

ROBOT CHARGING

AutoDock MINI 60

Automatic Retractable Charging Dock



Compact power. Precise contact. Mission-ready autonomy.

30-60 W SERIES | 12 V MOBILE ROBOTS | SEPTEMBER 2026

A complete return-to-charge system

Station-side dock, robot-side module and installation accessories.

Product concept

AutoDock Mini 60 gives compact robots a practical autonomous charging interface without increasing chassis complexity. The robot-side module presents four low-profile contact pads, while the stationary dock uses compliant retractable bars to maintain stable electrical contact across normal positioning variation. USB-C provides a convenient control and configuration path.

01 Automatic docking

Supports mapped charging points and rear or side approach strategies.

02 Compliant contact

Retractable bars absorb small angle, height and stopping variations.

03 Two-piece architecture

Separates stationary power hardware from a compact vehicle interface.

04 Developer-friendly I/O

DC barrel, T-plug options and USB-C simplify prototype integration.

Electrical & interface specification

Mechanical dimensions are extracted from the supplied product drawings.

Power range	30-60 W
Station DC input	12-24 VDC, 6 A max, DC 5.5 x 2.5 mm jack
Charge output	10.8-14.6 VDC programmable CC/CV
Maximum output	5 A, 60 W max
Battery systems	3S Li-ion, 4S LiFePO4, 12 V SLA profile option
Control interface	USB-C service/configuration; 5 V logic
Vehicle connectors	DC 5.5 x 2.5 mm male and T-plug cable options
Charging method	Four-pad conductive docking with retractable station contacts
Efficiency target	90% minimum peak, station input to battery
Dock confirmation	Contact presence, output voltage and current verification
Protections	Reverse polarity, OVP, OCP, SCP, OTP and timeout
Station dimensions	192 W x 142 H x 80 D mm
Vehicle module	132 W x 100 H x 34.5 D mm
Mounting pattern	98 x 55 mm, 4 x M5
Environment target	0 to 45 deg C; indoor laboratory and light commercial use
Compliance path	IEC/EN 62368-1, EMC and regional adapter approvals

Compact modules with documented mounting

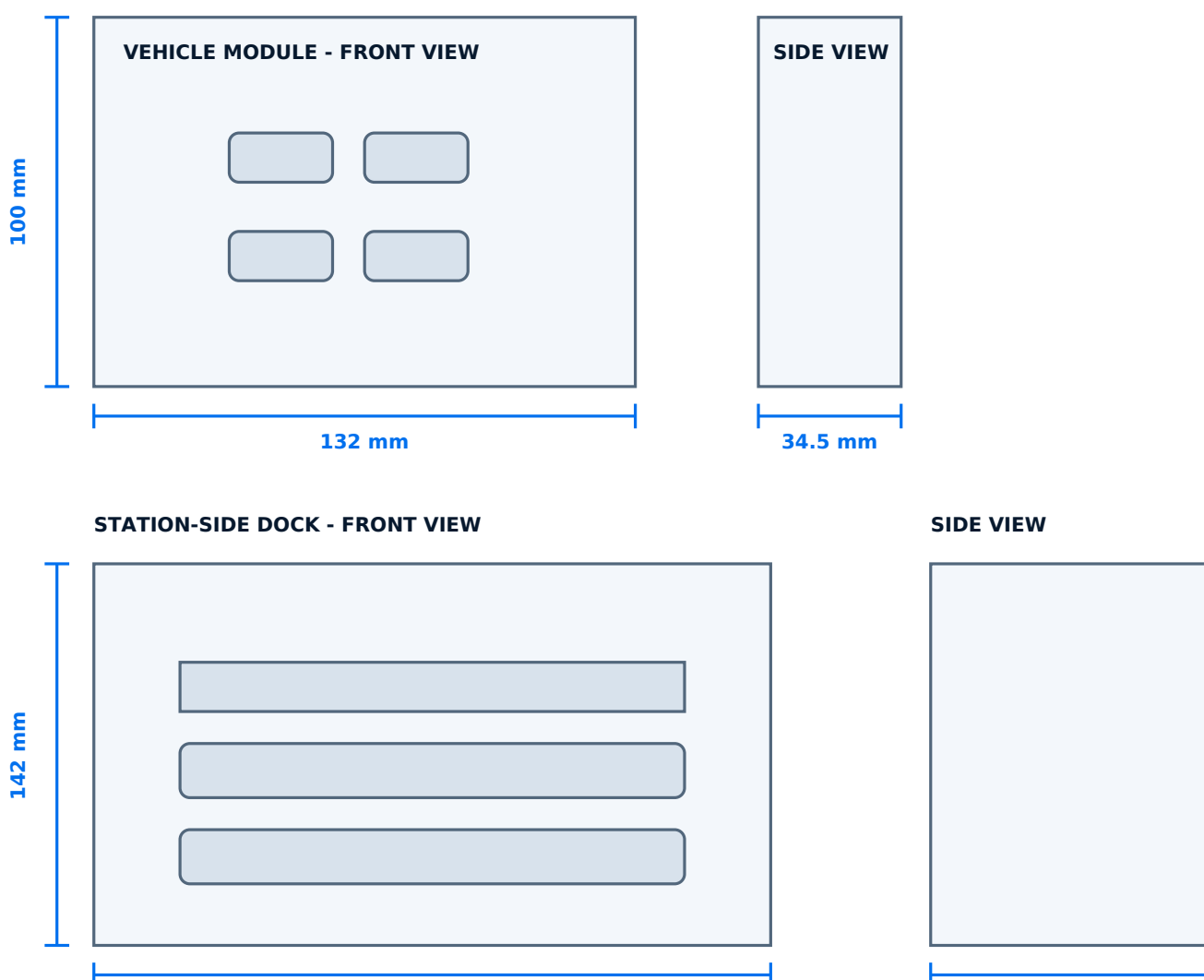
Station-side charging dock

192 x 142 x 80 mm

Two horizontal retractable contact bars and a front status/sensing window.

Vehicle-side charging module

132 x 100 x 34.5 mm



Integration allowance: reserve cable bend radius, chassis reinforcement and a clear docking approach corridor.
Do not use enclosure dimensions alone as the final vehicle collision envelope.

From low battery to resumed mission

1

1. REQUEST

Robot software requests charge below a configurable state-of-charge threshold.

2

2. APPROACH

Navigation brings the vehicle to the mapped dock pose.

3

3. ALIGN

The robot performs a slow final approach using its preferred sensor stack.

4

4. CONTACT

Four pads engage the compliant station bars.

5

5. VERIFY

Polarity, voltage and stable contact are checked before full current.

6

6. CHARGE

CC/CV charging runs while status and faults are monitored.

7

7. RESUME

The robot disconnects and returns to its scheduled task.

SOFTWARE INTEGRATION

Compatible with custom ROS/ROS 2 docking behaviors through the robot controller.

Docking navigation software is not included in the base charging hardware.

Six reasons to build it into the robot

01

Compact 60 W power

A practical charge rate for small 12 V research and service platforms.

02

Retractable contact bars

Mechanical compliance improves connection reliability during repeated docking.

03

Low-profile vehicle module

Preserves payload space and keeps chassis installation simple.

04

Accessible interfaces

Common DC connectors and USB-C shorten prototype integration time.

05

Complete installation kit

Bracket, fasteners, cables and connector adapters support rapid deployment.

06

Autonomous operation

Enables scheduled charging, opportunity charging and longer unattended tests.

Where it fits - and what must be verified



ROS research platforms

Repeatable autonomous testing without manual cable connection.

Educational robots

Charging infrastructure for classroom fleets and laboratory projects.

Inspection prototypes

Support for light-duty indoor patrol and sensing demonstrations.

Delivery prototypes

Opportunity charging for small indoor logistics and service robots.

Launch validation

- Contact-cycle endurance and spring-force consistency
- Docking offset, angle and height tolerance
- Connector heating at 5 A continuous current
- Reverse-polarity and short-circuit shutdown
- Battery-profile and charge-termination accuracy

MARKET BASIS

TurtleBot documents compact ROS robot platforms and charging-dock use in robot development systems.

Reference: turtlebot.com/about/

Accessed 17 September 2026.

Unconfirmed electrical values are development targets.