



Leading the charge in robotic systems designed to maximize workforce potential through increased safety and efficiency.

Safely extending human capabilities in complex industrial environments

GUARDIAN® XT™

The Guardian® XT™ highly-dexterous, mobile manipulation robot combines robotic strength and precision with human judgment and ingenuity via teleoperation for enhanced productivity and safety in dangerous, complex, and unstructured industrial environments. Its versatile design enables mounting to various mobile and lift platforms and allows operators to control their trade tools remotely while working at-height or at ground-level.



The Guardian® XT™ mobile manipulation robot is a teleoperated system designed to provide a safer and more effective way to complete dexterous, industrial work in challenging and hazardous conditions.

Designed for Use in Challenging Industrial Work Environments

- › One- or two-armed upper body robot mounts on various mobile and lift platforms, making it ideal for a wide variety of industrial applications, including at-height, overhead, and ground-level configurations
- › An operator can safely teleoperate the system to perform dexterous tasks remotely, using custom and off-the-shelf trade tools
- › Indoor and outdoor use
- › Battery-operated for maximum portability and use in unstructured environments (can also accommodate installed power sources)

Robotic Capability Meets Human Skill and Intelligence for Maximum Dexterity

- › A combination of robotic arms, torso, and actuated end effectors enable a wide range of motion and dexterous manipulation capabilities (reach, grab, raise/lower, turn)
- › Each arm can lift and manipulate up to 100 lb (200 lb with 2 arms)¹
- › Dexterous control of the robotic arms, end effectors, and trade tools is achieved via the SenSuit™ wearable controller, which also provides the operator with situational awareness of the robot's interactions with its environment

Enhances Worker Safety and Productivity

- › Maximizes productivity for tough overhead jobs involving handheld tools
- › Capable of reducing or eliminating the need for humans working in dangerous, at-height situations

- › Potential to reduce worker exposure to hazardous conditions
- › Helps combat fatigue-related downtime and occupational injuries

Industries and Applications

The Guardian XT mobile manipulation robot is uniquely equipped to increase worker safety and efficiency in challenging work environments that occur in a wide variety of industries, including:

Power Utilities

At-height powerline maintenance and vegetation management

Oil & Gas, Chemical Processing, and Food Processing

Pipe and tank inspection, maintenance, and repair

Construction

Overhead and at-height work for solar energy, structural, and commercial projects (i.e., surface prep, high pressure tool work, solar panel installations, welding, and pre-commissioning NDT inspections, etc.)

Infrastructure Maintenance and Repair

Overhead and at-height tasks including surface prep, painting, and heavy tools work for storage tanks, pipes, building façades, bridges, telecommunication towers, indoor communication panels, etc.

Heavy Manufacturing

Overhead heavy tools work, components handling, heavy metal welding/cutting, surface prep, and painting

Maritime

Shipbuilding, maintenance, and repair, including surface prep, painting, overhead and at-height tools work, and heavy metal welding/cutting

Distribution and Warehousing

At-height pick and pack, operational maintenance, and repair

Parks, Forest, and Commercial Property Management

At-height, commercial tree trimming

¹ Use case-dependent and under ideal conditions.



Guardian® XT™ Mobile Robot Technical Specifications¹

| Remote Robot System (one- or two-armed upper body robot) | |
|--|--|
| Dimensions | <ul style="list-style-type: none"> Arms/Torso: Height² <72" (1.83 m) x Width <40" (1.02 m) x Depth <24" (0.61 m) |
| Weight | ~275 lb (~125 kg) for two-arm variant |
| Lift Capacity | 100 lb per arm (45.4 kg) ³ |
| Workspace | Reach and workspace are dependent on the type of base selected |
| Degrees of Freedom (DoF) | <ul style="list-style-type: none"> Arm: 7 DoF per arm Torso: 2 DoF |
| High Vision/Audio System | <ul style="list-style-type: none"> Dual HD cameras Stereo audio microphones |
| End Effector | Active robotic hand with 3 DoF to engage with trade tools |
| Operating Temperature | -4 °F to 115 °F (-20 °C to 46 °C) |
| Power | <ul style="list-style-type: none"> 2 DC battery modules (48 VDC, nominal; hot-swappable)) Able to use tethered power from a fixed power source or a mobile/lift platform via converter |
| Operating Time | <ul style="list-style-type: none"> DC battery: Targeting 4-hour runtime (hot-swappable battery design enables near-continuous operation) Tethered power source: continuous runtime Mobile or lift platform power source: Runtime dependent on base type |
| IP Rating | IP66 |
| Mobile Base | |
| Customer-specified | System is base-agnostic and can mount to various mobile and telescoping bases with integrated controls |
| SenSuit™ Wearable Controllers | |
| Controller Garment | Long-sleeved, motion-capturing controller garment with tracker and vibrotactile feedback for real-time robotic force presentation ⁴ |
| Hand Input Device | Left- and right-hand input devices with real-time force-reflective feedback ⁴ |
| Head Mounted Display (HMD) | Augmented reality-enabled, high-definition HMD with built-in head tracking feature |

¹ Specifications are subject to change. ² Includes vision system. ³ Use case-dependent and under ideal conditions. ⁴ Feedback from robot's interactions with its environment.



See how Sarcos Robotics can transform
your operational safety and efficiency.

Sarcos Technology and Robotics Corporation
650 S 500 W
Salt Lake City, UT 84101
Phone: (1) 888-927-7296



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Contact us: www.sarcos.com/contact Visit: www.sarcos.com

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