

1 Port RS232 Serial over IP Ethernet Device Server



Actual product may vary from photos

User Manual

SKU#: NETRS2321P

For the latest information and specifications visit
www.startech.com/NETRS2321P

Compliance Statements

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by StarTech.com could void the user's authority to operate the equipment.

Industry Canada Statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [A] est conforme à la norme NMB-003 du Canada.

CAN ICES-3 (A)/NMB-3(A)

Use of Trademarks, Registered Trademarks, and other Protected Names and Symbols

This manual may make reference to trademarks, registered trademarks, and other protected names and/or symbols of third-party companies not related in any way to StarTech.com. Where they occur these references are for illustrative purposes only and do not represent an endorsement of a product or service by StarTech.com, or an endorsement of the product(s) to which this manual applies by the third-party company in question. Regardless of any direct acknowledgement elsewhere in the body of this document, StarTech.com hereby acknowledges that all trademarks, registered trademarks, service marks, and other protected names and/or symbols contained in this manual and related documents are the property of their respective holders.

Safety Statements

Safety Measures

- Wiring terminations should not be made with the product and/or electric lines under power.
- Cables (including power and charging cables) should be placed and routed to avoid creating electric, tripping or safety hazards.

Mesures de sécurité

- Les terminaisons de câblage ne doivent pas être effectuées lorsque le produit et/ou les câbles électriques sont sous tension.
- Les câbles (y compris les câbles d'alimentation et de chargement) doivent être placés et acheminés de façon à éviter tout risque électrique, de chute ou de sécurité

安全対策

- 電源が入っている状態の製品または電線の終端処理を行わないでください。
- ケーブル(電源ケーブルと充電ケーブルを含む)は、適切な配置と引き回しを行い、電気障害やつまづきの危険性など、安全上のリスクを回避するようにしてください。

Misure di sicurezza

- I terminali dei fili elettrici non devono essere realizzate con il prodotto e/o le linee elettriche sotto tensione.
- I cavi (inclusi i cavi di alimentazione e di ricarica) devono essere posizionati e stesi in modo da evitare pericoli di inciampo, rischi di scosse elettriche o pericoli per la sicurezza.

Säkerhetsåtgärder

- Montering av kabelavslutningar får inte göras när produkten och/eller elledningarna är strömförda.
- Kablar (inklusive elkablar och laddningskablar) ska dras och placeras på så sätt att risk för snubblingsolyckor och andra olyckor kan undvikas.

Table of Contents

Compliance Statements	1
Safety Statements	2
Product Diagram	5
Top View	5
Rear View	6
RJ45 Pin Assignment.....	7
RS-232 DB9 Pin Assignment.....	8
Product Information	9
Package Contents	9
Installation	9
DIN Rail Mounting	10
Load Default Settings/System Reset Button	10
Load Default Settings	10
System Reset.....	10
Broadcast Search.....	10
Using the Web Console	11
Accessing the Web Console.....	11
Changing/Setting a Login ID and Password.....	11
Configuring System Network Settings	12
System Status	14
Load Default Setting	14

Firmware Update.....	15
Configuring TCP Mode	16
Configuring UDP Mode	18
UART.....	20
Resetting the Device.....	23
Virtual COM Software Operation.....	23
Installing the Virtual COM Software	23
Configuration the Virtual COM Software.....	25
Setting Up COM Mapping.....	27
TCP/UDP Settings.....	29
LED Indicators.....	31

Product Diagram

Top View



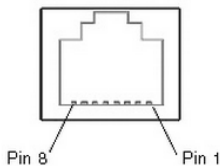
1	<i>LEDs</i>
2	<i>RS-232 DB9 Serial Port</i>
3	<i>Wall Mount Screw Hole</i>
4	<i>DIN Rail Screw Hole</i>

Rear View



1	<i>RJ45 Port</i>
2	<i>Load Default/Reset Button</i>
3	<i>DC Jack</i>

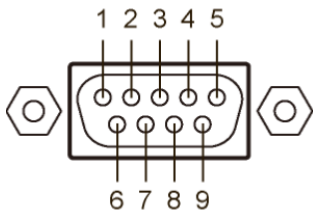
RJ45 Pin Assignment



Pin	Description
1	<i>TX+</i>
2	<i>TX-</i>
3	<i>RX+</i>
6	<i>RX-</i>

RS-232 DB9 Pin Assignment

NOTE: This serial device server performs as a DTE device.



Pin	Name	IO
1	DCD	Input
2	RD	Input
3	TD	Output
4	DTR	Output
5	GND	
6	DSR	Input
7	RTS	Output
8	CTS	Input

Product Information

Package Contents

- Serial over IP Device Server x 1
- Universal Power Adapter (NA/UK/EU/AU) x 1
- User Manual x 1
- DIN Rail Kit x 1

Installation

1. Plug in the power adapter and connect the RJ45 interface to your LAN.

NOTE: *Alternatively, you can also use a crossover cable to connect the NETRS2321P directly to your system for the initial configuration.*

2. Press and hold the load default button for more than 3 seconds and less than 10 seconds, then release it. This will return the serial device server to factory default and it will respond to the IP address 10.1.1.1.
3. Configure the PC to the same IP domain.
4. Open a web browser and connect to **http://10.1.1.1** to open the configuration interface. The default login ID will be "**admin**" and the password will be "**admin**".
5. Once logged in, you will have access to all configuration settings including the ability to change the IP address for the device server.

DIN Rail Mounting

- Attach the included DIN Rail brackets (one per side) using the provided screws to the top DIN Rail screw hole (marked in the above diagram), and clip to your DIN Rail

Load Default Settings/System Reset Button

Load Default Settings

- Press and hold this button for more than 3 seconds, then release to load the factory default settings.

IP address: 10.1.1.1

Subnet Mask: 255.0.0.0

Login ID / Password: admin

System Reset

- Press and hold this button for more than 10 seconds, then release to reboot the device (maintains configuration settings)

Broadcast Search

- The Broadcast Search function is used to locate all NETRS2321P devices that are connected to the same LAN as your computer. Since the Broadcast Search function searches by MAC address and not IP address, all NETRS2321P connected to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

NOTE: *Broadcast packet packets are not passed through a router. The VCom utility can only be used to monitor devices in the same segment of the LAN.*

Using the Web Console

Accessing the Web Console

1. Navigate to an web page and enter the IP Address on the NETRS2321P device in the Address Bar and press Enter (default IP Address = 10.1.1.1).
2. The Login screen will appear.



STE100A USER LOG IN

Site: 10.1.1.1

ID: admin

Password: ●●●●●

OK

Login in Screen

3. Enter an ID and Password and press the OK button (default ID = admin and password = admin).
4. The Home screen will appear.

Changing/Setting a Login ID and Password

1. From the Home screen, click the Administrator link on the left-hand side of the screen.
2. From the drop down menu select the Authentication link.
3. The Authentication screen will appear.

Setting	Value
Username	<input type="text" value="admin"/> max:15
Password	<input type="password" value="••••"/> max:15
Confirm	<input type="password" value="••••"/>
<input type="button" value="Update"/>	

Authentication Screen

4. Enter a new login ID and Password (The ID and Password must be a maximum of 15 characters and alphanumeric).
5. Press Update button to store the data.
6. Reset the device to for the new ID and Password to take effect.

Configuring System Network Settings

1. From the Home screen, click the Administrator link on the left-hand side of the screen.
2. From the drop down menu select the System IP link.
3. The System IP screen will appear.

Setting	Value
IP Address	<input type="text" value="10"/> . <input type="text" value="1"/> . <input type="text" value="1"/> . <input type="text" value="1"/>
Subnet Mask	<input type="text" value="255"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/>
Gateway	<input type="text" value="10"/> . <input type="text" value="1"/> . <input type="text" value="1"/> . <input type="text" value="254"/>
DNS	<input type="text" value="10"/> . <input type="text" value="1"/> . <input type="text" value="1"/> . <input type="text" value="254"/>
IP Configure	<input checked="" type="radio"/> Static <input type="radio"/> DHCP
VLAN Tag	<input checked="" type="radio"/> Disable <input type="radio"/> Enable : VLAN ID <input type="text" value="0"/>
<input type="button" value="Update"/>	

System IP Screen

- On the System IP screen, you can adjust the network configuration settings by selecting the Static radio button on the IP Configure field,
- If the IP Configure field is set to DHCP mode, all other settings will be ignored, and the IP address will be assigned by DHCP server after resetting the device.
- Press the Update button to apply the network changes and reset the default for the changes to take place.

System Status

1. From the Home screen, click the Administrator link on the left-hand side of the screen.
2. From the drop down menu select the System Settings link.
3. The System Settings screen will appear.

Item	Value
Kernel Version	V1.1.2 2010/10/07
MAC Address	00:02:AB:00:00:02
Target Name	<input type="text" value="STE100A"/> max:12 <input type="button" value="Update"/>

System Settings Screen

4. On the System Settings screen, you can display the system Kernel firmware version and MAC Address.
5. You can also adjust the device alias (Target Name) and Idle timeout settings. The Target Name field allows a Max of 12 alphanumeric characters, including underscore, and dash.
6. Press the Update button to store the Target Name data, and reset the device for the changes to take effect.

Load Default Setting

1. From the Home screen, click the Administrator link on the left-hand side of the screen.
2. From the drop down menu select the Load Default Settings link.
3. The Load Default Settings screen will appear.

4. On the Load Default Settings screen, you can load and store the factory default settings into EEPROM.

NOTE: *Network settings and MAC address will not be changed.*

5. Press Load button to load default settings.
6. Reset the device for the changes to take effect.

Firmware Update

On this page, you can update the firmware via Ethernet.

Note: *Pressing the 'Load' button will immediately erase the flash with no further warning*

1. From the Home screen, click the Administrator link on the left-hand side of the screen.
2. From the drop down menu select the Load Default Settings link.
3. The Load Default Settings screen will appear.
 1. Press the Load button to erase flash.
 2. Wait for erase process to complete.
 3. There are two methods to do the Firmware Update action (TFTP or Web):

Note: *Please avoid loss of network connection, power or other interruption during the firmware upgrade procedure.*

• **Web:**

- Please type in or browse the target image file in the input

field, and then press “update” button to continue.

• **TFTP:**

- Use Windows Command Prompt window to run the tftp client program.
- Syntax: `tftp -i 10.1.1.1 put FILE_DIRECTORY\FILENAME.bin`
- The firmware update should take about 45 seconds to complete.
- If the update process somehow goes wrong (like power failure), please connect to `http://10.1.1.1` to try and restart the process (you may have to reset the device first).

Configuring TCP Mode

Note: *When TCP mode is set to Server or Client mode, the UDP mode will be disabled automatically. When UDP mode is enabled, the TCP mode will be disabled automatically.*

1. From the Home screen, click the TCP Mode link on the left-hand side of the screen.
2. The TCP Mode screen will appear.

Item	Setting
Telnet Server/Client	<input checked="" type="radio"/> Server <input type="radio"/> Client <input type="radio"/> Disable
Reverse Telnet	<input type="radio"/> On <input checked="" type="radio"/> Off
CLI Mode	<input type="checkbox"/> Enable
Data Port Number	<input type="text" value="23"/>
Control Protocol	<input type="radio"/> RFC2217 <input checked="" type="radio"/> Port Number : <input type="text" value="6000"/>
Remote Server IP Address	<input checked="" type="radio"/> IP <input type="text" value="210"/> . <input type="text" value="200"/> . <input type="text" value="181"/> . <input type="text" value="102"/> <input type="radio"/> Domain Name <input type="text" value="0"/>
Client mode inactive timeout	<input type="text" value="20"/> minute (1~99,0=Disable)
Server mode protect timeout	<input type="text" value="60"/> minute (1~98,0=Disable,99=Can't replace)
<input type="button" value="Update"/>	

TCP Mode Screen

3. The following settings can be configured:
- **Telnet Server/Client:** Set the device to be a **Telnet Server**. In server mode, the Telnet port listens and waits for a host or other client to make a connection. In this case the Ethernet connected device is the client.
 - **Reverse Telnet:** Reverse Telnet works the same as Telnet Server mode. The Telnet port is listens for a connection after booting up. If you encounter errors when using some Telnet clients, such as the Microsoft interpretation of Telnet for Windows XP you can try the connection using Reverse Telnet mode.
 - **CLI Mode:** The Command Line Interface (CLI) allows user to configure and control NETRS2321P directly through the UART interface.

Note: CLI mode is only available when NETRS2321P is in TCP Server Mode.

- **Port Number:** This assigns the TCP server port number that the server will listen on for connecting clients (Only for TCP Server Mode).
 - **Remote Server IP Address:** When in Client mode, this device will automatically try to connect to the remote TCP server with this IP address.
 - **Client Mode Inactive Timeout:** When in Client mode, this parameter sets the time that device will maintain a connection until timeout, if there is no data transfer over the connection. After disconnecting, the device will try to build a new connection again immediately.
 - **Server Mode Protect Timeout:** When in Server mode, this parameter sets the time that device will maintain a connection until timeout, if there is no data transfer over the connection. Once disconnected, only a Client can initiate a new connection to the Server.
4. Once you have completed making changes, press the Update button to store the data.
 5. Reset the device for the changes to take effect.

Configuring UDP Mode

1. From the Home screen, click the UDP Mode link on the left-hand side of the screen.
2. The UDP Mode screen will appear.

Item	Value	
Mode	<input type="radio"/> Listen <input type="radio"/> Normal <input checked="" type="radio"/> Disable	
Local Port	21	
	IP	Port
	<input checked="" type="radio"/> 0 . 0 . 0 . 0 IP <input type="radio"/> 0 Domain Name	0
	<input checked="" type="radio"/> 0 . 0 . 0 . 0 IP <input type="radio"/> 0 Domain Name	0
	<input checked="" type="radio"/> 0 . 0 . 0 . 0 IP <input type="radio"/> 0 Domain Name	0
	<input checked="" type="radio"/> 0 . 0 . 0 . 0 IP <input type="radio"/> 0 Domain Name	0

UDP Mode Screen

3. The following settings can be configured:

- **Mode:**

- **Disabled:** When UDP mode is enabled, TCP mode will be disabled automatically. In UDP mode, the Local Port will be assigned to this device. You can list the remote connection IP and Port for up to 10 remote devices.
- **Listen:** When in UDP Listen mode, it can only receive remote UDP data.
- **Normal:** When in UDP Normal mode, it can both receive and send UDP data to remote units.

- **Local Port:** Assign the UDP port that this unit listens on.

- **Remote Address:** The remote address table allows users to set several remote site IP addresses and ports. When sending data, the device will send UDP data to the IP addresses in the table.
4. Once you have completed making changes, press the Update button to store the data.
 5. Reset the device for the changes to take effect.

UART

UART or Universal Asynchronous Receiver Transmitter refers to the RS-232 serial port of the device. All of the port settings can be modified from the UDP screen.

1. From the Home screen, click the UART link on the left-hand side of the screen.
2. The UART Mode screen will appear.

Item	Setting
Baudrate	57600 ▾
Character Bits	8 ▾
Parity Type	none ▾
Stop Bit	1 ▾
Hardware Flow Control	none ▾
Uart Memory Overflow count	2821M,340K,319Byte
Uart FIFO Overflow count	0times
Delimiter	<input type="checkbox"/> Character 1: 00, <input type="checkbox"/> Character 2: FF <input type="checkbox"/> Silent time: 5 (1~255)*200ms <input type="checkbox"/> Drop Character

UART Screen

- The following settings can be configured:
 - Baud Rate:** Set the baud rate of UART interface. The NETRS2321P supports 110, 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 and 230400bps baud rates.
 - Character Bits:** Set the number of data length of UART interface. The NETRS2321P supports character bits of 5, 6, 7, or 8 bits.

- **Parity Type:** Set the parity of UART interface. The NETRS2321P supports parity settings of Odd, Even, Space, Mark or none.
 - **Stop Bit:** Set the stop bit length of UART interface. The NETRS2321P supports 1, 1.5 or 2 stop bits.
 - **Hardware Flow Control:** Set the flow control mode of UART interface as enabled or as none.
 - **UART Memory Overflow Count:** Shows the number of overflow bytes in network buffer.
 - **UART FIFO Overflow Count:** Shows the number of overflows counted in the UART RX buffer.
 - **Delimiter:** This sets the Character 1 and/or Character 2 to be used as the delimiter. When sending data from serial to TCP the data is first stored in the cache. When set, not until the value of character 1 or 2 is received from the serial side is the data released from the cache and sent to TCP.
 - **Silent time:** If there is no data sent or received for the number of milliseconds specified the connection is dropped.
 - **Drop Character:** drops the delimiter character of the serial port when sending to TCP, (the receiver doesn't display the character).
4. Once you have completed making changes, press the Update button to store the data.
 5. Reset the device for the changes to take effect.

Resetting the Device

1. From the Home screen, click the Restart link on the left-hand side of the screen.
2. The UART Mode screen will appear.
3. Press the Reset button to rest the NETRS2321P.

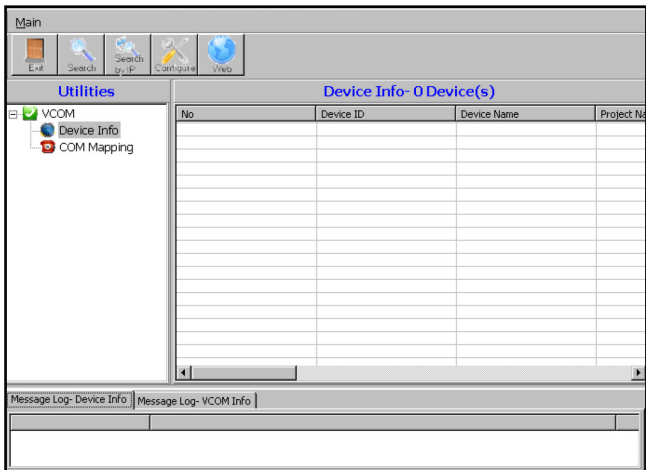
Virtual COM Software Operation

The Virtual Com application lets you install and configure your NETRS2321P easily over the network. Five function groups are provided to ease the installation process, allow COM mapping, and provide monitoring and IP location server functions.

Installing the Virtual COM Software

1. Using a web browser, navigate to www.startech.com/NETRS2321P.
2. On the Product page, click the Support tab located in the middle of the screen.
3. In the Drivers and Downloads section, click on the driver link that corresponds with the operating system running on the host computer.
4. When the download is complete, right-click the zip folder and select Extract All.
5. In the list of extracted files, right-click the vcomsetup.exe file and select Run as Administrator and follow the on-screen prompts to complete the installation.

6. When the VCOM software has been downloaded, navigate to the Start Menu or Desktop and select VCOM.
7. The Main screen will appear.

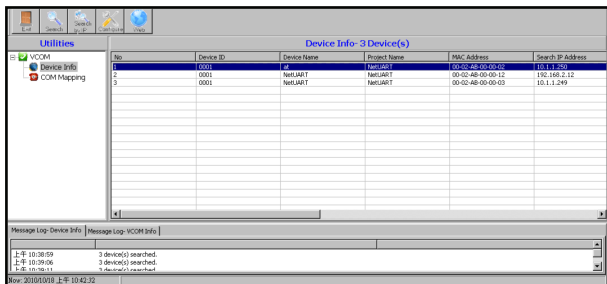


Main Screen

8. Select the Search button to locate all Devices that are connected to the same LAN as your computer. Since the Search function searches by MAC address and not IP address, all connected devices to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

Configuration the Virtual COM Software

1. From the Main screen, select the device you would like to adjust and click the Configure button.



Main Screen

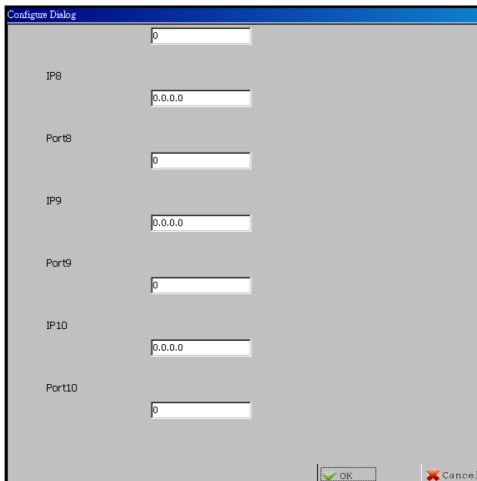
2. An Authorization screen will appear, you will be prompted to enter your User ID and Password (Default: **admin** / **admin**).

Setting	Value
Username	<input type="text" value="admin"/> max:15
Password	<input type="password" value="*****"/> max:15
Confirm	<input type="password" value="*****"/>
<input type="button" value="Update"/>	

Authorization Screen

3. Click the Update button.

4. The Configure Dialog screen will appear.

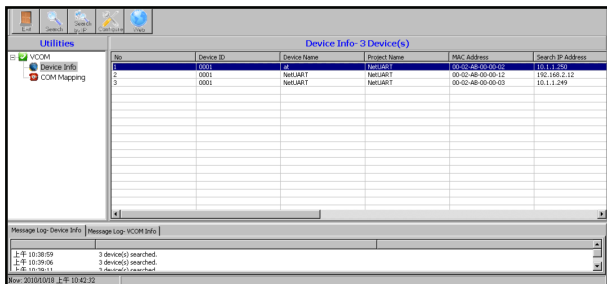


Configure Dialog Screen

5. The port IP and Port number can be configured.
6. Select the OK button to save changes.

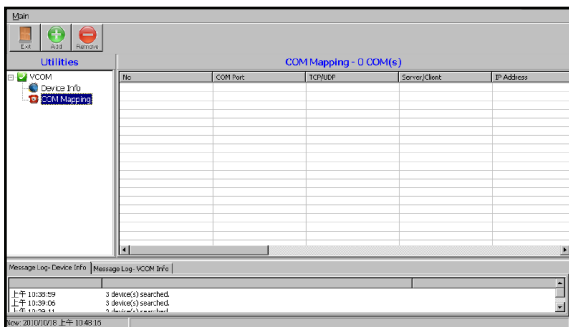
Setting Up COM Mapping

1. From the Main screen, select the Com Mapping link from the left-side of the screen.



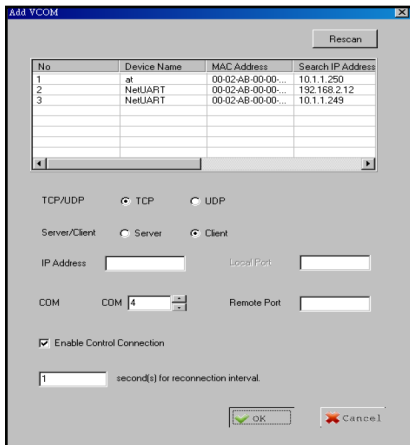
Main Screen

2. The COM Mapping screen will appear.



COM Mapping Screen

3. Click the Add button.
4. The Add VCON screen will appear.



Add VCON Screen

5. Fill out the following fields to add a VCON:
 - **TCP/UDP:** Choose a network protocol.
 - **Server/Client:** Choose either Server or Client.
 - **IP Address:** Enter the IP Address.
 - **Local Port:** Enter a local port number.
 - **COM:** Enter a Virtual COM port number.
 - **Remote Port:** Enter a remote port number.
6. Click OK to create the COM Mapping

TCP/UDP Settings

Depending on the protocol you are using, the options below will enable/disable automatically as applicable.

Server/Client (TCP Mode Only)

- Set the device to be a **Telnet Server**. In server mode, the Telnet port listens and waits for a host or other client to make a connection. In this case the Ethernet connected device is the client.
- Set the device to be a **Telnet Client**. In the case the Ethernet connected device is the Telnet server or other NETRS2321P in server mode.

IP Address

- Depending on your selections above, there are one of three scenarios:
 - TCP Server - Disabled
 - TCP Client - Remote Server Address
 - UDP - Remote Target Address

Local Port

- Assigns the local port for the device to listen on TCP Server – Assigns the TCP server port number that the server will listen on TCP Client – Disabled UDP – Assign the UDP port that this unit listens on.

COM

- Assign the desired virtual COM port number

Remote Port

- TCP Server – Disabled
- TCP Client – Assign the remote TCP port you wish to communicate on.
- UDP – Assign the remote UDP port you wish to communicate on

Enable Control Connection (TCP Server or Client Only)

- Enables/Disables control of the serial device on a remote network. Using the IP address and port number allows the user to gain control of the receiver from a remote location when this is enabled.

Second(s) for Reconnection Interval

- Dictates the duration that the software will automatically attempt to reconnect the COM port to the serial port on the serial device server, for the purpose of keeping the connection alive.

LED Indicators

LED Name	Status	Description
Ready	On	Power is on and the device is ready.
	Off	Power is off or the device is not ready.
Link/Act	On	UTP is link.
	Blinking	UTP Tx/Rx is activity.
	Off	UTP is not link.
Tx/Rx	Blinking	RS-232 port is transmitting or receiving data.
	Off	No data is transmitting or receiving in RS-232 port.

Warranty Information

This product is backed by a two-year warranty.

For further information on product warranty terms and conditions, please refer to www.startech.com/warranty.

Limitation of Liability

In no event shall the liability of StarTech.com Ltd. and StarTech.com USA LLP (or their officers, directors, employees or agents) for any damages (whether direct or indirect, special, punitive, incidental, consequential, or otherwise), loss of profits, loss of business, or any pecuniary loss, arising out of or related to the use of the product exceed the actual price paid for the product.

Some states do not allow the exclusion or limitation of incidental or consequential damages. If such laws apply, the limitations or exclusions contained in this statement may not apply to you.

Hard-to-find made easy. At StarTech.com, that isn't a slogan. It's a promise.

StarTech.com is your one-stop source for every connectivity part you need. From the latest technology to legacy products — and all the parts that bridge the old and new — we can help you find the parts that connect your solutions.

We make it easy to locate the parts, and we quickly deliver them wherever they need to go. Just talk to one of our tech advisors or visit our website. You'll be connected to the products you need in no time.

Visit www.startech.com for complete information on all StarTech.com products and to access exclusive resources and time-saving tools.

StarTech.com is an ISO 9001 Registered manufacturer of connectivity and technology parts. StarTech.com was founded in 1985 and has operations in the United States, Canada, the United Kingdom and Taiwan servicing a worldwide market.

Reviews

Share your experiences using StarTech.com products, including product applications and setup, what you love about the products, and areas for improvement.

StarTech.com Ltd.

45 Artisans Cres.
London, Ontario
N5V 5E9
Canada

FR: startech.com/fr
DE: startech.com/de

StarTech.com LLP

2500 Creekside Pkwy.
Lockbourne, Ohio
43137
U.S.A.

ES: startech.com/es
NL: startech.com/nl

StarTech.com Ltd.

Unit B, Pinnacle
15 Gowerton Rd.,
Brackmills
Northampton
NN4 7BW
United Kingdom

IT: startech.com/it
JP: startech.com/jp