GR2 – GSM/GPRS + GPS Modem
Product description

Rev. 1 – 21/06/2012

Contents

GLYN
High-Tech Distribution

1. Overview

The GR2 is a board based on the Telit GE864-GPS module for GPRS GPS Applications
The Unit includes:

- Quad Band GSM/GPRS Modem
- The latest SiRF Star IV GPS engine
- In built Python script engine so that scripts can be run directly on the GE864-GPS Module
- Wide range Power supply 5-55V
- On board SIM Holder.
- On board charger circuit and connector for LiPO battery connection
- Either RS232 or UART connection

Note: Picture shown with RS232 interface

1.1 Mechanical Outline

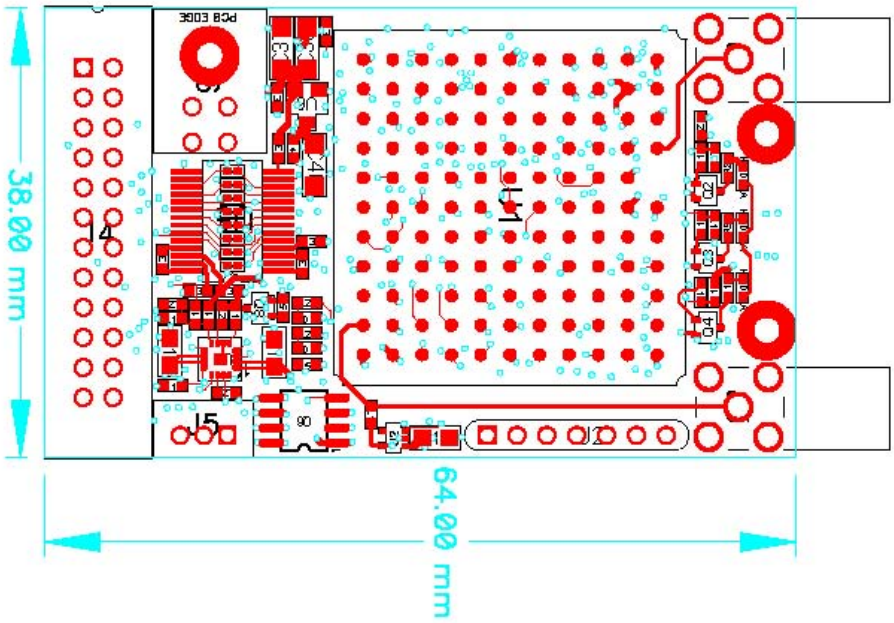


Figure 1 – Mechanical Outline

1.2 Part Numbers

GR2-RS232 – with RS232 interface fitted

GR2-UART – with UART interface fitted

2 Hardware Interface Description

2.1 Main features of the GR2

Feature	Implementation
Incorporates Telit GE864-GPS module	The Telit module handles all GSM/GPS processing with PYTHON script and includes the latest GPS SIRF Star IV GPS receiver
Frequency bands	Quad band: GSM 850/900/1800/1900MHz
Power supply	Single supply voltage 6V to 55V
Option selection ADC and GPIO inputs	1 ADC input 3 input/output GPIO
Option selection Communication	Modem full RS232 or option UART 2.65v level (on board SMT)
Battery Backup	Charger for LIPO battery on board
Antennas	GSM GPS external antennas can be fitted via the with SMA Female connectors mounted on the GR2

To view the data, AT command manual and application notes for the Telit GE864-GPS Modem please refer to the Telit website:
http://www.telit.com/en/products/gsm-gprs.php?p_id=12&p_ac=show&p=109

2.2 GR2 Power Supply block diagram

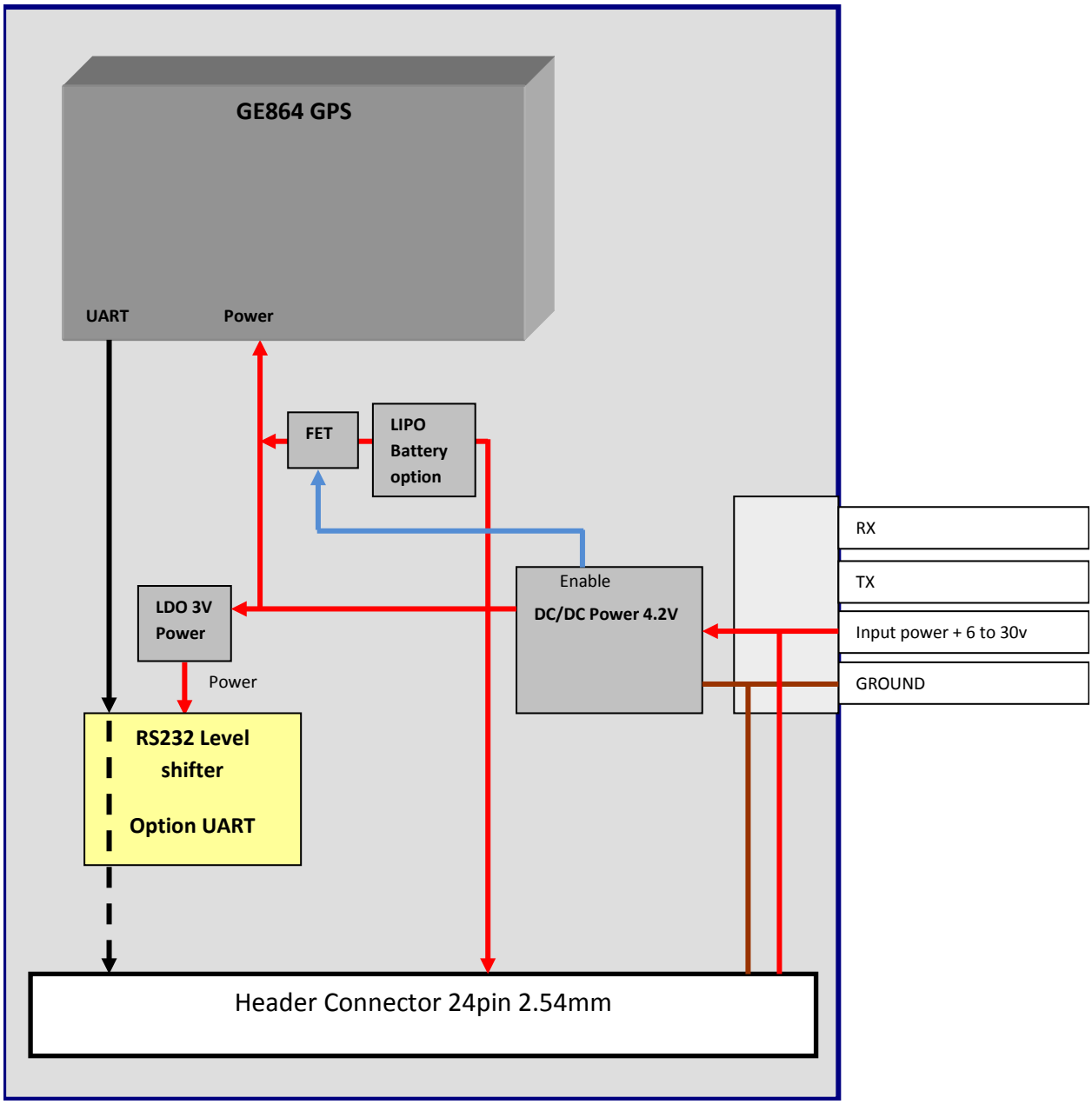


Figure 2 – Power block diagram

2.3 Interface Description

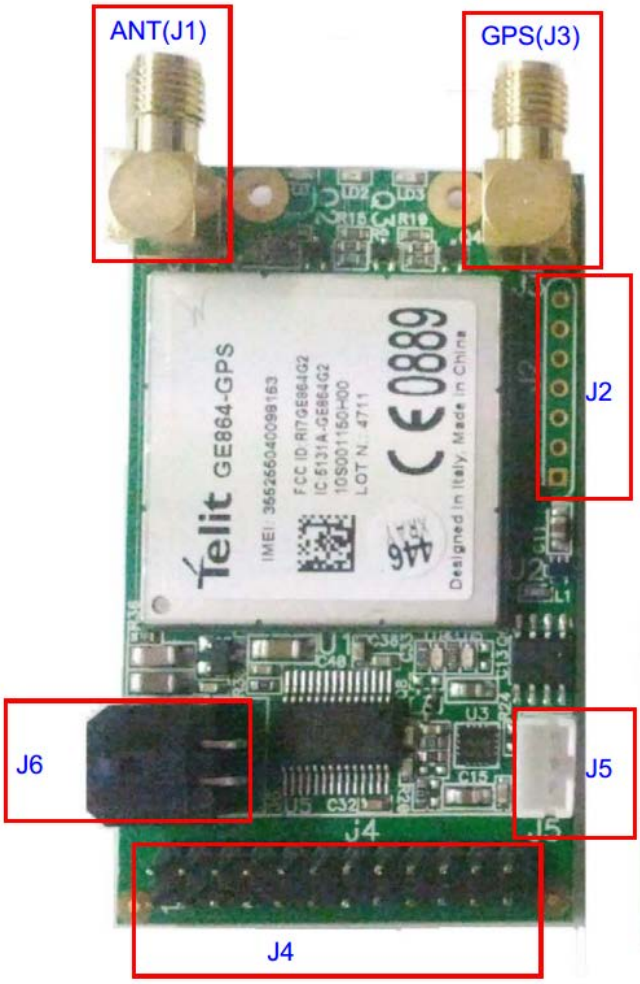


Figure 2 – GR2 top view

GR2 Board provides the following option connector for power supply and Interface.

2.3.1 IO interface

J4 Header Connector 24pin 2.54mm

Figure 3 – J4

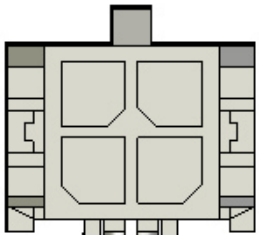
Pin#	Signal	I/O	Description
1	GND	PWR	Ground
2	TX_TRACE	O	Connect to pad D11 of GE864
3	VIN	PWR	Power supply
4	RX_TRACE	I	Connect to pad F10 of GE864
5	DCDCINH	I	Power inhibit, active High
6	SERVICE	I	Connect to pad H4 of GE864
7	VMOD	O	4.2V power output
8	ADCIN1	I	ADC_IN1 input
9	TX_RS232	I	RS232 level TXD(optional CMOS level)
10	RESET	I	Reset
11	RX_RS232	O	RS232 level RXD(optional CMOS level)
12	FLLED	O	STAT_LED
13	RTS_RS232	I	RS232 Level RTS(optional CMOS level)
14	ONOFFIN	I	ON/OFF
15	CTS_RS232	O	RS232 Level CTS(optional CMOS level)
16	PWERMON	O	PWRMON output
17	DCD_RS232	O	RS232 Level DCD(optional CMOS level)
18	VAUX	O	VAUX output
19	DSR_RS232	O	RS232 Level DSR(optional CMOS level)
20	GPIO5	I/O	GPIO 5
21	DTR_RS232	I	RS232 Level DTR(optional CMOS level)
22	GPIO6	I/O	GPIO 6
23	RING_RS232	O	Ring output(optional CMOS level)
24	GPIO7	I/O	GPIO 7

2.3.2 Power supply

The power supply of the GR2 Board has to be a single voltage source of POWER 6V-55V capable of providing a peak during an active transmission. The GR2 Board is not protected from supply reversal voltage and over voltage. An external fuse is needed to ensure an electrical safety according to EN60950-1. A fast acting fuse 0.8A with melting is necessary to use with the GR2 Board at a 24V power supply system for vehicles.

Note: EN pin (DC-DC INHIBIT) enable pin, pull up to power supply to disable, float to enable.

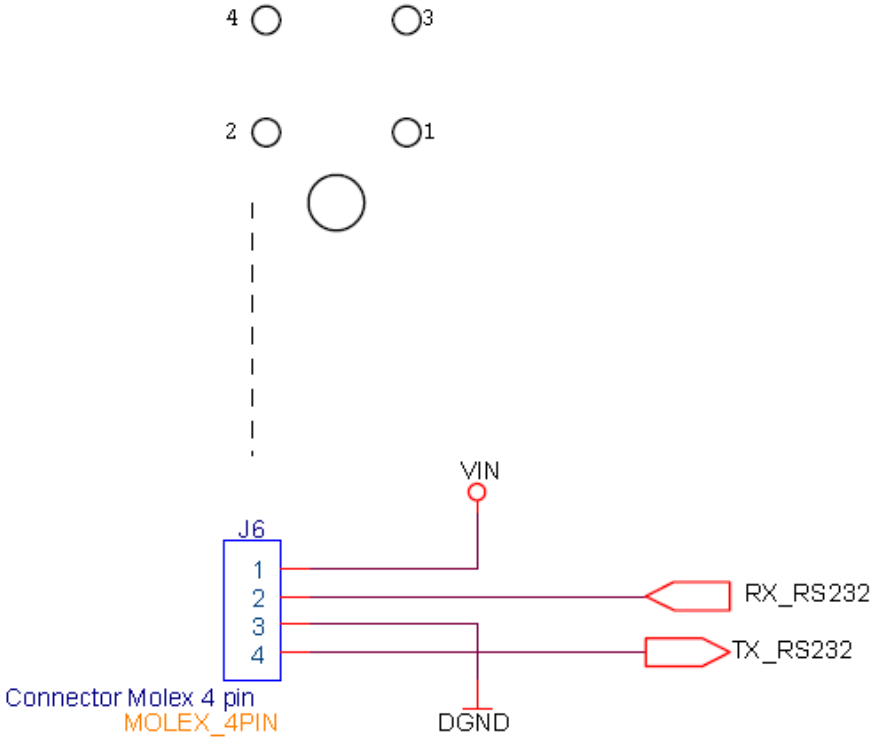
Power can also be applied through the Power Connector J6 .



Pin assignment

1 – Power (Bottom Right)
2 – RX-RS232 (Bottom Left)
3 – GND (Top Right)
4 – TX RS232 (Top Left)

J6 – for Power connection – TOP VIEW



We also offer the mating power cable with flying leads that you can wire into any suitable power supply that is available in your setup. Details can be found at http://www.glynstore.com/products/EZ%252dPOWERCABLE-for-EZ10%7B47%7DEZ863%7B47%7DEZ864.html

2.3.3 Supply Voltage Requirements

The DC power supply must be connected to the POWER input:
- Input voltage range 6 - 55V DC
- Nominal Voltage 12V DC
- Power Supply current rating: max. 2A @12V
- Power Supply ripple: max. 120mV
- Input current in idle mode: 20mA @ 12V
- Input average current in communication mode: 100mA @ 12V

2.3.4 RS-232 interface

The serial interface of the GR2 is intended for the communication between the GSM module and the host application. This RS-232 interface is a data and control interface for transmitting data, AT commands and providing multiplexed channels. EMC immunity complies with the vehicular environment requirements according to EN 301 489-7. The user interface of the GR2 Terminal is accessible from a Data Terminal Equipment DTE connected to the RS232 interface and it is managed by AT commands according to the GSM 07.07 and 07.05 specification and the supported commands are listed in the AT Commands Reference Guide. Connector type on the terminal is:

- Baud rate from 300 to 230,400 bit/s
- Short circuit (to Ground) protection on all outputs.
- Input voltage range: -12V to +12V

2.3.5 Battery Management

The GR2 Board has internal LIPO BATTERY CHARGER
LIPO BATTERY has NTC sensor, this sensor will not charge the battery when Temperature is out of the range of 0º to 45º

2.3.6 External Battery

Connector J5 is where a LiPo battery can be connected directly. A suitable battery 3.7V/960mAH with the mating connector is:

http://www.glynstore.com/products/EZ863%252dGPS-BATTERY.html

2.3.7 ADDITIONAL GPS PIN ACCESS

Access to more functions of the inbuilt GPS receiver of the GE864-GPS is possible via the connector labelled J2. This is a 7way SIL **(connector not fitted as standard)**

Pin#	Pin Name	I/O	Description
1	GPSEXTLNAEN	I	Active antenna power enable, active high(also connected with pad A7 of GE864)
2	GPSONOFF	I	GPS ON/OFF control input
3	GPSPPS	O	Pulse Per Second
4	GPSRX	I	Serial data input
5	GPSTX	O	Serial data output
6	GPSWU	I	GPS wake up
7	GND	PWR	Ground

2.4 Antenna Requirements

2.4.1 Internal Mount Options

GSM

PCB antenna like EAD Quintus series is recommended.

GPS

When using the GPS an active GPS antenna should be connected to the GPS (J3). A patch antenna of at least 20x20mm is recommended for good performance. To give good performance we recommend 4.6 External Mount Options

You will need an internal pigtail connector for each GSM and GPS connection. SMA Male to SMA Female Bulkhead, Glyn Part number INTCABLE4 (15cm length) is our recommendation
http://www.glynstore.com/products/INTCABLE4-RF-Cable-%28SMA-straight-male-plug-%252b-15cm-cable-%252b-bulkhead-mount-SMA-female-jack%29.html

A range of different combo and GSM and GPS antenna solutions are available from Glyn.
All these options are best explored by looking through the Glynstore website

For GSM -
http://www.glynstore.com/categories/Antennas-%26-RF-Cables/GSM%7B47%7D3G-Antennas/External-GSM%7B47%7D3G-Antennas/

For GPS –

http://www.glynstore.com/categories/Antennas-%26-RF-Cables/GPS-Antennas/Active-GPS-Antennas/

For Combo GSM/GPS

http://www.glynstore.com/categories/Antennas-%26-RF-Cables/GSM-%252d-GPS-Combo-Antennas/

Other options are available, please speak to your Glyn representative about any other requirements, eg custom cable length, custom mounting mechanism.

3 Limited Warranty

Glyn warrants, to the original purchaser, that this equipment shall be free of defects in materials and workmanship for a period of one (1) year.
This warranty does not apply if the product has been misused or has been damaged by accident, abuse, misuse, or misapplication or if it has been modified without permission.