RFE

MAKING
BROADCAST
SMARTER

DS5000

High Power FM Transmitter DSP Based

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PRODUCT DESCRIPTION
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The DS5000 FM Transmitter features very compact dimensions associated with RFE most innovative technological characteristics. 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.

The transmitter is equipped with 3 Hot-Plug power supplies in parallel mode. In case of failure of one of them the transmitter will continue to work without power reduction.

MAIN FEATURES

- Highest overal efficiency > 73% with Software Energy Saving
- Large LCD color display with touch panel
- Nominal Output Power 5000W
- UDAQ Ultimate Digital Audio Quality
- High stereo performance typ. 60 dB
- 6th LD-MOS generation VSWR 65:1
- CCIR & FCC Compliant
- DSP Based Audio Processor with:
  - AMC (Automatic Modulation Control)
  - SFP (4 band audio processor w/ Filter Profile)

OPTIONS

- DDS Direct Digital Synthesis
- RDS/RBDS coder
- SNMP v2 remote control
- OIRT and JPN version
- Audio Over IP
- GSM Telemetry
- Deep Tropicalization

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GENERAL	**Power Output**	5000W adjustable until to 110% of nominal power
	RF Output Impedance	50 ohm
	RF Output Connector	EIA 7/8" (1+5/8" available as option)
	Monitor RF	BNC connector.
	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 power
	Audio Presence Detector	adjustable level and time
	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	≥ 80dBc - Exceeds EBU/CCIR/FCC requirements.
	RF Spurious	≥ 85dBc - Exceeds EBU/CCIR/FCC requirements.
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.
	FM S/N Ratio	≤-75 dB below ±75 kHz deviation (unweighted). ≤-70 dB below ±75 kHz deviation (weighted)

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STEREO OPERATION	**Audio Input Impedance**	600 ohm / 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	<0.15% @ 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	≤70 dB below ±75 kHz deviation
AES/EBU OPERATION	**Input Connector**	XLR female.
	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 (optional)	**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. Time and power adjustable from the front panel.
	Audio Failover	in case of absence of the main audio source, it automatically switches to the backup audio source.
AUXILIARY CONNECTIONS	**RS485**	DB9 female connector back panel.
	Telemetry Interface	DB25 female connector back panel (I/O and Relay Contact)
	LAN	RJ45 connector back panel (Web Interface)
	MPX OUT	BNC female connector back panel.
OTHER OPTIONS		Advanced Web Server & SNMP v2c Telemarty Board
		IPA400 Audio Over IP
		DDS Direct Digital Synthesis
ELECTRICAL	**AC Input Power**	3 x 230 VAC 50/60 Hz single phase. In case VAC is lower than 170 V the transmitter output power will derate at ~ 50%.
	AC Apparent Power Consumption	6900 VA;
	CosΦ	> 0.95
	Cooling	Forced air.
	Acoustic noise	< 56 dBa @ 1 meter max.
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 483 mm. D x 600 mm. H x 176 mm
	Weight	~ 30 Kg

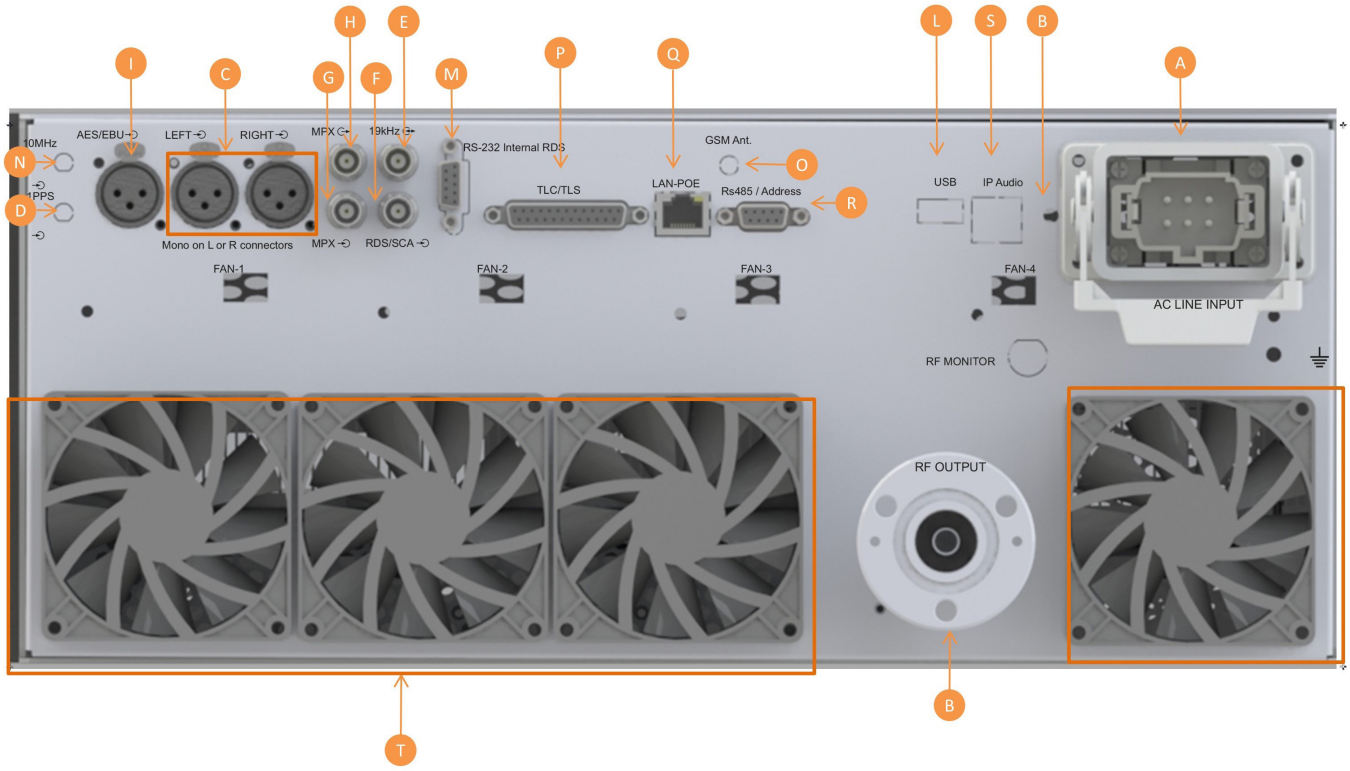
ORDERING INFORMATIONS

Description	**Ordering Code**
DS5000 - 5kW FM Transmitter DSP	ATF01650-R
Internal Advanced RDS	ALV01210
Advanced Web Server & SNMPv2c	AT000440

SUGGESTED SPARE PARTS

Description	**Ordering Code**
1400W Pallet Amplifier	AMF00450
80x80x38 4 wire Fan	FAD80-24D
Main Power Supply	PSA3500-59-A
Aux Power Supply	PSA200-24-A
50R - 1 kW RF Termination	RFA50R-1KA

Rear Panel Connectors



On the rear panel connectors are located as follows:

A	AC Input with power switch and fuse	
B	RF out	EIA 7/8"
C	L/R audio input	XLR connector
D	1 PPS input	SMA connector (only with DMB option)
E	19kHz in/out	BNC connector
F	SCA/RDS input	BNC connector
G	MPX audio output	BNC Connector
H	MPX audio input	BNC connector
I	AES/EBU input	XLR connector
L	USB	USB-A connector (for SNMP2 firmware Update) - optional
M	RDS/RS232	DB9 connector (optional)
N	10MHz input	SMA connector (only with DMB option)
O	GSM	Slot for optional GSM board
P	TLC/TLS	DB25 connector
Q	LAN	RJ45 connector
R	RS485	DB9 connector
S	AUDIO IP input	RJ45 connector (option)
T	Fans	