

MiR1350 specifications

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The product specifications in English are the most recently updated on the Support Portal.

See the latest updates [here](#).

General information

Designated use	Autonomous mobile robot (AMR) for internal transportation of heavy loads and pallets
Type	Autonomous Mobile Robot (AMR)
Color	RAL 9005 / Jet Black
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	1 350 mm 53.1 in
Width	910 mm 35.8 in
Height	322 mm 12.7 in
Weight	247 kg 544.5 lbs
Ground clearance	25–27 mm 1.0–1.1 in
Load surface	1 304 × 864 mm 51.3 × 34 in
Wheel diameter (drive wheel)	200 mm 7.9 in
Wheel diameter (caster wheel)	100 mm 3.9 in

Payload


Maximum payload	1 350 kg 2 976 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.
Maximum lifting capacity with a MiR EU-/US-lift installed	1 250 kg 2 755 lbs

Speed and performance

For an in-depth explanation of the performance specifications, see the guide *MiR600 and MiR1350 Space Requirement Best Practices*. You can find this guide on [MiR Support Portal](#).

Maximum speed (with maximum payload on a flat surface)	1.2 m/s (4.3 km/h) 3.9 ft/s (2.7 mph)
Maximum acceleration	No payload: 0.43 m/s ² 1.41 ft/s ² Maximum payload: 0.40 m/s ² 1.31 ft/s ²
Acceleration limits with maximum payload	0.40 m/s ² 1,3 ft/s ²
Operational corridor width	With default setup: 2 150 mm 84.6 in With minimized footprint and muted Protective fields: 1 200 mm 47.2 in
Operational corridor width for a 90° turn	With default setup: 2 200 mm 86.6 in With minimized footprint and muted Protective fields: 1 550 mm 61 in
Operational corridor width for a U-turn	2 300 mm 90.6 in With minimized footprint: 1 550 mm 61 in

	With default setup: 4 250 mm 167.3 in
Operational corridor width for two robots passing	With minimized footprint and muted Protective fields: 2 700 mm in 106.3 in
	With default setup: 2 850 mm 112.2 in
Operational width for pivoting	With minimized footprint and muted Protective fields: 1 850 mm 72.8 in

	Docking to L-marker: ± 3 mm 0.12 in on X-axis, ± 3 mm 0.12 in on Y-axis, $\pm 0.25^\circ$ yaw
	Docking to VL-marker: ± 2 mm 0.08 in on X-axis, ± 3 mm 0.12 in on Y-axis, $\pm 0.25^\circ$ yaw
	Docking to V-marker: ± 20 mm 0.79 in on X-axis, ± 20 mm 0.79 in on Y-axis, $\pm 2^\circ$ yaw
	Docking to Bar-marker: ± 10 mm 0.39 in on X-axis, ± 5 mm 0.19 in on Y-axis, $\pm 0.75^\circ$ yaw
Positioning accuracy (in controlled conditions)	<p> The positioning accuracy is tested under the following conditions:</p> <ul style="list-style-type: none">• Using a single robot without payload• On a site that is within the environmental requirements for the robot with good localization and no or few dynamic obstacles• On a flat, clean surface
Traversable gap and step tolerance	<p>Gap: maximum 29 mm 1.14 in at maximum 0.5 m/s 1,64 ft/s², from all angles</p> <p>Step: maximum 10 mm 0.39 in at maximum 0.5 m/s 1,64 ft/s² at maximum 40° angle with no payload, not recommended with maximum payload</p>

Operational doorway width	With default setup: 2 050 mm 80.7 in With minimized footprint and muted Protective fields: 1 200 mm 47.2 in
Minimum distance between chargers	1 100 mm 43.3 in
Time used when docking to or undocking from a VL-marker	Docking time: up to 12 s Undocking time: up to 7 s (Offsets used: -0.75 m 29.5 in on X-axis, 0.2 m 7.9 in on Y-axis, 0° yaw)
Time used when docking to or undocking from a V-marker	Docking time: up to 39 s Undocking time: up to 5 s (Offsets used: -0.75 m 29.5 in on X-axis, 0.4 m 15.7 in on Y-axis, 0° yaw)
Minimum distance between VL-markers	Fast docking where the robot docks the moment it detects the marker: 30 mm 1.18 in Slow docking where the robot moves to the entry position before it docks to the marker: 20 mm 0.79 in
Minimum distance between V-markers	Fast docking where the robot docks the moment it detects the marker: 280 mm 11 in Slow docking where the robot moves to the entry position before it docks to the marker: 220 mm 8.7 in
Minimum space around MiR Pallet Rack	Default setup: 70 cm 27.6 in to the sides of the rack, 270 cm 126.3 in in front of the rack With minimized footprint: 30 cm 11.8 in to the sides of the rack, 240 cm 94.5 in front of the rack

Active operation time with maximum payload	6 h 45 m
Active operation time with no payload	9 h 50 min
Standby time (robot is on and idle)	12 h 30 min

Power

Battery type	Lithium-ion
Charging time with MiR Charge 48V	10%–90%: 46 min 72°F at an ambient temperature of 22°C 72°F
Charging time with cable charger	10%–90%: 1 h 10 min
Charging options	MiR Charge 48V, Battery Charger 48V 12A, Cable Charger Lite 48V 3A
Charging current, MiR Charge 48V	Up to 35 A depending on battery temperature and constant voltage ramping down towards end of charge cycle
Number of full charging cycles	Minimum 3 000 cycles ⓘ The minimum number of full charging cycles before the battery capacity drops below 80% .
Battery voltage	47.7 V nominal, minimum 42 V, maximum 54 V
Battery capacity	1.63 kWh (34.2 Ah at 47.7 V)

	With no payload
	15 min charging = 3 h runtime (1:12 charging to runtime ratio)
	30 min charging = 6 h 15 min runtime (1:12.5 charging to runtime ratio)
Charging ratio and runtime for	With maximum payload:
	15 min charging = 2 h 15 min runtime (1:9 charging to runtime ratio)
	30 min charging = 4 h 50 min runtime (1:9.6 charging to runtime ratio)

Environment

Environment	For indoor use only
	5–40°C 41–104°F (the maximum ambient temperature only apply up to 1 h)
Ambient temperature range, operation	<p>ⓘ The following climatic conditions from ISO3691-4 section 4.1.2 apply to the robot:</p> <ul style="list-style-type: none"> • Maximum average ambient temperature for continuous use is 25°C 77°F • Maximum ambient temperature for short term use (up to 1 h) is 40°C 104°F • Lowest average ambient temperature for continuous use in normal indoor conditions is 5°C 41°F • Lowest average ambient temperature for <u>continuous</u> use in cold (1–4 °C 33.8–39.2°F) indoor conditions is 1°C 33.8°F.
Ambient temperature range, storage	0–50°C 32°F–122°F
Humidity	10–95% non-condensing
IP rating	IP 52

Floor conditions	No water, no oil, no dirt
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Maximum altitude	2 000 m 6 561 ft
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Compliance

EMC	EN61000-6-4
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Designed to meet safety standards for industrial vehicles	ISO 13849-1—see the SISTEMA report on MiR Support Portal , ISO 3691-4 (except Clause 4.4, 4.9.4, 5.1, 5.2, 6, and Annex A), ISO 12100, ISO 13850, ITSDF B56-5, RIA R15.08-1
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TüV safety evaluation	ISO 13849-1—you can find the certificate on MiR Support Portal
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CE	Yes—you can find the certificate on MiR Support Portal under Documentation > Documentation type > Certificates
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Safety

Safety functions	13 safety functions according to ISO 13849-1, certified by TÜV Rheinland. The robot stops if a safety function is triggered.
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Personnel detection safety function	Triggered when obstacles or people are detected too close to the robot
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Emergency stop	Four emergency stop buttons, one in each corner. Emergency stop connector in electrical interface and joystick interface.
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Overspeed avoidance	Prevents the robot from driving faster than the predefined safety limit
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Manual control in robot interface	Token-based system for accessing the manual control. The robot issues only one token at a time.
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Safe guarded stop	Yes
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Safe load position	Triggered if the speed exceeds 0.3 m/s 1 ft/s while the lift/carrier is being lowered or raised
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Communication

Wi-Fi (internal PC)	Internal computer: 2.4 GHz and 5 GHz, 2 external antennas
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
Aux. power for top applications	Yes
Ethernet switch	MikroTik switch. Connect to the switch through the RJ45 Ethernet port on the front-right corner shield.
Aux. safety functions	Yes
General purpose I/O	Yes

Top module

Power for top modules	Yes
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Sensors

SICK safety laser scanners	2 pcs, microScan3 (front and rear), give 360° visual protection around the 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
Minimum lidar radius range for each safety laser scanner	10 m 10.9 yd
Proximity sensors	8 pcs

Light conditions

Must comply with the requirements for the Intel RealSense D435 camera

Lights and audio

Audio

Speaker

Signal and status lights

Indicator lights on four sides, eight signal lights (two on each corner)