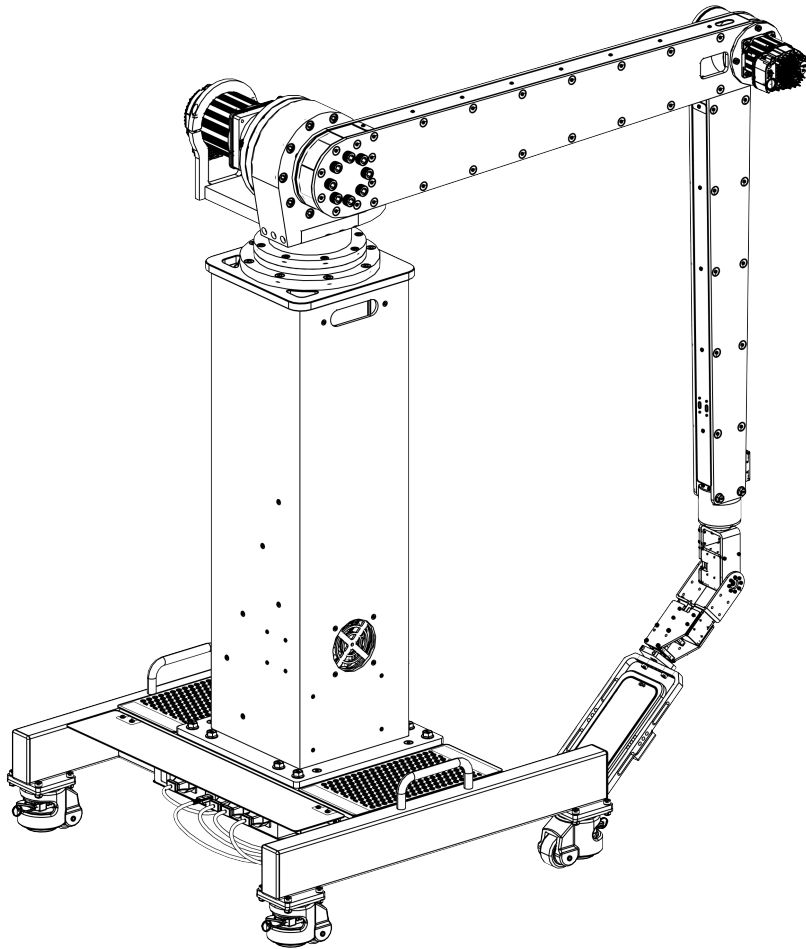


# GLAMBOT™

GETGLAMBOT.COM



## USER MANUAL

Version 02.02 | effective 12/20/23

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# SAFETY GUIDELINES

Please read the following information: failure to comply with provided information may lead to voiding the warranty.

This document covers safety, proper handling, and general information for use of your robotic arm.

## GENERAL PRECAUTIONS

### CAUTION:

To avoid injury, damage to the robot or equipment, please follow the provided guidelines.

- Please read through the directions before starting.
- The robot is not intended for use by children under 16 years old, or any person with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless:
  - Supervised by a person responsible for the person's safety and who has read and understands these instructions.
- Always keep the robot away from children under 3 years old to prevent injury or damage.
- Keep components or small parts away from children.
- Keep away from pets and animals of any kind, animals may behave erratically in the presence of the robot.
- First time users should take extra care when handling the robot to minimize injury or damage.
- If the robot is operating abnormally, there is an unusual sound, smell, or smoke is detected:
  - Turn the robot OFF immediately.
  - Unplug the robot.
- At all times, keep in mind safety first to prevent injury to individuals using or around the robot.
- Always follow installation and service instructions closely. Keep manuals for future reference.
- Review and follow all safety information provided throughout this manual.
- This guide does not cover all possible safety issues or conditions. Always use common sense and good judgment.
- Warning: Conversion or modifications to this product not expressly approved by the party responsible for compliance could void the user's authority to operate the product.
- Please take care of this unit and its accessories, keep them clean. Try to keep the robot and its accessories dry; please do not let this unit exposed to water or moisture.
- Please do not break, throw, or trample the robot.
- Avoid installation in extremely hot, rainy or water splashing, or being placed in high temperature or moist environment.

- Never disassemble or modify the smart servo in any way, otherwise, warranty of the product will be lost. For non-human faults or breakdown, please contact authorized distributors.
- Do not use any tools other than those provided in the kit or specified in the manual.
- Keep robot away from face and body when moving.

## HANDLING + PERSONAL SAFETY

### CAUTION:

#### Pinching Hazard

- Avoid touching the robot when it is moving to avoid getting pinched.
- Keep hand and fingers out of the joint areas to avoid getting caught in between.
- Do not place your hands in any joint to prevent damage or personal injury.

### IMPORTANT:

- The robot requires a clean workspace to move around and perform activities.
- Do not insert any foreign objects into any of the component or internal cavities.
- Generally, do not allow or cause the robot to fall over.
- Do not exert strong force against the joints or actuators.

### GENERAL:

- Never oil the joints with any kind of lubricant.
- Do not modify or open any of the actuators.
- Do not drop, crush, bend, deform, puncture, any of the components. Doing so can cause fire, electric shock, damage, or personal injury.
- When handling wire connectors, only hold the plastic housing by the edges to prevent damage due to electrostatic discharge (ESD).
- Do not forcibly twist the robot when the power is on to prevent damaging the motors.

## POWERING

Please read the user manual that came with the Robotic Arm. It contains important installation and safety instructions.

### CAUTION:

To avoid electric shock:

- Do not plug the AC power cables into an electrical outlet if the power cable is damaged.
- During a storm, unplug the AC power cable from the socket to protect it from damage.
- Never use an AC power cable that shows signs of damage or excessive wear.

### CAUTION:

Risk of fire or electric shock:

- Use only the provided AC power strip. Use of any other power strip may damage the robot or affect your safety.
- Unplug the power if:
  - The power strip is exposed to rain, liquid, or excessive moisture.
  - The power strip case has become damaged.
  - You suspect the power strip needs service or repair.

## EXTENSION CABLES

### CAUTION:

To avoid electric shock:

- Do not use multiple socket adapters or power extension cables that bypass the ground wire or disable grounding.
- Do not use adapter plugs that bypass the grounding feature or remove the grounding feature from the plug or adapter.
- When using a power extension cable or a multiple socket adapter, make sure it is grounded and has sufficient current rating. No more than one extension device at a time is recommended for use.
- If using a multiple socket adapter, take care when plugging the power cable, as some types allow incorrect plugging which could result in permanent damage to the robot, as well as cause possible electric shock and/or fire damage.
- Do not connect or disconnect the power adapter with wet hands.
- Plug the robot power cables only into properly grounded electrical outlets.
- If using an extension cable, make sure that the total ampere rating of the products plugged in to the extension power cable does not exceed the ampere rating of the extension cable.

## WORKING AREA

### GENERAL:

- Start from the default posture before turning on the robot.
- When turned off, it is best to keep the robot in the default posture without the cable plugged.
- Before starting, make sure there is enough free space for operation. This requires a radius of at least 5ft around the robot to avoid obstacles.
- Generally, leave at least 5ft all around the robot to avoid damage. Ensure that all cabling is removed from the usable area.

- The working surface must be dry and level; thick carpets or rugs are not recommended for operational stability.
- Keep the robot away from radiators, heat sources, and direct sunlight.
- Operating temperatures: between 40°F to 104°F.
- Operating humidity range: between 20% and 80%.
- Do not leave the robot unattended.

## LIQUID SPILLS

### CAUTION:

Use extreme caution when removing wet power cables from a power socket (or extension cable) and only attempt this if it is safe to do so:

Liquids spilt onto the robot or AC adapter may cause a short-circuit and stop the robot from working. The warranty is automatically void if any liquid seeps inside the AC adapter, whether apparent from the outside or not.

- Do not use the robot in a wet environment.
- Do not connect to power when your hands are wet.
- Do not attempt to dry the components with an external heat source such as a hairdryer or an oven.


### PROCEDURES:


If a liquid spill has occurred:

1. Turn off the robot.
2. Disconnect all cables, including the power strip and emergency stop.
3. Place the robot in the default posture, as possible.
4. Wipe the robot completely dry.
5. If liquid seeped into/onto electrical components allow sufficient time to dry.
6. When thoroughly dry, turn on the robot to continue operation.

## WARNINGS

Below are the warning symbols used throughout the manual and their meanings.

 denotes important information that is not directly related to safety, but that the user should be aware of

 indicates important safety precautions the user should follow

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# GETTING STARTED

The instructions and recommendations in this manual are intended to assist integrators and operators of the Glambot in understanding the operating principles of their hardware and software components.

## INTRODUCTION

The Glambot is a lightweight, modular robotic arm manipulator intended for use in event settings to capture creative videos for social media and marketing applications.

 The Glambot is designed to operate safely in close proximity to humans. However, the integrator should conduct a risk assessment for each installation to evaluate the need for additional safety devices and signage.

## WHAT'S INCLUDED

The robot is a modular device and will be shipped in 3 separate boxes.

- 
- BOX #1:
- Robot Base
  - Emergency Stop Button

- 
- BOX #2:
- Robot Tower

- 
- BOX #3:
- Robot Arm
  - Hardware - fasteners to assemble the robot
    - 8x Flanged Hex Head M8x1.25 x 25L Zinc-plated bolts
    - 8x Flanged Hex Head M6x1.0 x 30L Zinc-plated bolts
    - 4x Flanged Hex Head M6x1.0 x 16L Zinc-plated bolts
- 

## WHAT YOU NEED

### OPERATING DEVICES

- Smartphone – recording video
- iPad #1 - control station
- iPad #2 - sharing station

### ASSEMBLY TOOLS

- 1/4" drive torque wrench
- 10mm 1/4" drive socket

- 12mm 1/4" drive socket

#### OPTIONAL ITEMS

- 10ft, 25ft, 50ft extension cord
- cable management supplies
- charging cables
  - for recording device
  - for control device
  - for sharing device
- upgraded travel case set
- 10mm wrench
- 12mm wrench
- 1/4" drive ratchet
- 1/4" drive torque wrench

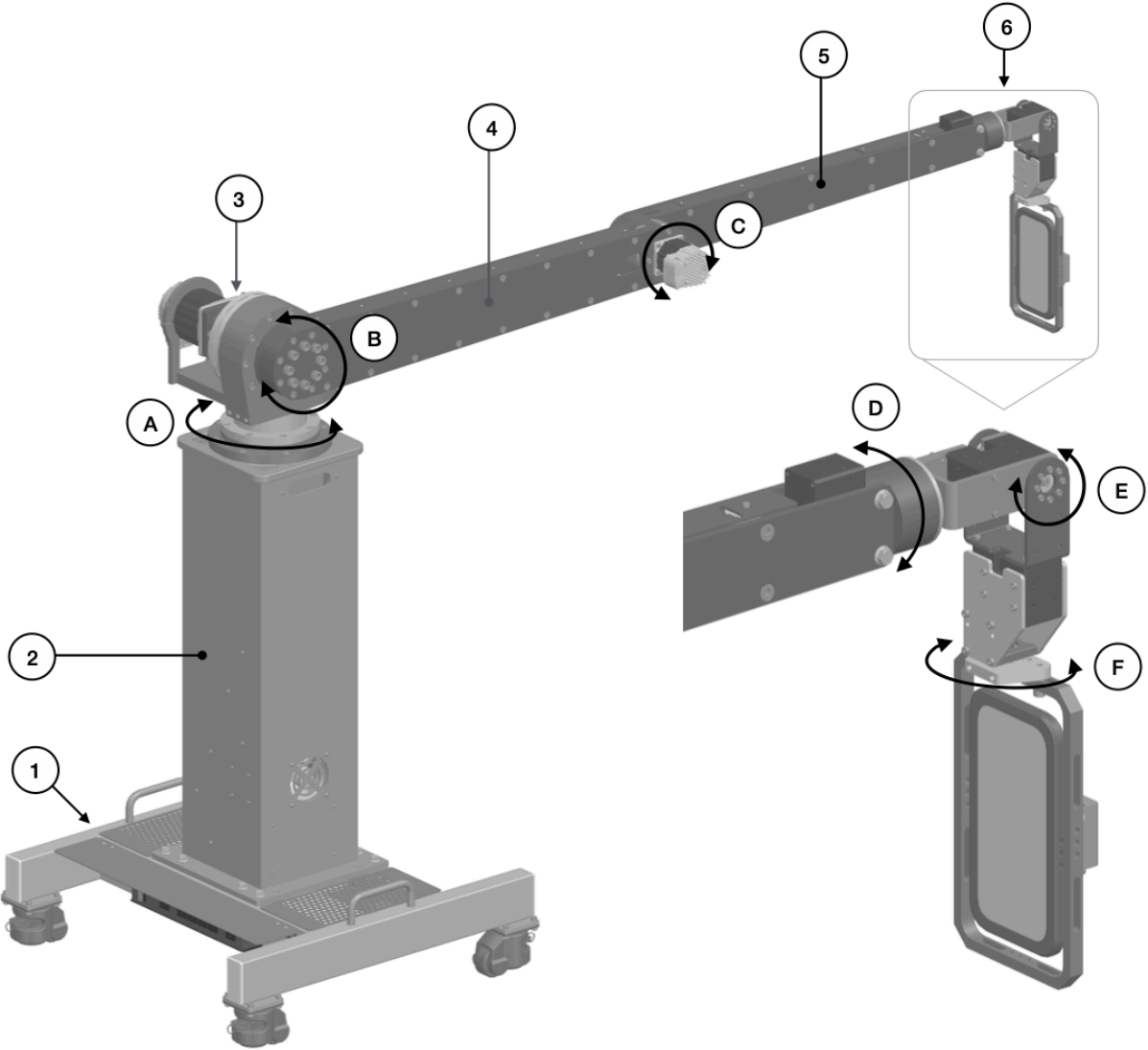


# GETTING TO KNOW THE GLAMBOT

## MECHANICAL COMPONENTS

The structural elements form six interlinked axes. Refer to the figure below for identification of key components that are referenced throughout the manual.

LINKS:	① Base	② Tower	③ Shoulder	④ Arm 1	⑤ Arm 2	⑥ Wrist
JOINTS:	Ⓐ Pan	Ⓑ Lift	Ⓒ Elbow	Ⓓ Wrist 1	Ⓔ Wrist 2	Ⓕ Wrist 3



## EMERGENCY STOP BUTTON

The emergency stop button is a standalone device pre-assembled with a connection cable. The button enables Category 0 Stop in accordance with ISO 10218-1 - stopping by immediate removal of power to the machine actuators.

**i** The actual appearance of the emergency stop button can differ from that shown.

Each robotic arm must have its own emergency stop button. You can place the button at any location within the operator's reach.

Use the button to immediately stop the robotic arm in an emergency when other protective measures have proved to be impracticable or inefficient.

To resume operation of the robotic arm after an emergency shutdown, reset the system as described below:

1. Wait for the arm to come to a full stop.
2. Evaluate the position of the arm. If calibration will create danger, your next step is to contact Technical Support Service.
3. Evaluate the status of all motors and connections. If any damage has occurred, your next step is to contact Technical Support Service.
4. Perform any necessary pre-commissioning checks. Un-press the emergency stop button to begin the commissioning process.



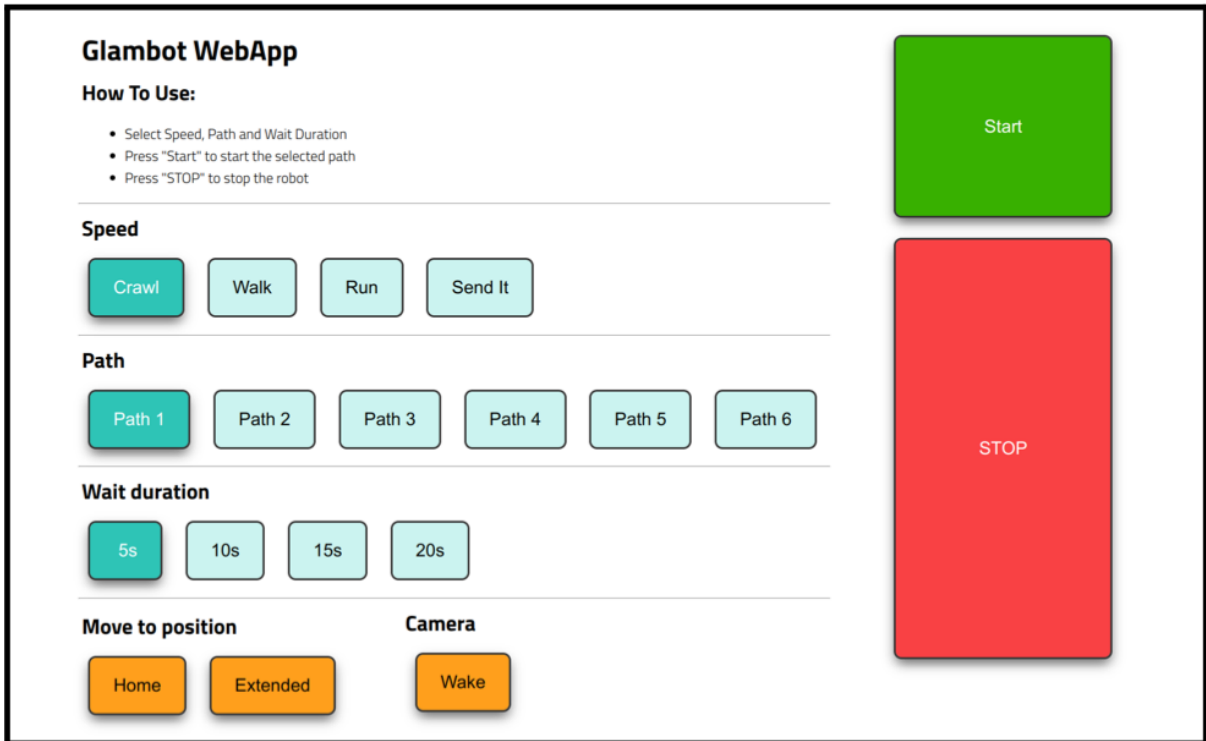
## END EFFECTORS

An end effector is a tool, or a device designed to enable a robotic arm to perform various operations, specifically video recording as intended for the Glambot. Aside from integration of an iPhone, end effectors are beyond the scope Pixster Photo Booth.

The Glambot comes pre-assembled with a phone holder—a special cage to easily mount various types of smartphones.

## WEBAPP

The webapp is a custom control board for the robot that is accessible through the internet browser when the control device is linked to the unique Glambot Wi-Fi network.



## DEFINITIONS

**Path:** Controls the movement that will be executed to capture a video.

**Wait Duration:** Time that the robot remains at the start position prior to executing a path.

**Speed:** Modulates the speed constant for each of the (6) motors on the robot.

**Home:** Collapsed position for stowing the robot when powered.

**Extended:** Horizontal position used for powering off and assembling the robot.

**Start:** Initiates movement after a path is selected.

**Stop:** Halts the robot during a given movement using software only.

**Wake:** Moves to next screen within Snappic app.

# OPERATIONS

## SAFE OPERATION REQUIREMENTS

Make sure to read and meet the requirements before operating an arm.


To ensure safe operation of the Glambot, it is essential to comply with the following requirements:


- Conduct a risk assessment of your application to evaluate the need for additional safety devices or any other risk-mitigating measures.
- Provide continuous power supply to the robotic arm.
- Keep away from the workspace of the arm when it is powered on.

## DEPLOYMENT QUICK GUIDE

Before commissioning, carry out the following preparatory works:

1. Unpack the robotic arm and other components.
2. Check the appearance of the arm and its components for any damages or defects.

 If you find any obvious damages or defects or find out that any of the supply package components are missing, contact the dealer or the manufacturer.

 When unpacking and installing an arm, avoid moving or rotating arm joints manually because this can cause damage to the arm.

To commission the Glambot for use, complete the following steps:

1. Locate the base at the appropriate ground condition and location for the application.
2. Attach the tower and arm components.
3. Mount a smartphone in the first assembly and attach to the arm.
4. Verify the installation by conducting pre-commissioning checks.
5. Connect the appropriate networks for all mobile devices for recording, control, and sharing.

 Refer to the Deployment Guide for detailed instructions.

## PATHS

There are 12 preloaded paths that all lie within the envelope of the Glambot. Each group listed here has a forward and reverse version of the same path:

Group 1: Mid-Height, Full Side-to-Side Sweep Movement

Group 2: Mid-Height, Head-on Movement

Group 3: High-Height, Full Side-to-Side Sweep Movement

Group 4: High-Height, Head-on Movement

Group 5: High-Height, Half Side-to-Side Sweep Movement

Group 6: Head-on, Height Sweep Movement

## RECOMMENDED TRAVEL APPROACH

Transport the robot in the boxes that they were delivered in. Store the boxes in a cool dry location.

If traveling frequently with the Glambot, it is recommended to upgrade to the hard-shell travel case kit. With the kit you can re-use the foam inserts from the cardboard cases. The cases also feature latches with locking for improved security, wheels and handles for safer handling.

# TROUBLESHOOTING

## QUICK TROUBLESHOOTING GUIDE

Common commissioning troubleshooting scenarios:


- Calibration Does Not Begin:
  - Check if the Orange Light on the Lift motor is flashing. If so, apply slight pressure beneath the arm and restart the machine.
- Glambot Wi-Fi network does not show up:
  - Turn off Wi-Fi on the device that is searching for the network, then turn on Wi-Fi and the network should show up.
  - If the network has already existed on the device, forget network, turn off Wi-Fi, turn on Wi-Fi.
  - Restart the miniPC by restarting the entire unit.
- Bluetooth network does not show up:
  - Check all nearby devices to confirm and old device or a device that was paired at a previous event is not already automatically connected. Only one device can be connected at a time.

## COMMISSIONING TROUBLESHOOTING

ISSUE #1: Glambot does not begin calibration sequence.

This is signified by a lack of movement after waiting 2 minutes after power on. Specifically, the robot does not automatically start calibrating the elbow joint.

1. Check power to the unit.
  - a. Confirm there is power to the outlet that the machine is plugged into. See event coordinator.
  - b. Confirm the light on the switch to the power strip is illuminated ensuring there is power to the unit.
2. Check that all the connections that are required in the deployment guide are made.
  - a. Start from the base.
  - b. Confirm that the plugs into the power strip that are existing are still well connected.
3. Check the Wrist Motor Status.
  - a. If the motors are oriented properly at the 0 locations and holding their locations if you attempt to move them then the motors have appropriately initialized. Move to #4.

- b. If the motors appear to be hanging by influence of gravity and not the holding position when you attempt to move, continue troubleshooting the wrist motors.
  - 1. Check the motors for flashing lights.
    - a. If the motor lights are flashing, they likely experienced an over-torque event. Set the wrist to the default position, check that all connections are still good, and restart the machine.
    - b. If no flashing lights, move each motor to diagnose if just one, two, or all three are not engaged. If this is the case, start with the one closest to the arm that is not engaged and check the wire connections and cable integrity. Ensure they are secured properly into their position. Also, ensure that each wire into the connector is securely in the connector. Restart the machine.
  - 2.  **If the issue persists, advanced troubleshooting is required.**
    - a. Check the internal cable integrity. Using M2.5 hex wrench, remove (2) fasteners holding the connector panel at each end and inspect the wires into the back of the panel mount connector. If nothing is found continue to next step.
    - b. Check the communication board. Using M3 hex wrench, remove the (2) fasteners holding the front panel and inspect if the lights on the U2D2 are on.
      - i. If the bottom red light is on then it has power, check the USB connection to the u2d2 and to the miniPC. [is there a sight hole that we can add in the front panel, so it doesn't have to be removed/]
      - ii. Otherwise, check power connection. (check light on the 24V power supply) [do I need to add a light to the 24V distribution panel?]

**If the issue persists, your next step is to contact Technical Support Service.**

- 4. Check if the Stepper Motor Status.
  - a. Check if the elbow status light is green. If yes, proceed to check lift motor in step C.
  - b. If the elbow light is orange, likely an over-torque issue during startup. Orient the link so that the arm is hanging perfectly vertical to the floor and restart the machine.
  - c. Check if the lift light is green. If yes, proceed to check pan motor in step E.
  - d. If the lift orange, likely and over-torque issue during startup. Apply some slight pressure to the bottom side of the ARM1 and restart the machine.
  - e. \*If the issue persists, advanced troubleshooting is required\*
  - f. Using M3 hex wrench, remove the (2) fasteners holding the front panel. Check if the pan motor light is green. If yes, proceed to check communication board in Step G.

- g. If the pan light is orange, likely due to cable connection issue. Reach up and check that the connectors are fully inserted and restart machine.
- h. Check the power supply status lights. If green proceed to Step 1.
- i. If Orange, check all wiring connections including wires into back of connectors again and restart.
- j. Check the communication board. If the board has only a single red light, then there is no USB connection. check the USB to the front of the board and to the mini-PC and restart the machine.
- k. If the board has no lights check the 24V power. Confirm the connection in the base is good. If access to DVM, check 24V at connector or distribution board.

**If the issue persists, your next step is to contact Technical Support Service.**

ISSUE #2: Glambot does not finish calibration sequence.

1. Completed one or more of the calibration moves, but does not proceed throughout the entire 3-step process. Likely didn't achieve full "zero" location, find the last joint to have calibrated and press on the subsequent link gently in the direction of the "zero" location. Calibration should continue as normal.

ISSUE #3: Glambot network does not show up.

1. Turn off Wi-Fi on the device that is searching for the network, then turn on Wi-Fi and the network should show up.
2. If the network has already existed on the device, forget network, turn off Wi-Fi, turn on Wi-Fi.
3. Restart the mini-PC by restarting the entire unit.

ISSUE #4: Glambot Bluetooth network does not show up.

1. Check all nearby devices to confirm and old device or a device that was paired at a previous event is not already automatically connected. only one device can be connected at a time.

ISSUE #5: Webapp does not show up.

1. Ensure you have waited the entire 5-minute start up time.
2. Ensure your device is connected to the Glambot Wi-Fi.
3. Ensure your web address has the correct the Glambot #.
4. Refresh browser, you need to refresh each time you turn on the Glambot as each time a new webapp page is created.



## OPERATION TROUBLESHOOTING

For the troubleshooting during operation, if any of the steps below do not resolve the issue, your next step is to contact Technical Support Service.

ISSUE #6: Glambot does not go home after pressing button for first time.

1. Ensure you refreshed the Glambot webapp.
2. Repeat 'webapp does not show' up sequence from Issue #5.

ISSUE #7: Video capture happens immediately when arm gets to path start.

1. Confirm the smartphone case isn't causing a screen touch input, nor pressing a volume button.
2. Select a different time delay in the webapp, then run path again. If successful, switch back to desired delay and reattempt any path.

ISSUE #8: Wrist goes limp.

1. Send to the extended position.
2. Wiring has come loose or damaged, check all wire connections. Restart machine.

ISSUE #9: Does not move when commanded.

1. Confirm the webapp screen grays out when select the path.
  - a. If gray and does not move press stop button immediately. Likely the motors are in error mode, check all the status lights. Refer to Issue #1 troubleshooting.
  - b. If does not gray then refresh the webapp page, likely the page timed out or was not refreshed upon commissioning.
  - c. If issue persists, confirm connection to corresponding Glambot Wi-Fi.
2. Send to 'Extended' position and restart machine.

ISSUE #10: Does not record video.

1. Ensure you are at the 'Tap to Start' screen prior to executing path.
2. Ensure phone is connected to corresponding Glambot Bluetooth.
3. Ensure proper Snappic App settings, specifically for the button controls.
4. Confirm the smartphone case is not causing a screen touch input, nor pressing a volume button.
5. Restart the Snappic app.

LED CODES

<Add tables from the various ones we commonly use>

## APPENDIX A: SPECIFICATIONS

### MECHANICAL SPECIFICATIONS:

Weight\*: XX kg

Payload\*: X kg

Degrees of freedom: 6

Reach\*: XX mm

Repeatability: +/-X.X mm

Non-stop lifetime cycle XX,XXX+ hours

Protection class : IPXX

Noise level : less than XX dB

Rated voltage 120 VAC

Average power: XXX W

Maximum power: XXX W

Maximum joint speed: XX RPM

Joint acceleration: X rad/s<sup>2</sup>

Max end effector center point velocity: X m/s

Acceleration time 0-1 m/s: X.X s

\* The specifications can vary, depending on the customer precise requirements.

### JOINT SPECIFICATIONS

Axis 1 -180° to 180° 90°/s

Axis 2 -50° to 140° 90°/s

Axis 3 -40° to 160° 90°/s

Axis 4 -45° to 45° 90°/s

Axis 5 -45° to 45° 90°/s

Axis 6 -120° to 120° 90°/s

### PHYSICAL ENVELOPE

< TBD IMAGE >

## POWER CONNECTION

Input Voltage: 100–120 VAC

Mains frequency: 47–63 Hz

Standby power: XX W

Average operating power: XXX W