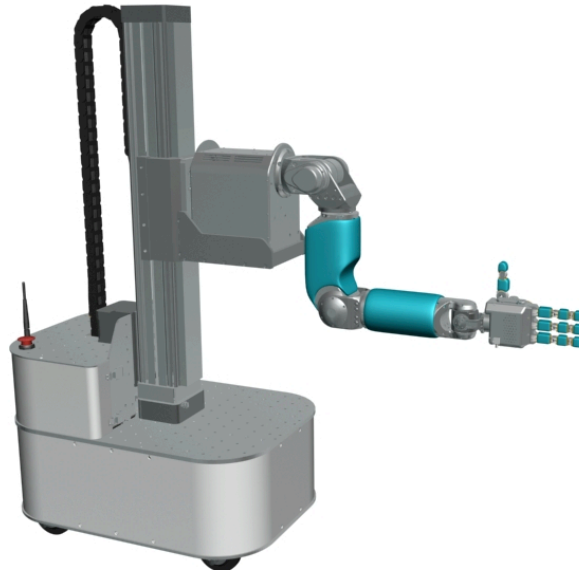


B1 Omni Base



Overview

The Meka B1 Omni Base is a mobile robotic platform capable of omnidirectional motion. It utilizes the proven [Holomni Powered Caster](#) to obtain high performance holonomic control. Designed to support both Meka and 3rd party payloads, the B1 Omni Base is the ideal platform for researchers interested in mobile manipulation in human environments. The B1 features a compact footprint, integration with the Meka M3 real-time control system, and on-board LAN, WAP, and EtherCAT. It also provides auxiliary power for additional manipulators, computers, and sensors. Options include a Prismatic Lift for manipulator payloads and a Computation Backpack for additional on-board computation.

System Properties

The B1 Omni Base has an on-board Real Time PC (RTPC) running Ubuntu, RTAI, EtherCAT, and the Meka M3 control system. Interfaces to the RTPC and EtherCAT bus are exposed to allow for easy integration of payloads such as the Meka A2 manipulator.

The B1 has an onboard WAP and LAN to allow for additional computers. An

Total DOF	3
Actuated Motors	8
Interface	M3 EtherCAT
Onboard Power	24V 60AH SLA
Weight	101.5 Kg
Payload	100Kg
Max acceleration	4.0 m/s ²
Max velocity	0.7 m/s
Dimensions	673 x 460 x 312 mm

Preliminary specifications. Subject to change.



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optional Computation Pack may be added, providing two Mac-Mini PCs with M3 and ROS support. In addition, a PS2 joystick controller allows for easy manual control of the base.

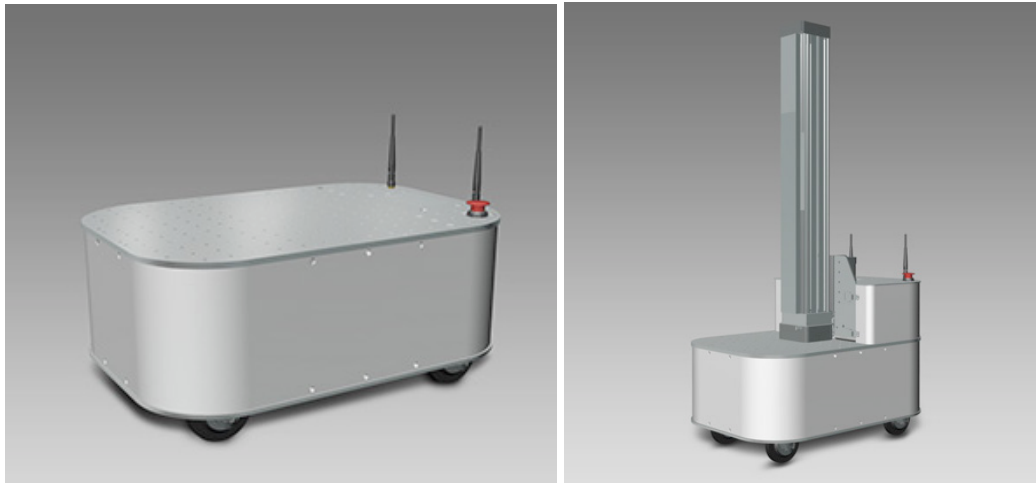
The integrated Prismatic Lift option is useful for manipulator and sensor payloads that require a large vertical workspace. This actuator provides 600mm of throw, an EtherCAT control bus, and position and force control.

Electrical Properties

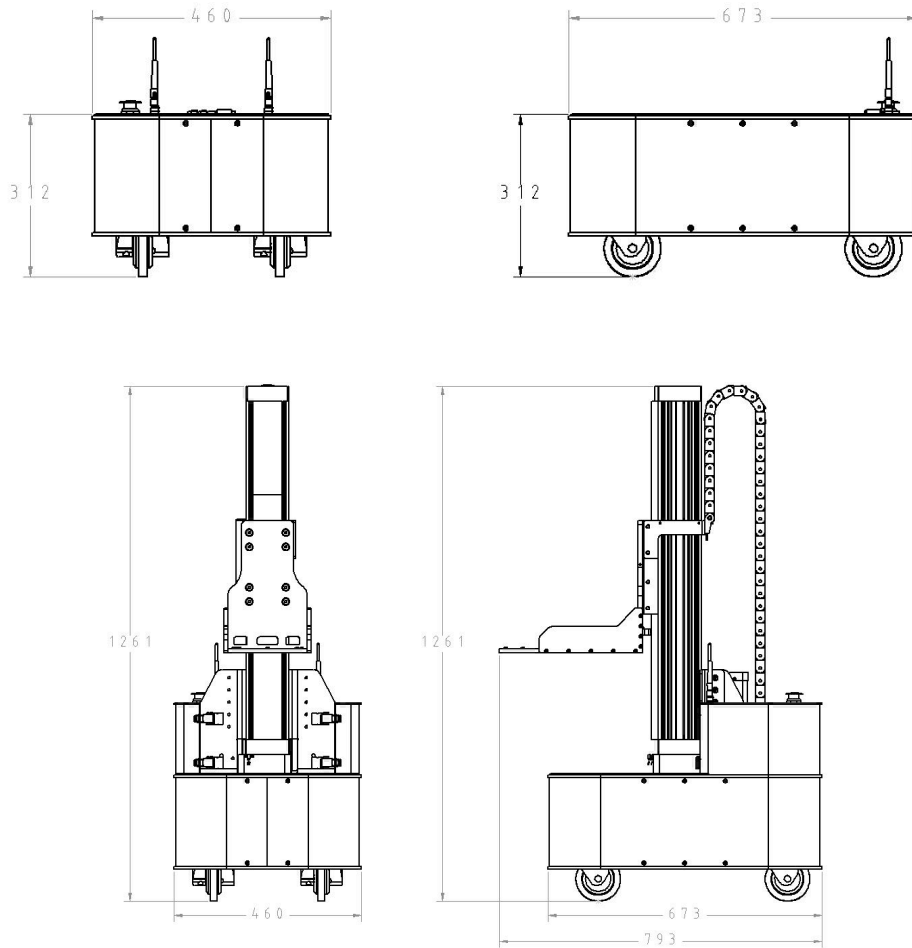
The B1 has an internal 60AH 24V SLA battery pack that provides power to the base motors and controllers. The 24V supply is also available to power Meka and 3rd party payloads. In addition, an internal 300W DC-DC converter provides 12V and 19.8V supplies for auxiliary devices such as computers, hubs, and sensors.

An external Charge Box is used to charge the power system. The Charge Box may be hot-plugged onto the B1 Omni Base during operation and the system will transparently run from a AC powered 24V DC power supply.

Mechanical Properties



The B1 Omni Base measures 673 x 460 x 312 mm. The small footprint is ideal for cluttered environments. It has a weight of 101Kg which provides excellent static stability for payloads up to 100Kg. The top plate has M6 mounting holes spaced on 40mm centers.



Control and Software

The B1 Base is shipped with the following controllers ready to run:

- Velocity control in world coordinates
- Pose control in world coordinates
- Operation-space force control in world coordinates

The base has embedded DSP controllers which relay data on the EtherCAT bus at 1Khz. The off-board real-time control PC (RTPC) runs Ubuntu Linux, RTAI, and the M3 control system.

The M3 control system provides:

- A plug-in based real-time C++ control architecture allowing for easy design of custom controllers.
- A calibrated (SI) view on all sensors and actuators
- Integrated Orocos KDL kinematics and dynamics functionality
- A XML-RPC and TCP/IP server for scripting by external Python clients
- A Python API for controlling the B1 pose and forces.



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- Support for the Willow Garage Robotics Operating System (ROS) and its ODE based physical simulation.
- Open-source GPL licensing.

The M3 API can be found here: <https://mekabot-dev.com/m3doc/html/index.html>

Options

- Computation Backpack
- Prismatic Lift

Sales

Contact info@mekabot.com for current pricing. Purchase includes.

- Meka B1 Base
- Meka M3 Power Board
- Meka M3 EtherCAT hub
- Meka M3 control software and B1 BASE calibration files.
- Preconfigured Dell Core Duo RTPC
- One year, no-cost unlimited support including parts, travel, phone and email.