

GG863-SR Gateway Product description

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Applicable Products

Short Range to GSM GPRS Gateways	
Terminal GG863-SR Gateway	
Product GG863-SR ZigBee GG863-SR Plus GG863-SR Pro For further information on how to order GG863-SR specific model, please contact your Telit representative	



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1 Introduction

1.1 Scope

Aim of this document is the description of features, functions and interfaces of the **Telit GG863-SR Gateway** which is a complete SR to cellular gateway solution for wireless m2m applications based on Telit **GE863-PRO³** core.

1.2 Audience

This document is intended for customers who are evaluating short range wireless network applications and may need to provide remote access to their solutions.

1.3 Contact Information, Support

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

ts-emea@telit.com

ts-northamerica@telit.com

ts-latinamerica@telit.com

ts-apac@telit.com

1.4 Document organization

This document contains the following chapters:

Chapter 2, "[GG863-SR](#)", presents an overview of the main product features

Chapter 3 "[Product Description](#)", gives detailed information on the product characteristics in terms of functional, environmental and performance specifications.

Chapter 4 "[Service and SW / Firmware Update](#)" shows how to update the **GG863-SR**

Chapter 5 "[Conformity Assessment Issues](#)" states all applicable declarations of conformity to international standards and regulations.

Chapter 6 "[Safety Recommendations](#)" presents useful recommendations on how to handle and deploy the device



1.5 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.

1.6 Related documents

- [1] 1wv0300835 GG863-SR Hardware User Guide
- [2] 1wv0300836 GG863-SR Software User Guide
- [3] 1wv0300781 GE863-PRO³ Linux Software User Guide
- [4] 1wv0300777 GE863-PRO³ U-BOOT Software User Guide

1.7 Document History

Revision	Date	Changes
ISSUE #0	15/06/2009	First Issue



2 GG863-SR

2.1 Overview

The **Telit GG863-SR Gateway** is an all-in-one gateway solution with a completely innovative approach focusing on data transmission and routing between short range devices and IP networks.

Equipped with GSM/GPRS cellular and short range technology, **GG863-SR** provides gateway functionalities to short range networks allowing remote access to each device connected to the network.

Thanks to the modular design of **GG863-SR Gateway**, customers have great flexibility in designing the short range network by choosing among:

1. different ISM bands (433, 868, 915 MHz and 2,4 GHz),
2. different protocol stacks (ZigBee, M-bus or Telit proprietary),
3. various network topologies (Star, Mesh, Cluster Tree),
4. wide coverage ranges (from 70m to 4km open air),
5. flexible transmission power specifications (from 1 to 500 mW).

Telit GG863-SR Gateway comes with a gateway application that dramatically reduces time to market, and a user friendly web management console that allows easy maintenance of installed devices.

Based on **GE863-PRO³** ARM9 dedicated processor architecture and powered by an optimized Linux operating system, **GG863-SR** is fully programmable and customizable: customers who need to deploy specific applications may use Telit development kit with dedicated APIs and libraries for GSM and short range devices, which give the developer full control of the system for maximum flexibility and reduced time to market.

2.2 Target market

Telit GG863-SR has been designed and developed for applications in:

- Smart Grid applications
- Automated Meter Reading
- Home and industrial automation
- Security Alarms



- Public Healthcare and Home Assistance
- Urban and Landscape monitoring

Telit GG863-SR has been designed both as a turnkey solution ready to be deployed, and as an open platform for specific applications, thus addressing the needs of both small integrators and large solution providers.

2.3 Product features

2.3.1 Main features

- GE863-PRO3 core
 - o ARM9 on board (128MB flash, 64MB RAM)
 - o Quad band GSM/GPRS class 10
- 5-36V DC supply
- Dimension: 83mm x 64mm x 33mm (excluding antennas)
- Weight: 150 g
- Temperature range: -20 to +70 °C (operational)
- Network stacks
 - o Zigbee (Z-One)
 - o Wireless M-Bus (M-BUS)
 - o Proprietary low power mesh (M-One)

2.3.2 Interfaces

- 4 pin Power connector
- 2 SMA female, 50 Ohm RF connectors (GSM/GPRS and short range)
- 4 status LEDs
- Mini USB 2.0 Full speed
- RJ11 multipurpose (UART debug for ARM9, 2 General purpose I/Os)
- Push-push SIM card holder, 1.8 / 3 V

2.3.3 Software

- Linux OS
 - o Kernel 2.6
 - o Telit dedicated libraries: GSM, Zigbee, proprietary mesh, Wireless M-BUS
 - o HTTPD web server
 - o Cron Scheduler
 - o GPIO Library
- Telit proprietary IP to Short range gateway application
- Web management console: short range network setup, GSM/GPRS, shell access
- Telit Software development environment, based on Eclipse IDE



2.3.4 Approvals

- Fully type approved conforming with R&TTE directive
- CE

2.3.5 SMS

- Point-to-point mobile originated and terminated SMS
- Concatenated SMS support
- SMS Cell broadcast
- Text and PDU mode

2.3.6 GSM/GPRS

- GPRS class 10
- Mobile station class B
- Coding scheme 1 to 4
- PBCCH support
- SMS Cell broadcast
- Output Power:
 - o Class 4 (2W) @ 850 / 900 MHz
 - o Class 1 (1W) @ 1800 / 1900 MHz

2.3.7 Short Range

Short range extension module, optionally among:

- Zigbee
 - o Frequency Band: 2,4 GHz
 - o Output power: 1 or 100 mW
 - o Coverage: up to 1500 m
- Proprietary TinyOne Plus
 - o Frequency Band: 868, 915 MHz,
 - o Output Power: 5,10 or 25 mW
 - o Coverage: up to 1500 m
- Proprietary TinyOne Pro
 - o Frequency Band: 868, 915 MHz
 - o Output power: 500 mW
 - o Coverage: up to 4000 m
- Proprietary TinyOne Lite
 - o Frequency Band: 433 MHz
 - o Output power: up to 10 mW
 - o Coverage: up to 1000 m

2.3.8 Additional features

- Battery management



- SMS
- Firmware Over The Air (FOTA) service



3 Product Description

NOTE: The illustrations in this Product Description are only schematic and do not assure fidelity to construction or layout details, finishes, writings or colours.

3.1 Dimensions

The **Telit GG863-SR** dimensions are:

- Housing Length: 83 mm (without connectors)
- Overall Length: 107 mm (including fixtures)
- Width: 64 mm
- Thickness: 33 mm

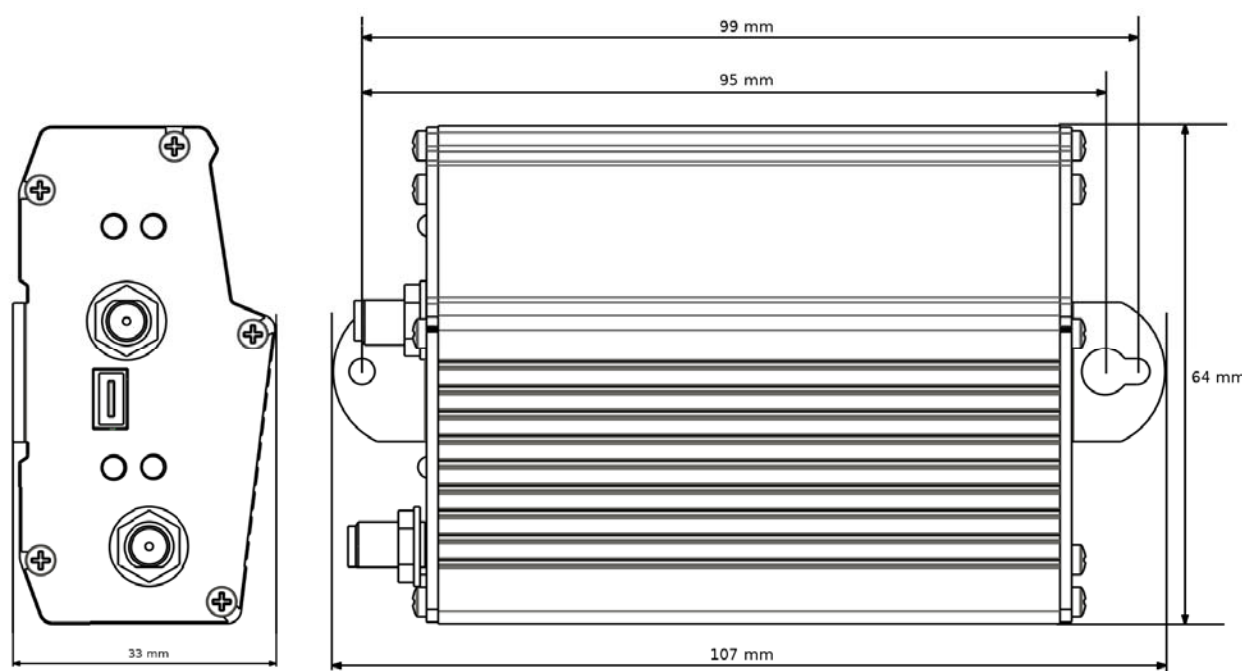


Figure 1 - GG863-SR layout and dimensions

3.2 Weight

The weight of **GG863-SR** is 150 grams.



3.3 Installation

The **Telit GG863-SR** can be fixed on a suitable surface by two screws through the holes (3.3 / 5.8 mm diam.) in the lids forming part of the front and rear panels. The figure shows the maximum and minimum inter-axis distance between the fixing holes.

In case of a permanent vertical installation in dusty environment, it is recommended to cover the SIM slot with a self-adhesive tape.

3.4 Operating Frequency (GSM)

The operating frequencies in GSM, DCS, PCS modes conform to the GSM specifications.

Mode	Freq. TX (MHz)	Freq. RX (MHz)	Channels (ARFC)	TX - RX offset
GSM 850	824.2 ÷ 848.8	869.2÷893.8	0 ÷ 124	45 MHz
EGSM 900	890.0 ÷ 914.8	935.0 - 959.8	0 ÷ 124	45 MHz
	880.2 ÷ 889.8	925.2 - 934.8	975 ÷ 1023	45 MHz
DCS-1800	1710.2 ÷ 1784.8	1805.2 - 1879.8	512 ÷ 885	95 MHz
PCS-1900	1850.2 ÷ 1909.8	1930.2 - 1989.8	512 ÷ 810	80 MHz

Table 1 - GSM bands

3.5 GSM/GPRS Transmitter output power

GSM-850/900

GG863-SR operating mode is class 4 in accordance with the specifications which determine the nominal 2W peak RF power (+33dBm) on 50 Ohm.

DCS-1800/PCS-1900

GG863-SR operating mode is class 1 in accordance with the specifications which determine the nominal 1W peak RF power (+30dBm) on 50 Ohm.

3.6 Reference sensitivity

GSM-850/900

Sensitivity of **GG863-SR** according to the specifications for the class 4 GSM-859/900 portable terminal is – 107 dBm typical in normal operating conditions.



DCS-1800/PCS-1900

Sensitivity of **GG863-SR** according to the specifications for the class 1 DCS-1800/PCS-1900 portable terminal is -106 dBm typical in normal operating conditions.

3.7 Supply voltage

The external power supply must be connected to Power supply input as described in the following subsection and must fulfill the following requirements:

Nominal Supply Voltage	12 volts
Min Supply Voltage	5 volts
Max Supply Voltage	36 volts

Table 2 - Supply voltage

NOTE: Operating voltage range must never be exceeded; care must be taken in order to fulfill Min/Max voltage requirements.

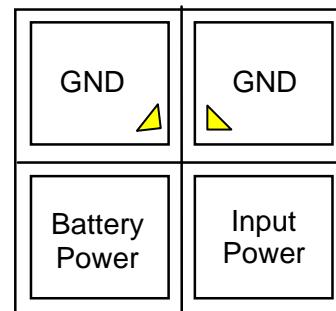
3.7.1 Power Connector

The power connector is on the left side of the terminal is Molex 4-pin connector (part no.:43045-0400 male).

Pin description:

- GND = Ground reference (1x POWER, 1x Signal)
- Input Power = 5 – 36 VDC
- Battery Power = 3.7 – 4.2 V

FRONT VIEW



Warning – Only one power source must be electrically connected at a time.



3.8 Environmental specifications

3.8.1 Temperature range

Use case	Temperature Range	Note
Operational temperature	-20°C ÷ +55°C	Full function; Full specification compliance
	-20°C ÷ +70°C	Full function*
Temperature in non operational conditions	-30°C ÷ +85°C	

Table 3 - Temperature range

* Temperature outside the -20°C ÷ +55°C range can affect the sensitivity, the performance and the MTBF of the terminal.

3.8.2 RoHS compliance

The **GG863-SR** is fully RoHS compliant to EU regulation.

3.9 GG863-SR Interfaces

The interfaces of the **GG863-SR** are distributed on front and rear panels, see figure below for a description of connector placement.

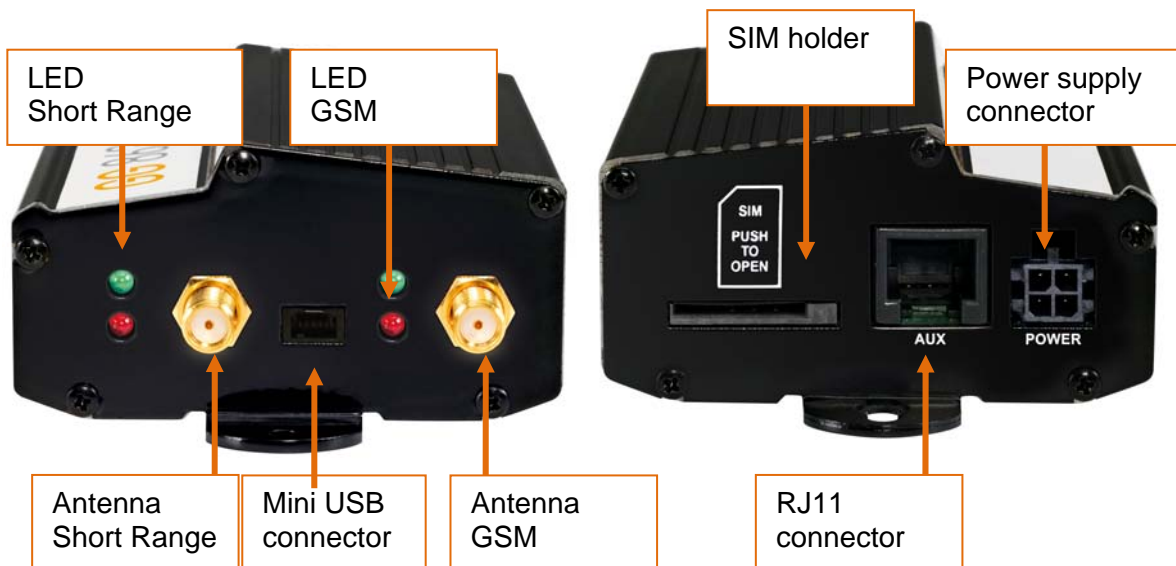


Figure 2 - Connectors placement



3.10 Accessories

The following accessories will be made available as separate, optional items.

Article description	Telit Part Number
GSM Quad-Band Antenna 2.5 dBi gain, magnetic surface mount with ca. 2,5 m coaxial cable RG174 and SMA m connector;	1rr0100056tlb
Short range Antenna 868 SMA male ½ W 116 mm	4990250108
Short range Antenna 2.4 GHz male ½ W 45 mm	4990250118
AC adapter: Input 100-240V AC 50..60Hz, Euro Plug Output 12V DC 1,2 A, ca. 1,8m cable with 4-pin plug (Molex 43025-400)	4990250137



Note – Specifications and part numbers are subject to modifications. Please contact your Telit representative for details about ordering accessories

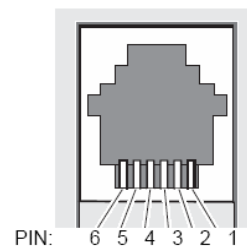
3.11 General Purpose I/O

3.11.1 RJ11 connector

The RJ11 connector type is used to provide General purpose I/Os and UART debug interface.

All General Purpose input / output lines on the RJ11 GPIO are connected to the Telit GE863-PRO³ module over a 100 Ohms series resistor.

Table below shows the RJ11 pin-out, depending on the chosen jumper configuration



PIN	Signal	Description
1	GND	GROUND
2	GPIO(PC29)	GPIO
3	GPIO(PC28)	GPIO
4	RX_ARM	RX UART Debug ARM



5	TX_ARM	TX UART Debug ARM
6	VMOD	Low Power Supply Output (3.5V)

Table 4 - RJ11 Pin out

VMOD = direct connection to the pin of the power supply voltage input of the Telit module (3.8V typical) and the output of the internal switching voltage regulator. The presence of this line at pin6 is to be considered as a low power output (<30mA) for pull-up potential (requires external reduction of voltage to max. 2.9V DC).

NOTE: Connections to VMOD shall be made only when familiar with designing circuits conform to EMC requirements.

3.11.2 Mini USB type connector

Pin-out of mini USB connector is shown in the following table:

PIN	Signal
1	USBCNX
2	DDM
3	DDP
4	NC
5	GND

Table 5 - Mini USB Pin out

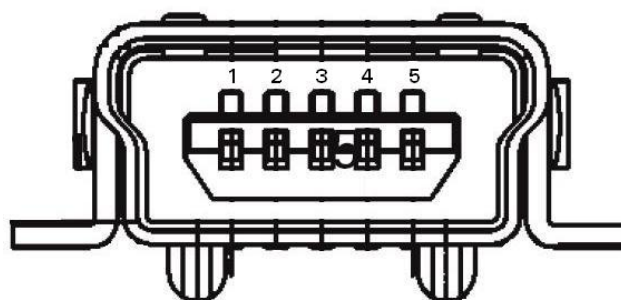


Figure 3 – Mini USB



3.12 SIM Interface Characteristics

The **Telit GG863-SR** support plug-in type Subscriber Identity Modules (SIM) according to GSM11.14 Phase 2 – with 1.8 and 3 Volts supply.

For the technical characteristics of the SIM, refer to the documentation supplied together with the SIM by the Mobile Network Operator or Service Provider.

The **Telit GG863-SR** has an enhanced SIM card reader with a sensor that allows detecting of hot plug and removal of the SIM, therefore the SIM can be extracted and re-inserted while the module is still on.



Warning – Hot plug/removal of the SIM is not supported during power saving mode

3.12.1 Insertion and Removal of the SIM

The terminal has a built-in toggle spring (Push-Push) SIM holder, accessible through a slot in the panel as shown in Figure 2 - Connectors placement.

Do not insert or remove the SIM when the product is in power saving mode.

To insert and remove the SIM, a plastic strip of the same width of the SIM and appropriate length of ca. 50-100 mm shall be prepared as a tool. The figure printed on the panel shows the position of the cut edge and the direction, how the SIM shall be inserted.

Insert the SIM and push it with the tool slightly inside until the spring snaps in. Removing the tool, the SIM shall remain inside the **Telit GG863-SR**.

To remove the SIM, push the tool slightly inside until the spring is released so that it pushes the SIM outside when the tool is retracted.

3.13 Antenna

3.13.1 Antenna Output

NOTE: BEFORE connecting the **Telit GG863-SR** to a Power Supply source, a suitable Antenna shall be connected and properly installed.

The antenna has to be installed with care in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from persons (20 cm). In case this requirement



cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.

For a good efficiency of the antenna and minimum interference with other electronic systems, a space of min. 40 cm around the radiating part should be free, at least of electrically conducting materials (except the ground plane on which it is attached).

Less distance and fewer obstacles there are between the antenna connected to the **Telit GG863-SR** Terminal and the antenna of the GSM/GPRS network base station, the less power is radiated by the Terminal under normal conditions and the higher is the safety margin in case of disturbances.

A check for interferences can be made when the **Telit GG863-SR** transmits at maximum power level to register to a GSM 900 network (see frequency channel numbers), immediately after being switched on.

3.13.1.1 Antenna Connector

The **Telit GG863-SR** includes two SMA bulkhead female, class 4 (2W) co-axial connectors for the external antennas.

3.13.1.2 GSM Antenna Requirements

The GSM antenna for **GG863-SR** device shall fulfill the following requirements:

GSM ANTENNA REQUIREMENTS	
Frequency range	Standard Dual Band GSM/DCS frequency range or Standard Quad Band GSM/DCS/PCS frequency range if used for all four bands
Bandwidth	70 MHz in GSM850, 80 MHz in GSM & 170 MHz in DCS & 140 MHz PCS band
Gain	Gain < 3dBi
Impedance	50 ohm
Input power	> 2 W peak power
VSWR absolute max	<= 10:1
VSWR recommended	<= 2:1

Table 6 - GSM Antenna requirements



3.13.1.3 Short range Antenna Requirements

The short range antenna for **GG863-SR** device shall fulfill the following requirements:

Zigbee ANTENNA REQUIREMENTS	
Frequency range	2.4GHz
Bandwidth	2.30 – 2.50 GHz
Gain	Gain < 4dBi
Impedance	50 ohm
VSWR recommended	<= 1.5:1

Table 7 - Zigbee Antenna requirements

Short Range ANTENNA REQUIREMENTS			
Frequency range	868MHz	915 MHz	433 MHz
Bandwidth	868 +/- 25 MHz	915 +/- 25 MHz	433,05 – 434.79 MHz
Gain	0 dBi	0 dBi	0 dBi
Impedance	50 ohm	50 ohm	50 ohm
VSWR recommended	<= 1.5:1	<= 1.5:1	<= 1.5:1
Radiation pattern	Omni directional	Omni directional	Omni directional
Polarization	Vertical	Vertical	Vertical

Table 8 – Short range Antenna requirements

3.14 User Interface

GG863-SR provides various interfaces for management and configuration purposes: mainly, the web based control panel user interface and a unix-like shell are accessible via USB connection.

3.14.1 Switching the GG863-SR Gateway ON and OFF

3.14.1.1 Switching ON

The GG863-SR Terminal switches on automatically each time the Power Supply is connected the first time or re-connected.



The gateway operating system is fully operational after 20 seconds. Logging onto a GSM or SR network may take longer than this and it is beyond the control of the GSM/GPRS and SR modules.



Note – When the power supply cable is disconnected, it is recommended to wait for approximately 5 seconds before applying the power again.

3.14.1.2 Switching OFF

GG863-SR can be switched off either by disconnecting the power supply or by software command.



Warning – Please note that hardware power off should be done only after a proper GSM logoff. Any GSM device is requested to issue a “detach” request at turning off.

Software shutdown can be done by means of the “halt” command on the Linux shell. For further information on available Linux shell commands on GE863-PRO³, please refer to [3].

Normal shutdown sequence will take up to 8 seconds. An additional delay of up to 10s is experienced as the GSM module logs off the network.

3.14.2 LED Indicators

The GG863-SR Terminal has 2 double LED indicators, one for the GSM technology and one for the ZB/RF technology.

3.14.3 GSM Led indicators

The green Power LED indicates whether the GSM Engine is powered: if permanently ON, the GSM is powered, if OFF, the GSM is not powered.

The red LED shows information on the network service availability and Call status.

LED STATUS	DEVICE STATUS
permanently on	a call is active
fast interrupt sequence (period 0,5s, Ton 1s)	Net search / Not registered / turning off
slow interrupt sequence (period 0,3s, Ton 3s)	Registered full service
permanently off	device off



3.14.4 ZB/RF Led indicators

The green Power LED indicates that the ZB/RF Engine inside the **GG863-SR** is powered.

The red LED shows information on the network service availability.

3.15 Gateway Software

The **GG863-SR** gateway provides support for direct communication to end nodes (devices) in a wireless PAN from a parent application running on an IP network. Different types of data collection are available:

- direct connection between parent application and end points (request-response)
- automatic data collection from end nodes, via alerts or polling, sending consolidated data to the application on a periodic basis over a cellular technology

The gateway provides, in integrated form, support for ZigBee/802.15.4 or proprietary short range technologies plus cellular GSM/GPRS functionalities.

The behavior of the gateway can be customized through the Telit development environment and dedicated libraries.

The GG863-SR software architecture is shown below:

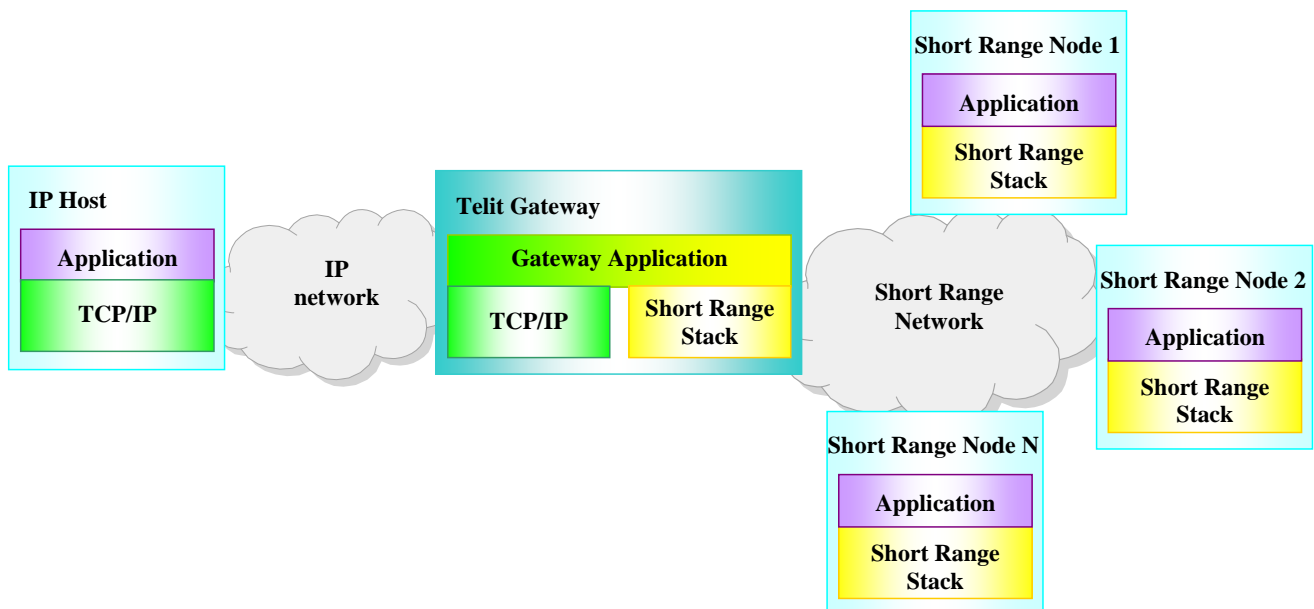


Figure 4 - Software Architecture



3.15.1 Operating System

The real-time Linux OS gives developers access to an extensive library of drivers for different peripherals and to a complete development environment.

The Linux running in the **GE863-PRO³** is a customized version based on Linux kernel 2.6. For a complete description of the **GE863-PRO³** and its Linux OS please refer to [3].

3.15.2 Data management

3.15.2.1 Send/Receive data from parent application to SR end node

The SR/GSM-GPRS gateway provides support for direct communication to end nodes (devices) in a wireless PAN from a parent application running on an IP network.

The main features consist in:

- Standard BSD-like TCP/UDP socket APIs are used to send a receive data
- Gateway is generic and does not require knowledge about the application and network
- The application running on the end node of a short range network is connected to an IP application hosted in the back end – or another device – in the IP network.

Example of typical application (device administration): a light server application runs on the end node, to which the back-end system can connect, thus controlling or configuring device settings.

3.15.3 Network Management

3.15.3.1 Automatic setup Short Range and GSM/GPRS network

- automatic setup and start the SR range and GSM/GPRS network.
- automatic mode for network startup

3.15.3.2 Event management for end node network association

Complete management of the SR end node event notification: parent application on the IP network can be informed immediately if end nodes state changes;

Example: if one of the end devices joins the network or disconnects, application on IP host will be informed.



3.15.3.3 Network protocols

Different kind of network protocol are supported:

- UDP
- TCP
- DHCP
- Telnet

3.15.4 Web control panel

User can configure all the main gateway parameters for both GSM/GPRS and SR network by means of a web interface.

The control panel provides specific configuration panels for:

- **GSM/GPRS**
 - o APN
 - o Internet service provider number
 - o GPRS profile
 - o Setup automatic server connection
- **SR**
 - o PANID
 - o Profile ID
 - o Node ID
 - o Channel

3.15.5 Short Range Driver

The Short Range Driver (SR Driver) provides a software interface between the IP Gateway application and the Short Range network coordinator. The Short Range Driver presents a set of APIs that allow the Application level to control and configure the SR Coordinator inside the gateway.



3.15.6 GSM Library

The GSM Library is a set of API that grants the access to all the GSM/GPRS functionalities provided by the GE863-PRO3.



4 Service and SW / Firmware Update

The firmware update of the module can be performed with the U-boot bootloader provided by Telit. By means of U-boot bootloader, users can choose to upgrade the Operating system or the specific application.

For further information on how to update the Firmware, please refer to [4].



5 Conformity Assessment Issues

The **GG863-SR** is assessed to be conforming to the R&TTE Directive as stand-alone products, so if the module is installed in conformance with Telit installation instructions require no further evaluation under Article 3.2 of the R&TTE Directive and do not require further involvement of a R&TTE Directive Notified Body for the final product.

In all other cases, or if the manufacturer of the final product is in doubt then the equipment integrating the radio module must be assessed against Article 3.2 of the R&TTE Directive.

In all cases assessment of the final product must be made against the Essential requirements of the R&TTE Directive Articles 3.1(a) and (b), safety and EMC respectively, and any relevant Article 3.3 requirements.

The **GG863-SR** conforms to the following European Union Directives:

- R&TTE Directive 1999/5/EC (Radio Equipment & Telecommunications Terminal Equipments)
- Low Voltage Directive 73/23/EEC and product safety
- Directive 89/336/EEC for conformity for EMC

In order to satisfy the essential requisite of the R&TTE 99/5/EC directive, the **GG863-SR** is compliant with the following standards:

- GSM (Radio Spectrum). Standard: EN 301 511 and 3GPP 51.010-1
- EMC (Electromagnetic Compatibility). Standards: EN 301 489-1 and EN 301 489-7
- LVD (Low Voltage Directive) Standards: EN 60 950



NOTE: The device can be used in all EU and in other countries on 2,4 Ghz ISM band. When operating outdoor in France, the emission shall be limited to 10mW in the 2454-2483.5 MHz range.

In this document and the Hardware User Guide, Software User Guide all the information you may need for developing a product meeting the R&TTE Directive is included.



6 Technical Support

Telit's technical support to customers of **GG863-SR** gateway consists in:

- **Technical documentation:** available for download into the Website www.telit.com
>Products >Short Range RF> Short Range to GSM/GPRS Gateways
- **Engineering support:** accessible via E-Mail service with 48 hr replies assured under normal conditions.

When submitting a technical enquiry, it is advisable to write Company, Project, Product Type, Trouble and Person reference in the "subject" field of the e-mail so that all mails can be easily retrieved also after several forwards.

In the message body, you are invited to provide as much relevant information as possible, for instance:

- Product type and variant and/or P/N
- Delivery date
- Serial number (printed on a label positioned on the back of the case)
- Software version
- Description of the application and short range stack used
- SIM Type (issued by which Mobile Network Operator of Home PLMN or Service Provider and SIM type & supplier)
- Network Conditions, both for GSM and SR
- Antenna types
- Network configuration
- Other SR devices involved in communication



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 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 carefully the instruction for its use. Do not insert or remove the SIM when the product is in power saving mode.

The system integrator is responsible of the functioning of the final product; therefore, care has to be taken to the external components of the module, as well as of 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 in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm). In case of this requirement cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.



7.1 Disposal of this product in the European Union

According to the directives 2002/95/CE, 2002/96/CE and 2003/108/CE, which have been transposed in Italian Legislative Decree of July 25, 2005, n. 151, Telit Communications S.p.A informs that:

- The symbol of the crossed-out wheeled bin reproduced on the product or on the packaging, indicates that the product, at the end of life cycle, must be gathered separately from the other waste.
- The separate collection of rubbish for this product at the end of its life cycle is arranged and managed by the manufacturer. The user, who wants to dispose the product, must contact the manufacturer and follow the available system that allows the separate collection of rubbish for this product that has reached the end of the life cycle.
- The suitable separate collection of rubbish, necessary for the subsequent transfer of the obsolete product for the recycling, the treatment and the compatible environment disposal, contributes to avoid possible negative effects to the environment and the health, and helps in the re-use and/or recycle of the materials from which this product is composed.
- The illegitimate disposal of the product by the holder implies the enforcement of the administrative penalties provided for the regulations in force.
- The company is enrolled on the register of the manufacturers of Electric and Electronic Equipment (EEE) of the Italian Minister for the Environment with the number:
IT08020000002357



2002/95/EC	Directive of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
2002/96/EC	Directive of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE)
2003/108/EC	Directive of the European Parliament and of the Council of 8 December 2003 amending directive 2002/96/EC on waste electrical and electronic equipment (WEEE)
Italian Legislative Decree of July 25, 2005, n. 151	Attuazione delle direttive 2002/95/CE, 2002/96/CE e 2003/108/CE, relative alla riduzione dell'uso di sostanze pericolose nelle apparecchiature elettriche ed elettroniche, nonche' allo smaltimento dei rifiuti

