Radio Systems International

RAD – X SERIES
Product Description

Radio Systems International is pleased to introduce our state-of-the-art RAD-X series modular radio exciter products.

Our RAD-X series exciters, HD Radio encoders, solid state high power transmitters and combiners are designed to provide the end user an ingenious modular radio system, built to the highest quality standards for many years of reliable service, ease of operation and superior value.

The RAD-X project is managed by our industry leading design team with more than 50 years of field experience encompassing five continents, one hundred countries and thousands of satisfied broadcasters. RSI 's design team is anchored to its commitment to innovative, create and design radio systems of the highest quality while keeping the cost of the equipment reasonable and offering the best value for the dollar spent.

Our experience includes providing radio systems to several of most demanding national or multi-regional network groups as well as installing our products turnkey in smaller radio stations in rural communities worldwide.

2013

RAD – X Series

Based upon this experience, RSI Radio System International has incorporated this vast knowledgebase into the design of our extensive product line of FM Transmitters and accessories.

Introducing the new "RAD - X" Platform that provides an unsurpassed blend of cost effectiveness, reliability, digital technology and energy efficiency.

The RAD-X radio line is specifically field- engineered with extensive input and design review from our FM radio clients worldwide.

Now available to the US Market, as US engineered, assembled and tested, FCC approved.

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RAD - A Exciter

The basic 30w - 60w exciter, RAD–A is quintessentially a stand-alone FM radio transmitter capable of handling both analog and AES/EBU (optional) digital signals. It can work independently as a LPFM or as a power driver stage in tandem

with an amplifier from the RAD–X family. This product is Ideal for either small community radio services or large nationwide networks.

The RAD-X can easily be powered from alternative energy sources like solar or wind power and incorporates state-of-the art digital control circuitry for simple operator setup with excellent operational stability over time and extreme temperature variations. Extensive self-check logic functions, local-remote management are included as standard features.

(30-60w picture above, 100-250w below).

Initially this device, when configured as a driver stage of high powered transmitters, was normally coupled with a twin exciter in a 1+1 configuration; however, since 2003, this solution has proven unnecessary due to the spotless reliability track record of the RAD-A. (The redundancy is still available upon request)

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Technical Characteristics

Frequency range: 87.5 ÷ 108 MHz
Modulation: FM
Emission class: F3E

VCO tuning:	*25 MHz*
Frequency stability:	*± 2.5 ppm*
Synthesizer step:	*10 KHz*
Power output:	*30 Watts (-A1) 60W (-A2) 100w (-A3), 250w (-A4)*
Spurious emission:	*< - 80 dB or better*
Harmonic emission:	*< - 65 dB*
Stereo separation:	*> 55 dB @ 1 KHz*
Distortion:	*< 0.1 % (TYP. 0.06%) @ 1 KHz*
Base band:	*30 Hz ÷ 60 KHz within 0.15 dB*
Un-weighted S/N Ratio:	*> 80 dB (30Hz ÷ 15KHz 50 S RMS)*
Asynchronous AM S/N Ratio:	*> 70 dB Ref. 100% AM 400Hz*
Synchronous AM S/N Ratio:	*> 65 dB with FM @ 75 KHz @400 Hz*
Pre-emphasis:	*50 or 75 µS internally selectable*
RF out connector:	*N-F 50 Ohm*
MPX input connector:	*2 KOhm*
SCA input connector:	*3 BNC-F*
Cooling:	*Forced air – Redundant (2 brushless fans)*
Oper. Temperature range:	*- 10 ÷ +45 °C*
Maximum humidity:	*90 % Non-condensing*
AC supply:	*100 ÷ 240 VAC - 47 ÷ 63 Hz*
Mechanical dimensions:	*1 HE x 19", 405mm depth (-A1 and -A2) 2 HE x 19", 405mm depth (-A3 and -A4) Weight: 5 Kg (-A1 and -A2) 10 Kg (-A3 and -A4)*
Stereo L+R input:	*Optional with RAD –SCP*
Digital input:	*Optional with RAD –AEB*

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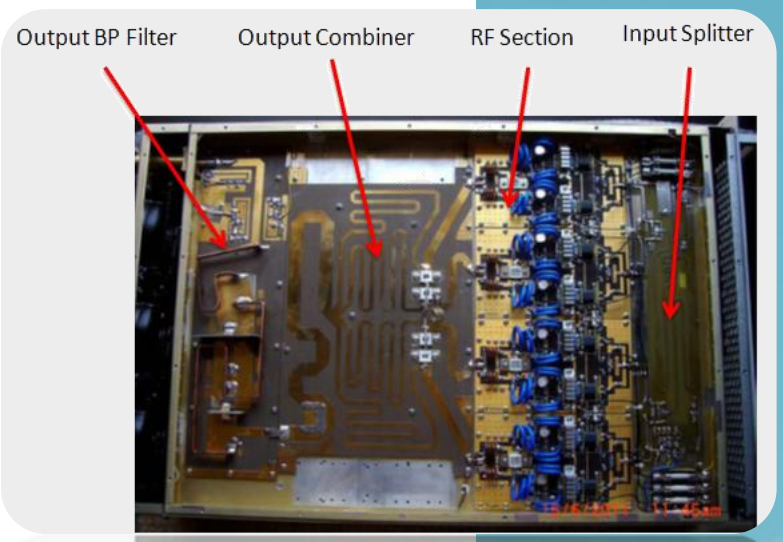
RAD – X Transmitter Amplifier Platform



This open-cover picture shows a detailed (upper side) view of a 5kW transmitter model RAD-5 (factory-nicknamed "dash 5").

Possible configurations include single modules based on free scale devices, dual-FET blocks, or combination of those two, in order to achieve the nominal power level plus at least a 10-15% overhead power which can vary slightly depending on the final operating frequency.

The image on the right side shows the lower side of the transmitter chassis, with the alarm/control unit and 3 power supply units.

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The rear side of the housing, pictured below, includes the output connector, the mains input and the ventilation exhaust from the 3 heavy-duty fans.

The combination of several PAs (in this case, one RAD-A exciter feeds two -5) results in the most compact and efficient 10kW FM transmitter available on the market today.

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ADDITIONAL FEATURES

(Internal exciter parameters are the same as shown for RAD –A):

Frequency Range:	*87.5 to 108 MHz*
Power range min.:	*40w – max. 60w*
Output power:	*(+/- 0,5 db) 550w (-05) 1120w (-1) 2150w (-2) 5450w (-5)*
Probe output attenuation:	*54 dB, typical*
Spurious Emissions /harmonics:	*<75 dB*
In-Out Impedance:	*50 Ohm*
Input connector:	*"N"-type*
Output connector:	*7/16" (-05, -1) or 7/8"(-2, -5)*
Output RF probe connector:	*BNC*
Single-phase Supply:	*110Vac or 220Vac +/- 20%, 50 or 60Hz*
Three-phase electrical supply:	*400 Vac (230 on request) +/- 20%, 50 or 60Hz*
Max current on aux terminal:	*1 A @ 230 Vac, no fuse*
Total Weight:	*20kgs (-05, -1) - 26kgs (-2) – 35kgs (-5)*
Power factor:	*0,97*
Telemetry:	*TCP-IP (free web browser) optional for all models*
Mechanical housing cm.:	*(W x H x D) 48 x 13.4 x 67 (-05, -1, -2) cm. (W x H x D) 48 x 17,6 x 67 (-5)*
Temperature range nominal:	*0° to +35° C*
Extreme:	*-10° to +45° C*

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The RAD -STL Studio-Transmitter Link

A broadcast quality transmitter's ultimate task is to deliver the audio signals, as transparently as it can to the end user.

It's not the transmitter's job to improve, equalize, limit, compress nor encode the audio signals.

That is the purpose of professional signal processing equipment prior to the final transmitter stage.

Our research has shown that often, if a customer decides to choose the lowest-cost, one-box-is-good-for-all solution, it may result in a very poor quality signal delivered to the home listener.

The effect: listening fatigue for the audience, distorted speech on talk shows, poor fidelity in music play out and a less the optimum experience for the listener.

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RAD – SPR
Stereo Processor & Rectifier

The RAD –SPR is the right tool for the job, a professional Stereo Encoder, Sound Processor, Compressor and Limiter. The RAD-SPR is also, available with static RDS encoder.

No bottlenecks between your hi-quality studio equipment, digital sound and mountain-top gear!

Available in the most commonly requested frequency bands, the RAD –STL is a reliable and transparent air pipeline to deliver the studio signal up to the transmitter's tower.

The radio link comes with standard 100ft aerial cables and connectors, as well as specific frequency-tailored antennas at both ends

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The most common frequency bands are covered, namely

Although MPX-input is the most common operator configuration, a specific L+R stereo modulator or demodulator can be provided as an option.

Standard output power level is 1 ~ 20w; however, if higher output power is required, an optional power stage can increase the output power by 4db to 30 ~ 50w (depending on the frequency band).

Multiple lines, or mux configurations to carry multiple signals, are available upon request as well as Yagi, Log-periodic or parabolic antennas and their accessories.

1500~2500 MHz - 20MHz sub-band
200~960 MHz -20MHz sub-band

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Transmitters

Type of Modulation:	*FM Class F3*
VCO Tuning:	*25 MHz*
Frequency Stability:	*± 2,5ppm (Or Better upon request)*
Synthesizer Step:	*25 KHz*
Power Output:	*1 or 5w @ 1.5-2.5GHz, 10 or 20w @ 200-960MHz*
Spurious Emission:	*< -80 dB or better*
Harmonic Emission:	*< -65 dB (-80 dB on request)*
Stereo Separation:	*> 55 dB @ 1 KHz*
Distortion:	*< 0.2% (typical 00.8 %) @ 1 KHz)*
Base Band:	*30 Hz - 60 KHz within 0.15 dB*
Un-weighted S/N Ratio:	*> 72 dB rms at 30 Hz ~ 20 KHz*
Emphasis:	*50 or 75 µS - selectable*
RF Connectors:	*N-F 50 ohm*
Input Base Band Imp.:	*2 Kohm*
Input Mono Impedance:	*600 Ohm*
Cooling:	*Forced air*
OP. Temperature Range:	*0 ÷ +45°C*
Maximum Humidity:	*90%*
AC Supply:	*100 ÷ 240 Volt; 47 ÷ 63 Hz*
Mechanical Dimensions:	*1 HE x 19" 44 cm Depth*
Weight:	*6.8 Kg*

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Receivers

Type of Modulation:	***FM Class F3***
VCO Tuning:	***25 MHz***
Frequency Stability:	***± 2,5ppm (Or Better upon request)***
Synthesizer Step:	***25 KHz***
Image Rejection:	***60dB Typ.***
RN Noise Figure:	***6dB or lower***
Stereo Separation:	***> 45 dB @ 1 KHz***
Distortion:	***< 0.5% (TYP 0.2 % @ 1 KHz)***
Base Band:	***30 Hz - 60 KHz within 0.08 dB***
	> 72 dB with 0.2 mV input (Typ 78 dB)
De-emphasis:	***50 or 75 µS int. selectable***
RF Connectors:	***N-F 50 ohm***
B. Band-IF Conn.:	***BNC-F***
Base-Band Imp.:	***< 30 ohm***
Cooling:	***Forced air***
OP. Temperature Range:	***0 ÷ +45°C***
Maximum Humidity:	***90%***
AC Supply:	***100 ÷ 240 Volt; 47 ÷ 63 Hz***
Mechanical Dimensions:	***1 HE x 19" 44 cm Depth***
Weight:	***6.2 Kg***

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2013 official Price List

(Prices EXW in US$)

RAD -A1 30w transmitter-exciter	US$ 1,240.00
RAD -A2 60w transmitter-exciter	US$ 1,480.00
RAD -A3 100w transmitter-exciter	US$ 2,470.00
RAD -A4 250w transmitter	US$ 2,990.00
RAD -05 500w transmitter	US$ 3,850.00
RAD -1 1kW transmitter	US$ 5,980.00
RAD -2 2kW transmitter	US$ 10,140.00
RAD -2A 2kw amplifier (need 30w exciter)	US$ 9,150.00
RAD -5 5kW transmitter	US$ 27,300.00
RAD -5A 5kW amplifier (need 60w exciter)	US$ 26,400.00
RAD -10 10kW transmitter	US$ 51,800.00
RAD -10A 10kW amplifier (need 100w exciter)	US$ 50,400.00
RAD -SPR Stereo coder and audio processor	US$ 1,430.00
RAD -DSS Digital Stereo coder	US$ 1,010.00
RAD -AEB AES/EBU Digital input module	US$ 1,330.00
RAD -WEB TCP-IP module for web browsing	US$ 1,050.00
RAD -STL/L Stereo-transmitter Link L-band	US$ 4,880.00
RAD -STL/U Stereo-transmitter Link UHF	US$ 4,030.00
RAD -ANT/L Pair of Antennas and cables for L-Band STL	US$ 980.00
RAD -ANT/U Pair of Antennas and cables for UHF-Band STL	US$ 780.00
RAD -DIP/1 FM Dipole Antenna (simple	US$ 560.00
RAD -DIP/2 FM Dipole Antenna (2 bays)	US$ 1,910.00
RAD -DIP/4 FM Dipole Antenna (4 bays)	US$ 2,860.00

Warranty: 10 Year

(Specific RMA program and warranty return conditions apply)

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