MIR250

Technical spesification

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 materiel	Polycarbonate, Lexan Resin 221R
Product design life	Five 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
Ground clearance	25 - 28 mm | 1.0 - 1.1 in
Weight (without battery or payload)	83 kg | 183 lbs
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
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	Place center of mass according to directions in the user guide
Speed and performance	
Active operation time with maximum payload	13 hours at 22°C | 72°F, from 100 to 0% power in the robot interface and with no top module
Active operation time with no payload	17.4 hours at 22°C | 72°F, from 100 to 0% power in the robot interface and with no top module
Traversable gap and sill tolerance	0-20 mm | 0.8 in. Above 20 mm | 08 in: Instructions must be followed. Above 30 mm | 1.2 in: Not recommended, risk of personal injury. Above 50 mm | 2 in: Prohibited

Operational doorway width	With default footprint and SICK safety configuration: 1 300 mm | 52 in. With default footprint and SICK safety configuration and muted protective fields: 800 mm | 32 in. With dynamic footprint and SICK safety configuration: 950 m | 38 in
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
Maximum speed (with maximum payload on a flat surface)	2.0 m/s | 4.4 mph
Docking types	Forward and reverse, and sideways docking to L-markers
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	1 350 mm | 53.1 in. With dynamic footprint and SICK safety configuration: 1 000 mm | 39.4 in
Operational corridor width for a 180° turn	With dynamic footprint and SICK safety configuration: 1 250 mm | 49.2 in
Maximum incline/decline	+/- 5 % at 0.5 m/s
Minimum distance to achieve maximum speed	9.5 m | 31.2 ft
Standby time (robot is on and idle)	22 h
Power	
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	1:16 (2 hours and 40 minutes runtime with maximum payload)
Charging ratio and runtime for 20 min charging	1:14 (4 hours and 30 minutes runtime with maximum payload)
Charging ratio and runtime for 30 min charging	1:12 (6 hours and 5 minutes run time with maximum payload)
Charging ratio and runtime for 60 min charging	1:10 (10 hours and 20 minutes 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% to 90%: 1 hour and 10 minutes
Environment	
Ambient temperature (operation)	5°C to 40°C | 41°F to 104°F according to ISO3691-4 section 4.1.2
Ambient temperature (storage)	1 month: -10°C to 60°C |14°F to 140°F. 3 months: -20°C to +45°C |14°F to 140°F
Humidity	10-85% non-condensing
Maximum altitude	2 000 m | 6 561 ft
Environment	For indoor use only
IP class	IP21
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 by a human or other obstacle in the path of travel.
Emergency stop	Triggered by pressing the Emergency stop button.

Overspeed avoidance	Prevents the robot from driving faster than the predefined safety limit
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	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