

## VVHP-Very Very High Power ALL-OUTDOOR (Tower Top) MW SYSTEM

### Product Overview

The Skylinks ALL-OUTDOOR MW SYSTEM is a superlative solution offering the highest possible system gain by providing the Very Very High TX output power available close to the Antenna and zeroing the losses typical of standard feeders/elliptical WG connections between Indoor RF equipment and antennas.

The result is a large saving in both CAPEX and OPEX , specifically:

- no need of buying and installing long WG lines and related accessories
- opportunity to decrease the antenna size
- lighter tower frame structure
- no need of tower refurbishment for holding very large dishes

Alternatively, in case of new network deployment a lower number of sites is required to cover the same distance.

The equipment are fitted in a temperature controlled cabinet, depending on different link configurations as well as the thermal capacity depending on the total power consumption.

Either the DRS (RFU + SDIDU) or the HS (All-In-One) version of existing Slylinks' MW systems can be used depending on customer needs.



### DRS System Features

- Selectable Rates and Interfaces  
PDH Options
  - > Up to 16 x E1/T1
  - > 100BaseTX/Ethernet: Scalable 1-100 Mbps
  - > DS-3/E-3/STS-1

### HS All-in-ONE System Features

- Complete Digital Microwave System placed into a 2RU 19" std.
- QPSK, 16-256 QAM Modulation
- FEC – Forward Error Correction with Reed-Solomon Coding
- Built-in Adaptive Modulation system with dynamic capacity allocation and priority data transmission (PBPS – Packet Based Priority System)

- Super PDH Options
  - > Up to 32 x E1/T1
  - > 100 BaseTX/Ethernet: Scalable 1-100 Mbps
- SDH Options
  - > 1-2 x SDH STM-1/OC-3 SONET
- GigaBit Ethernet
  - > 2E1+ 4x1000BaseTx/Ethernet: Scalable 1-310 Mbps
- Support for multiple configurations for both PDH and SDH
  - > 1+0, 1+1 Hot Standby protection space and frequency diversity
  - > 2+0 East/West Repeater and East/East capacity doubler
- Selectable Spectral Efficiency of 0.8 to 6.25 bits/Hz (including FEC and spectral shaping effects)
- QPSK, 16 –256 QAM Modulation
- Powerful Trellis Coded Modulation concatenated with Reed-Solomon Error Correction
- Built-in Adaptive Equalizer
- Support of Voice Orderwire Channels
- Adaptive Power Control
- Built-in Network Management System (NMS)
- Consecutive Point ring architecture
- Built-in Bit Error Rate (BER) performance monitoring
- Integrated Crosspoint switch: allows a total of 160 E1s (200 T1s) to be mapped any-to-any between front-panel ports and RF link(s).
- Optional STM-1 Mux/Demux: allows the SDIDU™ to extract up to 63 E1 (or 84 T1) from an STM-1. In conjunction with an integrated Crosspoint Switch, up to 223 E1 (284 T1s) can be mapped any-to-any between front-panel ports, STM-1, and RF link(s).

- Asymmetrical data rates – different modulation setup for up-stream and downstream
- On-line Ethernet packet compression with reduced length of frames allowing throughput efficiency increase up to 25%
- Two USB ports for connecting USB-flash disk or PC
- "In-Band"/"Out-of-Band" Management
- NAT, Proxy ARP support for effective IP management setup
- Large range of System and Ethernet Counters
- Adaptive Power Control ATCP
- Built-in Network Management System (NMS) – Web, SNMP, TELNET
- Built-in Bit Error Rate (BER) Tester
- Built-in Spectrum analyzer
- Support for 1+0 and 2+0
- Customer network data interface:
  - 1 x Gigabit Ethernet (100/1000Base-T)
  - 1 x Fast Ethernet (10/100Base-T) for traffic or management

#### Options

- 2 or 4 x ASI (BNC input/output)
- 1-2 x E1 / T1 plug-in extension module
- 1 x E3 / DS3 plug-in extension module

## System Configurations

Using the DRS system, the following configurations are available:

- 1+0
- 1+1 (either HSB or freq./space diversity)
- 2+0 (either east-east or east-west)
- 2+0 XPIC

Using the HS system, the following configurations are available:

- 1+0 HS All-In-One or HS+ (RFU+ Compact IDU)
- 2+0 east-west (2\* HS All-In-One)
- 1+1 or 2+0 with a capacity up to 730Mbps "user bitrate" (with 2\*RFUs + 2\* HS+ Compact IDUs)

All above versions can be implemented in any combination of VHP or UHP (pls refer to datasheet)

SYSTEM PARAMETERS			
Frequency	4 GHz	6/7/8 GHz	10/11 GHz
Standards	ETSI/FCC	ETSI	ETSI/FCC
Operating Frequency ( GHz )	3.8 to 4.2, 4.40 to 5.00 5.90 to 7.10	7.10 to 8.50	10.70 to 11.70
Channel BW 28 MHz Channel BW 56 MHz	128 QAM 157 Mbps 32 QAM 157 Mbps / 128 QAM 310 Mbps		
Tx Power (dBm) QPSK 16, 32, 64QAM 128, 256QAM	VHP / UHP +35/+40 +32/+37 +30/+35		VHP / UHP +34/+39 +31/+35 +29/+33
Rx Sensitivity (dBm) @ 10 <sup>-6</sup> BER 28 MHz, 157 Mbps 56 MHz, 157 / 310 Mbps	-70 -72 / -66		-69 -71 / -65
Frequency Stability	0.0010%		
Background BER	< 10 <sup>-12</sup>		
Standards Compliance	Radio ETSI EN 302 217, EN 301 216, EN 301 128, EN 300 198		
	Power Supply ETSI EN 300 132-2		
	EMC / Safety ETSI EN 301 489 / IEC EN 60950		

HS PAYLOAD INTERFACE PARAMETERS		
Gigabit Ethernet	Line Rate	Full-Duplex, scalable up to 310 Mbps
	Interfaces	1 x 10/100/1000 Base-T (RJ45) 1 x 10/100 base-T (Rj45)
	Maximum packet length	1632 Bytes
E1 / E3	Line Rate	1-2 x 2.048 / 1 x 34.368 Mbps
	Interfaces	G703 RJ45 / BNC
	Test Utility	Loopback, Internal BER tester
ASI	Half-Duplex-TX	4 X ASI TX
	Half-Duplex-RX	4 X ASI RX
	Full-Duplex	2X ASI TX + 2X ASI RX

DRS PAYLOAD INTERFACE PARAMETERS		
PDH	Line Rate	1 to 32 x E1/T1
	Interfaces	120 Ω balanced or 75 Ω unbalanced
	Standards Compliance	ITU-T G.703, G783
Fast Ethernet	Line Rate	Full-Duplex, scalable up to 150 Mbps
	Interfaces	2 x 100 Base-Tx
	Standards Compliance	IEEE 802.3
SDH	Line Rate	1 or 2 STM -1/ OC3 155.52 Mbps
	Interfaces	Optical Type Sc Single mode 1310nm, Electrical BNC
	Standards Compliance	Telcordia
Gigabit Ethernet	Line Rate	Full-Duplex, scalable up to 300 Mbps
	Interfaces	4 x 1000 Base-Tx
	Standards Compliance	IEEE 802.3

MECHANICAL/ENVIROMENTAL	
<b>Dimensions</b>	500W x 700D x 860H mm
<b>Weight</b>	Empty box: 30,5Kg. 1+0 ca. 40Kg. 1+1 ca. 50Kg
<b>Operating Temperature</b>	Standard : -5° to +55°C - Option: -35° to +55°C (Artict Option -55°C)
<b>Power Input</b>	-48V DC
<b>Power Consumption</b>	< 240W (including Cooling System 100W max)
<b>Cooling Capacity</b>	30W/°K
<b>Protection Grade</b>	IP55 (IEC 60529), Corrosion ISO 21207 B

<b>Antenna Interface</b>	4 GHz	6GHz	7/8 GHz	11 GHZ
	UDR48/N-Type	UDR70 (CPR137)	UDR84	UDR100/120

