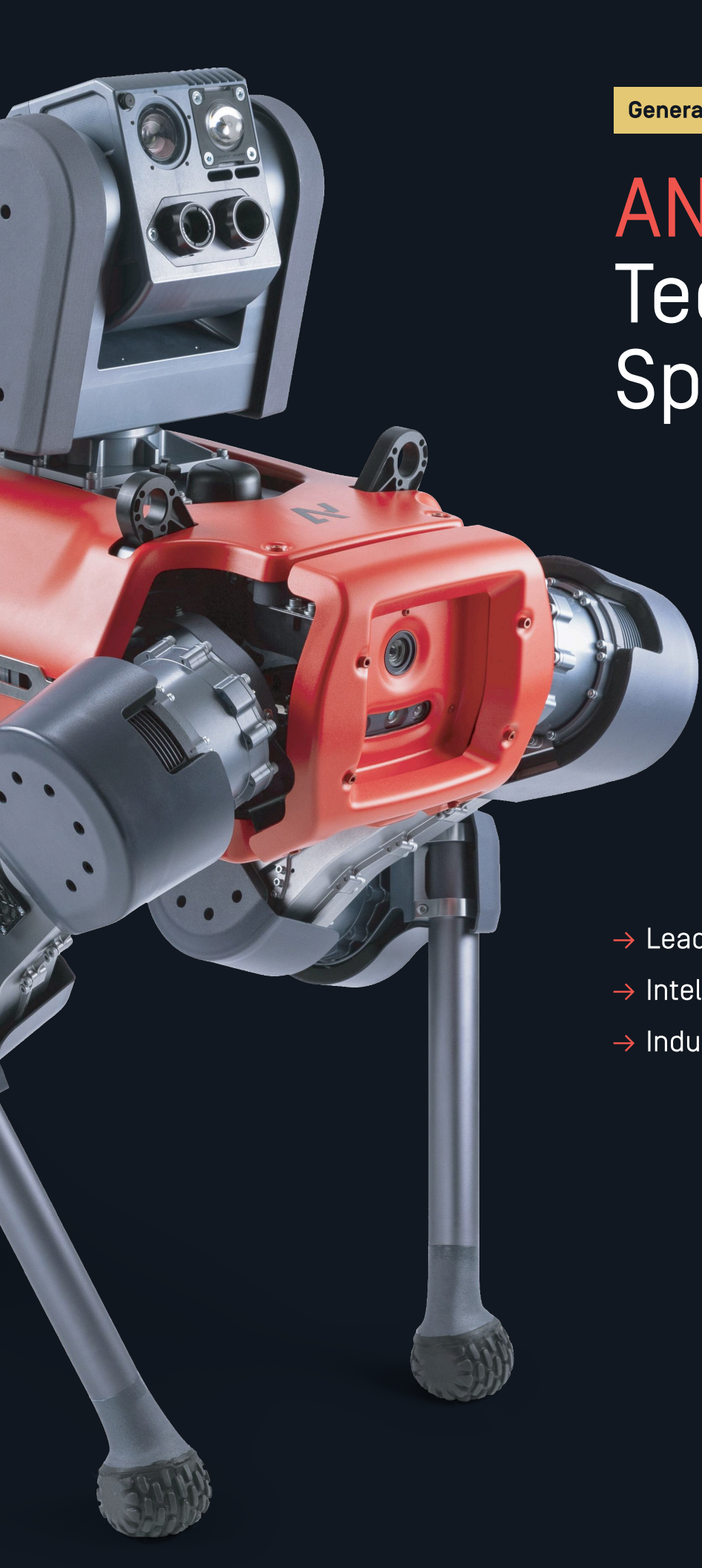


A detailed view of the ANYmal robot, showing its red upper body, grey legs, and head with two cameras. The robot is positioned on the left side of the frame, facing right.

Generation D

ANYmal Technical Specifications

- Leading Autonomy & Mobility
- Intelligent Inspection
- Industrial Grade

ANYbotics



Leading Autonomy & Mobility

Complete autonomous navigation and AI-based mobility enable ANYmal to seamlessly conduct mission-critical inspections in multistory and complex facilities with ease.

Intelligent Inspection

Utilizing high resolution sensors and cutting-edge machine learning, ANYmal delivers accurate real-time data, uploaded directly to customer systems via our ANYmal API.

Industrial Grade

ANYmal is purpose-built for use in intricate industrial environments. Ruggedized design, impact protection, and IP67 dust and waterproofing make it well-suited to operating in harsh conditions.

Extreme Mobility

ANYmal's legged design and AI-based mobility software provide unprecedented mobility and performance. Combined with its obstacle avoidance capabilities, the robot is ready for use in complex and dynamic environments. The robot reliably navigates any environment and traverses rough terrain with ease. ANYmal completes even challenging missions requiring it to climb steep stairs, pass through narrow corridors, or conquer rocky, slippery, or wet surfaces.



STAIRS

ANYmal can climb and descend a variety of industrial stair types in both directions:

- Up to 42°
- Max rise 230 mm (9.06 in)
- Min run 210 mm (8.27 in)
- Min width 800 mm (31.50 in)
- Open risers
- Grated steps



MOBILITY HIGHLIGHTS

STEP

250 mm (9.84 in)



WALKING SPEED

Up to 1.3 m/s (4.3 ft), recommended 0.75 m/s (2.5 ft) for increased robustness



NARROW SPACE

700 mm (27.56 in)



SLOPE

±30°



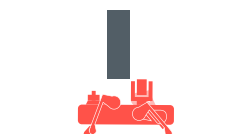
ACCURATE POSITIONING

Knows its absolute location with centimeter/inch accuracy



SUSPENDED

600 mm (23.62 in)



OMNIDIRECTIONAL

Steps sideways and turns in place



Full Autonomy

ANYmal's unparalleled ability to perceive and navigate its environment powers fully autonomous operation. Once it maps an environment, the robot remembers every detail and can dynamically plan the best route to perform its mission, even without an internet connection. The robot's ability to avoid collisions, plan and replan paths, and recharge autonomously enables safe, efficient, and continuous autonomous operation.

ROBOT DEPLOYMENT

SHOW & GO

Show the robot its environment and tasks by manually guiding it through the plant and indicating the inspection point locations. Set up missions that the robot will remember and autonomously repeat.

IMPORT CAD/BIM

Import your existing CAD models to virtually set up inspection points, paths, and missions. Perform realistic simulations of your inspection missions and software integration before the robot arrives at your facility to save on deployment time.



NAVIGATION WAYPOINTS

ANYmal uses the points for autonomous navigation. It follows the shortest path between waypoints to target 3D coordinates throughout its inspection missions.

During deployment, navigation waypoints are generated for planning robot missions. Points can later be added, edited, or removed in the Operator GUI.



INSPECTION POINTS & MISSION SETUP

Inspection points are defined as a special navigation goal for the robot in the user interface.

Inspection missions can be set up using the Mission Editor in the Operator GUI. Rule-based logic can be implemented to have the robot react to anomalies and alter its mission in real-time.



COLLISION AVOIDANCE MODES

The robot employs multiple modes to avoid collisions and safely stop near cliffs.

In *Stop & Go* mode, the robot will stop before obstacles to avoid collisions and move again once the obstacle has moved.

In *Obstacle Avoidance* mode, if space is available, the robot will reroute around obstacles. If a path is completely blocked, the robot can attempt to intelligently replan its route in order to complete its mission.

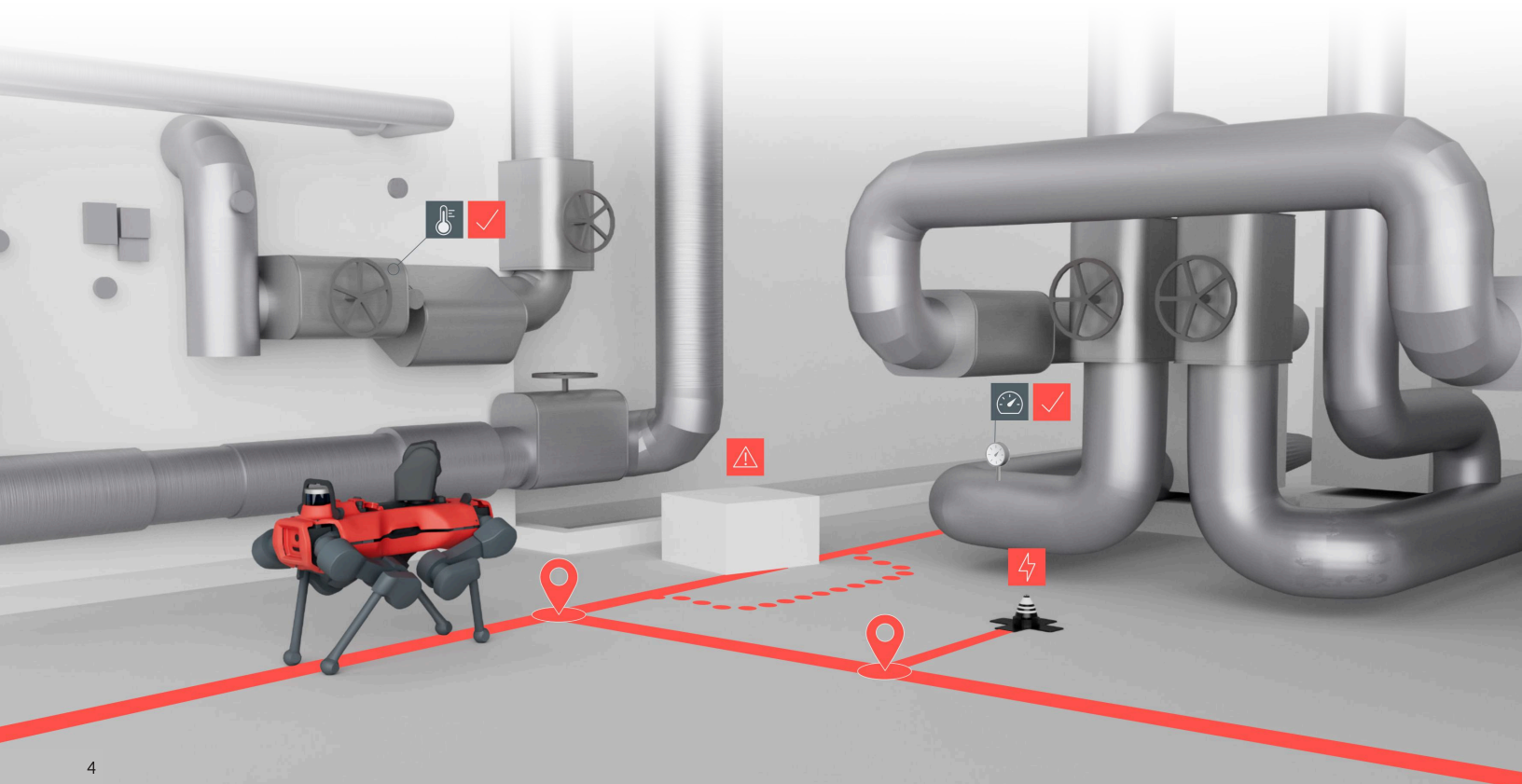


AUTOMATED CHARGING

The docking station enables continuous autonomous operation and is also defined as a point of interest when setting up the facility environment.

Missions can be set to any length because the robot will automatically navigate to the docking station when its battery is low and resume its mission after charging.

More information about the docking station and charger is available on page 8.



Industrial Inspection

READING INSTRUMENTS

A broad range of analog instruments and indicators can be digitized. Once trained on a type of instrument, the value or state is reliably identified.

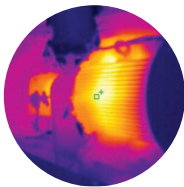
Example: The pressure value, success status, confidence level, and image of an analog gauge are recorded on the robot and transmitted to your data portal.



DETECTING EVENTS

Unforeseen technical events can result in hazardous situations. Equipped with precision sensors, ANYmal detects dangerous conditions in the environment and triggers a warning when required.

Example: The temperature of the hottest point in the thermal image of a motor, along with the image, is reported to the plant operator.



CHECKING EQUIPMENT HEALTH

Early signs of operating problems are caught by examining the equipment's general health. During inspection, ANYmal checks critical points for anomalies and immediately reports severe problems.

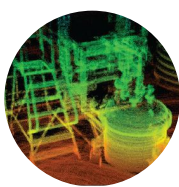
Example: Sound recording and frequency analysis to detect unusual vibrations.



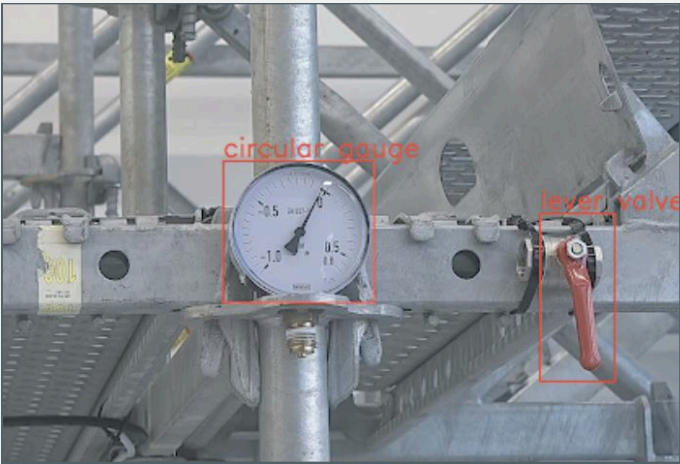
3D ENVIRONMENT SCANNING

Industrial environments require continuous tracking of structural changes. ANYmal supports operations by scanning and documenting 3D environmental data.

Example: Dense point clouds are recorded with ANYmal's LiDAR and depth cameras, then fused into a global point cloud map.



INSPECTION PIPELINE



Detect and recognize objects, even if they have moved.

Extract and process data



Collect multiple types of data for analysis and reporting

01



APPEND METADATA

To add context to data, inspection results include predefined metadata fields such as time or location. The spatial metadata of each inspection point in your facility is recorded to ensure repeat inspection and support digital twins.

02



RULE-BASED LOGIC

Inspection missions can be programmed to change if certain inspection results are observed (e.g., a high or low threshold), enabling operators to prioritize inspection activities based on measured conditions on-site.

03



ASSOCIATE INSPECTION RESULTS

Multiple inspection results can be associated with each other to add additional context to the raw inspection data.

04



INSPECTION REPORTING

Generate reports of inspection results, export them to data portals or digital twins, or see inspection results live in the GUI when connected to the robot via Wi-Fi or LTE.

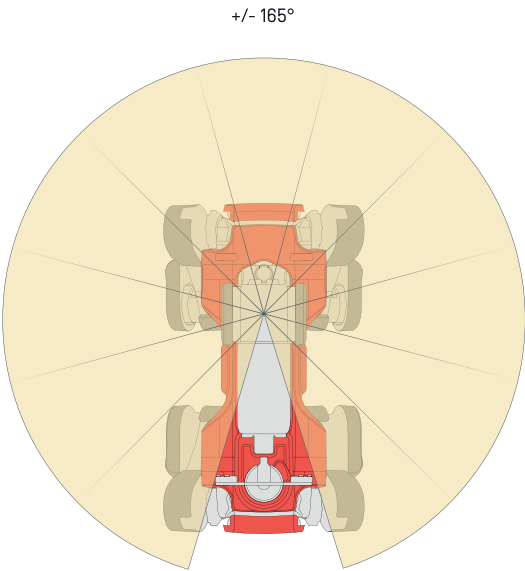
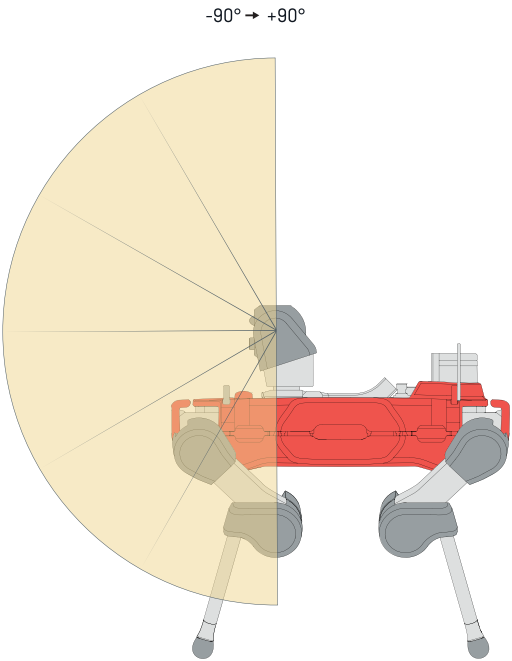
INSPECTION PAYLOAD

Zoom camera	Default: 1080 × 1920 px (Full HD), 15 FPS Maximum: 3840 × 2160 px (QFHD/4k), 30 FPS 20× optical zoom, 70.2° to 4.1° FOV (horizontal)
Thermal camera	-40 to +550°C [-40 to 1022°F] (radiometry) 336 × 256 px 46° FOV (horizontal)
Ultrasonic microphone	0–384 kHz sampling frequency
Spotlight	1895 lm continuous, 3790 lm for short time
Range of motion	Pan: ±165°, tilt: -90°/+180° Speed: 340°/s
Dimensions	229 × 177 × 246 mm [L/W/H] [9.02 × 6.97 × 9.69 in]
Weight	5.7 kg [12.6 lbs]



Inspection Payload Range of Motion

ANYmal’s inspection payload captures visual, thermal, and acoustic data for generating insights about your equipment and infrastructure. The pan tilt unit’s wide range of motion, combined with highly accurate positioning and powerful sensors, ensures reliable, accurate, and repeatable data collection, even in low-light conditions.



ANYmal

Dimensions

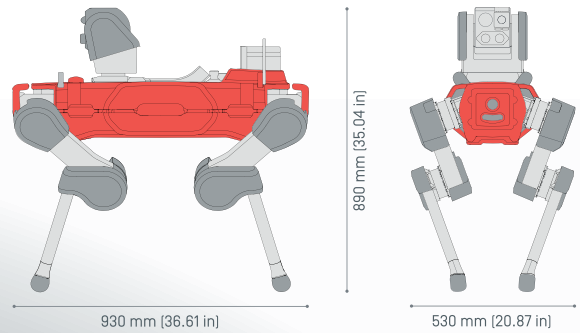
Length: 930 mm [36.61 in]
Width: 530 mm [20.87 in] (default walking)
Height: 890 mm [35.04 in] (default walking);
470 mm [18.50 in] (lying on ground)

Weight

50 kg [110.2 lbs]; 55.7 kg [122.8 lbs]
with inspection payload

Walking speed

Max 1.3 m/s [4.27 ft]. Rough or slippery terrain might
reduce the walking speed. 0.75 m/s [2.46 ft] is
recommended for safe and efficient operation



Edge Computing

Computers

2× 8th Gen Intel Core™ i7 [6-core] CPU
with 2× 8 GB Memory [RAM]

Hard disks

2× 240 GB SSD

Operating system

Ubuntu 20.04

Telecommunication

Wi-Fi

Built-in module 2.4/5 GHz, 802.11 ac Wave2
Access point or client mode

4G LTE

Add-on module, LTE Cat.12

Battery

Battery & capacity

Swappable Li-ion battery, UN 38.3 certified, 932.4 Wh

Running time & range

90 to 120 minutes and 2 km [1.24 mi] range on a full
charge, up to 1.5 km [0.93 mi] for a typical inspection
mission (depending on payload weight and number of
inspection points)

Recharge time

3 hours for full charge, 100 minutes for 70% quick-
charge

Dimensions

466 × 136 × 78 mm [18.35 × 5.35 × 3.07 in] [L/W/H]

Weight

5.5 kg [12.13 lbs]

Ingress protection

IP67

Perception Sensors

LIDAR

16 channels, 300,000 points/s, full sweep at 10 Hz 0.4
to 100 m [1.31 to 328 ft] range, 3 cm [1.18 in] accuracy
[typical]
360 × 15.0° to -15.0° FOV (horizontal × vertical)
905 nm, Class 1 Eye-safe per IEC 60825-1:2007 & 2014

Depth camera

0.3 to 3 m [0.98 to 9.84 ft] range, 87.3 × 58.1 × 95.3°
depth FOV (horizontal/vertical/diagonal), Class 1 Laser
Product under the EN/IEC 60825-1, Edition 3 [2014]

Teleoperation cameras

1440 × 1080 px
110 × 76.5 × 117.7° FOV

Environmental conditions

Temperature

Specified: 0 to 40°C [32 to 104°F]
Typical: -10 to 50°C [14 to 122°F]

Day & night

No light required for autonomous operation and
inspection. Low light (min. 20 lux) needed for automatic
docking and teleoperation

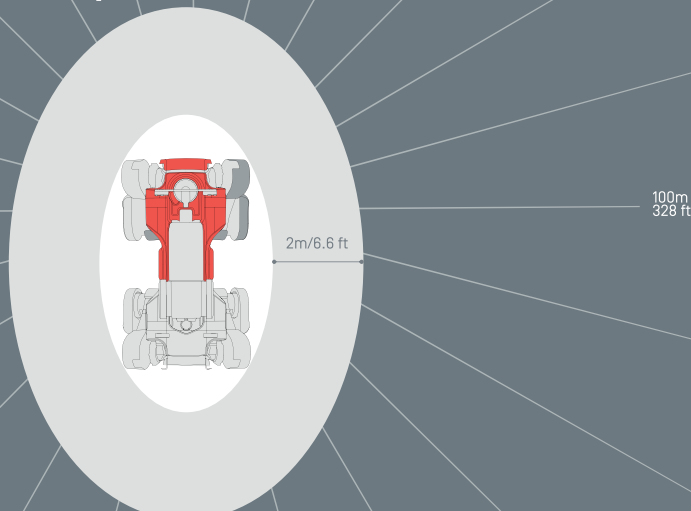
Water & dust ingress protection

Fully protected against water and dust (IP67) and able
to operate in humid and dusty conditions

Industrial floor

ANYmal walks on metal, concrete, gratings/check
erboards, gravel, dirty, wet, and slippery floors

Perception Sensors Field of View



Dynamic sensing

High density near field sensing

The robot's depth cameras detect details
about the environment and obstacles within
2 meters [6.6 ft]

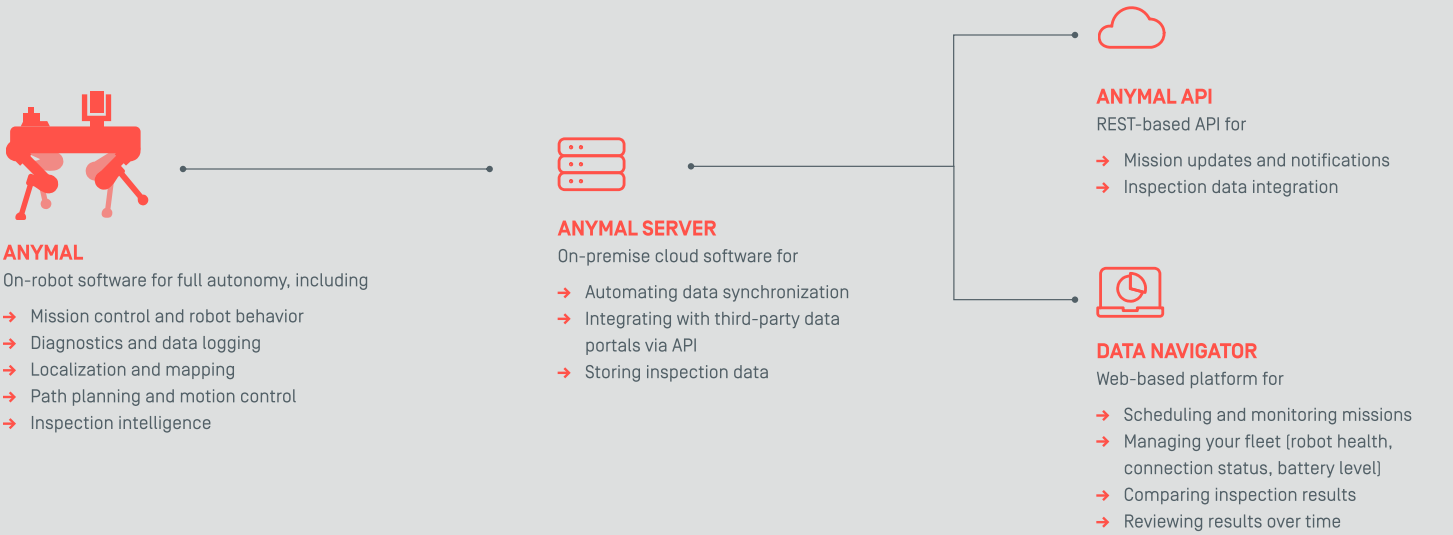
Accurate long range sensing

The powerful onboard LiDAR is used for
mapping, localization, and collision
avoidance up to 100

Automated End-to-End Workflow

Prescheduled or upon your operator’s request, ANYmal performs automated inspection routines with improved reliability and accuracy. The robot and its results integrate into existing systems and data portals with its gRPC- based ANYmal API to produce consistent inspection data and analysis reports. Work with a fleet of ANYmals to easily scale your monitoring coverage and frequency.

ROBOT OPERATION



Charger

Charges the robot's battery, outside the robot or automatically with the docking station.	
Power supply	110—240 V/50—60 Hz
Ingress protection	IP65
Cable length	5m (16.4 ft)
Dimensions	145 × 300 × 124 mm (L/W/H) (5.71 × 11.81 × 4.88 in)
Weight	3.5 kg (7.72 lbs)

Docking station

Permits the robot to recharge itself after missions, enabling fully autonomous operation. The robot's mission range can be extended by deploying additional docking stations along the route.	
Ingress protection	IP65
Required space for charging	1000 × 800 mm (L/W) (39.4 × 31.5 in)
Dimensions	5m (16.4 ft)
Dimensions	145 × 300 × 124 mm (L/W/H) (5.71 × 11.81 × 4.88 in)
Weight	1.4 kg (3.1 lbs)



Data Navigator

Transforming inspection data into actionable insights

Data Navigator helps you manage and analyze the inspection data that's collected by your ANYmal. It gives insights into your equipment's performance, allowing you to detect potential issues early and optimize maintenance.



FLEXIBLE INSTALLATION

Data Navigator is designed for seamless integration with diverse IT environments. Deploy on-premise, on the cloud, or in fully air-gapped systems for critical infrastructure—no internet access required.



EASY SETUP AND INTUITIVE DESIGN

Data Navigator is ready to use out-of-the-box, enabling you to gain immediate insights into the health of your assets. Its user-friendly, web-based platform ensures that your teams can access inspection insights anytime, anywhere, without the need for specialized training. Critical data is accessible to all approved users.



CENTRALIZED ASSET MONITORING

View inspection results, anomalies, and mission status at a glance. From a single dashboard, you can track asset conditions, resolve problems, and manage favorite assets and points of interest.



SCHEDULE MISSIONS

Easily schedule inspection missions with full flexibility. The Mission Scheduler allows you to control when and how data is collected, delivering targeted insights that align with your operational priorities.



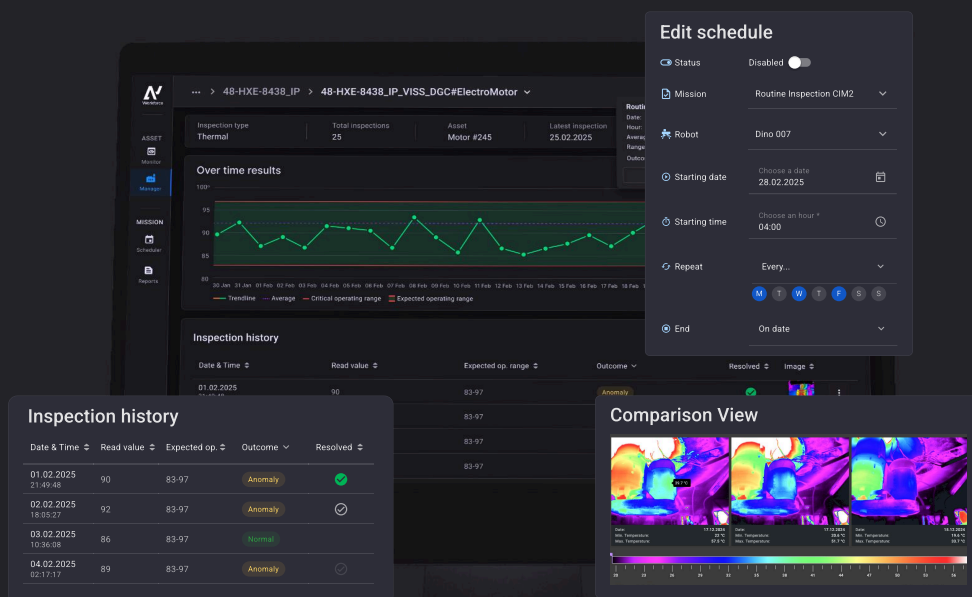
REVIEW RESULTS OVER TIME

Detect issues early with trend line-based insights. Choose between different data visualization options like average values, expected operating ranges, and trend line analysis to see how data changes over time.



COMPARE INSPECTION RESULTS

Compare thermal, audio, and visual inspection data to monitor asset health and uncover performance insights. The Comparison View allows you to do side-by-side analysis of up to four inspection results, including videos, images, and recordings.





Safety & Compliance

Emergency stop

Push button on the robot to disconnect complete power supply complies with ISO 13849-1:2015 Category 3, PL c

Remote control emergency stop

Push button on the robot to disconnect complete power supply complies with ISO 13849-1:2015 Category 3, PL c

Compliance

CE marked, complying with Machinery Directive 2006/42/EC (MD), EMC Directive 2014/30/EU (EMCD), Low Voltage Directive 2014/35/ EU, Radio Equipment Directive 2014/53/EU (RED) and Restriction of Hazardous Substances in Electrical and Electronic Equipment (ROHS) 2011/65/EU



Getting Started

We partner with customers to define business goals and how ANYbotics can contribute to solving inspection tasks based on the requirements of their environment and applications. Based on our analysis, we provide a custom offer that covers your exact needs. Contact us to assess the application of autonomous inspection robots in your operations or ask for an on-site demonstration at your facility via anybotics.com or info@anybotics.com.



Use Cases

Learn more about ANYmal's use cases and impact in industries like Oil & Gas, Chemicals, Energy, or Mining:

anybotics.com/news/

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