



HIGH POWER AMPLIFIERS

Product Catalogue

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**Professional Communications
HF Power Amplifiers Family**

RH6111

RH6111 is single board designed according to the highest accuracy requirements with the most advanced technology. The amplifier provides the highest level of linearity, power efficiency and reliability of HF radio transceivers in the up-to-day digital communications. RH6111 is intended to be integrated into HF digital radios operating within 1.5...30 MHz frequency range.

It provides reliable communication in most harsh environmental conditions.



Technical specifications

Operating frequency range:	1.5-30 MHz
Output power in CW, AM, SSB PEP modes:	20 W \pm 1 dB
Amplification gain:	30 dB
Nominal power input level :	16 dBm
Intermodulation :	Less than -36 dB relative to PEP at 50 Ω load
Harmonic level:	-33 dB relative to PEP ; VSWR \geq 2:1
	Less than -50 dB with 7-band switch filter in the frequency bands:
	1.5-2.19 MHz
	2.2-3.39 MHz
	3.4-5.19 MHz
	5.2-7.99 MHz
	8.0-12.29 MHz
	12.3-18.99 MHz
	19.0-30.0 MHz
Non-harmonic component level:	≤ -70 dB
Input/output impedance:	50 Ω
Operation at load mismatch:	Operation is provided with VSWR 2:1 – 5:1. The output power is reduced to: 13W at VSWR =2, 9W at VSWR=3, 6.5W at VSWR=4, 3W at VSWR=5
	Independent protection at short and open output is provided.
Activation time:	2 sec.
Tx/Rx Switching time:	10 msec.
Rx/Tx Switching time:	25 msec.
Switching time between any filters:	2 msec.
Interface:	RS232 / RS485
Control system:	Monitoring and indication of the following are provided: Output power level; reflected power level; VSWR value; operating frequency range; input signal level; thermal conditions control; monitoring of the filters; monitoring of final stages and the other functional parts of the device.
Cooling system:	Air forced.
Overheating protection:	Automatic cooling system control, two-step overheating protection.
Supply voltage :	24 \pm 2V DC. Input current \leq 2A at nominal load in CW mode.
Operation cycle:	Continuous
Operating temperature range:	-30 to +55° C
Size:	198×160×25 mm
Weight:	300 g

RH6121

RH6121 is designed according to the highest accuracy requirements with the most advanced technology. The amplifier provides the highest level of linearity, power efficiency and reliability of HF radio transceivers in the up-to-day digital communications. RH6121 is intended to amplify RF signal within 1.5...30 MHz frequency range.

It provides reliable communication in most harsh environmental conditions.



Technical specifications

Operating frequency range:	1.5-30 MHz
Output power in CW, SSB PEP modes:	Four levels: 150 W \pm 1 dB 75 W \pm 1 dB 37 W \pm 1 dB 19 W \pm 1 dB
Amplification gain:	36 dB
Nominal power input level:	16 dBm \pm 3 dBm
Intermodulation:	less than -38 dB relative to PEP at 50 Ω load -34 dB relative to PEP with VSWR \geq 2:1
Harmonic level:	less than -50 dB, with 7-band switchable filter in the following frequency bands: 1.5 - 2.3 MHz 2.3 - 3.5 MHz 3.5 - 5.4 MHz 5.4-8.3 MHz 8.3 -12.8 MHz 12.8 - 20.0 MHz 20.0 - 30.0 MHz
Non-harmonic component level:	less than – 70 dB
Input/output impedance:	50 Ω
Operation at load mismatch:	Operation is provided in the load range with VSWR 2:1 – 5:1. At this condition an output power will be reduced to: 97W at VSWR =2, 68W at VSWR=3, 50W at VSWR=4, 60W at VSWR=5, Independent protection at short and open output is provided.
Activation time:	2 sec.
Switching time of transmission/reception:	10 msec.
Switching time of reception/transmission:	25 msec.
Switching time between any harmonic filters:	2 msec.
Interface:	RS232 / RS485
Control system:	It provides a monitoring and indicates the following features: Output power level; reflected power level; VSWR value; operating frequency range; input signal level; thermal conditions control; monitoring of the separate functional node operability of the device.
Cooling system:	Air forced ventilation
Overheating protection:	Automatic cooling system control, two-step overheating protection.
Power supply voltage :	27 \pm 2V DC. Input current is less than 19A at nominal load in CW mode.
Operation cycle:	Continuous using the air forced ventilation
Operating temperature range:	-30°C to +55° C
Dimensions:	159×164×381.5 mm
Weight:	18 kg

RH6133

The RH6133 is a solid state, broadband power amplifier,

designed to meet the new standards of software reprogrammable radios to satisfy the performance required in the use of HF radios in modern, digital communication systems.

The RH6133 has proven performance used as a standard RF amplification module. The RF Amplifier/Power Supply is a self-contained unit suitable for tabletop or 19" rack installation.

Broadband RF amplification with the complete elimination of tunable elements gives the family's components the frequency agility characteristics required by ALE (Automatic Link Establishment) operation over the HF band.

The main features of the amplifier are:

- Built-in controller
- LCD monitor
- 2 –levels overheat protection
- Short/open output protection
- Continuous operational cycle at full output power
- High reliability in harsh environment



TECHNICAL SPECIFICATIONS

Frequency range:	1.5-30 MHz
Output Power:	
in SSB mode	peak - 500 W
in CW mode	average - 500 W
Gain:	38 dB
Gain flatness in frequency range	±1 dB
Input power level	18±3 dBm
Intermodulation	better than –34 dB (ref to any tone)
Non-harmonic components:	better than – 70dB
Harmonic components:	better than – 60dB is provided with 8-bands switchable filter at frequency bands:
	1.5-2.2 MHz
	2.2-3.2 MHz
	3.2-4.6 MHz
	4.6-6.7 MHz
	6.7-9.8 MHz
	9.8-14.2 MHz
	14.2-20.6 MHz
	20.6-30 MHz
Input/output impedance:	50 Ω

VSWR	2:1 – 5:1
Operation with unmatched load:	Output power is reduced:
	240W at VSWR=2.0
	180W at VSWR=3.0
	160W at VSWR=4.0
	80W at VSWR=5.0 autonomous protection at short or open output
Turning on time	3 s
Tx/Rx switching time	10 ms
Rx/Tx switching time	25 ms
Switching between any harmonic filters	2 ms
Cooling system:	forced air cooling
Over heat protection:	Cooling system automatic control, 2-level protection.
Primary Power:	90-250 VAC, 47-63Hz
Power consumption:	Less than 1700 W.
Duty cycle:	Continuous, with forced air cooling
Operation temperature range	-10 to +50 °C
Dimensions:	482(W) ×177(H) ×627(D) mm
Weight:	27 kg

RH6132

The RH6132 is a solid state, cost effective, broadband power amplifier

designed to meet the new standards of software defined radios to satisfy the performance required in the use of HF radios in modern, digital communication systems.

The RH6132 has proven performance used as a standard RF amplification module.

Broadband RF amplification with the complete elimination of tunable elements gives the family's components the frequency agility characteristics required by ALE (Automatic Link Establishment) operation over the HF band.

The main features of the amplifier are:

- Built-in controller
- LED indicators
- 2 –levels overheat protection
- Short/open output protection
- Continuous operational cycle at full output power
- High reliability in harsh environment



TECHNICAL SPECIFICATIONS

Frequency range:	1.5-30 MHz	VSWR	2:1 – 5:1
Output Power:		Operation with unmatched load:	Output power is reduced:
in SSB mode	peak - 500 W		240W at VSWR=2,
in CW mode	average - 500 W		180W at VSWR=3,
Gain:	38 dB		160W at VSWR=4,
Gain flatness in frequency range	±1 dB		80W at VSWR=5, autonomous
Input power level	18±3 dBm		protection at
Intermodulation	better than –34 dB (ref to any tone)		short or open output
Non-harmonic components:	better than – 70dB	Tuning time	3 s
: Harmonic components	better than – 60dB	Tx/Rx switching time	10 ms
	provided with	Rx/Tx switching time	25 ms
	8-bands switchable filter at frequency bands:	Switching between any harmonic filters	2 ms
	1.5-2.2 MHz	Cooling system:	forced air cooling
	2.2-3.2 MHz	Over heat protection:	Cooling system automatic control, 2-level protection.
	3.2-4.6 MHz		
	4.6-6.7 MHz	Primary Power:	90-250 VAC, 47-63Hz
	6.7-9.8 MHz	Power consumption:	Less than 1700 W.
	9.8-14.2 MHz	Duty cycle:	Continuous, with forced air cooling
	14.2-20.6 MHz	Operation temperature range	-10 to +50 °C
	20.6-30 MHz	Dimensions:	482(W) ×177(H) ×627(D) mm
Input/output impedance:	50 Ω	Weight:	27 kg

RH6136

The RH6136 is a solid state, broadband power amplifier,

designed to meet the new standards of software reprogrammable radios to satisfy the performance required in the use of HF radios in modern, digital communication systems.

The RH6136 has proven performance used as a standard RF amplification module. The RF Amplifier/Power Supply is a self-contained unit suitable for tabletop or 19" rack installation.

Broadband RF amplification with the complete elimination of tunable elements gives the family's components the frequency agility characteristics required by ALE (Automatic Link Establishment) operation over the HF band.

The main features of the amplifier are:

- Built-in controller
- LCD monitor
- 2 –levels overheat protection
- Short/open output protection
- Continuous operational cycle at full output power
- High reliability in harsh environment



TECHNICAL SPECIFICATIONS

Frequency range:	1.6-30 MHz	VSWR	2:1 – 4:1
Output Power: in SSB mode	peak - 1000 W	Operation with unmatched load:	Output power is reduced, autonomous protection at short or open output
in CW mode	average - 1000 W		
Gain:	14 dB	Tx/Rx switching time	15 ms
Gain flatness in frequency range	±1 dB	Rx/Tx switching time	15 ms
Input power level	40 W	Switching between any harmonic filters	15 ms
Intermodulation	better than –32 dB (ref to any tone)	Cooling system:	forced air cooling
Non-harmonic components:	better than – 70dB	Over heat protection:	Cooling system automatic control, 2-level protection.
Harmonic components:	better than – 60dB is provided with 8-bands switchable filter at frequency bands:	Primary Power:	48 VDC
	1.5-2.3 MHz	Current: in SSB mode	Less than 40 A,
	2.3-3.3 MHz	in CW mode	Less than 70 A
	3.3-4.7 MHz		
	4.7-6.8 MHz	Duty cycle:	Continuous, with forced air cooling
	6.8-9.7 MHz	Operation temperature range	-10 to +50 °C
	9.7-14.0 MHz	Dimensions:	482(W) x221(H) x475(D) mm
	14.0-20.0 MHz	Weight:	29 kg
	20.0-30 MHz		
Input/output impedance:	50 Ω		

RH6137

The RH6137 is a solid state, broadband power amplifier,

designed to meet the new standards of software reprogrammable radios to satisfy the performance required in the use of HF radios in modern, digital communication systems.

The RH6137 has proven performance used as a standard RF amplification module with built-in pre-amplifier. The RF Amplifier/Power Supply is a self-contained unit suitable for tabletop or 19" rack installation.

Broadband RF amplification with the complete elimination of tunable elements gives the family's components the frequency agility characteristics required by ALE (Automatic Link Establishment) operation over the HF band.

The main features of the amplifier are:

- Built-in controller
- Built-in Pre-amplifier
- LCD monitor
- 2 –levels overheat protection
- Short/open output protection
- Continuous operational cycle at full output power
- High reliability in harsh environment



TECHNICAL SPECIFICATIONS

Frequency range:	1.5-30 MHz	VSWR	2:1 – 4:1
Output Power: in SSB mode	peak - 1000 W	Operation with unmatched load:	Output power is reduced,
in CW mode	average - 1000 W		650W at VSWR=2.0
Gain:	42 dB		450W at VSWR =3.0
Gain flatness in frequency range	±1 dB		330W at VSWR =4.0
Input power level	18±3 dBm	Switching on time	260W at VSWR =5.0 autonomous
Intermodulation	better than –32 dB (ref to any tone)	Tx/Rx switching time	protection at short or open output
Non-harmonic components:	better than – 70dB	Rx/Tx switching time	3 s
Harmonic components:	better than – 60dB is provided with 8-bands switchable filter at frequency bands:	Switching between any harmonic filters	10 ms
	1.5-2.2 MHz		25 ms
	2.2-3.2 MHz	Cooling system:	forced air cooling
	3.2-4.6 MHz	Over heat protection:	Cooling system automatic control, 2-level protection.
	4.6-6.7 MHz		
	6.7-9.8 MHz	Primary Power:	90-250 VAC, 47-63Hz
	9.8-14.2 MHz	Power consumption:	Less than 3350 W
	14.2-20.6 MHz		
	20.6-30 MHz	Duty cycle:	Continuous, with forced air cooling
Input/output impedance:	50 Ω	Operation temperature range	-10 to +50 °C
		Dimensions:	482(W) x221(H) x475(D) mm
		Weight:	29 kg

RH6138

The RH6138 is a solid state, broadband power amplifier designed to meet the new standards of software defined radios (SDR) to meet the highest performance requirements for HF radios in modern digital communication systems.

The RH6138 is universal device providing automatic/manual configuration of its circuitry and gain depending of the input signal level. The RF Amplifier/Power Supply is a stand alone unit suitable for tabletop or 19" rack installation.

RH6138 is capable to operate with radios complying MIL-STD-188-141A, STANAG 4444, STANAG 5066. The Power amplifier meets MIL-STD-810E.

The main features of the amplifier are:

- Built-in controller
- Built-in Pre-amplifier
- LCD monitor
- 2 –levels overheat protection
- Short/open output protection
- Continuous operational cycle at full output power
- High reliability in harsh environment



TECHNICAL SPECIFICATIONS

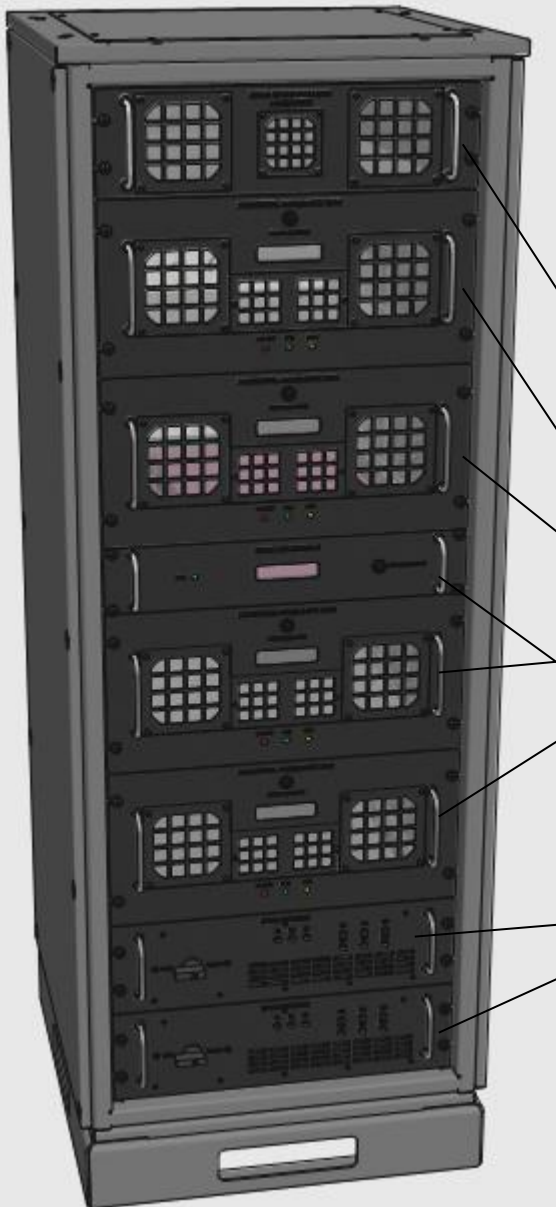
Frequency range:	1.5-30 MHz	VSWR	2:1 – 4:1
Output Power: in SSB mode in CW mode	peak - 1000 W average - 1000 W	Operation with unmatched load:	Output power is reduced, 650W at VSWR=2.0 450W at VSWR =3.0 330W at VSWR =4.0 260W at VSWR =5.0 autonomous protection at short or open output
Gain:	14 / 42 dB (automatic switching)	Switching on time	3 s
Gain flatness in frequency range	±1 dB	Tx/Rx switching time	10 ms
Input power level	40 W / 18±3 dBm	Rx/Tx switching time	25 ms
Intermodulation	better than –32 dB (ref to any tone)	Switching between any harmonic filters	2 ms
Non-harmonic components:	better than – 70dB	Cooling system:	forced air cooling
Harmonic components:	better than – 60dB is provided with 8-bands switchable filter at frequency bands: 1.5-2.2 MHz 2.2-3.2 MHz 3.2-4.6 MHz 4.6-6.7 MHz 6.7-9.8 MHz 9.8-14.2 MHz 14.2-20.6 MHz 20.6-30 MHz	Over heat protection:	Cooling system automatic control, 2- level protection.
Input/output impedance:	50 Ω	Primary Power:	90-250 VAC, 47-63Hz
		Power consumption:	Less than 3350 W
		Duty cycle:	Continuous, with forced air cooling
		Operation temperature range	-10 to +50 °C
		Dimensions:	482(W) x221(H) x475(D) mm
		Weight:	29 kg

RH6152

Designed to work with any HF radio transceivers, the RH6152 power amplifier delivers the most reliable radio communications for a wide range of operational applications.

With its strict precision design, the fully solid-state amplifier features the latest and most advanced technology, providing exceptional linearity, efficiency and operating dependability for HF radio voice and data communications.

The RH6152 is universal device providing automatic/manual configuration of its circuitry and gain depending of the input signal level. The RF Amplifier/Power Supply is a stand alone unit coming as one 19" rack.



Power Combiner

RH6152 unites

Controller

Power supply units

TECHNICAL SPECIFICATIONS

Frequency range:	1.5-30 MHz	VSWR	2:1 – 5:1
Output Power:	5000 W PEP and AVE 3 power levels : 5kW, 1.5kW and 500W	Operation with unmatched load : (Power vs VSWR):	Nominal Power 2.0:1 60% of Nominal Power 2.5:1 50% of Nominal Power 3.0:1 40% of Nominal Power 4.0:1 20% of Nominal Power 5.0:1
Gain:	49 dB		
Gain flatness in frequency range	±1 dB	Switching on time	1 s
Input power level	18±3 dBm	Tx/Rx switching time	10 ms
Intermodulation	better than –32 dB (ref to any tone)	Rx/Tx switching time	10 ms
Non-harmonic components:	better than – 70dB	Switching between any harmonic filters	10 ms
Harmonic components:	better than – 60dB is provided with 8-bands switchable filter at frequency bands: 1.5-2.2 MHz 2.2-3.2 MHz 3.2-4.6 MHz 4.6-6.7 MHz 6.7-9.8 MHz 9.8-14.2 MHz 14.2-20.6 MHz 20.6-30 MHz	Cooling system: Over heat protection:	forced air cooling Cooling system automatic control, 2-level protection.
		Primary Power: Power consumption: Power factor Duty cycle:	3 phase, 380 ± 10% VAC, 47 to 63Hz. Less than 20 kW > 0.85 100% continuous, with forced air cooling
		Operation temperature range	-10 to +50 °C
		Dimensions:	600x600x1600 mm
Input/output impedance:	50 Ω		
Transmitter tune time	< 1 s	Weight:	< 300 kg

RH6152 provides the following controls and indications:

- Input signal level indication.
- PTT status.
- Forward and reflected power levels.
- Critical Errors indication.
- Power supply voltage, current and PSU status indications.
- Power Combiner fault state.
- Fault indication for each Amplification Unit (1.5 kW).

