Robots, Parts, and Custom Solutions

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LT-F Compact Treaded All Terrain Surveillance & Inspection Robot

LT-F Robot Specifications:

- Enclosed treaded robot chassis with new integrated flush camera tilt system in the nose of the robot.
- Patent Pending Flipper Arm/Stabilizer arm can be used to climb over objects as tall as the robot is long. The arm can be used as a wheelie bar from climbing up stairs, etc.
- Compact design with all components carefully placed for optimum spacing and most effective operation using solid modeling 3-D CAD software
- Two (2) planetary IG52-04 285RPM 24VDC gear motors - one per side
- One 22.2VDC 10Ahr Li-Ion drive battery. Run time ~2.5 to ~8 hours depending on use
- 11.1VDC 5Ahr Li-Ion video power battery. Run time 7-10 hours
- Custom Dual 25Amp drive dual motor controller specifically designed for this robot
- Custom 10Amp Flipper arm motor controller specifically designed for this robot
- Fuse blocks, terminal blocks, charging ports, switch, etc. all integrated into the design
- Integrated nylon carrying strap on the rear or the robot
- Chassis made from heavy gage aluminum that is laser cut and CNC bent. Chassis seams are welded. Entire body is coated flat black.
- Total weight of fully assembled robot: ~40lbs
- Total height (floor to top of treads or camera housing): ~7 inches, total width: ~16.25 inches, total length: ~26 inches
- 7” composite rubber and UHMW cogged wheels that match a positive traction aggressive all terrain tread
- Ground clearance: ~2 inches
- Speed: 0 to 5 feet per second, infinitely adjustable/controllable

LT-F Control Console Specifications:

- Other custom versions are also available such as WiFi, Gamepad controller, etc.
- Standard version include the following:
  - 2.4GHz frequency spectrum control system (searches for best most reliable channel) with a Fail Safe long range dual receiver
  - 900MHz video transmitter and receiver
  - Tested urban range 200+ yards (effective operation range for video and control with multiple building structures, wireless interference, etc. Concrete and steel walls will reduce range further)
  - Tested rural line of site range 1000+ feet
  - 7” color wide screen LCD for viewing video
  - Full control of speed and direction for drive motors.
  - Position control of camera tilt
  - Full control of speed and direction for Flipper/Stabilizer arm
  - Visible indication lights for flipper arm position
  - Extra channel(s) for lights or other custom options.
  - Includes rechargeable NiMH batteries for control console and video
  - Pelican case with 7”LCD mounted in the lid and controls mounted in base.
  - Light weight can be carried and operated or placed on hood of car or table and operated
  - Convenient transport case doubles as operator console, just flip it open, erect antennas, and turn it on.

Chargers:

- Three chargers mounted in case. The chargers are for the 24V motor battery, 12V video/control battery, and 12V control console battery. The chargers are fully automatic and will charge all the batteries simultaneously.

LT-F Upgrades and Add-On Options:

- *OSD (On Screen Display).* This add-on allows the user to view all the robot's information thought the wireless video link. The run time (started at the time the robot is turned on), the 24V battery voltage, 12V video/control voltage, and current (Amps) are all relayed back on the OCD as shown in the images to the below:

- *Upgrade LT-F with Flipper Arm Positioning Control.* This option is for the LT-F robot and can only be used with the Pelican Case Remote. The LT-F comes with a standard speed controller on the flipper arm that allow the operator to control the speed and direction of the arm. With the position control option the operator can control the flipper arm by position. The operator just adjusts the position on the remote and the flipper arm will position itself and hold that position. This makes operation a lot simpler in a remote environment because it eliminates the guess work of where the arm is.
- *Standard Robot Microphone (for Audio from Robot to Remote).* This add-on installs a microphone on the robot with an amplifier for picking up distant and faint noises. The microphone is a standard compact microphone that is meant for listening to large areas. The microphone will be mounted to the robot and the audio will be transmitted back with the video transmitter via the audio channel. The audio will be broadcast real time on the 7" Color LCD. Volume of the audio can be adjusted on the 7" monitor. The gain, etc of the amplifier is set up on the robot.
- *PA System (for Audio from Remote to the Robot).* This add-on allows the user to use a hand held radio to broadcast to the robot through a loud speaker PA system. Using this option along with the above microphone allows 2 way communication between the remote users and the robot. The PA speaker is shown on the robot picture on page one of this datasheet.
- *Upgrade Wireless Video and add Extra Data Receiver.* The Standard Video on the robot is a 900MHz 500mW system. With this system the range can be as far as 1000feet line of site. Inside a building with cement walls, etc the range is significantly reduced. This upgrade replaces the 500mW 900MHz transmitter with a 1000mW 900MHz transmitter. To extend the range of the data an extra receiver is added to the robot.
- *Upgrade LT-F with 4-Axis Arm.* SuperDroid Robots offers many different custom arms. Contact us for different arm configurations, such as position control arms, clutches, more or less axis and/or degrees of freedom. This 4 axis arm includes a shoulder joint that can rotate 180 degrees. An elbow joint that can rotate ~140 degrees, a continuous turn wrist, and a gripper. Each arm axis is directly driven with gear motors with speed control. The arm also includes the necessary controls to control the arm from our controller.

Pricing:

Pricing is subject to change without notice. Contact SuperDroid Robots for formal quotation.

Recommended Features		Cost	Detail of Item
Ext Cost	Qty		
			LT / LT-F Base Robot
$4,043.97	1	$4,043.97	LT Tank with motors, batteries, motor controller, motor mounts, assembly
$1,639.47	1	$1,639.47	Flipper Arm and Assembly
			LT / LT-F Remotes and/or Control Systems
$0.00		$1,351.63	Handheld Dx5i Remote with RF Video and 7" Color LCD
$0.00		$1,645.28	Handheld Dx7 Remote with RF Video and 7" Color LCD
$1,719.54	1	$1,719.54	Pelican Case Dx5i Remote with RF Video and 7" Color LCD
$0.00		$2,300.96	Pelican Case 8 channel DSM2 Remote with RF Video and 7" Color LCD
$0.00		$395.50	Upgrade Video Transmitter Power, Add Low Pass Filter, and Add Extra Data Receiver
$0.00		$476.00	Positioning Control of Flipper Arm (move and hold to set positions)
			LT / LT-F Camera Systems
$869.05	1	$869.05	LT Color IR Camera 180 degree Tilt System embedded in nose of robot
$0.00		$2,159.50	Pan Tilt 27X Zoom Camera System under 8inch dome
$0.00		$10,909.95	8 Foot Lift System with 360 Pan, 90 degree Tilt, IR camera, Controls, Mounting, Wiring, and Assembly
			LT / LT-F Misc. Options, Add-Ons, and/or Accessories
$388.15	1	$388.15	Smart Charger Battery Charging Station (Charger for each battery in custom case)
$0.00		$463.37	On Screen Display for current, voltage, battery usage (mAhrs)
$0.00		$356.48	OSD Position Feedback of Flipper Arm
$0.00		$169.75	Standard Microphone Audio System
$0.00		$389.55	PA system with radio for broadcasting from remote to robot
$0.00		$393.61	Remote Release Hitch
$0.00		$9,985.56	4 Axis Arm (~180 degree Shoulder, ~140 degree Elbow, Continuous Wrist Twist, 4 inch Gripper) - Roll Cage Removed, Camera Offset to one side
			LT / LT-F Shipping
$0.00		$419.00	Standard Pelican Case
$0.00		$160.00	Estimated Shipping from NC US
			LT / LT-F Recommended Spares
$0.00		$652.20	Spare Li-Ion Main Battery, NiMH Remote Battery, Li-Ion Video Tx Battery
$0.00		$483.70	Extra 24V Lithium Robot Drive Battery
$0.00		$99.20	Extra 12V Lithium Robot Video Battery
$0.00		$999.84	Spare Treads and Wheels for LT Robot
$0.00		$401.21	Spare Flipper Arms
$8,660.18		Recommended LT Surveillance Robot	

Standard Payment Terms:

1. Payment via check, money order, or wire transfer is required.
2. Sixty percent (60%) of price due upon award, remainder prior to shipment.

Delivery:

1. Procurement of materials, assembly and testing is required. Lead time is typically 3-8 weeks.

General Terms:

1. SuperDroid Robots, Inc is not responsible for special incidental, or consequential damages resulting from any warranty or under any legal theory, including, but not limited to lost profits, downtime, goodwill, damage to, or replacement equipment or property, or any cost of recovering, reprogramming, or reproducing any data stored. ANY LIABILITY SHALL BE LIMITED TO REPLACEMENT OF DEFECTIVE PARTS. SuperDroid Robots, Inc. is further not responsible for any personal damages, including, but not limited to bodily and health damages resulting from any use of our products.
2. SuperDroid Robots, Inc. makes no representations as to the fitness of its products for specific uses. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS HEREBY EXCLUDED.
3. Agreements shall be construed in accordance with the laws of the State of North Carolina, and the rights and obligations created hereby shall be governed by the laws of North Carolina.
4. In the event a dispute or controversy arises, such dispute or controversy (including claims of default) shall be brought in the courts of Wake County, North Carolina and the plaintiff hereby agrees to this choice of venue.

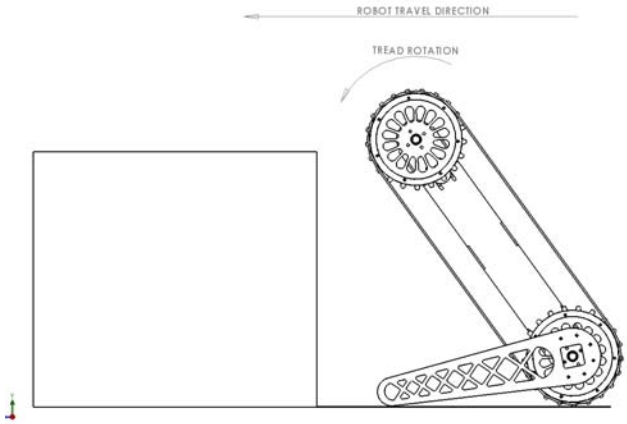
Warranty:

1. SuperDroid Robots will repair any manufacturing defects for 120 days after shipment. Damage from abuse or neglect will not be covered. Shipment of robot will not be covered in warranty. If an additional warranty is required, please contact us for a quotation.
2. Consumable items will not be covered by the warranty. Consumable items include, but are not limited to treads, chains, bearings, wheels, and batteries.
3. Extended warranties, spare parts, and maintenance training is available, contact us with specific needs. Service agreements are also available, but never forced upon you!

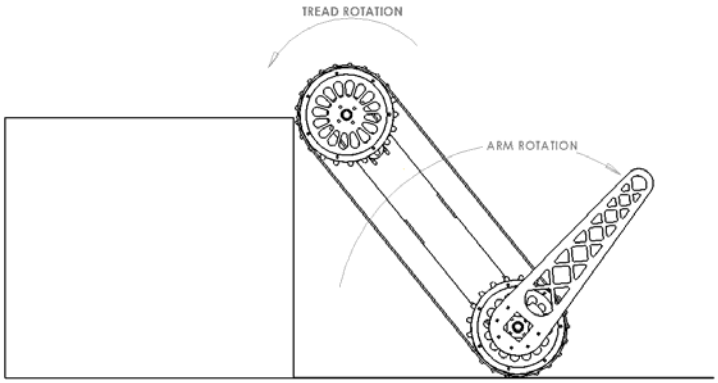
LT-F Flipper/Stabilizer Arm Description (Patent Pending):

A rugged robot platform with multipurpose rear stabilizer arms. The arms are located on the rear of the robot and have a rounded or wheeled front tip. The rear arms are approximately 2/3 the length of the robot. When rotated down the arms lift the front of the robot off the ground allowing it to move on top of objects as tall as the robot chassis' length. With the front of the robot on the object, the arms then rotate upwards continuing until the rear of the robot is lifted as high as the arms are long. The robot can then travel onto the object and rotate the arms back into parked position keeping them out of the way.

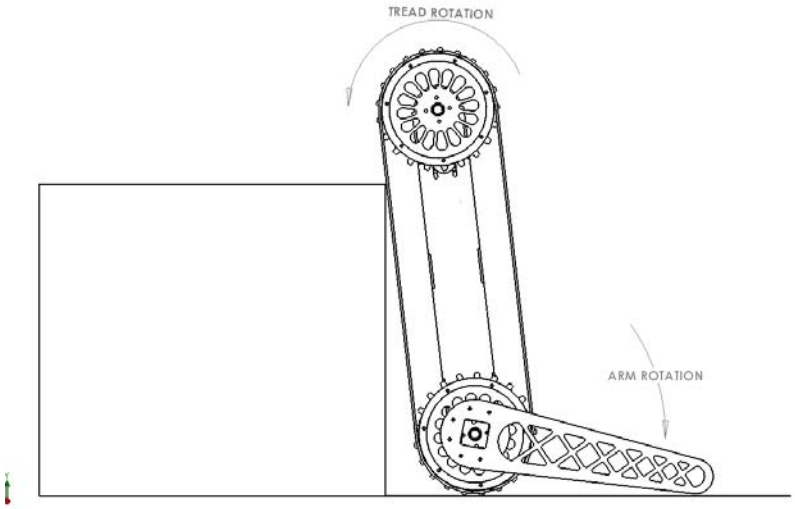
1. The arms are used for climbing an obstacle:



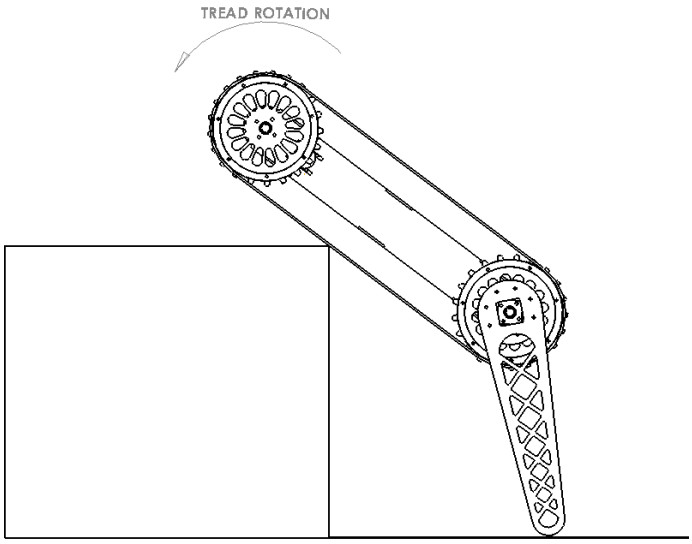
Step 1: The arms have lifted the front of the robot up to the height of the object it is about to climb. The rounded front ends of the arms allow the robot to still travel in a forward motion until it reaches the object.



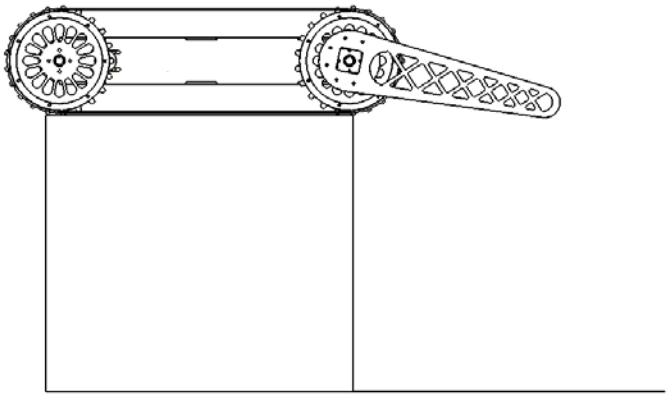
Step 2: The robot is now resting on the object while the arms are rotated backwards. The treads are moving slowly forward at this time.



Step 3: The arms and treads continue to move in the same direction as in step 2. The arms are strong enough to lift the entire weight of the robot off the ground.

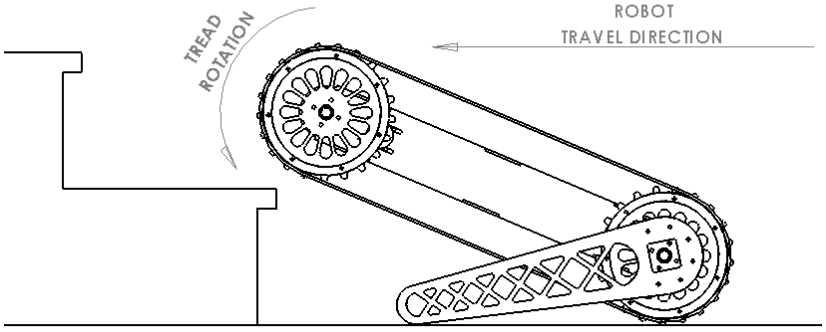


Step 4: The robot is now moving forward and the arms are only stabilizing the robot from flipping over. If the robot does fall over backwards or the object is too tall, the arms can simply flip the robot upright.

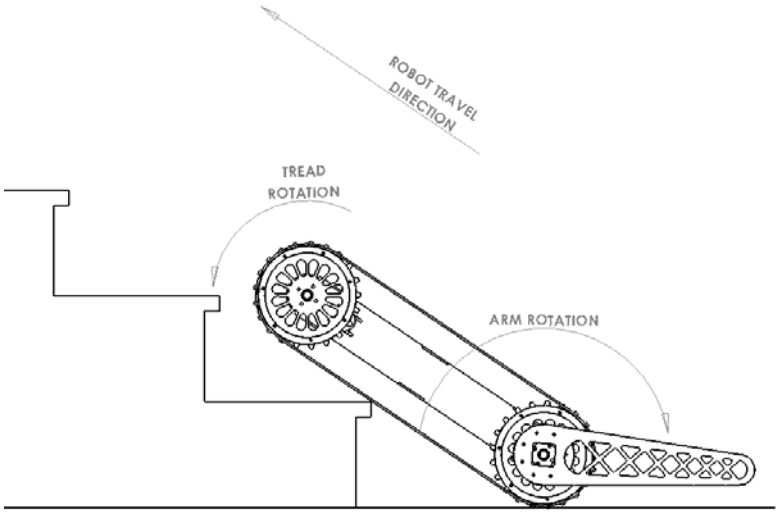


Step 5: The robot has now climbed on top of the object. The multipurpose arms can now be rotated back into a position that the next object requires.

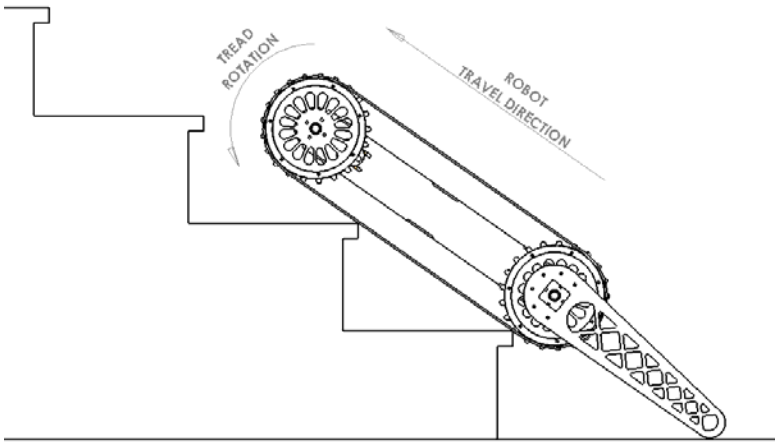
2. The arms used for climbing stairs.



Step 1: The robot has lifted the front end up high enough to clear the first step. The robot then drives forward just far enough to rest on the top of the first step.



Step 2: The arms are rotated in the direction of the arrow shown. Once the arms are about to reach the ground the robot can drive forward. The arms act as a stabilizer bar that prevents it from turning over.



The robot can now climb the stairs without flipping over backwards.