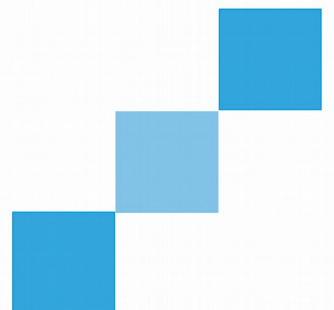


# Ionos E1 – GL865 Quad band GSM Module

CS-P000-TS-1N-Rev.A

Description of the document.



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## Version Control

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## Table of Contents

Abbreviation.....	4
1Introduction.....	6
1.1Applications.....	6
2Key features.....	7
3Block diagram.....	8
4Functional description.....	9
4.1Power Supply.....	9
4.1.13.3V output.....	9
4.2UART interface.....	9
4.3Network status.....	9
4.4Additional interfaces.....	10
4.4.1GPIO.....	10
4.4.2ADC.....	10
4.5RF specifications.....	10
4.5.1Antenna.....	10
4.6Optional features.....	11
4.7Dimensions.....	11

## Abbreviation

GSM	Global System for Mobile communication
GPRS	General Packet Radio Service
SIM	Subscriber Identity Module
LED	Light Emitting Diode
ADC	Analog to Digital Converter
DAC	Digital to Analog Converter
GPIO	General Purpose Input / Output
RTS	Request To Send
CTS	Clear To Send
DSR	Data Set Ready
DTR	Data Terminal Ready
DCD	Data Carrier Detect
RI	Ring Indicator



## 1 Introduction

Ionos E1 is a quad band GSM module supporting GPRS class 10. The leading features of the module makes it ideal for various M2M applications, wireless monitoring, telecom applications, etc.,

This document provides a brief description of the technical specifications of Ionos E1 – GL865 Quad band GSM Module. The high performance GSM module has major advantages including small form factor, low power, general purpose digital I/Os and easy configuration through AT commands.

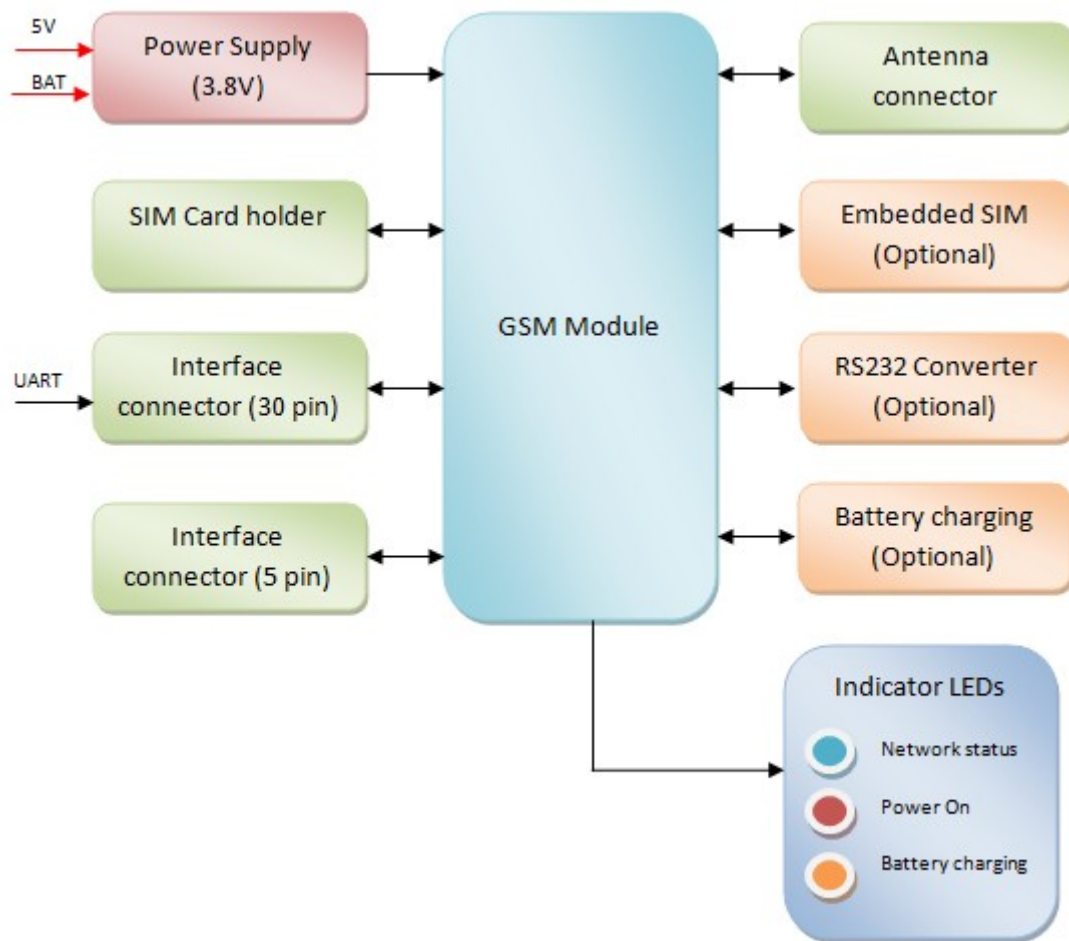
### 1.1 Applications

- Smart metering
- Battery powered applications
- Remote monitoring

## 2 Key features

Parameter	Value
Power Supply	3.8V
Current consumption	2A (Peak)
Frequency band	850 / 900 / 1800 / 1900 MHz
Network Protocols	TCP / IP
SMS	Point-to-point mobile originated and mobile terminated SMS Concatenated SMS supported SMS cell broadcast Text and PDU mode SMS over GPRS
GPRS	GPRS class 10 Mobile station class B Coding scheme 1 to 4 PBCCH support GERAN Feature Package 1 support (NACC, Extended TBF)
Communication interface	UART
Baud rate	300 to 115200 bps
SIM Card	1.8V, 3V
Antenna	SMA or IPEX
LED Indication	Network status, Power ON, Battery charging
Operating temperature	-40°C to +85°C
AT commands	AT commands according to 3GPP 27.005, 27.007 and Telit custom AT commands
Additional interfaces	ADC, DAC, GPIO

## 3 Block diagram





## 4 Functional description

### 4.1 Power Supply

The module shall be powered through USB or 30 pin connector.

Connector	Supply Voltage	Current
USB	5V	2A
30 pin	5V	2A

The on-board regulator steps down the input voltage is stepped down into voltage required for GSM module. It is recommended to maintain 2A supply since the peak current may shoot up when the module tries to register to a network.

Since the GSM module operates on 1.8V logic level, the board comprises of a level translator to convert the 1.8V logic level to 3.3V logic level.

#### 4.1.1 3.3V output

The board provides a 3.3V 300mA output in the peripheral connector for any external application.

### 4.2 UART interface

The module shall be accessed through UART. The specifications are as follows:

Parameter	Value
Logic level	3.3V TTL
Baud rate	300 to 115200 bps
Auto bauding	115200 bps
Access through	AT commands

The serial interface is usually two wire (RX and TX). But the module also provides RTS, CTS, DTR and DSR which shall be used if required.

### 4.3 Network status

The module's registration to the network shall be observed through the NET status LED indication as follows:

LED status	Indicarion
Off	Module Off
Fast blink	Not registered to network
Slow blink	Registered to network

## 4.4 Additional interfaces

### 4.4.1 GPIO

The Ionos E1 module provides 6 nos. of general purpose I/Os which are available on the 30 pin interface connector for user configuration and custom applications.

The voltage specifications are as follows:

Parameter	Value
Voltage level (High)	3.3V TTL
Voltage level (Low)	0V
Output current	1mA

### 4.4.2 ADC

The Ionos E1 module provides 2 nos. of ADC inputs which are available on the 30 pin interface connector for user configuration and custom applications. The board features a voltage divider circuit to reduce the input to 1.2V since the IC cannot accept more than 1.2V on the analog pins.

## 4.5 RF specifications

The RF specifications are as follows:

- Sensitivity:
  - 108 dBm (typ.) @ 850/900 MHz
  - 107 dBm (typ.) @ 1800/1900 MHz
- Output power
  - Class 4 (2W) @ 900 MHz
  - Class 1 (1W) @ 1800 MHz

### 4.5.1 Antenna

The Ionos E1 module is provided with IPEX antenna with 3dB gain by default. The module also supports SMA antenna which shall be provided on user demand.

## 4.6 Optional features

The GSM module includes the following optional features which shall be provided on user demand:

- 3.7V battery connectivity with on-board battery charging
- 3G compatibility
- Python script interpreter
- On-board RS232 converter
- Embedded SIM option
- UFL or SMA connector option for antenna

## 4.7 Dimensions

The physical dimension of the board is as follows:

- 53.98mm x 42.5mm