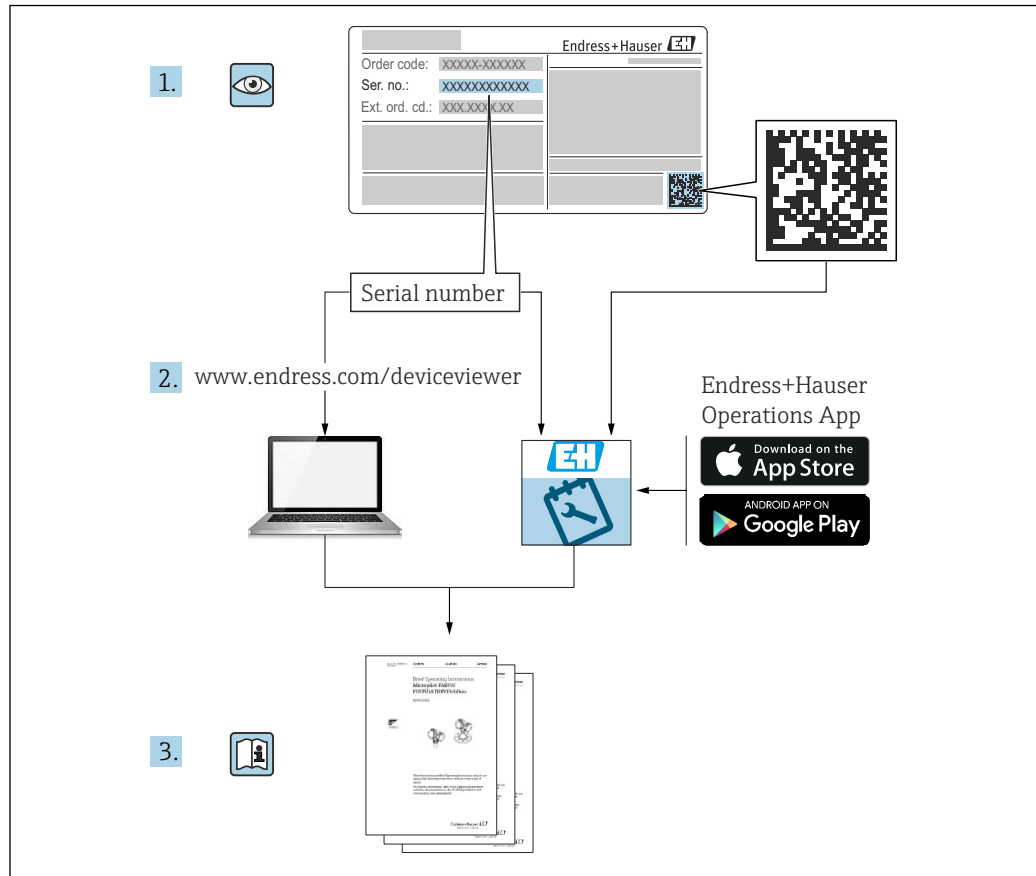


Operating Instructions

Tankvision Multi Scan NXA83B

Tank Gauging
Redundancy manual





- Make sure the document is stored in a safe place such that it is always available when working on or with the device
- Avoid danger to individuals or the facility: read the "Basic safety instructions" section carefully, as well as all other safety instructions in the document that are specific to working procedures

The manufacturer reserves the right to modify technical data without prior notice. The Endress+Hauser sales organization will supply you with current information and updates to these instructions.

Table of contents

1	About this document	4
1.1	Document function	4
1.2	Symbols	4
1.3	List of abbreviations	5
1.4	Documentation	5
1.5	Change history	5
1.6	Registered trademarks	6
2	Basic safety requirements	7
2.1	Requirements for the personnel	7
2.2	Intended use	7
2.3	Workplace safety	8
2.4	Operational safety	8
2.5	Product safety	8
2.6	IT security	8
3	Incoming acceptance and product identification	9
3.1	Incoming acceptance	9
3.2	Product identification	9
3.3	Order code and product version	10
4	Introduction	11
5	Switch By System	12
5.1	Typical system architecture	12
5.2	Tankvision Multi Scan in "Switch By System" redundancy mode	12
5.3	Port Latching	14
5.4	Boot Up	14
5.5	Slave interfaces	15
5.6	Mode display and control	15
5.7	Configuration	17
5.8	Configuring Tankvision Professional NXA85 to talk to a pair of redundant Multi Scan NXA83B	22

1 About this document

1.1 Document function

This manual provides detailed information on the system's capabilities and architecture. It supports project and sales engineers in designing the system architecture during both the acquisition and execution phases. Furthermore, during system operation it serves all service personnel who require in-depth knowledge of the system's functionality.

1.2 Symbols

1.2.1 Safety symbols



This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.



This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.



This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in minor or medium injury.



This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

1.2.2 Symbols for certain types of information



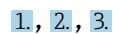
Tip
Indicates additional information



Reference to documentation



Notice or individual step to be observed



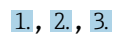
Series of steps



Result of a step

1.2.3 Symbols in graphics

1, 2, 3, ...
Item numbers



Series of steps

A, B, C, ...
Views

1.3 List of abbreviations

- BPM
Bi-Phase Mark
- DCC
Data Communications Controller
- DCS
Distributed Control System
- LPG
Liquefied Petroleum Gas

1.4 Documentation

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

- *Device Viewer* (www.endress.com/deviceviewer): Enter the serial number from the nameplate
- *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

The following document types are available in the Downloads area of the Endress+Hauser website (www.endress.com/downloads), depending on the product configuration:

Document type	Purpose and content of the document
Technical Information (TI)	Planning aid This document contains all the technical data on the product and provides an overview of everything that can be ordered with the product.
Brief Operating Instructions (KA)	Quick guide to obtaining the first measured value The Operating Instructions contain all the essential information about the product from incoming acceptance to initial commissioning.
Operating Instructions (BA)	Reference The Operating Instructions contain the information that is required in the various phases of the life cycle of the product: From product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.
Description of Device Parameters (GP)	Reference for parameters The document contains detailed explanations of readable or configurable parameters in the product. The description is aimed at those who work with the product over its entire life cycle and perform specific configurations.
Safety Instructions (XA)	Safety Instructions for electrical equipment in hazardous areas are supplied with the product depending on the approval. These are an integral part of the Operating Instructions.  The nameplate indicates the Safety Instructions (XA) that are relevant to the product.
Supplementary device-dependent documentation (SD/FY)	Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is an integral part of the product documentation.

1.5 Change history

BA01296G_01.14

- 3.0.10
- Initial version

BA01296G_02.15

- 3.0.12
- Change of order code structure

BA01296G_03.16

- 3.1.0 and 4.0.0
- Old V1 support and simplified configuration

BA01296G_04.18

- 3.4.0 and 4.4.0
- Changes to V1 Driver and GBT calculations

BA01296G_05.21

- 5.0.0
- Migration to Windows 10 IoT operating system

BA01296G_06.23

- 5.1.0
- Introduction of a new Webserver

BA01296G_07.26

- 5.1.0
- Minor changes to document structure

1.6 Registered trademarks

Microsoft®, Windows® and Edge®

Microsoft®, Windows®, Edge® and the Microsoft logo are registered trademarks of the Microsoft Corporation.

Modbus®

Registered trademark of SCHNEIDER AUTOMATION, INC.

Java®

Registered trademark of Sun Microsystems, Inc.

Mozilla® Firefox®

Registered trademark of the Mozilla Foundation

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

All other marks are property of their respective owners.

2 Basic safety requirements

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 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
- 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 °C (60 °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/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 state-of-the-art device is designed and tested in accordance with good engineering practice to meet operational safety standards. It left the factory in a condition in which it is safe to operate.

The device fulfills general safety requirements and legal requirements. It also complies with the EU directives listed in the device-specific EU Declaration of Conformity.

Endress+Hauser confirms this fact by affixing the CE mark to the device.

2.6 IT security

The manufacturer 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 Incoming acceptance and product identification

3.1 Incoming acceptance

On receipt of the delivery:

1. Check the packaging for damage.
 - ↳ Report all damage immediately to the manufacturer.
Do not install damaged components.
2. Check the scope of delivery using the delivery note.
3. Compare the data on the nameplate with the order specifications on the delivery note.
4. Check the technical documentation and all other necessary documents, e.g. certificates, to ensure they are complete.



If one of the conditions is not satisfied, contact the manufacturer.

3.2 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
- Enter the serial numbers from the nameplates in *Device Viewer* (www.endress.com/deviceviewer): all the information about the device is displayed.

3.2.1 Nameplate

Do you have the correct device?

The nameplate provides you with the following information on the device:

- Manufacturer identification, device designation
 - Order code
 - Extended order code
 - Serial number
 - Tag name (TAG) (optional)
 - Technical values such as supply voltage, current consumption, ambient temperature, communication-specific data (optional)
 - Degree of protection
 - Approvals with symbols
 - Reference to Safety Instructions (XA) (optional)
- Compare the information on the nameplate with the order.

3.2.2 Manufacturer address

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

Place of manufacture: See nameplate.

3.3 Order code and product version



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

www.products.endress.com/order-ident

4 Introduction

The Multi Scan NXA83B is a configurable system designed for tank gauging and tank inventory management systems.

Redundant operation with a pair of Multi Scan NXA83B linked together is supported, so that only one NXA83B will poll the gauges. The other Multi Scan NXA83B will automatically update its database with live data from the active Multi Scan NXA83B.

This mode of redundancy is called **Switch By System** and this document outlines the configuration and operation of the 2 Multi Scan NXA83B.

There are 2 other modes of redundancy, both of which operate on a single Multi Scan NXA83B (i.e. not a redundant pair):

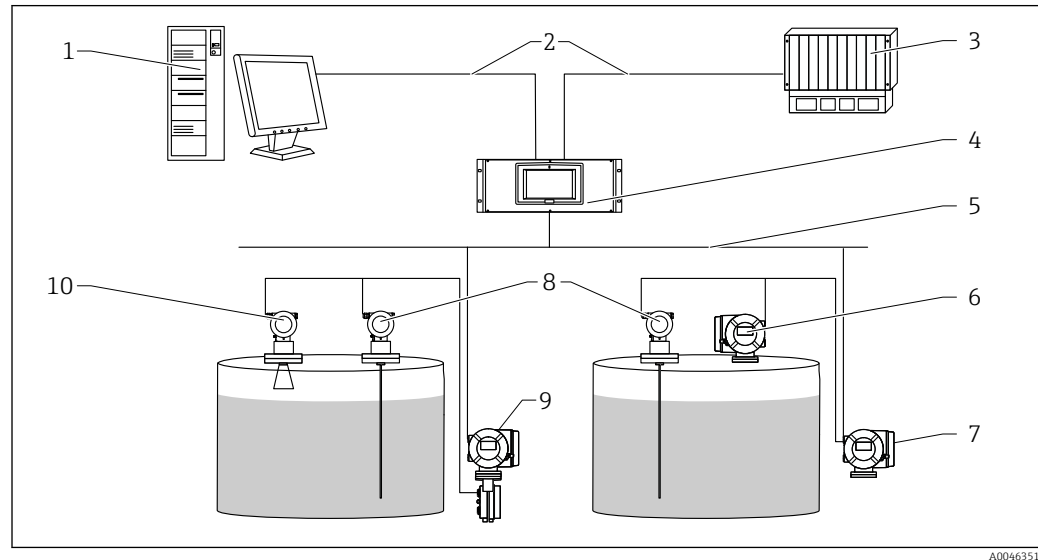
- **Switch By Gauge:** Gauges are configured with 2 ports (Primary and Backup) on the same Multi Scan NXA83B. If the Multi Scan NXA83B loses connection to a gauge on one port it will switch to poll the gauge from the other port. This is on an individual gauge basis, thus both Primary and Backup ports may be polling at the same time
- **Switch By Interface:** This is similar the switch by Gauge, except that the Multi Scan NXA83B will poll ALL gauges on only one port (i.e. Primary on startup). Only when communication to all gauges has failed on this port will the Multi Scan NXA83B switch to poll gauges from the other port. Thus the Primary and Backup ports will never poll at the same time

This manual is solely concerned with the redundancy functionality, it is assumed that the user has read the Multi Scan NXA83B manuals and is familiar with configuring a Multi Scan NXA83B database.

5 Switch By System

5.1 Typical system architecture

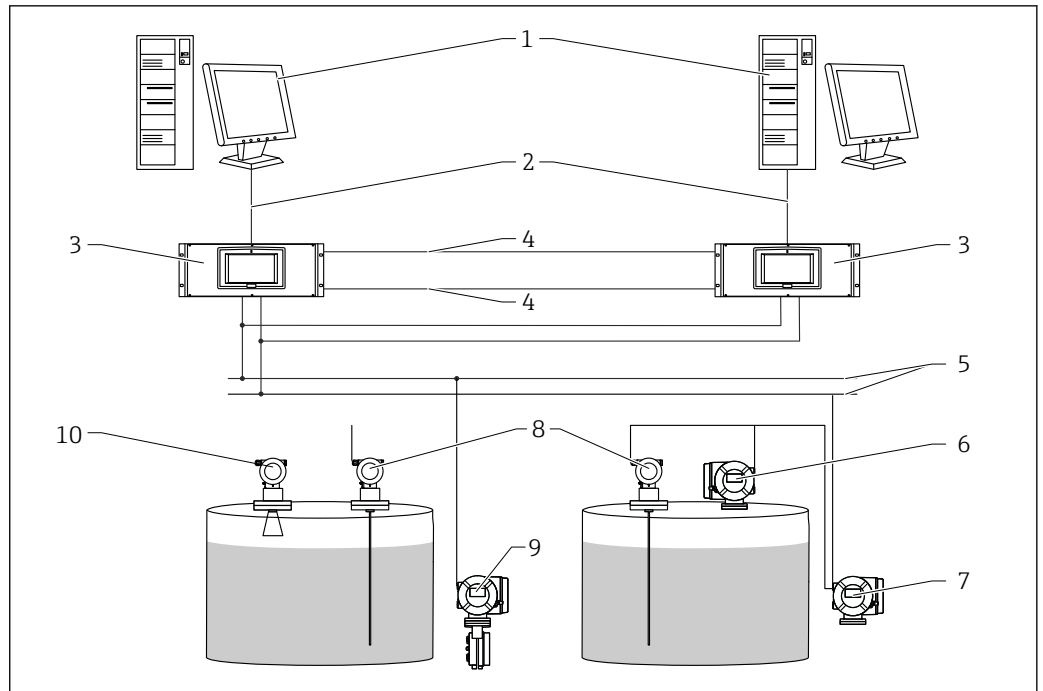
The diagram below shows an example of Multi Scan NXA83B used in the typical, single system architecture.



- 1 Tankvision Professional NXA85 Workstation
- 2 Ethernet/Serial
- 3 DCS/PLC (Distributed control system/Programmable logic controlled)
- 4 Tankvision Multi Scan NXA83B
- 5 Fieldbus protocol (Modbus, Sakura V1, Whessoe WM550)
- 6 Proservo
- 7 Promonitor
- 8 Prothermo
- 9 Tank Side Monitor
- 10 Micropilot

5.2 Tankvision Multi Scan in "Switch By System" redundancy mode

The diagram below shows an example of a pair of Multi Scan NXA83B used in the Switch By System redundancy mode.



A0046352

- 1 Tankvision Professional NXA85 Workstation
- 2 Ethernet
- 3 Tankvision Multi Scan NXA83B
- 4 Control link RS232
- 5 Fieldbus protocol
- 6 Proservo
- 7 Promonitor
- 8 Prothermo
- 9 Tank Side Monitor
- 10 Micropilot

The 2 NXA83B have a number of field loops (2 Enraf BPM in this example) connected to both Multi Scan NXA83B.

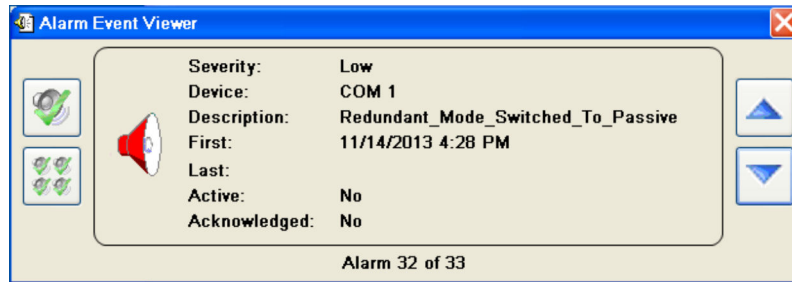
There are also 2 Control links connected between the NXA83B, these are used to transfer data between the systems, one for each direction of data transfer.

In normal operation one Multi Scan NXA83B will be in Live Polling mode, that is, polling for all field data from the gauges. The other Multi Scan NXA83B will be in Redundant Link mode, and it will be getting data from the live Multi Scan NXA83B via one of the Control Links.

Therefore both Multi Scan NXA83B will have live field data, which will be displayed on screen and be available on any slave (Modbus etc.) port or OPC connection. Slave ports may be configured to not reply on the passive system, to mimic functionality in older equipment such as the Datacon.

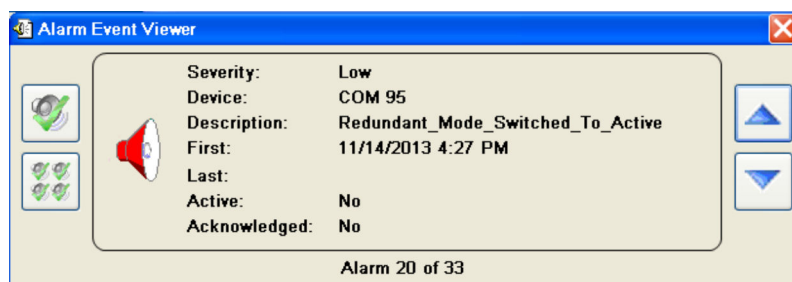
If one of the field ports on the live system does not receive a correctly formatted reply for longer than the timeout period (default 60 seconds), it will be marked as failed and initiate a switch. This will cause the Multi Scan NXA83B to stop polling all field ports and switch to Redundant Link mode.

An event will be generated to inform the user that the system is now passive.



The second Multi Scan NXA83B will detect this change, switch to Live Polling mode and start to poll all the field ports for gauge data.

An event will be generated in the second Multi Scan NXA83B to inform the user that the system is now active and polling for gauge data.



During the switchover, no data will be lost and no gauging alarms will be raised in the Multi Scan NXA83B or in any connected tank gauging software.

If, following the switch, the field port on the second Multi Scan NXA83B also fails to receive correctly formatted data then a No Reply From Gauge alarm will be generated for each gauge on that field port.

If at any time an individual gauge fails on a port (i.e. does not reply), but other gauges are returning valid data, the failed gauge will immediately be set to error and an alarm raised. This will not trigger a switch.

5.3 Port Latching

If a port has failed on both Multi Scan NXA83B the system will "Latch" for that port. A Latched port will not trigger redundancy mode switching. This state will remain until valid communications is restored to the port. If the second Multi Scan NXA83B is not connected or powered up, all ports will latch and no switching will occur.

Latching does not affect other ports, so if an unlatched port fails redundant mode switching will occur as normal.

5.4 Boot Up

Multi Scan NXA83B which are configured as "Switch by System" will initially boot up in Redundant Link mode and check to see if there is a Multi Scan NXA83B in Live Polling Mode.

If a Multi Scan NXA83B in Redundant Link mode does not find a "Live" system within a timeout period it will switch to Live Polling mode. The timeout period contains a random element, so that if 2 Multi Scan NXA83B boot at exactly the same time, one should always switch to Live Polling before the other.

If there are no Control Link connections between the 2 systems both will eventually switch to Live Polling mode.

5.5 Slave interfaces

All slave interfaces (Modbus, Datacon etc) by default operate as normal when used on redundant Multi Scan NXA83B. They will reply to requests whether they are running on the Live Polling or Passive system, as both systems have valid live data.

However there may be applications where the master system requires that only slave interfaces running on the Live Polling system reply to requests. For instance if both Multi Scan NXA83B are multi-dropped on the same interface and have the same addresses etc.

In this case the Slave port should be configured with the **Do Not Reply When Passive** option ticked in the **Port Config** tool. See later section on Slave Port Configuration for details on where this can be found.

If this option is ticked then the slave interface will not reply to any requests if it is running on the Passive system.

5.6 Mode display and control

The current redundancy mode may be displayed via the Communications Monitor, which can be accessed from a remote control session or from the operator touch screen.

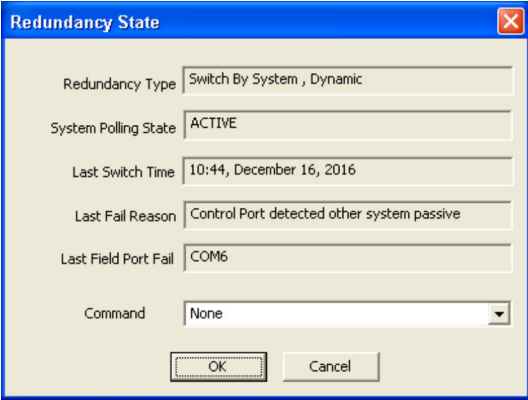
 For full details on accessing and using the Communications Monitor, refer to the DCC Communications Configuration manual BA01292G.

The redundancy mode is normally automatically selected by the 2 Multi Scan NXA83B systems which between them will determine which system is Active and which is Passive. A Multi Scan NXA83B will boot up in the Passive mode and only go Active if it detects that the other system is either not running or is in Passive mode as well.

However there may be times when the mode requires to be manually controlled, in which case this can be carried out using the Communications Monitor redundancy screen. It can be used to initiate a manual switchover or to set the 2 systems to never switch, for instance when some maintenance work is to be carried out.

 When a Multi Scan NXA83B is rebooted it will always start in automatic (Dynamic) switchover mode.

The redundancy state screen in the Communications Monitor can be displayed by clicking on the **Redundancy** button.



The fields displayed on this screen will include the following:

- **Redundancy Type** – this shows the type of redundancy configured for this Multi Scan NXA83B. It will also show the current switching mode if the redundancy is set to **Switch By System**
- **System Polling State** – this shows the current polling state, **ACTIVE** or **PASSIVE**. It will always show **ACTIVE** if the redundancy type is NOT **Switch By System**
- **Last Switch Time** – the time that the last switchover occurred in a **Switch By System** redundant system. If the redundancy type is not **Switch By System** or a switchover has not occurred then this field will be blank
- **Last Fail Reason** – If a switchover has occurred then this will indicate the cause and can be one of the following. If the redundancy type is not **Switch By System** or a switchover has not occurred then this field will be blank:
 - **Field Port Failed**
 - **Manual command**
 - **Control Port detected other system passive**
 - **Control Port detected both systems active**
- **Last Field Port Fail** – this COM port number of the last field port to fail and trigger a redundant switchover

The Command field allows a set of redundant actions to be selected.

The screenshot shows a window titled "Redundancy State" with a close button (X) in the top right corner. The window contains several text fields and a dropdown menu:

- Redundancy Type:** Switch By System , Dynamic
- System Polling State:** ACTIVE
- Last Switch Time:** 10:46, December 16, 2016
- Last Fail Reason:** Control Port detected other system passive
- Last Field Port Fail:** COM5
- Command:** A dropdown menu currently showing "None". The menu options are:
 - Set System ACTIVE
 - Set System PASSIVE
 - Set Dynamic Switching
 - Set No Switching

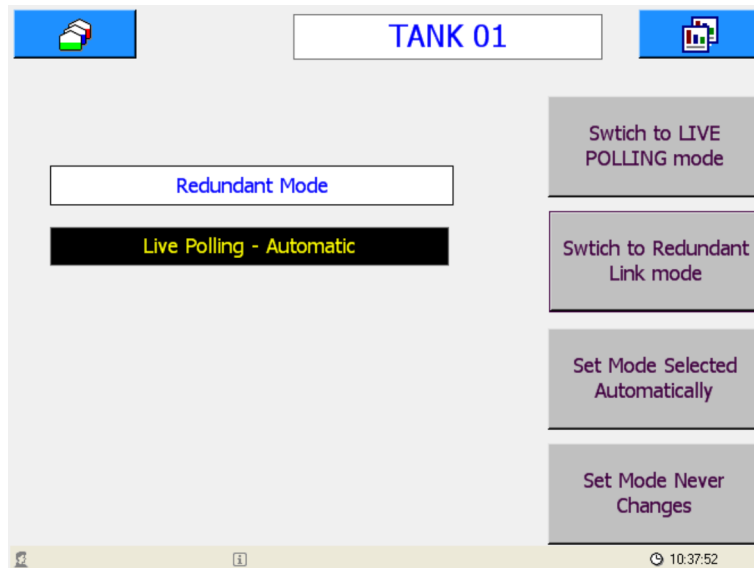
The command action will not be carried out until the **OK** button is clicked and the Redundancy Status screen is closed.

 When initiating a manual switchover, the recommended procedure is to select the **Set System PASSIVE** command on the system that is currently **ACTIVE**.

5.6.1 Single Tank Display

The current redundancy mode may also be displayed in the Single Tank displays on the local touchscreen. This is generally only recommended for firmware versions before v3.2.0/4.2.0. For later versions use the Communications Monitor.

This screen shows the mode that the Tankvision Multi Scan is currently operating. The mode may also be manually controlled using this screen.

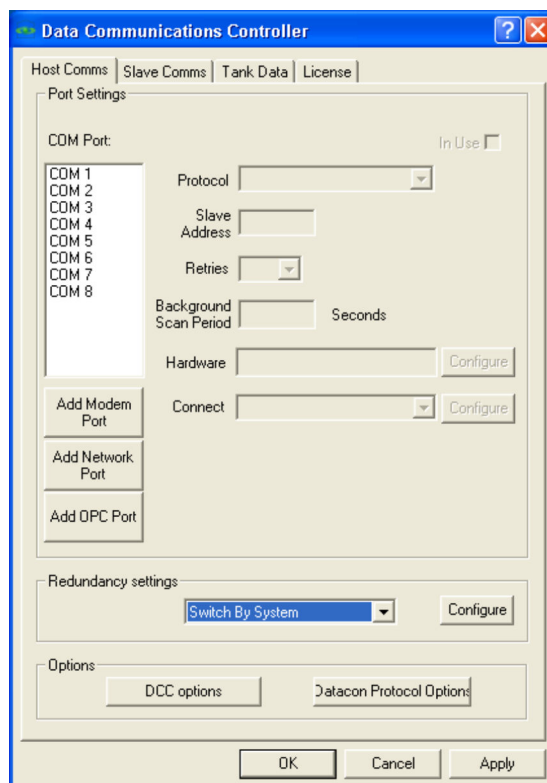


5.7 Configuration

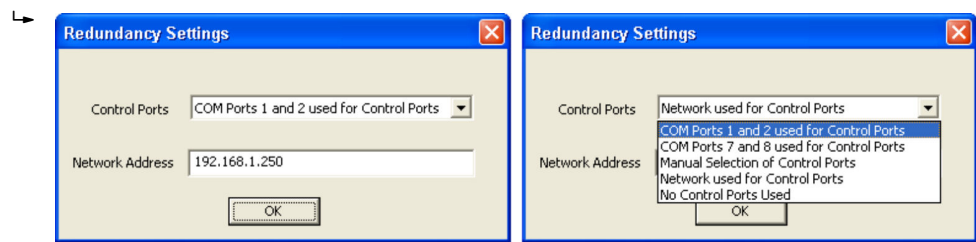
5.7.1 Redundancy Control Port Configuration

The first step to configuring a redundant database on the Multi Scan NXA83B is to configure the redundancy mode. This is set using the Port Configuration module in the Communications menu.

1. Click on the **Host Comms** tab, and set the **Redundancy Settings** to **Switch By System**.
 - The **Configure** button will now be enabled.



2. Click this button to determine the method of connecting the control links between the 2 Multi Scan NXA83B.

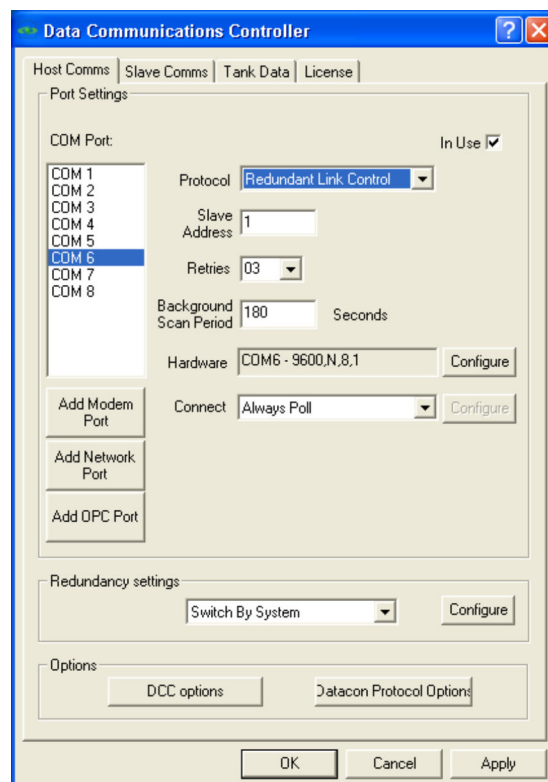


There are 5 options to select from:

- **COM ports 1 and 2 used for Control Ports** – The Multi Scan NXA83B automatically configures the communications ports for redundancy. Ensure that COM 1 and COM 2 are NOT selected as **In Use** as either Host or Slave ports. Connect a Serial Cross-over lead from COM 1 on one Multi Scan NXA83B to COM 2 on the other for both Multi Scan NXA83B. This is the recommended method of connecting the control links
- **COM ports 7 and 8 used for Control Ports** – The Multi Scan NXA83B automatically configures the communications ports for redundancy. Ensure that COM 7 and COM 8 are NOT selected as **In Use** as either Host or Slave ports. Connect a Serial Cross-over lead from COM 7 on one Multi Scan NXA83B to COM 8 on the other for both Multi Scan NXA83B
- **Manual Selection of Control Ports** – This option must be selected when the control ports have been manually configured. There must be 2 control ports configured:
 - 1 DCC Host port configured as a Redundant Link Control protocol
 - 1 DCC Slave port configured as a Redundant Link Control protocol

These can be either standard RS232 COM ports (recommended for manual configuration) or Network ports. The communication parameters should be set identically for both Multi Scan NXA83B.

In operation the Host Redundant Link Control is connected to the Slave Redundant Link Control of the other system, and vice-versa



- **Network used for Control Ports** – The Multi Scan NXA83B automatically configures network ports for redundancy. The Network address of the second Multi Scan NXA83B must be supplied in the Network Address field. Both Multi Scan NXA83B must be connected to the same network, or have a Network Cross-over lead connected between the Ethernet ports of the 2 Multi Scan NXA83B. Connection using a Network Cross-over lead is not a recommended method for Redundant Link since it prevents access to the Multi Scan NXA83B operating system using a remote desktop connection
- **No Control Ports Used** – If this option is selected both Multi Scan NXA83B will default to Live polling mode. This option should NOT be used for **Switch By System** redundancy

5.7.2 Field Port and Slave Port Configuration

Next configure all field ports in the Host Comms page as normal, except that the redundancy operation may be modified for individual ports by editing the **Redundancy Settings** section of the **COM port Settings** dialog.

COM Port Settings

Serial Comms

Baud Rate: 1200

Parity: Odd

Data Bits: 7

Stop Bits: 1

Flow Control: None

Echo Expected ☐

Delay Between Polls: 250 mS

Comms Timeout: 0 mS

Not Applicable

Not Applicable: 75

Not Applicable: 24

Not Applicable: 270R

Not Applicable: 390R

Redundancy Settings

Do Not Trigger Redundant Switch ☐

Timeout Period: 60 s

Do Not Reply When Passive ☐

OK

For Host ports the following settings may be adjusted:

- **Do Not Trigger Redundant Switch** – If ticked the port will not trigger a switchover if it fails
- **Timeout Period** – The time period for determining if the port has failed. If no replies are received from devices on the port for longer than this period a switchover will be triggered. Defaults to 60 seconds

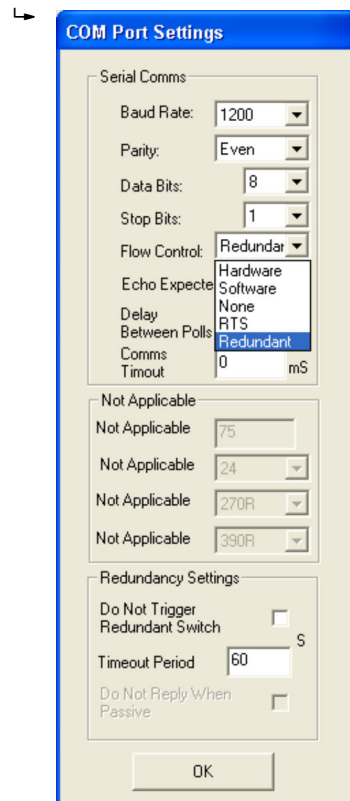
For Slave ports the following setting may be adjusted:

Do Not Reply When Passive – The port will not reply to any requests if it is running on the passive system

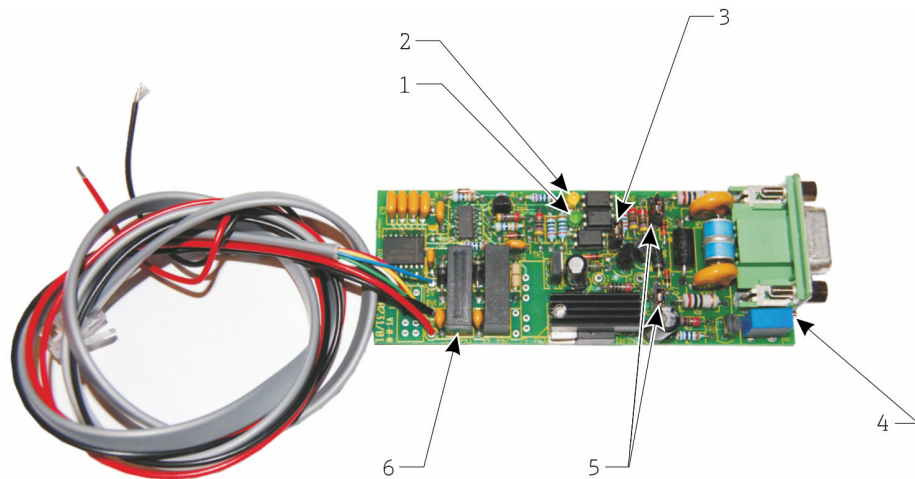
5.7.3 Current Loop Board Configuration

When using Current Loop interface boards with redundant systems (such as when interfacing to Whessoe WM500/550 devices) the following should be implemented:

1. Set the **Flow Control** Field to **Redundant**.



2. Remove the Redundant Mode Control jumper (3) from each board.

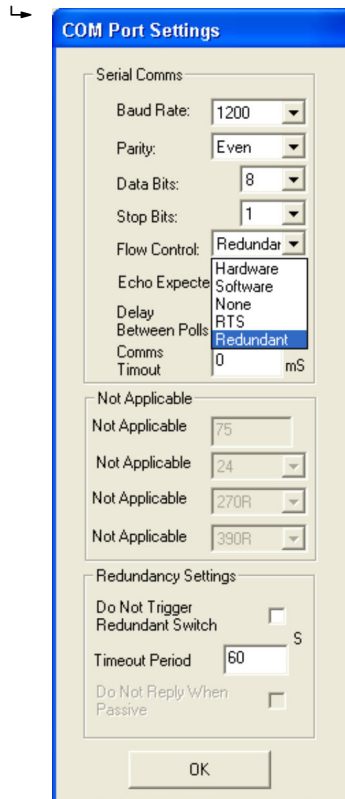


- 1 Tx LED
- 2 Rx LED
- 3 Redundant Mode Control jumper (Fitted = Loop always powered; Not Fitted = Redundant Mode)
- 4 Loop Current Adjust
- 5 Master/Slave Select
- 6 Power Converters

5.7.4 L&J Tankway Board Configuration

When using L&J interface boards with redundant systems the following should be implemented:

1. Set the **Flow Control** Field to **Redundant**.



2. Make sure LK1 is in the UP position (i.e. towards the Tx/Rx LEDs) on each board.

5.7.5 Gauge Configuration

After the interfaces have been configured, the gauges must be configured for redundant operation.

To do this, select the gauge in the **Gauge Configuration** screen in the Configurator tools.

Set the **Comm Port** field to be the field port (i.e. the port that the gauges are connected to). There is no need to enter port a **Backup COM Port** field, so leave blank.



Firmware Versions before 3.0.6 do require the **Backup COM Port** field to be the Host Redundant Link Control port. To display this field click on the **Advanced** button.

5.8 Configuring Tankvision Professional NXA85 to talk to a pair of redundant Multi Scan NXA83B

A PC running the Tankvision Professional NXA85 tank gauging software may be used on conjunction with a pair of redundant pair of Multi Scan NXA83B.

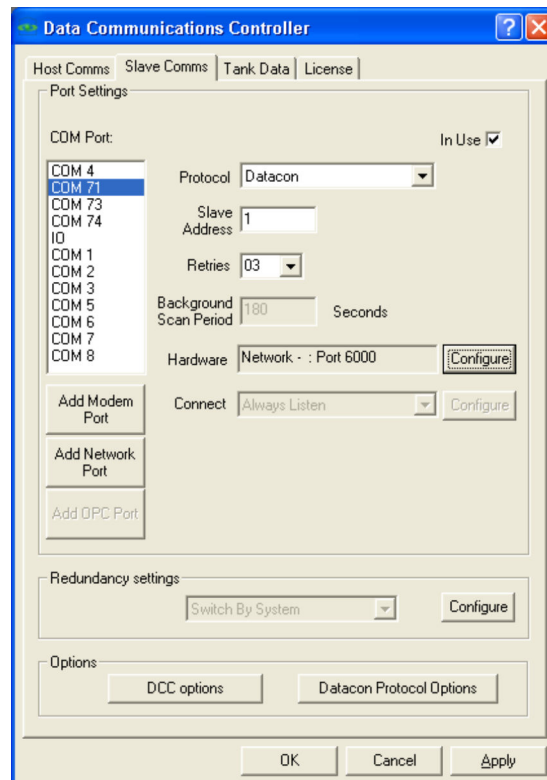
It must be connected to the Multi Scan NXA83B by one of the following:

- RS232, RS485 or RS422, using a pair of serial communication ports on the PC (one for each Multi Scan NXA83B)
- Ethernet, with the PC and both Multi Scan NXA83B connected via a switch or similar

This section will give some notes on what to configure, but refer to the DCC Configuration manual (BA01292G) for more details on configuring Tankvision Professional NXA85.

5.8.1 Multi Scan NXA83B Configuration

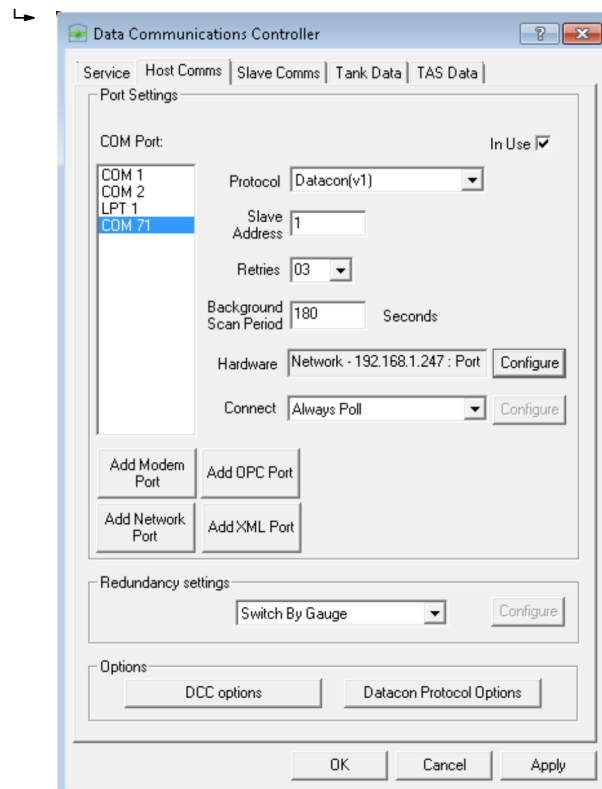
Each Multi Scan NXA83B should be configured with a slave interface to communicate with the Tankvision Professional, using the Datacon protocol. The screen shot shows it configured as a network interface.



5.8.2 Tankvision Professional NXA85 Port Configuration

In the Tankvision Professional NXA85 system configure a pair of Host COM ports using the Datacon protocol, one connected to each Multi Scan NXA83B. These may be either physical serial COM ports (COM 1 +) or network ports (COM 71 +).

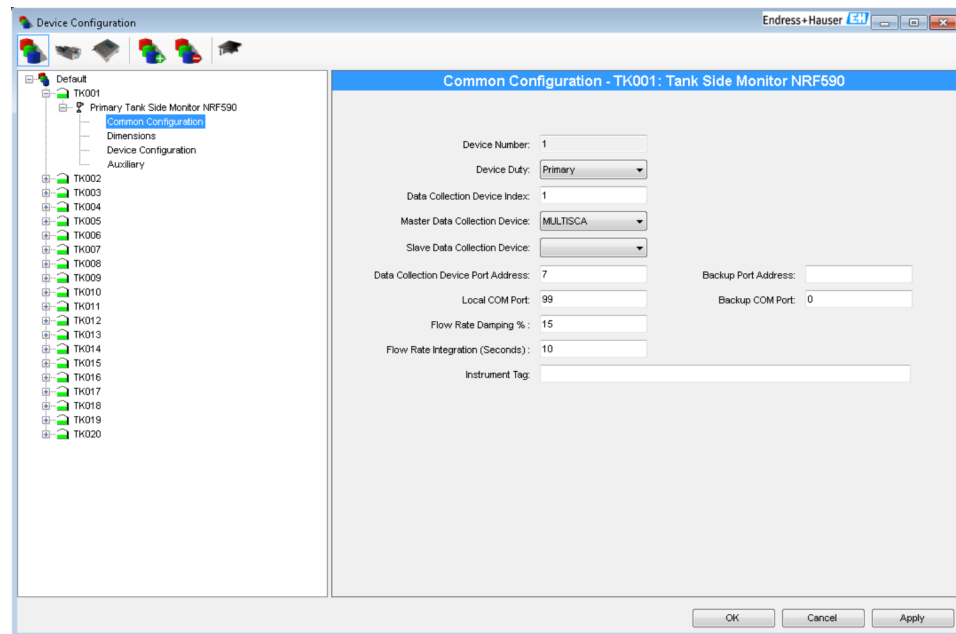
- Set the **Redundancy settings** mode to **Switch By Gauge**.



If using network ports then ensure that the Network Address and Port fields are configured to match the Multi Scan NXA83B settings.

5.8.3 Gauge Configuration

Gauges should be configured as normal in Tankvision Professional NXA85.



Ensure that the **Data Collection Device index** is set to correct index of the device in the Multi Scan NXA83B. Alternatively it can be left as 0 if the device name is exactly the same on Tankvision Professional NXA85 and Multi Scan NXA83B.

Set the **Local COM Port** and the **Backup COM Port** to the 2 interfaces configured for the datacon protocol

5.8.4 Tankvision Professional NXA85 Redundant Operation

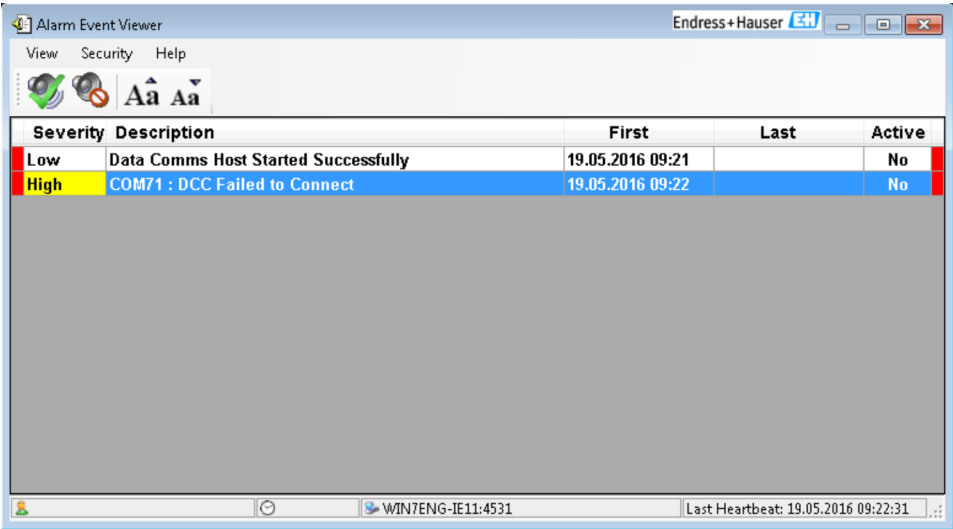
Tankvision Professional NXA85 will attempt to poll for gauge data on the Local COM Port initially. If the data for the gauge is all invalid then it will switch individual gauges to poll on the Backup COM Port. During the switch there will be no loss of data.

If the Multi Scan NXA83B initiate a redundant switchover then there should be no loss of data in Tankvision Professional NXA85 and assuming both Multi Scan NXA83B are still operational then Tankvision Professional NXA85 will not switch its ports.

If an interface port fails completely, for instance if the link between the PC and a Multi Scan NXA83B is broken or the Multi Scan NXA83B loses power, then Tankvision Professional NXA85 will switch all gauges to its other port. During the switch there will be no loss of data, but alarms will be generated.

If the interface port is via Ethernet (COM 71+) then the following alarms will be generated:

- **DCC Comms Failure** (60 seconds after failure)
- **Device Disconnected** (20 to 30 seconds after failure)
- **Failed To Connect** (5 to 10 seconds later)

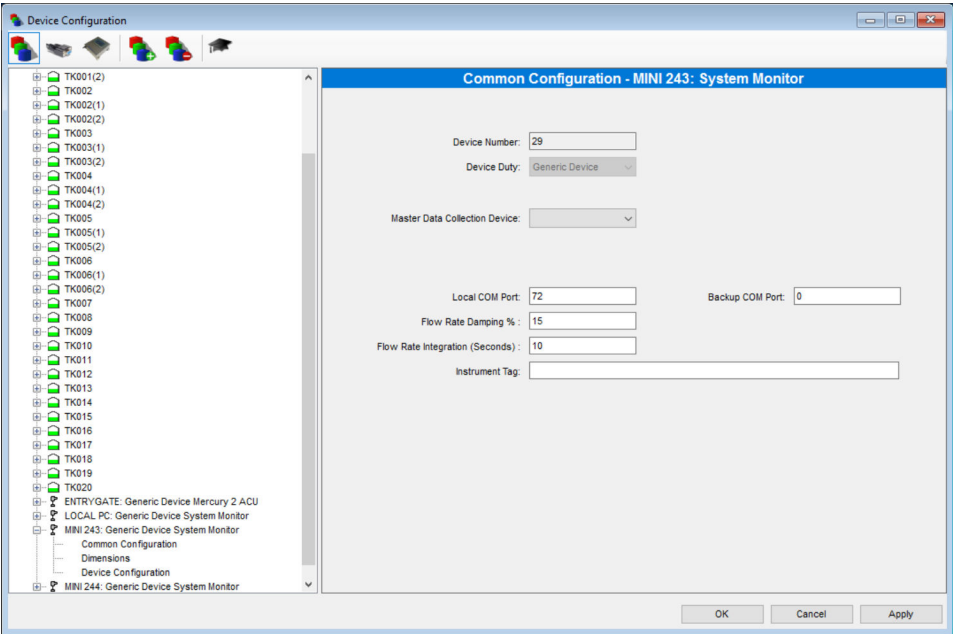


If the interface port is via a physical serial port then only the **DCC Comms Failure** will be generated.

5.8.5 Multi Scan NXA83B System Monitor

The Tankvision Professional NXA85 system can be configured to poll for diagnostic information from the Multi Scan NXA83B device itself. This is then used to generate events to notify the Tankvision Professional NXA85 user when a redundant switchover occurs on the Multi Scans NXA83B.

To enable this feature, configure **System Monitor** devices in the Tankvision Professional NXA85, one for each Multi Scan NXA83B.



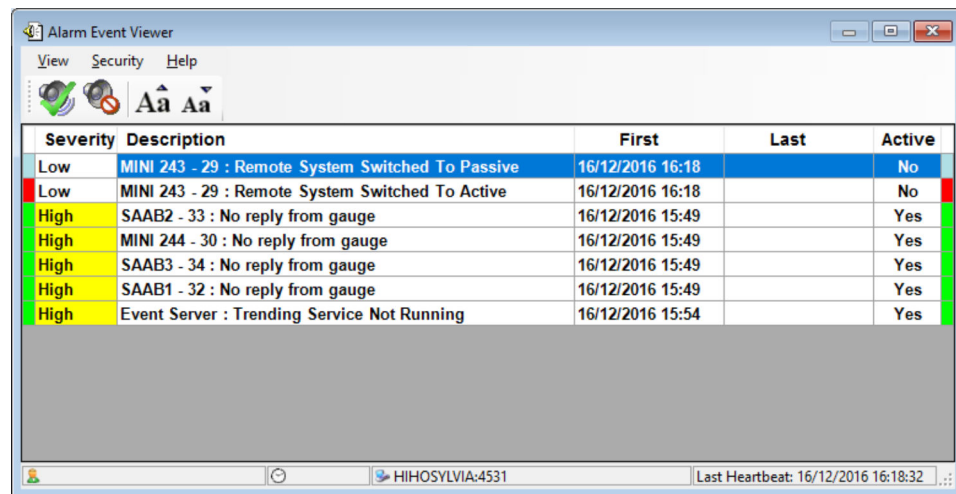
The configuration fields that are relevant for this device type are as follows:

- **Device Name** – This should typically be configured as the Multi Scan NXA83B network name or to some text that can uniquely identify that Multi Scan NXA83B to the user
- **Local COM Port** – Enter the COM port that is used to communicate with the Multi Scan NXA83B
- **Backup COM Port** – Always set this field to 0
- **Data Collection Device index** – Not required, leave as 0

In operation the Tankvision Professional NXA85 system will poll the Multi Scan NXA83B directly for diagnostic data and generate an event when a redundant switchover occurs.

These will be one of the following:

- **Remote System Switched To Passive**
- **Remote System Switched To Active**



The screenshot shows the 'Alarm Event Viewer' window with a menu bar (View, Security, Help) and a toolbar with icons for alarm status and font settings. The main area contains a table of alarm events.

Severity	Description	First	Last	Active
Low	MINI 243 - 29 : Remote System Switched To Passive	16/12/2016 16:18		No
Low	MINI 243 - 29 : Remote System Switched To Active	16/12/2016 16:18		No
High	SAAB2 - 33 : No reply from gauge	16/12/2016 15:49		Yes
High	MINI 244 - 30 : No reply from gauge	16/12/2016 15:49		Yes
High	SAAB3 - 34 : No reply from gauge	16/12/2016 15:49		Yes
High	SAAB1 - 32 : No reply from gauge	16/12/2016 15:49		Yes
High	Event Server : Trending Service Not Running	16/12/2016 15:54		Yes

At the bottom of the window, there is a status bar showing a user icon, a refresh button, the text 'HIHOSYLVIA:4531', and 'Last Heartbeat: 16/12/2016 16:18:32'.



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