ANYbotics

ANYmal quadruped robot platform

Fully autonomous, highly mobile, expandable

ANYmal is a versatile robot platform with highly sophisticated locomotion capabilities, well suited for a wide range of autonomous or remote controlled missions.

Hardware interface

Customizable adapter interface to mount e.g. a pan-tilt sensor head.

Computing power

Onboard computers provide power for complex optimizations and vision tasks.

Environment perception

LIDAR provides data for localization, mapping and path planning.

Ingress-protection IP67

ANYmal is completely sealed against dust and water ingress.

Compliant actuation

360° ANYdrive joints allow extreme maneuvers and dynamic gaits.

Long endurance

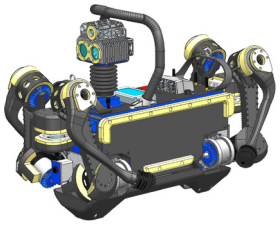
Onboard batteries ensure about 3 h autonomous operation.

Sophisticated locomotion

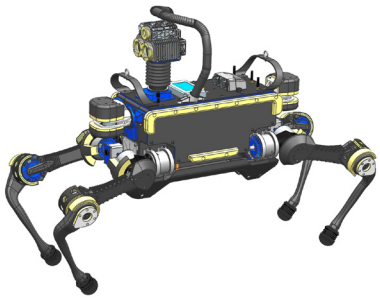
Walking/trotting gaits and special maneuvers, accurate foot placement.

Robust & lightweight

A combination of carbon fiber and aluminium ensures high robustness and low weight.

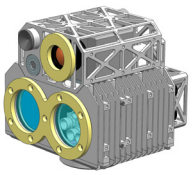


Tightly packable



High ground clearance

Docking station



Inspection head

Weight	30 kg	**Power consumption**	~300 W
Payload	up to 10 kg	**Power autonomy**	2–4 hours
Min size (lying)	80 x 60 x 40 cm	**Joint mobility**	360° for all joints
Operating size (standing)	80 x 60 x 70 cm	**Software**	Ubuntu, ROS
Speed	up to 1.0 m/s		

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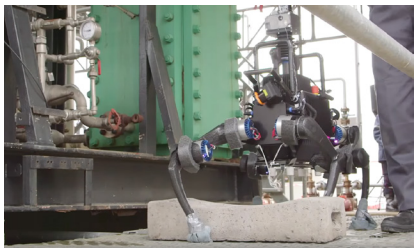
ANYmal key features and applications

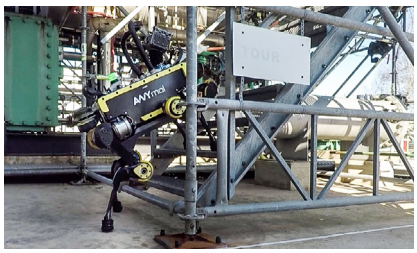
Highly sophisticated locomotion capabilities

- Robust locomotion with different gaits: walking, trotting
- Moving at the speed of a walking human (up to 1.0 m/s)
- Special maneuvers such as standing up, crawling, running, jumping, recovering from fall, climbing stairs, overcoming/removing obstacles
- Outstanding mobility due to full 360° rotation for hip and knee joints
- Accurate foot placement in rough terrain
- Accurate mapping, localization, and obstacle detection



Excellent motion and interaction performance

- High resolution position and force sensing
- Accurate control of position, speed and contact forces
- Sophisticated control algorithms with high bandwidth



High level of autonomy

- On board intelligence for autonomous orientation and mobility
- Battery based power autonomy of 2–4 hours depending on activity
- High overall locomotion efficiency as a result of energy storage and release capability in the compliant ANYdrive joints
- Docking station for reloading

Safety

- Single operator without special safety precaution
- ANYdrive joints with in-built compliance guarantee safety and robustness even during dynamic collisions
- Robust against impulsive loads when running, jumping or colliding

Robustness and low impact

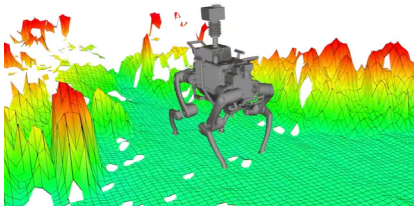
- Rugged design, well suited for outdoor operation
- Protected against rain, splash water, dust etc. (min. IP 67 protection)
- Can be operated in potentially hazardous environment
- Low noise level
- Low impact on the ground, minimal footprint

Size and payload (present version, scalable)

- 30 kg weight, dimensions of a mid-sized dog
- Payload of up to 10 kg
- Defined HW interfaces for sensory equipment (pan-tilt head, LIDAR, cameras, etc.)

Maintenance and repair convenience

- Highly modular decentralized electronics
- Highly integrated and quickly exchangeable ANYdrive joints



Modular software

- ROS-enabled and open-source modular software framework
- Software API and control framework for real-time access to sensory data and actuator commands
- Easy integration with API for locomotion goals and robot maneuvers
- User interface for robot management / autonomous mission creation

Application packages

- Mission planning
- Acoustical alarm recognition, safety point return
- Pressure gauge / valve lever position / liquid level recognition and reading
- Gas leakage detection
- Thermal inspection