



# GL865-QUAD V4 Module Software User Guide

1vv0301515 Rev. 2 – 2019-08-28

**TELIT**  
**TECHNICAL**  
**DOCUMENTATION**

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

## **NOTICES LIST**

While reasonable efforts have been made to assure the accuracy of this document, Telit assumes no liability resulting from any inaccuracies or omissions in this document, or from use of the information obtained herein. The information in this document has been carefully checked and is believed to be reliable. However, no responsibility is assumed for inaccuracies or omissions. Telit reserves the right to make changes to any products described herein and reserves the right to revise this document and to make changes from time to time in content hereof with no obligation to notify any person of revisions or changes. Telit does not assume any liability arising out of the application or use of any product, software, or circuit described herein; neither does it convey license under its patent rights or the rights of others.

It is possible that this publication may contain references to, or information about Telit products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that Telit intends to announce such Telit products, programming, or services in your country.

## **COPYRIGHTS**

This instruction manual and the Telit products described in this instruction manual may be, include or describe copyrighted Telit material, such as computer programs stored in semiconductor memories or other media. Laws in the Italy and other countries preserve for Telit and its licensors certain exclusive rights for copyrighted material, including the exclusive right to copy, reproduce in any form, distribute and make derivative works of the copyrighted material. Accordingly, any copyrighted material of Telit and its licensors contained herein or in the Telit products described in this instruction manual may not be copied, reproduced, distributed, merged or modified in any manner without the express written permission of Telit. Furthermore, the purchase of Telit products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Telit, as arises by operation of law in the sale of a product.

## **COMPUTER SOFTWARE COPYRIGHTS**

The Telit and 3rd Party supplied Software (SW) products described in this instruction manual may include copyrighted Telit and other 3rd Party supplied computer programs stored in semiconductor memories or other media. Laws in the Italy and other countries preserve for Telit and other 3rd Party supplied SW certain exclusive rights for copyrighted computer programs, including the exclusive right to copy or reproduce in any form the copyrighted computer program. Accordingly, any copyrighted Telit or other 3rd Party supplied SW computer programs contained in the Telit products described in this instruction manual may not be copied (reverse engineered) or reproduced in any manner without the express written permission of Telit or the 3rd Party SW supplier. Furthermore, the purchase of Telit products shall not be deemed to grant either directly or by implication, estoppel, or otherwise, any license under the copyrights, patents or patent applications of Telit or other 3rd Party supplied SW, except for the normal non-exclusive, royalty free license to use that arises by operation of law in the sale of a product.

## USAGE AND DISCLOSURE RESTRICTIONS

### I. License Agreements

The software described in this document is the property of Telit and its licensors. It is furnished by express license agreement only and may be used only in accordance with the terms of such an agreement.

### II. Copyrighted Materials

Software and documentation are copyrighted materials. Making unauthorized copies is prohibited by law. No part of the software or documentation may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, without prior written permission of Telit

### III. High Risk Materials

Components, units, or third-party products used in the product described herein are NOT fault-tolerant and are NOT designed, manufactured, or intended for use as on-line control equipment in the following hazardous environments requiring fail-safe controls: the operation of Nuclear Facilities, Aircraft Navigation or Aircraft Communication Systems, Air Traffic Control, Life Support, or Weapons Systems (High Risk Activities"). Telit and its supplier(s) specifically disclaim any expressed or implied warranty of fitness for such High Risk Activities.

### IV. Trademarks

TELIT and the Stylized T Logo are registered in Trademark Office. All other product or service names are the property of their respective owners.

### V. Third Party Rights

The software may include Third Party Right software. In this case you agree to comply with all terms and conditions imposed on you in respect of such separate software. In addition to Third Party Terms, the disclaimer of warranty and limitation of liability provisions in this License shall apply to the Third Party Right software.

TELIT HEREBY DISCLAIMS ANY AND ALL WARRANTIES EXPRESS OR IMPLIED FROM ANY THIRD PARTIES REGARDING ANY SEPARATE FILES, ANY THIRD PARTY MATERIALS INCLUDED IN THE SOFTWARE, ANY THIRD PARTY MATERIALS FROM WHICH THE SOFTWARE IS DERIVED (COLLECTIVELY "OTHER CODE"), AND THE USE OF ANY OR ALL THE OTHER CODE IN CONNECTION WITH THE SOFTWARE, INCLUDING (WITHOUT LIMITATION) ANY WARRANTIES OF SATISFACTORY QUALITY OR FITNESS FOR A PARTICULAR PURPOSE.

NO THIRD PARTY LICENSORS OF OTHER CODE SHALL HAVE ANY LIABILITY FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), HOWEVER CAUSED AND WHETHER MADE UNDER CONTRACT, TORT OR OTHER LEGAL THEORY, ARISING IN ANY WAY OUT OF THE USE OR DISTRIBUTION OF THE OTHER CODE OR THE EXERCISE OF ANY RIGHTS GRANTED UNDER EITHER OR BOTH THIS LICENSE AND THE LEGAL TERMS APPLICABLE TO ANY SEPARATE FILES, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

## Applicability Table

**PRODUCTS**

		<b>Platform Version ID<sup>1</sup></b>	<b>Technology</b>	
		GL865 – QUAD V4	34	2G

---

<sup>1</sup> Platform Version ID is a reference used in the document. It identifies the different SW versions, e.g. 10 for SW version 10.xx.xxx, 13 for SW version 13.xx.xxx, etc.

## Contents

<b>NOTICES LIST .....</b>	<b>2</b>
<b>COPYRIGHTS .....</b>	<b>2</b>
<b>COMPUTER SOFTWARE COPYRIGHTS.....</b>	<b>2</b>
<b>USAGE AND DISCLOSURE RESTRICTIONS .....</b>	<b>3</b>
<b>APPLICABILITY TABLE .....</b>	<b>4</b>
<b>CONTENTS .....</b>	<b>5</b>
<b>AT COMMANDS LIST .....</b>	<b>8</b>
<b>1. INTRODUCTION .....</b>	<b>9</b>
1.1. Scope .....	9
1.2. Audience.....	9
1.3. Contact Information, Support .....	9
1.4. Text Conventions.....	10
1.5. Related Documents .....	11
<b>2. AT COMMANDS .....</b>	<b>12</b>
2.1. Serial Port Speed.....	12
2.2. AT Error Report Format .....	13
2.3. Module Identification.....	13
2.4. SIM Management .....	15
2.4.1. SIM Detection .....	15
2.4.2. SIM Lock & Unlock .....	16
2.5. Network Information.....	18
2.5.1. Network Status .....	18
2.5.2. Network Operator Identification.....	18
2.5.3. Preferred Network Operator List .....	19
2.5.4. Signal Strength & Quality .....	20
2.6. Voice Call Establishment – Originate .....	20
2.6.1. Set Module in a Specific Mode.....	20
2.6.2. Dialing a Phone Number .....	21
2.6.3. Disconnect a Call.....	21
2.6.4. Answering an Incoming Call.....	22
2.6.5. Set Volume on Speaker .....	22
2.6.6. Set Microphone Mute.....	22
2.7. GSM Single Numbering Scheme .....	23

2.8.	Call Management.....	24
2.8.1.	Identifying the Call Type .....	24
2.8.2.	CLIP Calling Line Identification Presentation .....	25
2.8.3.	CLIR Calling Line Identification Restriction .....	26
2.8.4.	Call Barring Control .....	27
2.8.4.1.	Lock/Unlock the Module.....	27
2.8.4.2.	Call Barring Service Status .....	27
2.8.4.3.	Bar/Unbar All Incoming Calls .....	28
2.8.4.4.	Bar/Unbar Incoming Calls in International Roaming.....	29
2.8.4.5.	Bar/Unbar All Outgoing Calls .....	30
2.8.4.6.	Bar/Unbar All Outgoing International Calls.....	31
2.8.4.7.	Bar/Unbar All Outgoing Internat. Calls except to Home Country .	32
2.8.4.8.	Unbar All Calls.....	33
2.9.	DTMF Tones.....	34
2.10.	SMS Management .....	35
2.10.1.	Select SMS Format Type.....	35
2.10.1.1.	Set Text Mode Parameters .....	36
2.10.1.2.	Character Sets.....	36
2.10.1.2.1.	IRA Character Set.....	36
2.10.1.2.2.	UCS2 Character Set.....	37
2.10.2.	Read/Write SMSC Number .....	37
2.10.3.	SMS Storage .....	38
2.10.4.	SMS Receiving/Reading & Sending.....	40
2.10.5.	Store and Send a SMS .....	42
2.10.6.	Delete a SMS .....	43
2.10.7.	SMS Status.....	43
2.11.	Phonebooks.....	45
2.11.1.	Phonebook Storage .....	45
2.11.2.	Search Phonebook Entries .....	46
2.11.3.	Read Phonebook Entries .....	46
2.11.4.	Write Phonebook Entry .....	47
2.11.5.	Delete Phonebook Entry .....	48
2.11.6.	Dial Phonebook Entry .....	48
2.12.	Clock and Alarm Functions .....	50
2.12.1.	Clock .....	50
2.12.1.1.	Set Module Clock.....	50
2.12.1.2.	Read the Current Date and Time .....	50

2.12.2.	Alarm .....	50
2.12.2.1.	Set Alarm.....	50
2.12.2.2.	Delete Alarm.....	51
2.12.2.3.	Recurrent Alarm.....	52
2.13.	GPIO Pins Configuration.....	53
2.13.1.	Set GPIO Pin as Output.....	53
2.13.2.	Set GPIO Pin as Input.....	53
2.13.3.	Get GPIO Pin Status.....	54
2.14.	Read Analog/Digital Converter Input.....	54
<b>3.</b>	<b>DATA CONNECTION.....</b>	<b>55</b>
3.1.	GPRS Activation .....	55
3.2.	Connection to an Echo TCP Server .....	56
<b>4.</b>	<b>FIRMWARE DOWNLOAD PROCEDURE .....</b>	<b>57</b>
4.1.	XFP download .....	57
4.1.1.	Stream selection.....	57
<b>5.</b>	<b>GLOSSARY AND ACRONYMS .....</b>	<b>58</b>
<b>6.</b>	<b>DOCUMENT HISTORY .....</b>	<b>59</b>

## AT Commands List

The following list, organized in alphabetical order, shows the AT commands covered by this User Guide. The number close to each command indicates the page of the first AT command occurrence.

<b>AT</b> .....	12	<b>AT+CMEE</b> .....	13	<b>AT+CSNS</b> .....	23
<b>AT#ADC</b> .....	54	<b>AT+CMGD</b> .....	43	<b>AT+CSQ</b> .....	20
<b>AT#CGPADDR</b> .....	55	<b>AT+CMGF</b> .....	35	<b>AT+EGDCONT</b> .....	56
<b>AT#GPIO</b> .....	53	<b>AT+CMGL</b> .....	43	<b>AT+EIPRECV</b> .....	56
<b>AT+CALA</b> .....	50	<b>AT+CMGW</b> .....	42	<b>AT+EIPSEND</b> .....	56
<b>AT+CALD</b> .....	51	<b>AT+CMUT</b> .....	22	<b>AT+ESLP</b> .....	12
<b>AT+CCLK</b> .....	50	<b>AT+COPS</b> .....	18	<b>AT+ETCPIP</b> .....	56
<b>AT+CGACT</b> .....	55	<b>AT+CPBF</b> .....	46	<b>AT+ETL</b> .....	56
<b>AT+CGATT</b> .....	55	<b>AT+CPBR</b> .....	46	<b>AT+FCASS</b> .....	21
<b>AT+CGDCONT</b> .....	55	<b>AT+CPBS</b> .....	45	<b>AT+IPR</b> .....	12
<b>AT+CGMM</b> .....	14	<b>AT+CPBW</b> .....	47	<b>ATA</b> .....	22
<b>AT+CGMR</b> .....	13	<b>AT+CPIN</b> .....	16	<b>ATD</b> .....	21
<b>AT+CLCK</b> .....	16	<b>AT+CRC</b> .....	24	<b>ATH</b> .....	21
<b>AT+CLIP</b> .....	25	<b>AT+CREG</b> .....	55	<b>AT+TCOMWRT</b> .....	57
<b>AT+CLIR</b> .....	26	<b>AT+CSCS</b> .....	36		
<b>AT+CLVL</b> .....	22	<b>AT+CSMP</b> .....	36		



# 1. INTRODUCTION

## 1.1. Scope

This document covers the more significant standard and proprietary AT commands provided by Telit's modules. Several module features are described and for each one of them the related AT commands are explained through examples. This document is not an exhaustive description of the AT commands implemented on the Telit's modules series, its target is only to give you an entry point to the AT commands world.

## 1.2. Audience

The present User Guide is addressed to users that need to learn and use quickly standard and proprietary AT commands. The reader can learn the use of the AT commands through simple examples shown in the document, and then deepen the interested AT commands reading the documents [17]/[26]/[27] in accordance with the used module.

## 1.3. Contact Information, Support

For general contact, technical support services, technical questions and report documentation errors contact Telit Technical Support at:

- TS-EMEA@telit.com
- TS-AMERICAS@telit.com
- TS-APAC@telit.com
- TS-SRD@telit.com (for Short Range Devices)

Alternatively, use:

<http://www.telit.com/support>

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

<http://www.telit.com>

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates feedback from the users of our information.

## 1.4. Text Conventions

---



Danger – This information **MUST** be followed or catastrophic equipment failure or bodily injury may occur.

---

---



Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.

---

---



Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

---

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

## 1.5. Related Documents

- [1] GL865-QUAD V4 Hardware User Guide, 1w0301518

## 2. AT COMMANDS



After power on, the module is in sleep mode by default. To exit from this mode, and enter the full functionality mode, must be followed these steps:

1. Connect, for example, the Telit AT Controller tool to the module
2. Select on the tool the hardware handshaking
3. Power on the module
4. Activate the connection. If the connection is successfully done, the tool shows information about the module that is in sleep mode. To exit sleep mode, enter the following AT command:

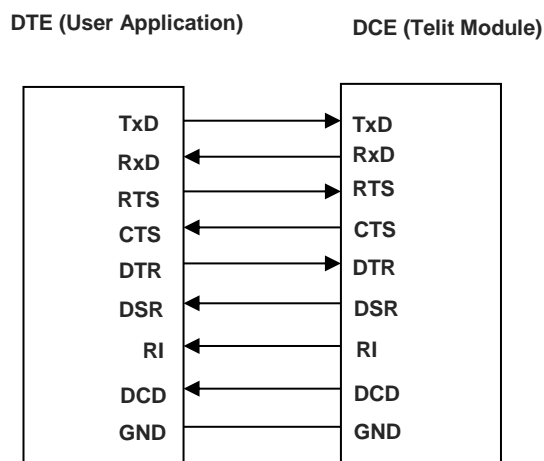
**AT+ESLP=0**

to go back, enter:

**AT+ESLP=1**

### 2.1. Serial Port Speed

Here is the V.24 serial interface standard provided by the Main Serial Port of the modules. To have hardware information refer to document [1].



After power on, the module is ready to receive AT commands on its Main Serial Port. Its second serial port, called Auxiliary, is used for factory test.

For example, type in the following AT command to verify if the DTE/DCE connection is working.

**AT**  
**OK**

Use the following AT command to configure the Main Serial Port speed.

**AT+IPR=<rate>**

Use the Test command to get the Main Serial Port speed range expressed in bps; **0** = autobauding.

**AT+IPR=?**

+IPR:

0,75,150,300,600,1200,2400,4800,7200,9600,14400,19200,28800,38400,57600,115200,230400,460800,921600

OK

Use the Read command to get the current Main Serial Port speed.

**AT+IPR?**

+IPR: 115200 ← factory setting.

OK

Set up the Main Serial Port speed to 38400 bps.

**AT+IPR=38400**

OK

Before entering the following AT commands, set up the DTE serial port speed to 38400 bps.

Check the new current Main Serial Port speed.

**AT+IPR?**

+IPR: 38400 ← setting is not saved in NVM

OK

## 2.2. AT Error Report Format

Use Test command to know the available error report formats

**AT+CMEE=?**

+CMEE: (0-2)

OK

Disable the error report in numerical and verbose format.

**AT+CMEE=0**

OK

Enable the error report in numerical format.

**AT+CMEE=1**

OK

Enable the error report in verbose format.

**AT+CMEE=2**

OK

## 2.3. Module Identification

Use the following AT commands to verify the Software Versions and module identification.

Check the Software Versions.

**AT+CGMR**

34.00.000

OK

Check the module identification.

**AT+CGMM**

GL865-QUAD V4

OK

## 2.4. SIM Management

### 2.4.1. SIM Detection

Power off the module, extract the SIM (no PIN code active), and power on the module, then enter the following command.

**AT+ESIMS?**

+ESIMS: 0            ← the SIM is not present  
OK

The module is powered on, insert the SIM

**AT+ESIMS?**

+ESIMS: 0    ← the SIM is not detected  
OK

Power off/on the module. The following URC is displayed:

+EUSIM: 1    ← the SIM is detected

Enter the following command.

**AT+ESIMS?**

+ESIMS: 1    ← the SIM is detected  
OK

**AT+CPIN?**

+CPIN: READY  
OK

**AT+EPIN1?**

+EPIN1: "READY"  
OK

## 2.4.2. SIM Lock & Unlock

The following AT commands respectively:

locks/unlocks the SIM

**AT+CLCK=<fac>,<mode>,<password>**

checks if the SIM is locked, and allows the user to enter the PIN when the SIM is locked.

**AT+CPIN=<pin>[,<newpin>]**

### Example 1

The SIM is inserted into the module. Power on the module, now check if the PIN must be entered.

**AT+CPIN?**

+CPIN: SIM PIN ← the PIN code is needed, the SIM is locked

OK

Enter the PIN to unlock the SIM

**AT+CPIN="XYXY"**

OK

**AT+CPIN?**

+CPIN: READY ← the SIM is unlocked

OK



After 3 attempts failed, the PIN code is no longer requested and the SIM is locked. Use SIM PUK to enter a new PIN code and unlock the SIM.

---

### Example 2

Enter the following command, and power off/on the module to lock the SIM

**AT+CLCK="SC",1,"XYXY"**

OK

Check if the SIM has been locked.

**AT+CPIN?**

+CPIN: SIM PIN ← the SIM is locked

OK

**AT+CPIN="XYXY"**

OK

**AT+CPIN?**

+CPIN: READY

OK

Enter the following command to unlock the SIM

**AT+CLCK="SC",0,"XYXY"**

OK



## Example 3

Extract the SIM and power off/on the module. Check if PIN code is needed, just to see the command response when using different +CMEE setting.

+CMEE=0

**AT+CPIN?**

ERROR

+CMEE=1

**AT+CPIN?**

+CME ERROR: 10

+CMEE=2

**AT+CPIN?**

+CME ERROR: SIM not inserted

## 2.5. Network Information

### 2.5.1. Network Status

Use the following command to enable/disable network registration reports. The command syntax is:

**AT+CREG=[<mode>]**

Use the Test command to get the range of the parameter value.

**AT+CREG=?**

+CREG: (0-2)

OK

Example

Check if the module is registered.

**AT+CREG?**

+CREG: 0,1            ← yes, it is registered.

OK

Now, disconnect the antenna from the module and enter again the command.

**AT+CREG?**

+CREG: 0,0            ← it is not registered.

OK

Connect again the antenna to the module, and select the Network Registration Report format: Local Area Code and Cell Id.

**AT+CREG=2**

OK

**AT+CREG?**

+CREG: 2,1,"D5BD","0000520F",0

OK

### 2.5.2. Network Operator Identification

The following command executes an attempt to select and register the network operator. <mode> parameter defines whether the operator selection is done automatically or it is established using the operator identified by <oper> parameter.

**AT+COPS=<mode>[,<format>,<oper>[,<Act>]]**

Use the following command to query the module for Network Operators Identifications.

**AT+COPS?**

+COPS: 0,0,"22201"

OK

Test command returns, after a while, the list of the operators present on the air.

**AT+COPS=?**

```
+COPS:
(2,"22201","22201","22201",0),(1,"22210","22210","22210",0),(3,"22288","22288","22288",0),(1,"
29340","29340","29340",0),,(0-3),(0-2)
OK
```

Disconnect the antenna, wait a moment, and enter again the previous AT command.

```
AT+COPS=?
+COPS: ,(0-3),(0-2)
OK
```

### 2.5.3. Preferred Network Operator List

Use the following AT command to manage the Preferred Operator List stored on SIM. The command syntax is:

```
AT+CPOL=[<index>][,<format>[,<oper> ...
```

Check the supported number of operators in the SIM Preferred Operator List and the format:

```
AT+CPOL=?
+CPOL: (0-23), (0-2)
OK
```

Reading the entire list:

```
AT+CPOL?
+CPOL: 0,2,"23203",1,0,1
+CPOL: 1,2,"20610",1,0,1
+CPOL: 2,2,"28405",1,0,1
+CPOL: 3,2,"23002",1,0,1
+CPOL: 4,2,"23820",1,0,1
+CPOL: 5,2,"24491",1,0,1
.....
.....
+CPOL: 22,2,"24001",1,0,1
+CPOL: 23,2,"22801",1,0,1
OK
```

The meaning of the string "XXXYY" is:      - XXX = Mobile Country Code  
   - YY = Mobile Network Code

Delete the entry in position 1, <index>=1

```
AT+CPOL=1
OK
```

Check if the entry is deleted.

```
AT+CPOL?
+CPOL: 0,2,"23203",1,0,1
+CPOL: 1,2,"",0,0,0      ← the entry is deleted
+CPOL: 2,2,"28405",1,0,1
.....
.....
OK
```

#### 2.5.4. Signal Strength & Quality

Assume that the module is registered on a network. The following AT command returns the received signal strength (<rss>) and quality (<ber>), giving an indication about the radio link reliability. The command syntax is:

##### **AT+CSQ**

###### Example 1

The antenna is not connected to the module or network coverage is not present at all.

##### **AT+CSQ**

+CSQ: 99,99

OK

The module is in idle state, the antenna is connected, and network coverage is present. Enter again the previous AT command.

##### **AT+CSQ**

+CSQ: 18,99 ← 18 = <rss> = Received Signal Strength Indication

OK 99 = <ber> the module is in idle state, no Bit Error Rate

##### **AT+CSQ=?**

+CSQ: (0-31,99),(0-7,99)

OK

###### Example 2

Establish a voice call.

##### **ATD 34XY92X4Y9;**

OK ← voice channel is open

Get the received signal strength (<rss>) and quality (<ber>) during a voice call

##### **AT+CSQ**

+CSQ: 12,0 ← 12 = <rss> = Received Signal Strength Indication

OK 0 = <ber> = Bit Error Rate in %

Close the voice channel

##### **ATH**

OK

## 2.6. Voice Call Establishment – Originate

Before setting up the voice call, it is assumed that the module is registered on a network and the signal strength is enough to carry on a reliable radio link.

The following sub-chapters introduce AT commands regarding the audio features of the module.

### 2.6.1. Set Module in a Specific Mode

Use the following AT command to set up the module in a specific mode: data, fax class 1, fax (manufacturer specific), fax class 2.

**AT+FCLASS=?**

(0, 1, 2, 2.0)

OK

Use the Read command to get the current setting.

**AT+FCLASS?**

0

OK

### 2.6.2. Dialing a Phone Number

Use the following AT command to establish a voice call. To perform the voice call you must use the ";" character at the end of the command.

**ATD<number>;**

Examples

**AT+FCLASS?**

0

← the current mode is data.

OK

Call the national number 040-4X92XYX.

**ATD 0404X92XYX;**

OK

Call the national number 040-4X92XYX in international format +39-040-4X92XYX.

**ATD +390404X92XYX;**

OK

If you do not use ";" character, the command returns NO CARRIER message.

**ATD+390404X92XYX**

NO CARRIER

### 2.6.3. Disconnect a Call

Use the following AT command to hang up the current voice call:

**ATH**

OK

#### 2.6.4. Answering an Incoming Call

When an Incoming Call is recognized, the module sends to the DTE the RING message. Use the following AT command to answer to the call.

RING

RING

**ATA**  
OK

voice channel is on

#### 2.6.5. Set Volume on Speaker

Use the following AT command to set up the output volume level:

**AT+CLVL=<vol>**  
OK

Use the Test command to get the <vol> range

**AT+CLVL=?**  
+CLVL: (0-6)  
OK

Use the Read command to get the current value of <vol>.

**AT+CLVL?**  
+CLVL: 3  
OK

#### 2.6.6. Set Microphone Mute

The following AT command mutes the microphone:

**AT+CMUT=1**  
OK

Check the microphone setting:

**AT+CMUT?**  
+CMUT: 1  
OK

## 2.7. GSM Single Numbering Scheme

Most Network Operators use a primary phone number associated to the voice service and a secondary phone number to data and fax. If the Operator employs a GSM Single Numbering Scheme, the voice and data number is the same.

To select the bearer to be used when a mobile terminated Single Numbering Scheme call is established, use the following AT command.

**AT+CSNS=[<mode>]**

Test command returns the supported bearers or teleservices

**AT+CSNS=?**

+CSNS: (0-7)

OK

Example 1

Read command returns the current bearer

**AT+CSNS?**

+CSNS: 0 ← voice (factory default)

OK

An Incoming Call is recognized:

RING

RING

**ATA**

voice channel is on

Example 2

Read command returns the current bearer

**AT+CSNS=4** ← data

OK

An Incoming Call is recognized:

RING

RING

**ATA**

data channel is on

## 2.8. Call Management

### 2.8.1. Identifying the Call Type

The module can identify the call type before answering. To accomplish this feature, the module provides different ring indications (URC) depending on the call type. It is up to the user to enable the extended format reporting of incoming calls using the following AT command.

**AT+CRC=[<mode>]**

OK

Test command returns the supported values

**AT+CRC=?**

+CRC: (0,1)

OK

#### Example 1

Disable extended format reporting, and then assume that the module receives a call.

**AT+CRC=0**

OK

**AT+CRC?**

+CRC: 0 ← extended format reporting disabled.

OK

The module detects a call. Ring indications are displayed on DTE:

RING

RING

#### Example 2

Enable extended format reporting, and then assume the module receives a call.

**AT+CRC=1**

OK

**AT+CRC?**

+CRC: 1 ← extended format reporting enabled

OK

The module detects a call. Ring indications in extended format are displayed on DTE:

+CRING: VOICE

+CRING: VOICE



## 2.8.2. CLIP Calling Line Identification Presentation

The module can identify the caller number and give indication about it before the call is answered. The Calling Line Indication is shown on DTE after each RING or +CRING indication. The following AT command is used to enable/disable the Calling Line Identification Presentation.

### **AT+CLIP=[<n>]**

Test command returns the supported values

#### **AT+CLIP=?**

+CLIP: (0-1)

OK

### Example

Enable the extended call type format reporting.

#### **AT+CRC=1**

OK

Enable the caller number identification.

#### **AT+CLIP=1**

OK

#### **AT+CLIP?**

+CLIP: 1,1

OK

The module detects a call; ring indications and Calling Line Identification of the calling party are displayed on DTE:

+CRING: VOICE

+CLIP: "+390404X92XYX",145,"",128,"",0

+CRING: VOICE

+CLIP: "+390404X92XYX",145,"",128,"",0

### 2.8.3. CLIR Calling Line Identification Restriction

The module can send the Calling Line Indication (CLI) to the other party through the Network when an outgoing call is established. This indication can be restricted (CLIR) in various ways.

Use the following AT command to set the Calling Line Identification Restriction.

**AT+CLIR=[<n>]**

Test command returns the supported values

**AT+CLIR=?**

+CLIR: (0-2)

OK

#### Example 1

Check the current CLIR settings:

**AT+CLIR?**

+CLIR: 0,4

OK

<n> = 0 = CLIR module facility in accordance with CLIR Network Service

<m> = 4 = CLIR temporary mode presentation allowed (it is the facility status on the Network)

The <m> parameter reports the status of the service at Network level. If the CLIR service is not provisioned by the Network, then it is not possible to use this service and changing the first parameter <n> will not change the CLI presentation to the other party behavior of the Network.

#### Example 2

Check the current CLIR settings:

**AT+CLIR?**

+CLIR: 0,4

OK

Set CLIR facility active, CLI not sent.

**AT+CLIR=1**

OK

Check the current CLIR settings:

**AT+CLIR?**

+CLIR: 1,4

OK

#### 2.8.4. Call Barring Control

The Call Barring Service enables the user to control the calls:

- Outgoing calls
- Outgoing international calls
- Outgoing international calls except those for its Country
- Incoming calls
- Incoming calls while roaming.

User can activate or cancel Call Barring using the AT commands hereafter described. The user needs to enter a special access code (Call Barring Access Code) to modify Call Barring options. Network Operator provides the Call Barring Code for every subscriber. Hereafter the Call Barring Code is indicated as "network password".

The network handles the Call Barring Service: the module sends a network request and it may take several seconds to have the response from the network. Furthermore, all the Call Barring Service AT commands must be used when the module is registered on some network, otherwise an error code is returned.

##### 2.8.4.1. Lock/Unlock the Module

Use the following AT command to lock/unlock the module or Network facilities:

**AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]**

Test command returns the supported facilities:

**AT+CLCK=?**

+CLCK: ("PF","SC","AO","OI","OX","AI","IR","AB","AG","AC","FD","PN","PU","PP","PC")

OK

##### 2.8.4.2. Call Barring Service Status

Use the following AT command to require the status of the selected network facility. Only "SC", "AO", "OI", "OX", "AI", "IR" support query mode.

**AT+CLCK=<fac>,2**

Examples

Check the status of SIM facility:

**AT+CLCK="SC",2**

+CLCK: 0

OK

Check "IR" network facility status (Bar Incoming Calls status when roaming outside the home country).

**AT+CLCK="IR",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4  
OK

"IR" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Check "OI" network facility status (Bar Outgoing (originated) International Calls).

**AT+CLCK="OI",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"OI" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Set the error report in verbose format, disconnect the antenna, and check "OI" network facility status.

**AT+CMEE=2**

OK

**AT+CLCK="OI",2**

+CME ERROR: no network service

#### 2.8.4.3. Bar/Unbar All Incoming Calls

Use the following AT command to change the status of the "AI" network facility (All Incoming Calls):

**AT+CLCK="AI",<mode>,<passwd>**

Examples

Lock and unlock "AI" network facility.

Check "AI" network facility status:

**AT+CLCK="AI",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"AI" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Lock "AI" network facility. The network password is XXXX.

**AT+CLCK="AI",1,"XXXX"**

OK

Check "AI" facilities status:

**AT+CLCK="AI",2**

+CLCK: 1,1

+CLCK: 0,2

+CLCK: 0,4

OK

Unlock "AI" facilities:

```
AT+CLCK="AI",0,"XXXX"
OK
```

Check "AI" facilities status:

```
AT+CLCK=AI,2
+CLCK: 0,1
+CLCK: 0,2
+CLCK: 0,4
OK
```

"AI" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

#### 2.8.4.4. Bar/Unbar Incoming Calls in International Roaming

Use the following AT command to change the status of the "IR" network facility (Incoming Calls when Roaming outside the home country).

```
AT+CLCK="IR",<mode>,<passwd>
```

Examples

Lock and unlock "IR" network facility.

Check "IR" network facilities status:

```
AT+CLCK="IR",2
+CLCK: 0,1
+CLCK: 0,2
+CLCK: 0,4
OK
```

"IR" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Lock "IR" network facility. The network password is XXXX

```
AT+CLCK="IR",1,"XXXX"
+CME ERROR: unknown ← setting not supported by the Network Operator
```

Change the Network Operator (change the SIM)

Lock "IR" network facility. The network password is YYYY

```
AT+CLCK="IR",1,"YYYY"
OK ← setting supported by the new Network Operator
```

Check "IR" facilities status:

```
AT+CLCK="IR",2
+CLCK: 1, 1
+CLCK: 0, 2
+CLCK: 1, 4
OK
```

"IR" network facility is locked (1): 1 = voice, 2 = data, 4 = fax.

#### 2.8.4.5. Bar/Unbar All Outgoing Calls

Use the following AT command to change the status of the "AO" network facility (All Outgoing Calls).

**AT+CLCK="AO",<mode>,<passwd>**

Examples

Check "AO" network facility status:

**AT+CLCK="AO",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"AO" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Lock "AO" network facility. The network password provided by Network Operator is XXXX.

**AT+CLCK="AO",1,"XXXX"**

OK

Check "AO" network facility status:

**AT+CLCK="AO",2**

+CLCK: 1,1

+CLCK: 0,2

+CLCK: 0,4

OK

Unlock "AO" network facility:

**AT+CLCK="AO",0,"XXXX"**

OK

Checking "AO" network facility status:

**AT+CLCK="AO",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"AO" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

#### 2.8.4.6. Bar/Unbar All Outgoing International Calls

Use the following AT command to change the status of the "OI" network facility (Outgoing International Calls).

**AT+CLCK="OI",<mode>,<passwd>**

Examples

Lock and unlock "OI" network facility.

Checking "OI" network facility status:

**AT+CLCK="OI",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"OI" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Lock "OI" network facility. The network password is XXXX.

**AT+CLCK="OI",1,"XXXX"**

OK

Check "OI" network facility status:

**AT+CLCK="OI",2**

+CLCK: 1,1

+CLCK: 0,2

+CLCK: 0,4

OK

Unlock "OI" network facility:

**AT+CLCK="OI",0,"XXXX"**

OK

Check "OI" network facility status:

**AT+CLCK="OI",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"OI" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

#### 2.8.4.7. Bar/Unbar All Outgoing Internat. Calls except to Home Country

Use the following AT command to change the status of the "OX" network facility (Outgoing International Calls except to Home Country).

**AT+CLCK="OX",<mode>,<passwd>**

Examples

Lock and unlock "OX" network facility.

Check "OX" network facility status:

**AT+CLCK="OX",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"OX" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Lock "OX" network facility. The network password is XXXX.

**AT+CLCK="OX",1,"XXXX"**

+CME ERROR: unknown ← setting is not supported by the network

**AT+CLCK="OX",0,"0000"**

+CME ERROR: unknown ← setting is not supported by the network

Check "OX" network facility status:

**AT+CLCK="OX",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"OX" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.



#### 2.8.4.8. Unbar All Calls

Use the following AT command to change the status of the "AB" network facility (All Barring services)

**AT+CLCK="AB",<mode>,<passwd>**

Examples

Unlock "AB" network facility. The network password provided by Network Operator is XXXX.

**AT+CLCK="AB",0,"XXXX"**

OK

Check "IR" network facility status:

**AT+CLCK="IR",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"IR" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Check "OI" network facility status:

**AT+CLCK="OI",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"OI" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

Check "AI" network facility status:

**AT+CLCK="AI",2**

+CLCK: 0,1

+CLCK: 0,2

+CLCK: 0,4

OK

"AI" network facility is unlocked (0): 1 = voice, 2 = data, 4 = fax.

## 2.9. DTMF Tones

Test command returns the supported DTMF.

**AT+VTS=?**

+VTS: 0,1,2,3,4,5,6,7,8,9,A,B,C,D,#,\*  
OK

Example

An Incoming Call is recognized, the module sends to the DTE the RING message. Use the following AT command to answer to the call.

RING

RING

**ATA**

OK ← voice channel is on

**AT+VTS=9** ← send single DTMF

**AT+VTS=6;+VTS=2;+VTS=8;+VTS=2** ← send multiple DTMF

.....

.....

## 2.10. SMS Management

The SMS Service stores, sends, receives, and deletes SMSs, which are short text messages up to 160 characters long. Before using the SMS messages, you must configure the Short Message Service.

### 2.10.1. Select SMS Format Type

The module supports two SMS formats:

- PDU mode
- Text mode

The module uses the PDU format to send a message on the air. The PDU mode enables the user to edit the message in PDU format. If the user is familiar with PDU encoding, he can operate with PDU by selecting that mode and use the appropriate commands.

The present document uses the Text mode to explain how to operate with SMS. Here is the AT command to select the mode.

**AT+CMGF=[<mode>]**

Examples

Test command returns the supported range of values:

**AT+CMGF=?**

+CMGF: (0,1)

OK

Read command returns the current setting

**AT+CMGF?**

+CMGF: 0 ← PDU mode

OK

Set up Text Mode for the SMS:

**AT+CMGF=1**

OK

This setting is active until the module is turned OFF.

### 2.10.1.1. Set Text Mode Parameters

When SMS format is Text mode, the SMS parameters that usually reside on the header of the PDU must be set apart with the +CSMP command.

**AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]**

Read command returns the current setting

**AT+CSMP?**

+CSMP: 0, 167, 0, 0

OK

#### Example 1

Set the SMS parameters as follow:

- <fo> expressed in binary format, see table below. The binary number expressed in decimal format is 17.

0	0	0	1	0	0	0	1
Module is not requesting a status report	Always 0	Replay Path not requested	Validity period field present in relative format	Always 0	SMS-SUBMIT		

- <vp> validity period (in relative format) = 24 hours is coded into 167 decimal format.
- <pid> protocol identifier.
- <dcs> data coding scheme, default value 0.

**AT+CSMP= 17,167,0,0**

OK

**NOTE:** the setting is automatically saved.

### 2.10.1.2. Character Sets

Use the following AT command to select the character set:

**AT+CSCS=[<chset>]**

Test command returns the supported character sets:

**AT+CSCS=?**

+CSCS: ("IRA", "GSM", "HEX", "PCCP437", "8859-1", "UCS2", "UCS2\_0X81")

OK

Read command returns the current character set:

**AT+CSCS?**

+CSCS: "IRA"

OK

#### 2.10.1.2.1. IRA Character Set

The IRA character set is used in Text mode. IRA set defines each character as a 7-bit value: from 0x00 to 0x7F. The table below lists all the supported characters and their hexadecimal code.

		Most Significant Nibble							
		0x	1x	2x	3x	4x	5x	6x	7x
Least Significant Nibble	x0			SP <sup>1</sup>	0	@	P		p
	x1			!	1	A	Q	a	q
	x2			"	2	B	R	b	r
	x3			#	3	C	S	c	s
	x4			\$	4	D	T	d	t
	x5			%	5	E	U	e	u
	x6			&	6	F	V	f	v
	x7			'	7	G	W	g	w
	x8			(	8	H	X	h	x
	x9			)	9	I	Y	i	y
	xA	LF <sup>2</sup>		*	:	J	Z	j	z
	xB			+	;	K		k	
	xC			,	<	L		l	
	xD	CR <sup>3</sup>		-	=	M		m	
	xE			.	>	N		n	
	xF			/	?	O	£	o	

<sup>1</sup> – SP stands for space character

<sup>2</sup> – LF stands for Line Feed character

<sup>3</sup> – CR stands for Carriage Return character

The following examples show how to use the IRA table:

- Get the IRA code of the character '&': the most significant nibble is 2, the least significant nibble is 6, so the IRA code for the '&' character is the hexadecimal value: 0x26.
- Translate IRA code 0x6B into the corresponding character: the most significant nibble is 6, the least significant nibble is B, the cell at the crossing of column 6 and row B holds the character: "k".

#### 2.10.1.2.2. UCS2 Character Set

The UCS2 Character Set is used in Text mode.

- Phone number 329 05 69 6... converted into "UCS2" format: 3=0033, 2=0032, 9=0039, 0=0030, 5=0035, 6=0036, 9=0039, 6=0036 ...
- Text HELLO converted into UCS2 format: H=0048, E=0045, L=004C, O=004F

#### 2.10.2. Read/Write SMSC Number

The module sends the SMS message to the SMSC Center, where the message is dispatched towards its destination or is kept until the delivery is possible. To ensure the correct operation of this service, the number of the SMSC Center must be configured on the module in accordance with the network operator used.

To know the SMSC number stored on the module, use the following AT command.

**AT+CSCA?**

+CSCA: "+39X20XX58XX0",145

OK

SMSC number is compliant with the international numbering scheme.

Use the following AT command to store a new SMSC number. The old number is overwritten.

**AT+CSCA=<number>,<type>**

Set up the desired SMSC number in international format:

**AT+CSCA="+39X20XX58XX0",145**

OK

This setting remains stored in the SIM card until it is changed or deleted, so this operation may be done only once if the SIM Card is not changed.

Enter the command with no SMSC number:

**AT+CSCA=,145**

OK

Check the stored SMSC number:

**AT+CSCA?**

+CSCA: "+",145

OK

### 2.10.3. SMS Storage

Module can provide the following SMS storage, grouped into three groups <mem1>, <mem2>, and <mem3>. The following test command returns the supported SMS storage groups:

**AT+CPMS=?**

+CPMS: ("SM", "ME", "SM\_P", "ME\_P", "MT"), ("SM", "ME", "SM\_P", "ME\_P", "MT"), ("SM", "ME", "SM\_P", "ME\_P", "MT")

OK

<mem1>: memory from which SMS messages are read and deleted

- "SM"           SIM Card Memory
- "ME"           Mobile Equipment Memory
- "SM\_P"        Manufacturer Specific
- "ME\_P"        Manufacturer Specific
- "MT"           Storages associated with ME

<mem2>: memory to which writing and sending operations are made

- "SM"           SIM Card Memory
- "ME"           Mobile Equipment Memory
- "SM\_P"        Manufacturer Specific
- "ME\_P"        Manufacturer Specific
- "MT"           Storages associated with ME

<mem3>: memory to which the received SMS are preferred to be stored

- "SM"           SIM Card Memory
- "ME"           Mobile Equipment Memory
- "SM\_P"        Manufacturer Specific
- "ME\_P"        Manufacturer Specific
- "MT"           Storages associated with ME

Select memory storage "SM":

**AT+CPMS="SM"**

+CPMS: 15, 30, 15, 30, 15, 30

OK

**AT+CPMS?**

+CPMS: "SM", 15, 30, "SM\_P", 15, 30, "SM\_P", 15, 30

OK

Select memory storage "ME":

**AT+CPMS="ME"**

+CPMS: 0, 50, 15, 30, 15, 30

OK

**AT+CPMS?**

+CPMS: "ME", 0, 50, "SM\_P", 15, 30, "SM\_P", 15, 30

OK

Select memory storage "SM\_P":

**AT+CPMS="SM\_P"**

+CPMS: 15, 30, 15, 30, 15, 30

OK

**AT+CPMS?**

+CPMS: "SM\_P", 15, 30, "SM\_P", 15, 30, "SM\_P", 15, 30

OK

**AT+CPMS="ME\_P"**

+CPMS: 0, 50, 15, 30, 15, 30

OK

**AT+CPMS?**

+CPMS: "ME\_P", 0, 50, "SM\_P", 15, 30, "SM\_P", 15, 30

OK

**AT+CPMS="MT"**

+CPMS: 15, 80, 15, 30, 15, 30

OK

**AT+CPMS?**

+CPMS: "MT", 15, 80, "SM\_P", 15, 30, "SM\_P", 15, 30

OK

#### 2.10.4. SMS Receiving/Reading & Sending

Use the following AT command to read a SMS received.

**AT+CMGR**

Example

Check the current character set.

**AT+CSCS?**

+CSCS: "IRA"

OK

Check the SMS format

**AT+CMGF?**

+CMGF: 1 ← Text Mode

OK

Check header parameters of SMS

**AT+CSMP?**

+CSMP: 0, 168, 0, 240

OK

Select memory storage "SM":

**AT+CPMS="SM"**

+CPMS: 15, 30, 15, 30, 15, 30

OK

Check the number of SMS stored: 15

**AT+CPMS?**

+CPMS: "SM", 15, 30, "SM\_P", 15, 30, "SM\_P", 15, 30

OK

When the module receives a new SMS, an Unsolicited Result Code is generated. This indication may be sent to the DTE, buffered if the DTE is busy (for example, during a data call), or discarded. To set the desired behavior, use the following command:

Select how the module notifies to the DTE the new SMS receiving from the network.

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

OK

Now, a remote device sends a SMS, the DTE displays the following URC:

+CMTI: "SM", 16 ← 16 is the SMS index the "SM" memory

Check the number of SMS stored: 16

**AT+CPMS?**

+CPMS: "SM", 16, 30, "SM\_P", 16, 30, "SM\_P", 16, 30

OK

Read the SMS pointed by index=16. The SMS body is in yellow.

**AT+CMGR=16**

+CMGR: "REC UNREAD", "393477928479", "", "2018/03/07 14:36:25+04"

**SMS #1**

OK



Use the following AT command to send a SMS.

## AT+CMGS

Example

Send a SMS to the remote device, and do not store it.

Select Text Mode

**AT+CMGF=1**

OK

Select how the new received message event is notified by the DCE to the DTE.

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

OK

Send a SMS to the remote device. The SMS body is yellow.

**AT+CMGS="+39347XY284XY"**

> SMS #2

← close the message with Ctrl Z or ESC to abort

+CMGS: 113

OK

## 2.10.5. Store and Send a SMS

Use the following AT command to store a SMS.

**AT+CMGW=<da>**

Use the following AT command to send the SMS stored.

**AT+CMSS=<index>**

Example

Stores a new SMS in the "SM" storage, send it to the remote device, and read the message in the receiving storage.

**AT+CMGF=1**                      ← Select Text Mode  
OK

**AT+CSMP=17,168,0,240**      ← Assume to send a SMS of Class 0  
OK

Select how the new received message event is notified by the DCE to the DTE

**AT+CNMI=1,1,0,0,0**  
OK

Store into "SM" the SMS message to be sent to the module itself.

**AT+CMGW="+39347XY284XY "**

> **SMS #3**                              ← close with Ctrl Z or ESC to abort

+CMGW: 17  
OK

Read the just stored SMS identified by index=17

**AT+CMGR=17**  
+CMGR: "STO SENT", "39347XY284XY", ""

**SMS #3**  
OK

Send the stored SMS #3 using the storage position returned by the previous command.

**AT+CMSS=17**  
+CMSS: 114

OK

**AT+CPMS?**

+CPMS: "SM", 17, 30, "SM\_P", 17, 30, "SM\_P", 17, 30

OK

### 2.10.6. Delete a SMS

Use the following AT command to delete a SMS stored on the "SM" storage type.

**AT+CMGD=<index>**

Example

Deleting an SMS stored in "SM" storage type:

**AT+CPMS="SM"** ← Select memory storage

+CPMS: 17, 30, 17, 30, 17, 30

OK

Delete SMS in memory position 17.

**AT+CMGD=17**

OK

**AT+CPMS="SM"**

+CPMS: 16, 30, 16, 30, 16, 30

OK

Delete all SMS. Disregard the first parameter of the +CMGD.

**AT+CMGD=1,4**

OK

**AT+CPMS="SM"**

+CPMS: 0, 30, 0, 30, 0, 30

OK

### 2.10.7. SMS Status

SMSs can be gathered into 5 different groups depending on their status:

- REC UNREAD: received messages not read
- REC READ: received messages read
- STO UNSENT: written messages not sent
- STO SENT: written messages sent
- ALL: all types of messages

Use the following AT command to query the SMS status:

**AT+CMGL=<stat>**

Example 1

Check if Text Mode is active

**AT+CMGF?**

+CMGF: 1 ← Text Mode is active

OK

Check the supported SMS status

**AT+CMGL=?**

+CMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")

OK

Read command returns the current SMS storage groups

**AT+CPMS?**

+CPMS: "SM", 2, 30, "SM\_P", 2, 30, "SM\_P", 2, 30  
OK

List all the SMSs stored on "SM" storage with their Status.

**AT+CMGL="ALL"**

+CMGL: 1,"REC READ", .... SMS body ....  
+CMGL: 2,"REC READ", .... SMS body ....  
OK

List the SMSs stored on "SM" storage with their Status=STO SENT

**AT+CMGL="STO SENT"**

OK

## Example 2

Check if Text Mode is active.

**AT+CMGF?**

+CMGF: 1  
OK

Check the supported SMS status.

**AT+CMGL=?**

+CMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")  
OK

Select "ME" storage type.

**AT+CPMS="ME"**

+CPMS: 0, 50, 2, 30, 2, 30  
OK

List SMSs stored in the "ME" storage type.

**AT+CMGL="ALL"**

OK

**AT+CMGL="REC UNREAD"**

OK

## 2.11. Phonebooks

The user can access the different Phonebook types, stored on the SIM card or on the NVM memory, by means of the dedicated AT commands.

### 2.11.1. Phonebook Storage

The choice of the Phonebook Storage must be the first Phonebook operation. Once storage is selected, it is no longer needed to select it again until the desired storage remains the same, and the module is not turned off.

Use the following command to select the phonebook memory storage identified by <storage> parameter. To have more information on the command refer to document. The command syntax is:

**AT+CPBS=<storage>**

Test command returns the <storage> range provided by the module.

**AT+CPBS=?**

Example

Read the supported range of Phonebook Storages. The <storage> range depends on the SIM, that must be inserted.

**AT+CPBS=?**

+CPBS: ("ME","SM","LD","MC","RC","FD","DC","ON")  
OK

Read the current phonebook storage

**AT+CPBS?**

+CPBS: "SM", 1, 50  
OK

Select "FD" phonebook storage.

**AT+CPBS="FD"**

OK

**AT+CPBS?**

+CPBS: "FD", 0, 13  
OK

Select "MC" Phonebook Storage

**AT+CPBS="MC"**

OK

**AT+CPBS?**

+CPBS: "MC", 0, 10  
OK

### 2.11.2. Search Phonebook Entries

Use the following AT command to search a Phonebook entry.

**AT+CPBF=<findtext>**

Examples

**AT+CPBS="SM"**

OK

**AT+CPBS?**

+CPBS: "SM", 4, 50

OK

Look for entries having name starting with "New" on the selected storage:

**AT+CPBF="New"**

+CPBF: 2, "1234567890", 129, "New1Record"

+CPBF: 4, "1234567890", 129, "New3Record"

+CPBF: 5, "1234567890", 129, "NEW4Record"

OK

### 2.11.3. Read Phonebook Entries

Use the following AT command to read a Phonebook entry:

**AT+CPBR=<index1>[,<index2>]**

Select "SM" storage:

**AT+CPBS="SM"**

OK

**AT+CPBS?**

+CPBS: "SM", 3, 50

OK

Look for the entry at the position index = 1:

**AT+CPBR=1**

+CPBR: 1, "1234567890", 129, "NewRecord"

OK

**AT+CPBR=2**

+CPBR: 2, "1234567890", 129, "New1Record"

OK

**AT+CPBR=3**

+CPBR: 3, "1234567890", 129, "New2Record"

OK

Look for the entries from position 7 up to position 9:

**AT+CPBR=1,3**

+CPBR: 1, "1234567890", 129, "NewRecord"

+CPBR: 2, "1234567890", 129, "New1Record"

+CPBR: 3, "1234567890", 129, "New2Record"

OK.

#### 2.11.4. Write Phonebook Entry

Use the following AT command to write a Phonebook entry:

**AT+CPBW=[<index>][,<number>[,<type>[,<text>]]]**

Examples

Select the "SM" phonebook:

**AT+CPBS="SM"**

OK

Read the current phonebook storage

**AT+CPBS?**

+CPBS: "SM", 3, 50

OK

Write a new record on the first free position of the selected "SM" phonebook:

**AT+CPBW=,"1234567890",129,"New3Record"**

OK

Read the current phonebook storage

**AT+CPBS?**

+CPBS: "SM", 4, 50

OK

Check where the New record has been written (case sensitive):

**AT+CPBF="New"**

+CPBF: 2, "1234567890", 129, "New1Record"

+CPBF: 3, "1234567890", 129, "New2Record"

+CPBF: 4, "1234567890", 129, "New3Record"

+CPBF: 1, "1234567890", 129, "NewRecord"

OK

Write another record

**AT+CPBW=,"1234567890",129,"NEW4Record"**

OK

Check where the NEW record has been written (case sensitive):

**AT+CPBF="NEW"**

+CPBF: 5, "1234567890", 129, "NEW4Record"

OK

### 2.11.5. Delete Phonebook Entry

Use the following AT command with only <index> parameter to delete a Phonebook entry:

**AT+CPBW=<index>**

Examples

Select the "SM" phonebook:

**AT+CPBS="SM"**

OK

Delete entry in position 3 on the "SM" phonebook:

**AT+CPBW= 3**

OK

**AT+CPBF="New"**

+CPBF: 2, "1234567890", 129, "New1Record"

+CPBF: 4, "1234567890", 129, "New3Record"

+CPBF: 5, "1234567890", 129, "NEW4Record"

OK

### 2.11.6. Dial Phonebook Entry

To dial a phone number stored in the Phonebook, the user must get the desired phone number index position using the +CPBF command. Once the <index> number is known, the user can establish the call.

**ATD><n>[:]**

Wait for command response in accordance with the call type entered.

Examples

Establish a Voice call, on HS audio path, to "Fabio" whose number is stored on the SIM Phonebook:

Select the "SM" as active storage.

**AT+CPBS="SM"**

OK

Find the index number where "Fabio" is recorded.

**AT+CPBF="NAME"**

+CPBF: 3, "+390404X9YYYY", 145, "NAME"

OK

Set the volume.

**AT+CLVL=6**

OK

Check the mute setting.

**AT+CMUT?**

+CMUT: 0 ← mute OFF

OK



Establish the voice call using the index.

**ATD>3**

OK

## 2.12. Clock and Alarm Functions

The module provides Real Time Clock and Alarm features. The next chapters describe examples showing AT commands used to:

- set up the right time
- check the actual time
- set up an alarm time
- delete an alarm time

### 2.12.1. Clock

#### 2.12.1.1. Set Module Clock

Use the following AT command to update the module clock.

**AT+CCLK=<time>**

**<time>** is a string type value. Its format is "yy/MM/dd, hh:mm:ss"

Set up the clock to 12 March 2018 at 10h 27m 30s

**AT+CCLK="18/03/12,10:27:30"**

OK

The time is successfully set. The updated time starts immediately after the time setting command.

#### 2.12.1.2. Read the Current Date and Time

Use the following AT command to display the current module time.

**AT+CCLK?**

Read the current time:

**AT+CCLK?**

+CCLK: "18/03/12,10:29:05" ← Current date/time is: 12 March 2018 10h 29m 05s

OK

### 2.12.2. Alarm

#### 2.12.2.1. Set Alarm

Use the following AT command to set up the alarm configuration:

**AT+CALA=<time>[,<n>[,<type>[,<text>[<recur>]]]]**

Example

Read the current time.

**AT+CCLK?**

+CCLK: "18/03/12,10:33:47"

OK

Set up the alarm configuration: <n>=0 is the alarm index, <type> and <text> are dummy values.

**AT+CALA="18/03/12,10:44:30",0,1,"Dummy"**

OK

**AT+CCLK?**

+CCLK: "18/03/12,10:43:40"  
OK

**AT+CCLK?**

+CCLK: "18/03/12,10:44:08"  
OK

**AT+CCLK?**

+CCLK: "18/03/12,10:44:22"  
OK

The alarm time is reached, the module displays on the DTE the following URC.

+CALV: 0                    ← alarm index is 0.

#### 2.12.2.2. Delete Alarm

##### Example

Follow these commands to set up and delete the alarm using its index. Read the current time.

**AT+CCLK?**

+CCLK: "18/03/12,10:44:22"  
OK

Set up the alarm configuration, the alarm index is 0.

**AT+CALA="18/03/12,10:55:30",0,1,"Dummy"**

OK

Read the current time

**AT+CCLK?**

+CCLK: "18/03/12,10:45:22"  
OK

Read the current time

**AT+CCLK?**

+CCLK: "18/03/12,10:48:30"  
OK

The alarm time is not reached. Delete the alarm configuration using the alarm index.

**AT+CALD=0**

OK

Read the current time

**AT+CCLK?**

+CCLK: "18/03/12,10:58:20"  
OK

The alarm time is over, the unsolicited +CALV: 0 message is not appeared on the DTE in accordance with **AT+CALD=0** command.

Check the supported alarm indexes

**AT+CALD=?**

+CALD: (0) ← is supported only alarm index = 0

OK

### 2.12.2.3. Recurrent Alarm

Follow these commands to set up the recurrent alarm configuration.

Read the current time

**AT+CCLK?**

+CCLK: "18/03/12,11:28:20"

OK

Set up the alarm configuration, the alarm index <n>=0. <recur>=0 sets a recurrent alarm for all days in the week.

**AT+CALA="18/03/12,11:55:30",0,1,"Dummy",0**

OK

Read the current time

**AT+CCLK?**

+CCLK: "18/03/12,11:45:20" ← the alarm time is still not reached

OK

The Alarm time is reached, the module displays on the DTE the following URC.

+CALV: 0 ← alarm index is 0.

Set up the new day to simulate the passing of time

**AT+CCLK="18/03/13,11:42:00+00**

OK

Read the current time

**AT+CCLK?**

+CCLK: "18/03/13,11:44:25" ← the alarm time is still not reached

OK

The alarm time is reached, the module displays on the DTE the following URC.

+CALV: 0 ← alarm index is 0.

## 2.13. GPIO Pins Configuration

The module provides 8 GPIO pins, which can be configured in input or output direction.

**AT#GPIO=[<pin>,<mode>[,<dir>]]**

User applications, through GPIO AT commands, can control external user equipment connected to GPIO pins. Simple or no circuitries are needed to perform the required hardware interface.



The GPIO setting is not saved on power off. At power on, repeat the GPIO setting. For detailed GPIO pins descriptions refer to document [1].

---

### 2.13.1. Set GPIO Pin as Output

Use the following AT command to set a GPIO as output with Low or High-status value.

**AT#GPIO=<pin>,<mode>,1**

Set GPIO1 pin as Output with Low status:

**AT#GPIO=1,0,1**

OK ← GPIO1 pin is set in output; its status is Low

Set GPIO1 pin as Output with High status:

**AT#GPIO=1,1,1**

OK ← GPIO1 pin is set in output; its status is High

### 2.13.2. Set GPIO Pin as Input

Use the following AT command to set a GPIO as input. A dummy value must be specified for pin status value.

**AT#GPIO=<pin>,<dummy\_value>,0**

Example

Set GPIO9 pin as Input:

**AT#GPIO=3,0,0**

OK ← GPIO3 pin is set in input

### 2.13.3. Get GPIO Pin Status

Use the following AT command to check the pin status.

**AT#GPIO=<pin>,2**

Example

Set GPIO1 pin as output with Low status.

**AT#GPIO=1,0,1**

OK

Set GPIO2 pin as input.

**AT#GPIO=2,0,0**

OK

Now, physically connect GPIO1 with GPIO2, and check the GPIO2 status.

The command returns: <dir> and <status>

**AT#GPIO=2,2**

#GPIO: 0,0            ← GPIO2 pin status is Low, as commanded by GPIO1.

Set GPIO1 pin as output with High status.

**AT#GPIO=1,1,1**

OK

Check the GPIO2 status. The command returns: <dir> and <status>

**AT#GPIO=2,2**

#GPIO: 0,1            ← GPIO2 pin status is High, as commanded by GPIO2.

Check the GPIO1 status.

**AT#GPIO=1,2**

#GPIO: 1,1

## 2.14. Read Analog/Digital Converter Input

Use the following AT command to read the ADC input voltage.

**AT#ADC**

#ADC: 1050           ← voltage value expressed in mV

OK

### 3. DATA CONNECTION

#### 3.1. GPRS Activation

Power on the module, the SIM is inserted.

+EUSIM: 1            ← SIM is detected

Check if the module is registered.

**AT+CREG?**

+CREG: 0,1           ← yes, it is registered.

OK

Check on which Network Operator the module is registered.

**AT+COPS?**

+COPS: 0,0,"22201"

OK

Check if the module is GPRS attached

**AT+CGATT?**

+CGATT: 1   ← GPRS attached

OK

Set a PDP context, <cid>=1

**AT+CGDCONT= 1,"IP","APN"**

OK

**NOTE:** setting is saved.

Check how many PDP contexts are defined.

**AT+CGDCONT?**

+CGDCONT: 1,"IP","APN","0.0.0.0",0,0

OK

Activate PDP context identified by <cid>=1.

**AT+CGACT=1,1**

OK

Get the IP address assigned to the module by the network

**AT+CGPADDR=1**

+CGPADDR: 1, "2.192.14.28"

OK

Deactivated the PDP context identified by <cid>=1

**AT+CGACT=0,1**

OK

No address is assigned.

**AT+CGPADDR=1**

+CGPADDR: 1, ""

OK

### 3.2. Connection to an Echo TCP Server

Power on the module, the SIM is inserted.

+EUSIM: 1                    ← SIM is detected

Data account id, total 3 accounts.

**AT+EGDCONT=?**

+EGDCONT: (0-2),"IP",,,,,

OK

Define TCP/IP data account.

**AT+EGDCONT=0,"IP","APN"**

OK

**AT+EGDCONT?**

+EGDCONT: 0,"IP","APN"

← setting is not saved in NVM

OK

Activate PDP. Data account id = 0

**AT+ETCPIP=1,0**

OK

Create a socket and return socket id. Connection to an echo TCP server.

1: create e socket and returns its id

0: data account id

0: TCP

"...": destination IP address

"...": destination port

**AT+ETL=1,0,0,"XXX.YY.YYY.XXX",20510**

+ETL: 1

← socket id=1

OK

Using the socket id=1, send data

**AT+EIPSEND=1,"0123456789"**

+EIPSEND: 1, 5

OK

+ESOCK: 1 READY RECV

← URC that notifies the data reception

Receive data

**AT+EIPRECV=1**

+EIPRECV: 1,"0123456789"

OK

Close socket id=1

**AT+ETL=0,1**

OK



## 4. FIRMWARE DOWNLOAD PROCEDURE

### 4.1. XFP download

Use the following AT command to start XFP download procedure.

**AT+TCOMWRT**

OK

#### 4.1.1. Stream file name

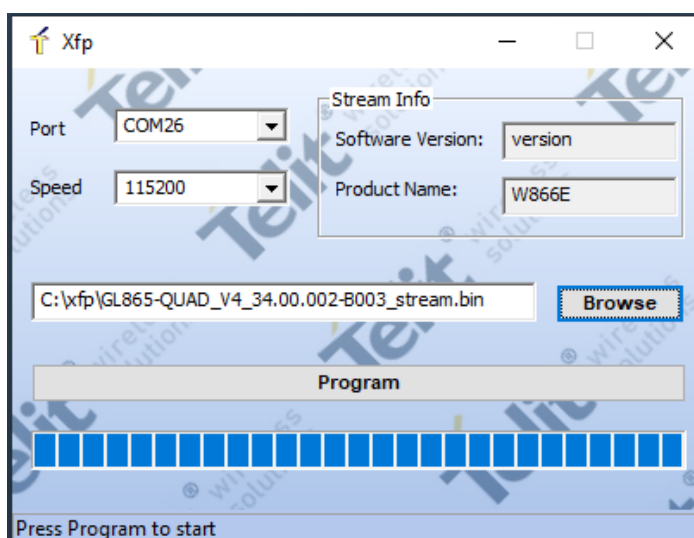
GL865-QUAD V4 XFP stream binary name will be GL865-QUAD\_V4\_<xx.yy.zzz-abcd>\_stream.bin. where **xx.yy.zzz-abcd** is the GL865 QUAD V4 general release version number.

Example:

GL865-QUAD\_V4\_34.00.002-B003\_stream.bin

#### 4.1.2. Stream selection

Launch XFP tool and configure serial port. Serial port must be so configured: 115,200 bps



browse stream file location and select the stream file to be flashed using XFP protocol

Click on “Program” button to start the XFP download procedure

## 5. GLOSSARY AND ACRONYMS

	Description
APN	Access Point Name
CSD	Circuit Switched Data
CTS	Clear To Send
DCE	Data Circuit-Terminating Equipment
DTE	Data Terminal Equipment
DTMF	Dual Tone Multiple Frequency
DTR	Data Terminal Ready
GPIO	General Purpose Input/Output
IRA	International Reference Alphabet
ME	Mobile Equipment
MSISDN	Mobile Station International Subscriber Directory Number
NVM	Non-Volatile Memory
PDN	Public Data Network
PDP	Packet Data Protocol
PDU	Protocol Data Unit
PIN	Personal Identification Number
QoS	Quality of Service
SIM	Subscriber Identification Module
SMS	Short Message Service
SMSC	Short Message Service Center
TCP/IP	Transmission Control Protocol / Internet Protocol
UE	User Equipment
URC	Unsolicited Result Code

## 6. DOCUMENT HISTORY

Revision	Date	Changes
0	2018-03-15	First issue
1	2018-07-18	In chapter 2 added a note about sleep mode and the related AT command.
2	2019-09-28	Firmware download procedure section added



# SUPPORT INQUIRIES

Link to [www.telit.com](http://www.telit.com) and contact our technical support team for any questions related to technical issues.

[www.telit.com](http://www.telit.com)



---

Telit Communications S.p.A.  
Via Stazione di Prosecco, 5/B  
I-34010 Sgonico (Trieste), Italy

Telit Wireless Solutions Inc.  
3131 RDU Center Drive, Suite 135  
Morrisville, NC 27560, USA

Telit Wireless Solutions Ltd.  
10 Habarzel St.  
Tel Aviv 69710, Israel

Telit IoT Platforms LLC  
5300 Broken Sound Blvd, Suite 150  
Boca Raton, FL 33487, USA

Telit Wireless Solutions Co., Ltd.  
8th Fl., Shinyoung Securities Bld.  
6, Gukjegeumyung-ro8-gil, Yeongdeungpo-gu  
Seoul, 150-884, Korea

Telit Wireless Solutions  
Tecnologia e Servicos Ltda  
Avenida Paulista, 1776, Room 10.C  
01310-921 São Paulo, Brazil

---

Telit reserves all rights to this document and the information contained herein. Products, names, logos and designs described herein may in whole or in part be subject to intellectual property rights. The information contained herein is provided "as is". No warranty of any kind, either express or implied, is made in relation to the accuracy, reliability, fitness for a particular purpose or content of this document. This document may be revised by Telit at any time. For most recent documents, please visit [www.telit.com](http://www.telit.com)

Copyright © 2016, Telit

Mod. 0815