ubiqSerial

GSM/GPRS communication modem

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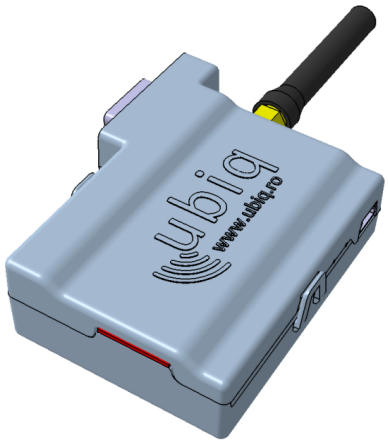
1. Description



ubiqSerial is a GPRS gateway for serial RS232 devices, ideal for serial cable replacement in long range serial connections with remote equipments. It is compatible with most of the serial communications protocols and withstands baudrates up to 115200 bps.

ubiqSerial's architecture includes an ARM9 processing core and GPRS modem, allowing low cost data transfer, while offering more than a standard GPRS modem: two-way network communication, with no fixed IP, no VPN or other network setup requirements.

ubiqSerial allows two-way communication between a computing system and a remote meter by using a GPRS modem in two different ways:

- simulating a virtual RS232 serial connection
  (typically used for remote PLC connection via GPRS)
- simulating a virtual CSD connection
  (typically used for remote meter reading in existing AMR systems, to replace transparently the GSM/CSD with GSM/GPRS communication)

2. Typical application - serial cable replacement in long range serial connections

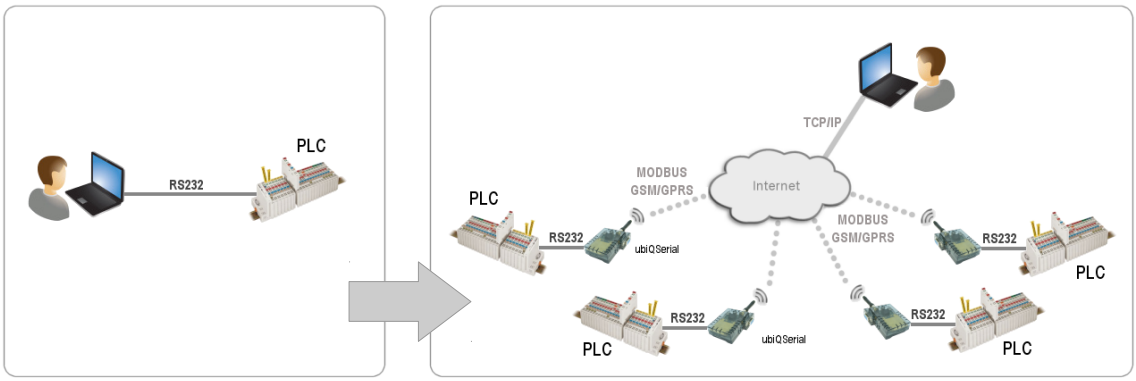


Fig. 1 - Example of serial cable replacement in long range serial connections with ubiqSerial, via GPRS

2. Installation instructions for connecting ubiqSerial to the serial devices

Step 1: Connect the GSM antenna to the modem, using the SMA female connector.

Step 2: Connect the modem to the serial device via the DB9 female connector and secure it with the DB9 screw.

Step 3: After powering the external serial device, observe LED's (green and blue) status.

When the green LED is lit/ turned ON, it shows that the modem is powered.

The blue LED indicates a multiple states, according to the following sequence:

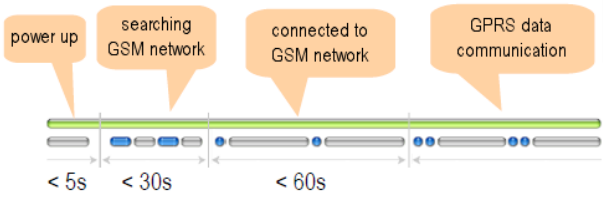
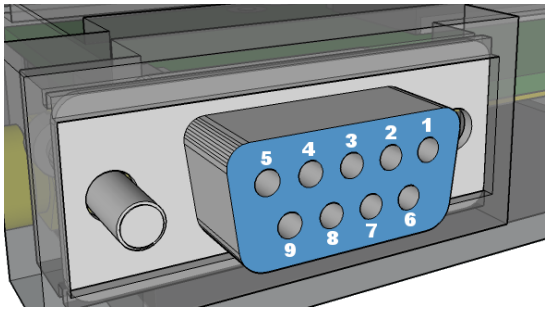


Fig. 2 - Typical status LEDs workflow

When the blue LED blinks fast (two times in a row, followed by a 2sec break), it shows that the modem has established the connection with the server. From this moment on, the serial device is ready for remote data transmission.

2.1. RS232 DBB9 interface pinout specification



Pin	Signal	Type	Description
1	DCD	O	Active CSD data connection
2	RXD	O	Receive Data from the modem
3	TXD	I	Transmit Data to the modem
4	DTR	I +	Data Terminal Ready to modem plus power supply 4.5Vcc – 16Vcc
5	GND	-	Power and signal ground
6	DSR	O	Data Set Ready for modem
7	RTS	I	Request to Send to modem
8	CTS	O	Clear to Send from modem
9	RI	O	Ring indicator from modem CSD/voice

3. Installation guide for ubiqSerial Driver software

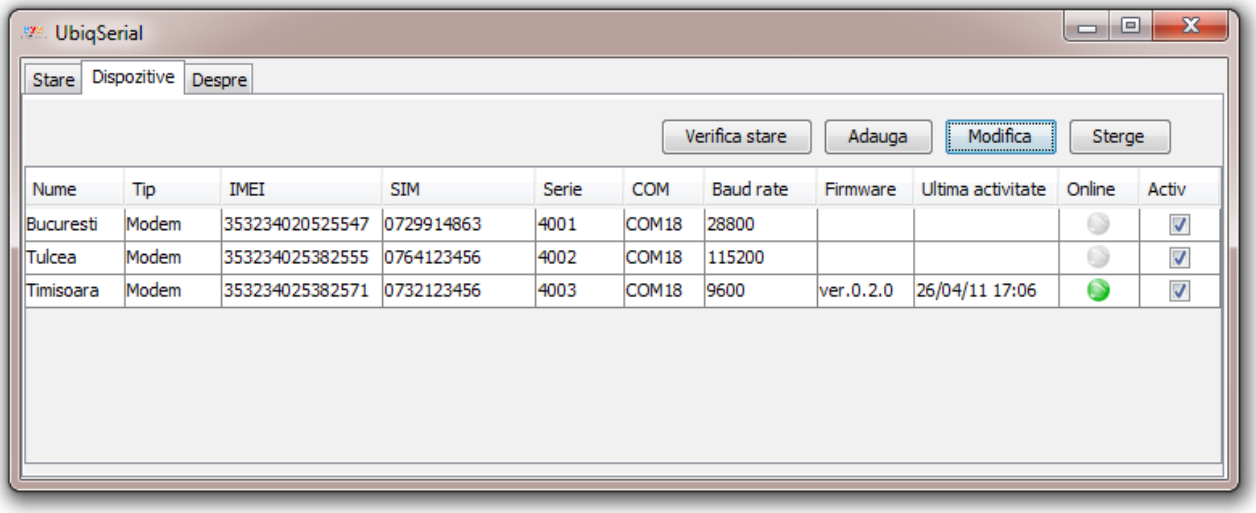
System requirements:

- JRE 1.5+ (http://www.oracle.com/technetwork/java/javase/downloads/index.html)
- internet connection
- Windows XP or better

ubiqSerial Driver software application needs to run on the same system as the one used by the application connected directly to the PLC, meters or other serial devices.

Depending on the operating system, the user could be requested to authorize several actions while performing the installation of the files. After completing the installation, the user can launch the application using the shortcut generated on the Desktop. This should be placed also in StartUp menu, so it will start automatically with Windows.

4. Description of ubiqSerial Driver application



Tab **Dispozitive (Devices)** contains the list of configurable equipments, each with the following information:

Nume (Name) – generic name for fast identification of client's location, where the meter and modem are installed (ex: ”Main Building Meter, Moscow, Russia”)

Tip (Type) – Modem or Serial

- **Modem** type devices simulate a virtual CSD modem. This way, the ubiqSerial Driver software acts like a CSD modem in relation with the remote data transmission software and it simulates the initial sequence of CSD connection. Then it routes the data transfer between the actual modem connected to the on-site meter and the remote data transmission software. The existing dispatcher application shall be configured for GSM or PSTN connection.

- **Serial** type devices create a direct transparent serial connection (local connection) between the actual modem connected to the on-site meter or PLC and the remote data transmission software. The existing dispatcher shall be configured for Serial Line connection.

IMEI – unique identification number of 15 digits for every modem connected to devices in the field; this unique number is printed on the label of each modem. (ex: „35503458348725 ”)

SIM – telephone number of installed SIM card in the ubiqSerial modem (ex: „+40700123456”)

Serie (Serial Number) – modem serial number; this number is optional, but can be used as an internal reference or for maintenance purposes (ex: „4003”)

COM – serial port number where the remote data transmission application will connect to in order to communicate with the on-site meter or PLC (ex: „COM2”)

Baudrate – communication speed between the modem and the on-site meter or PLC measured in bps. Note that hardware baudrate between ubiqSerial and on field device can be set different that the baudrate used by the data transmission application. This means the software can use a single baudrate to communicate with all devices in the field and ubiqSerial will manage different communication baudrates with each device transparently

Firmware – ubiqSerial internal firmware version; this data is filled up automatically with the information read from the modem and it's used for debugging purposes

Ultima activitate (Last activity) – date and time when ubiqSerial modem has been available online for data

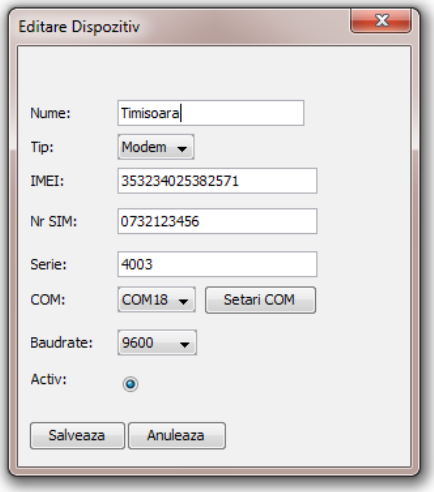
communication (ex: ” 26/01/11 14:06)

Online – communication status with the modem connected to the on-site meter or PLC; it needs manual refresh manually using button **Verifica stare (Check status)** (ex: „Online”)

Activ (Active) – activated/deactivated device status; it is used for devices that the user wishes to deactivate so the ubiqSerial Driver does not use, but for which it's desired that configurations stored for future use; changing the activated/deactivated status is done manually by the user.

5. ubiqSerial Driver configuration

5.1. Step 1- adding a new device

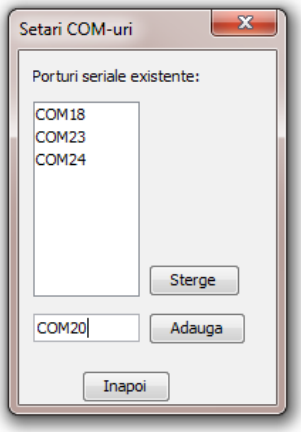


Click button **Adauga (Add)** from the tab **Dispozitive (Devices)**.
Window **Editare Dispozitiv (Edit device)** will appear.
The user will fill out the requested information, according to the details in section 4.

For **modem type** devices, a unique IMEI and SIM pair will be used for every individual device. One can use same COM port for different pairs of IMEI and SIM.

For **serial type** devices, a unique IMEI and COM pair will be used. SIM is ignored and it's only required for firmware update in this case. One can use only one COM for each IMEI, so maximum number of devices is limited to maximum ports allowed by Windows, divided by 2.

5.2. Step 2 - creating a virtual serial port



Click button **Setari COM (COM Settings)** from window **Editare Dispozitiv (Edit Device)**. The user will fill out the name of the new serial port and then click button **Adauga (Add)**.
During the creation of the virtual serial port you will be requested a driver for the new port. Allow the operating system to automatically search a driver, this is pre-installed by the ubiqSerial Driver software. After the serial port has been created, the user can create a new port or can close the port management window.

5.3. Step 3 - saving the configuration and restarting the driver

After the user has added the necessary device and saved the changes, the driver must be restarted. This can be done by in tab **Stare (Status)** by clicking the **Stop** then **Start** button.