

# NR500 Series Industrial Cellular VPN Router

## Application Note 005

### Transparent Mode with TCP Client on RS485

**Version:** V1.0.0  
**Date:** 2018/08/03  
**Status:** Confidential



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# 1. Introduction

## 1.1 Overview

This document contains information regarding the configuration and use of RS485 Transparent Mode with TCP Client.

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:** V1.0.0(903.0) or newer

**Other Compatible Models:** None

## 1.3 Version

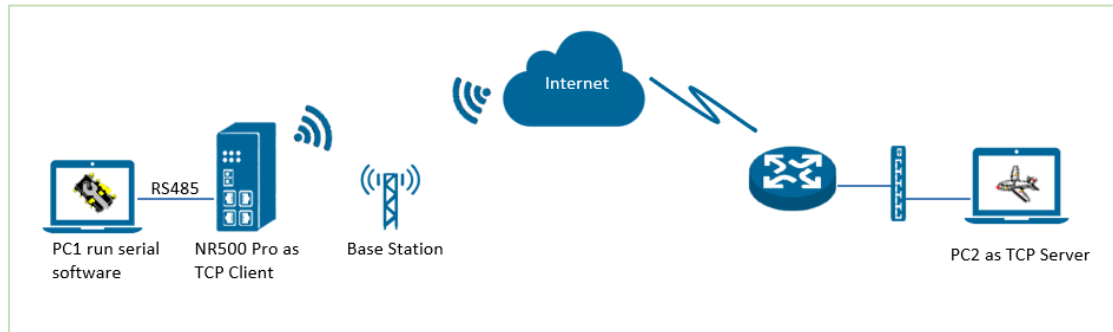
Updates between document versions are cumulative. Therefore, the latest document will include all the content of previous versions.

| Release Date | Doc. Version | Firmware Version | Change Description |
|--------------|--------------|------------------|--------------------|
| 2018/08/03   | V1.0.0       | V1.0.0(903.0)    | 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](mailto:support@navigateworx.com)

## 2. Topology

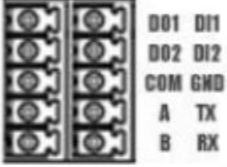


1. NR500 Pro runs as TCP Client and connect to Internet with SIM card.
2. PC1 simulate as serial device and runs serial software, such as Hercules. Hercules will send the datas to the TCP server side through NR500 Pro with TCP transparent mode.
3. PC2 runs as TCP server and assume it can get the Public Static IP address. PC2 enable TCP software, such as TCPUDPDbg. TCPUDPDbg can receive the datas from TCP Client side.

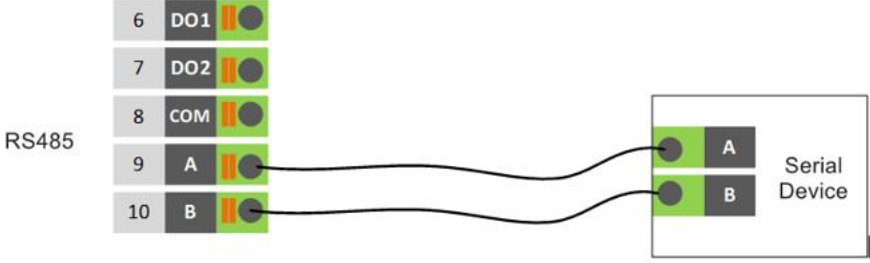
### 3. RS485 Cable

1. Please follow below picture to make the RS485 cable:

• **Serial Port & DIDO**



| PIN | RS232 | RS485 | DI  | DO  | Direction        |
|-----|-------|-------|-----|-----|------------------|
| 1   | --    | --    | --  | DO1 | Router-->Device  |
| 2   | --    | --    | --  | DO2 | Router-->Device  |
| 3   | --    | --    | --  | COM | --               |
| 4   | --    | A     | --  | --  | Router<-->Device |
| 5   | --    | B     | --  | --  | Router<-->Device |
| 6   | --    | --    | DI1 | --  | Router<--Device  |
| 7   | --    | --    | DI2 | --  | Router<--Device  |
| 8   | GND   | --    | --  | --  | --               |
| 9   | TX    | --    | --  | --  | Router-->Device  |
| 10  | RX    | --    | --  | --  | Router<--Device  |

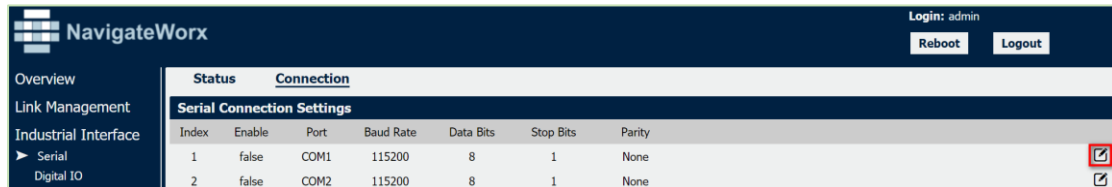
  


The diagram shows the RS485 cable wiring. On the left, the RS485 connector pins are labeled: 6 (DO1), 7 (DO2), 8 (COM), 9 (A), and 10 (B). On the right, the Serial Device connector pins are labeled: A and B. Wires connect pin 9 (A) to the Serial Device pin A, and pin 10 (B) to the Serial Device pin B.

## 4. Configuration

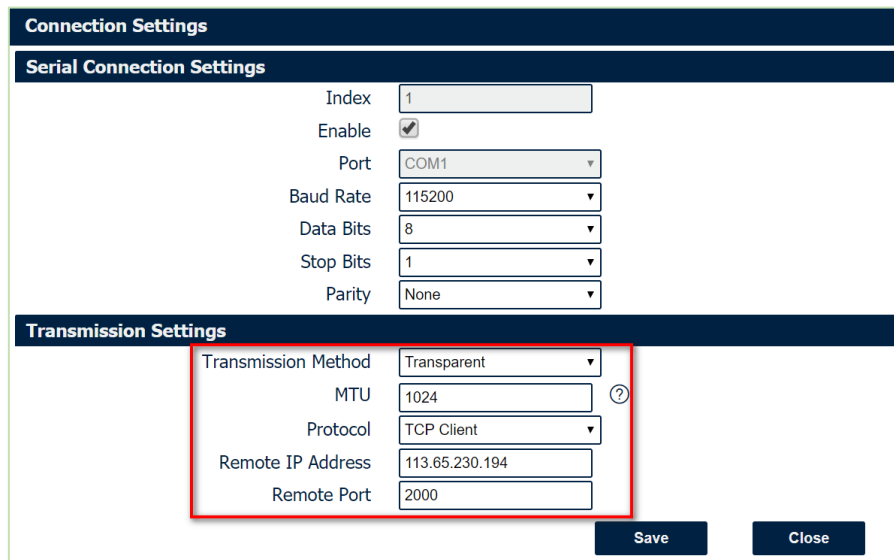
### 4.1 RS485 Configuration

1. Go to Link **Industrial Interface>Serial>Connection>Index 1**, Click the **Edit** button of COM1.



| NavigateWorx         |                            |        |      |           |           |           | Login: admin |            |
|----------------------|----------------------------|--------|------|-----------|-----------|-----------|--------------|------------|
|                      |                            |        |      |           |           |           | Reboot       | Logout     |
| Overview             | Status                     |        |      |           |           |           |              | Connection |
| Link Management      | Serial Connection Settings |        |      |           |           |           |              |            |
| Industrial Interface | Index                      | Enable | Port | Baud Rate | Data Bits | Stop Bits | Parity       |            |
| Serial               | 1                          | false  | COM1 | 115200    | 8         | 1         | None         |            |
| Digital IO           | 2                          | false  | COM2 | 115200    | 8         | 1         | None         |            |

2. Enable RS485 setting, select Protocol as "TCP Client" and enter the Server ip address and Server Port. Click Save.



**Connection Settings**

**Serial Connection Settings**

Index: 1

Enable:

Port: COM1

Baud Rate: 115200

Data Bits: 8

Stop Bits: 1

Parity: None

---

**Transmission Settings**

Transmission Method: Transparent

MTU: 1024

Protocol: TCP Client

Remote IP Address: 113.65.230.194

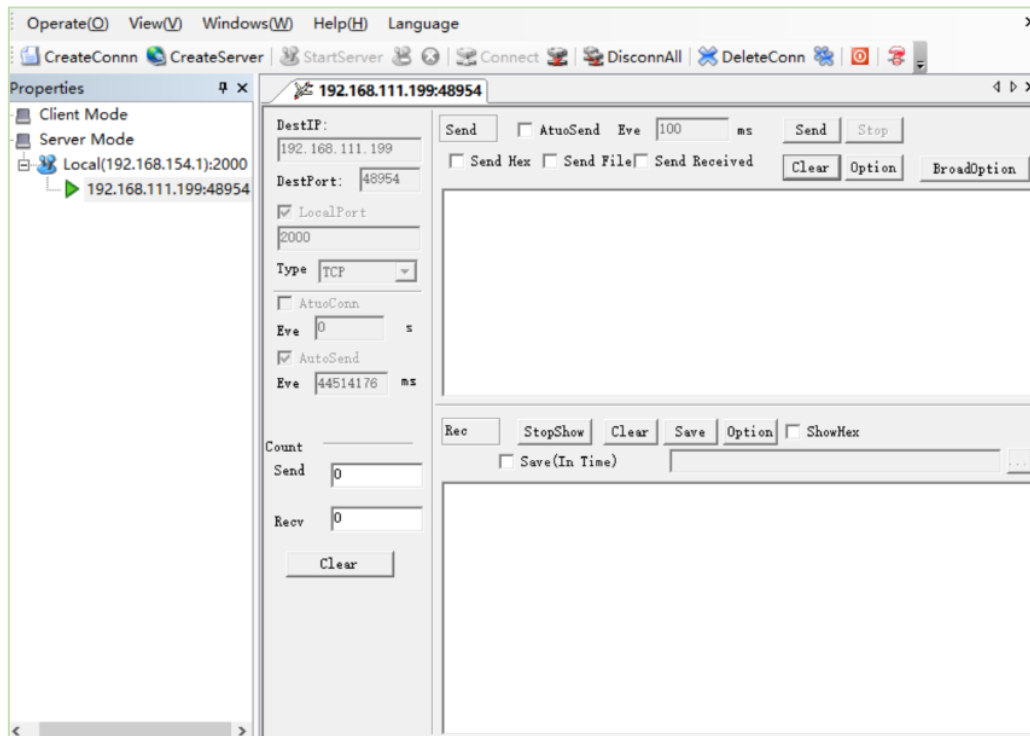
Remote Port: 2000

Save Close

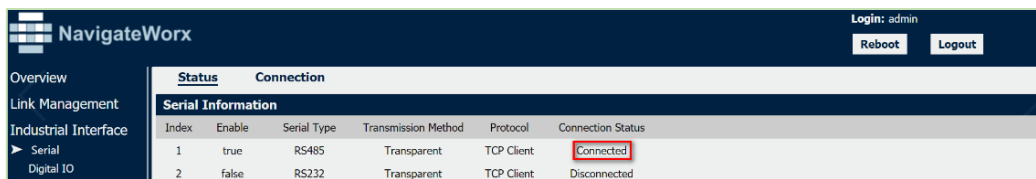
3. Click Save>Apply.

### 4.2 TCP Server Configuration

1.Run TCP Software "TCPUDPDbg" on server PC2, NR500 Pro will connect to the TCP Server automatically.



2. Go to **Industrial Interface>Serial>Status>Serial Information>Index1**, it will show the connection status.

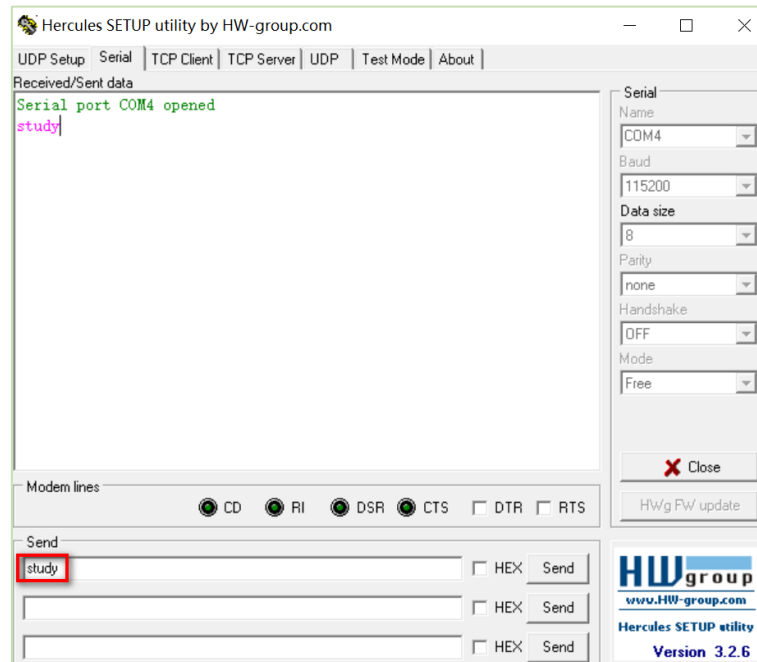


| Serial Information |        |             |                     |            |                   |
|--------------------|--------|-------------|---------------------|------------|-------------------|
| Index              | Enable | Serial Type | Transmission Method | Protocol   | Connection Status |
| 1                  | true   | RS485       | Transparent         | TCP Client | Connected         |
| 2                  | false  | RS232       | Transparent         | TCP Client | Disconnected      |

## 5. Testing

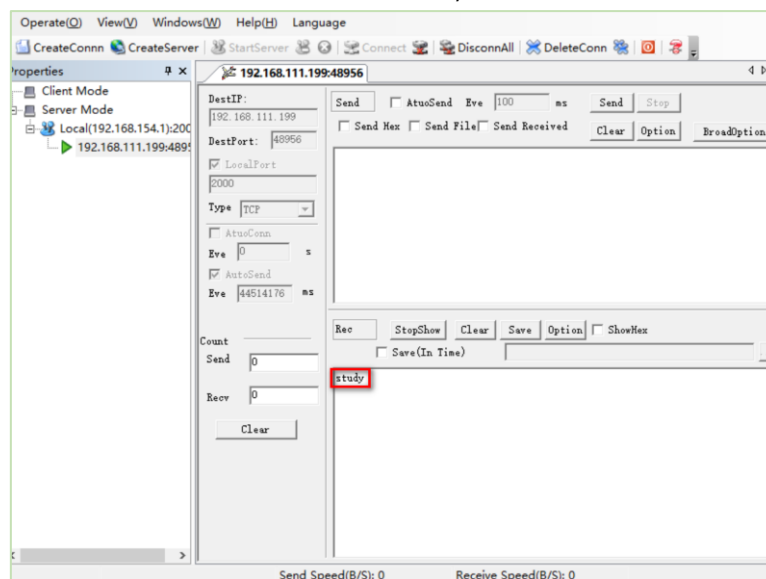
### 5.1 Test

1. Run serial software "Hercules" on PC1, send the data "study".



### 5.2 Test Result

1. TCP Server side can receive the data "study"



2. Test successfully.