

Virtual Serial COM Configure Utility

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1. Overview

The GC-ATC-2004 is a 4 Port RS232/RS422/RS485 to TCP/IP converter integrated with a robust operating system and network management features designed for industrial equipment to be accessed and controlled via Intranet or Internet. By integrating RTOS (Real Time Operating System) and complete TCP/IP protocol stack capability, GC-ATC-2004 provides a robust and high performance system to make your device easy to connect to a Network.

The GC-ATC-2004 Web Configurator is a breeze to operate and totally independent of the operating system platform you use.

The Virtual Serial COM (VSC) utility allows you to easily configure the GC-ATC-2004 from a web browser. VSC is also used to setup a Virtual COM port on the host PC.

This manual reflects the operation of Virtual Serial COM software VSPort version 2.5.7.

1.1 Installation

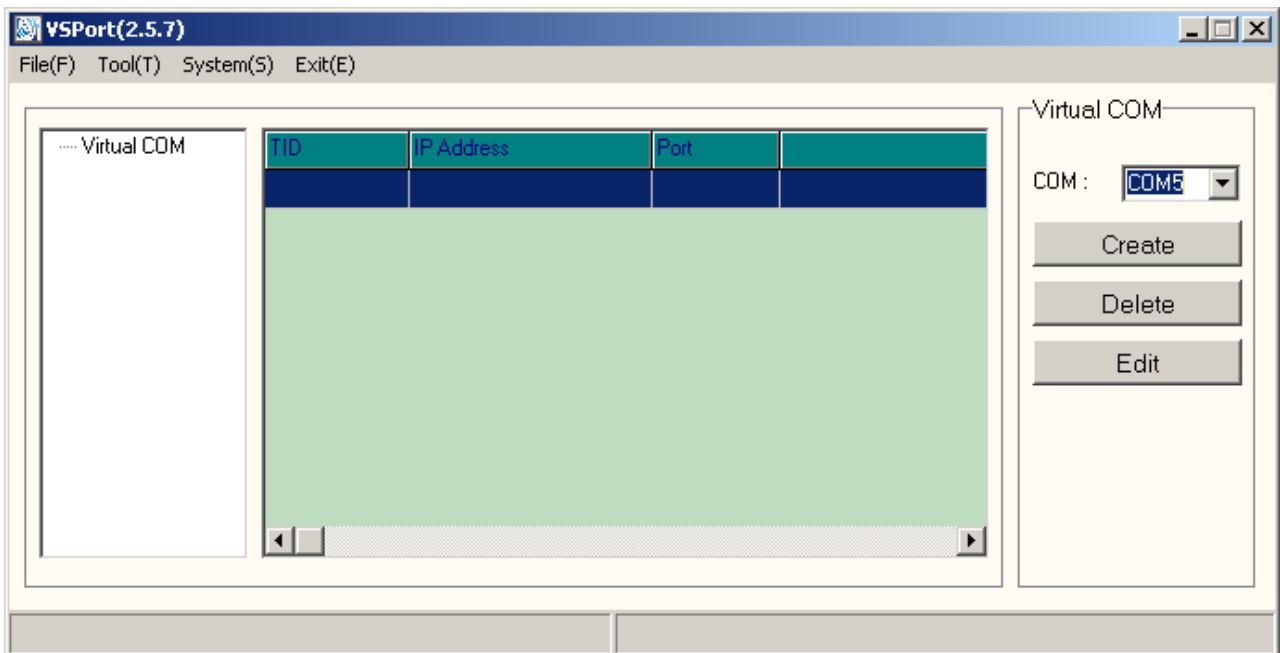
Installation of the Virtual Serial COM (VSC) utility is very simple. Locate the ATC2004 folder on the CD. Open the VCOM_2.5.7 folder and double-click on **Vir_COM_2.5.7_1114-setup.exe**. Follow the installation instructions. The software will install a **VSPort.exe** icon on the desktop.

If you do not install the utility, you can use your web browser to configure the device. The default IP address is 192.168.0.125. Your PC must be configured to the same subnet to see the default IP address.

1.2 Starting VSC

Locate the **VSPort.exe** icon on you desktop and double-click it or go to Programs and locate **VirCOM**. Select **VSPort.exe** from the list.

The following screen will appear. This program will allow you to configure the GC-ATC-2004 and create a virtual serial COM port.



2. IP Search

From the menu bar select **Tool** and click on **IP Search**. IP Search will allow you to search for devices and configure them.

When the search screen appears, click the **Refresh** button. The ATC device should appear in the window.

Click on a selected IP Address (or any part of the field) and the IP address, subnet mask, gateway address and MAC address will be copied to the entry fields.

The screenshot shows a window titled "SearchFrm" with a table of device information. The table has columns: Device Name, Device Location, Device Model, IP Address, Submask, and Gate Way. The first row shows an ATC2004 device with IP Address 192.168.0.125, Submask 255.255.255.0, and Gate Way 192.168.0.254. Below the table, there is a text area with the message "Click on the IP Address" and "These fields will be updated." Below this, there are input fields for IP Address, Sub Mask, Gate Way, and Mac, along with buttons for Refresh, Exit, and Alter. The IP Address field is highlighted with a red box and a red arrow pointing to it from the text "Click on the IP Address".

	Device Name	Device Location	Device Model	IP Address	Submask	Gate Way
1	ATC2004		ATC2004 4 Port TCP/I	192.168.0.125	255.255.255.0	192.168.0.254

Click on the IP Address

These fields will be updated.

Intel(R) PRO/Wireless 3945ABG Network Connection - Packet Scheduler Miniport

Active Route :
IP Address : 172.20.206.172
Sub Mask : 255.255.255.0
Gate Way : 172.20.206.252

IP Address : 192 . 168 . 0 . 125
Sub Mask : 255 . 255 . 255 . 0
Gate Way : 192 . 168 . 0 . 254
Mac : 00 0E E3 01 3E AE

Refresh
Exit
Alter

Enter a new IP Address, Subnet Mask and Gateway. Change the MAC Address *only* if required by your network administrator. Click the **Alter** button to write the changes to memory.

The screenshot shows a small dialog box titled "IP-Search" with a close button (X). The message inside says "Success ! Please Refresh Again After 5 Seconds !". There is an "OK" button at the bottom.

IP-Search

Success ! Please Refresh Again After 5 Seconds !

OK

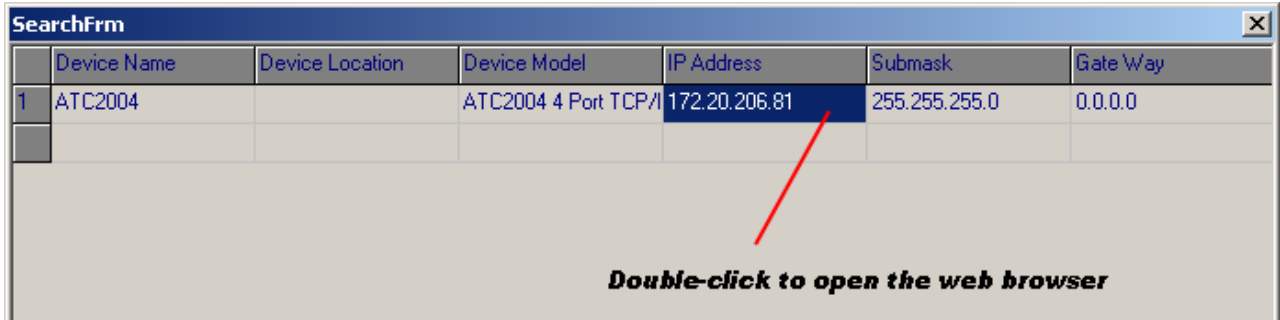
Click OK to continue. To view the changes, click the **Refresh** button again.

Note: The IP address and subnet mask should be compatible with your PC settings.

2.1 Web Configuration

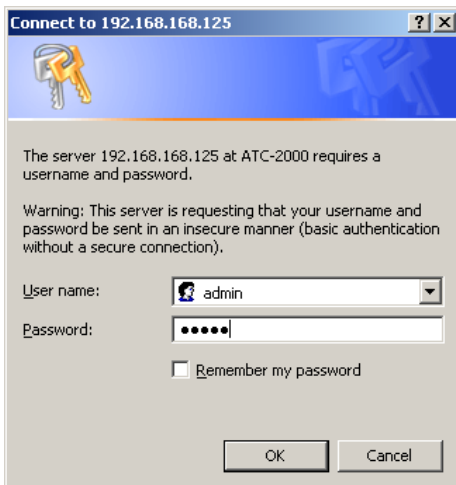
The GC-ATC-2004 contains a web server running the configuration utility. This is a very simple and quick way to configure the GC-ATC-2004.

To start the web configuration manager, double-click on the IP Address of the device.



You can double-click on any column item to start the web manager.

The *User Log In* screen will appear.



The default ID is **admin** and the default password is **admin**. Click OK to continue. The Network Setting page will open first, with the main menu shown on the left side.

2.1.1 Main Menu

Use the main menu to select different setup pages.

ATC ADVANCED TECHNOLOGY

ATC-2004

Main Menu

Basic Setup

- [Network Setting](#)
- [Operation Mode](#)
- [Serial Type](#)
- [Dynamic DNS](#)

Management

- [Device Admin](#)
- [System Status](#)
- [Backup & Restore](#)
- [Upgrade Firmware](#)
- [Ping](#)

Network Setting (Fixed IP)

TYPE: **STATIC IP**

IP Address	172	.	20	.	206	.	81
Subnet mask	255	.	255	.	255	.	0
Gateway	0	.	0	.	0	.	0
Primary DNS	168	.	95	.	1	.	1

APPLY CANCEL BACK

2.1.2 Network Setting

This page is used to set the network parameters. The ATC-2004 supports three IP connection types: Static IP, DHCP Client, and PPPoE. These types are listed in the drop-down menu for the Network Setting page. Each setup screen will have different features depending on the kind of IP connection you select. The default setting is Static IP.

2.1.2.1 Static IP

The default setup is Static IP, where the IP Address is permanently assigned to this unit. The Static IP setup is shown below.

Network Setting (Fixed IP)	
TYPE: STATIC IP	
IP Address	172 . 20 . 206 . 175
Subnet mask	255 . 255 . 255 . 0
Gateway	0 . 0 . 0 . 0
Primary DNS	168 . 95 . 1 . 1
APPLY CANCEL BACK	

Set the IP Address, Subnet Mask, Gateway and Primary DNS address. For local networks, the Gateway address is not needed.

If you change any of the settings, use the Apply button to keep your changes.

2.1.2.2 DHCP Client

If there is a DHCP Server in your network environment or you subscribe to a cable service from your ISP, you can set the IP configuration to DHCP to get a dynamic IP address. The Host Name is optional, depending on your DHCP Server setting.

Network Setting (DHCP Client)	
TYPE: DHCP CLIENT	
Host Name (optional)	ATC2004
APPLY CANCEL BACK	

2.1.2.3 PPPoE

Network Setting (PPPoE)	
TYPE: PPPoE	
User Name	<input type="text"/> (1 - 47)
Password	<input type="password"/> (1 - 35)
Service Name (optional)	<input type="text"/> (1 - 47)
Close Connection when Idle Time Over	<input type="text" value="0"/> (seconds)
PPPoE with Fixed IP Address	DISABLE <input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>
APPLY CANCEL BACK	

2.1.3 Operation Mode

The ATC-2004 supports four operation modes: TCP Server, TCP Client, UDP Server, and UDP Client. The modes are listed in the drop-down box in the Operation Mode page. The default setting is TCP Server.

2.1.3.1 TCP Server

Operation Mode Setup (TCP Server)	
MODE: TCP SERVER	
PORT 1	
Local Listen Port Number	<input type="text" value="50000"/> (0 - 65535)
Close Connection When Remote Idle	<input type="text" value="30"/> (seconds)
Max Connection	<input type="text" value="1"/>
Access Password	<input type="password"/> (maxlen 31)
Keep Alive Check	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
APPLY CANCEL BACK	

The Local Listen Port is the data access port for the device. Data coming in and going out will use this port number. Set each port to a different port number since there are four ports available.

Set the *Close Connection When Remote Idle* time to 0 to keep the connection open.

2.1.3.2 TCP Client

Operation Mode Setup (TCP Client)

MODE: TCP CLIENT

PORT 1			
Destination IP Address 1	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 2	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 3	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 4	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
TCP Connect On	<input type="radio"/> Startup <input checked="" type="radio"/> Any Character		
Keep Alive Check	<input checked="" type="radio"/> Disable <input type="radio"/> Enable		

2.1.3.3 UDP Server/Client

With UDP, computer applications can send messages, in this case referred to as datagrams, to other hosts on an Internet Protocol (IP) network without requiring prior communications to set up special transmission channels or data paths. UDP is sometimes called the Universal Datagram Protocol.

UDP uses a simple transmission model without implicit hand-shaking dialogues for guaranteeing reliability, ordering, or data integrity. Thus, UDP provides an unreliable service and datagrams may arrive out of order, appear duplicated, or go missing without notice. UDP assumes that error checking and correction is either not necessary or performed in the application, avoiding the overhead of such processing at the network interface level. Time-sensitive applications often use UDP because dropping packets is preferable to waiting for delayed packets, which may not be an option in a real-time system.

UDP applications use datagram sockets to establish host-to-host communications. Sockets bind the application to service ports that function as the endpoints of data transmission. A port is a 16 bit integer value, allowing for port numbers between 0 and 65,535. Port 0 is reserved, but is a permissible source port value if the sending process does not expect messages in response.

Ports 1 through 1023 (hexadecimal 0x3FF) are named "well-known" ports and on Unix-like operating systems, binding to one of these ports requires superuser (root) access.

Ports 1024 through 49,151 (0xBFFF) are the registered ports.

Ports 49,152 through 65,535 (0xFFFF) are used as temporary ports primarily by clients when communicating to servers.

Operation Mode Setup (UDP Server)

MODE: UDP SERVER ▼

PORT 1			
Destination IP Address 1	<input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 2	<input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 3	<input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 4	<input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Local Listen Port	<input type="text" value="50000"/> (0 - 65535)		

APPLY

CANCEL

BACK

There are four Remote Address fields available in UDP Client mode.

Operation Mode Setup (UDP Client)

MODE: UDP CLIENT ▼

PORT 1			
Destination IP Address 1	<input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 2	<input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 3	<input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Destination IP Address 4	<input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/> <input type="text" value="."/> <input type="text" value="0"/>	Port	<input type="text" value="50000"/> (0 - 65535)
Local Listen Port	<input type="text" value="50000"/> (0 - 65535)		

APPLY

CANCEL

BACK

2.1.4 Serial Type

The Serial Port Setup is used to configure the serial port parameters. The ATC-2004 supports three serial types: RS232, RS422 and RS485. These options are listed in the drop down menu for each port. The default setting is RS232. There is a setup window for each serial port.

A Delimiter character will empty the buffer when the character is received. Normally, characters are automatically buffered in and out.

Serial Port 1 Setup	
Serial Type	RS232
Baud Rate	19200 0 (User Defined)
Data Bits	8
Parity Check	None
Stop Bits	1
Flow Control	None
Force Packet Transmit Time	0 (0 - 65535)ms
Force Packet Transmit Length	0 (0 - 65535)bytes
Delimiter 1	0x00 (HEX) <input type="radio"/> Enable <input checked="" type="radio"/> Disable
Delimiter 2	0x00 (HEX) <input type="radio"/> Enable <input checked="" type="radio"/> Disable

APPLY CANCEL BACK

2.1.5 Dynamic DNS

The DDNS function is normally disabled. The *Dyndns* option must have a DNS service available. The TZO feature is not supported at this time.

DDNS Setup	
DDNS Services: Dyndns	
Username:	<input type="text"/> (maximum 31)
Password:	<input type="password"/> (maximum 31)
Device DNS Name:	<input type="text"/> (ex. hostname.dyndns.org)
Registry IP Address :	192.168.168.125
Status :	DDNS function is disabled
APPLY CANCEL BACK	

2.1.6 Device Administration Setting

You can block the device from responding to HTTP port 80 by selecting BLOCK.

Set the Device Management IP Address to an address that is on your system subnet. Use this in case you forget the IP address.

You can block a PING request by selecting BLOCK. The MAC address should *only* be changed under the direction of your IT Administrator.

Click the *Factory Default* button to reset the unit to factory settings. Click the *Reboot* button to restart the GC-ATC-2004 without changing any parameters.

Device Administration Setting		
Block Standard Http Port (80) Management	<input checked="" type="radio"/> UNBLOCK <input type="radio"/> BLOCK	
Device Management IP Address	<input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="200"/> <input type="text" value="200"/>	APPLY
Device Hostname	<input type="text" value="ATC-2000"/>	
Device Location	<input type="text"/>	
Administrator Password	User Name <input type="text"/> Password Change <input type="password"/> Password Confirm <input type="password"/>	APPLY
Block Ping Request	<input checked="" type="radio"/> UNBLOCK <input type="radio"/> BLOCK	APPLY
MAC Address Change	<input type="text" value="00"/> <input type="text" value=":"/> <input type="text" value="00"/> <input type="text" value=":"/> <input type="text" value="00"/> <input type="text" value=":"/> <input type="text" value="00"/> <input type="text" value=":"/> <input type="text" value="00"/>	APPLY
Reset System to Factory Default	FACTORY DEFAULT	
Reboot System	REBOOT	
BACK		

2.1.7 System Status Monitor

This page shows the status of the operating unit. Information is read only.

Status Monitor	
System Status	
Product Name:	ATC2004 4 Port TCP/IP Converter
Firmware Version:	1.02.00, Jan 15 2010
System Up Time:	1970/01/01 03:10:28
Ethernet Status	
IP Configuration Mode:	STATIC IP
Operation Mode:	TCP SERVER
Connection Port:	50000
MAC Address:	00:0e:e3:01:3e:ae
IP Address:	172.20.206.175
Subnet mask:	255.255.255.0
Default Gateway:	0.0.0.0
Primary DNS:	168.95.1.1
STATUS:	Up
Serial Status	
Serial Port 1:	RS232,19200,8, none,1,No Flow Control
Serial Port 2:	RS232,19200,8, none,1,No Flow Control
Serial Port 3:	RS232,19200,8, none,1,No Flow Control
Serial Port 4:	RS232,19200,8, none,1,No Flow Control

2.1.7.1 Statistics

The lower section of the System Status screen shows transmit and receive counts for Ethernet and Serial ports.

Statistic		
Ethernet :	TX Bytes:	222081 bytes
	TX Packets:	350 packets
	RX Bytes:	1279952 bytes
	RX Packets:	11879 packets
Serial:	TX Bytes:	0 ,0 ,0 , 0
	RX Bytes:	0 ,0 ,0 , 0

2.1.8 Backup and Restore

You can copy the setup information to a PC file and restore it later.

Backup & Restore Configuration

Backup

Backup

Restore

Please select a configuration file to restore : Browse...

Restore

BACK

2.1.9 Upgrade Firmware

This function is used to upgrade the firmware when new features or fixes are added. No firmware files are available at this time.

Firmware Upgrade

Warning: Upgrade must NOT be interrupted

Please select a file to upgrade

Browse...

UPGRADE

BACK

2.1.10 Network Diagnostic (PING)

You can PING another device by entering the Destination IP address and clicking the PING button. Sent and Received packet counts are displayed. If no packets are received, the PING failed.

Networking Diagnostic (PING)

Source IP Address :	172.20.206.175		
Destination IP Address :	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Packet Number :	<input type="text" value="4"/> (1 ~ 4)		
Packet Size :	<input type="text" value="60"/> (maximum 1460 Bytes)		
Ping Result :	Sent Request:	0	
	Receive Reply:	0	

3. Virtual COM Port

A virtual COM port on your PC has the same function as a hardware serial port, as far as the serial data is concerned. The hardware port sends out serial data to a device connected to the COM port. This is usually done over a serial cable, either RS232, RS422, or RS485. A virtual COM port sends out serial data but the data is converted to Ethernet packets, and is sent out over an Ethernet connection to a GC-ATC-2000. The GC-ATC-2000 receives the Ethernet packets and converts the data back to serial. The serial data is then directed to the device connected to the serial port of the GC-ATC-2000. Essentially, you have an unlimited serial link, with the ability to connect to a serial device from anywhere in the country.

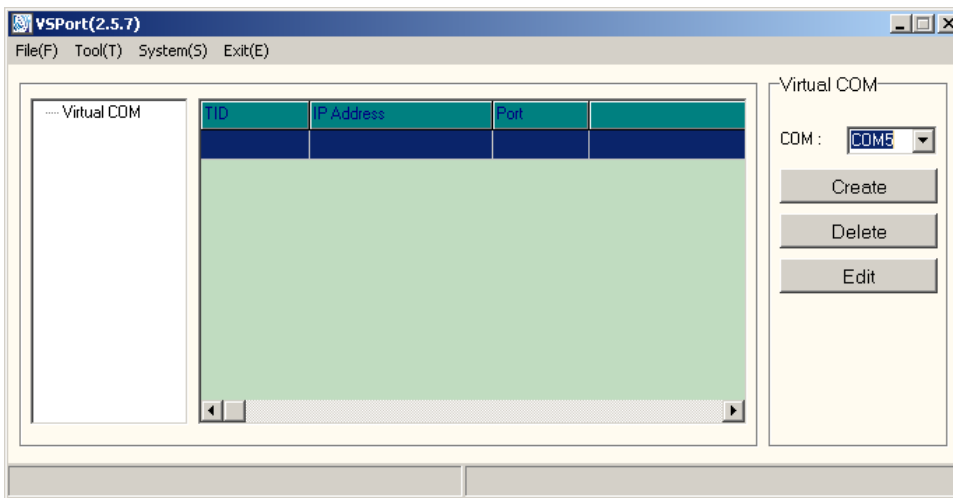
3.1 Virtual COM Port Setup

Locate the **VSPort.exe** icon on you desktop and double-click it or go to Programs and locate **VirCOM**. Select **VSPort.exe** from the list. If you were previously in the web configuration window, select EXIT to return to the Virtual COM window.

If the program doesn't start, look in the tool tray for the VirCOM start icon.

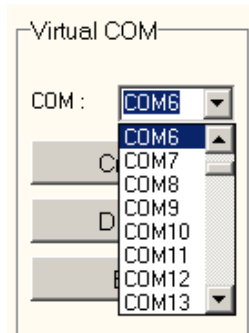
The following screen will appear. This program will allow you to configure the GC-ATC-2004 and create a virtual serial COM port.

The following screen will appear.

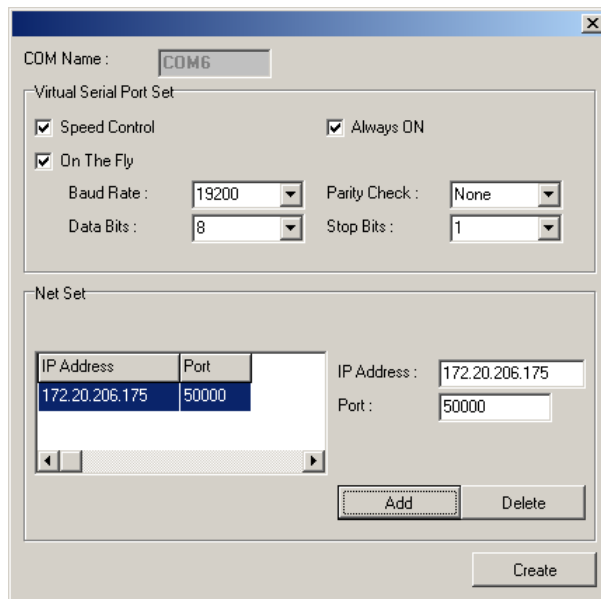


There are two parts to a Virtual COM port setup; the COM port assignment and adding the IP address and local port number of the GC-ATC-2004. In the case of the ATC-2004, you can setup four virtual COM ports.

Select the COM port from the drop down menu.



Click the **Create** button to open the COM setup dialog box.



The default port parameters are set to automatically control and detect the serial data. Uncheck the **On the fly** option to manually set the serial port parameters.

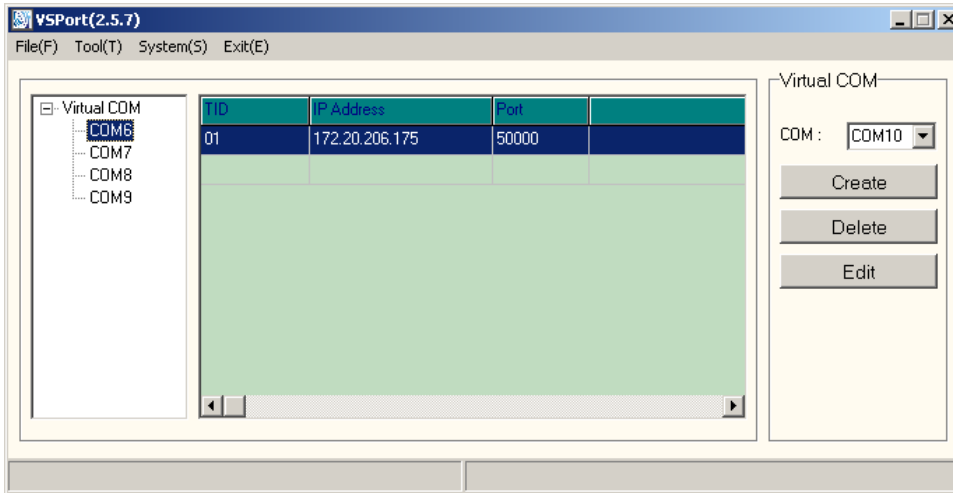
Enter the IP address of the GC-ATC-2004 in the **IP Address** field. Enter the data port number in the **Port** field. The default is **50000**.

Click the **Add** button. When the port is assigned, a pop-up box will indicate that it was successful. Click OK to continue. Click the **Create** button to complete the setup. Follow the same procedure to add additional COM ports. The ATC-2004 has four serial ports so each one can be assigned to a different local listen port. For example:

COM6, 172.20.206.175, Port 50000
COM7, 172.20.206.175, Port 50001
COM8, 172.20.206.175, Port 50002
COM9, 172.20.206.175, Port 50003

In the above example, any data directed to COM port 6 will be converted to Ethernet packets and sent to IP address 172.20.206.175, port 50000. There it will be converted back to serial data and sent out the serial port to the attached device.

Each time you create a new virtual COM port, it will be displayed in the VSPort dialog box. Use the Delete and Edit buttons to change the settings. The following window shows four virtual COM ports configured.



Close the VSPort dialog box when you are done adding and configuring virtual COM ports.

3.1.1 Testing Virtual COM Ports

The concept of a virtual COM port can sometimes be confusing. Before you start connecting the GC-ATC-2004 to a piece of new equipment, you should try the quick test described below. The test allows you to connect a GC-ATC-2004 to your PC and test the virtual Ethernet port and the hardware serial port. The software for the test, Hyper Terminal, should already be on your computer. If you do not have Hyper Terminal, you can use nearly any terminal emulation software.

Connect the GC-ATC-2004 serial port to a hardware serial port on your PC. The GC-ATC-2004 serial port cables have a Male DB9 connector so you will have to use a NULL Modem adapter between your PC port and the GC-ATC-2004 serial port.

Connect an Ethernet cable to the GC-ATC-2004 RJ45 Ethernet connector. (See note below about Ethernet connection) Apply power.

To start the test software, go to Programs/Accessories/Communications and select Hyper Terminal. The *Connection Description* dialog will open.

Virtual Port

Enter **Virtual** in the name field and click OK. The *Connect To* dialog box will open.

Go down to the *Connect using* list box, select **COM6** and click OK. (Select one of the COM ports you assigned in the Virtual COM setup section. COM6 is used here as an example.)

The *COM6 Properties* dialog box will open. Enter **19200** baud, **8** data bits, **none** parity, **1** stop bit, and **none** flow control. Click **OK** to continue.

View the status line on the bottom of the window. If you see *Auto detect*, use the *Disconnect* button to hang up the connection. Click the Properties icon (last one on the right side of toolbar). Click the *Configure* button to open the Properties dialog again. Click the Ok button. Select the *Settings* tab. Change the Emulation to VT100 and click OK.

The status line should show VT100 and 19200 8-N-1.

Click the call icon (looks like a phone) to remake a connection. The status line should show the port has been connected.

Resize the window to fit half of your screen. Move it to the top of the window. This window is the virtual COM window.

Serial Port

Now start another version of Hyper Terminal. This time enter **Serial** in the name field and click OK. The *Connect To* dialog box will open.

Go down to the *Connect using* list box and select the hardware COM port that is connected to the GC-ATC-2004. Click **OK**. In the *COMx Properties* dialog box, enter the port settings that match the settings of the GC-ATC-2004. In the example above, the settings are 19200, 8 data bits, no parity, 1 stop bit, and no flow control. Click OK to make the changes.

View the status line on the bottom of the window. If you see *Auto detect*, use the *Disconnect* button to hang up the connection. Click the Properties icon (last one on the right side of toolbar). Click the *Configure* button to open the Properties dialog again. Click the Ok button. Select the *Settings* tab. Change the Emulation to VT100 and click OK.

The status line should show VT100 and 19200 8-N-1.

Resize the window to fit half of your screen. This window is the hardware serial COM window.

TEST

Now, if everything was setup correctly, you should be able to type some characters in one window and see them appear in the other. Data is going in and out of the virtual com port via the Ethernet, and going in and out of the hardware serial port.

Ethernet Connection

If you are having trouble making a wireless connection to the GC-ATC-2004, you can use a cross-over cable to connect your PC directly to the GC-ATC-2004 Ethernet port. Make sure you change your network connections option to a Local Area Connection and set the connection up for the same subnet mask.

