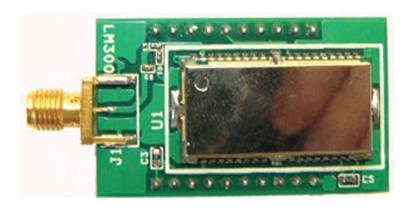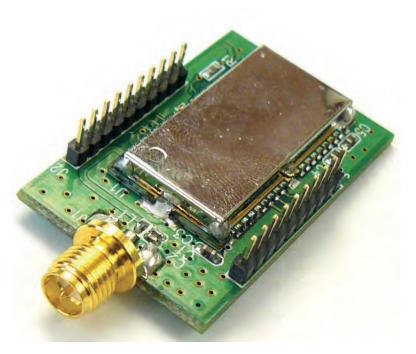## LM410 Class 1 Bluetooth SPP Plug n Play Module
External SMA Antenna, 2x10 pin connector

Product: LM410
Part No: 410-0200 for BT2.0 F/W
Datasheet Rev1.1/13-11-13

Bottom View

Top View

Side View

1   General Description

The LM410 is Class 1 Bluetooth2.0 + EDR module with external SMA connector. The Bluetooth function is based on CSR BlueCore 04 chipset which implements full speed Class 1 bluetooth operation with a support of upto 3 simultaneous connections while running full Bluetooth stack in the module. The interface to the host system is UART. This module is suitable for serial port application which require 100-600 m range (depending on the antenna) and comes with Bluetooth 2.0+EDR compliant SPP firmware.

The default firmware is multiconnection firmware v7.xx series and supports up to 3 simultaneous connections

2 Features

- Used in LM Technologies Ltd Bluetooth Ethernet access point (LM300)
- CSR BlueCore4 chipset
- Bluetooth 2.0 + EDR support
- Full bluetooth data rate upto 3 Mbps
- Supports 3 simultaneous SPP connections while running complete bluetooth stack in the module
- External SMA antenna connector
- Hexadecimal Command set
- LM300 Manager Windows Application for Module Configuration
- Multipoint SPP firmware support - 3 simultaneous SPP Connections
- 3.0 to 3.6 V operation
- CSR Bluecore 04 (BC04) chipset
- Support 802.11 Co-existence
- RoHS Compliant
- Small Outline: 44 x 26 x 14 mm (without S MA Connector), 55 x 26 x 14 mm (with SMA connector)
- Interoperability with laptops, PDAs, Phones etc

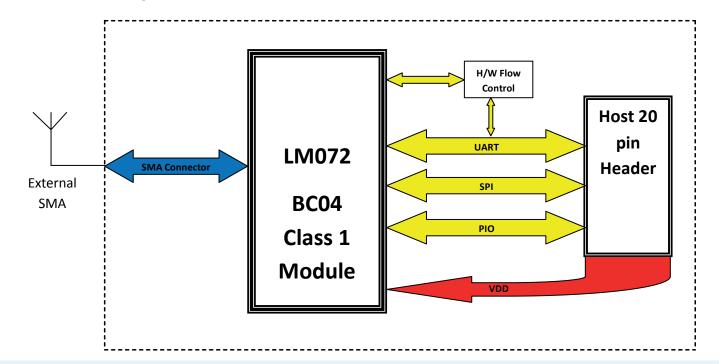### Application

- Serial Communications
- Serial Device Server

3 Packaging Options

Tray Packaging
Part No 400-0200

LM400 with BT2.0 + EDR multipoint firmware v7.xx

4 Block Diagram

5   Electrical Characteristics

Absolute Maximum Rating			
Parameter	**Min**	**Max**	**Unit**
Storage Temperature	-40	+85	°C
Supply Voltage (VDD)	+2.7	+3.6	DCV
Supply Voltage (PVCC)	+3.0	+3.3	DCV
All other pins	VSS-0.4	VDD + 0.4	DCV

Recommended Operating Conditions			
Parameter	**Min**	**Max**	**Unit**
Storage Temperature	-10	+70	°C
Supply Voltage(VDD)	+3.0	+3.6	DCV
Supply Voltage (PVCC)	+3.0	+3.6	DCV

General Electrical Specification					
Parameter	**Description**	**Min**	**Typical**	**Max**	**Unit**
Carrier Frequency		2.402		2.480	GHz
RF Output power	Measured with 50Ω ant	15	16.5	18	dBm
Rx Sensitivity		-	-88	-86	dBm
Load Impedance	No abnormal oscillation			5:1	
Input Low Voltage	RESET, UART, GPIO, PCM	-0.3	-	0.8	DCV
Input High Voltage	RESET, UART, GPIO, PCM	0.7VDD	-	VDD+0.3	DCV
Output Low Voltage	UART, GPIO, PCM	-	-	0.4	DCV
Output High Voltage	UART, GPIO, PCM	VDD-0.4	-	-	DCV
Average Current Consumption	Receive DM1		114		mA

6 Pin Assignments

Pin Definition for Header J2

VDD	TXD	RXD	SPICSB	RSTL	PIO5	SPIMOSI	SPICLK	DTR	GND
1	2	3	4	5	6	7	8	9	10

Pin No	Pin name	Direction	Description	Signal Level
1	VDD	Input	DC Input (3 ~ 3.3V)	Power
2	TXD	Output	UART Data output	TTL
3	RXD	Input	UART Data Input	TTL
4	SPICSB	Input	SPI Chip Select	TTL
5	RSTL	Input	Reset (Active Low)	TTL
6	PIO5	Input/output	Programmable IO	TTL
7	SPIMOSI	Input	SPI Master Output Slave Input	TTL
8	SPICLK	Input	SPI Clock	TTL
9	DTR	Output	UART Data Terminal Ready	TTL
10	GND		Ground	Ground

Pin Definition for Header J3

Pin No	Pin name	Direction	Description	Signal Level
1	PIO4	Input/output	Programmable IO	TTL
2	RTS	Output	UART Request to Send	TTL
3	PIO3	Input/output	Programmable IO	TTL
4	PIO2	Input/output	Programmable IO	TTL
5	PIO7	Input/output	Programmable IO	TTL
6	CTS	Input	UART Clear to Send	TTL
7	SPIMISO	Output	SPI Master Input Slave Output	TTL
8	PIO6	Input/output	Programmable IO	TTL
9	PIO9	Input/output	Programmable IO	TTL
10	PIO8	Input/output	Programmable IO	TTL

7   Factory Settings
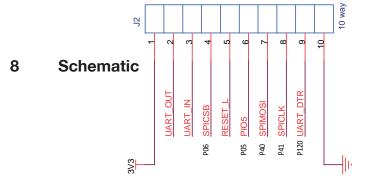
The factory settings of the COM Port are as follows:
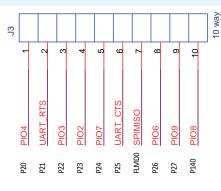
Baud Rate: 115200 bps
Data Bits: 8
Parity: None
Stop Bits: 1
Flow Control: Hardware
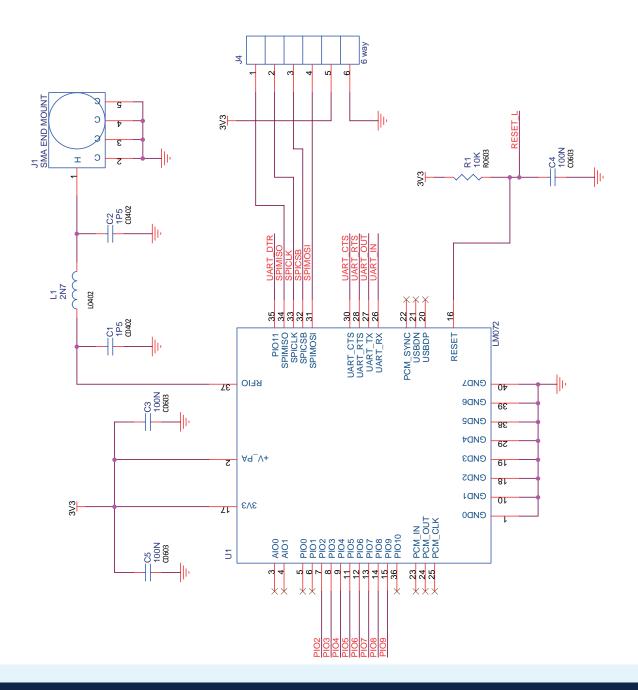
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8   Schematic

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9　Pinout from LM072 Module

Pin Number	Name	Type	Description
1	GND	Ground	Common Ground
2	PVCC	Power	Power Amp. Power supply (3.3V)
3	AIO 0	I/O	Programmable Input Output
4	AIO 1	I/O	Programmable Input Output
5	PIO 0	I/O	Programmable Input Output
6	PIO 1	I/O	Programmable Input Output
7	PIO 2	I/O	Programmable Input Output
8	PIO 3	I/O	Programmable Input Output
9	PIO 4	I/O	Programmable Input Output
10	GND	Ground	Common Ground
11	PIO 5	I/O	Programmable Input Output
12	PIO 6	I/O	Programmable Input Output
13	PIO 7	I/O	Programmable Input Output
14	PIO 8	I/O	Programmable Input Output
15	PIO 9	I/O	Programmable Input Output
16	RESET	CMOS Input	Reset Input of Module, Active Low
17	VCC	Power	Module input Supply, 3.3V DC
18	GND	Ground	Common Ground
19	GND	Ground	Common Ground
20	USB_DP	I/O	USB Data Plus
21	USB_DN	I/O	USB Data Minus
22	PCM_SYNC	I/O	Synchronous Data Sync
23	PCM_IN	CMOS Input	Synchronous Data Input
24	PCM_OUT	CMOS Output	Synchronous Data Output
25	PCM_CLK	I/O	Synchronous Data Clock
26	UART_RX	CMOS Input	UART Data Input
27	UART_TX	CMOS Output	UART Data Output
28	UART_RTS	CMOS Output	UART Request to Send (Active Low)
29	GND	Ground	Common Ground
30	UART_CTS	CMOS Input	UART Clear to Send (Active Low)
31	SPI_MOSI	CMOS Input	Serial Peripheral Interface Data Input
32	SPI_CSB	CMOS Input	Chip Select for Serial Peripheral Interface (Active Low)
33	SPI_CLK	CMOS Input	Serial Peripheral Interface Clock
34	SPI_MISO	CMOS Output	Serial Peripheral Interface Data Output
35	PIO 11	I/O	Programmable Input Output
36	PIO 10	I/O	Programmable Input Output
37	RF_IO	Analogue	Antenna Interface
38	GND	Ground	Common Ground

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This device complies with the following radio frequency and safety standards.

FCC Warning

This device complies with Part 15 of the FCC Rules. Operation is
subject to the following two conditions:
(1) this device may not cause harmful interference, and (2) this device must accept any
interference received, including interference that may cause undesired operation.

NOTE 1: Any changes or modifications to this unit not expressly approved by the party
responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled
environment. End users must follow the specific operating instructions for satisfying RF exposure
compliance.

Note 1: This module certified that complies with RF exposure requirement under mobile or fixed
condition, this module is to be installed in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed
locations and to generally be used in such a way that a separation distance of at least 20
centimeters is normally maintained between the transmitter's radiating structure(s) and the body of
the user or nearby persons. Transmitting devices designed to be used by consumers or workers that
can be easily re-located, such as wireless devices associated with a personal computer, are
considered to be mobile devices if they meet the 20 centimeter separation requirement.

A fixed device is defined as a device is physically secured at one location and is not able to be
easily moved to another location.

Note 2: Any modifications made to the module will void the Grant of Certification, this module is
limited to OEM installation only and must not be sold to end-users, end-user has no manual
instructions to remove or install the device, only software or operating procedure shall be placed
in the end-user operating manual of final products.

Note 3: The device must not transmit simultaneously with any other antenna or transmitter.

Note 4: To ensure compliance with all non-transmitter functions the host manufacturer is
responsible for ensuring compliance with the module(s) installed and fully operational. For
example, if a host was previously authorized as an unintentional radiator under the Declaration of
Conformity procedure without a transmitter certified module and a module is added, the host
manufacturer is responsible for ensuring that the after the module is installed and operational the
host continues to be compliant with the Part 15B unintentional radiator requirements. Since this

may depend on the details of how the module is integrated with the host, ASK PROXIMA CO., LIMITED shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

Note 5: FCC ID label on the final system must be labeled with "Contains FCC ID: VVXLM410" or "Contains transmitter module FCC ID: VVXLM410".

The transmitter module must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the host product. LM Technologies Ltd. is responsible for the compliance of the module in all final hosts.

That separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.