DUO5.5

Precision Positioner for
Antenna Measurements

FEATURES

Designed for Large Device-Under-Test

DUT size up to 83 cm width (32”) and 18 kg (40 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 DUO5.5 is the largest positioner in the DUO series, and holds an AUT/DUT up to 18 kg and an impressive 83 cm width.

Like our other positioners in the DUO series, the DUO5.5 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 DUO5.5 will offer high resolution and accuracy year after year.

HARDWARE

The DUO5.5 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. This guarantees the performance even in the most demanding applications.

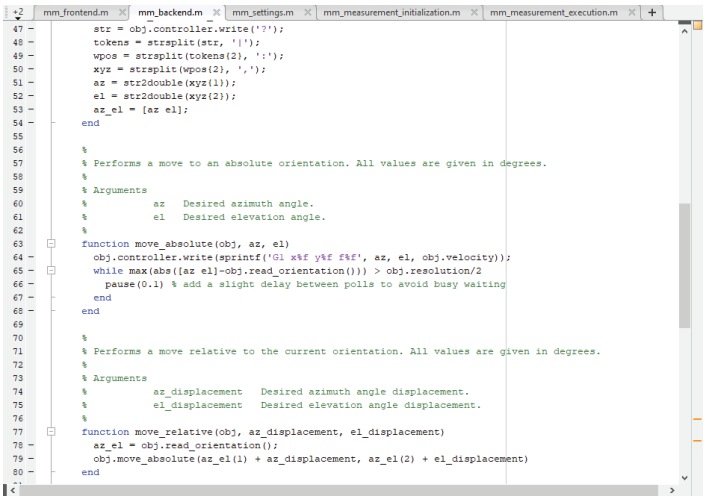
The arm design is CNC-machined to precision, offers maximum strength, and uses Polyoxymethylene (POM/Acetal/Delrin™), Polyethylene terephthalate (PET), and FR4/FRP. These materials all offer a low dielectric constant to limit stray reflections, and will withstand high chamber temperatures.

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.

A USB-connected controller controls the motor system (Serial-over-USB) and comes with reference applications in 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 Python (and Matlab) are included with the system.
The 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 movement in absolute positions. It makes it uncomplicated to develop a new application in any other software language.

python™

MATLAB

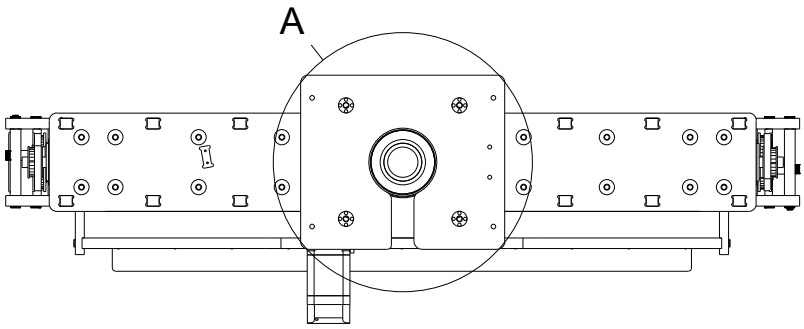
DUO5.5 SPECIFICATIONS

AUT/ DUT dimensions	Up to 83 cm width (32”) and 18 kg (40 lb).
Positioner dimensions	W 105 x H 72 x D 27 cm, weight 29.5 kg (65 lb).
Horizontal / Azimuth	Resolution 0.01° full-step. Holding torque 90 N-m (122 lb-ft). Closed-loop single motor. Max rotation speed 25° per second. Brass and aluminum instrument platform, black anodized.
Vertical / Elevation	Resolution 0.1° full step (1:18). Holding torque 72 N-m (53 lb-ft). Closed-loop dual motors. Max rotation speed 100° per second. Built from Delrin/POM, PET, and aluminum in lower part. Built from Delrin/POM, ABS, PET, and FR4 in upper part. Dual POM bearings in each arm. Upper arm is metal free to limit stray reflections.
Controller system	Multi-axis smart-controller. Controlled via Serial-over-USB. Python (and Matlab) application reference code. USB 1.1 connected, Type A connector. Detachable calibrated boresight laser for initial alignment.
Power supply	24 Volt 260 Watt, 100-240 Volt mains input.
Other	12-channel slipring. Six in use for elevation, six available.

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 manufacture anechoic chambers and positioner systems, and represents select US companies as well.

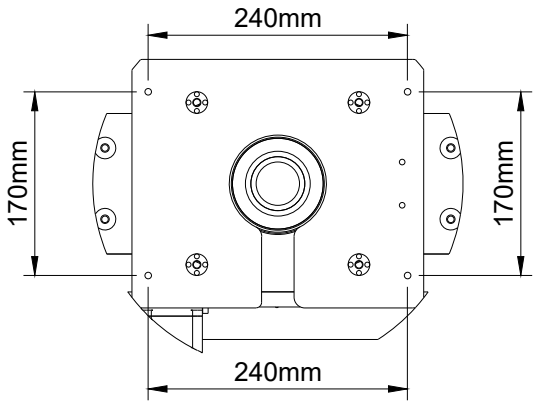
We provide standard products, modified standard products, and full-custom designs.

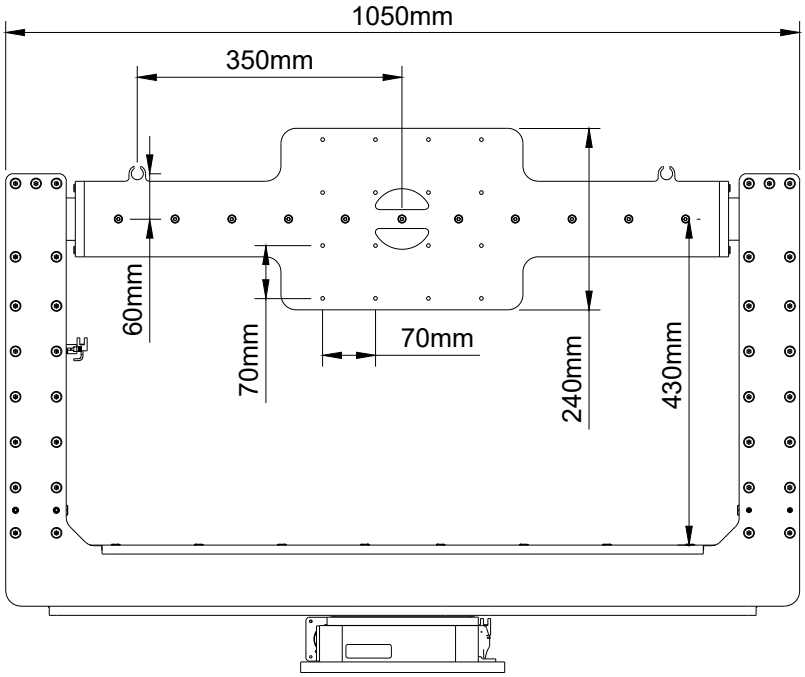


BOTTOM VIEW

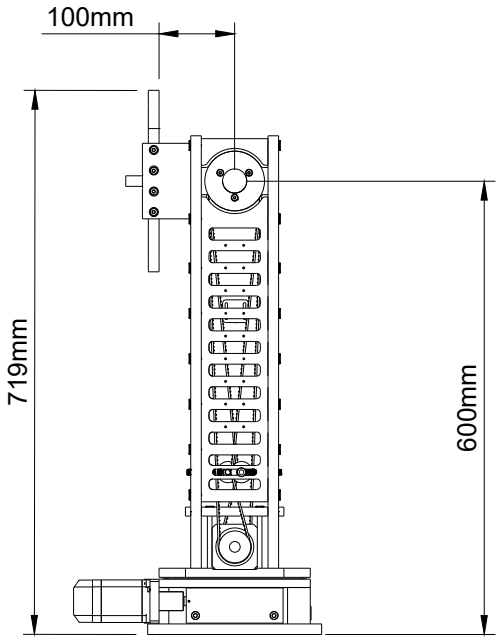
A

BOTTOM MOUNT HOLES

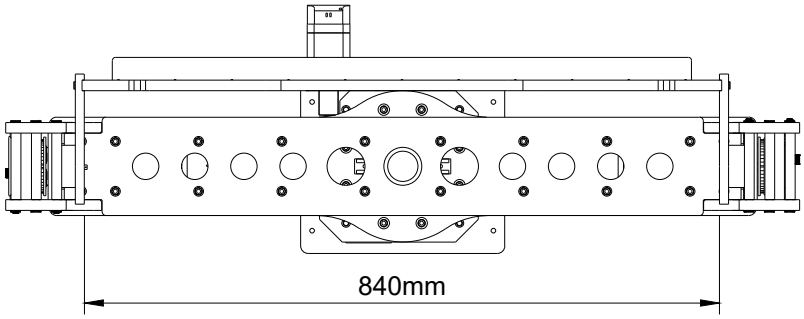




FRONT VIEW



SIDE VIEW



TOP VIEW

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DUO5.5 DIMENSIONS R23.2