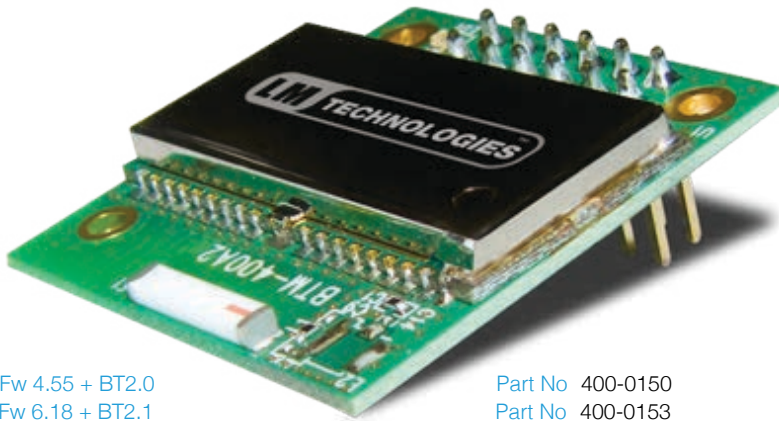




LM400 Plug & Play Bluetooth SMT Module Class 1 with IC Antenna

Series Number LM400
 Fw 4.55 + BT2.0 400-0150
 Fw 6.18 + BT2.1 400-0153
 Revised 18/MAR/2015



Fw 4.55 + BT2.0
 Fw 6.18 + BT2.1

Part No 400-0150
 Part No 400-0153

Features

- CSR BlueCore 4
- Bluetooth 2.0 / EDR Support
- Full Speed Class 1 Bluetooth operation with full 7 slave piconet
- Transmit Power up to 18dBm class 1
- 3.0 to 3.6V Operation
- SPP Firmware
- 802.11 Co-existence
- RoHS Compliant
- Low Power Consumption: Hold, Sniff, Park, Deep Sleep Mode

- Small Outline 30mm x 27mm x 14mm
- Interoperability with laptops, PDA's, Phones etc.
- Data Rate up to 3Mbps
- Up to 100m range in open space
- No Host Stack required, robust design, low cost solution

Applications

Serial Communications
 Bluetooth Enabled Printers
 GPS, POS and Barcode Readers
 Domestic and Industrial Applications

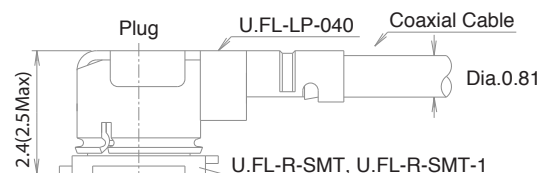
Overview

The LM400 by LM Technologies® is designed to provide Bluetooth 2.0 + EDR function on a small form factor. The Bluetooth function is based on CSR BlueCore4-Ext Bluetooth System, which implements full speed class 1 Bluetooth operations with full 7 slave piconet support. The module is being used in various applications such as: RS232 cable replacement, Wireless Factory monitoring, Truck/-Bus monitoring systems, PLC programming, Car Diagnostics, Wireless Printing, Wireless POS system, Wireless logistics, Wireless machines (healthcare/industrial) for monitoring.

See LM411 for U.FL and IPEX

Although many users may request U.FL receptacle for compatibility reasons, U.FL is in fact a trade name of a series of connectors manufactured and owned by HIROSE. IPEX connectors are identical in every dimension and is an international standard and will connect seamlessly with branded U.FL Connectors.

Our IPEX receptacles are manufactured to the highest standard using high grade materials for insulating and plating, a full breakdown of the materials used including Phosphor, Bronze, Gold and Brass can be supplied by request.





LM400 Plug & Play Bluetooth SMT Module Class 1 with IC Antenna

Series Number LM400
 Fw 4.55 + BT2.0 400-0150
 Fw 6.18 + BT2.1 400-0153
 Revised 18/MAR/2015

Packaging Options

Bluetooth 2.0 Tray - Module Only
 Part No 400-0150

1 x LM400 Bluetooth Module
 Firmware 4.55 BT2.0

Bluetooth 2.1 Tray - Module Only
 Part No 400-0153

1 x LM400 Bluetooth Module
 Firmware 6.18 BT2.1

- User Guides, Manuals and Wdcomm Configuration Software available to download via our website - <http://www.lm-technologies.com/support/downloads>

General Specification

Chipset	CSR Bluecore 4 (BC04)
Power Classification	Class 1
Module Type	Plug & Play 12 Pin Male Header
Bluetooth Specification	Core v2.0 + EDR backward compatible with Bluetooth 1.1/1.2
Frequency	2402 - 2480 Mhz
Temperature Range	-10° to +70°C
Data Rate	Up to 3 Mbps in HCI Mode
Range	Up to 100m in open space
Rx Sensitivity	-88 dBm typical
Antenna	Onboard
Voltage Operation	3.0 - 3.6V
Average Current Consumption (Receiving Data)	114mA
Power Output	+18 dBm
Default Firmware	v4.55 (BT2.0) or 6.18 (BT2.1)
Bluetooth Profile	Serial Port Profile (SPP)
Interface	UART
Connector Type	12 pin male 2 x 6
Serial Parameters	Default 19200 8 N 1, flow: RTS/CTS
UART Lines	TxD, RxD, GND, CTS, RTS
Baud Rates	1200,2400,4800,9600,19200,38400,57600,115200,230400,460800,921600bps
Configuration	via AT Command Interface
Flash memory	8MB
RoHS Compliant	Yes



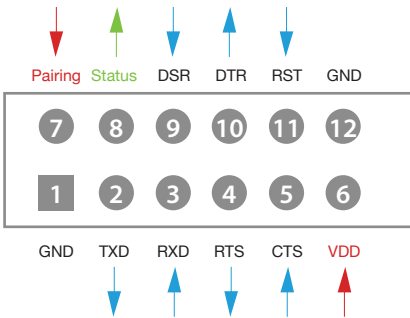
LM400 Plug & Play Bluetooth SMT Module Class 1 with IC Antenna

Series Number LM400

Fw 4.55 + BT2.0 400-0150
Fw 6.18 + BT2.1 400-0153

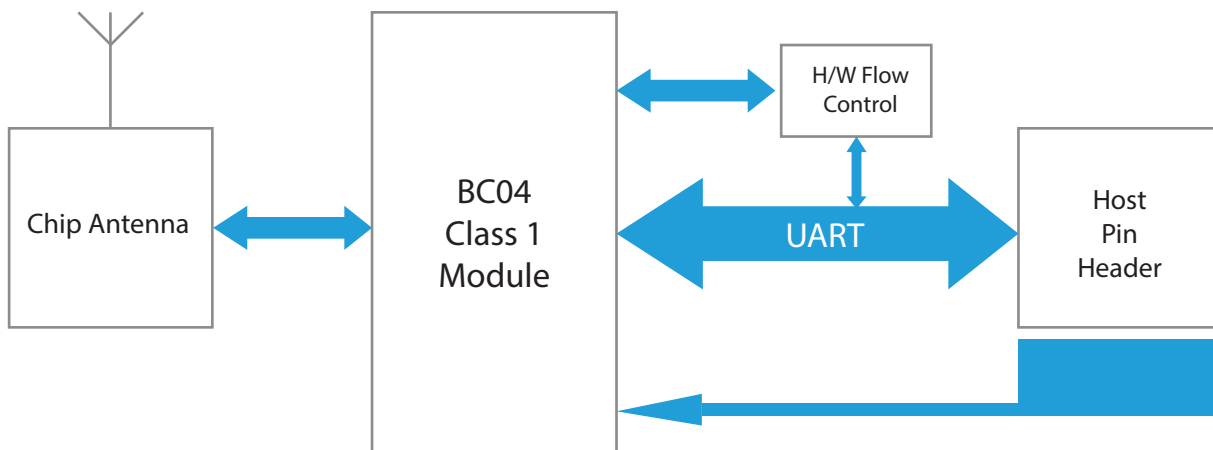
Revised 18/MAR/2015

Pinout and Definition for Header



Pin	Pin Name	Direction	Description	Signal Level
1	GND	-	Power Ground	Ground
2	TXD	Output	UART data output	TTL
3	RXD	Input	UART data input	TTL
4	RTS	Output	UART ready to send	TTL
5	CTS	Input	UART clear to send	TTL
6	VDD	Input	DC input (3.0 ~ 3.3V)	Power
7	Pairing	Input	Pairing input (Active Low)	TTL
8	Status	Output	Bluetooth Connect Detect (Active Low)	TTL
9	DSR	Input	Data Set Ready	TTL
10	DTR	Output	Data Terminal Ready	TTL
11	RST	Input	Reset (Active Low)	TTL

Bluetooth Block Diagram





LM400 Plug & Play Bluetooth SMT Module Class 1 with IC Antenna

Series Number LM400

Fw 4.55 + BT2.0 400-0150
Fw 6.18 + BT2.1 400-0153

Revised 18/MAR/2015

Power Consumption

Absolute Maximum Ratings	Min	Max	Units
Storage Temperature	-40	+85	°C
Supply Voltage (VDD)	2.7	3.6	DCV
Supply Voltage (PVCC)	3.0	3.3	DCV
Other Pin Voltage	VSS - 0.4	VDD + 0.4	DCV

Recommended Operating Conditions	Min	Max	Units
Temperature	-10	+70	°C
Supply Voltage for UART	3.0	3.6	DCV
Supply Voltage for USB	3.0	3.6	DCV

General Electrical Specification

Parameter	Description	Min	Typ.	Max	Unit
Carrier Frequency	-	2.402	-	2.480	GHz
RF Output Power	Measured in 50ohm	15	16.5	18	dBm
Rx Sensitivity	-	-	-88	-86	dBm
Load Impedance	No abnormal Oscillation	-	-	5:1	-
Input Low Voltage	RESET, UART, GPIO, PCM	-0.30	-	0.80	DCV
Input High Voltage	RESET, UART, GPIO, PCM	0.7VDD	-	VDD+0.3	DCV
Output Low Voltage	UART, GPIO, PCM	-	-	0.40	DCV
Output High Voltage	UART, GPIO, PCM	VDD-0.4	-	-	DCV
Average Current Consumption	Receive DM1	-	114	-	mA



LM400 Plug & Play Bluetooth SMT Module Class 1 with IC Antenna

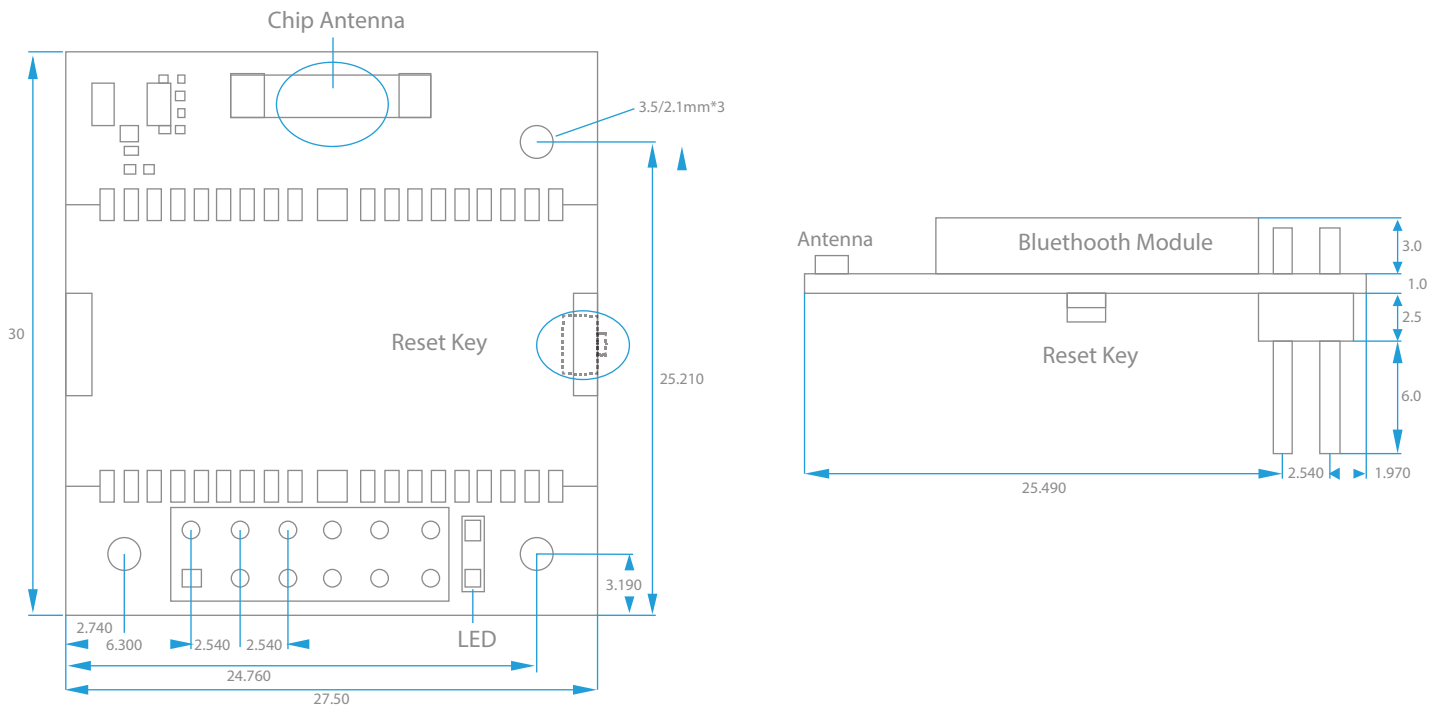
Series Number LM400

Fw 4.55 + BT2.0 400-0150
Fw 6.18 + BT2.1 400-0153

Revised 18/MAR/2015

Mechanical Dimensions

30mm x 25.5mm (L x W0 +/-0.15mm)



Notes

1. PIO10 DSR/DTR Don't use, they do not currently function.
2. PIO Pairing: The function has been changed to Data LED Indication
3. PIO6 Status: The function has not been specified.
4. LED: Bluetooth Link status.
5. RESET E
 - By pressing the Reset Button you do the following;
 - Disconnect and reconnect a wireless connection (A short press).
 - Restore the factory COM port 1 200bps settings (Press for over 3 seconds).



LM400 Plug & Play Bluetooth SMT Module Class 1 with IC Antenna

Series Number LM400

Fw 4.55 + BT2.0 400-0150
Fw 6.18 + BT2.1 400-0153

Revised 18/MAR/2015

Pin Outs

Pin	Pin Name	Type	Description
1	GND	GND	Common Ground
2	PVCC	Power	Power Amp. Power Supply (3.3V)
3	AIO 0	Bi-directional	Programmable I/O terminal, 32KHz sleep clock input
4	AIO 1	Bi-directional	Programmable I/O terminal
5	PIO 0	Bi-directional	Programmable I/O terminal, RX Enable
6	PIO 1	Bi-directional	Programmable I/O terminal, Tx Enable
7	PIO 2	Bi-directional	Programmable I/O terminal, USB_PULL_UP, CLK_REQ_OUT
8	PIO 3	Bi-directional	Programmable I/O terminal, USB_WAKE_UP, CLK_REQ_IN
9	PIO 4	Bi-directional	Programmable I/O terminal, USB_ON, BT_PRIORITY/CH_CLK output for co-existence signalling
10	GND	GND	Common Ground
11	PIO 5	Bi-directional	Programmable I/O terminal, USB_DETACH/, BT_ACTIVE output for co-existence signalling
12	PIO 6	Bi-directional	Programmable I/O terminal, CLK_REQ, WLAN_ACTIVE/CH_DATA input for co-existence signalling
13	PIO 7	Bi-directional	Programmable I/O terminal
14	PIO 8	Bi-directional	Programmable I/O terminal
15	PIO 9	Bi-directional	Programmable I/O terminal
16	RESET	CMOS input	Reset input of module, Active Low Reset
17	VCC	Power	Module Power Supply input
18	GND	GND	Common Ground
19	GND	GND	Common Ground
20	USB_DP	Bi-directional	USB data plus
21	USB_DN	Bi-directional	USB data minus
22	PCM_SYNC	Bi-directional	Synchronous data sync
23	PCM_IN	CMOS input	Synchronous data input
24	PCM_OUT	CMOS output	Synchronous data output
25	PCM_CLK	Bi-directional	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	GND	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 Synchronous Serial Interface (active low)
33	SPI_CLK	CMOS input	Serial Peripheral Intercafe Clock
34	SPI_MISO	CMOS output	Serial Interface data output
35	PIO 11	Bi-directional	Programmable I/O terminal
36	PIO 10	Bi-directional	Programmable I/O terminal
37	RF_IO	Analogue	Antenna interface
38	GND	GND	Common Ground



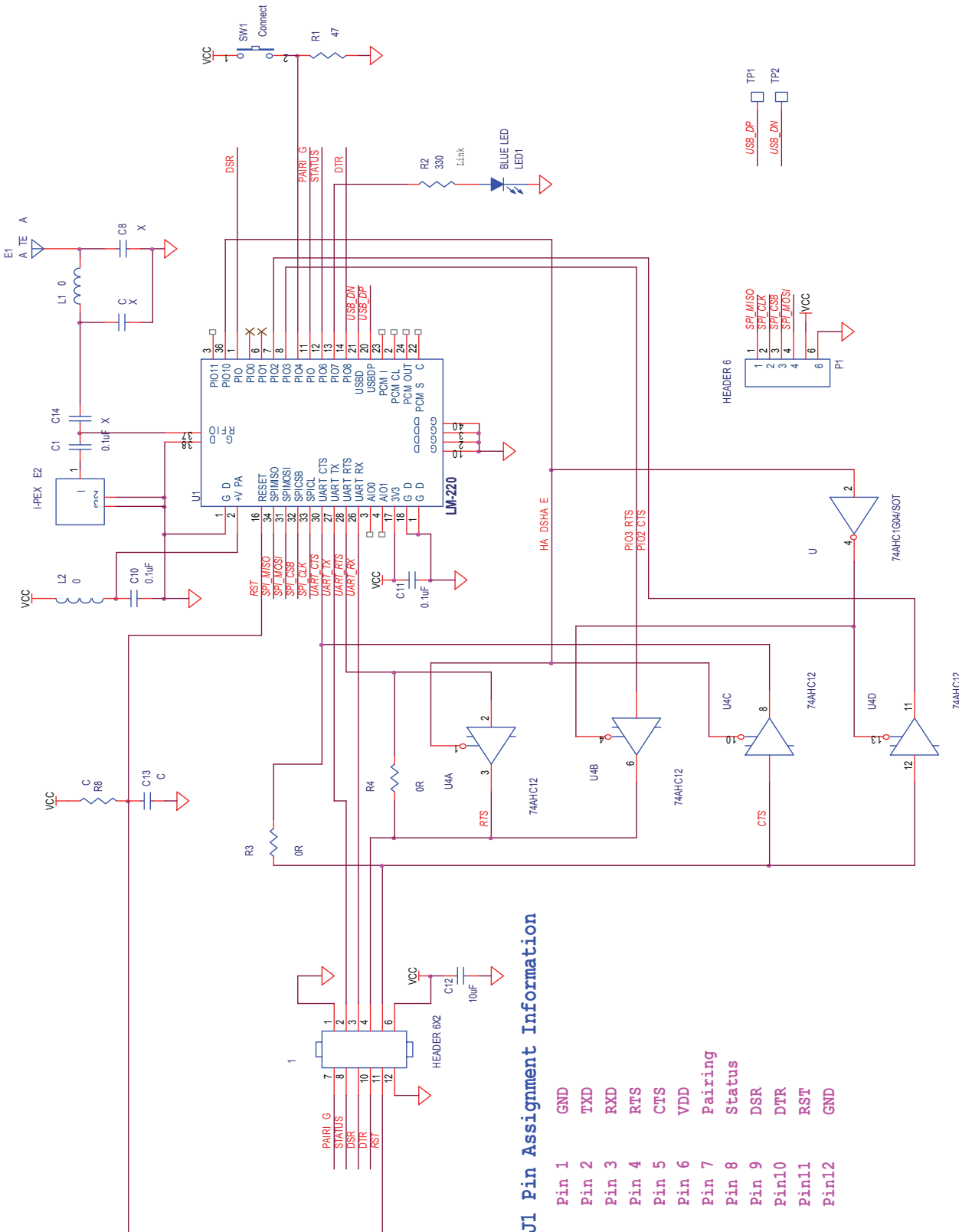
LM400 Plug & Play Bluetooth SMT Module Class 1 with IC Antenna

Series Number LM400

Fw 4.55 + BT2.0 400-0150
Fw 6.18 + BT2.1 400-0153

Revised 18/MAR/2015

Schematic



J1 Pin Assignment Information

Pin 1	GND
Pin 2	TXD
Pin 3	RXD
Pin 4	RTS
Pin 5	CTS
Pin 6	VDD
Pin 7	Pairing
Pin 8	Status
Pin 9	DSR
Pin 10	DTR
Pin 11	RST
Pin 12	GND