Z-text
SMS AT Command Set

Interfacing to the Z-text SMS modem

The commands used for sending and receiving messages are compatible with those used for GSM mobile phones and modems. Many of these are not relevant to landline SMS, and others are for obscure features that are rarely used. To keep things simple a subset of these is used which includes only those commands actually necessary, plus a few dummy commands to ensure compatibility with applications that are expecting a GSM phone to be connected. The full set of GSM commands is contained in specification GSM 07.05, which can be downloaded from www.etsi.org, but all commands used in the Z-text SMS modem are fully described later in this section.

The serial interface is fixed at 2400 baud, 8 bits per character, no parity, and 1 stop bit.

The COM port number is allocated by Windows on device installation, and can be found from Device Manager under the 'Ports (COM & LPT)' entry. It is possible that the port could be greater than 9 if many port numbers are already allocated (eg. Bluetooth adaptors often take up a lot of ports), which can cause a problem if the port is not opened correctly. Calling CreatFile to open "COM4" will work fine, but "COM10" will not. Using the form "\\.\COM10" will work correctly for all port numbers.

Note: where examples of the commands are shown, the reply from the modem is shown in *italics*.

Configuring the Z-text

It should not normally be necessary to do any configuration, as the default settings are suitable for most applications.

Sending a message

This is easy, only one command is required: AT+CMGS (see command reference below). Although the modem returns a prompt for the text message, it is not necessary to wait for it. This means that if the application only has to send messages, then it is not neccesary to look at the received data at all. Here is an example of this:

    AT+CMGS=01635231316
    Outgoing text message^Z
    > +CMGS: 5

It is recommended that the application should look for the *+CMGS* response to verify that the modem has accepted the message. Note that this response is returned immediately, the message has not yet been forwarded to the server. The AT+CMGR or AT+CMGL commands can be used to find out if the message is still waiting to be sent.

Receiving a message

This is slightly more involved, mainly because there are three ways to receive a message. The simplest is for it to be sent to the host immediately upon reception, but this is only appropriate for situations where the application is permanently running. The second method is for the modem to tell the host that the message has arrived and the host then retrieves it. The third method is to poll the modem for any unread messages, which allows messages received while the host was switched off to be received.

Method 1:

When the host application starts, it should configure the modem to send messages immediately on arrival with the following command:

AT+CNMI=0,2

When a new message is received, it will be sent to the host application:

+CMT: 01635231316,,"04/05/20,15:00:00+00"
New text message

In accordance with GSM 07.05, the message is not retained in the modem, so if the host application is not running at the time, then the message will be lost.

Method 2:

If the modem has not had the default settings changed, then no initialisation is required. Otherwise, when the host application starts, it should configure the modem to send a notification to the host with:

AT+CNMI=0,1

When a new message is received, a notification is sent to the host application, which should then read the message with the AT+CMGR command and then delete it with the AT+CMGD command to free up space for new messages:

+CMT: "ME",10
AT+CMGR=10
+CMGR: "REC UNREAD", 01635231316 ,,"04/05/20,15:00:00+00"
Incoming text message
AT+CMGD=10
OK

Unlike method 1 the message is only deleted when the host sends the AT+CMGD command, so if the message is missed, method 3 can be used to retrieve it later.

Method 3:

No initialisation is required, unless the host application could be confused by the +CMT.. notification from the modem, in which case they can be turned off with the following command:

AT+CNMI=0,0

The host must poll the modem to find out if a message has been received, and then delete it in the same manner as method 2 above. It is possible that more than one message will be waiting:

AT+CMGL="REC UNREAD"
+CMGL: 10,"REC UNREAD", 01635231316 ,,"04/05/20,15:00:00+00"
Incoming text message
+CMGL: 11,"REC UNREAD", 01635231316 ,,"04/05/20,15:00:10+00"

Another incoming text message

OK
AT+CMGD=10
OK
AT+CMGD=11
OK

Note that the AT+CMGL command will change the status of unread messages to read.

It is recommended that applications use method 3 on startup and then use method 1 or 2 from then on, although an occasional poll with AT+CMGL would provide assurance that an incoming message has not been missed.

Command reference

Many of the commands return a timestamp of the form "04/05/20,15:00:10+00". This begins with the date, in the form year/month/day, 20th May 2004 in the above example. This is followed by the time, 3pm in this case. The last number is the timezone in hours relative to GMT, but some servers send this as zero even when it is not (eg. Summertime).

Configuration commands

AT+CSCA Get / set messaging centre number

Set the telephone number of the landline SMS server, used for outgoing messages. This command has two forms. To get the existing number, follow the command with '?'

AT+CSCA?
+CSCA: "147017094009",129

The second parameter (129) is present only for compatibility with the GSM commands, and has no meaning for landline SMS.

To change the number, follow the command with '=' and the new number:

AT+CSCA=147017094009
OK

The default value is 147017094009, for the BT text service.

AT+NRX1 Get / set the first incoming SMS telephone number
AT+NRX2 Get / set the second incoming SMS telephone number
AT+NRX3 Get / set the third incoming SMS telephone number

Set the telephone numbers from which to receive messages. These are normally different from the outgoing number, and there may be more than one service that can send messages to the landline (as is currently the case in the UK during changeover to the new BT text service).
This command has two forms. To get the existing number, follow the command with '?'

AT+NRX1?
+ NRX1 : "08005875290"

To change the number, follow the command with '=' and the new number:

AT+ NRX1 =08005875290
OK

The default values are:

NRX1   08005875290   BT text.

NRX2   01612745990   Bizzyline, the service used by many DECT cordless
                         telephones. Due to be discontinued.

NRX3   Blank, for future use.

Note that this command is not part of the GSM 07.05 standard. Mobile phones use the same number for incoming and outgoing messages, so only AT+CSCA is needed.

AT+CNMI   Get / set new message reporting format

Sets the format used for notification of a new incoming message. There are 3 modes:

0   No indication is sent, the modem must be polled with the AT+CMGL command to check for new messages.

1   The new message notification is sent along with the number of the message slot that it is stored in:

   +CMT: "ME",10

   This indicates that a new message has been stored in slot 10, it can now be retrieved with the AT+CMGR command. The "ME" is for GSM compatibility, and should be ignored.

2   The new message notification is sent along with the text of the message:

   +CMT: 01635231316,,"04/05/20,15:00:00+00"
   New text message

   Where 01635231316 is the originating phone number, *"04/05/20,15:00:00+00"* is the timestamp and "New text message" is the received message.

This command has two forms. To get the existing mode, follow the command with '?'

AT+ CNMI?
+ CNMI : 0,1,0,0,0

The second parameter is the current mode, the others are present only for compatibility with the GSM commands.

To change the mode, follow the command with '=0,' and the new mode:

> AT+ CNMI =0,1
> *+ CNMI : 0,1,0,0,0*

For GSM compatibility, any additional parameters are accepted, but are ignored, as is the first 0 (but this must still be present).

The default mode is 1.

Sending and receiving commands

AT+CMGR   Read a message

Reads a message stored in a given slot, typically the slot number will have been obtained from the +CMT: new message indication:

> AT+CMGR=10
> *+CMGR: "REC UNREAD", 01635231316 ,,"04/05/20,15:00:00+00"*
> *Incoming text message*

If the message slot is empty (eg. An outgoing message has now been sent and automatically deleted) an error message is returned (see Error Messages below).

AT+CMGL   List all messages

Lists all messages, or all messages of a given type:

> AT+CMGL=<type>

Where <type> can be one of the following:

"REC UNREAD"   All unread messages.
"REC READ"   All read messages.
"STO UNSENT"   All unsent messages, ie. outgoing messages waiting to be sent.
"STO SENT"   All sent messages. This is for GSM compatibility only, the Z-text
     modem automatically deletes outgoing messages after sending.
"ALL"   All messages.

Messages are listed in a similar form to the AT+CMGR command:

> AT+CMGL="REC UNREAD"
> *+CMGL: 0,"REC UNREAD", 01635231316 ,,"04/05/20,15:00:00+00"*
> *Incoming text message*
> *+CMGL: 1,"REC UNREAD", 01635231316 ,,"04/05/20,15:00:10+00"*
> *Another incoming text message*
>
> *OK*

In the above example, the 0 and 1 following the +CMGL: are the message slot numbers.

Any unread messages in the returned list will have their status changed to read.

Note: AT+CMGL has the same effect as AT+CMGL="ALL"

AT+CMGS   Send a message

The command should be followed by '=' and the destination telephone number. The modem will reply with a '>' prompt, after which the text message should be sent. At the end of the message a terminator must be sent, this is ASCII control-Z character – the code is 26 decimal, 1A hex. It is represented in the following example by ^Z:

>   AT+CMGS=01635231316
>   *> Outgoing text message^Z+CMGS: 5*

The +CMGS: 5 tells us that the message has been stored in slot 5, but we normally don't need to know this. The message is automatically deleted when successfully sent to the server.

AT+CMGD   Delete a message

Deletes a message stored in a given slot:

>   AT+CMGD=10
>   *OK*

It is important that messages are deleted after being read, to make room for new incoming messages.

Additional commands

The following commands are accepted by the modem, but have no function except to return an appropriate response. They are included only for compatibility with existing GSM applications.

AT+CSMS
AT+CPMS
AT+CSMP
AT+CSDH
AT+CMGF

Error messages

If a command cannot be understood, the modem will respond with ERROR. If a command is recognised and properly formatted but still cannot be executed correctly, one of the following messages will be returned:

+CMS ERROR: 303   A parameter is outside the valid range.

+CMS ERROR: 322   When sending a message, there is no free message slot to store it in.

+CMS ERROR: 321   Invalid message slot number. It was either outside the valid range, an attempt was made to read an empty message slot, or an attempt was

made to delete a message from a slot that is already empty.

Character sets

There are a few differences between the standard Windows character set and the GSM one used for text messages. The following have no GSM equivalent, and will be stripped from any outgoing messages:

¢ ª « ¬ © ® ¯ ° ± ¹ ² ³ ´ ¶ · » ¼ ½ ¾ Þ þ ¨ º ¸ Ð

Not all accented characters are supported either. The following are:

Ä Å Ç É Ö Ü à ä å ç è é ì ð ñ ò ö ù ü

The following are not, and will be converted to their non-accented equivalent:

À Á Â Ã È Ê Ë Ì Í Î Ï Ñ Ò Ó Ô Õ Ù Ú Û Ý á â ã ê ë í î ï ó ô õ ú û ý ÿ

The GSM character set contains several characters that are not in the Windows character set, these are replaced with spaces in incoming messages. They are:

Δ Φ Γ Λ Ω Π Ψ Σ Θ Ξ