

PA10-125FL



**125kW CW RF AMPLIFIER @ 352,20MHz
LIQUID COOLED**

ISM CW AMPLIFIER

General information

The PA10 series belongs to the Very High Power Scientific application product family of fully solid state technology, liquid cooled amplifier.

The **PA10-125FL** is operating at the frequency of 352,20MHz, with 125kW CW output power with the capability to operate with pulsed signal, maintaining a very high linearity.

The amplifier have been designed to offer to the customer high performances, high reliability and great simplicity in operation and maintenance procedures, being at the same time extremely compact, using only 24 x 5,5 kW amplifier modules to obtain the nominal power of 125 kw in three 19" racks.

In fact each of the three 45kW amplifier rack is made by 8 amplifier modules, combined through the relevant 8 way combining system, with plug-in RF connection. The modules are mounted on sliding rails, so any maintenance and check could be performed directly on the field.

The 5,5kW amplifier module itself it is fully designed with direct RF connection, as well as DC supply connection , to minimize the use of cables and for a top level on field maintenance. The RF section combines 6 RF final amplifier of 1,2kW, and is driven by a dual stage high gain pre driver, with all the relevant controls section. Three AC/DC power supplies are enclosed in each module, for a high redundancy in case of failure.

The control system is based on top level PLC system, with the relevant 7" touch screen display. It manages all the parameters. Alarms and control of the system, it is ready for remote access though web browser interface or to be controlled by SNMP management system.

The final three way 125kW combining system it is available both with 6"1/8 RF out connector or with optional WR2300 half height coaxial line. It include the relevant water cooled loads.



Compact design technology allows 5,5kW output power amplifiers in only 19" drawer three units height combining 6 RF blocks of 1,2 kW CW each , with the relevant pre driver section.



The 19" drawer three units height also accommodates 3 AC/DC switching power supplies capable of 3,5kW each, and the relevant capacitors bank section or optimal pulsed operation capability.

Key Features (referred to 125kW output)

- **FULLY SOLID STATE** amplifier modules.
- **352,20MHz** operating frequency.
- **CW and Pulsed Signal** operating mode.
- **1mW** input power (0dBm).
- **>60% Efficiency** (Cooling system included).
- **RF Signal** free from spurious and harmonic signals.
- **LD-MOS** of last generation in order to have ruggedness, reliability, and high efficiency.
- **Redundant 24 x 5,5kW** RF amplifiers modules.
- **High Tolerance** mains voltage ($\pm 20\%$) is accepted by the transmitter.
- **IEC 215 compliant** with the personnel safety requirements applied
- **Remote Operation** compliant to IEC 864-1 rule (all option are available).
- **Control System** based on top level PLC system , including 7" touch screen display and web browser remote control.
- **PROTECTION AND CONTROL SYSTEMS**
 High speed external interlock system ($<5\mu\text{s}$) , for critical RF shut off.
 Mains parameter setting available (password protected)
 Main RF parameters protection
- **High Capacity Liquid cooling system** fully integrated.
- **Ultra Compact design** up to 125kW in just three 19" Rack 42U height.

TECHNICAL SPECIFICATIONS

GENERAL

• Frequency range	352,20 MHz
• Operating mode	CW or Pulsed
• Bandwidth @1dB	$> \pm 1$ MHz
• Output power	125kW CW
• Input Power	1mW (other level on request)
• Efficiency	60% typical (cooling system included)
• Harmonic emission	≤ 30 dBc
• Spurious emission	≤ 60 dBc
• Linearity (range 12.5kW to 112.5kW)	± 0.5 dB
• Temperature Gain stability (dynamic)	$\leq 0,5$ dB ($5^{\circ}\text{C} \div 40^{\circ}\text{C}$)
• Temperature Gain stability (static)	$\leq 0,1$ dB (25°C constant water cooling)
• Phase stability	$\pm 3^{\circ}$
• RF output impedance	50Ω (6-1/8" ventilated or WR2300 Half Height)
• RF input	50Ω (N connector)

PULSED OPERATION

• Rise Time	$\leq 10\mu\text{s}$
• Pulse duration	$20\mu\text{s}$ to 100ms
• Time repetition	10Hz to 1kHz
• Duty Cycle	0.1 to 99% @ 10Hz

- Pulse Ripple $\pm 1\%$ max
- Pulse Slope $\pm 1\%$ max

ENVIRONMENTAL

- Operating temperature 0°C to $+45^{\circ}\text{C}$ (others on request)
- Relative humidity 20% to 90% non-condensing
- Altitude up to 2500 m.

METERING

The following parameters can be read on front display

- Forward power (FWD) by means a precision Peak and CW detection
- Reflected power (REF)
- RF amplifier current monitoring
- RF amplifier power monitoring
- Water fluid temperature for each subsystem
- RF subsection temperature
- Dummy load temperature
- RF amplifier status
- Amplifier interlock monitoring
- Interlock setting :
 - Forward power (FWD);
 - Reflected power (REF);
 - Water Flow;
 - Temperature

REMOTE CONTROL

Parallel interface: start, stop, standby, alarms, status, interlock, recall memory
WEB interface: TCP/IP Telemetry ; SNMP

GENERAL

Voltage power supply: 3x380 VAC $\pm 20\%$
Frequency: 50-60Hz $\pm 5\%$
Power consumption: 230kW (cooling system included)
Power factor: ≥ 0.95
Cooling: liquid cooling (320 lt/min)
Dimensions: 1850 x 1000 x 2400h mm
Weight: 1100 kg

How to Order:

PA10-125FL – 125kW CW Amplifier, liquid cooling (0dBm input)

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