

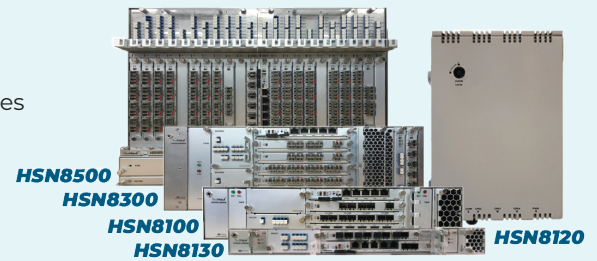
## flexiHaul HSN8120A/D Solution

### Flexible xHaul Solution for 4G and 5G



#### PRIMARY APPLICATIONS

- Fronthaul & Backhaul Transport at 4G/5G Cell Sites
- Wavelength Aggregation
- Outdoor Environments: Wall & Pole Mount



*flexiHaul HSN8000 Series*

### The flexiHaul HSN8000 Family of xHaul Solutions

HFR Networks' flexiHaul HSN8000 xHaul solutions offer a complete portfolio of CPRI and Ethernet over WDM solutions for cost effective and high performance transportation of mobile traffic and Carrier Ethernet offerings. These field proven WDM solutions support CPRI transport with low latency, minimal jitter, and unparalleled flexibility across active or passive WDM. HFR Networks' solutions have been proven in large scale customer deployments at leading global tier one mobile operators. These solutions enable service providers to rapidly expand mobile services, especially when fiber is constrained and it is imperative to quickly to add capacity to create new revenue streams.

#### PRODUCT OVERVIEW

HSN8120A/D is a member of the cost-effective and highly scalable 8000 family, and is used to transport CPRI and GbE services from a small cell site as a remote terminal for an aggregator, such as: the HSN8500NA, the HSN8300NA or the HSN8100NA.

The HSN8120A/D supports point to point and linear chain topologies. It has its own outdoor enclosure which includes an integrated four-port transponder for CPRI or Gigabit Ethernet service delivery used to transport service via CWDM or DWDM over dark fiber. In addition, HSN8120A/D is efficiently managed by the HSN8800 GUI based EMS, which provides the necessary tools for traffic provisioning, integrated test measurement and overall system monitoring.

#### Feature Rich, Pay-as-You-Grow Architecture

The flexiHaul HSN8000 series is a highly scalable solution portfolio built on a flexible, pay-as-you-grow architecture to achieve cost effective CAPEX/OPEX and an optimal return on investment. Utilizing a diverse set of plug-and-play service cards, the flexiHaul HSN8000 series allows a carrier to choose any combination of supported services and facilitates easy operation and maintenance.

### Integrated Carrier-Class Element Management System: Greatly Simplifies Network Operations

The flexiHaul HSN8120A/D solution is efficiently managed by HFR Networks' flexiHaul Element Management System (EMS) which provides the necessary tools for effortless set-up, traffic provisioning, integrated test measurement, and ongoing system monitoring. The flexiHaul EMS offers full visibility and operational control into remotely deployed RAN transport and Ethernet access equipment. Pre-integrated with HFR Networks' solutions, this highly scalable, carrier-class software solution runs on commercial off-the-shelf hardware or in a cloud instance. It ensures operators can quickly install new services while maintaining higher performance in order to exceed their customers' service level agreements (SLAs). Highly intuitive, the flexiHaul EMS helps optimize operations across a range of xHaul and Ethernet access service use cases, including mobile fronthaul/ backhaul applications and converged Carrier Ethernet offerings.

#### KEY FEATURES

- Proven CWDM/DWDM supports CPRI transport with low latency and reduced jitter
- Enables the expansion of mobile services quickly, especially when fiber is constrained
- Maximizes fiber efficiency while supporting a mix of mobile and Ethernet services
- Delivers increased performance to meet timing requirements for mobile applications
- Offers field tested interoperability across leading RAN vendors and Carrier Ethernet OEMs
- Provides centralized components and lowers OPEX with rich OAM features
- Integrated EMS enables full visibility, control, and monitoring for effortless operation

**Physical Characteristics**

Dimensions	376(H) X 276(W) X 159(D) mm 14.8(H) X 10.9(W) X 6.3(D) inches
Weight	13kg (28.7 lbs)
Power Consumption	35W (Fully Loaded)
Mounting Type	Wall or Pole

**System Capacity**

CPRI Capacity	Up to 4 x CPRI, GbE/10GbE
Wavelength	CWDM :ITU-T G.694.1 DWDM :ITU-T G.694.2
Transmission Distance	Up to 15 km

**Channel Interfaces**

Service Interfaces	CPRI 2/3/4/5/7/8, GbE, 10GbE
Optical Connector Type	LC/UPC

**Field Changeable Options**

CWDM Mux Band 1 (8 Wavelengths)
CWDM Mux Band 2 (8 Wavelengths)
DWDM Mux Band 1A, 1B, 1C (8 Wavelengths)
DWDM Mux Band 2A, 2B, 2C (8 Wavelengths)
Client/Network Pluggable Optics Common to flexiHaul Portfolio

**Multi-rate Universal Transponder**

Protocols	4 Ports CPRI: /3/4/5/7/8, GbE/10GbE
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**4-Port Universal Transponder**

Protocols	CPRI 3/4/5/7/8, GbE/10GbE x 4 Ports
Client/WDM Ports	4 / 4
CPRI/Line Monitoring	LOS, LOF, CV, BIP, AIS, RDI
Performance Monitoring	SFP/SFP+DDM, BIP, ES, SES, UAS
FEC	Supported
CPRI Delay (One-way)	< 0.5 μs (without FEC)
Profile	Low Latency Profile Standard OAM Profile High Link Budget Profile (FEC Enabled)
Delay Equalization	Supported

**Network Management**

Operation	EMS (Server, Client) Local Craft Terminal
Protocols	SNMPv2/ v3, 10 / 100 Base-TX

**OAM**

Fault Controls	Alarm Severity: Critical, Major, Minor, Warning
Classification Levels	Unit, Module, Port
Performance Monitoring	15 MIN/24 HR
Test Functions	Local & Remote Loopback, Delay Measurement, BERT
Visual LED Indicators	System Activity, System Failure, ACO, Alarms Status (Critical, Major, Minor)
Environmental Alarm	Door Alarm

**Topologies/Power/Environmental**

Topologies	Point to Point, Linear Chain
Power	HSN8110A – AC 90V~240V HSN8110D – DC -48V(-40V~-56V), +24V(+20V~+28V)
Environmental	Operating: -40 °C to 70 °C (GR-3108 Class 4) - 40 °C ~ +46 °C With Solar Loading Humidity : < 5 to 100 % RH

**Regulatory & Compliance**

FCC Part 15 Class A, CE Mark, UL 60950-1, IEC 60950-1
IC (Canada EMI), CB, NEBS Level 3, Class4, Enclosure Protection IP65
ATT-TP-76200, Issue 19, June 2014
VZ TPR 9205, Issue 5, October 2011

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