Long Reach Ethernet (LRE) Extend

MLS-202-E

2WAN, 2 GLAN, 10/100/1000 Mbps , LRE Bridge (Combo Interface for Copper or Coaxial)

High performance Ethernet over LRE Solution

The MLS-202-E is an Ethernet over LRE product with high performance. It is easy bridge that efficiently extends 10/100 Ethernet circuits to 2 wire-Networking LAN for Internet and Intranet access. The LRE technology offers the absolutely fastest data transmission speeds over existing copper telephone lines or Coaxial line without the need of rewiring. The MLS-202-E supports ultra-high performance to the pervasive telephone line network with up to 100/100Mbps symmetric data rate with in 300m and 7.8/2Mbps for 2.1km(copper) long connections.

Implements with Existing Telephone Copper Wires

The MLS-202-E is also a Long Reach Ethernet (LRE) converter provides two RJ-45 Ethernet ports and four RJ-11 phone jacks and two Coaxial Jack. Two RJ11/Coaxial is for LRE connection and the other is for POTS (Plain Old Telephone Service) connection. The MLS-202-E had built-in POTS splitter to share the existing phone line with POTS, therefore it is no need of replacing the existing copper wiring. Just plug the MLS-202-E into the existing RJ-11 telephone jack and a high-performance LRE network can be connected. It is ideal for use ad Ethernet extender to an existing 1-pair network.

Implements with Existing Coaxial Wires

The MLS-202-E had Coaxial Interfaces for point-to-point wiring network. The MLS-202-E supports ultra-high performance to the pervasive Coaxial (RG-59/RG-6) line network with up to 100/100Mbps symmetric data rate with in 500m and 15/1Mbps for 3km long connections.

Easy Installation

The Converter is plug-and-play design and fully compatible with all kinds of network protocols. Moreover, the operating status of each individual port and the whole system can be watched via the rich diagnostic LEDs on the front panel. MLS-202-E build in DIP switch selectable can be setting to central side (CO) or client side (CPE) mode. For point-to-point connection, a CPE mode MLS-202-E and a CO mode MLS-202-E must setup as one pair of converters to perform the connection.

Providers Superior Upstream and Downstream Transmission

The MLS-202-E also defines asymmetric and symmetric band plans and auto mode for the transmission of upstream and downstream signals. For more information please reference Table.

Key Features

- Ultra-high performance to the pervasive Coaxial (RG-59) line network with up to 100/100Mbps symmetric data rate with in 500m and 15/1Mbps for 3km long connections.
- Smart configuration for short loop installation can be work with Profile 30A, and long distance can be work with in Profile 17a for Auto mode.
- Operates transparent to high layer protocols such as TCP/IP and VLAN tagging.
- Auto-MDIX and Auto-sensing 10/100/1000Base-TX and Full or Half-Duplex on the Ethernet port.
- Plug and Play design for simple installation, single DIP switch selectable for configuration.
- Status LEDs for simple monitoring of the device and connection status.

Applications

- Extend LAN connectivity to a two remote site or between buildings
- Connect Ethernet over the different Room over existing house's Copper/Coax line infrastructure
- Connect new controller technology on the factory floor using existing wiring
- Extend Ethernet connectivity from a backbone network to an isolated location via Copper/Coax wire
- Transfer IP-Camera digital video and control signal, via telephone lines or coaxial to partially replace the fiber-optic network. Let installation and maintenance more easier to extend long-distance high-speed Ethernet.
- Extend 300 meter for HDMI over IP convert application.

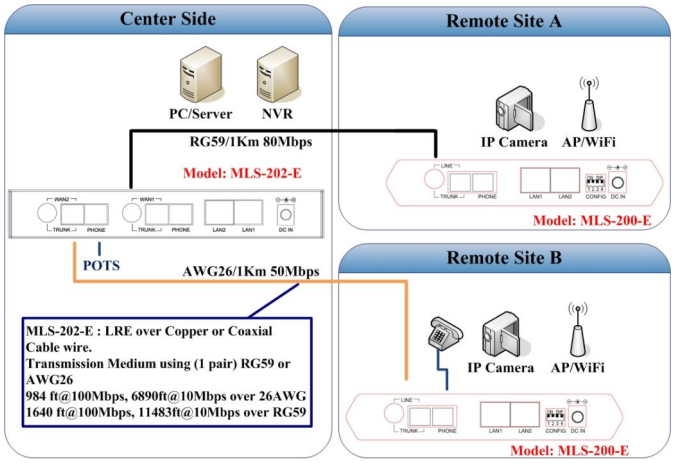

Figure A : Point to multi-point LRE application : Remote Site A、Remote Site B、Center Side，Three site network via Copper or Coaxial wire to connect.

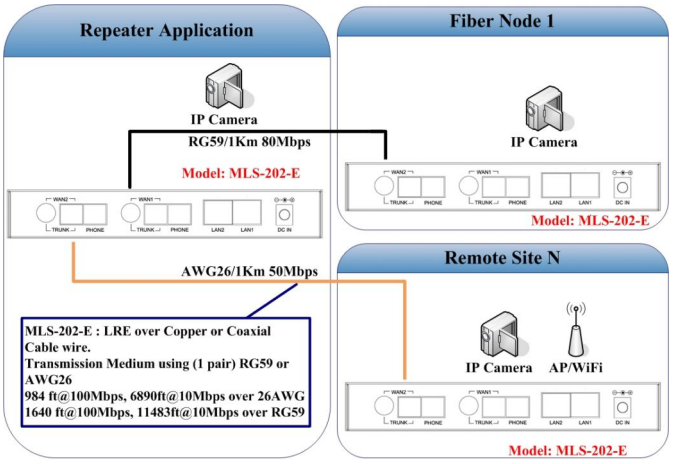

Figure B : Repeater Application : Fiber Node 1、Repeater Site、Remote Side N，Three site network via Copper or Coaxial wire to connect and extend network.

Product Model	MLS-202-E, 2 WAN Long Reach Ethernet Convert, 10/100/1000Mbps , 2-Port GLAN over LRE Bridge (Combo Interface for Copper or Coaxial)

Technical Specifications

Network Standards	IEEE802.3 10BASE-T, 10Mbit/s IEEE802.3u 100BASE-TX, Fast Ethernet at 100Mbit/s IEEE802.3ab 1000Base-TX, Gigabit Ethernet at 1000Mbit/s, Auto-negotiation IEEE802.3x Full Duplex and Flow Control
Switch Processing Scheme	Store and Forward
Address Table	Support 2K MAC address entries
Flow Control	Back pressure for half duplex IEEE 802.3x Pause Frame for full duplex
Switch fabric	Non-blocking & Non-head-of-line blocking full-wire speed forwarding
Maximum Transmit Unit	4.4Gbps
	1552 byte
Protocol	Transparent to higher layer protocols
Encoding	LRE-DMT - ITU-T G.993.1 - ITU-T G.997.1 - ITU-T G.993.1 (Profile 17a Support) - ITU-T G.993.2 (Profile 30a/17a Support)
Connectors	Fast Ethernet : Two RJ45 Connectors RJ11 : Four RJ11 Female Connectors, Two for Link line, the other for Phone Coaxial : Two Coaxial Female Connectors for LRE Link line 2 PIN DC IN (PWR 1) 2 PIN DC IN (PWR 2) Terminal Block
Fast Ethernet Interface	10/100/1000 Mbps MDI/MDI-X Auto Crossover
Indicators	Power LED LAN1~2 Link/Act LED LRE Line CPE LED x2 LRE Line Link/Act LED x2
DIP Switch Functionality	CO/CPE side selectable Line Interleave protect Band Plan profile selectable Line SNR select

Technical Specifications

	(CPE Side PHY Link Rate Down Stream / Up Stream reference Table) using 26AWG Copper								
	Communication distance(meter)	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8
Performance	300	118/118	118/102.4	118/118	118/94.9	85.6/42.7	91.7/46.8	118/63.2	118/100.6
	600	77.4/82.1	97.3/60.6	65/71.4	85.4/45.7	30.1/26.8	32.4/28.4	86.9/46.5	100/60.8
	900	35/40.2	47.5/22	29.7/36.2	48.4/17	6.8/8.6	7.3/8.9	48.3/20.4	49.9/21.7
	1200	17.6/19.8	38.1/7.6	16.6/18.6	35.9/6.7	4.5/0.6	4.8/0.6	40.5/7.9	40.1/5.3
	1500	7.5/10.8	22.6/2.9	7.2/9.8	20.7/3.4	X	X	24.5/1.9	X
	1800	6.9/10.8	20.6/3.3	5.8/8.4	15/3	X	X	22.4/2.8	X
	2100	X	7.9/2.5	X	6.8/2.4	X	X	10.4/1.3	X

	(CPE Side PHY Link Rate Down Stream / Up Stream reference Table) using RG-59 Coaxial								
	Communication distance(meter)	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8
Performance	500	118/118	118/102.4	118/118	118/94.9	85.6/42.7	91.7/46.8	118/63.2	118/100.6
	1000	77.4/82.1	97.3/60.6	65/71.4	85.4/45.7	30.1/26.8	32.4/28.4	86.9/46.5	100/60.8
	1500	35/40.2	47.5/22	29.7/36.2	48.4/17	6.8/8.6	7.3/8.9	48.3/20.4	49.9/21.7
	2000	17.6/19.8	38.1/7.6	16.6/18.6	35.9/6.7	4.5/0.6	4.8/0.6	40.5/7.9	40.1/5.3
	2500	7.5/10.8	22.6/2.9	7.2/9.8	20.7/3.4	X	X	24.5/1.9	X
	3000	6.9/10.8	20.6/3.3	5.8/8.4	15/3	X	X	22.4/2.8	X
	3500	X	7.9/2.5	X	6.8/2.4	X	X	10.4/1.3	X

Power Protection : (Surge)	IEC 61000-4-2 level 4 (ESD) , 15 kV (air discharge), 8kV (contact discharge) IEC-61000-4-5 MIL STD 883G, method 3015-7 Class 3B, -25kV HBM(human body model)
LRE Protection : (ESD)	IEC 61000-4-2 level 4 (ESD) , 15 kV (air discharge), 8kV (contact discharge) IEC-61000-4-4 (EFT) 40A (5/50ns) IEC-61000-4-5 (Surge) : 12A.8/20us
Dimension	175mm(W) x 110mm(D) x 27mm(H)
Weight (Main Unit)	430 g
Power Requirement	External Power Supply : DC 9~36V Power Consumption : < 8 Watts
Emissions Compliance	FCC part 15 Class B, CE Mark
Environmental Conditions	Operating Temperature : -20℃ ~ 70℃ (-4℉ ~ 158℉) Storage Temperature : -20℃ ~ 70℃ (-4℉ ~ 158℉) Operating Humidity : 10% ~ 90%, Non-condensing. 20-80% (Storage)

◆ The actual data rate will vary on the quality of the copper/coaxial wire cable and environment factors.

Ordering Information

MLS-202-E	2 WAN, 2 *10/100/1000 TX Ethernet Extender over Copper/Coax Line
MLS-200-E	1 WAN, 2 *10/100 TX Ethernet Extender over Copper/Coax Line

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