V-Linx serial interface (FTI06002)

Software Installation Manual

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References

B&B Electronics website:
www.bb-elec.com

B&B Electronics firmware/software:
http://www.bb-elec.com/ESP90x_Software.asp

B&B Electronics field upgrade procedure:
http://www.bb-elec.com/bb-elec/literature/ESP90x%20ESR90x%20Field%20Upgrade%20Procedure%20V1.02.pdf

Introduction

The software installation manual provides instructions for setting, adjusting and monitoring the V-Linx serial interface as used within FT NavVision®. The chapters and sections are organized in chronological order in which the specific components must be installed and monitored (where applicable).

About the installation manual

The installation manual contains the following chapters:

- Chapter “Safety instructions” presents warning, caution and note information, which the user should pay attention to.
- Chapter “Settings and adjustments” contains instructions on how to configure the interface.
- Chapter “Technical specifications” contains an overview of the main features and technical data.

Abbreviations list

AC	Alternating Current
ARP	Address Resolution Protocol
BaseT	Baseband Twisted-pair cable
CE	Conformité Européenne (European conformity)
COM	Communication
CPU	Central Processing Unit
CTS	Clear To Send
DC	Direct Current
DCD	Data Carrier Detect
DHCP	Dynamic Host Configuration Protocol
DIN	Deutsches Institut für Normung
DIP	Dual In-line Package
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTR	Data Terminal Ready
EMC	Electromagnetic Compatibility
ESD	Electrostatic Discharge
FCC	Fast Communications Controller
FT	Free Technics
GND	Ground
HIM	Hardware Installation Manual
HTTP	Hypertext Transfer Protocol
ICMP	Internet Control Message Protocol
I/O	Input/Output
IP	Ingress Protection[1] / Internet Protocol
LAN	Local Area Network
LED	Light Emitting Diode
MAC	Media Access Control
Mbps	Megabit per second
MDIX	Medium-Dependent Interface Crossover
PLC	Programmable Logic Controller
RISC	Reduced Instruction Set Computer
RJ	Registered Jack
RTC	Real Time Clock
RTS	Request to Send
Rx	Receive
RxD	Received Data
TCP	Transmission Control Protocol
Tx	Transmit
TxD	Transmitted Data
UDP	User Datagram Protocol

[1] IPxx = International protection rating. Classifies the degrees of protection provided against the intrusion of solid objects (including body parts like hands and fingers), dust, accidental contact, and water in electrical enclosures.

WAN	Wide Area Network

Revision history

Revisions issued since publication.

Issue	Date	Revision	Reason
1.0	August 24, 2010		First release

Safety instructions

NOTE:
This section provides only a summary of the most important safety requirements and notes, which will be mentioned in the individual sections. To protect your health and prevent damage to the devices, it is essential to read and carefully follow the safety instructions.

The indications NOTE, CAUTION and WARNING have the following significance:

NOTE:
An operating procedure, practice or condition etc., which it is essential to emphasize.

CAUTION

An operating procedure, practise or condition etc., which, if not strictly observed, may damage or destroy equipment.

WARNING

An operating procedure, practise or condition etc., which, if not carefully observed may result in personal injury or loss of life.

1. Settings and adjustment

1.1 Configuring the serial server

1. Open the ESP manager software.
   It will automatically search for any reachable (ESP or ESR) serial servers. A list of all serial servers connected to the LAN will appear in the serial server list window.
2. Double click the desired serial server port on the list to bring up the “Server properties” configuration screen (see Figure 1-1).

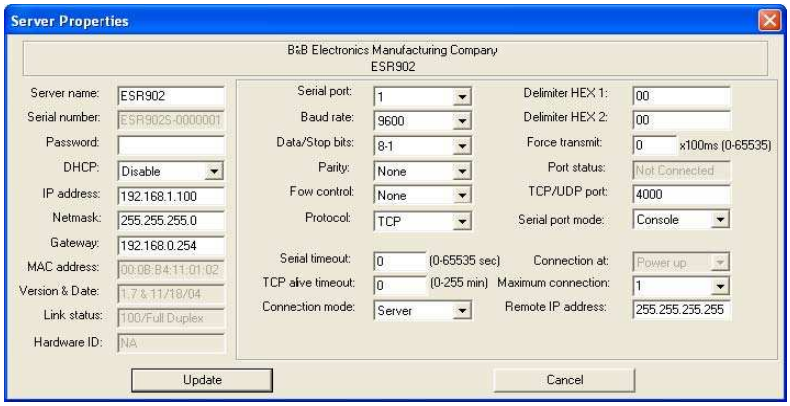


Figure 1-1: Server properties window

3. Change the relevant settings in the “Server properties” window as required.
   - Obtain appropriate “IP address (static)”, “Netmask” and “Gateway” addresses from your “Network Administrator” (recommended)
   - Set the “Serial port mode” property to “RS-232” to match the serial device connected to the serial server *(NOTE: once connected, FT NavVision® will take care of this)*
   - Set “Baud rate”, “Data/stop bits”, “Parity” and “Flow control” to match the configuration of the serial device connected to the serial server port *(NOTE: once connected, FT NavVision will take care of this)*.
4. When the parameters have been set, click “Update”.
   Following the prompts in the dialogue boxes. Restart the serial server and search all reachable servers again.
5. Re-enter the “Server properties” window to verify the changes have taken effect, or to view/change the configuration of other ports. Each port must be configured separately.

1.2 Indicators

- "Link" LED (bicolor) - (see Figure 1-2)
  Yellow = 10BASE-T[2]
  Green = 100BASE-T
- "Ready" LED (green)
  Green flashing = system ready
- "Power" LED (red)
- "RX" LED (red) and "TX" LED (green) for each serial port.

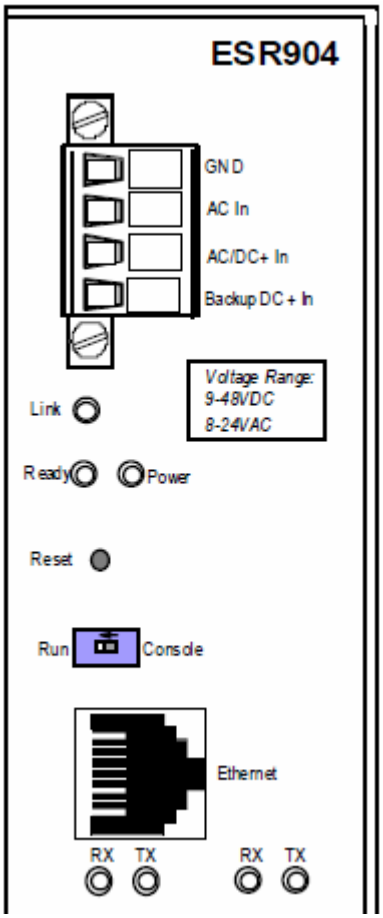


Figure 1-2: Indicators

1.3 Using the web server

The web server can be used to configure the serial server from any web browser software (such as Internet Explorer). Server properties can be set up using three browser pages.

[2] 10 BASE-T/100BASE-T = Ethernet cable standard, running at 10 Mbps/100 Mbps.

1.4 Server properties settings

In Internet Explorer, type the IP address of the serial server into the address field near the top of the window and press the “Enter” key. The following window will appear (see Figure 1-3):

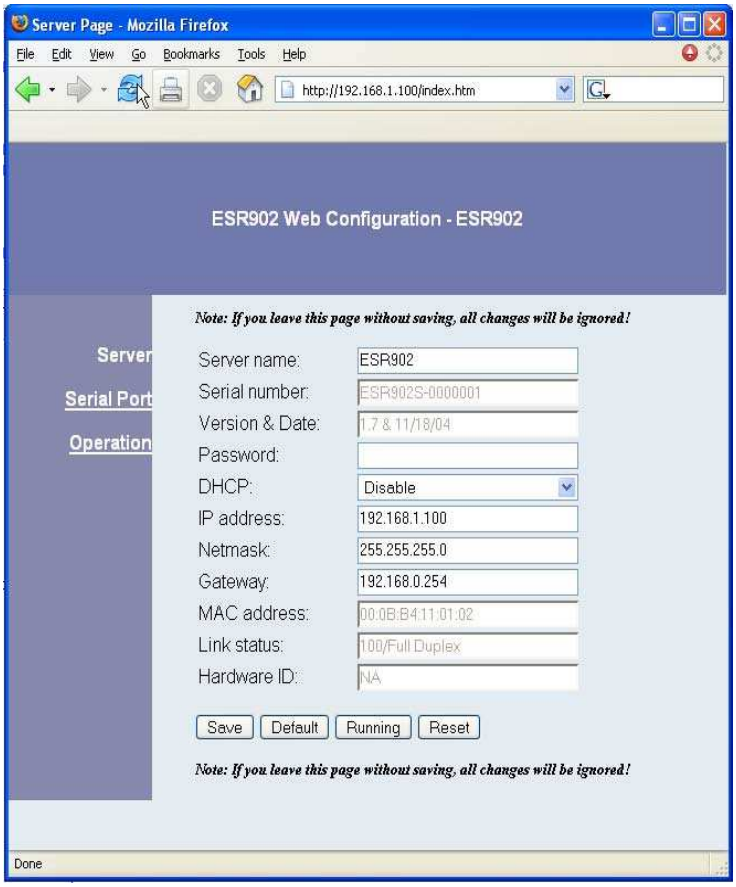


Figure 1-3: Server Page

Make sure that the “IP address” and the “Netmask” are set to the right address. If you neglect this there will be no communication possible between the PC and the V-Linx.

1.5 Serial port

To change the serial port properties, click “Serial port” on the left side of the browser window. The following page appears (see Figure 1-4):

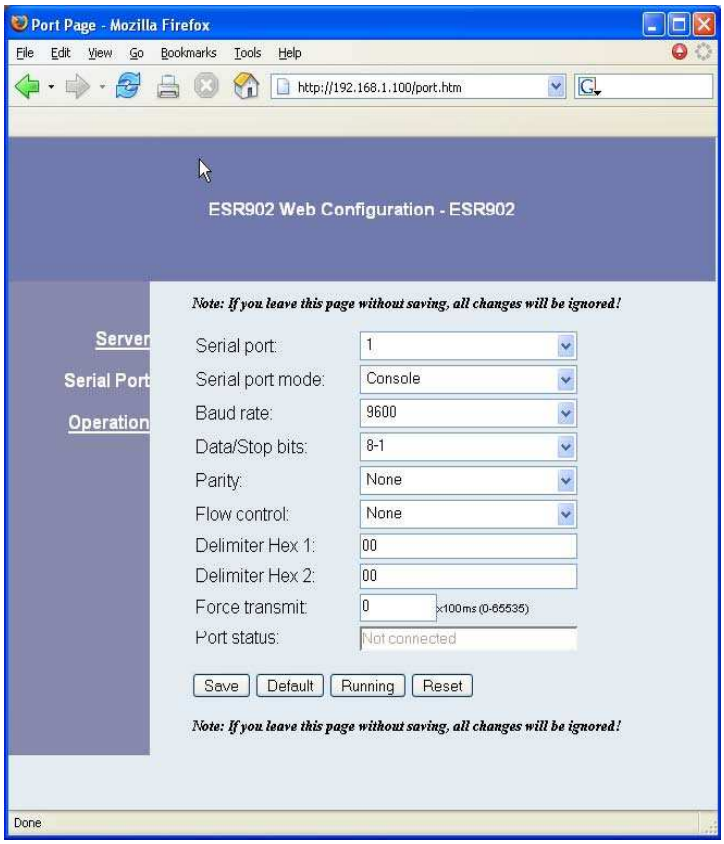


Figure 1-4: Serial port page

This page allows you to change the properties for each serial port. If FT NavVision® is connected it will calibrate these settings automatically.

1.6 Operation

To change other operational properties, click “Operation” on the left side of the browser window. The following page appears (see Figure 1-5):

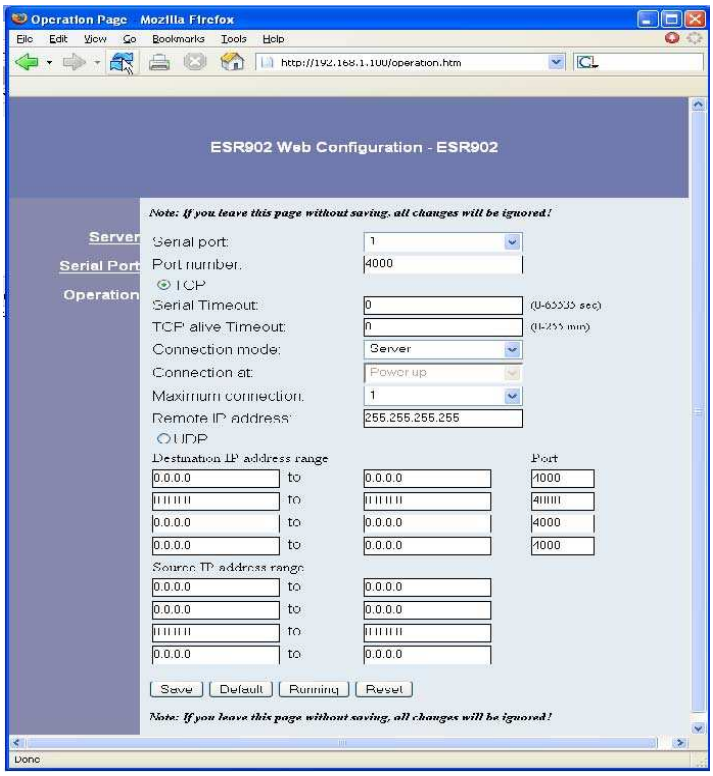


Figure 1-5: Operation page

Ensure that “Maximum connection” setting is set to “3” for each serial port.
Click “Save” to store changes to the serial server. Settings for each serial port must be saved separately.
After finishing the calibration click “Reset” and wait until the system has started up again.

1.7 Firmware update

1.7.1 Field upgrade procedure (ESP90x / ESR90x)

NOTE:

- *Verify the current software and date version via the "Server properties" window (see Figure 1-7). Update the software (where necessary).*
- *Please refer to the B&B electronics ESP90x Firmware/software compatibility chart for more detailed information concerning the upgrade of software/firmware*

CAUTION

Always upgrade software first before firmware by running software *.exe file to remove and then run it again to install.

1. Download the following from B&B electronics website (see header "References").
   - V-Linx software *(NOTE: if you don't have the latest)*
   - ESP90x or ESR90x firmware
   - The "Field upgrade" procedure documentation.

2. Install the V-Linx software (where necessary)
   - Run software *.exe file to remove the "**old**" V-Linx software.
   - Run software *.exe file again to install the "**new**" V-Linx software.

3. Now you are ready to install the "**new**" firmware using V-Linx software and the rest of the steps in this document.

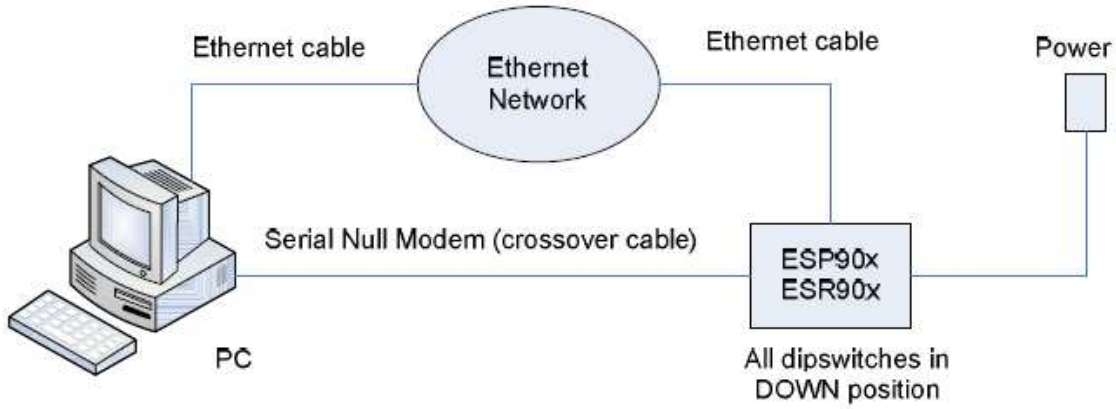


Figure 1-6: Hardware setup

4. Setup the hardware (see Figure 1-6).
   Please note the serial null modem - crossover cable MUST have pins 1, 2, 3, 4, 5, 6, 7, & 8 available or the upgrade will NOT work via “Serial method”. An alternative method via VCOM associated to port 1 can be used (normally used for remote upgrades).
5. Save the firmware file[3] to a known location.
6. Run “V-Linx manager” software.
7. Put unit in “Upgrade mode” and set “Baud rate: 115200”, “Data/stop bits: 8-1”, “Parity: None” and “Flow control: None”.

- Make sure the dipswitches are all in the down position *(NOTE: ESP904 will not have any dipswitches)*
- Set the “Serial timeout”, “TCP alive timeout”, “Force transmit”, and “Delimiter HEX 1 & 2” to “0” or “00”.

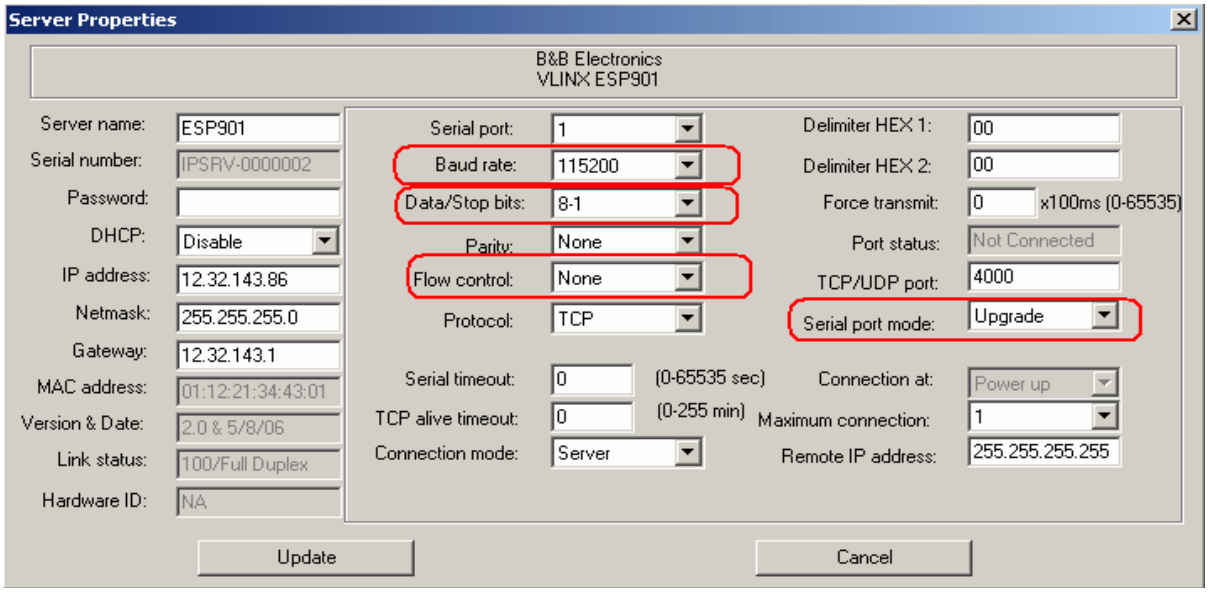


Figure 1-7: Baud rate/data and stop bits/flow control/serial port mode (server properties)

Click “Update” button (see Figure 1-7), the following window will appear. Click “Yes” to restart the unit (see Figure 1-8).

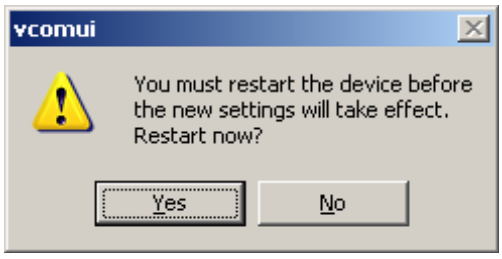


Figure 1-8: Update window

[3] Make sure the file saves as *.hex type file.

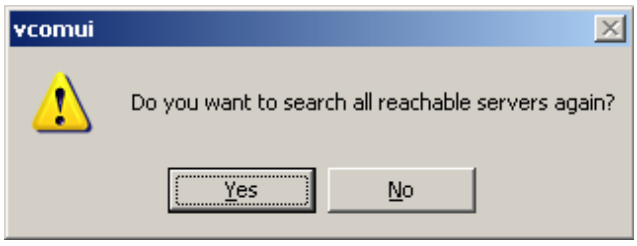


Figure 1-9: Searching server window

Click “Yes” (see Figure 1-9) to search for servers.

Make sure that the relevant ESP90x/ESR90x is on the list (see Figure 1-10), if not click “Searching Server”.
If you still do not see your device, reboot ESP90x/ESR90x device by pushing the “Reset button” or by cycling electrical power.

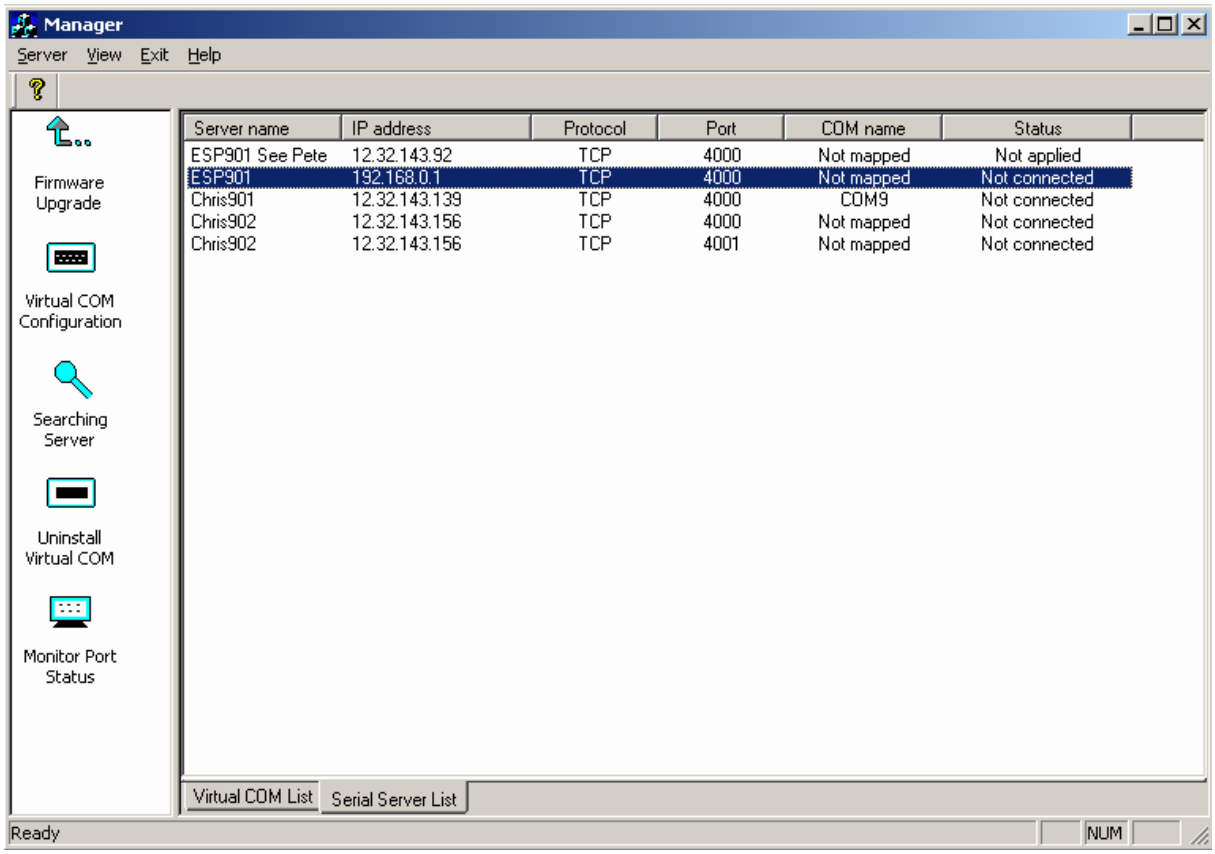


Figure 1-10: Server name window

Click on “Firmware upgrade” (see Figure 1-11).

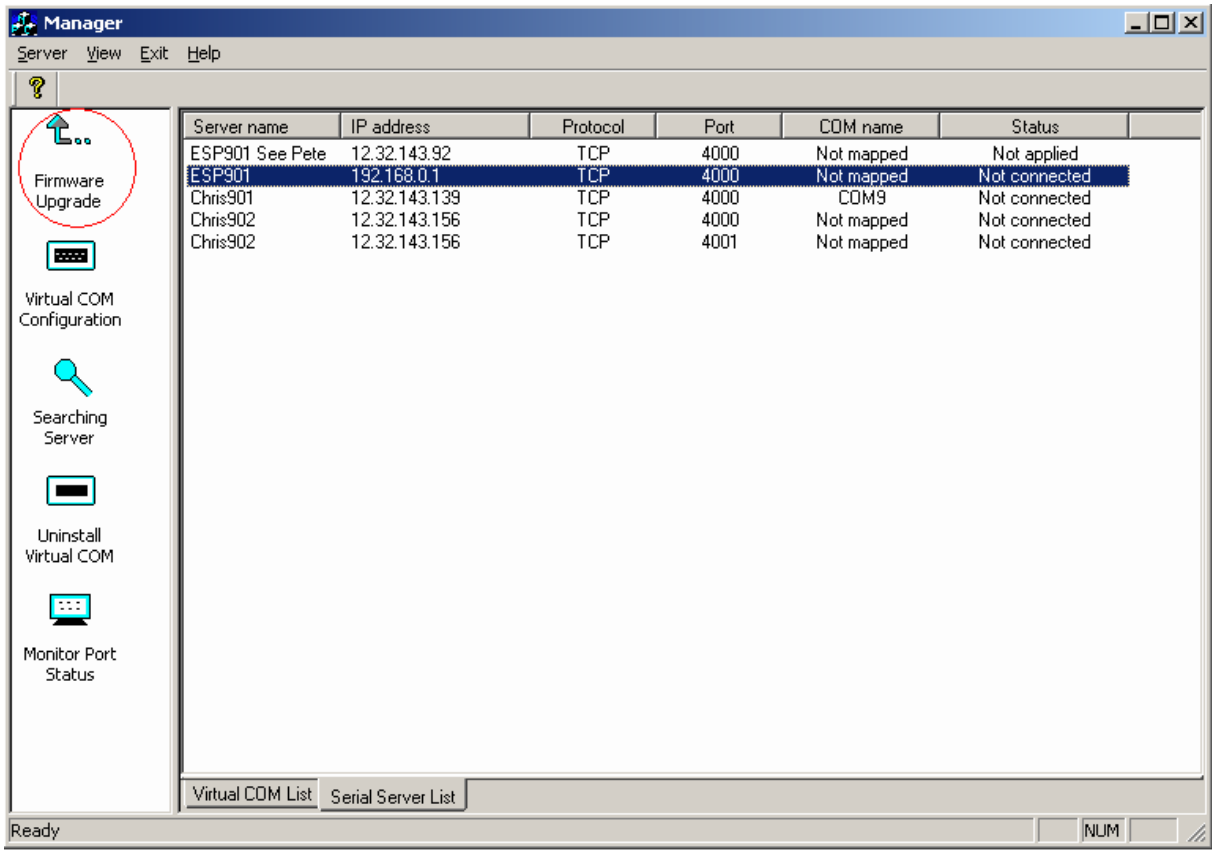


Figure 1-11: Firmware upgrade

Browse for the location of the “HEX file” (see Figure 1-12) and select via the “Serial port” menu the respective COMx port you are connected to (via serial null modem cable).

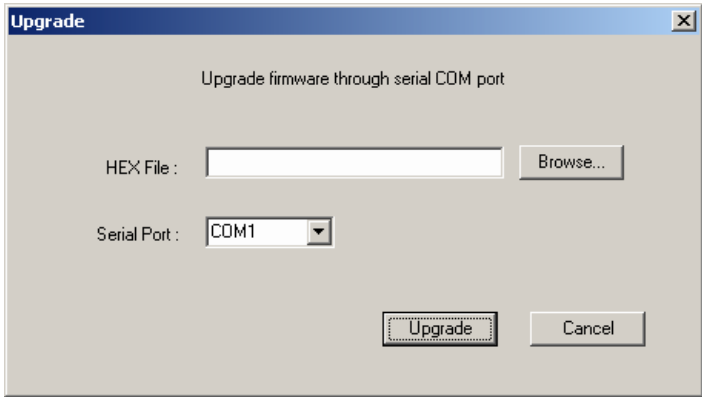


Figure 1-12: HEX file and COM port window

In window “Port settings” (see Figure 1-13) select:

- “Bits per second: 115200” (baud rate)
- “Data bits: 8”
- “Parity: None”
- “Stop bits: 1” as shown below. To confirm the “Port settings” click “OK”.

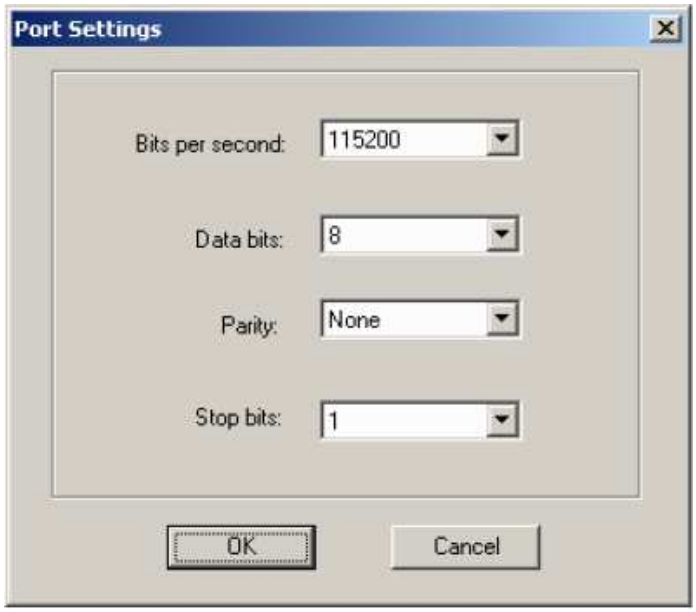
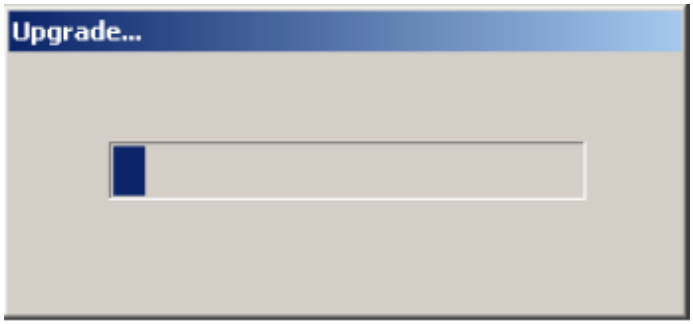


Figure 1-13: Port settings

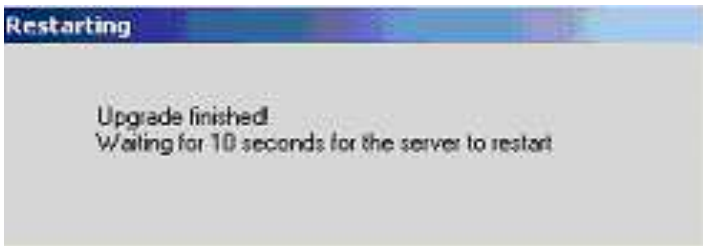
You will get this screen next. Wait for it to complete.

WARNING

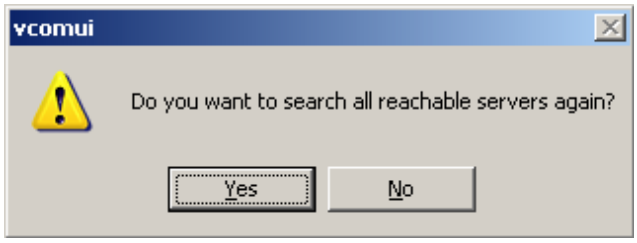
Do not remove power at this step or disrupt the process in anyway, or the flash memory may crash.



Then you will get this screen (Restarting).



Then you will get this screen (vcomui) next. Click “Yes”.



Check the green “Ready” LED. It should be blinking once per second.
If not, reset the unit by pushing the “Reset” button or by power cycling the unit. Click on “Searching server” (see Figure 1-14) and then click on your ESP90x/ESR90x on the list.

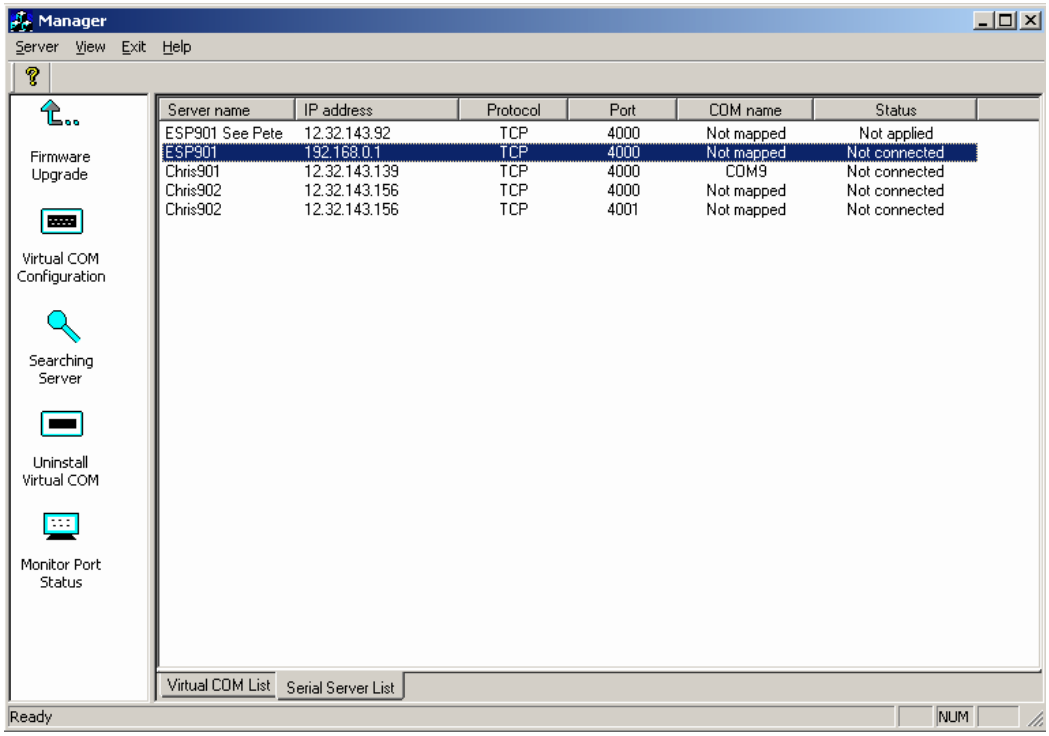


Figure 1-14: Searching server screen

Verify that the firmware upgrade was successful by checking the “Version & date” (see Figure 1-15) data.

- If it says the version you installed, then upgrade is successful. Change the settings back to your normal configuration
- If it says other version than what you installed, repeat procedure. Alternately, try defaulting the unit and start again.

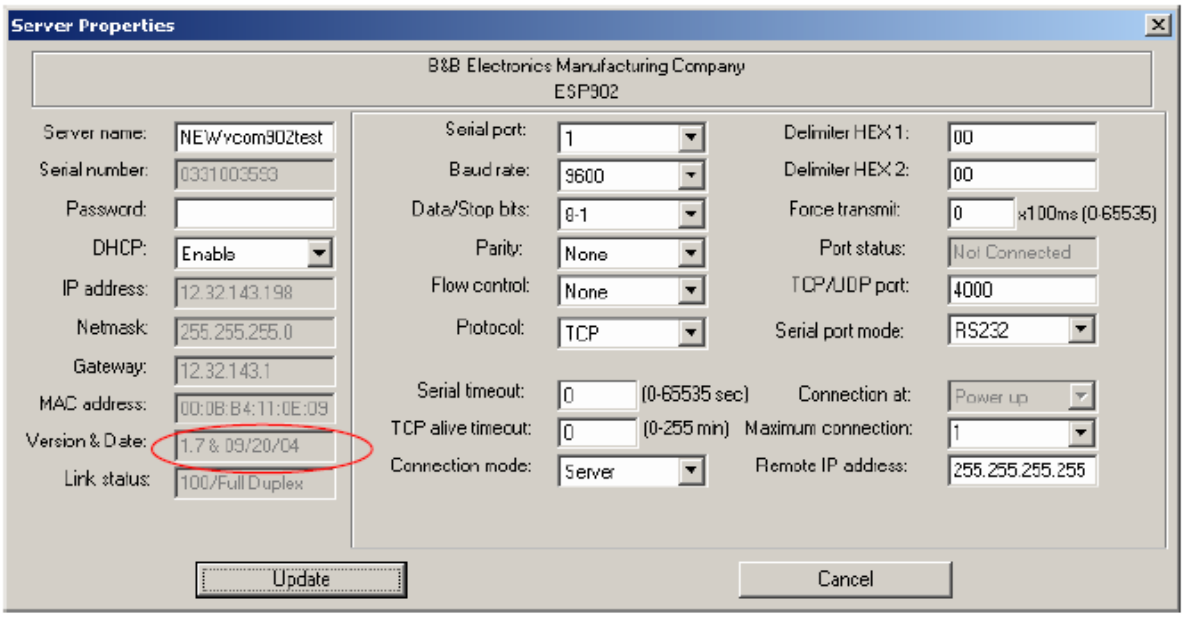


Figure 1-15: Version & date (server properties)

2. Technical specifications

Detail	Description
Serial connections	ESR901: One (1) terminal block or DB-9 male ESR902: Two (2) DB-9 male ESR904: Four (4) DB9 male - DTE configuration
Serial - model ESR901	One RS-232, RS-422 or RS-485, half & full-duplex, software selectable
Serial - model ESR902	Two RS-232, RS-422 or RS-485, half & full-duplex, software selectable
Serial - model ESR904	Four RS-232, RS-422 or RS-485, half & full-duplex, software selectable
Ethernet connection	Single RJ-45 female
Serial connectors	ESR901: One 9-pin, D-type male (DB9m) and one removable terminal block , connector selectable using DB9/terminal switch, interface type software selectable as RS-232, RS-422, RS-485H or RS-485F
	ESR902: Two 9-pin D-type male (DB9m), interface type software selectable as RS-232, RS-422, RS-485H, RS485F
	ESR904: Four 9-pin D-type male (DB9m) DTE, interface type software selectable as RS-232, RS-422, RS485H, or RS-485F
LAN	10/100 Mbps auto-detecting - 10 Base T, 100 Base TX
RS-232	TX, RX, RTS, CTS, DTR, DSR, DCD, GND
RS-422	TX+, TX-, RX+, RX-, RTS+, RTS-, CTS+, CTS-, GND
RS-485H	Data+, Data-, GND
RS-485F	TX+, TX-, RX+, RX-, GND
Data rate	110 bps to 230.4 kbps
Protocols	TCP, IP, ARP, DHCP, Telnet, HTTP, UDP, ICMP
Management	V-Linx manager, Web server, Serial console, Telnet
Power requirements	8 VAC to 24 VAC or 9 VDC to 48 VDC
Power consumption	ESR901: 320 mA @ 12 VDC ESR902: 340 mA @ 12 VDC ESR904: 360 mA @ 12 VDC Power supply start-up time ≤ 24 ms
Power connector	Terminal block
Operating temperature	-10 to 80℃

Storage temperature	-20 to 85℃
Humidity	5 - 98% R.H.
Approvals	CE, FCC, IP30
Indicators	Power LED → Red
	Link LED → Yellow = 10 BaseT or green = 100 BaseTX
	Ready LED → Flashing green
Dimensions	ESR901/ESR902: 4,46 x 15,52 x 10,46 cm
	ESR904: 4,46 x 18,03 x 10,46 cm

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