

## GDW-11 GSM Modem

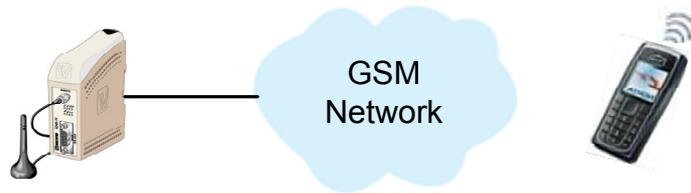
### Sending SMS Messages and E-mails



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## 1. Introduction - Sending SMS Messages



There are three different methods to cause the GDW-11 to issue an SMS message:

### Method 1. Toggle the DTR line on the RS232 port

This method is limited to sending 1 stored message and is suitable for applications where a closed contact is available to indicate a fault or status .

### Method 2. Send a stored message by issuing a command to the modem

The messages are stored on the SIM card and are sent when a specific command is issued from the connected equipment. A SIM card can normally store between 15 & 20 messages. This method requires a single line of ASCII text to initiate the transmission.

### Method 3. Send a message directly from connected equipment/PLC

Both the command and message content are sent directly to the modem. The amount of messages that can be sent is only restricted by available memory in the PLC program. This method requires a small amount of programming in the PLC to ensure the commands are timed properly.

This application note will explain what is required to set-up a GDW-11 for all three of the methods listed above.

In order to complete these instructions you will need the following items as a pre-requisite:

- Network SIM Card
- GD-Tool configuration software
- Straight through, male to female, 9 way serial cable (for programming GDW-11)

The GD-Tool configuration software is supplied on a CD-ROM with the GDW-11, or it can be downloaded from the Westermo website: [www.westermo.co.uk](http://www.westermo.co.uk)

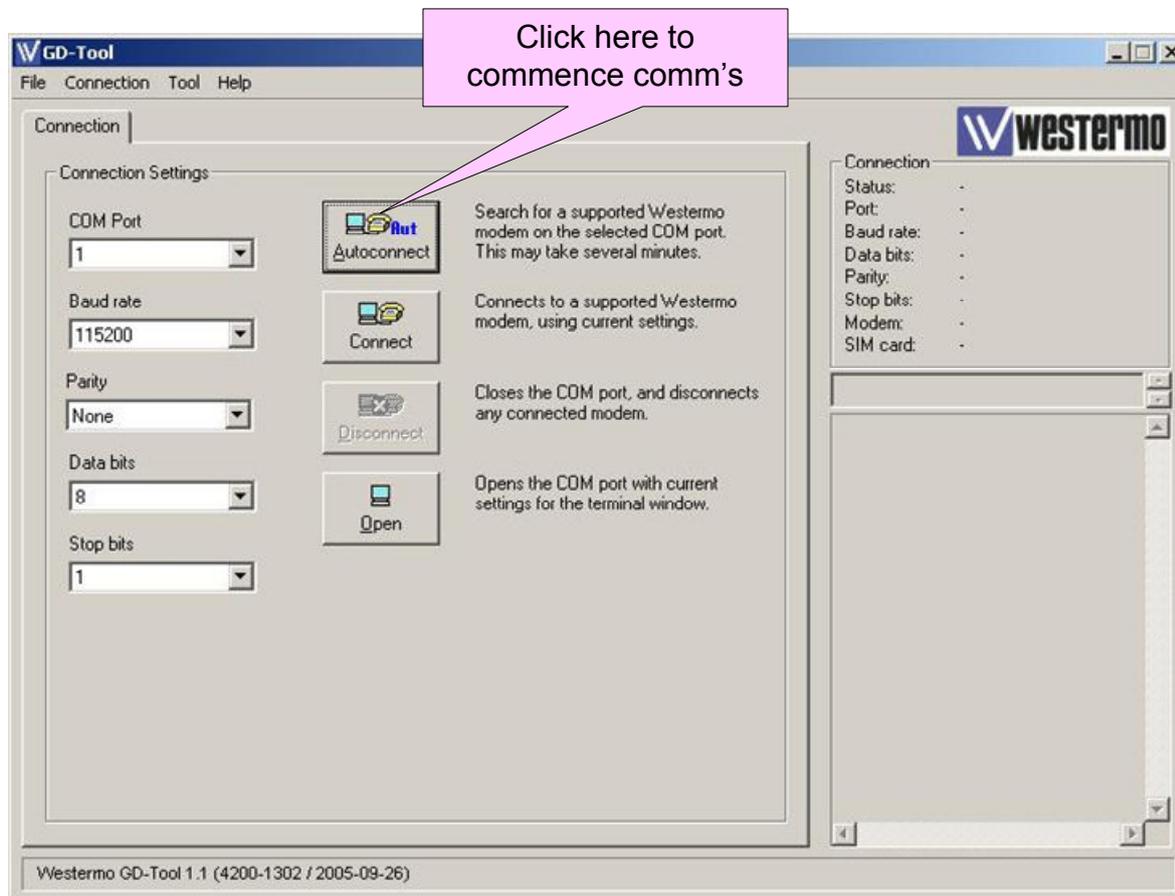
The serial cable will need to be fully terminated, GD-Tool will not work with just pins 2,3 & 5 connected!

### **IMPORTANT NOTE**

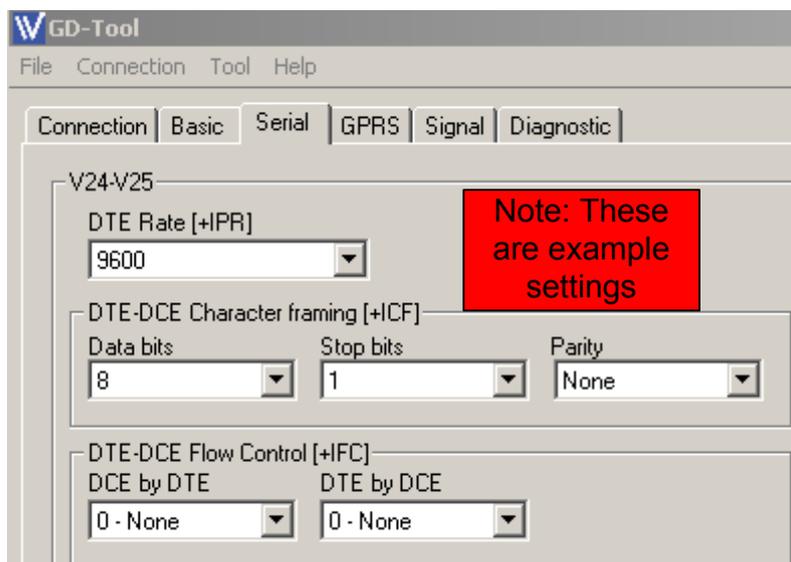
Network providers do not guarantee the delivery of an SMS message. For this reason we would never recommend using SMS messaging to indicate critical alarms.

## 2. Configuring the GDW-11

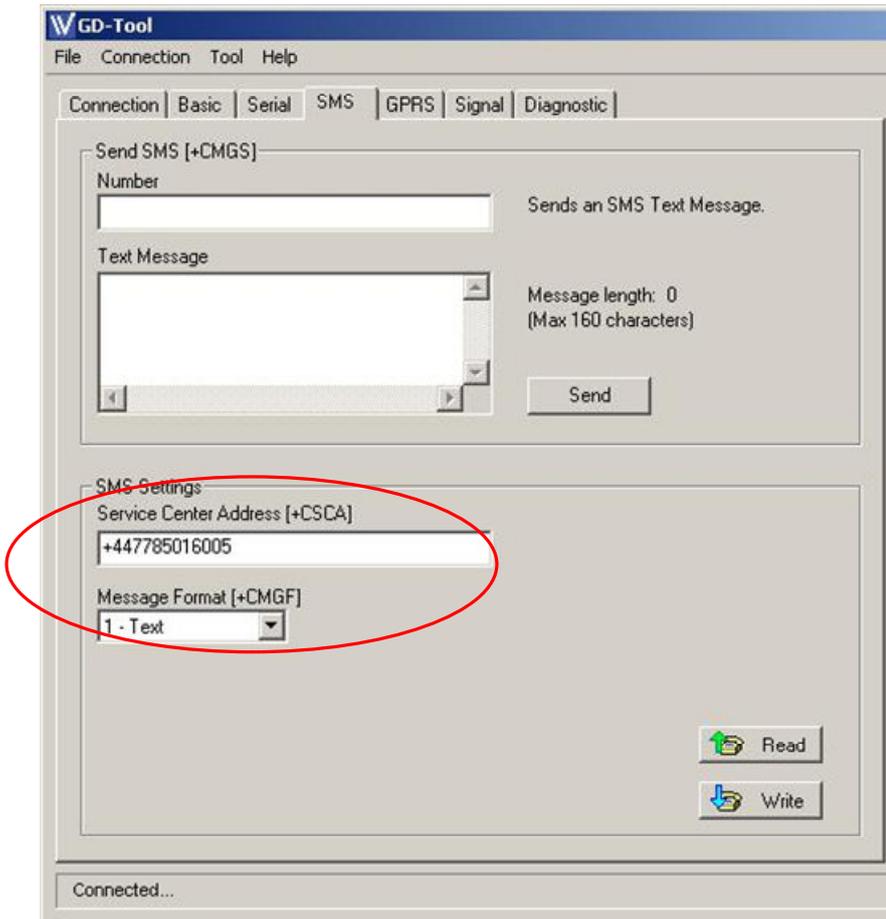
Start the GD-Tool program and connect the PC to the GDW-11 with the serial cable. Power up the modem, then click on the Autoconnect button to establish comm's.



Once GD-Tool has read all of the settings in the modem, there will be several tabs available to click on. For this application, we are only interested in the Serial and SMS tabs.



## Configuring the GDW-11.....cont'd

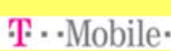


In order to send an SMS, the modem needs to know the network service centre number to send the message to.

Under normal circumstances this information is automatically read from the sim card.

However, should this field appear blank, it will be necessary to enter the correct service centre number, otherwise it will not be able to issue an SMS message.

The list below shows the numbers for the major networks.

Network Service Centre Addresses:	
 +447802000332	 +447785016005
 +447782000800	 +447958879890
 +447973100973	 +447958879979

## 3. Configuring Hyperterminal to make a connection

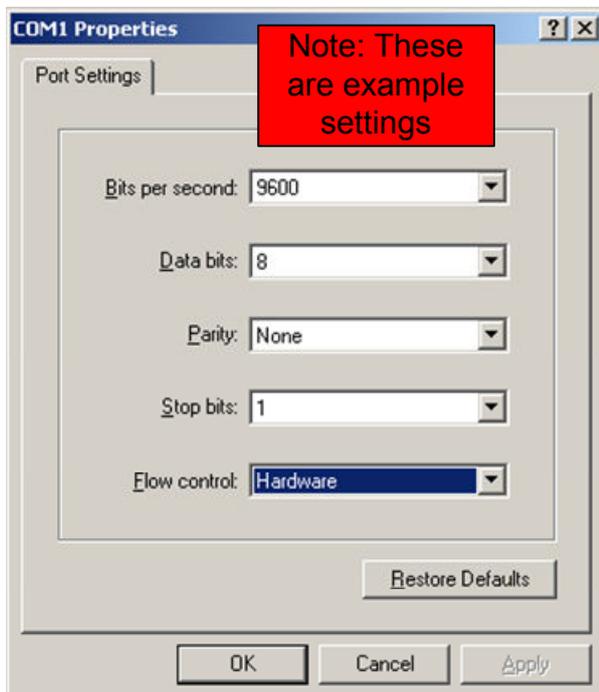
In order to program the GDW-11 with the desired SMS messages, or prepare the sim card for use, a terminal program is required to send the instruction commands. This section will show you how to set-up Hyperterminal for this purpose.

Check the serial cable is still attached to the GDW-11 and make sure that the modem is powered up. Click on the Windows start button, go to Programs, Accessories, Communications and select Hyperterminal. When the program starts choose a name for your connection and select "OK".

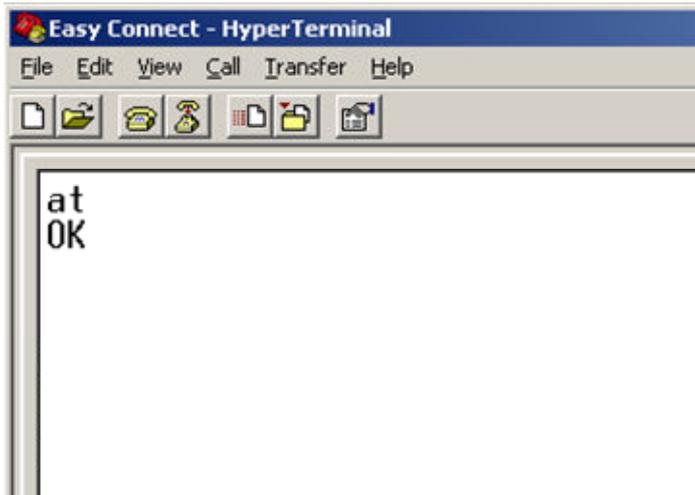


When this dialogue box appears set the "Connect using" box to the COM port connected to the GDW-11.

Then click on the OK button



Set-up the COM port for the settings to match those already set for the GDW-11 serial port, and click on the OK button.



The main terminal window will now be displayed. To test the modem is responding type the command:

**AT <CR>**

The modem should respond with "OK".

If you don't see any characters when you type the commands, it is likely that the echo is switched off. This will not affect the operation of the modem, but if you wish to see what you're typing, use the command:

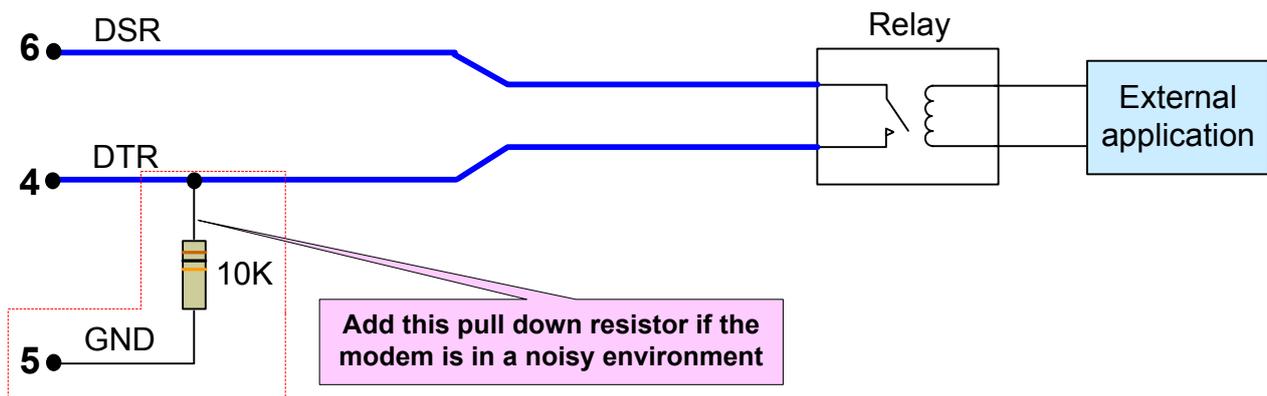
**ATE1<CR>** (switches the echo on)

Now refer to the next section for configuring the GDW-11 for sending text messages.

#### 4. Method 1- Using DTR to trigger a message

If the application doesn't have an intelligent device which is capable of issuing a command to the modem, it is possible to send a single SMS message by raising the DTR line high.

If the connected device isn't capable of raising the DTR line, it's possible to use the modem's own DSR line to trigger the message. The DTR line should be connected to GND, via a 10K ohm pull down resistor. The diagram below shows how the connection should be made.



With the hardware connection in place, the modem needs to be setup for this mode to operate correctly.

Using the Hyperterminal session that was created in the previous section, type in the following AT commands :

**AT&S0<CR>** (This sets the DSR line permanently high)  
**AT%D2<CR>** (Activates automatic transmission of SMS if DTR line triggered on)  
**AT&W<CR>** (Stores the above settings in memory)

Finally, the actual SMS message needs to be stored onto the sim card.

When DTR is triggered it will send the message that is stored in location 1 of the sim card memory. As it is not possible to specify the location for storing the message, the only way to ensure that the message is put into location 1 is by deleting all the messages from the SIM card. This is done with the following command:

**AT+CMGD=1,4<CR>**

Refer to the next page for completing this section.

## Method 1- .....continued

Now the message can be entered, using the commands below:

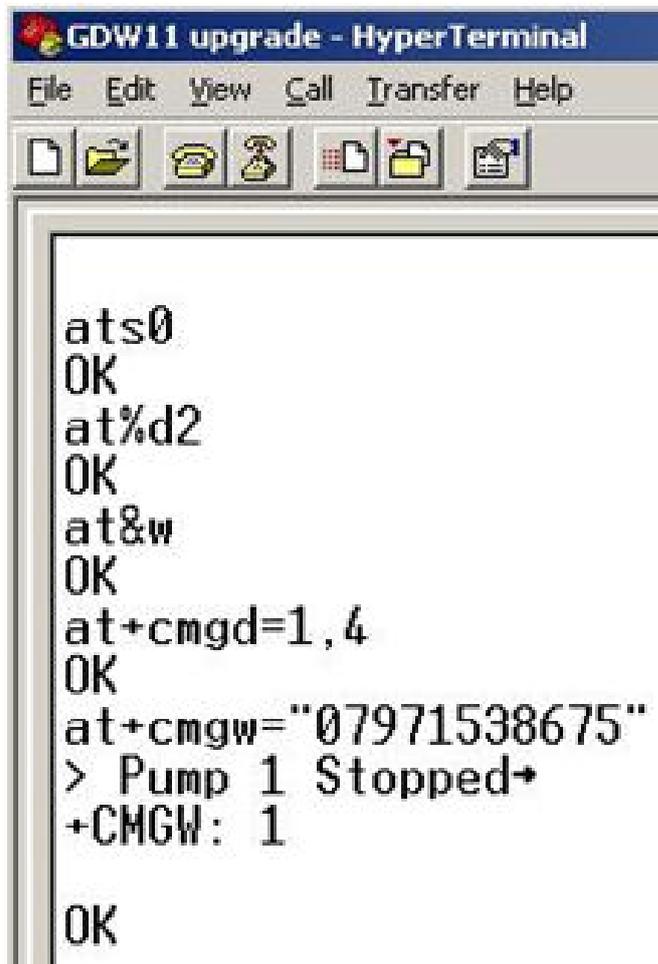
**AT+CMGW="your phone number"<CR>**

The modem will respond with ">" as a prompt to enter the text to be stored. At this prompt type the following:

**>MESSAGE CONTENT<Ctrl+Z>**

Immediately after pressing Ctrl+ Z, the modem will respond with "+CMGW: 1", this indicates that the message has been stored in location 1.

The screen shot below shows the whole sequence more obviously.



```
ats0
OK
at%d2
OK
at&w
OK
at+cmgd=1,4
OK
at+cmgw="07971538675"
> Pump 1 Stopped+
+CMGW: 1
OK
```

## 5. Method 2 - Sending messages stored in the GDW-11

If the connected device is capable of sending ASCII text strings to the modem, then you can use it to issue commands, which will send specific messages that are stored on the sim card.

The amount of messages you can store on a sim card will vary according to its capacity, but it is usually between 15 & 20 messages.

```

Westermo com1 - HyperTerminal
File Edit View Call Transfer Help
[at+cmgd=1,4
OK
at+cmgl="ALL"
OK
at+cmgw="07941582455"
> PUMP 1 FAULT→
+CMGW: 1
OK
at+cmgw="07941582455"
> PUMP 1 STOPPE
+CMGW: 2
OK
at+cmgw="07941582455"
> PUMP 1 OVERSPEED→
+CMGW: 3
OK
at+cmgw="07941582455"
> PUMP 1 ON FIRE→
+CMGW: 4
OK
at+cmgw="07941582455"
> PUMP 1 MISSING!→
+CMGW: 5
OK
    
```

With the Hyperterminal session running, it is necessary to delete any SMS messages that may have been previously stored on the sim card. Type the following command:

**AT+CMGD=1,4<CR>**

The modem should respond with "OK" to indicate this command has worked.

To check if the memory is now clear type this command:

**AT+CMGL="ALL"**

If the memory is empty then the modem will respond with "OK". If there are any stored messages they will be listed on the screen

Now it is possible to start storing the desired messages. The first part of the command stores the number of the mobile phone that the text will be sent to. Type the following command:

**AT+CMGW="your phone number"<CR>**

The modem will respond with ">" as a prompt to enter the text to be stored. At this prompt type the following:

**>MESSAGE CONTENT<Ctrl+Z>**

Immediately after pressing Ctrl+ Z, the modem will respond with "+CMGW: X", (where X is the location number where the message is stored) followed by "OK"

The screen shot on the left shows the above sequence more obviously

## Method 2 - .....continued

Repeat the command for every message that you wish to store, remembering to note the number of the location where the message gets stored. Use the form provided in Appendix 1 for this purpose.

Following the example from the previous page, the location, message and phone number list for the sim card would be:

<u>SIM CARD</u>	<u>MESSAGE</u>	<u>NUMBER TO SEND TEXT TO</u>
Location 1:	PUMP 1 FAULT	07941582455
Location 2:	PUMP 1 STOPPED	07941582455
Location 3:	PUMP 1 OVERSPEED	07941582455
Location 4:	PUMP 1 ON FIRE	07941582455
Location 5:	PUMP 1 MISSING!	07941582455

If you want to check the message list stored, use the **AT+CMGL="ALL"** command to view the sim memory.

The command required to send a message is as follows:

**AT+CMSS=X<CR>** Where **X** is the location of the message to be sent

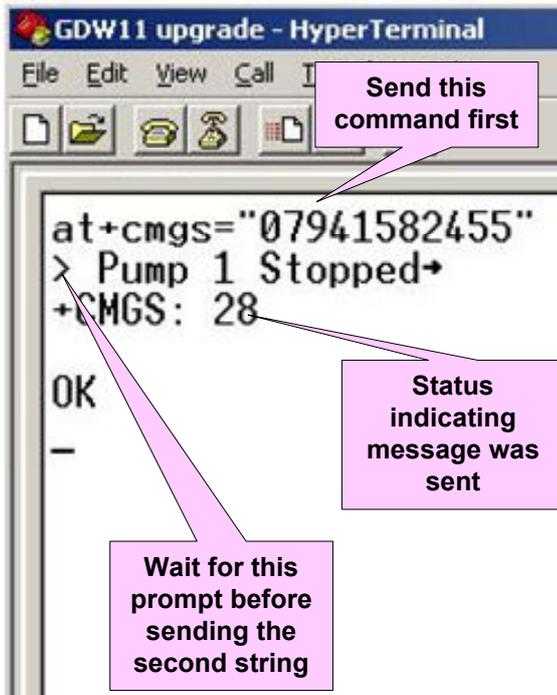
The carriage return at the end of the line is required to force the command to be actioned. Different devices implement ASCII control characters in different ways, so you will need to alter the <CR> command to suit your device. The most common forms are either **^M** or **/CR**

To send the messages stored in the previous example, the commands for each message would be as follows:

<u>SIM CARD</u>	<u>MESSAGE</u>	<u>COMMAND REQUIRED</u>
Location 1:	PUMP 1 FAULT	AT+CMSS=1
Location 2:	PUMP 1 STOPPED	AT+CMSS=2
Location 3:	PUMP 1 OVERSPEED	AT+CMSS=3
Location 4:	PUMP 1 ON FIRE	AT+CMSS=4
Location 5:	PUMP 1 MISSING!	AT+CMSS=5

## 6. Method 3. Send a message directly from a PLC

This final method is the most powerful, as the message and required commands are sent dynamically from the PLC. However, as dynamic texting is a two step process, it is important that the PLC program gets the timing of the commands correct.



The two strings that need to be sent from the PLC are as follows:

**AT+CMGS="your phone number"<CR>**

After receiving this first command, the modem will now be waiting for the message content to be sent. The PLC should now send the second string:

**MESSAGE CONTENT<Ctrl+Z>**

When the modem sees Ctrl+ Z the terminating character it will send the SMS immediately, and respond with "+CMGS: X", (where X is the reference number. Outgoing messages are **not** stored) followed by "OK"

If both commands are sent one after the other without a delay the modem will report an error. There must be a small delay after the first command to allow the modem to respond with the message prompt (ASCII character 62), before the second command is issued.

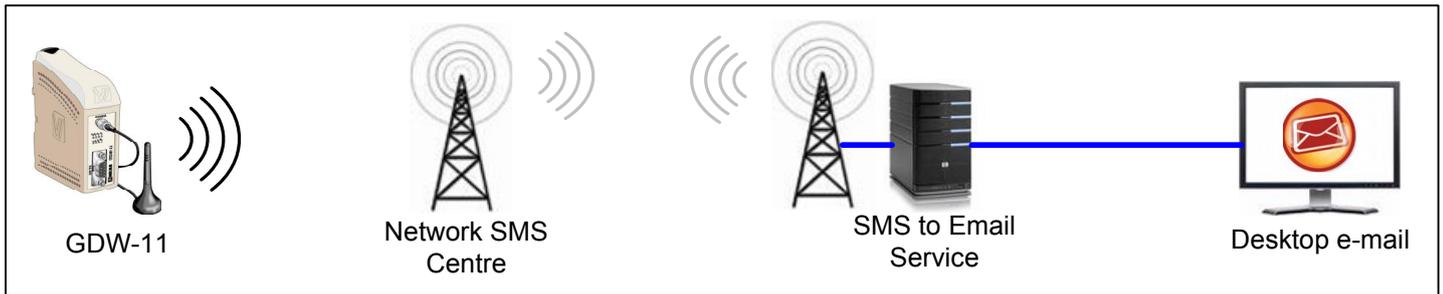
The screen shot on the left shows the sequence when done manually with Hyperterminal.

The carriage return <CR> and **Ctrl- Z** terminating characters are implemented differently, depending on the PLC manufacturer. Therefore, you will need to alter these commands to suit your device.

The most common forms are either **^M** or **/CR** for <CR>, and **^Z** or **/SUB** for **Ctrl-Z**

## 7. Sending E-mails

### Overview



Technically, the GDW-11 isn't actually capable of sending an e-mail. However, by using an SMS to E-mail forwarding service the same process is accomplished. E-mails give you greater flexibility for handling the original SMS message, as most e-mail programs give you the ability to forward to other users and groups.

There are several companies that offer this service, but the two services we have tested are:



O2's mmail service for O2 SIM cards only  
Send SMS to: **212**



SMS2Email service for any network  
Send SMS to: **07766 404142**

The cost of sending the message is charged at your standard network rate, there are no additional charges.

To send a message just add the email recipient to the start of the SMS message and then send it to the number for the forwarding service. The message can be stored or dynamic, as described in the previous sections of this application note.

For example:

To send the email message "**Plant alarm: Pump 1 shutdown**" to [joe.bloggs@westermo.co.uk](mailto:joe.bloggs@westermo.co.uk) create the text message as follows:

**joe.bloggs@westermo.co.uk Plant alarm: Pump 1 shutdown**  
(N.B. there must be a space after the email address)

Then send the text to one of the service providers' numbers: **212** or **07766 404142**

### IMPORTANT NOTE

Network providers do not guarantee the delivery of an SMS message. For this reason we would never recommend using SMS messaging to indicate critical alarms.





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