



LM300 Bluetooth Ethernet Access Point/ Server

3 simultaneous Bluetooth SPP connections

Product: LM300
Part No: 300-0361

1 Features

LM300 Server Features

- Supports 10/100 Mbps Ethernet
- Supports RS-232, RS-422 and RS-485 serial interface
- Supports LAN and WAN Communications
- In Server mode supports individual client sessions for security
- Virtual COM Drivers for Windows ME/2000/XP/VISTA/7
- Support socket connection, TCP Server, TCP client, and UDP
- Support upto 8 TCP connection in TCP Server mode
- Heart beat connection ensures reliable TCP connection against power failure or disruption
- Supports loop back mode. Data is looped back for testing connection easily
- Supports Serial Console, Web Console, Telnet* or Virtual COM port configuration using GUI Application
- Firmware upgrade supported over Virtual Serial Port
- Access physical or Bluetooth serial devices anywhere by adding the Server to LAN/WAN without the need of physically connecting to PC Serial Port
- Windows Utility (LM300 Manager Software) provided for configuration and testing
- CE, FCC, RoHS approved product

Bluetooth Features

- Supports 3 simultaneous Bluetooth SPP Connections
- CSR Bluecore 04 (BC04) chipset
- Bluetooth 2.0 + EDR compliant module
- Multiconnection firmware hexadecimal Command set provided for module configuration
- Control 3 wireless devices from anywhere on LAN/WAN
- Class 1 Bluetooth Plug and Play Module with External SMA Antenna
- 2 dBi Antenna provided by default
- Up to 100m range in open space
- 802.11 Coexistence supported

*: Telnet configuration supported only on Windows XP



2 Description

The LM300 Bluetooth Ethernet Access Point bridges Serial or Bluetooth devices to the Ethernet LAN/WAN. Existing Serial devices are no longer limited to physical connection to PC COM port. They can be installed anywhere on the LAN using TCP/IP or UDP/IP communication. The LM300 Manager Software installs 2 virtual serial ports on the PC to communicate with the LM300. One serial port is mapped to the physical serial port on LM300 and the other port is mapped to the Bluetooth module inside LM300. Hence, the LAN becomes transparent to the serial Device and the software running on PC. The LM300 can be configured as a TCP or UDP Client/Server. In Direct IP and virtual COM modes, LM300 should be configured as a server. LM300 also offers Heart beat feature to ensure reliable communication.



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The LM300 contains the LM Technologies LM410 Bluetooth Module which is programmed with Multiconnection SPP firmware. The Bluetooth Module is a Class 1 module with external SMA Antenna. It can attain a range of up to 100 m in open space. The firmware allows maximum 3 simultaneous SPP connections. Hence it is possible to control up to 3 Bluetooth devices remotely over LAN/WAN using the LM300 Bluetooth Ethernet Server.

The Direct IP, Virtual COM & Paired Mode and Heartbeat protocol are explained below.

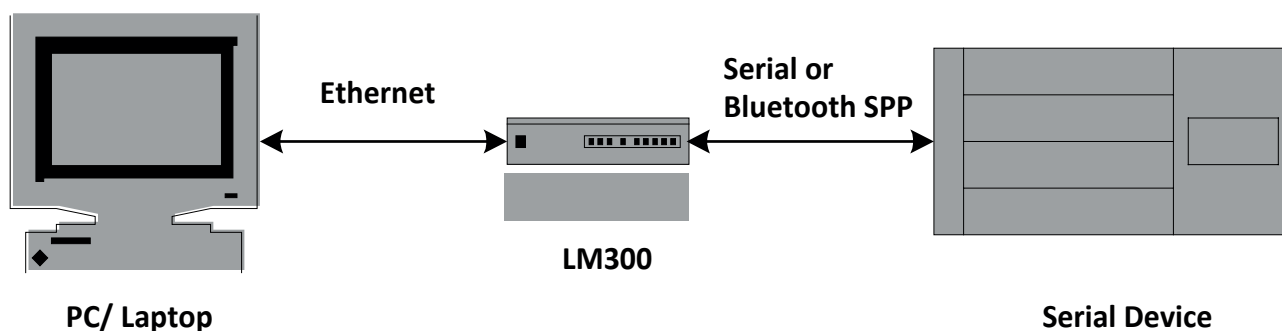
Direct IP Mode

Direct IP Mode Connections allow the applications using TCP/IP or UDP/IP network socket programs to communicate with the synchronous Serial Port on the LM300. In this type of application the LM300 is configured to TCP or UDP server. The socket program running on the PC establishes a communication connection with the LM300. The raw data is sent directly to and from the serial port.

Virtual COM Mode

The virtual COM mode requires the installation of a virtual COM port device driver. The LM300 Manager Software installs 2 virtual serial ports in the Device Manager. One serial port is mapped to the physical Serial Port in LM300 and other is mapped to the bluetooth module inside LM300. The PC will act as a host connecting to LM300 when the program opens Virtual COM port.

In this mode, the LM300 must be set either to TCP or UDP server in the menu with a designated Serial Port number. The virtual COM driver is a TCP or UDP client.



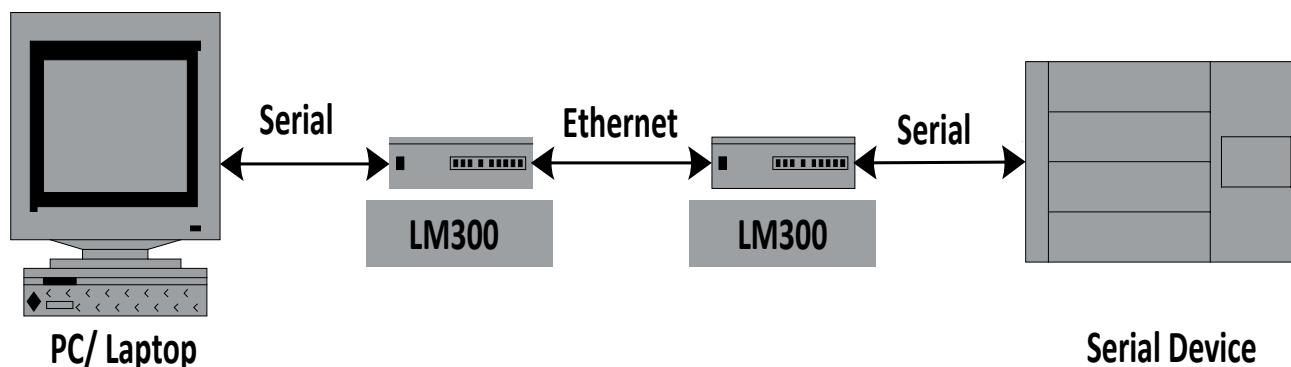
In virtual COM mode, the LAN becomes transparent to the serial device. Applications work just as if the serial device is connected to the host's physical COM port. The virtual COM port converts the application data into IP Packet destined for the LM300, which in turn converts the IP packets back to serial data.

Paired Mode

Paired Mode is also called serial tunneling. When this type of configuration is selected, no additional software is needed to be installed on the host PC. Infact a PC is not required to make the connection. Any two dumb serial devices that can communicate with each other through a serial link will be able to communicate using two LM300 Server and the LAN.



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Two LM300s are configured with one setup as a TCP or UDP client and other setup as TCP/UDP server. When setting up the server, the remote IP address section must contain the address of the client. This will allow the Client's IP address to pass the IP address filtering feature of the Server. Conversely, the Remote IP address of the client must contain the Server's IP address.

Heartbeat Protocol

The LM300 provides a convenient way to establish a reliable communications between two devices. Communications port 5300 is reserved for the Heartbeat protocol. If loss of connection occurs, the heartbeat protocol lets the LM300 know of a connection failure, hence ensuring reliable communication. If a loss occurs, the Heartbeat feature will try to reconnect the TCP data connection every 5 seconds until communication is established again. The heartbeat feature is available when using Direct IP, Virtual COM or Paired Mode. This is not available when using UDP application.

3 Packaging

Part No 300-0361

- 1 x LM300 with BT2.0 + EDR firmware
- 1 x 2dBi Antenna
- 1 x CD with Software and Driver
- 1 x Power Supply

4 Specifications

Serial Buffer :

- Output : 64 KBytes
- Input : 8 KBytes per port

Serial Connections :

- DTE - DB9 Male

LAN :

- 10/100 Mbps Auto -detecting - 10 Base T, 100 Base Tx

Serial Interfaces :

- RS232 - Tx, Rx, RTS, CTS, DTR, DSR, GND
- RS422 - Tx+, Tx-, Rx+, Rx-, RTS+, RTS-, CTS+, CTS-, GND
- RS485 - DATA+, DATA-, GND

Mounting :

- DIN Panel or Rail

Data Rate :

- 110 bps to 230.4 kbps

Parity :

- None, Even, Odd, Mark, Space

Data Bits :

- 5,6,7 or 8

Stop Bits :

- 1, 1.5 or 2

Protocol :

- TCP, IP, ARP, DHCP, Telnet, HTTP, UDP, ICMP



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Management :

LM300 Manager Software, Serial Console,
Telnet, Web Server, Firmware Upgradable
over Virtual COM Port. Password access option
available

Dimensions :

3.35 in x 4.5 in x 0.9 in (8.5 cm x 11.5 cm x 2.3 cm)

Weight :

322 g

Power Requirement :

9 - 15 V DC
300 mA

Storage Temperature :

-20 C to 60 C

Operating Temperature :

0 to 50 C

Humidity :

0 to 90% Non Condensing

Range :

100 ft (30 m) Indoors/Urban Range
300 ft (100 m) Outdoors/Open space

Network Topology :

Star

Approvals :

CE, FCC

Bluetooth Specification :

Core v2.0 + EDR

Maximum Bluetooth Connections :

3 SPP Connections

Bluetooth Firmware :

Multiconnection SPP Firmware

Bluetooth Chip :

CSR Bluecore 4 (BC04)

Frequency Range :

2402 - 2480 MHz

Antenna :

External SMA Antenna

Rx Sensitivity :

-88 dBm Typical

Antenna Gain :

+2 dBm SMA Antenna (default)

Bluetooth Module Power Output :

+18 dBm Max

5 Default Settings

LM300 Server

Server name:	LMport-101
Serial number:	Fixed – see bottom label
Password:	Blank
DHCP:	Disable
IP address:	192.168.1.1
Netmask:	255.255.255.0
Gateway:	192.168.1.254
MAC address:	Fixed – see bottom label
Version & Date:	Current firmware version number and date
Protocol:	TCP
Serial timeout:	0 seconds
TCP alive timeout:	0 minutes
Connection mode:	Server
Delimiter HEX 1:	00
Delimiter HEX 2:	00
Force transmit:	0 ms
TCP/UDP port:	LMport-101 port 1: 4000
Serial port mode:	Console
Maximum connection:	1
Remote IP address:	255.255.255.255

Serial Port:	1
Baud rate:	9600
Data/Stop bits:	8/1
Parity:	None
Flow control:	None

Serial Port:	2
Baud rate:	115200
Data/Stop bits:	8/1
Parity:	None
Flow control:	RTS/CTS (Hardware)

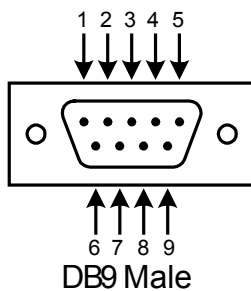


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Bluetooth Module

Name: LM BT ServerXXXX (XXXX = last 4 digits of Bluetooth Address of module)
Pin Code: 1234
Class of Device: 0x001F00 (Unclassified)
Max Data Chunk: 48 bytes
Connectable: YES
Auto Connect: YES
Security Mode: Authenticate and Encrypt
Pin Type: Fixed Pin
Connection Mode: Multiple
Data Transfer Mode: Streaming Mode
Discoverable Mode: Discoverable

6 Pin Out



DB9M Pin	RS232	RS422	RS485
1	DCD	RX-	--
2	RXD	RX+	--
3	TXD	TX+	DATA+
4	DTR	TX-	DATA-
5	GND	GND	--
6	DSR	CTS-	--
7	RTS	CTS+	--
8	CTS	RTS+	--
9	RI	RTS-	--

7 Application Diagram

