DUO5-500

Precision Positioner for
Antenna Measurements

FEATURES

Designed for Large Device-Under-Test

DUT size up to 50 cm width (20”) and 14 kg (31 lb.)

High-Quality Components

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

Quality Software

Clear structured Python and MATLAB source code

Closed-Loop drive system

Closed-loop motor control system to guarantee positioning accuracy

MMWAVE
TEST SOLUTIONS

INTRODUCTION

The DUO5-500 is the largest positioner in the DUO series, and holds an AUT/DUT up to 14 kg and an impressive 50 cm width.

Like our other positioners in the DUO series, the DUO5-500 arm system is engineered from polymer plastics and is 100 percent metal free in the upper section to perform well in communications and radar antenna applications.

Quality components are used throughout the design to secure the highest mechanical precision, and the DUO5-500 will offer high resolution and accuracy year after year.

HARDWARE

The DUO5-500 uses over-specified quality components to secure continuous reliable performance. Components have been carefully selected for precision under maximum load, and all motors are running in closed-loop feedback from digital encoders to guarantee the quality.

The azimuth turntable is instrument-grade in cast aluminum, and the 1:180 gearing offers both high precision and high torque. The turntable is rated for 55 kg load, guaranteeing the performance even in the most demanding applications.

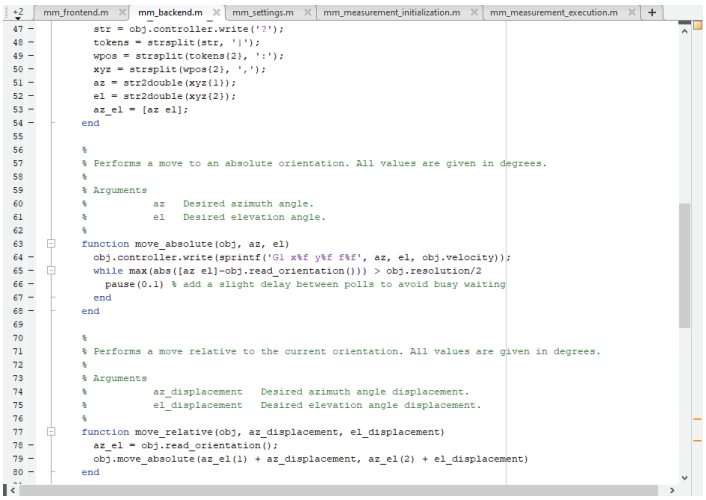
The arm design is CNC-machined to tight tolerances, offers maximum strength, and uses Polyoxymethylene (POM/Acetal/Delrin™), Polyethylene terephthalate (PET), and FR4/FRP. These materials all offer a low dielectric constant to limit stray reflections, and will withstand high chamber temperatures.

The arm uses a dual motor setup, one for each side, combined with quality single-stage gears for high accuracy, low backlash and holding torque. The belt drive system uses dual timing belts, a significant upgrade from the traditional single 6 mm belt, guaranteeing high precision under all loads.

A USB-connected controller controls the motor system (Serial-over-USB) and comes with reference applications in both Python and MATLAB. The controller's clean native instruction set makes it easy to develop a new application in any language.

SOFTWARE

Control applications for MATLAB and Python are 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.

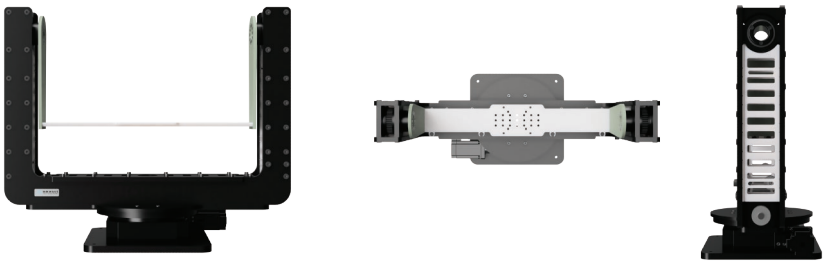


The applications are delivered in source code, and the clear structure and documentation allows an easy adaptation to any other software environment.

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.

python™

MATLAB



DUO5-500 SPECIFICATIONS

AUT/ DUT dimensions	Up to 50 cm width (20”) and 14 kg (31 lb)
Positioner dimensions	W 70 x H 46 x D 27 cm, weight 22 kg (48 lb)
Horizontal / Azimuth	Resolution 0.01° full-step (1:180), 0.0025° micro-step Holding torque 45.0 N-m (61 lb-ft) Weight capacity up to 55 kg Max rotation speed 25° per second Built from brass and aluminum, black anodized
Vertical / Elevation	Resolution 0.1° full step (1:18), 0.025° microstep Holding torque 58.0 N-m (78.6 lb-ft) Max rotation speed 35° per second Built from Delrin/POM, PET, aluminum in lower part Built from Delrin/POM, ABS, PET and FR4 in upper part Dual POM bearings in each arm Upper arm is 100 % metal free
Controller system	Multi-axis microprocessor-based controller Controlled via Serial-over-USB Python and MATLAB control UI USB 1.1 connected, Type A connector Closed loop drive stage for each of the three motors Detachable crosshair laser for DUT alignment
Power supply	24 Volt, 12.5 Amp – 100-240 Volt mains
Configuration options	Customized arm length and DUT backplate layout 12-channel slipring, 5-channels available each 10 Amp

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 represent select US companies, as well as design and manufacture own anechoic chambers and positioner systems.

We provide standard products, modified standard products, and full-custom designs.