D6050-XX Series Multi-Axis Positioner

Features and Specifications

Introduction

Overview

The D6050 is a highly versatile and ultra-accurate multi-axis positioner system suited for most antennas. The standard D6050 package consists of a 2-axis positioner, our powerful DAMS software suite, precision RF cables and rotary joints, all tools and documentation, plus DUT mounting hardware and more. All of this is backed with our 3-year warranty.

Measurement Capabilities

- Far Field (gain, beamwidth, efficiency, directivity, radiation patterns, RCS, and more!)
- 2D & 3D Spherical Measurements (AZ over EL, AZ over EL over freq. and more!)
- Spherical Near Field (optional)
- Phase Center Measurements

Highlights

- Multiple configuration options
- Indexable mast offset up to 23" from center
- Non-metallic DUT mounting axis
- Ultra-high precision (up to 0.02º)
- Ideal for most antennas up to 25 pounds

Configurable Models / Options

The D6050 platform is capable of operation from DC to 67 GHz with standard coaxial components and DC up to 110 GHz with waveguide components. Other upgrades and options include automated Z-axis, auto-polarization switch, or high-precision worm-driven non-metallic head upgrade. The D6050 can also be configured to include up to 5-axes as well. Complete turnkey packages also available including network analyzer, reference horn, laptop, etc.
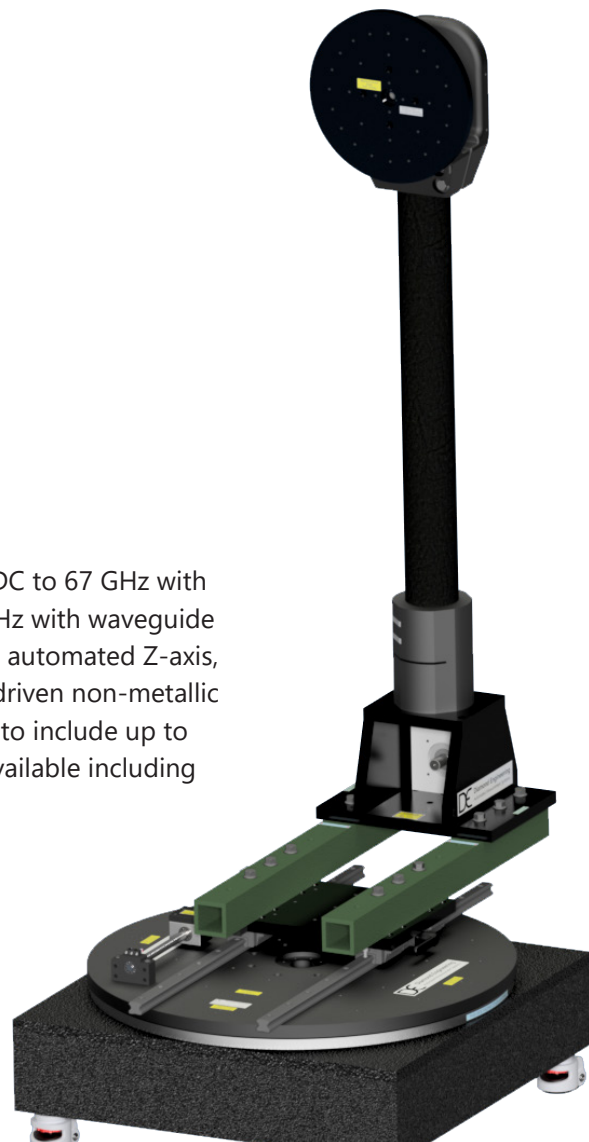
Specifications

Positioner

Turntable

Frequency Ranges (GHz):	Coax: DC to 6, 18, 40, 50, or 67
	mmW: DC to 75 (V-Band), 90 (E-Band) or 110 (W-Band)
Resolution:	0.02º
Drivetrain:	Precision worm gear table with 1.8º stepper motor
Gear Ratio:	90:1
Movement Range:	0-360º or ± 180º (re-indexable hardware limits)
Communication Options:	12-channel slip ring (standard, other options available)
Position Feedback:	Optional encoder (default open loop, position tracked by software)
Weight (positioner only):	100 lbs (45.5 kg) with slide rails
Positioner Max Speed:	4 RPM (24º per second)
AUT Mounting Options:	24" (610 mm) diameter acrylic plate, 0.750" thick, 1/4"-20 hole array
	(M6 hole array available upon request)
Weight Capacity:	Centered: 150 lbs (45.5 kg); distributed: 250 lbs (113.6 kg)
RF Rotary Joint:	Precision, low-noise rotary joint (SMA, 2.92 mm, 2.4 mm, or 1.85 mm)

Roll / Phi Axis

Frequency Ranges:	Coax: DC - 6, 18, 40, 50, or 67 GHz
	mmW: DC - 75 (V-Band), 90 (E-Band) or 110 (W-Band) GHz
Resolution:	0.05º
Drivetrain:	Belt driven with 1.8º stepper motor
Gear Ratio:	36:1 with precision planetary reducer
Movement Range:	360º continuous or ± 180º
Positioner Max Speed:	4 RPM (24º per second)
Position Feedback:	Optional encoder (default open loop, position tracked by software)
Weight (mast only):	22 lbs (10 kg)
AUT Mounting Options:	4.5" (115 mm) diameter PVC mounting plate with 10-32 hole array
	(Larger plate and/or M5 hole array available upon request)
Weight Capacity:	25 lbs (11.4 kg)
Axial Moment Capacity:	20 ft-lbs (27 Nm, 2.75 m-kg)
Lateral Moment Capacity:	10 ft-lbs (13.5 Nm, 1.35 m-kg)
RF Rotary Joint:	Precision, low-noise rotary joint (SMA, 2.92 mm, 2.4 mm, or 1.85 mm)

Z-Axis

Movement travel:	Up to 11 inches
Drive Type:	Precision ground C7 steel ball-screw
Motor:	NEMA 17 stepper motor (with manual control knob)
Max speed:	4 in/s (100 mm/s)
Movement resolution:	0.008" (0.2 mm)
Minimum travel:	0.008" (0.2 mm)
Position feedback:	None (default open loop, position tracked by software)

Electrical & Communications

Controller type:	Internal 3-axis microprocessor-based controller
Resolution:	Up to 1/32nd microstepping
Motor current:	3.125A per motor phase
Cooling:	24V fan
Communication interface:	9-pin D-Sub RS-232 (adapter included)
Included cable length:	10 feet (3 meters)
Input voltage:	24VDC 5A - 2.5 mm DC barrel connector
Power supply:	24VDC 5A, 110V / 220V input (included)

Standard Models

D6050-00	No RF Components
D6050-06	6 GHz SMA RF Components
D6050-18	18 GHz SMA RF Components
D6050-40	40 GHz 2.92 mm RF Components
D6050-50	50 GHz 2.4 mm RF Components
D6050-67	67 GHz 1.85 mm RF Components
D6050-75	75 GHz mmW V-Band RF Components
D6050-90	90 GHz mmW E-Band RF Components
D6050-110	110 GHz mmW W-Band RF Components
D6050-MMW-CFX	No RF components; configured with mounts for Copper Mountain FX series mmW adapters (up to 110 GHz)

Looking for something you don't see? Contact us! Diamond Engineering welcomes the opportunity to build custom measurement systems of any size or capability.

Additional Options

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DEPC-D	Pre-configured PC (desktop)
DEPC-L	Pre-configured PC (laptop)
DE-SIM	DAMS Antenna & Network Simulator software add-on
OPT-POL18	18 GHz SPDT RF switch auto-polarizer with cables/adapters
OPT-POL40	40 GHz SP4T RF switch auto-polarizer with cables/adapters
OPT-MP10	10" mounting plate for roll/phi axis
OPT-SR0	No slip ring (for limited ± 180º rotations only, not for 360º)
OPT-2A	Worm-gear driven head
OPT-3A	Automated Z-axis
OPT-4A	Automated Z- and X-axis with pseudo Y-axis
OPT-5A	Encoder feedback capability
DPA-PDK	DAMS Platform Development Kit

DAMS Antenna Measurement Studio

Overview

The DAMS antenna measurement studio is a data collection platform with various semi-automatic modules for post-processing DUT data. The DAMS software is capable of generating various reports and visual data representations ranging from 3D spherical plots, gain over frequency plots, Smith charts and more, contingent upon user requirements—the ideal compliment to the D6050.
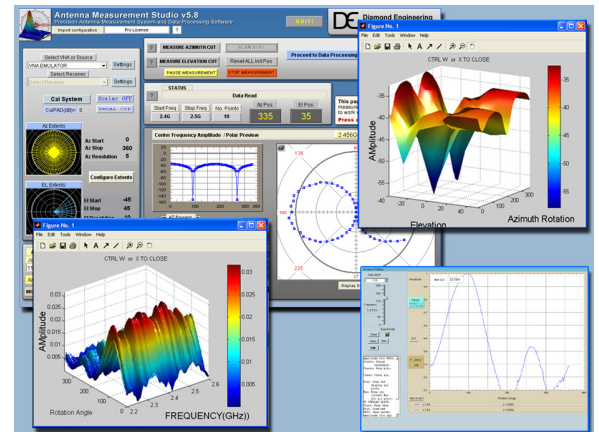
Measurement Features

- Support for power meters, voltmeters, spectrum analyzers and VNA/PNA
- Extensive post-processing modules
- Export data with variable formatting options
- Measure up to 1600 frequency points @ every increment
- Variable speed
- Move to max signal position
- Vertical / horizontal scan measurements
- CW/CCW antenna rotation
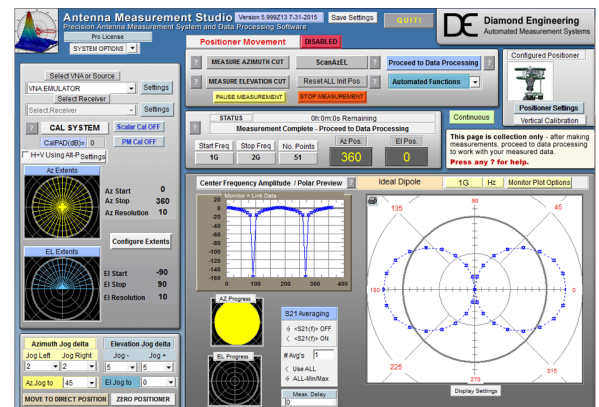

Data Processing and Visualization

- Quad-trace polar plots
- Dual-trace amplitude plots
- Compliance overlay
- 3D AZ/EL over freq
- 3D AZ over El
- Spherical plots
- Calibrated ref antenna import
- Path loss calculator
- Excel or .TXT export
- Complete data manipulation
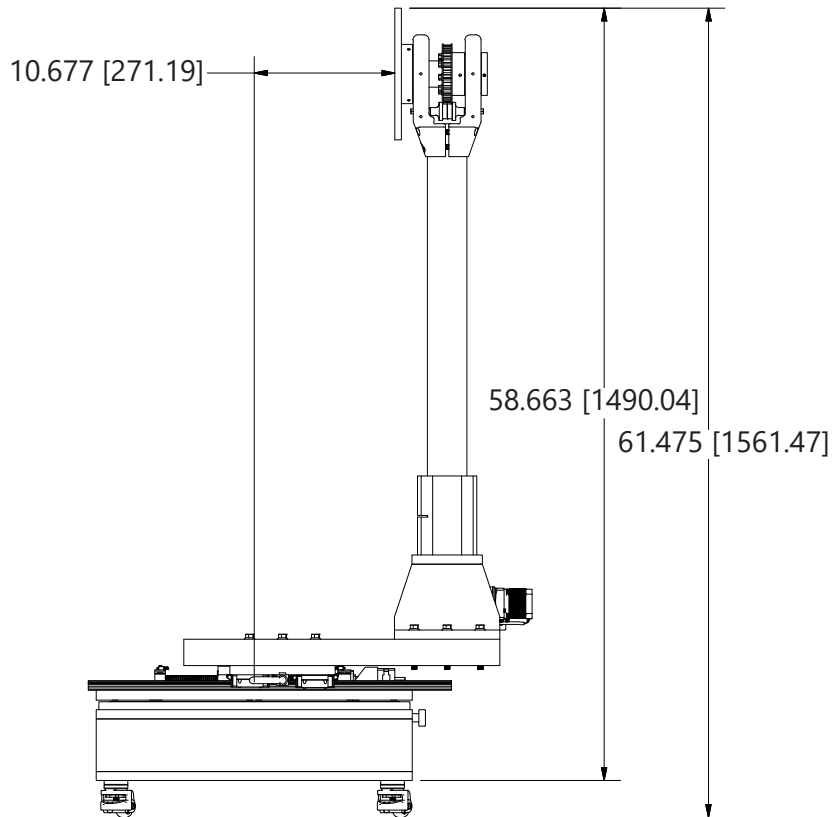- Multiple storage registers for convenience

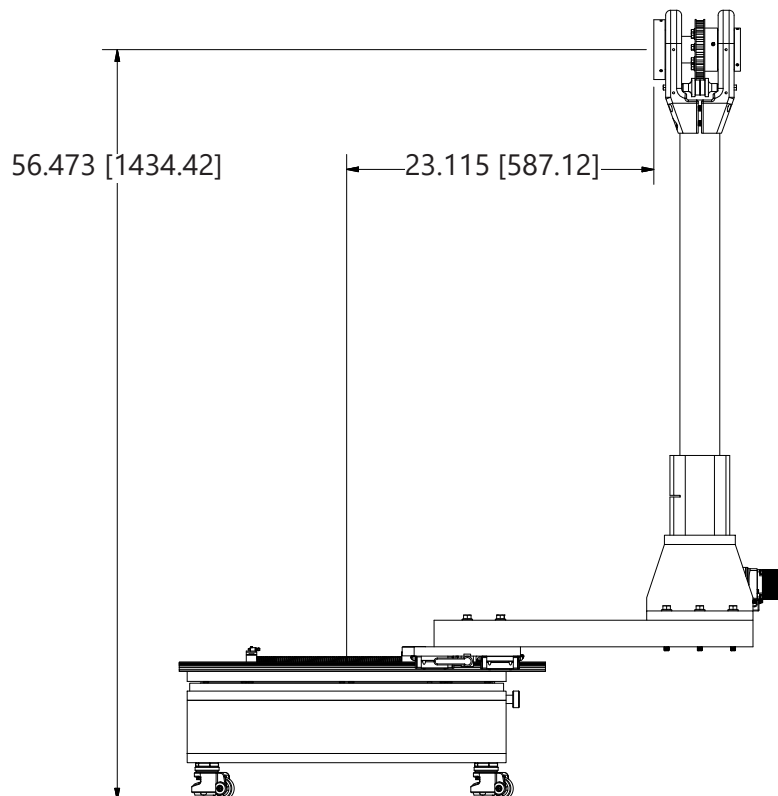# Product Drawings

Front View

Units: inches [mm]

∅10.000 [∅254.00]

46.794 [1188.58]

56.475 [1434.47]

1.855 [47.11]

9.681 [245.90]

24.000 [609.60]
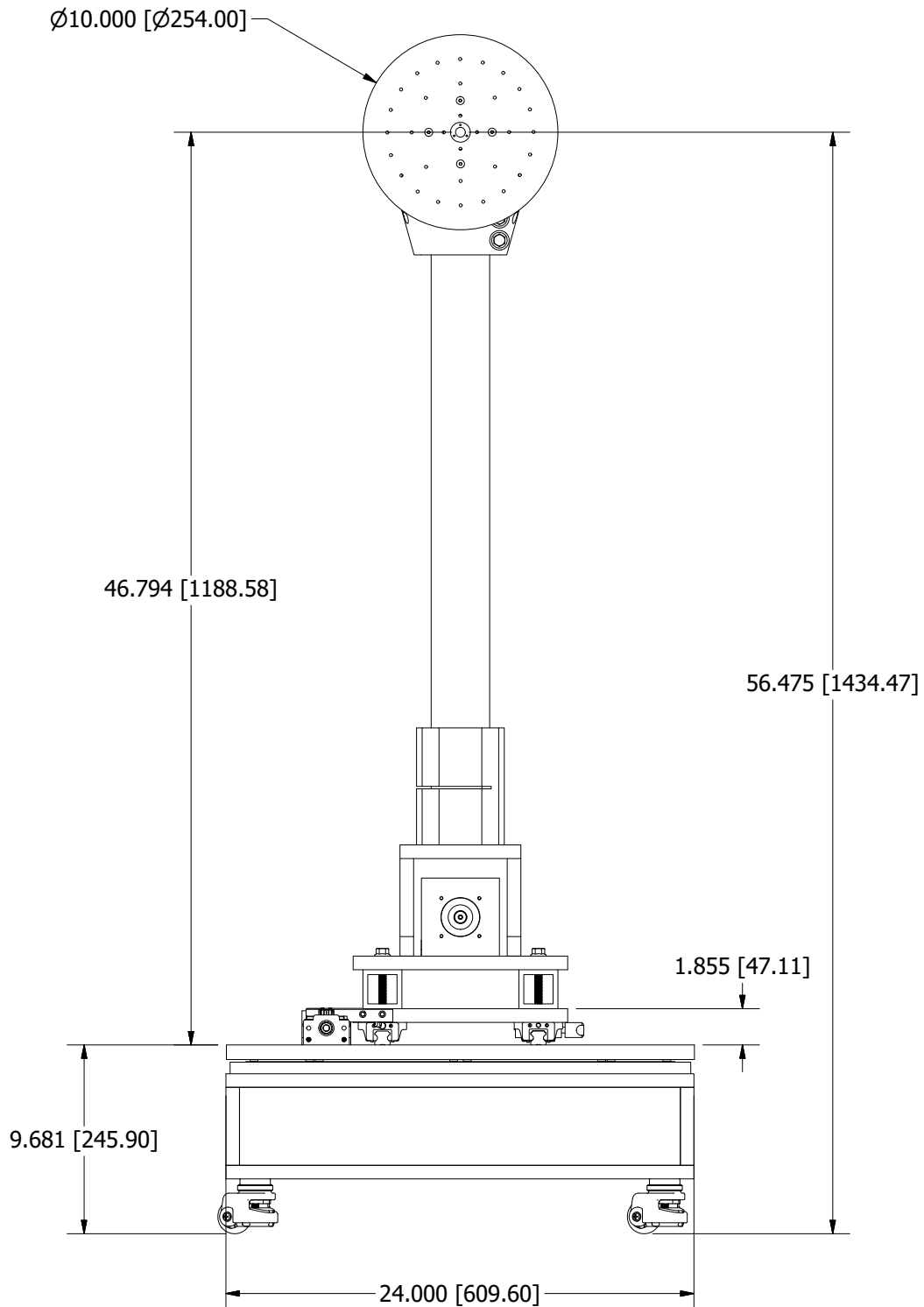
Side View

Units: inches [mm]

Standard configuration

10.677 [271.19]

58.663 [1490.04]

61.475 [1561.47]
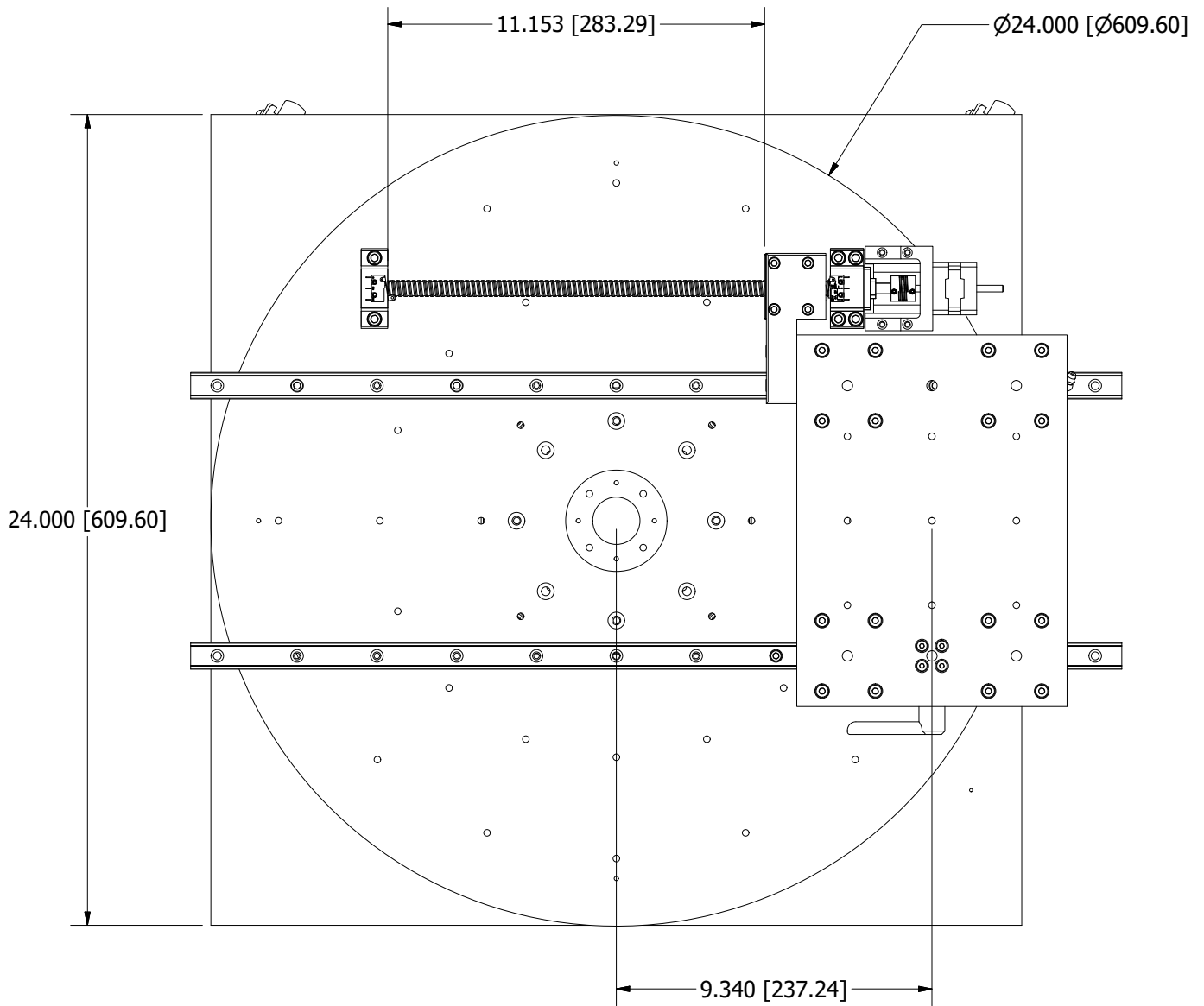
Maximum extension

56.473 [1434.42]

23.115 [587.12]

Turntable Top View

(Shown with maximum carriage plate with mast removed)

Units: inches [mm]

More Information

Software

For more information about our software, including screen shots, full specifications of capabilities and the ability to download a demo version, please visit:

http://www.DiamondEng.net/PDF/software_specs.pdf

Broadband Reference Horns

For more information about our broadband reference horns, please visit:

http://www.DiamondEng.net/PDF/de0726_datasheet.pdf

Power Amplifiers

For more information about our broadband power amplifiers, please visit:

http://www.DiamondEng.net/power-amplifiers

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