



HITEC-FM-130-Ka

13 meter full-motion Ka-band
TT&C satellite ground antenna system

KEY FEATURES

Full motion antenna with very high accuracy and performance in Ka-band

Large center-hub for housing RF equipment next to feed system and reducing RF losses

Multiple options:

- HVAC
- De-icing system
- Logging systems etc.

REFERENCES

Client:
Deutsche Luft- und Raumfahrtsgesellschaft (DLR)

Location:
Weilheim, Germany

Use & Deployment:
Multi-purpose (Communication & EO)

The FM-130-Ka is a low maintenance and future proof full motion antenna system designed for robust, reliable and high performance operation for multiple applications in Ka-band.

The FM-130-Ka can accommodate different feed systems and can operate at different frequencies, depending on the application.

The reflector, 13 m 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 ensuring highest rigidity and surface accuracy under self-weight and environmental effects as needed for operations in this frequency band. Optionally, a de-icing system can be installed.

The antenna hub has generous interior dimensions (W x H x D: 1.8 m x 1.8 m x 1.8 m) and allows installing converters and amplifiers right next to the feed in order to reduce RF losses. All main antenna functions can be conveniently monitored and controlled via a user-friendly touch screen (AFP).

Depending on customer requirements and the installed RF equipment, the FM-130-Ka can be equipped with a program-track (HACU-1000), step-track (HACU-2000) or monopulse (HACU-3000) capable version of the HITEC Luxembourg ACU.



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ANTENNA SYSTEM CHARACTERISTICS: HITEC-FM-130-Kα

SYSTEM PERFORMANCE

Tracking:	Program Track Step Track Monopulse (autotrack)
Frequency bands:	Designed for Ka-band (27 - 31 GHz) Adaptable to frequency bands from X- to K-band (8 - 27 GHz)
Radiation pattern:	Complies with ITU-S 580-6, ITU-R S.465-5
Accuracy:	Tracking, no wind: 0.002° Pointing, no wind: 0.010° Tracking, at 45 km/h and 60 km/h gusting: 0.015° Pointing, at 45 km/h and 60 km/h gusting: 0.020°

ANTENNA OPTICS

Configuration:	Cassegrain optics
Reflector diameter:	Designed for 13.0 m Adaptable to other diameters from 11 m to 15 m
Reflector surface accuracy:	< 0.3 mm RMS (over full eleva- tion range)
Polarization:	Tx: LP, LHCP and/or RHCP Rx: LP, LHCP and/or RHCP
3dB Beamwidth:	0.054° @ 27.5 GHz
Axial Ration (within 3σ tracking error)	≤ 1.0 dB
VSWR	≤ 1.33:1

FEED SYSTEM

Various feed systems can be installed following detailed customer specifications.

HUB CHARACTERISTICS

Available space for housing RF equip- ment:	~ 1.8 m x 1.8 m x 1.8 m
Environment:	Closed sealed space Temperature controlled

AXIS DESIGN

Full motion elevation over azimuth mount, dual backlash compensated drives

Controlled polarization axis

ELEVATION

Operational travel range:	Designed for -1 to 91 deg Extensible to -1 to 181 deg
Maximum rate:	6 deg/sec
Maximum acceleration:	3 deg/sec ²

AZIMUTH

Operational travel range:	± 360 deg
Maximum rate:	15 deg/sec
Maximum acceleration:	7.5 deg/sec ²

POLARIZATION

Range: ± 50°, continuous

ENVIRONMENTAL CONDITIONS

Drive limit:	130 km/h
Wind operational limit:	Mean 45 km/h Peak 60 km/h
Survival wind:	200 km/h (in stow position)
Temperature:	Operational -20°C to +40°C Survival -30°C to +50°C
Rain:	Max. 120 mm/h
Power supply:	3 x 400 V
Snow & ice (build up):	3500 kg
De-icing system:	Feed heater Feed blower
Corrosion:	Region: Coastal and polar

CONTACT

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