

Autonomous Mobile Robots

HD Series

Autonomous Mobile Robots that self-navigate to transport payloads up to 1500 Kg

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



Ordering Information

Type	HAPS	Side Lasers	Charging Station	Pendant	Top Plate	Part Number
HD-1500	No	No	No	No	No	37480-00000
		Yes				37480-00010
		No	Yes	Yes	Yes	37480-10004
	Single	No	No	No	No	37480-00100
		Yes				37480-00110
		No	Yes	Yes	Yes	37480-10104
		Yes				37480-10114
	Double	No	No	No	No	37480-00200
		Yes				37480-00210
		No	Yes	Yes	Yes	37480-10204
		Yes				37480-10214

Note: To ensure proper fleet management, please contact an OMRON representative before ordering AMRs to add to an existing fleet.

Note: The battery for the HD-1500 must be ordered separately (part number 68330-000).

Accessories and Optional Items

Item	Details	Part Number
EM2100	Network appliance that acts as a Fleet Manager or Fleet Simulator	14328-200
Top Plate Kit	Upper plate kit of the AMR. It is not necessary for building a customer payload structure	68950-000
Pendant	Handheld, external input device for manually driving an AMR. It is typically used for map creation	68940-000L
Charging Station	Includes a Power Supply Box and Docking Target	68910-010
Power Supply Box	Supplies power to the Docking Target or battery for charging purposes	68310-000
Docking Target	A fixed object that the AMR docks to for autonomous charging. Connects to the Power Supply Box	68910-000
Battery	Removable and rechargeable power source for the AMR	68330-000
Side Laser Extension Cables, Communication	1 m length	22115-000F
	2 m length	22117-000F
Side Laser Extension Cables, Power	1 m length	22800-000F
	2 m length	22802-000F
Wireless Antenna Extension Kit	Two cables, 2 m each, two dipole antennas	68955-000
CAPS License	Licensed version of the Cell Alignment Positioning System	20271-805

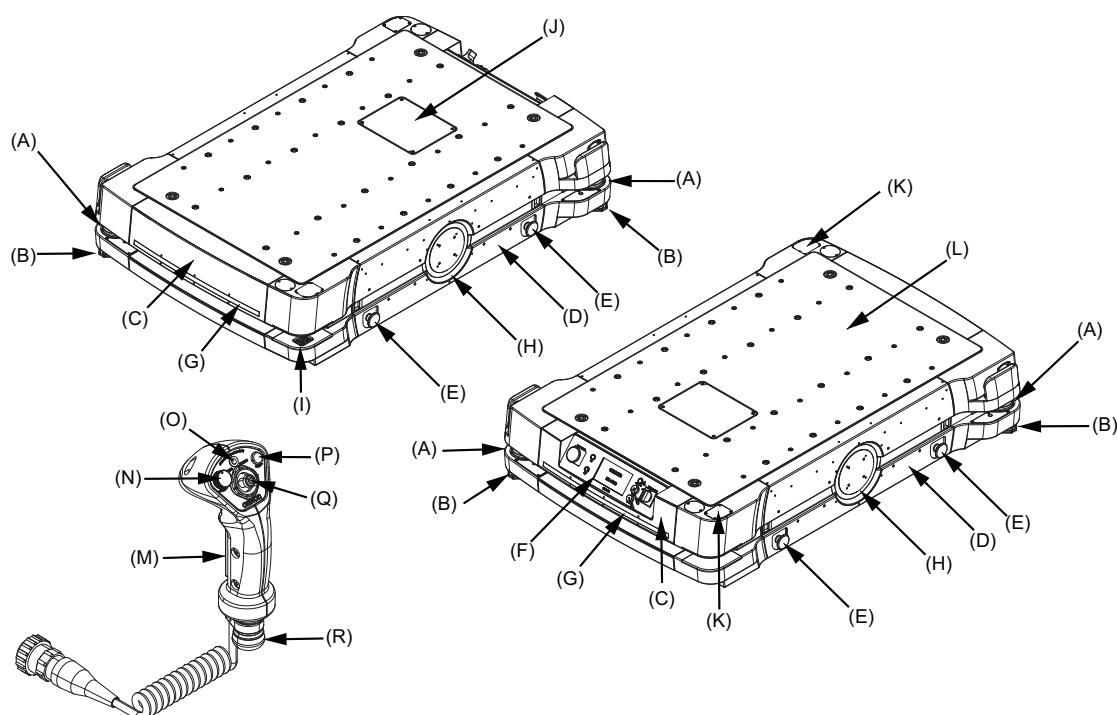
HD Series

Fleet Operations Workspace Solutions

Product Name	Configuration	Part Number
Primary Fleet Operations Workspace (FLOW) Core License, 1 Year	Entitlement for a 1 year renewable Primary FLOW Core license, runtime and development, per AMR connection	20271-800
Primary Fleet Operations Workspace (FLOW) Core License, 5 Year	Entitlement for a 5 year renewable Primary FLOW Core license, runtime and development, per AMR connection	20271-806
Secondary Fleet Operations Workspace (FLOW) Core License, 1 Year	Entitlement for a 1 year renewable Secondary FLOW Core license per fleet, redundant runtime	20271-802
Secondary Fleet Operations Workspace (FLOW) Core License, 5 Year	Entitlement for a 1 year renewable Secondary FLOW Core license per fleet, redundant runtime	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	EM2100 appliance with Entitlement for perpetual Fleet Simulator License	20271-903
License, Fleet Simulator	Entitlement for perpetual Fleet Simulator license for use with existing EM2100 appliance, simulation runtime and development	20271-804
License, Fleet Operations Workspace iQ	Entitlement for a 1 year renewable FLOW iQ license	20271-701
	Entitlement for a 5 year renewable FLOW iQ license	20271-705

- * 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.

Features and Components



Item	Description	Item	Description
A	Safety Laser Scanner	J	User Access Panel
B	Low Laser	K	Wireless Antennas
C	Front / Rear Skin	L	Payload Mounting Surface (Top Plate shown)
D	Side Skin	M	Three-position Enabling Switch
E	E-STOP Button ^{*1}	N	Speed Control
F	Operator Panel	O	Power Indicator LED
G	Light Strip	P	Goal Button
H	Light Disc	Q	Directional Control Stick
I	Charging Contacts	R	E-STOP Button

^{*1}: Additional E-STOP buttons are provided on the Operator Panel and the Pendant.

Specifications

HD-1500

Item		Details
Weight (with Battery)		506.5 kg
Environment	Ambient temperature	5 to 40°C
	Storage temperature	-20 to 60°C
	Ambient humidity	5 to 95% (non-condensing)
	Operating environment	Indoor usage only, no excessive dust, no corrosive gas
	Altitude	2000 m maximum
	Ingress Protection Class	IP20
Floor Conditions	Floor requirements	No water, no oil, no dirt
	Minimum floor flatness	F _r 25 (ACI 117 standard)
	Traversable step	10 mm max.
	Traversable gap	20 mm max.
	Climb grade	Max. 3° incline (5° with FLOW 3.0 or later)
Navigation	Routing	Autonomous routing by localizing with safety scanning laser, based on environment mapping
	Environmental map-making method	Scan by driving the AMR through the environment, and upload the scan data to the MobilePlanner
Payload Rating		1500 kg
Mobility	Run Time ^{*1}	12.5 h (no payload), 9 h (full payload)
	Maximum speed	1800 mm/s
	Maximum rotation speed	60 °/s
	Swing radius	982 mm
	Turn radius	0 mm
	Maximum translational acceleration	900 mm/s ²
	Maximum rotational acceleration/deceleration	150 °/s ²
	Maximum moment of inertia	490 kg·ms ²
	Stop position repeatability (single AMR)	To a position: ±50 mm To standard target: ±25 mm, ±2° With CAPS: ±8 mm, ±0.5° With HAPS: ±8 mm, ±0.4°
	Stop position repeatability (Fleet)	To a position: ±70 mm To standard target: ±35 mm, ±2° With CAPS: ±16 mm, ±0.5° With HAPS: ±10 mm, ±0.75°
Drive wheels	Materials	Non-marking, static dissipative polyurethane on steel rim
Passive casters	Materials	Non-marking polyurethane on cast iron rim.
Auxiliary Power	Unregulated	48 to 56 VDC
	Regulated	23.0 to 25.2 VDC
Standard	Harmonized standard	EN ISO 12100, EN ISO 13849-1, EN 60204-1
	Relevant standard	ISO 10218, UL1564, UL2271, UL1740
	Wireless	IEEE 802.11 a/b/g/n/ac
Signal Interfaces	Wireless	Two integrated wireless antennas
	Ethernet port	Two RJ-45 ports included for maintenance and access to the internally mounted NX102 unit.
	Digital I/O	Eight PNP (sourcing) inputs Eight PNP (sourcing) outputs
	Analog I/O	Four -10 to +10 VDC analog inputs Four -10 to +10 VDC analog outputs
	Audio	Digital audio out

HD Series

Item		Details
Safety Features	Safety Scanning Lasers	Two Safety Scanning Lasers are included to provide a 360° detection area around the AMR. The scanning plane is positioned 175 mm above the floor. Lasers are rated as Class 1, eye-safe, PLd Safety per ISO 13849-1.
	E-STOP Buttons	Five E-STOP buttons are located on the AMR (sides and Operator Panel). Additional E-STOP buttons can be added to the payload structure.
	Low Lasers	Two Low Lasers are provided to detect objects near the floor.
	Side Lasers (optional)	Two lasers, factory-mounted above safety scanning lasers, user-relocatable to the payload structure if needed.
	Visual Indicators	Light discs are located on the sides of the AMR. Light strips are located on the front and back of the AMR. Additional indicators can be added.
	Audible Indicators	Two speakers are included. Additional buzzers can be added.
	Emergency Stop Interface	Dual channel emergency stop inputs and outputs.
	Safety Outputs	Dual channel safety outputs.
	Protective Stop Interface	Dual channel protective stop inputs.
Operator Panel	Display	7-inch diagonal LCD.
	Controls	• E-STOP button • ON/OFF buttons • Brake release button • Pendant port • Maintenance port • Main disconnect switch

*1. Auxiliary power draw will impact these times

MobilePlanner Software

MobilePlanner, PC	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
MobilePlanner, Tablet Edition	Operating System	Android OS, Version 9 or newer, minimum 2 GB of RAM
		iOS, Version 10 or newer
Supported Languages		English, German, Japanese, French, Italian, Korean, Spanish, Simplified Chinese and Traditional Chinese.

EM2100 Appliance

Weight	9.1 kg
Mounting method	1U rack mount in a standard 19-inch equipment rack
Power Supply	100 to 240 VAC (typical 100 W)
Power Consumption	200 W 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
Ingress 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

Charging Station

Maximum Current	Input current: 25 A Output current: 120 A (nominal) ^{*1}
Input Voltage	3-phase 200 to 240 VAC, 50/60 Hz (Delta/Wye) 380 to 415 VAC, 50/60 Hz (Wye only)
Output voltage	40 to 57 VDC
Power Consumption	7.75 kW
Maximum Power Output	6.84 kW
Humidity	5 to 95%, non-condensing
Ambient Operating Temperature	5 to 40°C
Storage Temperature	-20 to 60°C
Ingress Protection Class	IP20 (IP10 for charging pads)
Weight	Power Supply Box: 108 kg Docking Target: 27.5 kg
Docking Target Mounting	To floor and/or wall

^{*1} Fused at 150 A

High Accuracy Positioning System

Ingress Protection		IP64
Environment		-40 to 85°C
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	20 to 30 mm
Protective covering tape (recommended)		Mighty Line Safety Floor Tape, Solid (102 mm width)
Stop Position Repeatability	Single AMR	±8 mm position, ±0.4° rotation
	Fleet	±10 mm position, ±0.75° rotation

Cell Alignment Positioning System (CAPS)

Stop Position Repeatability - Single AMR	±8 mm position, ±0.5° rotation
Stop Position Repeatability - Fleet	±16 mm position, ±0.5° rotation
Type	Software license

Pendant

Ambient Operating Temperature	0 to 40°C
Storage Temperature	-20 to 65°C
Humidity	5 to 95%, non-condensing
Altitude	2000 m
Ingress Protection Class	IP30

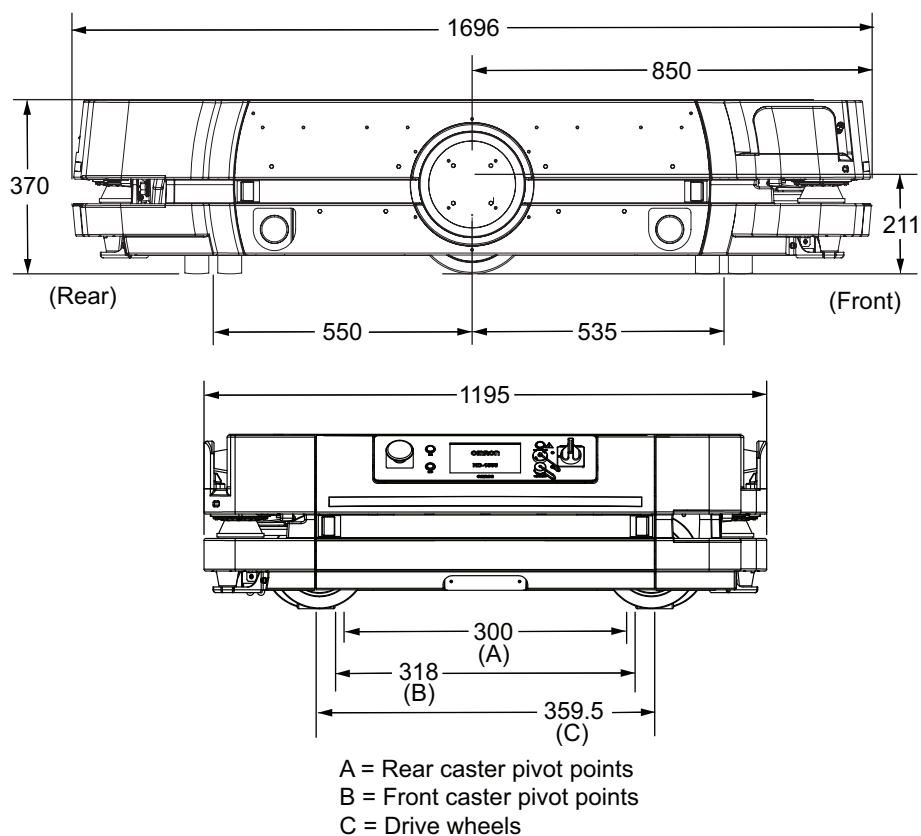
Battery

Voltage	48 to 56 VDC (52.8 nominal)
Capacity	70 Ah nominal
Recharge Time	40 min (from empty to full)
Charge Cycles	9000 recharge cycles (battery cell nominal)
Charging Method	Automatic or manual
Ambient Operating Temperature	5 to 40°C
Storage Temperature	-20 to 60°C (less than 2 weeks)
	-20 to 35°C (more than 2 weeks)
Humidity	5 to 95%, non-condensing
Altitude	4500 m, operating 15240 m, transporting
Ingress Protection Class	IP20
Weight	69.5 kg

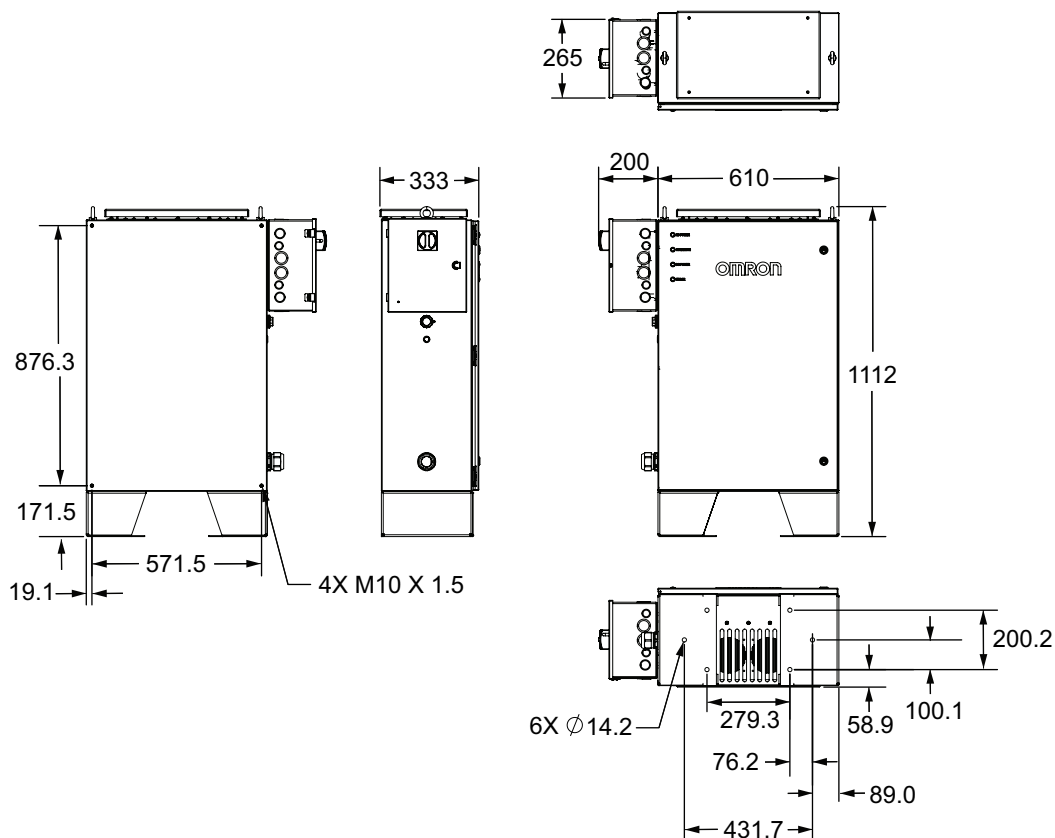
Dimensions

(Unit: mm)

HD-1500 AMR



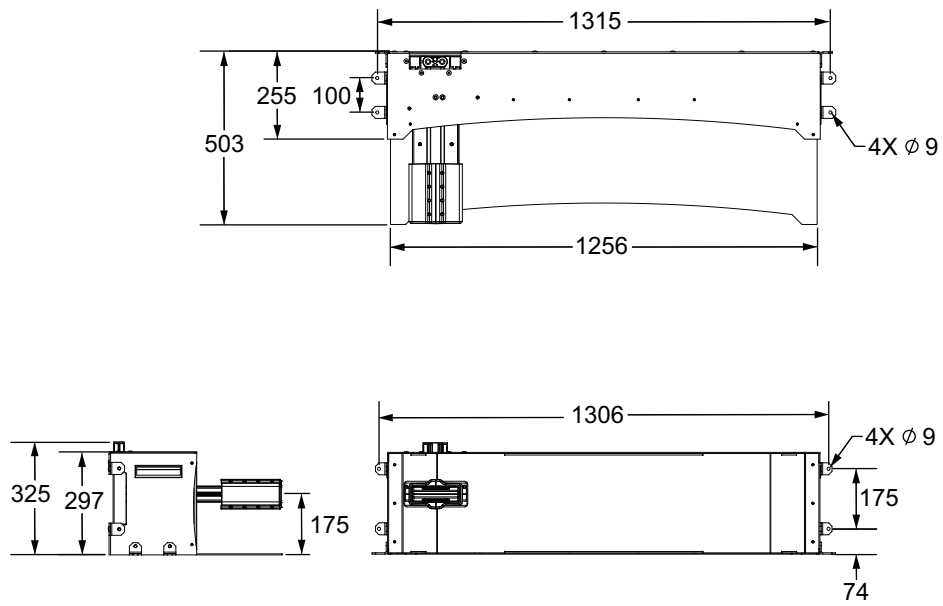
Power Supply Box



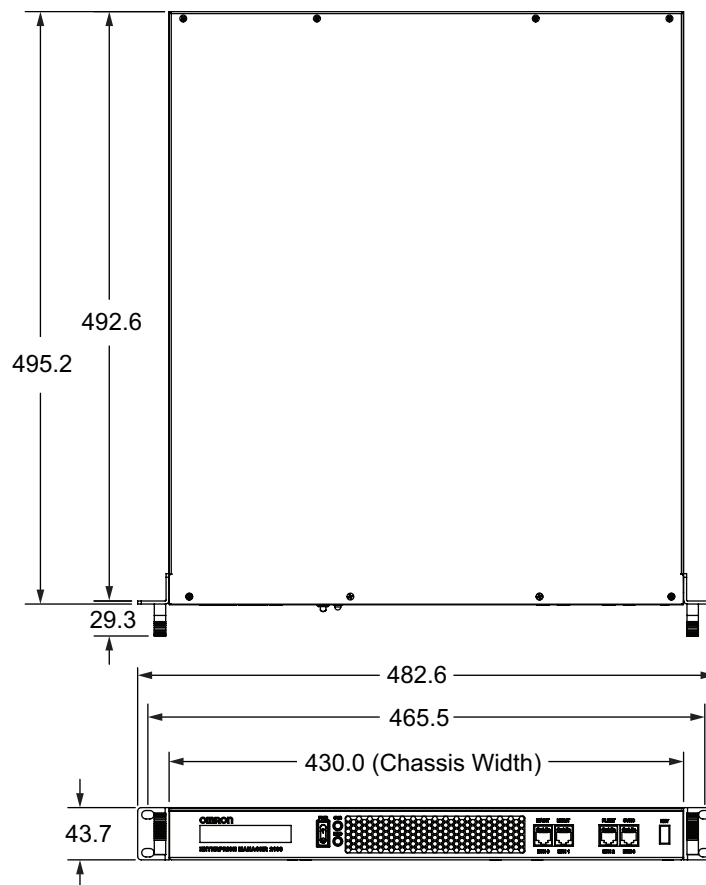
Dimensions

(Unit: mm)

Docking Target



Fleet Manager EM2100 Appliance



HD Series

Related Manuals

Manual No.	Title
I614	Mobile Robot Software Suite User's Guide
I617	Advanced Robotics Command Language Reference Manual
I618	Advanced Robotics Command Language Enterprise Manager Integration Manual
I634	EM2100 Installation Manual
I635	Fleet Operations Workspace Core User's Manual
I636	Fleet Operations Workspace Core Migration Manual
I637	Fleet Operation Workspace Core Integration Toolkit User Manual
I649	Fleet Simulator User's Manual
I645	HD-1500 Platform User's Manual
I647	Mobile Robot HD Safety Manual

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