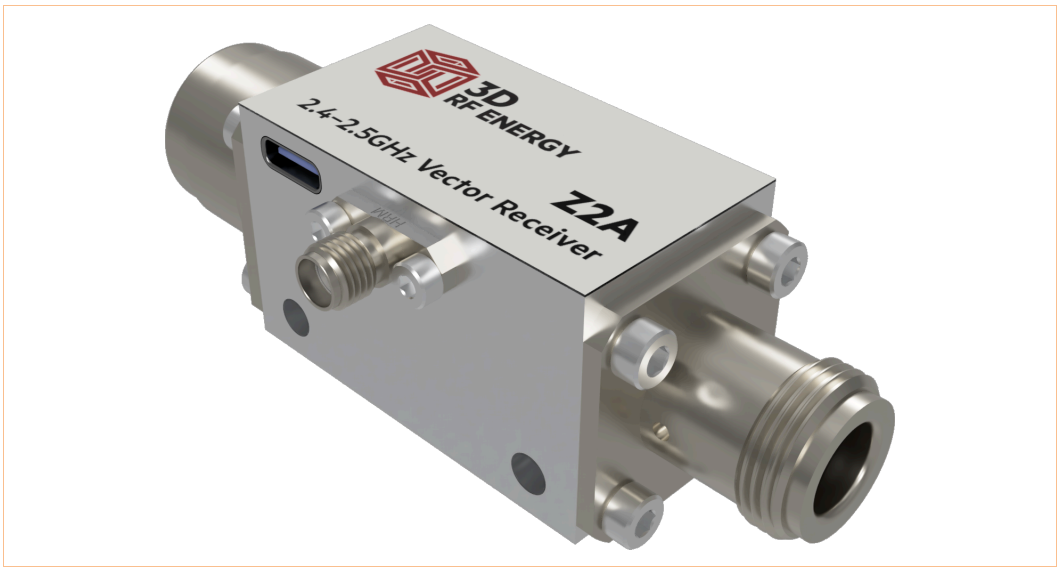
Z2A

2.4–2.5GHz vector receiver

Rev. 1 — 1 September 2020 **Product brief**



Vector receiver technology is a key component of all of 3D RF Energy's microwave energy systems, where it is used to perform high-accuracy real-time measurements of load impedance, delivered power, and output phase.

The Z2A module provides this capability to 2.4–2.5 GHz systems without an integrated vector receiver, including the P21A, M2401A, and M2402A SmartPA RF sources. It can also be used to monitor and control systems of combined sources.

The Z2A is available with N (standard) or 4.3-10 connectors. For higher power applications, the (slightly larger) Z3A provides the same capabilities as the Z2A, but with 7/16 connectors.

Features

- 500 W CW or pulsed, 2.4–2.5 GHz
- Per-pulse impedance measurements
- 30 dB power range
- Connects directly to 3DRFE sources & exciters
- Supported by RF Energy Testbench GUI
- Compact 46 x 25 x 25 mm

Applications

- Pulsed plasma generator
- Automotive microwave ignition development
- Materials processing
- Solid-state cooking development
- Microwave chemistry
- Cavity development

Specification summary

RF characteristics	
frequency range	2.4 GHz to 2.5 GHz
input power range	≤ 1 W to 500 W (limited by connectors)
reference input power level	-3 dBm to +10 dBm
measurement aperture	30 ns typical
sample speed	DC to 1 Ms/s
noise floor	≤ 5 mW (single pulse), 500 µW typical with averaging
measured power accuracy [1]	≤ 1%, incident power ≥ 10 W
measured power temperature stability	0.005 dB/°C typical
error correction	4 term, stored in non-volatile memory
directivity [1]	≥ 40 dB
source & load match	≥ 35 dB
S22 amplitude uncertainty [1]	0.05 dB typical, Γ = 0.1, incident power ≥ 10 W 0.5 dB typical, Γ = 0.9, incident power ≥ 10 W
S22 phase uncertainty [1]	1° typical, Γ = 0.1, incident power ≥ 10 W 4° typical, Γ = 0.9, incident power ≥ 10 W
RF reference output	unswitched carrier frequency reference, 3dBm typical
RF connectors	N(f) output; SMA(f) reference input/outputs
Physical & environmental	
size	46 x 25 x 25 mm, exclusive of connectors
mass	1.5kg
operating temperature	0 to 60°C

[1] After calibration