



# User's Manual

## **GSM Terminal GT340**

Industrial GSM Communicator

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Note: The specifications in this document are valid as of the listed versions of software and/or hardware. Revised versions of this manual, as well as software and driver updates are available in the download area of the Decode web site.

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# 1 Preface

## 1.1 Symbols



**WARNING** - Safety notice, which must be followed, may have influence on the user's safety or the function of the device.



**IMPORTANT** - Notice, which must be followed to avoid possible problems, which can arise in specific cases.



**NOTE** - Notice, which contains useful advice.

## 1.2 Safety Instructions

Device must be used in compliance with any and all applicable international and national laws and in compliance with special restrictions regulating the utilization of the communications of the communication module in prescribed applications and environments.



**WARNING** - We suggest you to adhere to following recommendations so as to avoid any damage to person or property.

- **All the associated (interconnected) equipment, PC and power supply units (PSU) shell comply with requirements of standard IEC 60950- 1:2005+A1:2009+A2:2013.**
- **Power supply must have SELV output and for security reasons connection must include series 1A fuse protection.**
- **Access to relay connections must be checked and restricted in the end installation using potential hazardous voltage.**
- **Installation and technical support of the device can be performed only by a qualified personnel or a person who has enough knowledge about this device and safety requirements.**
- **Unauthorized modifications or utilization of accessories that have not been approved may result in damage to the device and in a breach of applicable regulations, and result in the termination of the validity of the guarantee.**
- **Do not expose the device to extreme ambient conditions. Protect the device against dust, moisture and high temperature.**



**IMPORTANT** - GSM radio signal level and availability depends on the environment in which it is working, which could affect performance and functioning of device.

## 1.3 Document versions

Document version	Date	Note
v1.0	24/07/2018	First release

## 2 Overview

DECODE GT340 is compact dual-band GSM/GPRS terminal which enables easy connection of the user devices and PCs to the GSM network. It is based on uBlox SARA-G340 module with integrated TCP/IP stack. The micro SIM card is placed through the hole on the front panel of the device. Communication connector is standard DB9 female connector with RS232 DCE interface. The antenna connects to the female SMA 50Ω connector. LEDs on the front panel indicate the presence of the power supply voltage and activity of the GSM network. The device is powered by DC voltage in the range of 8V to 30V. Device is delivered in desktop case, but by adding an optional adapter, it can be mounted on DIN 35mm rail.



**Fig. 1: GSM Terminal GT340**

DECODE GT900 terminal enables the communication of electronic devices and systems over GSM network using GPRS, CSD and SMS services. It is specially designed for remote monitoring and control of industrial processes, security systems, POS terminals, level readers (gas, water, electricity...).

Typical applications include:

- remote PLCs reading and control
- remote process monitoring
- paying at POS (point-of-sale) terminals
- vending machine monitoring
- traffic management
- device service and maintenance
- alarm systems

## 2.1 Ordering information

Package include GSM Terminal GT340 in desktop aluminum case. For additional equipment see section 2.2 *Accessories*.

Model	SKU	Description
GT340	10410	GSM/GPRS terminal, 900 MHz/1900 MHz, desktop case, RS-232 DCE interface, power supply voltage 8 - 30 V DC

## 2.2 Accessories

Additional equipment is listed in the table below. More information about accessories can be found in the next chapter or at [www.decode.rs](http://www.decode.rs).

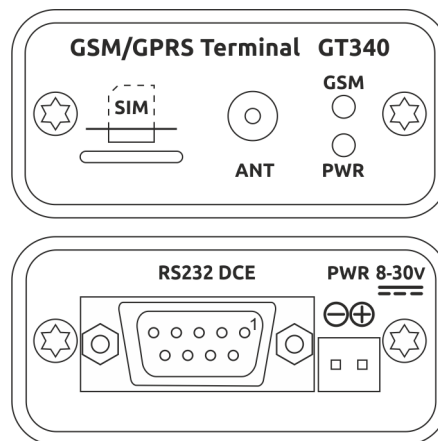
Model	SKU	Description
ANT-GSM-R	21760	GSM Rod antenna, 2.2 dBi, SMA, quad band
ANT-GSM-S	21757	GSM Swivel antenna, 2.2 dBi, SMA, quad band
ANT-GSM-M	23266	GSM antenna, Magnetic mount, cable 2.5m, 2.2 dBi, SMA, quad band
PS-1212-AD	10261	AC/DC adapter, DC12V 12W, AC100-240V 50/60Hz
PS-2415-DIN	23601	Power supply, DIN rail mount, DC24V 15W, AC85-264V 50/60Hz
CB-DB9MF-2M	21745	Serial Cable Assembly 1.8~2m, DB9 Male to DB9 Female
ENCL-DIN35-H2	23485	35mm DIN Rail Holder, Plastic

### 3 Device Description

GSM Terminal GT340 is enclosed in 88x58x28mm aluminum desktop housing. By obtaining optional adapter, it can be mounted on DIN 35 mm rail.

Front panel contains slot for micro SIM card, SMA connector for GSM antenna and LEDs for indication of power supply and activity of GSM network.

Rear panel contains DB9 female connector for RS232 DCE serial interface and pluggable screw clamp connector for DC power supply.

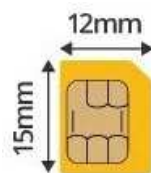


**Fig. 2: Front and rear panel connectors**

#### 3.1 SIM card

Device supports standard Micro SIM card designed for 1.8V/3.0V voltage. SIM card holder is push-push type.

Please pay attention to the direction of the card when inserting into the slot. Follow the drawing on the front panel of the device.



**Fig. 3: Micro SIM card**



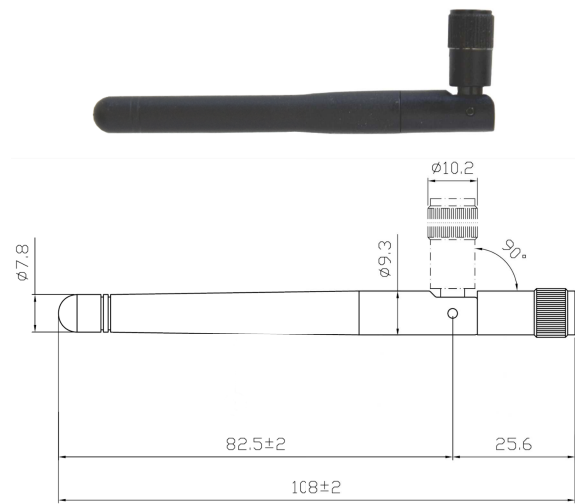
## 3.2 Antenna connection

Connect external antenna with SMA male connector to SMA jack connector on device. Make sure the antenna is for the GSM 900/1800MHz frequency with impedance of 50Ω, Secure the connector tightly.

One can choose optional GSM rod, swivel or magnetic mount antenna. For ordering details see chapter 2.2 *Accessories*.



**Fig. 4: GSM Rod antenna**



**Fig. 5: GSM Swivel antenna**





**Fig. 6: GSM Magnetic mount antenna  
with cable of 2.5m length**





### 3.3 LED indicators

LEDs on the front panel indicate the presence of the power supply voltage and activity of the GSM network.

Following table describes device status depending on LED PWR presentation:

Name	State	Presentation	Description
PWR (green)	Device is OFF		Continuously OFF
	Device is ON		Continuously ON

Following table describes GSM status depending on LED GSM presentation:

Name	State	Presentation	Description
GSM (red)	No network coverage, not registered		Continuously OFF
	Registered home 2G network		Cyclically High for 100 ms, Low for 2 s
	Registered roaming 2G network		Cyclically High for 100 ms, Low for 100 ms, High for 100 ms, Low for 2 s
	Voice or data 2G call enabled		Continuously ON



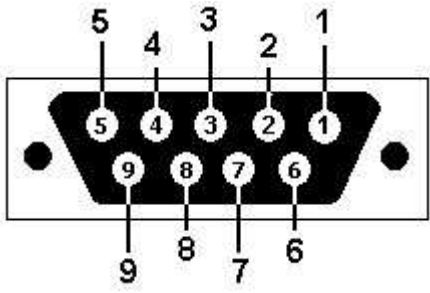
**IMPORTANT:** It is necessary to insert a SIM card and attach GSM antenna to enable GSM LED to light up. Built-in GSM module has general purpose pin for driving LED GSM. By default this pin is set for network status indication. If for some reason the LED does not light, check and if necessary set the function using the AT command "AT+UGPIOC=16,2↵". Save setting to non volatile memory using AT command "AT&W↵". Turn off device by issuing command "AT+CPWROFF↵", to safely save parameters in NVM (Non Volatile Memory).

Please refer to the "u-blox AT Commands Manual" for more details about AT commands.

### 3.4 RS232 serial interface

RS-232 communication with user device or PC can be established via standard DB9 female connector. GT340 acts like standard DCE device.

Auto baud rate detection is set by default, format is 8N1, with enabled hardware flow control.

RS232 pinout		Signal	Type
	1	DCD	RS-232 Output
	2	RxD	RS-232 Output
	3	TxD	RS-232 Input
	4	DTR	RS-232 Input
	5	GND	Signal Ground
	6	DSR	RS-232 Output
	7	RTS	RS-232 Input
	8	CTS	RS-232 Output
	9	RI	RS-232 Output

Serial RS232 cable with DB9 male and DB9 female connectors is obtained separately. For ordering details see chapter 2.2 *Accessories*.



**Fig. 7: Serial cable**

### 3.5 Power supply

GSM Terminal GT340 must be powered with DC power supply in range from 8V to 30V. Follow polarity designation on the rear panel of the device. Device has overvoltage protection (TVS diode) and it is protected against reverse polarity (serial diode).

One can choose optional AC/DC adapter for wall mounting, or industrial grade power supply for 35mm DIN rail mounting. For ordering details see chapter 2.2 *Accessories*.



**Fig. 8: AC/DC adapter 12V 12W,  
wall mount, 25x75x40mm**



**Fig. 9: Power supply 24V 15W,  
35mm DIN rail mount, 17.5x90x58.4mm**

The power supply of the device can be controlled using the DTR pin on the RS232 port. On the rear panel of the device, it is necessary to remove two torx screws using the T8 screwdriver. Remove the back panel and carefully remove the PCB out of the case.

The jumper PWR\_EN (close to the RS232 connector) defines how the power is turned on:

- in place – power is always ON
- removed – the power is turned ON by the DTR signal on the RS232 port

Choose how to turn on the power, return the PCB to the case, and mount the rear panel.

### 3.6 DIN rail mounting holder

DIN rail mounting holder can be mounted on the device and secured by two screws M3x5 (included with holder). For ordering details see chapter 2.2 *Accessories*.



**Fig. 10: 35mm DIN rail mounting holder**

## 4 Operation description

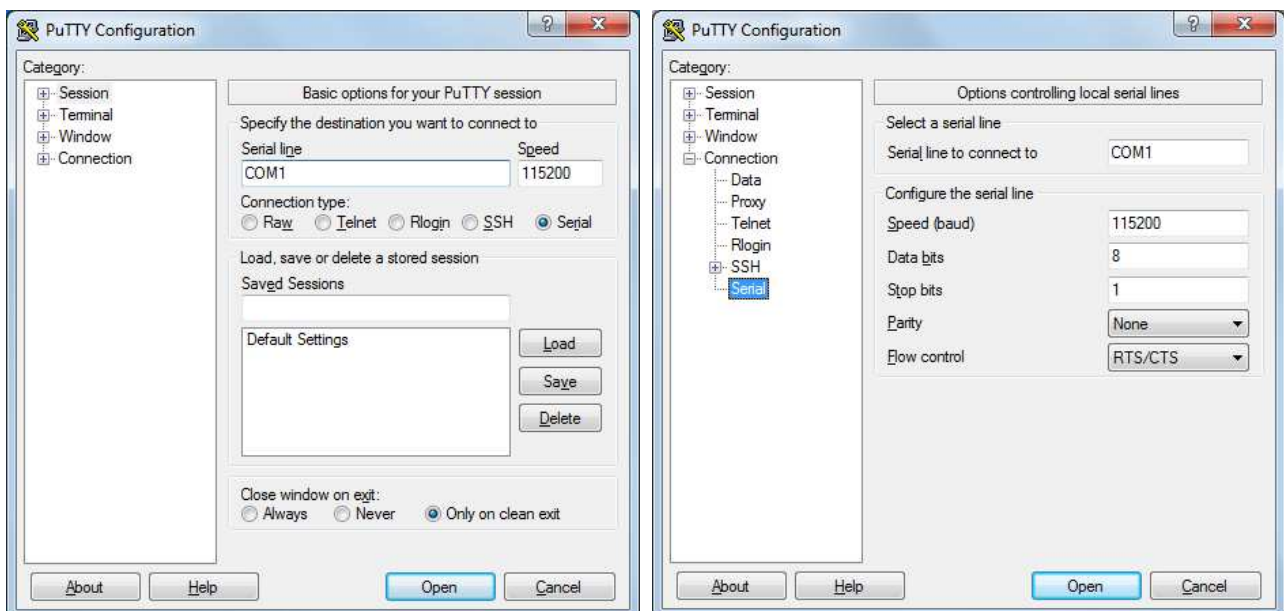
### 4.1 Basic operation

#### 4.1.1 Terminal program

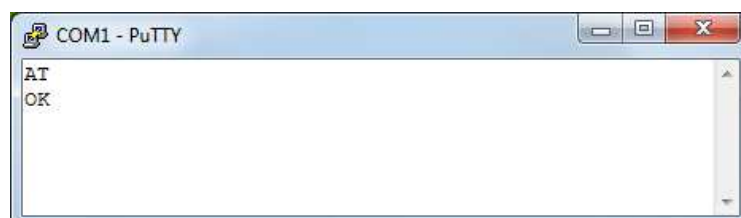
For communication and setting up the GT340, one can use terminal program such as "PuTTY". It is an open source software and can be downloaded, free of charge, at [www.putty.org](http://www.putty.org).

Choose the correct COM port and serial port parameters (e.g. 115200bps, 8bits, no parity bit, 1 stop bit, RTS/CTS hardware flow control).

**NOTE:** Auto baud rate detection is set by default. Issuing " AT↵ " command sets the device to chosen baudrate.



**Fig. 11: PuTTY terminal program**



**Fig. 12: Issuing AT command**

### 4.1.2 AT command guide

Following are examples of some AT commands. Please refer to the "u-blox AT Commands Manual" for a full description.

**i NOTE:** Issue " AT+CMEE=1↵ " to have extended error code (+CME ERROR), and " AT+CMGF=1↵ " for text mode as preferred message format.

Description	AT commands	Response	Comments
Network registration checking	AT+CREG?	+CREG: 0,0	Not registered
		+CREG: 0,1	Registered, home network
		+CREG: 0,2	Searching operator
		+CREG: 0,5	Registered, roaming
Check if PIN is required	AT+CPIN?	+CPIN: READY	PIN not required
		+CPIN: SIM PIN	PIN is required
Enter PIN code	AT+CPIN=1234	OK	PIN code accepted
		CME ERROR: 16	Incorrect PIN code
Receiving signal strength	AT+CSQ	+CSQ: 21,99	The first parameter has to be at least 10 for normal communication
Receiving an incoming call		RING	Incoming call
	ATA	OK	Answer the call
Make a call, or make an emergency call	ATD1234567; ATD112;	OK	Communication established Note: use ";" at the end for voice call
		NO CARRIER	Communication loss
Hang up call	ATH	OK	Call ended
List all SMS messages	AT+CMGL="ALL"	+CMGL: ...	Lists all SMS messages
Send SMS message	AT+CMGS="1234567" ↵	>	Initiate sending message, wait for ">"
	this is the text CTRL+Z	+CMGS: 1 OK	Enter the text and issue "CTRL+Z" to send
Set GSM LED	AT+UGPIOC=16,2	OK	Set LED OK
Save parameters in non volatile memory	AT&W	OK	The configuration settings are stored
Safe power down	AT+CPWROFF	OK	GSM module OFF

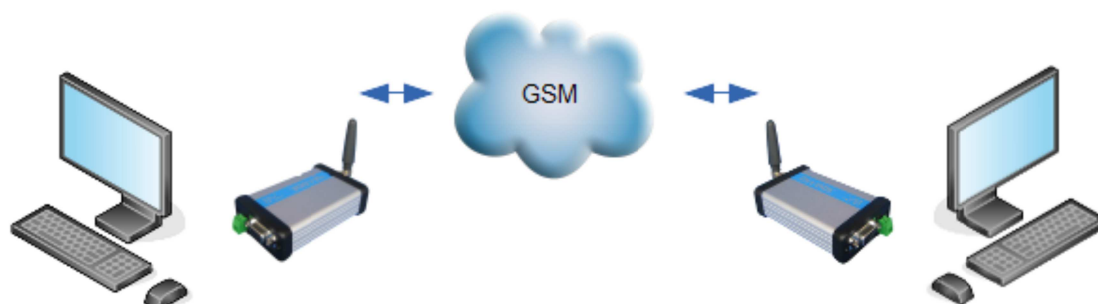
### 4.1.3 Factory settings

In the following table are some of the factory settings for GT340 Terminal. Please refer to the "u-blox AT Commands Manual" for a full description.

AT command	Factory settings	Description
AT+IPR	0	Auto baud rate detection
AT+IFC	2,2	RTS/CTS hardware flow control
AT+ICF	0,0	Auto detect format, odd parity
ATE	1	Echo ON
AT&C	1	DCD ON if the Carrier is detected, OFF otherwise
AT&D	1	DTR ON-OFF transition – DCE enters command state
ATQ	0	DCE transmits result codes
ATV	1	DCE transmits verbose response text
AT&S	1	DSR ON in data mode, OFF in command mode
ATS0	0	Automatic answer disabled
AT+CLIP	0	Calling line identification presentation disabled
AT+CSCS	"IRA"	International Reference Alphabet (ITU-T T.50)
AT+CMGF	0	Preferred message format – PDU mode
AT+CSMP	17,167,0,0	Text mode parameters
AT+CNMI	1,0	New message indication procedure
AT+UGPIOC	16,2	Network status indication mapped to LED GSM

## 4.2 Dial-up connection

This chapter explains how to install modem driver and create dial-up connection for data transmission via GSM/GPRS service.



**Fig. 13: Dial-up connection between to PCs**

### 4.2.1 Modem driver Installation

Install the modem driver using the *Control Panel -> Add New Hardware Wizard* (Windows XP), or typing *hdwwiz* in the *Start Menu -> Search programs and files* (Windows 7):

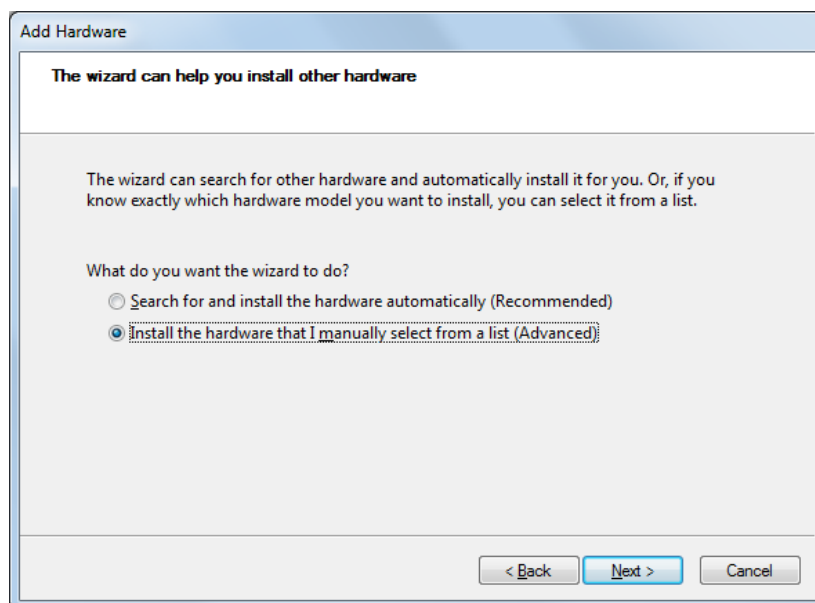


**Fig. 14: Add Hardware**

Click *Next*.



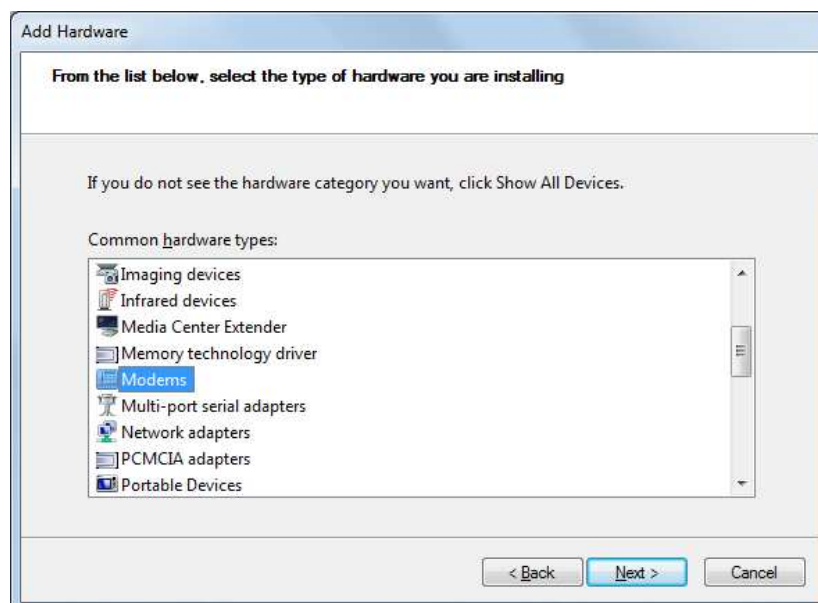
In the next window mark *Install the hardware that I manually select from a list (Advanced)*:



**Fig. 15: Install the hardware**

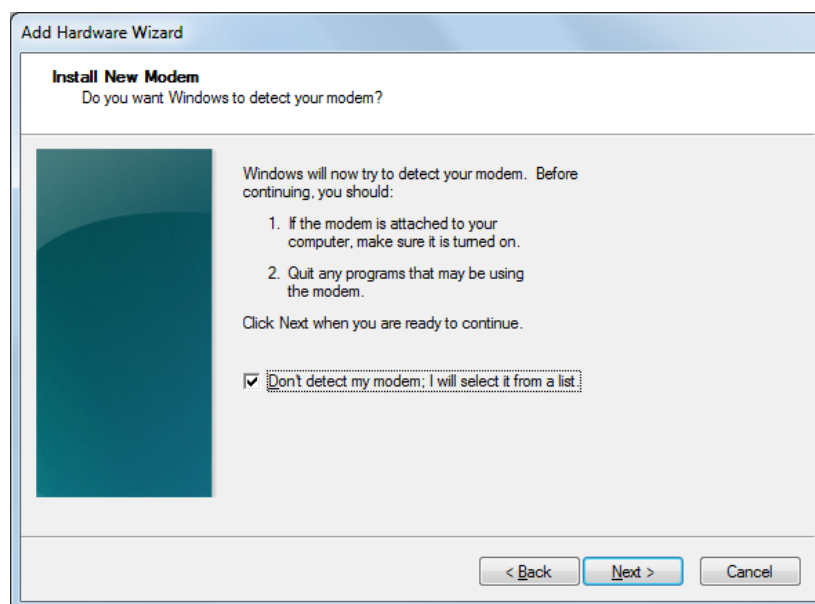
Click *Next*.

In the next window choose *Modems*:



**Fig. 16: Choose Modems**

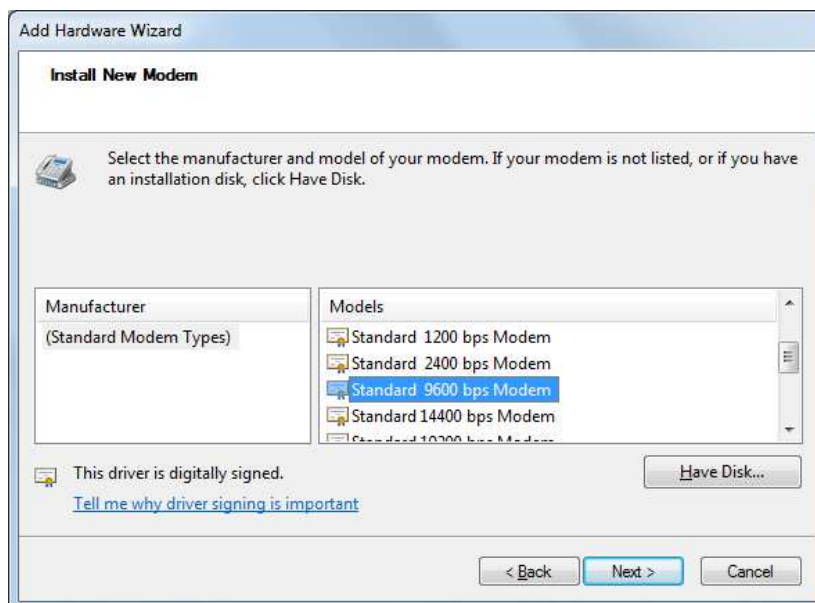
Click *Next*.



**Fig. 17: Choose from a list**

Mark field *Don't detect my modem; I will select it from list*. Click *Next*.

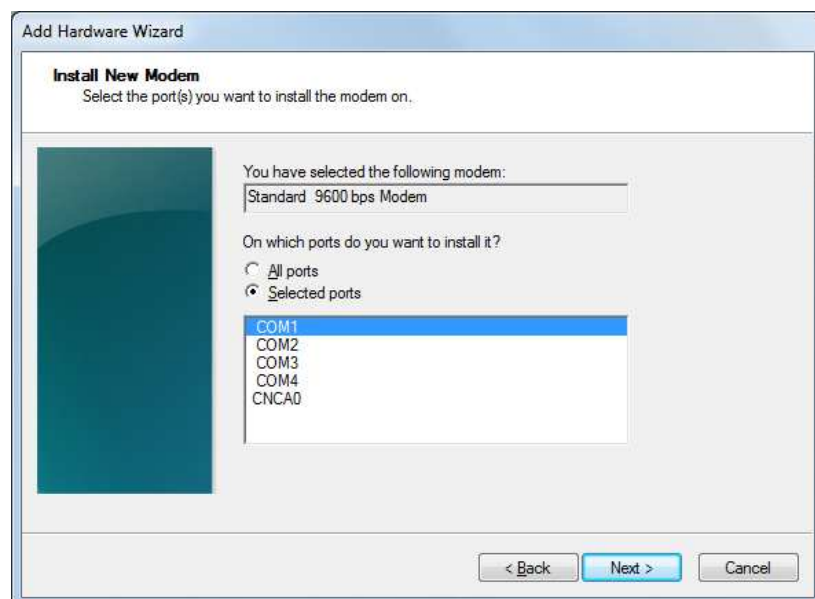
In the next window choose *Standard 9600 bps Modem*:



**Fig. 18: Choose Standard 9600 bps Modem**

Click *Next*.

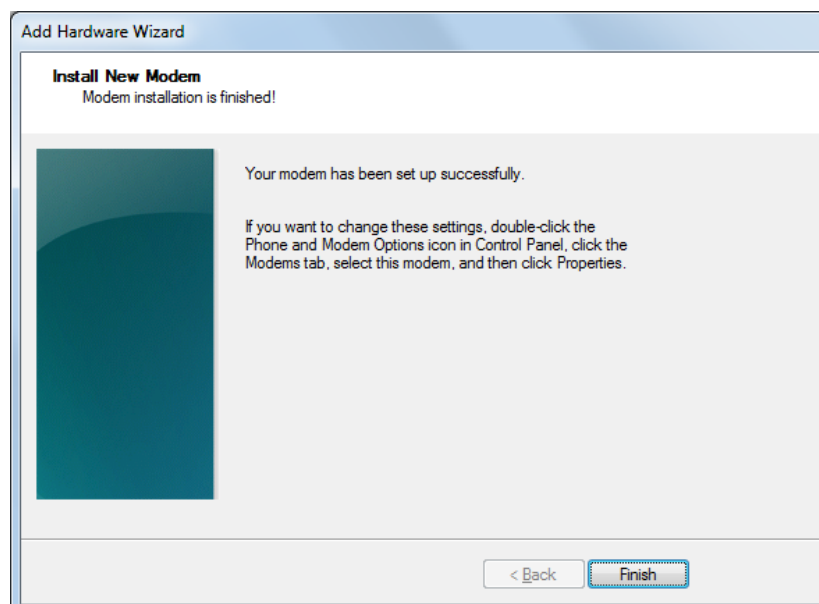
Choose serial port to which modem is connected:



**Fig. 19: Choose serial port**

Click *Next*.

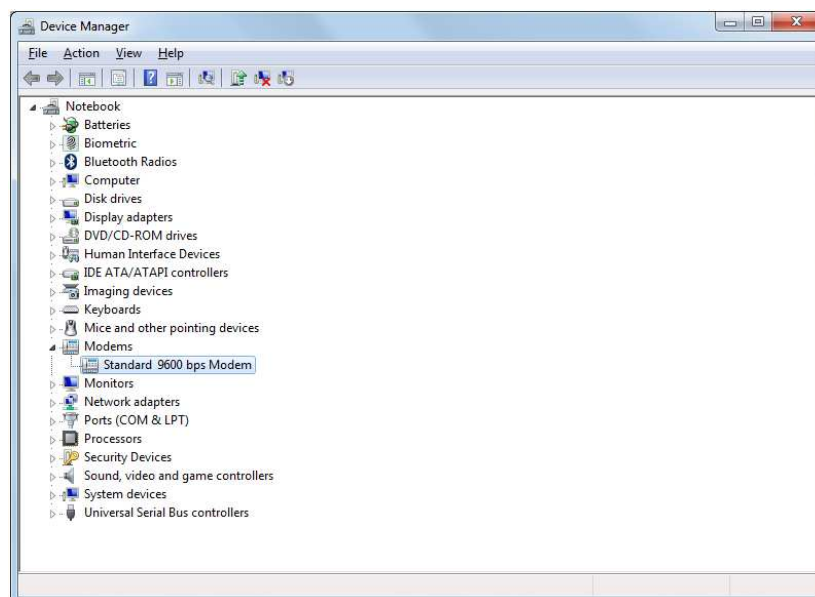
Wait for installation of modem driver to be finished.



**Fig. 20: Finished modem install**

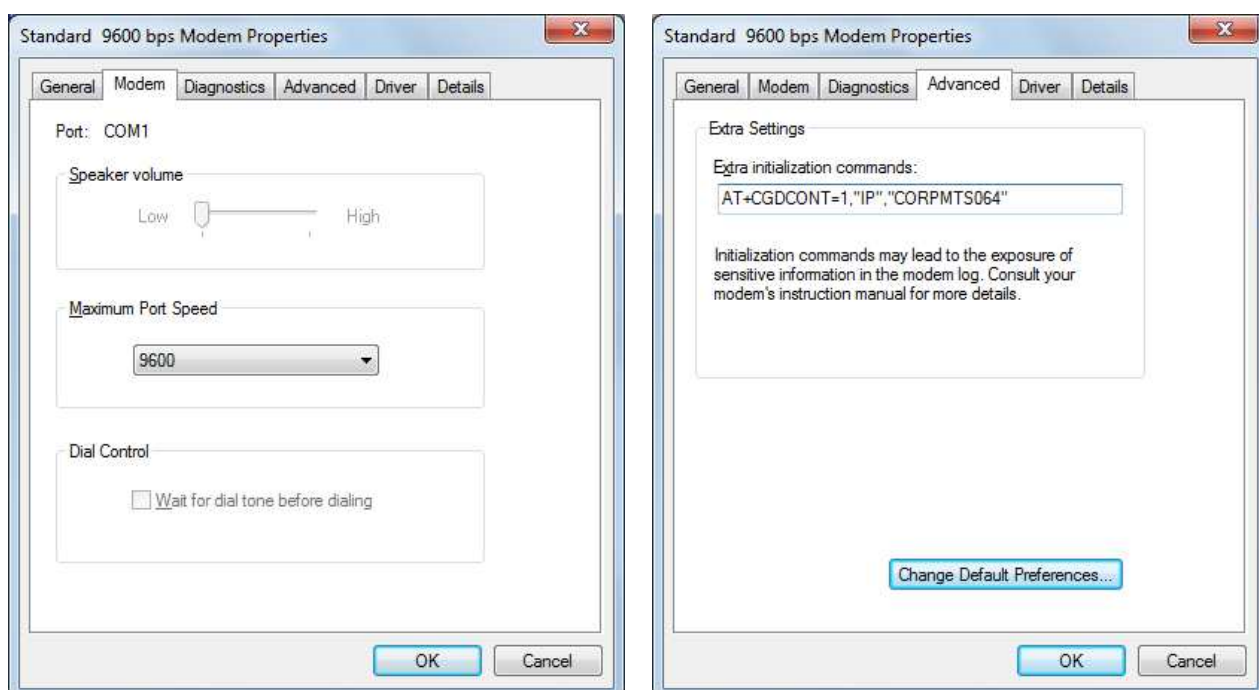
Click *Finish*.

Open *Device Manager* and expand *Modems* group:



**Fig. 21: Device Manager**

Right click on *Standard 9600 bps Modem* and choose *Properties*. In field *Extra initialization commands* enter APN name.

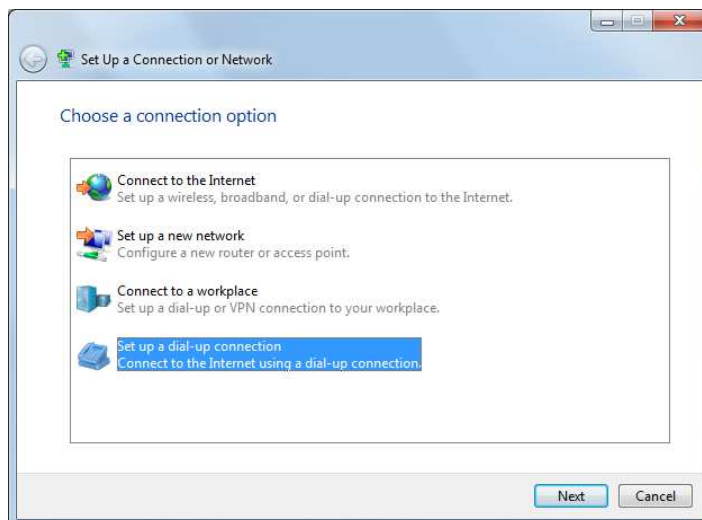


**Fig. 22: Modem Properties**

For example, for MTS provider, enter command `AT+CGDCONT=1,\"IP\",\"CORPMTS064\"`.

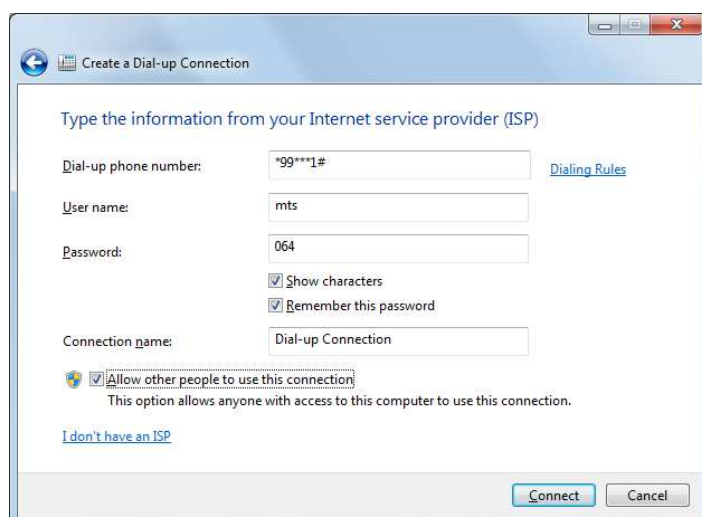
## 4.2.2 Creating Dial-up connection

On *Windows* operating system, open the *Control Panel*, then open the *Network and Sharing Center*, and finally click *Set up a new connection or network*.



**Fig. 23: Set up a dial-up connection**

In this window, click on *Set up a dial-up connection*, and in the next window, enter the parameters for access to APN (*phone number, user name, password*).



**Fig. 24: Enter the parameters**

For example, for MTS provider, parameters are:

Dial-up phone number: \*99\*\*\*1#

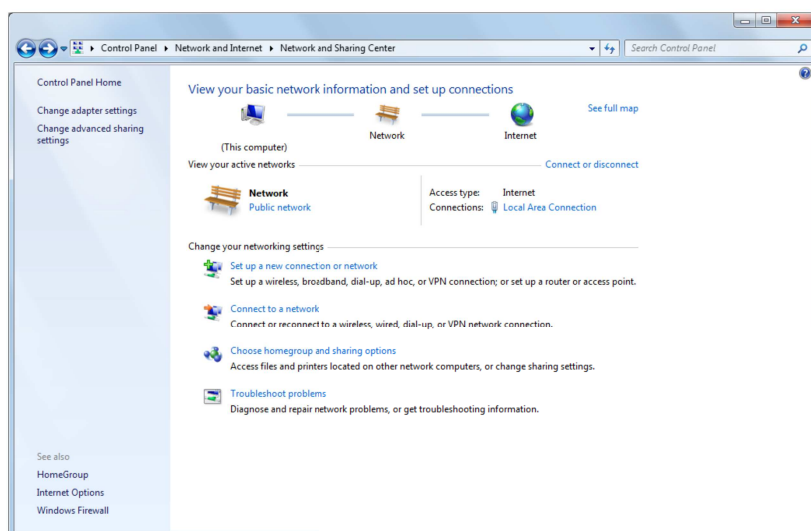
User name: mts

Password: 064

Clicking on *Connect* a dial-up connection to the APN will be established.

**NOTE:** Before connecting to the APN, the internet connection through *Local Area Connection* or *Wireless Connection* adapter needs to be turned off.

Open *Control Panel*, click *Network and Internet* and open *Network and Sharing Center*. In the left pane choose *Change adapter settings*.



**Fig. 25: Disable Local Area Connection adapter**

In the newly opened window, right click at *Local Area Connection* or *Wireless Connection* and choose *Disable*.

Dial-up connection can be established by clicking on the *Dial-up connection* in the same window, i.e. *Control Panel* -> *Network and Internet* -> *Network and Sharing Center* -> *Change adapter settings*:



**Fig. 26: Dial-up connection**

Once the dial-up connection is established, user device or PC connected to GT340 can access to all devices in the APN.

## 5 Technical specifications

<b>GSM</b>	uBlox SARA-G340, Dual-Band GSM 900/1800 MHz Compliant with 3GPP GSM Phase 2/2+ standard Multiplexed RS232 interface, 3GPP TS 27.010 AT command interface, 3GPP TS 27.007 Power saving
<b>GPRS</b>	Multi-slot Class 10 (uplink 42.8Kbps, downlink 85.6 Kbps) Coding scheme: CS-1, CS-2, CS-3 i CS-4
<b>CSD</b>	Up to 9600 bps Transparent / Non-transparent mode, RLP protocol
<b>SMS</b>	Text and PDU mode supported MO (mobile originating), MT (mobile terminating) SMS indication and acknowledgement CBS (Cell Broadcast Service) SMS during circuit-switched calls SMS over CSD, PSD SMS storage on module memory and SIM card Concatenated SMS
<b>FAX</b>	Group 3, Class 2.0
<b>Protocols</b>	PAP, PPP, TCP/IP, UDP/IP, HTTP/FTP, SSL i TLS 1.2
<b>Additional capability</b>	Call Waiting, Call Forwarding, Multi-Party USSD (Unstructured Supplementary Services Data) RTC – real time clock, alarm
<b>Output power</b>	Class 4 (33 dBm, 2W for 900 MHz band) Class 1 (30dBm, 1W for 1800 MHz band)
<b>SIM card</b>	Micro SIM, 1.8V/3.0V
<b>Serial RS232 interface</b>	ITU-T V.24, DCE configuration, DB9 female
<b>Serial baud rate</b>	Auto baud rate detection - default 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
<b>Data format</b>	8N1 (8 data bits, No parity, 1 stop bit) - default 8N2 (8 data bits, No parity, 2 stop bits) 8E1 (8 data bits, Even parity, 1 stop bit) 8O1 (8 data bits, Odd parity, 1 stop bit) 7E1 (7 data bits, Even parity, 1 stop bit) 7O1 (7 data bits, Odd parity, 1 stop bit)
<b>Flow control</b>	Hardware - default, Software, None
<b>Antenna connector</b>	SMA female
<b>LED indication</b>	green – Power ON, red – activity of the GSM network

<b>Power supply</b>	DC power supply, from 8 to 30V overvoltage and reverse polarity protection
<b>Power supply connector</b>	Pluggable screw clamp, 3.5mm, 1.5mm <sup>2</sup>
<b>Power consumption</b>	Standby 0.2W, Max 2.5W
<b>Dimension</b>	88 x 58 x 28 mm (without connectors)
<b>Weight</b>	cca 100g
<b>Protection</b>	IP40
<b>Temperature range</b>	od -40°C do +85°C od 0 do 95% RH (non condensed)
<b>Mounting</b>	Desktop case Optional holder for 35mm DIN rail mounting



## 6 Troubleshooting

### 6.1 The PWR LED does not light

Check if the voltage of power supply is in the range of 8-30V DC

Check if the power connector is properly inserted

Check if the power supply polarity is not reversed

### 6.2 The GSM LED does not light

Check if valid micro SIM card has been inserted properly

Check if the SIM card has been locked (refer to AT+CPIN command in chapter 4.1.2)

Check if the external antenna has been connected properly to the terminal

Check if the network coverage is available

Check if the GSM LED is properly mapped (refer to AT+UGPIOC command in chapters 3.3 and 4.1.2)

### 6.3 The terminal does not respond

Check if the RS232 cable has been connected properly

Check if the terminal program has proper setting. Factory default of GT340 is:

- Auto baud rate detection (issue "AT⇐" in uppercase to adjust baud rate of the GT340)
- 8 data bits
- no parity bit
- 1 stop bit
- RTS/CTS hardware control

## 7 Product label



**Fig. 27: Product label**

The label fixed on the right side of enclosure comprises information listed in next table.

Line 1	Product name		Product model	
Line 2	Manufacturer	CE sign	Waste	Supply voltage
Line 3	Manufacturer address		Disposal	Maximum current
Line 4	Bar code with Product ID and Serial number			
Line 5	Product ID		Serial number	

## 8 Disposal and Recycling



You must dispose of this product properly according to local laws and regulations. Because this product contains electronic components, it must be disposed of separately from household waste. When this product reaches its end of life, contact local authorities to learn about disposal and recycling options, or simply drop it off at your local Decode office or return it to Decode.

## 9 Contact

Please contact a Decode office if you have any questions regarding the information contained in this manual or Decode products, or if you have any other inquiries.

### **Decode d.o.o.**

30A Nikole Tesle Blvd,

11080 Belgrade, Serbia

Tel./Fax. +(381 11) 311 00 27

Email: office@decode.rs

Web: www.decode.rs