

NR500 Series Industrial Cellular VPN Router

Application Note 053

IEC101 to IEC104

Version: V1.0.0
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Status: Confidential



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1. Introduction

1.1 Overview

This document contains information regarding the configuration and use of IEC101 to IEC104.

This guide has been written for use by technically competent personnel with a good understanding of the communications technologies used in the product, and of the requirements for their specific application.

1.2 Compatibility

This application note applies to:

Models Shown: NR500 series.

Firmware Version: V1.1.4(0c0c9fa) or newer

Other Compatible Models: None

1.3 Version

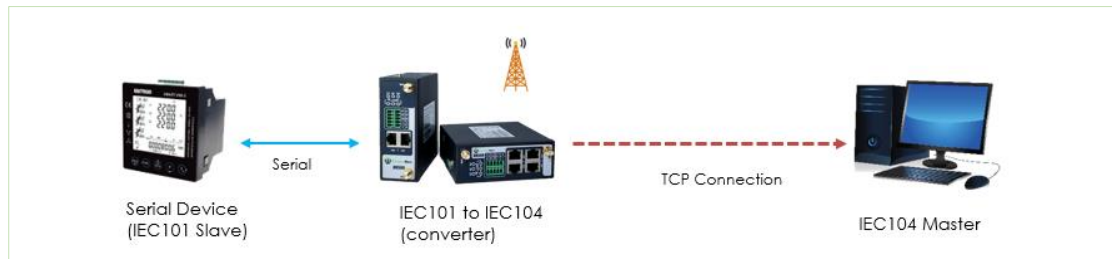
Updates between document versions are cumulative. Therefore, the latest document will include all the content of previous versions.

Release Date	Doc. Version	Firmware Version	Change Description
2020/07/17	V1.0.0	V1.1.4(0c0c9fa)	First released

1.4 Corrections

Appreciate for corrections or rectifications to this application note, and if any request for new application notes please email to: **support@navigateworx.com**

2. Topology

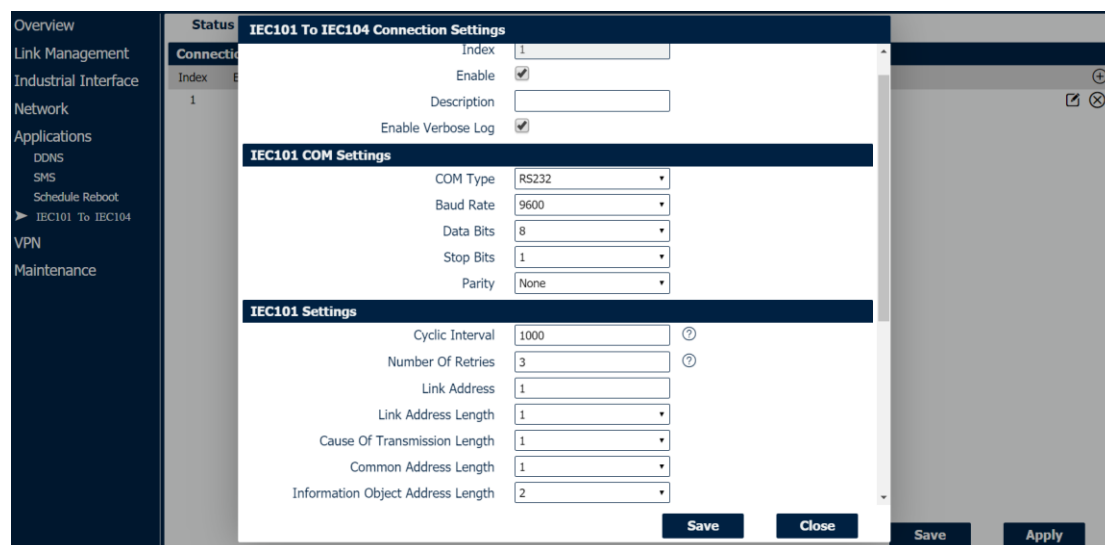


1. NR500 Router run as IEC101 to IEC104 converter.
2. A serial device support IEC101 protocol and act as slave connected to the router via serial port.
3. IEC104 master connected to the router via TCP and request the data from slave. After that, the slave will send the data to master as requested.

3. Configuration

3.1 Configuration on NR500

1. Go to **Applications>IEC101 To IEC104>Connection**, specify the IEC101 configuration, like below:

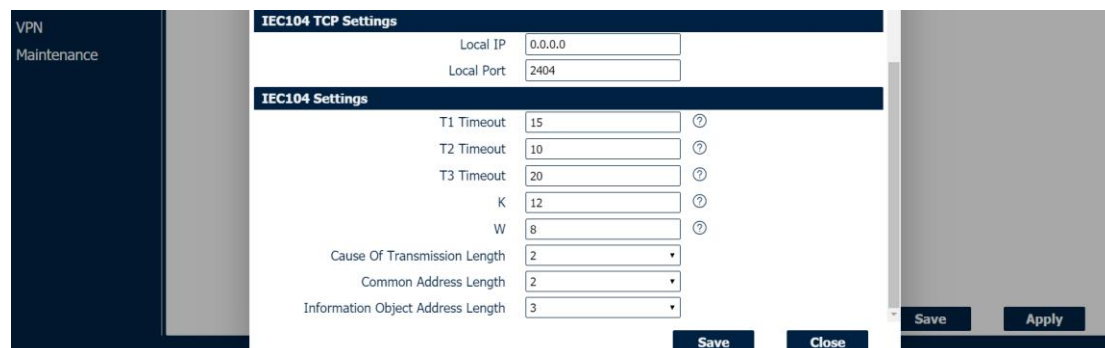


The screenshot shows the 'IEC101 To IEC104 Connection Settings' window. The left sidebar contains a navigation menu with categories: Overview, Link Management, Industrial Interface, Network, Applications (with sub-items: DNS, SMS, Schedule Reboot, IEC101 To IEC104), VPN, and Maintenance. The main window is titled 'IEC101 To IEC104 Connection Settings' and contains the following fields:

- Index:** 1
- Enable:**
- Description:** (empty text box)
- Enable Verbose Log:**
- IEC101 COM Settings:**
 - COM Type:** RS232
 - Baud Rate:** 9600
 - Data Bits:** 8
 - Stop Bits:** 1
 - Parity:** None
- IEC101 Settings:**
 - Cyclic Interval:** 1000
 - Number Of Retries:** 3
 - Link Address:** 1
 - Link Address Length:** 1
 - Cause Of Transmission Length:** 1
 - Common Address Length:** 1
 - Information Object Address Length:** 2

Buttons at the bottom include 'Save', 'Close', and 'Apply'.

2. Go to **Applications>IEC101 To IEC104>Connection**, specify the IEC104 configuration, like below:



The screenshot shows the 'IEC104 TCP Settings' window. The left sidebar shows 'VPN' and 'Maintenance' selected. The main window is titled 'IEC104 TCP Settings' and contains the following fields:

- Local IP:** 0.0.0.0
- Local Port:** 2404
- IEC104 Settings:**
 - T1 Timeout:** 15
 - T2 Timeout:** 10
 - T3 Timeout:** 20
 - K:** 12
 - W:** 8
 - Cause Of Transmission Length:** 2
 - Common Address Length:** 2
 - Information Object Address Length:** 3

Buttons at the bottom include 'Save', 'Close', and 'Apply'.

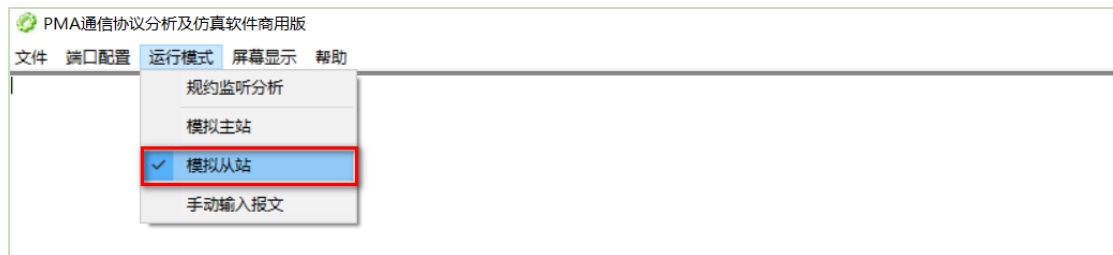
3. Click Save>Apply.

3.2 Configuration on IEC101 Simulator

1. Specify the serial settings on IEC101 simulator, to make it the same as NR500 router serial settings:



2. Specify it works as Slave Station:



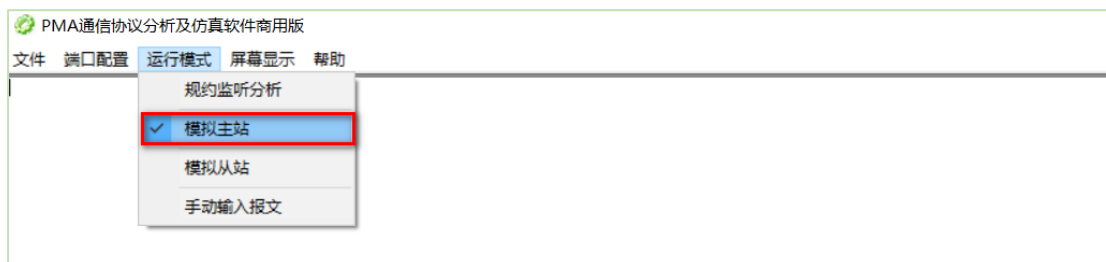
3. Specify the IEC101 settings on IEC101 simulator, to make it the same as NR500 IEC101 settings:



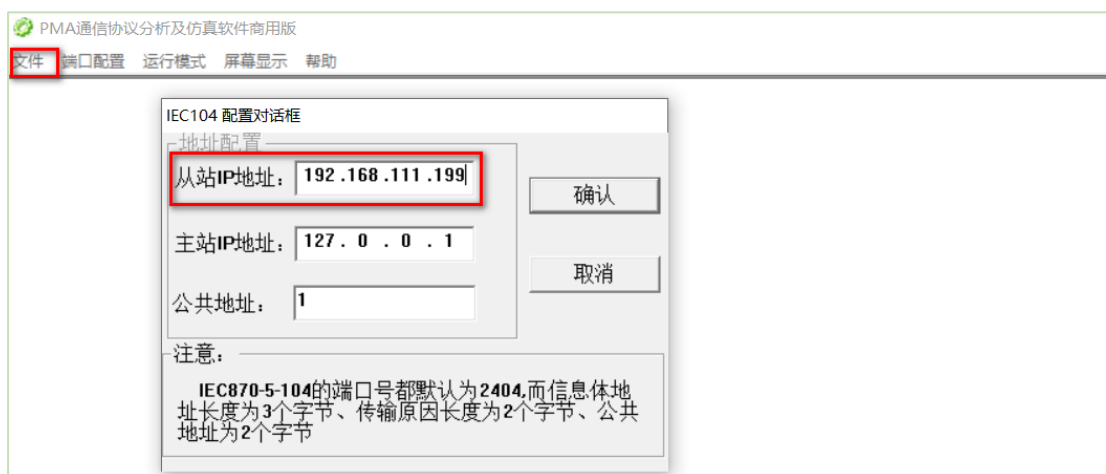
4. Save and start to connect.

3.3 Configuration on IEC104 Simulator

1. Enable the IEC104 simulator and make it works as Master Station:



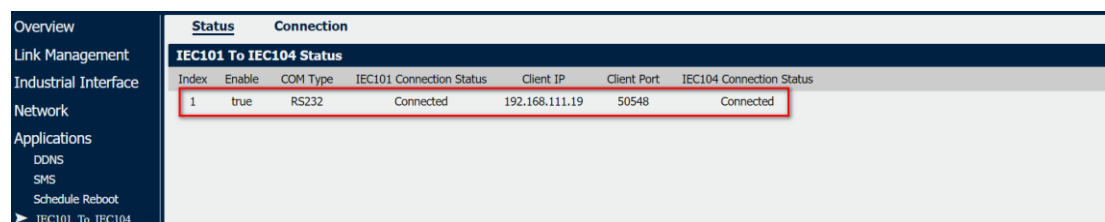
5. Specify the settings on IEC104 simulator, to make all the settings is the same as NR500 IEC104 setting, then connect to NR500 via TCP connection:



6. Save and start to connect IEC104 Master to IEC101 Slave:



7. Connected successfully:

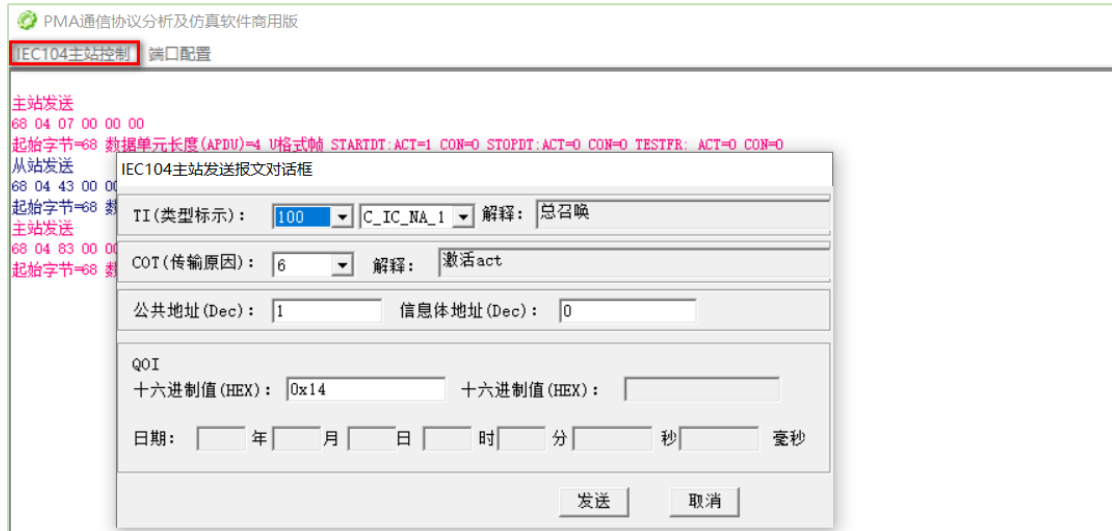


The screenshot shows the 'IEC101 To IEC104 Status' table in the software interface. The table has the following columns: Index, Enable, COM Type, IEC101 Connection Status, Client IP, Client Port, and IEC104 Connection Status. The first row shows a connection status of 'Connected' for both IEC101 and IEC104.

Index	Enable	COM Type	IEC101 Connection Status	Client IP	Client Port	IEC104 Connection Status
1	true	RS232	Connected	192.168.111.19	50548	Connected

4. Testing

1. IEC104 Master request the data from IEC101 Slave:



2. IEC104 Master receive the data from IEC101 Slave successfully:

