SLAMTEC

Athena 2.0

General Purpose Robot Platform

Model: N5M42-R2TPL

Data Sheet

- Small- to medium-sized robot development
- Highly adaptable and scalable
- Powerful optional functions

Learn more >

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I. Product Overview

1.1. Introduction

Developed by Slamtec, Athena 2.0 is a scalable and low-cost robot platform capable of meeting the needs of small-sized robot application development in areas such as smart patrol robots, container transportation robots, food delivery robots, and more.

The built-in SLAMCUBE 2 autonomous localization and navigation system enables path-finding and localization and navigation features, making Athena 2.0 capable of performing a variety of tasks across different commercial environments.

Cross-floor Moving, Light Deployment

Athena 2.0 is equipped with the latest version of Slamtec Smart Elevator Control 4.0, which allows it to adapt to different brands of elevators.

Through the latest version of Slamtec RoboStudio 2.0, Athena 2.0 supports integration of maps of multiple floors in one click. This improves the mapping efficiency and streamlines the deployment, thus enabling light deployment and fast use.

Multi-Sensor Data Fusion

Athena 2.0 uses multi-sensor data fusion technology. Fitted with equipment such as lidar, magnetic sensors, depth cameras, and bumper sensors, Athena 2.0 can implement autonomous mapping, localization, and navigation by flexibly responding to complex and ever-changing operational environments.

1.2 Basic Functions

1.2.1 Compact and Flexible

Athena 2.0 can move flexibly in a small size, thus meeting the needs of flexible moving and deployment-free scenarios. Thanks to its high obstacle passing stability, Athena 2.0 can easily pass narrow aisles and ramps.

1.2.2 Cross-floor Delivery and Light Deployment

Athena 2.0 is equipped with the latest version of Slamtec Smart Elevator Control 4.0, which allows it to adapt to different brands of elevators. When combined with RoboStudio 2.0, it can effectively enable light deployment and fast use.

Smart Elevator Control 4.0 addresses the challenges of bad weather, as well as unstable air pressure and communication in high-rise buildings. It provides accurate detection of elevator statuses along with call-control functionality. For hotel/restaurant delivery robots, it provides efficient and reliable solutions that help them autonomously navigate elevators in cross-floor scenarios.

1.2.3 Autonomous Mapping, Localization and Navigation

Athena 2.0 is built with the latest version of Slamtec SLAMCUBE 2 autonomous localization and navigation system which is more stable and can accommodate more interfaces. The structural design integrated three boxes into one, saving more space for chassis layout. With the path-finding, autonomous mapping and localization and navigation features, it helps robots figure out where they are, where they should go, and the best way to get there. It enables the robots to automatically find paths, locate, and move as needed without human assistance. In addition, Athena 2.0 supports multi-route patrol mode.

1.2.4 Rich Port Options and High Scalability

Athena 2.0 owns a completely open hardware and software platform and supports extended hardware. The rich port options eliminate the restrictions

in development platform and programming language, which makes Athena 2.0 universal for all types of host computer and support development of business logic applications through SLAMWARE SDK.

1.2.5 360° Protection and Smart Obstacle Avoidance

Athena 2.0 is fitted with equipment such as lidar, magnetic sensors, depth cameras, and bumper sensors, and adopts the multi-sensor fusion technology. It provides rapid and accurate identification of surrounding active environments, enabling smart obstacle avoidance and greatly reducing the chances of safety incidents. It also has fall-resistant and collision-resistant protection and emergency stop features, making the food delivery process fully protected, secure, and reliable.

1.2.6 Autonomous Recharging

The autonomous recharging feature ensures that Athena 2.0 will have enough power to complete the assigned tasks. Athena 2.0 will return automatically to its charging station when its remaining power falls below the set limits.

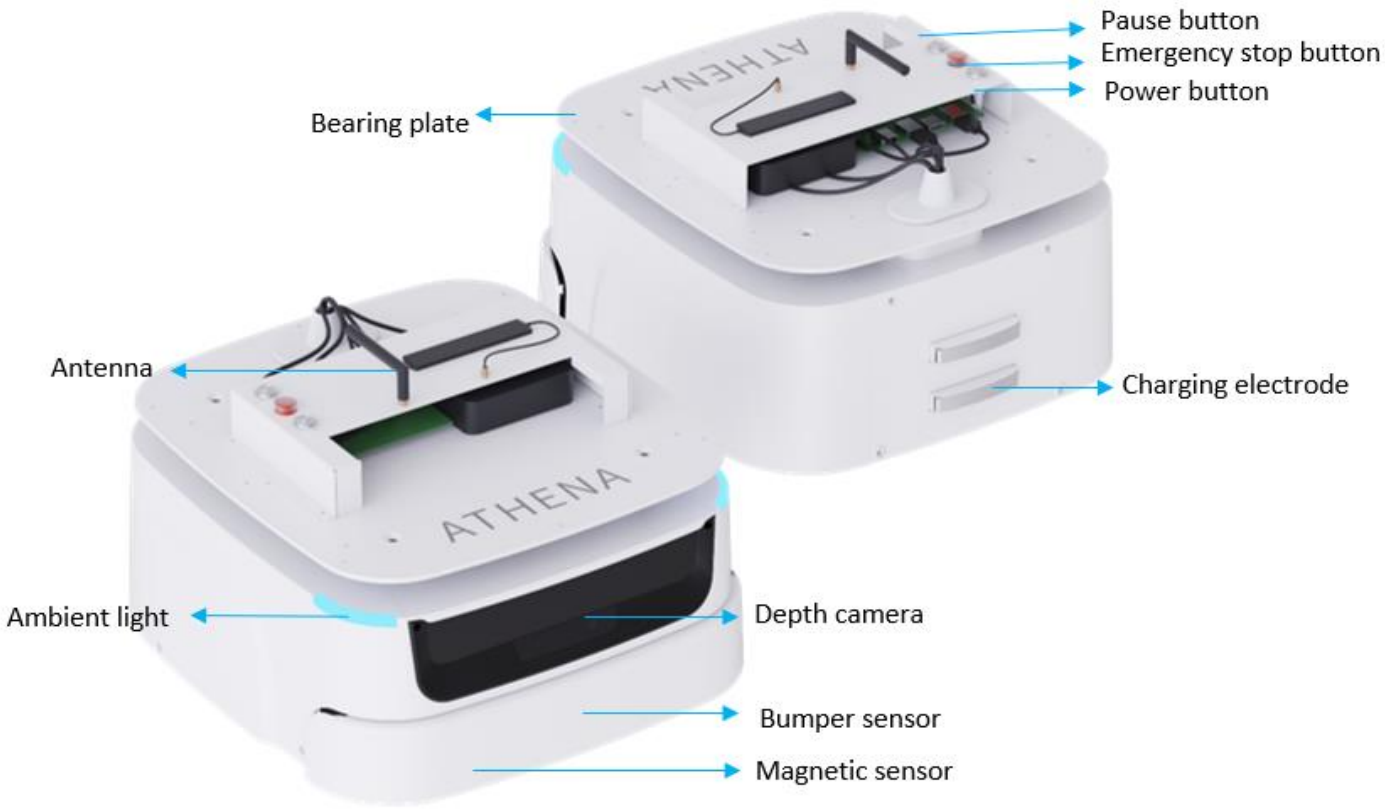
Special note: the automatic recharge function cannot be triggered only under the condition of that combined with upper machine with delivery and disinfection plug-in or customized models.

1.2.7 Multi-robot Scheduling & Collaboration

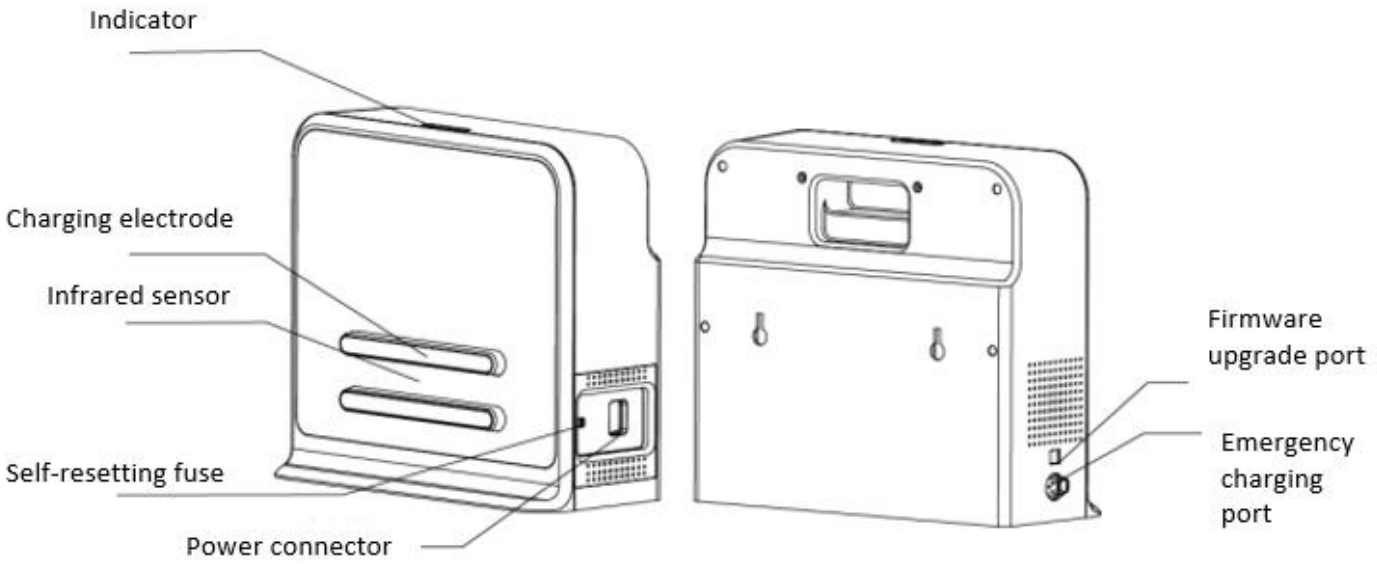
In scenarios such as large hotels, office buildings, and malls, multiple robots will avoid each other according to the task priority when they meet. The collaboration of multiple robots can further improve the delivery and guide efficiency.

Athena 2.0 supports local area network (LAN) and cloud platform collaborative operations, along with the dynamic adjustment of both speed and delivery routes in accordance with the environment to realize efficient, safe, and reliable multi-point delivery.

1.3 Exterior


Pause button
Emergency stop button
Power button
Bearing plate
Antenna
Charging electrode
ATHENA
Ambient light
Depth camera
Bumper sensor
Magnetic sensor

1.4 Charging Dock



Charging dock diagram

1.5 Product List

Name	Quantity	Notes
Athena 2.0 body	1	Athena 2.0 chassis body
Charging dock	1	Select environment for deployment before use.

II. Product Parameters

Name		Athena 2.0 chassis	
Core feature		SLAMCUBE 2 localization and navigation	
Mass and volume		Length x width	460*428 mm, rotation diameter 551 mm
		Height	232mm (excludes controller)
		Weight	22 kg
		Rated load	40 kg
		Max load (parallel cement pavement)	60kg
Sensor performance parameters	Lidar sensor	Max scan radius (90% surface reflective rate)	30 m (TOF S2 radar)
	Depth camera sensor	Quantity	1 for standard configuration (2 can be customized)
		Detection range	0.3–3.5 m（changed by the condition of illumination
		Field of View (FOV)	H:75±3°； V:51±3°
	Physical magnetic sensor	Quantity	2 units
		Max detection range	3.5 cm
	Bumper	Quantity	2 units
		Trigger method	Physical collision
Mapping performance		Map resolution	5 cm
		Max mapping area	500m×500m

Motion parameters		Max move speed	1.0 m/s (1.2 m/s can be customized)
		Max cross slope	10° Ramp: Max slope angle of chassis: 10°; Slope =18%*Ramp; The height of the full-machine mass center is within 18 cm, and the safety ramp within 10°. (A 100% slope means a 45° ramp, whose height difference for 100 m is 100 m.)
		Passing obstacle height	2 cm
		Passing obstacle width	4 cm
		Min pass range	55 cm
Motor		Wheelset	2x 6.5-inch in-wheel motor 4x 2.5-inch omni-directional wheel
User port	Hardware port	Ethernet	1x RJ45 Gigabit Ethernet port
		Power connector	DC 24V 9.5A
			DC 12V 2A
		Wi-Fi	2.4 GHz
		HDMI	1x HDMI
		Audio	1x 3.5mm headset socket
			1x LINE_MIC audio jack (Co-lay with headset socket)
			1x Dual-channel 5w/8Ω

			amplifier jack
		Type-C	Standard USB 3.0 Type-C port
	Software API	SLAMWARE™	HTTP API, supports different development languages and platforms, such as Windows, iOS, Android, and Linux
Battery and capacity		Capacity specifications	18 AH (standard)
			Battery scalable to 90 AH
		No-load operating time	19h (no load)
		Full- load operating time	8h（full load）
		Charging time	3-4 h (standard charging station)
		Battery life	500 charges
Power consumption		Power dissipation in standby time	17W (no load)
		Full-load rated power consumption (full load weight: 40kg)	40W (moving)
		Max power consumption with external load	228W
		Rated output	25.2V 2A
Noise		Operating noise	≤ 60 db
Operating environment		Operating temperature	0℃–40℃

	Transport and storage temperature	-25℃ to +55℃
	Operating humidity	30%–70%RH (No condensation)
	Applicable altitude	≤ 2000 m

Charging station	
Size	360 mm*150 mm*320 mm (W*D*H)
Color	White
Rated input	100-240V 50/60 Hz 3A Max
Rated output	DC 25.5V 6A