

Plexus PowerNet™



The first gigabit network providing both data and power using coaxial cable.

Enabling the Digital Mine Starts with Connectivity to the Face

The Digital Mine is founded on the use of critical data to increase production, reduce costs and enhance worker safety. Most often, underground mines choose fibre optic cable as the means to extend connectivity from the level out to the working areas. In addition a separate power cable is required for the wireless access points.

Fibre presents a number of challenges to the underground mining industry. Terminating fibre underground is difficult, time consuming and requires expensive specialized training, which is frequently, the biggest contributing factor limiting the advance of connectivity. These types of delays inhibit the agility and pace needed to enable the Digital Mine and bring communications to the face.

Identifying the mining industry's growing demand for real-time data, *Maestro Digital Mine* works with mining companies around the world to address the challenges associated with traditional communication backbone solutions (broadband and fibre). The *Plexus PowerNet™* system quickly extends communications using existing infrastructure to where it is needed.



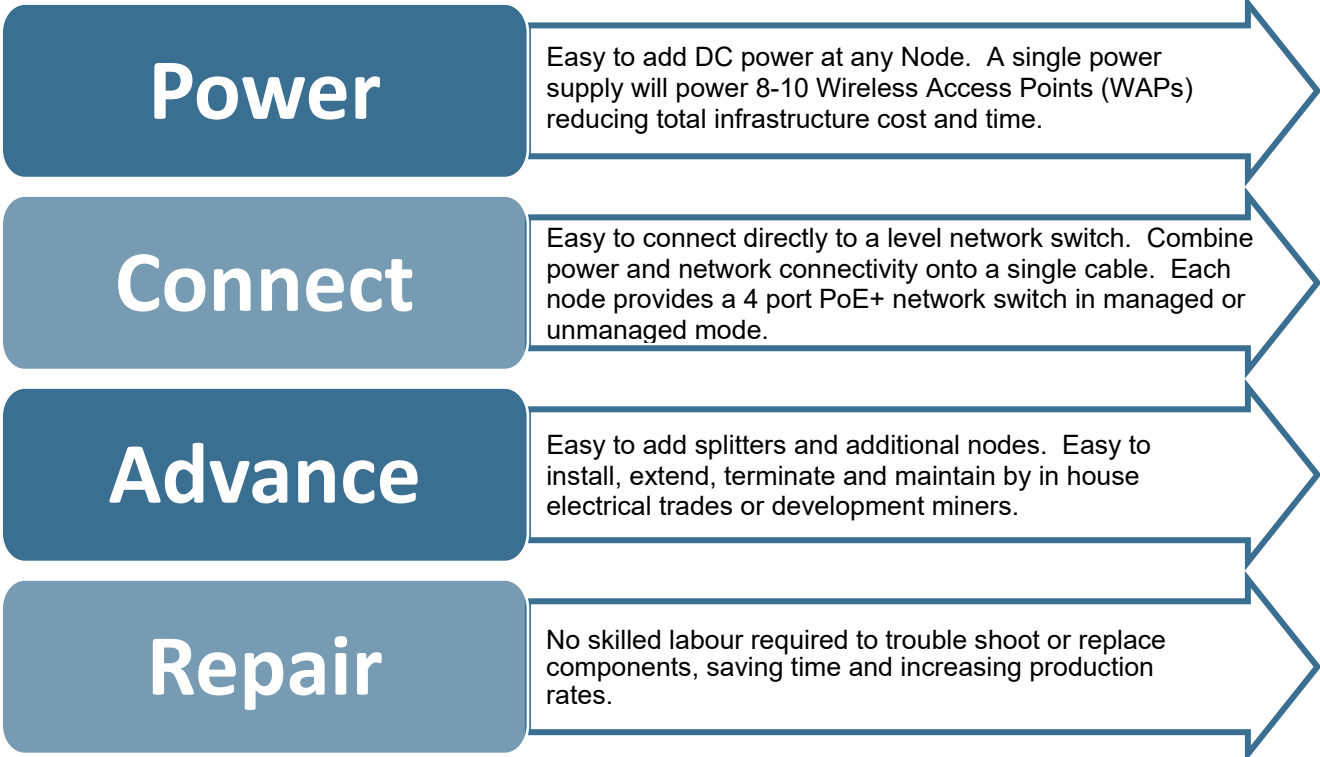
Plexus PowerNet™ delivers a high speed, low latency digital communication network that provides PoE+ power to Wireless Access Points (WAPs), cameras and any other IP based device. The system eliminates the need for costly outside fiber optic contractors and can be installed and maintained by any internal tradesperson.

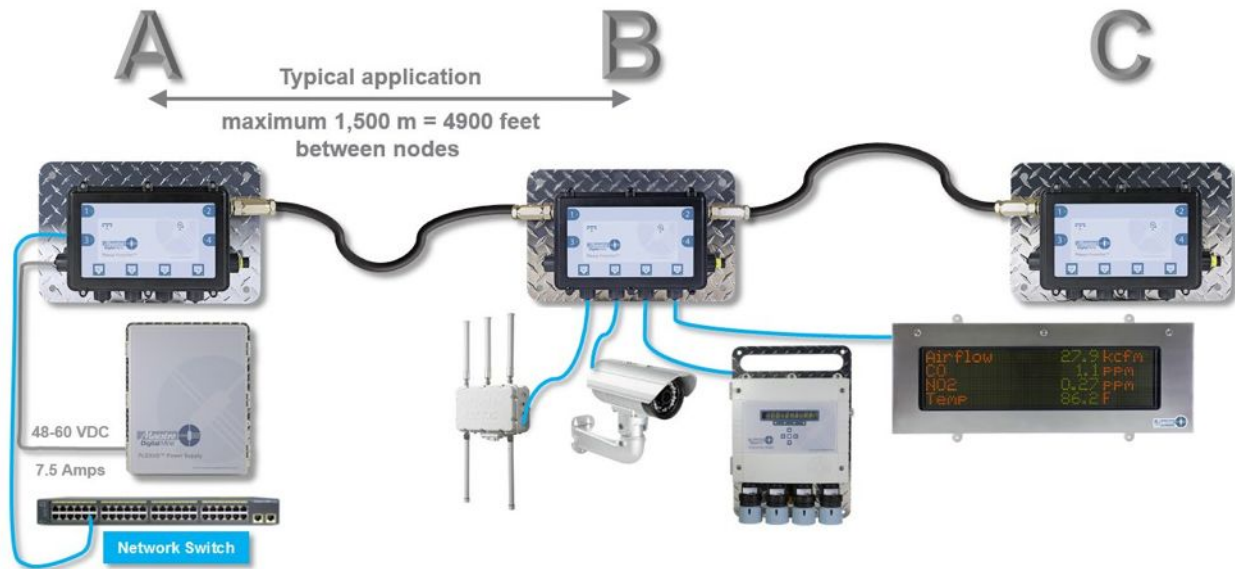
Accelerate the time to connectivity by making the complex, simple with the Plexus PowerNet™

The Plexus PowerNet™ is high bandwidth, low latency, coaxial communication infrastructure solution. It provides a robust, simple to deploy, one cable solution for network connectivity. Plexus makes installation simple, using a single coaxial cable that carries both power and network connectivity. This eliminates the need to run both fibre and power to new network devices. The EZ Advance Nodes provide an easy way to terminate, troubleshoot and deploy standards based IP devices from the Plexus PowerNet™ embedded network switch.



Features and Benefits





Customer Use Cases

Enable connectivity for the Intelligent Mine and the Connected Worker such as:

- Autonomous and tele-remote vehicles;
- Telemetry to drills, loaders and support equipment;
- Support for Short Interval Control and connectivity to tablet, smart devices;
- IoT sensors such as environmental, seismicity;
- Voice over IP (VoIP);
- Connected worker video, voice, and augmented reality;
- Asset Tracking;
- PoE based IP cameras for paste fill;
- PLC connectivity.



The core of the network is the Plexus PowerNet™ nodes, each of which has four PoE+ ports and provides power to the wireless access points or end point devices. The nodes also have a USB port that can allow an easy upgrade of firmware and backup of configurations. Simple port diagnostics on the devices make it easy to see power consumption, voltage and data rates.

The Plexus PowerNet™ is currently installed and being expanded at 18 mines in Canada, USA, Spain and Finland. Our current clients have compared other gigabit network solutions and concluded that CAPEX can be decreased in the area of 40-60% without any compromise of network speed or capability. The Plexus PowerNet™ can be used in mines with or without a fiber optic network. The Plexus has been designed for the quickest “last mile” of communication.

Technical Specifications

Contact us at sales@maestrodigitalmine.com for more information.

Hardware specifications:	
4 PoE+ Ports	PoE 802.3af, 12.95 W typical (15.4 W maximum) PoE+ 803.2at, 25.50 W typical (30.0 W maximum)
	4 x RJ-45 Circular bayonet receptacle (IP67 – dust tight, waterproof) for 10 BASE-T / 100 BASE-TX / 1000 BASE-T Ethernet Auto medium dependent interface (MDI) and MDI crossover (MDI-X) Auto negotiate
	1 x USB Type-A console port / configuration / firmware update (IP67)
	1 x DC Bi-directional power receptacle (15A Max. insertion) (IP67)
	1 x Coaxial bulkhead port (Type-A, Type-C) or 2 x Coaxial bulkhead ports (Type-B) (IP67)
LEDs	DC Power, Health, Link/Activity, PoE enabled
Layer 2 specifications:	
VLAN	Port-based and 802.1Q tag-based VLANs
IPv4	Protocol-based VLAN
IPv4 Applications	Management VLAN
LLDP	Link layer discovery protocol
Software management specifications:	
Web user interface	Built-in web user interface for easy browser-based configuration (HTTP) Administrator and user access levels Diagnostics, port up/down, voltage, amperage
SNMP	Simple Network Management Protocol – Version 3
RADIUS	RADIUS client
SSH	Secure Shell Protocol
SolarWinds®	NCM and NPM compatibility
Other management	Single IP management Dynamic Host Configuration Protocol (DHCP) client VLAN and Trunk configuration
Environmental specifications:	
Enclosure dimensions	10.787" x 6.811" x 3.937" (273.99 mm x 172.99 mm x 100.00 mm) (length x width x height)
Enclosure rating	IP67, NEMA 1,2,4,4X,12,13
Weight	6 lbs (2.7kg)
Certification	CE Mark, FCC Part 15
Operating temperature	+14° F to +122° F (-10° C to +50° C)
Voltage range	20 – 60 VDC
Product warranty:	
	Two year limited lifetime warranty with return to factory replacement, two year telephone support and software updates for the warranty term.

Maestro Digital Mine manufacturers Internet of Things (IoT) measurement and control instrumentation for the optimization of underground mine ventilation and underground digital networks for last mile of communication. Our products are made exclusively for the underground mine automation, IT and ventilation sectors that delivers energy savings and productivity improvements while meeting the highest health and safety standards.