MIC-RL4...15P+ HIGH CAPACITY ALL-INDOOR & SPLIT MOUNT TRUNK MICROWAVE RADIO

MIC-RL4...15P+ is the new Micran trunk radio capable of supporting up to 3.6 Gbps of aggregate data traffic. It provides up to 8 RF channels in one sub-rack chassis supporting 1024QAM; it gives operators great advantage in achieving higher link capacity. MIC-RL4...15P+ can transport E1, STM1 and native Ethernet: its support for Ethernet and legacy TDM makes it the best choice for network operators to migrate towards all-IP networks. It has been designed for high flexibility and resiliency, so offering a wide choice of protection configurations. MIC-RL4...15P+ is the Micran platform for deploying high capacity microwave links in place of optical fiber.

KEY FEATURES

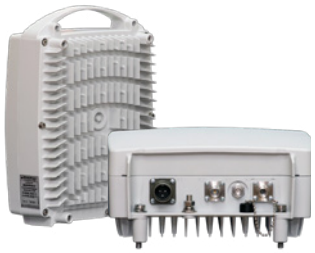
- Full range ITU-R frequencies: 4, 5, 6, 6.5, 7, 8, 11, 13, 15 GHz
- 16QAM to 1024QAM for longer hops and/or increased capacity
- Hybrid Ethernet/IP and/or TDM/E1/STM1 operation supports legacy networks
- Electrical and optical (MM, SM) Gigabit Ethernet Interfaces available
- Low-risk, cost effective migration path from TDM to Hybrid, to all-IP
- High MTBF design and manufacture for ultra-reliability
- Ultra-reliable, scalable and upgradeable for low, controlled CapEx and OpEx

ALL-INDOOR RADIO

- Highest capacity, best link performance and ultralow MTTR
- 3.6 Gbps of aggregate E1/STM1/Ethernet throughput
- High (+35 dBm) Transmit output power option
- High modularity rack shelves and Innovative branching assembly allows easy system expansion by adding channels
- Up to 8 RF channels in a single rack with room left for additional network equipment
- Up to 4+1, 2x(1+1) configurations
- ACCP/ACAP with/without SD/FD for ultra-reliable trunking networks

SPLIT MOUNT RADIO

- Fastest network deploying, simply maintenance and cost effective
- 1.8 Gbps of aggregate E1/STM1/Ethernet throughput
- Optical ODU-IDU cable for superrior IDU lightning protection and EMC with the radio cables of another equipment
- Up to 4 RF channels in a single 1U access module
- Up to 3+1, 4+0, 2x(1+1) configurations
- ACCP/ACAP with/without SD/FD for ultra-reliable trunking networks
- Low power consumption



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MIC-RL	4P+	5P+	6P+	6.5P+	7P+	8P+	11P+	13P+	15P+
Frequency Band. GHz	3.7-4.2	4.4-5.0	5.925-6.425	6.425-7.11	7.25-7.55	7.9-8.4	10.7-11.7	12.75-13.25	14.5-15.35
ITU-R	F.382	F.746	F.383	F.384	F.385	F.386	F.387	F.497	F.636
Frequency Duplex. MHz	266	312	266	340	161	266	530	266	420
Sub-bands Number	2(L)+2(H)	2(L)+2(H)	2(L)+2(H)	2(L)+2(H)	5(L)+5(H)	3(L)+3(H)	2(L)+2(H)	3(L)+3(H)	2(L)+2(H)
Sub-bands Width. MHz	112	140	112	170	35	90	243	85	231
Frequency Tuning	software defined within the limits of the sub-band. step 250 kHz								

Radio Features	Transmitter			Receiver					
MIC-RL	4P+...11P+	13P+, 15P+	4P+...11P+	4P+...13P+		15P+		4P+...11P+	
Mounting Type	split mount		all-indoor	split mount				all-indoor	
Channel Bandwidth, MHz	28/56			28	56	28	56	28	56
Modulation	Maximum output power*, dBm			Sensitivity*, dBm BER10-6					
16QAM	+28	+27	+35	-81	-78	-80	-77	-83	-80
32QAM	+27	+26	+34	-78	-75	-77	-74	-80	-77
64QAM	+26	+25	+33	-75	-72	-74	-71	-77	-74
128QAM	+25	+24	+32	-72	-69	-71	-68	-74	-71
256QAM	+24	+23	+31	-69	-66	-68	-65	-71	-68
512QAM	+23	+22	+30	-66	-63	-65	-62	-68	-65
1024QAM	+23	+22	+30	-63	-60	-62	-59	-65	-62
Power tuning range 0...-25 dB, step 1 dB manual / automatic				AGC range ≥ 50 dB					

* excluding losses in CFU (combining and filtration unit) for all-indoor radio

Functional Features			
Link configuration and protection	1+0 1F – 1 unprotected link, one pair of duplex frequency channels; 1+1 1F – 1 protected link, one pair of duplex frequency channels (1 main/protection); 1+1 2F - 1 protected link, two pairs of duplex frequency channels (1 main + 1 protection); 2+0 2F – 2 unprotected links, two pairs of duplex frequency channels; 2+2 2F - 2 protected links, two pairs of duplex frequency channels (2 main/protection); 2+1 3F - 2 protected links, three pairs of duplex frequency channels (2 main + 1 protection); 2+2 4F - 2 protected links, four pairs of duplex frequency channels (2 main + 2 protection); 3+1 4F – 3 protected links, four pairs of duplex frequency channels (3 main + 1 protection); 4+0 4F – 4 unprotected links, four pairs of duplex frequency channels; 4+1 5F – 4 protected links, five pairs of duplex frequency channels (4 main + 1 protection).		
Link Performance Increasing	SD - space diversity (double Rx), one pair of duplex frequency channels per link; FD - frequency diversity (double Rx), two pairs of duplex frequency channels per link; FD SD - frequency and space diversity (quadruple Rx), two pairs of duplex frequency channels per link.		
Traffic protection	full – according to link protection scheme; smart – 1+1 for high priority traffic, 2+0 for low priority traffic.		
Capacity, Mbps vs Modulation	Channel Bandwidth, MHz	28	56
	16QAM	89.6	156.8
	32QAM	112.0	224.0
	64QAM	134.4	268.8
	128QAM	156.8	313.6
	256QAM	179.2	358.4
	512QAM	201.6	403.2
	1024QAM	224.0	448.0
Payload (interfaces)	up to 4xGigabit Ethernet (SFP), 4xSTM-1 (SFP), 24xE1 (G.703, 120 Ohm), 12xFast Ethernet (RJ45)		
Wayside channels	2xFast Ethernet (128 Kbps), Intercom (FXS)		
Network Management	NMS “Master M”		
Network Management	NP (native protocol) / USB, Ethernet		
Protocol / Interface	SNMP / Ethernet (stand-alone SNMP-agent)		
ODU-IDU cable**	Optical single-mode, up to 15 000 m ODU-IDU distance		
ODU power cable**	Electrical, maximum length, m: 150 / 250 / 400 vs cable gauge 2×1.5 mm2 / 2×2.5 mm2 / 2×4 mm2 (U_{supply} = -48 V) 350 / 600 / 900 vs cable gauge 2×1.5 mm 2 / 2×2.5 mm 2 / 2×4 mm 2 (U_{supply} = -60 V)		

** for split mount radio

Climate / Power / Dimensions	ODU	IDU	
Mounting Type	split mount	split mount	all-indoor
Operating Temperature	-50 (-60) ...+50°C (Arctic version)	+5...+45°C	
Power Consumption	TRU < 60 W	MAU < 30 W	LNA < 2 W, PBU < 70 W, TRU < 70 W, MAU < 30 W
Power Supply Voltage	-39...-72 B		
Dimensions / Weight	264x370x125 mm / < 10 kg	480x44x240 mm (19”, 1U)	600x600x1850 mm (19”, 38U)

TRU - transceiver unit, MAU – main access unit, LNA – low noise amplifier, PBU – power booster unit