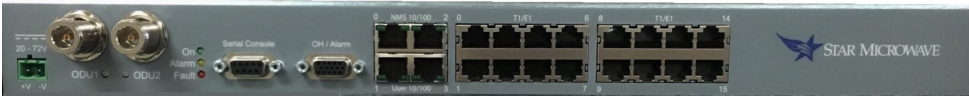


SM Cirius LM 175/200+ Mbps Ethernet + 16 T1/E1

Split Mount TDM + Ethernet Radio



The **Cirius LM** is a low-cost point-to-point PDH digital microwave radio system for T1/E1 payloads plus Ethernet and meets carrier-grade standards for performance, reliability, and quality.

The Cirius LM Series supports capacities of up to 16 T1/E1 lines and operates in frequency ranges from 6 to 38 GHz. It is available in non-protected (1+0) and protected (1+1) mode in HSB, MHSB. It can be mounted directly on an antenna or mounted separately and connected using standard UBR flange series waveguide.

Product Specifications

- IP interfaces: 2x10/100Base-T
- Software-configurable
- Capacity (8 Mbps to 175/200 Mbps)
- Modulation (QPSK, 8QAM, 16QAM, 32QAM, 64QAM, 128QAM, 256/QAM)
- Channel bandwidth (5 MHz, 10 MHz, 20 MHz, and 30 MHz)
- IP-PDH payload throughput-allocation
- 1+1 configuration with no additional switching hardware
- Rx protection switching
- Hot-Standby
- SNMP management with integral routing
- Configuration backup via removable NVRAM
- Common 1RU IDU for all frequency bands, capacities, modulations and channel bandwidths
- Built-in BER Monitor
- Superior receiver sensitivity and system gain performance

Product Features

- Cost-effective high-capacity PDH and Ethernet IDU for microwave and millimeterwave radios
- Optimized for efficient cellular backhaul and private network applications
- Flexible modem
 - ◊ Programmable Bandwidths and Symbol Rates
 - ◊ Programmable Modulation Modes (up to 256 QAM)
 - ◊ Programmable FEC
 - ◊ Mix PDH and Ethernet traffic
- Flex Band™ technology allows arbitrary bandwidth occupancy from a single IDU via software command
- Built-in PDH and Ethernet line interfaces
 - ◊ PDH: 16xT1/E1
 - ◊ Built-in 2-port Ethernet with port-based VLAN & QOS features
- Hot stand-by operation
 - ◊ Protect 2 ODUs from single IDU
- Single cable interface to Outdoor Unit
- Extensive link management interface support
 - ◊ Web-based link management
 - ◊ SNMP monitoring and craft menu applications
- Low-power design -20 to -72 VDC
- Uses less than 58 Watts
- Field-upgradeable firmware
- 1U 19-inch indoor rack mount unit

Technical Specifications

Description	Specifications - Typical													
	6U/L	7	8	10	11	13	15	18	23	26	28	32	38	
Frequency Range (GHz)	Frequency Bands (GHz)													
	5.925 - 7.110	7.125 - 7.725	7.9-8.5	10.15-10.65	10.7-11.7	12.75-13.25	14.4-15.4	17.7-19.7	21.2-23.6	24.2-26.5	27.5-29.5	31.8-33.4	37.0-40.0	
T/R Spacing	160	154	119	350	490	266	315	1008	1008	1008	TBA	812	700	
	170	160	126		500		420	1010	1200				1260	
	252.04	161	266		530		490	1092.5	1232					
	300	168	311.32				644							
	340	196					728							
	350	245												
Transmitter														
Max. Power (dBm) QPSK	30	30	30	26.5	28	26	26	25.5	25	25			19	
Max. Power (dBm) 16/32QAM	28	28	28	22.5	25	24	24	23	23	22				
Max. Power (dBm) 64/128QAM	25	25	25	20.5	22	20	20	19	19	19				
Max. Power (dBm) 256QAM	22	22	22	18.5	20	18	18	17	17	17				
Xmtr Attn Step(dB)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	NA	NA	1
Xmtr Power Range (dBm)	-10+30	-10+30	-10+30	-10+26.5	-10+28	-10+26	-10+26	-10+25.5	-10+25	-10+25				-10+19
TX Power Accuracy	+/- 2.0 @ <Max Pout, +/-2@Pout=Max Pout													

FCC System - Receiver Sensitivity (dBm)

Capacity	BW	Mod	6-8	11	13-15	18	23	32	38
16	10 MHz	QPSK	-92.0	-91.5	-91.5	-91.0	-91.0	-90.0	-89.5
32		16QAM	-85.0	-84.5	-84.5	-84.0	-84.0	-83.0	-82.5
40		32QAM	-78.0	-77.5	-77.5	-77.0	-77.0	-76.0	-75.5
48		64QAM	-75.0	-74.5	-74.5	-74.0	-74.0	-73.0	-72.5
56		128QAM	-69.0	-68.5	-68.5	-68.0	-68.0	-67.0	-66.5
64		256QAM	-67.0	-66.5	-66.5	-66.0	-66.0	-65.0	-64.5
33	20 MHz	QPSK	-91.0	-90.5	-90.5	-90.0	-90.0	-89.0	-88.5
66		16QAM	-84.0	-83.5	-83.5	-83.0	-83.0	-82.0	-81.5
82		32QAM	-77.0	-76.5	-76.5	-76.0	-76.0	-75.0	-74.5
98		64QAM	-74.0	-73.5	-73.5	-73.0	-73.0	-72.0	-71.5
115		128QAM	-68.0	-67.5	-67.5	-67.0	-67.0	-66.0	-65.5
130		256QAM	-66.0	-65.5	-65.5	-65.0	-65.0	-64.0	-63.5
50	30 MHz	QPSK	-90.0	-89.5	-89.5	-89.0	-89.0	-88.0	-87.5
100		16QAM	-83.0	-82.5	-82.5	-82.0	-82.0	-81.0	-80.5
125		32QAM	-76.0	-75.5	-75.5	-75.0	-75.0	-74.0	-73.5
150		64QAM	-73.0	-72.5	-72.5	-72.0	-72.0	-71.0	-70.5
175		128QAM	-67.0	-66.5	-66.5	-66.0	-66.0	-65.0	-64.5
200		256QAM	-65.0	-64.5	-64.5	-64.0	-64.0	-63.0	-62.5

RF/ODU Specifications

		ODU Interface											
Connector Type	N Type												
Cable Impedance	50 Ohms												
TX IF Frequency	350 MHz												
RX IF Frequency	140MHz												
		ODU Primary Power											
Power Dissipation (Watts)	33.0 to 72.0 VDC, either polarity, 25 Typical, 35 Maximum										19.2 to 72.0VDC, either polarity 52 Nominal, 58		
Protection Circuit	Powered and Protected by the IDU												
		CW Rejection											
CW Rejection to adjacent channel													
7 MHz bandwidth (dB)	>10, outside Fc +/- 7Mhz, >30dB outside Fc +/- 14MHz												
30 MHz bandwidth (dB)	>10 outside Fc +/- 35Mhz, >30dB outside Fc +/- 60MHz												
56MHz bandwidth (dB)	6MHz, >9, +/-112MHz,												
14MHz bandwidth (dB)	14MHz, >9, +/-28MHz, >												
		Environmental, Etc.											
Operating	ETS 300 019-2-4 Class 4M5(-33 to+55Degrees)												
Cold Start Conditions	Operational at -45 Degrees C, not guaranteed to fully specification compliant												
Storage	ETS 300-019-2-1												
Transport	ETS 300-019-2-2												
Mechanical	Weight, <9.5lbs., Size (inches) 10.9x9.4x3.6												
Finish	Polyester Powder Coat (Gloss Gray)												
Ground Lug	M5 x9LG												
Antenna Interface	N Type	WR112	WR112	WR90	WR75	WR75	WR62	WR42	WR42	WR42	NA	28	0.219
		WC112	WC112		WC75	WC75	WC62	WC51	WC42	WC42		0.25	

The Indoor Unit (IDU) is an extremely versatile high-capacity solution.

The IDU offers Flexible Signal Processing™ architecture, allows complete flexibility in combining Telco circuit-switched data (up to 16 T1s/E1s) and packet data (Ethernet) within the selected transport capacity.

The transport capacity can be provisioned and monitored via the web-based Link Manager or craft interface. SNMP monitoring is provided.

The Star Microwave Cirius LM provides significant flexibility in a low-cost mechanical design. It is feature-rich including SNMP, built-in ODU protection, auxiliary control and alarms, and a craft command-line interface.



Outdoor RF Unit (ODU)



Coupler for 1+1 Operation

Customer Network Data Interface Options

Physical

- Ethernet Full duplex 100BaseT
- 16 x T1s/E1s

Connector

- Ethernet RJ-45
- BNC Female 75 Ohm
- NxE1 2xRJ-48C, HD60

Compliance

- Ethernet IEEE 802.3
- NxT1 ITU-T

Auxiliary Connections

- RS232 Data Service Channel
- Alarm Port Two Form C relay alarm outputs and two TTL inputs

Compliance Summary

Outdoor Unit (ODU) Interface

Intermediate Freq. Range Tx: 350 MHz, Rx: 140 MHz
Emissions Bandwidths ANSI/FCC
ODU Command Interface ODU specific

Modem Capability

Capacity Options Throughput from 1 - 175/200 Mbps
Modulation Programmable: QPSK, 16-QAM, 32-QAM, 64-QAM, 128-QAM, 256 QAM
FEC (Trellis Coded Modulation concatenated with Reed-Solomon Coding)

Network Management

Supports SNMP
Connector 2x10/100BaseTX

Environmental

Temperature -5° to +45°C (IDU)
Relative Humidity 0 to 95%, non-condensing
Power 50-75 Watts (depending on Network Data Interface and ODU version)
ODU: -33° to +55°C, 100% Humidity

Mechanical

Dimensions 1RU, ANSI compliant

Payload Parameters

IP Interface 2x10/100BaseT, RJ-45 connector
Standards Compliance IEEE 802.3ab, 802.1Q
User Data Channel 64 kbps, V.11, DB-15 connector

Configuration

Radio Protection 1+0 or 1+1 Hot standby
Dual IF and power redundant feed (1+1 configuration)

Mechanical/Environmental

Dimensions IDU: 1U, 444.5 mm W x 240 mm D x 44.5 mm H
Operating Temperature: IDU: -5° to +45°C, ODU: -33° to +55°C (ODU)
Altitude: 4500 meters
Humidity IDU: 95%non-condensing, ODU: 100% all-weather
Power Input nominal: -48V DC (-20 to -72 VDC)
Power Consumption: IDU+ODU: 1+0: 60 watts, 1+1 115W
Power Connector: 2-pin male
Cooling: Natural Convection
IDU-ODU Interface: Coaxial N-type connector
ODU Cable: LMR-400, LMR-600, Belden

Management

Protocol: SNMPv1, 2
Local Access: Ethernet 10Base-T, RJ-45
Remote IDU Access: Out-of-band integrated routing over link and interconnected LANs
Craft Interface: VT-100, via local craft RS-232/DB-9 port or remote via telnet session
External Alarms: 4 inputs and 3 Form-C outputs, DB-25 connector

Standards Compliance Others:
ETSI EN 302 217-2, ETSI EN 301 489, ETSI EN 300 132-2, IEC EN 60950

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Specifications and availability may change without notice. Contact Factory for test conditions and specification changes.
Performance specifications are for 1+0 configurations and optimum conditions and may be affected by location, environment, and other operating conditions.