

23GHz Split-Mount Licensed Wireless Backhaul

- Split-mount
- Carrier-class
- FCC and ETSI
- Spectrum efficient
- IP and TDM
- Software expandable from 4 to 16 T1/E1
- Resilient transmission
- Lowest cost per megabit-mile

- 4 to 16 x T1/E1 + 10/100BaseT Ethernet
- Over 200Mbps user capacity
- 1.5 RU rack-mount
- 20-60 VDC power supply
- 2-year standard warranty**

- ✓ **Eliminate** leased line expenses
- ✓ **Connect** locations in days, not weeks
- ✓ **Upgrade** capacity of existing systems
- ✓ **Carry** voice and Ethernet simultaneously
- ✓ **Avoid** interference
- ✓ **Improve** manageability
- ✓ **Reduce** installation and maintenance
- ✓ **Secure** wireless backhaul links
- ✓ **Future-proof** connections
- ✓ **Expand** capacity of existing systems

Telecommunications Carriers

- Add Ethernet connectivity
- Combine with unlicensed backhaul
- Migrate TDM to IP services
- Provide management capability and security with SNMPv3 and AES encryption
- Carry voice and data on dedicated spectrum

Education, Medical & Enterprise

- Connect campus locations securely
- Install connections instantly
- Interconnect PBX trunk lines
- Eliminate leased line costs
- Provide management capability and security with SNMPv3 and AES encryption
- Carry voice and data on dedicated spectrum

Government Agencies

- Create secure inter-building networks
- Backhaul video monitoring systems
- Secure public safety networks
- Combine with unlicensed or 4.9GHz
- Interconnect PBX trunk lines
- Carry voice and data on dedicated spectrum

Industrial

- Connect oil drilling platforms, power stations and utility centers
- Carry AMR/AMI, SCADA, relay control, and IP data on dedicated spectrum
- Deploy voice/data substation connections
- Backhaul high-capacity video monitoring systems along with telemetry data



The EX-23s-16 split-mount microwave radios from Exalt Communications are carrier-class, software configurable systems designed with the same strict carrier-class requirements as the all-indoor EX-i and the all-outdoor EX-r series platforms. The highly flexible split-mount EX-23s-16 is available in convenient 1.5RU IDU/ODU configurations for both FCC and ETSI 23GHz bands, featuring native TDM and native IP transport with over 200Mbps aggregate throughput and sub-500µs latency.

With future-proof upgradeability and configuration control for channel bandwidth, modulation, and TDM/IP capacity via software, there is no need for field replaceable plug-ins or downtime to upgrade capacity or migrate TDM traffic to emerging IP-based network services.

The EX-23s-16 series 16-100F and 16-100E IDUs provide software expandability from 4 to 16 T1/E1 and a smooth upgrade path to higher capacity Ethernet services. TDM capacity may be conveniently expanded in groups of four ports via firmware option. And, only Exalt delivers market-leading security with AES encryption and secure SNMPv3³ management. Configurable in standalone 1+0 or monitored hot-standby 1+1 protection mode, the EX-s series also features enhanced fault-management and diagnostic features.



*Firmware upgrade required
 **Terms and conditions apply. See your Exalt Communications representative for details.

System

Frequency Band	21200-23610 MHz		
Output Power (at full power)	+22dBm Mode 1 +19dBm Mode 2 +16dBm Mode 3		
Power Control Step Size	0.5dB		
Maximum RSL (Mode 1)	up to -20dBm error-free 0 dBm no damage		
Receiver Threshold (guaranteed over temperature @BER=10 ⁻⁶)			
FCC (IDU 16-100F)	<u>Mode1</u>	<u>Mode2</u>	<u>Mode3</u>
5MHz channel	-90dBm	-84dBm	-77dBm
10MHz channel	-87dBm	-81dBm	-74dBm
20MHz channel	-84dBm	-77dBm	-70dBm
40MHz channel	-82dBm	-75dBm	-68dBm
ETSI (IDU 16-100E)			
3.5MHz channel	-91dBm	-85dBm	-78dBm
7MHz channel	-88dBm	-82dBm	-75dBm
14MHz channel	-85dBm	-79dBm	-72dBm
28MHz channel	-82dBm	-76dBm	-69dBm
User Capacity (Aggregate ¹ /Full Duplex ²)			
FCC (IDU 16-100F)	<u>Mode1</u>	<u>Mode2</u>	<u>Mode3</u>
5MHz channel	14/7 Mbps	30/15 Mbps	46/23 Mbps
10MHz channel	30/15 Mbps	62/31 Mbps	92/46 Mbps
20MHz channel	62/31 Mbps	126/63 Mbps	188/94 Mbps
40MHz channel	94/47 Mbps	252/126 Mbps	284/142 Mbps
ETSI (IDU 16-100E)			
3.5MHz channel	10/5 Mbps	20/10 Mbps	32/16 Mbps
7MHz channel	20/10 Mbps	42/21 Mbps	64/32 Mbps
14MHz channel	42/21 Mbps	88/44 Mbps	130/65 Mbps
28MHz channel	88/44 Mbps	176/88 Mbps	264/132 Mbps
Max. Supported T1/E1 ports			
FCC (IDU 16-100F)	<u>Mode1</u>	<u>Mode2</u>	<u>Mode3</u>
5 MHz channel	4/3	9/7	14/11
10MHz channel	9/7	16/14	16/16
20MHz channel	16/14	16/16	16/16
40MHz channel	16/16	16/16	16/16
ETSI (IDU 16-100E)			
3.5 MHz channel	3/2	6/5	8/7
7MHz channel	7/5	12/10	16/15
14MHz channel	12/10	16/16	16/16
28MHz channel	16/16	16/16	16/16
Error Floor	10 ⁻¹²		
Maximum packet size	1916 bytes		
Latency (T1/E1)	<500µs typical		
Link Security	96-bit proprietary 128 and 256 AES encryption ²		
Management	HTTP GUI, CLI/Telnet SNMPv2, SNMPv3		
Compliance	RF: FCC Part 101; ETSI EN302217-2-2 EMI: FCC Part 15; ETSI: EN301489		

Physical

Physical Configuration	Split-mount Indoor Unit (IDU) and Outdoor Unit (ODU)
Dimensions (H x W x D)	IDU: 2.63 x 17 x 14 inches (1.5RU) 6.7 x 43.2 x 35.6 cm (1.5RU) ODU: Diameter 10.5in/26.7cm Depth 3.5in/8.9cm
Operating Temperature	-40 to +65 degrees C -40 to +149 degrees F
Full Spec Temperature	-25 to +60 degrees C -13 to +140 degrees F

¹ The figure listed is the actual aggregate user throughput, maximum, as measured at layer 2. T1 or E1 circuits may be enabled one at a time, as needed, and subtract 3.1Mbps (1.544Mbps full-duplex) or 4.1Mbps (2.048Mbps full-duplex), respectively, from the aggregate user throughput. See your Exalt representative for details.

² Bidirectional capacity, or half of the aggregate capacity of the system. Base model configuration is 15Mbps+0xT1/E1.

Physical (continued)

Weight	IDU: 12 pounds; 5.5 kg ODU : <10 pounds; 4.6 kg
Environmental	IDU: GR-1089-CORE intra-building ODU: NEMA 4/IP56, EN 301 126-1
Altitude	15,000 feet; 4.6 km
Humidity	IDU: 95% non-condensing ODU: 100% condensing
Safety	IEC 60950-1, EN 60950-1
Interfaces	
IF	IDU/ODU: N-type (F); 50 ohms
RF	ODU: WR-42
T1/E1 (x16) ³	RJ48C/RJ45 (F)
T1 Impedance	100 ohms, balanced
T1 Line Codes	AMI, B8ZS, selectable per channel
T1 Clocking Speed	1.544Mbps
T1 Compliance	ANSI T1.102-1987; GR-499-CORE
E1 Impedance	120 ohms, balanced
E1 Line Codes	HDB3
E1 Clocking Speed	2.048Mbps
E1 Compliance	CEPT-1; G.823, ITU-T-G703
Loopback Modes	Remote Internal/External, Local line
Ethernet (x2)	RJ45 (F), auto-MDIX
Interface Speed	10/100BaseT
Duplex	Half, Full, Auto
Compliance	802.3
Console (Serial)	9-pin Sub-D (F)
Interface Speed	9600 bps
Compliance	EIA-574 (RS-232)
Alarm	9-pin Sub-D (F)
Inputs	(2) TTL/Closure
Outputs	(2) Relay (Form C)
DC Power	6-pin barrier strip
Input Voltage	±20-60VDC
Consumption	<70W (48V : <1.5A, 24V: <3.0A)
AC Power Adapter	EIC-to-NEMA 5-15
Input	100-240VAC, 1.5A
Output	48VDC, 2A, 100W

System Components

Complete link ⁴	Two terminals (IDU+ODU) each with AC adapter & accessory kit
Single terminal	One terminal (IDU+ODU) with AC adapter & accessory kit
Accessory kit	DC power connector, rack and grounding hardware (spare)
AC adapter	AC adapter (spare)
Monitored Hot Standby Kit	Optional accessory kit

³ Capacity may be increased in groups of 4xT1/E1 from 4 to 16 via separately purchased software option.

⁴ Two complete links (4 terminals: 4xIDU+4xODU) are required for monitored hot standby (MHS) protection along with MHS kit and MHS firmware version.