WINGMAN SPITFIRE

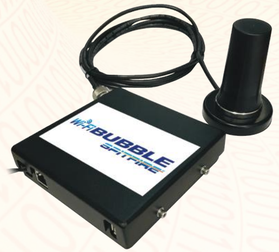
- Real-time access to Spitfire network performance for trouble shooting network install and on-going condition monitoring
- Configuration of Spitfire devices to setup Super Spitfire repeater links and other virtual network topologies
- Modbus TCP/IP interface allows Spitfire status to be logged into site database

PROFILER SPITFIRE

- Compact unit for logging of data on vehicle CAN networks
- Wi-Fi link enables data transfer to surface as vehicle passes through underground Wi-Fi Bubbles
- Data collection enables analysis and improvement of mining operations and equipment maintenance

Wi-Fi BUBBLE SPITFIRE

- Flameproof Wi-Fi access point with antenna mounted in hazardous area
- Enables use of portable Wi-Fi devices such as VoIP phones, messaging devices, and personnel tracking
- Create a Wi-Fi Bubble anywhere by connecting onto the mine network backbone (fibre network, Spitfire network)



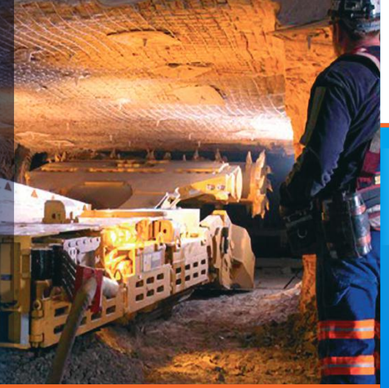
Scan QR Code to watch the Spitfire in action

Nautitech's Spitfire Broadband Power-line modem range

Passionate About Innovation

NAUTITECH® is an Australian provider of smart electronic and electrical solutions for OEMs and mine sites in the underground mining industry. We design and manufacture equipment that delivers **Communications** and **Visibility**, supports **Automation**, and provides a platform for **Asset and Condition Monitoring** of underground equipment.

Our core products include **Methane Monitoring** and **Shutdown** systems, **Underground Communications**, **Thermal** and **HD Cameras, IS Lights** and **Displays**. We collaborate, test, and research to continually improve what we deliver to our customers.



Service & Support

- AS3800 and IECEx service facility
- NATA certified calibration lab
- Field installation, maintenance & training
- Audits & compliance checks of explosion proof equipment including diesel machines
- Full 2 year warranty on new parts

We offer full product life cycle support

The reliability and quality of NAUTITECH® solutions have been proven to provide a competitive advantage.

AUSTRALIAN OWNED & OPERATED

FULL TWO YEAR 2 WARRANTY

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04/19

NAUTITECH®
DEVOTED TO SOLUTIONS IN HAZARDOUS AREAS

UNDERGROUND COMMUNICATIONS

SPITFIRE®

Reliable underground communications using pilot and power cores

Powerful Broadband Powerline Modem (BPLM) range promotes assisted automation and improved mining operations in complex environments underground

SPITFIRE®

Creates a reliable network connection across multiple machines in order to transmit data between equipment and the surface

SUPER SPITFIRE®

Extends the communications network to work over longer distances

WINGMAN SPITFIRE®

Enables remote monitoring, upgrade, and configuration of the network structure of all Spitfire BPLMs

PROFILER SPITFIRE®

Collects and buffers data from critical vehicle components and sends data to the surface via Wi-Fi

Wi-Fi BUBBLE SPITFIRE®

Establishes Wi-Fi hotspots on or near most major machinery underground for immediate mine to surface communication or access to data

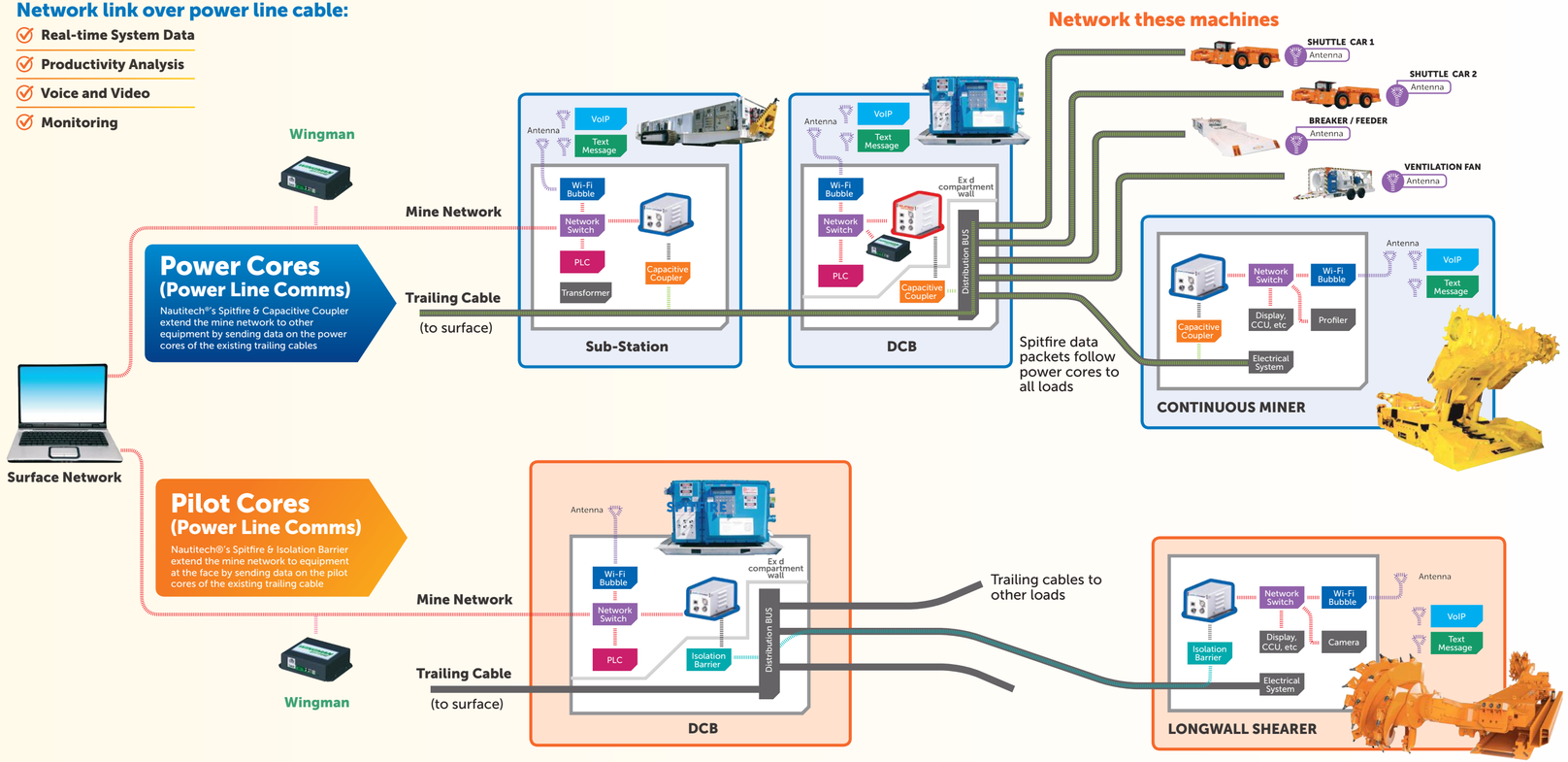
Simple "plug and play" installation supported by a full 2-year warranty

UNDERGROUND POWERLINE COMMUNICATIONS

Typical Applications: Longwall shearer, continuous miner, shuttle car, feeder breaker, auxiliary fans, roof bolters and other electrical machinery

Network link over power line cable:

- Real-time System Data
- Productivity Analysis
- Voice and Video
- Monitoring



Power line bus cable

Power line comms using 2x pilot cores

Power line comms using 2x power cores

Ethernet comms using fibre & CAT5/6

Capacitive Coupler — Capacitive Couplers connect to power cores up to 7.2 kV (IEC 60071-1). Simply connect to same phases throughout the system. Spitfire is not sensitive to polarity of power line wiring.

Isolation Barrier — Isolation Barriers protect equipment from high voltages on the pilot cores in the event of cable failure.

Install a Spitfire node in each load that requires network connection.

SPITFIRE

Super Spitfire acts as a repeater for Spitfire data packets between the sub-station and the load machines. If the mine network (fibre) is available at the DCB, Super Spitfire is not required. Simply install Spitfire in DCB and loads.

SUPER SPITFIRE

Use the powerful Spitfire Wingman to monitor and configure a network of Spitfires and Super Spitfires from a surface network.

WINGMAN SPITFIRE

Use for logging and transferring machine data to the surface

PROFILER SPITFIRE

Create Wi-Fi hotspots underground to enable use of portable devices

Wi-Fi BUBBLE SPITFIRE

NETWORK TECHNOLOGY

Network challenges in underground mining include confined spaces, lack of GPS, explosive atmosphere, weak strata and complex mining machinery. As such, use of powerline for communications is best for underground, tethered vehicles.

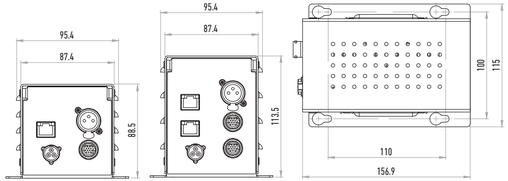
Feature	Ethernet	Fibre	Radio	Powerline
Data Rate		Best		
Distance	Worst	Best		
Environmental Survival		Worst		Best
Drop-Outs			Worst	
Infrastructure Burden				Best
Mobile			Best	

Environmental Specifications

Supply voltage	85 to 264 VAC
Supply frequency	50 Hz, 60 Hz
Supply power, max	12 W
Ethernet interface	10BASE - T/100BASE-TX
	Shielded RJ45
Operating temperature	0° to 60°C
Vibration	IEC 60068-2-6
Shock	IEC 60068-2-27
EMC emissions	IEC 61000-6-4
EMC immunity	IEC 61000-4-2/3/4/5/6/8

Dimensions

SPITFIRE / SUPER SPITFIRE



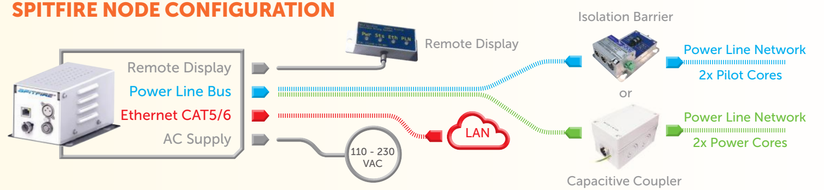
Dimensions

WINGMAN SPITFIRE

Environmental Specifications

Supply voltage - DC power	10 to 28 VDC
Supply voltage - AC power	10 to 28 VDC
Supply voltage - PoE power	37 to 57 VDC
Supply power, typical	1 W
EtherNet	10 BASE-T / 100BASE-TX
	Shielded RJ45
Operating temperature	0° to 60°C
EMC emissions	IEC 61000-6-4
EMC immunity	IEC 61000-4-2/3/4/5/6/8

SPITFIRE NODE CONFIGURATION



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