

Autonomous Mobile Robots

HD-1500

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

- Natural feature navigation:
Automatically plans efficient routes and prevents collisions;
capable of full reverse navigation
- Fleet management:
Scale deployment with AMR prioritization and multi-robot
coordination for manufacturing environments
- Easy deployment:
Installs quickly, without facility modifications



Ordering Information

Type	HAPS	Including Charging Station, Pendant, and Top Plate	Ordering Code
HD-1500	No	No	37483-00000
		Yes	37483-10004
	Double	No	37483-00200
		Yes	37483-10204

Note: All AMRs in a fleet must have the same version of the FLOW Core software installed. Other considerations must be made when adding AMRs to a fleet. Contact your local OMRON representative for more information.

Note: The battery for the HD-1500 must be ordered separately (68330-000). Before ordering lithium-ion batteries, please verify local shipping regulations to ensure compliance with applicable laws and restrictions.

Items Included With the AMR

Item	Description
Labels	Lifting, warning and product labels
USB drive	Contains digital product documentation and software for operating the AMR
Printed Documentation	Printed safety, unpacking and declaration documentation
Lift Kit	Includes straps and hardware for lifting the AMR

Accessories and Optional Items

Item	Details	Ordering Code
Supplementary Laser Scanner Kit	Includes 2 Supplementary Laser Scanners, mounting kit, cables and hardware	68945-030
Supplementary Laser Scanner Extension Cable, Communication	One cable, 1 m length	22115-000F
	One cable, 2 m length	22117-000F
Supplementary Laser Scanner Extension Cable, Power	One cable, 1 m length	22800-000F
	One cable, 2 m length	22802-000F
Mobile I/O Box	Used with a Fleet Manager to summon an AMR to a goal or control connected devices with I/O	23419-802
Mobile I/O Box Power Supply	Recommended for purchase with the Mobile I/O Box	23419-812
Top Plate Kit	Upper plate kit of the AMR, includes: access panel cover and cover seal, load plate, hardware and label	68950-000
Pendant	Handheld, external input device for manually driving an AMR, typically used for map creation	68940-000L

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Item		Details	Ordering Code
Charging Station	Power Supply Box	Supplies power to the Docking Target or battery for charging purposes.	73990-000
	Docking Target	A fixed object connected to the Power Supply Box that the AMR docks to for autonomous charging.	68910-000
Battery*1		Removable and rechargeable power source for the AMR.	68330-000
Wireless Antenna Extension Kit		Includes two dipole antennas, two 2 m coaxial cables and two 0.6 m coaxial cables.	68955-000
High Accuracy Positioning System (HAPS), Single Sensor		AMR Alignment using magnetic floor tape. Includes single HAPS sensor kit, hardware, and magnetic tape (25 mm wide, 49 m long)	68925-010
High Accuracy Positioning System (HAPS), Double Sensor		AMR Alignment using magnetic floor tape. Includes double HAPS sensor kit (two sensors), hardware, and magnetic tape (25 mm wide, 49 m long)	68925-020
High Accuracy Positioning System (HAPS) Magnetic Tape		25 mm wide magnetic tape (South top side, 49 m roll).	14925-000

*1: Before ordering lithium-ion batteries, please verify local shipping regulations to ensure compliance with applicable laws and restrictions.

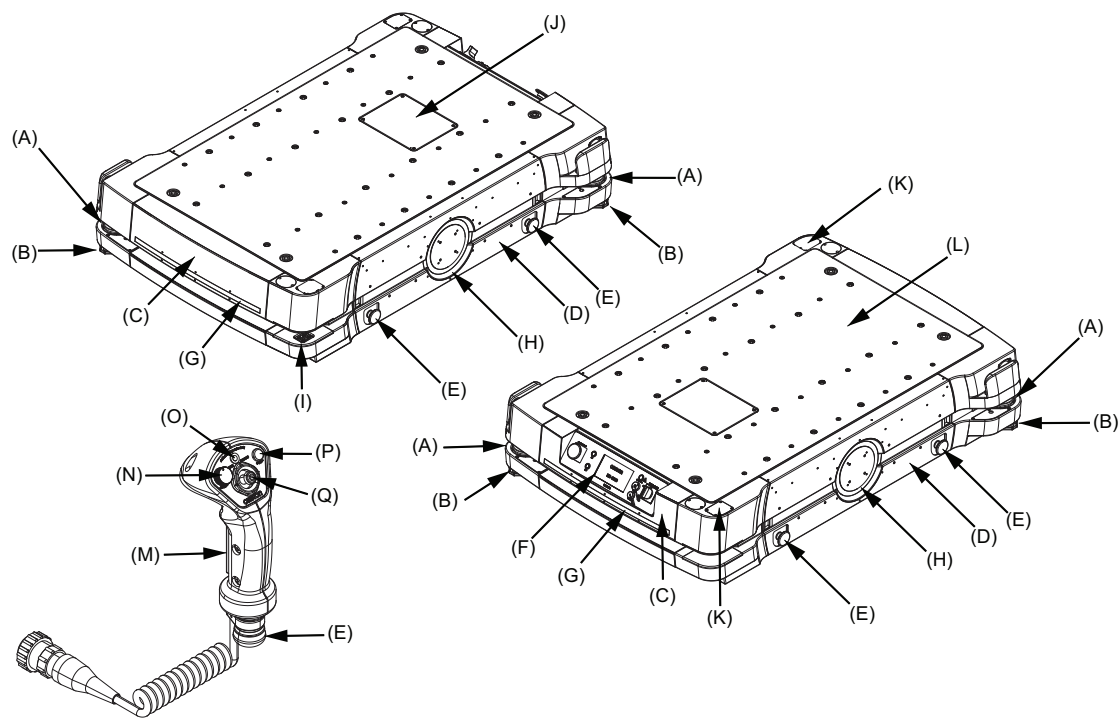
Software Licenses

Product Name	Applicable For	Configuration	Ordering Code
Fleet Operations Workspace Core Fleet Manager License, 3 Year	Virtual Fleet Manager	Initial entitlement for a 3 year renewable FLOW Core license. Replace □□ with 05, 10, 15, 20, 25, 30, 50 to indicate the number of AMRs licensed to connect. Replace □□ with 50 for 31 or more AMRs.	30271-1□□*1
Fleet Operations Workspace Core Fleet Upgrade		Entitlement for a fleet connection limit increase by one additional AMR (used for existing installations).	30271-001
Fleet Operations Workspace Core Renewal		Entitlement for a 1 year renewal of the FLOW Core license. Replace □□ with 05, 10, 15, 20, 25, 30, 50 to indicate the number of AMRs licensed to connect. Replace □□ with 50 for 31 or more AMRs.	30271-2□□
Fleet Operations Workspace iQ License (FLOW iQ)		Entitlement for a 1 year renewable FLOW iQ license.	30271-701
		Entitlement for a 3 year renewable FLOW iQ license.	30271-703
		Entitlement for a 5 year renewable FLOW iQ license.	30271-705
Cell Alignment Positioning System (CAPS) License	AMR	AMR Alignment using software-defined target. Entitlement for a perpetual CAPS license.	20271-805
Cycle Time Optimization License		Enables reduced cycle times with fewer stops and path caching. Entitlement for a perpetual Cycle Time Optimization license.	20271-905

*1: After expiration of a FLOW Core Fleet Manager license, all Virtual Fleet Manager functionality will continue to operate without requiring subscription renewals. An active subscription is required for software upgrades and to access subsequent software releases, including bug fixes, feature upgrades and performance improvements.

Note: To upgrade to the latest version of the FLOW Core software, contact your local OMRON representative.

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*	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		

* An additional E-STOP button is provided on the Operator Panel.

Specifications

Item		Details
Weight (with Battery)		506 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 corrosive or explosive gas or liquid, no ionizing radiation
	Altitude	2000 m maximum
	Ingress Protection Class	IP20
	Dust / Smoke	Accumulated dust smaller than 37 µm cannot exceed 1.5 mL / m ² in the operating environment. Avoid operating in areas with smoke.
	Enclosure Rating	Type 1
	Cleanroom Rating ^{*1}	ISO 5 / Class 100
Floor Conditions	Floor Requirements	No water, oil or dirt
	Minimum Floor Flatness	F _F 25 (ACI 117 standard)
	Traversable Step ^{*2}	10 mm max.
	Traversable Gap	20 mm max.
	Maximum Slope	5° / 8.75% incline
	Minimum Floor Compressive Strength	5 MPa
	Minimum Coefficient of Friction	0.6
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 MobilePlanner
	Low Lasers	Two Low Lasers are provided to detect obstacles below the scanning plane of the Safety Laser Scanners
	Supplementary Laser Scanners (optional)	Two optional, Supplementary Laser Scanners can be added for object detection in the vertical plane
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.
Maximum Payload Capacity		1500 kg
Mobility	Run Time ^{*3}	12.5 h (no payload), 9 h (full payload)
	Maximum Translational Speed (forward and reverse)	1800 mm/s
	Maximum Rotational Speed ^{*4}	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·m ²
	Stop Position Repeatability (Single AMR) ^{*5}	To a position: ±70 mm, ±2° To standard target: ±25 mm, ±2° With HAPS: ±8 mm, ±0.4° With CAPS: ±5 mm, ±0.4°
	Stop Position Repeatability (Fleet) ^{*5}	To a position: ±75 mm, ±2° To standard target: ±35 mm, ±2° With HAPS: ±10 mm, ±0.75° With CAPS: ±16 mm, ±0.5°
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 57 VDC (52.8 nominal); 50 A fused
	Regulated	23 to 25 VDC; two channels fused at 1.6 A
Standards	AMR	EN ISO 12100, EN ISO 13849-1, EN 60204-1, EN ISO 10218-1, EN 61326-3-1, EN 61326-1, EN ISO 3691-4, EN 12895, CAN/CSA Z434, CAN / UL 3100, KS C 9610-6-2, KS C 9610-6-4
	Battery	ANSI/CAN/UL/ULC 2271, UN 38.3
	Charging Station	UL 1012, CAN/CSA C22.2.107.2, EN 61204-7, EN 62477-1
	Wireless	IEEE 802.11 a/b/g

Item		Details
Certification Markings	AMR	cTUVus
	Battery	cURus, CE
	Power Supply Box	cTUVus
	Docking Target	cTUVus
Signal Interfaces	Wireless	Two integrated wireless antennas
	Ethernet Port	One RJ-45 port 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
Safety Features	Scanning Safety Lasers	Two Safety Scanning Lasers are included to provide a 360° detection area around the AMR. The scanning plane is positioned 181 mm above the floor. Lasers are rated as Class 1M, eye-safe, per IEC 60825-1, 21 CFR 1040.10 and 1040.11.
	Safety Laser Scanner Zone Sets	A pair of safety-rated alternate safety zone inputs can toggle the Safety Laser Scanner zones between a default configuration or an alternate configuration.
	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.
	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	178 mm diagonal LCD
	Controls	<ul style="list-style-type: none"> • E-STOP button • ON/OFF buttons • Brake release button • Pendant port • Maintenance port • Main disconnect switch

*1: Cleanroom ratings are associated with the AMR and charging components when used together as a complete system.

*2: A speed of 500 mm/s in the forward direction and 400 mm/s in the reverse direction is recommended for traversing steps. Routine driving over steps should be avoided. Lower speeds may not traverse the step. Faster or frequent driving over steps and gaps will shorten the lifespan of the drivetrain components. All steps should have smooth, rounded profiles.

*3: Auxiliary power draw will impact these times.

*4: The maximum rotational speed is reduced to 45°/s when the AMR is traveling at speeds over 300 mm/s.

*5: Stop position repeatability values were obtained using default AMR parameters and a map created by the HD-1500 AMR.

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MobilePlanner Software Requirements

MobilePlanner, PC	Operating System	Windows 10 (64-bit version), Windows 11
	CPU	1.5 GHz dual-core CPU recommended
	Main Memory	1.5 GB min. (4 GB min. recommended)
	Hard Disk	At least 400 MB of available space
	Video Memory	256 MB min.
	Display	XGA 1280 x 720, 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.

Virtual Fleet Manager Software Minimum Hardware Requirements

Fleet Size / AMR Count	Small / ≤ 5	Medium ≤ 15	Large ≤ 30	X-Large > 30 ^{*1}
Virtual CPU	2 cores		4 cores	
Clockspeed	4 GHz	8 GHz	12 GHz	16 GHz
Virtual RAM	8 GB	16 GB	24 GB	32 GB
Virtual Disk	512 GB			1 TB
FLOW Software Version	Minimum FLOW Core 4.0			

^{*1}: Contact your local OMRON representative for fleets larger than 100.

Note: The PC/IPC/Server is supplied by the user.

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	IP20 (IP10 for charging pads)
Cleanroom Rating ^{*2}	ISO 5 / Class 100
Pollution Degree	2
Equipment Class	1
Weight	Power Supply Box: 108 kg Docking Target: 27 kg
Docking Target Mounting	To floor and/or wall

^{*1}: Fused at 150 A

^{*2}: Cleanroom ratings are associated with the AMR and charging components when used together as a complete system.

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)

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

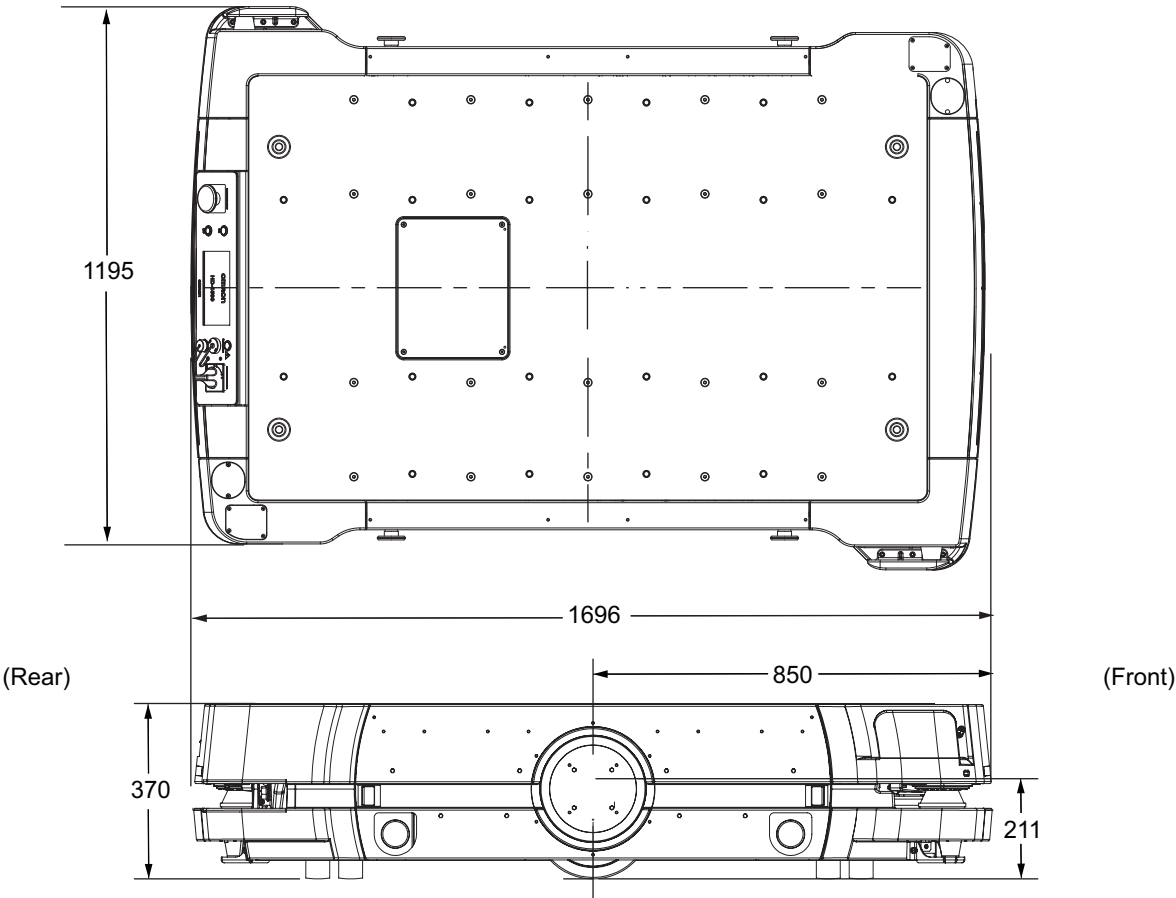
Type	Lithium-Ion (LiFePO4)
Voltage	48 to 57 VDC (52.8 nominal)
Capacity	68 Ah nominal
Recharge Time	24 min. (20% to 80% charge)
Charge Cycles	Approximately 8000 cycles ^{*1}
Charging Method	Automatic or manual
Ambient Operating Temperature	5 to 40°C
Storage Temperature	-20 to 60°C (less than 2 weeks) -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 kg

^{*1}: Approximately 80% of nominal battery capacity will be available after using the battery at 100% depth of discharge, at a temperatures of 23°C.

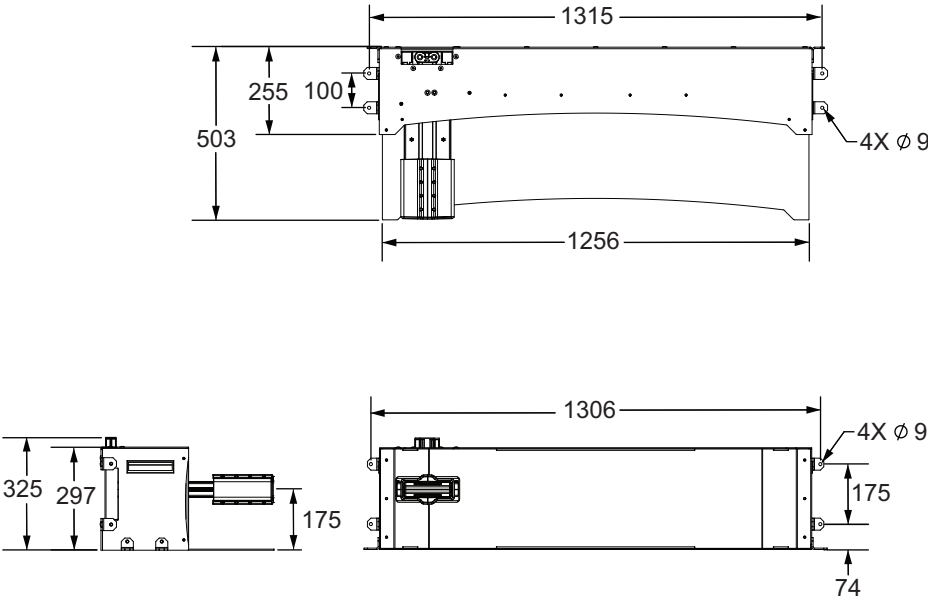
Dimensions

(Unit: mm)

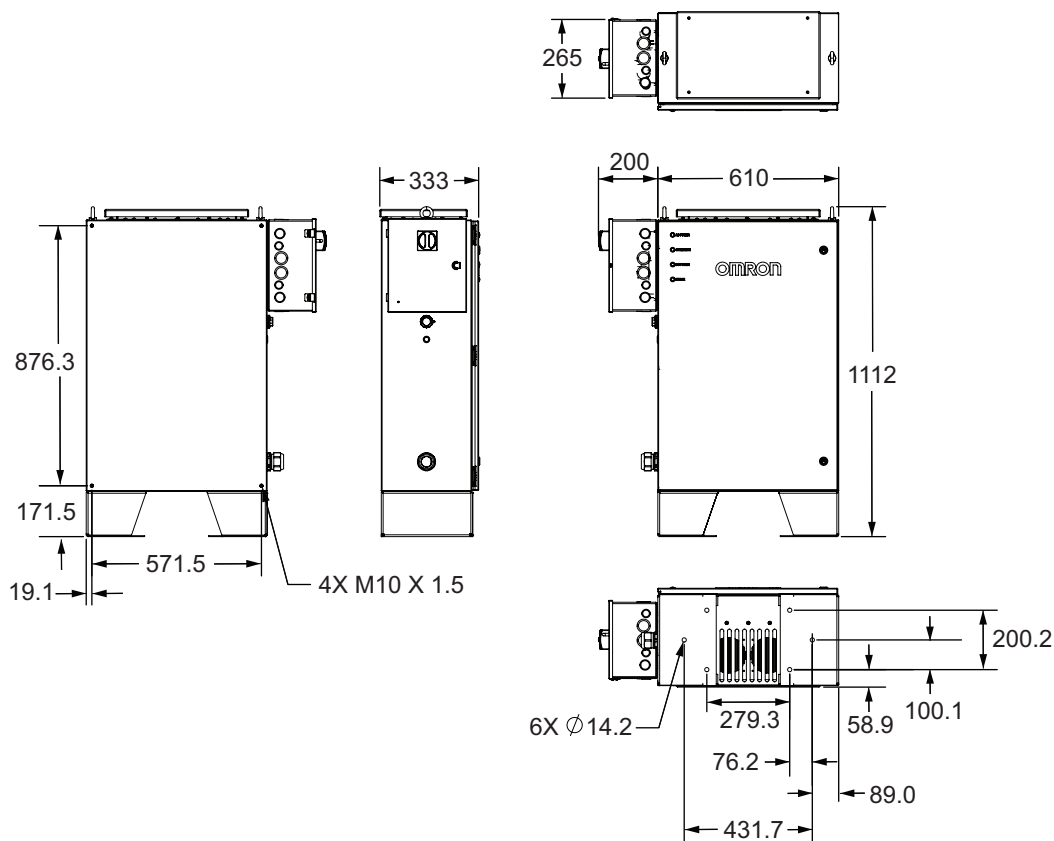
HD-1500 AMR



Docking Target



Power Supply Box



Related Manuals

Manual No.	Title
I645	HD-1500 Platform User's Manual
I617	Advanced Robotics Command Language Reference Manual
I618	Advanced Robotics Command Language Enterprise Manager Integration Manual
I635	Fleet Operations Workspace Core User's Manual
I636	Fleet Operations Workspace Core Migration Guide
I637	Fleet Operation Workspace Core Integration Toolkit User Manual
M107	Fleet Operation Workspace Core Integration Toolkit - MQTT API User's Manual
I655	Fleet Operations Workspace iQ User's Manual
I649	Fleet Simulator User's Manual
I677	Mobile I/O Box User's Manual
I695	Virtual Fleet Manager Installation Guide

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Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Note: Do not use this document to operate the Unit. This document describes AMR functionality supported with FLOW v4.1.10 and hardware revision V or higher. Contact your local OMRON representative for older version functionality details.

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