

# HIGH POWER AMPLIFIERS 400 WATT

HPA 3412 SERIES FOR KU-BAND



HPA 3412 A (indoor)



HPA 3412 B (outdoor)

ND SatCom has been a supplier to the Satcom industry for over 25 years. All necessary features required in today's satellite communication applications such as serial/parallel M&C interfaces, local and remote panels are available in this HPA product line. All RF parameters can be monitored and controlled on the front panel. The modular construction ensures easy servicing. The high voltage section is potted and all other electrical components are coated to protect against humidity and dust.

**This new HPA outdoor series product is available with an optional L-Band input now.**

This allows direct connection of L-Band Modulators to the HPA input. Long, high price RF cables with superior performance are no longer needed. Especially SNG solutions will benefit from this embedded approach since the outer dimensions of the standard ND SatCom outdoor HPA remains unchanged.

The outdoor versions of this series are available with two choices of remote panel. The standard panel allows the user to control the operating status of the amplifiers (standby, run, RF-on). An optional microprocessor-controlled remote panel displays additional status information and gives extended control options.

## Key Features

- / Unmatched RF performance
- / Enhanced TWT longevity
- / High-tech power supply unit for highly reliable operation
- / Indoor and outdoor versions
- / Integrated power factor correction
- / Low power consumption (max. 1250 W)
- / Light-weight (only 26 kg / 57 lbs)
- / Small dimensions (only 3 RU)
- / Low phase noise (typ. IESS 308/309)

## Options

- / Integrated linearizer
- / Redundancy switching
- / Remote control panel (outdoor version)

# TECHNICAL SPECIFICATION

## HPA 3412 SERIES FOR KU-BAND

### RF-SPECIFICATION

Frequency Range	12.75 - 14.50 GHz
Flange Power	> 350 W, > 55.4 dBm
TWT Power	400 W Tube
Gain at Rated Power	> 65 dB
Gain at 10 dB Backoff	> 72 dB
Gain Variation	< 1.0 dB / in any 80 MHz, < 2.5 dB / in any 500 MHz, < 5.5 dB / full band
Gain Slope	< 0.02 dB / MHz
Gain Stability	< ±0.25 dB / °C / 24 hrs after 30 min warm-up
Gain Adjust	> 0 - 20 dB, ±0.1 dB setability
Group Delay (in any 40 MHz)	< 0.01 ns / MHz linear, < 0.005 ns / MHz <sup>2</sup> parabolic, < 0.5 ns ripple
Intermodulation	< -22dBc at 6 dB below rated power without Linearizer < -30 dBc at 4 dB below rated power with Linearizer
Noise Figure	< 15 dB max.
AM/PM Conversion	< 2.5° / dB at 7 dB below rated power, < 6° / dB at rated output power
Harmonic Output Suppression	< -80 dBc at rated output
Noise and Spurious Emissions	< -65 dBW / 4 kHz (inband) < -120 dBW / 4 kHz 10.7..12.2 GHz < -90 dBW / 4 kHz 12.2..12.5 GHz < -115 dBW / 4 kHz 18.0..19.0 GHz
Phase Noise	Meets IESS 308/309
VSWR	< 1.4:1 Input, < 1.2:1 Output (waveguide)

### MECHANICAL SPECIFICATION

	Version A (indoor)	Version B (outdoor)
RF Connectors		
Inputs	SMA (input) / N-Jack (testport)	N-Jack (input/testport)
Outputs	WR 75 Waveguide Output, grooved, threaded M4 or UNC 6/32	WR 75 Waveguide Output, grooved, threaded M4 or UNC 6/32
Serial Remote Interface	9-pin D fem. RS422/RS485 (optional RS232)	PT 851-00R12-10S50 RS422/RS485
Alarm / Mute Interface	15-pin D fem.	PT 851-00R12-10S50
Parallel Remote Interface	25-pin D fem.	PT 851-00R19-10S50
Main Power Inlet	AMP C 16-1 4 pol. P	AMP C 16-1 4 pol. P
Dimension	483 x 133 x 600 mm (3 RU)	457 x 136 x 611 mm
Weight	< 26 kg / 57 lbs	< 26 kg / 57 lbs
Cooling	forced air min.180 m³/h	forced air min.180 m³/h
Noise Level (cooling fan)	< 75 dBA measured in 1 m distance	< 75 dBA measured in 1 m distance

### ELECTRICAL SPECIFICATION

Prime Power	110 to 240 VAC / 50 - 60 Hz, single phase
Power Consumption	< 1250 W max.
CE Directive	73/23/EEC and 92/31/EEC 89/336/EEC 1999/5/EC

### ENVIRONMENTAL SPECIFICATION

Operating Temperature Range	-10°C to +50°C	-40°C to +50°C
Operating Humidity	95% non-condensing at 40°C	95% condensing at 40°C
Shock and Vibration	for normal commercial transport	for normal commercial transport



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