

HITEC-LM-06

6,8m Limited-Motion Satellite Ground Antenna System

HITEC
LUXEMBOURG

The LM-06 antenna system is a low maintenance and future proof antenna system designed for robust, reliable and high-performance operation for geostationary applications. The LM-06 can accommodate different feed systems and can operate at different frequencies, depending on the application.

The reflector, 6.8m in diameter in a dual shaped Cassegrain configuration for high efficiency, is constructed of precision bonded aluminum panels. The backup structure consists of aluminum framework trusses, reinforced by a structural plenum. This configuration ensures optimum rigidity and surface accuracy under self-weight and environmental effects and can accommodate the optional de-icing system.

The antenna hub has generous interior dimensions (W x H x D: 1.7m x 1.5m x 1.1m) and allows placing up to 30 units of 19" racks and installing all converters and high-power amplifiers right next to the feed. Easy access to the equipment is ensured by a large opening covered by roller shutters.

The LM-06 is equipped with the HITEC Luxembourg Antenna Control Unit HACU-1000, providing program track functionality as a baseline. Depending on customer requirements and the installed RF equipment, a step-track or monopulse capable version of the HITEC Luxembourg ACU can be installed.

All satellite ground antenna systems, designed and produced by HITEC Luxembourg are ITAR-free and delivered as turn-key solutions.

KEY FEATURES

High accuracy under adverse environmental conditions for high performance operation

Large working platform and stairs combined with supersized center-hub for housing RF equipment and improved accessibility

Standalone system with all antenna components (e.g. power electronics) integrated in its structure

Equipped with an Antenna Front Panel, which allows global health and status monitoring, as well as commanding of the auxiliary functions

(e.g. HVAC, de-icing) through a single interface

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RF PERFORMANCE (OTHER FREQUENCY BANDS AND FEED CONFIGURATIONS ON REQUEST)

| | X-BAND | | KU-BAND | | KU-BAND (DBS) | | KA-BAND | | KA-BAND (EXT.) | | K-BAND |
|---|---|------------------------|--|--------------------------|--|-------------------------|---|------------------------|---|------------------------|--|
| | Rx | Tx | Rx | Tx | Rx | Tx | Rx | Tx | Rx | Tx | Rx |
| Frequency | 7.25-7.75 GHz | 7.9-8.4 GHz | 10.7-12.75 GHz | 13.75-14.5 GHz | 10.7-12.5 GHz | 17.3-18.4 GHz | 20.2-21.2 GHz | 30.0-31.0 GHz | 17.7-21.2 GHz | 27.0-30.0 GHz | 25.5-27.0 GHz |
| Polarization | Dual circular | | Dual linear | | Dual linear | | Dual circular | | Dual circular | | Dual circular |
| Antenna Gain | 52.2 dBi @ 7.5 GHz | 53.24dBi @ 8.15 GHz | 56.5 dBi @ 11.725 GHz | 58.4 dBi @ 14.125 GHz | 56.4 dBi @ 11.6 GHz | 60.3 dBi @ 17.85 GHz | 60.9 dBi @ 20.7 GHz | 64.5 dBi @ 30.5 GHz | 60.6 dBi @ 19.45 GHz | 64.1 dBi @ 28.5 GHz | 63.1 dBi @ 26.25 GHz |
| VSWR | 1.3 | | 1.3 | | 1.3 | | 1.3 | | 1.3 | | 1.3 |
| 3dB beamwidth | 0.42 deg @ 7.5 GHz | | 0.27 deg @ 11.725 GHz | | 0.274deg @ 11.6 GHz | | 0.15 deg @ 20.7 GHz | | 0.16 deg @ 19.45 GHz | | 0.12 deg @ 26.25 GHz |
| Typical G/T @ 5° El. @ 10° El. @ 30° El. | <i>(with 52 K LNA)</i> 31.5 dB/K @ 7.5 GHz 31.9 dB/K @ 7.5 GHz 32.8 dB/K @ 7.5 GHz | | <i>(with 75 K LNA)</i> 34.5 dB/K @ 11.725 GHz 34.9 dB/K @ 11.725 GHz 35.3 dB/K @ 11.725 GHz | | <i>(with 75 K LNA)</i> 34.4 dB/K @ 11.6 GHz 34.8 dB/K @ 11.6 GHz 35.2 dB/K @ 11.6 GHz | | <i>(with 120 K LNA)</i> 36.5 dB/K @ 20.7 GHz 37.1 dB/K @ 20.7 GHz 37.8 dB/K @ 20.7 GHz | | <i>(with 120 K LNA)</i> 36.0 dB/K @ 20.7 GHz 36.7 dB/K @ 20.7 GHz 37.4 dB/K @ 20.7 GHz | | <i>(with 150 K LNA)</i> 38.5 dB/K @ 26.25 GHz 39.1 dB/K @ 26.25 GHz 39.6 dB/K @ 26.25 GHz |
| Port-to-Port Isolation (dB) | | | | | | | | | | | |
| Rx/Tx (in Tx) | 120 dB | | 80 dB | | 80 dB | | 120 dB | | 120 dB | | n/a |
| Tx/Rx (in Rx) | 150 dB | | 80 dB | | 80 dB | | 120 dB | | 120 dB | | n/a |
| Tx/Tx | - | | 40 dB | | 40 dB | | 17 dB | | 17 dB | | n/a |
| Rx/Rx | - | | - | | - | | - | | - | | - |

ELECTRO-MECHANICAL

| | | |
|----------------------|---|----------------------|
| Configuration | Cassegrain optics | |
| Reflector diameter | 6.8 m | |
| Radiation pattern | Compliant with ITU-R S.580 | |
| Tracking system | Program track Step-track (optional) Monopulse (optional) | |
| Hub characterisation | Ca. 1.7m x 1.5m x 1.1m (W x H x D) Closed sealed space - Temperature controlled (optional) | |
| Axis design | Limited motion elevation over azimuth mount, dual backlash compensated drives on azimuth, high precision roller screw on elevation, controlled polarization axis (if applicable) | |
| Elevation | Range | -1 to 91 deg |
| | max. Velocity | 0.5 deg/sec |
| Azimuth | Range | 180 deg (continuous) |
| | max. Velocity | 1.0 deg/sec |

ENVIRONMENTAL

| | | |
|-----------------|-------------------|----------------------------------|
| Wind | Drive limit | 130 km/h |
| | Operational limit | 90 km/h (mean) - 110 km/h (peak) |
| | Survival | 200 km/h |
| Temperature | Operational limit | -20°C to +40°C |
| | Survival | -35°C to +60°C |
| Rain (maximum) | > 100 mm/h | |
| Power supply | 3x400 V | |
| Snow (build up) | 1000 kg | |
| Corrosion | Coastal and polar | |

OPTIONS

| | | |
|--------------------------------|----------------------|-------------------------|
| De-icing | Pedestal heat shield | HPA supports |
| Hub temperature control | Rain blower | Motion warnings |
| High / low temperature options | Hub 19" rack | Aircraft warning lights |