

MAGNI 6 DRIVE TRAIN

GENERAL OVERVIEW

The **Magni 6 DriveTrain** combines two medium-sized motor wheels with the **Magni 6 Motor Controller Board**. It provides a ready-to-use drive mechanism. This enables fast prototyping of custom robots by providing the motor controller and motor wheels, so you don't need to design the drive system yourself.

The drivetrain supports modular expansions. Sensors, actuators, and communication boards can be easily added. It is ideal for research, development, and custom robotics projects.



For illustration purposes only.
Actual board may vary.

Warning: Under heavy load, heatsinking on the Motor Controller Board is required.

KEY SPECIFICATIONS

- **No. of Motors:** 2 (2 X 3-phase electrically commutated motors)
- **Nominal Motor Voltage:** 24V
- **Maximum Voltage:**
 - 45V (motor controller)
 - 36V (per motor wheel)
- **Maximum Motor Current:** 10A per motor
- **Control Method:** Field Oriented Control
- **Rated Speed:** 1 m/s
- **Continuous Torque:** ≥ 5 Nm (0-1 m/s)
- **Rated Load (per wheel):** 100 kg
- **Weight:** ~4.5 Kg
- **Odometry:** Precision better than 0.09°.
- **ROS Integration:** Driverless Pico-ROS

CONNECTORS

- **Primary Connector:** Flow control serial, plus power for the digital sections of the board.
- **Motor Power:** Screw connectors provided to supply motor power.

SUPPORT BOARDS

A standard support board (**Magni 6 Connector Board**) can be provided to interface with a **Raspberry Pi 4/5**, delivering power to both the computer and the motor controller (**Magni 6 Controller Board**) for simplified integration.

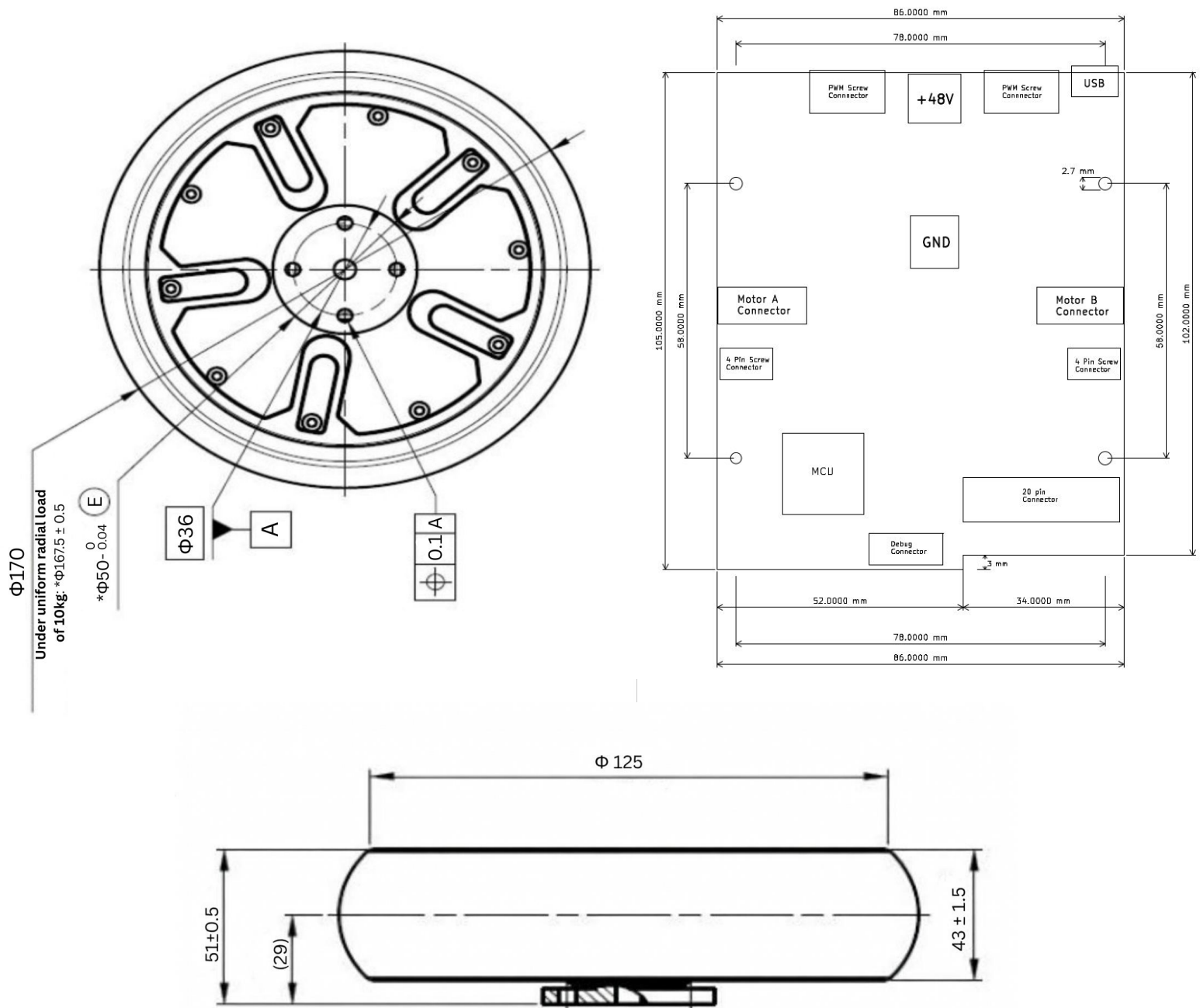
INPUT CONNECTOR PINOUT

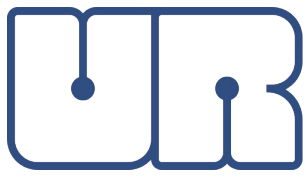
- **Power Pins (+12V, +5V, +3.3V):** Provides logic and peripheral power. The +12V power is generated on the board, while +5V and +3.3V must be supplied to it.
- **Ground Pins (GND):** Multiple ground pins are provided to ensure stable power and signal reference.
- **UART with flow control(Rx, Tx, RTS, CTS):** Standard serial interface with flow control communication with a host (e.g., RPi 5).
- **NC(Not Connected):** Reserved pins with no function in the current revision.

+12V	1	2	+5V
+12V	3	4	+3.3V
GND	5	6	NC
GND	7	8	NC
GND	9	10	NC
GND	11	12	NC
UROS_RX	13	14	GND
UROS_TX	15	16	GND
UROS_RTS	17	18	GND
UROS_CTS	19	20	GND

PHYSICAL DIMENSIONS

- **Motor Board Controller (MCB):** 105 mm x 86 mm (L x W)
- **2x Medium Sized Motor Wheels:**
 - **Wheel Diameter (unloaded):** $\Phi 171$ mm
 - **Wheel Diameter (under 10 kg load):** $\Phi 167.5 \pm 1$ mm





REFERENCE ARCHITECTURE

