# MANNSYS

# MANN-DMR4X

## N x STM1, GigE/FE, E1 Radio System

**High Capacity SDH Microwave Radio Links**

**(6, 7/8, 11,  13,  15,  18,  23,  26 GHz)**

**DMR4X** is a compact  high density and carrier-class SDH/Ethernet Microwave Radio System. It's mainly designed to fully utilize the present SDH network resource to provide heavy traffic service access for the Operator. Its service interfaces include 4 x STM-1 and Gig Ethernet, Fast Ethernet and E1.

**DMR4X** provides wireless transmission of data, video, voice and etc. The system can connect with fibre networks to provide hitless SDH interface, work with other access network equipments, 3G mobile cellular base station, switch and router..

**DMR4X** can support various capacity configurations, software controlled frequency and transmit power functionalities, which make it adaptive to global applications.

**DMR4X** supports N+0, N+N  configurations. The modem and power supply functions utilize replaceable plug-in modules which makes onsite upgrade and maintenance easy and convenient.  Capacity 4 x STM1 or 880Mbps(4 x28MHZ) in single IDU.
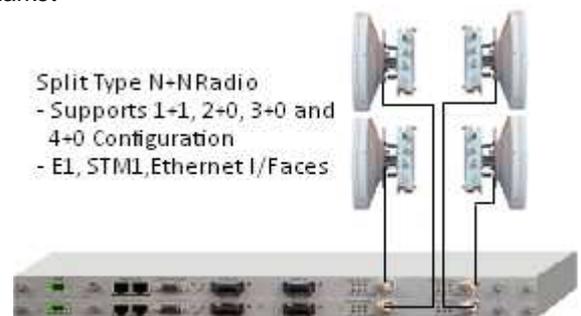
## Applications

- Wideband wireless access, wireless local  loop (WLL) and access market
- Mobile cellular network, which require higher capacity due to an increase in subscriber, cell sites and data application
- Back up network for fiber optic trunk links.
- Private and Enterprises network such as educational institutions, financial institution and utility companies providing voice ATM & IP private networks

Split Type N+N Radio
- Supports 1+1, 2+0, 3+0 and 4+0 Configuration
- E1, STM1, Ethernet I/Faces

## Product Features

- Frequency: 6.5GHz~26GHz: STM1 and GE Interfaces
- Single IDU，transmission capacity up to 622Mbps (28MHz)/ 1.2Gbps (56MHz*)
- Adaptive Modulation Control (*AMC) and bandwidth capacity controlled by software. （*AMC is only available in Ethernet mode）
- N+0, N+N,  multi-direction, Mesh, ring application, MSP & SNCP

- Up to 300-meter separation between IDU and ODU
- Built-in BER monitor, FEC, ATPC and RF, analog, and digital loopback functions
- SNMP, various optional NMS modes; selectable DCC channel transmission, DCN network access and private VC12/E1 channel transmission
- Easy operation, convenient maintenance, high reliability, low CAPEX and OPEX

## Configuration Options

- DMR4X ODU：Up to 1×STM-1 (28MHz) and 2×STM-1 (56MHz)
- DMR4X IDU：Up to 4×STM-1 (28MHz) with 4×STM1 or GE interfaces; Up to 8×STM-1 (56MHz) with 4×GE interfaces
- DMR4X IDU：48E1

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## Technical Specifications

| ODU-Technical Specifications | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Frequency** | | | 6GHz | 7/8GHz | 11 GHz | 13 GHz | 15 GHz | 18 GHz | 23 GHz | 26 GHz |
| **Standard** | | | ETSI/ITU/FCC | | | | | | | |
| **RF Output Power (dBm)** | | 256QAM | 19 | 19 | 16 | 16 | 16 | 15 | 15 | 15 |
| | | 128QAM | 20 | 20 | 17 | 17 | 17 | 16 | 16 | 16 |
| | | 64QAM | 21 | 21 | 19 | 19 | 19 | 17 | 17 | 17 |
| | | 32QAM | 22 | 22 | 20 | 20 | 20 | 18 | 18 | 18 |
| | | 16QAM | 23 | 23 | 21 | 21 | 21 | 19 | 19 | 19 |
| | | QPSK | 27 | 27 | 25 | 25 | 25 | 23 | 23 | 23 |
| **Accuracy (dB)** | | | +/-2 | | | | | | | |
| **Tuning Increment (dB)** | | | 1 | | | | | | | |
| | **28MHz** | 256QAM | -67 | -67 | -66 | -66 | -66 | -66 | -65 | -65 |
| | | 128QAM | -70 | -70 | -69 | -69 | -69 | -69 | -68 | -68 |
| | | 64QAM | -74 | -74 | -73 | -73 | -73 | -73 | -72 | -72 |
| | | 32QAM | -76 | -76 | -75 | -75 | -75 | -75 | -74 | -74 |
| | | 16QAM | -79 | -79 | -78 | -78 | -78 | -78 | -77 | -77 |
| | | QPSK | -86 | -86 | -85 | -85 | -85 | -85 | -84 | -84 |
| | **14MHz** | 64QAM | -77 | -77 | -76 | -76 | -76 | -76 | -75 | -75 |
| | | 32QAM | -79 | -79 | -78 | -78 | -78 | -78 | -77 | -77 |
| | | 16QAM | -82 | -82 | -81 | -81 | -81 | -81 | -80 | -80 |
| | | QPSK | -89 | -89 | -88 | -88 | -88 | -88 | -87 | -87 |
| | **7MHz** | 16QAM | -85 | -85 | -84 | -84 | -84 | -84 | -83 | -83 |
| | | QPSK | -92 | -92 | -91 | -91 | -91 | -91 | -90 | -90 |
| | **3.5MHz** | QPSK | -95 | -95 | -94 | -94 | -94 | -94 | -93 | -93 |
| **Flange** | | | UBR84 | UBR84 | UBR100 | UBR140 | UBR140 | UBR220 | UBR220 | UBR220 |

| System Capacity, Single ODU Mbps | 28MHZ | 14MHZ | 7MHZ | 3.5MHZ |
|---|---|---|---|---|
| 256QAM | 220 | NA | NA | NA |
| 128QAM | 192 | NA | NA | NA |
| 64QAM | 165 | 82 | NA | NA |
| 32QAM | 137 | 68 | NA | NA |
| 16QAM | 110 | 55 | 27 | NA |
| QPSK | 55 | 27 | 13 | 6 |

| | | | |
|---|---|---|---|
| **IF Interface** | For 50Ω coaxial ODU N/IDU TNC connector, Female | **RSSI** | Output voltage vs. RSL : 0~3V vs. -90-20dBm |
| **Frequency Stability** | ±5ppm | **RSL Accuracy** | ±2 dB |

| IDU- Technical Specification | | |
|---|---|---|
| **SDH Interface** | Maximum | 4×STM-1, SC, S-1.1 |
| **GE Interface** | Maximum | 4×GE, RJ45 |
| **PDH Interface** | Maximum | 48E1, 60 Pin Molex 120ohm |
| **FE Interface** | Maximum | 4Fe, RJ45 |

| System- Technical Specification | | | |
|---|---|---|---|
| **System configurations** | N+0, N+N, Space Diversity, Frequency Diversity, Multi Direction or Ring | | |
| **Network Management** | SNMP or Telnet | | |
| **Temperature** | IDU: -5~ 55℃ ; ODU: -35~ +55℃ | **Elevation** | 15,000ft / 4572 meters |
| **Humidity** | IDU: 0 ~ 95%, no condensation; ODU: all weather | | |
| **Weight(kg) & Dimension (mm$^3$)** | IDU: 3.5/445x238.5x44.5 ; ODU: 3.0~3.5/225×225×90 | | |
| **Power Supply** | Input power range | 36~72VDC | |
| | Power consumption | 1+0  ≤55W | 1+1  ≤85W |

- **All specifications are typical values and subject to change without prior notice.**