



Security Radar

Installation Guide

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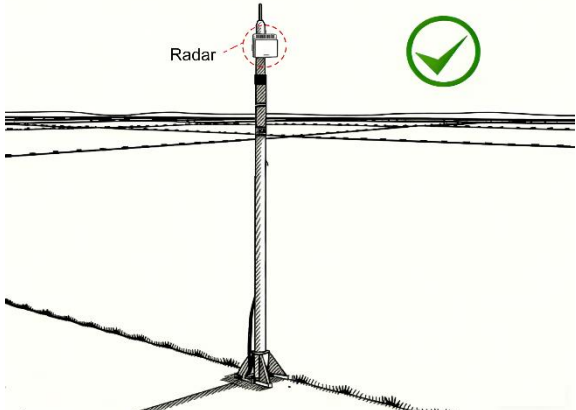
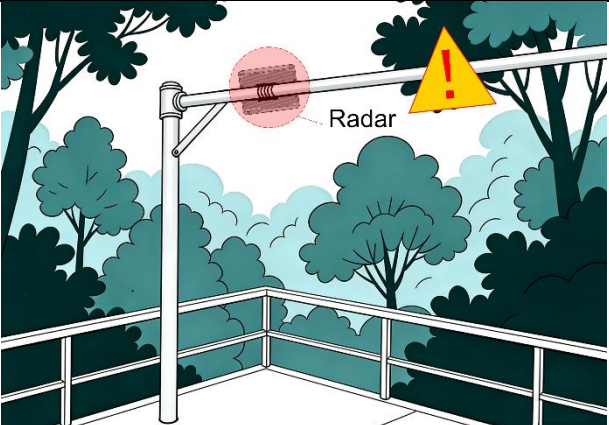
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Chapter 1 Site Selection

General Guidelines

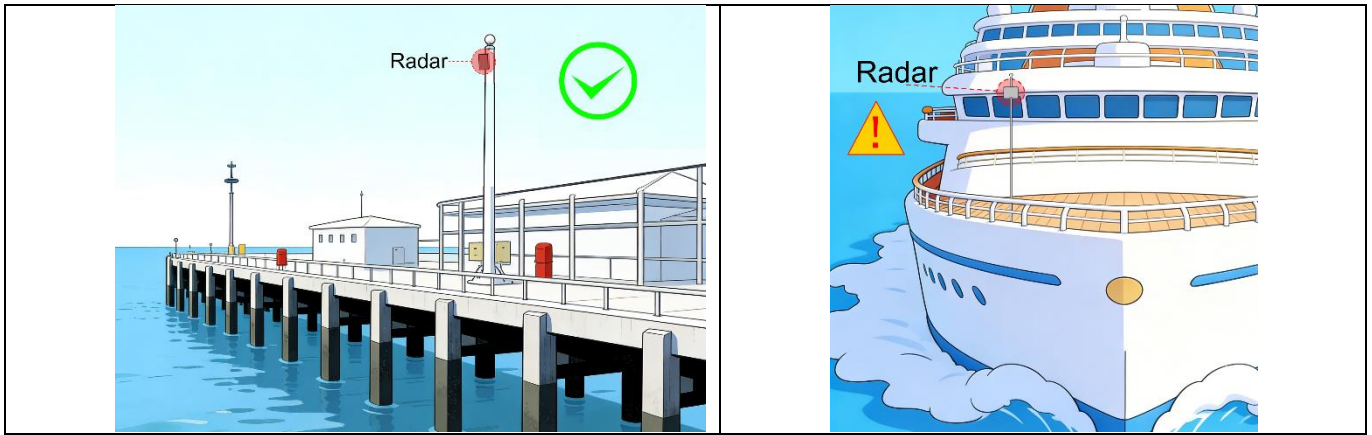
- Conduct a site survey before installation, especially for first-time installers. Consult HIKVISION representatives during the process.
- Provide site photos for evaluation, including the desired detection zone, surroundings, and any noticeable obstructions or RF sources.
- The radar must be installed in an open and unobstructed environment to ensure optimal performance.

Land-Based Site Selection

Suitable Locations	Unsuitable Locations
• Open areas with a clear line of sight to the detection zone. • Elevated positions (e.g., poles or towers) to minimize ground interference.	• Areas near walls, buildings, hills, dunes, groves, or dense vegetation. • Locations with metallic fences, light foliage, or low bushes that may partially obscure targets. • Proximity to ground traffic (e.g., roads with large vehicles like trucks or buses within 30m, or human movement within 5m), which can cause signal interference and "ghost" targets.
	

Shore-Based Site Selection

Suitable Locations	Unsuitable Locations
• Open coastal areas with an unobstructed view of the water. • Elevated positions to maximize coverage over the water surface.	• Areas blocked by natural obstacles like dunes, vegetation, or man-made structures. • Locations near large vessels, ports, or high-wave zones that may cause signal reflection.



Note

Keep the radar away from ground traffic or using higher poles to minimize the affection.

Avoid high-power electromagnetic waves

Before installation, verify if there are other devices operating in the same frequency band in the surrounding area. Avoid pointing the radar toward active transmitting devices, such as base stations (BS), wireless bridges, routers, or any other potential radio frequency (RF) interference sources, as this may degrade radar performance. If coexistence with these devices is necessary, detailed information on the operating frequency bands and exact installation locations of all nearby transmitters must be obtained. This data is essential for properly assessing potential interference risks and determining the feasibility of radar installation.



Avoid obstacles and highly reflective surfaces.

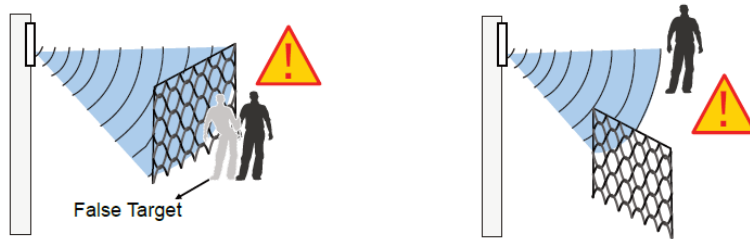
The higher the density of obstacles such as trees and walls, the greater the impact on detection performance. Avoid highly reflective surfaces like glass, metal, road signs, and other objects, as they can cause multipath effects, unstable tracking, signal attenuation, and other issues.

Avoid obstructions such as trees.

Avoid interference from signal sources in the same frequency band.



Avoid metals and other reflective objects.



Installation Direction

Avoid having the radar's direction perpendicular to the target's trajectory

The radar is least sensitive to targets with tangential motion, where the direction of movement is perpendicular to the radar boresight. To improve the radar's target detection performance, during installation, the radar should be positioned such that the direction of its centerline is not perpendicular to the target's direction of motion.



Chapter 2 Installation Points

Multiple Radars Installation

		Recommended Installation	Not Recommended Installation
		Overlap Detection Area	
		No/ Small Overlapping Area	Large Overlapping Area
Installation Direction Relative to Each Other	Same Direction	Figure 1, Figure 3, Figure 4	Figure 7, Figure 5, Figure 6
	Facing Direction	Figure 2 (different bands, sufficient distance)	/
	Oblique Direction	Figure 3 ($\geq 2 \times$ detection range, different bands)	/

Note

Recommended: Install radars facing same/opposite directions with adequate spacing or different frequency bands.

Not Recommended: Avoid installations where radars face each other within or with overlapping detection ranges.

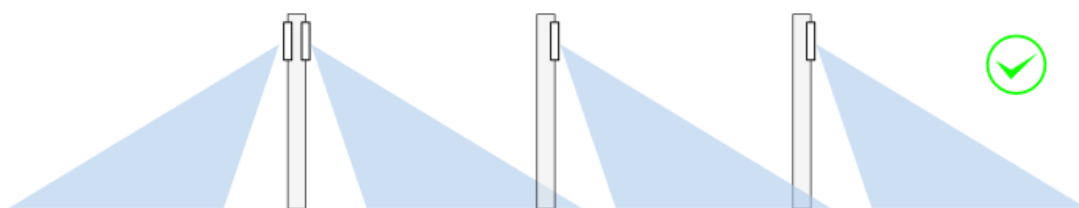


Figure 1

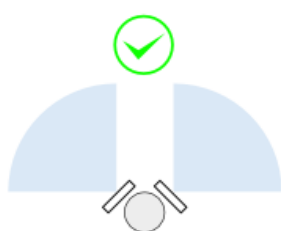


Figure 2

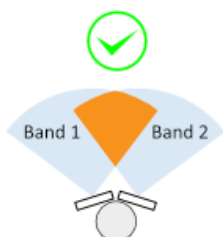


Figure 3

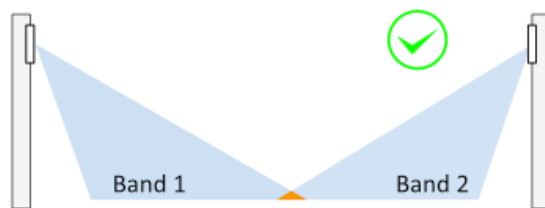


Figure 4

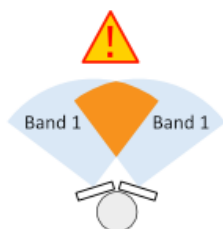


Figure 5

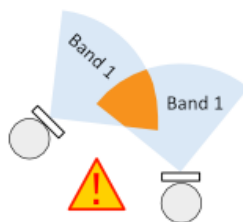


Figure 6

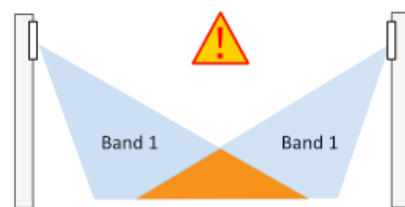
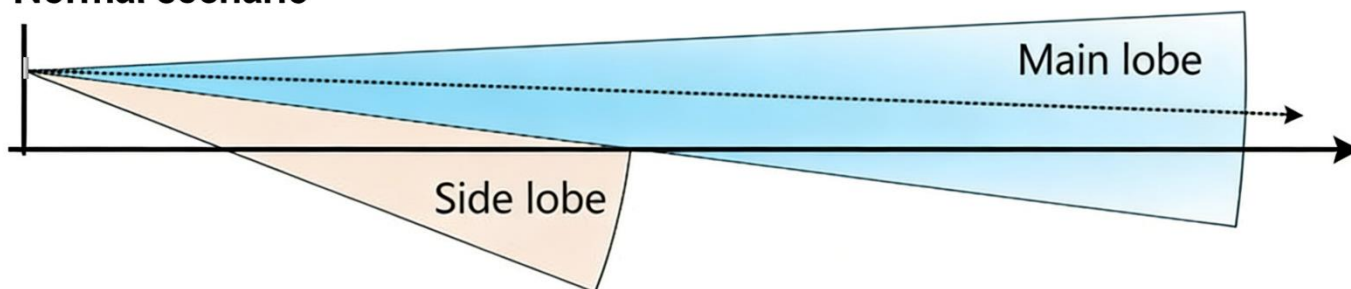


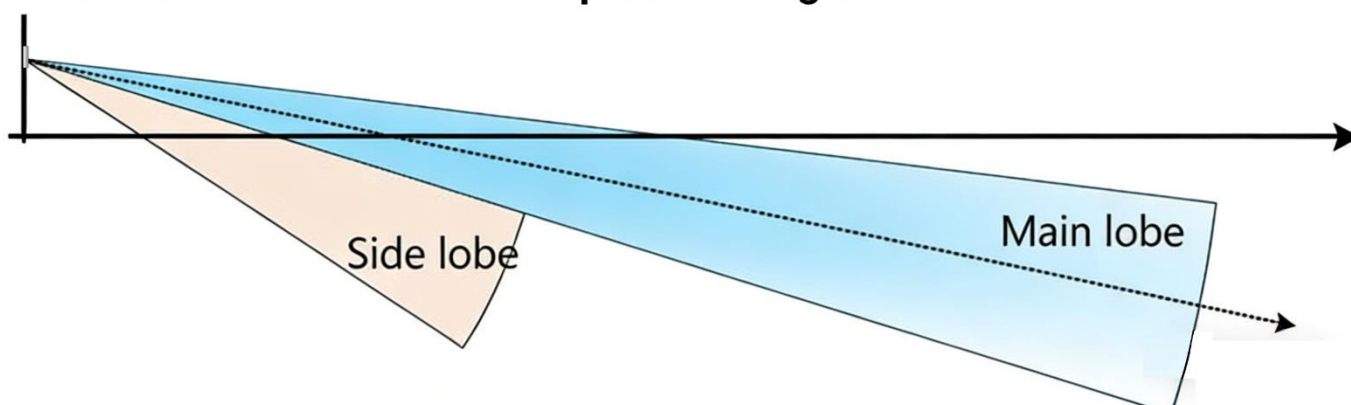
Figure 7

Installation Angle

Normal scenario



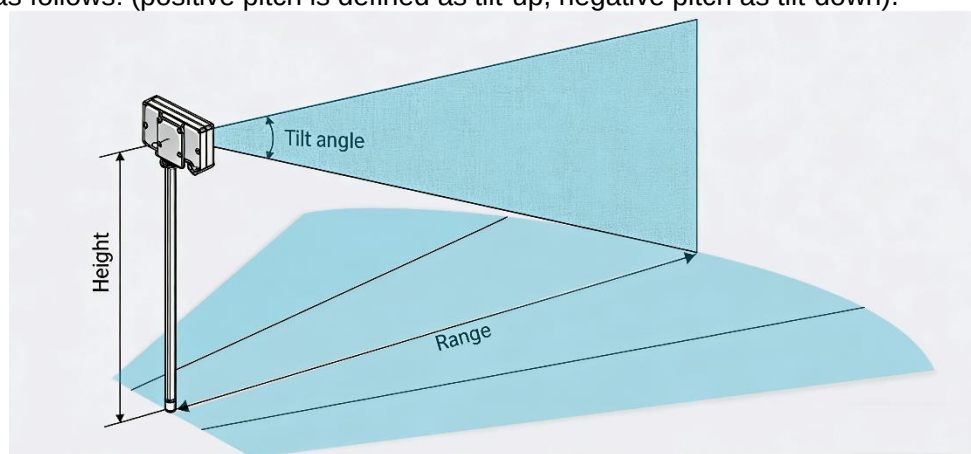
Installed with an excessive depression angle



The installation height and depression angle significantly impact the maximum detection range and blind zone:

- In the normal scenario (top figure), the main lobe and side lobes extend horizontally, providing wide coverage.
- With an excessive depression angle (bottom figure), the lobes tilt downward, reducing horizontal coverage. This directs more energy toward the ground, potentially increasing the blind zone and shortening the detection range for elevated or distant targets.

When the target is human, the impact of the installation height and tilt angle of the equipment on its detection blind zones is as follows: (positive pitch is defined as tilt-up, negative pitch as tilt-down).



Radar-Human Relative Height Difference (m)	Recommended Tilt Angle	5km Radar's Blind Range (m)
10		200~220
15		

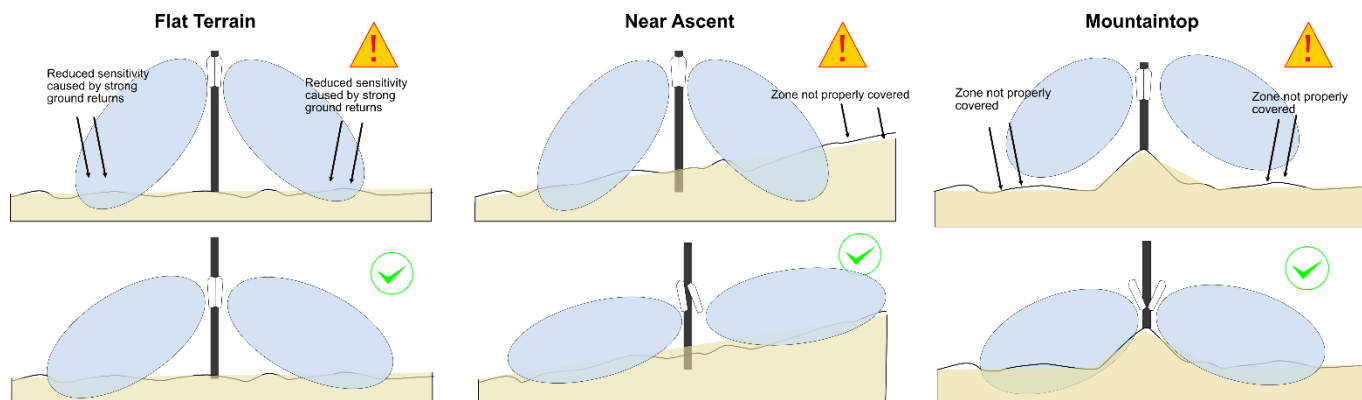
20	0° (Horizontal installation) ~ -1°	
25		
30	-1° ~ -1.5°	230~290
35		
40	-1.5° ~ -2°	300~340
45		
50	-2° ~ -2.5°	340~380
60		

Radar-Human Relative Height Difference (m)	Recommended Tilt Angle	3km Radar's Blind Range (m)
15	0° (Horizontal installation)	195
20	0° (Horizontal installation)	205
30	-1° ~ -1.5°	245
50	-2° ~ -2.5°	355

Radar-Vessel Relative Height Difference (m)	Recommended Tilt Angle	12km Radar's Blind Range (m)
15	1° ~ 1.5°	320
20	1° ~ 1.5°	340
30	0° (Horizontal installation)	370
50	-1° ~ -1.5°	470

The front cover of the radar is perpendicular to the ground to ensure that the direction of the electromagnetic waves emitted by the radar matches the terrain.

- Flat terrain: Install the radar vertically.
- Uphill terrain: Install the radar tilted upward at a certain angle based on the terrain.
- Downhill terrain: Install the radar tilted downward at a certain angle based on the terrain.

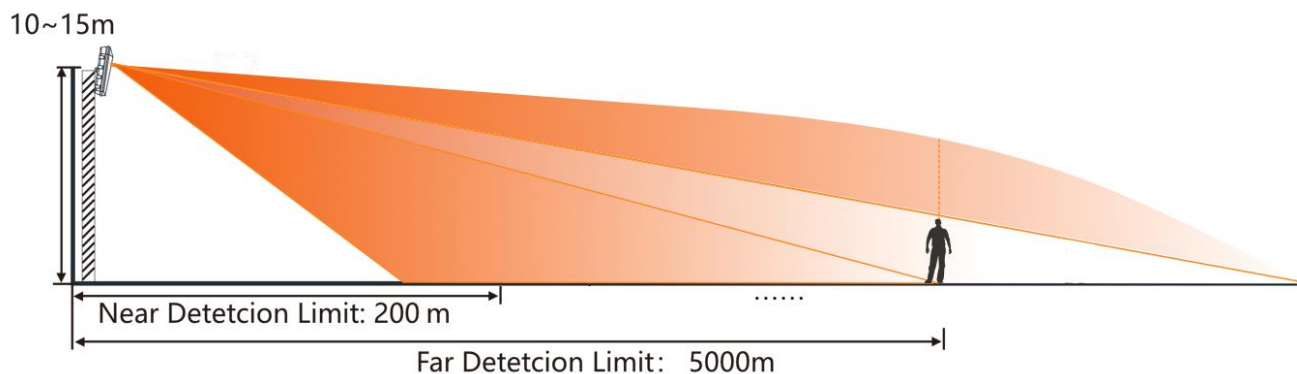


The radar's tilt angle can be appropriately adjusted within the acceptable blind zone direction to adapt to terrain undulations, but there are limitations on the tilt angle adjustment.

It is recommended to install the radar perpendicularly, and it is not recommended that the upward or downward tilt angles exceed 5° .

Installation Height:

Height is recommended to be 10-15m. When the height is over 6m, the higher the height is, the larger the blind area of radar detection is;



Model Name	Detected Target	Recommended Installation Height Range/m (default height)	Actual Blind Range/m Note: Recommended height of installation.	Actual Detection Range/m
STS-BG32X-L5/P STS-BG32X-L12/P	Walker	10~30 (15)	200	5000
	Vehicle	10~30 (15)	200	10000
STS-BG24X-L3/P	Vessel	10~30 (20)	200	12000

Note

Radar installation heights vary by model, and this installation manual only applies to 5KM radars (3 models).

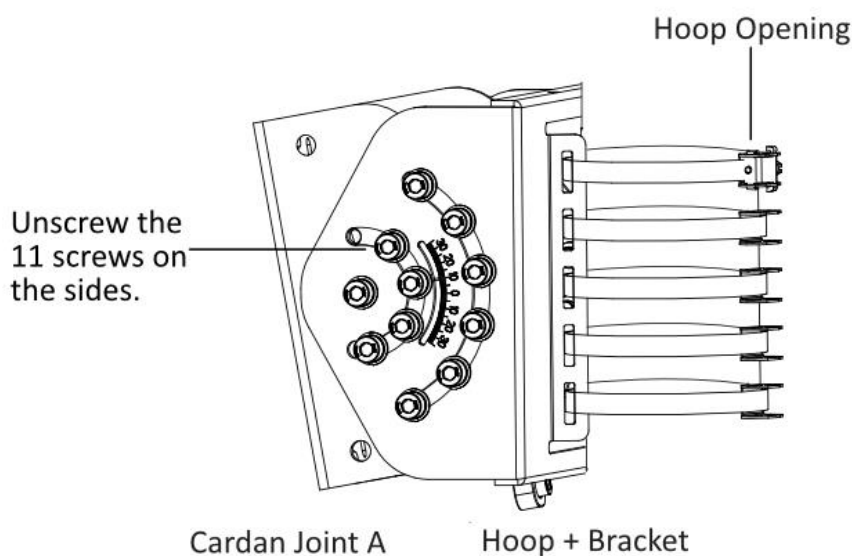
Chapter 3 Mounting

The radar supports multiple installation methods, and appropriate mounting accessories can be selected based on specific site conditions.

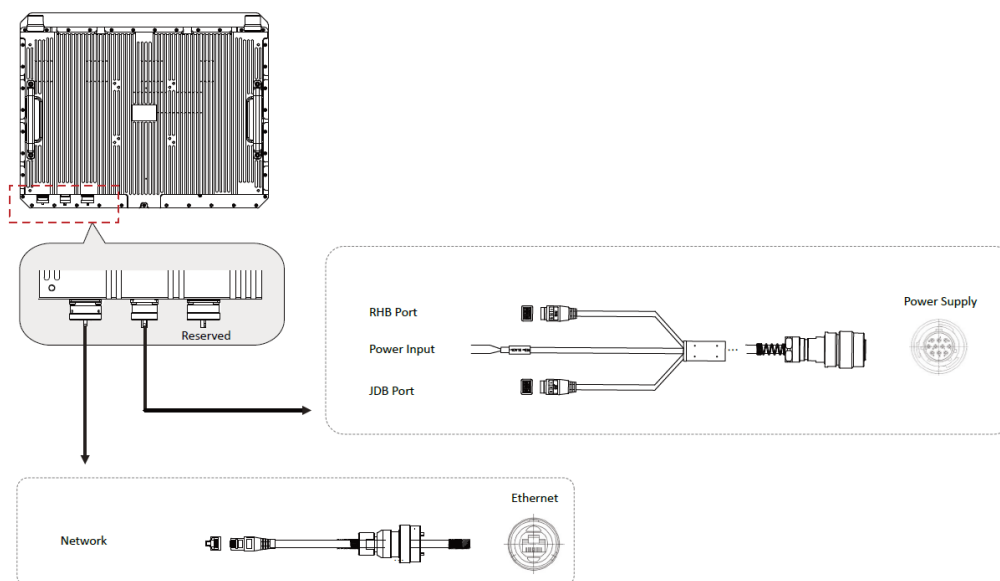
Under normal circumstances, the radar should be installed with its rear surface perpendicular to the horizontal plane. Since the internal transceiver module has been pre-configured with an elevation offset, additional angle adjustment is generally unnecessary.

A vertical installation relative to the ground is sufficient for most deployment scenarios. If the mounting structure is not truly vertical, mechanical adjustment of the radar's elevation angle may be required to ensure the antenna beam remains horizontally aligned.

Accessory



Port Description



The power input for 5km radar is DC36V/2.5A (with power adaptor).

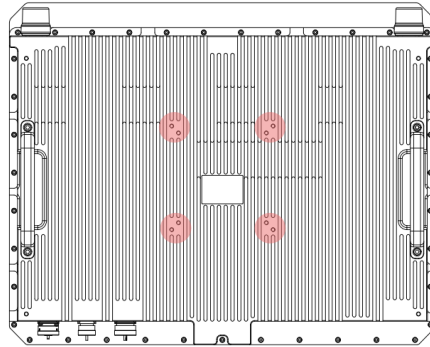
Installation Methods

5 km radar supports two installation methods: integrated bracket mounting and hoop mounting.

Integrated Bracket Mounting

Steps:

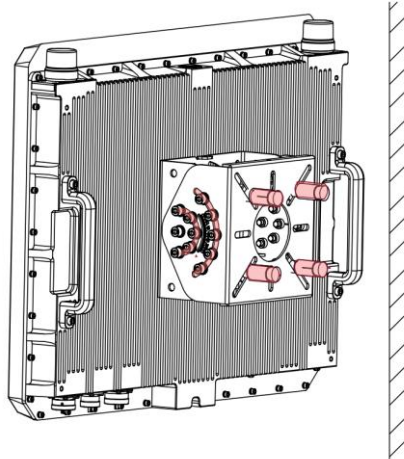
1. Fix the wall mounting bracket on the radar with 4 screws.



Note

There are 8 screws contained in the package.

2. Fix the Bracket with 4 expansion Screws.

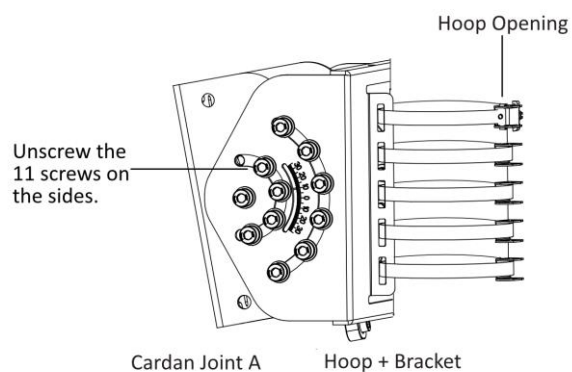


3. Loosen the screws on the sides to adjust the radar angle.

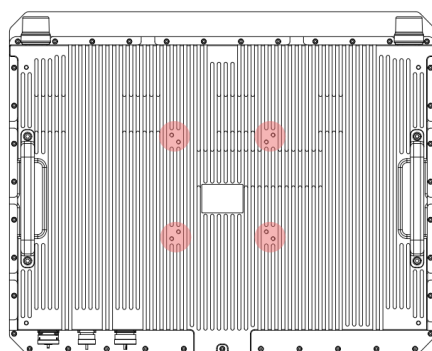
Hoop Mounting

Steps

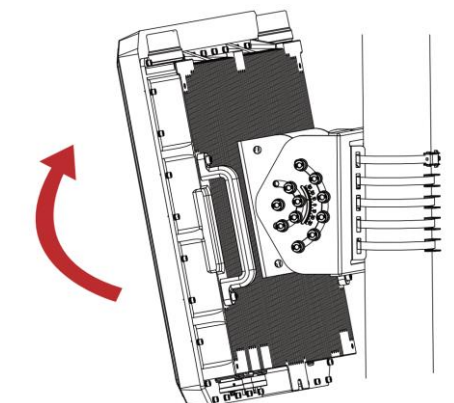
1. Disassemble the bracket into two parts, and open the hoop.



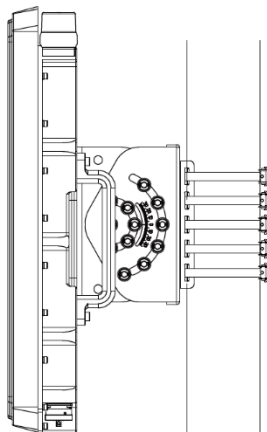
2. Fix the cardan joint A to the back of the radar with 4 screws (SC-PSFM4×10-SUS-GB9074.8).



3. Adjust the radar angle according to the actual scene.
4. Fix the 11 screws on the sides of cardan joint A to fix the radar to the bracket.



5. Fix the hoop to the vertical pole to complete the installation.





1. DO NOT install the radar in reverse direction.
 2. Install the radar according to the instructions in Quick Start Guide.
 3. To prevent injury, this radar must be securely attached to the installation surface in accordance with the installation instructions.
 4. If the bracket is designed for a specific device model of our company, use the bracket with the corresponding device only. Use with other devices may result in instability and cause injury.
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Appendix

Radar Beam Coverage Diagram

Model	Detection Distance	Image
STS-BG24X-L3/P	Vehicle: 5 km Human: 3 km	
STS-BG32X-L5/P	Vehicle: 8 km Human: 5 km	
STS-BW32X-L12/P	Vessel: 12 km	



See Far, Go Further