

ET5000

5000W ICEFET SOLID STATE FM TRANSMITTERS



**ELENOS**®

broadcast @xperience

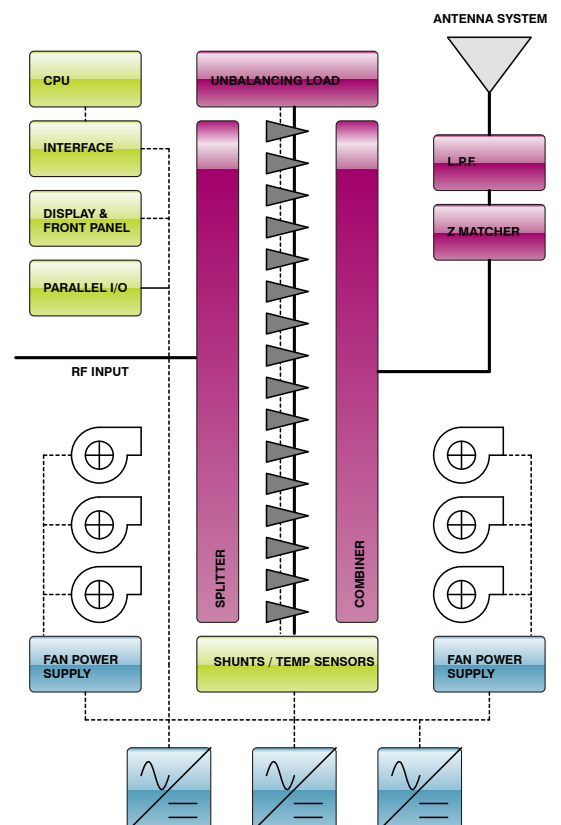
DATA SHEET

# ET5000 5000W ICEFET SOLID STATE FM TRANSMITTER

## Highlights

- **ICEFET®:** This technology reduces Mosfet and heat-sink temperatures, improves efficiency and grants higher MTBF. The result is unmatched size, consumption and reliability.
- **ALWAYS ON AIR (Fully redundant):** The redundancy of this transmitter prevents "SINGLE-POINT-FAILURES" thanks to a "SOFT FAILURE DESIGN", and a protection system which keeps it "ON AIR" even in the most extreme working conditions.
- **IPC (Intelligent Power Control):** Another exclusive Elenos application. IPC maintains constant the output power within 2% of the setting value, regardless of fluctuations in incoming AC line voltage, RF drive or load conditions.
- **IPF (Intelligent Proportional Fold back):** IPF is an intelligent system that allows the transmitter to stay "ON AIR" into mismatched loads.
- **BROAD BAND:** The transmitter keeps optimum performances of power and efficiency over the all broadband operation without needing of tuning. Useful as main transmitter or as reserve in "N+1" applications.
- **CONSTANT EFFICIENCY:** The Voltage Power Amplifier and the Bias voltage are both controlled to obtain maximum efficiency at any frequency and at any output rated power.
- **NO IPA:** In Elenos transmitters, the IPA (Intermediate Power Amplifier) is avoided. This choice eliminates one of the bottlenecks in redundancy frequently present on transmitters of this category.
- **EASY MAINTENANCE:** All parts, RF modules, electronic control boards, blowers, power supplies etc. are easy to replace.
- **SMS ALARMS/REMOTE DEEP DIAGNOSTIC CAPABILITY:** All alarms and events can be sent by SMS through a GSM modem. The industrial standard Hostlink protocol allows to safely handle huge quantity of information to perform remote deep diagnosis.
- **WORLD-WIDE SALES & SERVICE SUPPORT:** ELENOS is the FM manufacturer with one of the biggest distribution network of the world. Each distributor is chosen mainly by the technical support capability.

## E5000 Block diagram



# ET5000

## COMPOSITION

Exciter	ETG151
Amplifiers	E5000
Mounted in 19" standard rack	Yes

## GENERAL DATA

Output Nominal Power	5000W adjustable
Maximum peak power	5500W
Operating band	87.5 - 108 MHz
Output Low-pass Filter	W.B. 87.5 MHz - 108 MHz
RS232/RS485	Yes
Points of measure	RF Sample-MPX Monitor
Displayed Parameters	More than 50 parameters displayed on a wide graphic LCD
Adjustments	From the frontal panel trough LCD /from PC
Microprocessor controlled	Yes
Power supply redundancy	Yes
Number of MOSFETs	16
RF power stage technology	ICEFET & ECOSAVING
MOSFET type	BLF278 Philips
Number of power supplies	3
Dimensions: Rack units	4+3 U
Dimensions: W - H - D	48.5 - 31.1 - 70 cm
Weight	45+15 kg
Number of cooling fans in the amplifiers	6
Number of cooling fans in the exciter	1

## CONNECTORS

RF Output connector	7/8
RF Output connector exciter	N
RF Input connector	N
Input connectors LEFT & RIGHT	XLR female
MPX Input connector	BNC female
SCA Connector	BNC female
Remote control connector	DB25 female
RS485/232 Connector	DB9 female

## RF

Automatic gain control	Stabilizes the output power value on the set value
Overall output power stability	+/-0,1 dB
Output impedance	50Ω
Harmonic suppression	> 70 dB
Spurious signal suppression	> 80 dB
Driving power amplifier stage	110W
Input impedance power amplifier stage	50Ω
Gain power amplifier stage	16dB
V.S.W.R. protection	100% of forward power
Asynchronous residual AM (typical values)	60dB
Synchronous residual AM (typical values)	50dB
RF Efficiency	78%Typ

## AUDIO

L/R Audio input level	+12/-12 dBm for 75KHz standard deviation
L/R level adjustment	Soft adjust 0,1dBm steps from front panel
L/R Input Impedance	Selectable 10K- 600Ω
MPX audio input level	+12/-12 dBm for 75KHz standard deviation
MPX level adjustment	Soft adjust 0,1 dBm steps from front panel
MPX Input impedance	5KΩ selectable
SCA/RDS audio input level	0 dBm for 75KHz standard deviation
SCA/RDS level adjustment	Soft adjust 0,1 dBm steps from front panel
SCA/RDS Input Impedance	10KΩ
PILOT level adjustment	Soft adjust 0,1 dBm steps from front panel
PILOT Phase adjustment	Soft adjust 0,1 dBm steps from front panel
19KHz Output	Yes

## PERFORMANCE EXCITER

PLL lock time	<20sec
Time for starting up	30 sec. from OFF/ON
Time for starting up	1 sec. From interlock closure
Intermodulation distortion	<0.05% Measured with two of tones 1KHz & 1.3KHz, ratio 1:1 at 100% modulation
Frequency deviation	+/- 75 KHz 0.1dB steps adjustable
Frequency steps	10 KHz
Frequency stability	1 ppm from 0 to +40°C
THD+N	<0.03% @ 1KHz
Pre-emphasis	50/75 microseconds +/-0,1dB
FM S/N MPX FCC	82 dB 20Hz - 23KHz - 50uS - ref @ 53KHz - RMS
FM S/N STEREO CCIR Weighted	72 dB Weight-ref@53KHz-Qpk
FM S/N STEREO CCIR Unweighted	72 dB Unweight-ref@53KHz-QPk
Mono frequency response	+/-0.15 dB 30Hz - 15KHz
MPX frequency response	+/-0.1 dB 30Hz - 100KHz
Stereo frequency response	+/-0.15 dB 30Hz - 15KHz
SCA frequency response	+/-1 dB 20KHz - 100KHz
Type of modulation	F3 direct modulation FM on RF oscillator
Stereo Crosstalk	-72 dB @ 1KHz
Pilot tone frequency	19 KHz
Pilot tone deviation	7,5 KHz Adjustable
Pilot tone frequency stability	+/-1 Hz
Attenuation at 19KHz	> 45 dB
Phase Response	0.1 degree from linear phase; 53kHz to 100kHz
Modulation Capability	+/-250 KHz

<b>INSTALLATION REQUIREMENTS</b>	
Power supply	220/380 Threephase-Singlephase Version 50-60Hz VAC
Power consumption	7,5KW
Overall Efficiency	70%Typ
Magneto-thermic curve	D
Current Consumption @220VAC/single phase	33 Amp
Magneto-thermic capacity @220VAC/single phase	45 Amp
Conductor size @220VAC/single phase	10 sqrt.mm
Conductor size @220VAC/single phase	7 AWG
Current Consumption @220VAC/three phase	19 Amp
Magneto-thermic capacity @220VAC/three phase	32 Amp
Conductor size @220VAC/three phase	6 sqrt.mm
Conductor size @220VAC/three phase	9 AWG
Current Consumption @380VAC/three phase	11 Amp
Magneto-thermic capacity @380VAC/three phase	20 Amp
Conductor size @380VAC/three phase	4 sqrt.mm
Conductor size @380VAC/three phase	11 AWG
<b>COOLING SYSTEM</b>	
Cooling flow (m <sup>3</sup> /h)	From 600 to 1200 m <sup>3</sup> /h
Air temperature increase between output/input	17°C
Cooling system	Foced air-cooling
<b>ENVIRONMENT</b>	
Temperature range (operating)	0 - +45 °C
Temperature range (non operating)	-20 - +70 °C
Humidity range (operating)	95% a 40 °C
Humidity range (non operating)	90% a 65 °C
Altitude range (operating)	<4600 meters
Altitude range (non operating)	<15000 meters
<b>TELECONTROL &amp; TELEMETRY</b>	
Remote control	Yes
Remote Control at clean contacts	Yes
SNMP option	Yes (external)
<b>REGULATIONS CONFORMITY</b>	
High frequency radiations from the enclosure	Below limit imposed by technical regulations.
Functioning type	h24 uninterrupted
Electromagnetic fields immunity	Higher than specified by laws on electromagnetic fields compatibility
CE Mark	Conform to 1999/5/CE European Directive
<b>MANUFACTURING DATA</b>	
Spares availability guaranteed for	10 years from the date of purchase
<b>PRE- &amp; POST- MAINTENANCE</b>	
MTBF	10 Years
Programmed Maintenance	4 Years
Blower Replacement recurrence	4 - 6 Years (fuction of temperature)
Electrolitics Replacement Recurrence	8 Years
Lithium batteris replacement recurrence	10 Years
Batteries	Yes, only for alarm list storage
Time to realize the preventive maintenance every 4 years	1 Hour
Time to realize the preventive maintenance every 8 years	2 Hours
Level and number of technician for maintenance	1 technician
Electrical safety	EN60215
Average repair time (change of an RF module or power supply)	1 Hour
<b>SET</b>	
Installation manual Quick Start	Yes
User manual	Yes (On electronic format)
Maintenance manual	Yes (On electronic format)
Tests report	Yes
Troubleshooting manual	Yes (On electronic format)

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