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WL-COMETH QUICK START

Please download last documentation on our web site (www.acksys.fr), or refer to the full manuals on the CD

PRODUCT SPECIFICATIONS

Single channel RS232 or RS422A/RS485 to WIFI 802.11b adapter with high frequency filter and surge protection
 RS232/RS422A/RS485 selection by software
 Data format: 7/8 bits + 1 stop bit + no/even/odd/mark/space parity bit
 Metal housing with fastening, DIN Rail fastening option
 Power supply 9 to 36 VDC (3 W max) for DC version
 Power supply 85-264 VAC for AC version
 Size : 17x15x4.2 cm (6.7x6x1.6 in)
 Weight : 0.700 Kg (1.54 lbs)

WLAN interface

IEEE 802.11b (2,4 GHz – 2,4835 GHz) at 11 Mbit/s
 300 m nominal range (open space) from access point, 60 m in other cases.
 4 WEP key 64/128 bits.
 IP Protocols: IPv4, ICMP, TCP, UDP, Telnet, RFC 2217, MODBUS TCP
 TCP port 23 for TELNET administration, configurable TCP port for data exchange

RS232 EIA/TIA 574 Serial interface

DB9 male connector with DTE pinout, 15 kV ESD protection
 Sustained serial rate up to 250 Kbps

EIA RS422A/RS485 – CCITT V11 Serial interface

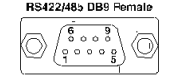
DB9 female connector, 15 kV ESD protection
 Line polarization selection by strap, Terminating resistor selection by jumper
 Master or Slave selection by software (built-in automatic turn-around)
 Sustained serial rate up to 396 Kbps (Max 999.999 Kbps)

OTHER USER MANUALS

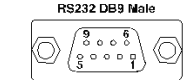
The main user manual of the WL-COMETH product is [WL-ComethUserGuide \(DTUS044\).pdf](#)
 It describes all WL-COMETH functionalities except the embedded firmwares proper.
 SERVERCOM firmware is described in [SERVERCOM UserGuide \(DTUS043\).pdf](#)
 MODBUS TCP firmware is described in [MODBUS-TCP UserGuide \(DTUS041\).pdf](#)
 TCP CLIENT is described in [TCPCLIENT UserGuide \(DTUS045\).pdf](#)
 DOWNLOAD firmware is described in [download firmware user guide\(DTUS040\).pdf](#)

CONNECTORS CABLING

Pin	RS422A Signal	RS485 Signal	Pin	RS232 Signal	Direction
1	Connect together for line polarization (+)		1	DCD	Input (to cometh)
2			2	RXD	Input (to cometh)
3	B (TXD)		3	TXD	Output (from cometh)
4	B' (RXD)		4	DTR	Output (from cometh)
5	GND	GND	5	GND	
6	Connect together for line polarization (-)		6	DSR	Input (to cometh)
7			7	RTS	Output (from cometh)
8	A (TXD)		8	CTS	Input (to cometh)
9	A' (RXD)		9	RI	Input (to cometh)



RS422/485 DB9 Female



RS232 DB9 Male

GETTING STARTED

1. Determine which WL-COMETH firmware you need

According to versions of WL-COMETH product, several firmwares can be loaded into FLASH memory upon delivery. But only one firmware can be run at any one time, so it's very important to determine the relevant one.

- "SERVERCOM" : COM Port emulation with RFC2217 extension, raw TCP socket application, Telnet compatible client
- "MODBUS" : MODBUS TCP gateway
- "TCPCLIENT" : TCP tunnel mode between two COMETHs, or on-request TCP calls to a server application
- "DOWNLOAD": This is a specific firmware which enables COMETH firmwares management : update, erase, add functions

Upon delivery, the default enabled firmware is SERVERCOM.

2. Determine the parameters of your application

- Serial data format, baud rate
- Serial control signals driving source
- Electrical type of your serial interface
- ...

3. Collect network characteristics

You will need at hand some information about your LAN. The following is required :

- COMETH IP address (see below)
- LAN netmask (see below)
- Gateway address (if required)

COMETH IP address : You must assign an IP address to the WL-COMETH . You **CANNOT** JUST PICK ONE AT RANDOM and wish it will work! The chosen address must meet the following requirements :

- Its network part must match the network part of other devices on the same LAN,
- Its host part must be different from any other devices on the same LAN (beware of printers, routers and gateways),
- Its host part must not be a reserved value like 0 or 255.

NETMASKS : If no netmask applies, it can be deduced from the IP address : given IP address X.Y.Z.T, if X<127, then the netmask is 255.0.0.0. If X=128 and X<191, then the netmask is 255.255.0.0. Otherwise the netmask is 255.255.255.0. If in doubt, please ask to the local Network Administrator.

4. Connect AC power 85-264 VAC or 9-36 VDC depending on the version

Use power supply cable.
 Notice WL-COMETH has no ON/OFF switch. WL-COMETH turns on automatically when power supply is connected.

5. Access to administration mode via RS232 serial port

This step allows WL-COMETH parameters setup (IP address ...).
 Push the switch towards the « Admin » position. The orange (DIAG) light should blink twice per second. If it is not the case, try pushing the switch in the opposite direction.

Connect to a PC RS232 COM port
 Below we describe how to do this with a PC with Windows™. Other devices (ANSI console...) or operating systems (Linux...) can be used.

COMETH has one male DB9 RS232 connector with DTE cabling. You can use the provided null modem cable and plug it directly, into a standard DB9 male connector (PC COM port for example)
Run HyperTerminal
 When asked to choose a modem or port, select a direct connection to COMx (COMx being the COM port on which you plugged the WL-COMETH).

Select the following port parameters : 2400 bauds (bits/second), 8 bits, parity none, 1 stop bit, no flow control.

HyperTerminal now displays a blank window. Hit the « ENTER » key to display the admin prompt.

6. WIFI mode configuration

WL-COMETH can works with two standards WIFI mode. AD-HOC mode and INFRASTRUCTURE mode.
 For select mode, see command "set net mode mode".
AD-HOC mode : In this mode WIFI devices can only communicate with other WIFI devices on the same channel and SSID, but they cannot go through an access point. To set up a dialog between two WL-COMETH in this mode, one of them must work in TCP client mode (master), and other must work in TCP server mode (slave). To set up AD-HOC mode use the "set net mode ad-hoc" command.
Infrastructure mode : In this mode WIFI devices can go through an access point to communicate with other WIFI devices, and devices on your local network or Internet. In this mode you must use a WIFI access point. To set up infrastructure mode use the "set net mode infra" command.

7. IP address configuration

You must now type the following commands to set up IP connectivity (you must type only the text in bold characters, other text is issued by the WL-COMETH).

In the following lines, replace XXX.YYY.ZZZ.TTT by the IP addresses and netmasks you chose for the WL-COMETH :

```
root> set net ip XXX.YYY.ZZZ.TTT
root> set net mask XXX.YYY.ZZZ.TTT
```

The following is required only if you will use a gateway :

```
root> set net gateway XXX.YYY.ZZZ.TTT
```

Now you should save the configuration changes :

```
root> save
root> reset
```

8. Enable the relevant firmware

Display the current firmware
 root> show version
 If this is the firmware you want, proceed to next section. Otherwise, you must change it.

List the available firmwares

```
root> show prog list
```

There are 6 slots (or segments) identified by a number (0 to 5). Locate the segment S of the firmware you want to enable.

→ It is now a good time to browse <http://www.acksys.fr/us/services/telechargements.htm> and check that you have the latest version of the firmware you plan to use.

To load and run this firmware, type :
 root> set prog enable S (Replace S by the segment number)

Now you should save the configuration changes :

```
root> save
root> reset
```

9. Other configuration

Many other configuration options are available, some are specific to each firmware. Please refer to the full list of administration commands in the relevant user's manual. The commands common to all firmwares are described in section "WL-COMETH programming".

10. Install the WL-COMETH in its final location

Now you can unplug the WL-COMETH from the administration PC and push the mode switch on the other side (thus allowing data to go from WLAN to the asynchronous interface).

Check the cabling of your device against the schematics of the WL-COMETH connector. Connect the WL-COMETH to the serial device.

Thanks to level LEDs, check if the reception is sufficient (see troubleshooting section). If not, change orientation of the antennas, or move the WL-COMETH.

Please refer to the full documentation on the CD for cabling example.

11. Windows COM port redirector software installation

This section concerns only based Windows COM port application.
 Warning, the COM port redirector software works only if WL-COMETH executes SERVERCOM firmware. The "mode" parameter of the "set serial mode mode" must also be set to "RFC 2217".
 Run the executable file on the provided disk. This installs the Serial IP™ software, allowing COM port redirection from MS-Windows to the WL-COMETH. Enter the software serial number when required to do so.

Run the Serial IP Port Manager, select a COM port name for the WL-COMETH, then select it in the ports list, and click « Telnet » in the radio buttons on the right. Fill in the IP address for example 192.168.1.253 and fill in the port number 2300.

You are now ready to use the WL-COMETH through port redirection. Just run your application and specify the COM port name that you selected in the previous step.

TROUBLESHOOTING

Please check the following step before calling for support. If you must call, we will need complete information about your network topology, IP addresses of intervening devices, description of your device's serial connector, model of the computer and operating system.

The checks should be done in the order given below.

1. Checking the hardware

Ten LEDs allow hardware diagnostic.

Power: this led lights up when the WL-COMETH is correctly powered.

If the POWER LED stays off, it means that your power supply is bad, or incorrectly connected.

Diag: In Administration mode, this LED flashes twice per second, unevenly
 In Exploitation mode, this LED flashes when an error is detected in characters received on the asynchronous interface
 At Power up : if the WL-COMETH is programmed to use DHCP, this LED flashes once per second, until answer from a DHCP server. In the opposite case, it stays lighted until the WL-COMETH is ready to use (in less than one second)

If the DIAG LED stays lighted at power up, it means that the WL-COMETH is out of order. Try to power it down, then up again after a few seconds.

If the DIAG LED flashes to indicate Administration mode, push firmly the « Adm » switch in the opposite position (OFF).

RF signal quality : six LEDs allow to check the link with the access point and the reception level.
 If all LED flashing, WL-COMETH is out of range of Access Point, or the SSID configured in WL-COMETH is not the same of access point. Move the unit or change direction of antennas, check and correct the SSID.

In other cases, WL-COMETH is in the range of Access Point and link is established. The LEDs indicates the reception level with the Access point.

Warning, if you don't have green LED on, the reception level may be too low to assume a good data transfer. At least one green led ON is recommended.
 If all six LEDs are on, the reception level is perfect.

WLAN Tx/Rx : this LED flashes when sending or receiving data on the WIFI

If the LAN Tx/Rx LED stays off while your device is sending data, it means that the WL-COMETH IP address is not correct, Serial IP is not properly installed or the WL-COMETH is not connected to the same LAN than your device.

If the LAN Tx/Rx LED stays off while you are sending data to your device, it means that the WL-COMETH IP address is not correct, Serial IP is not properly installed or the WL-COMETH does not receive data on the asynchronous serial interface.

Serial Tx/Rx : this LED flashes when sending or receiving data on the asynchronous serial interface.

If the Serial Tx/Rx LED stays off while your device is sending data, it means that the RS cable is bad, improperly connected, or some kind of flow control forbids transmission.
 If the Serial Tx/Rx LED stays off while you are sending data to your device, it means that some kind of flow control forbids transmission, or the WL-COMETH does not receive Ethernet data frames.

If the serial Tx/Rx LED stay on while you are not sending data to your device and your device is not sending data, it means that the RS cable is bad, improperly connected, A & B or A' & B' are inverted, line polarization is required in RS422A multi-drop and RS485 mode.

2. Checking the network topology

In the following examples the WL-COMETH IP address is 192.168.1.253. The testing computer address is 192.168.1.244.

- First you must ensure that the WL-COMETH has a unique IP address on the local network. Disconnect the WL-COMETH from the LAN, then try to PING the WL-COMETH address from a computer connected to the local network. This should result in an error or timeout :

```
C:\>arp -d 192.168.1.253
```

```
C:\>ping 192.168.1.253
```

```
Pinging 192.168.1.244 with 32 bytes of data:
```

```
Request timeout.
```

The « Request timeout » error messages are normal and expected in this case. If this is not the case, another host has the same IP address. Correct the problem. If the answer is some message like « no route to host », the computer you are using for the test has no access to the WL-COMETH's LAN, or the network part of the IP address of the WL-COMETH is incorrect.

- Now reconnect the WL-COMETH to the LAN and try to PING it :

```
C:\>arp -d 192.168.1.253
```

```
C:\>ping 192.168.1.253
```

```
Pinging 192.168.1.244 with 32 bytes of data:
```

```
Answer from 192.168.1.253 : bytes=32 time<10ms TTL=64
```

If there is no answer, the IP address of the WL-COMETH is not this one. Correct the problem with the administration system. Be sure to save the changed configuration and reset the WL-COMETH.

- Then, if you need to cross a gateway, PING the WL-COMETH from a computer installed on the other side of the gateway.

DO NOT just move the above computer from one LAN to the other ! You must set a new, appropriate IP address in the computer when you move it from one LAN to another.

If there is no answer, the gateway IP address or the netmasks are improperly set in the WL-COMETH or in your computer. Correct the problem with the administration system. Be sure to save the changed configuration and reset the WL-COMETH. Also the gateway itself may be improperly set. Check with your network administrator.

3. Checking the configuration

When you can PING the WL-COMETH, you should be able to use remote administration. Try to connect to the administration system : C:\> telnet 192.168.1.253

If the connection is refused, another TELNET is already connected to the WL-COMETH. You can also use the asynchronous port administration. Please refer to the installation guide to do this.

Once in administration mode, check the serial parameters for proper settings. The default TCP data port number is 2300. If the firmware is SERVERCOM and mode is « rfc2217 », then DTR and RTS should be set to « driven » and incoming signals to « ignore », other serial parameters are irrelevant.

4. Checking the software (SERVERCOM only)

In the Serial IP manager window, you should see the COM port name that you assigned in the installation. When the port is in use, LEDs are displayed on the left of the name. You can verify this by opening the port with HyperTerminal.

If the LEDs do not show up, the address or port given for the port is bad. Also, there may be a problem with the computer's network parameters : in this case, you cannot PING the WL-COMETH either.

If only two LEDs are displayed, the WL-COMETH is in RAW mode.

You can change this with the « set serial mode » command in the administration system. Adjust the Serial IP manager accordingly.

WL-COMETH PROGRAMMING

To program the WL-COMETH parameters, it's necessary to enter in administration mode and execute a set of commands.

1. Enter administration mode

From the RS232 line : administration is activated by pushing the « ADMIN » switch to the ON position.

From the network : administration is activated by TELNETing to the IP address of the WL-COMETH, on port 23. Data transfer can proceed simultaneously.

2. Security

Access to the administration system **through TELNET only** is protected with a username and password. The default settings are :

- login root
- password root

You can change these settings. Before logging in, you cannot change the configuration but you can display it. This behavior can be changed to NOT displaying the configuration as well, without the proper password.

You can forbid administration from the network.

3. Usual commands list

Warning, only some commands common to all firmware are documented below. Specific commands are documented in a dedicated user's guide (See section "Other user manuals")
 Administration commands common to all firmwares (general, security and network parameters) are documented in details in [WL-ComethUserGuide \(DTUS044\).pdf](#).

General-purpose commands:

login username start the administrator identification. Ask password.

save save the current configuration to the permanent configuration memory which is used after reboot and remains when the WL-COMETH is powered off.

reset close the admin session and reboot, thus ignoring unsaved parameter changes, and reloading saved parameters. The following parameters will take effect without resetting : location, id2217, showperm, netconfigperm.

quit close administration session (TELNET only)

General parameters changes: (factory setting)

set login username change administrator name. 8 upper/lower cases max. (root)

set password password change administrator password. 8 upper/lower cases max. (root)

set location location change location description. 30 upper/lower cases max. (unknown location)

set showperm allow allow or deny the right to display configuration information without entering the administrator password. (allow)

set showperm deny allow or deny the right to display configuration information without entering the administrator password. (allow)

set netconfigperm allow allow or deny the right to use the administration system from the network. (allow)

set netconfigperm deny allow or deny the right to use the administration system from the network. (allow)

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