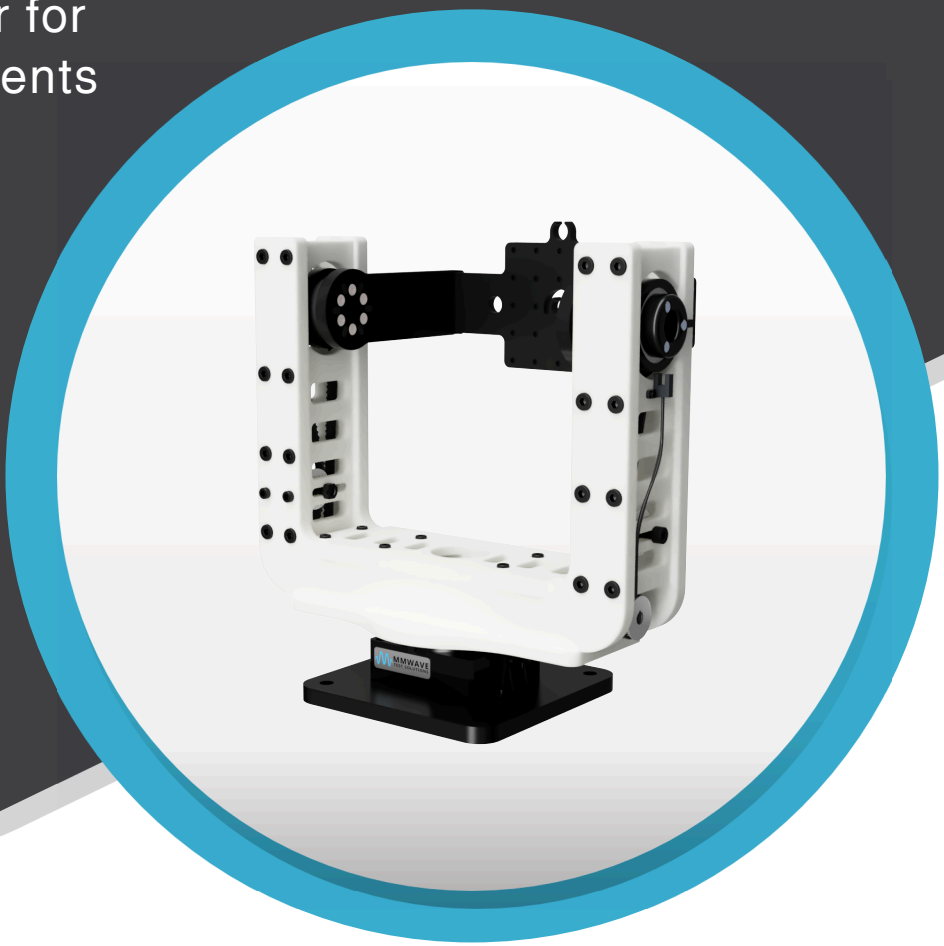
DUO3

Precision Positioner for
Antenna Measurements



FEATURES

Designed to fit Desktop-Sized Chambers

DUT size up to 24 cm width (9.5”) and 8 kg (18 lb.)

High-Quality Components

Heavy-duty instrument turntable, high-torque motors, and precision gears.

Control Software

Reference Python application included in source code.

Closed-Loop Drive System

Closed-loop motor control system to guarantee positioning accuracy

MMWAVE TEST SOLUTIONS

INTRODUCTION

The DUO3 is a compact positioner in the DUO series. Being capable of holding a DUT up to 8 kg and 24 cm width, it's the most effective compact positioner available.

The DUO3 arm is metal-free in the upper section to perform well in sensitive communication and radar tests. Quality components are used throughout the design, and secures high performance and mechanical stability in any test.

Despite it's compact size, the DUO3 does not cut any corners on quality or accuracy. It's a highly rigid design and delivers consistent performance.

HARDWARE

The DUO3 uses over-specified components in all aspects of the design. Components have been carefully selected for precision, gear ratios chosen to eliminate rounding errors, and all motors are running in an autonomous closed-loop feedback.

The azimuth turntable is instrument-grade quality, and is milled from a single aluminum block. The 1:180 gearing offers both high resolution and high torque. Rated for a load up to 55 kg, this turntable guarantees precision in the most demanding applications.

All of the arm design is CNC-machined and offers maximum strength and rigidity. It uses Polyoxymethylene (POM/Acetal/Delrin™), Polyethylene terephthalate (PET) with low dielectric constants to limit stray reflections. The upper arm is metal free with four bearings made of POM/glass and all bolts and nuts made from nylon and Fiber Reenforced Plastics.
The arms dual motor setup, one for each side, is combined with quality single-stage gears for high precision and low backlash to secure positioning precision under all loads.

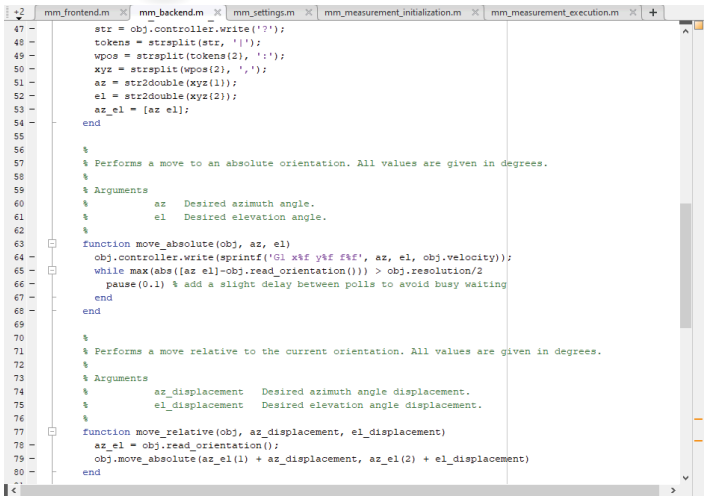
A USB-connected controller controls the motor system (Serial-over-USB), the DUO3 ship with reference application software in Python. The controller's clean native instruction set makes it easy to develop a new application in any language.

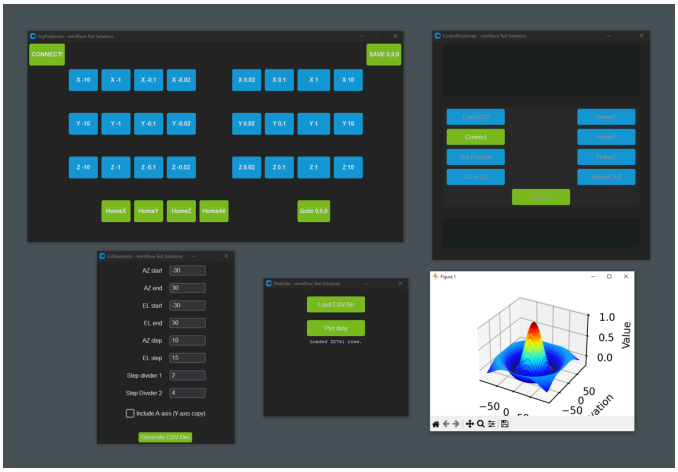
SOFTWARE

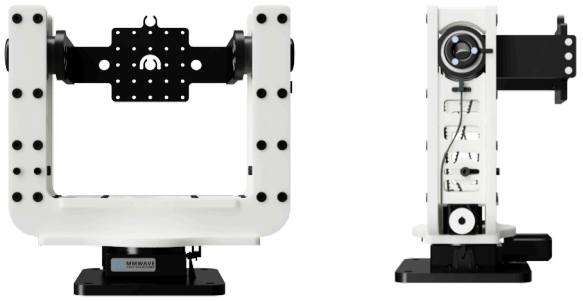
A Python control applications is included with the system.
Both reference implementations utilize a clean structure of a frontend with UI setup and manual control. A backend controls the controller board and instruments, and a settings file contains all default values for instruments, communication, and positioner range and velocity.

The applications are delivered in source code, and the clear structure and documentation allows an easy adaptation to any other software environment.

The hardware controller system is chosen for its simplicity, and its native instruction set is designed for controlling multi-axis positioners. It makes it uncomplicated to develop a new application in any other software language.







DUO3 SPECIFICATIONS

AUT/ DUT dimensions	Up to 24 cm width (9.5”) and 8 kg (18 lb) load.
Positioner dimensions	W 40 x H 36 x D 15 cm, weight 7 kg (15 lb.)
Horizontal / Azimuth platform	0.01° full step (1:180) Holding torque 44.5 N-m (32.8 lb-ft) Rotation velocity 25° / sec CNC milled from brass and aluminum, black anodized Built-in slipring for continuous rotations
Vertical / Elevation	0.1° full step (1:18) Holding torque 21.6 N-m (15.9 lb-ft) Rotation speed 100° / sec Dual motor to avoid torque twisting Built from Delrin/POM, and nylon, metal free upper arm Dual POM bearings in each of the two arms
Controller system	Multi-axis microprocessor-based stepper controller Controlled via Serial-over-USB Python reference control application USB 1.1 connected (Type A connector) Closed-loop drive for each of the three motors
Power supply	Fanless 24 Volt 90W – 100-240V mains voltage

Contact us at info@mmwavetest.com for more information

Mmwave Test Solutions is a company specializing in positioners, anechoic chambers, and similar technologies for mmWave and microwave measurements. We design and manufacture own standard products, and can deliver full-custom solutions as well.