Preliminary

LG24E

2.4 GHz Wireless Ethernet Gateway

- **2.4 GHz FHSS DNT24/Ethernet Gateway**
- **Optional 128-Bit AES Encryption**
- **Point-to-point, Point-to-multipoint or Store and Forward Operation**
- **100 mW EIRP Transmitter Power**
- **10/100Base-T Auto-sensing Ethernet Port**
- **HTTP Posts, SimpleDB, XML and ModBus/TCP Support**

The LG24E is the RFM2M family's wireless Ethernet gateway for DNT24 2.4 GHz Frequency Hopping Spread Spectrum (FHSS) based products, including the SN24xx series sensor modems and the ZN-24M RS-485 serial modems. On the wireless side, the LG24E's DNT24 radio provides robust wireless communications. On the wired side, the LG24E provides a 10/100Base-T interface to connect to virtually any Ethernet network. In between is the intelligence to allow seamless integration of 2.4 GHz DNT24 based devices into network or Internet cloud based applications. The wide array of Ethernet and Internet protocols supported reduce the effort to tie LG24E networks into existing sensing and monitoring applications. The LG24E gateway shares the same API as the other RFM2M gateway products letting you pick the wireless technology that best suits your application with only a minimum of changes to your application.

Absolute Maximum Ratings

Rating	Value	Units
Power Supply Input Voltage Range	-5 to +30	V
Non-operating Ambient Temperature Range	-40 to +85	ºC

Electrical and Mechanical Specifications

Specification	Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency Range			2406		2475	MHz
Spread Spectrum Modulation			Frequency Hopping (FHSS)			
Modulation Type			FSK			
Number of RF Channels			15 or 24			
RF Data Transmission Rate			250			kbps
Receiver Sensitivity			-100			dBm
Transmitter EIRP Output Power Options with Supplied 2 dBi Antenna			10 or 100			mW
Optimum Antenna Impedance			50			Ω
Antenna Connector			Reverse SMA Male			
Access Scheme			Ad Hoc TDMA			
Network Topologies			Point-to-Point, Point-to-Multipoint, Store & Forward			
Network Integrity			Heartbeat Transmissions			
Encryption			128-bit AES			

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Electrical and Mechanical Specifications (continued)

Specification	Sym	Notes	Minimum	Typical	Maximum	Units
RJ-45 Ethernet Port			10/100Base-T, Auto-sensing			
Ethernet Protocol			TCP/IP, UDP, ARP, ICMP, DHCP			
Internet Protocol			ModBus/TCP, HTTP Posts, SimplexDB, XML			
USB Diagnostic Console Port			USB 2.0			
Power Supply Input Voltage Range	V_{CC}		+9		+30	VDC
Current Consumption					1.1	A
AC Power Supply			110/220 VAC Wall-plug Adaptor with International Plug Set			
Case Dimensions			7.30 x 4.67 x 1.5 inches (185.4 x 118.6 x 38.1 mm)			
Mounting			Left and Right Flanges, Two Pre-drilled Holes in Each Flange			
Operating Temperature Range			-40		+85	ºC
Operating Relative Humidity Range		1	5		95	%

Notes:

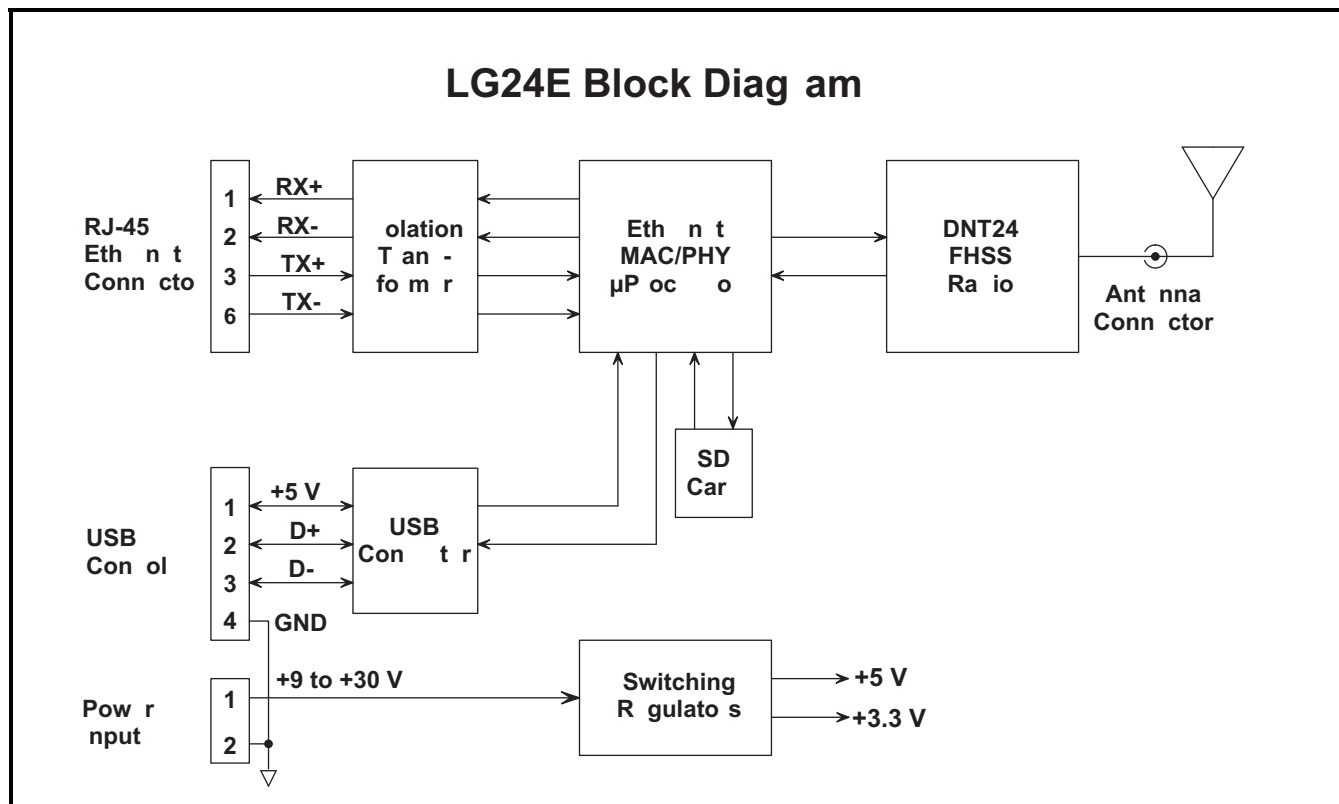1. Non-condensing humidity environment.

LG24E Block Diagram

Figure 1

LG24E Operation

The LG24E is a robust wireless Ethernet gateway for RFM's DNT24 Frequency Hopping Spread Spectrum (FHSS) radios. The DNT24 radio in the LG24E operates in the 2.4 GHz ISM band, transmitting data at 250 kbps with a power output of 10 or 100 mW EIRP.

The unit is packaged in a rugged aluminum enclosure, and ships with a universal wall-plug power supply and 2 dBi dipole antenna. The LG24E is also compatible with RFM's complete line of 2.4 GHz antennas, allowing extended operating range where allowed by local regulations.

The switching regulators used in the LG24E support a wide input voltage range, from +9 to +30 Vdc for operation from battery-backed DC power sources.

LG24E gateways support point-to-point or point-to-multipoint networks, with store & forward range extension capabilities for large site operations.

The LG24E provides a 10/100Base-T interface to connect to virtually any Ethernet network, providing seamless integration of DNT24 based remote devices, such as the SN24R420, into network or Internet cloud based applications.

The LG24E includes support for TCP/IP, UDP, ARP, ICMP and DHCP Ethernet protocols, plus ModBus/TCP, HTTP Posts, SimpleDB and XML Internet protocols. This wide array of protocol support greatly reduces the effort to tie LG24E networks into existing sensing and monitoring applications.

ModBus/TCP support allows the LG24E gateway to seamlessly deliver wirelessly collected sensor readings using the ModBus/TCP standard protocol. The LG24E in conjunction with DNT24-based nodes provide a robust wireless data collection network suitable for a wide range of ModBus automation applications.

The LG24E is configured through the Ethernet port using a built-in configuration utility formatted as a web page.

www.murata.com

RJ-45 Ethernet Connector

Pin	Name	I/O	Description
1	TX+	O	This pin is the Ethernet positive differential output.
2	TX-	O	This pin is the Ethernet negative differential output.
3	RX+	I	This pin is the Ethernet positive differential input.
4	RESERVED	-	This pin is reserved for future use and should not be connected.
5	RESERVED	-	This pin is reserved for future use and should not be connected.
6	RX-	I	This pin is the Ethernet negative differential input.
7	RESERVED	-	This pin is reserved for future use and should not be connected.
8	RESERVED	-	This pin is reserved for future use and should not be connected.

USB Console Port Connector

Pin	Name	I/O	Description
1	+5 V	I	This pin is the +5 V USB Input
2	D+	I/O	This pin is the positive differential I/O port.
3	D-	I/O	This pin is the negative differential I/O port.
4	GND	GND	LG24E ground.

DC Power Terminal Block

Pin	Name	I/O	Description
1	+PWR	I	Positive power supply input, +9 to +30 V.
2	GND	-	LG24E ground.

LED Indicators

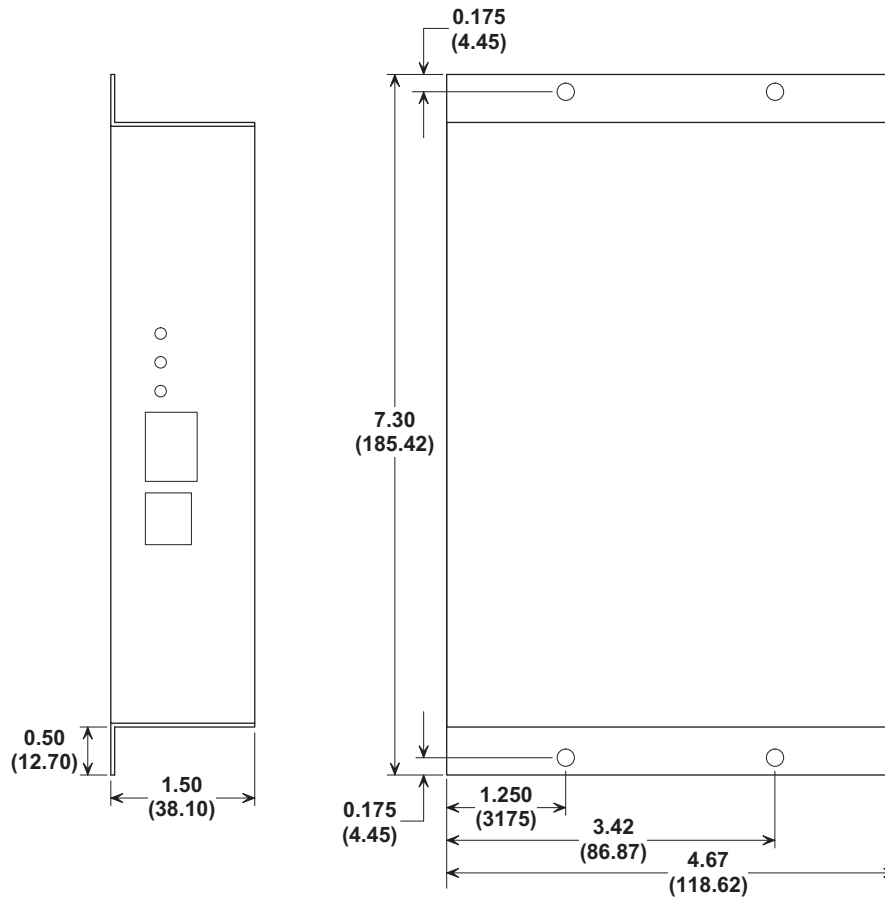| Pin	Name	I/O	Description
1	ACTIVITY	O	Left-most LED on the front of the unit, amber color. Indicates RF communications activity.
2	LINK	O	Middle LED on the front of the unit, red color. On the base, this LED indicates one or more remotes are linked to it. On a remote, this LED indicates it is linked to the base.
3	POWER	O	Right-most LED on the front of the unit, green color. Indicates the unit is powered up.
4	ETH ACT	O	Upper-left LED on the RJ-45 Ethernet connector, green color. Indicates the Ethernet port is linked.
5	ETH LINK	O	Upper-right LED on the RJ-45 Ethernet connector, amber color. Indicates the Ethernet port communications activity.

LG24E Outlin D awing

**0.175
(4.45)**

**7.30
(185.42)**

**0.50
(12.70)**

**1.50
(38.10)**

**0.175
(4.45)**

**1.250
(3175)**

**3.42
(86.87)**

**4.67
(118.62)**

Figure 2

Preliminary

Application Examples

LG24E/DNT24 S n o N two k

SN24R420
S n o No

ZN24M
RS-485 No

Application
(PC)

nt n t
Clou

LG24E
Gat way

SN24R420
S n o No

Figure 3

PLC Cont oll   LG24E/DNT24 S n o N two k

SN24R420
S n o No

ZN24M
RS-485 No

PLC
N two k
Ma t

LG24E
Gat way

SN24R420
S n o No

Figure 4
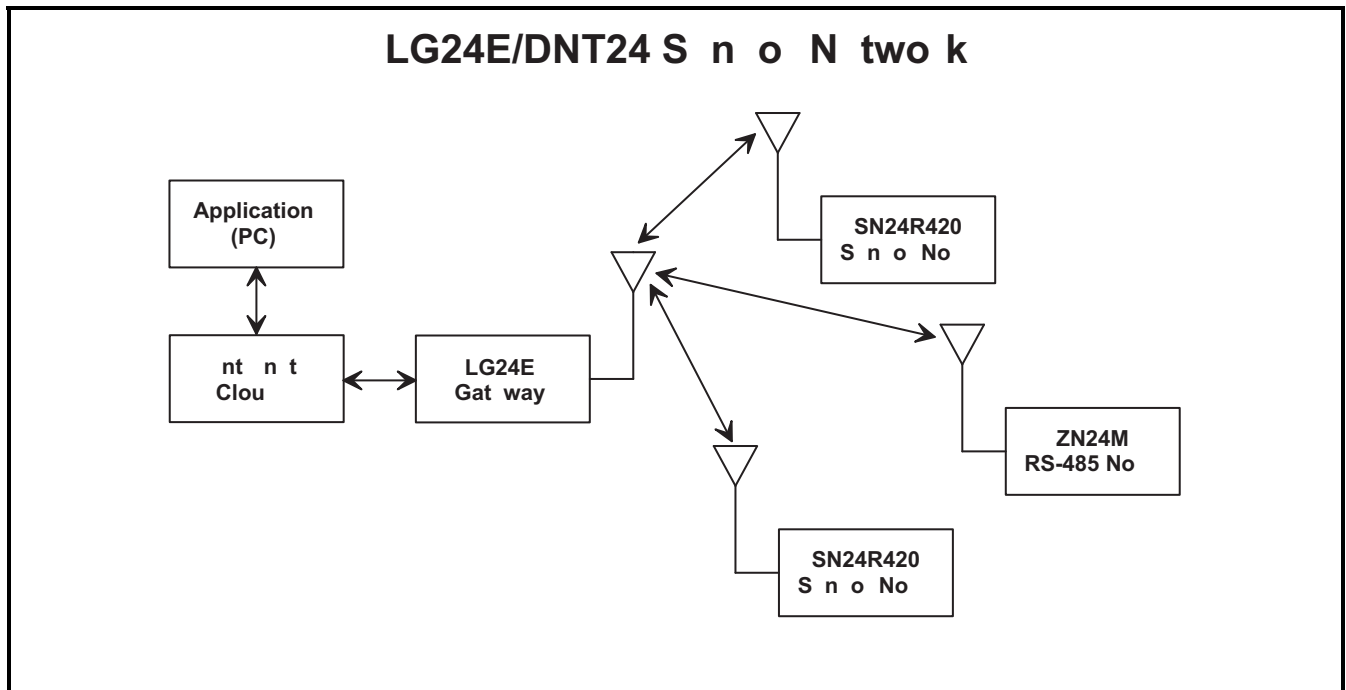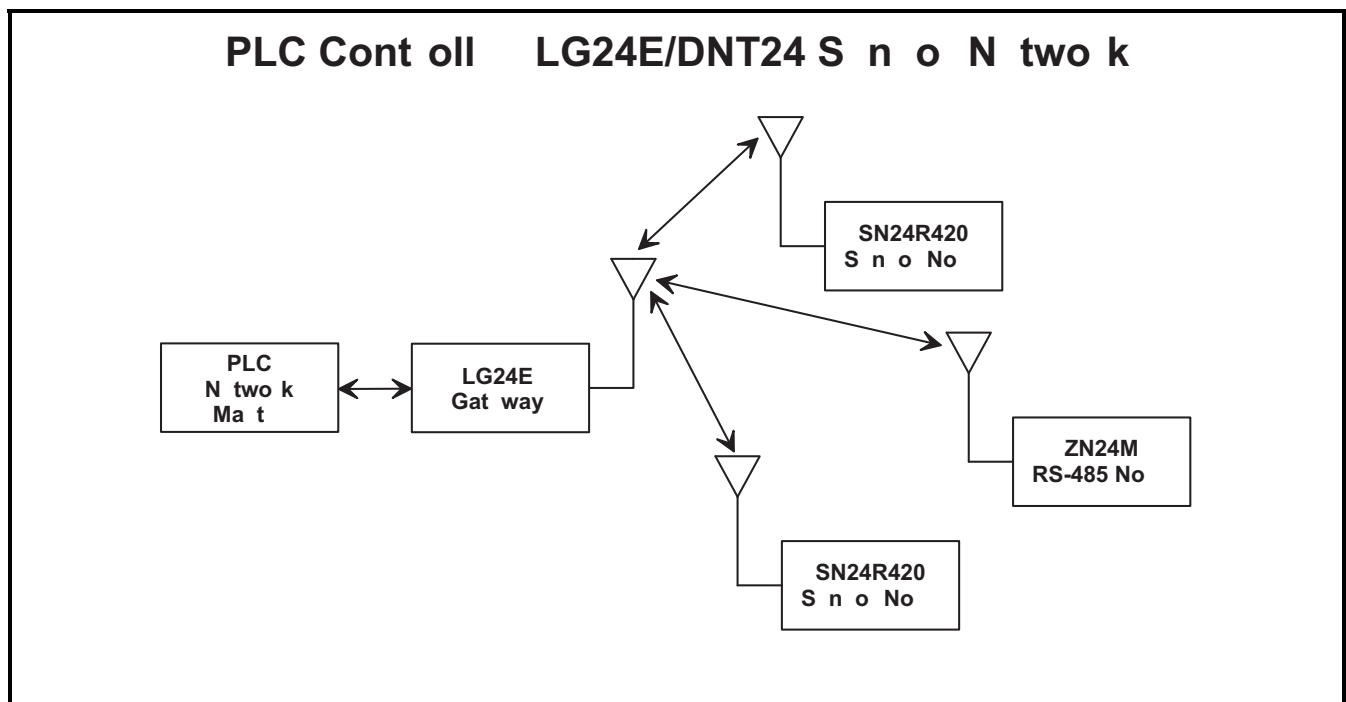
Specifications subject to change without notice.

M-0024-1000 Rev B