

eWON Application User Guide

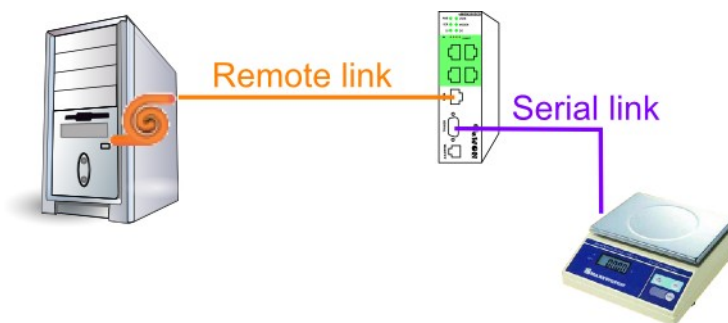
AUG 032 / Rev 1.0



You Select, We Connect

eVCOM

Standard serial communications



Content

eVCOM is the Virtual COM software for eWON. With eWON and eVCOM software, you can achieve long distance access to a serial device by creating, on your computer, a virtual COM port linked to an eWON placed beside your serial device.

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Hardware and software requirements

Hardware requirements

In order to follow this guide you'll need:

- 1 eWON with a serial port
- 1 Serial Device and the PC software to configure/use it.

Software requirements

eWON configuration software:

The eWON is configured through its web server. So all you need is a standard Web Browser software like Internet Explorerⁱ or Firefoxⁱⁱ.

Additionally we suggest you to download the eBuddy utility on our website :

<http://support.ewon.biz>.

This utility allows to list all the eWONs on your network and to change the default IP address of an eWON to match your LAN IP address range. With eBuddy you can also easily upgrade the firmware of your eWON (if required).



eVCOM software:

You can find the last eVCOM software on the *Download Software* page of the <http://support.ewon.biz> website.

eWON Firmware Version

To be able to follow this guide your eWON needs a firmware version 5.6 or higher. A simple way to realize the eWON firmware upgrade is to use eBuddy, the eWON software companion.

Introduction



eVCOM is the **Virtual COM** software for eWON

The eWON family is a range of Industrial Gateways designed to perform Serial-to-Ethernet Gateway, Industrail Modem Router, Internet Router, ADSL-Router, M2M gateway.

Please visit the www.ewon.biz to find all the latest information about eWON and eVCOM software.

What is a Virtual COM port?

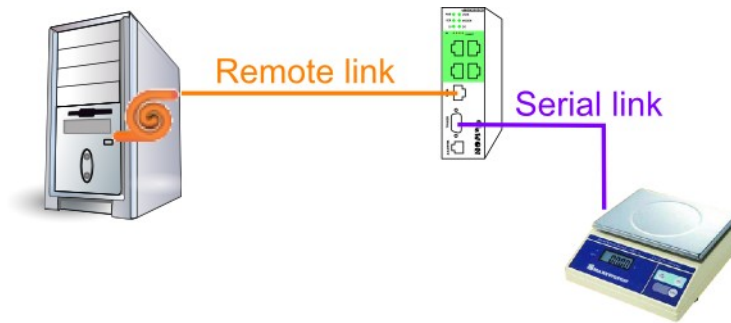
A Virtual Port (aka COM port redirector) is a specialized software (often including device driver and user application) that includes the underlying network software necessary to access networked device providing remote serial connectivity.

In figure below, you have a real Serial link between a computer and a Serial device.



With this direct link, the main limitation is the length of the cable (few meters).

To get rid of this limitation, you can use an eWON beside the Serial device and install the eVCOM software on your computer to create a virtual Serial Port linked to the eWON.



When your applicative software sends a serial command to the virtual port, this command will be packaged in a TCP/IP frame and will be transmitted to the eWON.

Once these frames are received by the eWON, the serial command is extracted and transmitted by the eWON serial port to the Device.

When the Device replies to the command on the serial link, eWON will package this reply and transmit it back to the computer and the applicative software.

VCOM Protocols handled

eVCOM software handles several protocols:

1. Standard VCOM (RAWTCP, RFC2217):

These are the standard Virtual COM protocols.

- RAWTCP is a simple encapsulation of the Serial communication data inside TCP frame
- RFC2217 is a complete handling of a serial port (data and control lines) through a TCP stream

This Standard VCOM mode is available with eWON with Serial Port.

2. VCOM Modbus:

This mode is specific for Modbus communication. It converts ModbusRTU commands in their ModbusTCP equivalents.

This VCOM Modbus mode is available with eWON with Serial Port.

3. VCOM MPI:

This mode is a specific implementation to do Remote Connection with Siemens S7-300 PLC, S7-400 PLC and Siemens MPI Panels.

This VCOM MPI mode is available with eWON with MPI port.

eWON IP address configuration

Every eWON™ is shipped with the pre-configured IP address **10.0.0.53** and **adm/adm** as User Name/ Password.

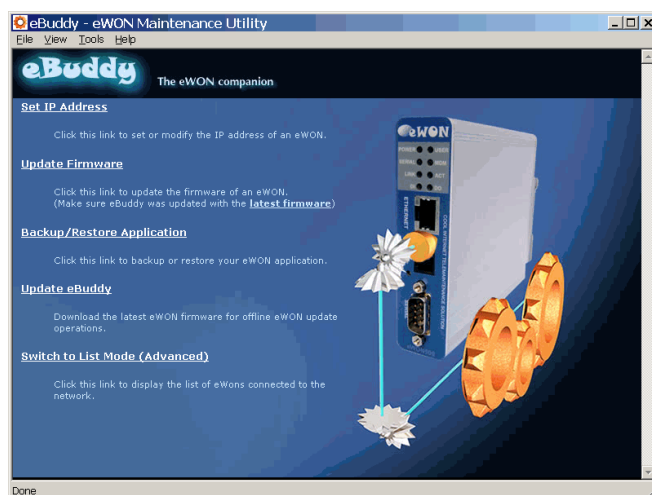
Probably the network settings of your PC does not allow you to connect to the pre-configured IP address.

You can find on our website an utility called «eBuddy» that will allow you to change the IP address of the eWON even if your PC is not on the same IP address range.

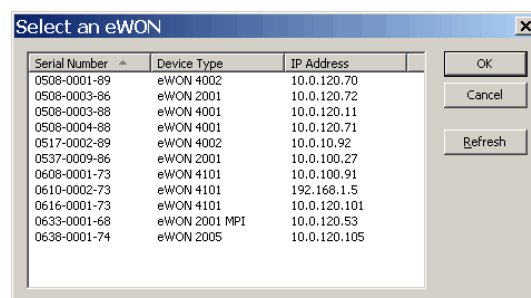
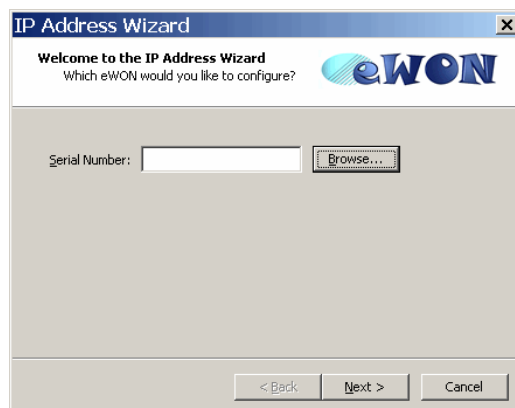
eBuddy : <http://support.ewon.biz>

To change the IP address of your eWON using eBuddy, follow the steps below:

Launch the eBuddy application (eBuddy.exe)

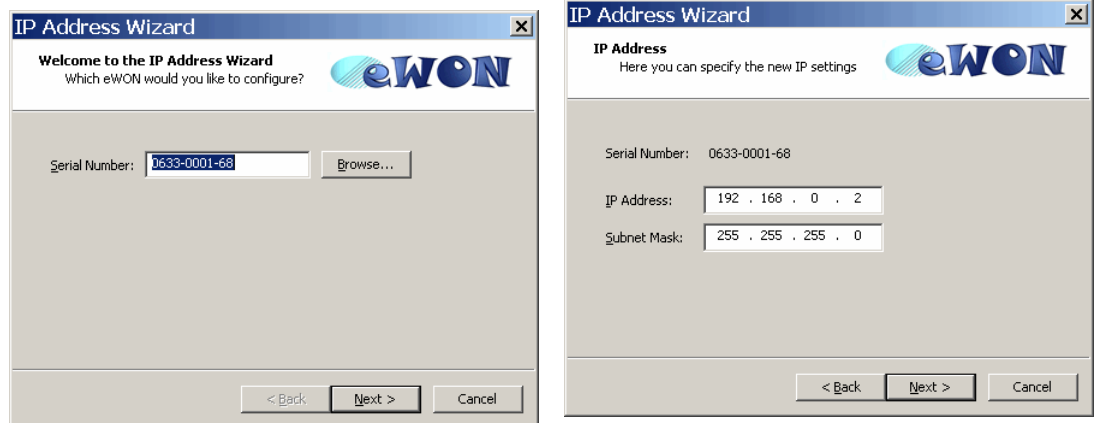


Click on the «Set IP address» link



3. eWON IP address configuration

Enter the eWON serial number in the **Serial Number** field if you know it, or click on the Browse button. In this case, the dialog box «Select an eWON» will appear showing you all the eWON existing on your Network.

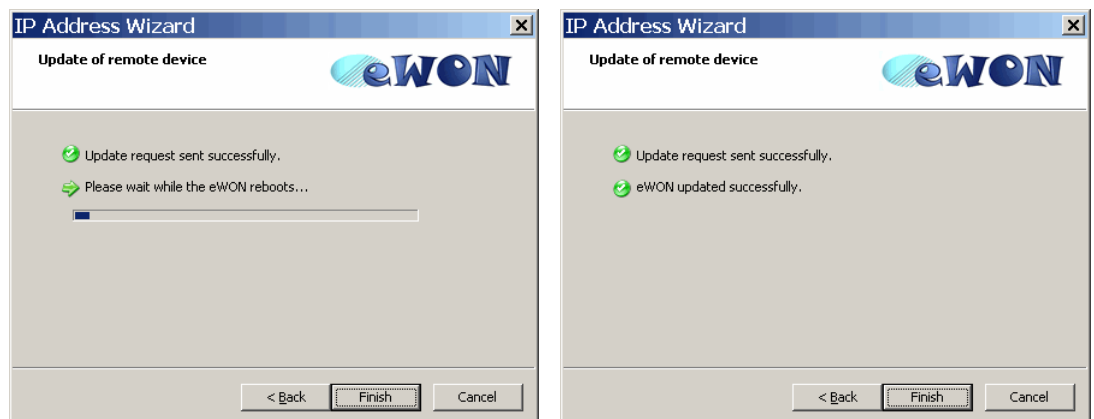


The first screenshot shows the 'IP Address Wizard' dialog box with the title 'Welcome to the IP Address Wizard' and the subtitle 'Which eWON would you like to configure?'. The 'Serial Number' field contains '0633-0001-68' and there is a 'Browse...' button. The second screenshot shows the 'IP Address' screen with the title 'IP Address' and the subtitle 'Here you can specify the new IP settings'. The 'Serial Number' field contains '0633-0001-68', the 'IP Address' field contains '192 . 168 . 0 . 2', and the 'Subnet Mask' field contains '255 . 255 . 255 . 0'.

Once the Serial Number entered, click **Next**.

Set the new **IP Address** and the **Subnet Mask**.

Click on **Next** to launch the update and wait for the eWON to reboot:



The first screenshot shows the 'Update of remote device' screen with the title 'Update of remote device' and the subtitle 'Update of remote device'. It displays a progress bar and the message 'Please wait while the eWON reboots...'. The second screenshot shows the 'Update of remote device' screen with the title 'Update of remote device' and the subtitle 'Update of remote device'. It displays the message 'eWON updated successfully.'.

When done, click on **Finish** to exit from the IP Address Wizard.

eWON Serial Configuration

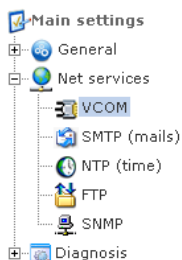
Connect your Serial Device to the serial port of your eWON.

NOTE Don't forget to set the dipswitch of the eWON to the serial communication mode (RS232 / RS485 / RS422) of your device.



In eWON, you need to configure the VCOM feature by the page

Configuration → System Setup → General → Net Services → VCOM



COM Port: **IO Port (COM:1)** Edit 14/09/2009 07:30:03

COM1 Virtual port configuration

General		
Port Type:	Raw TCP	Disable if not used to avoid port conflict.
TCP Port:	23	Default to 23 (telnet).
Poll signal interval	100	Check Modem line interval. Default to 100 MSec.
Debug	<input type="checkbox"/>	Warning: will slow down system.
Access Management		
Always accept new client	<input checked="" type="checkbox"/>	If a new client connects, the previous client connection is closed.
Stop IO Server	<input type="checkbox"/>	If a VCOM client connects, MITSUBISHI, HITACHI, SS-AS511 Iservers will be stopped if they use the same serial port
Inactivity Timeout	0 MSec (0=disabled)	Close TCP connection if no TCP data received after this time.
Line Parameters		
The values for RFC 2217. Permanent values for Raw TCP.		
Baud Rate:	19200	
Data Size:	8	
Parity:	None	
Stop Bit(s):	1	
HW Mode:	Half Duplex	

Update Config Cancel

4. eWON Serial Configuration

For simple serial communication, you need only

- to select the eWON port (COM1 for the serial port)
- to set the Port Type to "*Raw TCP*" (let the TCP port to its default value, 23)
- to configure the Line Parameters (BaudRate, Data, Parity, Stop bit and HW mode) to match the serial port of your device.

In the above configuration, the device used is a Twido configured in RS485, then the HW Mode is set to Half-Duplex and the Dipswitch is on RS485.

IMPORTANT

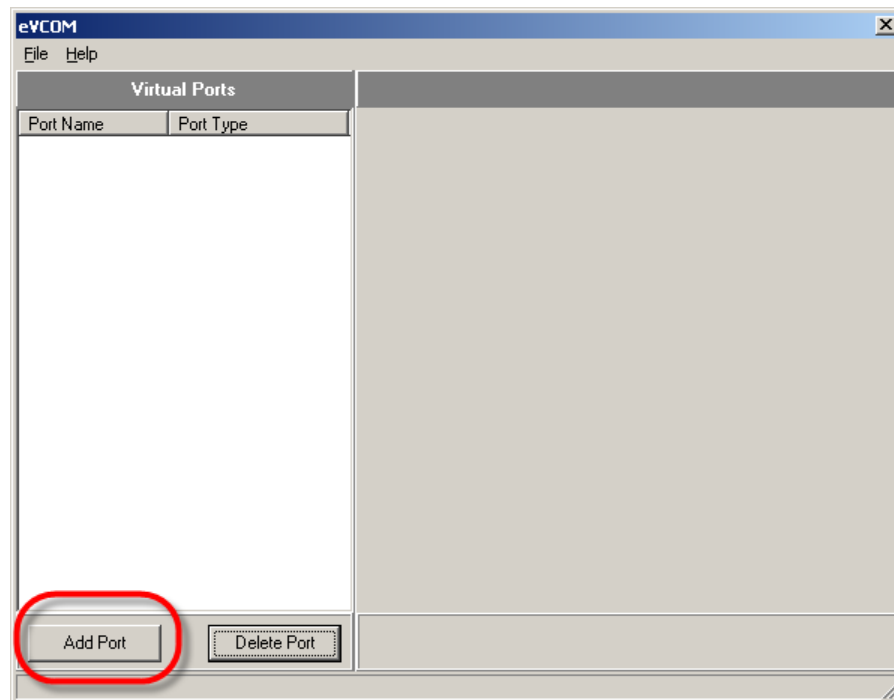


The VCOM must be the only process using the Serial Port!
Then, you must disable all eWON IOServers using this serial port.

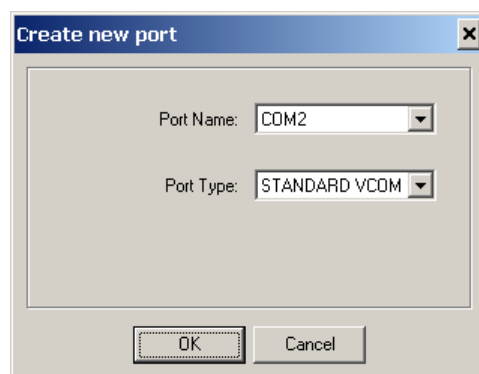
eVCOM configuration

Start the  eVCOM application.

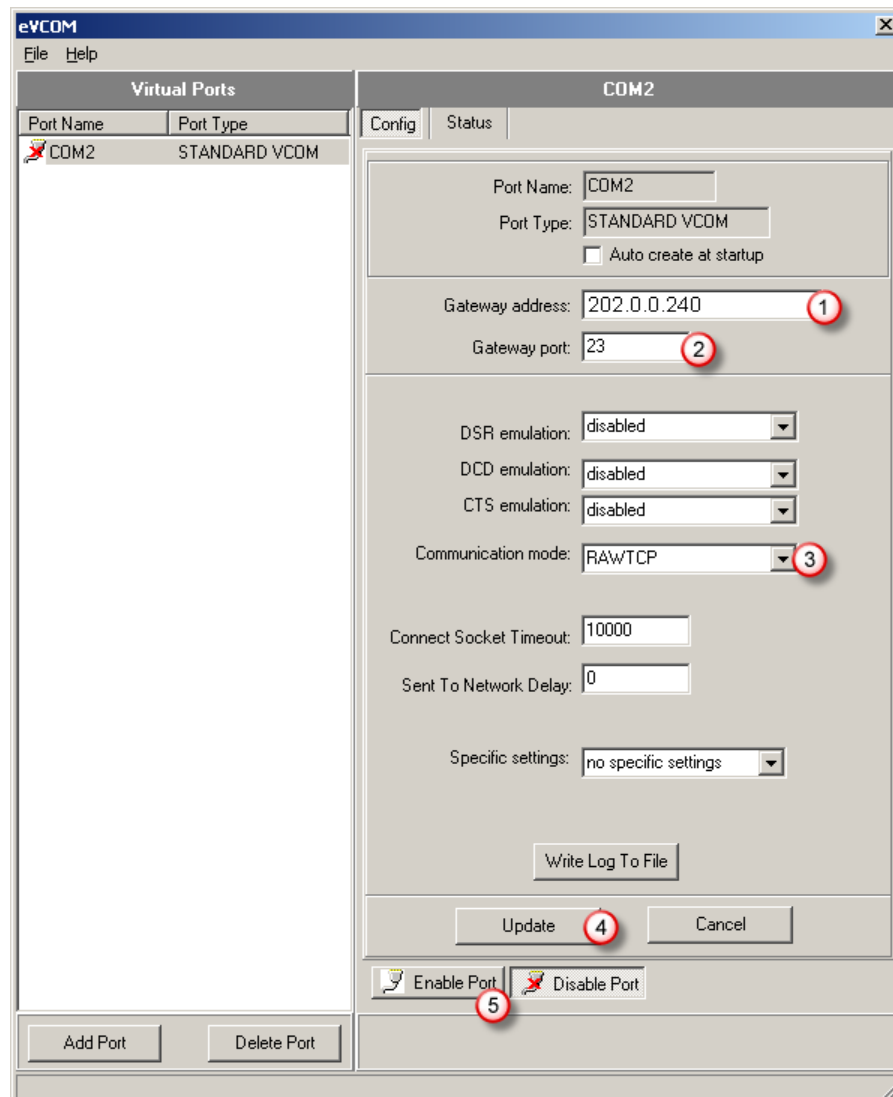
You need to create a Virtual Port. Use the Add Port button to create it.



A dialog box invites you to choose the COM Name and the Port Type. To create a Standard Virtual Com, select *STANDARD VCOM* as Port Type.



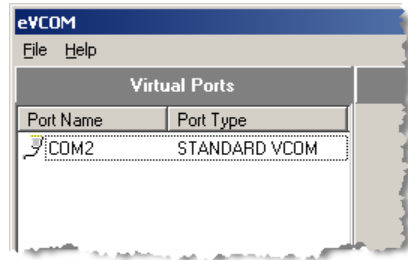
And configure it.







- (1) The *Gateway address* is the IP address where you can reach the eWON (either by your LAN network, either by a Direct PPP connection or either through Talk2M).
If your eWON is on your LAN network, you will use its LAN address, by default it's 10.0.0.53.
If your eWON is called with a direct PPP connection, you will use its PPP address 202.0.0.240.
If your eWON is called through Talk2M, you will use its VPN address (like 10.8.x.x).
- (2) The *Gateway port* must match the port in the eWON VCOM configuration.
- (3) The *Communication mode* must match the mode in the eWON VCOM configuration page (RAWTCP in our example).
- (4) Validate the configuration with the **Update** button.
- (5) After the configuration, you must use the **Enable Port** button to activate the Virtual Port.

5. eVCOM configuration

Once enabled, eVCOM will show your new COM port like following:



Note:

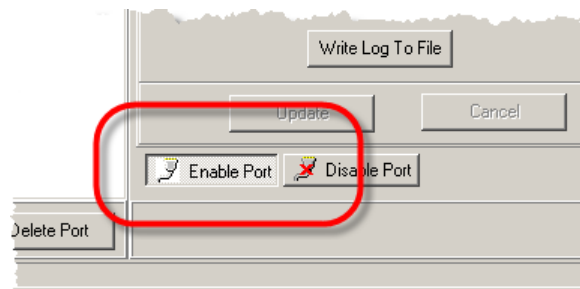
- the icon is  when the COM port is enabled
- the icon is  when the COM port is disabled.
- the icon is  when communication occurs without error.
- the icon is  when an error has occurred in the communication.

General Remote Access to the Device

Your Device is linked to the eWON.

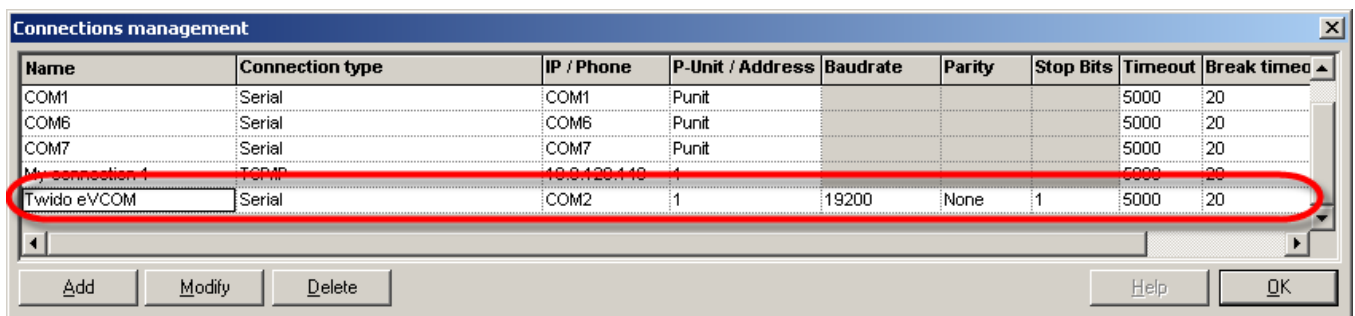
The connection to the eWON is established (either by your LAN network, either by a Direct PPP connection or either through Talk2M).

Now you can Enable your connection in the eVCOM software.



Configure the communication Software of your device to communicate through the COM2 (COM port create by eVCOM) instead of the physical COM port of your computer.

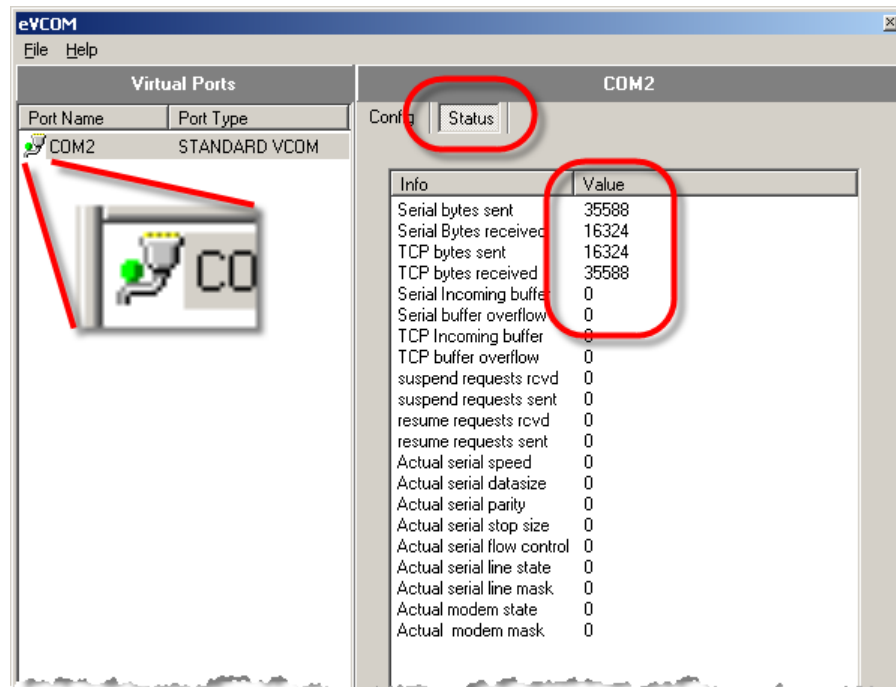
For example, in Twidosoft, you create the following connection:



And you can "Go Online" on your device

6. General Remote Access to the Device

Returning to the eVCOM software, selecting your COM port and viewing the Status tab will show like below:



Notice that the green dot in the virtual port icon showing that the connection is currently established.

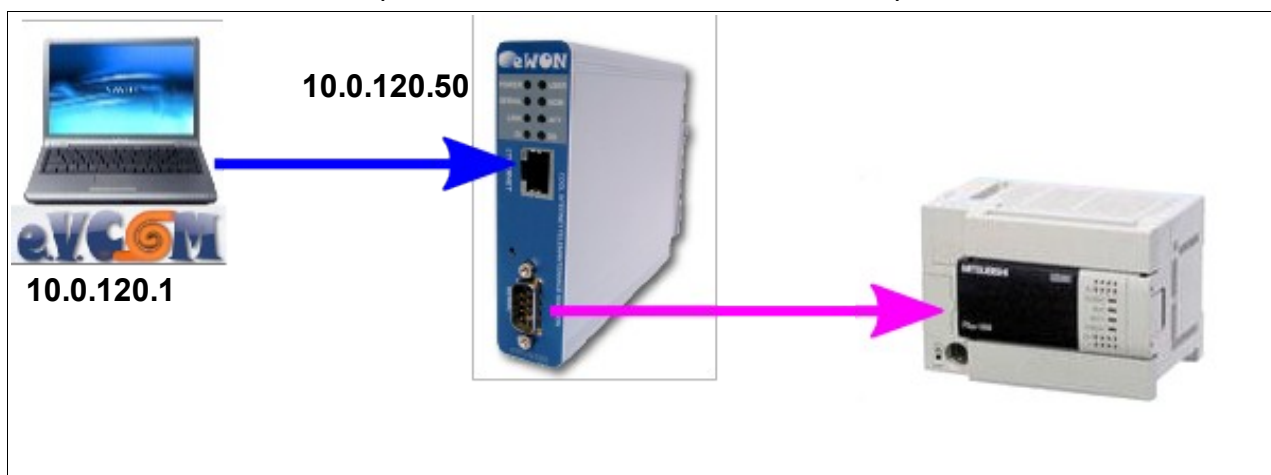
Looking also on the counters, you will see the values of the first 4 counters changing continuously showing the exchanges between the Software and the Device.

Congratulations, you work now on your Serial Device remotely through the eWON.

Practical examples

Direct Ethernet VCOM to a Mitsubishi PLC

For this example, we want to reach a Mitsubishi PLC placed behind an eWON500.



eWON configuration



The eWON-LAN IP address was configured to 10.0.120.50 by eBuddy.

On the eWON, as the Mitsubishi PLC uses a RS-422 serial link, you will configure the eWON serial dipswitch in RS-485/RS-422 mode:

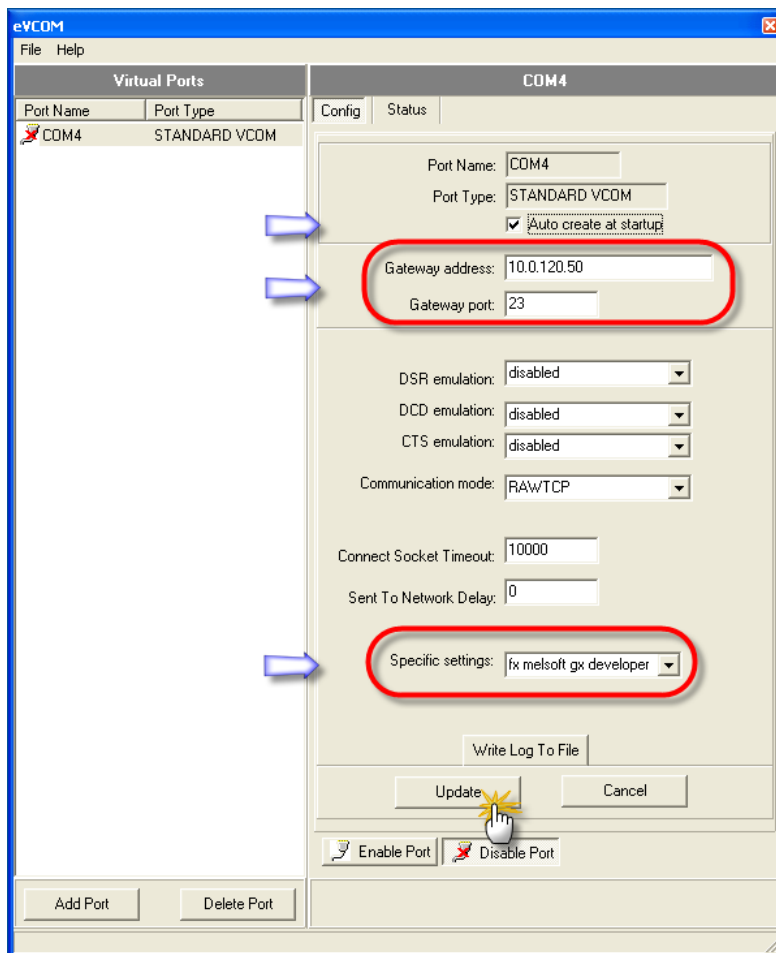
The VCOM port configuration will be the following:

Configuration → System Setup → General → Net Services → VCOM

General	Communication	Storage	11/12/2009 11:49:20
COM Port: IO Port (COM:1) Edit 11/12/2009 11:52:47			
COM1 Virtual port configuration			
General			
Port Type:	Raw TCP	Disable if not used to avoid port conflict.	
TCP Port:	23	Default to 23 (telnet).	
Poll signal interval	100	Check Modem line interval. Default to 100 MSec.	
Debug	<input type="checkbox"/>	Warning: will slow down system.	
Access Management			
Always accept new client	<input checked="" type="checkbox"/>	If a new client connects, the previous client connection is closed.	
Stop IO Server	<input type="checkbox"/>	If a VCOM client connects, MITSUBISHI, HITACHI, SS-A5511 Ioservers will be stopped if they use the same serial port	
Inactivity Timeout	0 MSec (0=disabled)	Close TCP connection if no TCP data received after this time.	
Line Parameters <small>Init values for RFC 2217. Permanent values for Raw TCP.</small>			
Baud Rate:	9600		
Data Size:	7		
Parity:	Even		
Stop Bit(s):	1		
HW Mode:	Full Duplex NO Handshaking		

eVCOM configuration

On the computer, create a Virtual port in the eVCOM software and set the “Gateway address” to the eWON IP address, then 10.0.120.50 :



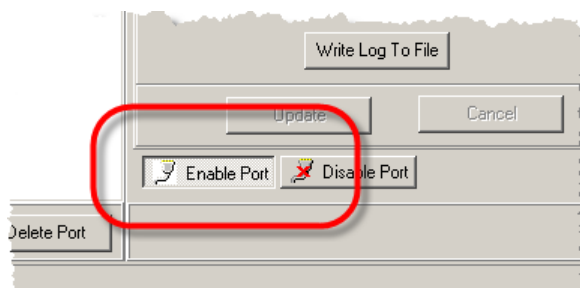
IMPORTANT



Don't forget to set the “Specific settings” of the Virtual Port to “fx melsoft gx developer”.

This is a specific behavior of eVCOM to handle correctly the communications with the Mitsubishi Melsoft software.

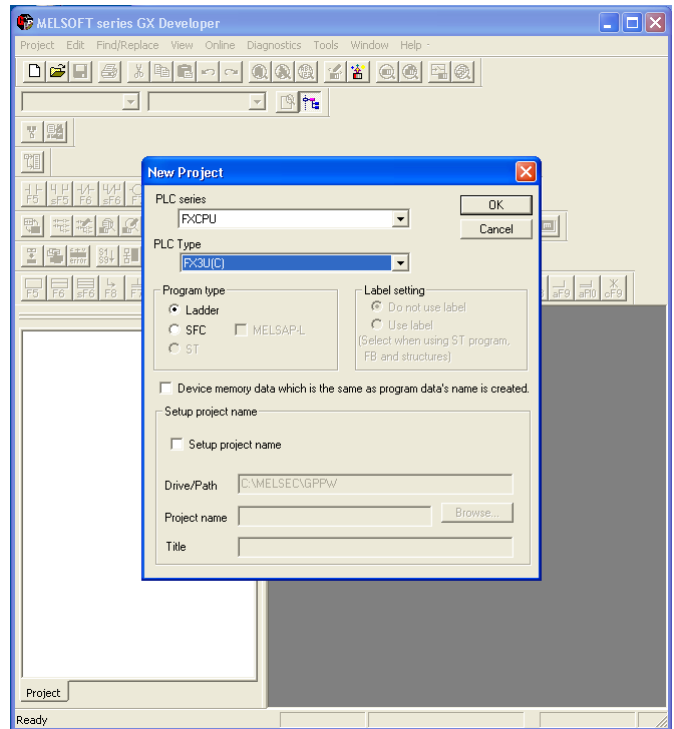
Now you can Enable your connection in the eVCOM software.



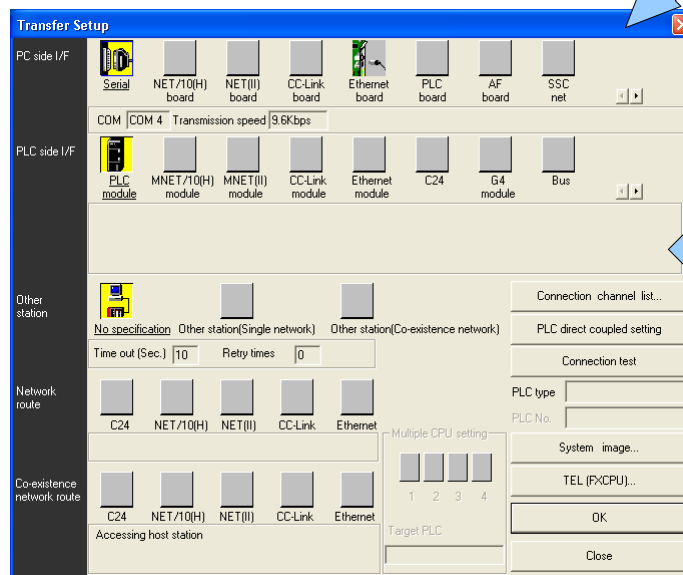
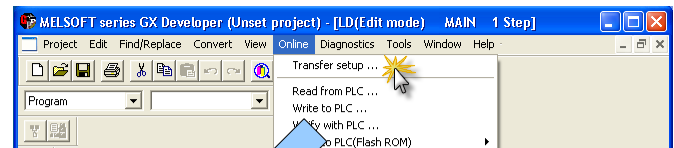
7. Practical examples

Mitsubishi Melsoft configuration

Open the Melsoft program
and create a new project.

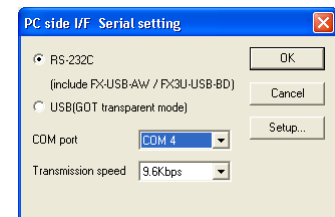


Goes in the “Transfer
Setup” menu.

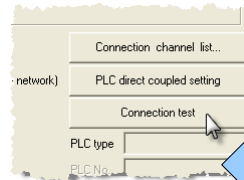


7. Practical examples

Configure the Serial interface on the Virtual Port created with eVCOM.



And test the connection.

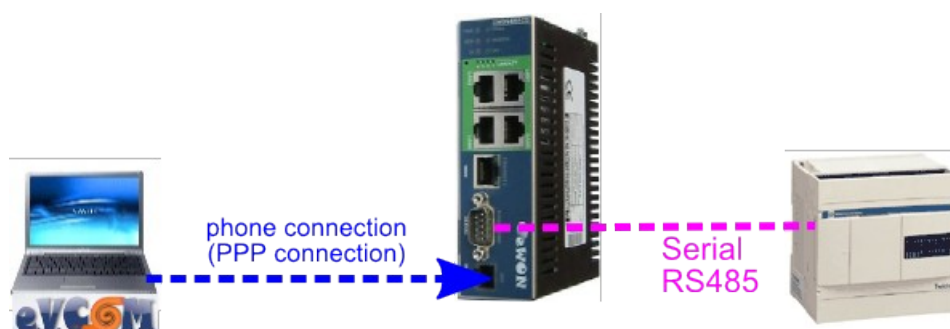


Congratulations, you can now program your Mitsubishi PLC remotely (on your LAN).

Direct Phone VCOM to a Twido

The remote connection that we will use in this example is a “Direct Phone Connection”. This connection consists in calling the eWON using a standard modem to set up a PPP (point to point) connection. For this, we need to configure the eWON as PPP server. The eWON will then pick up the phone, authenticate the caller and assign an PPP IP address to the eWON and to the PC for the remote connection.

For our example, we will assume to have a layout as described in the following picture:



NOTE In this manual we explain the communication using a direct phone connection. Just keep in mind that with the eWON you can also make this communication using other connection types like Internet connection, GPRS connection, VPN connection or using Callback features.

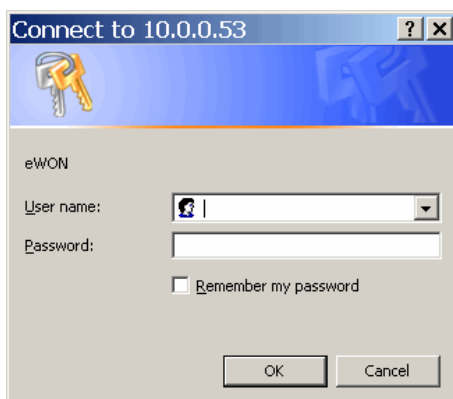
IMPORTANT Using eVCOM to reach a Twido PLC is done here only for **example purpose**. As Twido PLC is a Modbus-RTU device and as Twidosoft handles Modbus-TCP, the *efficient way* to remotely access a Twido through an eWON is the *Transparent Gateway function* and not eVCOM. In fact, Modbus Gateway is a kind of special case of the more general VirtualCOM functionality.

eWON configuration for Remote Connection

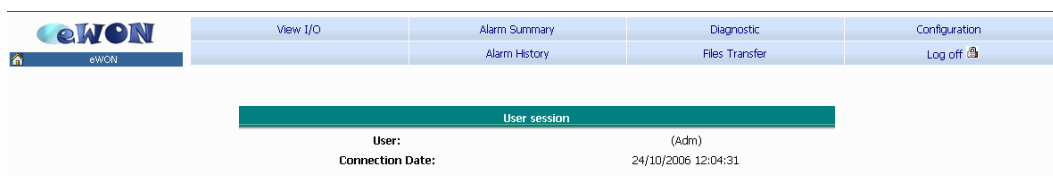
Access to eWON

Accessing your eWON is very simple:

Enter the IP address of your eWON in the address bar of your Web Browser (Internet Explorer, ...): <http://10.0.0.53> or <http://192.168.0.2> in our example.



On the **Connect to** pop-up page enter adm (User Name) /adm (Password) then **OK**.
You are now navigating on your eWON2001.



The menu bar on the top of the main page allows you to navigate through the different display and configuration pages of your eWON.

eWON PPP connection configuration

The eWON PPP configuration page can be reached on the web page (starting from the main page, see above) following this path:

**Configuration → System Setup → Communication →
Network Connections → Modem → Incoming**

7. Practical examples

Tag Setup		System Setup		IO Server Config		Main Menu	
Script Setup		Users Setup		Pages List			
General		Communication		Storage		02/06/2006 15:48:23	
PPP incoming Connection <input checked="" type="checkbox"/> Server enabled							
PPP Server Setup							
eWON PPP server IP address	202.0.0.240						
PPP Client IP address	202.0.0.1						
Enable protocol compression	<input checked="" type="checkbox"/>						
Use incoming for outgoing	<input type="checkbox"/>				Connected client is a gateway		
Number of rings before modem answers	1				Default = 0		
Idle time before hanging up	240		seconds				
Reset eWON if no incoming connection after...	0		Hours		0 = disable watchdog.		
<input type="button" value="Update"/>							

Check the **Server enabled** box for the PPP Incoming Connection.

Let the **eWON PPP server IP address** and the **PPP client IP address** unchanged.
By default the PPP Server address is set to 202.0.0.240.

Enable the protocol compression.

Let the other items unchanged.

Click **Update**.

Establish the remote connection

On your PC you will need to create a dial-up connection.

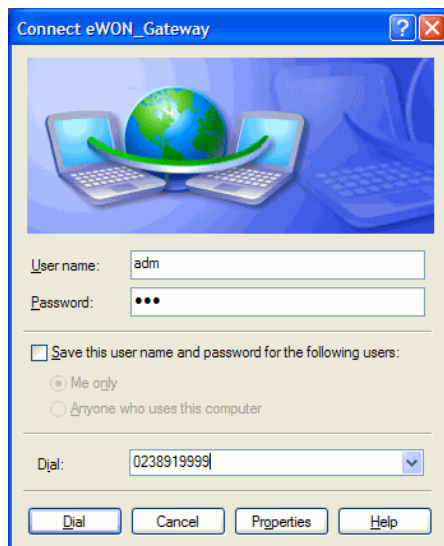
You can create a standard dial-up connection in Windows using the «New Connection Wizard» or you can use eCatcher, a free downloadable program on our Website.

With eCatcher you can create and manage easily your different remote connections. Among other things, with eCatcher you can configure your dial-up connection to launch automatically the corresponding Step7® project once the dial-up connection established.

eCatcher : <http://support.ewon.biz/DownloadSoft.html>

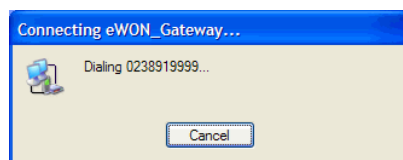
Using the Windows Dial-up connection

Click on your dial-up connection to open the «Connect» window:



In the **User name** and **Password** fields enter a valid eWON user name and password (adm/adm for example)

Enter the phone number of the eWON to call and click on the **Dial** button.



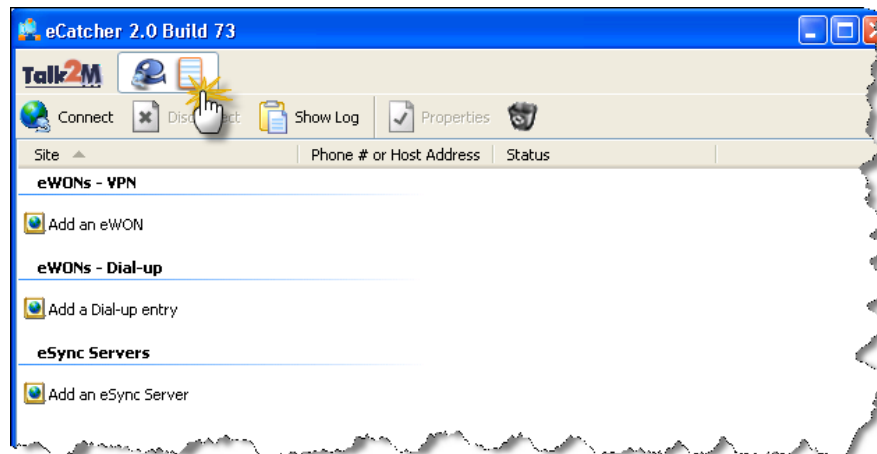
Once the connection is established, the status of your Dial-up connection becomes «connected».

Using eCatcher

To create a new Dial-up connection in eCatcher follow these next steps:

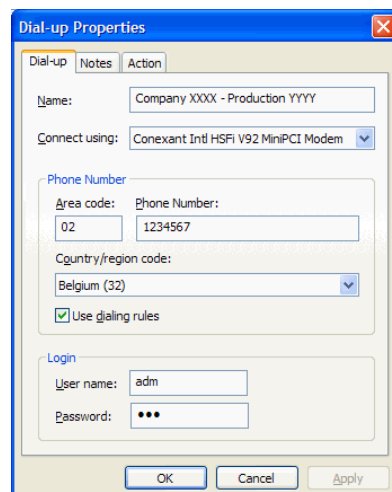
7. Practical examples

Launch the eCatcher application (eCatcher.exe)



Select the «My connection» tab (not the Talk2M tab).

Click on «Add a Dial-up entry»



On the **Dial-up** tab, enter the following information:

Name: a name to identify the Dial-up connection

Connect using: choose the Modem that you will use on your PC

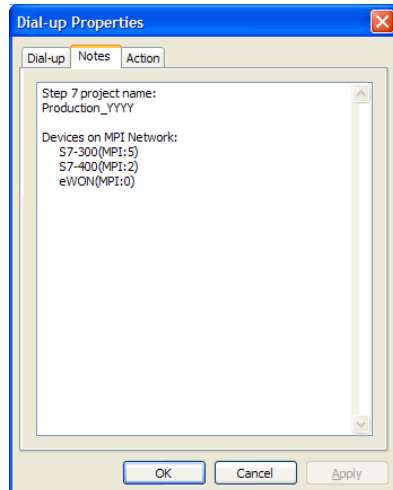
Phone Number: enter the phone number of your eWON. You can use or not the dialing rules defined on your PC.

Login: enter a valid eWON user and password (adm/adm for example)

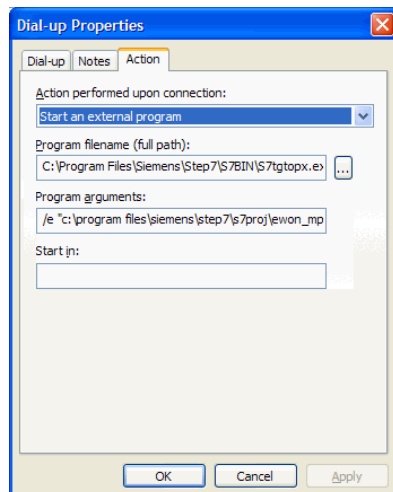
Go to the **Notes** tab:

This window will allow you to encode some information that will be useful for the remote connection. For example, the name of the involved Step7® project or the addresses of the PLC which can be reached through the remote connection, ...

7. Practical examples



Go to the **Action** tab:



This window will allow you to configure the action that will be performed once the remote connection is established.

You can choose **No Action** or for example define to start automatically Step7® with the concerned project. To realize this, configure the Action settings like following:

Action performed upon connection: Start an external program

Program filename: Use the «...» button to chose the Step7® program (S7tgotpx.exe)

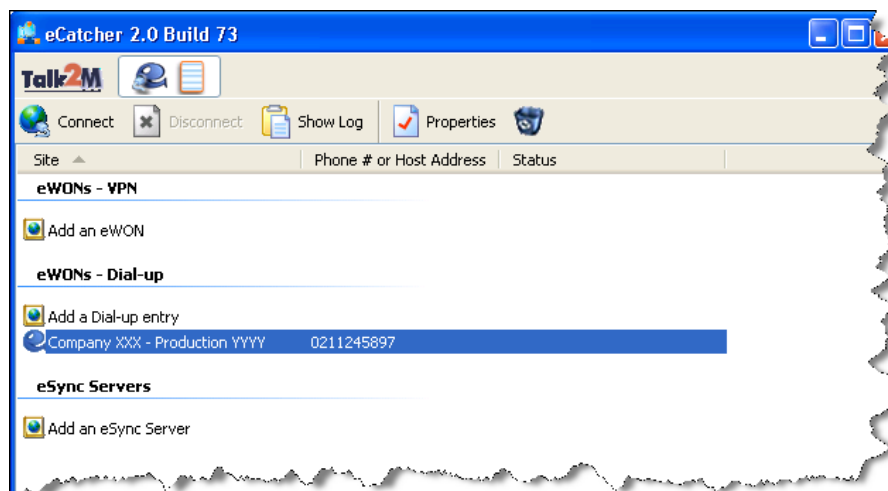
Program arguments: /e & full path of your Step7® project

(for our example: /e "c:\program files\siemens\step7\s7proj\ewon_mpi\ewon_mpi.s7p"

Click **OK** to close the *Properties* window.

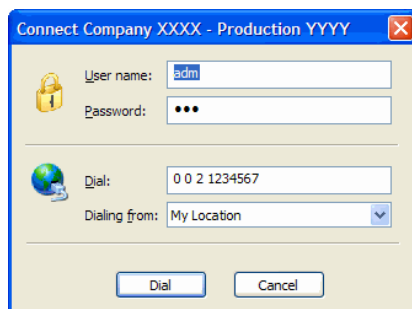
7. Practical examples

The Dial-up connection that you have created will now appear in the list of «eWONs -Dial-up».



To start the remote connection follow the steps below:

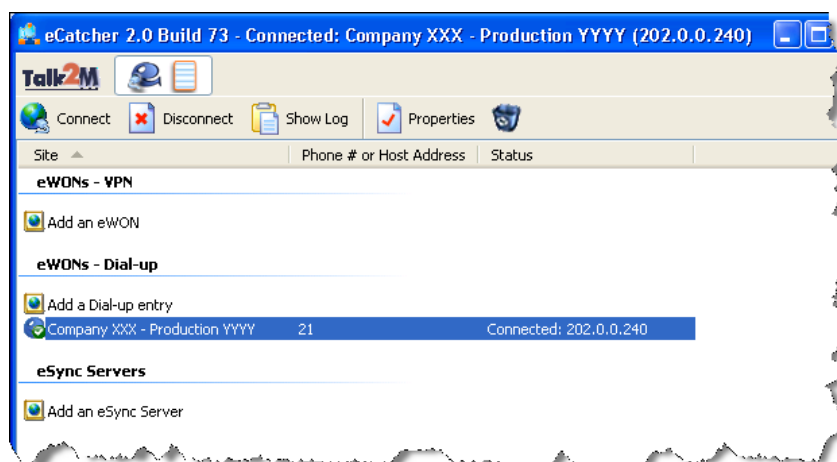
Double-click on the eWON – Dial-up you want to open (Company XXXX – Production YYYY)



Click on the **Dial** button to start dialing.

Once the PPP connection is established, the Step7® project will start automatically.

In eCatcher, the active Dial-up connection will be checked in green color and the Status column will indicate the PPP server address (Connected: 202.0.0.240).



Serial eWON configuration



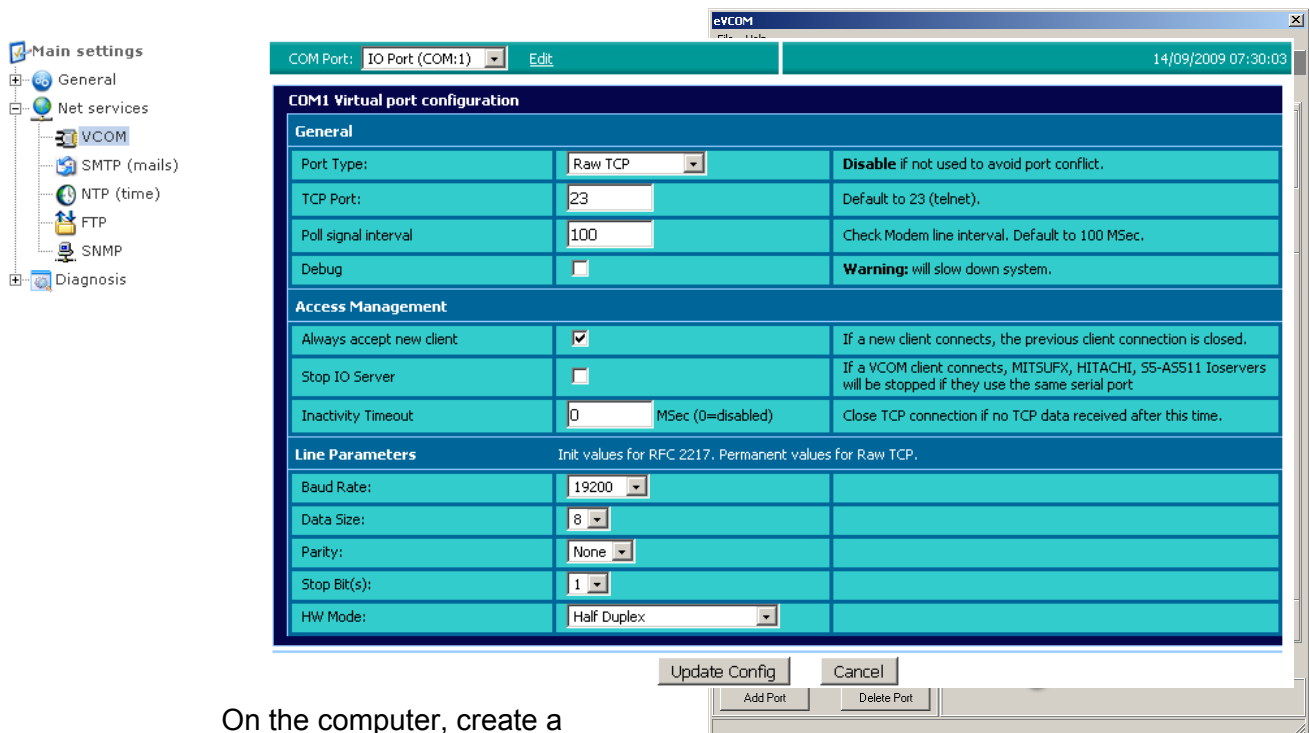
On the eWON, as the Twido PLC uses a RS-485 serial link, you will configure the eWON serial dipswitch in RS-485/RS-422 mode:

The VCOM port configuration will be the following:

Configuration → System Setup → General → Net Services → VCOM

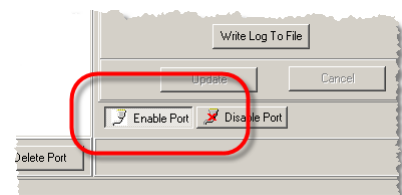
7. Practical examples

eVCOM configuration



On the computer, create a Virtual port in the eVCOM software and set the Gateway address to the eWON IP of the PPP link, then 202.0.0.240 :

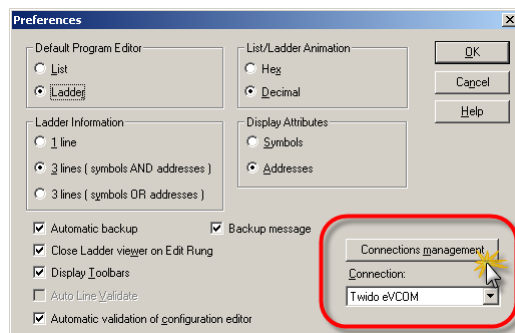
Don't forget to enable your connection in the eVCOM software.



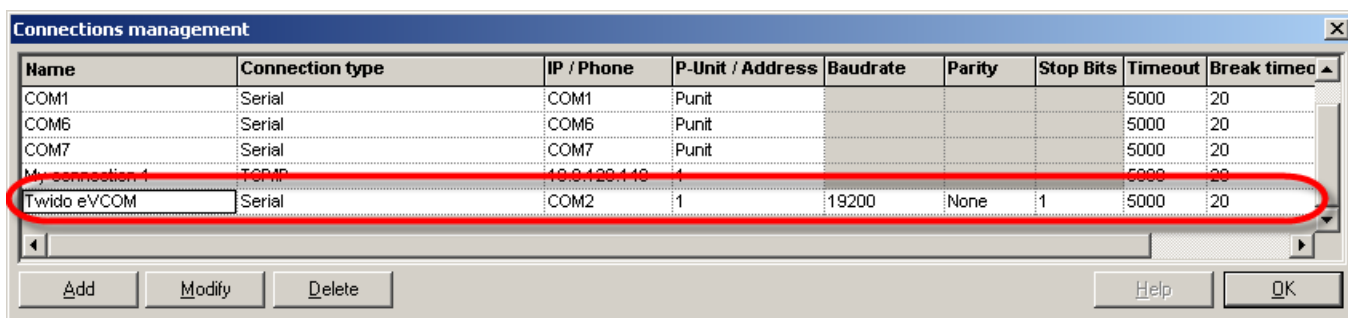
Twidosoft configuration

Now, in the Twidosoft software, you need to create a connection to the Virtual port created in eVCOM.

Open the “Preferences” DialogBox (File → Preferences) and click on the “Connections management” button.



And create a new Serial connection linked to the COM2 port with the communication parameters of your Twido PLC.



Before leaving the Preferences DialogBox, select your new connection in the “Connection” ComboBox.

Now, go on the menu “PLC → Connect” to establish the link between Twidosoft and your Twido PLC.

Revisions

<i>Revision Level</i>	<i>Date</i>	<i>Description</i>
1.0	08/12/2009	First release.

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