

## MANN-DMR LC Digital Radio

### Low / Medium Capacity PDH / Ethernet Microwave Radio Links

5.8GHz, 7/8GHz, 11GHz, 13GHz, 15GHz, 18GHz, 23GHz, 26GHz, 38GHz

MANN-DMRLC series is a point-to-point digital microwave radio transmission system that covers most of connectivity needs of a transmission network using E1/T1 and Ethernet Payloads. It is reliable, easy to install and provides a cost effective access solution for the Network Operator. The MANN-DMRLC is developed to meet the expectations of the modern telecommunication network characterized by broadband and mobility convergence.

MANN-DMRLC is a standard split mount radio system consisting of an indoor unit and an outdoor unit operating at from 5.8GHz to 38GHz frequency bands. Exceptional performance combined with low operational cost make the MANN-DMRLC an ideal radio for networks around the world.

MANN-DMRLC is designed to satisfy the various digital transmission needs of public and private networks for multiple applications. The short and medium haul microwave system MANN-DMRLC series offers technical solution from 5.8 to 38GHz, by ensuring high radio performance in each frequency band.



#### Typical Applications:

- 2G/3G mobile networks and micro cellular networks, Operator Access Transmission Network
- Backup transmission link for a fiber-optic link in case of disconnection
- Private links between a backbone network and customers premises for voice and data (LAN, WAN) services
- Transmission link for utility networks (pipelines, electricity, railways etc..)

#### Product Features

- Built-in Cross Connect Function in Ring or Repeater Application
- Standard Output from +27dBm to Higher power output option up to +27 at 5.8GHz
- Ethernet-PDH payload throughput-allocation
- Supports 5.8 to 38GHz Microwave frequency bands
- Supports 1+0, 1+1, 2+0, EAST/WEST Applications (ADM CAPABILITY)
- Hitless receive protection switching
- 8CQPSK and QPSK modulation Technique
- Multilevel local and remote loop back
- Wide Operating Temperature Range and wide Power Input Range
- Capacity independent ODU and frequency independent IDU
- Built-in BER Monitor
- Auxiliary EOW voice and data channels
- An advanced SNMP Based Network Management System
- Extensive maintenance and operational capabilities
- Meets all relevant ITU and ETSI standards



## Specifications (ODU)

Frequency		5.8GHz	7/8GHz	11GHz	13GHz	15GHz	18GHz	*23GHz	*26GHz	*38GHz		
RF Power STD (dBm)		0~+20	-10~+27	-10~+20	-10~+20	-10~+20	-10~+19	-10~+19	-10~+19	-10~+19		
RF Power HP (dBm)		0~+27	-10~+27	-10~+23	-10~+23	-10~+23	-10~+23	-10~+23	-10~+23	-10~+23		
Standard	ETSI, FC											
Accuracy	+/- 2dB											
Increments	1dB											
RX BER=10 <sup>-3</sup> (dBm)	QCPSK	4E1	-89	-89	-89	-88	-88	-88	-87.5	-87	-87	-85.5
		8E1	-86	-86	-86	-85	-85	-85	-84.5	-84	-84	-82.5
		16E1	-83	-83	-83	-82	-82	-82	-81.5	-81	-81	-79.2
	8CPSK	6E1	-86	-86	-86	-85	-85	-85	-84.5	-84	-84	-82.5
		12E1	-83	-83	-83	-82	-82	-82	-81.5	-81	-81	-79.5
		24E1	-80	-80	-80	-79	-79	-79	-78.5	-78	-78	-76.2
RX BER=10 <sup>-6</sup> (dBm)	QCPSK	4E1	-86	-86	-86	-85	-85	-85	-84.5	-84	-84	-82.5
		8E1	-83	-83	-83	-82	-82	-82	-81.5	-81	-81	-79.5
		16E1	-80	-80	-80	-79	-79	-79	-78.5	-78	-78	-76.2
	8CPSK	6E1	-83	-83	-83	-82	-82	-82	-81.5	-81	-81	-79.5
		12E1	-80	-80	-80	-79	-79	-79	-78.5	-78	-78	-76.5
		24E1	-77	-77	-77	-76	-76	-76	-75.5	-75	-75	-73.2
RF BW (MHz)	7/14/28											
ODU Flange Type	N-type		N-type	UBR84	UBR100	UBR140	UBR140	UBR220	UBR220	UBR220	UBR320	
Max Power Consumption IDU + ODU (1+0 and 1+1)	25W 1+0 and 40W 1+1 SP 35W 1+0 and 45W 1+1 HP											

## Specifications (IDU)

Capacity	8 Mbps	12 Mbps	16 Mbps	25 Mbps	34 Mbps	50 Mbps
No. of E1 Port	0 ~ 4	0 ~ 6	0 ~ 8	0 ~ 12	0 ~ 16	0 ~ 24
No. of Ethernet Port	2	2	2	2	2	2
Ethernet Throughput	9.0 Mbps	14 Mbps	18.5 Mbps	28.5 Mbps	40 Mbps	55 Mbps
<b>Bit Rate Adjustment Between E1 &amp; Ethernet with 2Mbps Step</b>						
Impedance	E1 = 75Ω Unbalanced or 120Ω Balanced; Ethernet = 100Ω Balanced					
Line Code	E1 = HDB3		T1(DS1)=AMI or B8ZS		Ethernet = 10/100Base-T	
Network Manager	SNMP, Telnet					
Status Indicator	LED		Power, Local, Remote-East, Remote-West, multiple Alarms & Status			
Alarms	2 Software-selectable dry contacts					
IF: 50 Ohm coaxial, N-type female connector, 300m max				<b>Frequency Stability:</b> ± 0.0005%		
Input Voltage: 20 ~ 70VDC				<b>Max Allowed RSL for Damage:</b> 0 dBm		
RSL Accuracy: ± 5 dB (-30 ~ -90 dBm); 2dB (-35 ~ -80dBm)				<b>Operational Temperature:</b> IDU: -15°C ~ 60°C; ODU: -35°C ~ +65°C		
Elevation: 15,000 ft / 4572 meter				<b>Humidity:</b> IDU: 0 ~ 95%, no condensation; ODU: All weather		
Weight / Dimension: IDU: 44 x 436 x 274 mm / 3.55 kg (1+0) / 3.75 kg (1+1); ODU: 225 x 225 x 90 mm / 3.0 ~ 3.3 kg						
System Configurations: Non-protected (1+0), Protected (1+1), Space Diversity (SD), Frequency Diversity (FD), 2+0 or East/West						
Safety + EMC IDU and ODU	EN 60950-1 + A11, IEC 60950-22, EN 301 489-1/-4, EN 302 217-2-2					
<b>* All specifications are typical values and subject to change without prior notice</b>						