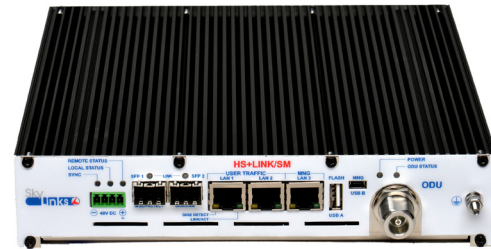


HS+LINK/SM

Compact HS+LINK Split Mount Microwave System



ESKODU



HS+SDIDU

GENERAL DESCRIPTION

The High Speed/Split Mount Radio System HS+LINK/SM provides a cost-effective solution to high capacity data transmission requirements. Operating in the licensed bands from 1.4 to 38GHz, it is composed by very compact IDU and ODU with enhanced features that include line interface, alarms and diagnostics and network management interfaces. HS+LINK/SM features enhanced software allowing capacity / configuration upgrade, downloadable field upgrades and an optional embedded SNMP agent for advanced network management capabilities, making it the ideal solution for networks operated by mobile service providers, internet service providers (ISP), utilities, public telephone operators, local governments, TV networks and corporate users. These SKYLINKS Digital Radios represent a new microwave architecture designed to address universal applications for GE platforms. The advanced technology is designed to provide flexibility to customers for their current and future Ethernet network needs. It is spectrum and data rate scalable from 5 to 365 Mbps, giving opportunity to service providers and companies to trade-off system gain with spectral efficiency and channel availability for optimal network connectivity. The overall architecture consists of a single 1U "half size" rack mount Software Defined Indoor Unit (SDIDU) with a cable connecting to an Outdoor Unit (ESKODU) with an external antenna.

SYSTEM ADVANTAGES

- Point-to-Point fixed and mobile links carrying data, voice and HD video.
- Telco and Broadcasting transport networks.
- Enterprise and private MW networks: OIL&GAS - WISP - UTILITIES - HEALTHCARE - DISASTER RECOVERY.
- High capacity backhaul and backbone critical communications infrastructures.
- High Speed MW links.

MAIN FEATURES

- Up to 365 Mbps data throughput, full duplex
- Available modulation schemes:
 - QPSK/8PSK/16-32-64-128-256 QAM
- Available channel bandwidth:
 - ETSI standards : 7/14/28/40 and 56 MHz
 - ANSI standards : 10/20/30/40 and 50 MHz
- Customer network data interface:
 - 3 x RJ Gigabit Ethernet (100/1000Base-T)
 - 2 x SFP (1000BaseSX/LX)
 - 16 x E1 / T1 G703 OPTION (Up to 64 x E1 / T1)
 - 4 x ASI OPTION (Up to 16 x ASI)

SYSTEM FEATURES

- FEC – Forward Error Correction with LDPC Coding
- Built-in Hitless Adaptive Modulation system with dynamic capacity allocation and priority data transmission (PBPS – Packet Based Priority System)
- On-line Ethernet packet compression with reduced length of frames allowing throughput efficiency increase up to 25%
- One USB port 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) – http, https, SNMP v1,2,3, TELNET, SSH
- Built-in Bit Error Rate (BER) Tester + Built-in Spectrum Analyzer

OPTIONS (External Multiplexer Module)

EMM ASI: 4 X ASI OPTION (UP TO 16 X ASI)

- Integrated HD video transport in addition to IP/Ethernet
- Multiple DVB-ASI access ports
- Support of timing synchronization and distribution of timing reference for SFN



EMM 16E1: 16 X E1 / T1 G703 OPTION (UP TO 64 E1 / T1)

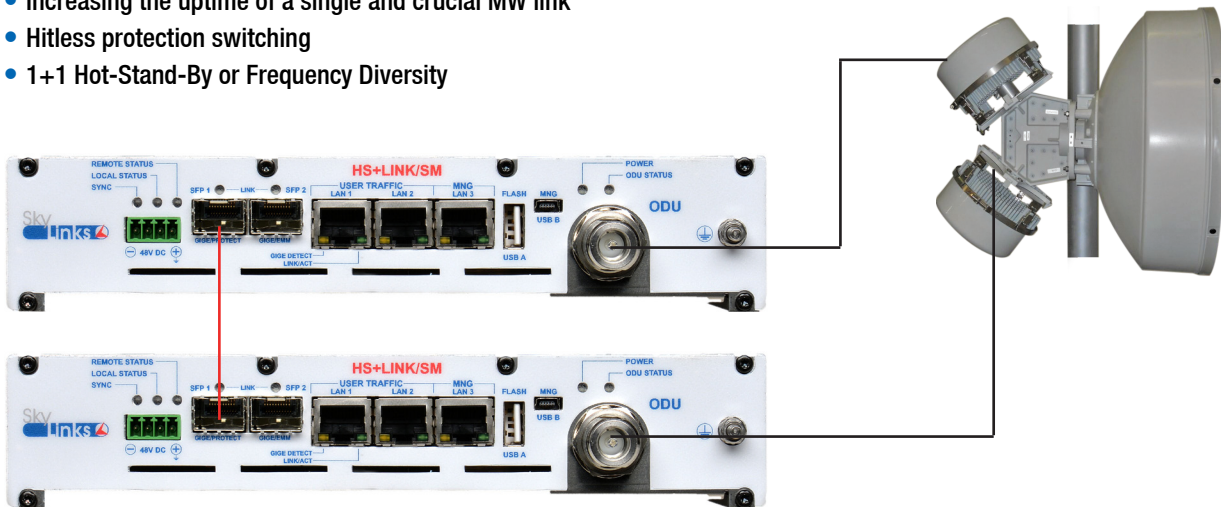
- IDU easily combined with TDM legacy data streams
- Transport of E1's/T1's with Ethernet over the same link



SYSTEM CONFIGURATIONS

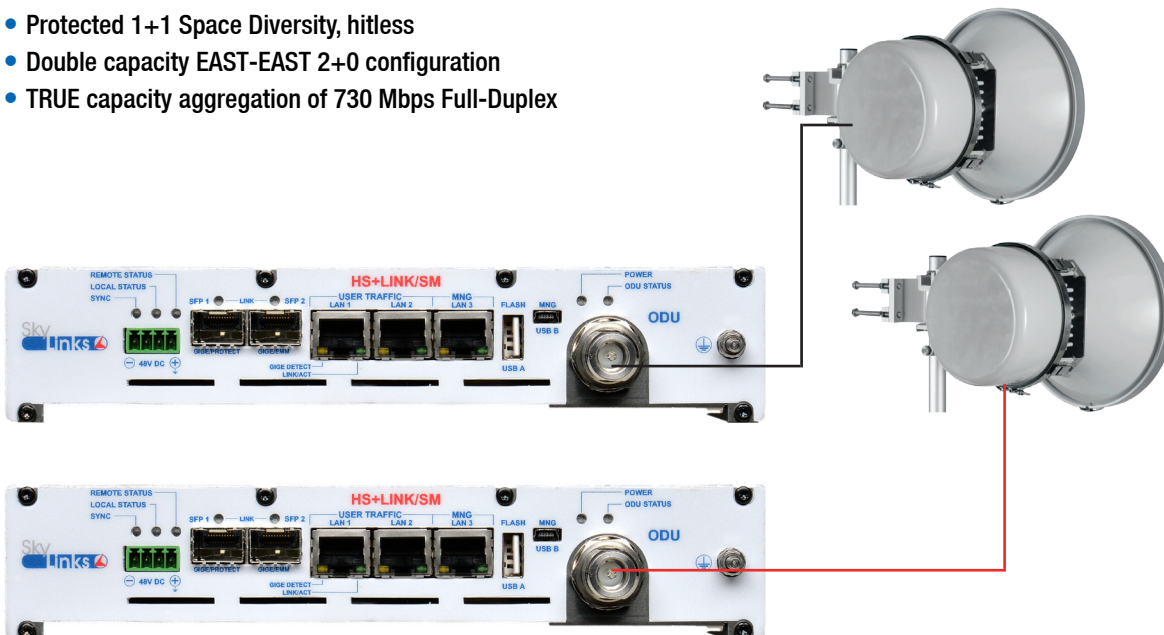
PROTECTED MODE (HITLESS 1+1 HSB/FD)

- Increasing the uptime of a single and crucial MW link
- Hitless protection switching
- 1+1 Hot-Stand-By or Frequency Diversity



2+0/XPIC AGGREGATE MODE OR PROTECTED 1+1 SD

- Protected 1+1 Space Diversity, hitless
- Double capacity EAST-EAST 2+0 configuration
- TRUE capacity aggregation of 730 Mbps Full-Duplex



SYSTEM PARAMETERS

Frequency Band	4 GHz	5 GHz	6 GHz	7/8 GHz	10 GHz	11 GHz	13 GHz
Operating Frequency (GHz)	3.6 - 4.2	4.4 - 5	5.9 - 7.1	7.1 - 8.5	10.0 - 10.7	10.7 - 11.7	12.75 - 13.25
Tx Power (dBm)	SP / HP	SP / HP	SP / HP	SP / HP	SP / HP	SP / HP	SP / HP
QPSK	+27/+32	+27/+32	+27/+32	+27/+32	+26/+31	+26/+31	+26/+31
16, 32, 64 QAM	+24/+29	+24/+29	+24/+29	+24/+29	+23/+28	+23/+28	+23/+28
128 QAM	+22/+27	+22/+27	+22/+27	+22/+27	+21/+26	+21/+26	+21/+26
256 QAM	+20/+25	+20/+25	+20/+25	+20/+25	+19/+24	+19/+24	+19/+24
Rx Sensitivity (dBm) @10 ⁻⁶ BER							
QPSK (28/56 MHz)	-88/-85	-88/-85	-88/-85	-88/-85	-88/-85	-88/-85	-88/-85
32 QAM (28/56 MHz)	-78/-74	-78/-74	-78/-74	-78/-74	-78/-74	-78/-74	-78/-74
128 QAM (28/56 MHz)	-70/-66	-70/-66	-70/-66	-70/-66	-70/-66	-70/-66	-70/-66
256 QAM (28/56 MHz)	-67/-63	-67/-63	-67/-63	-67/-63	-67/-63	-67/-63	-67/-63
Antenna Port interface	N-Type	N-Type	UDR70	UDR84	UBR100	UBR100	Circular WG

Frequency Band	15 GHz	17 GHz UL	18 GHz	23 GHz	24 GHz UL	26 GHz	38 GHz*
Operating Frequency (GHz)	14.4 - 15.35	17.1 to 17.3	17.7 to 19.7	21.2 to 23.6	24.0 to 24.25	24.55 to 26.45	37.0 to 39.5
Tx Power (dBm)	SP	SP	SP	SP	SP	SP	SP
QPSK	+25	+13	+23	+22	+10	+25	+18
16, 32, 64 QAM	+22	+10	+20	+19	+7	+22	+15
128 QAM	+20	+8	+18	+17	+5	+20	+13
256 QAM	+18	+6	+16	+15	+3	+18	+11
Rx Sensitivity (dBm) @10 ⁻⁶ BER							
QPSK (28/56 MHz)	-88/-85	-87/-84	-87/-84	-87/-84	-87/-84	-87/-84	-86/-83
32 QAM (28/56 MHz)	-78/-74	-77/-73	-77/-73	-77/-73	-77/-73	-77/-73	-76/-72
128 QAM (28/56 MHz)	-70/-66	-69/-66	-69/-66	-69/-66	-69/-66	-69/-66	-69/-65
256 QAM (28/56 MHz)	-67/-63	-64/-61	-64/-61	-64/-61	-64/-61	-64/-61	-66/-62
Antenna Port interface	Proprietary Circular WG ("Ball" Adapter)						
Standard 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						

NETWORK MANAGEMENT

Support	SNMP, WEB based GUI, TELNET, ASCII console
Local Access	Ethernet 10/100 Base-T / RJ-45, RS232, USB-A, USB-B
Out-of-Band Management	115 Mbps
In-band Management	Via LAN
IP Addresses	Primary, secondary
IP Option	NAT, Proxy ARP
IP Utilities	Ping, telnet

MECHANICAL / ENVIROMENTAL

Dimensions	IDU: "HALF"19" standard rack (1U), 210 x 44 x 201mm ODU: D 260mm x H 160mm
Weight	IDU: 2 Kg; ODU: 6.0 Kg
Operating Temperature	IDU: -5° to +45°C; ODU: -33° to +55°C (Arctic option -50°C)
Altitude	Up to 4500 meters
Humidity	IDU: 95% condensing; ODU: 100% all-weather
Power Input	-48V DC (-36V to -60V DC)
Power Consumption	IDU + ODU < 35 Watts
Cooling	Natural convection
Coaxial Interfaces	IDU N-type female, ODU N-type female
IDU-ODU Cable	Belden 9913/RG-8, up to 300m
Standards Compliance	ETSI ETS 300 019, Part 1-3 Class 3.2 (IDU) - Part 1-4 Class 4.1 (ODU)

