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5.1.0

Operating Instructions **Tankvision Multi Scan NXA83B**

Local display Operation manual







- Make sure the document is stored in a safe place such that it is always available when working on or with the device.
- To avoid danger to individuals or the facility, read the "Basic safety instructions" section carefully, as well as all other safety instructions in the document that are specific to working procedures.
- The manufacturer reserves the right to modify technical data in line with technological developments without prior notice. Your Endress+Hauser sales center will supply you with current information and updates to this manual.

Document version	Valid for SW version	Changes to the previous version
BA01288G/01.14	3.0.10	Initial version
BA01288G/02.15	3.0.12	Change of order code structure
BA01288G/03.16	3.1.0 and 4.0.0	Old V1 support and simplified configuration
BA01288G/04.18	3.4.0 and 4.4.0	Changes to V1 Driver and GBT calculations
BA01288G/05.21	5.0.0	Migration to Windows 10 IoT operating system
BA01288G/06.23-00	5.1.0	Introduction of a new Webserver

Version history

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1 About this document

1.1 Document function

This manual is giving detailed information on the system capabilities and architecture. It supports project and sales engineers in designing the system architecture during acquisition and execution phase. Furthermore during operation time of the system all servicing personnel in need of detailed knowledge about the system capabilities.

1.2 Symbols

1.2.1 Safety symbols

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

1.2.2 Symbols for certain types of information and graphics

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

1.2.3 Symbols in graphics

Symbol	Meaning			
1, 2, 3	Item numbers			
1. , 2. , 3	Series of steps			
A, B, C	Views			
EX A0011187	Hazardous area Indicates a hazardous area.			
A0011188	Indicates a non-hazardous location Safe area (non-hazardous area)			

1.3 Documentation

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



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

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

1.4 Registered trademarks

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

Modbus™

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

Java® Registered trademark of Sun Microsystems, Inc.

Mozilla[®] Firefox[®] Registered trademark of the Mozilla Foundation

Enraf, Honeywell, Rosemount, Emerson, Saab, L&J, VAREC, GPE are registered trademarks and trademarks of these organizations and companies. All other marks are property of their respective owners.



2 Basic safety instructions

2.1 Requirements for the personnel

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

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

The personnel must fulfill the following requirements for its tasks:

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

The operating personnel must fulfill the following requirements:

- Are instructed and authorized according to the requirements of the task by the facility's owner-operator.
- Follow the instructions in this manual.

2.2 Intended use

2.2.1 Applications

Inventory control

By using Tankvision Multi Scan to monitor the tank level and stored volume of valuable liquids remotely, owners or operators of tank farms or terminals for petroleum products and chemicals (liquids) can visualize the volume of the stored medium in real time. The data can be used to plan the inventory and distribution. The data can also be used to manage tank farm operations like pumping or transferring products. Tankvision has its unique concept using network technology. Without using proprietary software, the users can visualize and manage their valuable liquids stored in the tanks by a web browser. Tankvision Multi Scan is a flexible and cost effective solution due to its scalable architecture. The application coverage goes from small depots with only a few tanks up to refineries.

Inventory Calculations

Tankvision Multi Scan calculates based on measured variables and tank capacity tables:

- Observed or gross volumes
- Net volumes and
- Mass

of products like

- Hydrocarbons,
- Liquefied gases,
- Asphalt.

They are corrected according to international standards, including API/ASTM tables 5A, 5B/ 6, 53A, 53B/54, 23/24, LPG.

This includes temperature corrections at 15 $^{\circ}$ C, 60 $^{\circ}$ F and alternative temperatures. Additionally, available pump able volumes and water volume are calculated.

Remote configuration of measuring equipment

Some on-site operations can be avoided using remote configuration of measuring equipment during commissioning or maintenance (the availability of this feature may depend on the system configuration).

Application areas

- Tank farms in refineries
- Ship loading terminals
- Marketing and distribution terminals
- Pipeline terminals
- Logistic terminals for tanks storing products like crude oils, refined white and black products, chemicals, LPG

2.3 Workplace safety

For work on and with the device:

- Wear the required personal protective equipment according to federal or national regulations.
- Before connecting or disconnecting the device:
- Switch off the supply voltage.

2.4 Operational safety

Risk of injury!

- Operate the device only if it is in proper technical condition, free from errors and faults.
- The operator is responsible for interference-free operation of the device.

Modifications to the device

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

• If modifications are nevertheless required, consult with the manufacturer.

Repair

To ensure continued operational safety and reliability:

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

2.5 Product safety

This measuring device is designed in accordance with good engineering practice to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. It meets general safety standards and legal requirements. It also complies with the EC directives listed in the device-specific EC Declaration of Conformity. Endress+Hauser confirms this by affixing the CE mark to the device.

Furthermore, the device meets the legal requirements of the applicable UK regulations (Statutory Instruments). These are listed in the UKCA Declaration of Conformity along with the designated standards.

By selecting the order option for UKCA marking, Endress+Hauser confirms a successful evaluation and testing of the device by affixing the UKCA mark.

Contact address Endress+Hauser UK:

Endress+Hauser Ltd.
 Floats Road
 Manchester M23 9NF
 United Kingdom
 www.uk.endress.com

2.6 IT security

Our warranty is valid only if the product is installed and used as described in the Operating Instructions. The product is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the product and associated data transfer, must be implemented by the operators themselves in line with their security standards.

3 Identification

3.1 Product identification

The following options are available for identification of the device:

- Nameplate specifications
- Order code with breakdown of the device features on the delivery note
- *W@M Device Viewer*: www.endress.com/deviceviewer Enter the serial number from the nameplate

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

3.2 Nameplate

The information that is required by law and is relevant to the device is shown on the nameplate, e.g.:

Manufacturer identification Device name Order code Extended order code Serial number Degree of protection Barcode CE mark Admissible ambient temperature Supply voltage

3.3 Manufacturer address

Endress+Hauser SE+Co. KG Hauptstraße 1 79689 Maulburg, Germany

Place of manufacture: See nameplate.

3.4

Order code and device version

www.products.endress.com/order-ident



To find out the version of your device, enter the order code indicated on the nameplate in the search screen at the following address:

4 Introduction

The Multi Scan NXA83B is a configurable system designed for tank gauging and tank inventory management systems. It has been designed to fulfil a number of requirements some of which are listed below:

- Act as a foreign device gateway allowing old legacy equipment and devices with proprietary interfaces to interface with modern devices using OPC and Ethernet Technology.
- To provide a complete tank gauging and tank inventory management system for small sites. It can interface directly with a wide variety of tank gauging devices and provide a number of communication links to host devices. The Multi Scan NXA83B polls the field instruments maintaining an in-memory database of live and calculated data whilst also being able to service host computers for data.
- Up to 20 serial interfaces can be provided, capable of supporting a range of different electrical interfaces such as RS232, RS485, BPM, Current Loop etc. An Ethernet port and two USB ports are also provided.

The Multi Scan NXA83B is available as 19 in Rack Mount version. An option is to have a 7 in touch screen built into the front of the device to view and navigate through the different display options.



19 in Rack Mount

The Multi Scan is available in the following versions:

- 1 to 4 serial ports
- 1 to 12 serial ports
- 1 to 20 serial ports (16 in or outputs and 4 outputs)

The ports can be configured to be either inputs (from the field or host ports) or outputs (to host systems or slave ports). For the version 1 to 20 serial ports, 4 ports are reserved for outputs only.

5 Operation

This section will describe the normal operation of the Multi Scan NXA83B and the interactions with the user screens.

The screens shown on the LCD display are highly configurable. Whilst those shown in this section are only examples of what can be displayed, the basic navigation between screens will remain the same.

For more information on configuring the displays refer to the Multi Scan NXA83B Configuration manual (BA01291G).

5.1 Starting and Stopping

When power is applied to the Multi Scan NXA83B the Green power LED will be illuminated and the Windows operating system will start to boot.

This will take approximately 2 minutes, during which time a number of windows boot messages will be displayed before automatically logging into the user account, at which point the Endress+Hauser wait message will be displayed.



Depending on the firmware version of the Multi Scan NXA83B, the top line of the splash screen will display a range of information, including:

- The Network Name of the Multi Scan NXA83B
- If the system is currently connected to network it will show the IP address
- The firmware version

The boot will be complete when the GridView display is shown. At this point the system is fully operational, with all interfaces active (master and slaves).

TanklD	Product	Level	Temp.	TOV	Gauge Status	
		mm	°C	ltr		
TK1	BUTANE	3,995	18.60	3,995,100	On Level	
TK10	PREM	12,994	18.60	12,993,900	On Level	
TK11	KERO	13,994	18.60	13,993,900	On Level	
TK12	ADDATIVE	14,994	18.60	14,993,900	On Level	
TK13	BUTANE	15,994	18.60	15,993,900	On Level	
TK14	EMPTY	16,995	18.60	16,995,201	On Level	
TK15	EMPTY	17,995	18.60	17,994,600	On Level	
TK2	KERO	15,005	18.60	15,005,400	On Level	
ТКЗ	BUTANE	5,995	18.60	5,994,900	On Level	
TK4	PREM	6,996	18.60	6,996,400	On Level	
TK5	DERV	6,499	18.60	6,498,600	On Level	
TK6	DERV	3,004	18.60	3,003,500	On Level	
TK7	DERV	4,004	18.60	4,003,600	On Level	
TK8	PREM	10,992	18.60	10,992,200	On Level	
ТК9	DERV	6,007	18.60	6,006,700	On Level	
Totals				155,461,80		

NXA83_Display_Grid-View

It is perfectly safe to switch off the power without shutting down the operating system. The Multi Scan NXA83B contains an Enhanced Write Filter which protects the system from being corrupted due to a loss of power (see configuration document for description).

5.2 Status Bar

At the bottom of the Multi Scan NXA83B display screen is a status bar which will display the following information:

Field	Description
NXA83_Display_Field_User	This field will show the currently logged in user account
NXA83_Display_Field_Info	This field shows any information that is current to the system. This could include such messages as: • Watchdog Disabled • W&M Approved • W&M Unsealed (i.e. no longer approved)
NXA83_Display_Field_Time	This shows the current time

5.3 Display Navigation

There are a number of screen types that may be displayed:

- GridView
- Single Tank
- Multi Tank
- Report

Navigation between these screens is via two buttons, in the top left of the screen will open the Tanks menu and in the top right of the screen will open the Screens menu.

Click on a button to display the menu list. Clicking on the button again will remove the list.

ð			Grid\	/iew		i
-Tanks	roduct	Level mm	Temp. °C	TOV Itr	Gauge Status	- Screens
Ŷ	UTANE	4,667	18.60	4,666,700	On Level	Û
TK1	REM	13,669	18.60	13,669,000	On Level	
	ERO	14,671	18.60	14,670,700	On Level	
ТК10	DDATIVE	15,671	18.60	15,670,700	On Level	es.
	UTANE	16,671	18.60	16,670,500	On Level	<u>~</u>
тк11	MPTY	17,670	18.60	17,670,000	On Level	
	MPTY	17,332	18.60	17,331,900	On Level	
TK12	ERO	14,334	18.60	14,333,601	On Level	
	UTANE	6,667	18.60	6,666,500	On Level	
TK13	REM	7,666	18.60	7,666,300	On Level	٤
	ERV	6,834	18.60	6,833,700	On Level	
Ŷ	ERV	2,332	18.60	2,331,800	On Level	
	ERV	3,332	18.60	3,331,900	On Level	
TK8	PREM	11,669	18.60	11,669,000	On Level	
TK9	DERV	5,332	18.60	5,331,800	On Level	
Totals				158,514,10		
<u>5</u>	i					O 06:54:40

Each drop down list will display up to five items.

Clicking on the v or v button will display the next five items, if any more are available.

The right hand list allows user to select a different display. Clicking on one of the items will display a pop-up menu with all displays of that type that have been configured for the Multi Scan NXA83B.

Various different displays can be configured.

For example clicking on the Single Tank screens button will display a list of all configured single tank screens available.

â		GridView						
TanklD	Product	Level mm	Temp. °C	TOV Itr	(Single Tank Overview	Screens		
TK1	BUTANE	4,777	18.60	4,776,700	Inventory	Ŷ		
TK10	PREM	13,781	18.60	13,780,700	Inventory WM			
TK11	KERO	14,781	18.60	14,780,700				
TK12	ADDATIVE	15,781	18.60	15,780,700	LTD Detail			
TK13	BUTANE	16,781	18.60	16,780,500	Multi Elemente	<u>s</u>		
TK14	EMPTY	17,780	18.60	17,779,900	Multi Elements			
TK15	EMPTY	17,220	18.60	17,220,301	Primary Manual			
TK2	KERO	14,224	18.60	14,223,500	Data			
TK3	BUTANE	6,777	18.60	6,776,500	Profiles			
TK4	PREM	7,776	18.60	7,776,300		4 £		
TK5	DERV	6,890	18.60	6,889,500	* 5			
TK6	DERV	2,222	18.60	2,221,800	On Level	¢		
TK7	DERV	3,222	18.60	3,221,900	On Level			
TK8	PREM	11,779	18.60	11,779,000	On Level			
TK9	DERV	5,222	18.60	5,221,800	On Level			
Totals				159,009,80				
<u>8</u>	i					O 06:55:45		

• buttons to select more display items. Click on the Ŷ or Click on the item in the pop-up menu to change the main display.



The left hand drop down list displays all tanks in the database, and allows the user to select a tank to show in the single tank display.



5.4 Grid View

The GridView screens display data in a tabular format. The layout of the grid is fully configurable using the Tankvision Multi Scan Configurator tool, but cannot be changed by the user during normal operation.

The configurator can be used to set such things as:

- Title
- Data columns
- Column widths
- Column Header text
- Font Units

Grid views can also be configured for functions such as:

- Totalize all columns that contain volume, mass or weight values
- Show moving tanks with a coloured background
- Show only tanks with a defined product
- Show only selected tanks

A default grid view is supplied as standard with the Multi Scan NXA83B, called "GridView" in the pop-up list of Grid View Screens.

Various different grid view screens may be defined, so for instance a grid view may be configured for each product in the Multi Scan NXA83B, or for different views of the data.

ð			Grid	/iew		
TanklD	Product	Level mm	Temp. °C	TOV Itr	Gauge Status	
TK1	BUTANE	3,995	18.60	3,995,100	On Level	
TK10	PREM	12,994	18.60	12,993,900	On Level	
TK11	KERO	13,994	18.60	13,993,900	On Level	
TK12	ADDATIVE	14,994	18.60	14,993,900	On Level	
TK13	BUTANE	15,994	18.60	15,993,900	On Level	
TK14	EMPTY	16,995	18.60	16,995,201	On Level	
TK15	EMPTY	17,995	18.60	17,994,600	On Level	
TK2	KERO	15,005	18.60	15,005,400	On Level	
TK3	BUTANE	5,995	18.60	5,994,900	On Level	
TK4	PREM	6,996	18.60	6,996,400	On Level	
TK5	DERV	6,499	18.60	6,498,600	On Level	
TK6	DERV	3,004	18.60	3,003,500	On Level	
TK7	DERV	4,004	18.60	4,003,600	On Level	
TK8	PREM	10,992	18.60	10,992,200	On Level	
TK9	DERV	6,007	18.60	6,006,700	On Level	
Totals				155,461,80		
<u>5</u>	i					() 06:

A single tank display can be selected by clicking on the row for that tank in the grid. This will immediately display the single tank details for the selected tank.

The GridView may be optionally set to display any moving tanks with a different background colour. These colours will be:

- Brown: For those tanks that have a falling level
- Blue: For those tanks that have a rising level

The GridView may also be configured to display column totals for certain field types. The fields totalized will be:

- Volume fields
- Mass fields
- Weight fields

Remember that the moving colours and totals features are optional and may not always be configured for every grid view.

If the displayed GridView is larger than the screen size, scroll bars will be automatically enabled.

The tank data displayed in each field in the grid will have the following formatting:

- Valid Data: Will be displayed on a white background
- Invalid Data: Will be displayed on a red background. The appropriate diagnostic number will be shown preceded by "DN"
- Manual Data: Will be displayed on a white background. An "M" will be displayed after the data value

If the data value is too long to be displayed in the column it will be replaced by "#" characters.

5.5 Single Tank

The Single Tank screens display the data for one tank only and can show an extensive range of data for the selected tank. The layout of the screen is fully configurable using the Tankvision Multi Scan Configurator tool, but cannot be changed by the user during normal operation.

The configuration details for single tank screens are extremely extensive and are covered in the Multi Scan NXA83B Configuration Manual. However certain features will be shown in this section.

A Single Tank screen is a template for the data to be displayed. The user may select the actual tank to be shown in that screen using the drop down list on the left of the screen. A default screen will be supplied as standard with the Multi Scan NXA83B, called "Inventory" in the pop-up list of Single Tank Screens. Various additional screens may be configured.



A83_Operation_0

The formatting of the data displayed in a Single Tank display, with regard to validity of data or manual data, has no fixed format, and can be configured to suit any site requirement.

The default formatting in the screens as shipped from Endress+Hauser is as follows:

- Invalid Data: The appropriate diagnostic number will be shown preceded by "DN" and will be displayed with a red background
- Manual Data: The data will be displayed in green, with a black background
- Valid Data : The data is displayed in yellow with a black background

It is recommended that these formatting styles are maintained for all user configured Single Tank screens.

If an alarm item has been configured for a Single tank screen the alarm icon **e** will be displayed on any tanks that have one or more currently active alarms. Clicking on the **e** icon will display the **Alarm Summary** screen.

TK2	Programmable Alarms		
Gauge Alarms Level Alarms High High Low Low Low Temperature Alarms High Low Deviance Density Alarms High	Level Alarms High High High Low Low Low Variable Time To Target Floating Roof Difference Free Water Alarms High Low	Temperature Alarms High Low Deviance Density Alarms High Low Deviance High Low Deviance Movement Alarms High Flow Low Flow Low Flow Unauthorised Theft	User Defined Alarms ChkSottwareAlarm UserDefinedOne ChkSottwareAlarm UserDefinedTwo ChkSottwareAlarm UserDefinedFour ChkSottwareAlarm UserDefinedFive ChkSottwareAlarm UserDefinedSix ChkSottwareAlarm UserDefinedSix ChkSottwareAlarm UserDefinedSix
Con Deviance	Communications	uge	Exit

Any alarms that are active will be ticked and be displayed in red. Click on the **Exit** button to close the screen.

5.5.1 Commands

Certain data fields may be configured so that clicking on the displayed value will show the gauge commands pop-up menu. These fields are usually items such as **Level**, **Position**, **Temperature** etc.



Click on the and buttons to select more commands. Click on the command to send it to the connected gauge. Gauges that are not following level are shown in the tank mimic with a red line representing the Displacer position.



5.5.2 Manual Data

Certain data fields may be configured so that they are in manual mode (i.e. displayed with the green colour). Clicking on the displayed value will reveal the manual entry window.



NXA83_Display_Manual-Entry-Window

This allows a new value to be entered via the touchscreen. When the **OK** button is touched, the window will close and the value will be updated on the screen in a few seconds. The value is permanently saved, so that if the NXA83B is rebooted the new value will remain.

Calculated fields, such as Volumes, Mass etc., cannot be manually entered. If they are displayed in green it is because one (or more) of the calculation parameters is in manual mode.

5.5.3 Multi-Element Display

In the default configuration there is a second Single Tank screen available, called "Multi Elements", which can be used to view multi-element temperatures from gauges that support that function.

â			Grid	/iew			B
TanklD	Product	Level mm	Temp. °C	TOV Itr	(5	ngle Tank Overview	Screens
TK1	BUTANE	2,298	18.60	2,298,300		Inventory wm	Û
TK10	PREM	10,630	18.60	10,630,101		LTD Detail	
TK11	KERO	12,297	18.60	12,296,900			
TK12	ADDATIVE	13,297	18.60	13,296,900		Multi Elements	
TK13	BUTANE	14,297	18.60	14,296,900		Primary Manual	
TK14	EMPTY	15,297	18.60	15,296,900		Data	
TK15	EMPTY	16,299	18.60	16,298,601		Profiles	
TK2	KERO	16,702	18.60	16,702,201			
TK3	BUTANE	4,298	18.60	4,298,400		Redundancy Mode	
TK4	PREM	5,298	18.60	5,298,200			4€
TK5	DERV	5,650	18.60	5,650,100		U	
TK6	DERV	4,700	18.60	4,700,100		On Level	₹Ç.
TK7	DERV	5,700	18.60	5,700,100		On Level	
TK8	PREM	9,300	18.60	9,300,200		On Level	
TK9	DERV	7,700	18.60	7,699,900		On Level	
Totals				143,763,80			
<u>8</u>	i						③ 07:34:38



NXA83_Display_Multi-Element-Temperature-Vie

5.6 Reports

A range of reports may be configured using the Tankvision Multi Scan Configurator tool, which are then available to be viewed or printed on demand by a user during normal operation.

The reports are fully configurable using the same layout as grid views, refer to the Multi Scan NXA83B Configuration Manual (BA01291G) for details.

There are some extra configuration items that apply only to reports, such as:

- Select Orientation as Landscape or Portrait
- Set the Margins for the printed document

Reports can be manually printed or viewed by clicking on the icon. This will display a pop-up menu containing all configured reports. Various different reports may be created, however by default the Multi Scan NXA83B will have one report called "Inventory Report" and a screen print facility.

If there is no printer configured for the Multi Scan NXA83B, the Reports menu item will be greyed out and reports may not be printed.

If a printer has been installed and configured in the Multi Scan NXA83B the report may be printed. The printer must be set as the default printer within the operating system.

Otherwise a report may be viewed on screen using the Preview option.

Clicking on a report will display the "Print Report" menu.



Clicking the **Preview** button will display the report on the Multi Scan NXA83B screen whereas clicking the **Print** button will send the report directly to the printer.

Instrum Laxi Laxi Deckly Observal Volume Standarl Volume Room Weight Weight mm mm mm mm mm *C kgA Itr Itr kg kg TK1 BUTANE 2.868 17,122 01M 18.60 1.00000M 10,630,101 10,604,268 9,369,893 10,532,927M 9,337,133 TK1 KERO 12,867 2,133 0M 18.60 1.00000M 12,285,733 2,133,000 12,822,04H 2,125,54 TK12 ADDATIVE 13,867 5,133,000 13,818,570H 5,131,500 14,816,704H 5,113,557 TK13 BUTANE 14,868 5,131 0M 18.60 1.00000M 14,886,700 15,858,700 15,851,727M CC TK14 EMPTY 15,868 -16,768 0M 18.60 1.00000M 16,888,400 16,507,786M CC TK14 EMPTY 16,882 -16,768 0M 18.60 1.00000M 16,88	TankiD	Product	Level	Ullage	Water	Temp.	Ref.	Gross	Gross	Available	Usable	Ullage
mm mm mm *C kg1 it it kg kg TK1 BUTANE 2.888 17,132 0.00 18.60 DN04 2.888,300 DN04 17,131,700 DN04 DN TK1 PREM 10,630 3,370 0.00 18.60 1.00000M 12,285,733 2,133,000 12,222,044 2,125,54 TK1 KERO 12,867 2,133 0.04 18.60 1.00000M 12,285,733 2,133,000 12,822,0444 2,125,54 TK12 ADDATIVE 13,863 5,133 0.04 18.60 1.00000M 14,887,000 13,813,203 5,133,000 14,816,704M 5,113,305 TK14 EMPTY 15,868 -15,768 0.001 18.60 1.00000M 16,888,400 16,858,5737 9,130,000 DN 4 5,115,558 0.00 16,850,5537 3,130,000 DN 4 DN TK2 KERO 16,122 0.01 18.60 1.00000M 16,852,5377 9,130,000				Level	Level		Density	Observed	Standard	Room	Weight	Weight
TK1 BUTANE CBS Figure						+0	kad	Volume	Volume	16-	ka	ka
Int Dorbatic 1,15 0.6 10.50 D/104 1,15,16,100 D/104 D/104 <thd 104<="" th=""> <thd 104<="" th=""> <thd 104<="" t<="" td=""><td>TV1</td><td>PUTANE</td><td>2 000</td><td>17 122</td><td>mm 0M</td><td>10 60</td><td>EDN 04</td><td>2 969 200</td><td>DN 04</td><td>17 121 700</td><td>Kg DN 04</td><td>Kg DNO</td></thd></thd></thd>	TV1	PUTANE	2 000	17 122	mm 0M	10 60	EDN 04	2 969 200	DN 04	17 121 700	Kg DN 04	Kg DNO
Kit1 KER0 10,287 2,133 0H 18.00 100000H 10,285,100 10,302,221H 0,302,221H 0,302,21H 0,302,11L 0,118,333,303 16,302,300 <td>INI EM10</td> <td>DDEM</td> <td>10,620</td> <td>9 270</td> <td>0.04</td> <td>10.00</td> <td>1.00000.04</td> <td>2,000,300</td> <td>10 604 269</td> <td>9 269 099</td> <td>10 592 92754</td> <td>9 227 1226</td>	INI EM10	DDEM	10,620	9 270	0.04	10.00	1.00000.04	2,000,300	10 604 269	9 269 099	10 592 92754	9 227 1226
TR12 ADDATIVE 12,867 5,133 0.00 18,201 12,000 12,000,00 13,887,000 13,887,000 13,887,000 13,887,000 13,887,000 15,885,127.17M 500 TK14 EMPTY 15,886 -16,758 0.0M 18,801 10,00000M 16,888,400 0 16,805,358M 0 0 16,807,358M 0 0 16,007,358M 0 <th< td=""><td>FK11</td><td>KERO</td><td>12 867</td><td>2 133</td><td>0.01</td><td>18 60</td><td>1.00000M</td><td>12,867,000</td><td>12 835 733</td><td>2 133 000</td><td>12 822 004M</td><td>2 125 541</td></th<>	FK11	KERO	12 867	2 133	0.01	18 60	1.00000M	12,867,000	12 835 733	2 133 000	12 822 004M	2 125 541
NTK13 BUTANE 13,863 5,133 00H 18,801 1,00000H 14,888,9700 14,388,9700 14,388,970H 14	FK12	ADDATIVE	13,867	5 133	0.54	18 60	1.0000014	13 867 000	13,833,303	5 133 000	13 818 507M	5 115 0506
TK14 EMPTY 15,853 -15,763 OM 18,861 1,00000M 15,868,700 15,868,700 0 15,851,727/M OV TK15 EMPTY 16,868 -16,768 OM 18,861 1,00000M 16,868,400 0 16,850,358M C TK2 KERO 16,152 -1,132 OM 18,861 1,00000M 16,868,400 D 16,057,58M C TK2 KERO 16,132 -1,132 OM 18,861 1,00000M 4,870,000 D 16,085,393 0 16,075,78M C D	(K12	BUTANE	14 869	5 131	0.01	18.60	1.00000M	14 868 700	14 832 569	5 131 300	14 816 704M	5 113 356
TR15 EMPTY 16,888 -16,788 0.04 18,80 1,00000H 16,888,400 0 16,889,358H 0 TR2 KER0 16,132 -1,132 0.04 18,80 1,00000H 16,888,400 0 16,890,395H 0 TR2 KER0 16,132 -1,132 0.04 18,80 1,00000H 16,132,200 16,892,395 0 16,075,785H 0 TR3 BUTANE 5,870 9,130 0.04 18,80 1,00000H 5,885,537 9,130,000 DN04 DN	ГК14	EMPTY	15,869	-15,769	0M	18.60	1.00000 M	15,868,700	15,868,700	0,101,000	15.851.727M	0)
TR2 KERO 16,102 -1,132 0.44 18,60 1,000004 16,102,209 0 16,005,7368.44 0 TR3 BUTANE 4,870 9,130 0.44 18,60 1,000004 48,700,000 DN144 9,130,000 DN14 9,130,000 DN14 9,130,000 DN14 9,098,27 TK4 PREM 5,873 9,130,000 DM1 18,60 1,00000M 5,885,537 9,130,000 DN144 9,098,27 TK5 DERV 5,935 14,065 0.44 18,60 1,00000M 5,389,207 5,342,4744 9,098,27 TK5 DERV 5,433 14,065 0.44 15,015,000 4,1120,164 15,868,800 5,117,734 13,869,00 4,115,515 TK5 DERV 5,130 13,870 0.44 18,801 1,000000M 5,130,200 4,120,144 18,401,25,815 TK5 DERV 5,137 13,870 0.44 18,801 1,000000M 5,117,734 13,888,800 5,112,260H<	FK15	EMPTY	16,868	-16,768	ом	18.60	1.00000 M	16,868,400	16,868,400	ŏ	16,850,358M	Űŀ
RG BUTANE 4,870 9,130 0.0M 18,80 1.00000M 4.870,000 DN.04 9,130,000 DN.04 9,082,27 RC DERV 5,835 14,065 DM 18.60 1.00000M 5,835,200 5,260,05 5,260,05 5,260,05 5,260,05 5,381,41,517,57M 15,814,303 15,870 DN 18.80 1.00000M 4,130,200 5,814,903 5,115,873,M 15,814,303 15,875 5,115,77M 15,814,303 5,112,260 5,817,473 13,863,800 5,112,573M 15,814,303 16,916,1322,1237 11,820 1,00000M 5,130,200 5,117,734 13,814,303 5,112,260 13,82,237 11,814,303 11,022,000 5,817,473M 13,814,303 10,92,582 11,022 0,933,478M 10,92,582 11,032 0,933,478M 10,92,582 11,830,184 10,932,932 11,830,184	rK2	KERO	16,132	-1,132	0M	18.60	1.00000M	16,132,200	16,092,999	0	16,075,786M	01
TK4 PREM 5,870 9,130 0H 18.60 1.00000H 5,889,507 5,857,537 9,130,200 5,849,274H 9,098,27 TK5 DERV 5,335 14,065 0H 18.60 1.00000H 5,385,200 5,852,537 9,130,200 5,344,274H 14,015,151 TK6 DERV 4,130 15,870 0H 18.60 1.00000H 4,130,200 4,120,164 15,869,800 5,314,446H 14,015,151 TK7 DERV 5,130 13,870 0H 18.60 1.00000H 5,130,200 4,120,164 15,869,800 5,112,26H 13,221,237 TK8 PREM 9,372 10,128 0H 18.60 1.00000H 5,130,200 9,348,474H 10,052,552 TK8 DERV 7,128 11,872 0H 18.60 1.00000H 7,128,300 7,110,373 11,871,700 7,103,373H 11,830,184 TK9 DERV 7,128 11,872 0H 18.60 1.00000H 7,128,300 7,110,373 11,871,700 7,103,373H 11,830,184 Totals	TK3	BUTANE	4,870	9,130	0M	18.60	1.00000M	4,870,000	DN 04	9,130,000	DN 04	DNO
KS DER∨ 5,835 14,065 0.00 18,80 1,00000 H 5,335,200 5,820,778 14,064,800 5,314,445M 14,015,815 KS DER∨ 4,130 15,870 0.M 18,60 1,00000M 4,130,200 4,120,164 15,663,800 4,115,757M 15,814,403 K7 DER∨ 5,130 13,870 0.M 18,60 1,00000M 4,130,200 5,117,734 13,669,800 5,112,757M 15,814,303 K7 DER∨ 5,130 0.00 118,60 1,00000M 5,130,200 5,117,734 13,869,00 5,117,77M 15,814,303 K8 PREM 9,872 10,128 0.M 18,60 1,00000M 9,872,070 7,110,3770 7,103,3734 13,869,300 5,117,777 13,82,900 5,872,779 14,906,103 138,909,176 122,963,198 138,760,599 96,363,3 Totals 146,906,103 138,909,176 122,963,198 138,760,599 96,363,3 36,363,3 36,363,3	ľK4	PREM	5,870	9,130	0M	18.60	1.00000M	5,869,800	5,855,537	9,130,200	5,849,274M	9,098,2711
KS DERV 4,130 15,879 0 M 18.60 1.00000M 4,130,200 4,120,164 15,863,800 4,115,757M 15,814,303 K7 DERV 5,130 13,870 0 M 18.60 1.00000M 5,130,200 5,117,774 13,863,800 5,112,814,303 K8 PREM 9,872 10,128 0 M 18.60 1.00000M 9,872,000 9,948,011 10,128,000 5,87,476M 10,032,582 K9 DERV 7,128 11,872 0 M 18.60 1.00000M 7,128,300 7,110,373 11,837,1700 7,103,373M 11,830,184 Grads 0 146,306,103 138,309,176 122,963,138 138,760,539 96,363,3	'K5	DERV	5,935	14,065	0M	18.60	1.00000 M	5,935,200	5,920,778	14,064,800	5,914,445M	14,015,6151
IC7 DER√ 5,130 13,870 0.MI 18.60 1.00000 M 5,130,200 5,117,734 13,863,800 5,112,260 M 13,821,237 IC8 PREM 9,872 10,128 0.MI 18.60 1.00000 M 9,8872,000 9,848,011 10,128,000 9,837,476 M 10,025,562 K3 DER√ 7,128 11,872 0.MI 18.60 1.00000 M 7,128,200 7,110,070 7,103,373 M 11,837,100 10,932,562 K3 DER√ 7,128 11,872 0.MI 18.60 1.00000 M 7,128,200 7,110,070 7,103,373 M 11,837,100 598,963,33 96,363,3 otals 146,906,103 138,909,176 122,963,198 138,760,598 96,363,3	'K6	DERV	4,130	15,870	0M	18.60	1.00000M	4,130,200	4,120,164	15,869,800	4,115,757M	15,814,3031
K8 PREM 9,872 100,128 00M 18.60 1.00000M 9,872,000 9,837,478M 10,025,862 K3 DERV 7,128 11,872 0.M 18.60 1.00000M 7,1128,370 7,1103,770 7,103,3714 11,801,002,582 viaits 0.M 18.60 1.00000M 7,1128,370 7,103,3714 11,801,002,582 otals 1.46,906,103 138,909,176 122,963,198 138,760,599 96,363,3	'K7	DERV	5,130	13,870	0M	18.60	1.00000 M	5,130,200	5,117,734	13,869,800	5,112,260M	13,821,2971
KS DERV 7,128 11,872 0M 18.60 1.00000M 7,128,300 7,110,979 11,871,700 7,103,373M 11,830,184 fotals 146,906,103 138,909,176 122,963,198 138,760,599 96,363,3	FK8	PREM	9,872	10,128	0M	18.60	1.00000M	9,872,000	9,848,011	10,128,000	9,837,478M	10,092,5821
otals 146,906,103 138,909,176 122,963,198 138,760,599 96,363,3	'K9	DERV	7,128	11,872	0M	18.60	1.00000M	7,128,300	7,110,979	11,871,700	7,103,373M	11,830,1841
	otals							146,906,103	138,909,176	122,963,198	138,760,599	96,363,33
	otals		<u> </u>					146,906,103	138,909,176	122,963,198	138,760,599	96,363,33

Reports may also be configured to be printed automatically ($\rightarrow \ge 24$).

5.7 Alarms

When an alarm occurs in the system a pop-up window will be displayed. Where multiple alarms are active they are displayed in order of severity, Critical first then High and finally Low level alarms. Within the severity groupings the alarms are arranged in the order that they occurred with the oldest unacknowledged alarm first.

Acknowledged. Ho	Alarm Event View	Ver Severity: Device: Description: First: Last: Active: Acknowledged:	High TK10 - 10 Product Density Failed 01/10/2012 07:48 No No	
------------------	------------------	--	---	--

NXA83_Display_Alarm-Event-Viewer

This window will remain in front of the other screens and cannot be closed until all active alarms have been acknowledged. After all active alarms have been acknowledged the window can be closed by clicking on the \bowtie button.

To acknowledge the currently displayed alarm click 🥙

To acknowledge all alarms click 😻.

To scroll through all active alarms, use the rightarrow and rightarrow buttons.

The alarm buffer holds a maximum of 100 active alarms. If this is exceeded the oldest alarms will be lost.

To display the alarm window at any time, click on the 🔜 ic

icon in the Screens menu.

5.7.1 Event Log

A historical log of all alarms and events is saved on disk. To view these events click on the arrow on the right hand Screens menu, then click on the icon.

Select a date, those days in bold contain historical alarms/events.

		Ju	ly 201	.4				
Mon	Tue	Wed	Thu	Fri	Sat	Sun		
30	1	2	3	4	5	6		
7	8	9	10	11	12	13		
14	15	16	17	18	19	20		
21	22	23	24	25	26	27		
28	29	30	31	1	2	3		
							Close	ļ

		Event	LOG : 7/9/2014
Time	Event	Device	Description
00:07:17	#156		Data Comms Host Started Successfully
00:07:19	#027	TANK1 - 1	Programmable Alarm: High
00:07:19	#025	TANK1 - 1	Programmable Alarm: High High
00:07:20	#129	PRO1 - 2	No reply from gauge
00:07:20	#129	WHESS1 - 3	No reply from gauge
00:07:21	#129	TSM1 - 4	No reply from gauge
00:09:01	#156-A		Data Comms Host Started Successfully
00:09:01	#027-A	TANK1 - 1	Programmable Alarm: High
00:09:01	#025-A	TANK1 - 1	Programmable Alarm: High High
00:09:01	#129-A	PRO1 - 2	No reply from gauge
00:09:01	#129-A	WHESS1 - 3	No reply from gauge
00:09:01	#129-A	TSM1 - 4	No reply from gauge
00:09:47	#157		Data Comms Host Terminated
00:13:12	#156		Data Comms Host Started Successfully
00:13:14	#027	TANK1 - 1	Programmable Alarm: High
00:13:14	#025	TANK1 - 1	Programmable Alarm: High High
00:13:15	#129	WHESS1 - 3	No reply from gauge
00:13:15	#129	PRO1 - 2	No reply from gauge
00:13:16	#129	TSM1 - 4	No reply from gauge

NXA83 Event-Log

5.8 Scheduling

The following items may be configured to be auto scheduled:

- Gauge Commands
- Reports Printing

Scheduled gauge commands and report are configured using the Tankvision Multi Scan Configurator tool, refer to Multi Scan NXA83B Configuration Manual (BA01291G) for details.

5.9 Security

If security has been enabled in the Multi Scan NXA83B database (by default it is disabled) the user may be required to login to perform certain actions, such as gauge commands or manual data entry.





NXA83_Operation_005

The password entry screen will be displayed.

USER01		Password				ж
a	b	с	d	1	2	3
е	f	g	h	4	5	6
i	j	k	I	7	8	9
m	n	o	р	q		0
r	s	t	u	v		CAPS
w	x	У	z	<		Cancel

Enter the correct password using the onscreen keyboard and click **OK**. The current login account will be displayed on the status bar at the bottom of the screen.



Select the 😦 button fr

button from the screens menu to log out.

5.10 Communications Monitor

The Communications Monitor is available to be viewed from the Operator touch screen, which can be used to view diagnostic data on the field ports. This utility is similar to the full Communications Monitor available when remotely logged in, but with limited functionality. Therefore certain features will not be available from the Operator screen version, including such items as Raw Data viewing/logging, modem log and Connect details.



This feature is only available from firmware versions 3.2.0/4.2.0 onwards.

To view the Communications Monitor from the Operator screen click on the **Comms Monitor** icon in the right hand drop down menu.



NXA83_Operation_00

A version of the Communications monitor that is formatted for use on a touch screen will be displayed.

COM Port:	Configuration
	Protocol
	Device Name
	Duty
	Product Information
	Product Level
	Product Level Flow Bate
	Product Temperature
	Status
Statistics	Alarm Status
Messages Sent	Servo Status
Valid	Gauge Status
Invalid Replies	System Status
Timeouts	Reset Redundancy
Timeouts	Reset Redundancy

COM Port:	COM3			Configuration	dant Link Control
1	10	19	28		
2	11	20	29	Device Name	
3	12	21	30	Duty	
4	13	23	31	Product Information	
5	14	24	32	Product Level	-1
6	15	25	34	Product Level Flow Rate	-1
7	16	26	37	Product Temperature	-1.0
→ 9	17	27]
				Alarm Status	00
- Statistics		[
Messa	ges Sent	47839		Servo Status	00
Valid		47958		Gauge Status	00
Invalid	Replies	0		System Status	00
Timeou	uts	15		Reset	Redundancy

This screen operates in a similar way to the full Communications Monitor, in that a COM port can be selected from the drop down list. The screen will then show the details of that port.

The redundancy details can be viewed by clicking on the **Redundancy** button . This screen functions in exactly the same way as the full Communications Monitor. Refer to the separate DCC Communications Configuration manual BA01292G for more details on the operation of these screens.

6 Return

The requirements for safe device return can vary depending on the device type and national legislation.

- 1. Refer to the web page for information: http://www.endress.com/support/return-material
- 2. Select the region.
- 3. Return the device if repairs or a factory calibration are required, or if the wrong device was ordered or delivered.

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www.addresses.endress.com

