

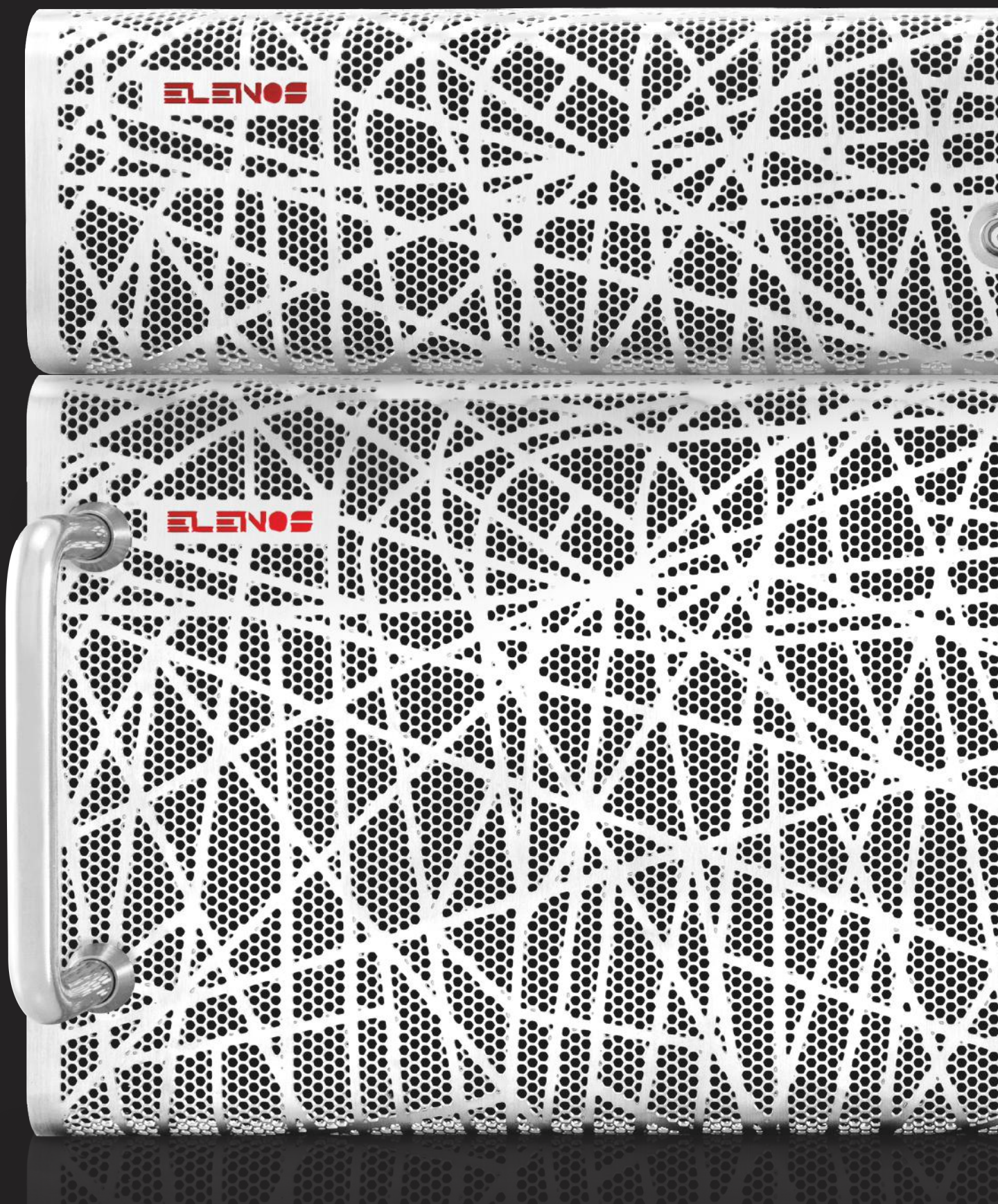
# ET10000X

## 10kW6U

DIGITAL TRANSMITTER

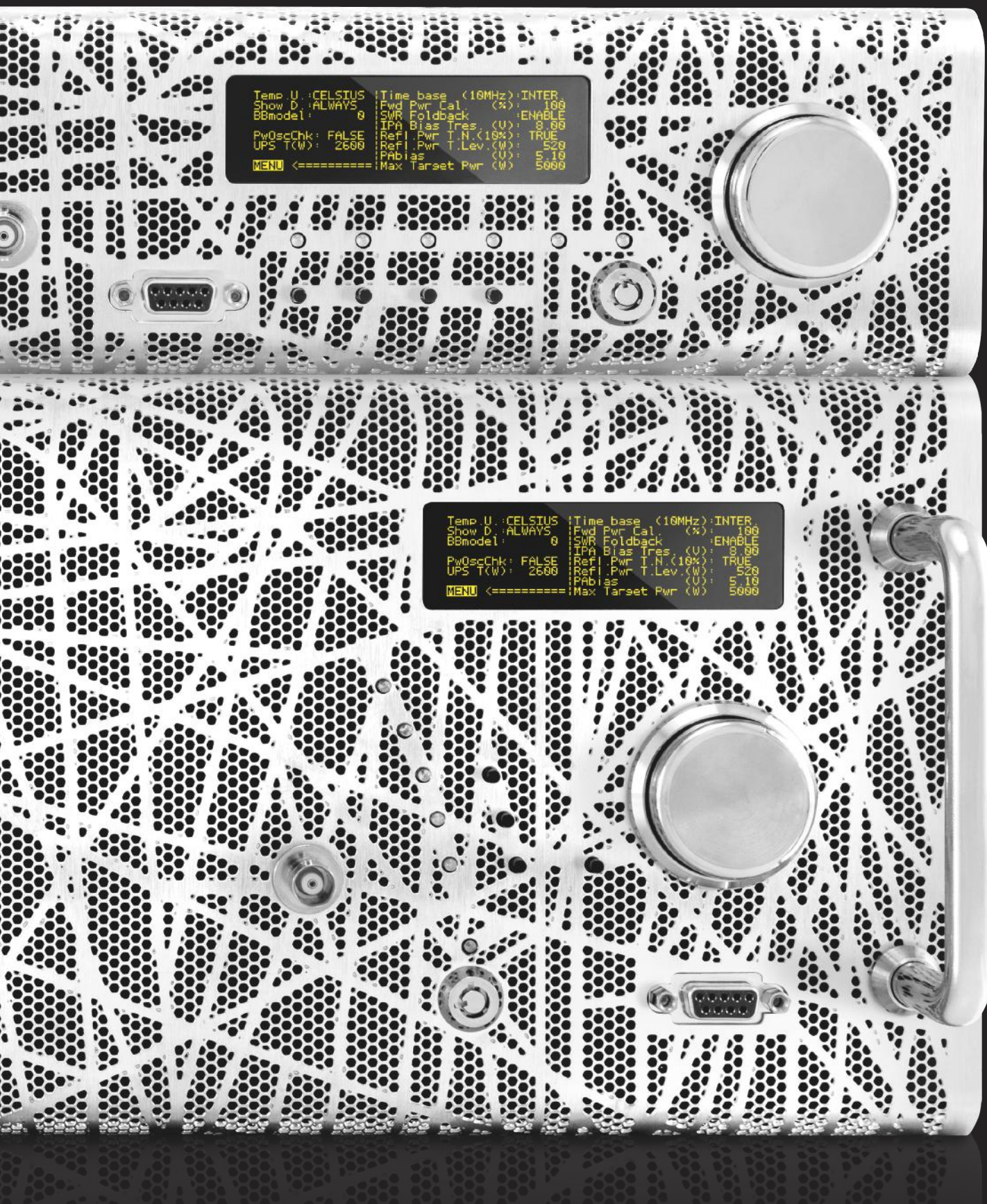
**ELENOS®**  
World Broadcast Experience





\*All images are proprietary from Elenos and are for indicative purposes only.  
Technical data can be subject to change without notice.





Temp.U.:CELSIUS Time base (10MHz):INTER  
Show D.:ALWAYS Fwd Pwr Cal. (%): 100  
BBmodel: 0 SWR Foldback :ENABLE  
IPA Bias Tres.(U): 8.00  
PwOscChk: FALSE Refl.Pwr I.N.(10%): TRUE  
UPS T(W): 2600 Refl.Pwr T.Lev.(W): 520  
PAbias (U): 5.10  
MENU <===== Max Target Pwr (W) 5000

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our technologies



Indium



Icefet



Ecosaving



Life Extender



Brochure

## FM DIGITAL TRANSMITTER **HIGH POWER**

# THE RESULT OF 10 YEARS OF RESEARCH IN ENERGY SAVING

The new ET10000X FM Transmitter is the latest of a series of Elenos devices, from the Italian manufacturer that proudly boasts a world record: being the first, ever, 12 years ago, to concern itself with energy conservation in the context of broadcasting.

Attention is paid to the environmental impact of transmitting stations, and has now also become very important for energy conservation of radio broadcasters. Antonello Giovannelli, Director of Research and Development at Elenos, told us that as early as 2003, with the project in the "IceFet" series (amplifiers and E3000 and ETG3000 transmitters integrated in 4 UR), the highest possible energy efficiency was being targeted with the available technology at the time.

The market trend for limiting consumption and costs was in the air, which is why the planning staff have prioritised this opportunity. In 2007 the economic crisis arrived, but at that time Elenos had already improved its products and had a complete catalogue with a very high energy efficiency range at its disposal, which was ideal for adopting energy saving policies on consumption. The possibility of programming power, already present in the original projects, was then further improved, allowing for an even more significant saving on electricity.

## REVOLUTIONARY

It is the result of a long investment in research and of the very high competence of Elenos' Team. So the revolutionary ET10000X is finally arrived! It is a highly powerful FM Transmitter that can boast an unbeatable range of characteristics of compactness, electrical efficiency and weight.

The apparatus can be contained in just 6 rack units, but can provide 10kW of RF power in the 87.5-108 MHz range with a total electrical efficiency within 70% and 75%.

ET10000X is a highly versatile and effective solution, and can be installed in stand-alone mode, or used as a reserve for more powerful systems, but can also be used as a base module for very powerful amplifiers.

"The project started around 4 years ago", Giovannelli explains, "and was already in the prototype stage, but we have only recently decided to market it, for two reasons. The first is technical: we wanted to work on it until it reached a maximum efficiency state-of-the-art and the best in aesthetic design. Once again we want to break the boundaries of déjà vu. The second reason is commercial: Elenos is at the very top of the energy savings and high-quality market, so much so that bringing out this model too soon would have created too much competition with our other products, on the same power range".



Brochure

## FM DIGITAL TRANSMITTER **HIGH POWER**

### CRISIS BREEDS OPPORTUNITY

Elenos is an Italian company based in the city of Ferrara and the leader of a group that includes brands such as ITELCO.

For Elenos, being an Italian company means knowing how to combine excellence and flexibility and knowing how to transfer these qualities to its products.

Elenos's care for the environment, that from the start of the 2000's attracted the interest of broadcasters more sensitive to these issues, with the arrival of the economic crisis from 2007 onwards became successful as a response to the growing need to manage budgets, but without compromising on the quality of the equipment and their capacity of coverage.

Today ET10000X is the heir to this business philosophy that has two concepts at its roots: responsibility and innovation. This equipment looks to the future of international broadcasting, because it represents a real and convenient solution, both to the problems of business management, and to the challenges that the world imposes on us.



### Features:

#### **Smart Design**

Extremely contained dimensions, lightweight, clean layout, easy maintenance and servicing.

#### **Low energy consumption**

Highly reduced electricity consumption and operating costs thanks to innovative and accurate design techniques.

#### **Reliability**

Very high reliability and a capacity to maintain operating functionality even under extreme conditions, thanks to intelligent protection systems, Icefet technology and Lifextender algorithms.

#### **Total control**

Accurate, detailed data on the device's operation, available at an analytical level (voltages, currents, powers, temperatures, efficiency, protections, settings, audio levels, communications).

Remote connection possible via SMS, GPRS, SNMP and WEB.

#### **Digital ready**

The FM Transmitter is ready for analog+digital or digital transmission.

With the new Elenos FM Transmitter you will catch the best opportunity to face FM digital future challenges.



Datasheet

## FM DIGITAL TRANSMITTER HIGH POWER | ET10000X

ET10000X

FM DIGITAL TRANSMITTER HIGH POWER

### GENERAL DATA

Output Nominal Max RF Power	10 kW continuous wave
Operating Band	87.5 - 108 MHz
Samples	RF sample
Displayed Parameters	RF Sample
	All the most important parameters (voltages, currents, temperatures, RF power, efficiencies.) in high resolution graphic OLED
Adjustments	From the frontal panel through OLED interface / from remote connection
Number of RF power L-Dmos	14
RF Power technology (by ELENOS)	ICEFET & ECOSAVING
Number of power supplies	3 (5 kW each one)
Dimensions: W - H - D	400 - 485, 175, 800 (mm); 19.1, 6.9, 31.5 (inches)
Weight	47 kg - 103.6 lbs
Number of cooling fans	6, long life, with controlled speed
Overall Efficiency	6 Controlled speed
RF Output connector	70-73% full band @ 10 kW; 68-70% full band @ -3dB; 64-65% full band @ -6 dB

### REMOTE CONTROL

Remote control capability	WEB, SNMP, MAIL, SMS (with optional modem)
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### CONNECTORS

RF Output connector	1+5/8" Unflanged
RF input connector	N Female
RF MONITOR	BNC female
Ethernet	RJ45
DB9	RS485 (FW upload)
DB25	TC/TS (parallel I/O)
DB25	Profiles (when used as reserve)
Mains	n°6 terminal blocks + grounding screw
SL-SMT.50 3 poles	Interlock
M5 threaded screw	Safety ground connection

### RF PERFORMANCES

Input Impedance	50 ohms
Output Impedance	50 ohms
Automatic RF power control	Stabilizes the output RF power
Overall RF output power stability	Within +/- 0.1 dB
VSWR protection	2:1 (1000 W @ full power) fast HW protection
	Automatic SW foldback over 1.7:1 with maximum 200 ms delay
	Protection against open and short circuit at antenna connector
Harmonics and spurious emissions	Within ETSI standards
Driving power	1.5 W, with "Power Good" automatic indication for the optimal RF driving power, and protection against bad input power levels (see manual)
Output RF power	Continuously adjustable within 1000-10000 range
Driver modulator	ETG20 ELENOS (analog or digital)



# FM DIGITAL TRANSMITTER HIGH POWER | ET10000X

## MODULATION PERFORMANCES

MPX input level	0 dBu for 75 kHz standard deviation
MPX attenuation adjustment	-10 dB to + 15.5 dB
MPX input impedance	Selectable 10 k unbalanced / 600 ohms balanced
L/R input level	0 dBu for 75 kHz standard deviation
L/R attenuation adjustment	-10 dB to + 15.5 dB
L/R input impedance	selectable 10 k unbalanced / 600 ohms balanced
AES-EBU interface	Electrical
AES-EBU input resolution	24 bits
AES-EBU input sample rate	31, 44.1, 48, 96, 192 kHz automatically selected
AES-EBU input level	-25.5 dBFS to 0 dBFS
EAS-EBU input impedance	110 ohms balanced
SCA/RDS input level	0 dBu for 10 KHz deviation (0 dB attenuation)
SCA/ RDS attenuation adjustment	-15.0 dB to 10.4 dB (input off at 10.5 dB)
Pilot level adjustment	Soft adjustment in 0.15 kHz steps, from 2.45 kHz to 13.4 kHz (from -30 dB to -15 dB in 0.1 dB steps)
Pilot phase adjustment	Soft adjust in 0.01 degree steps (from -20.00 degree to +20.00 degree)
Pilot tone frequency	19 kHz
Pre-emphasis	0/25/50/75 us selectable
Pre-emphasis accuracy	within +/- 0.1 dB
FM S/N (MPX)	> 80 dB
FM S/N (Stereo)	> 74 dB, CCIR weighted; > 78 dB, not weighted
Asynchronous AM S/N	> 55 dB
Synchronous AM S/N	> 50 dB
THD + N (MPX operation)	< 0.01% @ 75 kHz deviation, 30 Hz to 15 kHz
THD + N (Mono / Stereo operation)	< 0.03% @ 75 kHz deviation, 30 Hz to 15 kHz
Amplitude-Frequency characteristic (MPX)	within +/- 0.1 dB in 20Hz - 100 kHz band
Amplitude-Frequency characteristic (Stereo/Mono)	within +/- 0.1 dB (without preemphasis); within +/- 0.2 dB (with preemphasis) in 20 Hz - 15 kHz band
Stereo separation	> 70 dB in 20 Hz - 15 kHz band
Linear crosstalk	> 70 dB in 20 Hz - 15 kHz band
Intermodulation distortion	< 0.05% (two tones @ 1 kHz and 1.3 kHz, 1:1 ratio, 100% deviation)
Class of emission	F3
Stereo emission	According to ITU-R recommendation 450 (pilot tone)

## SFN PERFORMANCES

Baseband Time Delay	0 - 1 sec adjustable
Step	0.1 us
External Time Reference	1 pps
External Frequency Reference	10 MHz
Internal Time Reference	Optional Oven board
Internal Frequency Reference	Optional GPS receiver
Carrier frequency accuracy with external 10 MHz Ref	within +/- 0.01 Hz
Carrier frequency accuracy with internal 10 MHz Ref	within +/- 0.5 Hz Hz
Subcarrier frequency accuracy with external 10 MHz Ref	within +/- 0.001 Hz



Datasheet

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### INSTALLATION REQUIREMENTS

Line configuration	Power supplies can be externally connected in parallel (for 208-230 VAC mono-phase line) or in Wye configuration (for three-phase 400 VAC line 4-wires) or in Delta configuration (for 208 VAC line 3-wires)
Power consumption	14 kW Typical (15 kW max)
Recommended wiring section	4 sqmm / AWG11
Total current consumption	40 A per phase @ 208 VAC 20 A per phase @ 400 VAC
Power Factor	Current absorption may increase in case of lower line AC voltages > 0.95

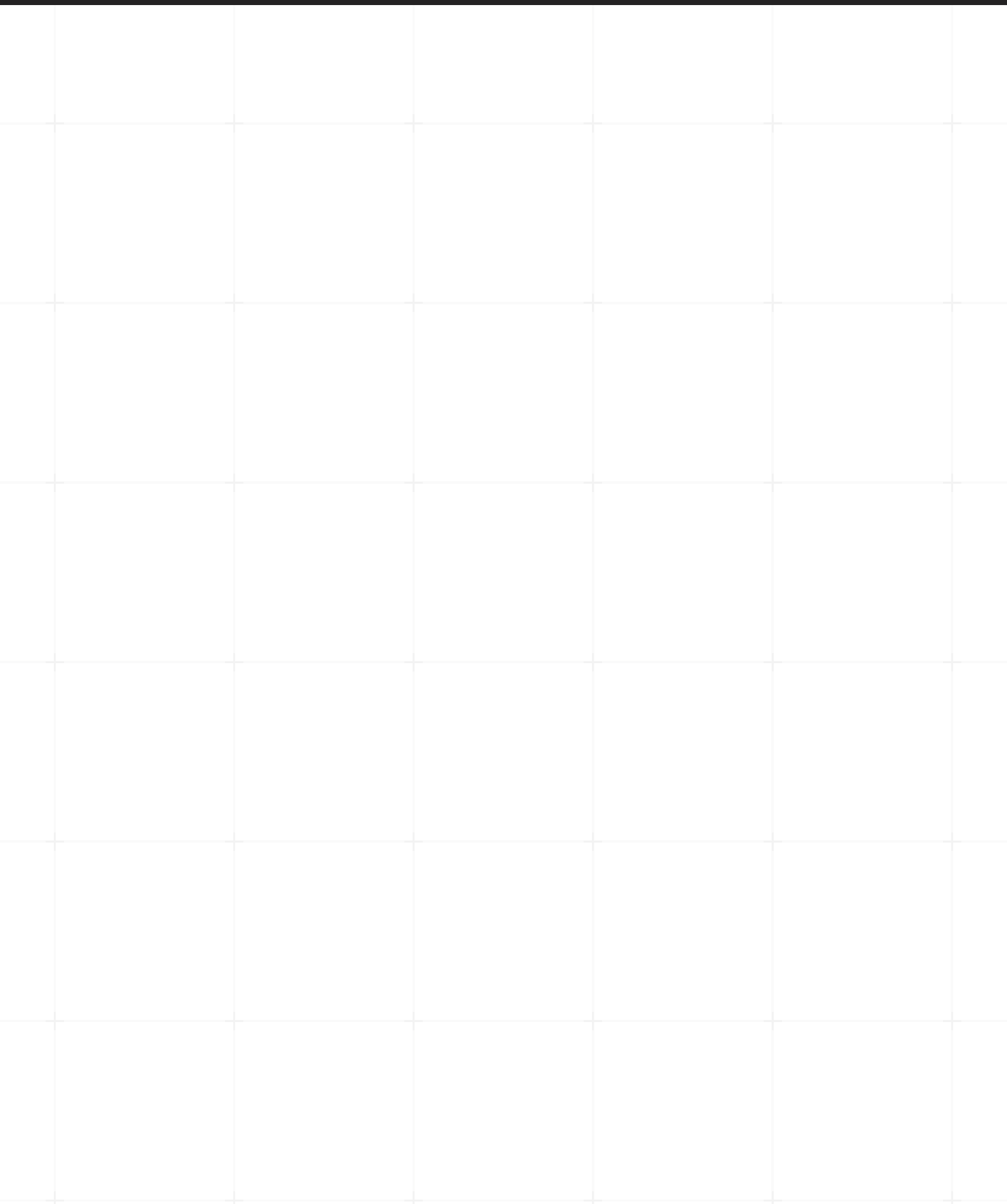
### COOLING SYSTEM

Cooling type	Forced air-cooling
Air flow	1,000 cbm/h typical (depending on temperature)

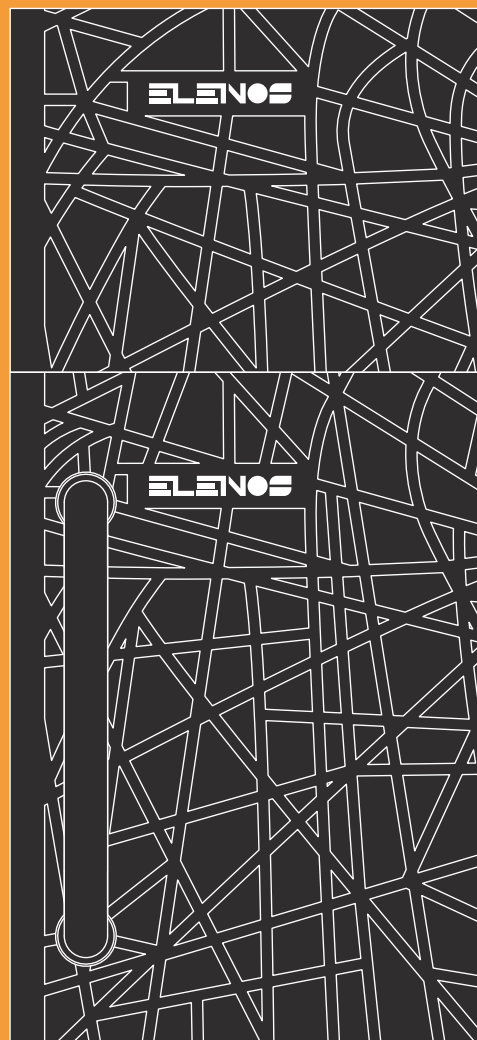
### ENVIRONMENT

Operating temperature	-5 to +45°C / 23 to +113 °F
Operating humidity	95% non-condensing @ 40°C / 104° F
Operating altitude	< 3000 metres / < 9840 feet
Storage temperature	-20 to +55°C / -4 to +131 °F
Storage humidity	90% non-condensing @55°C / 131°F
Storage altitude	< 15,000 metres / < 49,200 feet

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