Model 4660HG
4.6m Fly-Away Multi-Orbit Tracking Antenna

ANTENNA FEATURES

- 4.6m segmented 17-piece carbon fiber reflector with quadpod
- Axis-symmetric shaped ADE
- Compact/rugged polarization worm gear drive
- Motorized elevation jack screw over azimuth cable drive
- One-button auto-acquisition
- Standard feeds:
  - 4-Port C-Band (CP/LP); standard band or INSAT band
- Optional feeds:
  - 2-Port L/S-Band,
  - 3-Port S-Band
  - 4-Port Extended C-Band LP
  - 2-Port C-Band Troposcatter,
  - 2-Port X-Band,
  - 4-Port Ku-Band Precision,
  - 4-Port Ku-Band DBS
  - 2- or 4-Port Ka-Band LP/CP
- Motorized rotation of feed for polarization adjustment

MECHANICAL SPECIFICATIONS

Az/El/Pol Drives		▪ Motorized elevation jack screw over azimuth cable drive ▪ Motorized worm gear drive
Reflector Construction		4.6m 17-piece AvL carbon fiber reflector
Axis Travel	**Azimuth**	±90°
	Elevation	▪ 0° to 90° (7° over leg) of reflector boresight from calibrated inclinometer ▪ 5° to 90° standard limits or 5° to 65° (CE approval)
	Polarization	±95° for 2-Port and 3-Port Feeds; ±50° for 2-Port Wideband and 4-Port Feeds, 3-Port or 4-Port C-Band
Axis Speed	**Slewing/Deploying**	1°/second azimuth, 0.3°/second elevation
	Peaking	0.2°/second
Motors		90 VDC variable speed, constant torque
RF Interface	**BUC/HPA Mounting**	Behind reflector (additional case(s) required)
	Axis Transition	Twist-flex or optional rotary joints for Ku-band; pol rotary joint standard for C-band
	Waveguide	Cover flange at interface point
	Coax	Connectors bulkhead on each feed
Electrical Interface		Connectors on ODU on quadpod leg
Manual/Emergency Drive		Hand crank on azimuth, elevation, and polarization axes
Weight (approximate)		Weight per case is 225 lbs. max. (excluding S/L feed case), all but five cases weigh less than 174 lbs.
Stowed Dimensions		Ships on standard FedEx 48” L x 72” W x 60” H (122cm L x 183cm W x 152cm H) pallets or configured to fit onto two U.S. MIL 463-L pallets; base antenna packs on four standard FedEx pallets

ENVIRONMENTAL SPECIFICATIONS

Wind – Survival	Deployed	95 mph (153 km/h) in 90° elevation position 125 mph (201 km/h)
	Stowed	
Wind – Operational		30 mph (48 km/h), gusts to 65 mph (105 km/h)
Pointing Loss in Wind (RX)	10 mph (16 km/h)	< 0.8 dB all bands
	30 mph gusting to 45 mph (48 km/h to 72 km/h)	< 2.0 dB Ku-Band, Ka-Band
	45 mph gusting to 60 mph (72 km/h to 97 km/h)	< 2.0 dB C-Band, X-Band
Temperature	Operational	-31° to 125° F (-35° to 52° C)
	Survival	-40° to 140° F (-40° to 60° C)
Shock and Vibration		Designed for transport via rough roads, rail, sea and air
Corrosion Protection		For all regions from coastal to industrial, some periodic maintenance required for appearance
Humidity, Rain, Blowing Sand		Sealed to withstand 0-100% with condensation, >4 inches/hour (102 mm/hr), blowing to 40 mph (64 km/h)

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

RF PARAMETERS: L/S-BAND (2-PORT)

		Receive	Transmit
Frequency Range (GHz)		1.50 - 1.70	2.0 - 2.5
Polarization Configuration		Circular	
Gain (dBi)		35.3	37.5
VSWR	**1.30:1 (Standard)**	1.3:1 Max	1:5:1 assembly max (feed 1:3:1)
	1.50:1 (Extended)		
Beamwidth (Degrees)	**-3 dB**	2.7˚	2˚
	-10 dB	5.1˚	3.7˚
Radiation Pattern Compliance		FCC 25.209	
Antenna Noise Temperature (Midband, 20° El)		55° K	-
Power Handling Capability		-	2500 W
G/T Midband (Clear Horizon, Typical)		15.3 dB/° K	--
Cross-Polarization Isolation (LP Only, within Pointing Cone)	**On-Axis**	--	--
	Off-Axis	--	--
Feed Port Isolation (Tx to Rx, dB)		60	60
Max EIRP at Full Power (dBw)			70.0 @ 8.4 GHz
Satellite System Compliance		--	--

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

RF PARAMETERS: S-BAND (3-PORT)

		Receive	Transmit
Frequency Range (GHz)		2.20 - 2.40	2. 0 - 2.16
Polarization Configuration		Circular	
Gain (dBi)		38.3	36.4
VSWR	**1.30:1 (Standard)**	1.35:1	1.35:1
	1.50:1 (Extended)		
Beamwidth (Degrees)	**-3 dB**	2˚	2.2˚
	-10 dB	3.6 ˚	4 ˚
Radiation Pattern Compliance		FCC 25.209	
Antenna Noise Temperature (Midband, 20° El)		58° K	-
Power Handling Capability		-	2500 W
G/T Midband (Clear Horizon, Typical)		17.9 dB/° K	--
Cross-Polarization Isolation (LP Only, within Pointing Cone)	**On-Axis**	--	--
	Off-Axis	--	--
Feed Port Isolation (Tx to Rx, dB)		100	100
Max EIRP at Full Power (dBw)			69.5 @ 2.08 GHz
Satellite System Compliance		--	--

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

RF PARAMETERS: C-BAND (4-PORT)

		Receive	Transmit
Frequency Range (GHz)		**Standard:** 3.625 - 4.20 **Extended:** 3.4 - 4.2	**Standard:** 5.85 - 6.425 **Extended:** 5.75 - 6.725
Polarization Configuration		Circular or Linear	
Gain (dBi)		**Standard:** 42.9 **Extended:** 42.0	**Standard:** 46.7 **Extended:** 46.2
VSWR	**1.30:1 (Standard)**	1.30:1	1:5:1 assembly max (feed 1:3:1)
	1.50:1 (Extended)	1.50:1	
Beamwidth (Degrees)	**-3 dB**	1.2˚	0.7˚
	-10 dB	2.2˚	1.3˚
Radiation Pattern Compliance		FCC 25.209, ITU-R S.580-6, IESS 207	
Antenna Noise Temperature (Midband, 20° El)		45˚ K	--
Power Handling Capability		-	2500W per port
G/T Midband (Clear Horizon, Typical)		22.9 dB/° K (w/ 30°K LNB)	--
Cross-Polarization Isolation (LP Only, within Pointing Cone)	**On-Axis**	35 dB	35 dB
	Off-Axis	30 dB	30 dB
Feed Port Isolation (Tx to Rx, dB)		--	85 (including filter)
Max EIRP at Full Power (dBw)		--	81.5 @ 6.725 GHz
Satellite System Compliance		FCC, Intelsat	--

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

RF PARAMETERS: C-BAND INSAT (4-PORT)

		Receive	Transmit
Frequency Range (GHz)		4.50 – 4.80	6.725 – 7.025
Polarization Configuration		Linear	
Gain (dBi)		44.8	47.9
VSWR	**1.30:1 (Standard)**	--	--
	1.50:1 (Extended)		
Beamwidth (Degrees)	**-3 dB**	1˚	0.7˚
	-10 dB	2.1˚	1.2˚
Radiation Pattern Compliance		ITU-R S.580-6	
Antenna Noise Temperature (Midband, 20° El)		44˚ K	--
Power Handling Capability		-	2500W per port
G/T Midband (Clear Horizon, Typical)		--	--
Cross-Polarization Isolation (LP Only, within Pointing Cone)	**On-Axis**	35 dB	35 dB
	Off-Axis	30 dB	30 dB
Feed Port Isolation (Tx to Rx, dB)		35	80
Max EIRP at Full Power (dBw)		--	--
Satellite System Compliance		FCC, Intelsat	--

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

RF PARAMETERS: X-BAND MIL/WGS (2-PORT)

		Receive	Transmit
Frequency Range (GHz)		7.25 - 7.75	7.90 - 8.40
Polarization Configuration		Circular	
Gain (dBi)		48.6	49.3
VSWR	**1.30:1 (Standard)**	1.3:1 max.	1:5:1 assembly max. (feed 1:3:1)
	1.50:1 (Extended)		
Beamwidth (Degrees)	**-3 dB**	0.6˚	0.6˚
	-10 dB	1.1˚	1˚
Radiation Pattern Compliance		FCC 25.209, MIL-STD-188-164B	
Antenna Noise Temperature (Midband, 20° El)		45°K	--
Power Handling Capability		--	1000W per port
G/T Midband (Clear Horizon, Typical)		28.2 dB/° K with 45°K LNB	--
Cross-Polarization Isolation (LP Only, within Pointing Cone)	**On-Axis**	--	--
	Off-Axis	--	--
Feed Port Isolation (Tx to Rx, dB)		115 (including filter)	115 (including filter)
Max EIRP at Full Power (dBw)		--	79.8 @ 8.4 GHz
Satellite System Compliance		--	--

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

RF PARAMETERS: KU-BAND PRECISION (4-PORT)

		Receive	Transmit
Frequency Range (GHz)		10.7 - 12.75	13.75 - 14.5
Polarization Configuration		Linear	
Gain (dBi)		52	54
VSWR	**1.30:1 (Standard)**	1.3:1 max.	1:5:1 assembly max. (feed 1:3:1)
	1.50:1 (Extended)		
Beamwidth (Degrees)	**-3 dB**	0.4˚	0.3˚
	-10 dB	0.7˚	0.6˚
Radiation Pattern Compliance		FCC 25.209, ITU-R S.580-6, IESS 208	
Antenna Noise Temperature (Midband, 20° El)		45˚ K	--
Power Handling Capability		--	1000W per port
G/T Midband (Clear Horizon, Typical)		31.2 dB/° K with 65°K LNB	--
Cross-Polarization Isolation (LP Only, within Pointing Cone)	**On-Axis**	35 dB	35 dB
	Off-Axis	30 dB	30 dB
Feed Port Isolation (Tx to Rx, dB)		50	85 (including filter)
Max EIRP at Full Power (dBw)		--	84.5 @ 14.5 GHz
Satellite System Compliance		--	--

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

RF PARAMETERS: KU-BAND DBS (4-PORT)

		Receive	Transmit
Frequency Range (GHz)		10.7 -12.75	17.3 - 18.4
Polarization Configuration		Linear	
Gain (dBi)		52.4	56
VSWR	**1.30:1 (Standard)**	1:5:1 assembly max. (feed 1:3:1)	1.3:1 max.
	1.50:1 (Extended)		
Beamwidth (Degrees)	**-3 dB**	0.4˚	0.3˚
	-10 dB	0.7˚	0.5˚
Radiation Pattern Compliance		FCC 25.209, MIL-STD-188-164B	
Antenna Noise Temperature (Midband, 20° El)		44°K	--
Power Handling Capability		--	1000W per port
G/T Midband (Clear Horizon, Typical)		32.4 dB/° K with 50°K LNB	--
Cross-Polarization Isolation (LP Only, within Pointing Cone)	**On-Axis**	35 dB	35 dB
	Off-Axis	30 dB	30 dB
Feed Port Isolation (Tx to Rx, dB)		30	80
Max EIRP at Full Power (dBw)		--	84.0 @ 17.75 GHz
Satellite System Compliance		--	--

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

RF PARAMETERS: KA-BAND (4-PORT)

		Receive	Transmit
Frequency Range (GHz)		17.7 -21.2	27.5 - 31.0
Polarization Configuration		Circular or Linear	
Gain (dBi)		55.4	58.0
VSWR	**1.30:1 (Standard)**	1.30:1	1.30:1
	1.50:1 (Extended)	1.3:1 max.	1:5:1 assembly max. (feed 1:3:1)
Beamwidth (Degrees)	**-3 dB**	0.2˚	0.2˚
	-10 dB	0.4	0.3˚
Radiation Pattern Compliance		FCC 25.209, MIL-STD-188-164B	
Antenna Noise Temperature (Midband, 20° El)		97° K	--
Power Handling Capability		--	300W per port
G/T Midband (Clear Horizon, Typical)		32.2 dB/° K with 120° K LNB	--
Cross-Polarization Isolation (LP Only, within Pointing Cone)	**On-Axis**	35 dB	35 dB
	Off-Axis	30 dB	30 dB
Feed Port Isolation (Tx to Rx, dB)		35	85 (including filter)
Max EIRP at Full Power (dBw)		--	83.8 @ 31.0 GHz
Satellite System Compliance		--	--

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

CONTROLLER

Features	One-button auto acquisition of selected satellites, including peaking and optimization of cross-polarization. Internal movement detector and automatic stowing. Certified for auto-commissioning on most satellite services. Embedded AIU ODU and power supply ODU (PDU) installed on quadpod legs for easy access.
Size	Windows-based GUI software via Ethernet on AIU. Customizable power cable for use with NEMA 120/240V outlets.
Input Power	120/240 VAC 60/50 Hz, 6/3 A typical. 30-amp breaker recommended.

OPTIONS – UPGRADES AND SERVICES

- Optional feeds:
  - 2-Port L/S-Band
  - 3-Port S-Band
  - 2-, 3- or 4-Port C-Band CP/LP, standard band or INSAT band
  - 4-Port Extended C-Band LP
  - 2-Port C-Band Troposcatter
  - 2-Port X-Band
  - 4-Port Ku-Band Precision
  - 4-Port Ku-Band DBS
  - 2- or 4-Port Ka-Band LP/CP
- Ku-Band High Voltage (H/V) Switch
- Add BUC/HPA mounting (note that the elevation range may be restricted by these options)
- Upgrade to custom RF/IF I/O cabling configurations
- Custom colorization (contact AvL for available colors)
- Add custom logo on reflector face (one- or two-color, as per the AvL Logo Policy)
- Spare Parts Kit

Specifications subject to change without notice.
15 North Merrimon Avenue, Asheville, NC 28804
+1 (828) 250-9950 | sales@avltech.com | avltech.com

PACKAGING CONFIGURATION