

The Vision 60® Q-UGV®, is a high-endurance, agile, and durable all-weather ground robot for use in a broad range of unstructured urban and natural environments for defense, homeland, and enterprise applications.

The Vision 60 is a force multiplier by helping to

- Improve situational awareness
- Lighten physical and cognitive workloads
- Enhance the sustainability of deployments
- Increased standoff distance

Agile and Unstoppable

The agility provided by four legs means the Vision 60 can go pretty much anywhere people can go. It climbs stairs and steep hills, scrambles over rocks, and wades through swamps. Legs outperform wheeled and tracked unmanned ground vehicles on unstructured terrain, debris fields, steep inclines, and of course, inside facilities with stairs.

If the Vision 60 slips and falls, it gets right back up. If it's tipped over, it even has the ability to operate completely inverted.

Rugged and Robust

Vision 60 robots are robust - they have an IP67 rating, which means the platform is fully sealed from dust and can be submerged in up to 1 meter of water for up to 30 minutes. The Vision 60 can also operate in temperatures from -40° to 55° C (-40° to 131° F).

Unique "Blind Mode" Enhances Navigation

The Vision 60 has the unequaled ability to navigate through tall grass and unknown terrain even when its vision sensors are obscured by mud, rain, snow or direct sunlight. We achieve this using proprietary methods that mimic how mammals operate across a broad array of urban and rural environments. When other quadrupedal robots encounter environmental factors in the real world, they become paralyzed - which results in the robot having to end its mission.

Remarkable Endurance and Operating Time

The Vision 60 is highly energy-efficient, giving it excellent endurance. The robot can travel up to 6.0 miles on a single charge, depending on payload and operating conditions. Operating time is up to 3.15 hours of continuous walking. If the Vision 60 is sitting, it can operate up to 21 hours with the computer on and RGB cameras monitoring.

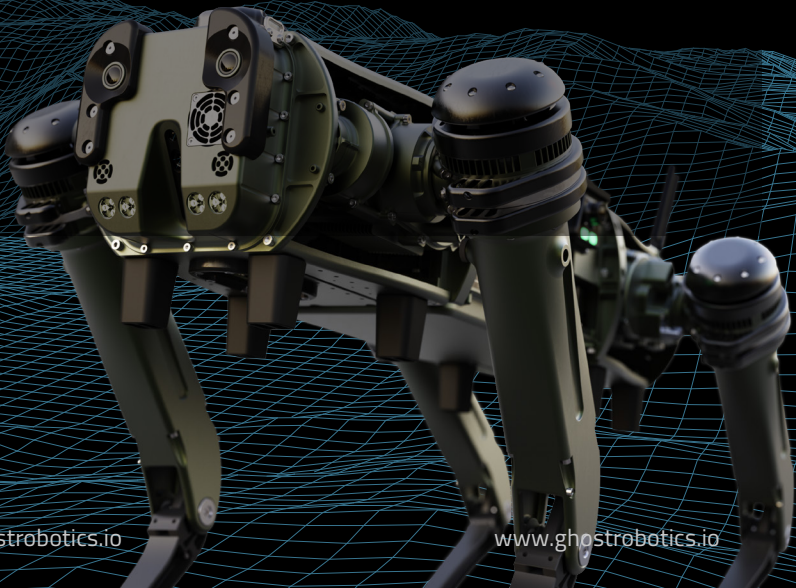
Open Architecture

We believe in an open architecture to allow for innovation.

Users and partners can leverage Ghost's robust SDK to build applications and integrate any sensor, radio, or electronics by using the industry-standard Robot Operating System (ROS/ROS2) framework. Robot joint-level integration is also possible through the C/C++ low-level interface.

Easily Field Repairable

Sub-assemblies on the Vision 60 can be swapped out within minutes. This includes the legs, battery, main CPU, and front and rear sensor heads.



Specifications

IP Rating Operating Temp	IP67 -40° to 55° C (-40° to 131° F) Cold start not possible below -20°C. Charging rate decreases above 40° C, no charging below 0° C.
Endurance	3.15 hours of continuous walking at 0.9 m/s; 10km (terrain and payload dependent) or 21 hours of standby time (sensors, compute, radio on) ; Standard battery charge time approx. 3 hours.
General Robot Design	All-electric direct charge Q-UGV Modular design with quick-change sub-assemblies. Constructed of AL & composites. Mounting options include T-slots, M5 tapped holes or 1913 MIL-STD rails, w/ optional body panels.
Speed	Standard walk 0.9m/s (2 mph). Up to 1.2m/s (2.7 mph) fast-walk; and 2.4m/s (4.9 mph; working towards 3.0m/s 6.7 mph) sprint. Speed is dependent on payload and terrain.
Flexible Communications Architecture	Integrated 2.4, 5.8 GHz Wi-Fi & 4G/LTE; GigE switch supports any external radio including 5G, SDRs & SAT
Export Control HC	US ECCN: EAR-99 8479.50.00.00 Industrial Robots (No ITAR restrictions)
Key Dimensions	Overall width: 570mm (22.5in) Body width: 250mm (10in) Overall height (standing): 685mm (27in) Height to bottom of body / "Ride height": 419mm (16.5in) Overall length: 950mm (37.5in)
Weight	Tare: 51kg (112 lbs)
Field Repair Entire Robot	Quick-swap sub-assemblies within minutes (legs, battery, front & rear sensor heads)
Autonomy Modes	Perception Aided Mobility. Front and rear collision avoidance with static or moving obstacles. Perception aided stair climbing with steering assistance. Footstep planning over curbs and grated surfaces. Record-Playback. Pre-defined mission route automation using route record-playback from OCU or any command-control station. Mission Control. Human readable scriptable mission format with reusable task-based plug-ins.
Payload Capacity	10 kg (22 lbs) payload weight. User-selectable payload compensation mode.
Actuation, Legs	3 Degrees of Freedom per leg, 12-Motor back-drivable drive-train, capable of inverted operation.
Foot Treads	Vibram® all-terrain treads are available in different configurations including sand and ice.
Compute	NVIDIA® Xavier 32GB RAM w/ 16 channel GMSL2, 2TB NVMe SSD
I/O	3 x Ethernet, 1 x USB 3.1, 6 x GMSL2, power:12V regulated & unregulated 32-42V
Integrated Sensors	5 x RGB (1080p resolution), 4 x D435 depth sensors , dual antenna RTK GPS
Lighting & Audio	2-way audio, Front & Rear LED drive lights, side diagnostic LEDs
Tele-Op Controller	Samsung® Active Tab 3 standalone or in combination w/ dual joystick Operator Control Unit. Direct robot control, GPS path planning and diagnostics.
Low-level High-Level Mission Control API	C/C++, ROS, ROS2, MAVLink Compatible, Zeno, ATAK, JSON Mission
Simulator	Bullet Physics-based, Windows, Linux, Mac
Wireless Charge Kit	Wireless charging station for persistent 24x7 operation