

CDM, Inc. is a manufacturer of Digital Wireless Solutions and a value added service provider for the surveillance industry. Our products are produced in the USA and sold throughout the world.

CDM has a team of engineers, designers and IT Personnel with experience in digital and hybrid development, wireless technology, aviation electronics, wireless microwave, CCTV, Image Analysis and IP networking.

**All products ship from our factory programmed, configured and link tested for each network locations, ensuring instant connectivity at the time of installation. No further programming is required by the installation team.**

Install the equipment, plug in the camera(s) and video is streaming. All of our product lines seamlessly integrate with existing CDM hardware providing quick expansion of the network over time.

CDM's wireless products are configured to support a wide range of applications in a variety of markets.

By combining our hardware with digital cameras or other IP devices CDM can provide real-time, high resolution images and data in all weather conditions.

**Our value added services include:**

Network Design, Network Configuration & System Backup, site surveys, programming of equipment and 24/7 technical support.

**Markets Served:**

Education, Government, Healthcare, Law Enforcement, Retail, Transportation, Utilities, etc.

**CDM**

*...Innovative Wireless Solutions*

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# COBRA SERIES MESH

Cobra 2202-P Dual Port, Dual Radio 54 mbps 802.3af Portal  
Cobra 2202-N Dual Port, Dual Radio 54 mbps 802.3af Node



The Cobra Series MESH device is built on the robust Linux™ platform and a field proven single board computer. In today's wireless surveillance market uptime is critical and throughput is paramount to almost any installation. The Cobra MESH device is the answer to both of these industry wide concerns, all the while maintaining a very competitive price point. Utilizing an improved version of the popular HWMP MESH protocol the Cobra Series MESH units can be rapidly deployed in almost any RF environment. By combining the HWMP+ protocol with the N-Streme & N-Streme Dual protocols we can create a very dynamic and resilient wireless network that will handle even the most resource demanding tasks.

Wireless Interface				
Radio Transceiver(s)	(Two) 65mw 5.8 GHz high performance radios			
Frequency	5.180 – 5.825 GHz (UNII / ISM)			
Protocol	802.11a standard compliant and/or proprietary N-Streme protocol			
Modulation	OFDM			
Transmit Power	65mw maximum			
Receiver Sensitivity	-93 dBm minimum			
Data Rate vs Receive Level	Data Rate	Receive Level	Data Rate	Receive Level
	6 Mbps	-94 dBm +/- 2 dB	24 Mbps	-86 dBm +/- 2 dB
	9 Mbps	-93 dBm +/- 2 dB	36 Mbps	-83 dBm +/- 2 dB
	12 Mbps	-91 dBm +/- 2 dB	48 Mbps	-77 dBm +/- 2 dB
	18 Mbps	-90 dBm +/- 2 dB	54 Mbps	-74 dBm +/- 2 dB

Ethernet Interface	
Ports (Node)	(Two) Ethernet ports to provide power/data and data only to IP devices
Ports (Portal)	(Two) Ethernet ports to power the unit and provide data

Network Interface	
Authentication	RADIUS server MAC enabled
Security:	SSL based authentication
Remote Admin:	SSH, IP/MAC Telnet, Win GUI, HTTPS, FTP, Serial Console
Encryption:	AES 128/256, DES 1/3 with CBC-MAC, RADIUS, EAP
VPN	EoIP, VLAN, PPOE, PPTP, IP/IP, L2TP
Protocols	RTP/IP, UDP/IP, TCP/IP, HTTPS, VRRP, NTP, DNS, DHCP, ARP, WDS
GPS Support	Async NMEA 0183, NMEA/RTCM or simple text
Radio	2 mini PCI-based radios

Power Interface	
Input Power (Node)	48Vdc Ethernet Port
Input Power (Portal)	48Vdc Ethernet Port

Physical Interface	
Enclosure	NEMA 4/IP67
Size	10.5" x 10.5" x 2.75"
Weight	7 lbs.
Environment	-40°F to 149°F (-40°C to 65°C)
Humidity	100% (operates in severe rain)

Management	
Local/Remote Administration	SSH, MAC Telnet, Win GUI via HTTP, FTP
Monitoring and Accounting	IP traffic accounting, firewall actions logging, statistics graphs accessible via HTTP
Management and System Health	Total uptime, uptime of wireless connections, free memory, total memory, CPU freq, CPU load, free HDD space, total HDD space, core temp, voltage, sector writes, monitoring of all local and remote interfaces, watchdog monitor, network monitor and status reporting by time or controlled events
Netwatch and Scripting	Netwatch is a tool used to monitor the wireless and Ethernet interfaces. A series of executable code (scripts) can be configured to report network problems. Such as send an email, reboot, or create daily backups and FTP the file to a remote server.
Router OS Upgrade	FTP flash memory upgrade via a network connection
BIOS Upgrade	XModem protocol using DHCP/BOOTP and TFTP protocols through the Ethernet network
Diagnostics	Bandwidth test, Ping, Frequency scan, Trace route, Packet sniffer, Bandwidth estimation, Torch

# POWERSMART 4800

120 Vac to 48 Vdc PoE Uninterrupted Power Control System



## FEATURES

The PowerSmart 4800 Power Control System (PSC) is designed to utilize low duty cycle utility power in conjunction with battery operation. It utilizes the utility power during nighttime operation and switches to battery power during daytime operation. The output power is based on 8 hours of electrical charge time. Its industrial design allows for ease of installation with a minimum amount of maintenance required. The system includes all hardware needed for installation on a utility pole. The PowerSmart 4800 is designed for industrial applications and delivers superior performance in all weather conditions.

### System Components

- 12 VDC AGM Batteries
- Charging Systems
- 12 VDC to 48 VDC PoE Converter
- 120 VAC to 48 VDC Power Supply
- Control Wiring
- Weatherproof Enclosures

### Power

Input Power – 120 VAC, 10 Amps  
Output Power – 48 PoE, 15 Watts

### Mounting

The PSC includes brackets for mounting to light poles.

### Dimensions/Weight

Battery Enclosure 15" x 16" x 10" / 85 lbs.  
Control Cabinet 20" x 20" x 8" / 50 lbs.

Custom Configurations Are Available



All **VIPER** products ship from our factory programmed, configured and link tested for instant connectivity



**VIPER 2201-T**  
**Dual Port, 54mbps 802.3af (PSE) Transmitter w/integrated antenna**  
 1 weatherproof Ethernet port for power and data

**VIPER 2201-AP**  
**Single Port, 54mbps 802.3af (PD) Access Point w/integrated antenna**  
 Can be powered from an 802.3af switch or a standard 48v injector kit

**VIPER 4201-AP**  
**Dual Port, 54mbps 802.3af (PD) Access Point w/integrated antenna**  
 Can be powered from an 802.3af switch or a standard 48v injector kit on Ethernet 1. Ethernet 2 is data only.

**VIPER 4001-AP12**  
**Dual Port, 54mbps 12V PoE Access Point w/integrated antenna**  
 2 weatherproof Ethernet ports, power and data on the 1st port and data only on the 2nd port.

**VIPER 4201-T**  
**Triple Port, 54mbps 802.3af (PSE) Transmitter w/integrated antenna**  
 Acts as a PSE device that will provide power when needed on Ethernet 2 & 3 for 802.3af IP devices.

- All Viper products are manufactured for indoor and outdoor applications.
- All connections are made on the outside of the unit eliminating the need for the installer to open it.
- The Viper equipment has a wireless range of 10+ miles and is designed for quick, efficient installations.
- The supplied PoE injector provides power and data to the device.
- All product ship from the factory programmed, configured and link tested eliminating the need for the installer to do any further IP configuration or programming.



### Accessories

- Type-N 5' Antenna cable assembly
- 5.8 GHz 19 dbi 6" Panel Antenna Kit w/cable
- 5.8 GHz 8 dbi Female Omni Antenna Kit w/cable
- 120 Deg, 16 dbi, SA58-120-16-WB Laird, Sector Antenna
- 4.94-5.875 GHz, 18-13.5 dbi Variable Sector Antenna
- 48Vdc PoE Injector Kit
- 12Vdc PoE Injector Kit
- Lightning Protector N-Male to N-Female



**VIPER 4001-T12**  
**Triple Port, 54mbps 12V PoE Transmitter w/integrated antenna**  
 3 weatherproof Ethernet ports for power and data or data only.

**VIPER 4200-LK**  
**Single link, 54mbps 802.3af Access Point (PD) & Transmitter(PSE)**  
 Consists of 1 Viper 4201-T & Viper 4201-AP and all related hardware and power requirements needed for installation.

**VIPER 5202-AP\*\***  
**Dual Port, 54mbps 802.3af (PD) Access Point**  
 Can be powered from an 802.3af switch or a standard 48v injector kit on Ethernet 1. Ethernet 2 is data only.

**VIPER 5203-AP\*\***  
**Dual Port, Dual Radio, 54mbps 802.3af (PD) Access Point**  
 Can be powered from an 802.3af switch or a standard 48v injector kit on Ethernet 1. Ethernet 2 is data only.

**VIPER 5203-RP\*\***  
**Dual Port, Dual Radio, 54mbps 802.3af (PSE) Repeater**  
 Acts as a PSE device that will provide power when needed on Ethernet 2 for 802.3af IP devices.

**Viper 7202-T\*\***  
**Dual Port, 300mbps 802.3af (PSE) Remote Transceiver**  
 Acts as a PSE device that will provide power for 1 IP device that is 802.3af.

**Viper 7202-AP\*\***  
**Multiport, 300mbps 802.3af (PD) Head End Transceiver**  
 Can be powered from an 802.3af switch or a standard 48v injector kit on Ethernet 1. Ethernet 2 is data only.

**Viper 7203-AP\*\***  
**Multiport, Dual Radio, 300mbps 802.3af (PD) Head End Transceiver**  
 Ethernet 1 is power/data and Ethernet 2 is data only. In addition it has 7 more Ethernet ports for communication and future network expansion.

**Viper 7203-RP\*\***  
**Multiport, Dual Radio, 300mbps 802.3af (PSE) Repeater**  
 Acts as a PSE device that will provide power for 2 IP devices that are 802.3af.

**\*\* Antennas not included**

Full Product Specifications Available at [www.cdmwireless.com](http://www.cdmwireless.com)

# SUNSMART SOLAR ELECTRIC POWER SYSTEM



## FEATURES

The CDM Wireless SunSmart product line is a self contained 12/24 Vdc Solar Electric Power System designed for remote wireless surveillance applications. It is designed for quick installation, long term reliability and virtually no maintenance.

Each solar installation is slightly different due to specific power requirements and geographic location. If CDM Wireless does not already have a model designed to meet the requirements they will design one that will.

Designed for industrial applications, the SunSmart product line delivers exceptional performance in all weather conditions. All systems ship factory assembled, wired and include all hardware and accessories needed to install it on a utility pole.

The CDM Wireless solar electric power system provides up to 510 Amp Hours of power to operate equipment in the event of a temporary weather related, or other, adverse event. It includes an intelligent technology power system that will disconnect the battery from the wireless and security equipment in the event the voltage drops below 11.6 volts. As the batteries recharge, the system brings the devices back online. This feature significantly prolongs the life of the battery(s).

### System Components

- 12/24 Volt AGM Batteries
- Solar Panel(s)
- Smart Technology Charging System
- Power Converter
- Control Wiring
- Side of pole solar panel mounts
- Weatherproof Enclosures  
(Weight & Dimensions vary with specific application)

### Smart Technology Power Controller

Peak Efficiency:	97.5%
Nom Battery Voltage:	12 or 24 volts
Max battery Current:	15Amps
Battery Voltage Range:	7-36 volts
Max PV Open Circuit voltage:	75 volts
Nominal Max PV input:	200 watts @12v
Output Rating:	15 Amps load control
Self Consumption:	35ma
Transient Surge Protection:	4 x 1500 Watts
Operating Temp:	-40c to +60c
Electronic Protections:	overload, short circuit, high voltage, reverse polarity, battery, PV & load, lightning & transient surges, high temp, reverse current at night

### Solar Panel(s)

- Model 110
- Model 135
- Model 210
- Model 210X
- Model 240
- Model 480
- Model XXX



## Cobra 2202-P

Can be powered from an 802.3af switch or a standard 48V injector kit on Ethernet 1. Ethernet 2 is data only.

## Cobra 2202-N

Acts as a PSE device that will provide power when needed on Ethernet 2 for 802.3af IP devices.

## FEATURES

HWMP+ is a specific layer-2 routing protocol for wireless mesh networks. It is based on Hybrid Wireless Mesh Protocol (HWMP) from IEEE 802.11s draft standard. It can be used in place of (Rapid) Spanning Tree protocols in mesh setups to ensure loop-free optimal routing.

The HWMP+ protocol however is not compatible with HWMP from IEEE 802.11s draft standard.

Note that the distribution system used for the network does not need to be Wireless Distribution System (WDS). HWMP+ mesh routing supports not only WDS interfaces, but also Ethernet interfaces inside the mesh. So you can use simple Ethernet based distribution system or you can combine both WDS and Ethernet links.

### Reactive Messaging Mode

In reactive mode HWMP+ is very much like AODV (Ad-hoc On-demand Distance Vector). All paths are discovered on demand, by flooding Path Request (PREQ) messages on the network.

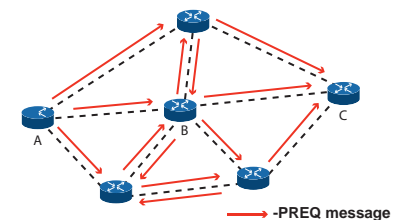
The destination node or some router that has a path to the destination will reply with a Path Response (PREP). If the destination address belongs to a client, the Portal this client is connected to will serve as proxy for the client device (i.e. reply to PREQs on behalf of the client).

### Proactive Messaging Mode

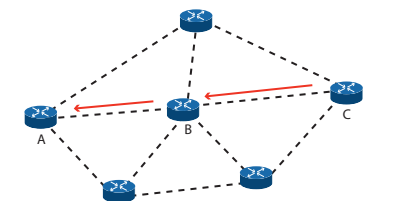
In proactive mode there are some Cobra devices configured as portals. In general, being a portal means that the device has interfaces to some other network, (i.e. it's entry/exit point to the mesh network).

The portals will announce their presence by flooding Root Announcement (RANN) message in the network. Internal nodes will reply with a Path Registration (PREG) message. The result of this process will be routing trees with roots in the portal.

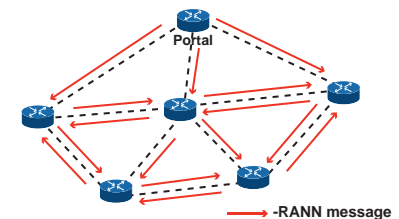
Portal nodes will act as default gateways for the mesh network. If an internal router does not know the path to a particular destination, it will forward all data to its closest portal. The portal(s) will then discover the best path on behalf of the member routers when needed. Once the best path is discovered, the closest portal will become the default gateways for the mesh node. Proactive mode is best suited when most of the traffic goes between internal mesh nodes and a few portal nodes.



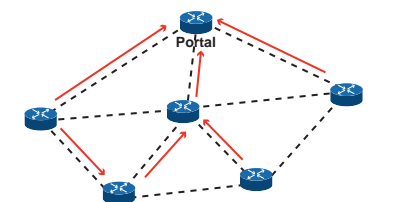
Device A Discovers the path to Device C by flooding wireless network with PREQ messages. (Path Request)



Device C sends a unicast response to Device A as a PREP message. (Path Response Message)



The portal (root) node announces itself by flooding root announcement messages on the network.



Internal nodes respond with Path Registration Messages. (PREG)



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