PA10-503FL

50kW 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 **PA10-503FL** is operating at the frequency of 352,20MHz, with 50kW 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 8 x 5,5 kW amplifier modules to obtain the nominal power of 50 kw in only one 19" racks.

The 8 amplifier modules are combined through an innovative 8 way combining system, with plug-in RF connection for the modules and the combining loads. 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.

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 50kW 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 8 x 5,5kW** RF amplifiers modules.
- **High Tolerance** mains voltage (± 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 (<5µs) , 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 50kW in just one 19" Rack 42U height.

TECHNICAL SPECIFICATIONS

GENERAL

Frequency range	352,20 MHz
Operating mode	CW or Pulsed
Bandwidth @1dB	> ±1 MHz
Output power	50kW CW
Input Power …….....	1mW (other level on request)
Efficiency …….....	60% typical (cooling system included)
Harmonic emission	≤ 30 dBc
Spurious emission	≤ 60 dBc
Linearity (range 5kW to 50kW)	± 0.5 dB
Temperature Gain stability (dynamic)	≤ 0,5 dB (5°C ÷ 40°C)
Temperature Gain stability (static) …….....	≤ 0,1 dB (25°C constant water cooling)
Phase stability …….....	±3°
RF output impedance	50 Ω (4-1/2")
RF input …….....	50 Ω (N connector)

PULSED OPERATION

Rise Time …….....	≤ 10µs
Pulse duration	20µs to 100ms
Time repetition	10Hz to 1kHz
Duty Cycle …….....	0.1 to 99% @ 10Hz

- Pulse Ripple ……..... ±1% max
- Pulse Slope ……..... ±1% max

ENVIRONMENTAL

- Operating temperature ..... 0°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 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 ±20%
Frequency:	50-60Hz ±5%
Power consumption:	90kW (cooling system included)
Power factor:	≥ 0.95
Cooling:	liquid cooling (80 lt/min)
Dimensions:	600 x 1000 x 2400h mm
Weight:	500 kg

How to Order:

PA10-503FL – *50kW CW Amplifier, liquid cooling (0dBm input)*

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