MiR1350 specifications

Date: 2025-01-09

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

See the latest updates here.

Specifications may vary based on local conditions and application setup.

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 of active operation, whichever comes first

Dimensions

Length	1 350 mm | 53.1 in
Width	910 mm | 35.8 in
Height	322 mm | 12.7 in
Weight	244 kg | 538 lbs
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
Drive wheel diameter	200 mm | 7.9 in
Caster wheel diameter	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. MiR1350 does not validate the height of the payload. It is the responsibility of the commissioner to ensure tall payloads do not collide with any hanging objects.
Payload placement	Place center of mass according to directions in the integrator manual.
Maximum lifting capacity with a MiR EU-/US-lift installed	1 250 kg | 2 755 lbs

Performance

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
Positioning accuracy (in controlled conditions)	Docking to L-marker: ± 3 mm | 0.12 in on X-axis, ± 3 mm | 0.12 in on Y-axis, ± 0.25° yaw Docking to VL-marker: ± 2 mm | 0.08 in on X-axis, ± 3 mm | 0.12 in on Y-axis, ± 0.25° yaw Docking to V-marker: ± 20 mm | 0.79 in on X-axis, ± 20 mm | 0.79 in on Y-axis, ± 2° yaw Docking to Bar-marker: ± 10 mm | 0.39 in on X-axis, ± 5 mm | 0.19 in on Y-axis, ± 0.75° yaw Moving to position: ± 100 mm | 3.94 in on X-axis, ± 83 mm | 3.27 in on Y-axis, ± 3.4° yaw

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)
Standby time (robot is on and idle)	12 h 30 min

Space requirements

For an in-depth explanation of the performance specifications, see the guide*MiR600 and MiR1350 Space Requirements*.You can find this guide on MiR Support Portal.
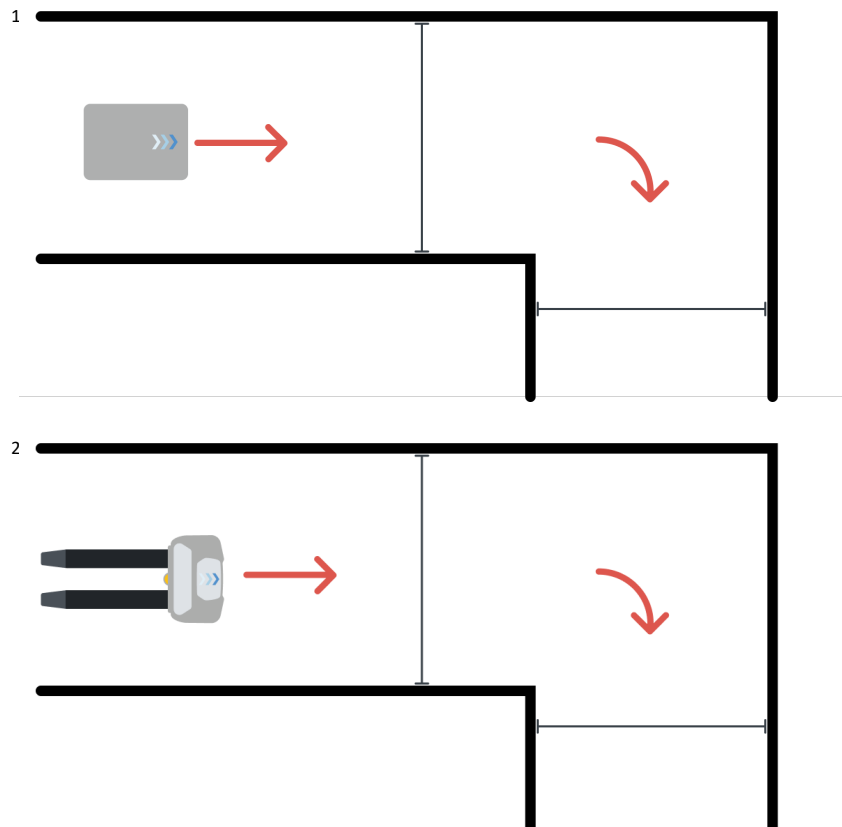
| Operational corridor width [1] | With default setup: 1 800 mm | 70.9 in |
| | With minimized footprint and muted Protective fields: 1 200 mm | 47.2 in |

[1]
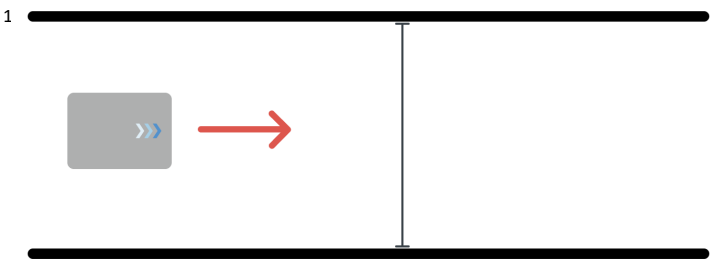
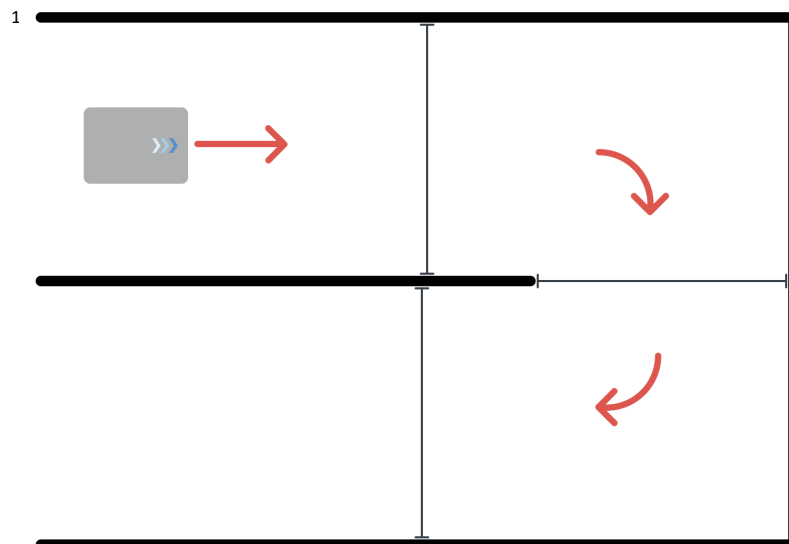| Operational corridor width for a 90° turn [12] | With default setup: 1 850 mm \| 72.8 in |
| | With minimized footprint and muted Protective fields: 1 550 mm \| 61 in |

Operational corridor width for a U-turn [1]	With default setup: 1 850 mm | 72.8 in With minimized footprint: 1 550 mm | 61 in

Operational corridor width for two robots passing [12]	With default setup: 3 500 mm | 137.8 in
	With minimized footprint and muted Protective fields: 2 700 mm | in 106.3 in

1

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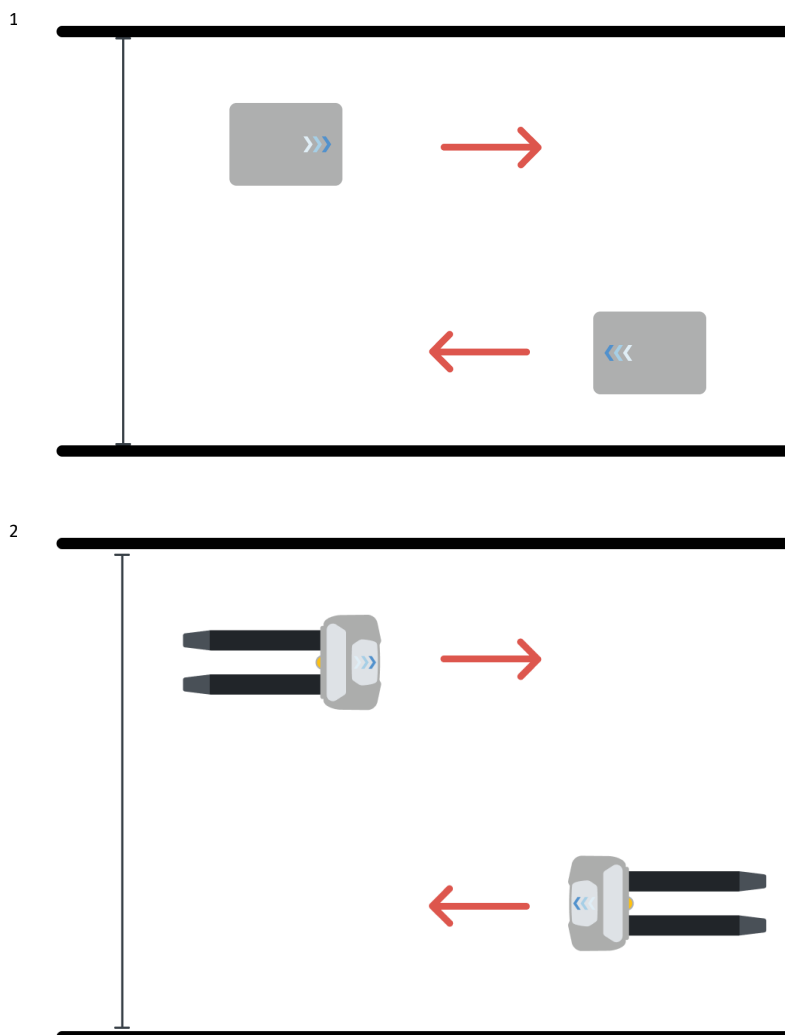
| Operational width for pivoting [1] | With default setup: 2 300 mm \| 90.6 in |
| | With minimized footprint and muted Protective fields: 1 850 mm \| 72.8 in |

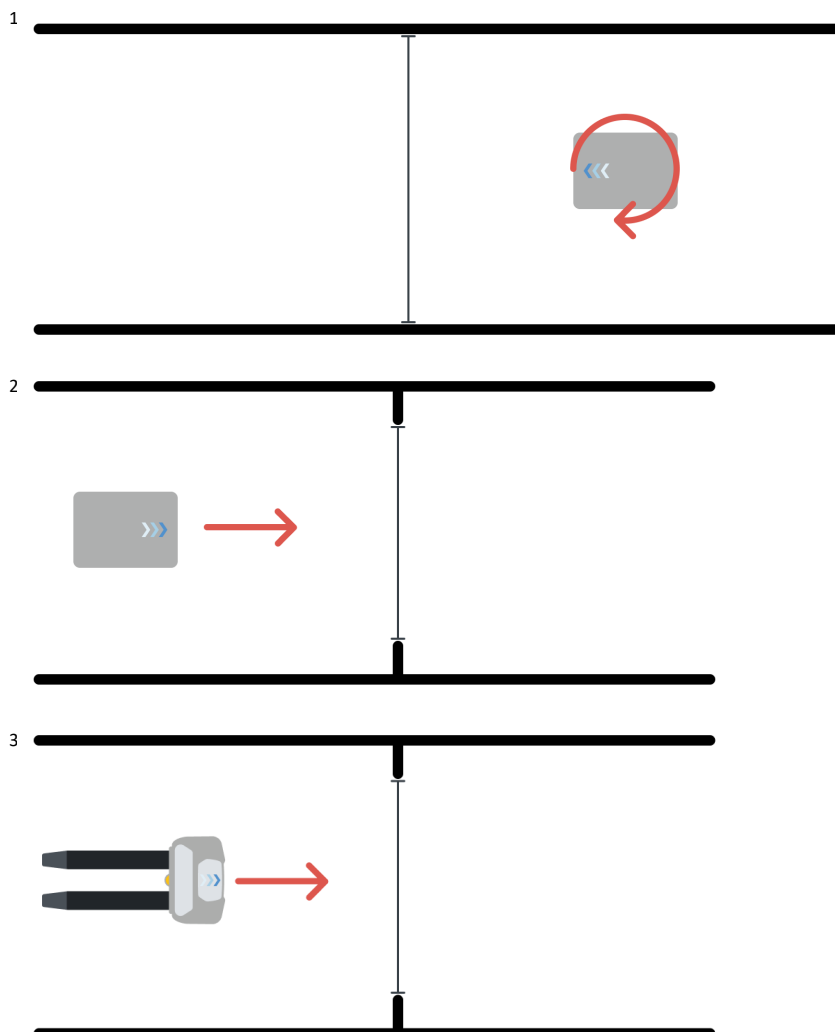| Operational doorway width [23] | With default setup: 1 650 mm \| 65 in |
| | With minimized footprint and muted Protective fields: 1 200 mm \| 47.2 in |

Minimum distance between charging stations [1]	1 100 mm | 43.3 in
Minimum space required in front of charging stations [2]	With default protective fields: 2 800 mm | 110.2 in With muted protective fields: 2 600 mm | 102.4 in
Minimum space required to the sides of charging stations	
Minimum space to adjacent wall for a charging station	
Minimum space to adjacent wall for a VL-marker	With default protective fields: 750 mm | 29.5 in With muted protective fields: 450 mm | 17.7 in
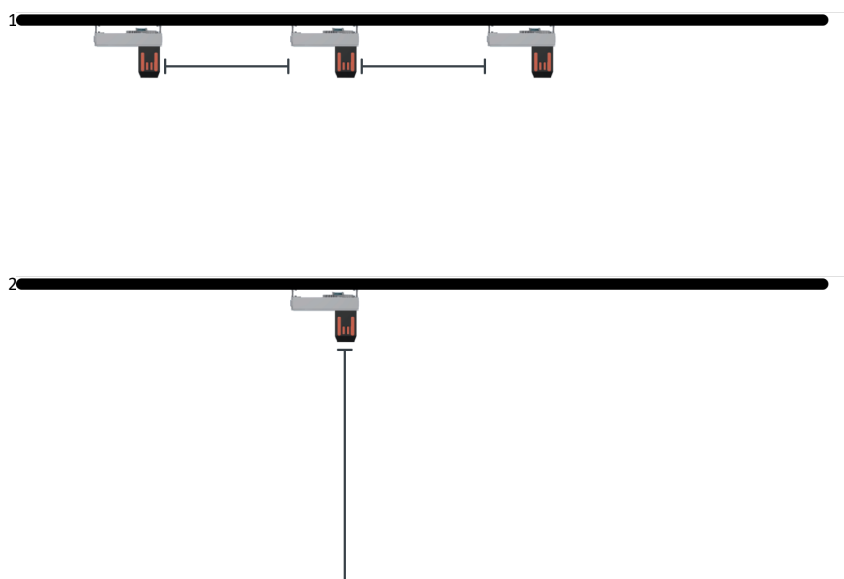
|	
Minimum distance between VL-markers	Fast docking where the robot docks the moment it detects the marker: 30 mm | 1.18 in Slow docking where the robot moves to the entry position before it docks to the marker: 20 mm | 0.79 in
Minimum distance between V-markers	Fast docking where the robot docks the 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 Bar-markers	With default protective fields: 2 450 mm | 96.5 in in front of the marker With muted protective fields: 2 200 mm | 86.6in in front of the marker
Minimum space around Vl-markers	With default protective fields: 500 mm | 19.7 in to the sides of the marker, 3 250 mm | 128 in in front of the marker With muted protective fields: 300 mm | 11.8 in to the sides of the marker, 3 100 mm | 122 in in front of the marker
Minimum space around V-markers	With default protective fields: 750 mm | 29.5 in to the sides of the marker, 3 000 mm | 118.1 in in front of the marker With muted protective fields: 750 mm | 29.5 in to the sides of the marker, 2 750 mm | 108.3 in in front of the marker

Minimum space around MiR Pallet Rack [1]	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

Power

Battery type	Lithium-ion
Charging time from 10%–90% with MiR Charge 48V (at an ambient temperature of 22°C | 72°F)	10%–90%: 46 min | 72°F
Charging time from 10%–90% with cable charger	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
Battery weight	
Battery dimensions	495 mm length × 210 mm width × 75 mm height | 19.5 in length × 8.3 in with × 3 in height

[1]
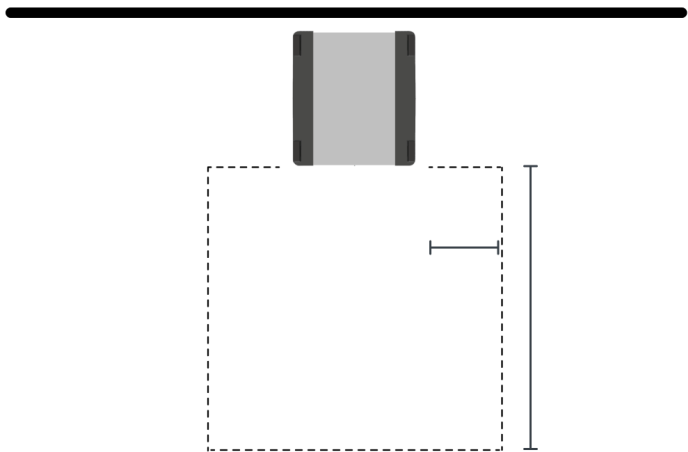
The minimum number of full charging cycles before the battery capacity drops below 80%	Minimum 3 000 cycles
Battery voltage	47.7 V nominal, minimum 42 V, maximum 54 V
Battery capacity	1.63 kWh (34.2 Ah at 47.7 V)
Charging ratio and runtime	With no payload 15 min charging = 3 h runtime (1:12 charging to runtime ratio) 30 min charging = 6 h 15 min runtime (1:12.5 charging to runtime ratio) 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)
Active operation time with no payload	9 h 50 min
Active operation time with maximum payload	6 h 45 m
Standby time (robot is on and idle)	12 h 30 min

Environment

Environment	For indoor use only
Ambient temperature range, operation	
Ambient temperature range, storage	0–50°C | 32°F–122°F
Humidity	20–95% non-condensing

IP rating	IP 52
Floor conditions	Clean and dry
Traversable gap and step tolerance	Gap: maximum 29 mm | 1.14 in at maximum 0.5 m/s | 1.64 ft/s^2, from all angles Step: maximum 10 mm | 0.39 in at maximum 0.5 m/s | 1.64 ft/s^2 at maximum 40° angle with no payload, not recommended with maximum payload
Floor to wheel frictional coefficient	0.60–0.80 (recommended)
Drive wheel material	Polyurethane
Material the robots cannot detect reliably [1]	Transparent, translucent, glossy, reflective, and light emitting
Optimal light conditions	Even and steady lighting (strong directional light can cause the robot to detect non-existent obstacles)
Maximum altitude	2 000 m | 6 561 ft

Compliance

EMC	EN61000-6-4
Designed to meet safety standards for industrial vehicles	ISO 13849-1—see the SISTEMA report here, 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
TüV safety evaluation	ISO 13849-1—see the certificate here

[1]We recommend either avoiding these materials, covering them with opaque and matte material the robot can detect, or ensuring the robot does not operate in areas with these materials.

Safety

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

Communication

Wi-Fi (robot computer)	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 cover.
Aux. safety functions	Yes
General purpose I/O	Yes

Top module

Power for top modules	Yes

Sensors

SICK safety laser scanners	2 pcs (front and rear), give 360° visual protection around the robot
3D cameras	For pallet and obstacle detection 2 pcs 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 range for each safety laser scanner	10 m | 10.9 yd
Proximity sensors	8 pcs

Lights and audio

Audio	Speaker
Signal and status lights	Indicator lights on four sides, eight signal lights (two on each corner)