

SMALL CELL AND ALPHA GATEWAYS



Small Cell and Alpha GateWays

Leveraging the HFC Network to **Generate New Revenue Opportunities**



EuroDOCSIS
Underground Network

Leverage existing power supply locations to add advanced revenue-generating services with the AlphaGateway XMG.

A single AlphaGateway SMG can power and provide backhaul for multiple devices such as small cell and security cameras.



3 HFC Small Cell Issues and Answers



HIGH RELATIVE TOTAL COST OF OWNERSHIP TIED TO POWERING AND BACKHAUL: FROM 3-10000\$ USING FIBER AND LOCAL UTILITY CONNECTIONS CAN BE BROUGHT DOWN DOWN BELOW 1000\$

1. Real Estate

Small Cell Challenges

- ▶ Municipal Permits/site acquisition and leasing costs, time, local codes, aesthetics

HFC Solutions

- ▶ Existing Infrastructure
 - Power Supply Cabinets
 - Coax Strand
- ▶ No added pole attachment

2. Site Power

- ▶ High availability desired
- ▶ Range from 50W to 400W
- ▶ Difficult to deliver outdoors
- ▶ Meters, bills, cost of wiring

- ▶ Battery Backed
- ▶ Wide availability
- ▶ Clean from noise, surges
- ▶ Permit system set up

3. Communications Backhaul

- ▶ Low Latency required
- ▶ Fiber desired but expensive to deploy

- ▶ DOCSIS 3.0 widely available
- ▶ DOCSIS 3.1 to provide GigE speeds
- ▶ Collocated with Power

Small Cell AND ALPHA GATEWAYS



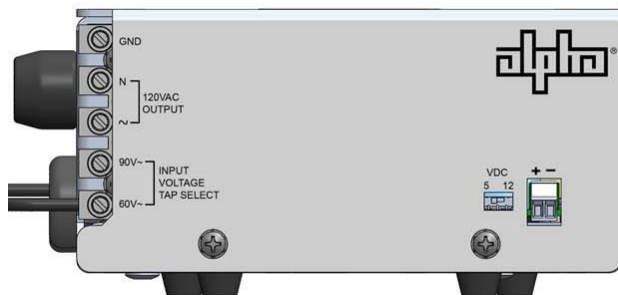
- ▶ Alpha's Current Solution for Small Cell
- ▶ Alpha's Next Products: HFC-Deployed Solutions for Small Cell

Alpha's Current Solution for Small Cell

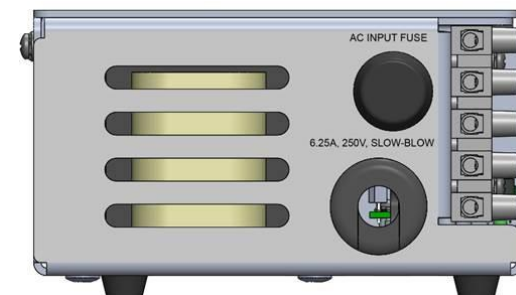


XMP- 8D

- ▶ HFC power from XM3
 - Mounts inside of XM2/XM3 cabinet
 - Converts 60/90VAC XM output to 120VAC up to 250W
 - Optional 5/12VDC Auxiliary Supply



Front View



Side View

Standard Deployment

3G/4G/5G XM SITE SOLUTION



Small Cell Equipment

- ▶ 3G/4G/5G Radio (1)

Power

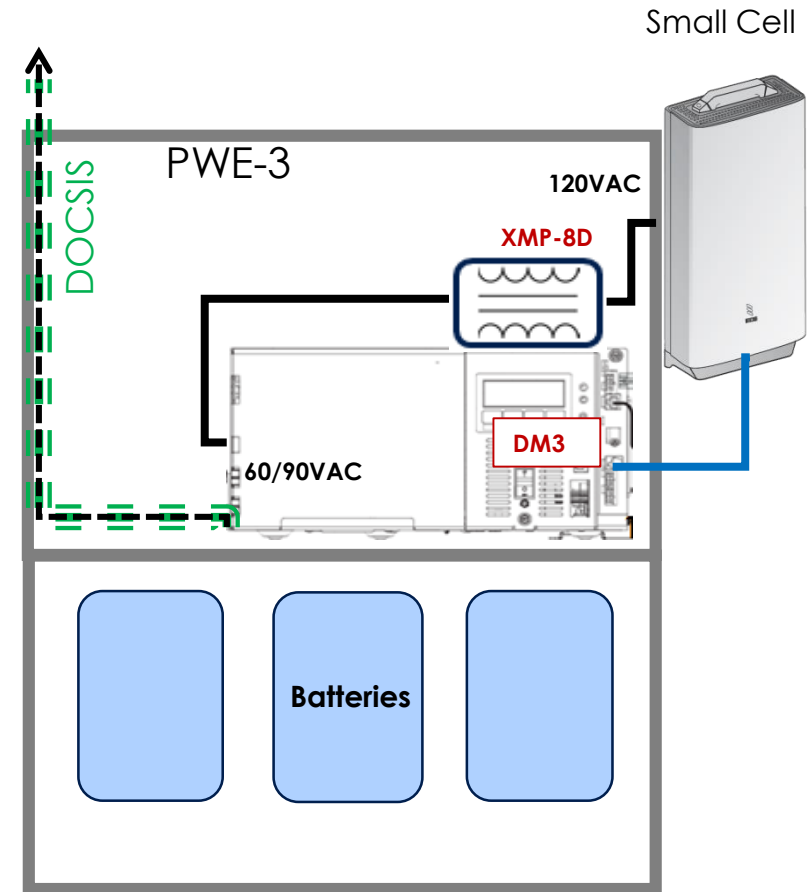
- ▶ XMP-8D

Backhaul

- ▶ DM3 For DOCSIS 3.0 Backhaul

Real Estate

- ▶ Radio + Antenna Mounted to PWE





Next: SMG-AC90/AC120/-48VDC- 300



- ▶ Convert any HFC voltage (45-90VAC) to small cells power voltages (90VAC or -48VDC)
- ▶ DOCSIS 3.1 for backhaul

Power:

- **Input Connection:** Coax (5/8-24)
- **Input Range:** 45-120VAC HFC Plant Power
- **Input Select:** 60V(45VAC LVD) / 90V (55VAC LVD)
- **Output:** 80-90VAC/-48VDC up to 300W Load
- **Connections (Terminal Blocks) :** Up to 4
- **Remote Power Control:** Up to 4 Connections

Remote Management:

- **Transport:** DOCSIS
- **Protocols:** SNMP/HTTP
- **Monitored Parameters:** DOCSIS Parameters, Input Voltage/Current, Delivered Power (Per Port), Internal Temperature
- **XD/Continuity Support:** Yes

Backhaul: DOCSIS 3.1

Environmental

- **Operating Temperature:** -40 to 60°C (-40 to 140°F)
- **Storage temperature:** -40 to 85°C (-40 to 185°F)
- **Humidity:** 5-100%, non-condensing
- **Regulatory Compliance:**
 - **Environmental:** UL50E / NEMA 6; IEC 60529: IP67
 - **Safety:** UL/IEC/EN 60950-1: ED2
 - **Surge:** SCTE 81
 - **EMC:** FCC Class B (FCC CFR 47 Part 15 Class B), ICCES-003
 - **RoHS:** Directive 2011/65/EU

Physical:

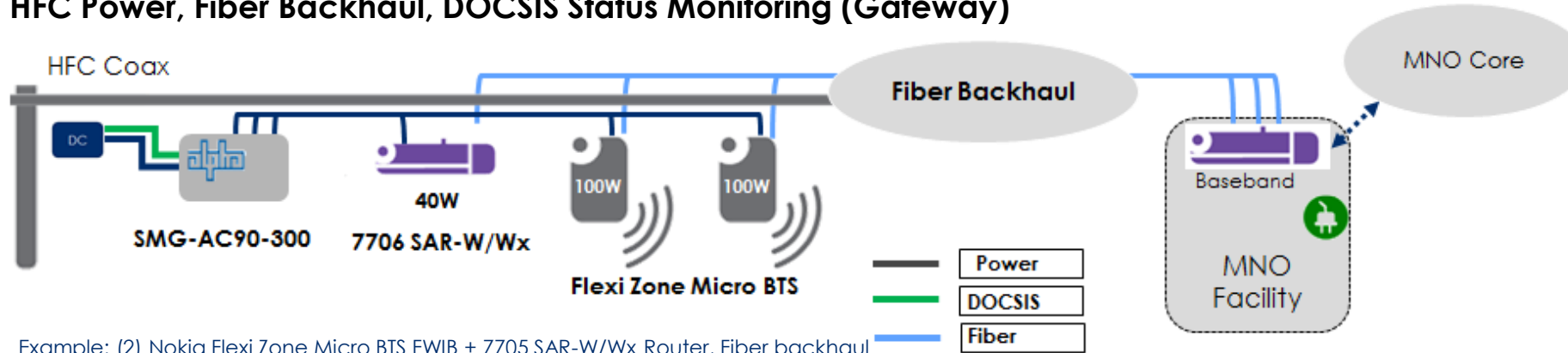
- **Dimensions H x W x D (in):** 16 x 8.8 x 5.4
- **Weight:** 20lb
- **Mounting Options:** Strand, Pole, Wall, Vault



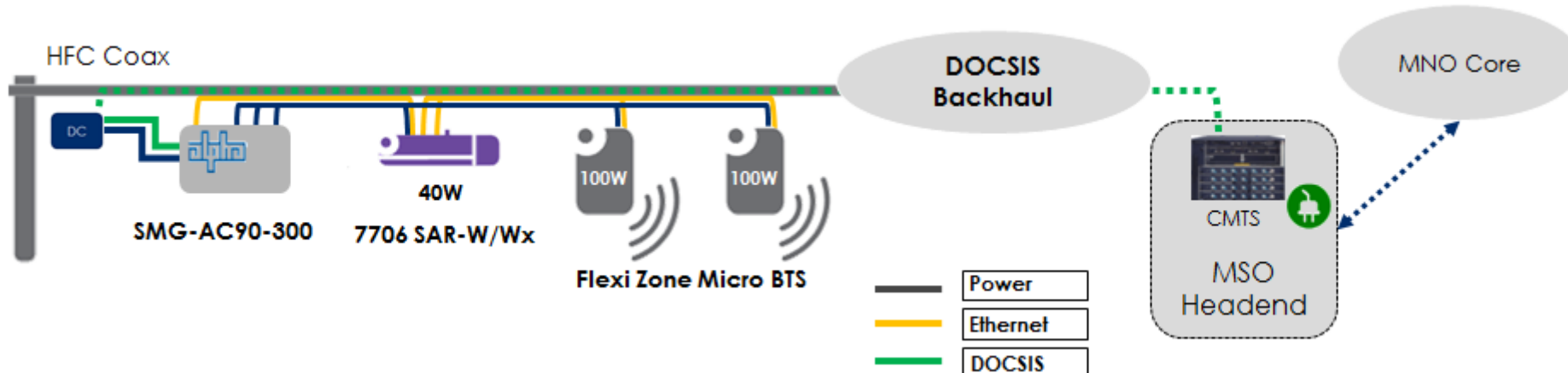


Use Cases: SMG-AC90/AC120/-48 VDC - 300W

HFC Power, Fiber Backhaul, DOCSIS Status Monitoring (Gateway)



HFC Power (Up to 4 devices), DOCSIS Backhaul (1 DOCSIS Connection)



XM3 Solutions in Brasil



ERICSSON RB6501 AT THE POWER SUPPLY CABINET

