HELI-19

POYNTING
BEYOND A CONNECTED LIFE

ANTENNAS | HELI-19 SERIES

CIRCULAR POLARISED, BI-DIRECTIONAL MINE/TUNNEL ANTENNA

Dual-band Wi-Fi; 2400 – 2500 MHz, 9 dBic; 5000 – 6000 MHz, 11 dBic

2400 – 2500 MHz
5000 – 6000 MHz

2.4GHz:9 dBic
5GHz:11dBic

Bi-Directional

2.4 – 2.5 GHz
5.0 – 6.0 GHz

2x2 MIMO possible with RHC & LHC

Internet of Things

Machine to Machine

IP 65

Chemical Protection

-40°C to +80°C

Fire Resistant

APPLICATION AREAS

Mining

Tunnelling

Mining and Surface

- **Circular Polarised HELI antenna provides enhanced signal propagation and connection stability within a tunnel**
- **Left-Hand Circular (LHC) & Right-Hand Circular (RHC) Polarised options available**
- **Bi-directional – radiates in both directions in a tunnel**
- **Ruggedized water and dust ingress protected (IP 65)**
- **Ideal for Mining & Tunnel M2M and IoT deployments**

Product Overview

The HELI-19 forms part of a series of Mini-HELI antennas. These antennas are only mini in size relative to their bigger brothers, the HELI-3, HELI-4 & HELI-8, but offer medium to high gain, which makes these antennas ideal for mining tunnels where IoT/M2M connectivity is deployed and can also be used for coverage into the stopes.

The HELI-19 is a dual-band 2.4 GHz and 5 GHz Wi-Fi antenna, radiating in both directions (i.e. bi-directional). This makes them ideal for the coverage of both Wi-Fi bands in mining and other type of tunnels. These antennas are typically used for the deployment of IoT within the tunnel to provide telemetry and mine automation. These antennas are available in both Left-Hand Circular (LHC) & Right-Hand Circular (RHC) polarised antenna elements to provide optimal decorrelation within a MIMO deployment when using the BRKT-45, resulting in optimum performance. The decorrelation is due to the polarisation difference and spatial diversity, between the two antenna elements, which enhances MIMO performance and RF reliability within a mining tunnel. The dual-band Wi-Fi connection propagates around tunnel bends in a Non-Line of Sight scenario and provides immunity to many Wi-Fi signal disrupting objects such as trains and drilling machinery which appear to obscure the tunnel.

Features

- Dual port 2.4 GHz and 5 GHz Wi-Fi antenna
- This antenna is especially designed for mining and other types of tunnels where rapid extension of network is required
- Bi-directional – radiates in both directions in a tunnel
- Left & Right-hand Circular Polarised available (for MIMO)
  Intrinsically safe version available on request

Application Areas

- Supplementing fibre/leaky feeder cable “Hotspots” to areas to enhance mobility or extend networks to inaccessible areas
- Underground telemetry and automation
- Creating of complete underground in tunnel wide data networks and internet/LTE connectivity
- Seamless connection to personnel using cellular phones and smart devices and tablets

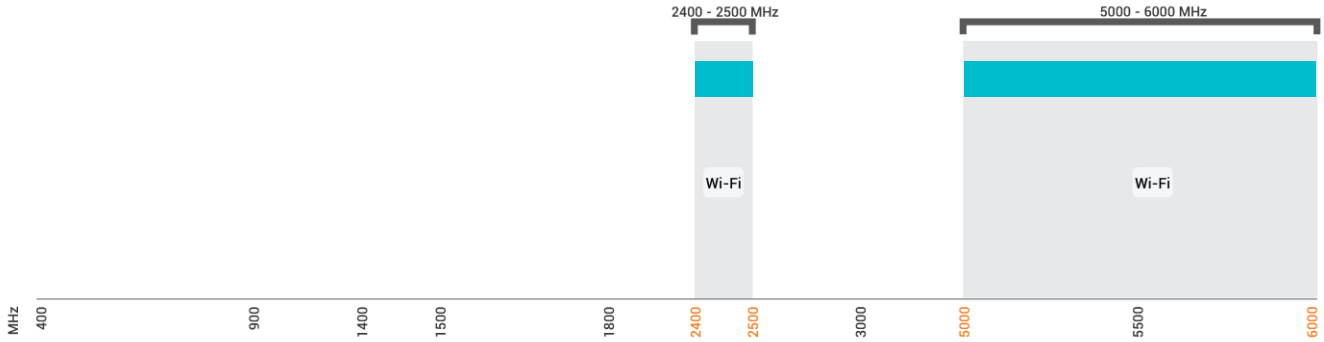
2x HELI-19 antennas mounted on the BRKT-45 for MIMO application

Revised: October 2023

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech

Frequency Bands

The HELI-19 is a Wi-Fi / ISM antenna that works from | 2400 – 2500 MHz | and | 5000 – 6000 MHz |



Indicates the Wi-Fi bands on which HELI-19 works

Antenna Overview

	Wi Fi	Wi Fi
Port	1	2
Frequency Bands	2400 – 2500 MHz	5000 – 6000 MHz
Peak Gain	9 dBic	11 dBic
Coax Cable Type	RG-141	RG-141
Coax Cable Length	400mm	400mm
Connector Type	N-Type (M)	N-Type (M)

**The coax cable & connector are factory mounted to the antenna*

Revised: October 2023

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech

Electrical Specifications

Frequency Bands:	2400 MHz - 2500 MHz 5000 MHz - 6000 MHz
Gain (Max):	9 dBic for 2400 MHz – 2500 MHz 11 dBic for 5000 MHz - 6000 MHz
VSWR:	<2:1
Feed Power Handling:	30 W
Input Impedance:	50 Ohm (nominal)
Polarisation:	Circular Polarised (LHC or RHC)
Coax Cable Loss:	0.84 dB /m @ 2.4 GHz 1.47 dB /m @ 6 GHz
DC Short:	N/A

Product Box Contents

Antenna:	A-HELI-0019-V3-01

Ordering Information

Commercial name:	HELI-19
a) Right-hand Circular Version	
Order product code:	A-HELI-0019-V3-01-R
EAN number:	6009710921425
b) Left-hand Circular Version	
Order product code:	A-HELI-0019-V3-01-L
EAN number:	6009710921418

Note: For MIMO application, order both Right-Hand Circular and Left-Hand Circular antennas.

Mechanical Specifications

Product Dimensions	631 mm x 143 mm x 116 mm
Packaged Dimensions:	660mm x 165mm x 140mm
Weight:	0.70 kg
Packaged Weight:	1.3 kg
Radome Material:	UV Stable ASA
Radome Colour:	Grey Pantone-424C
Mounting Type:	Ceiling mounted

Environmental Specifications, Certification & Approvals

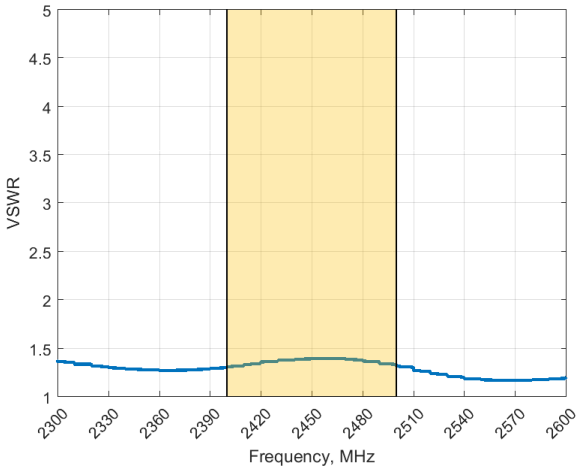
Wind Survival:	≤120 km/h
Temperature Range (Operating):	-40°C to +80°C
Environmental Conditions:	Outdoor/Indoor
Water Ingress Protection Ratio/Standard:	IP 65
Salt Spray:	MIL-STD 810G/ASTM B117
Operating Relative Humidity:	Up to 98%
Storage Humidity:	5% to 95% - non-condensing
Storage Temperature:	-40°C to +80°C
Enclosure Flammability Rating:	UL 94-HB
Impact Resistance:	IK 08
Product Safety & Environmental:	Complies with CE and RoHS standards

Revised: October 2023

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech

Antenna Performance Plots

VSWR: 2400 – 2500 MHz



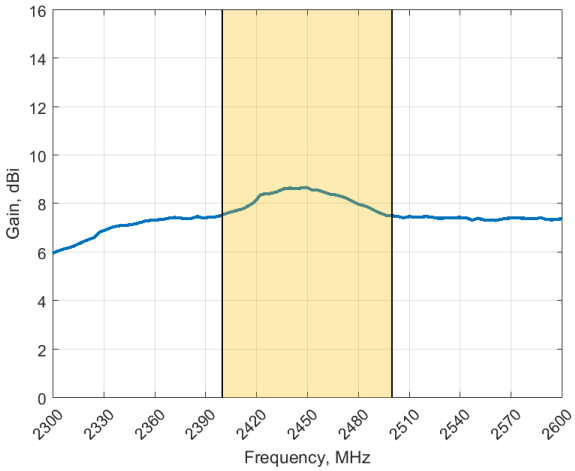
Voltage Standing Wave Ratio (VSWR)*

VSWR is a measure of how efficiently radio-frequency power is transmitted from a power source, through a transmission line, into a load. In an ideal system, 100% of the energy is transmitted which corresponds to a VSWR of 1:1.

The HELI-19 delivers superior performance across all bands with a VSWR of <1.5:1.

**VSWR measured with 400mm low loss cable*

GAIN (EXCLUDING CABLE LOSS): 2400 – 2500 MHz

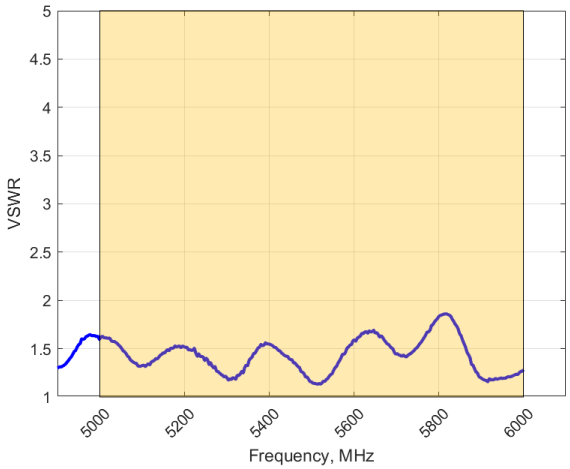


Gain+ in dBic

9 dBic is the peak gain across all bands from 2400 – 2500 MHz

+Antenna gain measured with circular polarised standard antenna

VSWR: 5000 – 6000 MHz



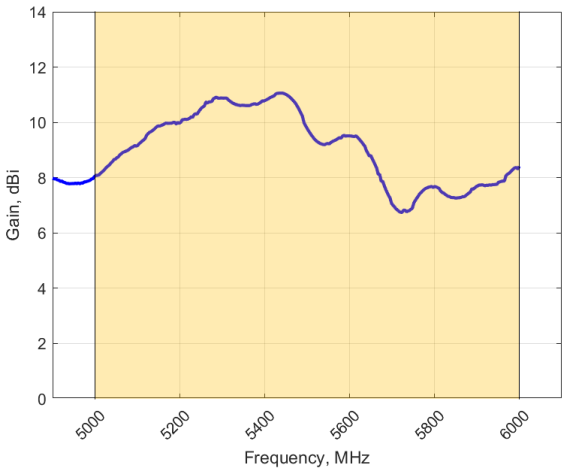
Voltage Standing Wave Ratio (VSWR)*

VSWR is a measure of how efficiently radio-frequency power is transmitted from a power source, through a transmission line, into a load. In an ideal system, 100% of the energy is transmitted which corresponds to a VSWR of 1:1.

The HELI-19 delivers superior performance across all bands with a VSWR of <2:1.

**VSWR measured with 400mm low loss cable*

GAIN (EXCLUDING CABLE LOSS): 5000 – 6000 MHz



Gain+ in dBic

11 dBic is the peak gain across all bands from 5000 – 6000 MHz

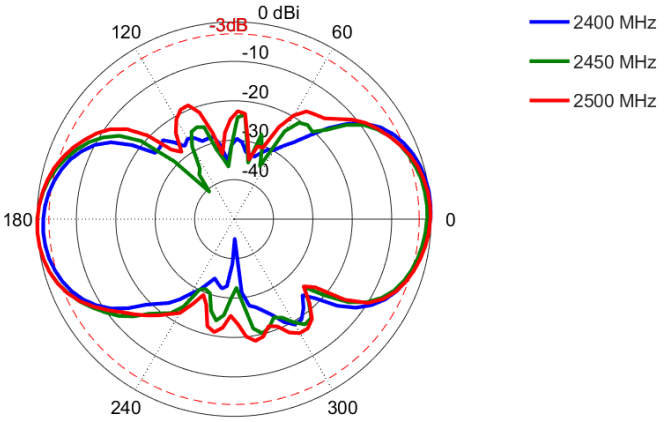
+Antenna gain measured with circular polarised standard antenna

Revised: October 2023

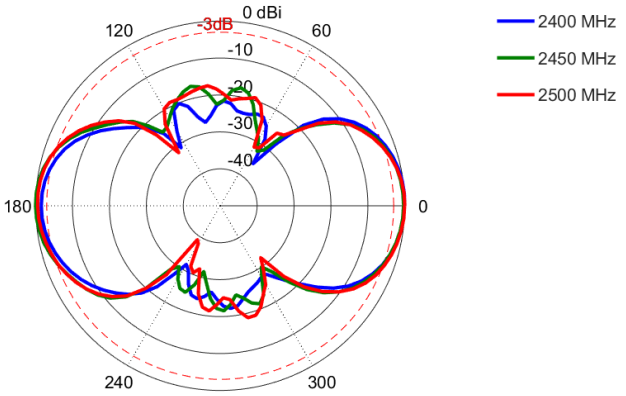
Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech

Radiation Patterns

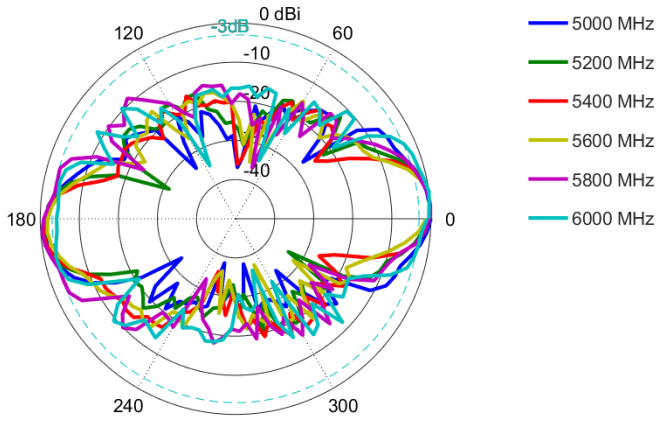
Azimuth Port 1: 2400 – 2500 MHz



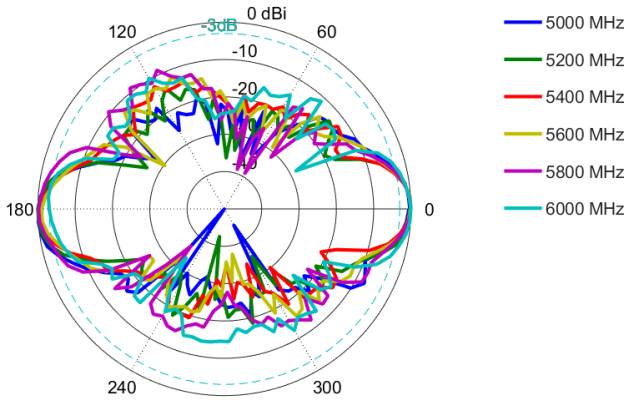
Elevation Port 1: 2400 – 2500 MHz



Azimuth Port 2: 5000 – 6000 MHz



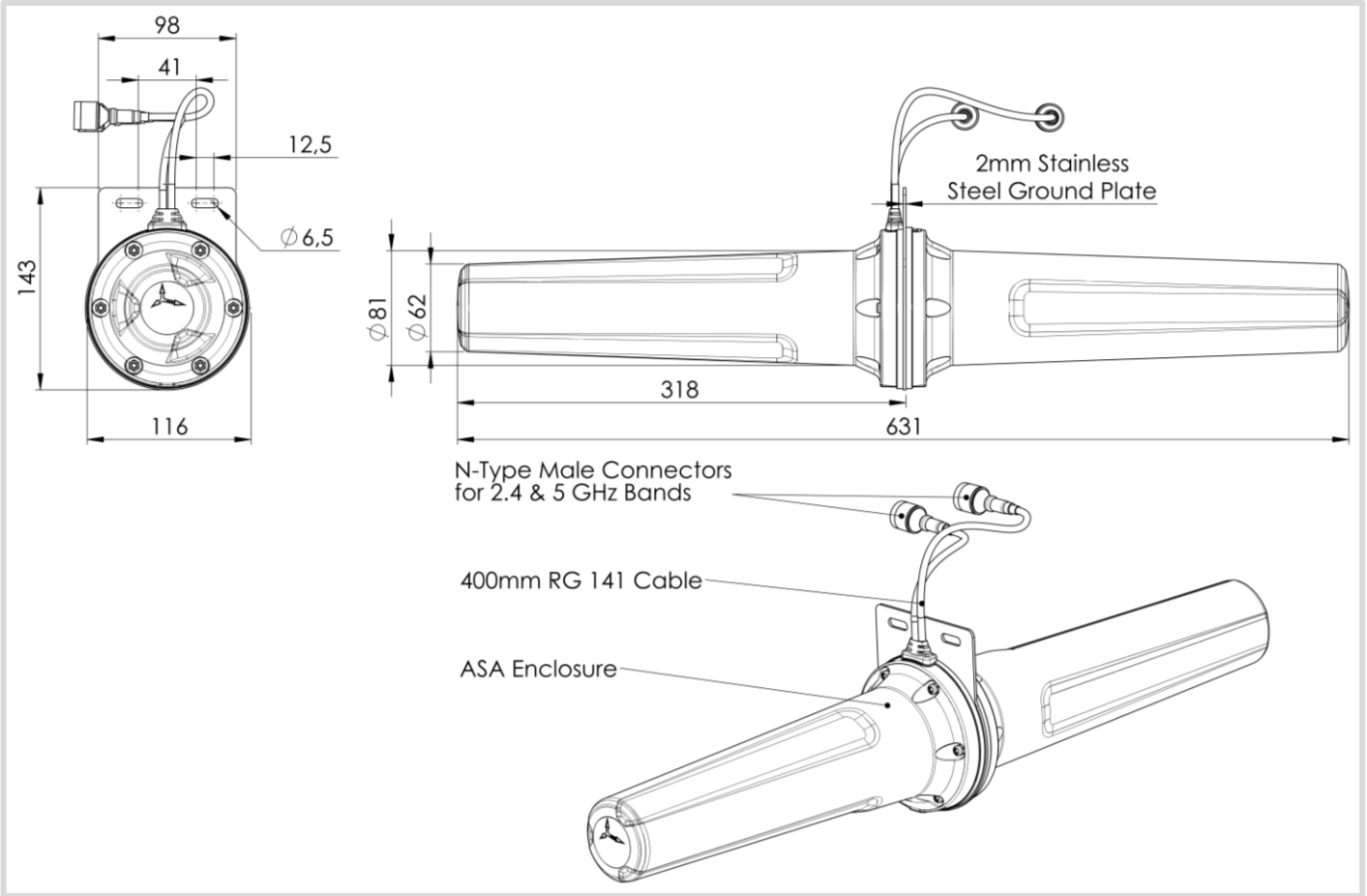
Elevation Port 2: 5000 – 6000 MHz



Revised: October 2023

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech

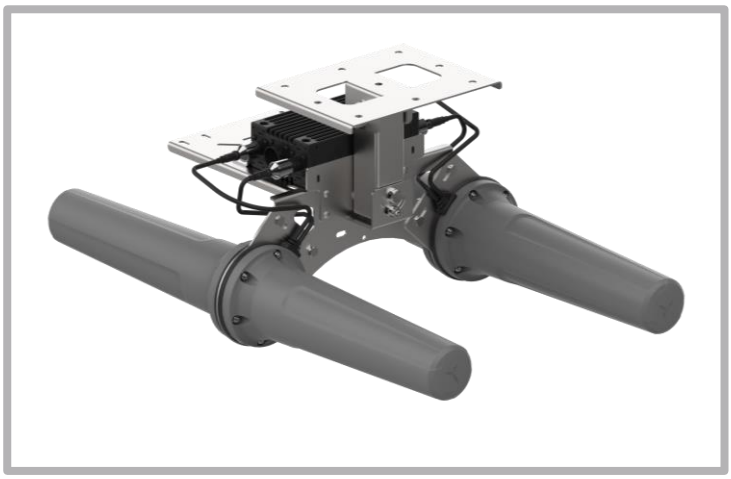
Technical Drawings



Revised: October 2023

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech

Antenna Assembly Options



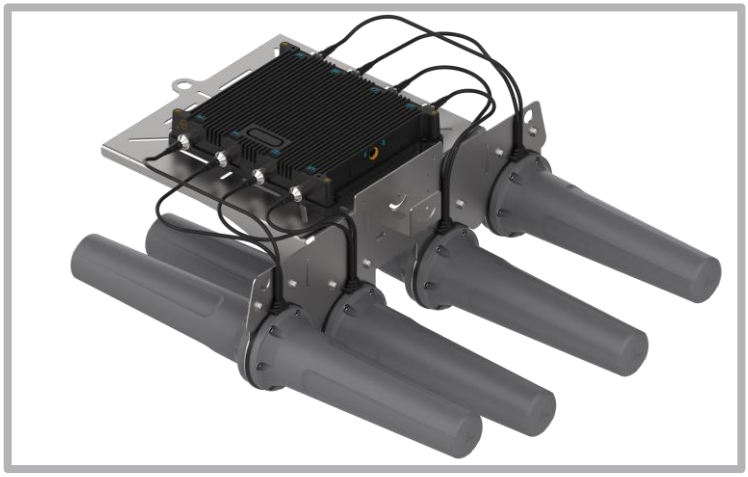
1. 2 X 2 MIMO Application: Complete assemblies available with antennas and brackets:

A-HELI-0022-V2-01 consists of:

- A-HELI-0019-V3-01-L _ Left-Hand, Circular polarised bi-directional antenna
- A-HELI-0019-V3-01-R _ Right-Hand, Circular polarised bi-directional antenna
- A-BRKT-045-V2-01 _ Ceiling Mount, swivel bracket

A-HELI-0022-V2-02 consists of:

- A-HELI-0019-V3-01-L _ Left-Hand, Circular polarised bi-directional antenna
- A-HELI-0019-V3-01-R_ Right-Hand, Circular polarised bi-directional antenna
- A-BRKT-045-V2-01 _ Ceiling Mount, swivel bracket
- A-BRKT-047-V2-01 _ Mine roof bolt attachment accessory



2. 4 X 4 MIMO Application: Complete assemblies available with antennas and brackets:

A-HELI-0042-V1-01 consists of:

- 2 x A-HELI-0019-V3-01-L _ Left-Hand, Circular polarised bi-directional antenna
- 2 x A-HELI-0019-V3-01-R _ Right-Hand, Circular polarised bi-directional antenna
- A-BRKT-046-V2-01 _ Ceiling Mount, swivel bracket

A-HELI-0042-V1-02 consists of:

- 2 x A-HELI-0019-V3-01-L _ Left-Hand, Circular polarised bi-directional antenna
- 2 x A-HELI-0019-V3-01-R_ Right-Hand, Circular polarised bi-directional antenna
- A-BRKT-046-V2-01 _ Ceiling Mount, swivel bracket
- A-BRKT-047-V2-01 _ Mine roof bolt attachment accessory

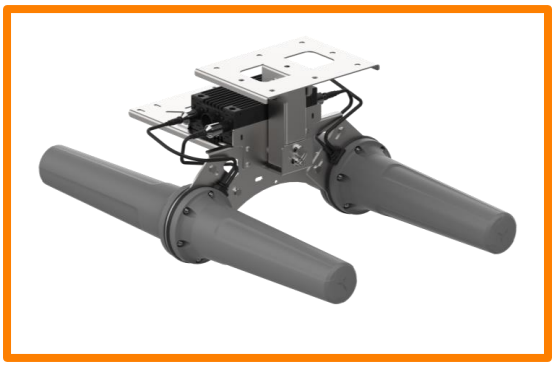
Revised: October 2023

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech

Mounting Options

Base Mount

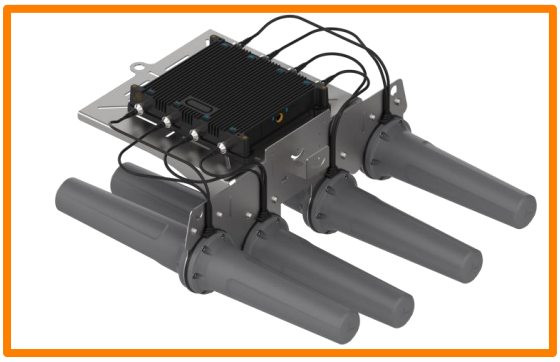
The antenna can be suspended directly using the two slots on its base.



Ceiling Mount (MIMO) - Optional

An optional multi-directional swivel bracket is available for mounting 2 x miniHELI antennas (right-hand circular and left-hand circular polarised antennas) to a ceiling for MIMO application.

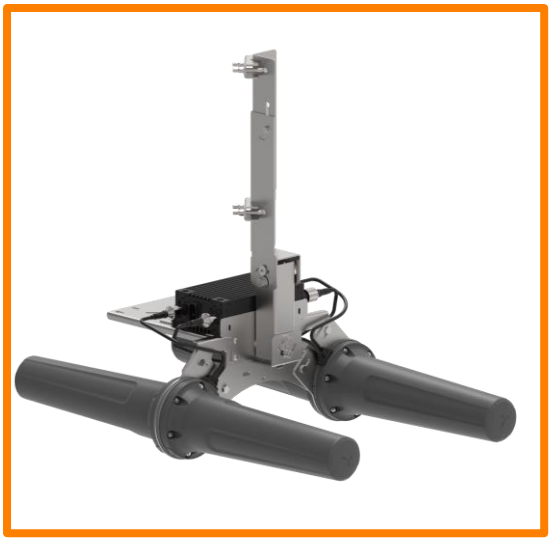
This option uses A-BRKT-045-V2-01.



Ceiling Mount (MIMO) - Optional

An optional multi-directional swivel bracket is available for mounting 4 x miniHELI antennas (2 x right-hand circular and 2 x left-hand circular polarised antennas) to a ceiling for MIMO application.

This option uses A-BRKT-046-V2-01.



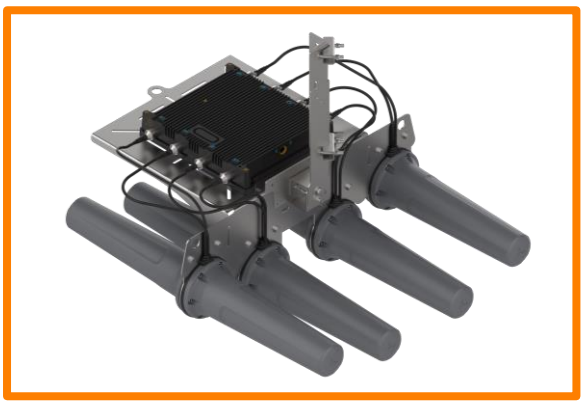
Roof Bolt Mount (MIMO) - Optional

This optional 20mm roof bolt mounting bracket attachment is used in conjunction with BRKT-45 for mounting to standard mine roof bolts.

This option uses A-BRKT-047-V2-01.

Revised: October 2023

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech



Roof Bolt Mount (MIMO) - Optional

This optional 20mm roof bolt mounting bracket attachment is used in conjunction with BRKT-46 for mounting to standard mine roof bolts.

This option uses A-BRKT-047-V2-01.

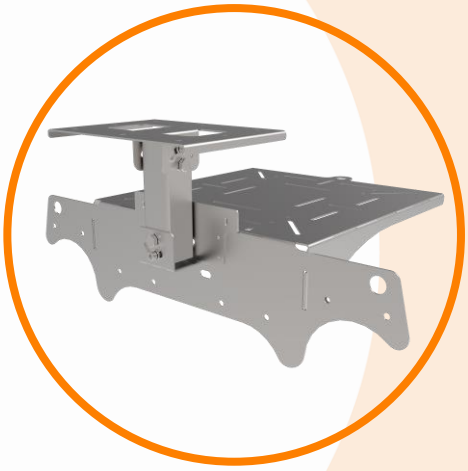
Revised: October 2023

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
Document version: TS-A-HELI-0019-V3-01 REV 4.0
www.poynting.tech

Additional Accessories

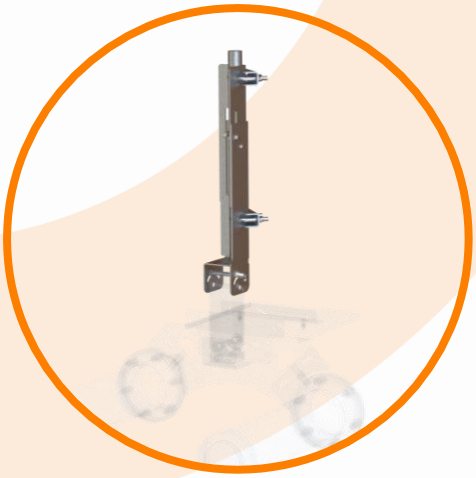
A – BRKT – 045 -V2 - 01

Ceiling mounting bracket for holding miniHELI right-hand and left-hand circular polarised antennas.



A – BRKT – 046 -V2 - 01

Mining tunnel roof mount bracket for 4x mini-HELI antennas.



A – BRKT – 047 -V2 - 01

Ceiling 20mm rod mounting bracket attachment to use with BRKT-45 and BRKT-46.

See accessories technical specifications on www.poynting.tech

CONTACT POYNTING

Poynting Antennas (Pty) Ltd - Head Office
Unit 4, N1 Industrial Park,
Landmarks Avenue,
Samrand, 0157, South Africa
Phone: +27 (0) 12 657 0050
E-mail: info@poynting.tech
International Email: sales-global@poynting.tech

Poynting Europe
Regus Business Center Neue Messe Riem
Kronstadter Straße 4
81677 München
Germany
Phone: +49 89 7453 9002
E-mail: sales-europe@poynting.tech

Poynting USA
1804 Owen Court, Suite 104,
Mansfield,
TX 76063
USA
Phone: +1 817 533-8130
E-mail: sales-us@poynting.tech