Reference Manual
00809-0300-5110, Rev AB
September 2016

Rosemount™ TankMaster WinView

Tank Management Software

OPC FOUNDATION MEMBER

EMERSON™
Process Management

Rosemount™ TankMaster WinView Tank Management Software

NOTICE

Read this manual before working with the product. For personal and system safety, and for optimum product performance, make sure you thoroughly understand the contents before installing, using, or maintaining this product.

For equipment service or support needs, contact your local Emerson Process Management/Rosemount Tank Gauging representative.

The contents, descriptions and specifications within this manual is subject to change without notice. Rosemount TankRadar AB accepts no responsibility for any errors that may appear in this manual.

Version

This manual describes the functionality of TankMaster WinView RevAA.
If an older version of TankMaster is used, all functionality described in this manual may not be present and the Graphical User Interface (GUI) may not look the same.

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Section 1 Getting Started

1.1 What is TankMaster?

TankMaster is an Emerson Process Management/Rosemount™ Tank Gauging inventory management software package for installation and configuration of level gauging equipment. The *TankMaster* program package provides you with powerful and easy-to-use tools for installation and configuration of devices such as the Rosemount 2410 Tank Hub, the Rosemount 5900S Radar Level Gauge, the Data Acquisition Unit (DAU), and the Field Communication Unit (FCU). You can easily change settings of protocols, devices and tanks at any time.

TankMaster is designed to be used in the Microsoft® Windows 7 environment providing easy access to measurement data from any PC in your network.

The *TankMaster* system allows you to use the TRL/2 Modbus protocol and can be connected via interfaces like RS232 and RS485. Other communication protocols, e.g. Enraf GPU, are also supported. *TankMaster* works in Windows 7 networks and is based on the open OPC standard allowing you to import data to other systems like DCS:s, PLC:s, Scada systems and Microsoft Office programs.

The graphical interface gives you a clear overview of installed devices and tanks. For each tank you can easily see the associated transmitters and data acquisition units.

Measured data is presented in realtime and you can customize the view of tank data to suit your needs.

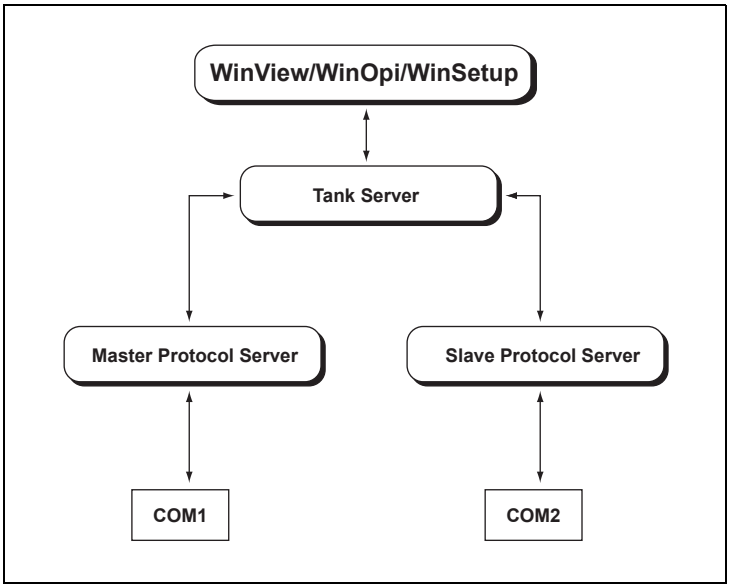
Key Features

- Monitoring of measured and calculated data.
- Clear overview of installed tanks and devices.
- Simple installation by using “wizards”.
- Open connectivity.
- Object oriented user friendly Graphical User Interface.

1.2 TankMaster Software Package

TankMaster comprises the following software modules:

- *WinView*
- *WinOpi*
- *WinSetup*
- *Tank Server*
- *Master Protocol server*
- *Slave Protocol Server*



WinView is the operator´s interface to the tank gauging system. It communicates with the *Tank Server* and the different protocol servers to let the user monitor measured tank data. *WinView* also provides alarm handling, automatic report handling as well as inventory calculations like volume and mass.

WinOpi is an extended version of *WinView*. WinOpi has full support for API calculations. WinOpi is the operator´s interface to the tank gauging system. It communicates with the *Tank Server* and the different protocol servers to let the user monitor measured tank data. *WinOpi* also provides alarm handling, batch report, automatic report handling, historical data sampling as well as inventory calculations like volume, observed density and other parameters

The *WinSetup* program is a graphical user interface for installation, configuration and service of level gauging devices.

The *Tank Server* communicates with devices via the *Master protocol server* and handles configuration data for all the installed tanks and devices. Tank and device names, configuration data like antenna type, number of connected temperature sensors and analog inputs and many other parameters are stored by the *Tank Server*. The *Tank Server*

collects measured data from connected devices and provides these data to the *WinView/WinSetup* user interface.

The *Master Protocol Server* transfers configuration data and measured data between the *Tank Server* and connected devices in the tank gauging system. The *Master Protocol Server* is able to communicate with various types of devices to collect measurement data such as level, temperature, and pressure.

The *Slave Protocol Server* is used to connect the *TankMaster* system to a host computer (DCS system). The *Slave Protocol Server* exchanges tank data between the *Tank Server* and the host computer.

1.3 Installing the TankMaster Software

1.3.1 System Requirements

The following system specification is recommended to run TankMaster ver. 6.C0 or higher(1):

General	
Product	Rosemount TankMaster; WinOpi, WinSetup, WinView
Operating system	English version of: • Windows 7 Professional, 32- and 64-bit versions, with service pack 1(SP1) • Windows Server 2008 R2 with service pack 1(SP1) • Windows 10 version 1511 (64-bit platform recommended) • Windows Server 2012 R2 SP1
TankMaster PC Hardware	
Processor	• 2.5 GHz, multi core processor
Internal Memory (RAM)	• 4 GB for 32-bit operating systems • 8 GB for 64-bit operating systems
Hard Disk	128 GB • TankMaster + SQL Server 2005 Express needs approximately 600 MB • Supported Operating Systems (up to Windows Server 2012 R2) need approximately 25 Gb of available space
Serial Ports	USB (RS232)
Monitor	A 22 inch or larger monitor is recommended.
Hardware key	One key connected to a USB port for each PC with a TankMaster server. TankMaster clients do not require a hardware key.

Note
A hardware key is **not** required to run WinSetup.

1.3.2 Installed Software Modules

The following software program modules are installed:

- TankMaster WinSetup program.
- TankMaster WinView program.
- Tank Server.
- Various Master protocol servers.
- Various Slave protocol servers.

(1) For previous TankMaster versions other system requirements may apply. Please contact Emerson Process Management/Rosemount Tank Gauging for more information.

1.3.3 Installation Procedure

To install the TankMaster software package do the following:

1. Insert the TankMaster CD-ROM.

Response: the installation wizard is started.

Note
If the installation wizard does not start automatically when the CD-ROM is inserted, double-click the file Tmcd.exe on the TankMaster CD-ROM, or click the Windows Start button , choose Run and select the Tmcd.exe file on the TankMaster installation CD in order to start the TankMaster installation.

2. In the installation window click the **TankMaster** button to install the TankMaster software(1).
3. Install the Acrobat Reader software if you want to be able to read the online documentation in pdf format.
4. Finish the installation.

(1) The TankMaster and Acrobat Reader softwares can be installed in any order. The installation window remains open during the complete installation procedure.

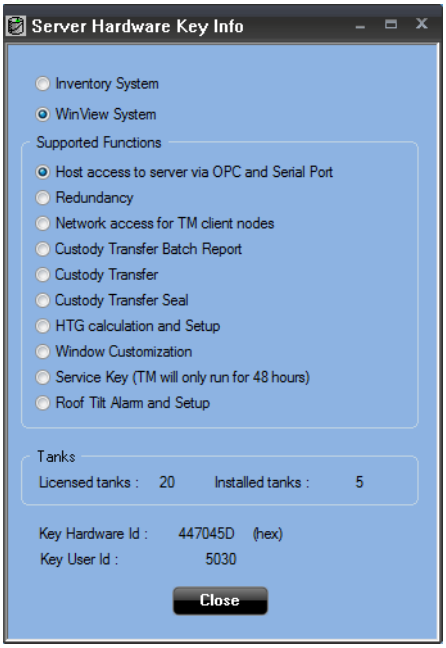
1.4 Hardware Key Info

The *Server Hardware Key Info* window displays the functions enabled by the TankMaster hardware key. The displayed information is not possible to edit and is only valid for the selected server. Also shown is the number of tanks permitted to install according to the TankMaster license, and the current number of installed tanks.

Note
If the number of installed tanks exceeds the number of licensed tanks, the inventory calculation option will be disabled until a hardware key with a sufficient number of licensed tanks is installed, or tanks are uninstalled.

To access the *Server Hardware Key Info* window, do the following:

1. From the **Tools** menu, choose **View Server HW Key Info**.



2. Select server.

3. When finished viewing the *Server Hardware Key Info* window, click **Close** to close the window.

1.4.1 Enabled Functions

The *Enabled Functions* pane in the *Server Hardware Key Info* window shows all the available TankMaster options. A selected “radio button” indicates that the corresponding function is enabled with the current hardware key. The available functions are listed in the table below:

Function	Explanation
Inventory System[(a)]	Enables Alarm, Volume according to API, etc.
WinView System	Enables Alarm, Volume, etc.
Host access to server via OPC and serial port	Communication to host via OPC DA and Modbus RTU.
Network access for TM client node[(a)]	Enables viewing of all installed tanks in the network from any TankMaster PC, independent of WinOPI type.
Redundancy[(a)]	Enables the use of redundant servers.
HTG calculation and Setup[(a)]	Hydrostatic Tank Gauging, Enables the use of pressure sensors.
Custody Transfer[(a)]	Setup mode for the Custody System.
Custody Transfer Seal[(a)]	Read Only mode. No possibility to change configuration.
Custody Transfer Batch Report[(a)]	Batch report for the Custody System.
Window Customization[(a)]	Enables the use of customized windows.
Service Key (TM will only run for 48 hours)	Only available for Service engineers.

(a) Only available in WinOpi.

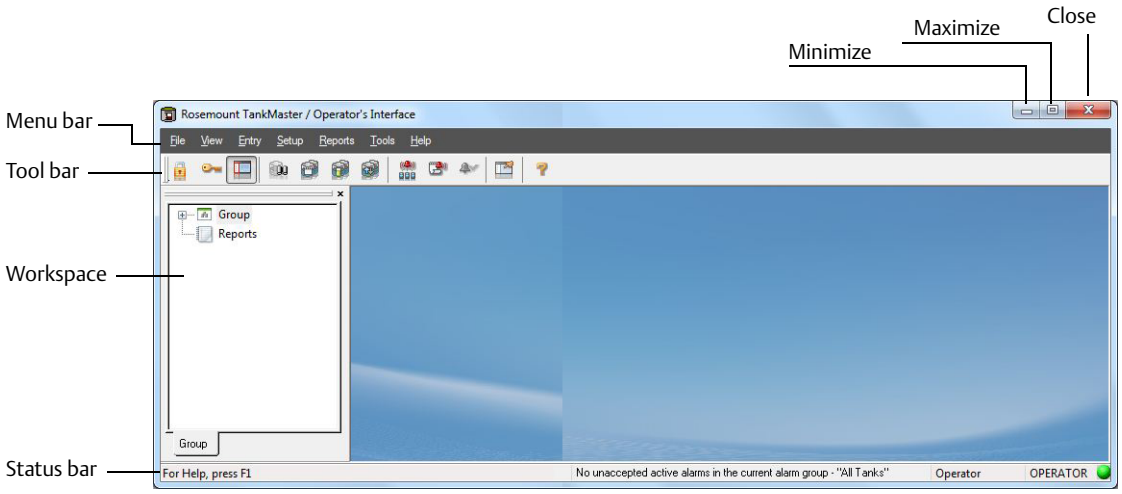
1.5 Illegal characters

Naming objects in TankMaster using certain characters may cause problems. The following characters should be avoided:

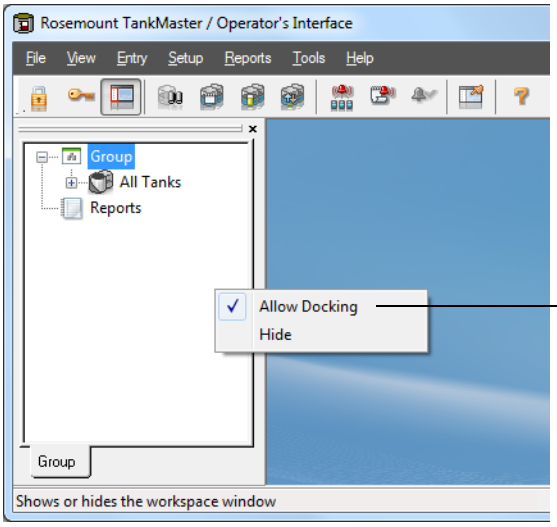
\	Reverse solidus	%	Percent sign
/	Solidus	<	Less-than sign
?	Question mark	>	Greater-than sign
*	Asterisk	{	Left curly bracket
[	Left square bracket	}	Right curly bracket
]	Right square bracket	'	Apostrophe
|	Vertical line	"	Quotation mark

Section 2 The WinView Main Window

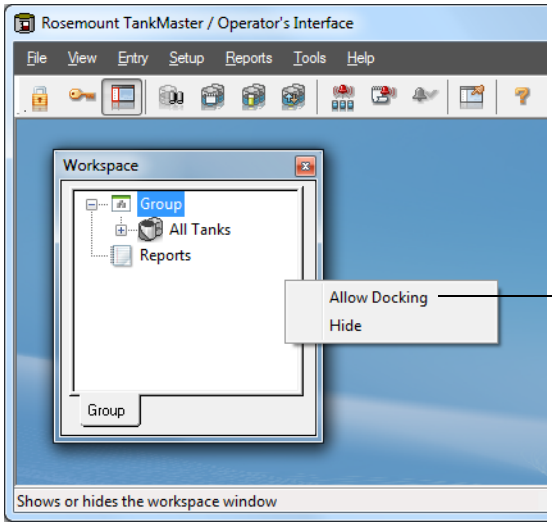
The TankMaster *WinView* main window includes the *Workspace* to display tanks and devices, a menu bar at the top of the screen, a status bar at the bottom of the screen and a number of buttons in the toolbar.



The *Workspace* window can be moved anywhere in the *Main* window. It can be docked at any side, or it can be left floating.



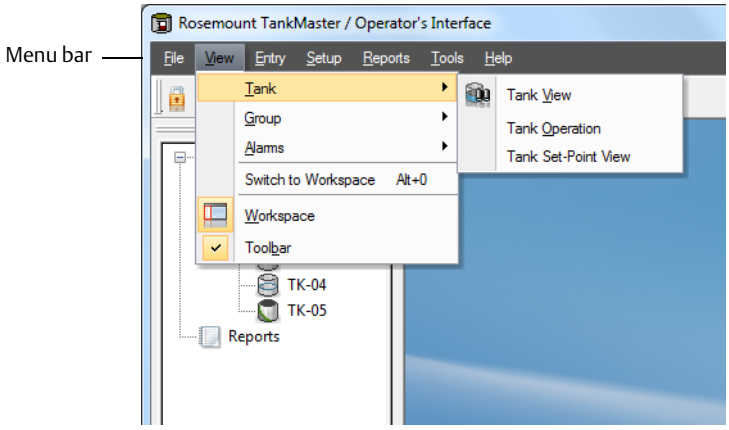
Right click and choose Allow Docking to place the *Workspace* window along one of the *Main* window borders.



The *Workspace* window can also be moved around in the *Main* window by deselecting Allow Docking.

2.1 Menus

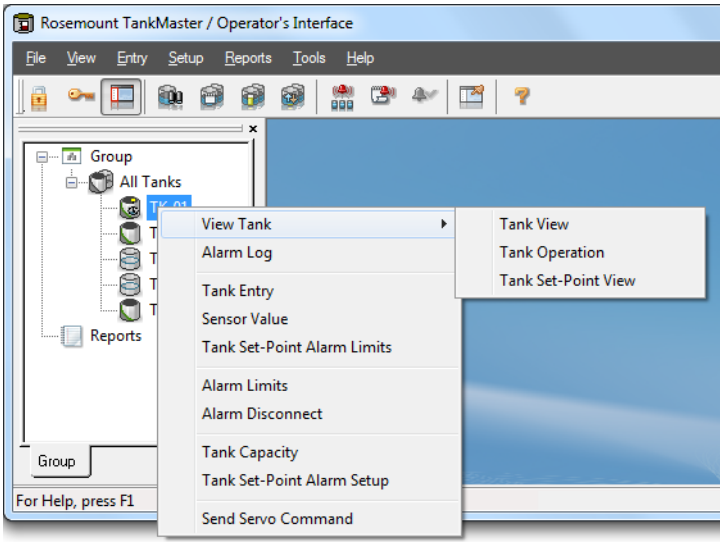
The menu bar at the top of the screen contains menus such as **File**, **View**, **Entry**, **Setup**, **Reports**, **Tools** and **Help**.



Some menu options are available by clicking the right mouse button. Different options are available depending on what type of object is selected in the *Workspace* window.

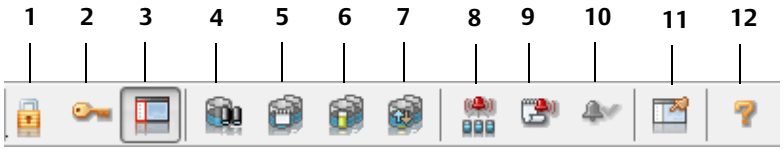
Example

By clicking the right mouse button on a tank, the following menu appears:



2.2 Toolbar

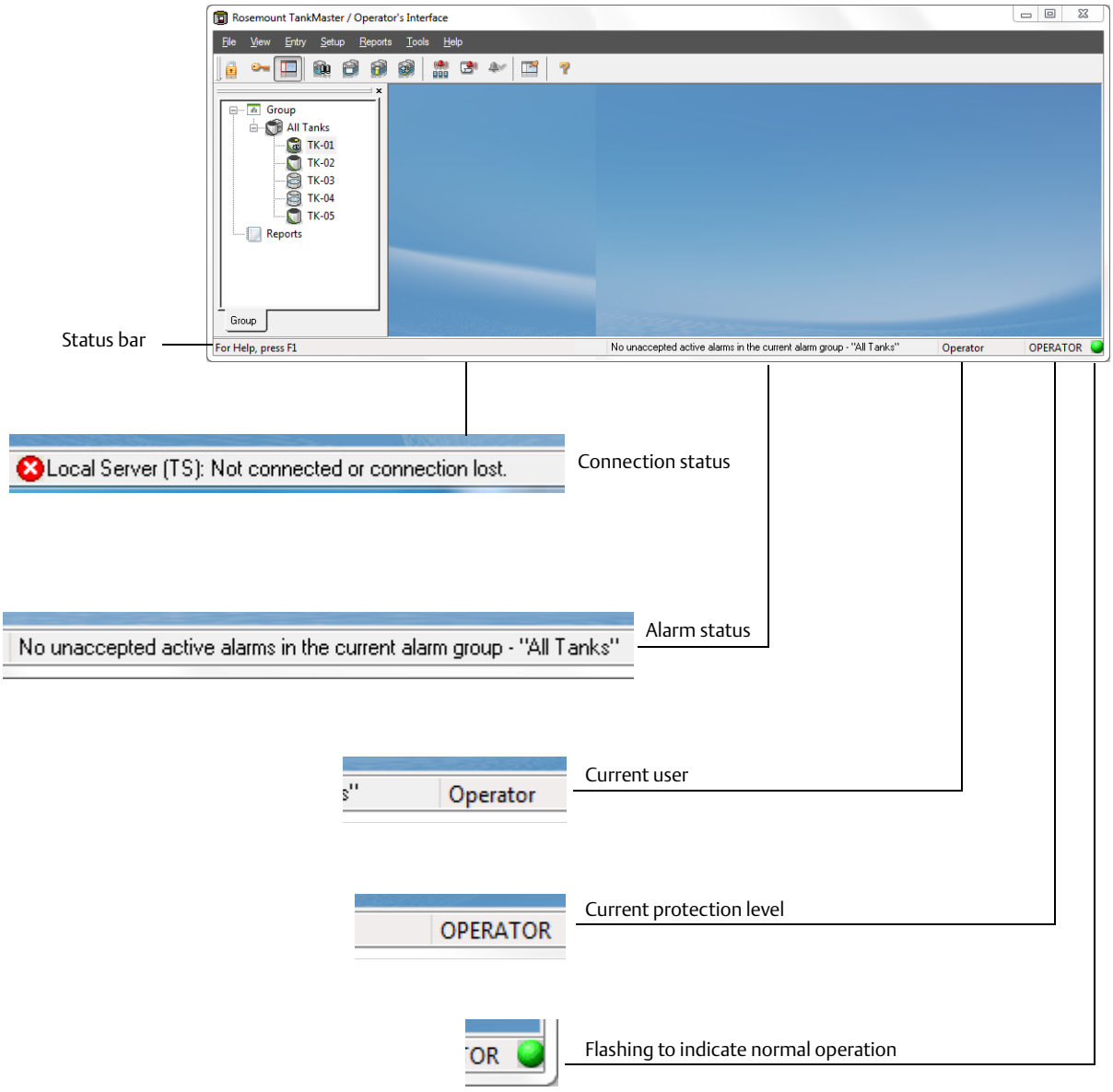
To display the WinView toolbar, from the **View** menu choose the **Toolbar** option. The toolbar provides buttons acting as shortcuts to different menu options.
The following items are included in the standard toolbar:



1. Lets you log off to View Only mode.
2. Lets you log on to TankMaster as Operator, Supervisor or Administrator.
3. Lets you turn the *Workspace* window On or Off.
4. Opens the *Tank View* window.
5. Opens the *View Group* window.
6. Opens the *Bargraph Group* window.
7. Opens the *Tank Movement* window.
8. Opens the *Alarm Summary* window.
9. Opens the *Alarm Log* window.
10. Lets you accept alarms.
11. Opens the *Tools/Options* window.
12. About WinView.

2.3 Status bar

The status bar is located at the bottom of the TankMaster main window.



The status bar displays information about current alarms. It also provides information about the current protection level status (View Only, Operator, Supervisor, Administrator etc.).

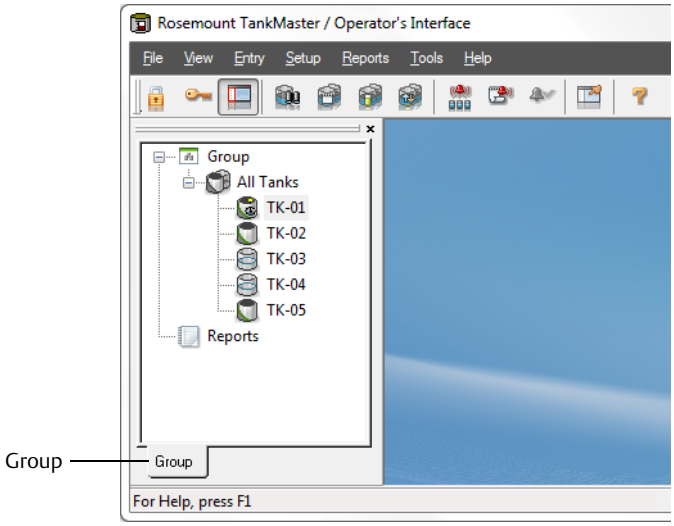
2.4 Workspace - viewing tanks and devices

The workspace displays an overview of all devices and tanks. The workspace lets you perform a variety of tasks:

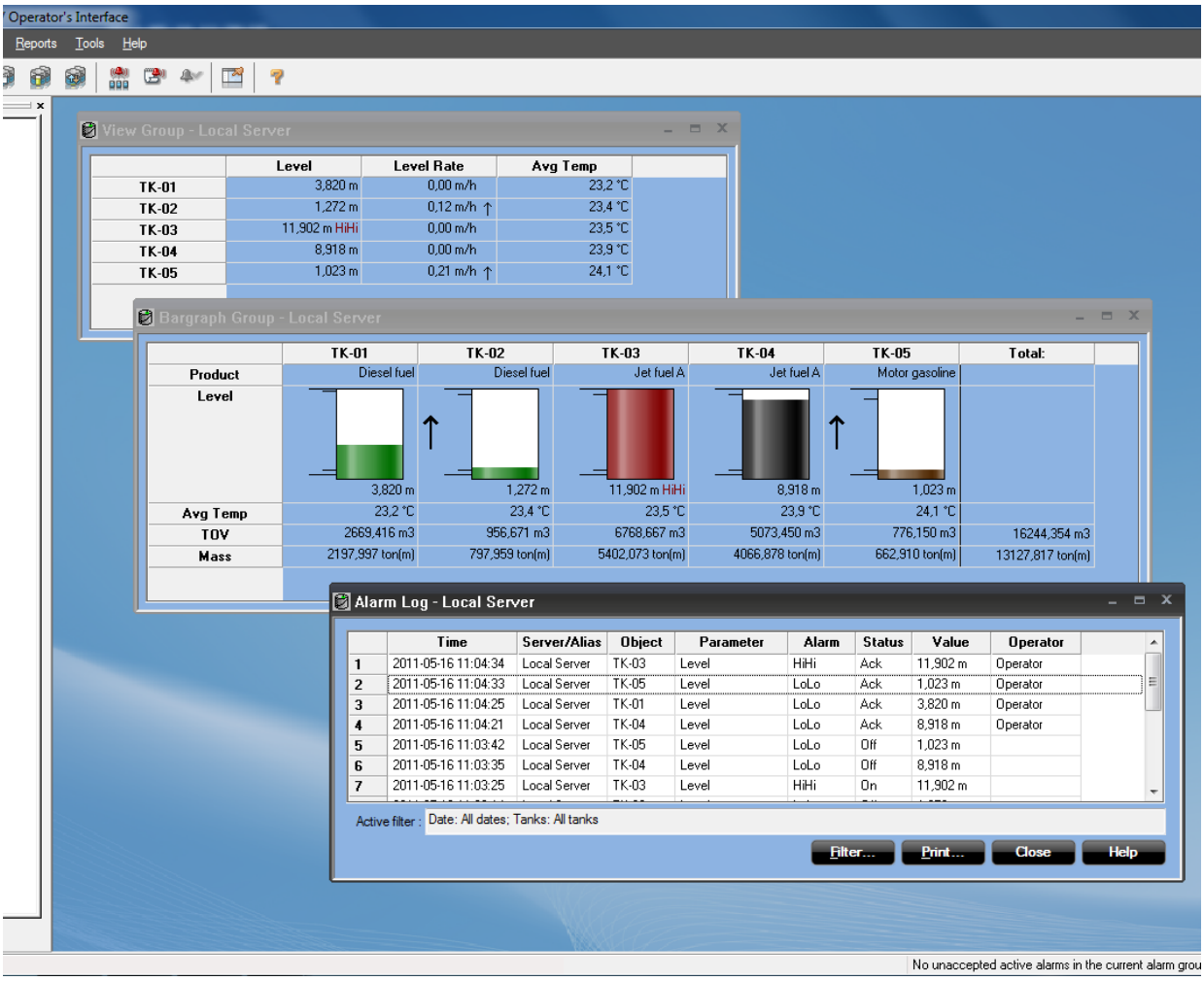
- View tank data.
- View tank operation data.
- View alarm logs and alarm summary.
- Supervise alarms.
- Specify reports.

2.4.1 Viewing Tanks

The *Workspace* window shows the installed tanks:



Various tank data can be monitored such as level, temperature as well as alarm logs and summary of current alarms.



2.5 Icons

In the *Workspace* window the different objects are represented by the following icons:


Cylindrical tank


Floating roof tank


Spherical tank.


Horizontal tank


Tank group (blue icon)


Report

2.6 User management

TankMaster provides several protection levels to prevent unauthorized changes. These protection levels are categorized as **User Access Levels** and **User Access Sub Levels**. The **User Access Levels** are Administrator, Supervisor, Operator, and View Only and each has five **User Access Sub Levels**. This gives a total of 20 unique access levels.

In order to change WinView settings such as Alarm limits, System Setup, Tank Setup etc. you have to be logged on to TankMaster. You can be logged on in ChiefAdmin, Administrator, Supervisor, Operator, or View Only mode.

The default usernames and passwords are:

User	Level	Sub Level	Default password
View	VIEW ONLY	*	view
Operator	OPERATOR	*	oper
Supervisor	SUPERVISOR	*	super
Administrator	ADMINISTRATOR	*	admin
ChiefAdmin	ADMINISTRATOR	*****	chief

2.6.1 Logging on to TankMaster

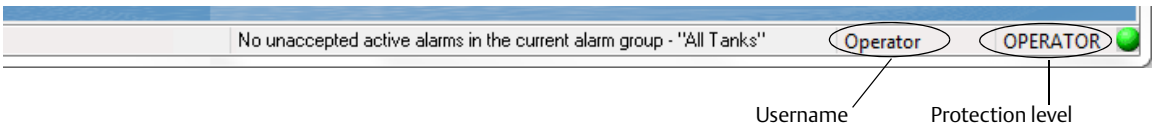
To log on to TankMaster do the following:

1. From the **File** menu choose **Log On** or click the Log On button in the WinView toolbar.

2. Type your Username and Password. The password is case sensitive but the username is not.

Note
If logging on fails five consecutive times the user account is disabled. In this case the user account has to be enabled by an administrator.

3. Click the **OK** button.
The currently logged on user and the protection level is displayed in the *WinView* status bar.

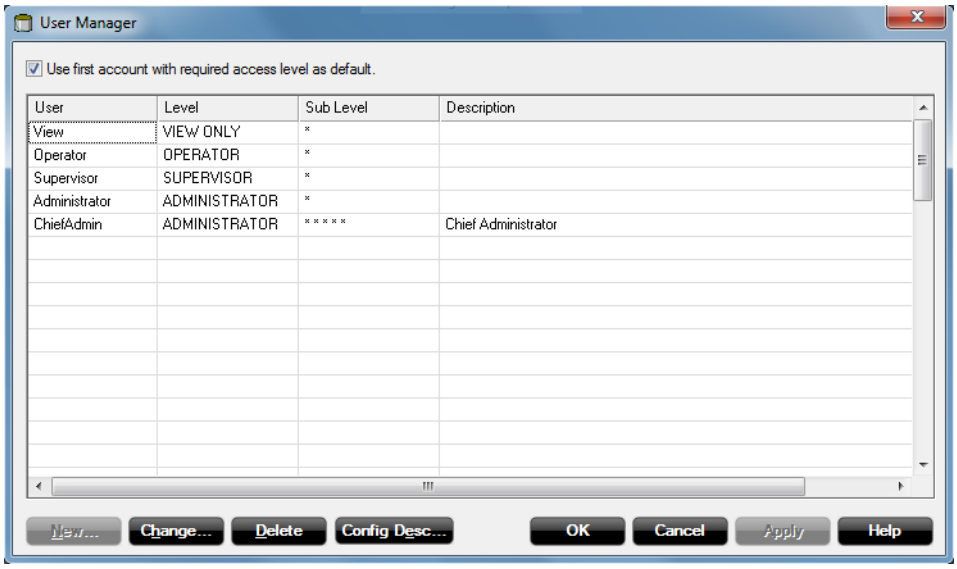


2.6.2 To administrate user accounts

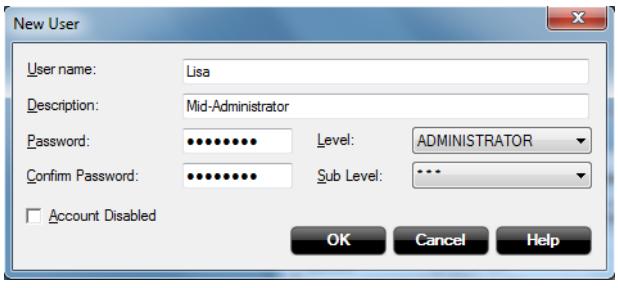
TankMaster allows you to setup a number of users at different levels and sub levels. You must be logged on as an Administrator in order to add new user accounts or to change the existing user account settings.

To add a new user:

1. Log on as an Administrator.
2. In the **Tools>Administrative Tools** menu choose **User Manager**.

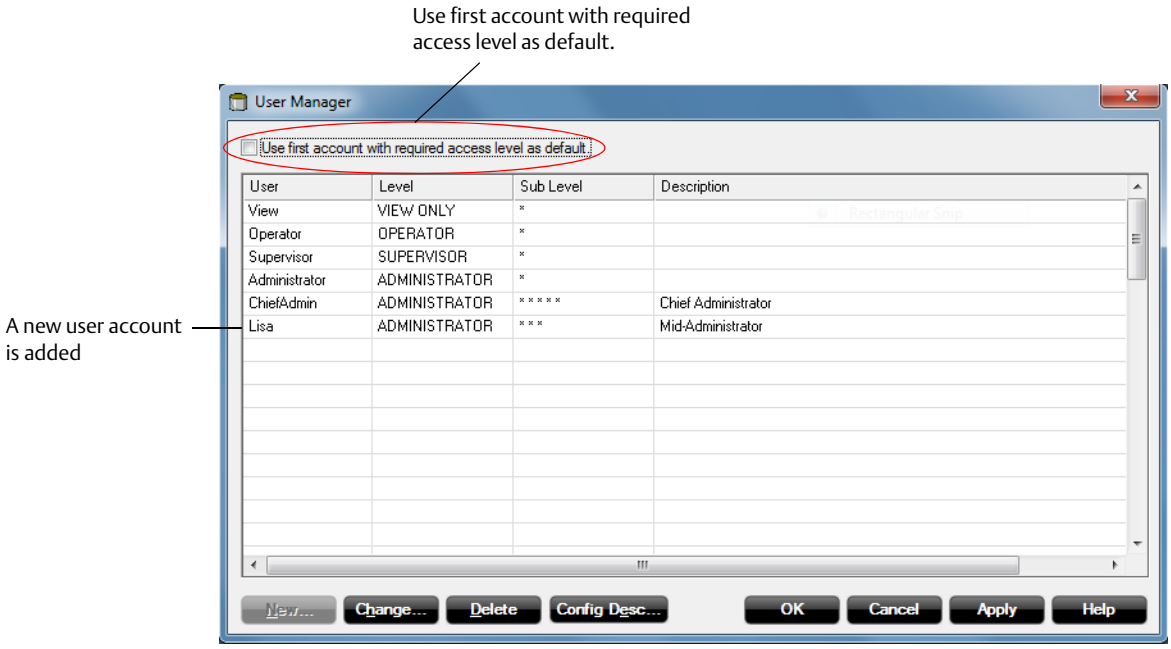


3. In the *User Manager* window select a cell in an empty row and click the **New** button.



4. Type a user name and a password. If you like, enter a description in the Description field.

5. Choose the desired **Level** (User Access Level) and **Sub Level** and click the **OK** button. See "User management" on page 17 for further information about the available User Access Levels and Sub Levels.



6. Check that the new user appears in the *User Manager* window.
Select the "Use first account..." box if you want a default user name to appear in the Log On dialog whenever it is opened. If this box is unmarked the User Name field is empty when the Log On dialog opens.

When the "Use first account..." box is selected, a default user name appears in the Logon dialog.

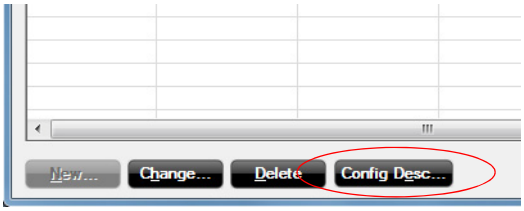
7. Click the **OK** button.

2.6.3 Configure Access Sub Level description

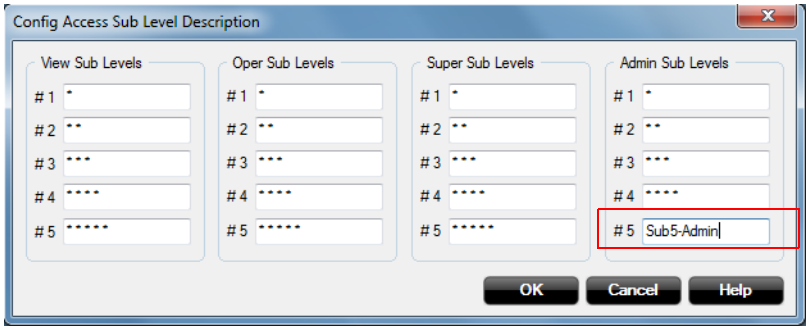
TankMaster offers the option to change the Sub Level descriptions to something more suitable than the default settings.

To configure the access sub level descriptions, do the following:

1. In the **Tools>Administrative Tools** menu choose **User Manager**.



2. In the *User Manager* window, click the **Config Desc** button.



3. In the *Config Access Sub Levels Description* window enter a new description in the desired field.
   In the example above, the description of item number 5 of category *Admin Sub Levels* is changed from "*****" to "Sub5-Admin".

4. Press **OK** to close the *Config Access Sub Level Description* window.

2.6.4 To set required access levels

TankMaster WinView includes the option to set the protection level required for the following actions:

- Report Handling
- Accepting Alarms
- Exiting WinView

For example, if you are logged on as an Operator (* * *), you are not allowed to exit *WinView* if the required exit level for this action is set to Operator (* * * *) or higher.

To set the required access levels:

1. From the **Tools/Administrative Tools** menu choose **Set Required Access Levels**.

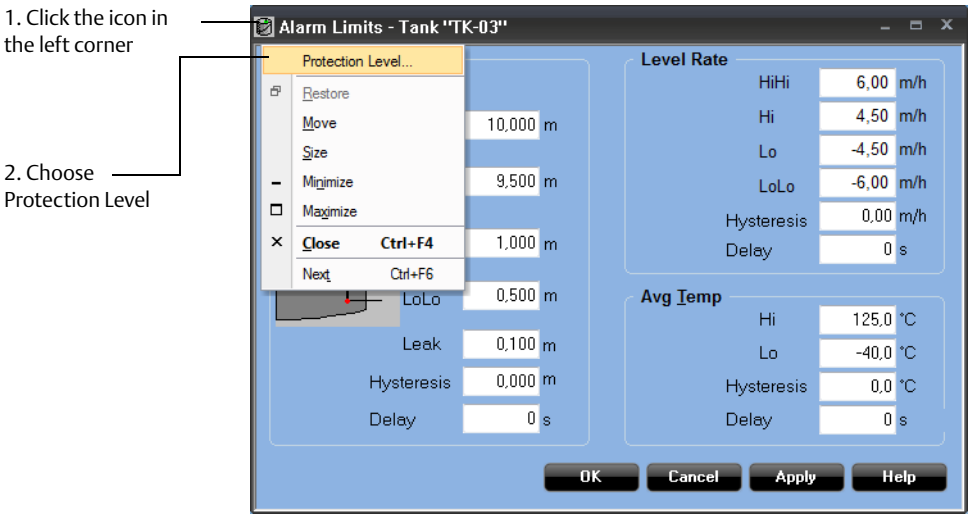
Note
You have to be logged on as an Administrator (* * * * *) to be able to set the required access levels. To create an Administrator (* * * * *) account, see chapter 2.6.2 *To administrate user accounts*.

2. Set the required access level for each action and click the **OK** button.

2.6.5 To change protection level for separate windows

In TankMaster it is possible to set a **Protection Level** for a specific window to avoid unauthorized users to edit data, e.g. the *Alarm Limits* window. This function is only available if you are logged on at the Administrator (* * * * *) level. To change the protection level do the following:

1. Put the cursor on the icon at the upper left corner and click the left mouse button.



2. Choose the **Protection Level** option.

Note
You have to be logged on as an Administrator (* * * * *) to be able to change the Protection Level. To create an Administrator (* * * * *) account, see "To administrate user accounts" on page 19.

3. Select the desired Protection Level and Sub Level from the corresponding drop down menus and click the **OK** button.

4. Now you will be prompted to log on at the specified protection level (or higher protection levels) in order to make any changes to this window (Alarm Limits in the example above).

2.6.6 To change password

To change your TankMaster password, do the following:

1. From the **Tools/Administrative Tools** menu choose the **Set Password** option.

2. Enter your Username if the workspace is in View Only mode. If you are already logged on, your username appears in the Username field.

3. Enter the old password and the new password in the corresponding fields.

Note
The password is case sensitive.

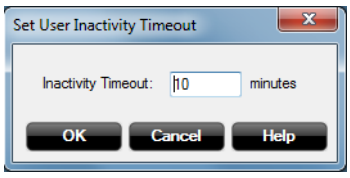
4. Confirm the new password and click the **OK** button.

2.6.7 To change inactivity timeout

TankMaster WinView includes the option to set a timeout after which the current user is automatically logged off. The timeout period is reset each time the user performs an activity that requires an access level check, for example setting a new alarm limit or logging on to *WinView*.

To set the Inactivity Timeout:

1. From the **Tools/Administrative Tools** menu choose the **Set Inactivity Timeout** option. (You have to be logged on as Administrator).



2. Type the desired value in the corresponding input field.

3. Click the **OK** button.

2.6.8 To set program security options

TankMaster WinView provides options which may be used to restrict user privileges to run Windows programs or perform certain actions.

The configurations are categorized in two parts:

TankMaster Operator´s Interface

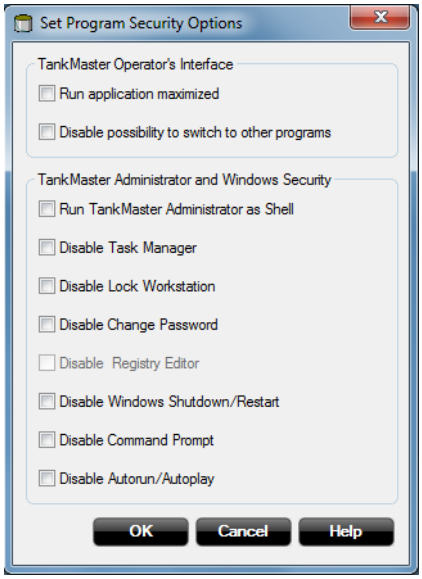
- **Run application maximized**. If this option is checked, WinView will run maximized and the minimize and restore down buttons in the upper right corner of the application window will be disabled.
- **Disable possibility to switch to other programs**. If this option is checked, WinView will ignore keyboard commands such as *Alt+Tab, Alt+Esc, Ctrl+Esc,* etc.

TankMaster Administrator and Windows security

- **Run TankMaster Administrator as Shell**. Allows the TankMaster Administrator program to run as a Windows Shell instead of the standard shell (Windows Explorer). When this option is set, all other security options in the “TankMaster Administrator and Windows Security” group are automatically set.
- **Disable Task Manager**. Prevents the user from starting Task Manager (**Taskmgr.exe**). If this option is set and the user tries to start Task Manager, a message appears explaining that a system policy prevents the action.
- **Disable Lock Workstation**. Prevents the user from locking the system. While locked, the desktop is hidden and the system cannot be used. Only the user who locked the system or the system administrator can unlock it.
- **Disable Change Password**. Disables the Change Password button on the Windows Security dialog box (Which appears when pressing **Ctrl+Alt+Del**). As a result, the user cannot change the Windows password on demand.
- **Disable Registry Editor**. Disables the Windows registry editors, **Regedt32.exe** and **Regedit.exe**. If this option is set and the user tries to start a registry editor, a message appears explaining that a system policy prevents the action.
- **Disable Windows Shutdown/Restart**. Prevents the user from shutting down or restarting Windows. This option removes the **Shut Down** option from the Start menu and disables the Shut Down button on the Windows Security dialog box that appears when you press **Ctrl+Alt+Del**. This option prevents the user from using the Windows user interface to shutdown the system, although it does not prevent them from running programs that shut down Windows.
- **Disable Command Prompt**. Prevents the user from running the interactive command prompt, **Cmd.exe**. This option also determines whether batch files (**.cmd** and **.bat**) can run on the computer.
- **Disable Autorun/Autoplay**. Disables the Autoplay feature on all drives.

To set the program security options:

1. From the **Tools/Administrative Tools** menu choose the **Security Option**.



2. Select the desired security options.

3. Click the **OK** button.

Section 3 Viewing Tank Data

TankMaster offers a number of views for presentation of measured and calculated data. You can view measured and inventory data for single tanks as well as all tanks.

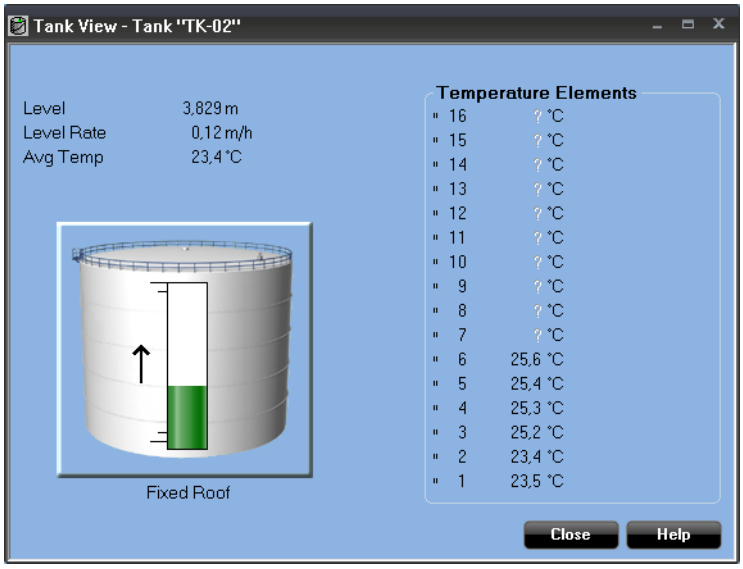
You can also edit custom views with parameters by your own choice. You can for example edit a custom view to only show Level, Level Rate and Level Status. See “ Modifying the group views” on page 37 for further instructions on how to modify windows for tanks.

3.1 Measured values

3.1.1 Single tanks

To open the *Tank View* window do the following:

1. Select the desired tank in the *Workspace* window.
2. From the **View>Tank** menu, choose the **Tank View** option, or click the right mouse button and choose **View Tank>Tank View**.



The *Tank View* window shows data from the Rosemount™ 2410 Tank Hub, the Rosemount 5900S Radar Level Gauge, and the Rosemount 2240S Multi-Input Temperature Transmitter for a single tank. For each item the value, measurement unit and status is displayed.

Bar graph

A bar graph shows the product level and free water level at the bottom of the tank. Flow rates exceeding a certain threshold is indicated by an arrow on the left side of the bar graph. Depending on the actual flow rate value one of two arrow types appears. The thresholds which control the arrow indication can be changed (**Tools>Options>Tank Movement**). See also " Tank movement" on page 33 for more information.

Temperature sensors

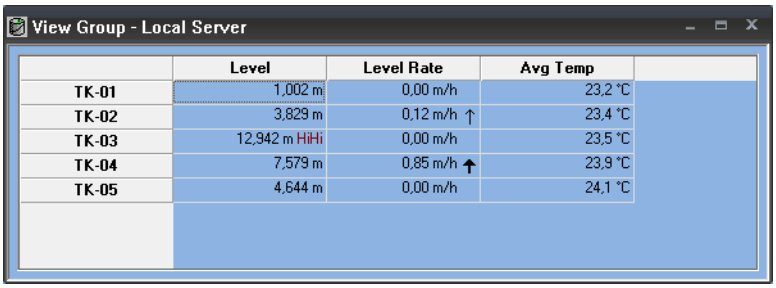
Temperature sensors immersed in the product are marked with a "*" symbol. The temperature sensors can be connected to the Rosemount 2240S Multi-Input Temperature Transmitter or the Rosemount 644 Temperature Transmitter for Single Point Temperature Sensor.

3.1.2 Tank groups

View group

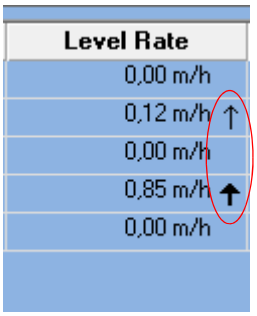
To view data for all tanks do the following:

1. Select All Tanks in the *Workspace* window.
2. Click the right mouse button and choose **View Group>View Group, or** from the **View>Group** menu, choose the **View Group** option.



This window shows **Level, Level Status, Level Rate, Average Temperature** and other variables for all tanks.

Filling/emptying a tank can be indicated with arrows as shown below:



There are two different arrow sizes. By setting appropriate thresholds, the arrows can be used to indicate level rates within different ranges. To specify the level rate thresholds, choose the **Tools/Options/Tank Movement** tab. See " Tank movement" on page 33 for more information.

Tank movements can also be highlighted by different color coding to improve visibility, See "Enable color highlight" on page 36..

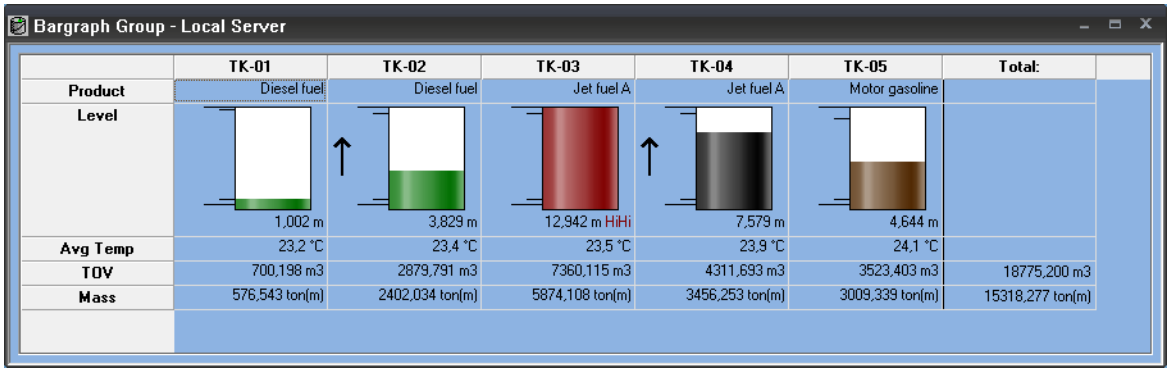
You can change the contents of the *View Group* window by choosing the **Tools/Options/Group Templates** tab. See " Modifying the group views" on page 37 for more information.

Note
The contents in a group view can be sorted, See "Sorting content in product table" on page 56. for further information.

Bar graph group

To view data presented in bar graph format do the following:

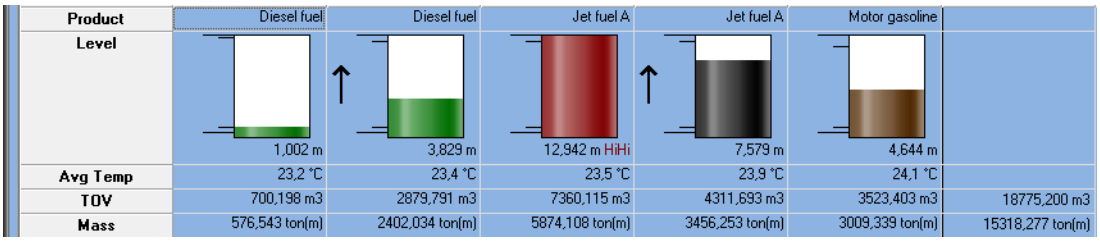
1. Select All Tanks in the *Workspace* window.
2. Click the right mouse button and choose **View Group>Bar Graph Group, or** from the **View>Group** menu, choose the **Bar Graph Group** option.



In the *Bargraph Group* window each tank is represented by a bar graph showing Product Level and Free Water Level for each tank. It also indicates level changes by showing an arrow next to the bar graph.

For each tank the following default parameters are listed in a table:

- Product
- Level
- Average Temperature
- Total Observed Volume (TOV)
- Mass



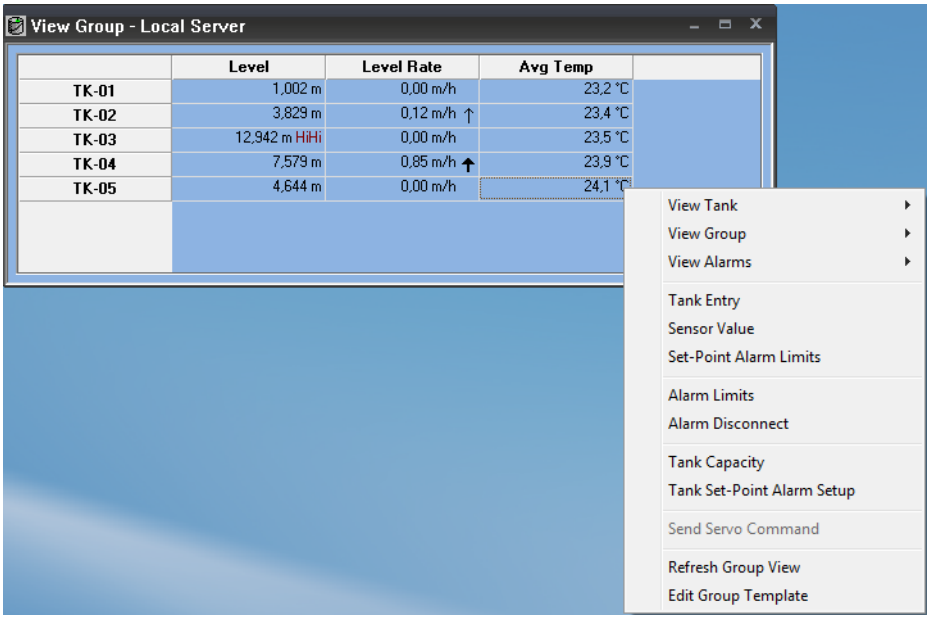
Filling/emptying a tank can be indicated with arrows. There are two different arrow types. By setting the Flow Rate thresholds to appropriate values, the arrows can be used to indicate low or high flow rates. See " Tank movement" on page 33 for more information.

You can change the contents of the *Bar Graph Group* window by choosing the **Tools/Options/Group Templates** tab. See " Modifying the group views" on page 37 for more information.

Note
The tanks can be organized in rows instead of columns, See "Modifying the group views" on page 37.

Shortcut menu

In the different Group View windows, there is a shortcut menu available for quick access to other group and tank views. The shortcut menu appears when clicking the right mouse button in the open group view.



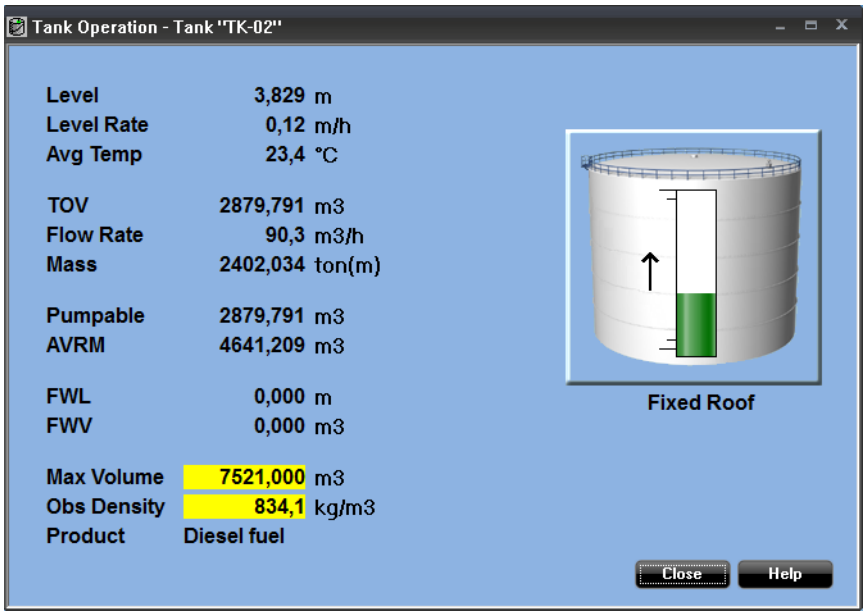
The shortcut menu includes:

- View Tank
- View Group
- View Alarms
- Tank Entry
- Sensor Value
- Set-Point Alarm Limits
- Alarm Limits
- Alarm Disconnect
- Tank Capacity
- Tank Set-Point Alarm Setup
- Send Servo Command
- Refresh Group View
- Edit Group Template

3.2 Tank operation

To view data for a specific tank do the following:

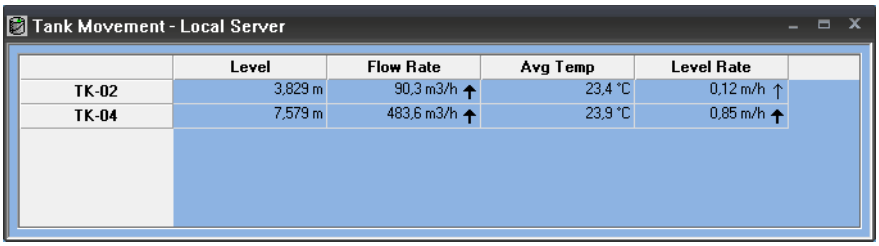
1. Select the desired tank in the *Workspace* window.
2. Click the right mouse button and choose **View Tank>Tank Operation,** or from the **View>Tank** menu, choose the **Tank Operation** option.



See " Inventory parameters" on page 57 for further information on the relation between measured data and inventory parameters.

3.3 Tank movement

To view tanks which are emptied or filled, click the right mouse button and choose **View Group>Tank Movement, or** select a tank group in the *Workspace* window and choose **View>Group>Tank Movement**.



The *Tank Movement* window shows the direction of the current product surface movement. It also includes Level Rate and Flow Rate. Limits can be set in order to exclude tanks with Flow Rates and Level Rates below certain values. Thus only tanks with flow rates and level rates exceeding the specified limits appear in the *Tank Movement* window.

An arrow points in the direction of surface movement. A thick arrow indicates a high flow rate/level rate. A thin arrow indicates a low flow rate/level rate.

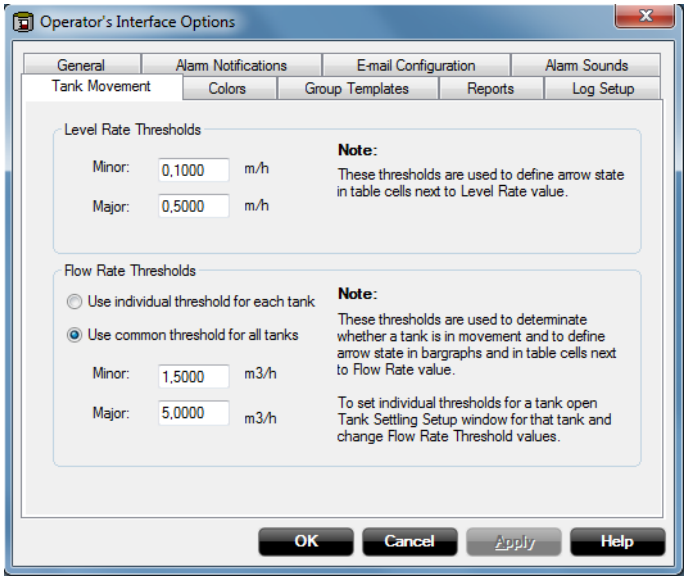
Tank movements can also be highlighted by different color coding to improve visibility, See “Enable color highlight” on page 36..

You can change the contents of the *Tank Movement* window by choosing the **Tools/Options/Group Template** tab. See “ Modifying the group views” on page 37 for more information.

3.3.1 Level rate thresholds

To specify thresholds for Level Rate, do the following:

1. From the **Tools** menu choose **Options**, and select the **Tank Movement** tab.



2. Enter the desired Level Rate thresholds.

3. Press **Apply** and **OK** to close the *Operator's Interface Options* window.

Note
The Flow Rate/Level Rate threshold settings apply to all windows which indicate product surface movement such as the View Group window, Tank View window etc.

Level rate thresholds

Minor – Level rates above this value are indicated with a thin arrow in the *Tank Movement* window. There is no movement indication for level rates below this threshold.

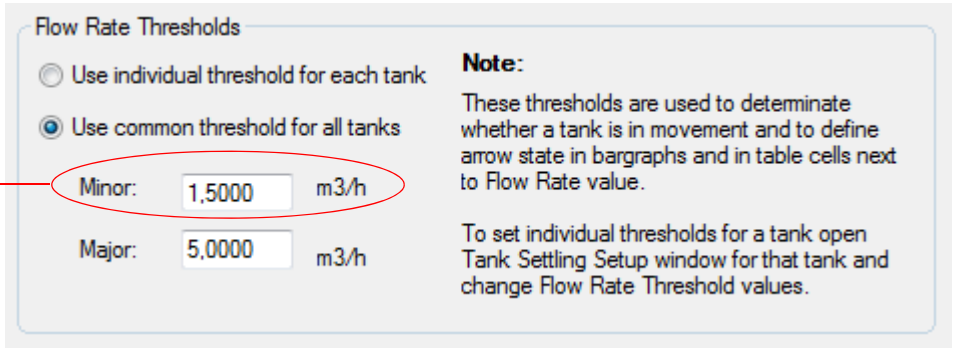
Major – Level rates above this value are indicated with a thick arrow in the *Tank Movement* window.

Note
It is the Flow Rate that controls color highlight indication in the *Tank Movement* window.

3.3.2 Common flow rate thresholds

To specify thresholds for Flow Rate Thresholds, do the following:

1. From the **Tools** menu choose **Options**, and select the **Tank Movement** tab.
2. Choose the **Use common threshold for all tanks** option.



Tanks with Flow Rates below the Minor threshold value don't appear in the Tank Movement window

3. Enter the desired threshold values.
4. Click **Apply** and **OK** to close the *Operator's Interface Options* window.

Note
The Flow Rate/Level Rate threshold settings apply to all windows which indicate product surface movement such as the View Group window, Tank View window etc.

Flow rate indication

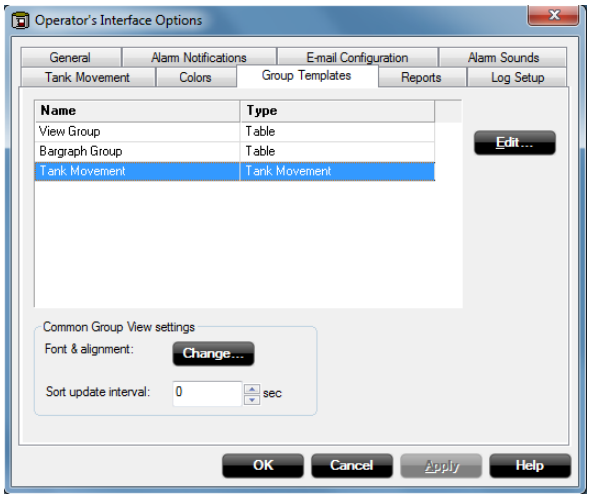
Minor – Tanks with Flow Rates below this threshold do not appear in the *Tank Movement* window. Flow rates above this limit are indicated with a thin arrow.

Major – Flow rates above this threshold are indicated with a thick arrow.

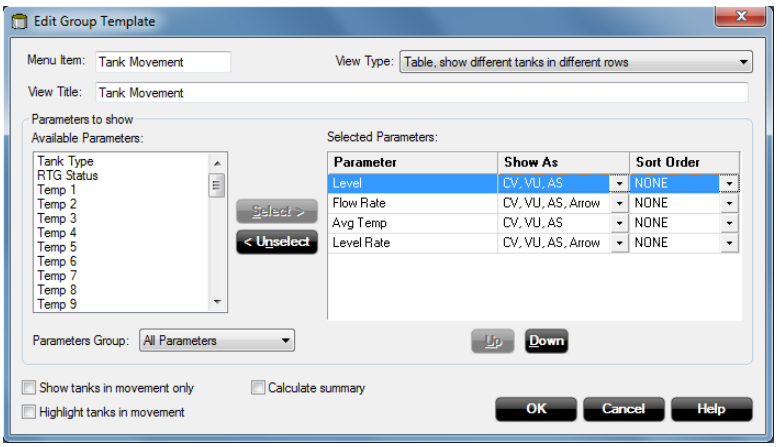
3.3.3 Enable color highlight

To enable color coding for Tank Movement, do the following:

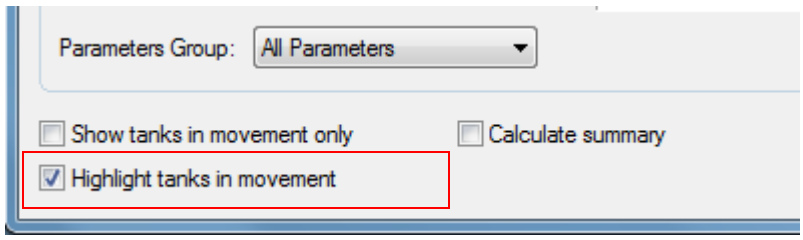
1. From the **Tools** menu, choose **Options**.



2. In the **Group Templates** tab, select the desired group template and click the **Edit** button.



3. Select the Highlight Tanks in movement check box.

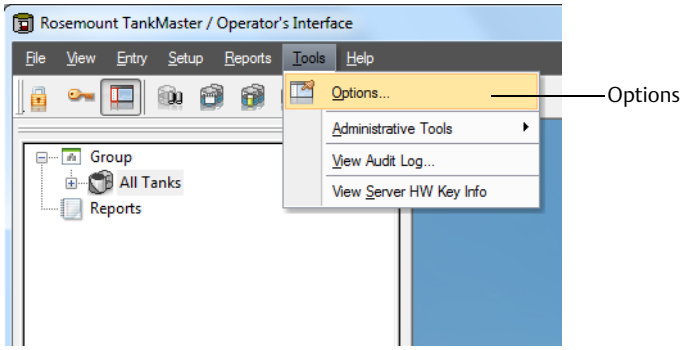


Note
To change the color definitions of tanks in movement, See “Color Settings for Tank Movement” on page 46.

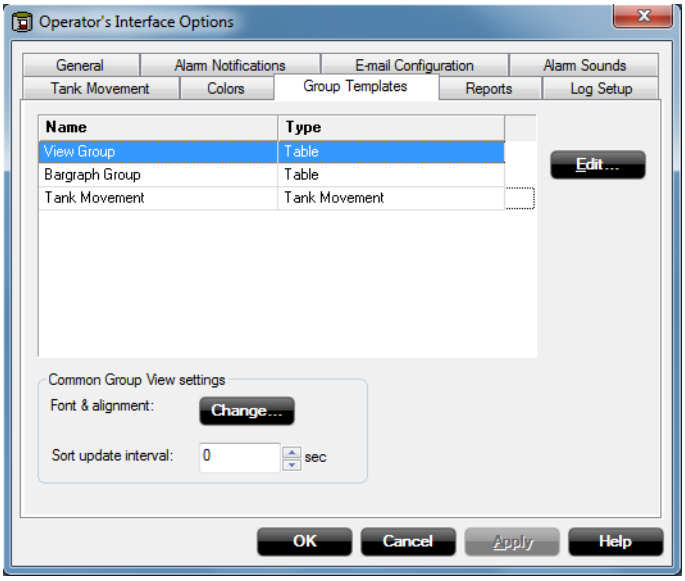
3.4 Modifying the group views

To change the appearance of a window under the View/Group menu, do the following:

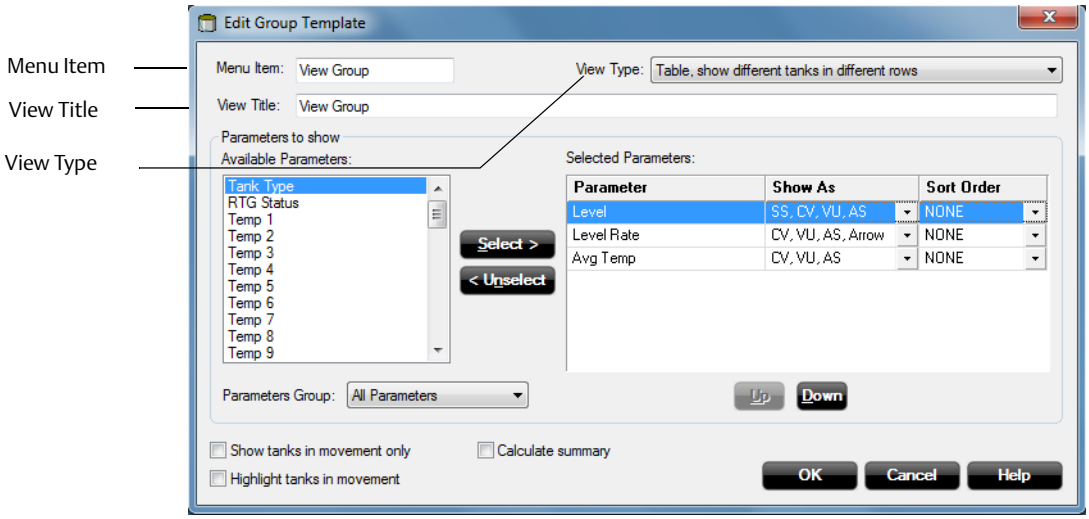
1. From the **Tools** menu choose **Options**.



2. Select the **Group Templates** tab.



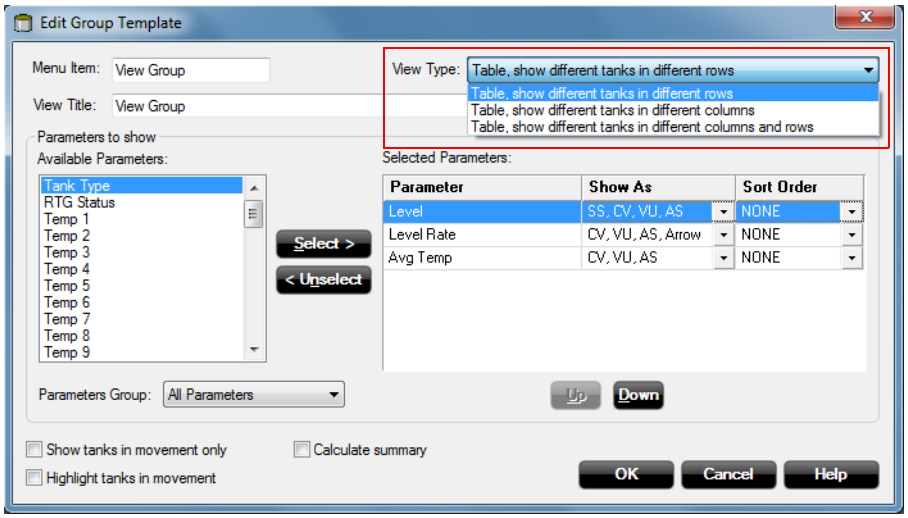
3. Select one of the existing tank views and click the **Edit** button to open the *Edit Group Template* window.



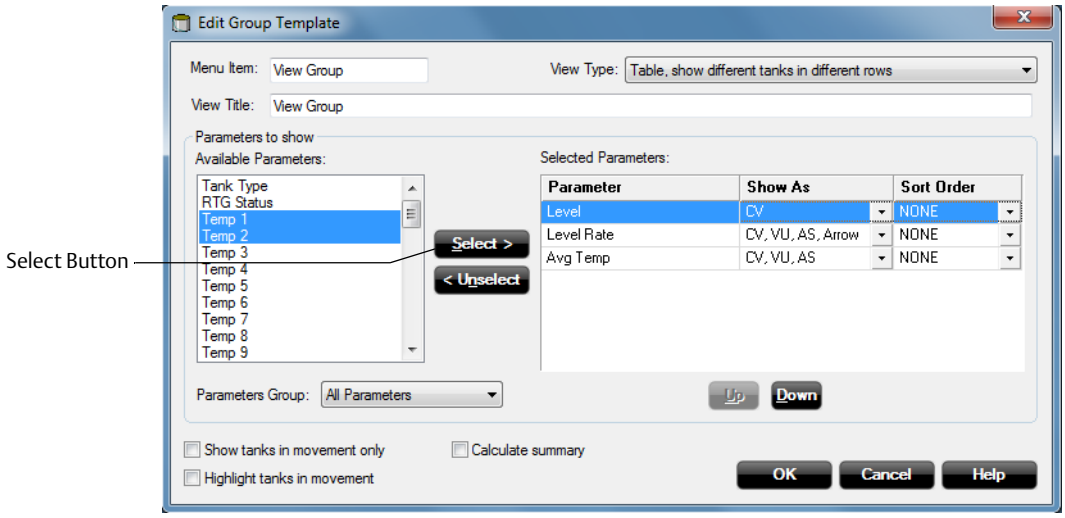
4. The Menu Item and the View Title fields can be edited:

- The **Menu Item** name appears as an option in the **View>Group** menu.
- The View Title name appears in the title bar of the edited group view.

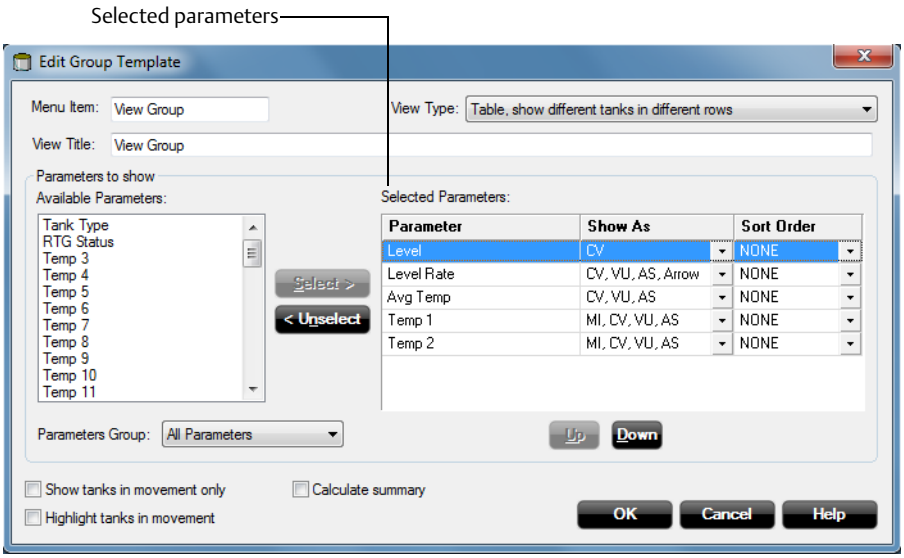
5. The View Type can be changed by selecting one of the options from the **View Type** drop-down menu.



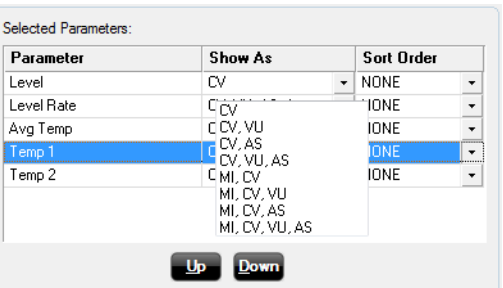
6. You can choose between tables where tanks are presented row by row, column by column, or in rows and columns.



7. Select the desired parameters in the left pane and click the **Select** button. Now the selected parameters appear in the right-hand pane:



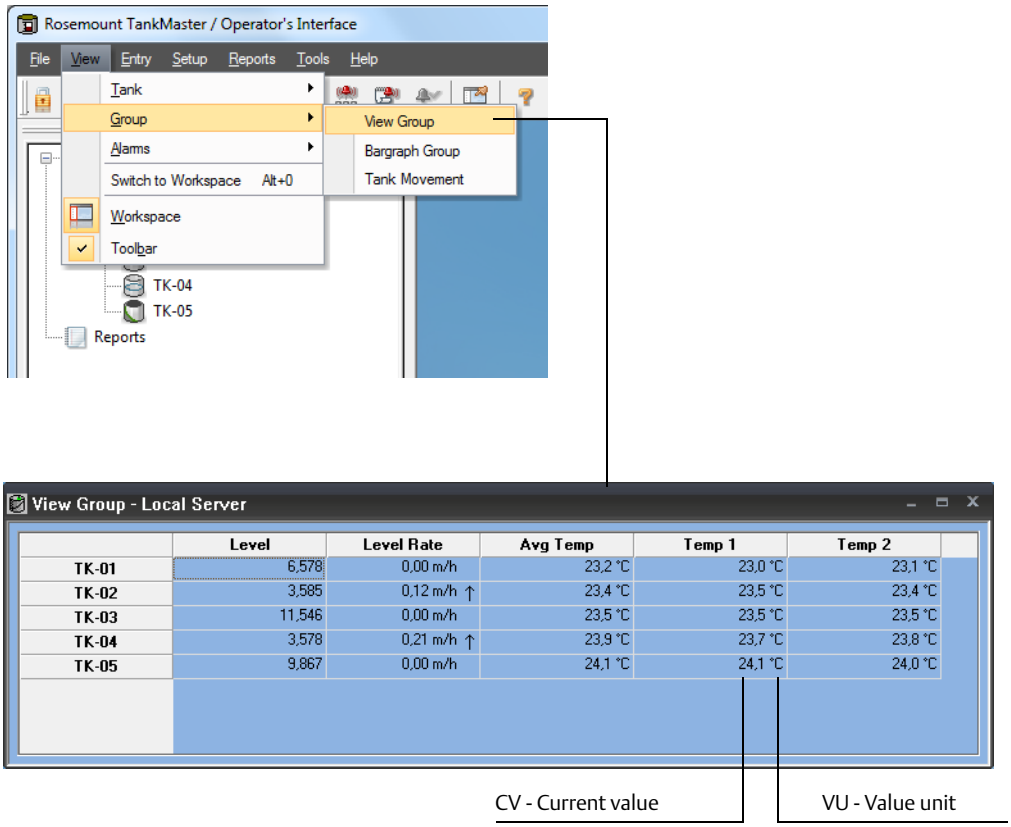
8. In the **Show As** column, for each parameter choose the format for data presentation:



MI=Temp.Sensor in Liquid,
CV=Current Value,
VU=Value Unit,
AS=Alarm Status,
etc.

9. Click the **OK** button.

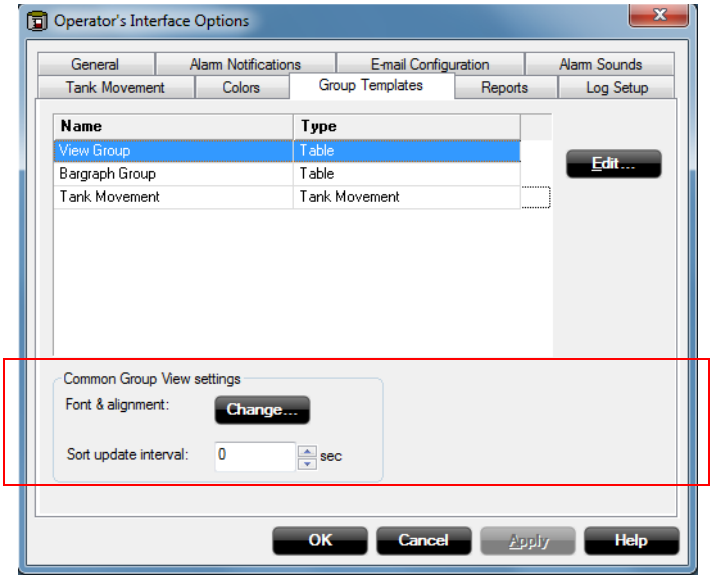
To open the changed window, from the View/Group menu choose the selected **Menu Item** name, in this example **View Group**.



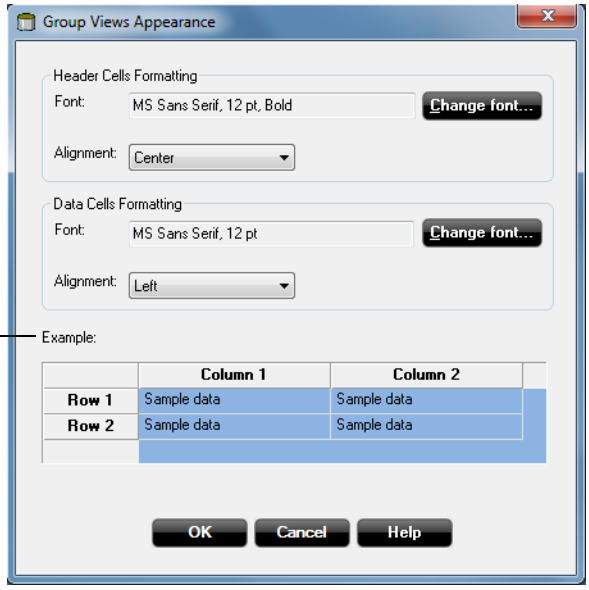
3.4.1 Common group view settings

In all windows where data is presented in tables, you can change font and alignment of text in data cells and headers:

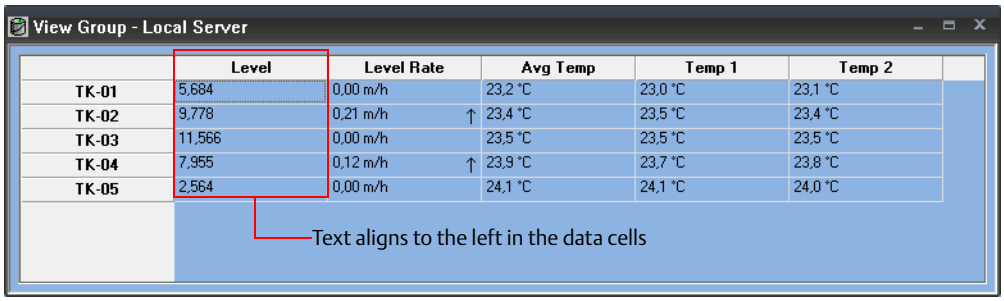
1. From the **Tools** menu choose **Options**.
2. Select the *Group Templates* tab.



3. In the *Group Templates* tab press the **Change** button.



4. Specify the desired formatting for column headers and data cells.
A preview of the result is shown in the Example box.
With settings as in the example above, the *View Group* window would look like this:

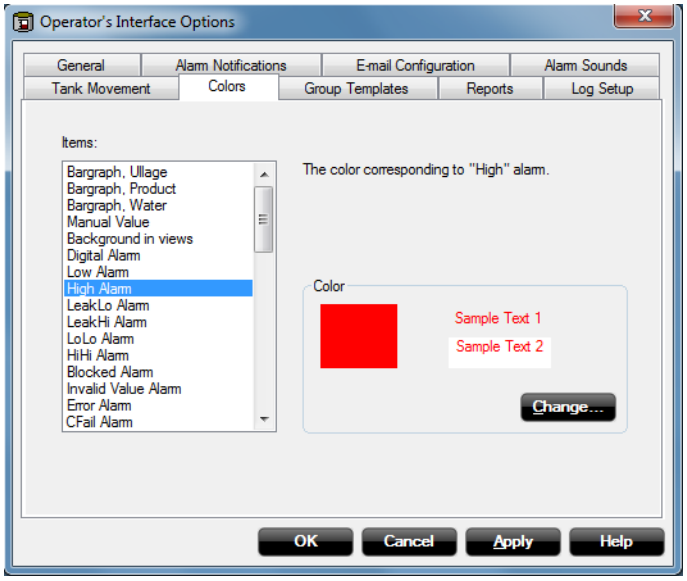


3.5 Color Settings

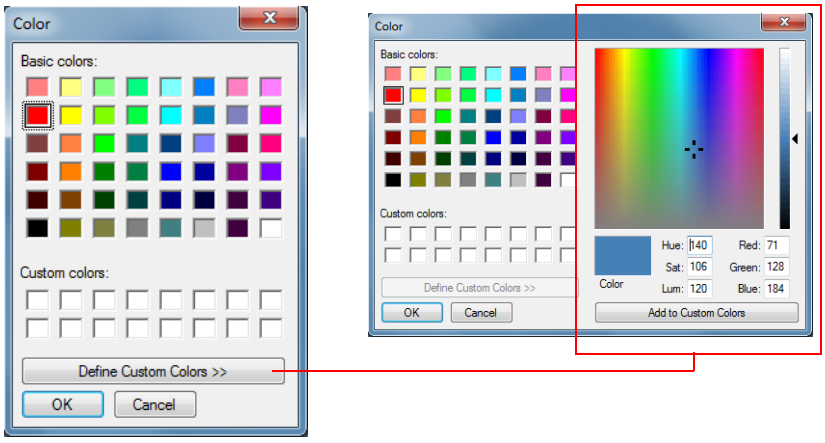
WinView offers the option to specify colors for bar graphs, backgrounds in input fields, manually entered values, different types of alarms, and products in the Product Table.

To specify colors do the following:

1. From the **Tools** menu choose **Options**.
2. Select the **Color** tab.



3. Choose the desired item from the list. You can specify colors for bar graphs and backgrounds in windows, to indicate manual values, alarms and products.
4. Click the **Change** button.



5. Choose a color from the Color palette or define a new color by clicking the Define Custom Colors button.
6. Click the **OK** button.

3.5.1 Product color settings

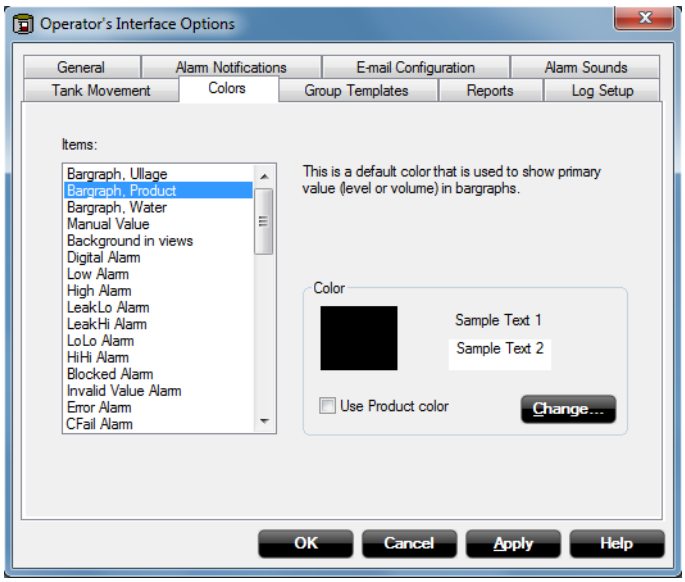
WinView offers two different options for product colors in Bargraphs:

Option 1	The same color is used for all products.
Option 2	Each product is associated with a color according to the Product Table setup.

In the Product Table you can choose colors to represent specific products. These colors will then be used in different bargraphs to show the current product level. However, before this option is available a set of product colors must be defined, and WinOpi must be configured to use these product colors.

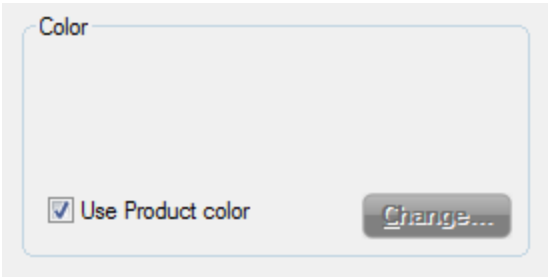
To specify product colors do the following:

1. Choose **Tools>Options** and select the **Colors** tab.

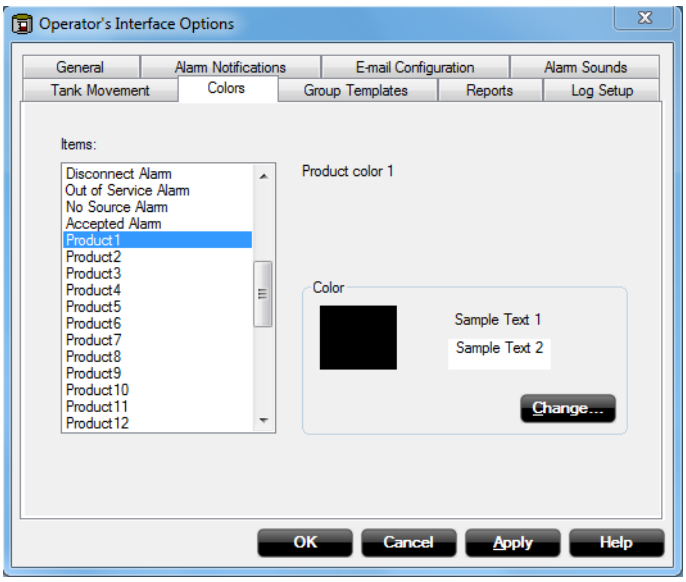


2. Choose the **Bargraph Product** item.

3. Select the **Use Product Color** check box.



4. Scroll down to the product list. Edit the desired products: Product1, Product2 etc. Up to 20 products can be defined. To define a product color click the **Change** button and choose one of the available colors, or define a new color.



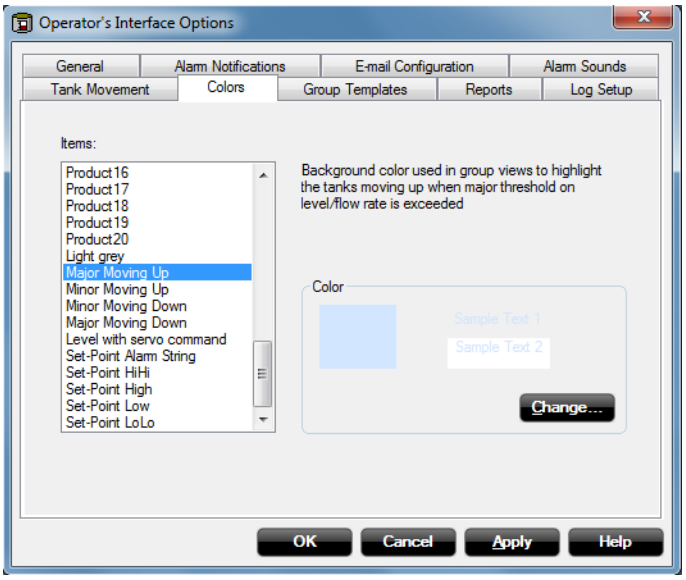
5. Click the **OK** button when you have specified the desired product colors.

See " Creating a product table" on page 55 for instructions on how to associate products with specific colors.

3.5.2 Color Settings for Tank Movement

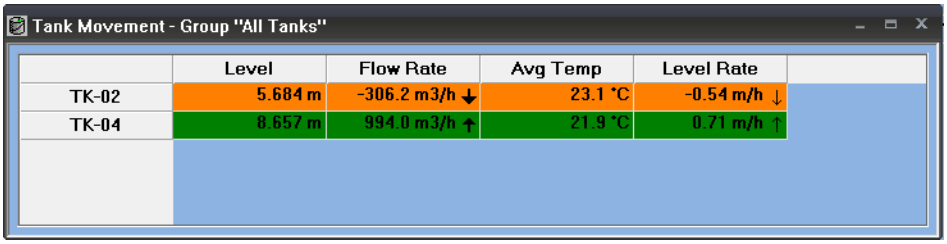
To change the colors for tank movement, do the following:

1. From the **Tools** menu choose **Options**.
2. Select the **Color** tab.



3. The affected fields are **Major Moving Up/Down** and **Minor Moving Up/Down**.
4. Press **Apply** and **OK** to close the *Operator's Interface Options* window.

Response: the colors for tank movement are changed.



Note
To enable the use of color highlight for tank movement, " Enable color highlight" on page 36.

Section 4 Installing a Tank Measurement System

4.1 Installation procedure

Setting up a tank measurement system for level measurement and inventory calculation includes the following steps:

1. **System Setup**
   Specify measurement units and other system parameters. The System Setup is done in TankMaster WinSetup.
   See chapter 4.2 *System setup* for further information.

2. **Tank Capacity Table**
   Specify the geometry of the tank for volume calculation.
   See chapter 4.3 *Setting up a Tank Capacity Table* for further information.

3. **Creating a Product Table**
   Specify the products to be used in the tank.
   See chapter 4.4 *Creating a product table* for further information.

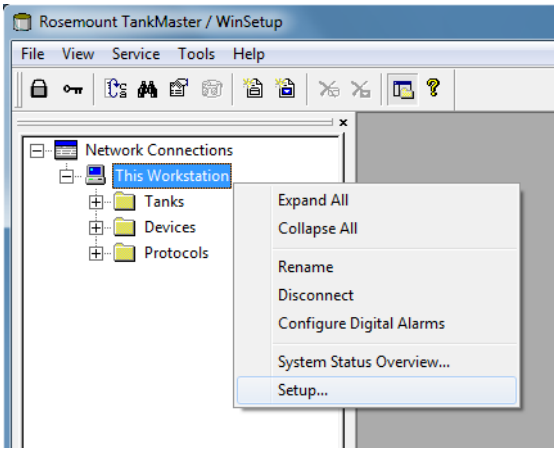
4. **Tank Inventory Configuration**
   Specify parameters for inventory calculation.
   See chapter 4.5 *Inventory parameters* and for further information.

5. **Alarm Handling**
   Specify alarm limits for level, volume and signals from external sensors.
   See chapter Section 5 *Alarm Handling* for further information on alarm handling.

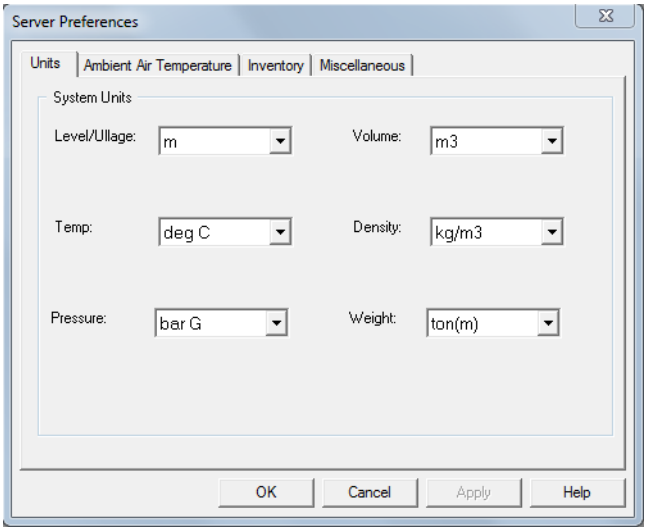
4.2 System setup

To specify measurement units and other system parameters in WinSetup, do the following:

1. In the WinSetup workspace, select the server to which the device is connected.
2. Click the right mouse button on the server icon and choose the Setup option, or from the Service menu choose the **Servers>Setup** option.



3. The following window appears. Make the desired settings and click the OK button.

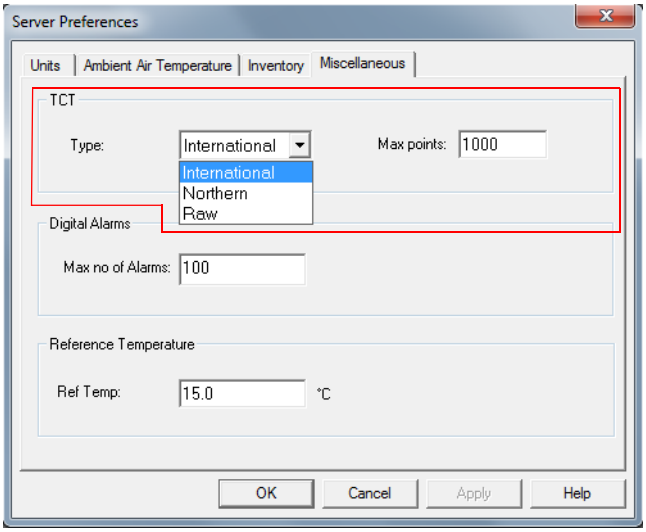


Note
Changing the System Setup settings will not affect previously installed tanks. It will only affect tanks installed after the change is done.

4.2.1 System units

Choose the desired measurement units to be used for data presentation.

4.2.2 Tank Capacity Table



You can specify the default type of Tank Capacity Table (TCT) from the **TCT Type** drop-down list. When a TCT table is created for a new tank, the type is automatically specified according to the default setting in the System Setup window. However, for a new tank you can change TCT type in the *Tank Capacity Setup* window if you don´t want to use the default setting, see chapter 4.3.4 *Creating a Tank Capacity Table*.

Reference Temperature is only available for WinOpi.

4.3 Setting up a Tank Capacity Table

The geometry of the tank is defined in a strapping table called the Tank Capacity Table, TCT. The TCT describes the geometry of the tank and is used to convert a product level to the corresponding volume. The values can be entered either as absolute levels, as relative levels, or as pairs of level and volume.

You can choose one of three types of Tank Capacity Tables:

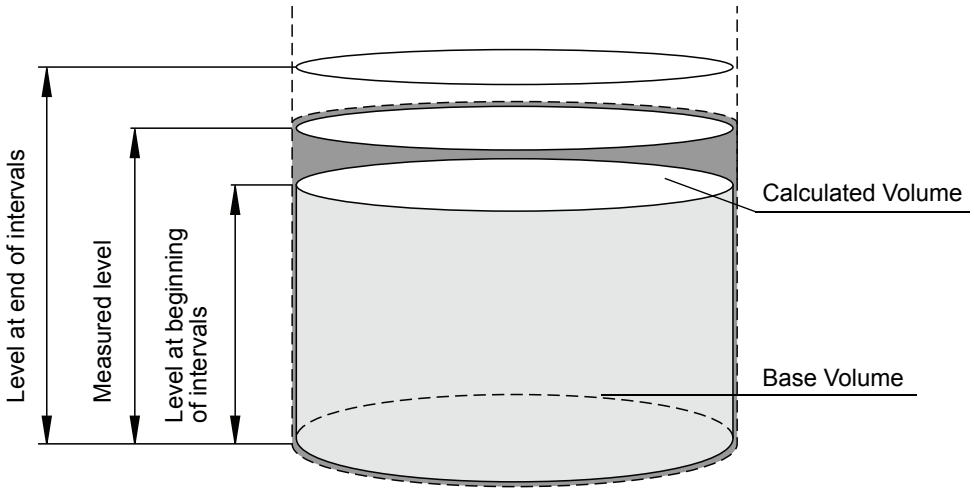
- International (absolute levels)
- Northern (relative levels; mostly used in Sweden and Finland)
- Raw

You can specify a default TCT type that will automatically be used for new tanks (*Setup>System*). You can change TCT type of a separate tank if you don´t want to use the default setting (*Setup>Tank Capacity*).

When you specify a TCT using either the Northern or the International method, it is very important that the resulting level-volume curve is continuous. The calculated volume at the top of one interval must correspond exactly to the volume at the bottom of the next interval.

The relative and the absolute method of entering TCT data require four parameters at each strapping point:

From	level at the beginning of the interval,
To	level at the end of the interval,
Volume	Base Volume,
Area	Tank Area Coefficient.



The Northern and the International methods do not use the same Base Volume and Tank Area Coefficient. When you use the Raw Method you have to enter pairs of level and volume. For each level you enter the corresponding standard volume.

4.3.1 Using the International method

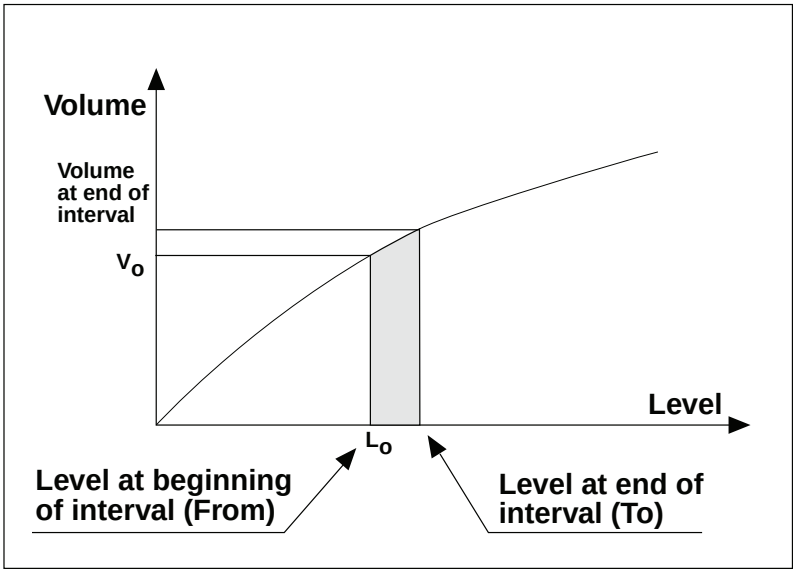
The Base Volume is the volume at the beginning of the interval. The Tank Area Coefficient describes how the volume varies with the level within the interval.

With the International Method, the desired volume is calculated as:

Desired Volume = V_o + Area * (Level - L_o)

where;

Level	The measured level.
L_o	Level at the beginning of the interval
V_o	Base Volume
Desired Volume	The volume at the measured level
Area	Tank Area Coefficient. This is not the surface area of the product, although the mesurement unit of this parameter is the same as for a surface area (volume/length).



4.3.2 Using the Northern method

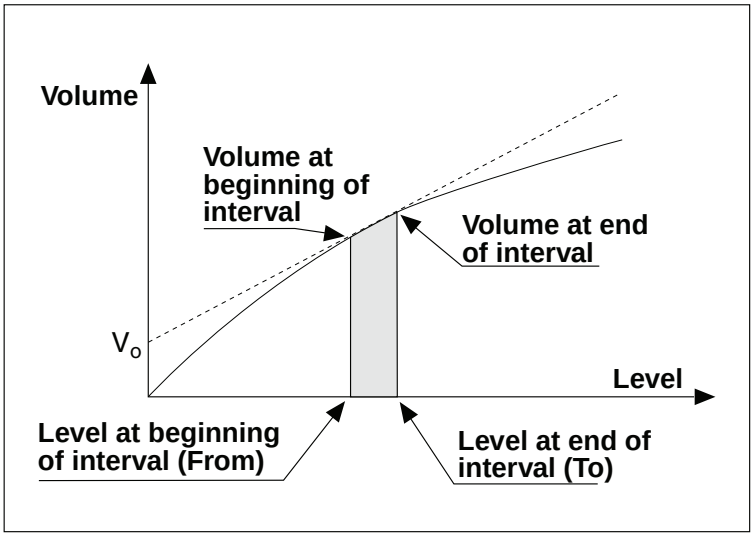
The Northern method is based on the fact that within the interval, there is an approximately linear relationship between level and volume, as illustrated below. The Base Volume corresponds to the volume at Level = 0, given by extrapolation of the linear level - volume relationship. The Tank Area Coefficient describes how the volume varies with the level within the interval based on this Base Volume.

With the Northern Method, the volume is calculated as:

Desired Volume = V_o + Area * Level

where;

Level	The measured level
Desired Volume	The volume at the measured level
V_o	Base Volume
Area	Tank Area Coefficient. This is not the surface area of the product, although the mesurement unit of this parameter is the same as for a surface area (volume/length).



4.3.3 Using the Raw method

When you use the Raw Method you have to enter corresponding values of Level and Volume. In the following example, it is shown how pairs of Level and Volume values are input in TankMaster when using TCT type Raw.

Level	Volume
1.53	10 105
2.72	22 309
3.18	29 934
4.78	41 249

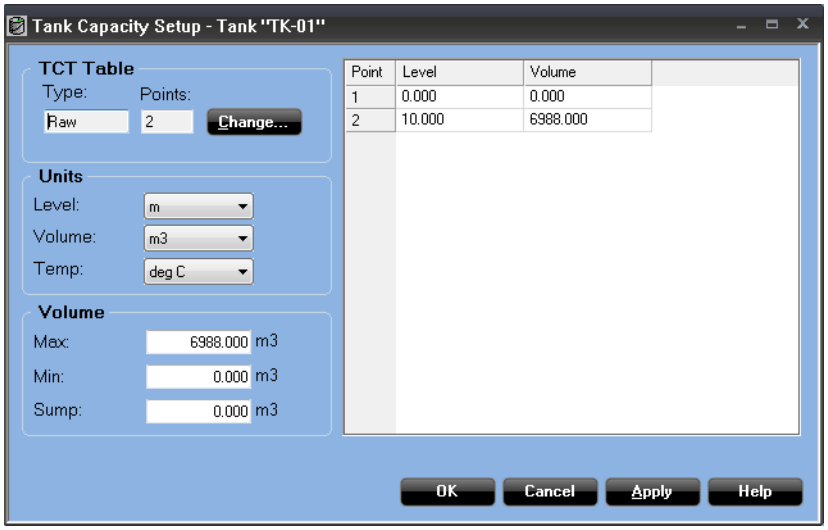
4.3.4 Creating a Tank Capacity Table

TankMaster WinView offers you the option to specify a strapping table to be used for volume calculations (see chapter 4.5 *Inventory parameters* for more information on the relation between inventory data and measured data).The geometry of the tank is defined in the Tank Capacity Table (TCT). The TCT is used for converting a product level to the corresponding volume. The values can be entered either as pairs of level and volume, as absolute levels or as relative levels depending on the type of TCT that is used. The Tank Capacity Table is stored as pairs of level and volume irrespective of the way the values are entered into the system.

To create a Tank Capacity Table do the following:

1. Select the desired tank in the WinView *Workspace* window.

2. In the **Setup** menu choose **Tank Capacity**.

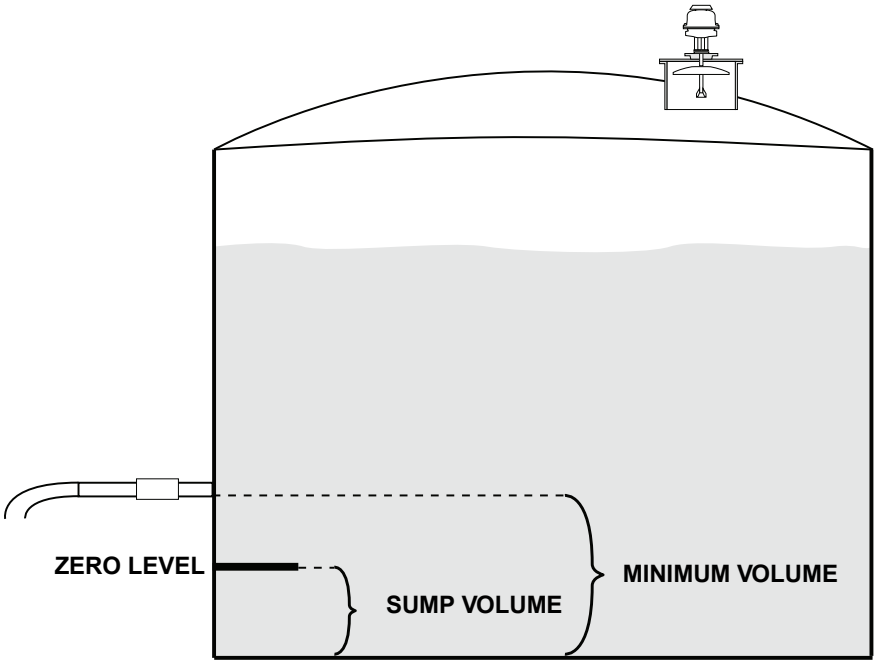


3. To change the TCT type for the current tank, or to specify the number of strapping points, click the **Change** button. The default TCT type is specified in the *System Setup* window (WinSetup). This TCT type is automatically chosen when strapping tables are created for new tanks. Note that using the Change button only affects the current tank.

4. Choose the Level and Volume measurement units to use when the strapping table is entered.

5. Type the Maximum and the Minimum Volume of the current tank. The Minimum Volume is equal to the volume between the outlet and the bottom of the tank.

6. The Sump Volume is the volume that is left when the tank is emptied down to the zero level. Instead of being specified in the Sump Volume field, it may be included in the Strapping Table. In this case, the Base Volume at the Zero Level is equal to the Sump Volume.
   Make sure that the Sump Volume is not specified both ways at the same time!



7. Enter numerical values for the strapping table points.

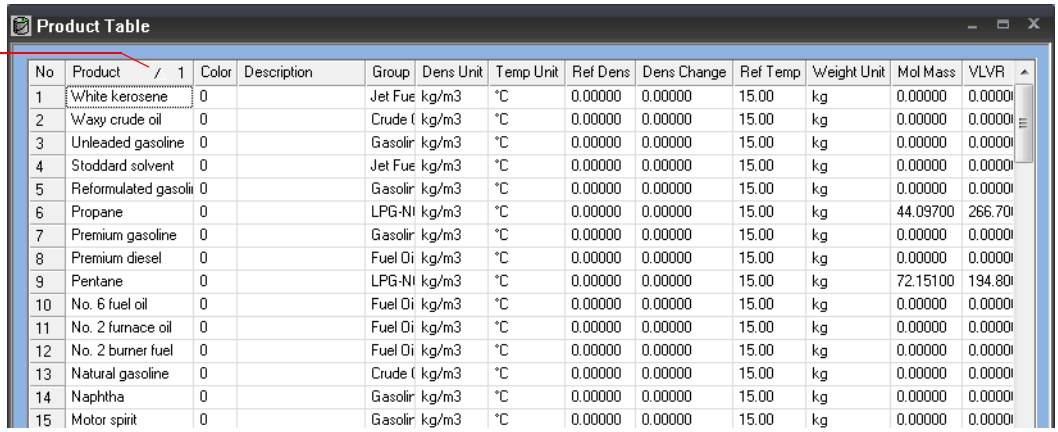
8. Click the **Apply** button to store the entered values without closing the window, or click the **OK** button to finish the tank capacity setup.

4.4 Creating a product table

Product specific information is stored in the Product Table. It is possible to edit the default selection of products and also add new products to the table. To change an item in the Product Table:

1. From the **Setup** menu, choose the **Product Table** option.

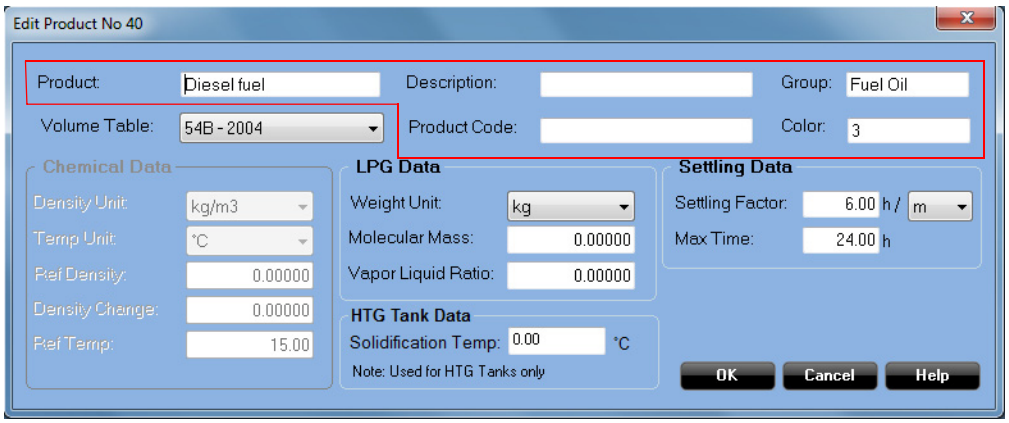
The arrow indicates that the Product field is sorted



No	Product / 1	Color	Description	Group	Dens Unit	Temp Unit	Ref Dens	Dens Change	Ref Temp	Weight Unit	Mol Mass	VLVR
1	White kerosene	0		Jet Fue	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
2	Waxy crude oil	0		Crude (	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
3	Unleaded gasoline	0		Gasolir	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
4	Stoddard solvent	0		Jet Fue	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
5	Reformulated gasoli	0		Gasolir	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
6	Propane	0		LPG-Nt	kg/m3	°C	0.00000	0.00000	15.00	kg	44.09700	266.70
7	Premium gasoline	0		Gasolir	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
8	Premium diesel	0		Fuel Oi	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
9	Pentane	0		LPG-Nt	kg/m3	°C	0.00000	0.00000	15.00	kg	72.15100	194.80
10	No. 6 fuel oil	0		Fuel Oi	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
11	No. 2 furnace oil	0		Fuel Oi	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
12	No. 2 burner fuel	0		Fuel Oi	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
13	Natural gasoline	0		Crude (	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
14	Naphtha	0		Gasolir	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000
15	Motor spirit	0		Gasolir	kg/m3	°C	0.00000	0.00000	15.00	kg	0.00000	0.0000

Note
The content in the product table can be sorted, for more information See “Sorting content in product table” on page 56.

2. In the Product table select a cell and double click the left mouse button, or click the **Edit Product** button.



3. Enter the appropriate data for: Product, Description, Group, Product Code and Color. The other fields are only available for *WinOpi*.

Color

Type a number that corresponds to the desired product color. Note that this requires that a set of product colors has been specified in the *Tools/Options/Color* window. See chapter 3.5.1 *Product color settings* for more information on how to specify product colors.

4. Repeat steps 2 and 3 for all products you want to add into the Product Table.

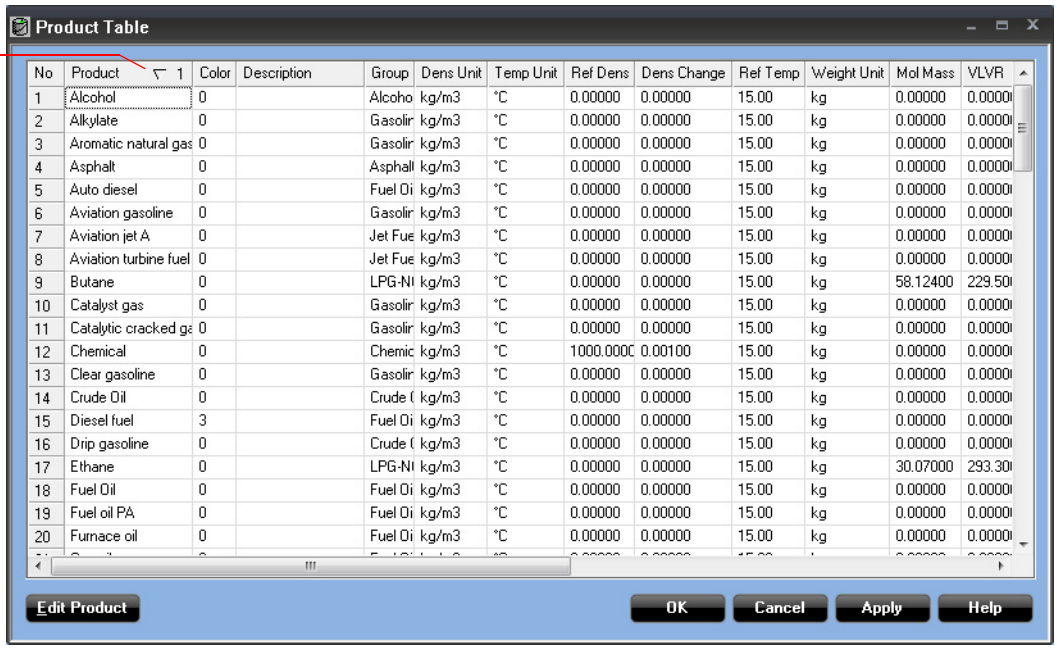
5. Click the **OK** button.

4.4.1 Sorting content in product table

The content in the Product Table can be sorted, to do this perform the following steps:

1. Left click in the cell head of the desired column. Multiple columns may be sorted.

The arrow indicates that the Product field is sorted



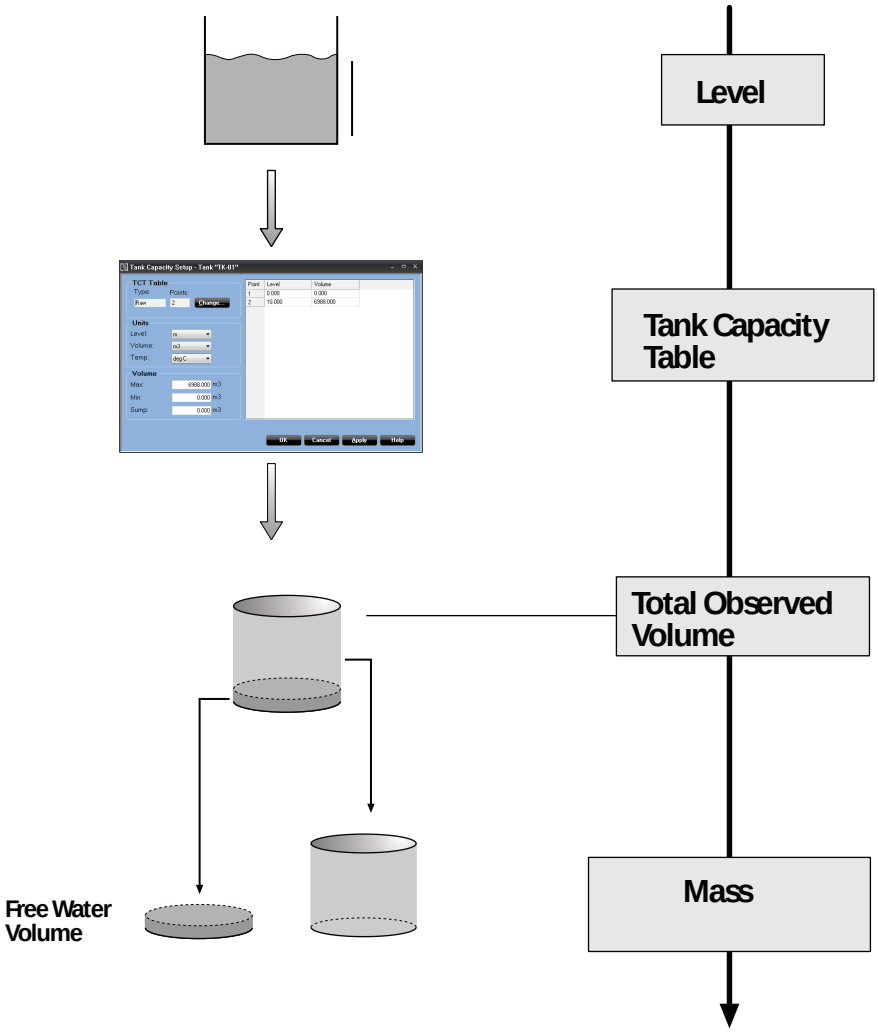
2. If left clicking the cell head again, the sorting changes from descending to ascending.

3. To reset the sorting, right click on the desired column cell head.

4.5 Inventory parameters

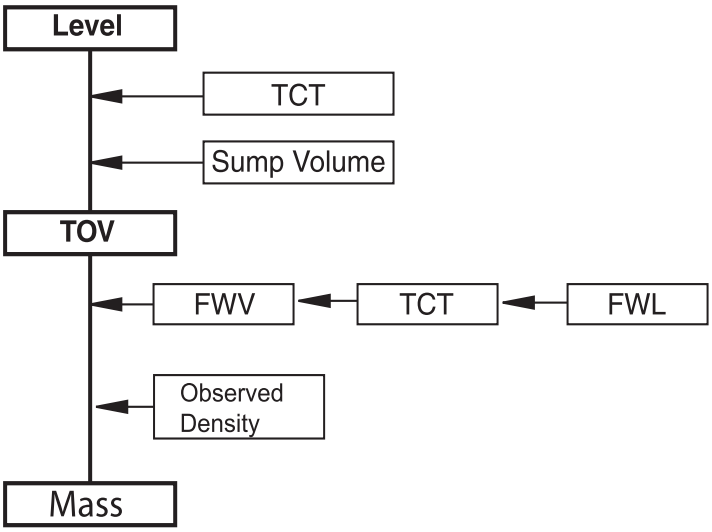
TankMaster calculates inventory parameters based on input data available for the current tank.

The following figure shows an example of how TankMaster converts measured product level to TOV and Mass:



Relation between tank parameters and physical quantities

The following figure illustrates the relationship between tank parameters and physical quantities. The main parameters are shown in the left-hand part, and the input parameters are shown in the right-hand part of the flow chart:



Tank parameters flow chart

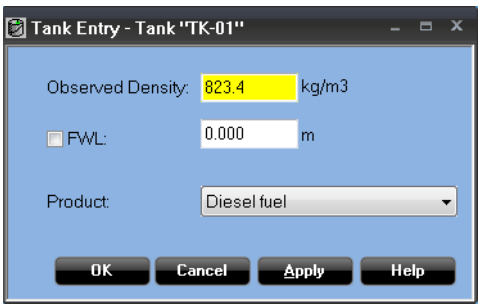
Total Observed Volume, TOV	is calculated from strapping tables. It is the total volume at the observed temperature of the product.
Mass	is the TOV multiplied by the Obs Density.
Maximum Volume	is entered by the user. The Maximum volume should correspond to the maximum product level.
Available Room, AVRM	is calculated by substracting the Total Observed Volume from the Maximum Volume of the tank.
Sump volume	is the volume that is left in a tank when emptied down to the Zero level.
Minimum Volume	is the volume between the outlet and the bottom of the tank.
Pumpable Volume	is the Total Observed Volume minus the Minimum Volume.
Flow Rate	the Flow Rate is calculated using the level rate and the strapping tables.
Free Water Level, FWL	can be manually entered or measured by a water interface sensor. To specify the Free Water Level source signal, i.e. the analog input to which the sensor is connected, select the current tank and choose the *Tanks>Properties>Configuration* menu in the *TankMaster WinSetup* program.
Free Water Volume, FWV	calculated on the basis of the Free Water Level and the Tank Capacity Table (TCT).

4.5.1 Tank entry

During operation, e.g. changing product in a tank, the setup is performed in the *Tank Entry* window, assuming that the product has been properly defined in the Product Table.

The *Tank Entry* window is used for specifying a number of product parameters to be used for inventory calculations. To enter *Observed density*, *Free Water Level* and type of product for a specific tank, do the following:

1. Select the desired tank in the *Workspace* window.
2. Click the right mouse button and choose **Tank Entry**, or from the **Entry** menu choose the **Tank Entry** option.



3. Enter the desired values.

Observed Density

Enter a manual value for the Observed Density.

Free Water Level

For the FWL parameter TankMaster can use automatically measured data, or data that is manually entered.

To enter manual values select the check box and type the desired value in the corresponding input field. Manual values are marked with yellow color. See chapter 3.5 *Color Settings* for more information on how to define colors for manual values.

Product

Choose the desired product from the pop-up list. The list contains products specified in the *Product Table* (see chapter 4.4 *Creating a product table* for information on how to create a product table).

Section 5 Alarm Handling

WinView lets you supervise various types of alarms. You can set alarm levels as well as hysteresis and delay times for Level, Level rate and Average temperature.

The status of the alarms can be either HiHi, High, Low, LoLo, Error, Leak Hi, Leak Lo, CFail (communication failure) or Normal. The HiHi, High, Low and LoLo alarms, the Alarm Delay Times, the Alarm Hysteresis and the Leak Alarms are set by the operator in the *Alarm Limits* window. The operator password is required to do changes in the *Alarm Limits* window.

The measurement data that the *WinView* receives from the different field devices are continuously checked against the alarm limits. If a value has passed an alarm limit, the corresponding alarm will be activated after a certain delay time given by the Delay Time setting.

The alarm status is shown with a flashing bright red color in for example, the *Alarm Summary* window, until the operator has accepted the alarm. When an alarm is accepted, the status is shown in a steady dark red color. The alarm colors can be changed (see chapter 5.6.2 *Color*). Even if the conditions have returned to normal, the alarm status is not reset until the operator has accepted the alarm. In order to disable an alarm the parameter that caused the alarm must pass below the alarm limit and an extra amount specified by the **Alarm Hysteresis** value. When these conditions are satisfied, the alarm reset is delayed an amount of time given by the **Delay Time**.

Leak alarms

The level leak alarm monitors product level changes. When the Leak Limit is set the current tank level is stored. The WinView monitors the difference between the actual level and the stored level, and activates the Leak Alarm when this difference becomes greater than the Leak Limit programmed by the operator.

Sensor failure

If there is a sensor failure, for example when the signal goes out of range, sensor status **Error** is displayed.

Communication failure

If a Field Communication Unit, a Radar Tank Gauge or a Data Acquisition Unit does not respond after three queries, the alarm status of the tank parameters will be set to **CFail**.The Status Bar will show error messages such as "<*Tank Name*> FCU CFail", "<*Tank Name*> RTG CFail", or "<*Tank Name*> DAU CFail" in case a device that does not respond. All parameters associated with a device does not respond gets the status CFail. Even though the CFail alarm can be shown for a number of parameters, it is only concerned as one alarm, and the alarm needs only to be accepted once for each unit.

Alarm status priority

Each parameter status has a certain priority as shown below. If for example a Communication Failure alarm is activated for a certain tank, the alarm status Error will not be shown for that tank as long as the Communication Failure status is valid. If the parameter is disconnected (see chapter 5.5 *Disconnecting alarms*) then Discon will replace CFail as the status of the parameter.

The *WinView* alarms are given the following order of priority:

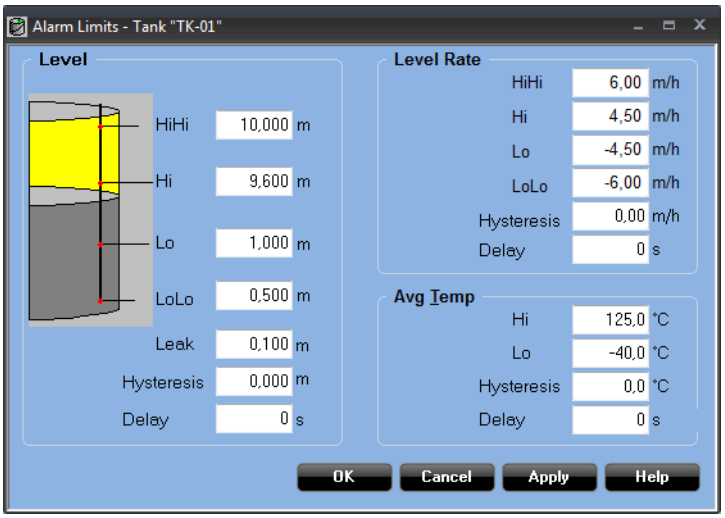
1. Disconnect (Discon)
2. Communication Failure (CFail)
3. Error
4. Blocked
5. HiHi, LoLo
6. Leak Alarm Hi, Leak Alarm Lo
7. High, Low

Priorities 1 to 4 are valid for automatically measured values only, not for manually entered values.

5.1 Alarm limits

To set the Alarm Limits do the following:

1. Select the desired tank in the WinView *Workspace* window.
2. Click the right mouse button and choose **Alarm Limits**.



The *Alarm Limits* window lets you specify various alarms. You can setup alarm limits for level, level rate, average temperature.

3. Enter the desired alarm limits for Level, Level Rate and Avg Temp.
4. Click the **OK** button to activate the current settings and to close the *Alarm Limits* window.

5.1.1 Level

HiHi, Hi, LoLo, Lo

Type the desired limits in the appropriate input fields.

HiHi	Alarm threshold for the extreme high condition.
Hi	Alarm threshold for the high condition.
Lo	Alarm threshold for the low condition.
LoLo	Alarm threshold for the extreme low condition.

Leak

Leak alarm limits can be specified for Level. To enable/disable Leak alarms choose the **Alarm Disconnect** option from the **Entry** menu and deselect/select the corresponding check box, see chapter 5.5 *Disconnecting alarms*.

Hysteresis

By setting a hysteresis value you can stop alarms from turning on and off due to turbulent measurement conditions.
Example: the Level Hi limit is set to 10 m and the hysteresis to 0.1 m. The alarm is activated when the level exceeds 10 m. It remains active until the level drops below 9.9 m. In this case small waves on the liquid surface do not influence the Hi alarm.

Delay

The Delay time can be used to prevent temporary changes of the measurement value from activating the alarm.

5.1.2 Level Rate

HiHi, Hi. LoLo, Lo

Type the desired limits in the appropriate input fields.

HiHi	Alarm threshold for the extreme high condition.
Hi	Alarm threshold for the high condition.
LoLo	Alarm threshold for the low condition.
Lo	Alarm threshold for the extreme low condition.

Hysteresis

By setting a hysteresis value you can stop alarms from turning on and off due to turbulent measurement conditions.
Example: the Level Rate Hi limit is set to 4,5 m/h and the hysteresis to 0.1 m/h. The alarm is activated when the level exceeds 4,5 m/h. It remains active until the level drops below 4,4 m/h. In this case fluctuations in the flow do not influence the Hi alarm.

Delay

The Delay time can be used to prevent temporary changes of the measurement value from activating the alarm.

5.1.3 Average temperature

HiHi, Hi, LoLo, Lo

Type the desired limits in the appropriate input fields.

Hi	Alarm threshold for the high condition.
Lo	Alarm threshold for the low condition.

Hysteresis

By setting a hysteresis value you can stop alarms from turning on and off due to turbulent measurement conditions.
Example: the Avg Temp Hi limit is set to 125,0 °C and the hysteresis to 0.1 °C. The alarm is activated when the level exceeds 125,0 °C. It remains active until the level drops below 124,9 °C. In this case fluctuations in the temperature do not influence the Hi alarm.

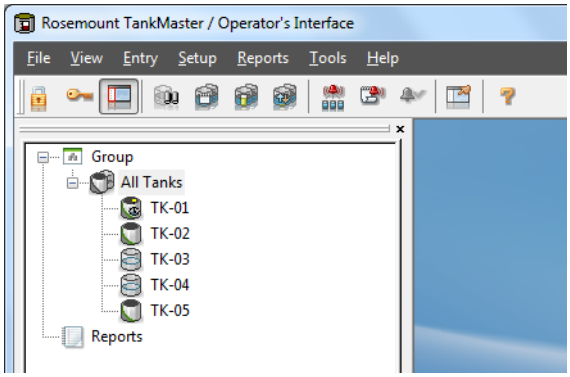
Delay

The Delay time can be used to prevent temporary changes of the measurement value from activating the alarm.

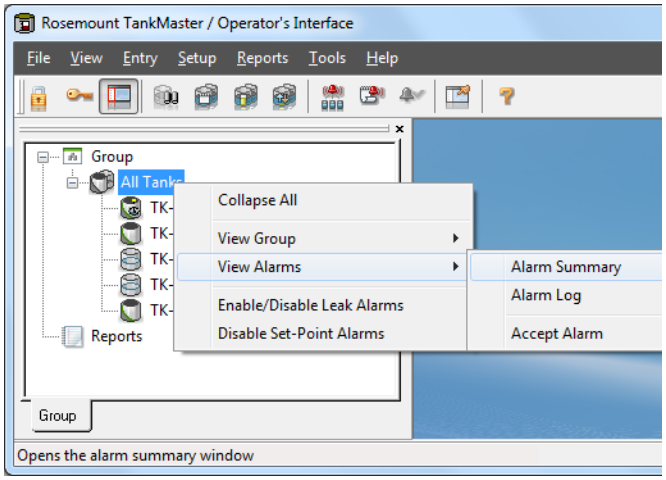
5.2 Viewing active alarms - Alarm Summary

You can view alarms for all tanks in the system by selecting the appropriate icon in the *Workspace* window.

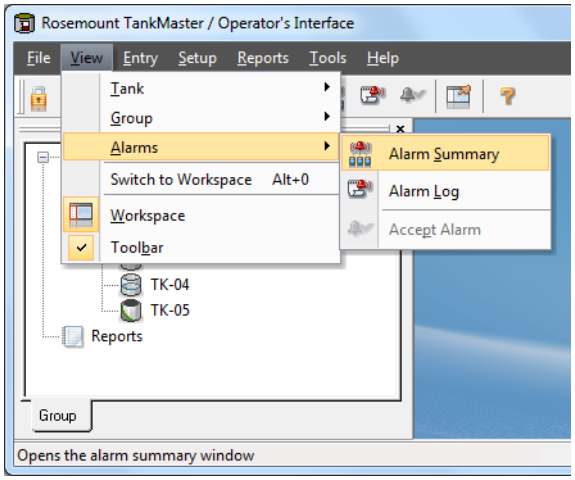
To view a summary of active alarms do the following:



1. Select **All Tanks** in the *Workspace* window.



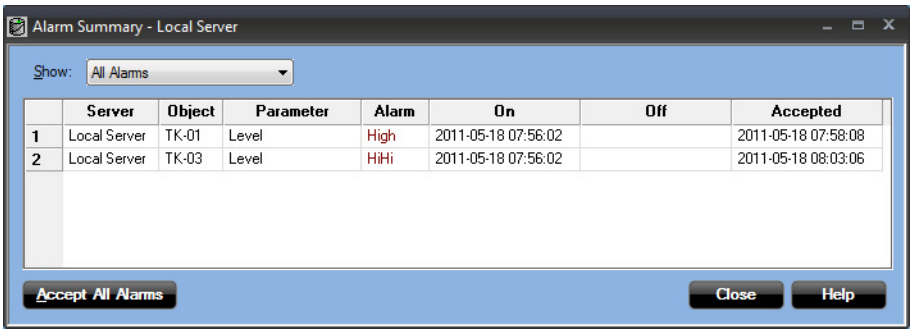
2. Click the right mouse button and select **View Alarms** > **Alarm Summary,**



or,

from the **View/Alarms** menu choose the **Alarm Summary**.

Now the *Alarm Summary* window appears:



The *Alarm Summary* window displays an alarm until it is accepted and the condition that caused the alarm to activate is taken care of.

Alarm status

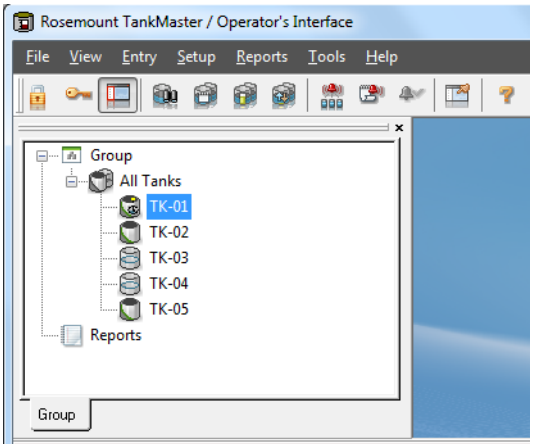
The *Alarm Summary* window displays the time when the alarm was activated in the **On** column, and the time it was accepted by an operator in the column designated **Accepted**.

An alarm is not removed from the list until it has been accepted as well as the condition that activated the alarm has returned to normal.

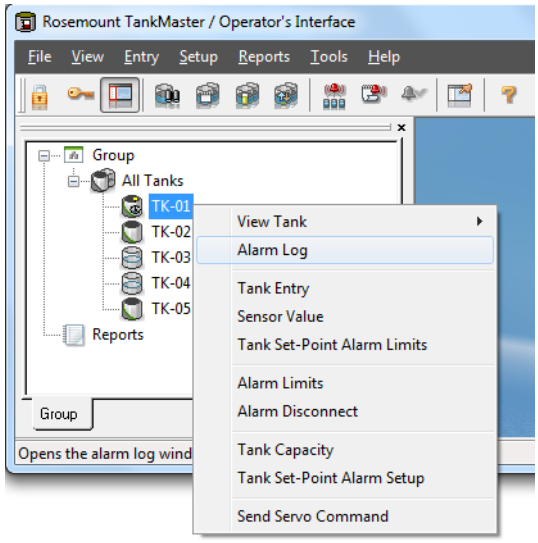
Note
A Leak Lo/Hi alarm is not removed from the list until it has been disconnected in the Alarm Disconnect window, (Entry/Alarm Disconnect menu).

5.3 Alarm log

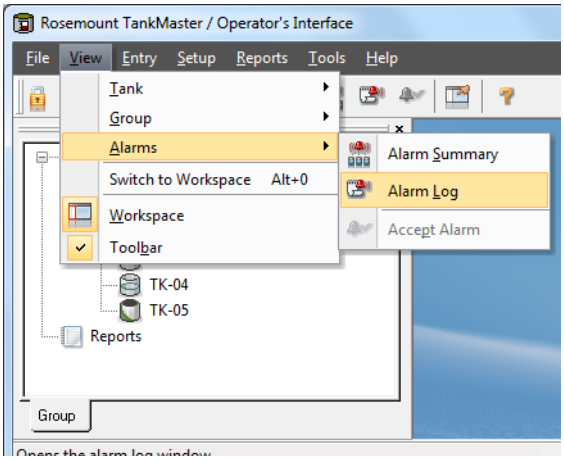
You can view an alarm log for a tank or all tanks. To view the Alarm Log do the following:



1. Select the desired tank (or All Tanks) in the *Workspace* window.

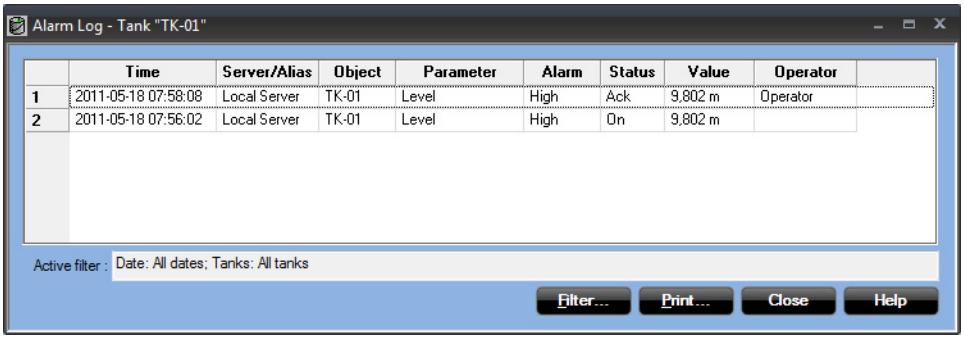


2. Click the right mouse button and select **Alarm Log,**



or,

from the **View/Alarms** menu, choose the **Alarm Log** option.



This window shows a list of logged alarms. For each alarm the following information is displayed:

- Alarm type (High, Low etc.)
- Tank name.
- The parameter that activated the alarm.
- The parameter value when the alarm was activated.
- Alarm status.
- The time and date when the alarm was activated and accepted.
- The operator who accepted the alarm.

Alarm status

When an alarm is activated the status is indicated as **On**.
When the alarm is accepted, **Acc** is added to the status line.

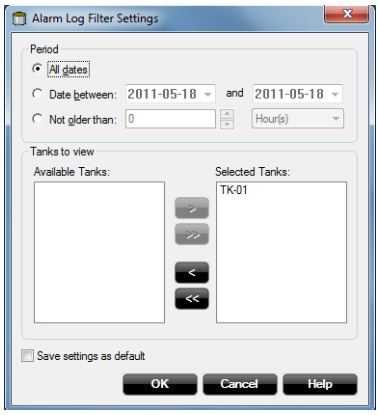
If an alarm is unaccepted, the status remains to be **On**, even if the measured value that caused the alarm to activate has returned to normal.

The alarm status is not changed to Off until the corresponding alarm has been accepted, **and** the measurement value is within the accepted range.

Filter settings

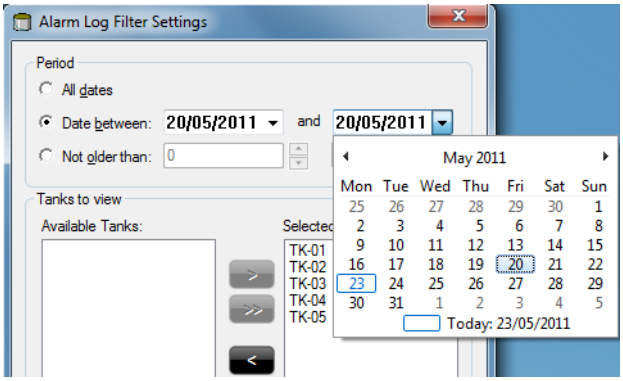
You can specify which tanks to be displayed (applicable for All Tanks) and the range of days or hours to be viewed:

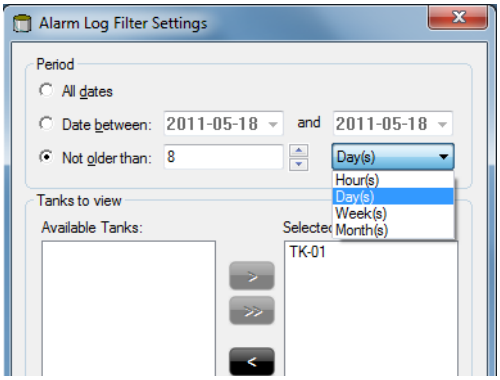
1. In the *Alarm Log* window, click the **Filter** button to open the *Alarm Log Filter Settings* window:



Note
In the example above, a single tank was selected for viewing in the Alarm Log window. Therefore, only one tank is shown in the Selected Tanks pane when the Filter button is pressed. All tanks are available in the Selected Tanks pane if All Tanks is selected in the *Alarm Log* window.

2. Specify the period of time to be viewed.





Choose **All dates** if you want to view every alarm that has been logged for the selected tanks.

Choose **Date between** if you want to view alarms for a certain range of days.

Choose **Not older than** if you want to view all alarms from a certain point of time until now.

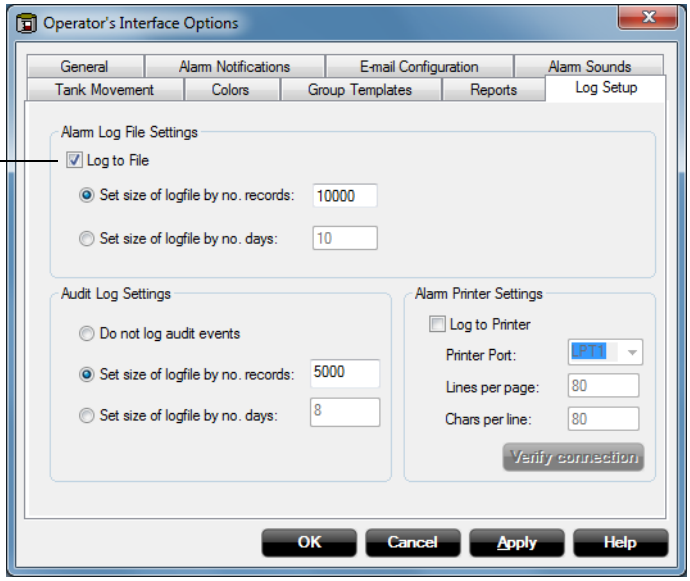
3. Mark the **Save settings as default** check box if you want this filter setting to be the standard setting each time you open the *Alarm Log* window.

4. Click the **OK** button.

5.3.1 Saving the alarm log to file

The Alarm Log can be saved to file. To save the Alarm Log do the following:

1. From the **Tools** menu choose **Options**.
2. Select the **Log Setup** tab.



3. Choose the **Log to File** option.

   Set the maximum log file size by specifying the number of records or the number of days to be logged.

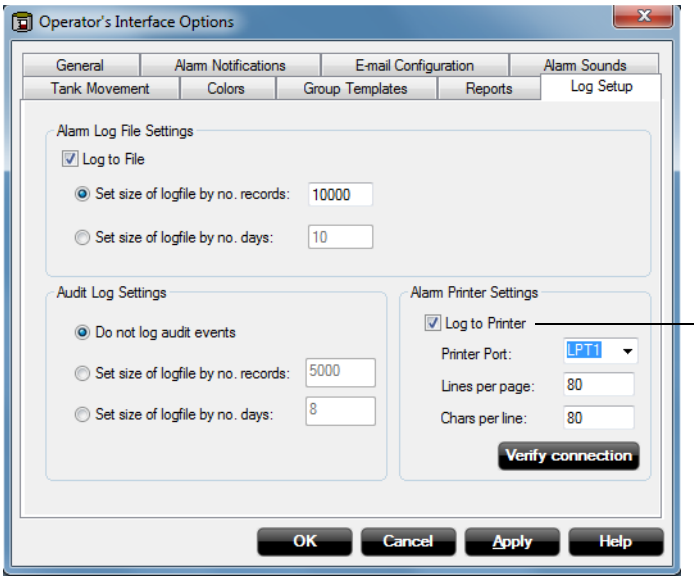
By setting the size of the log file to for example 10 days all alarm events from the current date and 10 days back are stored.

5.3.2 Alarm printer settings

Alarms can be printed directly to an Alarm Printer. The printout of the alarm is executed when the alarm is activated.

To print each alarm on an Alarm Printer:

1. From the **Tools** menu choose **Options**.
2. Select the **Log Setup** tab.



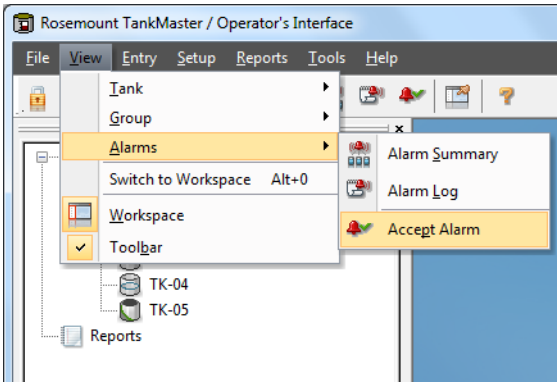
3. Choose the **Log to Printer** option.
4. Select the Printer Port to which the Alarm Printer is connected. Also set the maximum number of lines per printed page and the maximum number of characters per line.
5. Click the button **Verify connection** to print a test page on the Alarm Printer.

5.4 To accept alarms

To accept an alarm do one of the following:

- Press the <SHIFT + F9> keys.
- Click the toolbar Accept button.

- In the **View** menu, select **Alarms** and then **Accept Alarm**.



Alarms can only be accepted by a user that is logged on at an access level above or equal to the required access level. To set the required access level for alarm handling, see "To set required access levels" on page 22.

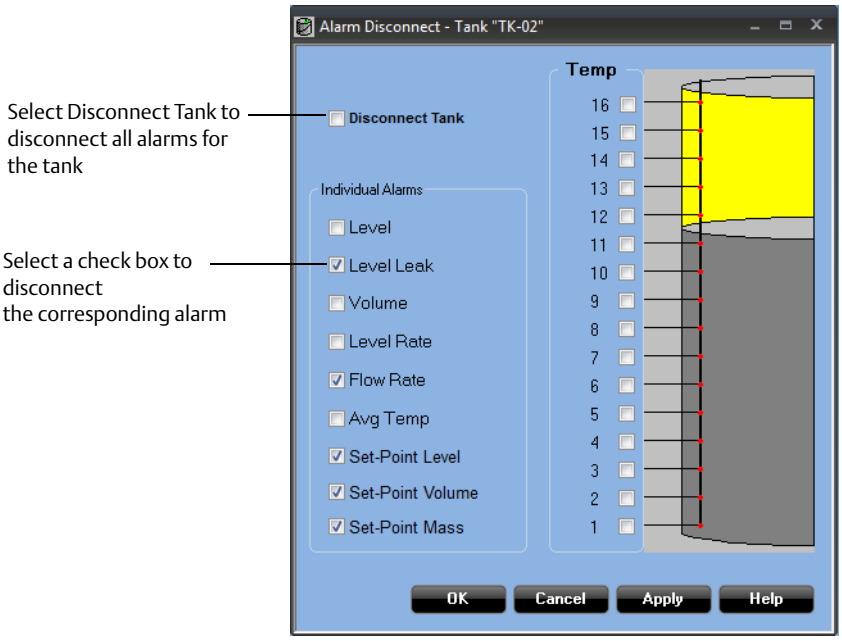
5.5 Disconnecting alarms

Disconnecting alarms can be useful if, for instance, service is required. You can choose to disconnect certain alarms which you don´t want to be active or you can choose to disconnect all alarms.

To disconnect an alarm do the following:

1. Select the desired tank in the *Workspace* window.

2. Click the right mouse button and choose **Alarm Disconnect**, or from the **Entry** menu choose the **Alarm Disconnect** option.



This window lets you specify which alarms you want to disable. *WinView* continues to update the measurement value even if the corresponding alarm is disconnected.

The status of a disconnected alarm will be shown as **Discon**.

A disconnected temperature sensor is not included in the average temperature calculation.

Note
There are no Error alarms for disconnected sensors. This means that sensor failures will not be notified for sensors with disconnected alarms.

3. To disconnect an alarm, select the check box next to the corresponding parameter. To disconnect all alarms, select the check box **Disconnect Tank**.

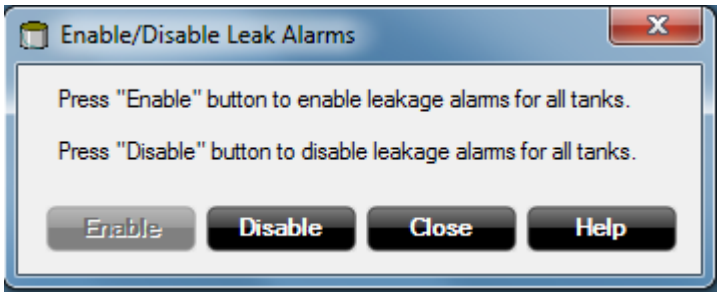
Note
Even though an alarm is disconnected the measurement of the specific parameter continues.

5.5.1 Enable/Disable Leak Alarms

The Enable/Disable Leak Alarms function is used to enable or disable leak alarms for all tanks.
To enable/disable alarms for individual tanks use the Alarm Disconnect function, See “Disconnecting alarms” on page 74.

To enable or disable Leak alarms, do the following:

Right-click on All Tanks and choose **Enable/Disable Leak Alarms**. Alternatively the *Enable/Disable Leak Alarms* window can be opened from the menu **Entry>Enable/Disable Leak Alarms**.



The only available option is *Level*.

Press the button **Enable** to activate the selected leak alarms for all tanks. The button *Enable* is active if the leak alarm is disabled for one or more tanks.

Press the button **Disable** to disable the selected leak alarms for all tanks. The button *Disable* is active if the leak alarm is enabled for one or more tanks.

5.6 Alarm Setup

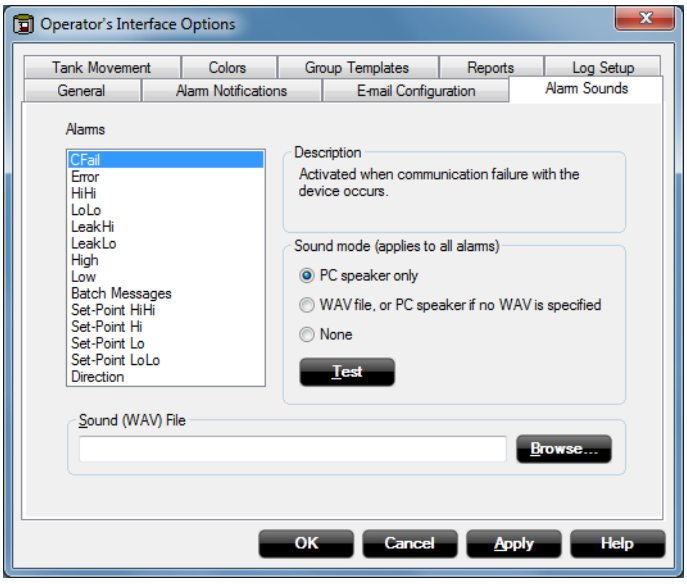
5.6.1 Sound

WinView offers the option to set different kinds of alarm sound signals. This option can be used to distinguish between various types of alarms.

To specify sound signals do the following:

1. From the **Tools** menu choose **Options**.

2. Select the **Alarm Sounds** tab.

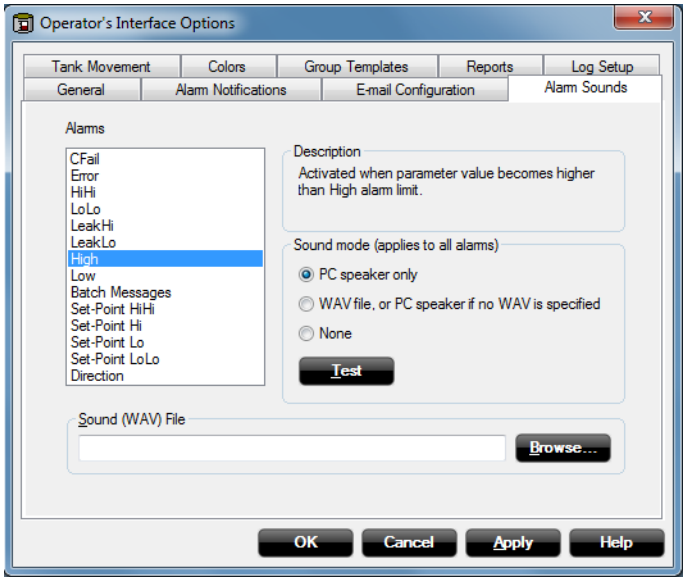


3. Choose one of the alarms.

4. Choose the desired alarm type: PC speakers (built-in sounds in Microsoft Windows), WAV file or None. The None option disables alarm signalling. Click the **OK** button.

To use WAV sound files do the following:

1. Select the WAV file sound mode option.
2. Choose the desired alarm: High, Low, etc.
3. Click the Browse button and choose a sound file (WAV) which is available on the hard disk to be used for the selected alarm.



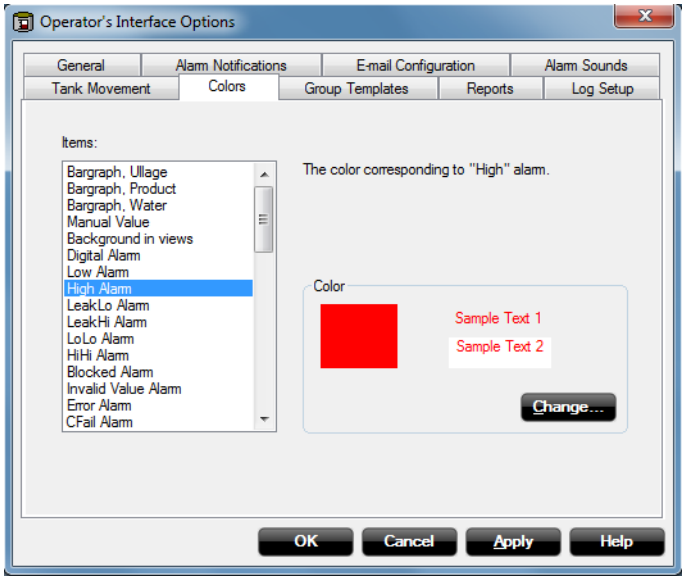
4. Repeat steps 2 and 3 for all alarms that you want to associate to a WAV sound.
5. Click the **OK** button.

5.6.2 Color

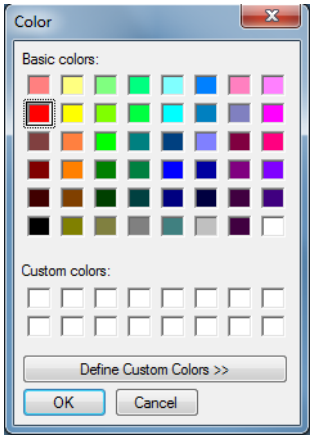
WinView offers the option to specify colors for bar graphs, presentation of tank data, manual values, different types of alarms and products in the Product Table. For more information on color settings, see chapter 3.5 *Color Settings*.

To specify colors for different types of alarms do the following:

1. From the **Tools** menu choose **Options**.
2. Select the **Colors** tab.



3. Choose the desired alarm from the Items list.
4. Click the **Change** button.

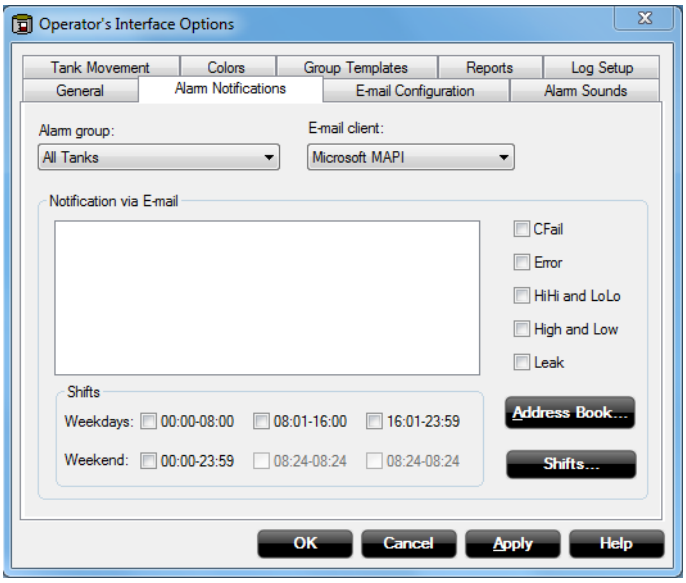


5. Choose a color from the Color palette or define a new color by clicking the Define Custom Colors button.
6. Click the **OK** button.

5.6.3 Alarm notification

WinView can be configured to send notifications via e-mail when an alarm is activated. To specify alarm notification properties do the following:

1. From the **Tools** menu choose **Options**.
2. Select the **Alarm Notifications** tab.

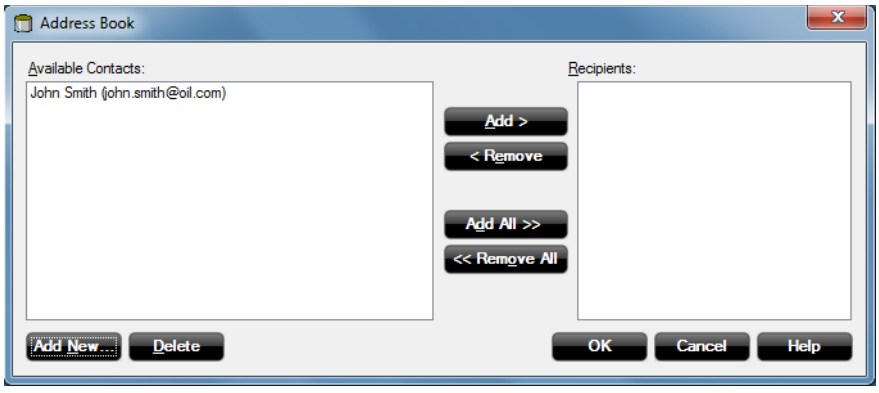


This window lets you:

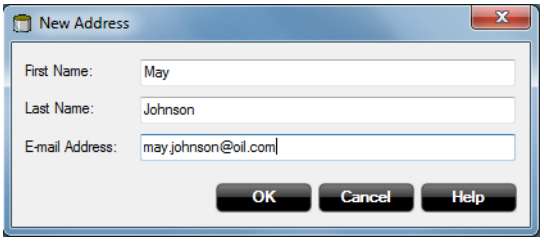
- select Mail Client
- create a list of e-mail recipients for alarm notifications

To add e-mail recipients and configure Alarm Notification:

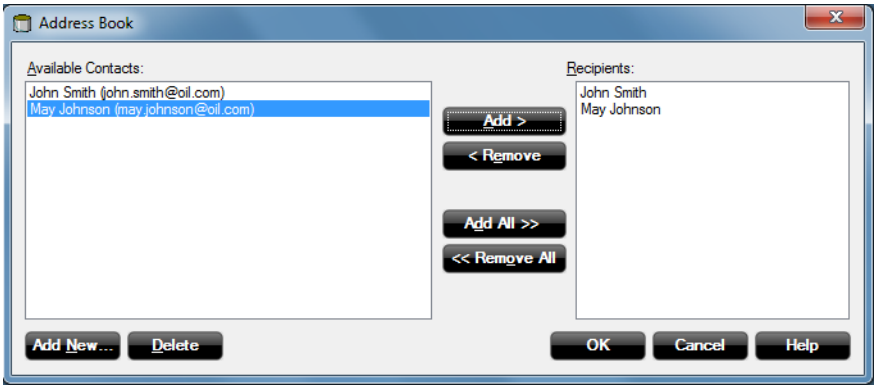
1. Click the **Address Book** button.



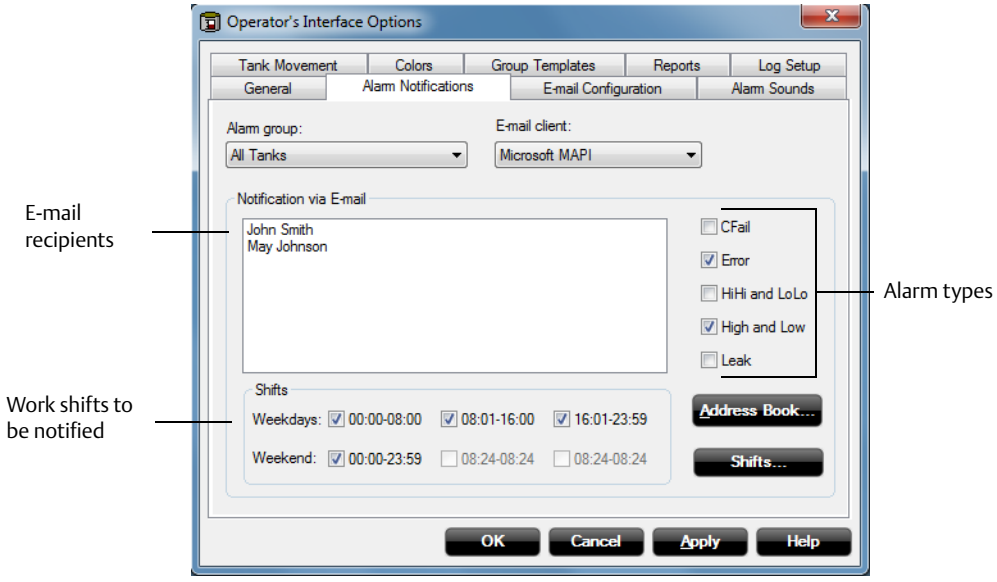
2. From the left pane choose a name to be included in the list of recipients and click the **Move** button. Click the **Add New** button to add names which are not available in the address book.



3. Repeat step 2 until all recipients you want to include appear in the right pane.



4. Click the **OK** button.



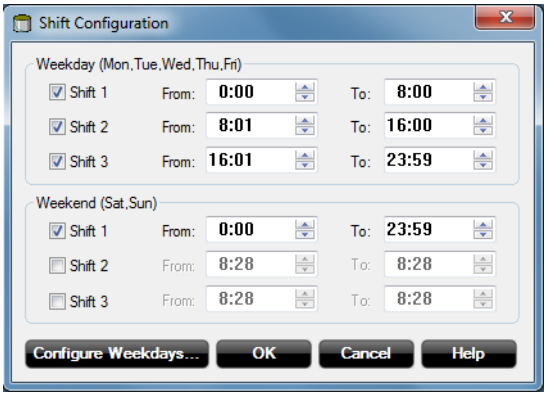
5. For the selected e-mail recipient, choose the alarm types to be included in the e-mail notification by selecting the corresponding check boxes.

6. For the selected e-mail recipient, choose one or more shifts for which the e-mail notification function will be activated.

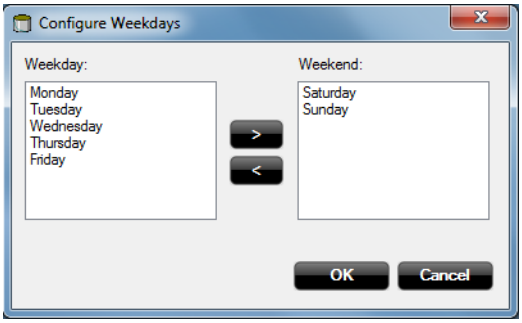
To configure available shifts:

Note
When configuring shifts, each hour of the day must be covered. No time gap is allowed.

a. Click the **Shifts** button.



b. Configure start and stop times for the shifts, and also which shifts to use. Click **Configure Weekdays** to select which weekdays comprise the work week.



c. Click **OK**.

7. Choose Mail Client. There are two mail clients to choose from: the Microsoft MAPI and the Built-in mail console utility. The Microsoft MAPI does not require further configuration. To configure the Built-in e-mail client, see paragraph *Built-in E-mail client configuration* on page 5-82.

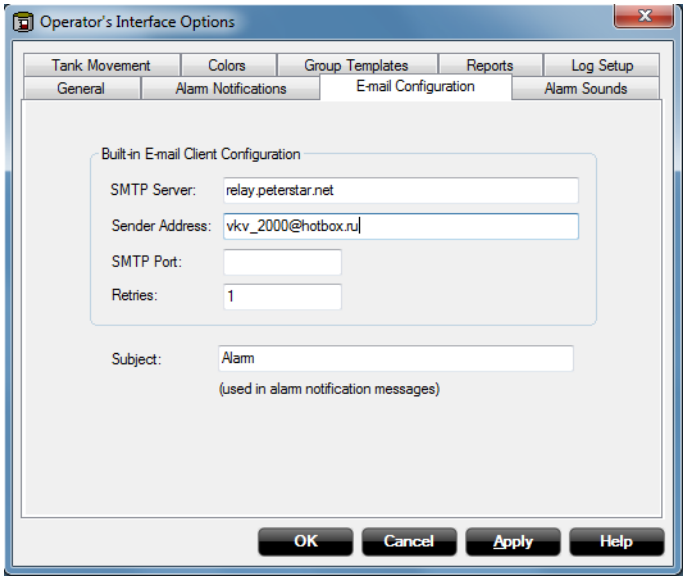
Note
On some systems the MAPI mail client generates a security warning dialog from the server when trying to send an alarm notification. On these systems, the distribution of alarm notifications requires user interaction and no alarm notifications will be sent if the security warning dialog is left unattended.

8. Click the **OK** button.

Built-in E-mail client configuration

WinView has an e-mail client built in, allowing sending alarm notifications via e-mail. To configure the program do the following:

1. From the **Tools** menu choose **Options**.
2. Select the **E-mail Configurations** tab.



3. Enter the following parameters:

SMTP Server	Specify your SMTP server for outgoing messages. You can get this information from your Internet service provider or LAN administrator.
Sender Address	Address for the sending e-mail account (must be located on the specified SMTP server).
SMTP Port	Optional.
Retries	Optional.
Subject Line	Mail title (only used for Alarm notification and is optional).

4. Click the **OK** button.

Section 6 Reports

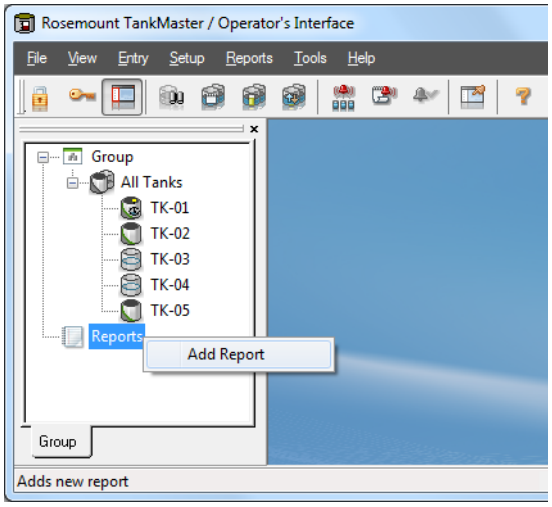
WinView provides the option to automatically print standard reports on a regular basis. The reports show information about the tanks and their contents.

6.1 Automatic reports

TankMaster WinView lets you specify reports to be distributed at a predefined schedule.

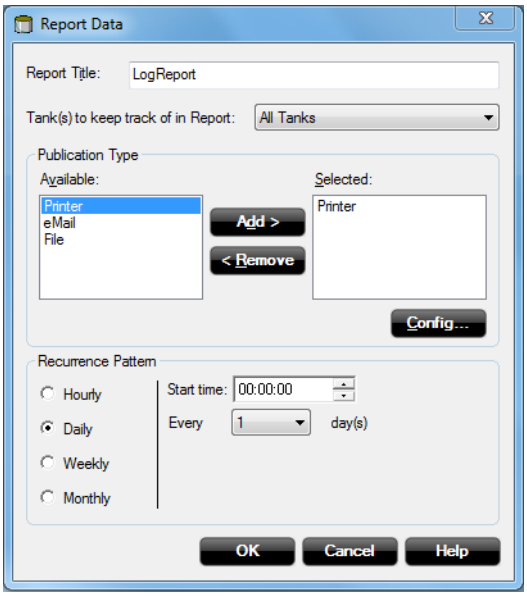
To set up an automatic report do the following:

1. In the WinView workspace select the **Reports** icon.



2. Click the right mouse button and select **Add Report, or** from the **Tools** menu choose **Options** and select the **Reports** tab.

Alternatively, select the **Reports** icon and from the **Reports** menu choose **Add Report**.

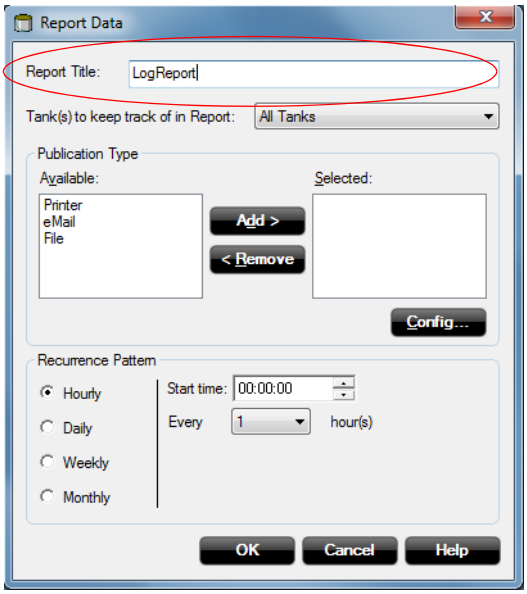


The *Report Data* window lets you specify the following:

- report title
- tanks to send reports to
- how the report will be distributed (publication type): via email, printer, or stored in text file format.
- recurrence pattern, i.e. how often the report will be sent

6.1.1 Report title

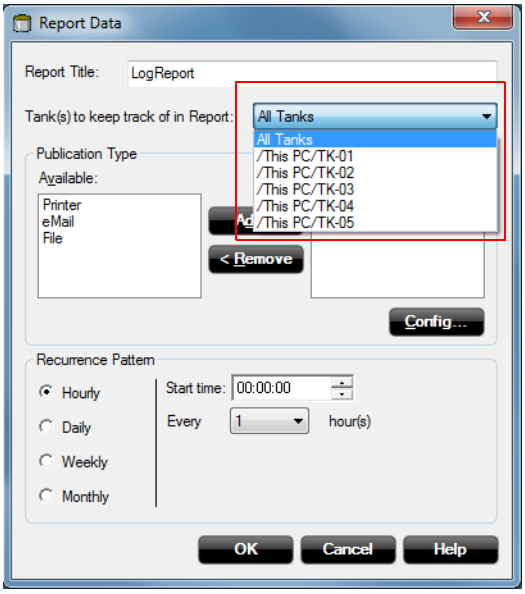
Enter the desired **Report Title**.



Enter the desired Report Title

6.1.2 Tanks in report

To define for which Tank/Tanks the report should be published, select the desired option in the **Tank(s) to keep track of in Report** pane.



Choose for which tank the report should be published

Choose *All Tanks* to include all tanks in the report, or choose a specific tank

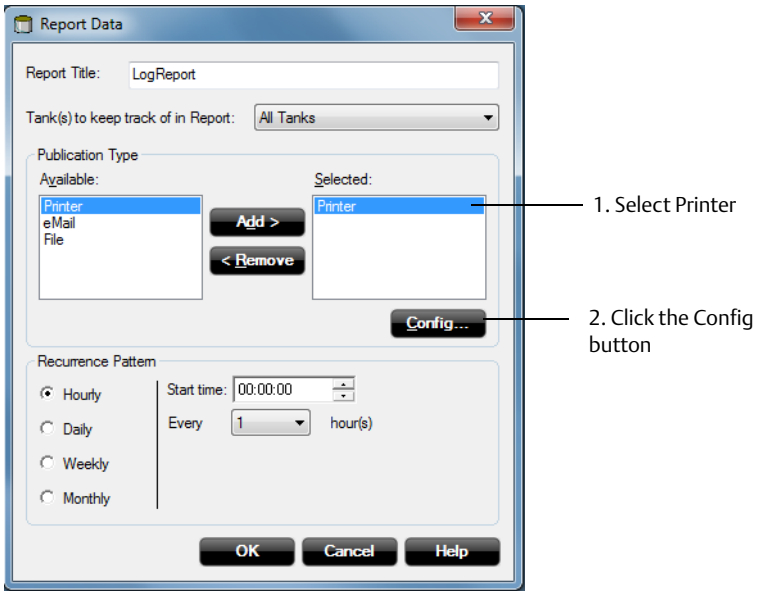
6.1.3 Publication type

Reports can be printed, sent by e-mail as well as saved in text file format to be opened by any program which can handle text files.

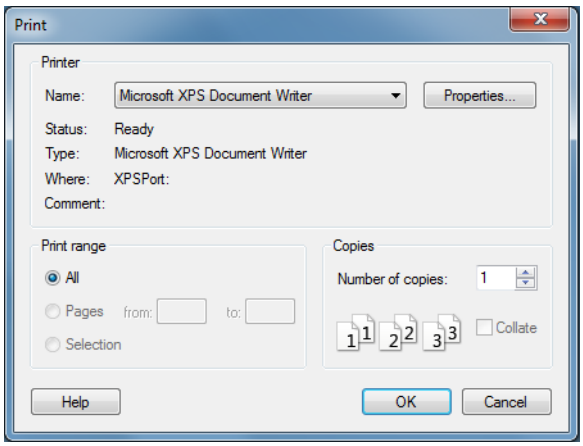
Printer

To configure a report to be printed do the following:

1. In the *Report Data* window, select Printer from the list of available publication types and click the **Add** button.
2. Select **Printer** in the right pane (Selected) and click the **Config** button.



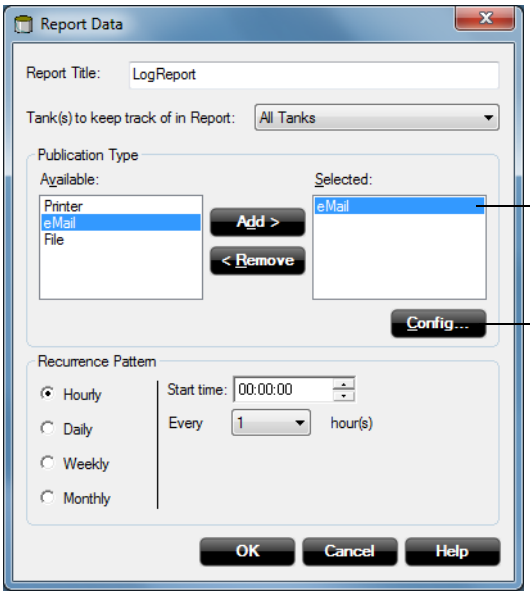
3. Choose the desired printer to publish reports on.



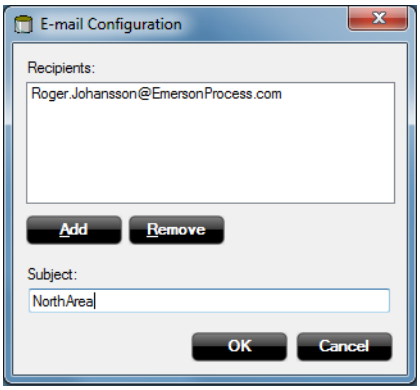
4. Click the **OK** button.

E-mail

To configure a report to be sent by e-mail do the following:



1. Select **eMail** from the list of available publication types and click the **Add** button.
2. Select **eMail** in the right pane (Selected) and click the **Config** button:



3. Add as many recipients as you like to the Recipients list in the *E-mail Configuration* window.

Note
To configure the e-mail client, See “Built-in E-mail client configuration” on page 82.

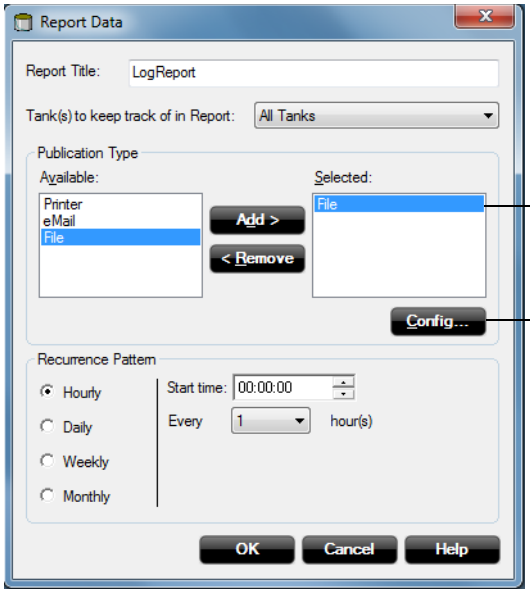
4. Click the **OK** button.

You can create several e-mail distribution lists by repeating steps 1 to 4 as described above. The report will be sent to all the e-mail distribution lists available in the right pane of the *Report Data* window.

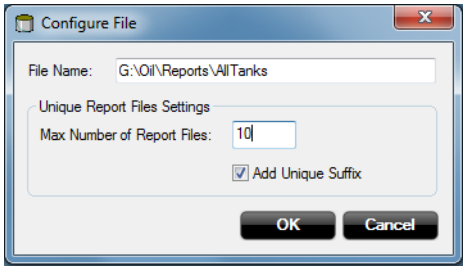
File

To save a report as a text file, do the following:

1. Select **File** from the list of available publication types and click the **Add** button.



2. Select **File** in the right pane (Selected) and click the **Config** button.



3. Type the file name and the path to the folder where the file will be stored. Select **Add Unique Suffix** to add a unique suffix to the report file name. In this example, the first report file will be called AllTanks_1.txt, the second report file AllTanks_2.txt, and so on. When the **Max number of Report Files** is reached, the oldest report file will be replaced. In this example, when AllTanks_10.txt has been created, the next report file will be AllTanks_1.txt, and the previously stored report file “AllTanks_1.txt” will be replaced.

Note
The file extension .txt is automatically added to the file name.

4. Click the **OK** button.

6.1.4 Recurrence pattern

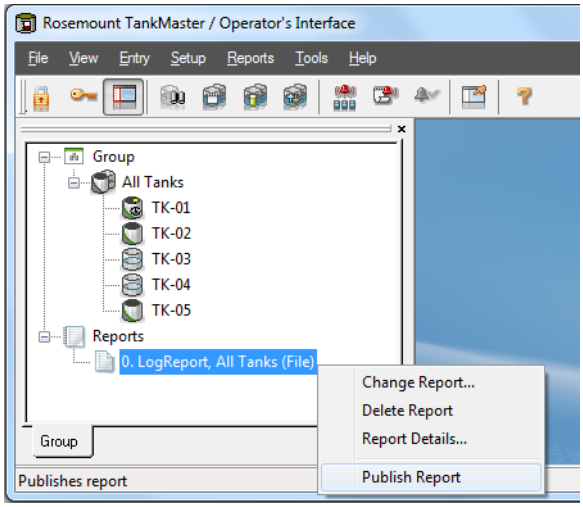
Define how often the report will be automatically distributed. Select hourly, daily, weekly, or monthly and specify a start time and frequency. The recurrence pattern is applicable to all publication types.

6.2 Publish report

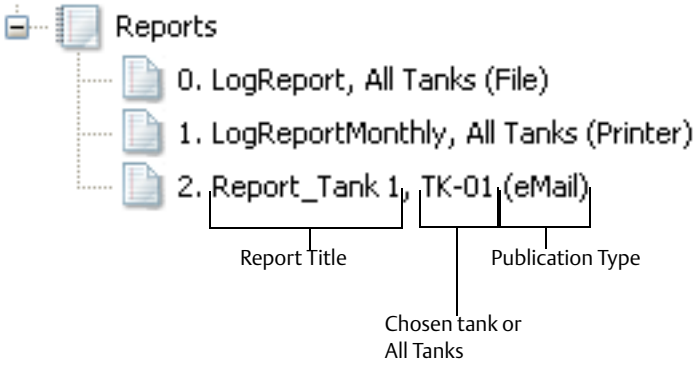
In addition to automatically distributing reports according to a specified recurrence scheme, reports can be sent at any time by using the **Publish Report** option. To publish a report do the following:

1. In the WinView workspace select the report to be published (printed, sent by e-mail or saved to file).

2. Click the right mouse button and choose Publish Report, or from the Reports menu choose Publish Report.



The report is now published according to the specified publication type (Printer, File etc.):



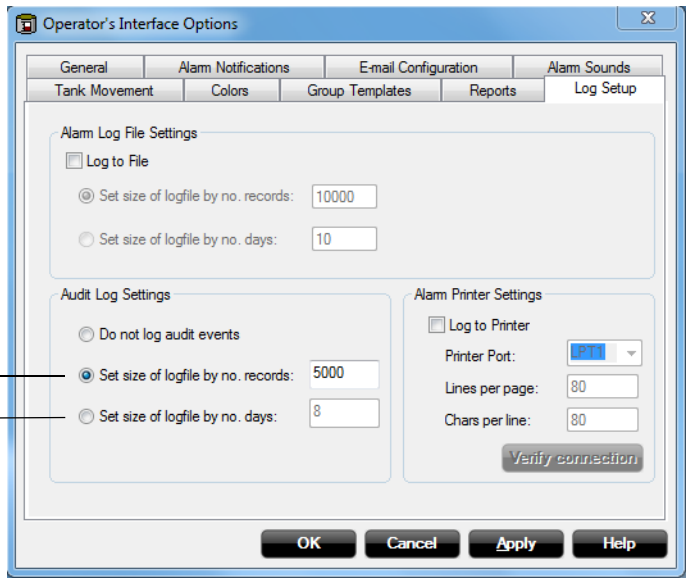
Section 7 Audit Log

The Audit Log function enables you to record the various actions that can be carried out by a TankMaster operator. Audit Log records such actions as changing the alarm limits, logging on/off, setting manual values for level and other parameters. Many other actions are recorded as well.

7.1 Setup

The Audit Log function can be enabled or disabled at any time. To activate the Audit Log function do the following:

1. From the **Tools** menu choose **Options**.
2. Select the **Log Setup** tab.



3. Activate the Audit Log function by choosing one of the two options:

- Set size of logfile by number of records.
- Set size of logfile by number of days.

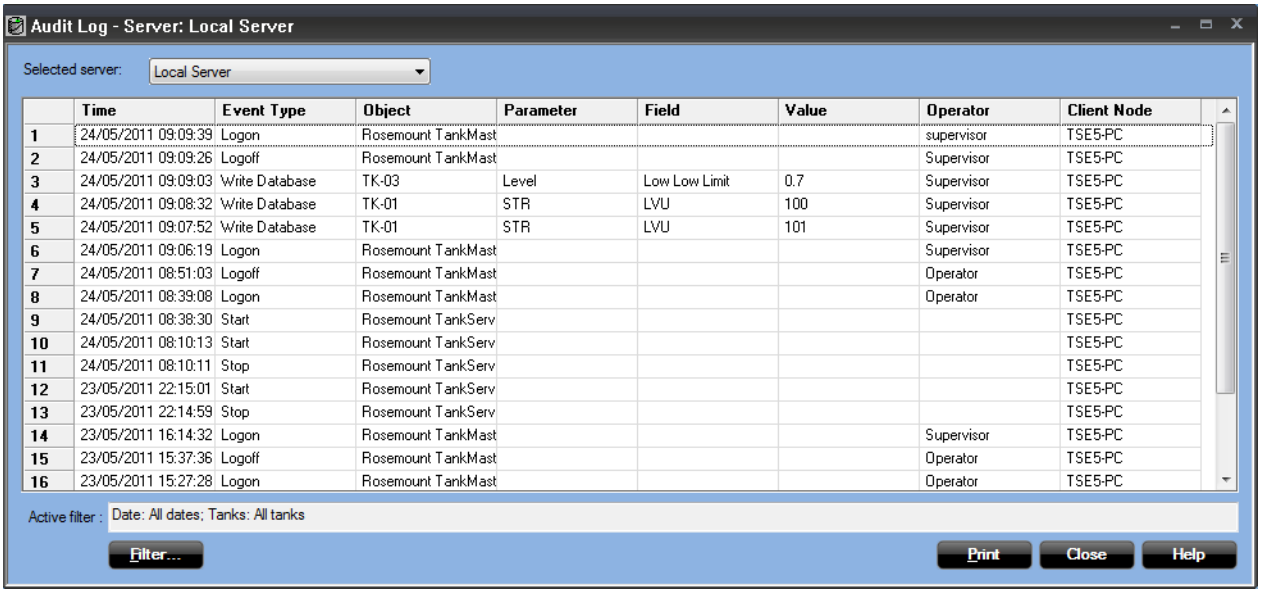
Either of these two options can be used to limit the size of the Audit Log file. When the file reaches its size limit, the oldest records will be removed as new records are stored.

4. Chose the **OK** button to activate the current settings.

7.2 Viewing the Audit Log

To view the Audit Log:

1. Choose the **Tools>View Audit Log** option.

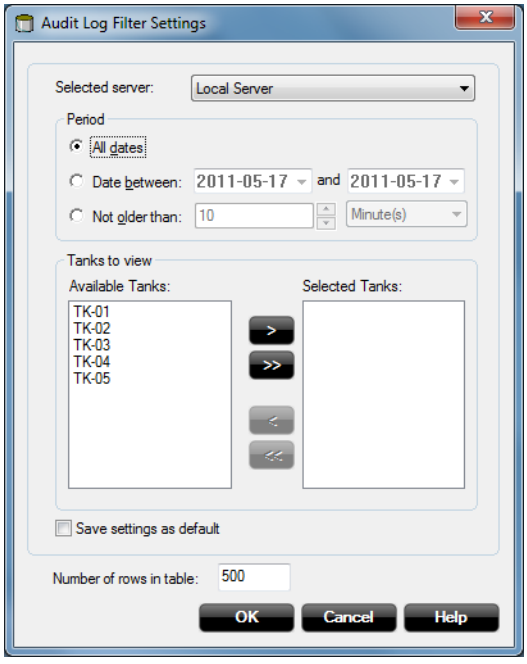


	Time	Event Type	Object	Parameter	Field	Value	Operator	Client Node
1	24/05/2011 09:09:39	Logon	Rosemount TankMast				supervisor	TSE5-PC
2	24/05/2011 09:09:26	Logoff	Rosemount TankMast				Supervisor	TSE5-PC
3	24/05/2011 09:09:03	Write Database	TK-03	Level	Low Low Limit	0.7	Supervisor	TSE5-PC
4	24/05/2011 09:08:32	Write Database	TK-01	STR	LVU	100	Supervisor	TSE5-PC
5	24/05/2011 09:07:52	Write Database	TK-01	STR	LVU	101	Supervisor	TSE5-PC
6	24/05/2011 09:06:19	Logon	Rosemount TankMast				Supervisor	TSE5-PC
7	24/05/2011 08:51:03	Logoff	Rosemount TankMast				Operator	TSE5-PC
8	24/05/2011 08:39:08	Logon	Rosemount TankMast				Operator	TSE5-PC
9	24/05/2011 08:38:30	Start	Rosemount TankServ					TSE5-PC
10	24/05/2011 08:10:13	Start	Rosemount TankServ					TSE5-PC
11	24/05/2011 08:10:11	Stop	Rosemount TankServ					TSE5-PC
12	23/05/2011 22:15:01	Start	Rosemount TankServ					TSE5-PC
13	23/05/2011 22:14:59	Stop	Rosemount TankServ					TSE5-PC
14	23/05/2011 16:14:32	Logon	Rosemount TankMast				Supervisor	TSE5-PC
15	23/05/2011 15:37:36	Logoff	Rosemount TankMast				Operator	TSE5-PC
16	23/05/2011 15:27:28	Logon	Rosemount TankMast				Operator	TSE5-PC

The Audit Log displays different events such as changed parameter values, changed alarm limits, logging on and off and many others. You can also see the time that the event was recorded and the operator who was logged on.

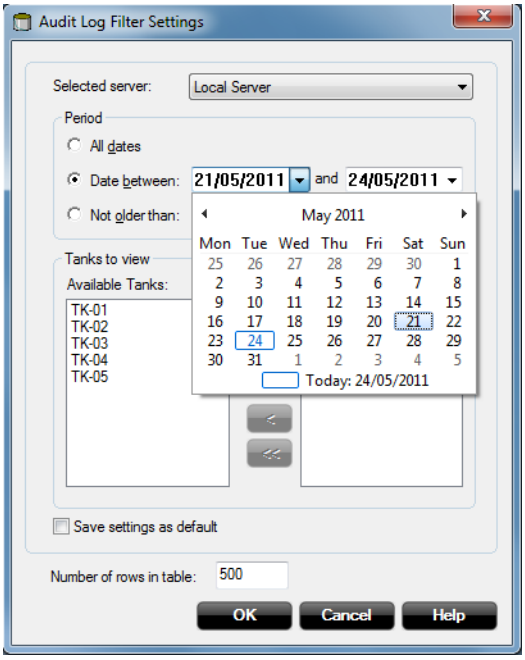
7.2.1 Filtering

The Audit Log can be filtered by date and by tank.

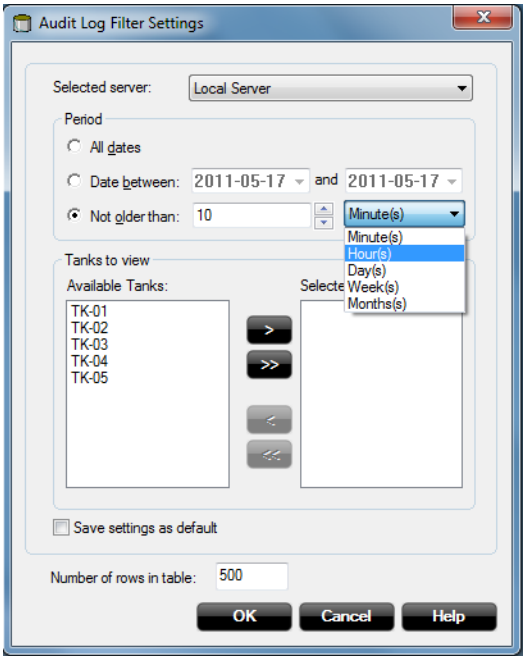


Filtering by date

All dates disables filtering by date. All records regardless of date appear in the *Audit Log* window.
Choose **Dates between** if you want to log events within a certain period of time.



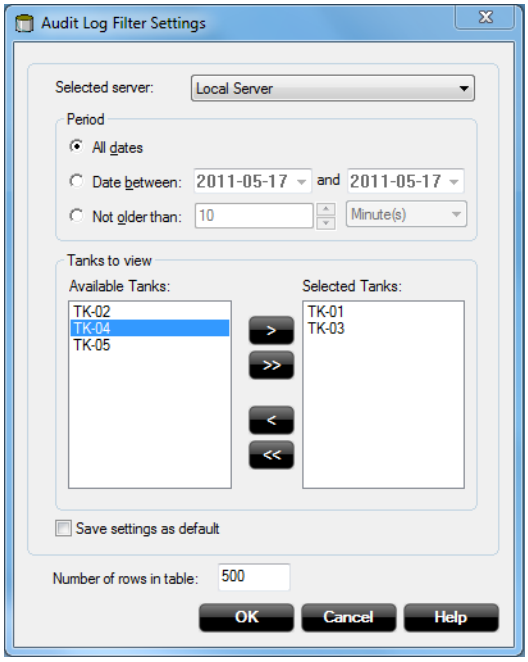
Not older than limits the log to events which are not older than the specified number of minutes, hours, days, weeks or months.



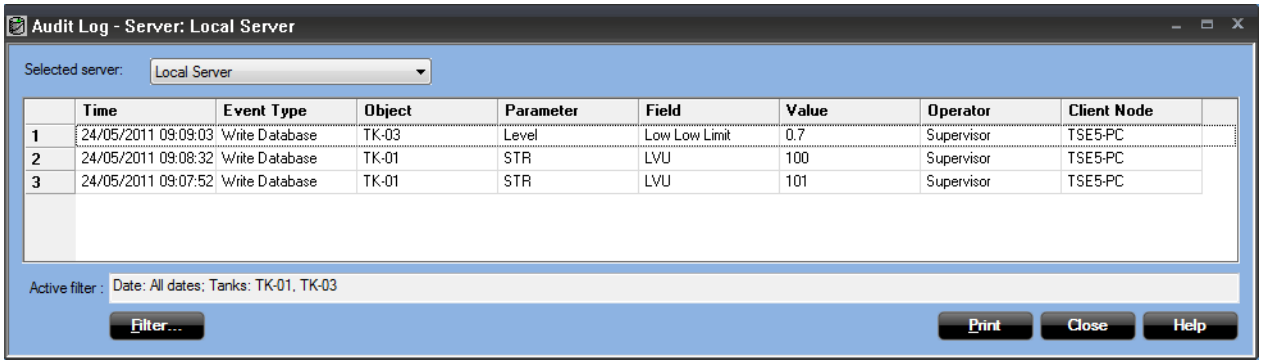
If no tanks are selected, the Audit Log will display events for all tanks.

Filtering by tanks

This Filter option lets you select specific tanks to be displayed in the *Audit Log* window:



1. Select the desired tank in left pane (Available Tanks).
2. Click the Move > button. Selected tanks appear in the right pane (Selected Tanks).
3. Repeat steps 1-2 for all tanks to be viewed in the *Audit Log* window.
4. Click the **OK** button.
   Response: the Audit Log displays events for the selected tanks.



Section 8 Servo Commands

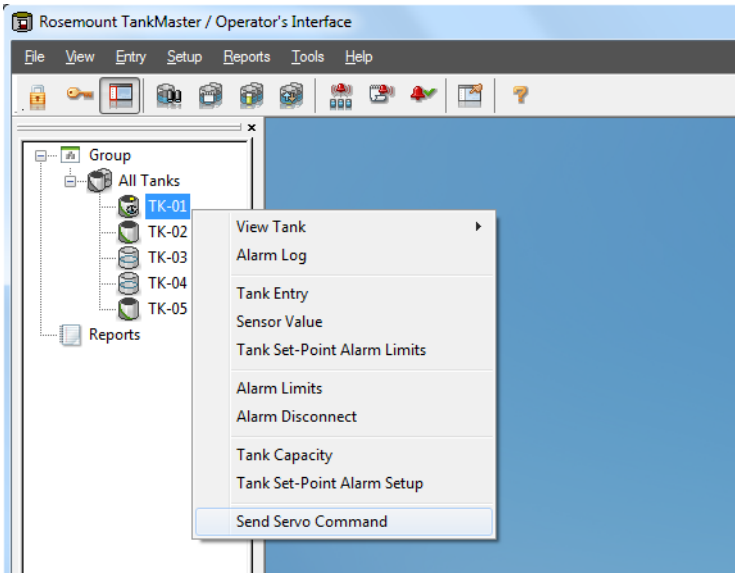
For servo tanks, it is possible to send commands to the servo gauge, e.g. Enraf® series 854, using the Servo Command window.

8.1 Select a servo tank in the workspace window

In order to make Servo Commands available in WinView, the tank must be installed as a Servo Tank. See WinSetup Reference manual for more information on tank installation.

To access the Servo Command window, do the following:

1. Select a Servo Tank in the Workspace window.



2. Right-click the selected Servo Tank and select Send Servo Command.

3. The following commands are available:

Freeze (Block)	holds the displacer in the current position.
Park (Lock/Stow)	raises the displacer to the top of the tank.
Measure (Unlock/Unstow)	unlocks the gauge after Freeze or Park, and the displacer moves to the product surface.
Test	raises the displacer and then returns it to the product surface.
Search for water level	initiates the search for the product/water interface.

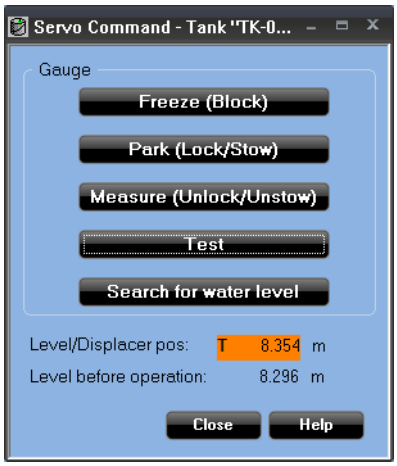
Servo state will be displayed to the left of the level value in the *Servo Command* and the *Tank View* window.

State	Abbreviation
Freeze (Block)	F
Park (Lock/Stow)	P
Test	T
Search for water level	W

The table below shows the different Servo commands and servo states shown in WinView when using CIU and Rosemount™ 2460 System Hub. The Raise, Freeze and Lower servo states refer to the displacer movement.

Servo Command	Displayed servo state in Windows					
	CIU			2460 System Hub		
	Raise	Freeze	Lower	Raise	Freeze	Lower
Park (Lock/Stow)	P	F	-	T	P	-
Freeze (Block)	-	F	-	-	F	-
Measure (Unlock/Unstow)	-	-	T	-	-	T
Test	T	-	T	T	-	T
Search for water level	-	W	?	T	-	W

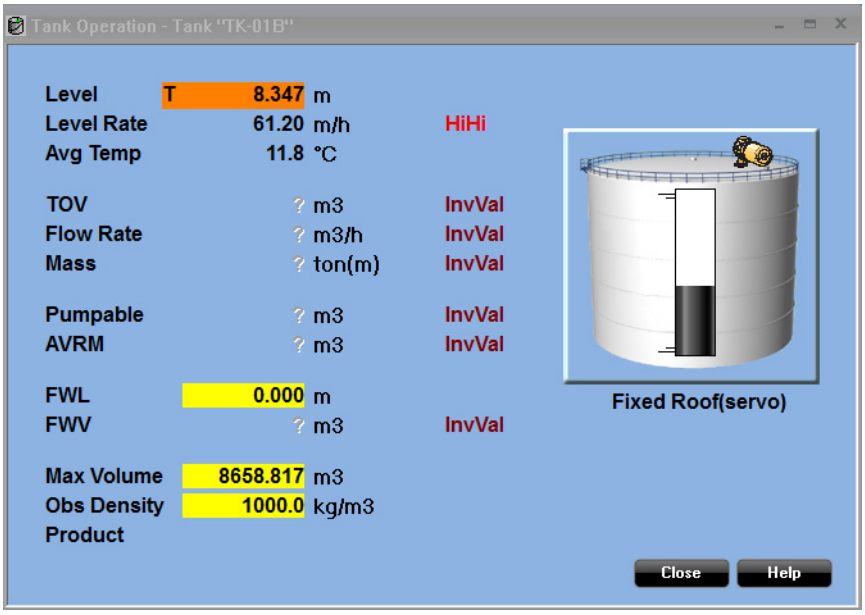
The Level/Displacer position field turns orange when Servo Commands are activated from the *Servo Command* window:



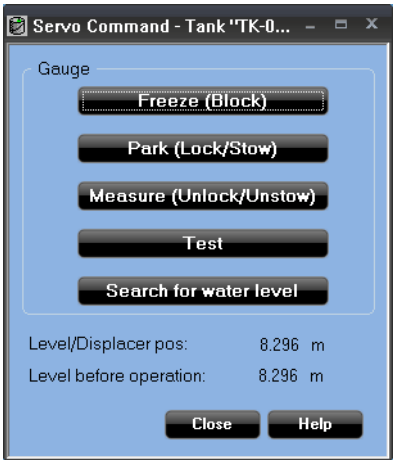
When servo commands are active TankMaster only displays Level and Temperature values. Inventory calculations are disabled as long as the servo command is active.

Note
When a servo command is active, the Level value does not show the current product level. The level shown is the current displacer level.

In the *Tank Operation* window, the Level position field turns orange. All Inventory calculations field are disabled as long as the servo command is executed.



4. To close the *Servo Command* window, press the Close button. Make sure the indicator next to Level and Displacer pos. is cleared, e.g. the T for Test is switched off.



Note
Only level and temperature are shown in TankMaster while a servo command is active. Inventory calculations (volume calculations) are disabled during this time.

Note
When a servo command is active and the displacer is in movement, the active device communication is prioritized.

OPC and ModBus

The current servo command is viewable via OPC and/or ModBus from a host computer.

To access the current servo command, use the TK.xx.LL.SS OPC tag.

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