HARRIS

23, 26, 38 GHz CEPT digital hierarchy

MicroStar® M

point-to-point

digital radio

QPSK Modulation

2/4/8/16 E1,
E3 + 2 E1

MicroStar® M is a family of point-to-point digital PDH (Plesiochronous Digital Hierarchy) microwave radios designed for rapid, easy deployment of short, medium, and long links. A wide range of frequency bands and protection configurations are available for voice and data applications.

Based on a common platform architecture incorporating the most reliable design in the industry, MicroStar® M has features ideally suited for cellular networks, personal communications networks, and global private or public communications systems.

For short link applications, at frequencies from 23 GHz to 38 GHz, the MicroStar® M offers an integrated RF unit and a choice of parabolic or flat panel antenna configurations. Compact, lightweight, and very easy to install, the rectangular form factor and small size Outdoor Unit (ODU) lends itself to high-density urban applications where site locations are at a premium. With proven superior specifications and interference rejection, frequency re-use and network planning are simplified with the MicroStar® M.

The Outdoor Units are capacity independent while the Indoor Units are frequency independent which reduce equipment sparing needs. In addition, the embedded software within the radio is also common simplifying operation, configuration, maintenance, and training requirements.

next level solutions

MicroStar® M 23, 26, 38 GHz CEPT digital hierarchy

System Characteristics

Bands	Frequency Ranges	Xmtr/Rcvr Frequency Spacing
23 GHz	21,200 - 23,600 MHz	1008, 1200, 1232 MHz
26 GHz	24,500 - 26,500 MHz	1008 MHz
38 GHz	37,000 - 39,500 MHz	700, 1260 MHz

Modulation: QPSK (Quadrature Phase Shift Keying)

Bit Rate Capacity: 2/4/8/16 E1, E3+2E1

Channel Bandwidth:

2 E1	4 E1	8 E1	16 E1	E3 + 2E1
3.5 MHz	7.0 MHz	14.0 MHz	28 MHz	28 MHz

IDU/ODU Interconnection: Separation 300 m, approx 1000 ft. max.
Single coaxial cable, Belden 9913 (RG-8) or equivalent

Digital Interface: E1; 120 Ohms bal. or 75 Ohms, unbal.

Frequency Source: Programmable Synthesizer, full tuning range

Configurations: Non-protected (1+0) or Protected (1+1) Hot-Standby

Data Channel: Up to 19.2 kBaud asynchronous data

Data Interface:
IDU Types I, II & III; RS232 IDU Type I & III; RS423

VF Orderwire: (optional) with DTMF signaling
IDU Types I & III; Analog IDU Type II; Digital

Line Code: HDB3 or AMI

Network Management: FarScan™, NetBoss™, SNMP Managers

NMS Interface:
Types II & III; SNMP, FarScan™, dry relay contacts, and supported on NetBoss™, systems Type II; Ethernet

Radio Control/Monitoring Tools:
Type I & III; CIT, VT-100, handheld terminal, NMS
Type II; WebCIT, VT-100, handheld terminal, NMS

Fault Detection: Auto-Diagnostics, replace-me LEDs
Alarms: Indoor Unit, Outdoor Unit, Cable, Sum

Operating Environment:	Indoor	Outdoor
Guaranteed Performance	0°C to +50°C	-33°C to +55°C
Operational	-10°C to +55°C	-40°C to +55°C

Humidity; Indoor, 95% max. 100% *(non-condensing)*

Power Sources: 21 to 60 Vdc, positive or negative ground

Power Consumption: (non-protected)
IDU Types I & III; 65 W IDU Type II; 55 W
Consumption could be more depending on the configuration.

Transmitter Characteristics

Power Output: *(nominal)* 23 GHz; +17 dBm 26/38 GHz; +15 dBm
At antenna port, non-protected assembly including filter & branching losses

RF Power Attenuation: 40 dB in 1 dB steps

Power Mute Control: > 50 dB attenuation

Frequency Stability: ±5 ppm including aging

System Gain* (dB) nominal

	IDU Type I 2/4 E1*		IDU Type II 2/4/8/16 E1*				IDU Type III** 8/16 E1*, E3+2E1		
23 GHz	2 E1	4 E1	2 E1	4 E1	8 E1	16 E1	8 E1	16 E1	E3+2E1
BER 1x10^{-3}	107.0	104.0	107.0	104.5	101.5	99.0	101.0	98.0	97.0
BER 1x10^{-6}	105.0	102.0	105.5	103.0	100.0	97.5	99.0	96.0	95.0
26/38 GHz									
BER 1x10^{-3}	105.0	102.0	105.0	107.5	99.5	97.0	99.0	96.0	95.0
BER 1x10^{-6}	103.0	100.0	103.5	101.0	98.0	95.5	97.0	94.0	93.0

At antenna port for a non-protected assembly with FEC including filter and branching losses.For protected assemblies (MHSB) add additional losses of 2 dB for CH A and 7 dB for CH B.

** Software upgradeable with common circuit card*
*** For Type III 4 E1only or 8 E1 only are also available*

Receiver Characteristics

Noise Figure: 8 dB *At antenna port, non-protected, including filter & branching losses.*

Sensitivity (dBm): typical

	IDU Type I 2/4 E1*		IDU Type II 2/4/8/16 E1*				IDU Type III** 8/16 E1*, E3+2E1		
23 GHz	2 E1	4 E1	2 E1	4 E1	8 E1	16 E1	8 E1	16 E1	E3+2E1
BER 1x10^{-3}	-92.0	-89.0	-92.0	-89.5	-86.5	-84.0	-86.0	-83.0	-82.0
BER 1x10^{-6}	-90.0	-87.0	-90.5	-88.0	-85.0	-82.5	-84.0	-81.0	-80.0
26/38 GHz									
BER 1x10^{-3}	-92.0	-89.0	-92.0	-89.5	-86.5	-84.0	-86.0	-83.0	-82.0
BER 1x10^{-6}	-90.0	-87.0	-90.5	-88.0	-85.0	-82.5	-84.0	-81.0	-80.0

At antenna port for non-protected assembly with FEC including filter and branching losses.

** software upgradeable with common circuit card*
*** For Type III 4 E1only or 8 E1 only are also available*

Residual BER: < 10^{-12} BER

Frequency Stability: ±5 ppm including aging **FEC:** Built-in

Regulatory Information

Frequency Plans: 23 GHz; ITU-R Rec. F637-2, ETS 300 198, MPT 1409
26 GHz; ETS 300 431, MPT 1420, CEPT-ERC Rec. T/R 13-02 E, BAPT211ZV11
38 GHz; ETS 300 197, MPT 1414, ITU-Rec. 749, BAPT211ZV11

Digital Interface: Compatible with ITU-T Rec. G.703

Electromagnetic Compatibility: ETS 300 385 (EN55022)

Mechanical Characteristics

Connections: *Indoor to Outdoor Units;* Type "N" Female connector

Rack Size: Indoor Unit; 483 mm (19") EIA or ETSI relay rack

Dimensions:	Height	Width	Depth
Outdoor Unit*	330 mm (13")	330 mm (13")	100 mm (4")
Indoor Units Type II (NP)	45 mm (1.75")	483 mm (19")	267 mm (10.5")
Type II (Protected)	90 mm (2.5")	483 mm (19")	267 mm (10.5")
Type III	133 mm (5.3")	483 mm (19")	296 mm (11.7")

* Without antenna

Weight: IDU Type III; 8.5 kg (18.7 lbs.) IDU Type I; < 3 kg, (6.6 lbs.)

Antenna Characteristic

Type: Parabolic Antenna, Andrews VHLP 1, 2, or 4, ft.

Mounting: Pole or Wall mount

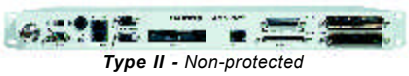
Alignment: Optional Alignment Kit

Polarization: Horizontal or Vertical

Windload: Operational; 150 Km/h Survival; 205 Km/h

Indoor Units (IDU)

Type I - *Non-protected*
(Protected also available)



Type II - *Non-protected*

Type II - *Protected*

Type III - *Protected*
(Non-protected also available)

Unless otherwise indicated, typical performance specifications are listed and apply to transmitters/receivers connected back-to-back and must be confirmed before they become applicable to any specific system, contract or order.

HARRIS
next level solutions

Microwave Communications Division | 3 Hôtel de Ville | Montreal, Quebec, Canada H9B 3G4
Phone 1-800-4-HARRIS ext. 3209 (within North America) 1-407-727-9207 ext.3209 (outside North America)
www.harris.com