
MiR250



The MiR250 is a more flexible AMR that can work around the clock and is brilliantly simple to setup, for improved productivity. Its smaller footprint and increased adaptability help optimize internal logistics without changing layout.

General information

Designated use	For internal transportation of goods and automation of internal logistics
Type	Autonomous Mobile Robot (AMR)
Color	RAL 7011 / Iron Grey
Color - ESD version	RAL 9005 / Jet Black
Cover materiel	Polycarbonate, Lexan Resin 221R
Product design life	Five years or 20 000 hours, whichever comes first

Dimensions

Length	800 mm / 31.5 in
Width	580 mm / 22.8 in
Height	300 mm / 11.8 in
Ground clearance	25 - 28 mm / 1.0 - 1.1 in
Weight (without battery or payload)	83 kg / 183 lbs (MiR250 Shelf Carrier: 146 kg)
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	Robot footprint. Contact MiR if a bigger top module is required.
Top plate	Anodized aluminum, 5 mm / 0.2 in
Height with MiR Shelf Carrier 250	370 mm / 14.6 in
Weight with MiR Shelf Carrier 250	146 kg / 321 lbs

Payload

Maximum payload	250 kg / 551 lbs
Acceleration limits with payload	0.3 m/s ²
Footprint of payload	Robot footprint. Contact MiR if a bigger payload footprint is required.
Payload placement	COM position according to User guide

Speed and performance

Active operation time with full load	13 hours at 22 degrees Celsius, from 100 to 0% power in the robot interface and with no top module.
Active operation time with no load	17.4 hours at 22 degrees Celsius, from 100 to 0% power in the robot interface and with no top module.
Standby time	22 hours. Robot is on and idle.
Traversable gap and sill tolerance	0-20mm / 0.8 in. Above 20 mm / 0.8 in: Instructions must be followed. Above 30 mm / 1.2 in: Not recommended, risk of personal injury. Above 50 mm / 2 in: Prohibited.
Space needed for U-turn around obstacle/wall	1 500 mm / 59.1 in aisle, 1 550 mm / 51 in at the end of aisle. 1 000 mm / 39.4 in with muted protective fields. (MiR Dynamic: 1 250 mm / 49.2 in aisle, 1 250 mm / 49.2 in at the end of aisle with normal setup.)
Minimum doorway width	Default footprint and SICK safety configuration: 1 300 mm / 52 in. Default footprint and SICK safety configuration with muted protective fields: 800 mm / 32 in. Dynamic footprint and SICK safety configuration: 950 mm / 38 in

Minimum size of detectable object (scanner)	20 mm / 0.8 in at 1.0 m / 39.4 in. 70 mm / 2.6 in at 2.5 m / 98.4 in
Maximum speed (with maximum payload on a flat surface)	2.0 m/s / 4.4 mph
Minimum corridor width for a 90 degree turn	Default footprint and SICK safety configuration 1 500 mm / 60 in. Default footprint and SICK safety configuration with muted protective fields 950 mm / 37.4 in. Dynamic footprint and SICK safety configuration 1 250 mm / 50 in. With MiR Shelf Carrier 250: 1 550 mm / 61 in
Docking types	Forward and reverse, and sideways docking to L-markers
Maximum incline/decline	+/- 5 % at 0,5 m/s
Minimum corridor width	1 350 mm / 53.1 in. With dynamic footprint and SICK safety configuration: 1 000 mm / 39.4 in. With MiR Shelf Carrier 250: 1 400 mm / 55.1 in
Positioning accuracy (in controlled conditions)	+/- 20 mm / 0,8 in to position, +/- 3 mm / 0,15 in to VL-marker
Minimum corridor width for a U-turn	With dynamic footprint and SICK safety configuration: 1 250 mm / 49.2 in. With MiR Shelf Carrier 250: 1 600 mm / 63 in aisle. 1 700 mm / 66.9 in at the end of aisle

Battery and charger

Charging options	MiR Charge 48V, Cable Charger, Cable Charger Lite 48V 3A
Charging time with MiR Charge 48V, 10% to 90%	52 minutes
Battery capacity	1.63 kWh (34.2 Ah at 47.7V)
Battery type	Lithium ion
Battery voltage	47.7 V nominal, min 41 V, max 54 V
Charging an empty battery	Only possible with the cable charger. To dock to MiRCharge 48V, the robot requires at least 3 % battery (or equal to 10 minutes of operating time).
Charging current, MiR Charge 48V	Up to 35 A depending on battery temperature and constant voltage ramping down towards end of charge cycle.
Minimum number of full charging cycles	3 000 cycles
Cable charger	Robot cannot drive with cable charger connected and charging.
Charging ratio and runtime for 10 min charging	1:18 (3 hours runtime with maximum payload)
Charging ratio and runtime for 20 min charging	1:18 (6 hours runtime with maximum payload)
Charging ratio and runtime for 30 min	1:17 (8.3 hours run time with maximum payload)

charging

Charging ratio and runtime for 60 min charging	1:10 (10.6 hours runtime with maximum payload) Fully charged
---	--

Charger communication	The robot communicates with MiRCharge 48V through CAN interface. Charging starts only when the robot connection is present
------------------------------	--

Battery dimensions	546 mm / 21.5 in in length, 204 mm / 8 in width, 76 mm / 3 in in height
---------------------------	---

Battery weight	14 kg / 30 lbs
-----------------------	----------------

Charging time with cable charger (10-90%)	One hour and ten minutes
--	--------------------------

Environment

Ambient temperature (operation)	+5°C to 40°C according to ISO3691-4 section 4.1.2
--	---

Ambient temperature (storage)	-20°C to 60°C (one month), -20C to +45C (three months)
--------------------------------------	--

Humidity	10-85% non-condensing
-----------------	-----------------------

Maximum altitude	2 000 m / 6 561 ft
-------------------------	--------------------

Environment	For indoor use only
--------------------	---------------------

Compliance

EMC	EN61000-6-2, EN61000-6-4, (EN12895)
------------	-------------------------------------

Safety standards for industrial vehicles	Design in accordance with present standards
---	---

Safety

Personnel detection safety function	Triggered by a human or other obstacle in the path of travel.
--	---

Emergency stop	Triggered by pressing the Emergency stop button.
-----------------------	--

IP Class	21
-----------------	----

Communication

I/O connections	4 digital inputs, 4 digital outputs (GPIO), 1 Ethernet port, 1 Auxiliary emergency stop
------------------------	---

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
---------------------------	--

Ethernet	M12 plug, 4p. 10/100 Mbit Ethernet with Modbus protocol, adapter for external antenna
-----------------	---

Safety I/O connections	6 digital inputs, 6 digital outputs
-------------------------------	-------------------------------------

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 (two pcs.)

nanoScan3 (front and back) 360° visual protection around robot

3D camera (two pcs.)

3D camera Intel RealSense D435. FoV: Detects objects 1 800 mm / 70.9 in high at a distance of 1 200 mm / 47.2 in in front of the robot. 114° total horizontal view. Ground view, minimum distance from robot: 250 mm / 9.8 in

Proximity sensors

Eight pcs.

Lights and audio

Audio

Speaker

Status lights

LED light band

Signal lights

Eight pcs, two on each corner

Maintenance

Maintenance

Maintenance hatches on four sides of the robot.

Service intervals

Six months or according to user guide