HELI-40

ANTENNAS | HELI-40 SERIES

CIRCULAR POLARISED, BI-DIRECTIONAL MINE/TUNNEL ANTENNA

Dual-Band Wi-Fi, 2400 – 2500 MHz; 5000 – 6000 MHz, 4.8 dBi

2400 – 2500 MHz; 5000 – 6000 MHz

4.8 dBi

Bi-Directional

2.4 – 2.5 GHz 5.0 – 6.0 GHz

Machine to Machine

Internet of Things

2x2 MIMO

Chemical Protection

-40°C to +70°C

Fire Resistant

IP 68

- **Circular Polarised antenna provides enhanced signal propagation and connection stability within a tunnel**
- **Left-Hand Circular (LHC) & Right-Hand Circular (RHC) polarised**
- **Bi-directional – radiates in both directions within a tunnel**
- **Ruggedized, water and dust ingress protected (IP68)**
- **Ideal for Mining & Tunnel M2M and IoT deployments**

APPLICATION AREAS

Mining

Tunnelling

Vehicle

Product Overview

The HELI-40 adds to our current HELI antenna range for mining and tunnelling deployment. The HELI-40 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. The HELI-40 was specifically designed for vehicle/equipment mounting, making it ideal for deployment within the tunnel to provide telemetry and mining automation.

The antenna comes standard in both Left-Hand Circular (LHC) and Right-Hand Circular (RHC) polarised to provide optimal decorrelation within a MIMO deployment. The polarisation diversity and frequency diversity of the antenna enhances MIMO performance and RF reliability within a mining tunnel. The circular polarisation allows the dual-band Wi-Fi frequencies to propagate around tunnel bends in a non-line of sight scenario. This provides improved performance with enhanced link stability and reliability.

Features

- Circular polarised, four port 2.4 GHz and 5 GHz antenna
- Left & Right-Hand Circular Polarised
- Bi-Directional – Radiates in both direction in a tunnel
- Rugged mechanical design for harsh environments (IK10)
- Water and dust ingress protected (IP68)

Application Areas

- Mining Vehicles & Machinery communications, telemetry, and automation (M2M & IoT)
- Industrial factory automation, robotic machinery and other M2M systems telemetry
- Creating complete underground in tunnel connection for vehicle tracking and personnel safety

Revised: October 2021

Regulatory Compliance: RoHS 2011/65/EU Compliant | ISO 9001:2015
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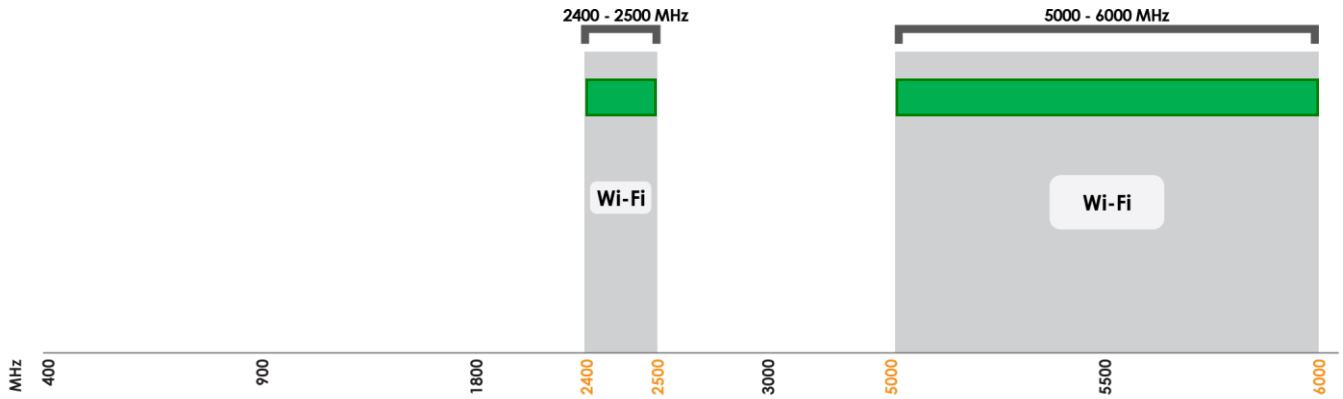
Frequency Bands

The HELI-40 is a bi-directional antenna that works from 2400 – 2500 MHz | 5000 – 6000 MHz



Indicates the WI-FI bands on which HELI-40 works

Antenna Overview

	Wi Fi DUAL BAND
Ports	4
SISO / MIMO	MIMO
Frequency Bands	2400 – 2500; 5000-6000 MHz
Polarisation	LHCP & RHCP
Peak Gain	4.8 dBi
Coax Cable Type	RG58
Coax Cable Length	300mm
Connector Type	N-Type (M)

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

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Electrical Specifications

Frequency bands:	2400 – 2500 MHz 5000 – 6000 MHz
Gain (max):	4.8 dBi
VSWR:	<2:1
Feed power handling:	10 W
Input impedance:	50 Ohm (nominal)
Polarisation:	LHCP & RHCP
Coax cable loss:	0.97dB/m @ 2400 MHz 2.0 dB/m @ 5800 MHz
DC short:	Yes

Product Box Contents

Antenna:	A-HELI-0040-V1-01
Mounting bracket:	Threaded Spigots (Up to 60mm clamping thickness), Adhesive Surface Mounting & Optional Magnetic Mount

Ordering Information

Commercial name:	HELI-040
Order product code:	A-HELI-0040-V1-01
EAN number:	6009710923542

Mechanical Specifications

Product dimensions	253 mm x 128 mm x 144 mm
Packaged dimensions:	265 mm x 211 mm x 204 mm
Weight:	TBC
Packaged weight:	TBC
Radome material:	UV Stable ASA
Radome colour:	Black
Mounting Type:	Spigot, Surface with Magnetic mount option

Environmental Specifications, Certification & Approvals

Wind Survival:	≤220 km/h
Temperature Range (Operating):	-40°C to +70°C
Environmental Conditions:	Vibration resistant, mining & automotive application
Water ingress protection ratio/standard:	IP 68
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 +70°C
Enclosure Flammability Rating:	UL 94-HB
Impact resistance:	IK 10
Product Safety & Environmental:	Complies with CE and RoHS standards

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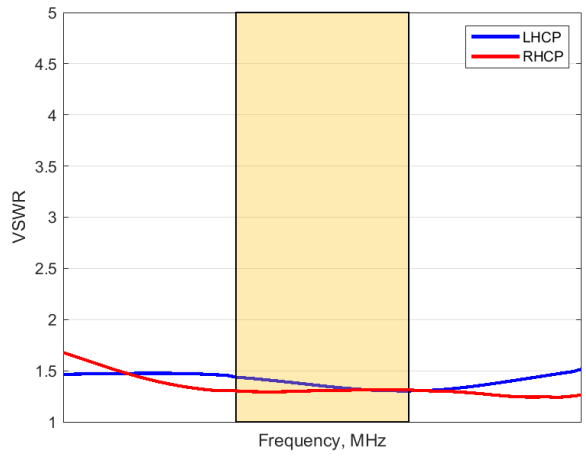
Antenna Performance Plots

VSWR: 2400 – 2500 MHz



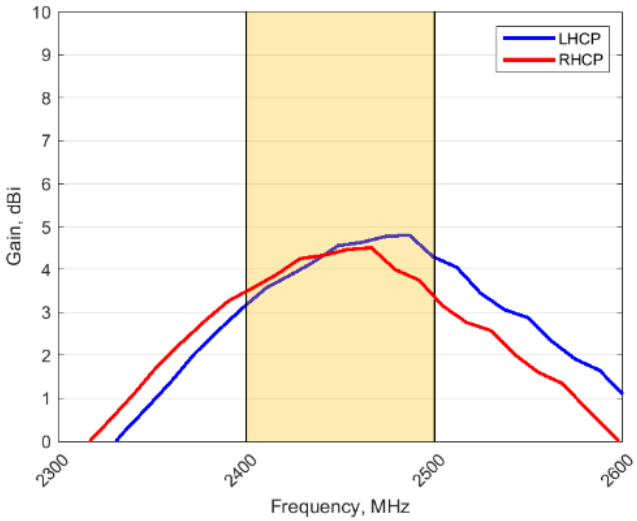
Voltage Standing Wave Ratio (VSWR)*

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-40 delivers superior performance across all bands with a VSWR of 2:1 or better across 90% of the bands.

**VSWR measured with 300mm low loss cable.*

GAIN: 2400 – 2500 MHz (EXCLUDING CABLE LOSS)



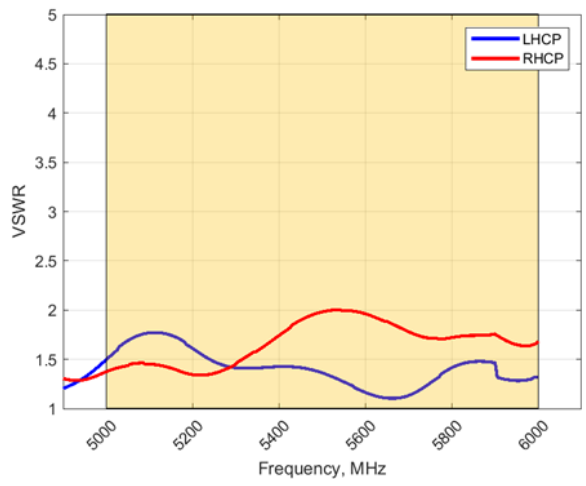
Gain⁺ in dBi

4.8 dBi is the peak gain across all bands from 2400 – 2500 MHz

Gain @ 2400 – 2500 MHz: 4.8 dBi

⁺Antenna gain measured with polarisation aligned standard antenna

VSWR: 5000 – 6000 MHz



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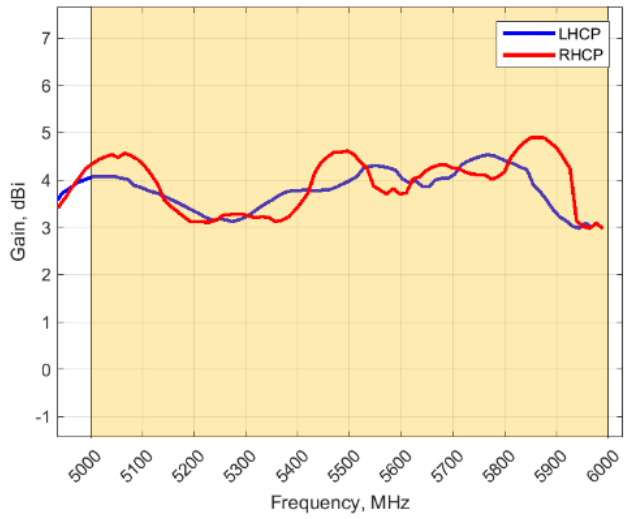
The HELI-40 delivers superior performance across all bands with a VSWR of 2:1 or better across 90% of the bands.

**VSWR measured with 300mm low loss cable.*

GAIN: 5000 – 6000 MHz (EXCLUDING CABLE LOSS)



Gain⁺ in dBi

4.8 dBi is the peak gain across all bands from 5000 – 6000 MHz

Gain @ 5000 – 6000 MHz: 4.8 dBi

⁺Antenna gain measured with polarisation aligned standard antenna

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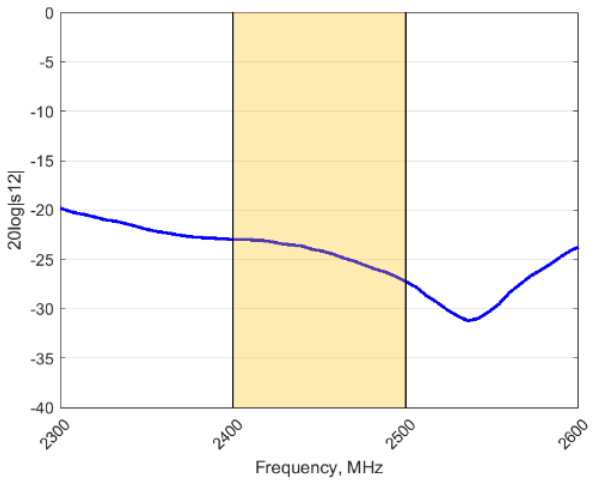
Isolation: 2400 – 2500 MHz

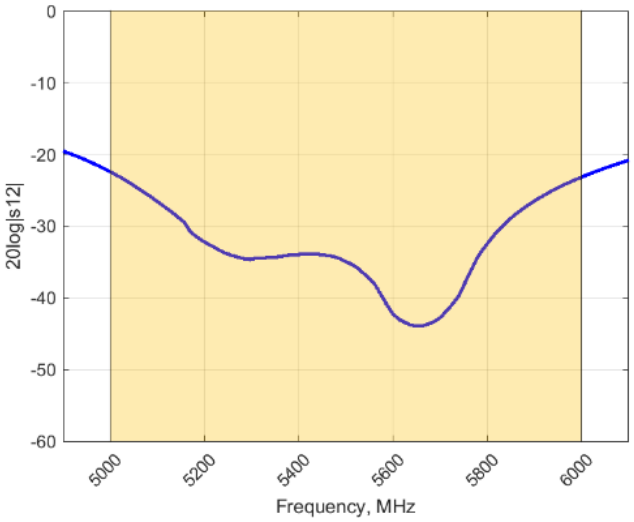


Isolation

Isolation is a measurement of the amount of energy leaked from one port to another. In an ideal case no energy should leaked between the ports.

The HELI-40 antenna has an isolation of <-20dB across the 2400 – 2500 MHz band.

Isolation: 5000 – 6000 MHz

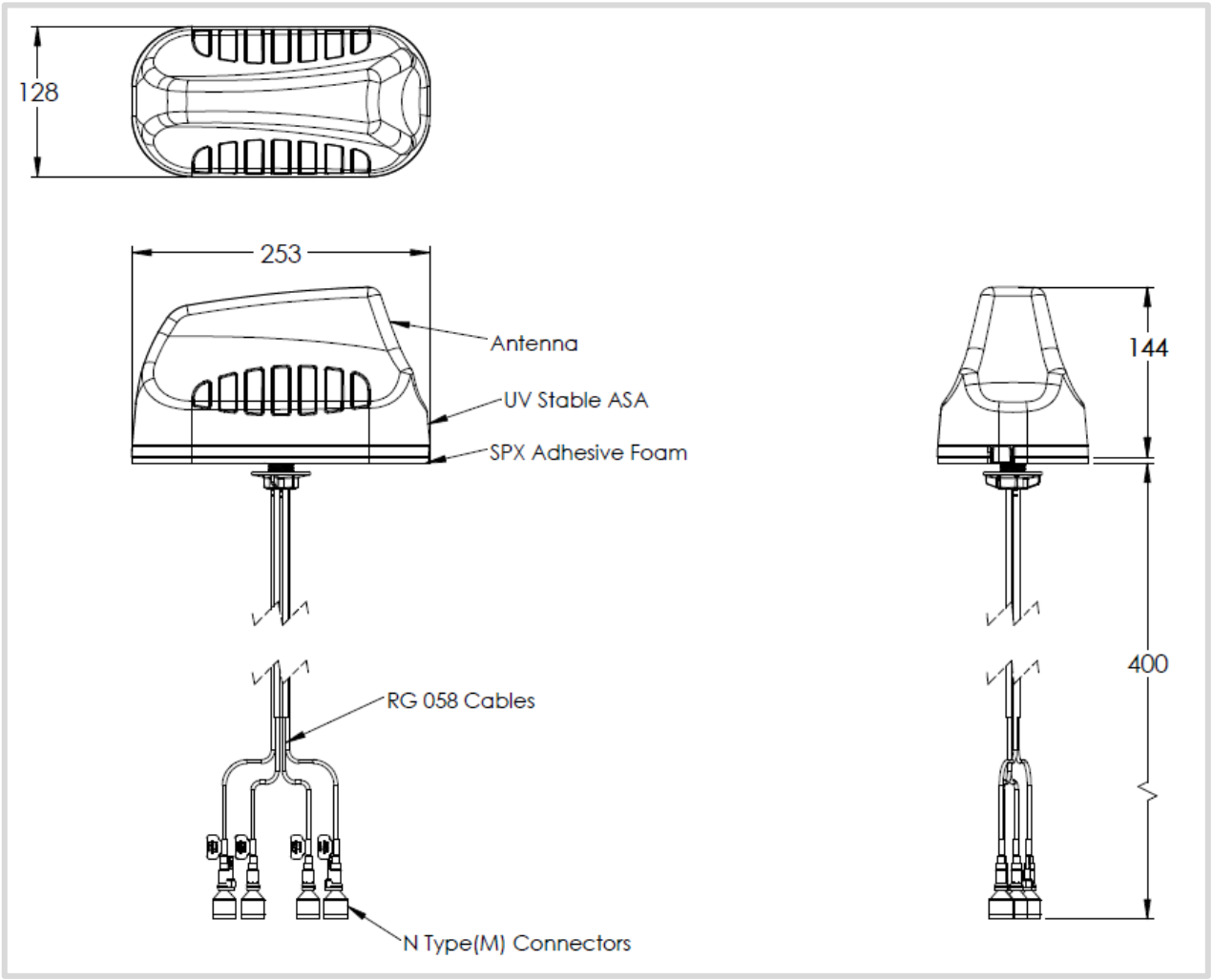


Isolation

Isolation is a measurement of the amount of energy leaked from one port to another. In an ideal case no energy should leaked between the ports.

The HELI-40 antenna has an isolation of <-20dB across the 5000 – 6000 MHz band

Technical Drawing



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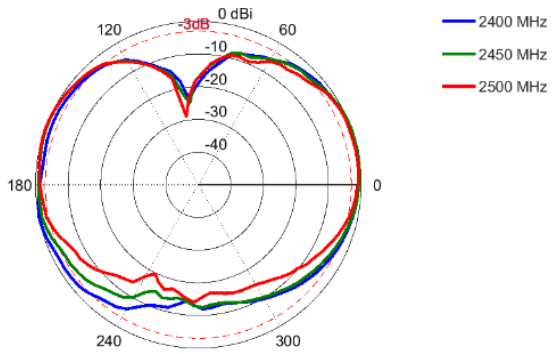
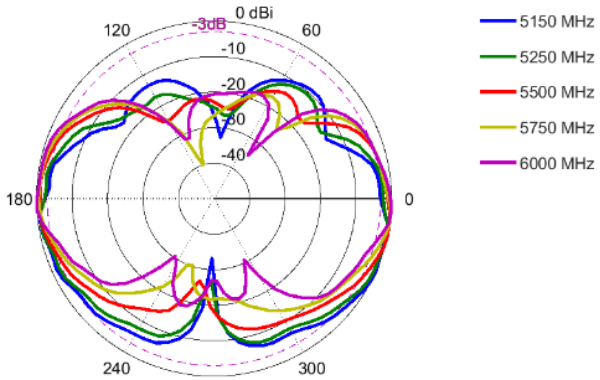
Radiation Patterns

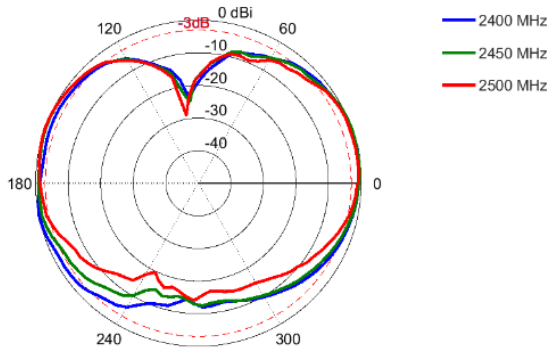
Azimuth: 2400 – 2500 MHz



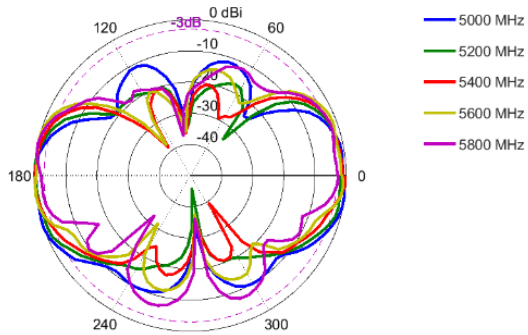
Azimuth: 5000 – 6000 MHz



Elevation: 2400 – 2500 MHz[FREQUENCY 3]



Elevation: 5000 – 6000 MHz



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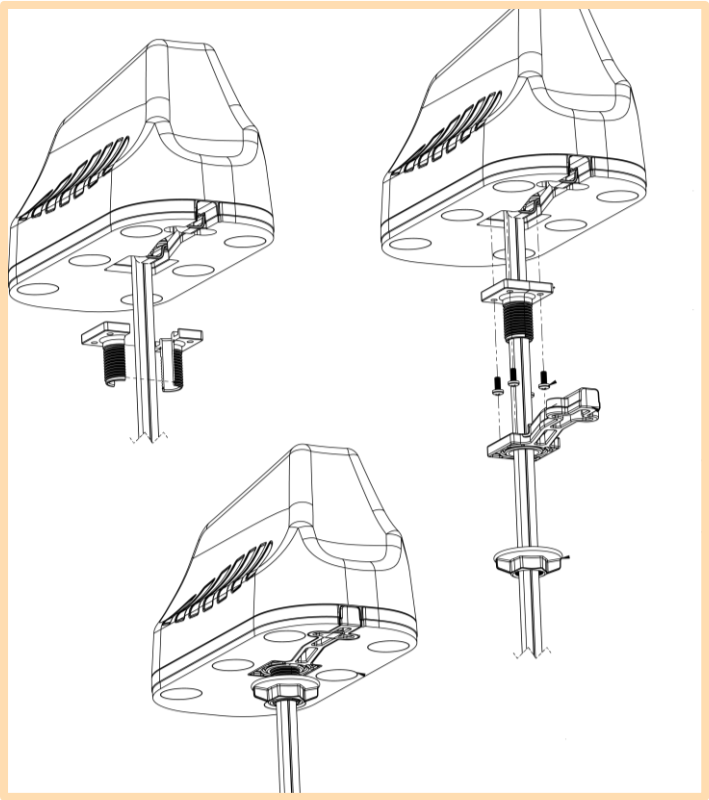
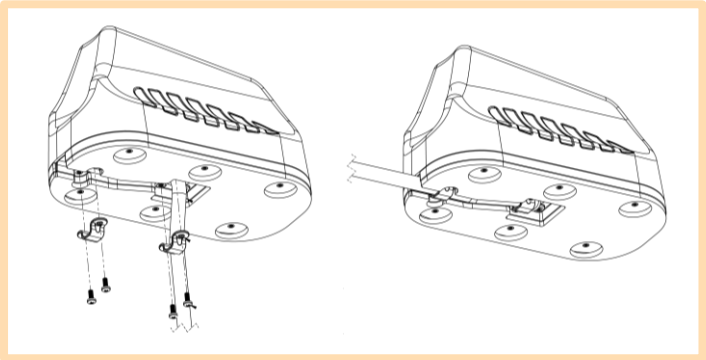
Mounting Options



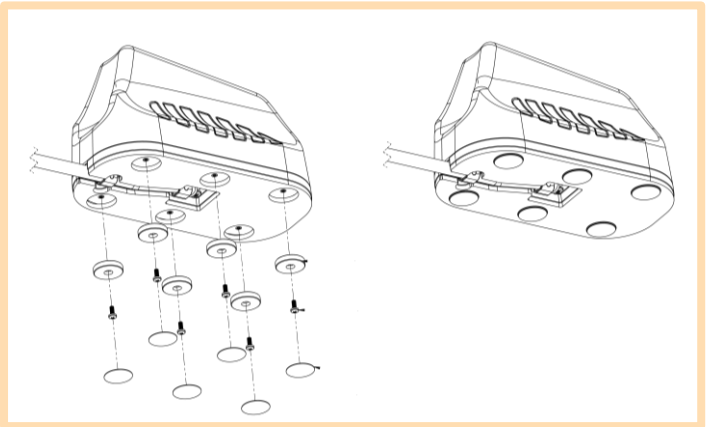
Standard Spigot Mount

Threaded Spigot Mounting



Surface Mount

Adhesive Surface Mounting



Magnetic Mount

Optional Magnetic Base Kit

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Additional Accessories

A-MBK-0001-V1.0

Magnetic Base Kit

Additional cables and adapters available. See accessories technical specifications on www.poynting.tech

Contact Poynting

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