



## ALB200-Ku Series 400 W, Ku-Band Antenna Mount TWTA

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The ALB200-Ku range of Ku-Band TWT provide over 350 W of output power in a compact, lightweight, rugged, weatherproof, antenna mount enclosure. The advanced packaging and cooling techniques enable the unit to operate in extreme environmental conditions from direct rain to direct sunlight. The amplifiers can be simply deployed anywhere in the world, are user-friendly, and incorporate a comprehensive remote control facility as standard, including RS485 and Ethernet options.

The HPA incorporates a high efficiency multi-collector TWT powered by an advanced power supply built on over **25** years of experience in the design and manufacture of satellite amplifiers. The company's products have an enviable reputation for performance, robust quality and reliable service.

The ALB200-KU is available with a wide range of options and accessories, backed by round-the-clock, worldwide technical support.

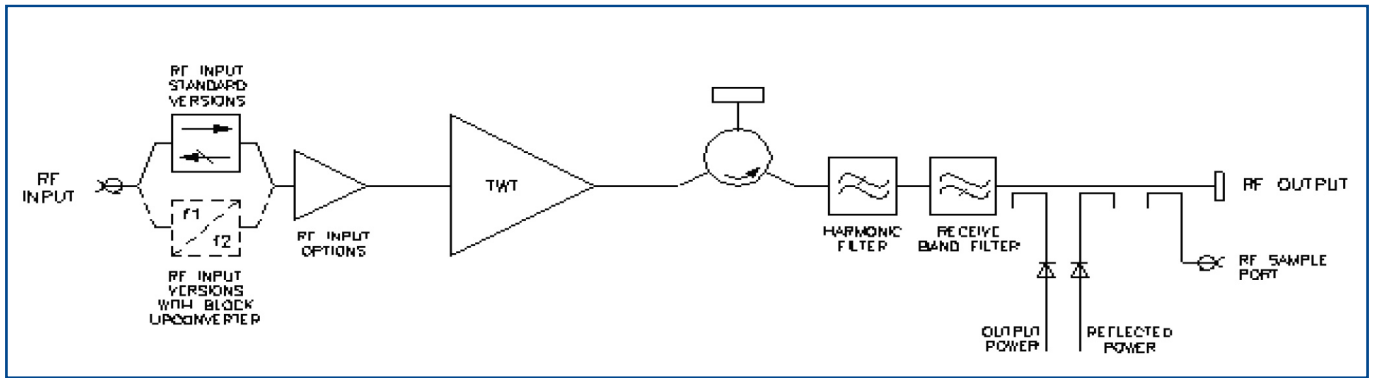
#### OPTIONS

- Integral solid-state amplifier (SSA)
- L-band block upconverter
- Gain control (requires SSA)
- Lineariser
- Break-out link for upconverter

#### FEATURES

- Advanced cooling design enables operation at +55 °C and in direct sunlight.
- Weatherproof antenna mount construction allows exposed mounting.
- CE compliant.
- cETLus listed.
- CB certified.
- Wide input voltage range – can operate from mains supplies worldwide.
- Redundant control – contains control and drive circuits for 1:1 redundancy.
- Stand-alone setting – automatically sequences to transmit mode.
- Round-the-clock hotline support.
- Wide range of accessories including: controllers, waveguide networks, cable assemblies.

**BLOCK DIAGRAM**



**PERFORMANCE** (Without Upconverter)

Frequency range:

standard – KU1 .....	13.75 to 14.5	GHz
extended – KU2 .....	12.75 to 14.5	GHz

Output power:

TWT output flange .....	400	W min
HPA rated output .....	350	W min

Gain:

at rated power (C option) .....	45	dB min
at rated power (A, D, Z option) .....	70	dB min
SSG $P_{rated}$ –10 dB (C option) .....	50	dB min
SSG $P_{rated}$ –10 dB (A, D, Z option) .....	75	dB min
Attenuation range (D, Z option) .....	25	dB min

Gain variation:

full band .....	2.5	dB max
over any 80 MHz band .....	1.0	dB max
slope .....	0.08	dB/MHz max

Gain stability 24hrs (constant drive, temperature and load).....

0.5	dB max
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Gain stability over full operating temperature.....

2.0	dB max
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Intermodulation (two equal carriers) with total output =  $P_{rated}$  –4 dB:

options A, D .....	-18 dBc	max
performance with linearised option, Z .....	-24 dBc	max

Harmonic output .....

-60 dBc	max
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AM to PM conversion at  $P_{rated}$  –6 dB .....

2.5	%/dB
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Noise power:

transmit band .....	-70	dBW/4 kHz max
receive band		
10.95 – 12.75 GHz - standard .....	-150	dBW/4 kHz max
10.70 – 11.70 GHz - extended .....	-150	dBW/4 kHz max

Residual AM:

<10 kHz .....	-50	dBc max
10 kHz < f < 500 kHz .....	-20(1.5+log f)	dBc max
>500 kHz .....	-85	dBc max

Group delay:

linear .....	0.01	ns/MHz
parabolic .....	0.005	ns/MHz <sup>2</sup>
ripple .....	0.5	ns p-p

Phase noise:

continuous .....	10 dB lower than IESS phase noise profile	
AC fundamental .....	-50	dBc
sum of all spurs .....	-47	dBc

Input VSWR (operating) .....

1.3:1	max
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Output VSWR (non-operating) .....

1.3:1	max
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Load VSWR, no damage .....

2.0:1	max
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Frequency .....	47 to 63	Hz
Power requirement .....	1500 VA	max
Power factor .....	0.95	min

**MECHANICAL**

Weight .....	25.0 kg (55 lb)	typ
Dimensions .....	see outline	
Cooling .....	integral forced-air	

**CONNECTORS**

RF input .....	N-type female
RF output .....	PBR120 with 6-32 UNC 2B threaded holes
RF sample port .....	N-type female
Prime power .....	ITT Cannon - CGL02A20-3P-E1B-B
Control interface .....	62GB-12E-2041-PN

**Note:** Mating connectors for the mains supply and control interface are supplied.

**ENVIRONMENTAL**

For operation outside these parameters, refer to **Agilis** for guidance.

Operating temperature (see note 1) .....	-40 to +55	°C
Derating .....	2 °C/300 m above sea level	
	(3.6 °F/1000 ft)	
Solar gain .....	1120	W/m <sup>2</sup>
Storage temperature .....	-40 to +80	°C
Relative humidity (condensing) .....	100	%
Altitude:		
operating .....	4.5 km (15,000 ft)	max
non-operating .....	12 km (40,000 ft)	max
Vibration .....	BS EN 60068-2-64 test Fh, Transportation	
Shock .....	IEC Publication 68-2-27 Part 2 Test Ea, 25 g	
EMC:		
	EN61000-6-3:2001 (Emissions)	
	EN61000-6-2:2001 (Immunity)	
	FCC CFR47 Part 15B	

**CE CERTIFIED**

EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC.

**NOTES**

1. +55 °C applies when the input supply voltage is between 180 and 265 V. Below 180 V, the maximum operating temperature is +50 °C. 2. Safety applies for operating altitude up

**ELECTRICAL**

Prime power .....	single phase, line-neutral or line-line
Voltage.....	99 to 265 V



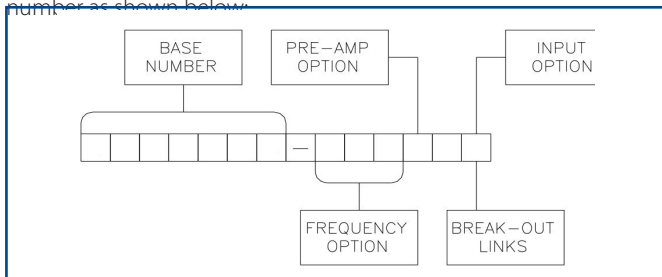
## CONTROLS

TYPE	FUNCTION	
REMOTE CONTROL	Off Standby Transmit RF Inhibit	High Power Alarm Set* Low Power Alarm Set* Auto Redundancy Control* RF Switch Control* Gain Control* (when fitted)
REMOTE STATUS/MONITOR	Off Warm-Up Standby Transmit Fault Summary Reflected Power External Interlock TWT Too Hot Mean Helix Current Peak Helix Current High Power Alarm* Low Power Alarm*	Output Power Monitor* Reflected Power Monitor* Helix Current Monitor* Helix Voltage* Collector Voltages* Heater Voltage* Heater Current* Elapsed Hours*
INTERFACES: Serial User	RS-422/485 Dry Relay Contact	
Other Features	Auxiliary Output Voltage Redundant system & waveguide switch drive 'Stand Alone' setting for automatic power-up	

**Note:** Controls/Monitoring marked\* are only available via Serial Interface.

### OPTIONS

Extensive options are offered with the **ALB200-Ku** and include: integral pre-amplifiers, gain control, linearisers and block upconverters. The options are defined by adding to the base number as shown below:



(Consult **Agilis** for availability of options).

#### Frequency Options

The **ALB200-Ku** is offered in two frequency bands:  
 KU1 - 13.75 – 14.50 GHz  
 KU2 - 12.75 – 14.50 GHz  
 KU3 - 14.00 – 14.50 GHz (upconverter option only)

#### Pre-Amp Option

The pre-amp option can be selected from any of the following:

- C - No pre-amp (typical SSG 52 dB).
- A - Integral solid-state amplifier (typical SSG 78 dB).
- D - As option 'A' but includes an attenuator to provide 25 dB (min.) of gain control.
- Z - Integral lineariser that improves the linearity of the HPA,

providing a C/I of typically -26 dBc at 4 dB OPBO. The lineariser also incorporates the pre-amp and gain control options. (Consult **Agilis** for availability).

#### Input Option

The **ALB200-Ku** can be offered with an L-Band Block Upconverter. Specify:  
 N - Standard RF  
 U - L – Ku-Band Block Upconverter (see page 4)

**Note:** the upconverter requires the inclusion of either the 'D' or 'Z' options. (Consult **Agilis** for availability).

#### Break-Out Links

Available only with the upconverter option, this enables bypassing of the upconverter and can be used for monitoring, set-up, redundant switching etc. Specify 'S' for Break-Out Links (leave blank if not required).

#### ACCESSORIES

The **ALB200-Ku** is supplied with an operation manual, prime power connector mating part, interface connector mating part and air cowls. Additional accessories include:

- **Override Controller**  
Provides automatic power-up for 'emergency' situations.
- **Control Unit**  
Provides control of 2 HPA's in 1:1 switch configuration. (The waveguide switch network can also be supplied).
- **Cable Assemblies**  
For connecting **ALB200-Ku** to controllers and waveguide switches.
- Additional mains connector parts.
- Additional interface connector parts.

For more information on accessories, contact **Agilis**.

**PERFORMANCE WITH INTEGRAL BLOCK UPCONVERTER**

Output frequency range:		
option KU1 .....	13.75 to 14.5	GHz
option KU3 .....	14.0 to 14.5	GHz
L-band input:		
frequency range option KU1 .....	950 to 1700	MHz
frequency range option KU3 .....	950 to 1450	MHz
level .....	10 dBm	max
LO frequency:		
option KU1 .....	12.8	GHz
option KU3 .....	13.05	GHz
External reference (see note):		
frequency .....	10 MHz	
level .....	-3 to +7	dBm
impedance .....	50	$\Omega$
Output power:		
TWT output flange .....	400	W min
HPA rated output .....	350	W min
Gain:		
at rated power (D, Z option) .....	70	dB min
SSG $P_{rated} - 10$ dB (D, Z option) .....	75	dB min
Attenuation range (D, Z option) .....	25	dB min
Gain variation:		
full band .....	4.0	dB max
over any 40 MHz band .....	1.5	dB max
slope .....	0.08	dB/MHz max
Gain stability 24hrs (constant drive, temperature and load).....	0.5	dB max
Gain stability over full operating temperature.....	2.0	dB max
Intermodulation (two equal carriers) with total output = $P_{rated} - 4$ dB:		
options C, A, D .....	-18	dBc max
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Harmonic output .....	-60	dBc max
AM to PM conversion at $P_{rated} - 6$ dB .....	2.5	%/dB
Noise power:		
transmit band .....	-70	dBW/4 kHz max
receive band (10.95 – 12.75 GHz) .....	-150	dBW/4 kHz max

Residual AM >100 kHz from carrier .....	-60	dBc max
Group delay:		
linear .....	0.01	ns/MHz
parabolic .....	0.005	ns/MHz <sup>2</sup>
ripple .....	0.5 ns p-p	
Phase noise:		
Continuous .....	meets IESS phase noise profile	
AC fundamental .....	-50	dBc
Sum of all spurs .....	-47	dBc
Input VSWR (non-operating) .....	1.6:1	max
Output VSWR (non-operating) .....	1.3:1	max
Load VSWR, no damage .....	2.0:1	max

**Note:** the BUC can be operated without the external reference, typical frequency stability  $\pm 0.25$  ppm.

**HEALTH AND SAFETY HAZARDS**

Agilis satellite amplifiers are safe to handle and operate provided that the relevant precautions are observed. Agilis does not accept responsibility for damage or injury resulting from the use of electronic devices it produces.

**High Voltage**

Dangerous voltages are present within the TWT amplifier when operating normally. However, the equipment is designed so that personnel cannot come into contact with high voltage circuits unless covers are removed.

**RF Radiation**

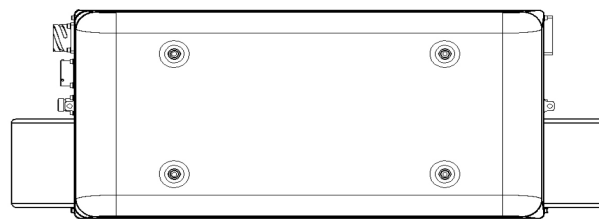
All RF connectors must be correctly fitted before operation.

**Beryllia**

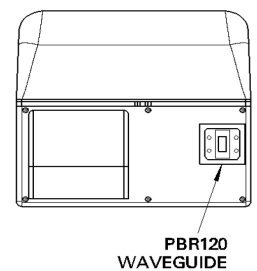
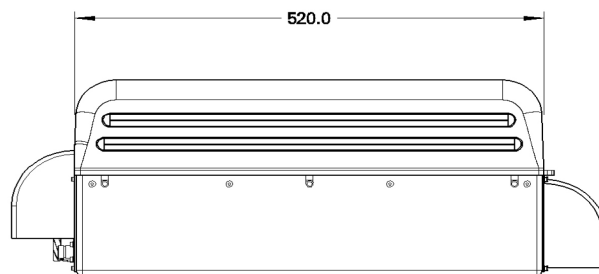
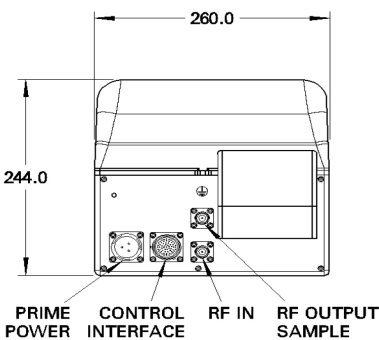
The TWT in the amplifier contains beryllium oxide ceramic parts. These are not accessible unless the TWT casing is damaged. Consult Agilis regarding the disposal of damaged or life-expired tubes.

**OUTLINE**

8230A



**Packed Gross Weight & Dimension**  
30.00kg 70x42x51 cm



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Note: All specifications are subject to change without notice.  
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Request A Quote

