

SMS Lite 4G

User Guide

SMS Lite 4G
Version 2.4



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Revision Details

| Version | Date | Author | Change Description |
|---------|----------|--------|---|
| V1.0 | 10/11/14 | IH | Original Format |
| V1.1 | 23/02/15 | RH, FA | Addition of 'debounce' option for inputs & formatting update |
| V1.2 | 13/03/15 | FA | Reword escalation sentence p10. Edit diagram for Input / Output |
| V1.3 | 22/08/16 | RH | Minor alterations to suit V3.00 Firmware |
| V1.4 | 20/09/16 | RH | Added SIM Busy error code |
| V1.5 | 23/02/18 | GP | Added notices to clarify security conditions required for messages to be processed. Added additional information on LED error codes |
| V1.6 | 11/02/19 | RH | Added variable length pulse command |
| V1.7 | 12/07/19 | GP | Added troubleshooting section |
| V1.8 | 1/08/19 | AM | Added LE910 modem specifications. Amended legibility and naming consistency |
| V1.9 | 15/04/20 | PW | Add product number to version control |
| V1.10 | 18/02/21 | PW | Add programming tip to avoid spaces in naming conventions |
| V2.0 | 10/11/21 | AM | New document format, minor updates and corrections |
| V2.1 | 13/1/22 | GP | Minor corrections to debounce, add test command |
| V2.2 | 29/3/22 | GP | Minor additions to defaults and inputs sections |
| V2.3 | 1/12/22 | AM | Additional troubleshooting, basic configuration section and message format help |
| V2.4 | 24/5/23 | AM | Clarified fault codes, updated troubleshooting tips |

About This User Guide

This document aids with the installation and operation of the QTech SMS Lite system. Included in this document is:

- How to install the SMS Lite module
- SMS Lite operation
- Device Configuration
- Device Specifications

Contact QTech for application notes, which can be obtained to provide guidance for specific configuration scenarios, detailing the configuration workflow steps.

Product Overview

The SMS Lite is a cellular remote-control device that uses text messages to provide up to four people with status conditions, notifications, and control options for its four switched inputs and two relay outputs. It is operational within minutes with the minimum configuration requirement being the registering of a single cellular number to the SMS Lite. No external software is required.

The SMS Lite supports connection to current New Zealand telecommunications companies (Spark/One NZ (previously Vodafone)/2Degrees) and selected Australian Networks including Telstra and Optus but not all frequency band classes. Contact QTech for advice on supported networks if necessary.

Each SMS Lite is supplied with the following:

- Qty 1x SMS Lite Module - P/N PD8640-4G
- Qty 1x Antenna stub type, 2dBi gain - (P/N PD9230)

The power supply is not included - please order a plug pack P/N PD5412 if required or visit our website for suitable alternatives.

Please read this guide before using the SMS Lite or connecting ANY external devices to it.
This version of the SMS Lite is configured for NZ and AU cellular networks only.
For use in other countries, please contact QTech.

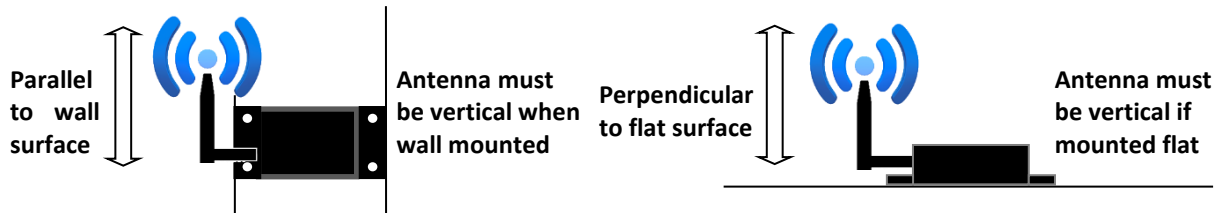
Features

- 4 digital inputs
- 2 digital outputs
- 12-24V DC operation or solar powered with the optional RSS01 Remote Solar Station.
- 3G Bands (MHz) B1(2100), B5(850), B8(900)
- 4G Bands (MHz) B1(2100), B3(1800), B5(850), B8(900) B28(700)
- Configuration by text messaging, no programming software required

Getting Started

Antenna Connection

Carefully connect the antenna. The antenna must be vertically orientated. Alternative high gain and externally mounting antenna options are available.

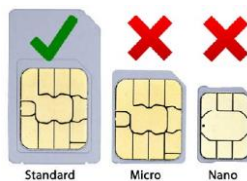


 **Warning – DO NOT operate the SMS Lite without an antenna connected.**

SIM Card Installation

Before installing the SIM card, ensure that it is registered and activated on the Telco's network.

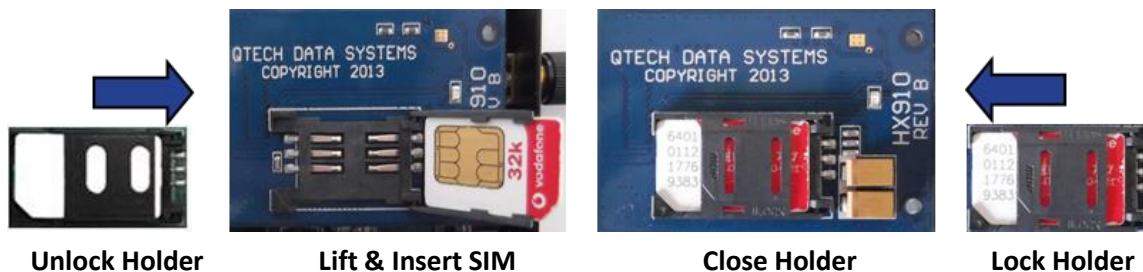
The SIM card must be a standard "full size" card, not a micro or nano SIM.



We recommend you insert the SIM into a regular cell phone and check that you can send and receive messages. Carefully remove the SMS Lite cover by prising the side panels near the retaining dimples.

Locate the SIM card holder adjacent to the antenna. Push the top of the holder in the direction of the "Open" arrows to "Unlock" (toward antenna), then flip open (away from the antenna).

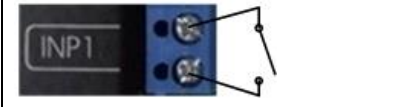
Carefully insert the SIM card. Be careful to orientate the card correctly, once in place gently slide the plastic retainer towards the antenna to "Lock".




Inputs

The SMS Lite inputs are to be connected to switches or mechanical contacts.

The default input names are: INP1, INP2, INP3, INP4, which can be renamed.

| | |
|---|--|
|  | <p>An input is ON or active when the input switch is closed. An input is OFF or inactive when the input switch is open. Closing this switch to turn “INP1” “ON”.</p> |
|---|--|

 **Warning – Only mechanical switches or mechanical closure devices should be connected to the inputs. DO NOT connect external voltage or other electrical source to the inputs.**

Output Relays

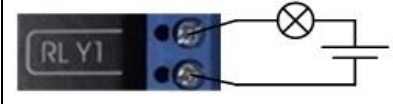
The output relays are normally open devices with a maximum rating of 32V DC at a current of 2A.


The relays can switch DC low voltage, low current devices directly.

However, we recommend using interface relays as they improve future serviceability and are required or higher voltages or currents.

The relays are internally protected by solid state snubbers for operating with inductive loads.

The default output relay names are: RLY1, RLY2, RLY3, RLY41, which can be renamed.


| | |
|--|---|
|  | <p>The output relays are normally open contacts. Send “ON” command to close “RLY1” operating light.</p> |
|--|---|

 **Warning – DO NOT directly connect to 220V AC voltage. The New Zealand and Australian wiring regulations require that any wiring in excess of 32 volts must be carried out or be certified by a registered electrician. Consult your local electrical installer for further guidance.**

DC Power Supply

Connect a suitable 12-24V DC power supply to the 2.1mm socket labelled “12V DC”.

QTech recommends plug pack P/N PD5412 or power supplies PD5413 & PD5414.

 **Warning – DO NOT use Switch Mode Power Supplies (SMPS) with this product. The DC power supply used for this product MUST have a grounded negative or be a “linear” transformer-based plug pack. The reason is that the antenna, programming port and external connections can provide exposed earth points and the SMPS can impose an AC voltage on the DC ground, which can lead to damage.**

The SMS Lite is over voltage protected by a 30V Zenner diode. Voltages greater than this will blow the internal 2A fast blow fuse. The supply voltage should be clean, continuous and transient free.

Basic Configuration

To operate the SMS Lite, the device must have a mobile number registered as 'Phone 1' referred to as Ph1. You must register this number before you can configure any of the inputs or outputs.

The SMS Lite can have up to 4 phone numbers registered.

We recommend you follow these quick functional tests before performing advanced configuration.

This will help prove the SIM card, cellular network connection, device functionality and simplify potential troubleshooting.

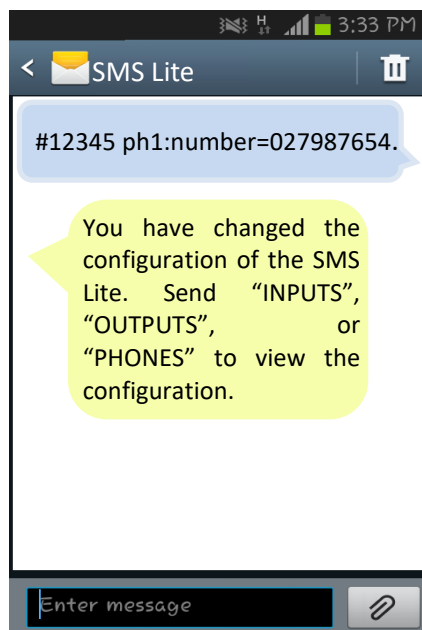
Register Phone 1 (Ph1) – Master User

Use this procedure to program the master user.

1. Locate the PIN (Personal Identification Number) printed inside your SMS Lite case. The PIN in this example is 12345.



2. Compose text message to the SMS Lite mobile number in the following format: `#[PIN][space]Ph1:number=0123456789[dot]` (e.g. **#12345 Ph1:number=027987654.**)
3. A confirmation text will be sent to you acknowledging a configuration change.



Each configuration command must be finished with a full stop (.)

The PIN is used each time a configuration change is made

A setting can be overridden by sending a new configuration message. A configured input, output, or phone number can also be cleared by sending a configuration message with a blank value:

`#[PIN][space]Ph2:number=.`

Connect the I/O

Now the Master user is configured, connect the SMS Lite to the wired inputs and outputs.

Activate an Input

Activate (switch on) one of the mechanical switch inputs.

Phone 1 will be sent a text message each time the input turns on or off.

Acknowledge the Alarm

You must acknowledge receipt of the alarm notification.

To acknowledge an alarm:

OK <input name> (e.g. Text: **OK INP1**)

Operate an Output

Phone 1 can control the outputs by sending the following commands:

- Turn the specified output on
ON <output name> (e.g. **ON RLY1**)
- Turn the specified output off
OFF <output name> (e.g. **OFF RLY1**)
- To pulse an output on for one second then off again
PULSE <output name> (e.g. **PULSE RLY1**)
- To pulse an output for a defined period of time
PULSE <output name> <duration> <units> (e.g. **PULSE RLY1 10 mins**)

Where the units can be ms, sec, min, or hr, and the maximum duration is 1 day.

This is all that is required for the master phone number to receive notifications from the SMS Lite inputs and control the outputs.

If this basic configuration was successful, continue to additional configuration for extra phone numbers, renaming and advanced settings.

We highly recommend renaming the Site Name and the Input and Output names, as these names are used in the text messages and can save confusion.

Additional Configuration

Further configuration is now possible to allow personalisation of your SMS Lite.

You can assign a site name as well as naming each of the inputs and outputs and assigning phone(s) to these. The SMS Lite can be configured with up to 4 phone numbers allowing multiple user notifications and control options.

Tip – A configuration worksheet can be found at the back of this manual and on our website.

We highly recommend these are used to record the Site, I/O names, phone numbers and their escalation order.

Naming Conventions

Before renaming the site name, inputs, and outputs there are important considerations and limitations.

Use alphanumeric characters – only use letters A to Z and numbers 1 to 9

Do NOT use spaces in the names – e.g. do not use “VSD RUN” or “PUMP SHED”

Do NOT use names longer than 8 characters – keep them short, 4 characters is recommended

Do NOT use punctuation marks or special characters: Do not use <: ; . , ? / @ # emojis etc

Do NOT use reserved keywords in the name. These includes ON, OFF, NAME, PHONE, SITE, DEBOUNCE, DEFAULTS, OK, BUSY, PULSE, STATUS, BAL, STATS, INFO, INPUTS, OUTPUTS

Do NOT duplicate names, each name must be unique.

Additional Phone Numbers

Configure up to 3 additional users to allow notification and control options, using the same process used to configure the Ph1 Master user.

1. Compose text message to the SMS Lite mobile number in the following format:
#[PIN][space]Ph2:number=0124567890[dot] (e.g. #12345 Ph2:number=022987654.)
2. A confirmation text will be sent to you acknowledging a configuration change.

Configuration Options

All configuration text messages sent to the SMS Lite must in the form of:

#[PIN][space]<object>:<item>=<value>[dot]

e.g. **#12345 Site:Name=Shed1.**

Or

#12345 INP1:Name=Pump.

Configuration options are shown in the following table:

| Object | Item | Value |
|--|--------|---|
| Site | Name | Name of the site where the SMS Lite is. (8-character limit, no spaces) |
| INP1, INP2, INP3, INP4 These are the 4 individually configurable inputs | Name | An identifying name for the input. (8-character limit, no spaces) |
| | Phones | Ph1→Ph4 Which configured phone number(s) will receive notifications from this input. |

| | | |
|--|---------------|--|
| RLY1, RLY2 These are the 2 outputs which allow you to turn on / off or pulse | Name | An identifying name for the output. (8-character limit, no spaces) |
| | Phones | Ph1→Ph4 Which configured phone number(s) have permission to control this output. |
| Ph1, Ph2, Ph3, Ph4 Phone numbers of people who receive alarm escalations or can control inputs | Number | Local or International format (e.g. 021...or +6421....) The phone number(s) that will receive notifications and/or have control. Up to 4 people. |

Configuration messages can be sent individually with one text message per configuration instruction or in a combined text message:

To program the Site name to Shed1, name Input 1 as Pump and set notification escalations to phones 1, 2 and 3. You can either send the SMS Lite 3 individual configuration text messages:

e.g. **#12345 Site:Name=Shed1.**
#12345 INP1:Name=Pump.
#12345 INP1:Phones=Ph1,Ph3.

Or you can send 1 combined message:

e.g. **#12345 Site:Name=Shed1. INP1:Name=Pump. INP1:Phones=Ph1,Ph2, Ph3.**

Escalations

When programming the alarm escalations to phone numbers it is important to note that the numbers step in numerical order.

E.g. Ph1→Ph2→Ph4 and Ph1→Ph2→Ph3 will work, however if you were to attempt to program Ph4→Ph2→Ph3, the configuration text would be accepted but the escalation order would be Ph2→Ph3→Ph4.

After any configuration change you will receive either a confirmation message or an error message. If you receive an error message, double check the configuration format and check that there is a full stop at the end. Correct the error and resend.

Text commands can be in upper or lower case; however, any capitalisation when naming the Site, Input or Outputs will be retained.

e.g. **#12345 Site:Name=Shed1.**
 is valid as
#12345 site:name=shed1.

The security for these messages is based on the PIN number being correct. Any phone can be used for these commands if the PIN in the message matches that printed on the SMS Lite.

If the PIN is not correct messages will not be processed.

Advanced Commands

Debouncing Inputs

This feature prevents the SMS Lite from sending multiple messages when connected to devices such as float switches, which can switch on and off several times before settling due to contact bounce. You can program a delay before the text message is sent by the SMS Lite.

The trigger point / device that is connected to the SMS Lite must stay in that state for the 'debounce' time that is set, before the SMS Lite will send a text message alerting you of a status change.

The delay is configurable, and you can select one of the following options: 0, 5, 10, or 30 seconds, or 1, 5, 10, or 15 minutes. Only these values are allowed.

The debounce value is applied to all inputs - you cannot specify different values for each input.

Program the 'debounce' option and value using the following instruction:

```
#[PIN][space]<object>:<item>=<value>[dot]  
#12345 site:debounce=value. (e.g #12345 site:debounce=1min)
```

The value must be written in the following format "0sec", "5sec", "10sec", "30sec", "1min", "5min", "10min", "15min"

For example:

```
#12345 site:debounce=10sec.
```

Clearing Configuration Settings

To clear all of the SMS Lite configuration settings, use the message:

```
#[PIN][space]Defaults[dot]
```

Note: This command will also clear all the programmed telephone numbers. After issuing this command you must re-register the Master User (Ph1) before proceeding.

Supply Voltage Alarm

If the SMS Lite supply voltage drops below 10.5V DC, Ph1 will receive this notification message:

The supply voltage at <site> has gone low.

When the voltage increases above 11.5V DC a supply voltage message will be sent:

The supply voltage at <site> has returned to normal.

Tip – Supply voltage alarms do not escalate like input alarms.
Supply voltage can be queried at any time using the STATUS command

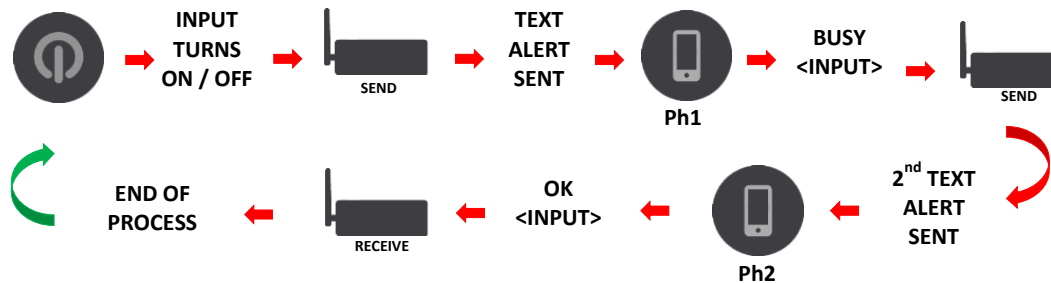
Message Paths

The following diagrams are examples of the message flows for the SMS Lite. They show the basic message flow, an example of a busy response, no response and the escalation flow to multiple phones.

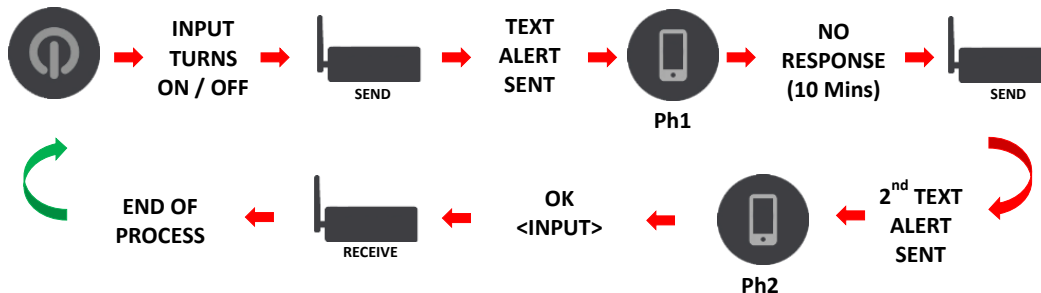
Example 1 - Phone 1 Alerted – Alarm Acknowledged



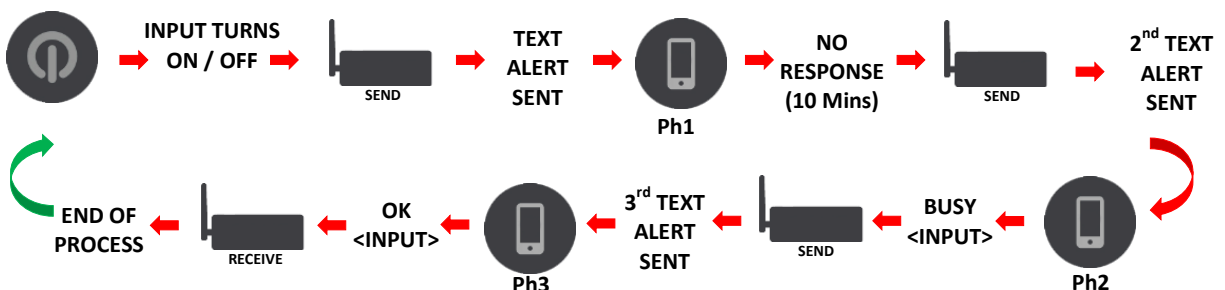
Example 2 - Phone 1 Alerted, Busy – Escalate to Phone 2



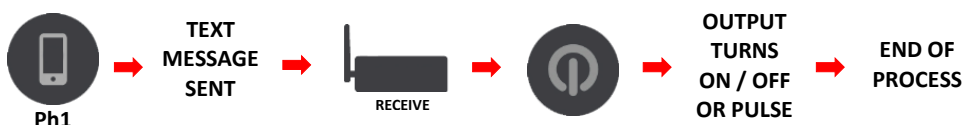
Example 3 - Phone 1 Alerted, No Response – Escalate to Phone 2 After 10 Mins



Example 4 - Phone 1 No Response, Escalate to Phone 2 After 10 Mins, Busy – Escalate to Phone 3



Example 5 - Output – Control Output with Phone 1



Alarms

Alarm Acknowledgements

To acknowledge an alarm:

OK <input name> (e.g. Text: **OK Pump**)

This will stop any further escalation of the alarm to the numbers in the phone list for that input status change. It will begin at the top of the list the next time the input is activated.

To force the SMS Lite to send the alarm message to the next phone number in the list.

BUSY <input name> (e.g. Text: **BUSY Pump**)

Up to 3 other phones can be programmed to receive a notification. If Phone 1 replies 'busy' or if there is no response after 10 minutes, the SMS Lite will send a text to the next programmed number.

Alarm Messages for Escalations

The first person in the multi-person escalation list receives a message and they are given the option to reply BUSY:

Format: <Site> <Input> has turned ON. Reply OK <Input> or BUSY <Input>. You are the <nth> of N to be sent this.

e.g. **Shed1 Pump has turned ON. Reply OK Pump or BUSY Pump. You are the 2nd person of 3 to be sent this message**

The last person in the escalation list receives a different message as they don't have the option to reply BUSY:

Format: <Site><Input> has turned ON. Reply OK <Input>. You are the <nth> of <N> to be sent this.

e.g. **Shed1 Pump has turned ON. Reply OK Pump. You are the 3rd person of 3 to be sent this message**

Alarm Escalations Stop After Delivery

The escalation sequence will stop after the last person on the escalation list receives their message. This is to prevent repeated messages, and every phone will have a text showing what the alert was. An escalation sequence will restart after an input has reset and been reactivated.

Other Alarm Messages

Other alarm messages have the following format.

Alarm has been acknowledged message:

<Site><Input> alarm has been acknowledged.

Alarm has not been acknowledged message:

<Site> <Input> alarm was NOT acknowledged.

SMS Lite returns to normal (Idle) state:

<Site><Input> has turned OFF.

Information Commands

INPUTS *e.g. Text: INPUTS*

The SMS Lite will respond with a description of how the inputs are configured. This includes the input names, and the phone number list for each input. The current value for input debouncing is also displayed.

OUTPUTS *e.g. Text: OUTPUTS*

The SMS Lite will respond with a description of how the outputs are configured. This includes the output names, and the list of phone numbers that are allowed to control each output.

PHONES *e.g. Text: PHONES*

The SMS Lite will respond with a description of the phone number list it has configured.

STATUS *e.g. Text: STATUS*

The SMS Lite will respond with the current values of all inputs and outputs as well as current supply voltage.

BAL *e.g. Text: BAL*

The SMS Lite will request the prepay account balance information from the cellular operator then forward that message (or messages) to the phone number that requested it. (Not available from 2 Degrees).

For security, these commands only respond to phone numbers in the SMS Lite's phone list. If the phone number is not in the phone list, the command will not be processed.

STATS *e.g. Text: STATS*

The SMS Lite will respond with information about the Radio Signal Strength. This will range from -50dBm to -110dBm and is reported as *Strong, Medium, or Weak*.

INFO *e.g. Text: INFO*

The SMS Lite will inform you of the version of firmware it is running.

TEST *e.g. Text: TEST*

This is a quick check to see if the SMS Lite is operational. It will display a led sequence and send the response:

“SMS-Lite comms test succeeded!”

Use this for initial setup checks, see section on Troubleshooting.

Any phone number can be used for these commands, including those **not in** the SMS Lite phone list.

Output Control

Outputs are controlled by sending a text message containing “on”, “off” or “pulse” and the output name. In this example Output 1 has been renamed ‘Fan’

- Turn the specified output on
ON <output name> e.g. **ON Fan**
- Turn the specified output off
OFF <output name> e.g. **OFF Fan**
- To pulse an output on for one second then off again
PULSE <output name> e.g. **“PULSE Fan”, or “PULSE fan 1 sec”**

For security, outputs **can only** be controlled by phone numbers in the SMS Lite’s phone list.
If the phone number is not in the phone list, the command will not be processed.

Status LED

The SMS Lite has a status LED, labelled ‘Link’ located next to the antenna connection.

Status Indications

The LED indicates these status information and events:



- Heartbeat** – 1 short flash every two seconds - OK - SMS Lite is connected to the cellular network.
- Power Up** – 5 slow flashes - displayed when the SMS Lite powers up.
- Transmit OK** – 5 short flashes - shows the SMS Lite successfully sent an SMS.
- Transmit Fault** – 3 long flashes - shows the SMS Lite tried to send but there was a problem.

Error Code Indications

The status LED also indicates these error codes to help identify issues:

- Error Code - 2 Flashes** - indicates the Modem will not power up.
This error code requires the SMS Lite be returned to QTech for service.
- Error Code - 3 Flashes** - indicates the Modem will not respond to commands.
This error code requires the SMS Lite be returned to QTech for service.
- Error Code - 4 Flashes** - indicates the SIM card is not inserted.
This error code may be fixed by checking the SIM card inside the SMS Lite.
- Error Code - 5 Flashes** - indicates the SMS Lite is not registered to the cellular network.
Normally caused by a weak cellular signal and may be fixed by using a higher gain antenna.
- Error Code - 6 Flashes** - indicates the cellular operator is not supported by the SMS Lite.
This error code may occur in some overseas locations.
- Error Code - 7 Flashes** - indicates the SIM card is currently busy.
This can occur briefly during the initialisation phase after the SMS Lite is powered up.
This error code may occur if the SIM card is not compatible with the SMS Lite.
- Network Error Code - 3 Slow Flashes** – a transmit fault has occurred on the mobile network.
This Indicates the SMS Lite tried to send an SMS but received an error code back from the phone network. Likely causes are having no credit on the SIM card or the cell tower being busy (no network availability) or invalid phone number for the SMS message recipient.

Verifying SMS Operation

| Step | Description | Note |
|------|--|---|
| 1 | Remove the top cover of the unit | <p>Power down the device.</p> <p>The top cover is held in place using dimpled locators. The cover is “sprung” open by gently prising the lid corners up. A flat bladed screwdriver can be used to assist but avoid touching the electronics or scratching the device metalwork.</p> |
| | |  <p>daughterboard</p> <p>mainboard</p> |
| 2 | Insert a valid SIM card | <p>Ensure the SIM has a valid SCA number, phone number and is known to be working (test in a phone beforehand if necessary).</p> <p>Insert the SIM card into the SIM socket, noting the correct orientation is observed. Bear in mind that not all SIMs can be used in all localities.</p> |
| 3 | Power up the device to check operation | <p>Connect the power adaptor to the unit and turn on the power.</p> <p>Do not touch the electronics.</p> <p>The device will indicate a burst of Status LED flashes on boot up then settle into a heartbeat flash (very short) every few seconds.</p> <p>During boot up the device may indicate an error code. If so, please note it down.</p> <p>As an added indication that it is working the modem LED on the modem daughterboard will slowly flash, on for 1sec off for 1sec, indicating that the device has registered on a network.</p> |
| 4 | Send a test message | <p>Send a test message to the device from a phone by creating a new text message to the device’s phone number: Test</p> <p>No PIN number is required for the test message.</p> |
| 5 | Verify operation | <p>If the device is operating OK the Status LED will indicate 1 short flash every two seconds. This is called the “Heartbeat” indication.</p> <p>When it receives the test message the Status LED will display a test pattern on the LED for a few seconds consisting of alternating long and short flashes</p>  <p>(i.e., short flash-longer flash-gap-short flash-longer flash-gap).</p> <p>You will see this pattern a few times.</p> <p>If the SIM is working properly the device will send a response text message “SMS Lite comms test succeeded” to the phone.</p> <p>When it sends this message there will also be a short burst of LED flashes to indicate that it is transmitting.</p> <p>If the device fails to do either or both of these, then there is a fault. If an error code is flashing, see the previous Status LED section to diagnose the fault, or contact QTech for assistance after working through the troubleshooting section below.</p> |
| 6 | End of test | Power down and carefully replace the top lid. Then power up again. |

Troubleshooting

| Symptom | Action |
|--|---|
| <p>The Verification test message displays a test pattern on SMS Lite status indicator but <u>no response</u> SMS message is received.</p> | <p>This could mean there is a problem with the SIM operating on the network because it could receive the test message but not send a response.</p> <p>If the network error (transmit fault) code is displayed after the test pattern then the network could not process the response message usually for one of these reasons:</p> <ul style="list-style-type: none"> a) There is no credit on the SIM or mobile account b) The SIM is incorrectly provisioned (some data-only SIMs cannot send SMS messages) c) The SMS service number (SMSC) is incorrect d) The mobile network is busy. <p>The SIM can be checked in a phone by sending a message from the phone. This will usually also set up the SMSC number if it is not correctly programmed in the SIM. Make sure the message is sent via SMS and not a messaging app (which typically uses data and not SMS).</p> <p>If the network is busy, wait a while and try again. If the problem continues try sending a message from your phone where the SMS lite is located. If this succeeds the network is not busy and this is not the problem.</p> <p>Look for other error codes being displayed on the SMS lite status indicator. Then see below.</p> <p>Remove the lid on the SMS Lite and check that the LED indicator on the modem daughterboard is flashing on and off slowly. If it is not then the device has not registered on the mobile network.</p> |
| <p>The verification test message test pattern <u>did not</u> display on the status indicator and you did not receive a response.</p> | <p>This means the device can neither receive nor transmit test messages.</p> <p>The SMS lite must be running a recent version of the firmware to process the test message. If the device was purchased prior to June 2019 then try programming the master phone number then sending the info command. If that responds then the SMS lite is receiving and sending SMS messages.</p> <p>Stand near the device and check that you have reasonable network coverage (a few bars) on a mobile phone.</p> <p>Check all connections to the antenna are firm and that the antenna is in an open area away from or not enclosed in metal objects. Avoid long antenna cables (over 5m) and ensure low-loss coaxial cable is being used.</p> <p>If you are unsure about cellular coverage or antenna performance in rural areas, try setting up the SMS Lite in a location with known good cell coverage and check operations.</p> |

| Symptom | Action |
|--|--|
| <p>There are no status indications or no heartbeat indicator</p> | <p>This could be due to a blown fuse or the device is in an error state.</p> <p>Repower the device and look for the power up indication (5 flashes) within about 30s. If it is not flashing the status led at all then remove the lid and look on the modem module daughterboard for an indicator on or flashing.</p> <p>If there are not indicators on at all on the module daughterboard check the fuse and check that the power supply does not exceed the rated input voltage for the device.</p> <p>If the module LED is on solid but not flashing but then turns off then the device cannot register the SIM on the mobile network (see below).</p> <p>If the device powers on ok and shows the power up indication but nothing else then try another SIM that is known to be working or try the SIM in a phone.</p> |
| <p>The SMS lite seems to be flashing an error code.</p> | <p>If the error code is replaced by the heartbeat indication (short flash every few seconds) then the device is in its normally operating mode and is registered on the mobile network.</p> <p>The typical boot sequence when the device starts is as follows:</p> <ul style="list-style-type: none"> - The device will turn the status LED on then flash briefly with a number of flashes (potentially error code 7 indicating the device is busy while starting up). Or the status LED may be off for approximately 20s. - The device then attempts to register on the mobile network and may display error code 5 whilst waiting to register, once registered and initialisation completed the device should settle into the heartbeat LED indication. - If an error code is repeatedly displayed, then this is the code that should be reported to QTech. <p>Carefully note the actions of the indicator LED as it powers up and count the number of pulses in an error code when it is displayed, report this code to QTech for further support.</p> <p>If the unit is stuck, flashing Error code 7, the SIM card may not be compatible with the SMS Lite, or incorrectly provisioned, contact QTech for assistance.</p> |
| <p>The device will not register on the mobile network</p> | <p>Error code 5 flashes indicates that the SMS Lite cannot register on the network.</p> <p>If the device flashes error code 5 (or 6) then the device may not be operating on a supported network possibly because the SIM is not provisioned correctly for the supported networks:</p> <ul style="list-style-type: none"> - Australia – Optus, Telstra. - New Zealand – Spark, 2Degrees, One NZ (Vodafone). <p>If the SIM works correctly in a phone, then the issue may be one of frequency band operation. Contact QTech for assistance.</p> |

| Symptom | Action |
|--|--|
| | <p>Error Code 6 indicates that the device is not registering and is operating in a country that is not supported by the device.</p> <p>Open the lid of the device and look at the indicator on the daughterboard.</p> <ul style="list-style-type: none"> - If it is on solid the device is searching for a network, this could be a cellular coverage issue. - If it is flashing slowly the device has registered on a network but the SIM subscription may not be valid (unknown subscriber number) put the SIM in a phone and check it. - If the indicator is off (after being on solid for some time) then the device cannot register on the network and it may be a network coverage or antenna issue. |
| <p>The test message works but messages sent to the master phone number (phone 1) are not received</p> | <p>This usually means the master phone number has been programmed with an invalid number. Try again and do not forget to use the correct PIN number and terminate the command with a full stop (dot).</p> <p>One may also see the network error code (3 long flashes) if the any of the programmed phone numbers are incorrect and the device is trying to message them.</p> |
| <p>An old SIM was replaced with a new one and it stops working</p> | <p>Check that the new SIM works in a phone.</p> <p>If the device appears to be operating normally but inserting a SIM from a new provider has caused it to stop, then using the old SIM, send the INFO command to obtain the firmware version number and note the response. The firmware may require updating to support the new SIM. Contact QTech for assistance.</p> |
| <p>The Stats command returns a message to say the signal is <u>weak</u></p> | <p>The command estimates whether cellular coverage is acceptable. If messages are not sent or received reliably this may be due to:</p> <ul style="list-style-type: none"> - Poor connectivity to the cell tower, possibly due to range or terrain. - SMS Lite antenna is obscured or enclosed diminishing receive signal strength. - Antenna and cables are insecure and have been damaged. - The antenna being used is inadequate for the situation. <p>Verify all cables are secured and not subject to fretting or wind events.</p> <p>Elevate the antenna and place it outside.</p> <p>In severe cases the device will not register on the mobile network and shows an error flash code.</p> <p>Consider using a higher gain antenna, contact QTech for advice.</p> |
| <p>The SMS Lite suddenly stops working</p> | <p>Check for a power failure or blown fuse.</p> <p>Check that the SIM account is in Credit.</p> <p>Remove the SIM and try it in a phone and clear or delete any SMS messages (especially network generated messages).</p> |

| Symptom | Action |
|--|---|
| Messages are received by unintended recipients in the address book. | If there are no phones explicitly programmed for an input (see configuration overview) then when the input changes state the notification is sent to all phones in the phone book in the order PH1 to PH4 (whichever have a phone number associated). |
| More messages than expected are being received when an input state changes | <p>This can occur on inputs that need “switch debounce” to prevent them chattering causing several messages to be sent.</p> <p>Increase the input debounce time for the inputs using the debounce command.</p> <p>Note. It is recommended that the debounce be configured as part of the initial setup before assigning names to inputs and outputs.</p> |

Programming Tips

PIN Required for any Configuration Text

The PIN is used each time a configuration change needs to be made. Each configuration command must be finished with a full stop. i.e. #[PIN][space]Ph1:number=0123456789[dot]

Clear An Individual Phone Number

i.e. #[PIN][space] Ph2:number=.
Recommended if a staff member leaves and you will not need to replace that person in the list.

Empty Configuration Values

Similar to clearing an individual phone number, it is valid to specify an empty value. This is useful if you want to prevent all phones from being able to control an output. e.g. **#12345 RLY1:phones = .**

Replace An Individual Phone Number

i.e. #[PIN][space] Ph2:number=027456789[dot]
If you wish to replace a number, send a new configuration message containing the position in the list (eg Ph2) and the new number. This number will now have all the previous persons escalations and control permissions. You can send a text containing 'Inputs' or 'Outputs' to check which escalations or control permissions are assigned to this number.

Clear All Settings

To clear all configuration settings and restore factory defaults, send the text: #[PIN][space] Defaults
Use this to clear all programming.

Output Permissions Default

If you do not program the phone numbers for an output then each person (Ph1 – Ph4) will automatically have permission to send control commands to the output.

Active Alarm Interruption

After any configuration changes the SMS Lite will reinitialise all active alarm state information. Check there are no active alarms before reconfiguration as the process will be halted. Send 'Status' to the SMS Lite to see the status of any of the inputs or outputs, this can help identify if the alarm escalation has been interrupted by a configuration change.

Error Message

If you get an error message from the SMS Lite, check the previous message you sent. Key things to check are the PIN, object or item spelling, there are no spaces in the names, or the full stop may be missing. Correct the error and re-send.

Case Sensitivity

The messages are not case sensitive, but capitalisation of any names you configure will be retained.

Technical Specifications

Note. Specifications are subject to change without notice.

SMS Lite Specification

| Item | Parameter | Specification |
|----------------|--------------------|--|
| General | | |
| | Part Number | PD8640-4G |
| | Dimensions | Approx. 112 x 75 x 25mm (Overall) 4x mounting holes to fit M4 fixings |
| | Weight | 255 grams (with supplied antenna) |
| | Temperature | Operating: 0-70 degrees C |
| | Humidity | 0 – 90% non-condensing |
| | Ingress Protection | IP20, water contact must be avoided |
| | Power | Input voltage: 12-24V DC Current: 13mA @ 12V DC, 9mA @ 24V DC |
| | Power Connector | 2.1mm DC socket, centre positive |
| I/O | | |
| | Digital Inputs | 3 x signal/ground pairs, switched to ground Input voltage: 4V max. Input current: 4mA Ground inputs are internally tied to power ground |
| | Digital Outputs | 3 x isolated relay output pairs Output voltage: 32V max. Output current: 2A max. |
| Modem | Antenna | Detachable SMA Max. Cable length 6m (low loss RG57) |
| | 3G Bands (MHz) | B1(2100), B5(850), B8(900) |
| | 4G Bands (MHz) | B1(2100), B3(1800), B5(850), B8(900) B28(700) |

Configuration Worksheet

| | e.g. | SMS Lite |
|---------------|-----------|----------|
| Phone: | 021234567 | |
| Site: | Shed1 | |
| PIN: | #12345 | |

| Phone | Number | Contact Person |
|-------------|--------|----------------|
| Ph1: | | |
| Ph2: | | |
| Ph3: | | |
| Ph4: | | |

| | e.g. | Input 1 | Input 2 | Input 3 | Input 4 |
|----------------|-------------|---------|---------|---------|---------|
| Name: | Pump | | | | |
| Phones: | Ph1,Ph2,Ph3 | | | | |

Program the phones which will be included in each input escalation, if required.

| | e.g. | Output 1 | Output 2 |
|----------------|-------------|----------|----------|
| Name: | Fan | | |
| Phones: | Ph1,Ph2,Ph4 | | |

Program the phones which will have permission to control outputs.

Additional sheets can be downloaded from our website: <https://qtech.co.nz>

Warranty

The SMS Lite hardware and software is covered by QTech Limited Warranty Agreement and software End User License Agreement, respectively.

Please refer to the QTech Limited Product Warranty Agreement, which may be downloaded from the QTech website: www.qtech.co.nz

QTech Data Systems Limited does not warrant the suitability of this product for any particular application as the conditions in which it is used are beyond our control. This is notwithstanding warranty of merchantability.

Additional Information and Support

If you have problems try the following:

- Visit the QTech web site for application notes and guides
- Refer to the troubleshooting section if one is present in this document
- Contact the support desk at support@qtech.co.nz
- Phone the support desk, contact details at beginning of this document



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