RFE MAKING BROADCAST SMARTER

HPS10000 - HPS10000/DD

10KW FM Transmitter

with Hot-Plug P.A. & Power Supplies

HPS10000

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PRODUCT DESCRIPTION
HPS10000

HPS Series 10KW FM Semicompact Transmitter

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The HPS10000 FM Transmitter features very compact dimensions associated with RFE most innovative technologies in terms of efficiency, costs and maintenance. A reliable device, easy to be used and controlled, including the best performances in a small size.

The standard configuration includes various features, while others are available on request.

MAIN FEATURES

- Highest overal efficiency > 73%
- Nominal RF power up to 10000W
- 6 Hot Plug Redundant Power Supplies
- 9 Hot Plug RF Amplifier
- Large LCD color display with touch panel
- UDAQ Ultimate Digital Audio Quality
- Web TCP/IP
- 6th LD-MOS generation VSWR 65:1
- CCIR & FCC compliant
- High stereo performance typ. 60 dB
- DSP Based Audio Processor with:
  - AMC (Automatic Modulation Control)
  - SFP (4 band audio processor w/ Filter Profile)

OPTIONS

- Dual Exciter Configuration
- DDS Direct Digital Synthesis
- RDS/RBDS coder
- SNMP v2 remote control
- Audio Over IP
- GSM Telemetry
- SFN Reference
- Deep Tropicalization

RFE Broadcast S.r.l. - Via Marevitano 26, 88042 Falerna (CZ) - Italy
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GENERAL	**Power Output**	10000W nominal adjustable from 10 to 110%
	RF Input Connector(Amplifier)	50 ohm - "N" female
	RF Output Connector	50 ohm - 1+5/8" EIA
	RF Monitor	BNC connector From Internal Masurement Coupler.
	VSWR	max 1.8:1 (8% of nominal Power)
	Frequency Range	87.5 ÷ 108.00 MHz, Programmable in 10 kHz steps. (Other frequencies on request)
	Frequency Stability	≤±1 ppm from -5 to 45°C Frequency accuracy best than± 50 Hz in short period ± 150 Hz max after one month
	Off Lock Attenuation	≤ -80 dBc
	Modulation Capability	max ±150 kHz (nominal ±75 kHz±5%).
	Power Good Detector	adjustable from 20÷90% of the set power
	Audio Presence Detector	adjustable level and delay
	Modulation Mode	Mono, Stereo, Multiplex, SCA, RDS
	Preemphasis	Flat/50/75µs selectable from front panel
	Residual AM Synchronous	≤ -50 dB
	Asynchronous AM S/N Ratio	≤-70 dB @100% AM without Modulation
	Synchronous AM S/N Ratio	≤-60 dB @100% AM with Modulation
	RF Harmonics (for 2f,3f...)	≥80 dBc
	RF Spurious	≥80 dB
MONO OPERATION	**Audio Input Impedance**	600 ohm balanced - ≥10 kOhm.
	Audio Input Level	-6 to +12 dBm adjustable in 0.1 dB steps
	Input Connector	XLR female
	Audio Frequency Response	±0.1 dB, 30 Hz to 15 kHz
	Total HarmonicDistortion	≤0.1% with or without pre-emphasis (range ±75KHz)
	Total HarmonicDistortion + Noise	≤-0.15% with or without pre-emphasis (range ±75KHz)
	Intermodulation Distortion	0.1%, 1 kHz/1.3 kHz, 1:1 ratio
	Transient Intermodulation Distortion	0.1% 2.96kHz square wave and 14 kHz sine wave.
	Distortion	0.1% 2.96kHz square wave and 14 kHz sine wave
	FM S/N Ratio	≤-75 dB below ±75 kHz deviation (unweighted). ≤-70 dB below ±75 kHz deviation (weighted)
STEREO OPERATION	**Audio Input Impedance**	600 ohm balanced -10 KOhm
	Audio Input Level	-6 to +12 dBm adjustable in 0.1 dB steps
	Input Connector	XLR female
	Audio Frequency Response	±0.1 dB, 30 Hz to 15 kHz
	Total HarmonicDistortion	≤0.1% with or without pre-emphasis (range ±75KHz)
	Total HarmonicDistortion + Noise	≤-0.15% with or without pre-emphasis (range ±75KHz)
	Intermodulation Distortion	0.1%, 1 kHz/1.3 kHz, 1:1 ratio
	Transient Intermodulation Distortion	0,1% 2.96kHz square wave and 14 kHz sine wave.
	FM S/N Ratio	≤-70 dB below ±75 kHz deviation (unweighted). ≤-70 dB below ±75 kHz deviation (weighted)
	Stereo Separation	≥ 50dB from 30Hz to 15kHz (typ 60dB @ 1kHz)
	Crosstalk attenuation	Main to Sub ≤-60 dB 30 Hz to 15 kHz
	38 kHz Suppression	≤ -75 dBc
	Pilot Frequency	19 kHz ± 2 Hz
	Output Pilot	1 Vpp. (selectable), BNC female

MULTIPLEX OPERATION	**Composite Input Impedance:**	2 kOhm unbalanced
	Composite Input Level	-6 to +12 dBm
	Input Connector	BNC Female
	Composite Amplitude Response	±0.1dB, 30Hz to 100kHz.
	Total Harmonic Distortion + Noise	0.1% @ 400 Hz
	Intermodulation Distortion	0.1%, 1 kHz/1.3 kHz, 1:1 ratio.
	Transient Intermodulation Distortion	0.1% 2.96kHz square wave and 14 kHz sine wave.
	FM S/N Ratio	-75 dB below ±75 kHz deviation
AES/EBU OPERATION	**Input Connector**	XLR female balanced.
	Input Impedance	110 ohm
	Input Level	-20 to -3 dBfs
	Data Format	24 bit (automatic)
	Sampling Frequency	from 32 to 96 kHz (automatic)
SCA, RDS OPERATION	**Input Impedance**	≥ 2 kOhm
	Input Level	-6 to +12 dBm adjustable in 0.1 dB steps
	Frequency Response	±0.1 dB, 50 kHz to 100 kHz
	Input Connector	BNC female.
AUDIO PROCESSOR	**DSP Technology**	Equipped with DSP (Digital Signal Processor) that permits advanced digital audio treatments.
	AMC Technology	Automatic Modulation Control, the average deviation value is kept constant within the preset limits, in order to avoid annoying “over-modulation” peaks
	4BE Technology	Through a drop-down menu you can select 6 preset audio equalization profiles (Bass Enhancer, Hi Lift, Speech, Pop, Rock and Club).
INTERNAL RDS CODER - RDS-ADV option	**Type**	Dynamic, Compliant to CENELEC Spec. (EN50067)
	Frequency	57 kHz ± 3 Hz
	Synchronization	19kHz ± 3 Hz Internal or External (Software selectable)
	Interface	RS232 Asynchronous (1200 to 19600 baud) LAN/IP using the RDS-IP-100 Optional Interface
	Services	PI, PS, TP, TA, PTY, M/S, DI, CT, RT, AF, IH.
	Memories	6 memory programs.
	Coding	Differential and Bi-phase
	Amplitude Modulation	Double band with Carrier Suppression
	Other Feature	In case of RDS coder fault the Transmitter keep broadcasting.
OTHER FEATURES	**Power Reduction**	allows the reduction of the output power in a time lapse. Time and power are adjustable from the front panel.
	Audio Changeover	allows the automatic switching of the main audio source to a backup audio source in case of the main audio absence.
AUXILIARY CONNECTIONS	**RS485**	DB9 connector on the back panel.
	Telemetry Interface	DB25 connector on the back panel
	LAN	RJ45 connector on the back panel
	MPX OUT	BNC connector on the back panel.
OPTIONS		SNMP v2c & Advanced Web Server
		Audio Over IP
		DDS Direct Digital Synthesis

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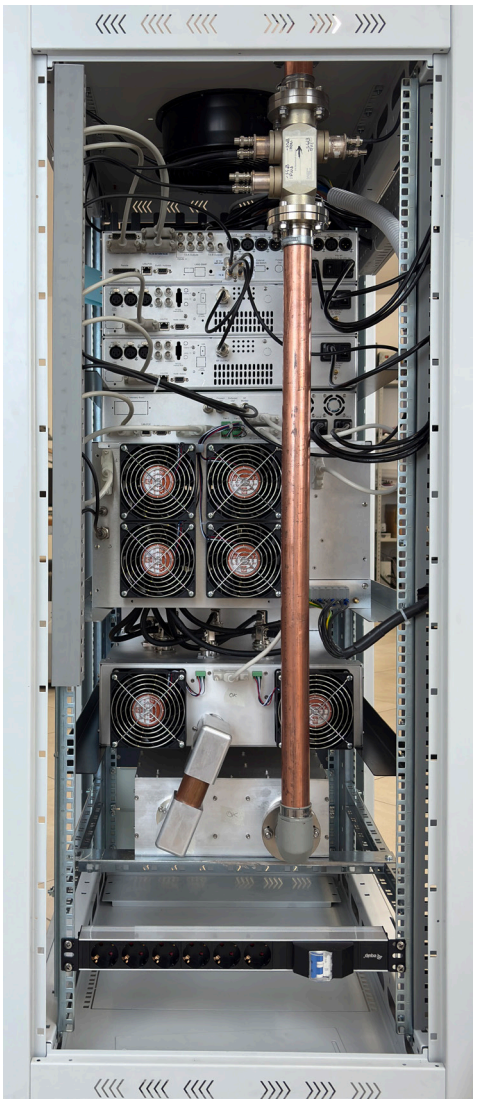
TECHNICAL SPECIFICATIONS
HPS10000

ELECTRICAL	**AC Input Power**	220 ± 20% VAC 50/60 Hz single phase; 380 ± 10% VAC 50/60 Hz three phase + neutral
	AC Apparent Power Consumption	13.500 VA max
	CosΦ	> 0.97
	Cooling	Forced air with exaust air output on the top of th rack
	Acoustic noise	< 56 dBa @ 1 meter.
ENVIRONMENTAL	**Operating temperature**	-10°C to +50°C
	Max Operating Altitude	3000 mt (with adequate air evacuation system in site, for higher altitudes please contact our technical support).
	Relative Humidity Range	0 to 90%
PHYSICAL DIMENSION	**Mounting**	Standard 19" 30 U rack (other rack dimension on request)
	Size	W - 640 mm. D - 800 mm. H - 1600 mm
	Weight	140 Kg

AMPLIFIER AND POWER SUPPLY EXTRACTION DETAIL

REAR VIEW



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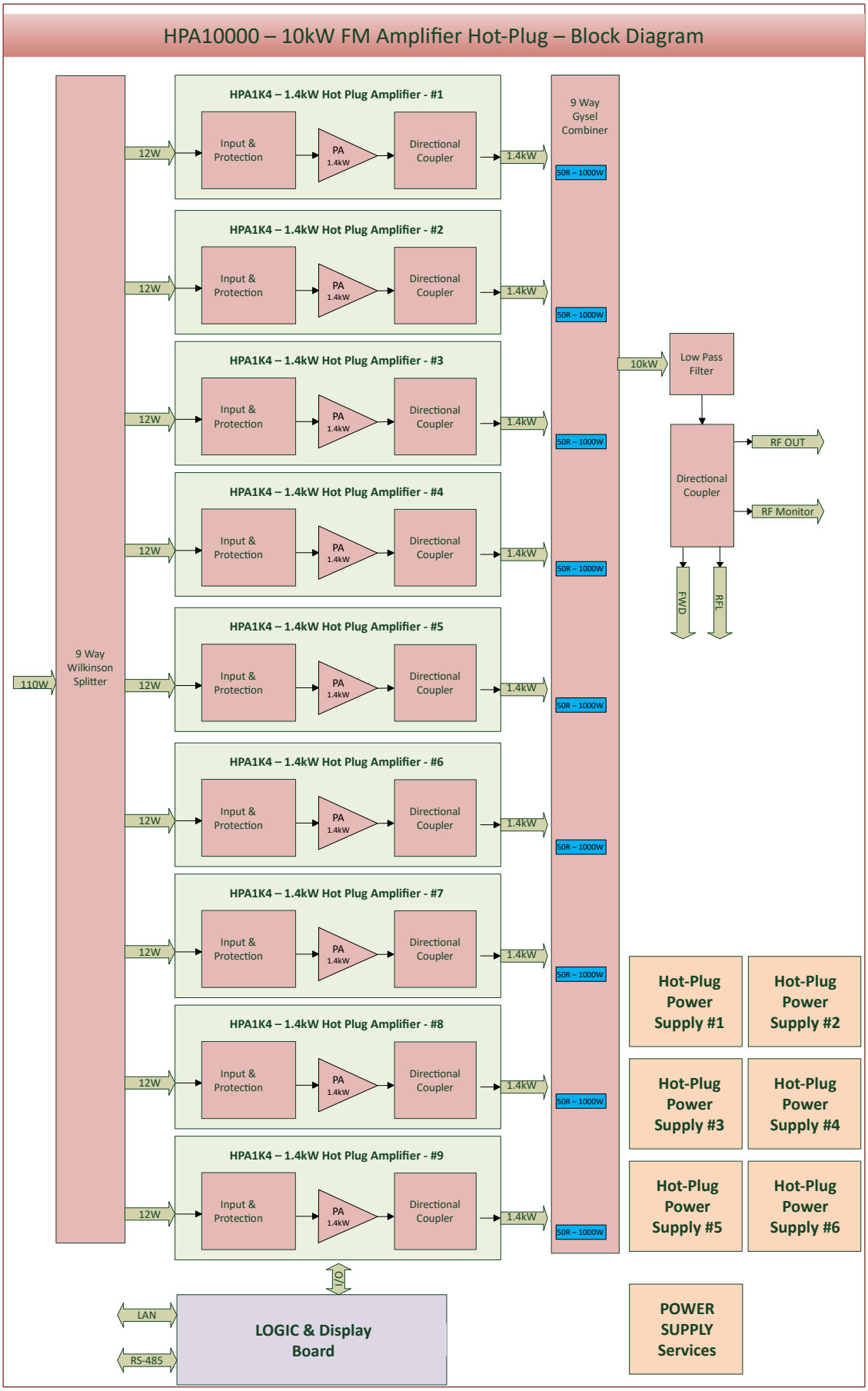
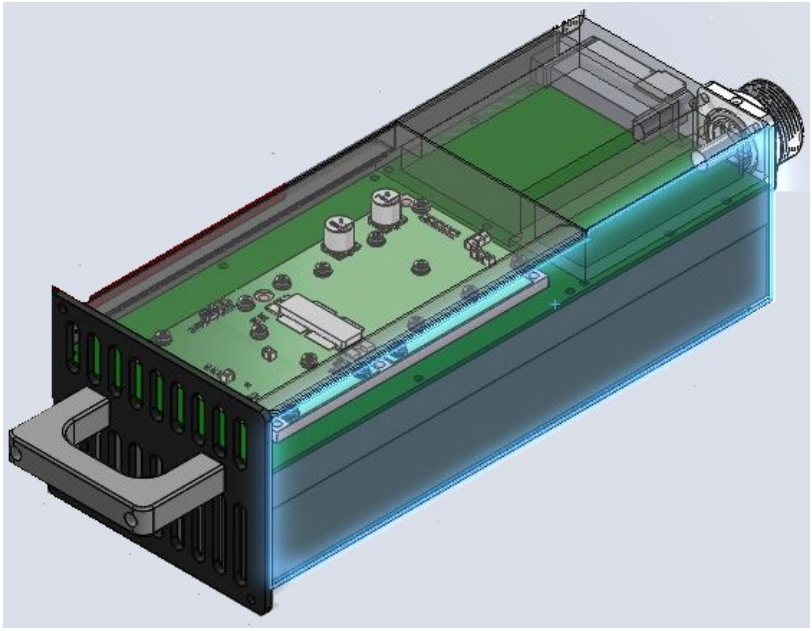
HPA10000 – 10kW FM Amplifier Hot-Plug – Block Diagram



HPA-1K4
1.4kW FM Hot-Plug Amplifier Module

GENERAL	**Power Output**	1400W Max @ 48Vdc
	RF Input Connector	Proprietary
	RF Output Connector	50 ohm – DIN 7/16”
ELECTRICAL	**Input Power**	18-59Vdc – 28A Max
	Cooling	Forced air (need external fans)
ENVIRONMENTAL	**Operating temperature**	-10°C to +50°C
	Max Operating Altitude	4500 mt.
	Relative Humidity Range	0 to 90%
PHYSICAL DIMENSION	**Mounting**	Standard 19” chassis 4 U rack
	Size	W x 100 mm. D x 250 mm. H x 88 mm
	Weight	3.8 Kg



OmniOn POWER

DATASHEET

CP3500AC52TE-FB2 Global Platform High Efficiency Rectifier

Input: 100-120/200-240 V_{ac}; 3500W capable; Default set: ±52 V_{dc} @;5 V_{dc} @ 10W

RoHS Compliant

Planned 80 PLUS TITANIUM

PMBus

Description

The CP3500AC52TE-FB Rectifier has an extremely wide programmable output voltage capability and fold-back current limiting features. High-density front-to-back airflow is designed for minimal space utilization and is highly expandable for future growth. This custom rectifier incorporates both RS485 and dual-redundant I²C communications busses that allow it to be used in a broad range of applications. Feature set flexibility makes this rectifier an excellent choice for a set of applications requiring operation over a wide output voltage range.

Applications

- Wide band power amplifiers

Features

- Efficiency exceeding 96%[1] (meets 80+ Titanium)
- Compact 1RU form factor with 40 W/in³ density
- 3500W from nominal 200-240V_{AC}
- 1500W from nominal 100 – 120V_{AC} for V_O > 52V_{DC}
- Output voltage programmable from 18V – 58V_{DC}
- ON/OFF control of the main output
- Comprehensive input, output and overtemp. protection
- PMBus compliant dual I²C serial bus and RS485
- Precision measurement reporting such as input power consumption, input/output voltage & current
- Remote firmware upgrade capable
- Power factor correction (meets EN/IEC 61000-3-2 and EN 60555-2 requirements)
- Redundant, parallel operation with active load sharing
- Redundant +5V @ 2A Aux power
- Internally controlled Variable-speed fan
- Hot insertion/removal (hot plug)
- Four front panel LED indicators
- UL and cUL approved to UL/CSA†62368-1, TUV (EN62368- 1), CE§ Mark (for LVD) and CB Report available
- Special Foldback Curve
- Black faceplate
- Conformal coating
- RoHS Directive 2011/65/EU and amended Directive (EU) 2015/863
- Compliant to REACH Directive (EC) No 1907/2006

* UL is a registered trademark of Underwriters Laboratories, Inc.

† CSA is a registered trademark of Canadian Standards Association.

‡ VDE is a trademark of Verband Deutscher Elektrotechniker e.V.

§ This product is intended for integration into end-user equipment. All CE marking procedures of end-user equipment should be followed.

** ISO is a registered trademark of the International Organization of Standards

+ The PMBus name and logo are registered trademarks of the System Management Interface Forum (SMIF)

[1] At output voltages exceeding 52V_{DC}

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