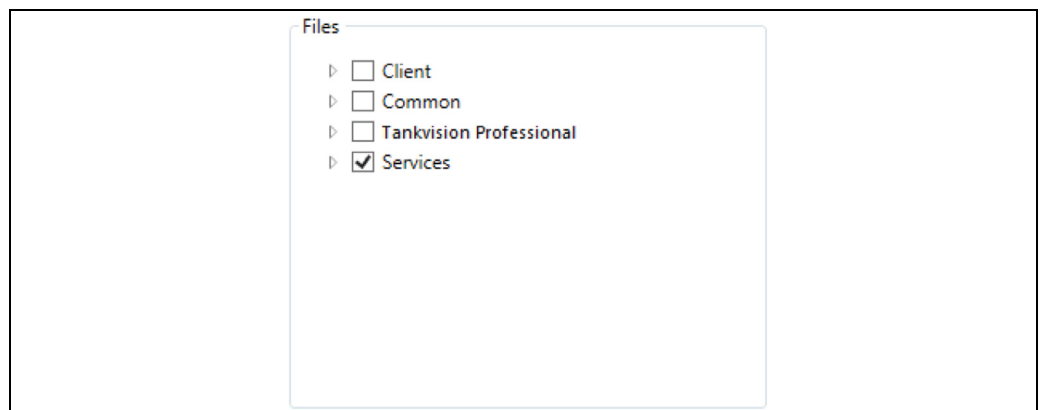
BA00393GEN_042

This section will not be displayed if a preconfigured database is being restored. If the required configuration file is not visible, expand the required area (**Services**, **Common**, **Client**, **Tankvision Professional**).
Configuration files that will be restored are indicated with a tick ✔.
To select or deselect a configuration file, click on the name of the configuration file.

6.1.4   Restore Selected Items

If all the items to be restored have been selected, click on the **Restore** button to begin the restore process. If the restore utility is being run on a the tank gauging or terminal management software server, a warning message will be displayed:
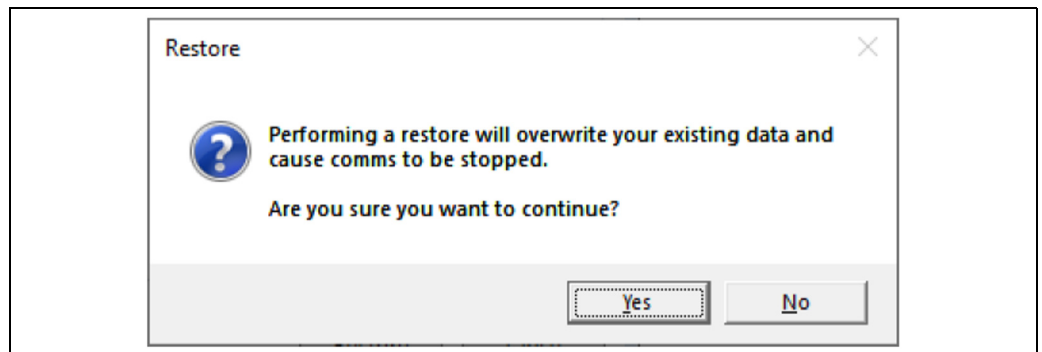
BA00393GEN_011

Click **Yes** to continue.
The screen will change to indicate the progress of the restore:
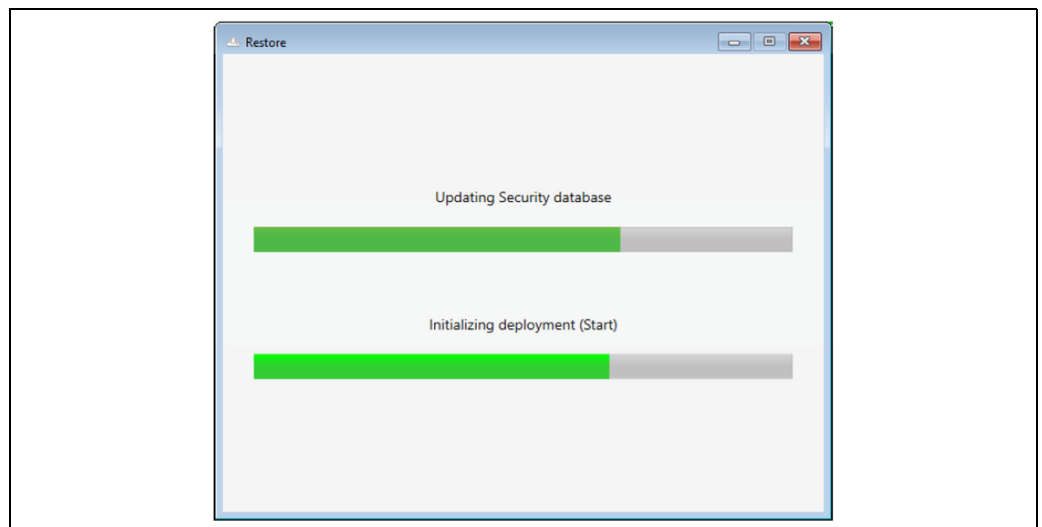
BA00393GEN_012

Once the backup has completed the screen will change again to give some options on what can be done next:
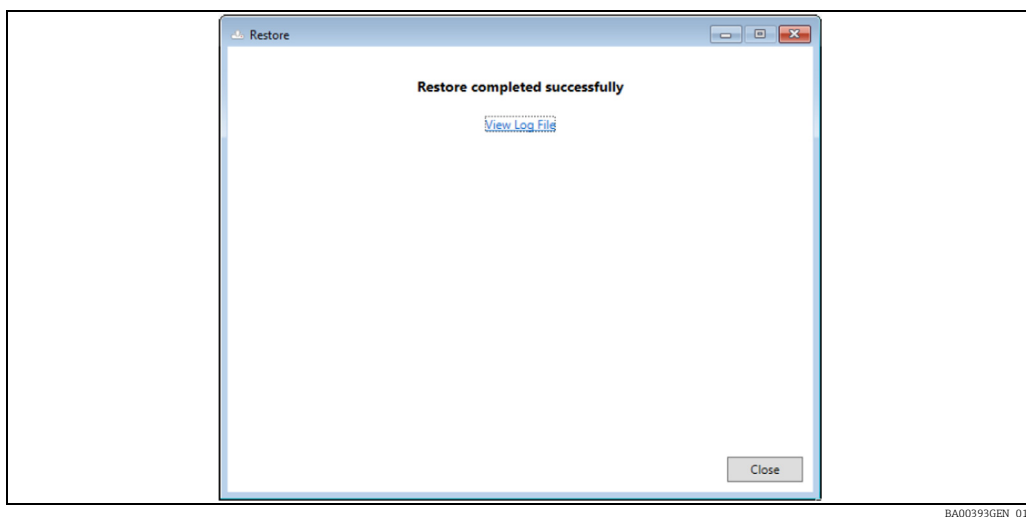
BA00393GEN_013

To view the log file that was generated during the restore, click on the **View Log File** option. The log file will be dislayed in the default text viewer.
To exit the **Restore** utility, click on the **Close** button.

7   Applying Service Pack updates

1. Locate the folder where the service pack resides (must be on the local PC) and double click on the file icon.

📄 ServicePack4	26/08/2010 10:34
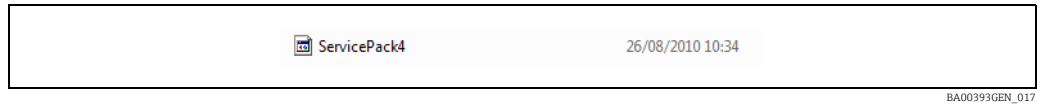
BA00393GEN_017

The following screen shows the options:
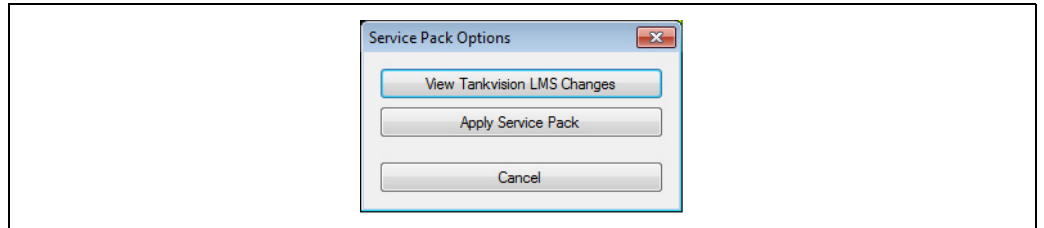
BA0xxxxGEN_Maintenance_001

Service pack options for Tankvision LMS

Clicking **View Tankvision Professional Changes**/**View Tankvision LMS Changes**/**View Terminalvision Changes** shows the release notes:
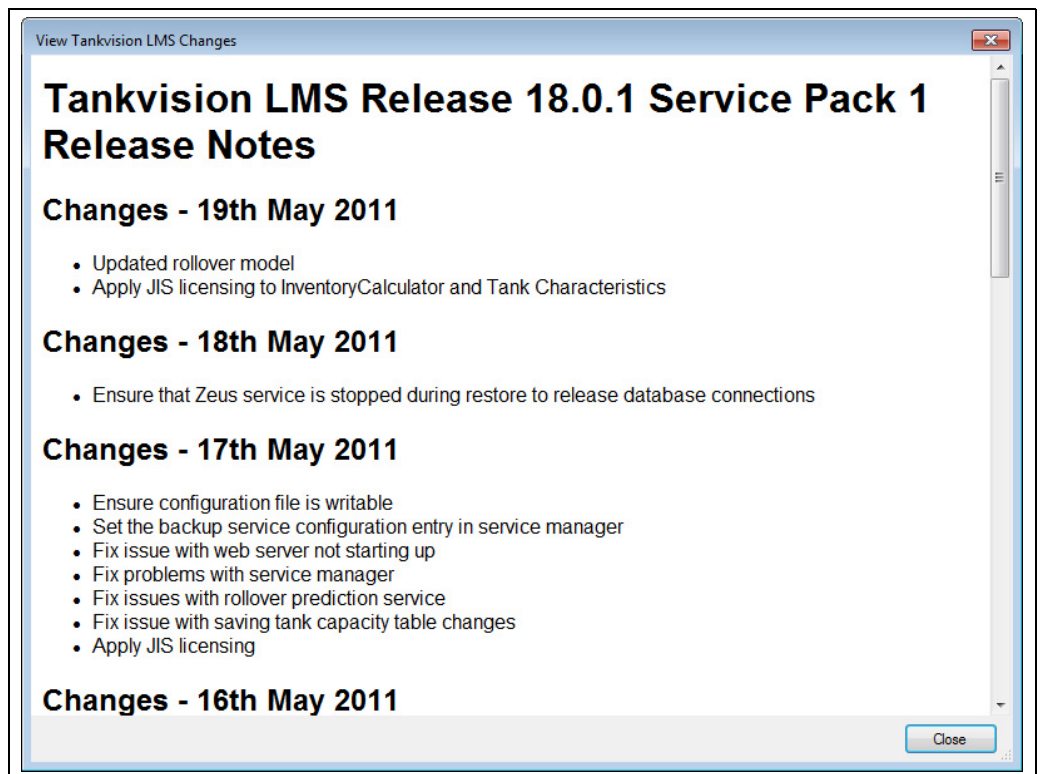
BA0xxxxGEN_Maintenance_002

Release notes for Tankvision LMS

Clicking **Apply Service Pack** initiates the installation.
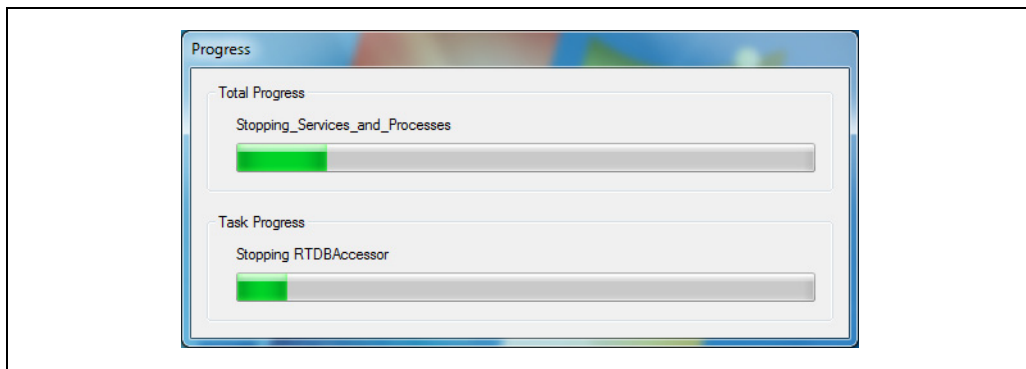
BA00393GEN_020

2. When finished, restart the computer to complete the install as recommended in the final window:

BA00393GEN_021

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