Agilent Labware MiniHub

Data Sheet

Figure 1: Agilent Labware MiniHub models configured for mixed labware storage. Labware MiniHub for the Agilent BenchCel (G5471A) is shown on top, while the MiniHub model for systems is shown below (G5472A).

Applications

- Laboratory automation
- Genomic workflows and assays
- ELISA and cell-based assays
- Drug discovery
- High-throughput screening
- Compound management
- Secondary screening and ADMET assays
- Enzyme assays
- and more...

Introduction

The Agilent Labware MiniHub is a rotating random-access device for presenting and storing SBS-format labware in laboratory automation systems. An efficient modular unit, the Labware MiniHub features user-configurable shelf spacing that easily accommodates a mix of microplates, tube racks, deep-well microplates, and pipette tip boxes while maintaining a compact footprint.

The Agilent Labware MiniHub is designed with your applications in mind. Small but flexible, and safer than other alternatives, the Labware MiniHub solves all your room-temperature storage needs.

Agilent Technologies

Revolutionary flexibility

Traditional storage devices use fixed-pitch racks (fixed height between shelves), permitting only one type of labware per carousel. To use a mix of labware types, you must employ different carousels, thus taking up valuable system real estate and limiting the choice of labware types on small storage devices.

A novel concept in labware storage, stackable spacers in the Agilent Labware MiniHub allow the height between shelves to be adjustable, thus permitting different labware types in the same carrousel and easily creating multiple locations for storage of any given labware. Unique shelf design permits both portrait and landscape access for most robots. In addition, the size of cutouts in the shelves fits popular filter plates, preventing contamination issues.

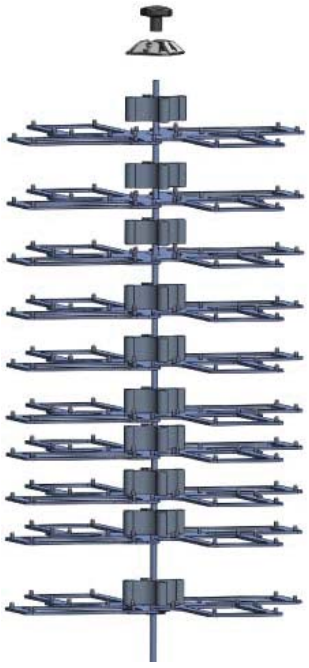

Figure 2: The revolutionary design permits configurable shelf spacing, accommodating labware of different heights.

Technology

Remarkable performance with excellent positional accuracy

The Labware MiniHub uses the same direct-drive technology that is employed by the Agilent Direct Drive Robot (DDR) to offer the best reliability with the highest levels of safety. With infinite bi-directional rotation, the Labware MiniHub never needs to unwind and always takes the shortest route to its target position. With a brushless motor and the bearing as the only moving parts, the mechanical design is simple, efficient and maintenance-free, thus ensuring high levels of dependability and a reduced cost of ownership. Positional accuracy is guaranteed by combining a high resolution optical encoder with the stepper motor.

Safety and crash recovery

The Labware MiniHub use of direct drive reduces the drive inertia and enables smooth accelerations and a continuous force feedback loop at all times. Rounded edges on all surfaces, the avoidance of any major pinch point, and a maximum linear speed below 250 mm/s increase the overall safety of the Labware MiniHub. In the unlikely event of a crash or interference, the motors will immediately stop. After removing the obstacle, the Agilent VWorks Automation Control software will permit continuation of the previous action in the protocol.

Figure 3: Cutouts in the shelves are suitable for holding filter plates.

Software control

The Labware MiniHub is easily controlled using VWorks Automation Control software or third-party automation software through the available ActiveX interface. Both options will give the user access to the diagnostics interface to easily set up and teach the Labware MiniHub.

Features & Benefits

- Easy re-configuration without tools or additional hardware
  - Unique 4-position shelves accommodates all SBS-footprint labware
  - Stackable 25.1 mm spacers permits different labware heights
- Performance
  - Plate presentation time is < 5 seconds
  - Automatically uses shortest route to target position (90° or 180° turns)
- Ultra-compact design
- Labware presentation in portrait or landscape orientation
- Designed with safety in mind
  - Direct drive for minimal inertia
  - Collision/resistance sensing and automatic emergency stop
  - Rounded edges to prevent puncture or other injuries
- Reliable and precise state-of-the-art direct drive technology
  - Fewer moving parts, higher reliability
  - Smooth acceleration/deceleration
  - Adjustable acceleration for safe liquid handling

Specifications

Transfer time: < 5 seconds for longest turn

Payload:
Per labware: 200 g
Maximum: 12 800 g

Repeatability: ± 0.02° Phi (± 0.5 mm)

Exclusion zone: 33 x 500 cm cylinder above the base

Labware compatibility: Supports SBS footprint labware (microplates, deep-well microplates, tube and vial racks, tip boxes), and some common filter plates

Weight:
G5471A: 10 kg
G5472A: 13 kg
G5473A: 3.6 kg

Mounting pattern: Four M5 x 60 (G5550-02377) through holes on 188 mm bolt modifies pattern, or using two M6 x 25 screws (G5550-02412) using the sliding brackets under white cover plates

Operating environment: 4-40°C, 20-90% RH non-condensing

Computer connection: RS-232 or DB9 serial port

Table 1: Regulatory compliance certification

Regulatory Compliance	Standard
EMC	
European Union	EMC Directive 2004/108/EC IEC 61326-1:2005 / EN 61326-1:2006
Canada	ICES/NMB-001:2004
Australia/New Zealand	AS/NZS CISPR 11:2004
Safety	
European Union	Machinery Directive 2006/42/EC Low Voltage Directive 2006/95/EC IEC 61010-1:2001 / EN61010-1:2001
Canada	CAN/CSA-C22.2 No. 61010-1-04
USA	ANSI/UL 61010-1:2004

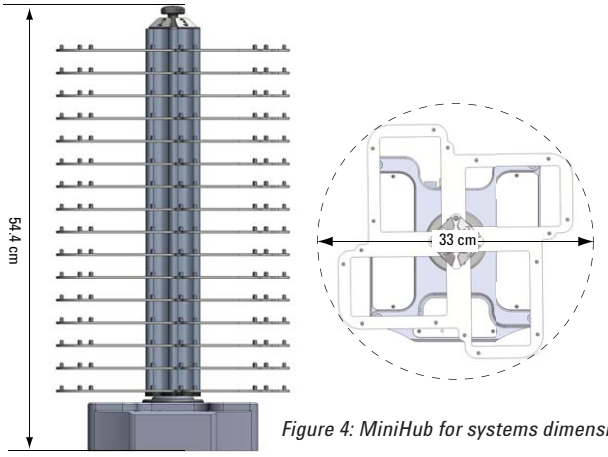

Figure 4: MiniHub for systems dimensions.

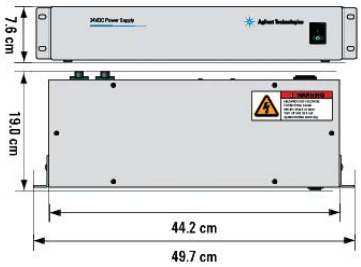

Figure 6: 24VDC Power Supply includes rack-mounting brackets.

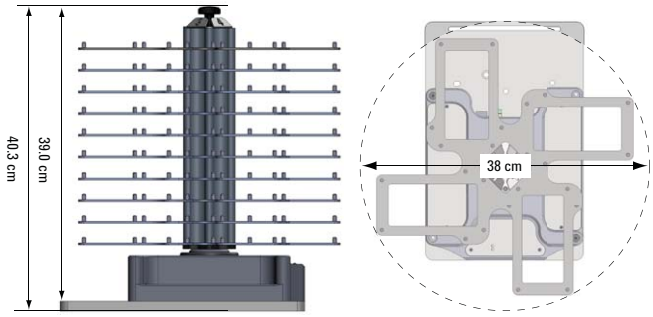

Figure 5: MiniHub for Agilent BenchCel dimensions.

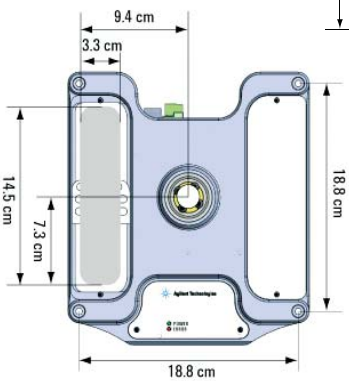

Figure 7: MiniHub base layout. Mount using the four corner M5 x 60 screws or two M6 x 25 using the sliding brackets under the cover plates.

Ordering Information

Two models of the Agilent Labware MiniHub are available:

G5471A (Systems model) was designed to be integrated in laboratory automation systems driven by a robot with extended vertical reach such as the Agilent DDR. Labware can be accessed in either portrait or landscape orientation. The Labware MiniHub includes 16 shelves to accommodate a maximum of 64 microplates (14 mm SBS format for a 25.1 mm pitch). A maximum of 18 tip boxes can be accommodated with seven shelves and triple spacing (75.3 mm pitch). This system has the smallest footprint with just a 33 cm diameter.

G5472A (BenchCel model) is ready for integration with the Agilent BenchCel Microplate Handler in laboratory workstations. The Labware MiniHub can be placed on either side of the BenchCel Handler and labware is accessed in the portrait orientation. It includes 10 shelves to accommodate a maximum of 40 microplates (14 mm SBS format for a 25.1 mm pitch) or 16 tip boxes with triple spacing (75.3 mm pitch).

Figure 8: BenchCel robot picking up microplate from the Agilent Labware MiniHub.

G5473A – 24VDC Power Supply. Included with both Labware MiniHub configurations, the power supply can power two Labware MiniHubs or two Agilent Microplate Exchangers. The general purpose laboratory 24 V power supply is able to deliver up to 175 W of continuous power to two devices. It features rack-mounting brackets for convenient setup on an Agilent BioCel System or other automation systems.

Table 2: Ordering information for spare parts

Part name	Part number
Shelves	
G5471A System model (16)	G5508-10000
G5472A BenchCel model (10)	G5400-00007
Spacer	G5508-20009
Rod	
46.6 cm (for the system model)	G5508-20012
30.0 cm (for the BenchCel model)	G5508-20013
Standard integration plate (BenchCel model only)	G5400-20029
Fuses	
4 A	5188-8316
12 A	5188-8347

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