MIR500 Pallet Lift

Technical spesification

General information	
Designated use	For internal transportation of heavy loads and pallets within the industry and logistics
Type	Autonomous Mobile Robot (AMR)
Color	RAL 7011 / Iron Gray
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	1 350 mm | 53.1 in
Width	910 mm | 35.8 in
Height	322 mm | 12.7 in
Weight (without payload)	226 kg | 498 lbs
Ground clearance	40 mm |1.6 in
Load surface	1 249 x 789 mm | 49.2 in x 31 in
Dimensions for mounting top modules	Equal to robot footprint. Contact MiR if a bigger top module is required.
Wheel diameter (drive wheel)	200 mm | 7.9 in
Wheel diameter (caster wheel)	100 mm | 3.9 in
Payload	
Maximum payload	500 kg | 1 100 lbs
Footprint of payload	Equal to robot footprint. Contact MiR if a bigger payload footprint is required.
Total lifting capacity with a MiR EU-/US-/Shelf-lift installed	500 kg | 1 100 lbs
Speed and performance	
Maximum speed (with maximum payload on a flat surface)	2.0 m/s | 4.4 mph
Width for pivoting	With default setup: 2 600 mm | 102.4 in. With improved setup: 2 500 mm | 98.4 in
Operational corridor width	With default footprint: 2 200 mm | 86.6 in. With minimized footprint: 2000 mm | 78.7 in
Operational corridor width for two robots passing	With default setup: 4 000 mm | 157.5 in. With improved setup: 3 600 mm | 141.7 in

Operational doorway width	In normal operation: 1 950 mm | 76.8 in. In normal operation with camera filter set to high: 1 800 mm | 70.9 in. With muted protective fields: 1 700 mm | 66.9 in
Minimum distance between chargers	750 mm | 29.5 in, if the robot can approach the charger in an angle of 80-100° to the wall
Docking types	Forward docking. Reverse docking.
Turning diameter around an obstacle/wall with no load	With default footprint: 2 200 mm | 86.6 in. With minimized footprint: 2 100 mm / 82.7 in
Maximum incline/decline	5% at 0.5 m/s
Minimum size of detectable object	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
Occupied pallet rack detection	Yes
Operational corridor width for a 90° turn	With default setup: 2 200 mm | 86.6 in With improved setup: 2 100 mm | 82.7 in
Operational corridor width for a 180° turn	With no payload and default footprint: 2 200 mm | 86.6 in. With no payload and minimized footprint: 2 100 mm | 82.7 in
Active operation time with no payload	15 h
Power	
Charging options	MiR Charge 48V, Battery Charger 48V 12A , Cable Charger Lite 48V 3A
MiR Charge 48V	The robot communicates with MiR Charge 48V through CAN interface. Charging starts only when the robot connection is present.
Charging current, MiR Charge 48V	Up to 40 A depending on battery temperature and constant voltage ramping down towards end of charge cycle.
Charging time with MiR Charge 48V, 10% to 90%	1 h
Charging current with cable charger	12:00 a.m.
Charging time with cable charger	10%—90%: 2 h with 20 A charger. 3.5 h with 12 A charger
Minimum number of full charging cycles	1 000 cycles
Battery voltage	48 V Nominal
Battery capacity	2 kWh (41.6 Ah at 48 V)
Battery type	Li-NMC
Battery weight	14.3 kg | 31 lbs
Standby time (robot is on and idle)	26 hours
Battery dimensions	300 mm length × 300 mm width × 107 mm height | 11.8 in length × 11.8 in width × 4.2 in height
Cable charger	When charging with a cable charger, the robot goes into emergency stop.
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).
Charger communication	The robot communicates with MiR Charge 48V through a CAN interface. Charging starts only when the robot connection is present
Environment	
Ambient temperature, operation	5°C to 40°C | 41°F to 104°F according to ISO3691-4 section 4.1.2
Ambient temperature range, storage	-10°C to 60°C |14°F to 140°F
Humidity	10-95% non-condensing
Environment	For indoor use only
Floor conditions	Can withstand driving through small puddles of water on the floor, maximum 4 mm deep. Wet floors should be risk assessed as braking distance can be affected.
Maximum altitude	2 000 m | 6 561 ft
IP class	IP21
Compliance	
EMC	EN 12895:2015 and EN 61000-6-4:2018
Safety standards for industrial vehicles	CE, EN1525, ANSI B56.5, ISO3691-4, RIA15.08, ISO13849-1
Safety	
Safety functions	Five safety functions according to ISO 13849-1. MiR500 stops if a safety function is triggered.
Manual control in robot interface	Token-based system for accessing the manual control. The robot issues only one token at a time.
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, 1 Ethernet port
WiFi (router)	2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac. Internal computer: 802.11 a/b/g/n/ac.
WiFi connection	WiFi adapter: 2.4 GHz and 5 GHz, two internal antennas.
Communication protocol	REST, Modbus
WiFi (internal PC)	Dual-band a/b/g/n/ac
Top module	
Power for top modules	M23 plug, 6p. 2 x 48 V / 20 A safe pwr, 1 x 24 V / 2 A always on
Sensors	
SICK safety laser scanners (two pcs.)	microScan3 (front and back) 360° visual protection around robot
3D cameras	2 pcs 3D camera Intel RealSense™ D435. FoV height: 1 700 mm | 66.9 in. FoV distance in front of robot: 950 mm | 37.4 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	Buzzer, speaker
Signal lights	8 pcs, 2 on each corner
Status lights	LED light band
Maintenance	
Maintenance hatches	Maintenance hatches on four sides of the robot.
Service interval	6 months or according to user guide