







SMS Tools User Guide

Introduction

The SMS tools application has been developed to include basic SMS functionality such as sending a message, receiving a message and redirecting an incoming message to another destination. You can also utilise this functionality to read and change run-time variables on the router.

Basic functionality supported:

-  Ability to send a text message via a 3G network and store in permanent storage
-  Ability to receive a text message via a 3G network and store in permanent storage
-  Ability to forward incoming text messages via a 3G network to another remote destination which may be a TCP/UDP server or other mobile devices.
-  Ability to read run-time variables from the device (e.g. uptime) and send result to a remote destination which may be a TCP/UDP server or other mobile devices.
-  Ability to change live configuration on the device (e.g. connection APN)
-  Ability to execute supported commands (e.g. reboot)

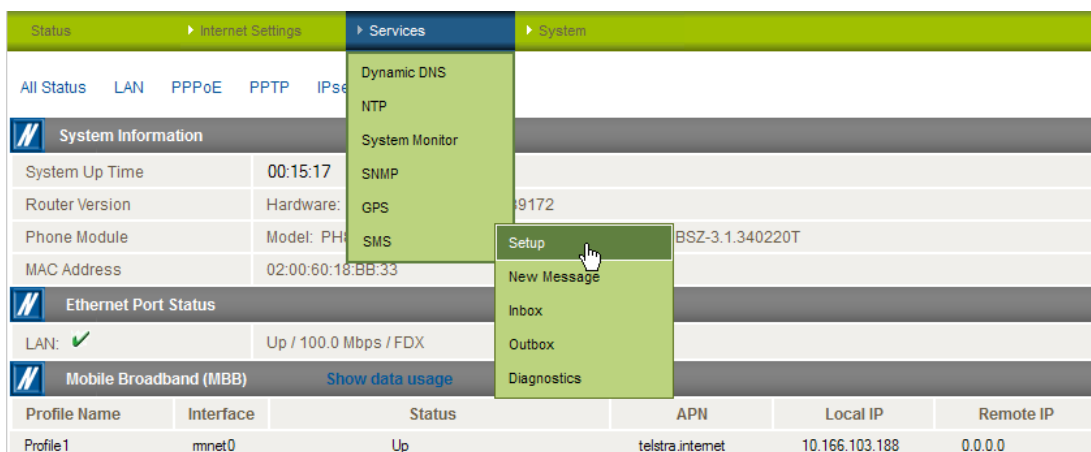


Note: Before performing the instructions in this guide, please ensure that you have the latest firmware version on your router. Visit <http://www.netcommwireless.com/products/m2m-wireless> to find your device and download the latest firmware. Please also ensure that the SMS service is available on your SIM.

Setup

General SMS functionality is enabled by default. You can open the Setup page in order to configure additional settings.

From the menu bar along the top of the screen, navigate to **Services > SMS > Setup**.



The screenshot shows the router's web interface with the 'Services' menu open. The 'SMS' option is selected, and the 'Setup' sub-menu is visible. The interface includes sections for System Information, Ethernet Port Status, and Mobile Broadband (MBB) settings.

Profile Name	Interface	Status	APN	Local IP	Remote IP
Profile1	mnet0	Up	telstra.internet	10.166.103.188	0.0.0.0

Figure 1: Services - SMS – Setup

Status > Internet Settings > Services > System

Services > SMS > Setup

General SMS Configuration	
SMS Enable/Disable	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Messages / Page	<input type="text" value="20"/> 10-50
Encoding Scheme	<input checked="" type="radio"/> GSM 7 Bit <input type="radio"/> UCS2
SMSC Address	<input type="text" value="N/A"/> <input type="button" value="Change"/>
SMS Configuration for Redirection	
Redirect to Mobile	<input type="text"/>
Redirect to TCP	<input type="text"/> IP address or domain name
TCP Port to Redirect	<input type="text"/> 1-65535
Redirect to UDP	<input type="text"/> IP address or domain name
UDP Port to Redirect	<input type="text"/> 1-65535
SMS Configuration for Remote Diagnostics	
Enable Remote Diagnostics	<input checked="" type="radio"/> Enable <input type="radio"/> Disable

Figure 2: SMS Setup page

ITEM	DEFINITION
SMS Enable/Disable	Enables or disables the SMS functionality of the router.
Messages / Page	Enter the number of SMS messages to display per page.
Encoding Scheme	Select the encoding method used for SMS messages.
SMSC Address	The short message service center (SMSC) address is the number of your mobile broadband SMS provider.
Redirect to Mobile	Forward incoming text messages to the remote destination defined.
Redirect to TCP	Forward incoming text messages to the remote TCP destination defined.
TCP Port to Redirect	The TCP port on which to connect to the remote destination on.
Redirect to UDP	Forward incoming text messages to the remote UDP destination defined.
UDP Port to redirect	The UDP port on which to connect to the remote destination on.
Enable Remote Diagnostics	Enable diagnostics to be performed by a specially crafted SMS message.

Table 1: SMS Setup descriptions

SMS Configuration for Redirection

Incoming text messages can be redirected to another mobile device and/or a TCP/UDP message server.

Redirect To Mobile

You can forward incoming text messages to a different destination number. This destination number can be another mobile phone or 3G router phone number. To disable the feature, simply delete the number in the 'Redirect To Mobile' field and click the "Save" button.

For Example: If someone sends a text message and Redirect To Mobile is set to "0412345678", this text message is stored on the router and forwarded to "0412345678" at the same time.

Redirect to TCP & TCP Port, Redirect to UDP & UDP Port

You can also forward incoming text messages to a TCP/UDP based destination. The TCP or UDP server can be any kind of public or private server if the server accepts incoming text-based message.

The TCP/UDP address can be an IP address or domain name. The port number range is from 1 to 65535. Please refer to your TCP/UDP based SMS server configuration for which port to use.

For Example: If someone sends a text message and Redirect to TCP is set to "192.168.20.3" and "2002", this text message is stored in the router and forwarded to "192.168.20.3" on port "2002" at the same time.

SMS Configuration for Remote Diagnostics

Enable Remote Diagnostics

Enable or disable the Remote Diagnostics feature. If this setting is enabled all incoming text messages are parsed and tested for if they contain Remote Diagnostics commands.

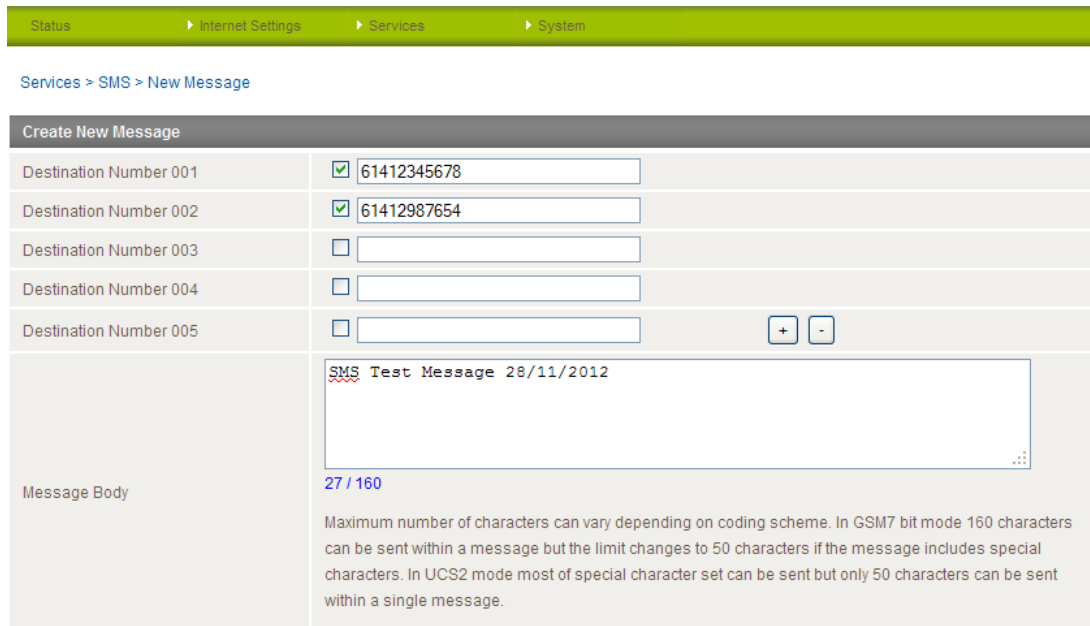
If Remote Diagnostics commands are found, the router executes those commands. This feature is disabled by default.



Note: It is possible to adjust settings and prevent your router from functioning correctly. If this occurs, you will need to perform a factory reset in order to restore normal operation. It is highly recommended that you enable security when using this feature. See the Inbox/Outbox section below for further details.

New Message

This page allows you to send a new text message to multiple recipients.



[Status](#) > [Internet Settings](#) > [Services](#) > [System](#)

[Services](#) > [SMS](#) > [New Message](#)

Create New Message

Destination Number 001	<input checked="" type="checkbox"/>	<input type="text" value="61412345678"/>	
Destination Number 002	<input checked="" type="checkbox"/>	<input type="text" value="61412987654"/>	
Destination Number 003	<input type="checkbox"/>	<input type="text"/>	
Destination Number 004	<input type="checkbox"/>	<input type="text"/>	
Destination Number 005	<input type="checkbox"/>	<input type="text"/>	<input type="button" value="+"/> <input type="button" value="-"/>

Message Body

SMS Test Message 28/11/2012
 27 / 160

Maximum number of characters can vary depending on coding scheme. In GSM7 bit mode 160 characters can be sent within a message but the limit changes to 50 characters if the message includes special characters. In UCS2 mode most of special character set can be sent but only 50 characters can be sent within a single message.

Figure 3: SMS New Message page

A new SMS message can be sent to a maximum of 100 recipients simultaneously. After sending the message, the result is displayed next to the destination number as “Success” (in blue) or “Failure” (in red).

There are 10 recipient entry fields shown on this page by default but you can increase or decrease this number by pressing the + or – button at right side of the last recipient entry field.

You can select to enable or disable individual message recipients by selecting the checkbox beside each entered number. After entering the desired recipient numbers, type your SMS message in the “Message Body” field and then click the **Send** button.

Inbox/Outbox

You can check all sent SMS messages in the SMS Outbox or you can read, delete, reply or forward an SMS message to another mobile device from the SMS Inbox.

SMS message senders can be added to the “White List” which is used to secure the Remote Diagnostics feature. Select the sender or recipient number and click the “Add White List” button.

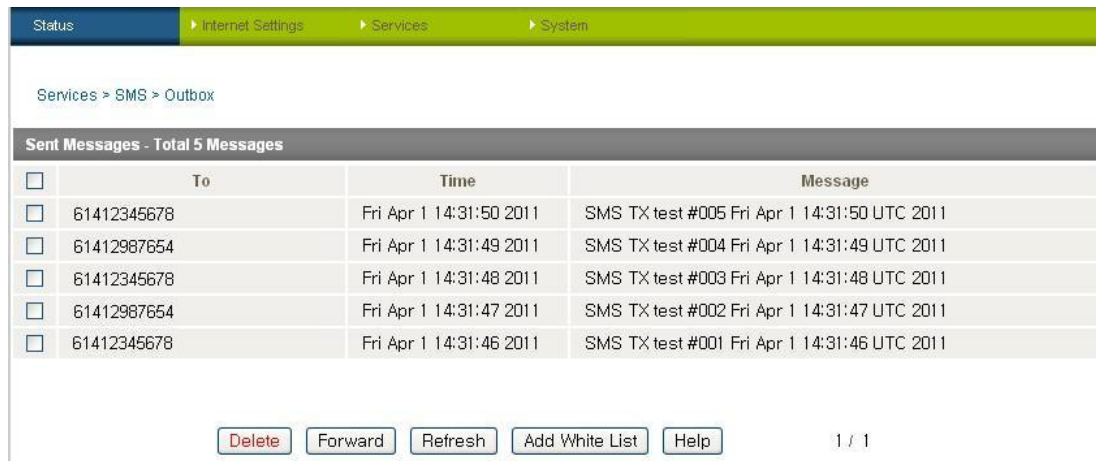


Services > SMS > Inbox

Received Messages - Total 5 Messages			
<input type="checkbox"/>	From	Time	Message
<input type="checkbox"/>	61412345678	Fri Apr 1 14:28:21 2011	sms test #0010 Fri Apr 1 14:28:21 UTC 2011
<input type="checkbox"/>	61412987654	Fri Apr 1 14:28:20 2011	sms test #009 Fri Apr 1 14:28:20 UTC 2011
<input type="checkbox"/>	61412345678	Fri Apr 1 14:28:19 2011	sms test #008 Fri Apr 1 14:28:19 UTC 2011
<input type="checkbox"/>	61412987654	Fri Apr 1 14:28:18 2011	sms test #007 Fri Apr 1 14:28:18 UTC 2011
<input type="checkbox"/>	61412345678	Fri Apr 1 14:28:17 2011	sms test #006 Fri Apr 1 14:28:17 UTC 2011

1 / 1

Figure 4: SMS Inbox



Services > SMS > Outbox

Sent Messages - Total 5 Messages			
<input type="checkbox"/>	To	Time	Message
<input type="checkbox"/>	61412345678	Fri Apr 1 14:31:50 2011	SMS TX test #005 Fri Apr 1 14:31:50 UTC 2011
<input type="checkbox"/>	61412987654	Fri Apr 1 14:31:49 2011	SMS TX test #004 Fri Apr 1 14:31:49 UTC 2011
<input type="checkbox"/>	61412345678	Fri Apr 1 14:31:48 2011	SMS TX test #003 Fri Apr 1 14:31:48 UTC 2011
<input type="checkbox"/>	61412987654	Fri Apr 1 14:31:47 2011	SMS TX test #002 Fri Apr 1 14:31:47 UTC 2011
<input type="checkbox"/>	61412345678	Fri Apr 1 14:31:46 2011	SMS TX test #001 Fri Apr 1 14:31:46 UTC 2011

1 / 1

Figure 5: SMS Outbox

Diagnostics and Command Execution Setup

Status
▶ Internet Settings
▶ Services
▶ System

Services > SMS > Diagnostics & Command Execution Setup

SMS Diagnostics & Command Execution Configuration

Enable Authentication	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Send Ack. SMS for Set Command	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Send Ack. SMS to	<input type="radio"/> Fixed Number <input checked="" type="radio"/> SMS Sender Number
Fixed Ack. SMS Number	<input type="text" value="0412345678"/>
Send Error SMS for Get/Set/Exec Command	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Send Error SMS to	<input type="radio"/> Fixed Number <input checked="" type="radio"/> SMS Sender Number
Fixed Error SMS Number	<input type="text" value="0412987654"/>
Max. Diag. SMS Tx Limit	<input type="text" value="100"/> messages per <input type="text" value="DAY"/> 0 / 100 messages sent <input type="button" value="Reset"/>

Limit the maximum number of diagnostic text messages to be sent within a certain time period. The current "messages sent" count automatically resets at the beginning of the designated time unit. For example, the counter will reset to 0 at 1:00, 2:00... for "HOUR", 00:00 for "DAY", 00:00 Monday for "WEEK" and the 1st day of the month for "MONTH".

White List for Diagnostic or Execution SMS Messages

Incoming diagnostic or execution SMS messages are first checked with this White List. If the sender and password of the message do not match any of the destination numbers and passwords in the list, the message is ignored and an error message is sent either to the sender, or a predefined destination. Destination numbers can be easily added from SMS Inbox/Outbox pages using the "Add White List" button, up to a maximum of 20 entries.

Index	Destination Number	Password	Control
01	<input type="text" value="0412345678"/>	<input type="text" value="1234"/>	<input type="button" value="Delete"/> <input type="button" value="+"/> <input type="button" value="-"/>

Figure 6: Diagnostics and Command Execution Setup

Enable Authentication

Enable or disable checking the sender's phone number against the allowed sender "White List" for incoming Diagnostics/Command Execution SMS messages.

If authentication is enabled, the router will check if the sender's number exists in the White List. If it exists, the router then checks the password in the incoming message against the password in the White List for the corresponding sending number. If they match, the Diagnostics/Command is executed.

If the number does not exist in the White List or the password does not match, the router does not execute the incoming Diagnostics/Command Execution SMS message. This is enabled by default.



Note: It is highly recommended to enable security when using the Diagnostics/Command Execution feature.

Send Ack. SMS for Set Command

Enable or disable sending an acknowledge message after execution of a Set command.

If disabled the router does not send any acknowledgement after execution of a Set command. This can be useful to determine if a command was received and executed by the router. This is disabled by default.

Send Ack. SMS to

Select destination to send an acknowledgement message to after the execution of a "Set" command.

If "Fixed Ack. SMS Number" is selected, the acknowledgement message will be sent to the predefined number in the "Fixed Ack. SMS Number" field.

If the SMS Sender Number is selected, the acknowledgement message will be sent to sender directly. The default setting is to use "SMS Sender Number".

Fixed Ack. SMS Number

Enter the destination number to which acknowledgement messages are sent after the execution of a Set command.

Send Error SMS for Get/Set/Exec Command

Enable or disable the sending of an error message resulting from the execution of a Get/Set/Exec command. If disabled, the router does not send any error notifications after the execution of a Get/Set/Exec command. This function is disabled by default.

Send Error SMS to

Select the destination of the error messages from the execution of a Get/Set/Exec command.

If "Fixed Number" is selected, any error messages will be sent to the predefined number in the "Fixed Error SMS Number" field.

If "SMS Sender Number" is selected, any error messages will be sent to the sender directly.

The default setting is to use "SMS Sender Number".

Fixed Error SMS Number

The destination number to which error messages from the execution of a Get/Set/Exec command should be sent.

Max. Diag. SMS Tx Limit

You can set the maximum number of acknowledgement and error messages sent when an SMS Diagnostics and/or Command is executed. You can set the maximum limit on a per hour/day/week or month basis.

The default is to send a maximum of 100 messages per day.





You can check the current sent message count by looking next to the "Max. Diag. SMS Tx Limit" field. If the maximum number has been exceeded, you can also reset sent the message counter by pressing the "Reset" button.

The Total transmitted message count resets after a reboot or at the beginning of the time frame specified.



Note: Times displayed are in UTC format.

For example:

-  If the time frame is set to "HOUR" and the current time is "04:30", then the counter will reset to zero at "05:00".
-  If time frame is set to "DAY" and current date and time is "04:30" 17th of March, then the counter will reset to zero at "00:00" 18th of March.
-  If time period is set to "WEEK" and current date and time is "04:30" Saturday, then the counter will reset to zero at "00:00" on the coming Monday.
-  If time period is set to "MONTH" and current date and time is "04:30" 17th of March, then the counter will reset to zero at "00:00" 1st of April.

White List

A maximum number of 20 entries can be stored in the router. If Authentication is enabled, any incoming Diagnostics/Command Execution SMS messages are processed only if the sender's number exists in White List and the message password matches with the password specified in the White List.

One blank entry is shown by default and you can add or delete an entry by pressing the **+** or **-** button. The White List numbers and passwords can be cleared by pressing the **Delete** button.

To add a number to the white list, enter the desired phone number and password then click the **Save** button.

Message Storage for Diagnostic Messages



Diagnostic messages (Diagnostic commands, acknowledgements and error notification messages) sent to remote destination are stored in Inbox/Outbox.

Security



In order to provide security for SMS command execution, it is recommended that all SMS commands be subject to successful authentication against the White List as well as setting a password for each phone number entered. This prevents unauthorised or accidental execution of SMS commands.

SMS Command format



Generic Format for reading variables:

-  get VARIABLENAME
-  PASSWORD get VARIABLENAME

Generic Format for writing to variables:

-  set VARIABLENAME=VALUE
-  PASSWORD set VARIABLENAME=VALUE

Generic Format for executing a command:




-  execute COMMAND
-  PASSWORD execute COMMAND

Replies

Upon receipt of successfully formatted and authenticated (if required) command, the router will reply to the SMS in the following format:

TYPE	SMS CONTENTS	NOTES
Get Command	"VARIABLENAME=VALUE"	
Set Command	"Successfully set VARIABLENAME to VALUE"	Only sent if the acknowledgment message function is enabled
Execute Command	"Successfully executed command COMMAND"	

Where "VARIABLENAME" is the name of the value to be read

-  Where "VARIABLENAME(x)" is the name of another value to be read
-  Where "VALUE" is the content to be written to the "VARIABLENAME"
-  Where "COMMAND" is a supported command to be executed by the device (e.g reboot)

- ☰ Where “PASSWORD” is the password (if configured) for the corresponding sender number specified in the White List
- ☰ Multiple commands can be sent in the same message, if separated by a semicolon.

For Example:

- ☰ get VARIABLENAME1; get VARIABLENAME2; get VARIABLENAME3
- ☰ PASSWORD get VARIABLENAME1; get VARIABLENAME2
- ☰ set VARIABLENAME=VALUE1 ; set VARIABLENAME2=VALUE2
- ☰ PASSWORD set VARIABLENAME1=VALUE1; set VARIABLENAME2=VALUE2; set VARIABLENAME3=VALUE3

If required, values can also be bound by an apostrophe, double apostrophe or back tick.

For Example:

- ☰ “set VARIABLE=’VALUE’”
- ☰ “set VARIABLE=”VALUE””
- ☰ “set VARIABLE=`VALUE`”
- ☰ “get VARIABLE”

A password (if required), only needs to be specified once per SMS, but can be prefixed to each command if desired.

- ☰ “PASSWORD get Variable1”; “get VARIABLE2”
- ☰ “PASSWORD set VARIABLE1=VALUE1”; “set VARIABLE2=VALUE2”

If the command sent includes the “reboot” command and has already passed the White List password check, the device keeps this password and executes the remaining command line after the reboot with this same password.

For Example:

- ☰ “PASSWORD execute reboot; get Variable1”; “get VARIABLE2”
- ☰ “PASSWORD execute reboot; PASSWORD get Variable1”; “get VARIABLE2”

Commands are not case sensitive, however variable names and values are case sensitive.

List of valid commands (which can be used in conjunction with the execute command):

“pdpcycle”, “pdpdown” and “pdpup” commands can have a profile number suffix ‘x’ added. Without the suffix specified, the command operates against the current active profile or last active profile.

#	COMMAND NAME	DESCRIPTION
1	reboot	Immediately perform a soft reboot
2	pdpcycle or pdpcyclex	Disconnect (if connected) and reconnect the 3G connection. If a profile number is selected in the command, try to disconnect/reconnect the specified profile in case the profile is active. If no profile number is selected, try to disconnect/reconnect the current active profile. Reports an error if no profile number is selected and there is no currently activated profile.
3	pdpdown or pdpdownx	Disconnect the PDP. If a profile number is selected in the command, try to disconnect the specified profile in case the profile is active. If no profile number is selected, try to disconnect the current active profile. Reports an error if no profile number is selected and there is no currently activated profile.
4	pdpup or pdpupx	Reconnect the PDP. If a profile number is selected in the command, try to connect with the specified profile. If no profile number is selected, try to connect to the last active profile. The router will check the currently activated profile and disconnect this profile before executing the command. Reports an error if no profile number is selected and there is no stored last active profile number.

List of valid variables:

Where “x” is a profile number (1-6). If no profile is specified, variables are read or written to for the current active profile. If a profile is specified, variables are read or written to for the specified profile number ('x').

#	RDB VARIABLE NAME	SMS VARIABLE NAME	READ/WRITE	DESCRIPTION	EXAMPLE
0	link.profile.x.enable link.profile.x.apn link.profile.x.user link.profile.x.pass link.profile.x.auth_type link.profile.x.iplocal link.profile.x.status	profile or profilex	RW	Profile	Read: (profile no,apn,user,pass,auth,iplocal,status) 1,Telstra.internet,username,password,chap,202.44.185.111,up Write: (apn, user, pass,auth) Telstra.internet,username,password
1	link.profile.x.apn	apn or apnx	RW	APN	telstra.internet
2	link.profile.x.user	username or usernamex	RW	3G username	Guest, could also return "null"
3	link.profile.x.pass	password or password	RW	3G password	Guest, could also return "null"
4	link.profile.x.auth_type	authtype or authtypex	RW	3G Authentication type	"pap" or"chap"
5	link.profile.x.iplocal	wanip or wanipx	R	WAN IP address	202.44.185.111
6	wwan.0.radio.information.signal_strength	rssi	R	3G signal strength	65 dBm
7	wwan.0.imei	imei	R	IMEI number	359102128941027512
8	statistics.usage_current	usage	R	3G data usage of current session	"Rx 500 bytes, Tx 1024 bytes, Total 1524 bytes" or "Rx 0 byte, Tx 0 byte, Total 0 byte" when wwan down
9	statistics.usage_current	wanuptime	R	Up time of current 3G session	1 days 02:30:12 or 0 days 00:00:00 when wwan down
10	/proc/uptime	deviceuptime	R	Device up time	1 days 02:30:12
11	wwan.0.system_network_status.current_band	band	R	Current 3G frequency	WCDMA 850

SMS Diagnostics Examples

The examples below demonstrate various combinations of supported commands. This is not a complete list. To obtain a complete list, please contact NetComm Wireless.

DESCRIPTION	AUTHENTICATION	INPUT EXAMPLE
Send SMS to change APN	Not Required	set apn1=Telstra.internet set apn2="3netaccecss"
	Required	Password1234 set apn1=Telstra.internet Password1234 set apn2=3netaccecss
Send SMS to change the 3G username	Not Required	set username='NetComm'
	Required	Password1234 set username= "NetComm"
Send SMS to change the 3G password	Not required	set password= 'NetComm'
	Required	Password1234 set password= 'NetComm'
Send SMS to change the 3G authentication	Not required	set authtype= 'pap'
	Required	Password1234 set authtype = pap
Send SMS to reboot	Not Required	execute reboot
	Required	Password1234 execute reboot
Send SMS to check the WAN IP address	Not Required	get wanip
	Required	Password1234 get wanip
Send SMS to check the 3G signal strength	Not Required	get rssi
	Required	Password1234 get rssi
Send SMS to check the IMEI number	Not Required	get imei
	Required	Password1234 get imei
Send SMS to check the current band	Not Required	get band
	Required	Password1234 get band
Send SMS to Disconnect (if disconnected) and reconnect the 3G connection	Not Required	execute pdpcycle
	Required	Password1234 execute "pdpcycle1"
Send SMS to disconnect the 3G connection	Not Required	execute pdpdown1
	Required	Password1234 execute "pdpdown1"
Send SMS to connect the 3G connection	Not Required	execute pdpup
	Required	Password1234 execute pdpup1
Send multiple get command	Not Required	get wanip; get rssi
	Required	Password1234 get wanip; get rssi
Send multiple set command	Not Required	set apn1="3netaccecss"; set password1='NetComm'
	Required	Password1234 set apn="3netaccecss"; set password=NetComm