OMRON

Mobile Robots
HD Series

Autonomous Mobile Robots (AMRs) that self-navigate to transport heavy payloads

- Natural feature navigation:
  Automatically plans efficient routes and prevents collisions
- Fleet management:
  Operates in coordination with a fleet of up to 100 mobile robots
- Easy deployment:
  Installs quickly, without facility modifications

Ordering Information

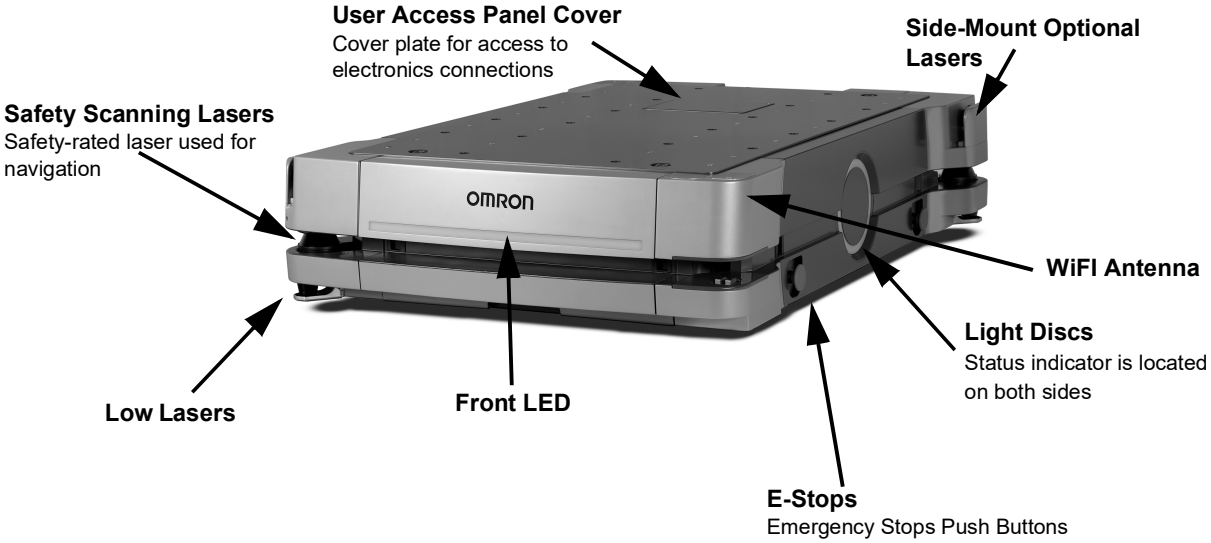
Part Number Configuration **37□□□-□**
1 2 3 4

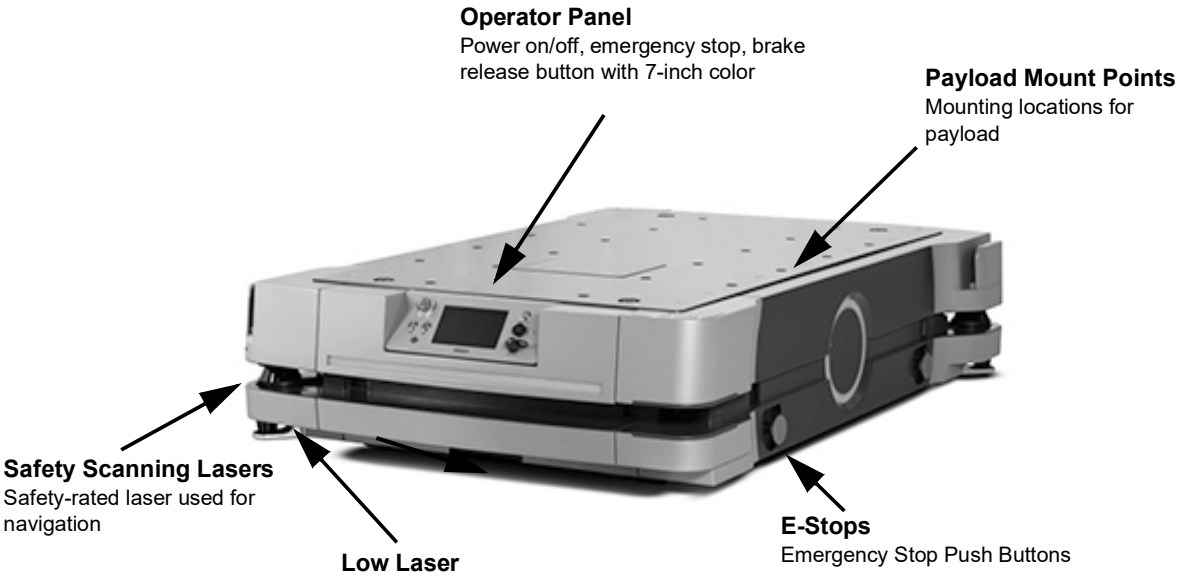
Mobile Robots-HD Platform

No.	Item	Specification		Symbol
1	Robot Type	HD-1500		4
2	Speed & Playload	1.8 m/s	1500 Kg	8
3	Laser Version	Omron (HD)		0
4	Configuration	Standard HD-1500	Robot	00000
			Robot, Dock	00002
			Robot, Side Lasers	00010
			Robot, Single HAPS	00100
			Robot, Single HAPS, Side Lasers	00110
			Robot, Double HAPS	00200
			Robot, Double HAPS, Side Lasers	00210
			Robot, Dock, Joystick/Pendant, Top Plate	10004
			Robot, Dock, Single HAPS, Joystick/Pendant, Top Plate	10104
			Robot, Dock, Single HAPS, Joystick/Pendant, Top Plate, Side Lasers	10114
			Robot, Dock, Double HAPS, Joystick/Pendant, Top Plate	10204
			Robot, Dock, Double HAPS, Joystick/Pendant, Top Plate, Side Lasers	10214

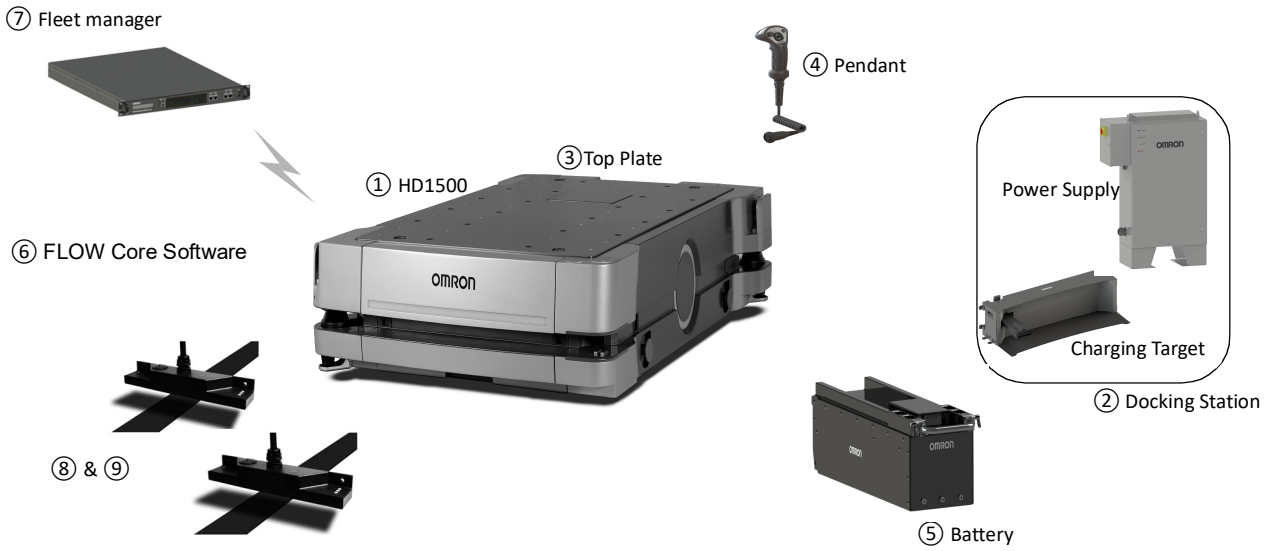
Components and Functions

HD-1500



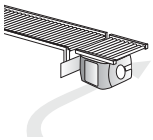
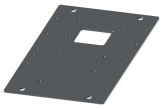


Accessories



	Product Name	Part Number	Description	Notes
①	HD-1500	37480-000	A mobile robot OEM running OMRON's FLOW Core Software. The battery is not included.	
②	Docking Station	68910-010	A docking station to charge the battery: Power supply: 68310-000 Charging target: 68910-000	Included in starter kit
③	Top Plate, HD-1500	68950-000	A upper plate of the mobile robot. It is not necessary for building customer payload.	
④	Pendant, HD-1500	68940-000L	Used for manually controlling the mobile robot.	
⑤	Battery, HD-1500	68330000	A battery that is installed in the mobile robot.	-
⑥	FLOW Core Software	Embedded	OMRON'S mobile solution operating software supporting navigation, safety, fleet management and advanced features.	-
⑦	Fleet Manager	20271-900-OEI-5	EM2100 appliance with FLOW Core software configured for mobile robot fleet management.	-
⑧	High Accuracy Positioning System (Single sensor)	68925-010	A combination of sensor and magnetic tape to achieve accurate alignment during forward driving motion, when the sensor is attached to mobile robot and magnetic tape is on the floor.	Factory Installed (Not field installed)
⑨	High Accuracy Positioning System (Double sensor)	68925-020	A combination of two sensors and magnetic tape to achieve accurate alignment during forward and backward driving motions, when the sensors are attached to mobile robot and magnetic tape is on the floor.	Factory Installed (Not field installed)
⑩	Magnetic Tape	14925-000	Heavy duty magnetic tape for the High Accuracy Positioning System. The tape is applied to signal the mobile robot where to stop.	-
⑪	Side Laser Kit	68945-010	Includes side laser, mounting kit, and metal enclosures.	-

HD-1500 Options and Accessories

Appearance	Product Name	Specification	Configuration & Attachment	Part Number
	High Accuracy Positioning System (HAPS)	Kit, Single sensor	Sensor × 1, mounting bracket × 1, power connector × 1, RS-232 connector × 1, 25 mm wide magnetic tape (south top side, 50 m roll)	68925-010
		Kit, Double sensor	Sensor × 2, mounting bracket × 2, power connector × 1, RS-232 connector × 2, 25 mm wide magnetic tape (south top side, 50 m roll)	68925-020
		Heavy Duty Magnetic tape	25 mm wide magnetic tape (south top side, 50 m roll)	14925-000
	Cell Alignment Positioning System (CAPS)	Software license	Software license activated on each AMR individually.	20271-805
	Battery	For HD-1500 models	HD-1500 battery	68330-000
	Docking Station (Part number: 68910-010)	Both wall or floor mount	Power Supply	68310-000
			Charging Target	68910-000
	Pendant	Cable length: 0.6 to 3 m	Includes a 3-position enabling switch	68940-000L
	Top Plate	Top cover for HD-1500	Kit includes mounting hardware and a cover for the User Access Panel	68950-000
	Side Lasers	270 degree field of view, 8 m detection range.	Side lasers may be mounted in the standard location on the AMR, or moved to a custom location. The kit comes with brackets that may be used if the lasers are not mounted in the standard location.	68945-010

Fleet Operations Workspace Solutions

Appearance	Product Name	Configuration & Attachment	Part Number
	Primary Fleet Operations Workspace (FLOW) Core License, 1 Year	Entitlement for a 1 year renewable Primary FLOW Core license	20271-800
	Primary Fleet Operations Workspace (FLOW) Core License, 5 Year	Entitlement for a 5 year renewable Primary FLOW Core license	20271-806
	Secondary Fleet Operations Workspace (FLOW) Core License, 1 Year	Entitlement for a 1 year renewable Secondary FLOW Core License	20271-802
	Secondary Fleet Operations Workspace (FLOW) Core License, 5 Year	Entitlement for a 5 year renewable Secondary FLOW Core License	20271-807
	Primary Fleet Manager	EM2100 Appliance with Temporary 120 Day Fleet Operations Workspace License	20271-900
	Secondary Fleet Manager	EM2100 Appliance with Temporary 120 Day Fleet Operations Workspace License	20271-901
	Bundle. Fleet Simulator	Package includes: Entitlement for perpetual Fleet Simulator License and EM2100 appliance	20271-903
	License, Fleet Simulator	Entitlement for perpetual Fleet Simulator license for existing EM2100 devices	20271-804

* To obtain the latest version of the Fleet Operations Workspace (FLOW) Core software, contact your local OMRON representative. Please note that an active subscription is required for access to software upgrades.
* Expiration of a 1 year subscription license without renewal will result in cessation of the fleet management functions of the OMRON AMR solution until the license is renewed.
* After four consecutive 1 year renewals (for a total of 5 years) or after purchase of a 5 year license, all fleet management functions will continue to operate without requiring subsequent subscription renewals. Please note that an active subscription will still be required to have access to subsequent software releases, including bug fixes, feature upgrades and performance improvements.

Specifications

Mobile Robots-HD Platform

Item		HD-1500	Note
Materials		Structural components are made from low carbon steel and cast aluminum, nonstructural parts are aluminum	
Dimension (L × W × H)		1696 x 1195 x 370 mm	
Weight (with Battery)		585 kg	
Environment	Ambient temperature	5 to 40 °C	
	Ambient humidity	5 to 95% (non-condensing)	
	Operating Environment	Indoor usage only, no excessive dust, no corrosive gas	Direct sunlight may cause safety laser false positive
	IP rating	IP20	
Floor Conditions	Floor Requirements	concrete, eproxy floor (no water, no oil, no dirt)	
	Minimum floor flatness	F_F25 (ACI 117 standard)*	* ACI 117 is the American Concrete Institute standard for concrete floors.
	Traversable step	10 mm max.	Maximum speed of 500 mm/sec forward and 400 mm/sec backwards
	Traversable gap	15 mm max.	
	Climb grade	level floor only.	max. 3° incline
Navigation	Routing	Autonomous routing by localizing with safety scanning laser based on environment mapping	
	Environmental map making method	Scan by walking the mobile robot through the environment, and upload the scan data in the MobilePlanner	
Payload	Maximum Weight	1500 kg	
Mobility	Maximum Speed	1800 mm/s	
	Maximum Rotation Speed	60°/s	
	Stop Position Repeatability	± 50 mm position*	*±10 mm position, ±0.5° rotation with option, (High Accuracy Positioning System) ±8 mm position, ±1° rotation with option, (Cell Alignment Positioning System)
Drive wheels	Materials	Non-marking, static dissipative Polyurethane on steel rim.	
	Size	250 mm diameter x 80mm 2 wheels	
Passive casters	Materials	Non-marking Polyurethane on cast iron 200 mm diameter x 50mm, 4 casters, 2 wheels each (8 wheels total)	
Power	Voltage	42VDC - 57VDC (52.8 V Nominal)	
	Capacity	70 Ah Battery cell nominal capacity	
	Run Time	12.5 hours (unloaded), 9 hours (full load)	
	Recharge Time	23.33 minutes (20 - 80%) or 39 minutes (0 - 100%)	
	Battery Life Cycles	9000 recharge cycles (battery cell nominal)	
	Charging Method	Automatic / manual	
Standard	Harmonized Standard	EN IS0 12100, EN ISO 13849-1, EN 60204-1	
	Relevant Standard	EN 60204-1, ISO 10218, UL1564, UL2271, UL1740	
	Wireless	IEEE 802.11 a/b/g/n/ac	
Safety Features	Safety Scanning Lasers	(2) one at front right corner and one at back left corner for 360 degree of safety zones. Each laser has a 270 deg. field of view.	175 mm above floor 360°, 30 m range, Class 1, eye-safe PLd Safety per ISO 13849-1
	Emergency Stops	one at Operator Panel screen, four others on the side panels (2 on each side)	
	Low Lasers	(2) one at front -right and one at back-left. 180 degree field of view	
	Side Lasers	Optional	* 2 on sides of payload structure, factory mounted, user-adjustable
	Indicators	Light disks on each side, light strips on the front and back.	
	Speakers	(2) 3.5 in. speakers, (2) piezo buzzers	
Operator Panel	Display	7 in. diagonal LCD	
	Controls	Key switch*, pendant connector, and maintenance port, on, off, and brake-release buttons.	* Key switch can be used to disable the off button to avoid accidental shutdown or tampering
User Interface	Wireless	IEEE 802.11 a/b/g/n/ac	
	Ethernet Port	1 x maintenance LAN, 1 x user LAN, 2 x internal LAN	
	Digital I/O	8 inputs and outputs	
	Analog I/O	4 inputs and outputs	
	Audio	Digital audio out	

MobilePlanner Software

Operating System	Windows 10 (32-bit/64-bit version)
CPU	1.5 GHz dual-core CPU recommended
Main Memory	1.5 GB min. (4 GB min. recommended)
Hard Disk	At least 200 MB of available space
Video Memory	256 MB min.
Display	XGA 1024 × 768, 16 million colors minimum
Supported Languages	English, German, Japanese, French, Italian, Korean, Spanish, Simplified Chinese and Traditional Chinese.

EM2100 Appliance

Part Numbers	20271-900 (Primary Fleet Manager) 20271-901 (Secondary Fleet Manager) 20271-903 (Bundle, Fleet Simulator)
Dimensions- W × D × H	430 × 495.3 × 43.7 mm
Weight	9.1 kg
Mounting method	1U rack mount in a standard 19-inch equipment rack
Power Supply	100-240 VAC (typical 100 W)
Power Consumption	200W max.
Operating Temperature	10 to 35 °C
Storage Temperature	-25 to 60 °C
Operating Humidity	8 to 90%, non-condensing
Storage Humidity	5 to 95%, non-condensing
Chassis protection class	IP20
Main Memory	32 GB DDR3
Storage	60 GB SSD
Archive Storage	4 TB HDD
Communication port	10/100/1000 Ethernet × 4, USB × 4, VGA
Status Display	Multi-segment LCD

High Accuracy Positioning System

Part Number		62925-010 and 62925-020
Sensor	**Depth**	30 mm
	Width	165 mm
	Rating	IP64
	Environment	-40 to 85 °C
	LEDs	Power, tape present, left marker, right marker
Magnetic Tape	**Width**	25 mm
	Orientation	South up
Markers (Magnetic Tape)	**Width**	25 mm
	Length	300 mm min. for 500 mm/s drive speed
	Orientation	North up
	Separation From Tape	15 - 30 mm
Connections	**Front Sensor**	RS232-1
	Rear Sensor	RS232-2
	Power, Both Sensors	Aux power using the included splitter cable

Cell Alignment Positioning System (CAPS)

Part Number	20271-805
Stop Position Accuracy	±8 mm position, ±1° rotation
Type	Software license

Battery

Part Number	68330-000
Run Time (No Payload)	12.5 hours
Weight	68kg
Voltage	44 - 57VDC (52.8V Nominal)
Capacity	70Ah
Recharge Time	23.33 minutes (20 - 80%) or 39 minutes (0 - 100%)
Life Expectancy	9000 charge cycle

Docking Station

Part Number	86310-000 (power supply); 68910-000 (target)
Current	Input current: 23 A Output current: 120 A
Contacts	2
Power	200 - 240 VAC (Delat/Wye) 380 - 415 VAC (Wye only)
Power Consumption	7.3 kW
Humidity	5 to 95 %, non-condensing
Temperature	5 to 40° C
Dimensions (W × L × H)	Power supply: 610 x 333 x 1112 mm Charging target: 1256 x 503 x 297 mm
Weight	Power supply: 105 kg Charging target: 39 kg
Mounting	directly to floor and wall
Indicators	Power on: Blue Charging: Yellow Error: Red Operating: Green

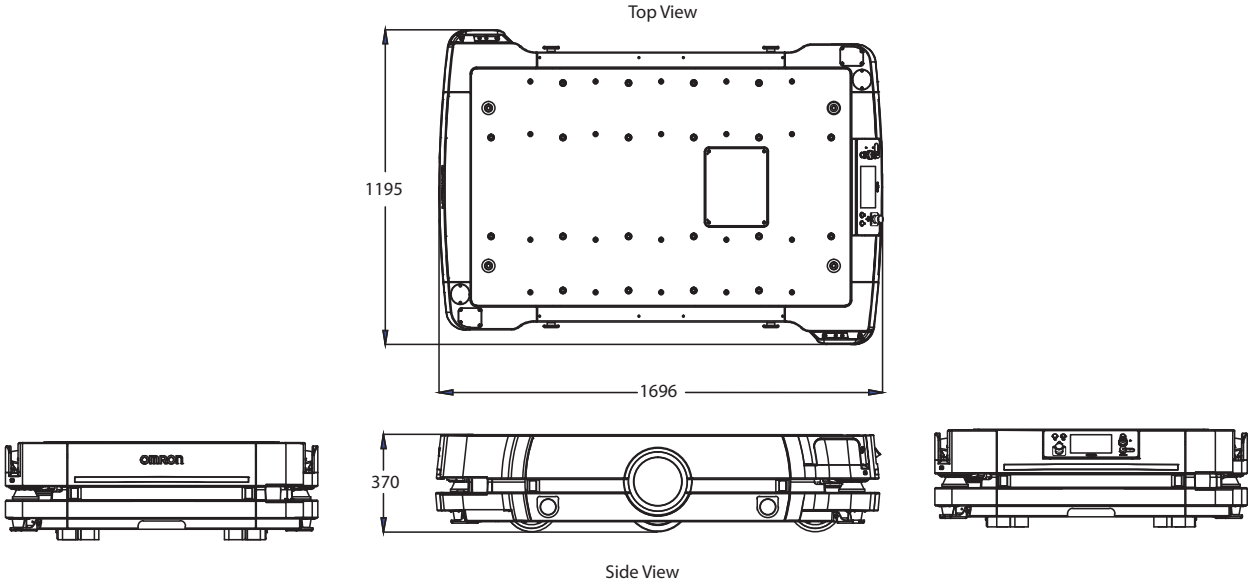
Pendant

Part Number	68940-000L
Weight	0.55 kg
IP Rating	IP56

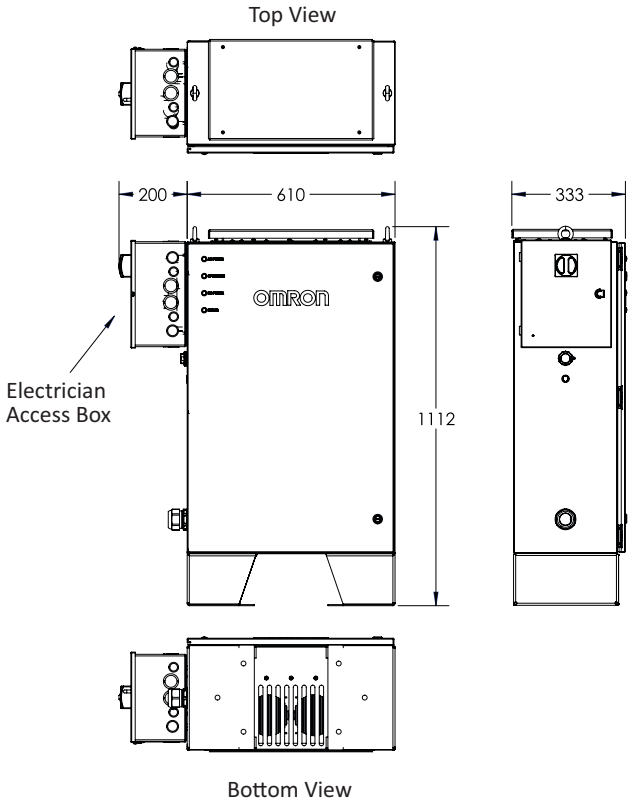
HD Series
Dimensions

(Unit: mm)

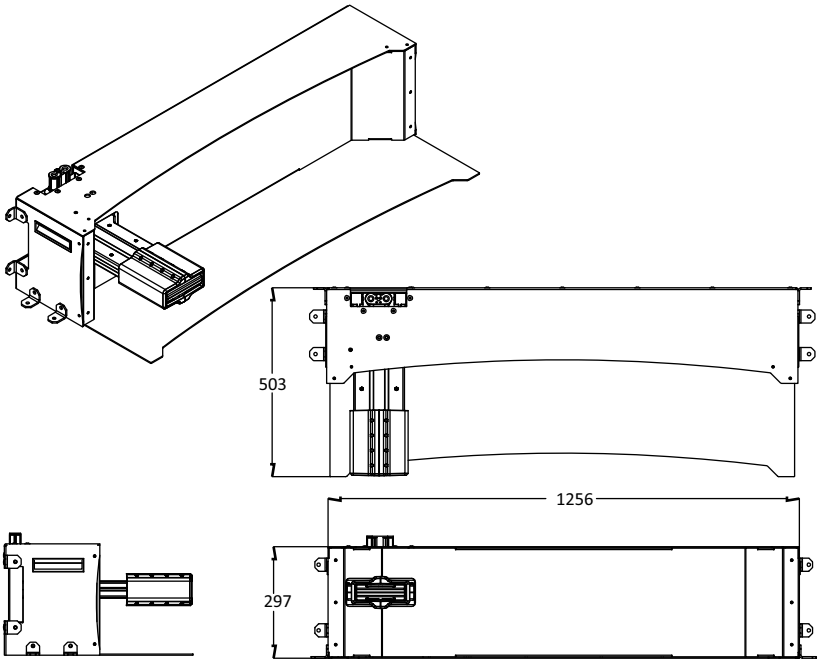
HD-1500 Mobile Robot



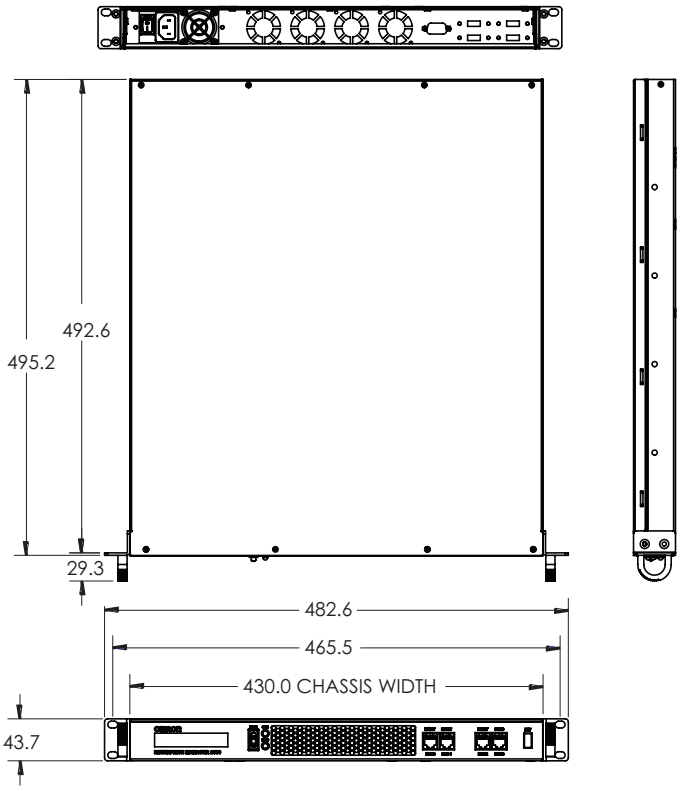
Power Supply Box



Docking Target

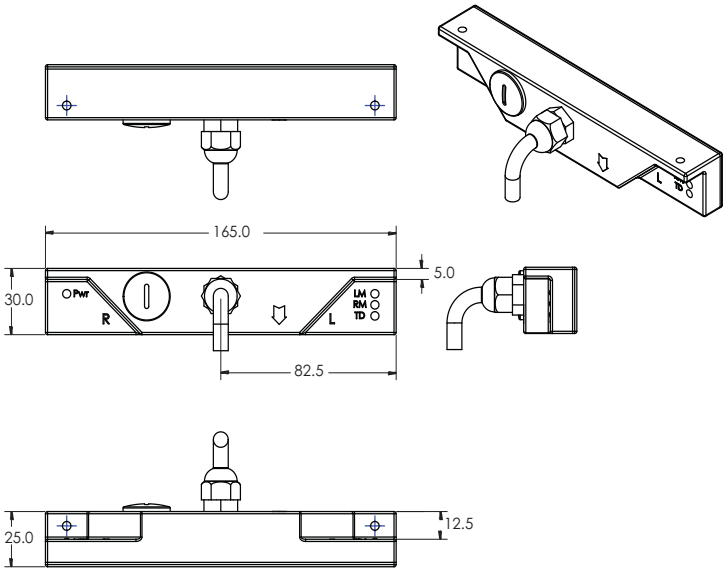


Fleet Manager EM2100 Appliance

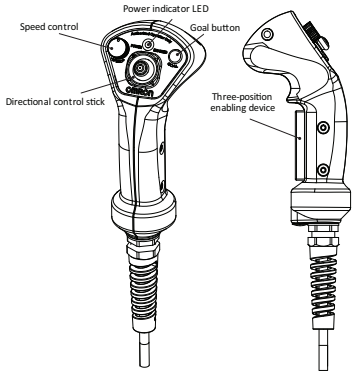


HD Series

High Accuracy Positioning System



Pendant



Related Manuals

Manual No.	English Title
I614	Mobile Robots Software Suite User Guide
I615	Enterprise Manager User Guide
I617	Advanced Robotics Command Language Reference Guide
I618	Advanced Robotics Command Language Enterprise Manager Integration Guide
I634	EM2100 Installation Guide
I635	Fleet Operations Workspace Core User Guide
I636	Fleet Operations Workspace Core Migration Guide
I637	Fleet Operation Workspace Core Integration Toolkit User Guide
I641	Fleet Simulator User's Guide
1645-E	HD-1500 User's Guide
1646-E	HD-1500 Peripherals User's Guide
1647-E	HD-1500 Safety Guide

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