

RCP-DELTA

Delta Robot and Controller

Open architecture robot controller

Compact panel mount enclosure with high-reliability, solid-state disk drive

Synchronization with moving material

Program in AeroBasic™, G-Code, IEC 61131, LabVIEW®, MATLAB®, .NET, and C++/CLI

Operating ranges from 500 mm to 1300 mm

Up to 15g linear acceleration and 200 pick and place operations per minute

Optional rotation axis for part alignment

Standard IP65 protection and optional IP69K for food and chemical applications



RCP-DELTA robot with the A3200 Motion Server open-architecture controller.

Scalable Open-Architecture Robot Control

The RCP-DELTA control system is based on Aerotech's A3200 Automation controller. The A3200's networked, distributed architecture provides a scalable platform in which additional robots, I/O, and positioning devices can be easily integrated. Multiple programming interfaces provide deployment flexibility by allowing developers to work in the environment that matches their skill sets or application requirements. External sensors are supported with industry standard fieldbuses (EtherCAT, Modbus TCP, Ethernet/IP™ and others) or applications operating in the RCP-DELTA's real-time enabled Windows® operating system.

Multiple Robot Configurations

Four models support payloads up to 3 kg with X/Y operating ranges of 500/800/1100/1300 mm with an optional continuous rotation about the Z axis (yaw). IP65 level protection is standard (sealed against dust and low pressure water jets) and IP69K (sealed against dust and close-range high pressure and high temperature spray) is available for applications where periodic cleaning with high pressure water and/or steam is required.

High-Speed Durable Design

Extensive use of carbon fiber and light-weight aluminum results in a robot that is capable of sustaining 200 pick and place operations per minute with peak acceleration on the order of 15g. Spring-loaded, flexible strut connections are designed to break away upon impact to limit energy transfer and are easily replaced when damaged.

Repeatable Operation

With absolute encoders on each motor the robot never has to be referenced, even after a loss of power. The motors are also equipped with holding brakes to prevent movement of the tool when the robot is not enabled.

Preconfigured Functions

The RCP-DELTA supports all standard A3200 programming and control capabilities such as multi-block look-ahead, corner rounding, and command shaping. Additional Delta robot specific functions are included for common robotic operations such as target queues, tracking moving material, and teaching tool/part locations.

RCP-DELTA SPECIFICATIONS

Delta Robot	-500	-500R	-800(R)(HD)	-1100(R)(HD)	-1300(R)(HD)
Payload	1 kg			3 kg	
X/Y Operating Range (Diameter)	500 mm		800 mm	1100 mm	1300 mm
Z Travel	200 mm	165 mm	350 mm	400 mm	400 mm
Pick and Place Cycle Time ⁽¹⁾	0.30 s		0.33 s	0.4 s	0.45 s
Protection	IP65 standard, IP69K optional				
Repeatability X, Y, Z	±0.1 mm				
Weight	25 kg (approximate)			65 kg (standard); 100 kg (HD)	

Note:

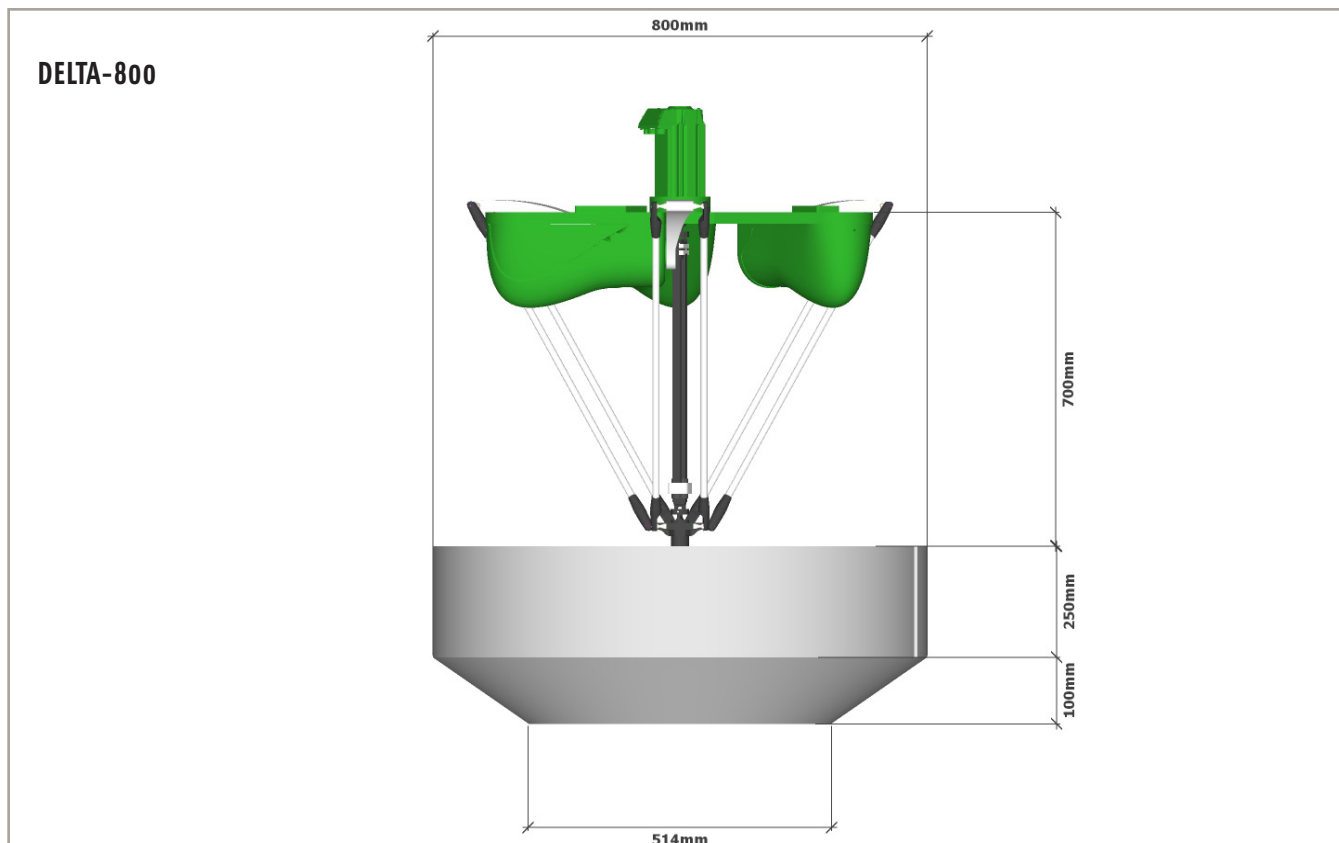
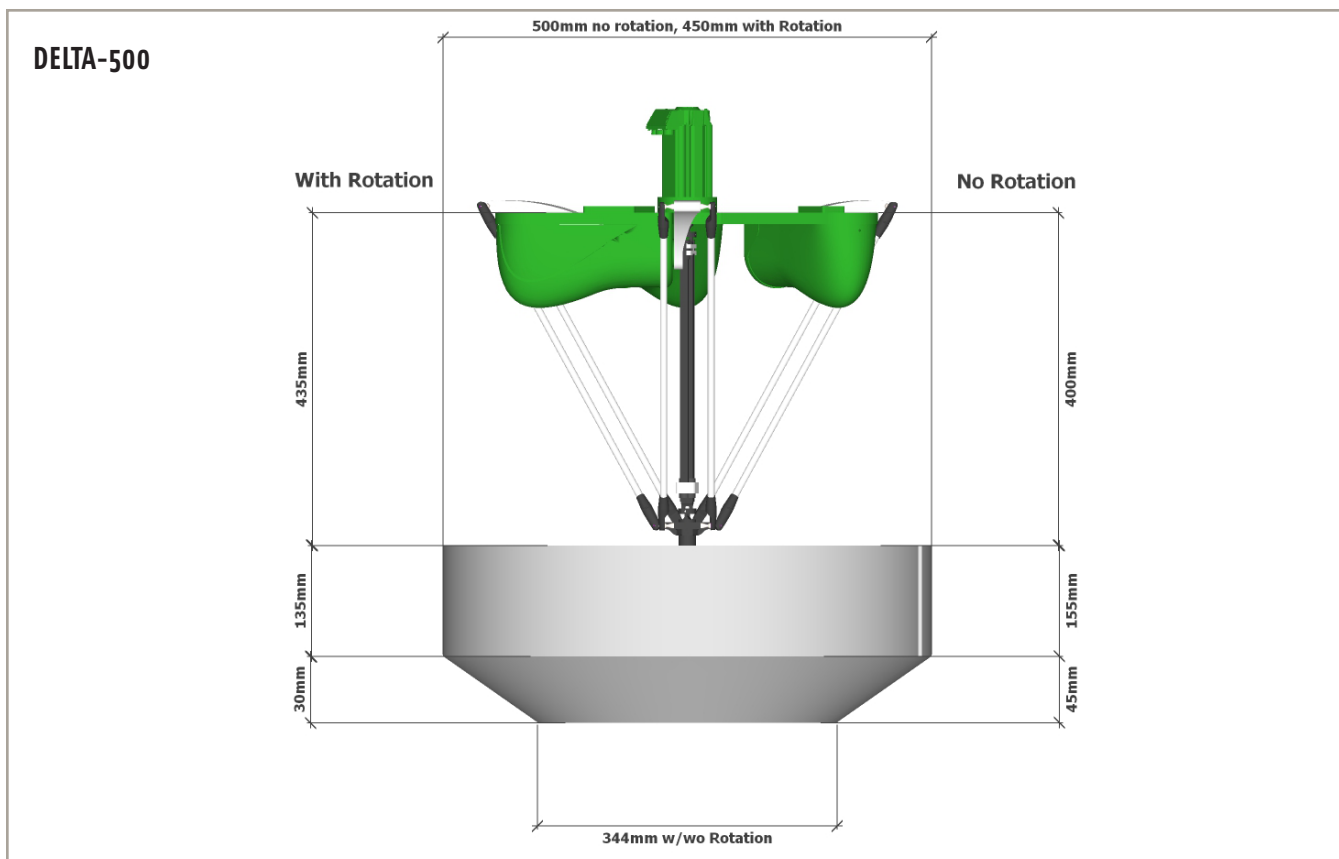
1. Move sequence consists of Z +25 mm, Y +305 mm, Z -25 mm, Z +25 mm, Y -305 mm, Z -25 mm with "rounded" corners at changes in direction.

Recommended Controller	
Power Requirements	230 VAC ⁽¹⁾ , 30 A
Mounting	Panel Mount
Software	A3200 and 64-bit Windows® Professional
Digital I/O	12 in; 12 out; optically isolated
Analog I/O	Three 16-bit ±10 V inputs; three 16-bit ±10 V outputs
System Interfaces	HDMI, DVI, 10/100/1000 Ethernet, USB 2.0, USB 3.0

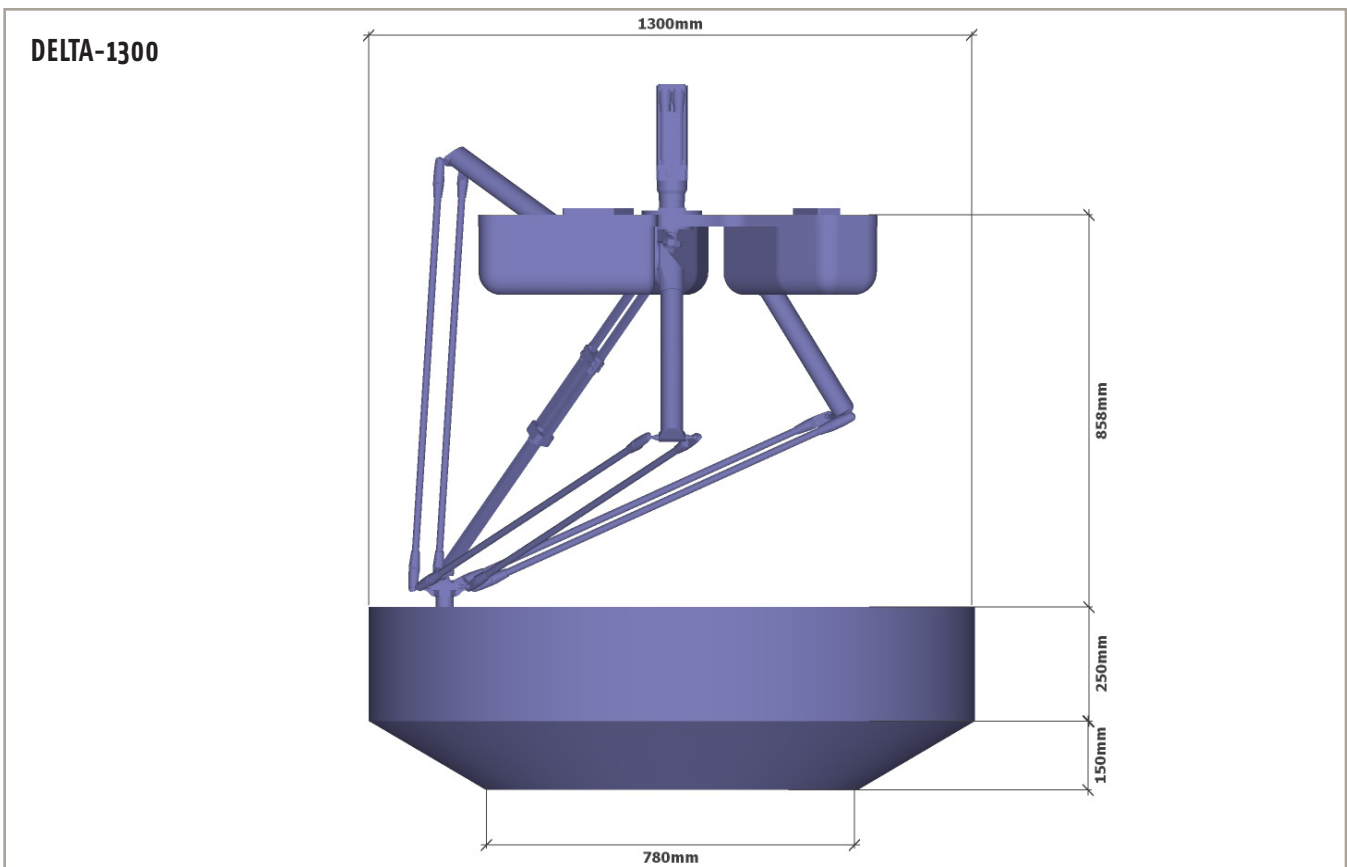
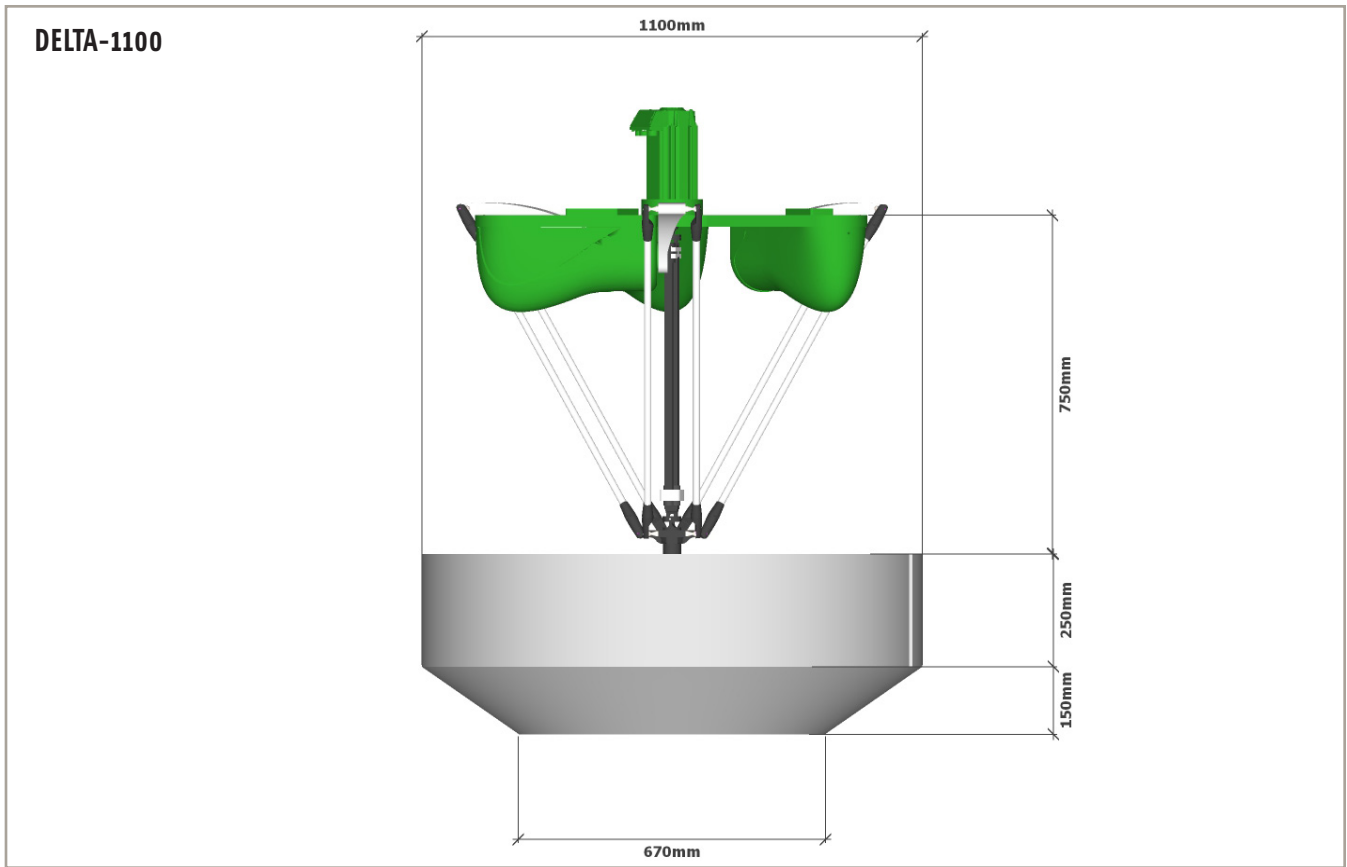
Note:

1. 230 VAC required to attain peak motor speed and torque.

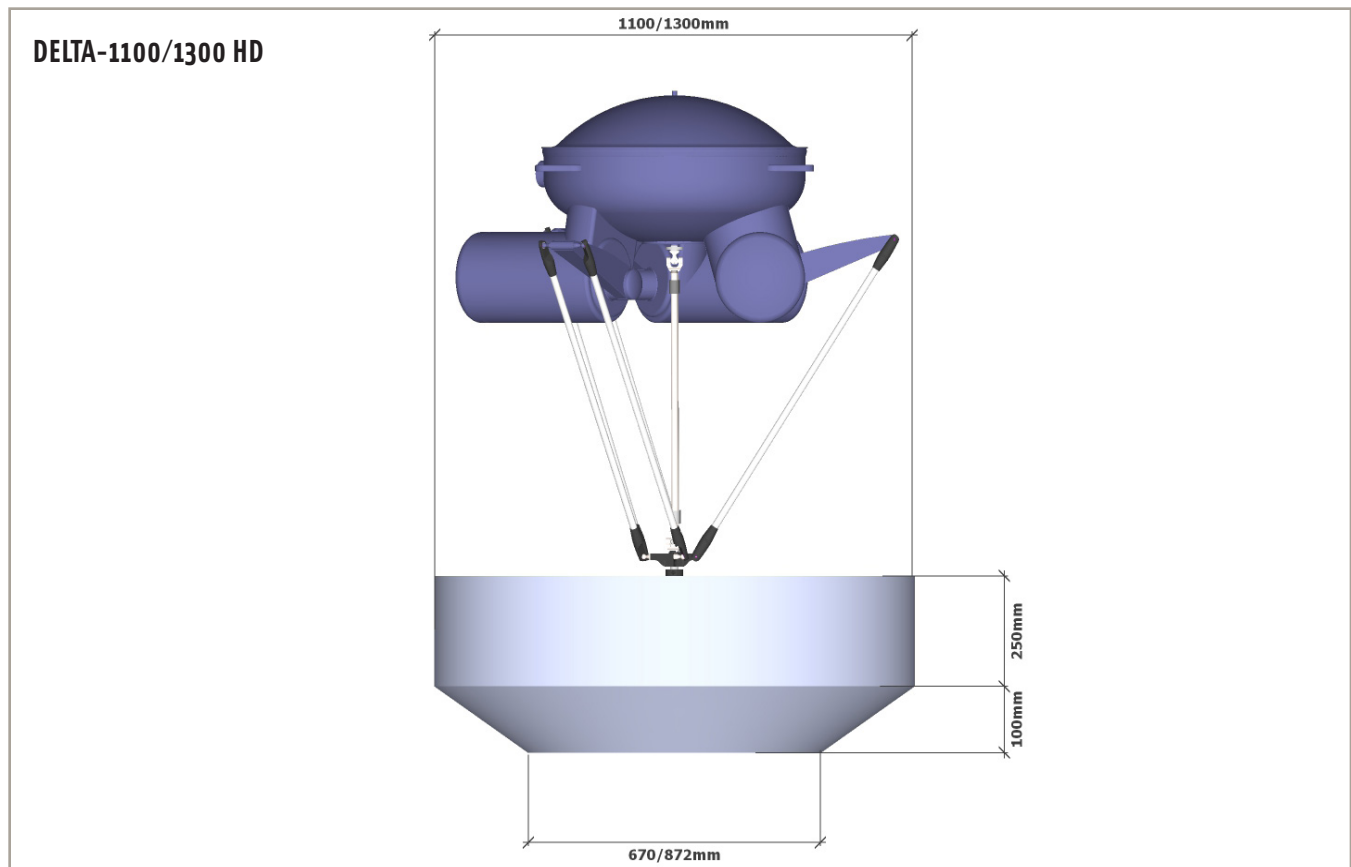
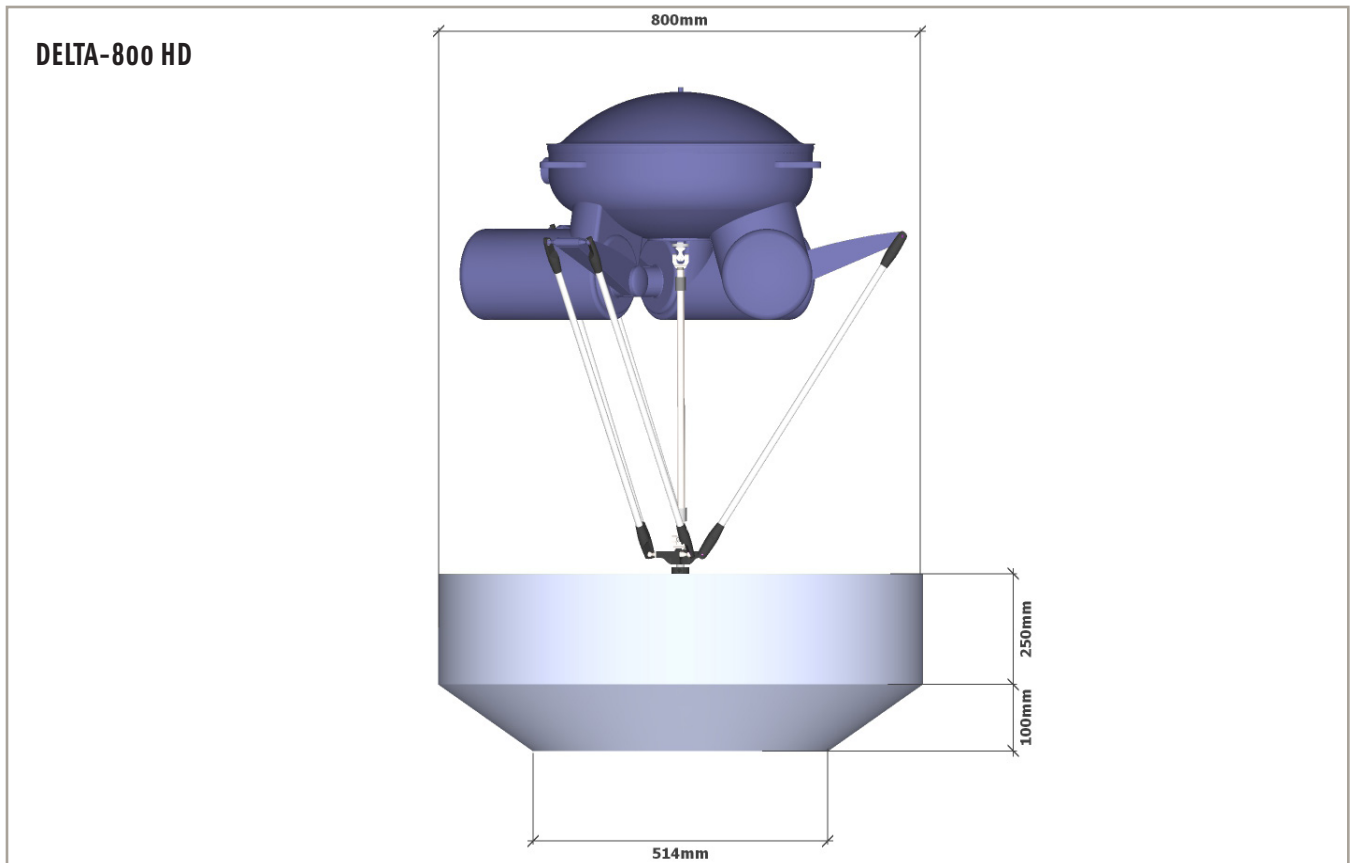
RCP-DELTA Series DIMENSIONS



RCP-DELTA DIMENSIONS



RCP-DELTA DIMENSIONS



RCP-DELTA ORDERING INFORMATION

Robot Control Platform-NEMA 23 Motors

RCP-DELTA-23	RCP-DELTA-23: Open architecture, PC-based robot controller for 3 axis (X/Y/Z) Delta robots. Includes a pre-configured installation of Aerotech's A3200 automation platform with robot specific programming extensions, NEMA 32 frame size motors, drives, and cables. Key system features include:
	<ul style="list-style-type: none"> • Industrial panel-mount PC with solid-state disk drive • Teach mode with user defined number of points • Synchronization with moving material • Target position command queue of user defined depth • Real time simultaneous display of tool and work point coordinates • G code and AeroBasic motion command syntax • Control up to 20 additional axes • Optional IEC 61131-3 PLC interface with support for PLCopen and .NET • BM130 motor with absolute feedback device and brake • Ndrive CP10 drives • 5 meter long motor power and feedback cables

Rotary Axis Option

-R1 and cables	NEMA 23 rotary axis motor; includes BM130 motor with absolute feedback, Ndrive CP10 drive,
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Robot Control Platform-NEMA 34 Motors

RCP-DELTA-34	RCP-DELTA-34: Open architecture, PC-based robot controller for 3 axis (X/Y/Z) Delta robots. Includes a pre-configured installation of Aerotech's A3200 automation platform with robot specific programming extensions, NEMA 32 frame size motors, drives, and cables. Key system features include:
	<ul style="list-style-type: none"> • Industrial panel-mount PC with solid-state disk drive • Teach mode with user defined number of points • Synchronization with moving material • Target position command queue of user defined depth • Real time simultaneous display of tool and work point coordinates • G code and AeroBasic motion command syntax • Control up to 20 additional axes • Optional IEC 61131-3 PLC interface with support for PLCopen and .NET. • BM250 motor with absolute feedback device and brake • Ndrive CP30 drives • 5 meter long motor power and feedback cables

Rotary Axis Option

-R1 and cables	NEMA 23 rotary axis motor; includes BM130 motor with absolute feedback, Ndrive CP10 drive,
-R2 and cables	NEMA 34 rotary axis motor; includes BM250 motor with absolute feedback, Ndrive CP30 drive,

Delta Robot

DELTA-500	Parallel kinematic Delta robot with 500 mm (max) diameter travel X/Y, 200 mm (max) travel in Z, IP65 protection and 1 kg max load
DELTA-500R	Parallel kinematic Delta robot with 450 mm diameter travel X/Y; 165 mm travel in Z; IP65 protection, 1 kg max load and unlimited rotation about the Z axis; rotary axis limited to 16 N·m peak torque
DELTA-800	Parallel kinematic Delta robot with 800 mm (max) diameter travel X/Y, 350 mm (max) travel in Z, IP65 protection and 3 kg max load
DELTA-800R	Parallel kinematic Delta robot with 800 mm diameter travel X/Y; 350 mm (max) travel in Z; IP65 protection, 3 kg max load and unlimited rotation about the Z axis; rotary axis limited to 16 N·m peak torque
DELTA-800-HD	Hygienic parallel kinematic Delta robot designed for food, chemical, and pharmaceutical applications; 800 mm (max) diameter travel X/Y, 350 mm (max) travel in Z, IP65 protection, and 3 kg max load
DELTA-800R-HD	Hygienic parallel kinematic Delta robot designed for food, chemical, and pharmaceutical applications; 800 mm (max) diameter travel X/Y, 350 mm (max) travel in Z, IP65 protection, and 3 kg max load and unlimited rotation about the Z axis; rotary axis limited to 16 N·m peak torque

RCP-DELTA ORDERING INFORMATION

DELTA-1100	Parallel kinematic Delta robot with 1100 mm (max) diameter travel X/Y, 400 mm (max) travel in Z, IP65 protection and 3 kg max load
DELTA-1100R	Parallel kinematic Delta robot with 1100 mm diameter travel X/Y; 400 mm (max) travel in Z; IP65 protection, 3 kg max load, and unlimited rotation about the Z axis; rotary axis limited to 16 N·m peak torque
DELTA-1100-HD	Hygienic parallel kinematic Delta robot designed for food, chemical, and pharmaceutical applications; 1100 mm (max) diameter travel X/Y, 400 mm (max) travel in Z, IP65 protection, and 3 kg max load
DELTA-1100R-HD	Hygienic parallel kinematic Delta robot designed for food, chemical, and pharmaceutical applications; 1100 mm (max) diameter travel X/Y, 400 mm (max) travel in Z, IP65 protection, and 3 kg max load and unlimited rotation about the Z axis; rotary axis limited to 16 N·m peak torque
DELTA-1300	Parallel kinematic Delta robot with 1300 mm (max) diameter travel X/Y, 400 mm (max) travel in Z, IP65 protection and 3 kg max load
DELTA-1300R	Parallel kinematic Delta robot with 1300 mm diameter travel X/Y; 400 mm(max) travel in Z; IP65 protection, 3 kg max load, and unlimited rotation about the Z axis; rotary axis limited to 16 N·m peak torque
DELTA-1300-HD	Hygienic parallel kinematic Delta robot designed for food, chemical, and pharmaceutical applications; 1300 mm (max) diameter travel X/Y, 400 mm (max) travel in Z, IP65 protection, and 3 kg max load
DELTA-1300R-HD	Hygienic parallel kinematic Delta robot designed for food, chemical, and pharmaceutical applications; 1300 mm (max) diameter travel X/Y, 400 mm (max) travel in Z, IP65 protection, and 3 kg max load and unlimited rotation about the Z axis; rotary axis limited to 16 N·m peak torque