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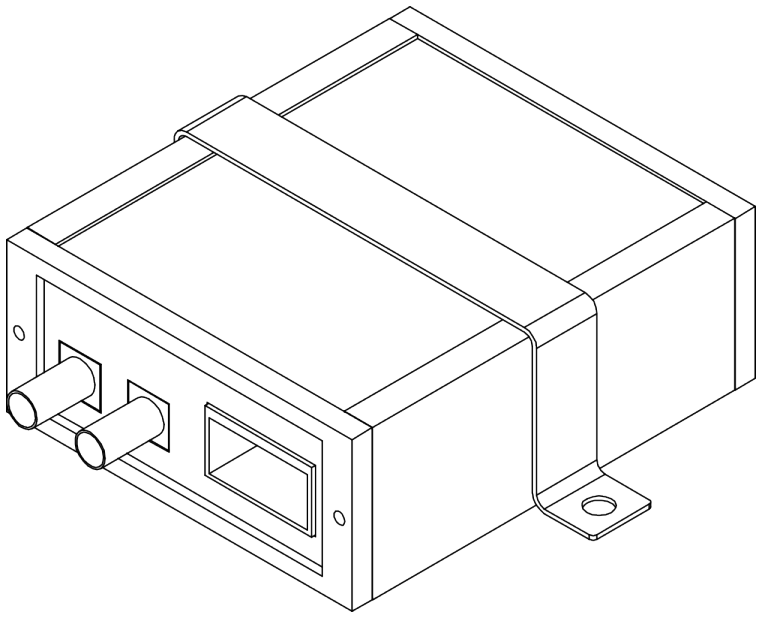
Albin Dennevi		1301-HMP031/1		
Approved	Checked	Date	Rev	Reference
		10-07-05	A	

Technical description MX-1 VB 3G



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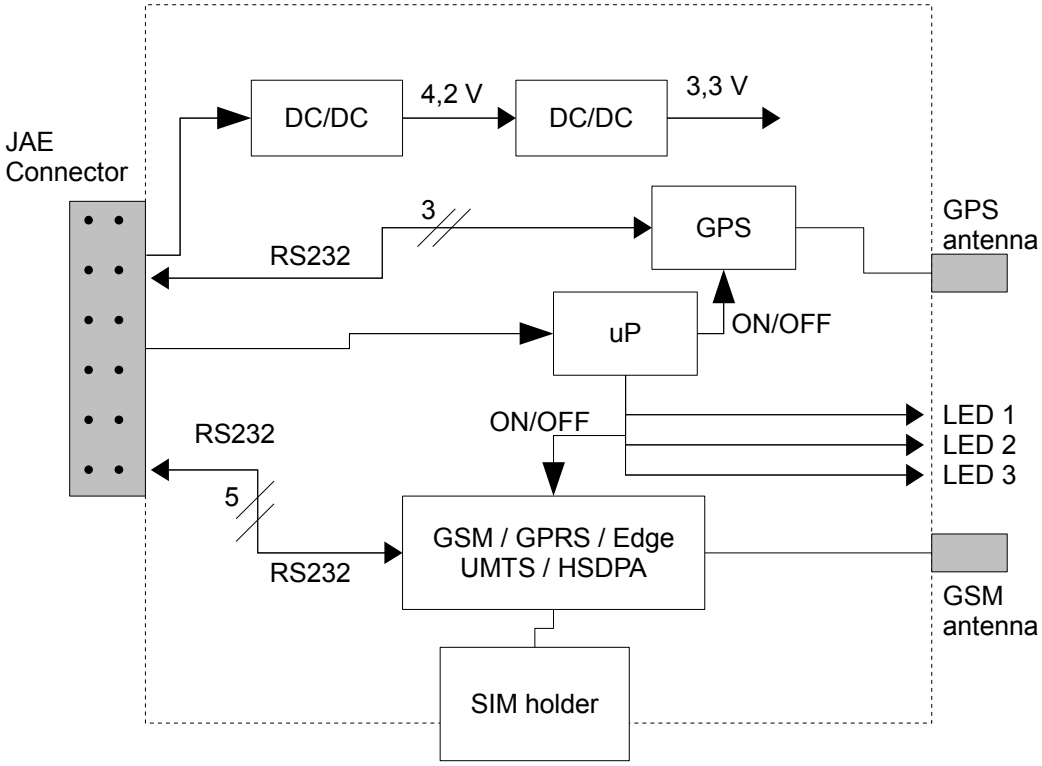
1 General description

1.1 Features

- Telit UC864-G 3.5G modem with quad-band support to GSM/GPRS/EDGE and tri-band UMTS/HSDPA.
- GPS receiver Fastrax IT500 with NMEA output.
- FAKRA RF connectors for GSM and GPS antennas.
- 14 pin JAE system connector for power, ON/OFF and serial ports.
- Wide input voltage range, 8-32 V.
- Low power sleep mode.

1.2 Simplified block diagram



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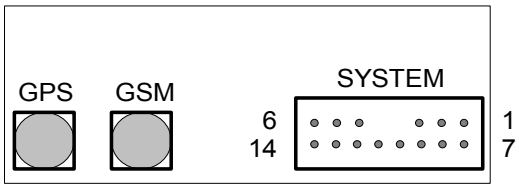
2 Connectors

2.1 Antenna connectors

Antennas are connected with FAKRA connectors. Blue FAKRA for the GPS and bordeaux FAKRA for the GSM/GPRS.

2.2 Connection layout



2.3 Modem connector

The MX-1 VB 3G includes an integrated universal serial bus (USB) transceiver, compliant with USB 2.0 specifications and supporting the USB Full-Speed (12 Mb/s) mode. In HSDPA mode, the downlink data speed rates up to 7.2Mbps.

Connector on the PCB: USB Type B Connector

2.4 System connector

Pin	Function	Comment
1	RTS modem	RS-232 input, connect to host computer output
2	CTS modem	RS-232 output, connect to host computer input
3	RX modem	RS-232 output, connect to host computer input
4	TX modem	RS-232 input, connect to host computer output
5	Ground	System ground to Input Voltage
6	Input voltage	12 or 24 V DC
7	N/A	
8	N/A	
9	N/A	
10	Ground	Ground for NMEA serial port
11	NMEA output	RS-232 output from NMEA GPS (4800 Baud)
12	NMEA input	RS-232 input to NMEA GPS
13	ON/OFF Input	Signal to turn on or off GPS and modem.

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14	Ground	Ground for modem serial port

Mating connector: JAE IL-AG5-14S-D3C1-A

Connector on the PCB: JAE IL-AG5-14P-D3L2

Default baud rate for the modem serial port is 115 200 bit/s 8-N-1 with no flow control. Modem baud rate can be set using AT commands.

2.5 Audio connector

Pin	Function	Comment
1	V-EXT	Fused 8-32V output for external amplifier.
2	0V	Reference for V-EXT.
3	LINE-OUT+	Positive audio output.
4	LINE-OUT-	Negative audio output.
5	LINE-IN+	Positive audio input.
6	LINE-IN-	Negative audio input.

Mating connector: JAE IL-AG5-6S-S3C1

Connector on the PCB: JAE IL-AG5-6P-S3L2

3 ON/OFF operation

Turn on the MX-1 VB 3G by holding the ON/OFF pin in the system connector above 2,5 V. The MX-1 VB 3G has a start-up time of ~5 seconds before the modem is ready to receive AT commands and the GPS outputs NMEA messages.

Turn off the MX-1 VB 3G by holding the ON/OFF pin below 2,5 V for more than 4 seconds.

ON/OFF levels: Off 0 – 2,0 V

On 4,0 – 32 V

If the ON/OFF pin is not connected (or floating) the MX-1 VB 3G will be in OFF state. The ON/OFF pin is internally pulled down with a 10kΩ resistor.

4 Power

4.1 Power consumption

Normal operation (ON/OFF > 4,0 V): ~40 mA @ 24 V

OFF mode (ON/OFF < 2,0 V): ~1 mA @ 24 V

Note: Power consumption is depending on the amount of data that is transmitted. Please see the Telit UC864-G hardware manual for accurate power consumption calculations.

Note: When connecting an active GPS antenna the power consumption in normal operation increases slightly (~5 mA @ 24 V for a Plantech GPS antenna). The power consumption in OFF state is not affected by installing an active GPS antenna.

4.2 Input voltage

Input voltage range: 8 – 32 V DC

4.3 GPS battery backup

The MX-1 VB 3G includes an optional mounted internal GPS backup battery for GPS RAM backup. Installing a battery reduces the startup time for the GPS. When installing the MX-1 VB 3G with uninterrupted power (controlling on off with only the ON/OFF pin) there is no need for a battery since the internal power converter supplies the GPS with a backup voltage.

The battery is not mounted at delivery if not specially requested.

Recommended battery: 3 V, 210 mAh Q-LITE CR2032FTH15-2

5 LED indicators

Three green LEDs indicate the status for the MX-1 VB 3G:

- **GSM**. Indicates GSM/GPRS status.
  - Off — Modem turned off
  - 0.5s on / 0.5s off — Net search / Not registered / turning off
  - 0.3s on / 2.7s off — Registered full service
  - On — A call is active
- **GPS**. Indicates GPS operational state.
  - Off — GPS turned off or no fix available
  - 1 s on / 1 s off — GPS is outputting valid GPS fixes
- **PWR**. Indicates power state.
  - Off — MX-1 VB 3G turned off (no main power)
  - 100 ms on / 3 s off — Sleeping (main power, but ON/OFF input low)
  - 2 s on / 2 s off — Normal mode. GPS and Modem turned on.

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6 Enclosure

Material: Alumina body with plastic sides.

Dimensions: 114 x 85 x 37 mm (including connectors)

114 x 118 x 37 mm (Including mounting hoop)

Weight: 183 g.

7 Mounting

The MX-1 VB 3G can be mounted with the included mounting hoop. Mounting screws are not included.

8 GPS and GSM/GPRS performance

Please see specific performance characteristics at www.telit.com and www.fastrax.fi

9 GPS antenna

The MX-1 VB 3G support active GPS antennas and can supply the antenna with max 40 mA @ 3,3 V.