



M7 User Manual

77GHz millimeter-wave blind spot detection warning system

Preface

User Manual

Dear user, thank you for choosing this product. To ensure a superior user experience, we strongly recommend carefully reading this manual.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The minimum safety distance is 20cm.

I、Product Introduction

1、Introduction of Motorcycle Blind Spot detection

Warning System:

The motorcycle blind spot detection warning system utilizes 77GHz millimeter wave radar technology to detect the real-time status of moving objects behind the vehicle and provides the rider with an alert in the form of a bright flashing light, corresponding to the pre-collision warning and collision warning functions.

Pre-collision warning is intended to alert the rider to potential collision hazards, raising caution and prompting careful driving; Collision warning system is used to alert the rider of impending collisions and instruct them to take immediate action.



Blind Spot Radar



Indicator light



M7 Host

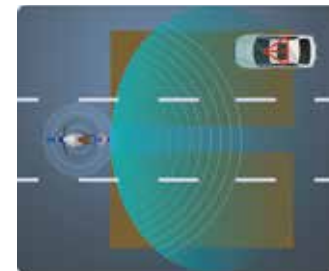
II、Motorcycle Blind Spot Detection Warning System Features

- *Integrated functions of BSD, LCA, and RCW
- *Maximum warning distance ≥ 45 meters
- *Compact structure, easy to install
- *Adaptive calibration
- *High compatibility (versatile application scenarios)
- *High detection accuracy with minimal false warnings

III、Introduction of the warning function

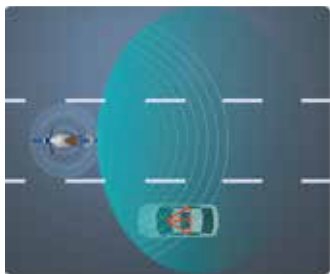
1、Blind Spot Detection system

While riding, when a moving target enters the set detected area, it triggers a Level 1 warning, causing the yellow indicator light on the corresponding side to stay on. The indicator light is turned off when the moving target leaves the detected area. The warning distance varies depending on the speed of the motorcycle, with higher speeds corresponding to relatively greater warning distances. As shown below:



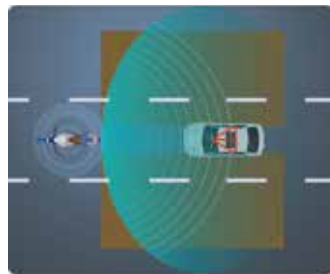
2. Lane Change Assist Warning

The system automatically activates the LCA warning function when the motorcycle is at rest or in motion with ACC/ON mode activated. If there is a fast-approaching moving object from the left rear or right rear, the system initiates a Level 2 warning early. The warning method involves blinking a yellow indicator light on the corresponding side. The yellow indicator light is turned off when the moving object has completed the overtaking or has left the detected area. As shown below:



3. Rear Collision Warning

The RCW warning function is automatically activated when the motorcycle is at rest or in motion with ACC/ON mode activated. If a rapidly approaching moving object is detected directly behind the vehicle, the system triggers Level 1 and Level 2 warnings. Level 1 warnings activate both side red lights continuously, while level 2 warnings involve both side red lights flashing simultaneously. Once a moving object exits the detected area or the collision risk is mitigated, the red light is turned off. As shown below:



IV、Installation

1、Installation height:

The recommended installation height for radar sensor is between 50cm to 80cm.

2、Installation orientation

The installation should orient the logo towards the front, horizontally, centered and upright facing the rear. In the case of an inverted installation, the radar needs to be detached from the fixed bracket, turned upside down, and then re-fixed in place.

3、Installation angles

The front of the radar should be vertically aligned with the horizontal plane and horizontally aligned with the motorcycle. Use a spirit level or a smartphone angle-measuring app to ensure accuracy. Horizontally, the radar antenna surface (front) should form a precise $90^{\circ} \pm 1^{\circ}$ angle with the motorcycle's axis. Ensure a pitch angle (tilt angle) of $1^{\circ} \pm 1^{\circ}$. Once the angle is adjusted, firmly tighten the screws on the radar base with a screwdriver.

4、Installation of the indicator lights

firstly fix the brackets of the left and right indicator lights to the bottom of the corresponding left and right rearview mirror poles. Subsequently, affix the indicator lights onto their respective brackets.

5、Power connection

1. The yellow wire B+ (constant power), connected to the positive terminal of the battery;
2. The black wire GND, connected to the negative terminal of the battery.
3. Red Wire ACC: Open the fuse box (if unable to locate the fuse, find the wiring terminal instead), with the key turned to the ACC (dashboard off) position, the voltage should be 0; and in the ON (dashboard on)/engine start state, there should be a 12V fuse or an empty slot, usable for ACC power supply.

Note: Both conditions must be met for it to be considered an ACC source; otherwise, search for an alternative power source.

6、Host Installation and Wiring

The usual locations for fixing the host are the underside of the seat cushion, inside the front shell, or around the motorcycle's battery area, while avoiding areas prone to water ingress. For radar wiring, strive to conceal the wires to prevent them from being compressed, tightly bound, or excessively stretched. Differentiate between left and right connectors for the indicator lights, ensuring that same-colored connectors are aligned and securely tightened.

VI、Product Electrical Parameters

Characteristics	Parameters	Technical specifications
System performance	Startup Time	< 1s
	Operating Voltage	8-16V
	Operating Current	$\leq 200\text{mA}@12\text{V}$
	Standby Current	< 1mA
	Operating Temperature	$-20^{\circ}\text{C} - 50^{\circ}\text{C}$
	Power Consumption	< 2.5W
	Waterproof rating	IP67
	Frequency	76-77GHz
	Refresh Rate	13fps
Dimensions	39.1*39.1(mm)	
Antenna performance	Transmit/Receive Channels	2T2R
	Elevation Beamwidth	$\pm 25^{\circ}$
	Azimuth Beamwidth	$\pm 60^{\circ}$
Detection performance	Distance Resolution	0.2m
	Speed Resolution	0.124m/s
	Speed Resolution	$\pm 61\text{m/s}$
	Distance Measurement Accuracy	0.04m/s
	Maximum Detection Range	55m