

## Lumos™ 5G FWA Antenna Installation Instructions

Airgain, Inc

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## Safety Warnings

- MAINTAIN A SAFE DISTANCE. Stay 8 in (20 cm) or more away from the Lumos antenna during normal operation.
- AVOID POWER LINES. Do not install the Lumos antenna within 23 ft (7 m) of power lines.

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## 1. Overview

The Lumos 5G Fixed Wireless Access (FWA) antenna is a high gain outdoor antenna with 2x2 and 4x4 MIMO configurations for maximizing LTE and 5G connectivity.

The Lumos antenna can operate within a temperature range of -40°C to 85°C (-40°F to 185°F) and has an environmental rating of IP67 for water and dust ingress protection.

## 2. Tools Required

Required tools:

- As appropriate, use a ladder, bucket truck, or scissor lift to safely install the device
- Two M8 wrenches for tightening the SMA connectors and inner bracket assembly joints
- Appropriate tool for M6 hex head bolts
- If mounting to a mast (up to 5" diameter)
  - Appropriate tools if using M8 nuts and hex head bolts
  - Flat head screwdriver if using tension clamps
- If mounting to a wall
  - Four appropriate M8 or 5/16" diameter screws depending on the wall material
    - As well as any relevant tools
- If routing cables through a wall
  - Drill
  - Silicone sealant
- If mounting in environment with potential for water freezing
  - Appropriate tool for heat shrink

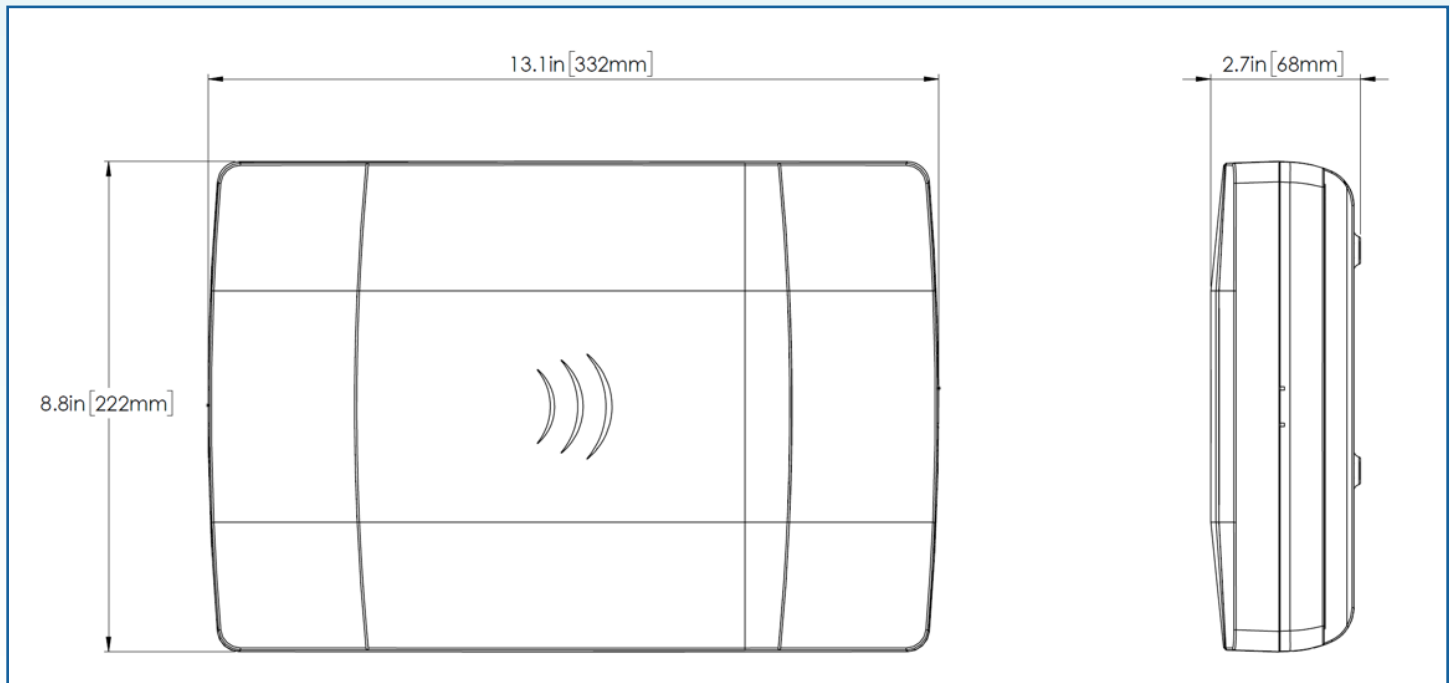
Optional tools:

- Flexible cable clips or vinyl siding clips for routing cables
- Coaxial surge protection with SMA female to male connectors (if mounting outdoors)
- AC extension cord (if needed for testing different locations with CPE)

### 3. Prior to Installation

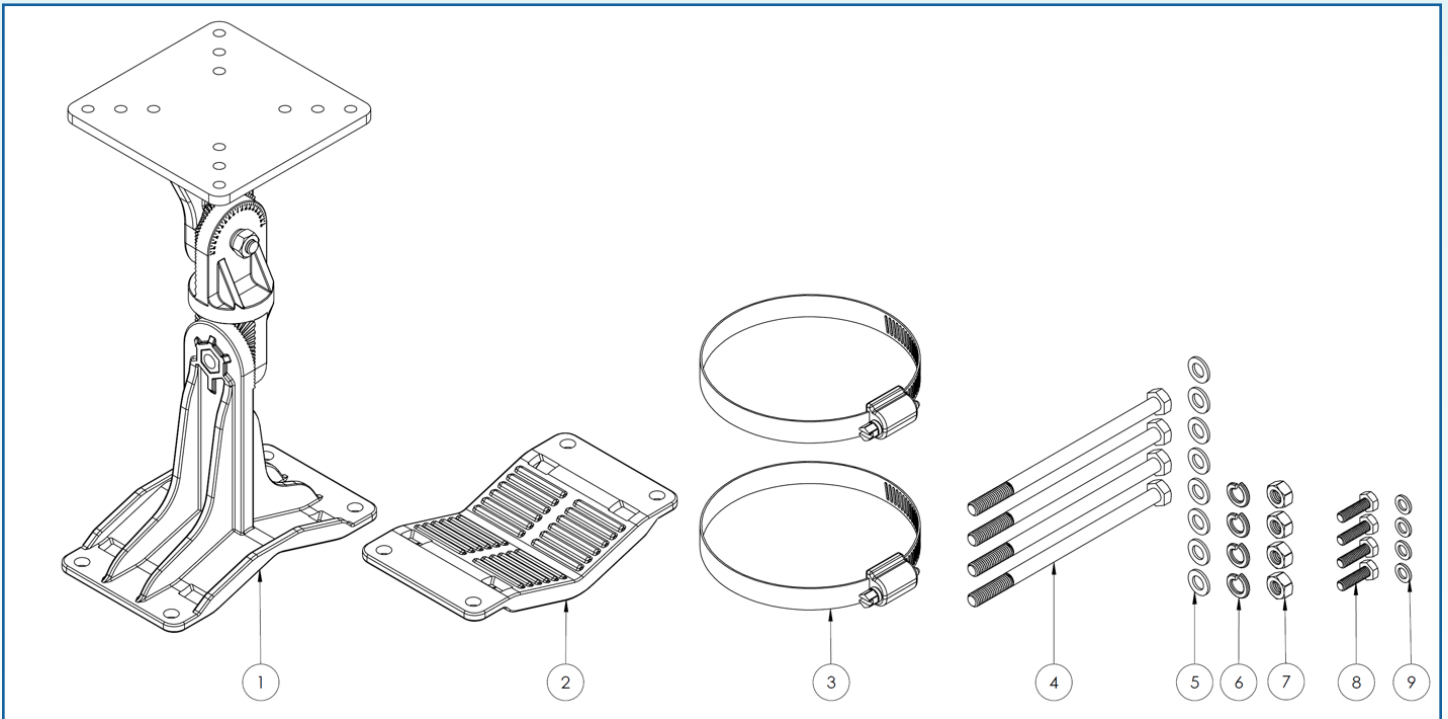
- Verify all contents are included in the box. The box should include:
  - The Lumos 5G FWA antenna.

Figure 1. Dimensions of Lumos 5G FWA antenna



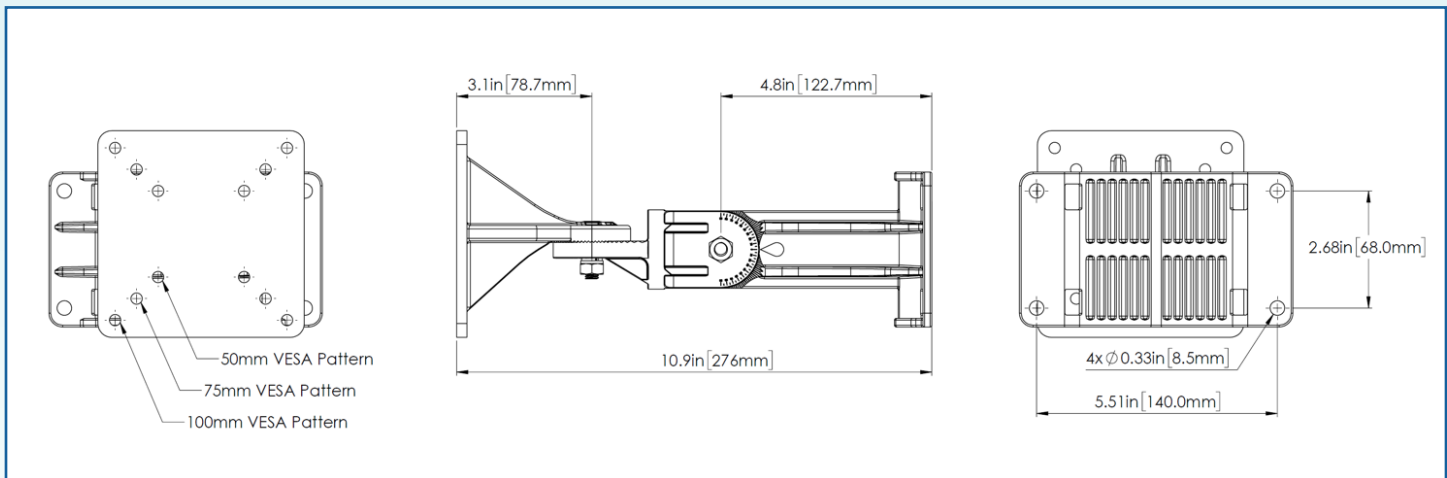
- Adhesive heat shrink for sealing around the connectors
- Multi-use mounting bracket assembly consisting of:
  - Front bracket with 100mm VESA pattern that fits to the Lumos antenna
  - Rear bracket
  - Inner mounting arm
  - Two M8 inner joint bolts with nuts and washers
- Four M6 x 20mm long hex head bolts for attaching the bracket assembly to the Lumos antenna
  - As well as four M6 flat washers
- Four M8 x 140mm long hex head bolts for attaching the bracket assembly to a mast
  - As well as four M8 nuts, four M8 split lock washers, and eight M8 flat washers
- Two tension clamps and set screws for attaching the bracket assembly to a mast

Figure 2. Mounting bracket hardware



Number	Description	Quantity
1	Bracket Assembly	1
2	Mast-Mount Bracket Flange	1
3	Tension Clamp	2
4	M8 x 140mm Long Hex Head Bolt	4
5	M8 Flat Washer	8
6	M8 Spring Lock Washer	4
7	M8 Nut	4
8	M6 x 20mm Long Hex Head Bolt	4
9	M6 Flat Washer	4

Figure 3. Dimensions of bracket assembly

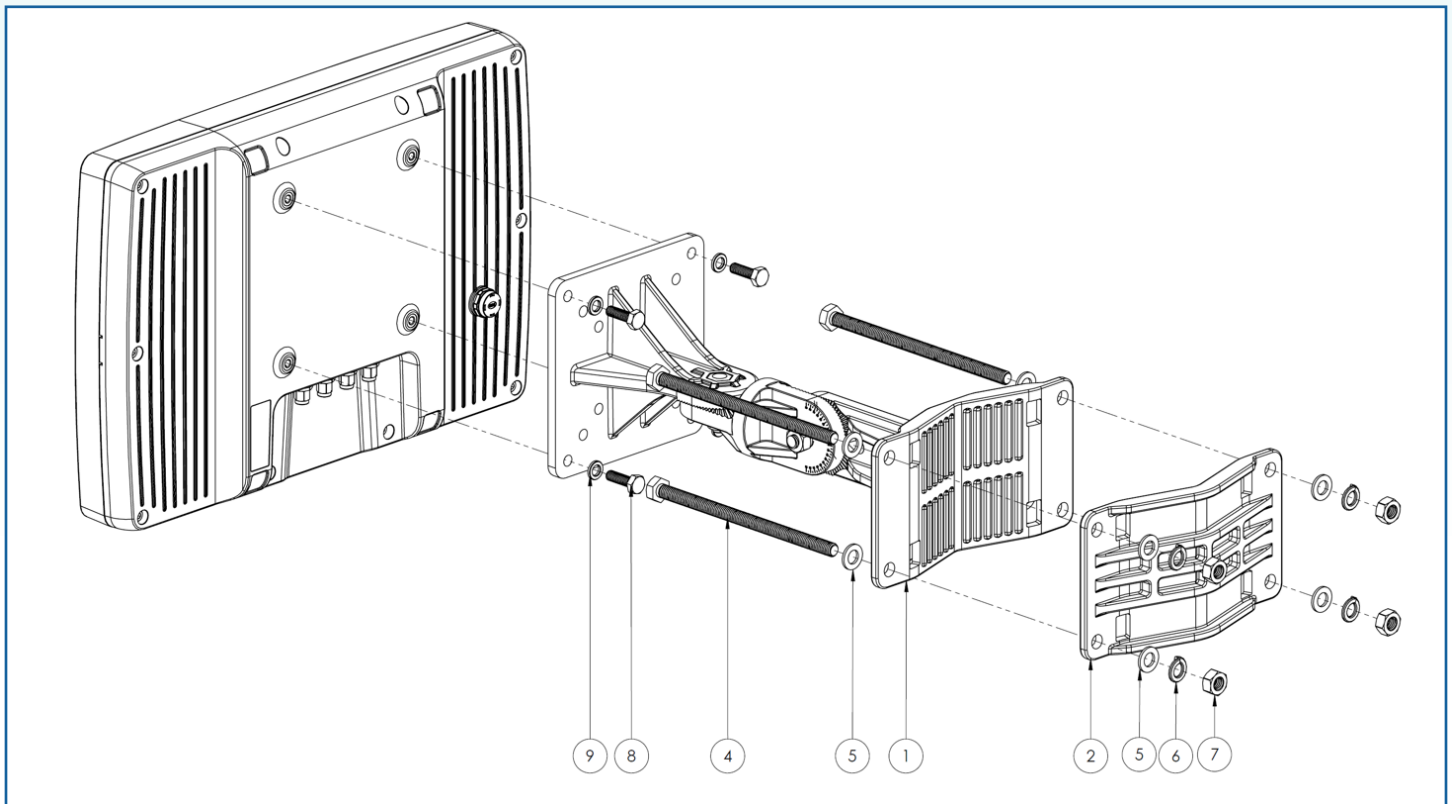


- It is highly recommended to connect the Lumos antenna to any CPE it might be deployed with for verification of performance prior to permanent installation
  - An appropriate EZConnect cable harness must be purchased separately depending on cable length and connector requirements
  - Torque each SMA connector pair to 1 Nm (8-10 in-lbs) using two M8 wrenches
  - The face of the antenna must be oriented towards the incoming signal in order to achieve best performance, typically in the direction of the nearest tower
    - Nearby towers can be located using a resource like [cellmapper.net](http://cellmapper.net)
  - Select a mounting location to ensure that the Lumos antenna is facing the direction of the strongest signal and:
    - There are no (or minimal) obstacles blocking the line-of-sight in the direction of the strongest signal
    - At least 18 in (46 cm) away from other antennas
    - At least 39 in (100 cm) away from any electrical light, electrical panel, or electrical plug
    - At least 79 in (200 cm) above ground level and out of reach of children

#### 4. Installation

- Mounting to a mast with M8 bolts
  - Fit the rear bracket and mast-mount bracket flange around the mast and secure at desired height with the M8 bolts, washers and nuts
    - Torque each M8 bolt to 10 Nm (88 in-lbs)
    - Avoid overtightening as this may damage or distort the mast tube section
    - Mast should not exceed 5 in (12.7 cm) diameter

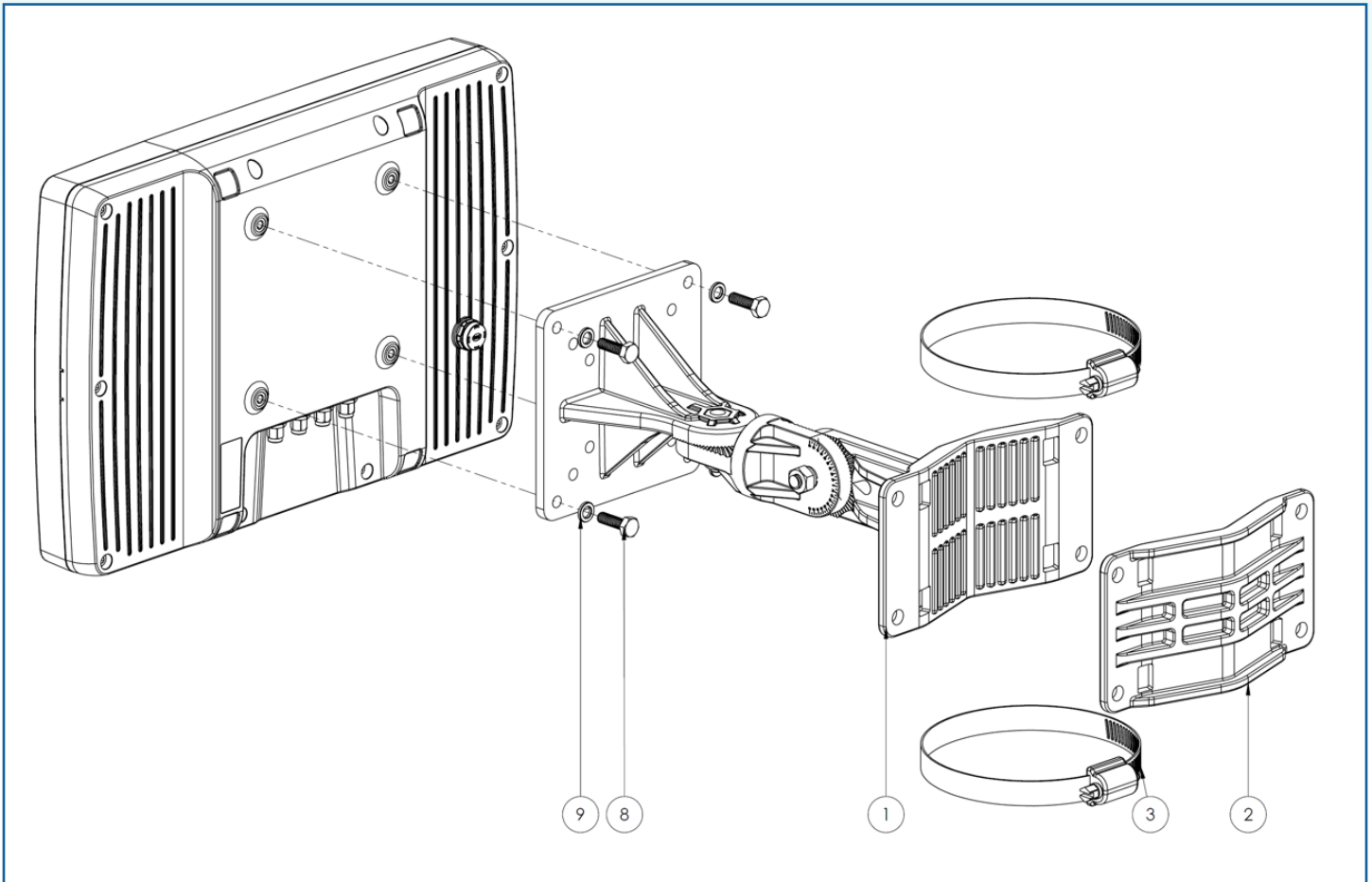
Figure 4. Assembly for mounting to a mast with M8 bolts





- Mounting to a mast with tension clamps
  - Fit the rear bracket and mast-mount bracket flange around the mast and secure at desired height with the tension clamps
    - The two clamps must be tightened evenly and avoid overtightening as this may damage or distort the mast tube section
    - Mast should not exceed 5 in (12.7 cm) diameter

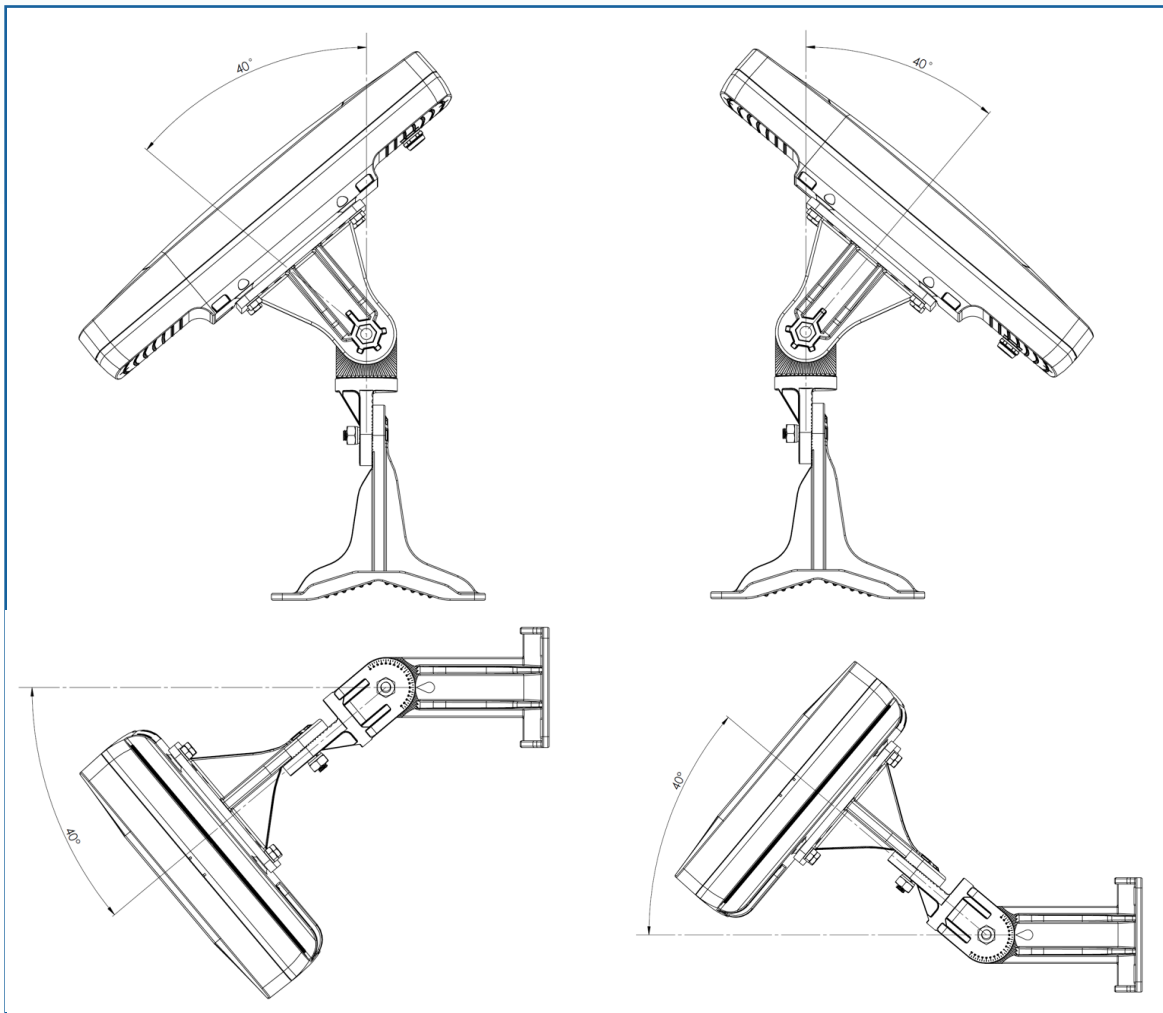
Figure 5. Assembly for mounting to a mast with tension clamps



- Mounting to a wall
  - Ensure there are no obstructions or utilities behind the mounting surface
  - Align rear bracket on the wall in desired position
  - Secure rear bracket to the wall with appropriate M8 or 5/16" diameter screws
- Fitting the Lumos antenna
  - Ensure the bracket assembly is securely fixed and the EZConnect cable harness is installed before fitting the Lumos antenna

- The SMA connectors between the Lumos antenna and EZConnect cable harness are outdoor rated, but if mounting in an environment with potential for water freezing then covering with the included adhesive heat shrink is recommended
- Align the 100x100mm VESA pattern on rear of the Lumos antenna with the front bracket such that the cables extend down towards the ground
  - If necessary, the front bracket can be separated from the rear bracket at the inner joints to ease installation
- Secure the Lumos antenna to the front bracket with the included M6 bolts
  - Torque each M6 bolt to 8 Nm (70 in-lbs)
- Adjust the horizontal and vertical angles as desired by loosening and tightening the inner bracket assembly joints
  - Both joints can be adjusted 5° for each tooth, not to exceed a total of 40° in either direction
  - Torque each M8 inner joint bolt to 20 Nm (15 ft-lbs)

Figure 6. Horizontal and vertical angle adjustments



- Routing the coaxial cables
  - An appropriate EZConnect cable harness must be purchased separately depending on cable length and connector requirements
  - Before routing cables, it is recommended to lay them out flat to straighten them
    - Note that the minimum bend radius for the cable is 0.5 in (12.5 mm)
  - Torque each SMA connector pair to 1 Nm (8-10 in-lbs) using two M8 wrenches
    - If mounting in an environment with potential for water freezing, it is recommended to cover each SMA connector pair with the included adhesive heat shrink
  - When routing cables, do not pull on the connectors as this may cause damage
  - Avoid running cables adjacent to any existing electrical wiring
  - If mounting outdoors, ensure that cables are angled downward into a loop before being curved up and into the building to help prevent water ingress
  - If routing through a wall, SMA connectors require a 3/8 in (9 mm) clearance hole
    - Ensure silicone is used to seal around any holes drilled through the wall
- Surge protection
  - If mounting outdoors, it is recommended to install surge protection just before the coaxial cables enter the building to protect against lightning
    - This would require an additional EZConnect cable harness for installing the surge protection between the outdoor and indoor cables

## 5. Contact Information

For any questions, please contact Airgain Support: [support@airgain.com](mailto:support@airgain.com)