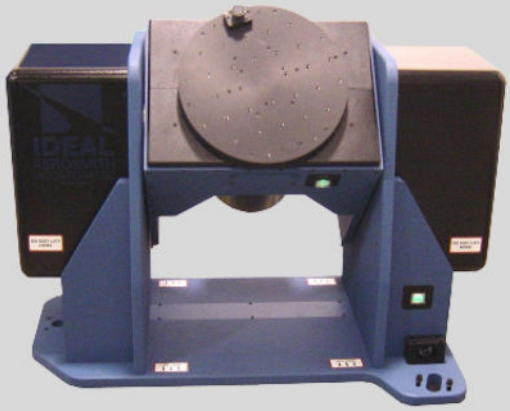
# 2102V SERIES TWO AXIS POSITION AND RATE TABLE SYSTEM



## STANDARD FEATURES

- **Position Accuracy**: ±15 arc seconds (both axes)
- **Rate Accuracy**: ± 0.001%
- Max Rate (varies depending on axis configuration):
  - Inner Axis: 300 deg/sec (standard); 2000 deg/sec (optional)
  - Outer Axis: 100 deg/sec (standard); 300 deg/sec (optional)
- Direct-drive, brushless servo system
- Precision-ground anodized aluminum tabletop
- 14 or 18 inch diameter tabletop
- Fail-safe brakes (both axes)
- Rotational freedom option of ±370° or unlimited for each axis
- AERO 5 Controller
- RS-232, IEEE-488 and Ethernet interface
- 20 kHz servo update rate
- Optional rack-mount kit with 19-inch rack, display, keyboard and mouse
- User-friendly Ideal Aerosmith Table Language (ATL)
- Trapezoidal velocity profiles with programmable velocity and acceleration
- Sinusoidal motion profiles with variable amplitude and frequency
- Position Profile, Velocity Profile, and Flight Profile Modes for simulating complex motion profiles
- Analog position and velocity input
- Analog position, velocity, and position error output
- Absolute Optical Encoders
- Capable of querying the current position, velocity, and acceleration

## DESCRIPTION

The Model 2102V Two Axis Position and Rate Table System is designed to provide precise position, rate and acceleration motion for the development and/or production testing of military and/or commercial rate and position sensors.

Accurate and reliable motion control of the 2102V Test Table is achieved with a servo-controlled system consisting of direct-drive brushless torque motors, precision absolute optical encoders, and the Ideal Aerosmith AERO 5 Controller microprocessor based, two axis motion controller.

## OPTIONS

- Custom tabletop
- Unlimited rotation for inner or both axes
- Custom user line or slip ring packages
- Vacuum/pressure line routed through the axis
- Vacuum chamber system
- Rack-mount cabinet for controller and servo amplifier chassis

***For much more detailed information, contact Ideal to request a Specification Document.***

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## 2102V Series Performance Specifications

| | Inner Axis | | Outer Axis | |
|---|---|---|---|---|
| **Range of Motion, deg** | ± 370 or unlimited | | ± 370 or unlimited | |
| **Position** | | | | |
| • Accuracy, arc sec (deg) | ± 15 (0.00417) | | ± 15 (0.00417) | |
| • Repeatability, arc sec (deg) | ± 3 (0.00083) | | ± 3 (0.00083) | |
| • Command/Display Resolution, deg | 0.0001 | | 0.0001 | |
| **Rate** | | | | |
| • Maximum, deg/sec* | Limited rotation axis: ±300<br>With optional slipring: ±2000 | | Limited rotation axis: ±100<br>With optional slipring: ±300 | |
| • Command/Display Resolution, deg/sec | 0.0001 | | 0.0001 | |
| • Accuracy, % ± Resolution (average of 10 readings, measured over 1 rev) | ± 0.001% | | ± 0.001% | |
| **Acceleration / Bandwidth** | 14 inch tabletop | 18 inch tabletop | 14 inch tabletop | 18 inch tabletop |
| • Peak, deg/sec$^2$ (2 sec. duration, sinusoidal motion, no payload) | 6700 | 6700 | 650 | 650 |
| • Max Continuous, deg/sec$^2$ | 2900 | 2900 | 280 | 280 |
| • -3dB Bandwidth (no load) | 10 | 10 | 5 | 5 |
| • Tare Inertia, lbm*in$^2$ (kg*m$^2$) | 295 (0.09) | 690 (0.20) | 7711 (2.26) | 7511 (2.20) |
| **Axis Wobble,** arc sec (deg) | 10 (0.00278) | | 10 (0.00278) | |
| **Axis Orthogonality,** arc sec (deg) | ± 10 (0.00278) between axes | | | |

* For a limited rotation axis, maximum rate may not be achievable as it is dependent upon acceleration capabilities, which vary with payload.

## 2102V Series System Physical Configuration

| | |
|---|---|
| **Table Surface Characteristics** | |
| • Diameter | Standard sizes: 14 and 18 inches (356 and 457 mm)<br>Test load mounting provisions are 1/4-20 threaded holes on a two-inch (50 mm) grid pattern. Custom tabletop and interface patterns available upon request. |
| • Face Flatness | 0.005 inches (0.127 mm) TIR (for 14 inch diameter tabletop) |
| • Face Runout | 0.002 inches (0.051 mm) @ 3.5 inch (89 mm) radius |
| • Material and Surface Finish | Aluminum with 32 RMS surface finish |
| **Test Load Capacity** | 40 lb. (18.1 Kg) centered. Maximum height 8 inches (203 mm).<br>Center of gravity must be less than 4 inches (102 mm) above tabletop |
| **User Harness/Slip Ring Options** | • Limited rotation for both axes: 54 lines at 5A each<br>• Unlimited rotation inner axis, limited rotation outer axis:<br>34 lines at 2A each or 48 lines at 3A each<br>• Unlimited rotation for both axes: 34 lines at 2A each or 46 lines at 2A each<br>Custom user harnesses are available. Please consult Ideal Aerosmith |
| **Vacuum/Pressure Line** | Available for tables with limited rotation both axes, or limited rotation outer axis with 48 line slipring. 100 milli-torr. 15 psig. |
| **Test Table Dimensions and Weight** | |
| • Dimensions, in (cm) | 44.7 Wide x 27.2 Deep x 31.6 High (113.5 Wide x 69.1 Deep x 80.3 High) |
| • Weight, lb (kg) | 435 (197) |
| **Controller** | Refer to AERO 5 Data Sheet for more detailed information. |
| • Type and Configuration | AERO 5 Controller |
| • Communication Interface | RS-232, IEEE-488 and Ethernet ports available to user |
| **Analog Input** | ±10 V input proportional to position or velocity with resolution of 0.31 mV |
| **Analog Output** | ±10 V output proportional to position, velocity or position error. Res: 0.31 mV |

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