QPAR USA

Direction Finding (DF) Spinning Antenna System

Find out more by scanning the QR code.

Key Features

- Frequency Range 0.5-40GHz.
- Polarisation Slant 45°.
- Directional antennas as standard.
- Optional Omni-Directional antennas.
- 200RPM.
- Power supply (**USA/EU compatible**).
- Available Multi-mode (**Spin, Sector & Designate**).
- ACU free design.
- Copley Drive offering: DS402 over CAN & EtherCAT, ASCII over TCP/UDP, RS232.
- MIL-STD-810-H.
- STANAG 4370.
- MIL-STD-461-G.
- IP56 Radome encapsulated for Protection.
- End User Replaceable Slipring/Rotary Joint.

Overview

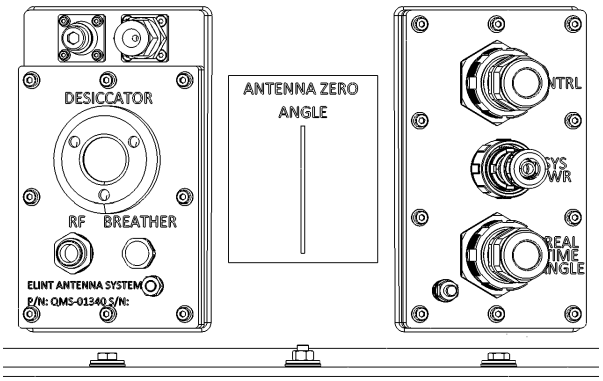
The QMS-01319 antenna system provides a 0.5-40GHz slant polarised rotating directional antenna driven by a direct drive motor for ELINT direction finding and spectrum monitoring applications. The directional antenna comprises two individual units: a 0.5-18 GHz antenna mounted back-to back with a 18-40 GHz antenna. Both antenna bands provide fan-beam patterns with narrow azimuth beamwidths for accurate emitter location, and wide elevation beamwidths enabling coverage of land, sea and airborne domains.

An RF switch fitted to the antenna assembly allows the signals from these two antennas to be switched to a single output connector through a high performance, full-band rotary joint. The Directional antennas can be rotated up to 200RPM to maximise probability of intercept of short pulse, long PRI radar emitters. The motor incorporates a holding brake which is only activated when the Antenna is powered down to prevent rotation of the directional antenna during transportation and maintenance activities. Routine preventative maintenance activities are easily achieved through access to the rotary joint/slipring assembly through a housing on the base of the unit.

Above the directional antenna sits a 0.5-40GHz slant polarised Omnidirectional antenna with polarisation matched to the directional antenna. The output from the Omnidirectional antenna can be used by sidelobe blanking algorithms to remove ambiguity in emitter bearings as well as providing constant angular coverage to maximise probability of intercept of emitter signals.

The Antenna is controlled by a ruggedised servo motor controller providing a high-performance, open source, DC powered drive for position, velocity, and torque control of the positioner motor via standard EtherCAT or Ethernet protocols. Supported operation modes including Profile Position-Velocity-Torque, Interpolated Position (PT, PVT), and Homing can be used directly or incorporated into customer control software. A low latency position output can be provided for direct interfacing with receiver hardware for synchronising with received signals.

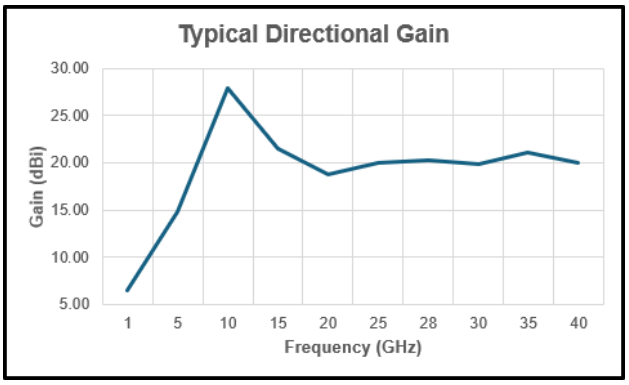
The antenna unit also incorporates a Desiccator cannister and breather vent and can accommodate additional heating units if required.

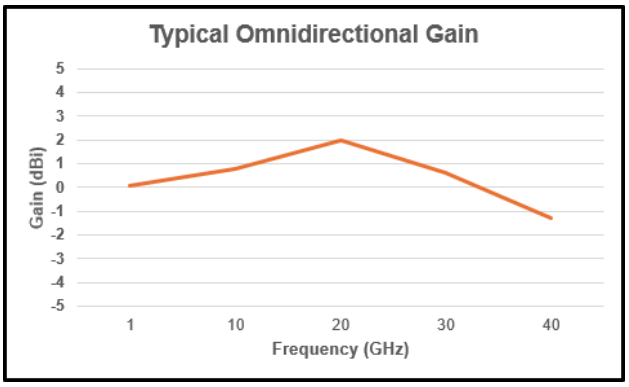


Antenna Control Panel (Mounted in base plate).

Technical Specifications

Parameter	Value	Comment
Frequency range	0.5 to 40GHz	
VSWR	Typically <2.5:1	
Polarization	+ Slant | - Slant	4.5 to 40 GHz | 0.5 to 4.5 GHz
Azimuth 3dB Beamwidth (Directional)	Typically <55° | <25° | <15° | >2° | >2.5°	<0.8 GHz | 2 to 2.7 GHz | 2.7 to 4.5 GHz | 4.5 to 18 GHz | 18 to 40 GHz
Elevation 3dB Beamwidth (Directional)	Typically >20°	0.5 to 40 GHz
Elevation 3dB Beamwidth (Omni)	Typically <25° | >25° | >20° | >25° | >12°	0.5 to 4.5 GHz | 4.5 to 10 GHz | 4.5 to 18 GHz | 18 to 27 GHz | 27 to 40 GHz
Elevation 10dB Beamwidth (Omni)	Typically >55° | >40° | >55° | >30° | >40° | >24°	0.5 to 4 GHz | 4 to 4.5 GHz | 4.5 to 8 GHz | 8 to 18 GHz | 18 GHz | 38 GHz
Realised Gain (Directional)	Typically >6.5 dBi | >8 dBi | >12 dBi | >12.7 dBi | >16.7 dBi | >17.8 dBi | 18 to 20 dBi	0.7 GHz | 1 GHz | 2.7 to 4.5 GHz | >4.6 GHz | >8 GHz | >12 GHz | 18 to 40 GHz
Realised Gain (Omni)	Typically >0 dBi	0.5 to 40 GHz
Side Lobe Level (Directional)	>15dB Average	0.5 to 40 GHz
Main Lobe Alignment (Directional)	Typically 2.5° to 3.7° | 0°	Elevation | Azimuth
Spin Velocity	0 to 200rpm	
Max Acceleration / Deceleration	200°/s²	
Angular resolution	0.02°	
Supply Voltage	110V/230V AC	
Size & Weight	Ø675mm (**Base Flange**) x 1078mm. 39kg Max	Weight based on inclusion of Omnidirectional antennas but subject to selected options.





QMS-01383
Frequency 1-18GHz
(Optional Omnidirectional available)

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