

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 can be 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 (MIL.)		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	27.5-31.0 GHz	25.5-27.0 GHz
Polarization	Dual circular		Dual linear		Dual linear		Dual circular		Dual circular		Dual circular
Antenna Gain <small>Rx: at LNA input Tx: at diplexer input</small>	52.2 dBi @ 7.5 GHz	53.7 dBi @ 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	60.5 dBi @ 19.45 GHz	64.3 dBi @ 29.25 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> 35.7 dB/K @ 19.45 GHz 36.3 dB/K @ 19.45 GHz 36.9 dB/K @ 19.45 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		85 dB		n/a
Tx/Rx (in Rx)	150 dB		80 dB		80 dB		120 dB		85 dB		n/a
Tx/Tx	19 dB		40 dB		40 dB		17 dB		17 dB		n/a
Rx/Rx	19 dB		40 dB		40 dB		17 dB		17 dB		17 dB

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