

GL865-DUAL/QUAD V3 Product Description

80400ST10120A Rev.4 – 2013-09-05



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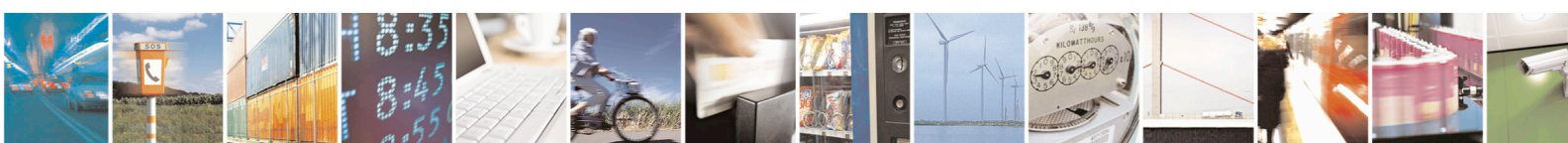
APPLICABLE PRODUCTS

PRODUCT
GL865-DUAL V3
GL865-QUAD V3



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1. Introduction

1.1. Scope

Scope of this document is giving an overview of the Telit GL865-DUAL/QUAD V3 module, which is a compact GSM/GPRS module with data and voice capabilities.

1.2. Audience

This document is intended for customers who are evaluating the GL865-DUAL/QUAD V3.

1.3. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit's Technical Support Center (TTSC) at:

TS-EMEA@telit.com
TS-NORTHAMERICA@telit.com
TS-LATINAMERICA@telit.com
TS-APAC@telit.com

Alternatively, use:

<http://www.telit.com/en/products/technical-support-center/contact.php>

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

<http://www.telit.com>

To register for product news and announcements or for product questions contact Telit's Technical Support Center (TTSC).

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. Document Organization

This document contains the following chapters:

[“Chapter 1: “Introduction”](#) provides a scope for this document, target audience, contact and support information, and text conventions.

[“Chapter 2: “The GL865-DUAL/QUAD V3”](#) gives an overview of the features of the product.



- Dimensions: 24.4 x 24.4 x 2.6 mm
- Weight: 2.8 grams
- Storage and Operating temperature range: -40°C to +85°C
- RoHS compliant

Interfaces

- 8 I/O ports maximum
- Analog audio (balanced)
- Digital Voice Interface
- 2 A/D plus 1 D/A converters
- Buzzer output
- ITU-T V.24 serial link through CMOS UART:
 - Baud rate from 300 to 115.200 bps
 - Autobauding up to 115.200 bps

Audio

- Telephony, emergency call
- Half rate, full rate, enhanced full rate and adaptive multi rate voice codecs (HR, FR, EFR, AMR)
- Superior echo cancellation & noise reduction
- Multiple audio profiles pre-programmed and fully configurable
- Embedded DTMF decoder

Approvals

- Fully type approved conforming with R&TTE directive
- GCF
- FCC, IC, PTCRB, ANATEL (GL865-QUAD V3 only)

SMS

- Point-to-point mobile originated and mobile terminated SMS
- Concatenated SMS supported
- SMS cell broadcast
- Text and PDU mode



- SMS over GPRS

Circuit switched data transmission

- Asynchronous non-transparent CSD up to 9.6 kbps
- V.110

GPRS data

- GPRS class 10
- Mobile station class B
- Coding scheme 1 to 4
- PBCCH support
- GERAN Feature Package 1 support (NACC, Extended TBF)

GSM Supplementary Services

- Call forwarding
- Call barring
- Call waiting & call hold
- Advice of charge
- Calling line identification presentation (CLIP)
- Calling line identification restriction (CLIR)
- Unstructured supplementary services mobile originated data (USSD)
- Closed user group

Additional features

- SIM phonebook
- Fixed dialling number (FDN)
- Real Time Clock
- Alarm management
- Network LED support
- IRA, GSM, 8859-1 and UCS2 character sets
- Jamming detection
- Embedded TCP/IP stack, including TCP, IP, UDP, SMTP, ICMP and FTP protocols
- EASY SCAN ® automatic scan over GSM frequencies (also without SIM card)



Python* application resources

- Python* script interpreter (module takes the application code directly in the Python* language)
- Memory: 800 kB of NV memory for the user scripts and 1 MB RAM for the Python* engine usage
- Over-the-air application SW update

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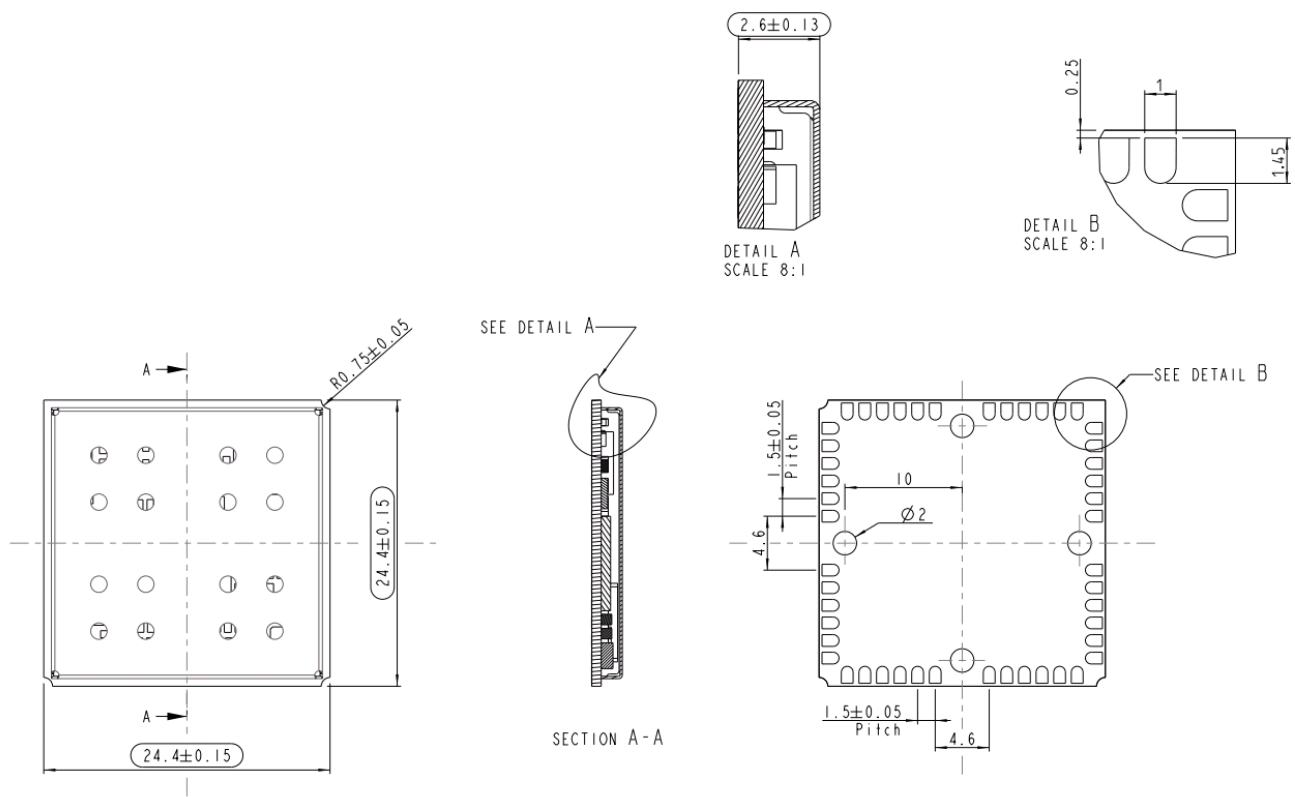


3. Product Description

3.1. Size and 2D mechanical drawing

The Telit GL865-DUAL/QUAD V3 module overall dimensions are:

- Length: 24.4 mm
- Width: 24.4 mm
- Thickness: 2.6 mm



3.2. Weight

The weight of the GL865-DUAL/QUAD V3 is 2.8 grams.



3.10. The user interface

The user interface is managed by AT commands according to ITU-T V.250, 3GPP 27.007 and 27.005 specifications. Moreover, custom AT commands are also available. Please refer to the AT Command User Guide for details.

3.11. Speech CODEC

The GL865-DUAL/QUAD V3 supports the following voice codec:

- HR - Half Rate
- FR - Full Rate
- EFR - Enhanced Full Rate
- AMR-HR, AMR Half Rate
- AMR-FR, AMR Full Rate

3.12. SIM Reader

The GL865-DUAL/QUAD V3 supports phase 2 SIM at 1.8V and 3V ONLY with an external SIM connector. For 5V SIM, an external level translator can be added.

3.13. SMS

The GL865-DUAL/QUAD V3 supports the following SMS types:

- Mobile Terminated (MT) class 0 – 3 with signaling of new incoming SMS, SIM full, SMS read
- Mobile Originated class 0 – 3 with writing, saving in SIM and sending
- Cell broadcast compatible with CB DRX with signaling of new incoming SMS.

The GL865-DUAL/QUAD V3 also supports SMS over GPRS

3.14. Real Time Clock and Alarm

The GL865-DUAL/QUAD V3 supports the Real Time Clock and Alarm functions through AT commands. An alarm output pin can be configured to indicate the alarm with a hardware line output.

Furthermore the Voltage Output of the RTC power supply is provided so that a backup battery can be added to increase the RTC autonomy during power off of the main battery (power supply).

3.15. Enhanced Measurement Report

The GL865-DUAL/QUAD V3 supports the Enhanced Measurement Report on SACCH channel according to 3GPP TS 44.018 version 4.22.0 Release 4 (par. 3.4.1.2, 9.1.54, 9.1.55) and 3GPP TS 45.008 version 4.17.0 Release 4 (par. 8.4.8).



3.16. Data transmission capabilities

The Telit GL865-DUAL/QUAD V3 is a mobile station class B supporting GPRS Class 10, coding schemes 1 to 4 and PBCCH. Moreover, it supports GERAN feature package 1, which consist in supporting the Extended Uplink TBF and Network Assisted Cell Change (NACC).

As for circuit switched data, the GL865-DUAL/QUAD V3 supports asynchronous non-transparent data up to 9.6 Kbps. Moreover, it supports the V.110.

3.17. Local security management

The local security management can be done with the lock of Subscriber Identity module (SIM). The security code will be requested at power-up.

3.18. Call control

The call cost control function is supported.

3.19. Phonebook

This function allows the storage of the telephone numbers in SIM memory. The capability depends on SIM version and its embedded memory.

3.20. Characters management

The GL865-DUAL/QUAD V3 supports the IRA, GSM, 8859-1 and UCS2 characters sets, in TEXT and PDU mode.

3.21. SIM related functions

Fixed Dialing Numbers (FDN), Abbreviated Dialing Number (ADN) and PIN insertion are supported.

Extension at the PIN2 for the PUK2 insertion capability for lock condition is supported too.

3.22. Call status indication

The call status indication is supported.

3.23. Automatic answer (Voice, Data)

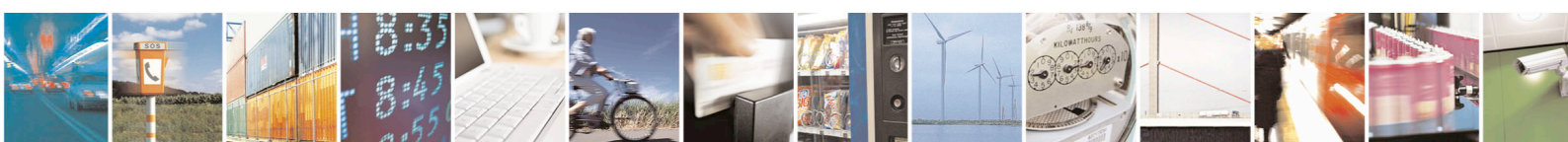
The automatic answer is supported. The user/application can specify the number of rings after which the module will automatically answer.

The user/application can set the number of rings by means of the command `ATS0=<n>`.

3.24. Supplementary services (SS)

The following supplementary services are supported:

- Call Barring,



3.33.2. DAC Converter

The GL865-DUAL/QUAD V3 has one on board DAC, which is a 10 bit converter, able to generate an analogue value based a specific input in the range from 0 up to 1023. However, an external low-pass filter is necessary. See the Hardware User Guide for the details.

3.34. Mounting the GL865-DUAL/QUAD V3 on your Board

The Telit GL865-DUAL/QUAD V3 module has been designed to be compliant with a standard lead-free SMT process. For detailed information about PCB pad design and conditions to use in SMT process please check with the GL865-DUAL /QUAD V3 Hardware User Guide.

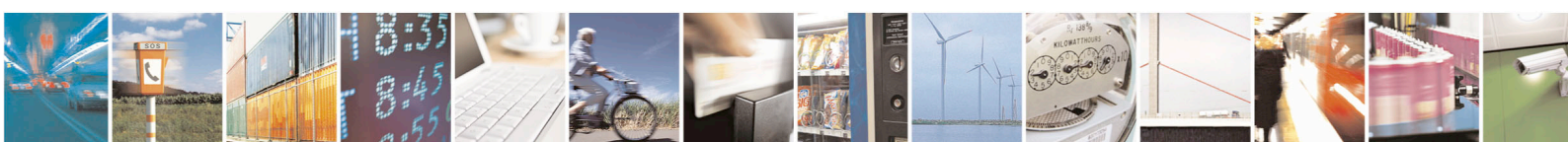
3.35. Packing system

The Telit GL865-DUAL/QUAD V3 is supplied on trays of 20 pieces each.

The GL865-DUAL/QUAD V3 can be also packaged on reels of 200 pieces each.

For further information on GL865-DUAL/QUAD V3 packing system please refer to the GL865-DUAL/QUAD V3 Hardware User Guide.

The level of moisture sensibility of GL865-DUAL/QUAD V3 is “3”, according with standard IPC/JEDEC J-STD-020, take care of all the relative requirements for using this kind of components. Special care for handling is highly required.



4. Evaluation Kit

In order to assist the customer in the development of the application, Telit offers the EVK2 Evaluation Kit that can be ordered separately. The EVK2 has a SIM card holder, the RS 232 serial port level translator, a direct UART connection, audio and antenna connector.

The EVK2 provides a fully functional solution for a complete data or phone application. The standard serial RS232 9 pin connector placed on the Evaluation Kit allows the connection of the EVK2 system with a PC or other DTE.

The development of the applications utilizing the Telit GL865-DUAL/QUAD V3 module must present a proper design of all the interfaces towards and from the module (e.g. power supply, audio paths, level translators), otherwise a decrease in the performance will be introduced or, in the worst case, a wrong design can even lead to an operating failure of the module.

In order to assist the hardware designer in his project phase, the EVK2 board presents a series of different solutions, which will cover the most common design requirements on the market, and which can be easily integrated in the OEM design as building blocks or can be taken as starting points to develop a specific one.

For a detailed description of the Telit Evaluation Kit, please refer to the documentation provided with the Telit GL865-DUAL/QUAD V3 Hardware User Guide and EVK2 User Manual.



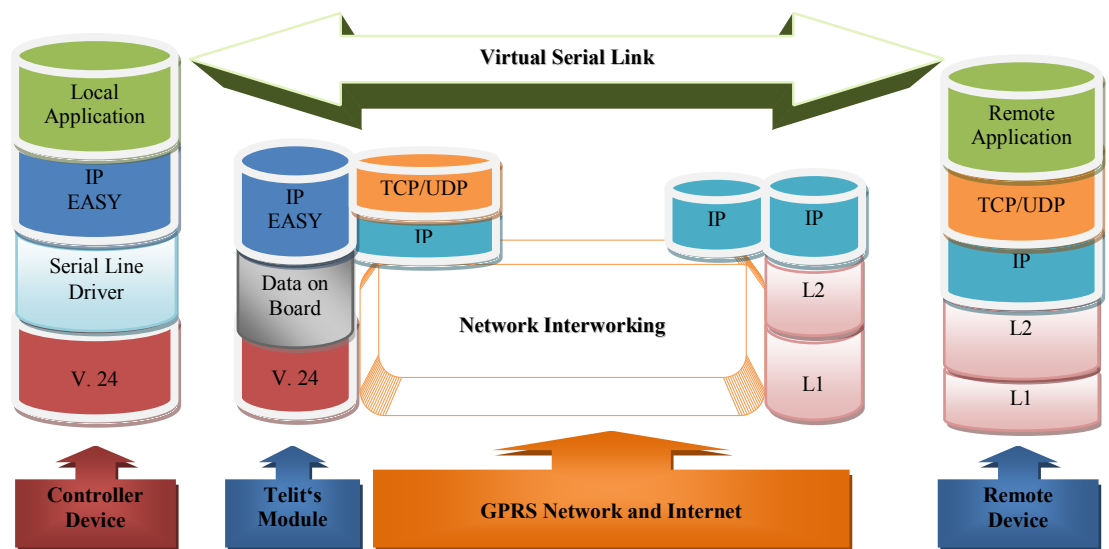
5. Software Features

5.1. IP Easy Extension

5.1.1. Overview

The IP Easy feature allows the Telit GL865-DUAL/QUAD V3 user to contact a device in internet and establish with it a raw data flow over the GPRS and Internet networks.

This feature can be seen as a way to obtain a "virtual" serial connection between the Application Software on the Internet machine involved and the controller of the Telit GL865-DUAL/QUAD V3 module, regardless of all the software stacks underlying.



This particular implementation allows to the devices interfacing to the Telit GL865-DUAL/QUAD V3 module the use of the GPRS and Internet packet service without the need to have an internal TCP/IP stack since this function is embedded in the module.

For more detailed information regarding the use of the IP Easy feature, please consult IP Easy User Guide and AT Commands Reference Guide.

5.2. Multisocket

The multisocket is an extension of Telit IP Easy feature, which allows the user to have two contexts activated (that means two different IP address), more than one socket connection (with a maximum of 6) and simultaneous FTP client service.

For more detailed information please consult the IP Easy User Guide.



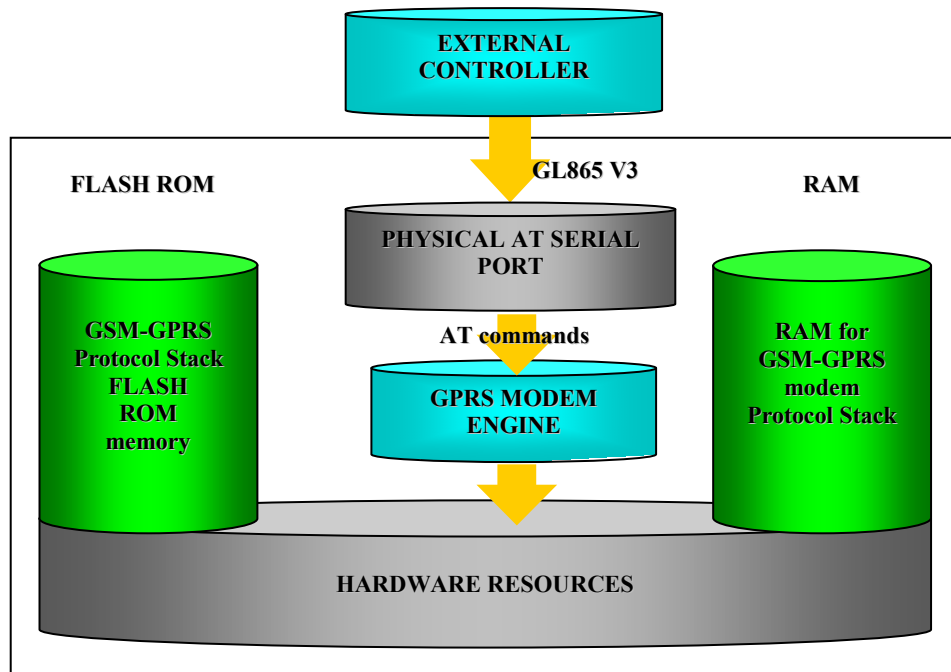
5.5. Easy Script Extension - Python interpreter

5.5.1. Overview

The Easy Script Extension is a feature that allows driving the modem "internally", writing the controlling application directly in a nice high level language: Python.

The Easy Script Extension is aimed at low complexity applications where the application was usually done by a small microcontroller that managed some I/O pins and the GL865-DUAL/QUAD V3 through the AT command interface.

A schematic of such a configuration can be:



In order to not use any external controller, and further simplify the programming of the sequence of operations, the customer can benefit of these feature already embedded in the GL865:

- Python script interpreter engine v. 1.5.2+
- 800 kB of Non Volatile Memory room for the user scripts and data
- 1 MB RAM reserved for Python engine usage



5.5.2. Python 1.5.2+ Copyright Notice

The Python code implemented in the Telit module is copyrighted by Stichting Mathematisch Centrum, this is the license:

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NOTE: More details about the Python modules are available in the Easy Script in Python User Guide.

5.6. SAP: SIM Access Profile

5.6.1. Architecture

The SAP feature allows the module to use the SIM of a remote SIM Server. This feature is implemented using special AT Command on a Virtual circuit of the CMUX interface.



5.7. Premium FOTA Management (PFM) Service

The premium FOTA Management Service provides a cost-effective, fast, secure and reliable way for wirelessly reflashing the firmware on mobile devices, ensuring that embedded software is up-to-date with the latest enhancements and features.

Customers, who want to benefit from this service, must pass through the Telit certification program, where Telit will assist the customer in validating the correct implementation of FOTA.

5.7.1. FOTA (Firmware Over The Air)

Telit, which has signed a partnership agreement with the worldwide leader of Firmware OTA technology Red Bend, has integrated its unique vCurrent® Mobile client software in its m2m product portfolio. Telit is therefore able to upgrade its products by transmitting only a delta file, which represents the difference between one firmware version and another.

See “PFM Application Note” for details in www.telit.com > Product > GSM/GPRS > Product Family > Application Notes.

5.8. AT Commands

The Telit GL865-DUAL/QUAD V3 module can be driven via the serial interface using the standard AT commands.

The Telit GL865-DUAL/QUAD V3 module is compliant with:

1. Hayes standard AT command set to maintain the compatibility with existing SW programs.
2. 3GPP 27.007 specific AT command and GPRS specific commands.
3. 3GPP 27.005 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)


Moreover the GL865-DUAL/QUAD V3 module supports also Telit proprietary AT commands for special purposes.

For a more information about AT commands supported by the GL865-DUAL/QUAD V3 module please refer to document AT Commands Reference Guide.




6. Conformity Assessment Issues


6.1. GL865-DUAL V3 CE Declaration of Conformity, Notified Body Statement of Opinion



EC DECLARATION OF CONFORMITY



1. **GL865-DUAL V3** (product name)
2. Telit Communications S.p.A Via Stazione di Prosecco, 5/b 34010 Sgonico –TRIESTE- ITALY (manufacturer)
3. This declaration of conformity is issued under the sole responsibility of the manufacturer
4. Dual Band EGSM900/DCS1800 Radio Module:



5. The object of the declaration described above is in conformity with the relevant Community harmonisation:
European Directive 1999/05/EC (R&TTE)
6. The conformity with the essential requirements of the 1999/05/EC has been demonstrated against the following harmonized standard:

EN 301 511 V9.0.2	For article 3.2 : Effective use of spectrum allocated
The product has also been verified against the following harmonized standards:	
EN 60950-1:2006 + A11:2009 + A1 2010 + A12:2011	For article 3.1 (a): Health and Safety of the User
EN 301 489-1 V1.8.1	For article 3.1 (b): Electromagnetic Compatibility
EN 301 489-7 V1.3.1	

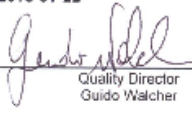
7. The conformity assessment procedure referred to in Article 10, and detailed in Annex IV of Directive 1999/05/EC has been followed with the involvement of the following Notified Body for article 3.2:
RFI Global Services Ltd Pavillon A, Ashwood Park, Ashwood Way RG23 8BG BASINGSTOKE United Kingdom Notified Body Number 0899

Thus, **CE 0889** is placed on the product.


8. The Technical Construction File (TCF) relevant to the product described above, and which supports this Declaration of Conformity, is held at: Telit Communications S.p.A Via Stazione di Prosecco, 5/b 34010 Sgonico (TRIESTE) ITALY.

Signed for and on behalf of Telit Communications S.p.A

Trieste, **2013-01-22**



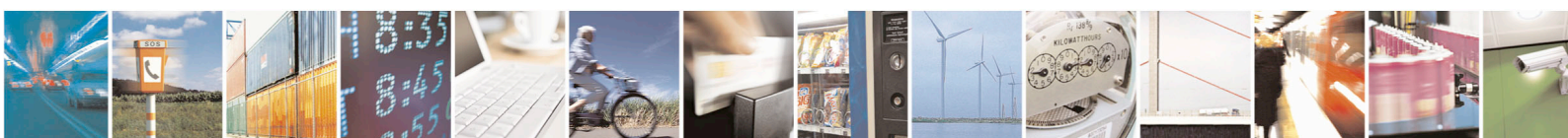
 Quality Director
Guido Walcher



 Quality Manager
Cesare Robelli

NSO number:	UL-UK-NT011 SC88264ID06
Technical Construction File:	TCF88246ID05

Mod 0211 2010-11 Rev.2 - This declaration of conformity is issued in compliance with 768/2008/EC



7. SAFETY RECOMMENDATIONS

READ CAREFULLY

Be sure the use of this product is allowed in the country and in the environment required. The use of this product may be dangerous and has to be avoided in the following areas:

- Where it can interfere with other electronic devices in environments such as hospitals, airports, aircrafts, etc
- Where there is risk of explosion such as gasoline stations, oil refineries, etc

It is the responsibility of the user to enforce the country regulation and the specific environment regulation.

Do not disassemble the product; any mark of tampering will compromise the warranty validity.

We recommend following the instructions of the hardware user guides for a correct wiring of the product. The product has to be supplied with a stabilized voltage source and the wiring has to be conforming to the security and fire prevention regulations.

The product has to be handled with care, avoiding any contact with the pins because electrostatic discharges may damage the product itself. Same cautions have to be taken for the SIM, checking the instruction for its use carefully. Do not insert or remove the SIM when the product is in power saving mode.

The system integrator is responsible for the functioning of the final product; therefore, care has to be taken to the external components of the module, as well as any project or installation issue, because the risk of disturbing the GSM network or external devices or having impact on the security. Should there be any doubt, please refer to the technical documentation and the regulations in force.

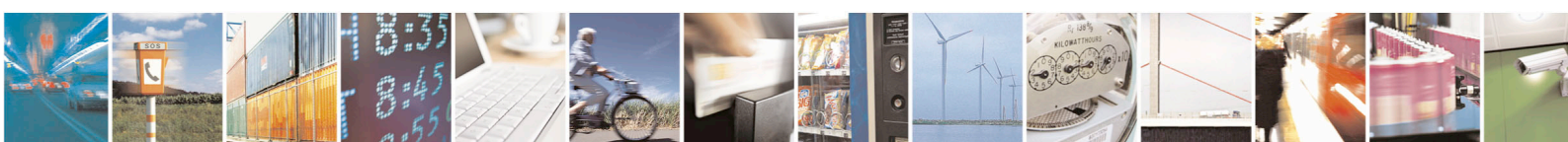
Every module has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed with care to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm). In case this requirement cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.

The European Community provides some Directives for the electronic equipment introduced on the market. All the relevant information's are available on the European Community website:

<http://ec.europa.eu/enterprise/rtte/dir99-5.htm>

The text of the Directive 99/05 regarding telecommunication equipment is available, while the applicable Directives (Low Voltage and EMC) are available at:

http://ec.europa.eu/enterprise/electr_equipment/index_en.htm



PDU	Protocol Data Unit
PH	Packet Handler
PIN	Personal Identity Number
PLMN	Public Land Mobile Network
PUCT	Price per Unit Currency Table
PUK	PIN Unblocking Code
RACH	Random Access Channel
RLP	Radio Link Protocol
RMS	Root Mean Square
RTS	Ready To Send
RI	Ring Indicator
SCA	Service Center Address
SIM	Subscriber Identity Module
SMD	Surface Mounted Device
SMS	Short Message Service
SMSC	Short Message Service Center
SS	Supplementary Service
TIA	Telecommunications Industry Association
UDUB	User Determined User Busy
USSD	Unstructured Supplementary Service Data



