

# Optical to RF Signal Converter

## Featuring the UniServ™ Satellite Unit



UniServ Satellite Unit



UniServ Satellite Head-End

Powerwave's innovative UniServ Satellite Unit is an Optical to RF signal converter designed to provide a flexible, reliable and cost-effective means of distributing single wireless services or protocols over large indoor coverage areas. These include high-rise buildings, campus facilities, shopping malls, airports, hospitality centers, and underground parking lots.

As part of Powerwave's Distributed Antenna System, the UniServ Satellite Unit offers fiber based RF Distribution to ensure greater signal quality and reach over large distances, not possible with coaxial cable alone. Available in Trunking, iDEN®, Cellular, Paging, GSM, and PCS, all services can be extended cost-effectively by feeding into a single or multiple antenna distribution system at remote locations. By combining Powerwave's UniServ Satellite Unit with Powerwave's LinkNet™ Satellite Head-End you can ensure extensive reach, low attenuation and noise for superior signal quality in the farthest and deepest corners of your facility.

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### Product Description

#### LinkNet Satellite Head-End\*

Accepting RF signals from a repeater or amplifier unit, this fiber-optic head-end unit converts RF signal(s) into light and distributes the signal(s) over single mode fiber optic strands to remote UniServ Satellite Units. For uplink communication, the process is reversed.

#### UniServ Satellite Unit

Installed to provide local area coverage, the UniServ Satellite Unit receives its dedicated optical signal from the LinkNet Satellite Head-End. Here, the light is converted back to an RF signal and amplified for distribution through its antenna port system. For uplink communication, the process is reversed.

### Features & Benefits

#### Installation & Service Features

Both the Fiber-Optic Head-End and the UniServ Satellite Unit are 'plug-and-play/unplug-and remove' to enhance ease of installation and maintenance.

#### Monitoring Features

The UniServ Satellite Unit can be locally controlled via an RS-232 serial interface to provide on-site alarm monitoring and control of system parameters with the use of a laptop. The UniServ Satellite Unit is also compatible with the InView Management System for remote monitoring and control. Also a summary alarm contact closure is incorporated into our UniServ Satellite Unit.

#### Housing Features

The Fiber-Optic Head-End fits into a standard 19" rack cabinet. The UniServ Satellite Unit is wall mountable or can be fitted into a standard 19" rack cabinet for multiple service applications.

Both active elements are designed to be conveniently located where maintenance access is available 24-hours a day.

#### Fiber Optic Benefits

The UniServ Satellite Unit leverages the inherent attributes of fiber optic technology, such as low attenuation and noise that results in its ability to provide superior signal quality. Other benefits associated with fiber optic distribution include reduced infrastructure and site development costs, making it an ideal solution for large facilities or multiple building settings.

•UniServ Satellite Unit must be sold in conjunction with the LinkNet Satellite Head-End.

ANTENNA  
SYSTEMS

BASE STATION  
SYSTEMS

COVERAGE  
SYSTEMS

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## Product Specifications

RF Performance	Downlink	Uplink
Frequency Range*	851-869 MHz Trunking, iDEN®, Public Safety 869-894 MHz Cellular 928-941 MHz Paging 935-960 MHz GSM 1805-1880 MHz GSM 1930-1990 MHz PCS	806-824 MHz Trunking, iDEN®, Public Safety 824-849 MHz Cellular 896-902 MHz Paging 890-915 MHz GSM 1710-1785 MHz GSM 1850-1910 MHz PCS
Maximum Power	+38 dBm IP3 Minimum (iDEN®, Cellular, Paging, GSM 900) +36 dBm IP3 Minimum ( GSM 1800, PCS)	+4 dBm IP3 Minimum (iDEN®, Cellular, Paging, GSM 900) ±0 dBm IP3 Minimum (GSM 1800, PCS)
Gain	+20 dB iDEN®, Cellular, Paging +20 dB PCS	+20 dB iDEN®, Cellular, Paging +20 dB PCS
Spurious Outputs	-20 dBm Maximum per Remote Module Antenna Port	
Group Delay	<2 μs not including Fiber-Optic Link	

Model Family Type	Service	FCC Type Acceptance	IC Type Acceptance
US800TP	Trunking, iDEN®, Public Safety	H6M-US800TP	1541A-US800TP
US800C	Cellular	H6M-US800C	1541A-US800C
US900P	Paging	H6M-US900P	1541A-US900P
US900G	GSM 900	n/a	n/a
US1800G	GSM 1800	n/a	n/a
US1900P	PCS	H6M-US1900P	1541A-US1900P

\* Consult a Powerwave representative for custom filtering options.

### Mechanical Characteristics

Dimensions (W x H x D)**	9.25" x 2.75" x 11" (235 x 20 x 280 mm)
Weight	6 lbs. (2.7 Kg) Maximum
RF Connectors	SMA (50 Ω)
Operating Temperature Range	-20°C to +50°C
Operating Humidity Range	5% to 90% RH, Non-Condensing

### Specifications for LinkNet Satellite Head-End (LNKFIH-H)

Primary Power	120/240 VAC, 50-60 Hz 75 VA (typical), 90 VA Maximum
Dimensions (W x H x D)	19" x 1.75" x 14" (485 x 45 x 356 mm)
Weight	16 lbs. (7.2 Kg) Maximum

### Electrical Specifications

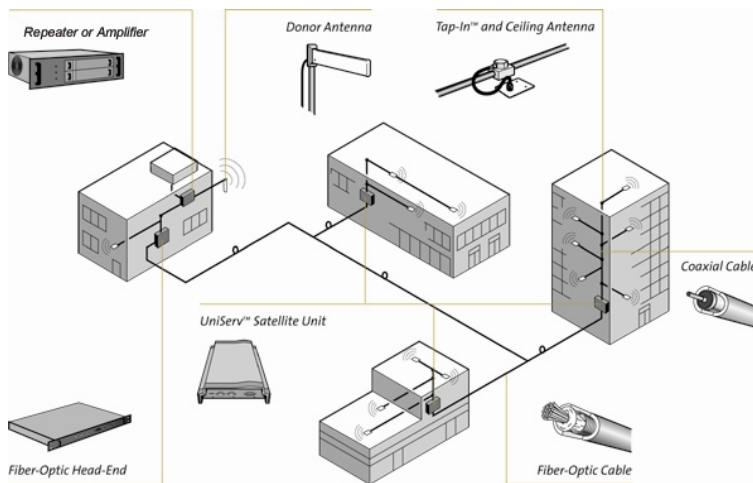
Primary Power	120/240 VAC, 50-60 Hz 25 VA (typical)
Backup Battery (optional)	24 VDC "Gel-Cell"

### Optical Specifications

Optical Connectors	SC/APC
Optical Path Loss	2 dBO Maximum

**Laser Warning:** Invisible Laser Radiation emitting from optical connector. Avoid direct exposure to beam.

All specifications are subject to change without notice. Please contact your Powerwave representative for complete performance data.



## Product Deployment

The signal is received via an off air donor antenna located on the exterior of a building, from a nearby macro cell site. The repeater or amplifier head-end amplifies the signal and distributes it to the Fiber-Optic Head-End where it is converted into light and carried over single mode fiber optic strands to UniServ Satellite Units. Designed to provide local area coverage, they receive the optical signal and convert it back to an RF signal, which is then amplified and distributed to each floor via coaxial cable. Powerwave's patented Tap-In signal taps and a series of ceiling mounted antennas provide balanced coverage throughout each building.

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COVERAGE AND CAPACITY

TECHNOLOGY LEADERSHIP

GLOBAL PARTNER

INTEGRATED SOLUTIONS

QUALITY AND RELIABILITY

UniServ™