MiR250 specifications

General information

Designated use	For internal transportation of goods and automation of internal logistics
Type	Autonomous Mobile Robot (AMR)
Color	RAL 7011 / Iron Gray
Color - ESD version	RAL 9005 / Jet Black
Cover material	Polycarbonate, Lexan Resin 221R
Product design life	5 years or 20 000 hours, whichever comes first
Disclaimer	Specifications may vary based on local conditions and application setup

Dimensions

Length	800 mm | 31.5 in
Width	580 mm | 22.8 in
Height	300 mm | 11.8 in
Weight (without battery or payload)	83 kg | 183 lbs
Ground clearance	25 - 28 mm | 1.0 - 1.1 in
Load surface	800 x 580 mm | 31.5 x 22.8 in
Wheel diameter (drive wheel)	200 mm | 7.9 in
Wheel diameter (caster wheel)	125 mm | 4.9 in

Dimensions for mounting top modules	Equal to robot footprint. Contact MiR if a bigger top module is required.
Top plate	Anodized aluminum, 5 mm | 0.2 in

Payload

Maximum payload	250 kg | 551 lbs
Footprint of payload	Equal to robot footprint. Contact MiR if a bigger payload footprint is required.
Payload placement	Place center of mass according to directions in the user guide

Speed and performance

Maximum speed (with maximum payload on a flat surface)	2.0 m/s (7.2 km/h) | 6.6 ft/s (4.4 mph)
Acceleration limits with maximum payload	0.3 m/s^2 | 1 ft/s^2
Minimum distance to achieve maximum speed	9.5 m | 31.2 ft
Operational corridor width	
Operational corridor width for a 90° turn	With default footprint and SICK safety configuration: 1 500 mm | 60 in With default footprint and SICK safety configuration and muted protective fields: 950 mm | 37.4 in With dynamic footprint and SICK safety configuration: 1 250 mm | 50 in

Operational corridor width for a 180° turn	With dynamic footprint and SICK safety configuration: 1 250 mm | 49.2 in
Traversable gap and sill tolerance	0-20 mm | 0.79 in Above 20 mm | 0.79 in: Instructions must be followed Above 30 mm | 1.18 in: Not recommended, risk of personal injury Above 50 mm | 1.97 in: Prohibited
Operational doorway width	With default footprint and SICK safety configuration: 1 400 mm | 55.1 in With dynamic footprint and SICK safety configuration: 1 000 mm | 39.4 in With minimized footprint and muted protective fields in any SICK safety configuration: 800 mm | 32 in
Active operation time with maximum payload	13 h at 22°C | 72°F, from 100–0% power in the robot interface and with no top module
Active operation time with no payload	17.4 h at 22°C | 72°F, from 100–0% power in the robot interface and with no top module
Standby time (robot is on and idle)	22 h
Minimum size of detectable object	Scanner: 20 mm | 0.79 in at 1 000 mm | 39.4 in distance 70 mm | 2.76 in at 2 500 mm | 98.4 in distance
Docking types	Forward and reverse to bar, V, and VL markers, and sideways docking to L-markers
Maximum incline/decline	± 5% at 0.5 m/s

Power

Battery type	Lithium ion
Charging time with MiR Charge 48V	10%–90%: 52 min
Charging time with cable charger	10%–90%: 1 h and 10 min
Charging options	MiR Charge 48V, Battery Charger 48V 12A, Cable Charger Lite 48V 3 Amp
Charger communication	The robot communicates with MiR Charge 48V through a CAN interface. Charging starts only when the robot connection is present
Charging current, MiR Charge 48V	Up to 35 A depending on battery temperature and constant voltage ramping down towards end of charge cycle.
Battery weight	14 kg | 30 lbs
Battery dimensions	46 mm length × 204 mm width × 76 mm height | 21.5 in length × 8 in with × 3 in height
Number of full charging cycles	Minimum 3 000 cycles
Battery voltage	47.7 V nominal, minimum 41 V, maximum 54 V
Battery capacity	1.63 kWh (34.2 Ah at 47.7 V)
Charging an empty battery	Only possible with the cable charger. To dock to MiR Charge 48V, the robot requires at least 3% battery (or equal to 10 m of operating time).
Cable charger	Robot cannot drive with cable charger connected and charging

Charging ratio and runtime for	10 min charging: 1:16 (2 h and 40 min runtime with maximum payload) 20 m charging: 1:14 (4 h and 30 min runtime with maximum payload)) 30 min charging: 1:12 (6 h and 5 min run time with maximum payload) 60 min charging: 1:10 (10 h and 20 min runtime with maximum payload) Fully charged

Environment

Environment	For indoor use only
Ambient temperature range, operation	5°C–40°C | 41°F–104°F according to ISO3691-4 section 4.1.2
Ambient temperature range, storage	1 month: -10°C–60°C | 14°F–140°F 3 months: -20°C–+45°C | 14°F–140°F
Humidity	10-85% non-condensing
IP Class	IP21
Maximum altitude	2 000 m | 6 561 ft

Compliance

EMC	EN61000-6-2, EN61000-6-4, (EN12895)
Safety standards for industrial vehicles	CE, EN1525, ANSI B56.5, ANSI R15.08

Safety

Personnel detection safety function	Triggered when obstacles or people are detected too close to the robot
Emergency stop	Triggered by pressing the Emergency stop button
Overspeed avoidance	Prevents the robot from driving faster than the predefined safety limit

Communication

WiFi (router)	2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac.
WiFi (internal PC)	WiFi adapter: 2.4 GHz and 5 GHz, 2 internal antennas
I/O connections	4 digital inputs, 4 digital outputs (GPIO), 1 Ethernet port, 1 Auxiliary emergency stop
Safety I/O connections	6 digital inputs, 6 digital outputs
Ethernet	M12 plug, 4p. 10/100 Mbit Ethernet with Modbus protocol, adapter for external antenna

Top module

Power for top modules	48 V (41-54 V, nom 47.7 V), 10 A combined. 24 V/2 A.

Sensors

SICK safety laser scanners	2 pcs nanoScan3 (front and rear) 360° visual protection around robot

3D cameras	2 pcs 3D camera Intel RealSense™ D435 FoV height: 1 800 mm | 70.9 in FoV distance in front of robot: 1 200 mm | 47.2 in FoV horizontal angle: 114° FoV minimum distance in front of robot for ground view: 250 mm | 9.8 in
Proximity sensors	8 pcs

Lights and audio

Audio	Speaker
Status lights	LED light band
Signal lights	8 pcs, 2 on each corner

Maintenance

Maintenance	Maintenance hatches on four sides of the robot
Service intervals	6 months or according to user guide