

GSM/SMS Guide

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1. Introduction to SMS Messaging

1.1. What is SMS (Short Message Service)?

SMS stands for Short Message Service. It is a technology that enables the sending and receiving of messages between mobile phones. SMS first appeared in Europe in 1992. It was included in the GSM (Global System for Mobile Communications) standards right at the beginning. Later it was ported to wireless technologies like CDMA and TDMA. The GSM and SMS standards were originally developed by [ETSI](#). ETSI is the abbreviation for European Telecommunications Standards Institute. Now the [3GPP](#) (Third Generation Partnership Project) is responsible for the development and maintenance of the GSM and SMS standards.

As suggested by the name "Short Message Service", the data that can be held by an SMS message is very limited. One SMS message can contain at most 140 bytes (1120 bits) of data, so one SMS message can contain up to:

- 160 characters if 7-bit character encoding is used. (7-bit character encoding is suitable for encoding Latin characters like English alphabets.)
- 70 characters if 16-bit Unicode UCS2 character encoding is used. (SMS text messages containing non-Latin characters like Chinese characters should use 16-bit character encoding.)

SMS text messaging supports languages internationally. It works fine with all languages supported by Unicode, including Arabic, Chinese, Japanese and Korean.

Besides text, SMS messages can also carry binary data. It is possible to send ringtones, pictures, operator logos, wallpapers, animations, business cards (e.g. VCards) and WAP configurations to a mobile phone with SMS messages.

One major advantage of SMS is that it is supported by 100% GSM mobile phones. Almost all subscription plans provided by wireless carriers include inexpensive SMS messaging service. Unlike SMS, mobile technologies such as WAP and mobile Java are not supported on many old mobile phone models.

1.2. Concatenated SMS Messages / Long SMS Messages

One drawback of the SMS technology is that one SMS message can only carry a very limited amount of data. To overcome this drawback, an extension called concatenated SMS (also known as long SMS) was developed. A concatenated SMS text message can contain more than 160 English characters. Concatenated SMS works like this: The sender's mobile phone breaks down a long message into smaller parts and sends each of them as a single SMS message. When these SMS messages reach the destination, the recipient mobile phone will combine them back to one long message.

The drawback of concatenated SMS is that it is less widely supported than SMS on wireless devices.

1.3. EMS (Enhanced Messaging Service)

Besides the data size limitation, SMS has another major drawback -- an SMS message cannot include rich-media content such as pictures, animations and melodies. EMS (Enhanced Messaging Service) was developed in response to this. It is an application-level extension of SMS. An EMS message can include pictures, animations and melodies. Also, the formatting of the text inside an EMS message is changeable. For example, the message sender can specify whether the text in an EMS message should be displayed in bold or italic, with a large font or a small font.

The drawback of EMS is that it is less widely supported than SMS on wireless devices. Also, many EMS-enabled wireless devices only support a subset of the features defined in the EMS specification. A certain EMS feature may be supported on one wireless device but not on the other.

2. Basic Concepts of SMS Technology

In the following sections, we will introduce to you some basic concepts of the SMS technology.

2.1. Validity Period of an SMS Message

An SMS message is stored temporarily in the SMS center if the recipient mobile phone is offline. It is possible to specify the period after which the SMS message will be deleted from the SMS center so that the SMS message will not be forwarded to the recipient mobile phone when it becomes online. This period is called the validity period.

Here is an example that illustrates how validity period can be used. Suppose you find a very interesting program that is showing on TV now. You think your friend may want to watch it. So, you send a text message to tell your friend about the TV program. Let's say the TV program lasts for an hour. Your SMS text message will not be useful to your friend if his mobile phone is not available before the program finishes. In this situation, you may want to send a text message with a validity period of one hour to your friend. The wireless carrier will not deliver the SMS text message to your friend if his mobile phone is not available before the validity period ends.

A mobile phone should have a menu option that can be used to set the validity period. After setting it, the mobile phone will include the validity period in the outbound SMS messages automatically.

2.2. Message Status Reports

Sometimes you may want to know whether an SMS message has reached the recipient mobile phone successfully. To get this information, you need to set a flag in the SMS message to notify the SMS center that you want a status report about the delivery of this SMS message. The status report is sent to you in the form of an SMS message.

A mobile phone should have a menu option that can be used to set whether the status report feature is on or off. After setting it, the mobile phone will set the corresponding flag in the outbound SMS messages for you automatically. The status report feature is turned off by default on most mobile phones and GSM / GPRS modems.

2.3. Message Submission Reports

After leaving the mobile phone, an SMS message goes to the SMS center. When it reaches the SMS center, the SMS center will send back a message submission report to the mobile phone to inform whether there are any errors or failures (e.g. incorrect SMS message format, busy SMS center, etc). If there is no error or failure, the SMS center sends back a positive submission report to the mobile phone. Otherwise it sends back a negative submission report to the mobile phone. The mobile phone may then notify the user that the message submission was failed and what caused the failure.

If the mobile phone does not receive the message submission report after a period of time, it concludes that the message submission report has been lost. The mobile phone may then re-send the SMS message to the SMS center. A flag will be set in the new SMS message to inform the SMS center that this SMS message has been sent before. If the previous message submission was successful, the SMS center will ignore the new SMS message but send back a message submission report to the mobile phone. This mechanism prevents the sending of the same SMS message to the recipient multiple times.

Sometimes the message submission report mechanism is not used and the acknowledgement of message submission is done in a lower layer.

2.4. Message Delivery Reports

After receiving an SMS message, the recipient mobile phone will send back a message delivery report to the SMS center to inform whether there are any errors or failures (example causes: unsupported SMS message format, not enough storage space, etc). This process is transparent to the mobile user. If there is no error or failure, the recipient mobile phone sends back a positive delivery report to the SMS center. Otherwise it sends back a negative delivery report to the SMS center.

If the sender requested a status report earlier, the SMS center sends a status report to the sender when it receives the message delivery report from the recipient.

If the SMS center does not receive the message delivery report after a period of time, it concludes that the message delivery report has been lost. The SMS center then re-sends the SMS message to the recipient.

Sometimes the message delivery report mechanism is not used and the acknowledgement of message delivery is done in a lower layer.

3. What is an SMS Center / SMSC?

An SMS center (SMSC) is responsible for handling the SMS operations of a wireless network. When an SMS message is sent from a mobile phone, it will reach an SMS center first. The SMS center then forwards the SMS message towards the destination. An SMS message may need to pass through more than one network entity (e.g. SMSC and SMS gateway) before reaching the destination. The main duty of an SMSC is to route SMS messages and regulate the process. If

the recipient is unavailable (for example, when the mobile phone is switched off), the SMSC will store the SMS message. It will forward the SMS message when the recipient is available.

Very often an SMSC is dedicated to handle the SMS traffic of one wireless network. A network operator usually manages its own SMSC(s) and locates them inside its wireless network system. However, it is possible for a network operator to use a third-party SMSC that is located outside the wireless network system.

You must know the address of the wireless network operator's SMSC in order to use SMS messaging with your mobile phone. Typically an SMSC address is an ordinary phone number in the international format. A mobile phone should have a menu option that can be used to configure the SMSC address. Normally, the SMSC address is pre-set in the SIM card by the wireless network operator, which means you do not need to make any changes to it.

4. Introduction to GSM / GPRS Wireless Modems

4.1. What is a GSM Modem?

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves.

A GSM modem can be an external device or a PC Card / PCMCIA Card. Typically, an external GSM modem is connected to a computer through a serial cable or a USB cable. A GSM modem in the form of a PC Card / PCMCIA Card is designed for use with a laptop computer. It should be inserted into one of the PC Card / PCMCIA Card slots of a laptop computer.

Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate.

As mentioned in earlier sections of this SMS tutorial, computers use AT commands to control modems. Both GSM modems and dial-up modems support a common set of standard AT commands. You can use a GSM modem just like a dial-up modem.

In addition to the standard AT commands, GSM modems support an extended set of AT commands. These extended AT commands are defined in the GSM standards. With the extended AT commands, you can do things like:

- Reading, writing and deleting SMS messages.
- Sending SMS messages.
- Monitoring the signal strength.
- Monitoring the charging status and charge level of the battery.
- Reading, writing and searching phone book entries.

The number of SMS messages that can be processed by a GSM modem per minute is very low -- only about six to ten SMS messages per minute.

4.2. What is a GPRS Modem?

A GPRS modem is a GSM modem that additionally supports the GPRS technology for data transmission. GPRS stands for General Packet Radio Service. It is a packet-switched technology that is an extension of GSM. (GSM is a circuit-switched technology.) A key advantage of GPRS over GSM is that GPRS has a higher data transmission speed.

GPRS can be used as the bearer of SMS. If SMS over GPRS is used, an SMS transmission speed of about 30 SMS messages per minute may be achieved. This is much faster than using the ordinary SMS over GSM, whose SMS transmission speed is about 6 to 10 SMS messages per minute. A GPRS modem is needed to send and receive SMS over GPRS. Note that some wireless carriers do not support the sending and receiving of SMS over GPRS.

If you need to send or receive MMS messages, a GPRS modem is typically needed.

4.3. Which is Better: Mobile Phone or GSM / GPRS Modem?

In general, a GSM/GPRS modem is recommended for use with a computer to send and receive messages. This is because some mobile phones have certain limitations comparing to GSM/GPRS modems. Some of the limitations are described below:

- Some mobile phone models (example: Ericsson R380) cannot be used with a computer to receive concatenated SMS messages.

What is a concatenated SMS message?

A concatenated SMS message is a message that contains more than 140 bytes. (A normal SMS message can only contain at most 140 bytes.) Concatenated SMS works like this: the sender's mobile device breaks a message longer than 140 bytes into smaller parts. Each of these parts are then fitted in a single SMS message and sent to the recipient. When these SMS messages reach the destination, the recipient's mobile device will combine them back to one message.

What is the cause of the problem?

When the mobile phone receives the SMS messages that are parts of a concatenated SMS message, it combines them to one message automatically. The correct behavior should be: when the mobile phone receives the SMS messages that are parts of a concatenated SMS message, it forwards them to the computer without combining them.

- Many mobile phone models cannot be used with a computer to receive MMS messages. Because when they receive a MMS notification, they handle it automatically instead of forwarding it to the computer.
- A mobile phone may not support some AT commands, command parameters and parameter values. For example, some mobile phones do not support the sending and receiving of SMS messages in text mode. So, the AT command "AT+CMGF=1" (it instructs the mobile phone to use text mode) will cause an error message to be returned. Usually GSM/GPRS modems support a more complete set of AT commands than mobile phones.
- Most SMS messaging applications have to be available 24 hours a day. (For example, an SMS messaging application that provides ringtone downloading service should be running all the time so that a user can download ringtones any time he/she wants.) If such SMS messaging applications use mobile phones to send and receive SMS messages, the

mobile phones have to be switched on all the time. However, some mobile phone models cannot operate with the battery removed even when an AC adaptor is connected, which means the battery will be charged 24 hours a day.

Besides the above issues, mobile phones and GSM/GPRS modems are more or less the same for sending and receiving SMS messages from a computer. Actually, you can consider an AT-command-enabled mobile phone as "GSM/GPRS modem + keypad + display + ...".

There is not much difference between mobile phones and GSM/GPRS modems in terms of SMS transmission rate, since the determining factor for the SMS transmission rate is the wireless network.

5. Introduction to AT Commands

AT commands are instructions used to control a modem. AT is the abbreviation of ATtention. Every command line starts with "AT" or "at". That's why modem commands are called AT commands. Many of the commands that are used to control wired dial-up modems, such as ATD (Dial), ATA (Answer), ATH (Hook control) and ATO (Return to online data state), are also supported by GSM/GPRS modems and mobile phones. Besides this common AT command set, GSM/GPRS modems and mobile phones support an AT command set that is specific to the GSM technology, which includes SMS-related commands like AT+CMGS (Send SMS message), AT+CMSS (Send SMS message from storage), AT+CMGL (List SMS messages) and AT+CMGR (Read SMS messages).

Note that the starting "AT" is the prefix that informs the modem about the start of a command line. It is not part of the AT command name. For example, D is the actual AT command name in ATD and +CMGS is the actual AT command name in AT+CMGS. However, some books and web sites use them interchangeably as the name of an AT command.

Here are some of the tasks that can be done using AT commands with a GSM/GPRS modem or mobile phone:

- Get basic information about the mobile phone or GSM/GPRS modem. For example, name of manufacturer (AT+CGMI), model number (AT+CGMM), IMEI number (International Mobile Equipment Identity) (AT+CGSN) and software version (AT+CGMR).
- Get basic information about the subscriber. For example, MSISDN (AT+CNUM) and IMSI number (International Mobile Subscriber Identity) (AT+CIMI).
- Get the current status of the mobile phone or GSM/GPRS modem. For example, mobile phone activity status (AT+CPAS), mobile network registration status (AT+CREG), radio signal strength (AT+CSQ), battery charge level and battery charging status (AT+CBC).
- Establish a data connection or voice connection to a remote modem (ATD, ATA, etc).
- Send and receive fax (ATD, ATA, AT+F*).
- Send (AT+CMGS, AT+CMSS), read (AT+CMGR, AT+CMGL), write (AT+CMGW) or delete (AT+CMGD) SMS messages and obtain notifications of newly received SMS messages (AT+CNMI).
- Read (AT+CPBR), write (AT+CPBW) or search (AT+CPBF) phonebook entries.

- Perform security-related tasks, such as opening or closing facility locks (AT+CLCK), checking whether a facility is locked (AT+CLCK) and changing passwords (AT+CPWD). (Facility lock examples: SIM lock [a password must be given to the SIM card every time the mobile phone is switched on] and PH-SIM lock [a certain SIM card is associated with the mobile phone. To use other SIM cards with the mobile phone, a password must be entered.]])
- Control the presentation of result codes / error messages of AT commands. For example, you can control whether to enable certain error messages (AT+CMEE) and whether error messages should be displayed in numeric format or verbose format (AT+CMEE=1 or AT+CMEE=2).
- Get or change the configurations of the mobile phone or GSM/GPRS modem. For example, change the GSM network (AT+COPS), bearer service type (AT+CBST), radio link protocol parameters (AT+CRLP), SMS center address (AT+CSCA) and storage of SMS messages (AT+CPMS).
- Save and restore configurations of the mobile phone or GSM/GPRS modem. For example, save (AT+CSAS) and restore (AT+CRES) settings related to SMS messaging such as the SMS center address.

Note that mobile phone manufacturers usually do not implement all AT commands, command parameters and parameter values in their mobile phones. Also, the behavior of the implemented AT commands may be different from that defined in the standard. In general, GSM/GPRS modems designed for wireless applications have better support of AT commands than ordinary mobile phones.

In addition, some AT commands require the support of mobile network operators. For example, SMS over GPRS can be enabled on some GPRS mobile phones and GPRS modems with the +CGSMS command (command name in text: Select Service for MO SMS Messages). But if the mobile network operator does not support the transmission of SMS over GPRS, you cannot use this feature.

6. Operating Mode: SMS Text Mode and SMS PDU Mode

The SMS specification has defined two modes in which a GSM/GPRS modem or mobile phone can operate. They are called SMS text mode and SMS PDU mode. (PDU stands for Protocol Data Unit.) The mode that a GSM/GPRS modem or mobile phone is operating in determines the syntax of some SMS AT commands and the format of the responses returned after execution. Below are the SMS AT commands affected:

- +CMGS (Send Message)
- +CMSS (Send Message from Storage)
- +CMGR (Read Message)
- +CMGL (List Messages)
- +CMGW (Write Message to Memory)
- +CNMA (New Message Acknowledgement to ME/TA)
- +CMGC (Send Command)

The syntax of the [unsolicited result codes](#) below also depends on the mode in which the GSM/GPRS modem or mobile phone is operating:

- +CMT (Used to forward received SMS messages to the computer / PC.)
- +CBM (Used to forward received cell broadcast messages to the computer / PC.)
- +CDS (Used to forward received status reports to the computer / PC.)

These two AT commands are useful to you only if SMS text mode is used:

- +CSMP (Set Text Mode Parameters)
- +CSDH (Show Text Mode Parameters)

6.1. Comparison of SMS Text Mode and SMS PDU Mode

Below we compare SMS text mode and SMS PDU mode from various aspects. The comparison should help you learn the differences between these two modes and decide which mode should be used by your SMS messaging application.

Syntax of SMS AT Commands and Responses

When the GSM/GPRS modem or mobile phone is operating in different modes, the syntax of certain SMS AT commands and the responses returned after command execution is different. Here's an example for illustration. Let's say you would like to send the SMS message "It is easy to send text messages." to the mobile phone number +85291234567. In SMS text mode, this is the command line that you should enter:

```
AT+CMGS="+85291234567"<CR>It is easy to send text messages.<Ctrl+z>
```

However, if the GSM/GPRS modem or mobile phone is operating in SMS PDU mode, executing the above command line will cause an error to occur. This is because the syntax of the +CMGS AT command is different in SMS PDU mode. To do the same task, the following command line should be used instead:

```
AT+CMGS=42<CR>07915892000000F001000B915892214365F7000021493A283D0795C3F33C88FE06CDCB6E32885EC6D341EDF27C1E3E97E72E<Ctrl+z>
```

Defined Values for Certain Parameters

When the GSM/GPRS modem or mobile phone is operating in different modes, the defined values for certain parameters are different. Usually string values are defined for text mode while numeric values are defined for PDU mode. For example, the +CMGL AT command is used to list SMS messages stored in message storage. It takes one parameter that specifies the status of the SMS messages to be retrieved.

The following table lists the defined values for the parameter in text mode and PDU mode:

Message status	Defined values in text mode	Defined values in PDU mode
Received unread	"REC UNREAD"	0
Received read	"REC READ"	1

Message status	Defined values in text mode	Defined values in PDU mode
Stored unsent	"STO UNSENT"	2
Stored sent	"STO SENT"	3
All messages	"ALL"	4

Suppose you would like to list all SMS messages from message storage. If the GSM/GPRS modem or mobile phone is operating in SMS text mode, you should assign the string value "ALL" to the +CMGL AT command, like this:

```
AT+CMGL="ALL"
```

In SMS PDU mode, the numeric value 4 should be assigned to the +CMGL AT command instead:

```
AT+CMGL=4
```

Input/Output Format of SMS Messages Used by SMS AT Commands

When the GSM/GPRS modem or mobile phone is operating in different modes, the input/output format of SMS messages used by SMS AT commands is different. In SMS text mode, headers and body of SMS messages are inputted/outputted as separate parameters/fields. In SMS PDU mode, TPDU (Transport Protocol Data Units) in hexadecimal format are inputted and outputted. Headers and body of SMS messages are encoded in the TPDU.

Here is an example for illustration. To send the SMS message "It is easy to send text messages." to the mobile phone number +85291234567, the following command line should be used in SMS text mode. As you can see below, the destination phone number header and message body are provided to the +CMGS AT command as separate parameters.

```
AT+CMGS="+85291234567"<CR>It is easy to send text messages.<Ctrl+z>
```

To send the same SMS text message in SMS PDU mode, the following command line should be used instead. The message body, destination phone number header and some other headers are encoded in the hexadecimal sequence.

```
AT+CMGS=42<CR>07915892000000F001000B915892214365F7000021493A283D0795C3F33C88FE06CDCB6E32885EC6D341EDF27C1E3E97E72E<Ctrl+z>
```

Ease of Use

As you can see in the previous example, it is easier to use AT commands in SMS text mode. You do not have to learn about the structure of different types of TPDU in the bit level and the encoding and decoding of the hexadecimal sequence.

Supported Features of SMS Messaging

Although it is easier to use AT commands in SMS text mode, it supports fewer features of SMS messaging than SMS PDU mode. This is because you do not have complete control over the header values and message body in SMS text mode. Some tasks, although can be done in text mode, require the programmer to have knowledge about PDU mode and TPDU. For example, to request a status report from SMSC in SMS text mode, you have to set bit 5 of the first octet of

the SMS-SUBMIT TPDU to 1 by the AT command +CSMP (command name in text: Set Text Mode Parameters). Similar tasks include setting the message validity period and sending a flash SMS message that immediately pops up on the phone screen when it arrives at the destination.

Level of Support

SMS PDU mode is more commonly supported by GSM/GPRS modems and mobile phones than SMS text mode.

7. How to Send SMS Messages from a Computer / PC?

In general, there are two ways to send SMS messages from a computer / PC to a mobile phone:

1. Connect a mobile phone or GSM/GPRS modem to a computer / PC. Then use the computer / PC and AT commands to instruct the mobile phone or GSM/GPRS modem to send SMS messages.
2. Connect the computer / PC to the SMS center (SMSC) or SMS gateway of a wireless carrier or SMS service provider. Then send SMS messages using a protocol / interface supported by the SMSC or SMS gateway.

7.1. Sending SMS Messages from a Computer Using a Mobile Phone or GSM/GPRS Modem

The SMS specification has defined a way for a computer to send SMS messages through a mobile phone or GSM/GPRS modem. A GSM/GPRS modem is a wireless modem that works with GSM/GPRS wireless networks. A wireless modem is similar to a dial-up modem. The main difference is that a wireless modem transmits data through a wireless network whereas a dial-up modem transmits data through a copper telephone line. More information about GSM/GPRS modems is provided in the section "[Introduction to GSM / GPRS Wireless Modems](#)". Most mobile phones can be used as a wireless modem. However, some mobile phones have certain limitations comparing to GSM/GPRS modems. This is discussed in the section "[Which is Better: Mobile Phone or GSM / GPRS Modem](#)".

To send SMS messages, first place a valid SIM card from a wireless carrier into a mobile phone or GSM/GPRS modem, which is then connected to a computer. There are several ways to connect a mobile phone or GSM/GPRS modem to a computer. For example, they can be connected through a serial cable, a USB cable, a Bluetooth link or an infrared link. The actual way to use depends on the capability of the mobile phone or GSM/GPRS modem. For example, if a mobile phone does not support Bluetooth, it cannot connect to the computer through a Bluetooth link.

After connecting a mobile phone or GSM/GPRS modem to a computer, you can control the mobile phone or GSM/GPRS modem by sending instructions to it. The instructions used for controlling the mobile phone or GSM/GPRS modem are called AT commands. (AT commands are also used to control dial-up modems for wired telephone system.) Dial-up modems, mobile phones and GSM/GPRS modems support a common set of standard AT commands. In addition to this common set of standard AT commands, mobile phones and GSM/GPRS modems support an extended set of AT commands. One use of the extended AT commands is to control the sending and receiving of SMS messages.

The following table lists the AT commands that are related to the writing and sending of SMS messages:

AT command	Meaning
+CMGS	Send message
+CMSS	Send message from storage
+CMGW	Write message to memory
+CMGD	Delete message
+CMGC	Send command
+CMMS	More messages to send

One way to send AT commands to a mobile phone or GSM/GPRS modem is to use a terminal program. A terminal program's function is like this: It sends the characters you typed to the mobile phone or GSM/GPRS modem. It then displays the response it receives from the mobile phone or GSM/GPRS modem on the screen. The terminal program on Microsoft Windows is called HyperTerminal.

7.2. Major Drawback of Sending SMS Messages through a Mobile Phone or GSM/GPRS Modem -- Low SMS Sending Rate

Using a mobile phone or GSM/GPRS modem to send SMS messages has a major drawback, that is the SMS sending rate is too low. Only 6-10 SMS messages can be sent per minute (when the "SMS over GSM" mode is used). The performance is not affected by the connection between the computer and the mobile phone or GSM/GPRS modem (i.e. the SMS sending rate is about the same no matter the mobile phone or GSM/GPRS modem is connected to the computer through a serial cable, USB cable, Bluetooth link or infrared link) and does not depend on whether a mobile phone or GSM/GPRS modem is used (i.e. the SMS sending rate is about the same no matter a mobile phone or a GSM/GPRS modem is used). The determining factor for the SMS sending rate is the wireless network.

8. How to Receive SMS Messages Using a Computer / PC?

In general, there are three ways to receive SMS messages using your computer / PC:

1. Connect a mobile phone or GSM/GPRS modem to a computer / PC. Then use the computer / PC and AT commands to get the received SMS messages from the mobile phone or GSM/GPRS modem.

2. Get access to the SMS center (SMSC) or SMS gateway of a wireless carrier. Any SMS messages received will be forwarded to your computer / PC using a protocol / interface supported by the SMSC or SMS gateway.
3. Get access to the SMS gateway of an SMS service provider. Any SMS messages received will be forwarded to your computer / PC using a protocol / interface supported by the SMS gateway.

8.1. Using a Computer to Receive SMS Messages through a Mobile Phone or GSM/GPRS Modem

Receiving SMS messages through a mobile phone or GSM/GPRS modem has a major advantage over the other two ways -- wireless carriers usually do not charge any fees for receiving incoming SMS messages with their SIM cards. The disadvantage of receiving SMS messages this way is that a mobile phone or GSM/GPRS modem cannot handle a large amount of SMS traffic. One way to overcome this is to load balance the SMS traffic with a pool of mobile phones or GSM/GPRS modems. Each mobile phone or GSM/GPRS modem will have its own SIM card and mobile phone number.

In terms of programming, sending and receiving SMS messages through a mobile phone or GSM/GPRS modem are similar. What you need to do is to send instructions (in the form of AT commands) to the mobile phone or GSM/GPRS modem.

9. How to Use a Windows PC to Send and Receive SMS Messages

Sending SMS messages with a mobile phone has a major problem -- it is very time consuming to write a text message using the small keypad of a mobile phone. Luckily, it is possible to use a PC (desktop or notebook computer) to send and receive SMS messages. This way you can use a full-sized QWERTY keyboard to write text messages.

In this article, we will demonstrate how to send and receive SMS messages on a PC that runs Microsoft Windows.

9.1 Requirements

To send and receive SMS messages via a mobile phone using a Windows PC, you need:

- a mobile phone that can be connected to your PC (some mobile phones do not have an interface for connecting to a PC)
- a Windows program that can control the mobile phone to send and receive SMS messages

Today, most mobile phones support at least one of the following options to connect to a PC:

- Via infrared (IrDA)
- Via Bluetooth
- Via a USB cable
- Via a serial cable

The infrared and Bluetooth option should be very useful to many notebook computer users since nowadays many notebook computers have built-in infrared or Bluetooth support.

The Windows program for sending and receiving SMS messages is provided by some mobile phone manufacturers. For example, Nokia offers a software package called Nokia PC Suite to their mobile phone users. It can be downloaded free of charge from Nokia's web site. Microsoft has also released a free program called SMS Sender that enables Windows users to send SMS messages via a GSM mobile phone from a PC.

In the following sections, we will explain how to use Microsoft SMS Sender to send SMS messages on your Windows PC.

9.2 Using Microsoft SMS Sender to Send SMS Messages from a Windows PC

9.2.1 Introduction

Microsoft SMS Sender is a Windows program for sending SMS messages from a PC via a GSM mobile phone. It can be downloaded free of charge from Microsoft's web site (click [here](#)). Localized versions of SMS Sender are available in more than 20 languages, including Arabic, simplified Chinese, French, German, Italian, Russian and Spanish.

One major limitation of this Windows program is that it cannot read SMS messages from a mobile phone. Besides, it does not support message formats other than ordinary text messages. For example, it does not support concatenated SMS messages, flash SMS messages, MMS messages and SMS messages that contain ring tones or logos.

Note that SMS Sender can only be installed on Windows XP and Windows Server 2003. If your PC runs Windows 2000 or Windows 95/98/ME, you need to use other SMS software.

9.2.2 Installing the Modem Driver of a Mobile Phone on a PC

To use SMS Sender, you must install the modem driver of the mobile phone on your PC. If not, your mobile phone will not be shown in the *Available Device* combo box in the main window of SMS Sender. Take out the CD or disk that came with your mobile phone and check if it contains the modem driver of the mobile phone. If you cannot find such CD/disk, or if you cannot find the modem driver in the CD or disk, go to the web site of the mobile phone manufacturer. Usually you can find the modem driver there. If you cannot find the modem driver on the web site, you can still use Windows' standard modem driver.

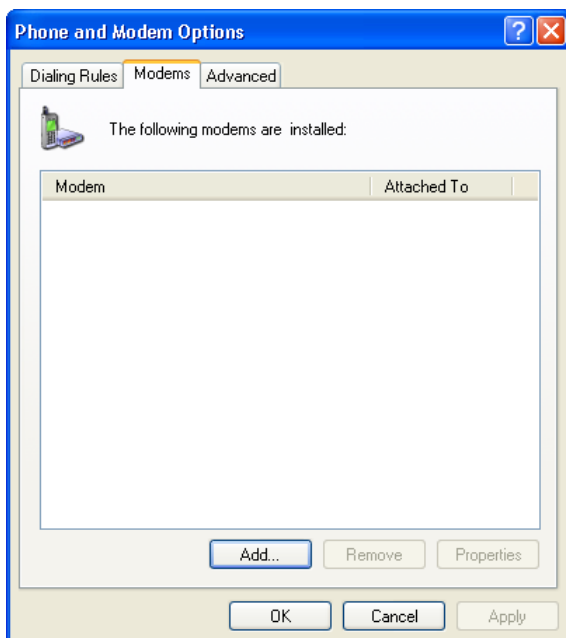
Generally, if the modem driver package contains a setup program, first you should run the setup program. Then connect the mobile phone to your PC. Usually Windows will prompt that new hardware is found and install the modem driver automatically. If this does not happen, you have to go to *Control Panel -> Phone and Modem Options* (on Windows 2000 and Windows XP) to install the modem driver manually.

If the modem driver package contains no setup program but just some .inf files, first you should connect your mobile phone to your PC. Next, Windows will prompt you that new hardware is detected. (If this does not happen, you have to go to *Control Panel -> Phone and Modem Options* [on Windows 2000 and Windows XP] to install the modem driver manually.) If the modem driver already exists in Windows, Windows will install the modem driver automatically. Otherwise it will pop up a window to guide you through the installation process. At some point of the installation process, Windows will ask for the location of the modem driver and you should enter the path of the folder that contains the .inf files.

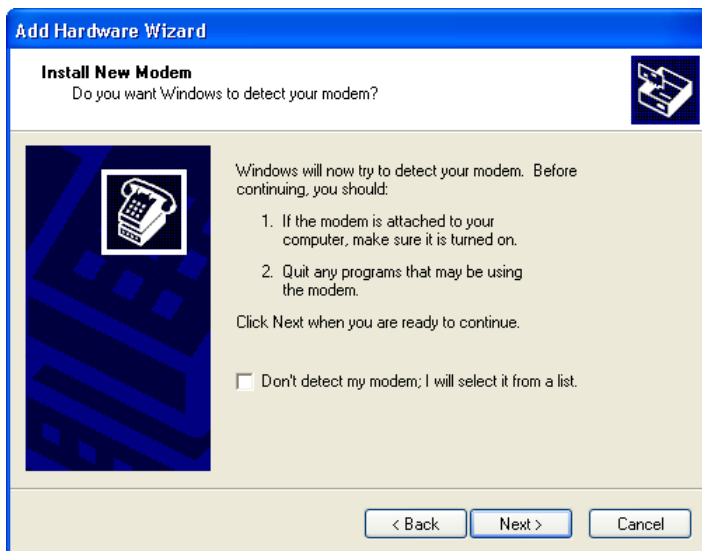
Read the modem driver documentation for more detailed instructions if you have difficulty in installing the modem driver. As an example, we will demonstrate how to install the modem driver of the Sony Ericsson T68i mobile phone on Windows XP below. The procedure for other mobile phone models and on other Windows versions should be similar.

9.2.3 Example : Connecting Sony Ericsson T68i to a PC via Bluetooth and Installing the Modem Driver on Windows XP

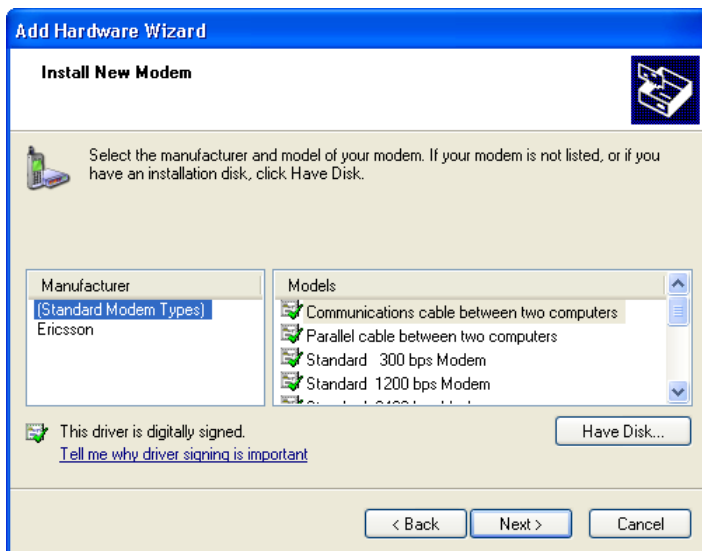
1. Download the setup program *MobileModemSettingsDrivers_R3A_english.exe* from the [web site of Sony Ericsson](#). Execute it to install the modem driver files.
2. Turn on the Bluetooth function of your T68i mobile phone and the Bluetooth adaptor of your PC. Using software such as BlueSoleil (usually you can find the software in the CD that came with the Bluetooth adaptor), go through the pairing process and assign the T68i mobile phone to a certain virtual COM port. In this example, we use COM 7.
3. Go to *Control Panel* and double click the *Phone and Modem Options* icon (see below). If the *Control Panel* is in Category View, you can find the *Phone and Modem Options* icon in the *Printers and Other Hardware* category.
4. In the *Phone and Modem Options* window (the screenshot is shown below), click the *Modems* tab and then click the *Add* button.



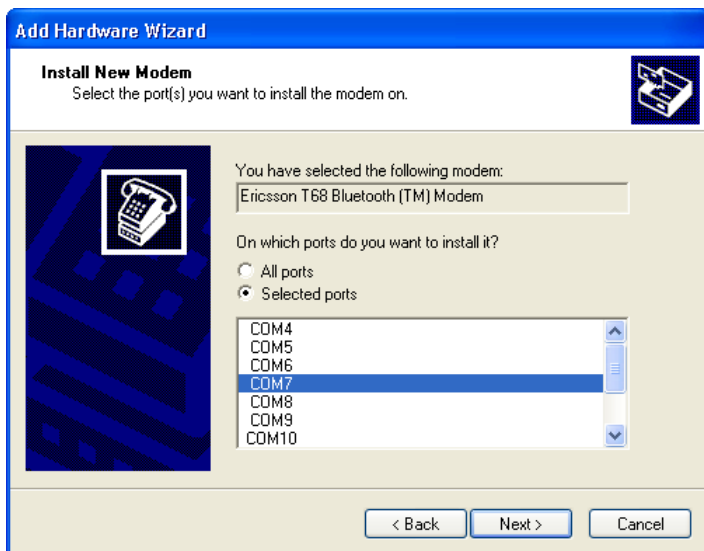
5. The *Add Hardware Wizard* appears (the screenshot is shown below). Check the *Don't detect my modem; I will select it from a list* item and click the *Next* button.



6. Select *Ericsson* -> *Ericsson T68 Bluetooth (TM) Modem*. Then click the *Next* button. (Windows' standard modem drivers also work fine with SMS Sender.)



7. Select the *Selected ports* option. Then select the COM port that you assigned to the T68i mobile phone in step 2. Since we assigned COM 7 to the T68i mobile phone in step 2, we select *COM7* in the list box. After that, click the *Next* button.



8. A dialog box appears warning that the T68i modem driver may not be compatible with Windows XP. Click the *Continue Anyway* button.

9. If you see the following screenshot, the modem driver of T68i has been installed successfully. Click the *Finish* button to close the wizard.

