



The **NEPTUNE 5 & 10 kW FM TCP/IP** "solid-state" Transmitters are part of the ECRESO's 5th generation of transmitters E Series range. Extremely reliable and compact, Neptune transmitters are the result of 20 years of experience combined with "avant-garde" components. Neptune 5 & 10 kW TCP/IP offer the best operating solution. They are extremely reliable, user-friendly and performant. The new technology they use, does not prevent them from being affordable.

Features & benefits >>>

- ▶ Low noise, low distortion and excellent audio quality Exciter (HELIOS). Pluggable Stereo Coder.
- ▶ Front panel or distant power and frequency adaptability using RS232 and/or TCP/IP, or even available from the Control unit.
- ▶ Optional RDS and digital AES input available with external coder.
- ▶ 1 to 10 kW output power with a maximum VSWR of 1.35; up to 11 kW with a VSWR equal or less than 1.1.
- ▶ Power supplies and amplifiers redundancy enabling maintenance without transmission break.
- ▶ Amplifier module and coupler covering a 87.5 to 108 MHz band with no need of additional configuration.
- ▶ A true user friendly, reliable and stable control unit that indicates the transmitter's condition at any time, either using direct access or distant mode (telemetric, TCP/IP). CAN-bus connection with other modules (high protection against disturbances).
- ▶ Large color graphical LCD Display, 1/4 VGA.
- ▶ Two possible cooling configurations: using either internal or external cooling system.
- ▶ Double drive FM Exciter (HELIOS) and IPA are available as an option.
- ▶ "Soft-start": 15-second progressive start ensuring reliability and long lasting use of all the modules.
- ▶ RF sample port available on front panel.
- ▶ Punch Stop button on front panel.
- ▶ Meets the most severe international standards. This product complies with the CE standard in accordance with the European directives 1999/5/CE (R&TTE directive). Made in compliance with the ISO 9001 quality standard.

Details >>>

HELIOS FM Exciter ▼



The Helios FM exciter (19" - 2U) is a standard component of the ECRESO's product range.

HELIOS is composed of a motherboard, a MOSFET 20 W power module, a power supply, and a display card on front panel.

Built-in HELIOS motherboard is a programmable synthesizer working on 87.5 – 108 MHz frequencies. It offers an exceptional signal/noise ratio, a low distortion, and an excellent audio quality. The PLL - Phase Lock Loop is controlled by an 8-bit microprocessor.

The "avant-garde" design of the HELIOS enables external clock synchronization (GPS for instance).

The harmonic filter developed by ECRESO, ensures the MOSFET 20 W power module a spectral purity far beyond the compulsory international standards. The 20 W module is temperature auto protected by an oversized radiator and VSWR protected by an analogical loop.

The Switching power supply is auto protected (overheating, power surge, etc...).

The Pacific blue HELIOS LCD display enables a quick and clear overview of the main functional parameters: frequencies, forward power, VSWR, deviation, etc...

HELIOS can be directly accessed and monitored using the RS232 on front panel (standard available) or using optional pluggable cards such as RC/RM (remote control, remote monitoring, telemetric) or IP CAN (TCP/IP) enabling distant monitoring and control of the device.

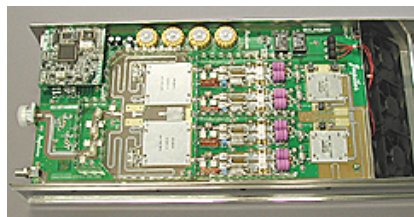
IPA – Preamplifiers ▼

The IPA module is composed of a 300W MOSFET amplifier stage. The IPA releases the power needed to drive the 1 kW amplifier stages.

The IPA has an easily extractable rack-like stand-alone power supply.



PA – Power amplifiers ▼



Each PA, based on the GOLIATH technology of the ECRESO's product range, is a 1 kW module composed of 4 MOSFET transistors, coupled with 2 "hybrid 3 dB couplers" and 1 WILKINSON coupler.

Each MOSFET transistor has a stand-alone power supply designed to keep the transmitter on the air (> at 3 dB) in case of failure.

The PA modules are "hot-pluggable"; they can be replaced by the user, without a transmission break (> 50% of the power).

Each module has a harmonic filter beside which a directive coupler is mounted, thus protecting it over 1.5 VSWR.

Integrated sensors on each PA ensure temperature control and protection.

PAs are extractable auto-ventilated racks. They weight less than 33 lbs (15 kg) each.

The IPA/PA are controlled and constantly monitored by the control unit using the CAN bus.

RF Output Couplers ▼

The RF output couplers (2 are available for the 10 kW equipment), using WILKINSON technology, ensure an efficient 5 PA coupling with a minimum loss (See synoptic).

An output directive coupler communicates the forward and reflected power of the NEPTUNE transmitter to the control unit.

Temperature sensors indicate any overheating.

RF Sample Port ▼

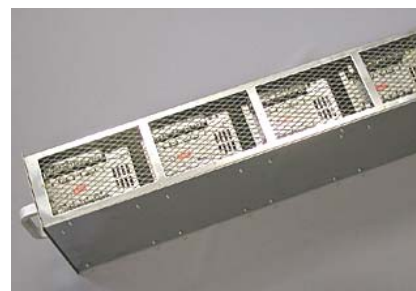
An RF sample port, accessible on the front panel via a BNC connector, releases accurate signal enabling precise measurements.

POWER supply ▼

Each component of the 10 kW device (FM HELIOS Exciter, IPA, PA and the control unit) is supplied automatically.

ECRESO has selected an auto-ventilated 500 W switching power supply. It is identical for IPA and PA and offers a high MTBF (76 000 hours).

Each 1 kW module is supplied by a drawer containing 4 power supplies.



Each power supply is protected against power surges, short-circuits and overheating.

A mains filter guarantees protection of the transmitter against interference.

Circuit breaker and surge voltage protection are available in standard.

An automatic re-starter of the general circuit breaker is optional.

Control Unit and CAN BUS

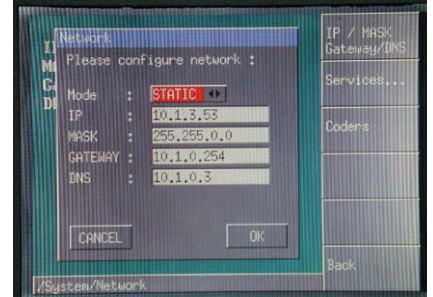
The control unit (CU) enables a quick and user-friendly access (color graphical 1/4 VGA display, bright keyboard and various menus) to the modules of the system and informs instantaneously of the detected failures, their types and localization.

The CU communicates with each subset of the transmitter using a CAN bus. This serial bus accepts the thermal, vibration and electromagnetic disturbances, and transports information at a 1 Mbit/s speed.

The CU has been developed under a stable and open Linux environment. It uses a reliable and efficient 32-bit processor.

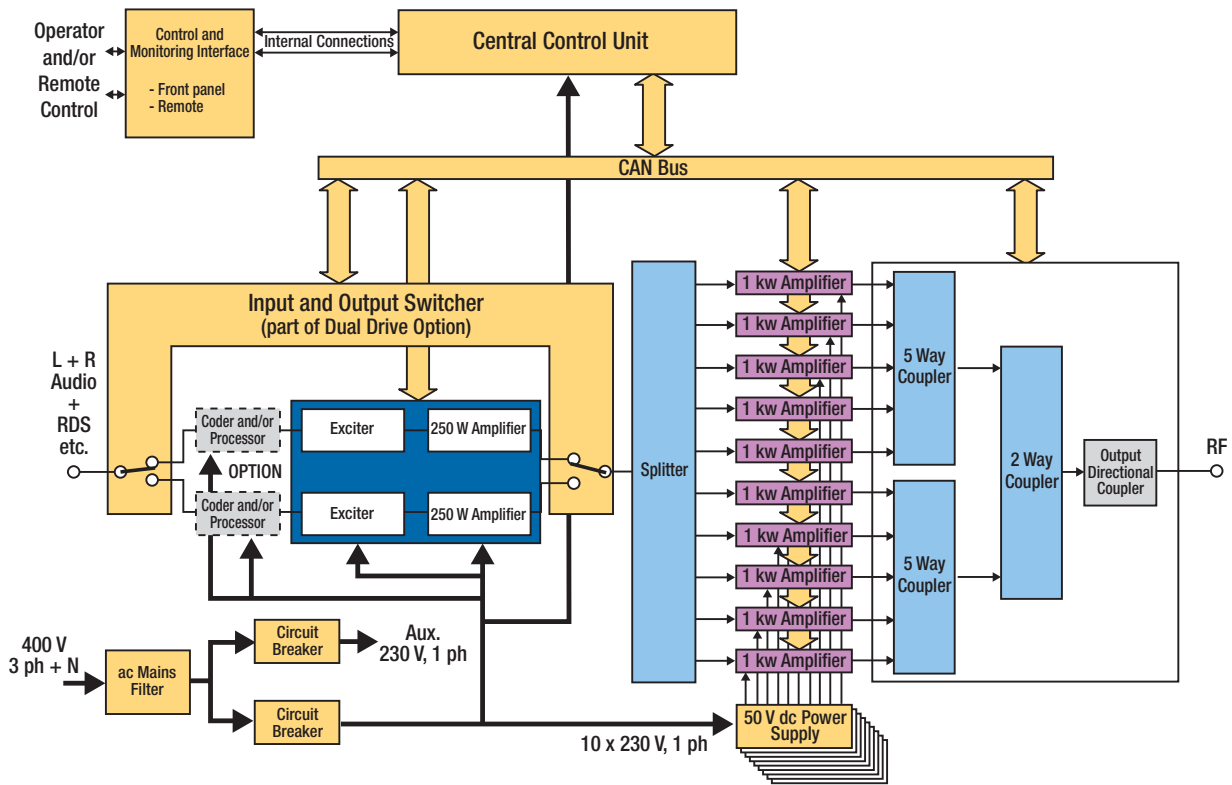
A "led" switches on the front panel in the event of a failure.

The failure is displayed, and the alarm launches a relay (RC/RM) and/or sends an email (TCP/IP) simultaneously. These control and monitoring functions developed by ECRESO enable an easy and optimal maintenance of the system.



Color Screen
Password entry and Remote Control interface configuration

Neptune 10 kW Transmitter Block diagram



Redundancy of the system

The philosophy of ECRESO is to ensure the user an optimal redundancy and therefore achieve maximum reliability.

Double drive FM Exciter (HELIOS) and IPA are available (optional).

Each MOSFET transistor has a stand-alone power supply that enables a

transmission "on the air" (> at 3 dB) in case of power failure. In addition, the PA modules are "hot-pluggable" enabling an easy replacement without transmission break.

In case of error or failure, the concerned module of the system reports an alarm to the control unit.

The 5 kW can be easily upgraded to a 10 kW device with the simple addition of PA modules and a WILKINSON coupler.

We offer you the best operation solution.

General >>>

Output Power:	5 kW or 10 kW
Frequency range:	87.5 – 108 MHz programmable in the band with 10kHz steps
RF Output impedance:	50 Ω
Output Connector:	1" 5/8 EIA
RF control Output:	10 mW
Consumed power:	< 19 kVA (10 kW) < 9.5 kVA (5 kW)
Frequency stability:	100 Hz per year
Modulation type:	FM - F3
Spurious and harmonic suppression:	> 75 dB
Pre-emphasis:	0 μs / 50 μs / 75 μs
Three-phase power supply:	320 VAC – 400 VAC, 47 – 63 Hz, 5 cables (Ph1, Ph2, Ph3, not floating neutral, ground)
Power factor:	> 0.90
Temperature range:	5° C – 45° C (Nominal operation) -10° C – 50 °C (Maximum)
Cooling:	Forced air 1200 l/s – 566 CFM – 4350 m3/H (10 kW) Forced air 620l/s -292 CFM 2232 m3/H (5 kW)
Sizes:	42 U enclosures 2100 (H) x 800 (l) x 800 (L) mm 82.7 (H) x 31.5 (D) x 31.5 inch
Weight:	± 580 kg - 1230lbs (10 kW) ± 450 kg - 992lbs (5 kW) Each 1 kW module < 15 kg -33lbs
Height:	< 1900 m (6233 feet) at 50 Hz

RDS SCA (AUX) Input:

Level Internally adjustable

INTERNAL STEREO CODER (OPTIONAL)

Stereophonic separation L/R:
> 50 dB from 80 Hz to 15 kHz
(-3 dB/10 Hz)

Output level MPX: 8.7 V peak to peak

Output level 19 kHz: 870 mV peak to peak

RECEIVER (OPTIONAL)

Connector:

6.3 mm stereo jack

Output level: 75 mV / 32 Ω

NON- STANDARD AC NETWORK ADAPTATION

Optional isolation

	Mono	Stereo	MPX (Multiplex)
RF impedance	> 2 kΩ unbalanced	> 2 KΩ unbalanced	> 5 kΩ balanced
Connector	BNC	XLR	BNC
Input level for a ± 75 kHz deviation	-3 dB → +18 dBu	-6 dB → +12 dBu	-3 dB → +12 dBu
Bandwidth	> 40 Hz to 15 kHz @ 0.5 dB	> 40 Hz to 15 kHz @ 0.5 dB	40 Hz to 55 kHz @ 0.2 dBu 20 kHz to 100 kHz @ 0.4 dB
Out of band rejection	> 35 dB to 19 kHz	> 50 dB @ 38 kHz	-
Distortion ± 75 kHz deviation	< 0.25 %	< 0.25 %	< 0.25 %
AM Modulation	< 1 %	< 1 %	< 1%
Signal / FM Noise	> 70 dB	> 70 dB	> 70 dB
Intermodulation Distortion (IMD)	< 0.05 %	< 0.05 %	< 0.05 %

Equipment designed and manufactured in France.

Fax response >>> NEPTUNE 5 & 10 KW TCP/IP FM TRANSMITTERS

Please send me an offer

I would like the visit of a sales person

Please contact me

Other:

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Name:

Company/Department:

Title:

Address:

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Country:

Phone number:

Fax number:

E-mail: