# **P25A**

## 1kW 2.45GHz RF source

Rev. 1 — 2 February 2023

#### **Product brief**



The P25A is a compact 1kW, 2.45GHz RF power source designed for industrial applications. It integrates two 500W production pallets with a MMIC driver, robust housing, internal isolator, and an RF exciter.

The integrated MCU-controlled exciter provides a stable low-noise RF signal, with precise control over frequency, power level, and pulse modulation. It provides system communication, calibration, temperature and current monitoring, and closed-loop control of output power.

The P24A PA module contains the same power amplifier and driver without an exciter.

#### **Features**

- 1kW CW/pulsed RF source
- MCU monitoring, control, protection
- Forward power monitoring/levelling
- Ethernet interface standard; RS-485 Modbus and SPI interfaces available as options
- Compact 26 x 13 x 4cm

### **Applications**

- Building block for high-power generators
- Materials processing
- Solid-state cooking

- Microwave chemistry
- Plasma generation





## Specification summary

RF characteristics	
maximum output power	≥ 1kW CW with 30°C water inlet temperature
programmable output power	40 to 61dBm, resolution 0.1dB
programmable frequency range	2.4 to 2.5GHz, resolution 1MHz (integer mode), 1Hz (fractional mode)
power stability	≤ ±0.5dB
efficiency	60% typical at 1kW Pout
pulse rise/fall time	40ns typical
pulse flatness	≤ 0.5dB droop across pulse
harmonic signals	≤ -30dBc at 1kW Pout
out-of-band spurious signals	≤ -70dBc
safe load mismatch	unlimited VSWR (internal isolator)
frequency reference output	10MHz ± 3ppm, 10dBm square wave output
frequency reference input	10MHz @ -10 to +20dBm (standard configuration) 2.4 to 2.5GHz @ 0dBm typical (EXT LO configuration)
RF connectors	7/16 (f) output; SMA (f) reference input/output
Control, monitor, external interfaces	
pulse modes	CW; internal pulse with external gate; external pulse
internal pulse generator	period 2µs to 128ms; pulse width 1µs to 65ms
trigger input and output	TTL input and output triggers for pulse and gate control, BNC (f)
trigger input and output monitors	TTL input and output triggers for pulse and gate control, BNC (f) incident and reflected RF power; drain current, voltage, temperature for PAs and driver
	incident and reflected RF power; drain current, voltage, temperature
monitors	incident and reflected RF power; drain current, voltage, temperature for PAs and driver
monitors  communication interfaces	incident and reflected RF power; drain current, voltage, temperature for PAs and driver  Ethernet standard; RS-485 Modbus (RTU/ASCII), SPI optional
monitors  communication interfaces  USB	incident and reflected RF power; drain current, voltage, temperature for PAs and driver  Ethernet standard; RS-485 Modbus (RTU/ASCII), SPI optional  USB 2.0 Type-C for flash drives, serial debug interface
monitors  communication interfaces  USB  interlock	incident and reflected RF power; drain current, voltage, temperature for PAs and driver  Ethernet standard; RS-485 Modbus (RTU/ASCII), SPI optional  USB 2.0 Type-C for flash drives, serial debug interface  screw terminal block
monitors  communication interfaces  USB  interlock  DC power	incident and reflected RF power; drain current, voltage, temperature for PAs and driver  Ethernet standard; RS-485 Modbus (RTU/ASCII), SPI optional  USB 2.0 Type-C for flash drives, serial debug interface  screw terminal block
monitors  communication interfaces  USB  interlock  DC power  Physical & environmental	incident and reflected RF power; drain current, voltage, temperature for PAs and driver  Ethernet standard; RS-485 Modbus (RTU/ASCII), SPI optional  USB 2.0 Type-C for flash drives, serial debug interface  screw terminal block  +32V, ≤ 60A, M5 screw terminals
monitors  communication interfaces  USB  interlock  DC power  Physical & environmental size	incident and reflected RF power; drain current, voltage, temperature for PAs and driver  Ethernet standard; RS-485 Modbus (RTU/ASCII), SPI optional  USB 2.0 Type-C for flash drives, serial debug interface  screw terminal block  +32V, ≤ 60A, M5 screw terminals  265 x 135 x 40mm, exclusive of connectors
monitors  communication interfaces  USB  interlock  DC power  Physical & environmental  size  mass	incident and reflected RF power; drain current, voltage, temperature for PAs and driver  Ethernet standard; RS-485 Modbus (RTU/ASCII), SPI optional  USB 2.0 Type-C for flash drives, serial debug interface  screw terminal block  +32V, ≤ 60A, M5 screw terminals  265 x 135 x 40mm, exclusive of connectors  3kg

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