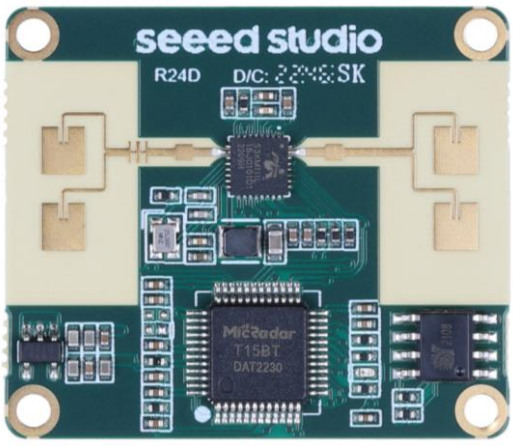
24GHz mmWave Sensor Human Static Presence Module Lite

MR24HPC1 Quick Setup Template V1.0



Catalog

1. Overview

For several common application scenarios in real life, the following provides some commonly used settings experience values for reference. When using them for the first time, you can set them based on the reference values. If the effect is not good, you can flexibly adjust them based on the parameter introduction in the User Manual.

This template will be divided into two parts: one is the parameter setting under Standard mode, and the other is the parameter setting under Custom mode. For the vast majority of users, the standard mode functions are sufficient. **We recommend that you first try using the standard mode**, and if the desired effect cannot be achieved, consider using the custom mode.

Under custom mode, the parameter settings require the user to send a command to the radar to enable the custom mode function before they can be set. After sending the command to end the setting to the radar, it should be saved and take effect.

2. Parameter Setting Template Under Standard Mode

2.1 Bathroom Scene

Environmental description: The room area is between 3.5 ~ 6 ㎡. There are facilities such as a washbasin, glass door, exhaust fan, and toilet in the room. The source of interference in the room is the exhaust fan.

Sensor installation suggestion: Install it at the top in the middle of the bathroom.

Setting Template: Select “Bathroom Mode” for scene mode and set sensitivity to “1”.

The format of the command to be sent is (in hexadecimal):

53 59 05 07 00 01 03 BC 54 43

53 59 05 08 00 01 01 BB 54 43

Reason: Due to the small size of the bathroom, the bathroom mode with sensitivity 1

can be selected (the radar wave cannot penetrate solid walls, but can penetrate glass, partition walls, etc.). The radar should be at least 0.5m away from the exhaust fan.

2.2 Bedroom Scene

Environmental description: The room is approximately 20 ㎡ in size and contains facilities such as air conditioning, fans, and a bed. Interference sources in the room include air conditioning and fans. The radar cannot accurately distinguish between humans and pets, so pets may also interfere with the normal detection of the radar.

Sensor installation suggestion: It is recommended to install the radar at a central position in the bedroom, preferably slightly closer to the bed to ensure coverage of the sleeping area.

Setting Template: Select “Area Detection Mode” for scene mode and set sensitivity to “2”.

The format of the command to be sent is (in hexadecimal):

53 59 05 07 00 01 04 BD 54 43

53 59 05 08 00 01 02 BC 54 43

Reason: If the dynamic detection range is too large/small, you can correspondingly set the Bathroom/Bedroom Mode. If the static detection range is too large/small, you can correspondingly set sensitivity 1/sensitivity 3. (Radar waves cannot penetrate solid walls, but can penetrate glass, partition walls, etc.)

If it is not possible to exclude interference sources such as air conditioners and fans from the detection range, the air conditioners, fans, and other devices must be turned off so that the radar can enter an Unoccupied state.

2.3 Office/Conference Room Scene

Environmental description: The room has an area of approximately 35 ㎡ and is equipped with central air conditioning, curtains, and a desk. The sources of interference in

the room are the central air conditioning and the curtains.

Sensor installation suggestion: It is recommended to install it at the top or a tilted position in the center of the room, while keeping a distance of at least 0.5m between the radar and the exhaust fan.

Setting Template: Select “Bedroom Mode” for scene mode and set sensitivity to “3”.

The format of the command to be sent is (in hexadecimal):

53 59 05 07 00 01 02 BB 54 43

53 59 05 08 00 01 03 BD 54 43

Reason: If the dynamic detection range is too large/small, you can set the Area Detection/Living Room Mode accordingly. If the static detection range is too large, you can set the sensitivity to 2. (Radar waves cannot penetrate solid walls, but can penetrate glass and partition walls, etc.)

Note that you need to consider the impact of wind on the curtains. If the curtains are within the radar detection range, you can reduce interference by changing the installation position or reducing the scene mode/sensitivity.

3. Custom Mode Parameter Settings Template

If you want to set the following parameters, please use the command in the table below to enter custom mode.

Function Description	Transfer direction	Frame header	Control word	Command word	Length Identification		Data	Checksum field	End of frame	Note
Custom mode setting										
Custom mode setting	Send	0x53 0x59	0x05	0x09	0x00	0x01	0x01~0x04	sum	0x54 0x43	0x01: Custom mode 1. 0x02: Custom mode 2. 0x03: Custom mode 3. 0x04: Custom mode 4.
	Response	0x53 0x59	0x05	0x09	0x00	0x01	0x01~0x04	sum	0x54 0x43	
End of custom	Send	0x53 0x59	0x05	0x0A	0x00	0x01	0x0F	0xCB	0x54 0x43	Used to save custom parameters

Function Description	Transfer direction	Frame header	Control word	Command word	Length Identification		Data	Checksum field	End of frame	Note
mode settings	Response	0x53 0x59	0x05	0x0A	0x00	0x01	0x0F	0xCB	0x54 0x43	
Custom mode query	Send	0x53 0x59	0x05	0x89	0x00	0x01	0x0F	0x4A	0x54 0x43	
	Response	0x53 0x59	0x05	0x89	0x00	0x01	0x01~0x04	sum	0x54 0x43	0x00: Custom mode is not enabled. 0x01: Custom mode 1. 0x02: Custom mode 2. 0x03: Custom mode 3. 0x04: Custom mode 4.

3.1 Bathroom

The environmental interference factors that cannot be controlled by the standard mode include: In the Bathroom Scene, there may be facilities such as exhaust fans, glass doors, and curtains, and the potential sources of interference may include slight vibrations caused by the exhaust fan or slight swinging of metal rings on the curtain.

Sensor installation suggestion: Suggested installation is to place the radar sensor at the top and center of the bathroom and slightly away from the exhaust fan to reduce interference.

Setting suggestion:

Parameter value settings	Parameter value range	Instruction
Existence judgment threshold: 33 (Default) **53 59 08 08 00 01 05 C2 54 43**	0~250	When there are micro-interference sources (such as vibration from exhaust fans) that prevent entering an unmanned state, it is possible to increase the existing judgment threshold appropriately.
Motion trigger threshold: 4 (Default) **53 59 08 09 00 01 03 C1 54 43**	0~250	When there are motion interference sources that prevent entering a static state, it is possible to increase the

		motion trigger threshold appropriately.
Existence perception boundary: 2.5m **53 59 08 0A 00 01 05 C4 54 43**	0.5m~5m	The detection range of static/dynamic can be adjusted flexibly according to the actual application environment to reduce interference (e.g. human interference beyond the boundary of 2.5 meters from the room's motion trigger).
Motion Trigger Boundary: 2.5m **53 59 08 0B 00 01 05 C5 54 43**	0.5m~5m	
Time for entering no person state: 30s **53 59 08 0E 00 04 00 00 75 30 6B 54 43**	0~3600s	The time to enter unmanned state can be adjusted flexibly according to actual needs.

3.2 Bedroom

The environmental interference factors that cannot be controlled by the standard mode include: In the scenario of a bedroom at home, there may be facilities such as air conditioners, fans, and floor cleaning robots, as well as pets such as cats and birds. Interference sources may exist, such as the operation of fans, air conditioners, and floor cleaning robots. Radar cannot accurately distinguish between humans and pets, so pets may also become interference sources and cause false alarms for the radar.

Sensor installation suggestion: It is recommended to install the radar at the center of the ceiling and ensure that the air conditioner is not within the detection range of the radar.

Setting suggestion:

Parameter value settings	Parameter value range	Instruction
Existence judgment threshold: 33 (Default) **53 59 08 08 00 01 05 C2 54 43**	0~250	When there are micro-interference sources (such as vibration from exhaust fans) that prevent entering an unmanned state, it is possible to

		increase the existing judgment threshold appropriately.
Motion trigger threshold: 4 (Default) **53 59 08 09 00 01 03 C1 54 43**	0~250	When there are motion interference sources that prevent entering a static state, it is possible to increase the motion trigger threshold appropriately.
Existence perception boundary: 3m **53 59 08 0A 00 01 06 C5 54 43**	0.5m~5m	The detection range of static/dynamic can be adjusted flexibly according to the actual application environment to reduce interference (e.g. human interference beyond the boundary of 2.5 meters from the room's motion trigger).
Motion Trigger Boundary: 3m **53 59 08 0B 00 01 06 C6 54 43**	0.5m~5m	
Time for entering no person state: 30s **53 59 08 0E 00 04 00 00 75 30 6B 54 43**	0~3600s	The time to enter unmanned state can be adjusted flexibly according to actual needs.

3.3 Office/Conference Room

The environmental interference factors that cannot be controlled by the standard mode include: In an office setting, there may be glass walls, central air conditioning, curtains, and other facilities in the office/meeting rooms. The interference sources may include slight vibrations caused by central air conditioning, the metal plates swinging due to the curtains, or people walking outside the glass walls.

Sensor installation suggestion: It is recommended to install the radar at the top or tilt it slightly and place it away from the central air conditioning unit.

Setting suggestion:

Parameter value settings	Parameter value range	Instruction

Existence judgment threshold: 33 (Default) **53 59 08 08 00 01 05 C2 54 43**	0~250	When there are micro-interference sources (such as vibration from exhaust fans) that prevent entering an unmanned state, it is possible to increase the existing judgment threshold appropriately.
Motion trigger threshold: 4 (Default) **53 59 08 09 00 01 03 C1 54 43**	0~250	When there are motion interference sources that prevent entering a static state, it is possible to increase the motion trigger threshold appropriately.
Existence perception boundary: 3.5m **53 59 08 0A 00 01 07 C6 54 43**	0.5m~5m	The detection range of static/dynamic can be adjusted flexibly according to the actual application environment to reduce interference (e.g. human interference beyond the boundary of 2.5 meters from the room's motion trigger).
Motion Trigger Boundary: 3.5m **53 59 08 0B 00 01 07 C7 54 43**	0.5m~5m	
Time for entering no person state: 30s **53 59 08 0E 00 04 00 00 75 30 6B 54 43**	0~3600s	The time to enter unmanned state can be adjusted flexibly according to actual needs.

3.4 Warehouse and Logistics

The environmental interference factors that cannot be controlled by the standard mode include: In the scenario of warehousing and logistics, the primary practical application is to trigger the function. The stationary metal storage shelves will not interfere with the radar's detection performance, while moving loading and unloading forklifts and pedestrian traffic can trigger the radar to detect the presence of people as usual.

Sensor installation suggestion: It is recommended to install the radar at the top in the scenario of warehousing and logistics.

Setting suggestion:

Parameter value settings	Parameter value range	Instruction
Existence judgment threshold: 33 (Default) **53 59 08 08 00 01 05 C2 54 43**	0~250	When there are micro-interference sources (such as vibration from exhaust fans) that prevent entering an unmanned state, it is possible to increase the existing judgment threshold appropriately.
Motion trigger threshold: 4 (Default) **53 59 08 09 00 01 03 C1 54 43**	0~250	When there are motion interference sources that prevent entering a static state, it is possible to increase the motion trigger threshold appropriately.
Existence perception boundary: 5m **53 59 08 0A 00 01 0A C9 54 43**	0.5m~5m	The detection range of static/dynamic can be adjusted flexibly according to the actual application environment to reduce interference (e.g. human interference beyond the boundary of 2.5 meters from the room's motion trigger).
Motion Trigger Boundary: 5m **53 59 08 0B 00 01 0A CA 54 43**	0.5m~5m	
Time for entering no person state: 30s **53 59 08 0E 00 04 00 00 75 30 6B 54 43**	0~3600s	The time to enter unmanned state can be adjusted flexibly according to actual needs.