

# ATC-2000WF User's Manual



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**1.0 Introduction**

ATC-2000WF Series of wireless serial device servers give you an easy way to connect your RS-232/422/485 serial devices to a WLAN. The 1-port ATC-2000WF and 2-port ATC-2002WF are ideal for environments where a LAN is not available, or where serial devices are moved frequently.

**1.1 Overview**

The RS232 connection application has been used for a long time. RS232 cable has limitations in distance. WLAN (Wireless Local Area Network) has become a worldwide standard protocol for wireless applications. There are many applications for using RS232 connection over WLAN, including POS, data capture, telemetry, PLC controllers, remote control, vending machine, industrial control, and others. The device that supports connection over WLAN is called as Wireless to Serial Server. Through out the guide, the **802.11g Wireless to Serial Server** will be referred as **the“Server”**.

ATC-2000WF wireless serial device servers support automatic IP configuration protocols (DHCP, BOOTP) and manual configuration via a handy web browser console. Both IP configuration methods ensure quick and effective installation, An external antenna increases the range of the wireless connection. Users can position the adjustable antenna for maximum signal strength or even replace the antenna with their own for additional flexibility and scalability. This feature is particularly useful when a serial device is connected in a high interference area. As an added feature, a signal strength indicator is located on the front panel to make it easier to troubleshoot connection Problems.

ATC-2000WF wireless serial device servers ensure the compatibility of network software that uses a standard network API by providing TCP Server Mode, TCP Client Mode, and UDP Mode. The Real COM/TTY drivers allow software that works with COM/TTY ports to be set up to work over a TCP/IP network in no time. This excellent feature preserves your software investment and lets you enjoy the benefits of networking your serial devices instantly.

To make your management task easier, the ATC-2000WF provides additional features, such as password authentication, IP filter, WEP support for 64-bit and 128-bit encryption, and SNMP support.

**1.2 Package Content**

- One 802.11g Wireless to Serial Server

- One Removable Antenna (RP-SMA) (“Reverse Polarity – SMA”)
- One CD (containing Set Up Utility, User Manual and various Application Notes)
- One AC Power Adapter with DC barrel plug (2.1mm ID, 5.5mm OD)
- One RS-232 DB9 Female Cross Configuration cable
- One Quick Installation Guide

### 1.3 Product Features

- Connect serial device to Wireless LAN network
- 802.11b Wireless LAN, compatible with 802.11g
- WEP support for 64-bit and 128-bit encryption
- Password authentication and IP filter
- Ad-Hoc(peer-to-peer), Infrastructure, Pseudo IBSS mode support
- RS-232 Serial Port for console
- 3 in one RS-232/422/485 port can be freely chosen, at up to 57.6 Kbps
- Versatile socket operation modes, including: TCP/IP, UDP/IP, HTTP, ARP, DHCP client
- Easy-to-use Windows Utility for mass installation
- Supports Windows Virtual COM drivers
- LEDs indicate LINK, DIS, ACT and PWR.

#### WLAN Radio Features:

- Protocol Type: 802.11b standard compliant
- Operating Range: Open Environment: 1000 ft./300m
- Office Environment: 100-330 ft./30-100m
- Security: WEP (Wired Equivalent Privacy) 64 and 128 bit encryption
- Network Mode Infrastructure mode, Ad-Hoc mode

### 1.4 Serial Communication Parameters

No. of ports:1 (ATC-2000WF)

Interface: RS-232/422/485

Port Type:DB9 Male and six bit terminal

Baud Rate Options: 9600, 38400, 57600 bps

Data Length Options: 8 bits

Parity options: None

Stop Bits Options: 1 bit

Flow Control: Hardware or none

Serial UART Buffer: 256 bytes input, 256 bytes output

#### Radio Characteristics:

- Spread Spectrum Technology: DSSS (Direct Sequence Spread Spectrum)
- RF Range: 2.4 ~ 2.4835 GHz
- Data Rate: 11 / 5.5 / 2 / 1 Mbps
- Modulation: DBPSK for 1 Mbps, DQPSK for 2 Mbps, CCK for 5.5 / 11 Mbps
- Operation channels: US - 11, Europe - 13, France - 4, Spain - 2, Japan - 14
- RF Power Output (Typ.): +15 dBm
- Receive Sensitivity (Typ. @BER 10E-5): -83 dBm@11Mbps

#### Power:

- Power Supply: 9-36VDC
- Current: Tx 350mA (Max.), Rx 210mA, Power Saving Mode 80mA

#### Software:

- Windows-based Driver with Multi -Link Virtual Com Driver
- PC Set UP Utility: User setup and device-search software run on Windows XP/ 98 / ME / NT / 2000

Network Protocol: TCP/IP, UDP/IP, SNMP, HTTP, ARP, DHCP client

Mechanical:

Antenna: PCB board-mount antenna option, or  
IPEX connector for external antenna and cable option

Dimensions: 95 x 76 x 26 mm)

Environmental:

Temperature: Operating: 0 to +55 °C / +32 to +131 °F

Storage: -20 to +65 °C / -4 to +149 °F

Relative Humidity: 95% (non-condensing)

Emissions EMC Certificate:

U.S.A.: FCC Part 15 Subpart C

CE: ETSI EN 300 328, EN 301 489-1/17, EN 55022, EN 61000, EN 50371

Certification: Some models are already FCC Modular-Certified for immediate public sale.

## 1.5 Serial Port Pin Assignments

### RS-232/422/485 Pinouts

RS-232 Pinout(DB9 Female )

PIN	RS-232	Input/Output
2	RXD	I
3	TXD	O
5	GND	-
7	RTS	O
8	CTS	I

RS-422/485 Pinout(SIX Terminal from Left)

PIN	RS-422	RS-485
1	T+	485+
2	T-	485-
3	R+	NC
4	R-	NC
5	VIN+	VIN+
6	VIN-	VIN+

## 1.6 Connecting the Hardware

This section describes how to connect ATC-2000WF to serial devices for first time testing purposes. We cover Wiring Requirements, Connecting the Power, Connecting to the Network,

You should also pay attention to the following items:

Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

Connecting the Power

Connect the 9-36 VDC power line with ATC-2000 power jack. When the power is properly supplied, the .Link and DIS. LED will light in red and yellow color until the system is ready, at which time the .Link. LED will be put out and DIS PWR LED still light.

Connecting to a Serial Device

Connect the serial data cable between ATC-2000WF and the serial device.

## 1.7 Top Panel LED Indicators

LINK ---- Indicate WLAN status

DIS ---- Indicate WLAN status  
 ACT ---- It will flash when transmit the data from WLAN to serial  
 or from serial to WLAN.  
 PWR ---- Indicate the Power supply  
 Detail for LINK,DIS Led indicate

LINK	DIS	Status
OFF	OFF	WLAN Connecting
ON	OFF	WLAN Connected
OFF	ON	WLAN Disconnect
ON	ON	Setup Command

## 2.0 Initial Configuration

When setting up your ATC-2000WF for the first time, the first thing you should do is configure the IP address. Select one of the initial IP Address configuration methods to configure

### 2.1 Factory Default IP Address

ATC-2000WF is configured with the following default IP addresses:

WLAN:

Setting static IP

IP Address 192.168.1.250

Netmask 255.255.255.0

### 2.2 Serial Console (38400, n, 8, 1)

Before configuring the ATC-2000WF via the serial console, turn off the power and use a serial cable to connect the ATC-2000WF to your computer's serial port.

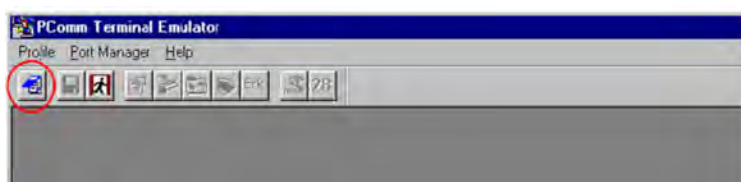
We suggest using PComm Terminal Emulator, which is available in CD driver to carry out the configuration procedure. Firstly install PComm Terminal Emulator on your computer.

1. Connect ATC-2000WF RS-232 serial port directly to your computer's male RS-232 serial

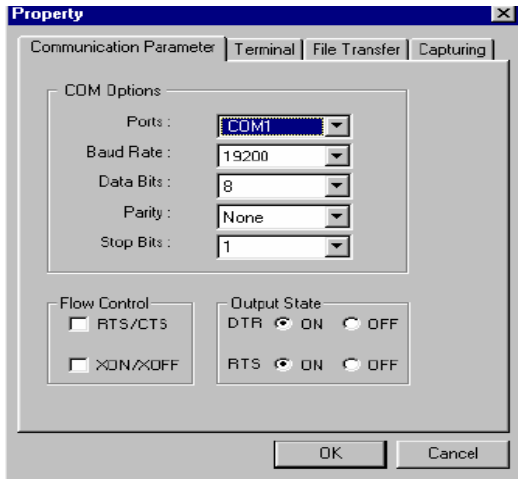
Port with RS-232 DB9 Female Cross Configuration cable

2. From the Windows desktop, click on **Start # Programs # PComm Lite # Terminal Emulator**.

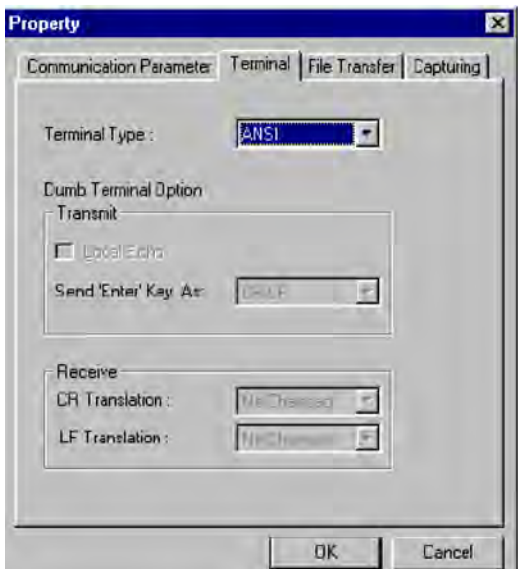
3. When the **PComm Terminal Emulator** window opens, first click on the **Port Manager** menu item and select **Open**, or click on the **Open** icon.



4. The **Property** window opens automatically. From the **Communication Parameter** page, select the appropriate COM port for the connection, **COM1** in this example, and **38400** for **Baud Rate**, **8** for **Data Bits**, **None** for **Parity**, and **1** for **Stop Bits**.



5. From the **Property** window's **Terminal** page, select **ANSI** or **VT100** for **Terminal Type**, and click on **OK**. If you select **Dumb Terminal** as the terminal type, some of the console functions—especially the .Monitor. function—may not work properly.



6. Press the “ ← ” backspace key (located in the upper right corner of the keyboard) continuously while powering on the ATC-2000WF



7. Sending a continuous “ ← ” backspace string to ATC-2000WF triggers it to switch

automatically

from data mode to console mode.

8. Start by configuring the IP address and WLAN under MS-DOS Command Mode. section for instructions on how to configure the rest of the IP settings.

9. Choosing the Proper Operation Mode

In this chapter, we describe the various ATC-2000WF operation modes. The options include an operation mode that uses a driver installed on the host computer, and operation modes that rely on TCP/IP socket programming concepts. After choosing the proper operation mode in this chapter, refer to Chapter 3.0 for detailed configuration parameter definitions.

### **Factory Default IP Address**

#### **Network Setting**

IP :192.168.1.250

MASK :255.255.255.0

GW :192.168.1.254

DHCP :OFF

#### **Wireless LAN Commands**

CHAN :11

MODE :infrastructure

SSID :wlandemo

RATE :11 mbps

WEP :OFF

#### **Serial Port Commands**

Baud Rate:38400 bps

Serial Flow Control setting :OFF

TCP Serial Port Number :1234

## **3.0 Summary of Commands – Listed by Functional Category**

(These commands are explained in detail with more detailed functioning examples further in this document.)

### **Network Commands**

IP xxx.xxx.xxx.xxx Where x is the IP of this device

MASK xxx.xxx.xxx.xxx Where x is the Network Mask of this device

GW xxx.xxx.xxx.xxx Where x is the Gateway of this device

DHCP x Where x is the DHCP setting: 1=ON 0=OFF

### **Wireless LAN Commands**

CHAN x Where x is the channel setting 1-14

MODE x Where x Network Mode x = a(ad hoc) b(infrastructure) p(Pseudo IBSS)

SSID xxxxxxxx Where x is the multi-character SSID network name

RATE x Where x is the Tx rate, 1,2,5,11 mbps

WEP x Where x is WEP key 0=OFF, 1=64bit, 2=128bit

WK x yyyyyyyyy Load WEP Encryption Key into WEP buffers 1, 2, 3 or 4

WKID x Where x is the Buffer of the WEP encryption key in use 1, 2, 3 or 4

AA x Where x is the authentication: A=Auto, S=Shared Key, O=Open

### **Serial Port Commands**

BAUD x Where x is serial port baud rate, 0=115200, 1=57600, 2=38400, 3=9600

FCTL x Where x is Serial Flow Control setting, 1=ON, 0=OFF

PORT xxxxx Where x= TCP Serial Port Number (Default value is "1001")

### **Server/Client Settings**

RMODE x Where x is CLIENT or SERVER setting for this device

RIP xxx.xxx.xxx.xxx Where x is Server Target Remote IP when this device is in Client mode.

RPORT xxxxx Where x is Server Target Remote PORT when this device Client mode.

#### **Enter Command Mode**

SetUpWLAN Gatekeeper Command Entry String

#### **Exit and Save Settings Commands**

EXIT Exits Command Mode but DOES NOT SAVE CHANGES

SAVE SAVE Command (Saves only but does not Exit Configuration Mode.)

SE SAVES and EXITS Command Mode simultaneously

#### **Other Commands**

PSMOD x Where x is the power saving mode: 1=ON 0=OFF

RES Reset as if a Hardware reset was applied

DEF Restores all settings to Factory Default

MAC Read-Only command that display the unique MAC address

VER Read-Only command returns Firmware Version Number

HELP Displays list of all available Commands along with abbreviated format

LIST Displays alphabetic readout of all Mini-b Settings