intelimax lite 4G

Lite 4G Serial Modem | MA-2060-4G

M2M 4G LTE Serial Modem MA-2060-4G
Hardware Specifications

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CONTACT INFORMATION

In keeping with RF Industries/Maxon's dedicated customer support policy, we encourage you to contact us.

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RF EXPOSURE ELECTRICAL SAFETY COMPLIANCE

The use of this device in any other type of host configuration may not comply with the RF exposure requirements and should be avoided. During operation, a 20 cm separation distance should be maintained between the antenna, whether extended or retracted, and the user's/bystander's body (excluding hands, wrists, feet, and ankles) to ensure RF exposure compliance. The modem is not designed for, nor intended to be, used in applications within 20 cm (8 inches) of the body of the user. Continued compliance of the equipment relies upon it being used with an AS/NZS 60950.1 approved SELV power supply.

Caution

Change or modification without the express consent of RF Industries Pty. Ltd. voids the user's authority to use the equipment. These limits are designed to provide reasonable protection against harmful interference in an appropriate installation. The modem is a transmitting device with similar output power to a mobile phone. This equipment generates, uses, and can radiate radio frequency energy and, if not used in accordance with instructions, can cause harmful radiation to radio communication. The modem is approved for use with the antenna: **ANT-SMA**. Unauthorized antennas, modifications, or attachments could impair call quality, damage the device, or result in violation of RF exposure regulations.

However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference in radio and television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving radio or TV antenna
- Increase the separation distance between the equipment and the receiver
- Contact RF Industries Maxon product Technical Support for assistance.

General Safety

RF Interference Issues: Avoid possible radio frequency (RF) interference by carefully following safety guidelines below:

- Switch OFF the modem when in an aircraft. The use of cellular telephones in aircraft is illegal. It may endanger the operation of the aircraft and/or disrupt the cellular network. Failure to observe this instruction may lead to suspension or denial of cellular services to the offender, legal action, or both.
- Switch OFF the modem in the vicinity of gasoline or diesel fuel pumps or before filling a vehicle with fuel.
- Switch OFF the modem in hospitals and any other place where medical equipment may be in use.
- Respect restrictions on the use of radio equipment in fuel depots, chemical plants, or in areas of blasting operations.
- There may be a hazard associated with the operation of your Modem in the vicinity of inadequately protected personal medical devices such as hearing aids and pacemakers. Please consult the manufacturers of the medical device to determine if it is adequately protected.
- Operation of the modem in the vicinity of other electronic equipment may cause interference if the equipment is inadequately protected. Observe any warning signs and manufacturers' recommendations.
- The modem contains sensitive electronic circuitry. Do not expose the modem to any liquids, high temperatures or shock. The modem is not waterproof. Please keep it dry and store it in a cool, dry place.
- Only use original accessories or accessories that are authorized by the manufacturer. Using unauthorized accessories may affect your modem's performance, damage your modem and violate related national regulations.
- Always handle the modem with care. There are no user serviceable parts inside the modem. Unauthorised dismantling or repair of the modem will void the warranty.

- The product needs to be supplied by a limited power source or the power supply provided. Otherwise, safety will not be ensured.
- Do not fixed the product in an open area where it is liable to lightning strike hazard.

Vehicle Safety

- Do not use the modem while driving.
- Respect national regulations on the use of cellular telephones in vehicles. Road safety always comes first.
- If incorrectly installed in a vehicle, the operation of the modem could interfere with the

correct functioning of vehicle electronics. To avoid such problems, be sure that the installation has been performed by qualified personnel.

- Verification of the protection of vehicle electronics should be part of the installation.

Note: The user is cautioned that changes or modifications not expressly approved by RF Industries could void the warrantee.

Potentially Unsafe Areas

Posted Facilities: Turn off this device in any facility or area when posted notices require you to do so.

Blasting Areas: Turn off your device where blasting is in progress. Observe restrictions and follow any regulations or rules.

Potentially Explosive Atmospheres: Turn off your device when you are in any area with a potentially explosive atmosphere. Obey all signs and instructions. Sparks in such areas could cause an explosion or fire, resulting in bodily injury or death.

Areas with a potentially explosive atmosphere are often but not always clearly marked. They include:

- Fuelling areas such as gas or petrol stations
- Below deck on boats
- Transfer or storage facilities for fuel or chemicals
- Vehicles using liquefied petroleum gas, such as propane or butane
- Areas when the air contains chemicals or particles such as grain, dust or metal powders
- Avoid using the modem in areas that emit electromagnetic waves or enclosed metallic structures e.g. lifts.
- Any other area where you would normally be ad

DISCLAIMERS

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In no event will RF Industries be liable for any damages arising directly or indirectly from any use of information contained in this document. Information in this document is preliminary and subjected to change without any notice.

Life support – This product is not designed for use in life support appliances or systems where malfunction of these products can reasonably be expected to result in personal injury.

RF Industries customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify RF Industries for any damages resulting from such application.

Right to make change - RF Industries reserves the right to make changes, without notice, in the products, including circuits and software, described or contained herein in order to improve design and/or performance.

Some features outlined in this manual may require an updated firmware version and/or GUI version to work. Please contact RF Industries for more information.

REVISION HISTORY

Product	IntelimaxLITE 4G M2M Serial Modem
Model	MA-2060-4G
Document Type	PDF
Current Version Number	1.00
Status of the Document	Preliminary Release
Revision Date	April 2017
Total Number of Pages	19

Revision History

Level	Date	History
1.00	April 2017	Preliminary Release

PRODUCT OVERVIEW

IntelimaxLITE 4G is a unique and intelligent fusion of 4G LTE capabilities with advanced functionality of a modem/router in a smart and compact design.

Package Contents

- IntelimaxLITE 4G Modem
- Power/Serial Cable
- Side mounting brackets

Optional Accessories

- USB Cable
- SMA (Male) 4G Unity Gain Antenna
- AC power adapter

General Features

- FDD-LTE CAT1 Wireless Module (10.2Mbps downlink, 5.2Mbps uplink)
- 3G UMTS Fallback
- Packet Switched Data
- RS232 and RS485 (as separate model)
- 2 Way SMS
- Inbuilt TCP/IP, UDP/IP STACK
- AT over IP
- Remote / local user interface
- Remote SMS diagnostics & reset
- Programmable periodic reset and other watchdog features
- Save and restore modem configuration from a file
- One customer profile configuration
- FOTA - Firmware upgrade over the air
- Two External antennas to maximise cellular connectivity
- External LEDs to show Network and Connection status
- Rugged plastic casing for industrial use

Frequency Bands

- FDD-LTE CAT1 700MHz(B28), 850MHz(B5), 900MHz(B8), 1800MHz(B3)
- UMTS/HSPA+   850MHz(B5), 900MHz(B8), 2100MHz(B1)

Data Speeds

- LTE CAT1:   UL 5.2Mbps max. / DL 10.2Mbps max.
- HSPA+:   UL 5.76 Mbps max. / DL 7.2 Mbps max.

Connections

- Serial Connection over RJ45
- USB Connection
- SIM Card Holder
- Antenna connector: SMA female x 2

LED Lights

- Power / RSSI
- Data

Operating Systems

- Windows XP/ Vista / 7 / 8 / 10

Power Source

- DC Input Voltage Range: 5 to 48 VDC with ±10% tolerance
- Idle Current: 20mA @ 12V
- Maximum Current: 220mA @12V

Mounting

- Side mounting brackets

Approvals / Compliances

- RCM (both modem and module)
- FCC (module only)
- PTCRB (module only)
- GCF (module only)
- CE (module only)
- RoHS (both modem and module)
- Carrier Approvals*   - (Please contact RF Industries for more information)

PRODUCT SPECIFICATIONS

Hardware Specifications

Item	Specification
Product Name	IntelimaxLITE 4G Modem MA-2060-4G
Cellular Module	Four Band FDD-LTE CAT1 Module
Processor	Module Processor
Reverse polarity protection	Supported
USB port	Mini B USB Connector, USB 2.0 Compliant
LED	POWER/RSSI (Red) DATA (Red)
Antenna connector	SMA Female x 2
Serial Interface	RJ45 port to provide Power and RS-232 / RS-485 connectivity
RS-232	Provides RxD, TxD, CTS, RTS, DCD, and DTR
RS-485	Full/Half Duplex
SIM socket	Push to lock, push to release

Electrical specifications

Maximum Ratings:

Voltage Input on RJ45 (VIN):   54V
USB voltage (VUSB):   5.5V
RS-232 lines:

Receiver: -25V to +25V
Driver: -13V to +13V

RS-485 lines:

Receiver: -25V to +25V
Driver: -8V to +13V

Recommended Operating Voltages:

Voltage Input on RJ45 Connector (VIN):   5V ~ 48V
USB voltage (VUSB):   5V

Typical Operating current: (at 20°C, -93dBm RX power)

VIN	Active mode*	Idle mode*	Sleep mode
5VDC	300mA	75mA	50mA
12VDC	120mA	30mA	20mA

* Dependant on RF conditions.

Power Polarity Protection

The modem has reverse polarity protection built in to the circuit. However, powering the modem incorrectly could still damage the modem and the power supply connecting to it. It is recommended to use a fused power supply.

RF specifications

IntelimaxLITE 4G connector RF loss is less than 1dB at supported bands. All the other RF related specifications follow the 4G module.

Mechanical Specifications

Dimensions	80 x 55 x 26 mm
Weight (without Antenna)	75g ±2g (Including brackets)
Housing Material	Polycarbonate (plastics)

Environment Specifications

Operating temperature range: -30 °C ~ 60 °C
Extended temperature range: -40 °C ~ 60 °C
Storage temperature range: -40 °C ~ 60 °C

RoHS compliance

All components and production materials used in Intelimax are RoHS compliant.

LED FUNCTIONALITY

Power / RSSI LED will be ON when powered, and both PWR/RSSI and DATA LEDs will blink for a short time under following scenarios:
1. After boot up
2. Reset button is held for more than 5 seconds, and
3. Reset button is held for more than 20 seconds

During normal operation, the PWR/RSSI and DATA LEDs will show the status asper the tables below:

Signal Strength	PWR/RSSI LED
SIGNAL > -84dBm	SOLID ON
-89dBm < SIGNAL ≤ -84dBm	800ms ON 200ms OFF
-96dBm < SIGNAL ≤ -89dBm	600ms ON 400ms OFF
-101dBm < SIGNAL ≤ -96dBm	400ms ON 600ms OFF
SIGNBAL ≤ -101dBm	200ms ON 800ms OFF
SIM Not Registered	400ms ON 600ms OFF

Connection Status	Data LED
IP STACK IDLE SERIAL MODEM IDLE	OFF
IP STACK ONLINE SERIAL MODEM CONNECTED	1s ON 1s OFF

MODEM CONNECTIONS

RJ45 Connector (Serial and Power)

RS232 interface

Name	Description	
Pin 1	POWER	5 ~ 48V DC input
Pin 2	DCD	Data Carrier Detect
Pin 3	DTR	Data Terminal Ready
Pin 4	GND	Power Ground
Pin 5	TXD	Transmit Data
Pin 6	RXD	Receive Data
Pin 7	CTS	Clear to Send
Pin 8	RTS	Request to Send

Note: Pin descriptions are as on DCE (modem) side.

Note: option is availbe for swapped RTS and CTS pinouts when order. Please contact RF Industries for details.

RS485 Interface

Name	Description	
Pin 1	POWER	5 ~ 48V DC input
Pin 2	N.C.	Data Carrier Detect
Pin 3	N.C.	Data Terminal Ready
Pin 4	GND	Power Ground
Pin 5	T+ / D+	Non-inverting Output / Non-inverting Output and Receive
Pin 6	R+ / D+	Non-inverting Receive / Non-inverting Output and Receive
Pin 7	T– / D–	Inverting Output / Inverting Output and Receive
Pin 8	R– / D–	Inverting Receive / Inverting Output and Receive

N.C. means Not Connected

USB Connector

Mini B type USB port and supports USB 2.0.

Switch

Reset Button for restoring Profile and Factory settings.

Antenna Connection

Two SMA female antenna connectors

SIM Slot

The SIM card slot uses a push in push out mechanism for SIM cards. The modem does not support a SIM tray and no tools are required for installing the SIM Card.
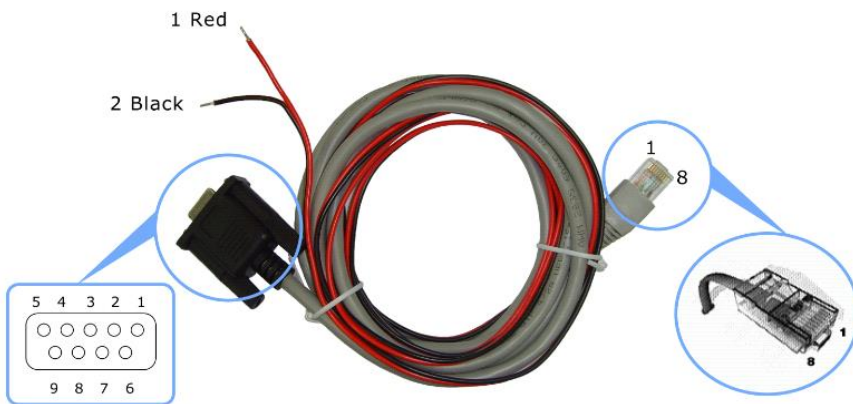
Side Mounting Brackets

The modem comes with two removable side mounting brackets. These can be used to mount the modem.

Power & Serial Cable

DB9 Female Connector

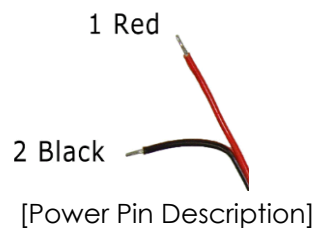| Name	Description	Other
Pin 1	DCD	
Pin 2	RXD	
Pin 3	TXD	
Pin 4	DTR	
Pin 5	GND	
Pin 6	DSR	N.C
Pin 7	RTS	
Pin 8	CTS	
Pin 9	RI	N.C

[DB9 Pin Description]

N.C. means Not Connected

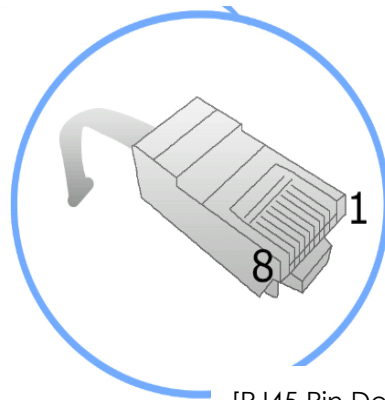**Note**: Pin description are as on DTE (Computer) side.

Power Connection

Name	Description	Other
1- RED	VCC	
2- BLACK	GND	

[Power Pin Description]

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RJ45 Jack

Name	Description	Other
Pin 1	VCC	Power
Pin 2	DCD	
Pin 3	DTR	
Pin 4	GND	Ground
Pin 5	TXD	
Pin 6	RXD	
Pin 7	CTS	
Pin 8	RTS	

[RJ45 Pin Description]

Note: Pin descriptions are as on DCE (modem) side.

Note: Pin 7 and 8 can be RTS and CTS depending on the modem. Refer to RJ45 connector description on page 15.

Mechanical Diagram