

PA11-803FL



80 kW CW , 81.25 MHz SSPA
LIQUID COOLED

General information

The PA11 series belongs to the Very High Power Scientific application product family of fully solid state technology, liquid cooled amplifier.

The **PA11-803FL** is operating at the frequency of 81,25 MHz, , 80 kW CW output power and 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, combining N. 16 x 5,5 kW amplifier modules in two 19" racks to obtain the nominal power of 80 kW.

The amplifier is then structured in two 44 kW amplifier racks , each of them made up by 8 amplifier modules combined inside the rack through a suitable 8 way combining system . The modules are mounted on sliding rails to be RF pluggable, so that the maintenance and check-up can be performed directly on the field.

The 5,5 kW amplifier module itself is designed with direct RF connections , as well as DC supply connections in order to minimize the use of cables and for an easy maintenance on the field. The RF section combines 6 RF final pallet amplifier modules of 1,2 kW, driven by a dual stage high gain pre driver including the control section of the RF parameters. Three AC/DC power supplies are enclosed in each module, for a proper phase balancing of the load and high redundancy in case of failure.

The Control Unit is based on integrated microcomputer system, along with a 7" touch screen display. It manages all the parameters, alarms and controls of the system, and it is ready for remote access through a web browser interface or via the SNMP management system.

The final two ways combining system provides on a 4-1/2" connector the 80 kW RF output power and includes the relevant water cooled combiner termination loads.



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



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

Key Features (referred to 80kW output)

- **FULLY SOLID STATE** amplifier modules.
- **81,25 MHz** operating frequency.
- **CW and Pulsed Signal** operating mode.
- **1mW** input power (0 dBm).
- **≥ 60% Efficiency**
- **RF Signal** free from spurious and harmonic signals.
- **LD-MOS** last generation transistors for ruggedness, reliability, and high efficiency.
- **Redundant 16 x 5,5 kW** 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 Unit** based on integrated system with 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.
 Main parameters setting available through Control Unit (password protected)
 Main RF parameters protection
- **External Liquid cooling system** fully monitored and integrated into the control system.
- **Ultra Compact design** up to 80kW in just two 19" racks, 42ru height.

TECHNICAL SPECIFICATIONS

GENERAL

• Frequency range	81.25 \pm 5.0 MHz
• Operating mode	CW or Pulsed
• Output power	80 kW CW
• Input Power	1.0 mW (other level on request)
• Efficiency	60% typical
• Harmonic emission	≤ 45 dBc
• Spurious emission	≤ 70 dBc
• Linearity (range 10kW to 80kW)	± 1.0 dB (without precorrector) ± 0.25 dB (with precorrector)
• Gain stability	$\leq 0,2$ dB (water temperature $25^{\circ}\text{C} \pm 0,5^{\circ}\text{C}$)
• Phase stability	$\pm 0.25^{\circ}$ (water temperature $25^{\circ}\text{C} \pm 0,5^{\circ}\text{C}$)
• RF output impedance	50 Ω (coax EIA 4-1/2" or 6-1/8" on request)
• RF input	50 Ω (N connector)

PULSED OPERATION

• Rise Time	$\leq 10\mu\text{s}$
• Pulse duration	20 μs to 100ms
• Time repetition	10Hz to 1kHz

- Duty Cycle 0.1 to 99%
- Pulse Ripple $\pm 1\%$ max
- Pulse Slope $\pm 1\%$ max

ENVIRONMENTAL

- Operating temperature 5°C to +45°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 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

GENERAL

Voltage power supply: 3x380 VAC $\pm 20\%$ + N
 Frequency: 50-60Hz $\pm 5\%$
 Power consumption: 135 kW
 Power factor: ≥ 0.95
 Cooling: liquid cooling (200 lt/min)
 Dimensions: Width 1335 mm ; Depth 1200 mm ; Height 2430 mm
 Weight: 1100 kg approx

How to Order:

PA11-803FL – 80 kW , VHF CW Amplifier, liquid cooled

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