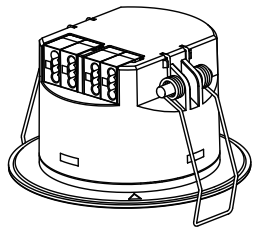




MSA237K 99 A
MSA237K 99 D

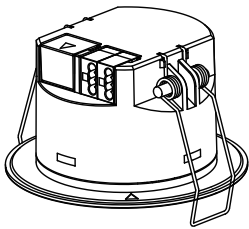
24GHz Large-space Presence Sensor

MSA237K 99 A



5.8GHz Low-mounting Microwave Motion Sensor

MSA237K 99 D



User's Manual(KNX version)



Instruction
MI250516A0



PRODUCT DESCRIPTION

MSA237K 99 A is a 24GHz radar sensor based on Merrytek patented orthogonal half-wave bending antenna. Its antenna has high gain and wide detection range and is combined with Merrytek's unique software algorithm. It can accurately detect minor movements brought by human in almost all indoor spaces and provide fast and accurate front-end sensing input for smart home, smart hotel, smart office and other scenes by KNX communication.

MSA237K 99 D is a 5.8GHz microwave sensor with high antenna gain and wide sensing range. Combined with the unique software algorithm of Merrytek, it can accurately detect human movements in almost all indoor spaces to trigger smart scene application by KNX communication in smart homes, smart hotels, and smart offices.

START PROCESS

After routing the physical addresses and setting the channel parameters, follow these steps:

- (1) Connect Bus interface;
 - (2) Set Bus and auxiliary power on (note:For MSA237K 99 A please make sure that product has auxiliary power supply, otherwise the device may not work properly);
 - (3) Press the programming switch of the product, the LED light will turn red;
 - (4) Use the bus interface to download the physical address through the ETS software. The programming LED light is off to indicate that the physical address download is successfully completed;
 - (5) Download the application after setting the required application parameters;
 - (6) After downloading the application, the product goes into initialization. During initialization, detection function is disable. After 10s, the initialization is completed, and the product works normally;
- Note: Please use the latest version of ETS or higher version than 5.7.2 version. Please obtain the ETS engineering configuration file of this sensor from our sales staff.

ETS APPLICATION INSTRUCTIONS



ETS APPLICATION
Download



Function configuration
download

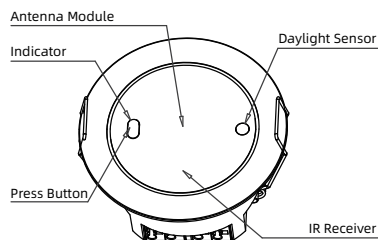
ETS Application Manual Download

<https://www.knx.org/knx-en/for-professionals/software/ets6/index.php>

INITIALIZATION

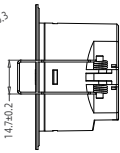
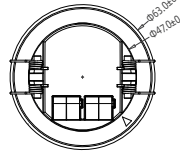
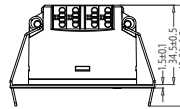
When powered on, sensor indicator will turn off after flashing for 10s. During initialization, sensor will not detect moving signal and you can use our MH18 remote to adjust detection area, hold time etc parameter.

PRODUCT INTRODUCE

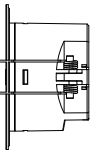
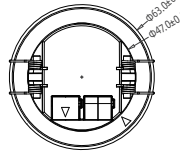
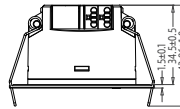


DIENSION(mm)

MSA237K 99 A



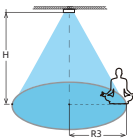
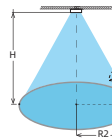
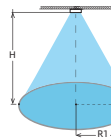
MSA237K 99 D



PARAMETERS

Model	MSA237K 99 A		MSA237K 99 D
Auxiliary Power Supply Voltage Range	12~30V DC		/
KNX Terminal Voltage	21~30V DC		21~30V DC
Auxiliary Power Supply Working Current	12V : 55±3mA Max 24V: 30±3mA Max 30V: 24±3mA Max		/
KNX Terminal Current	3±1mA		8±1mA
Power consumption	≤1W @24V DC		<0.5W @KNX bus power
Radar frequency	24GHz~24.25GHz ISM band		5.8GHz~75MHz ISM band
Transmitting Power	5mW Max.		1mW Max.
Sensor	Detection Area	ETS/Remote setting: 0.5~4m	ETS setting:1%~100% Remote setting:30%~100%
	Hold Time	ETS setting: 3s~7200s Remark: For better presence detection,hold time shall set >30s(Only available for MSA237K 99 A)	
Parameter	Detecting Range(100% detection area, radius)	3.5±0.5m(3m height installation) (based on 41m² open area test and might change due to different space)	4.5~5.5m(3m height installation) (based on 41m² open area test and might change due to different space)
	Mounting height	2~4m, typical value: 3m	2~6m, typical value: 3m
Working temperature		0°C ~ +50°C	
Storage temperature		-40°C ~ +80°C	
Hole Size		Φ50~55mm	
IP rating		IP20	
Warranty		5 years(only for product quality problem under indoor application)	

DETECTION AREA



- Major motion activates: detect the human significant moving (walking) in the detection area.
- Minor motion maintains: detect the human slight moving in the detection area, such as leaning forward, leaning forwarder and back, swinging limbs, shaking head, typing, playing with mobile phones and so on.
- Micro motion maintains: detect human abdominal and thoracic expansion behaviors caused by breathing.



Major motion activates

Minor motion maintains

Micro motion maintains

(MSA237K 99 A)

Mounting height	Setting	H=3m(MSA237K 99 A)		
		R1	R2	R3
High sensitivity	4m	3.5~4.5m	3.5~4.0m	3.5~4.0m
	3.5m	3.2~3.5m	3.2~3.5m	3.2~3.5m
	3m	2.5~3.0m	2.5~3.0m	2.5~3.0m
	2.5m	2.0~2.5m	2.0~2.5m	2.0~2.5m
	2m	1.5~2.0m	1.5~2.0m	1.5~2.0m
	1.5m	1.0~1.5m	1.0~1.5m	1.0~1.5m
	1m	0.5~1.0m	0.5~1.0m	0.5~1.0m
	0.5m	0~0.5m	0~0.5m	0~0.5m
Medium sensitivity	4m	3.5~4.0m	3~4m	2~2.5m
	3.5m	2.5~3.0m	2.5~3m	1.5~2m
	2.5m	1.5~2.0m	1.5~2m	0.5~1m
	2m	1.5~2.0m	1.5~2m	0.5~1m
	1.5m	0.5~1.0m	0.5~1m	0m
	1m	0.5~1.0m	0.5~1m	0m
	0.5m	3.0~4.0m	1.5~2m	1.5~2m
	4m	3.5m	3m	2.5m
Low sensitivity	3m	2.0~2.5m	1~1.5m	1~1.5m
	2.5m	1.0~1.5m	0.5~1m	0.5~1m
	2m	1.0~1.5m	0.5~1m	0.5~1m
	1.5m	0.5~1m	0~0.5m	0~0.5m
	1m	0.5~1m	0~0.5m	0~0.5m
	0.5m	0.5m	0~0.5m	0~0.5m
	0.5m	0.5m	0~0.5m	0~0.5m
	0.5m	0.5m	0~0.5m	0~0.5m

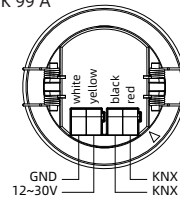
Tips: Above data is based on 1.6m height people radial moving towards sensor by 0.3m/s velocity in 81 m² open area for reference. If any variate changes, the detection range might be different.

(MSA237K 99 D)

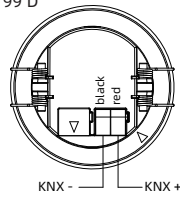
Detection Sensitivity	Radius detection range based on 3m height(R1)	Radius detection range based on 6m height(R1)
100%	4.5~5.5m	1.5~3.0m
80%	3.0~5.0m	
60%	2.0~3.0m	
40%	1.5~2.5m	0m
20%	0.5~1.5m	
1%	0m	

WIRING DICTION

MSA237K 99 A



MSA237K 99 D

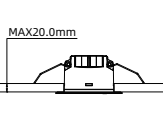
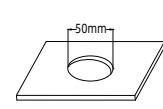
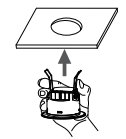


WIRING LAYOUT SUGGESTION :

1. KNX bus wiring suggestion hand in hand to the end, star or tree wiring is not recommended to ensure the stability of signal transmission.
2. KNX bus wiring wire recommends KNX standard EIB shielded wire or Category 6 network cable, the length of the bus wiring is recommended not to exceed 400 meters, and the number of sensor connected to a bus is recommended to not exceed 12.
3. The number of sensors connected to a bus needs to fully consider the current load capacity of the power supply: that is the sum of the currents of all KNX devices (including sensors) shall not be greater than the load current of the KNX power supply.

INSTALLATION

Flush mounting

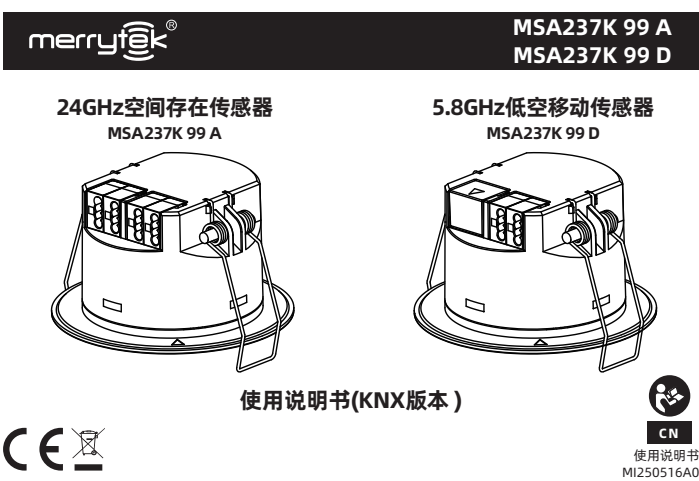


MH18 Rmote Manual

Remote Control Setting	Button	Remarks
	ON/OFF	Disable sense function
	1 2 3...	MSA237K 99 A Button Detection range 0.5m 1m 1.5m 2m 2.5m 3m 3.5m 4m MSA237K 99 D Button Detection range 30% 40% 50% 60% 70% 80% 90% 100%
	Single mode	Long press>3s to enter single mode.(Only available for MSA237K 99 A)
	Sensor motion	Enable sense function.(Only available for MSA237K 99 A)
	Presence enable	Short press enable presence detection, long press disable presence detection.(Only available for MSA237K 99 A)
	Sensitivity	Short press to switch high/medium/Low sensitivity.(Only available for MSA237K 99 A)
	Hold time	Hold Time: 10s/30s/60s
	Reset	Reset: All parameter back as factory setting; Indicator: Short press to open indicator; Long press to close indicator. Enhance: Short press to enter self-learning mode. (Only available for MSA237K 99 A)

Shenzhen Merrytek Technology Co.,Ltd.

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Phone: +86(755)2305 7253/59 • Fax: +86(755)2786 3012
Email: sales@merrytek.com • www.merrytek.com



产品介绍

MSA237K 99 A 是一款基于迈睿科技发明专利的大波束正交式天线的 24GHz 雷达感应器，其天线增益高，感应范围广，结合迈睿科技独特的软件算法和车规级 FMCW 雷达调制方式，它可以实现几乎所有室内空间的人体生命体征带来的细微运动的精准检测，进而以 KNX 通讯为基础为当下基于人体存在的智能家居，智慧酒店，智慧办公等场景提供快速且精准的前端传感输入。

MSA237K 99 D 是一款基于迈睿科技自主设计高增益天线的抗干扰性强的 5.8GHz 微波雷达感应器，其天线增益高，感应范围广且均匀，结合迈睿科技独特的软件算法，它可以实现几乎所有室内空间的人体运动带来的移动信号的精准检测，同时通过 KNX 通讯技术为当下基于人体移动的智能家居，智慧酒店，智慧办公等场景提供快速且精准的前端传感输入。

启动过程

经过布线分配的物理地址和设置每一个通道的参数后,接着按照下面步骤操作：

- (1) 连接总线接口；
 - (2) 设置总线与辅助供电上电；(备注：针对 MSA237K 99 A 请务必保证此感应器有辅助供电，否则设备将可能工作不正常)
 - (3) 按下设备的编程开关,按下后会亮起编程红色 LED 灯；
 - (4) 使用总线接口通过 ETS 软件下载物理地址,编程 LED 灯熄灭表示成功完成物理地址下载；
 - (5) 设置好你需要的应用参数后下载应用程序；
 - (6) 下载完应用程序之后产品进入初始化,初始化期间不探测外界感应信号,10s 之后初始化完成,产品正常工作；
- 备注：ETS 请采用最新版本或者 5.7.2 以上版本，本感应器的 ETS 工程配置文件请从我司销售人员处获取

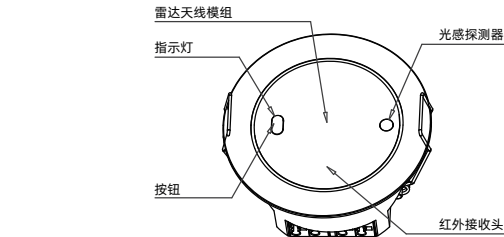
ETS 应用程序使用说明



初始化

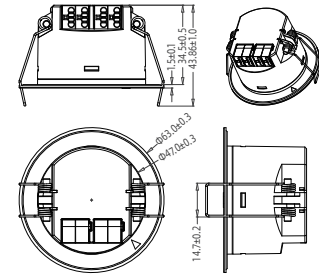
初次通电指示灯闪烁 10 秒后关闭，初始化期间不探测外界移动感应信号，指示灯可以通过 ETS 或迈睿 MH18 遥控将指示灯关闭和打开，同时延时时间、探测范围（感应距离）可以通过 ETS 或迈睿 MH18 遥控来设置。

功能示意图

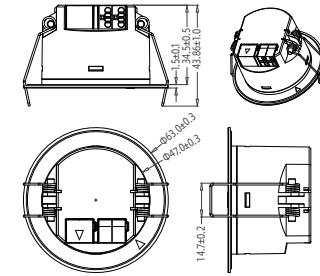


尺寸(mmm)

MSA237K 99 A



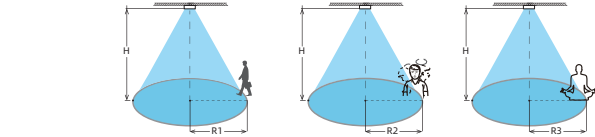
MSA237K 99 D



参数

型号	MSA237K 99 A	MSA237K 99 D
辅助供电电压范围	12~30V DC	12~30V DC
KNX端电压	21~30V DC	21~30V DC
辅助供电端工作电流	12V：55±3mA Max 24V：30±3mA Max 30V：24±3mA Max	/
KNX端电流	3±1 mA	8±1mA
工作功耗	≤1W @24V DC	<0.5W @KNX bus power
工作频率	24GHz-24.25GHz ISM 波段	5.8GHz±75MHz ISM 波段
发射功率	5mW Max.	1mW Max.
感应参数	感应范围	ETS/遥控设置：0.5-4m ETS设置：1%-100% 遥控设置：30%-100%
	延时设置	ETS设置：3s-7200s(针对MSA237K 99 A，延时时间需设置30s以上才有较好的存在感应效果)
探测范围	移动/微动/存在 (3m高)：3.5±0.5m (基于室内空旷41m²空间测试，在不同环境下感应距离可能会略有波动)	4.5-5.5m (3m高) (基于室内空旷41m²空间测试，在不同环境下感应距离可能会略有波动)
	(100%灵敏度，半径)	
安装高度	2-4m，典型值：3m	2-6m，典型值：3m
工作环境温度	0°C ~ +50°C	
储存温度	-40°C ~ +80°C	
开孔尺寸	Φ50-55mm	
防护等级	IP20	
质保	5 年@Ta (室内使用)	

探测区域



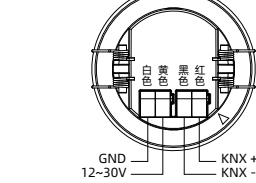
- 移动信号：检测到人体在探测区域内进行大幅移动(行走)信号。
- 微动信号：检测到人体在探测区域内微小幅度动作信号，比如：身体前倾、后倾、肢体摆动、摇头、打字、玩手机等一些微小幅度行为动作。
- 存在信号：检测到人体在探测区域内进行大幅移动(行走)信号。

(MSA237K 99 A)		(MSA237K 99 D)	
安装高度	H=3m	安装 3m 高的感应半径 (R1)	安装 6m 高的感应半径 (R1)
高感	感应灵敏度		
	4m	3.5-4.5m	3.5-4.0m
	3.5m	3.2-3.5m	3.2-3.5m
	3m	2.5-3.0m	2.5-3.0m
	2.5m	2.0-2.5m	2.0-2.5m
	2m	1.5-2.0m	1.5-2.0m
	1.5m	1.0-1.5m	1.0-1.5m
	1m	0.5-1.0m	0.5-1.0m
	0.5m	0-0.5m	0-0.5m
	4m	3.5-4.0m	3-4m
中感	3.5m	/	/
	3m	2.5-3.0m	2.5-3m
	2.5m	/	/
	2m	1.5-2.0m	1.5-2m
	1.5m	/	/
	1m	0.5-1.0m	0.5-1m
	0.5m	/	/
	4m	3.0-4.0m	1.5-2m
	3m	/	/
	2.5m	/	/
低感	2m	/	/
	1.5m	1.0-1.5m	1-1.5m
	1m	/	/
	0.5m	/	/
	4m	3.0-4.0m	1.5-2m
	3m	/	/
	2.5m	2.0-2.5m	1-1.5m
	2m	/	/
	1.5m	1.0-1.5m	0.5-1m
	1m	/	/
	0.5m	0.5-1m	0-0.5m
	0.5m	/	/

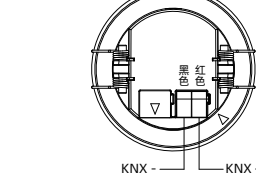
注意：以上测试数据基于 81 m² 开阔空间，1.6m 高测试人员以 0.3m/s 径向走向传感器的触发距离直至触发所得。在不同空间下，不同体态的人以不同速度走向传感器的触发距离可能有所偏差。

接线方式

MSA237K 99 A



MSA237K 99 D

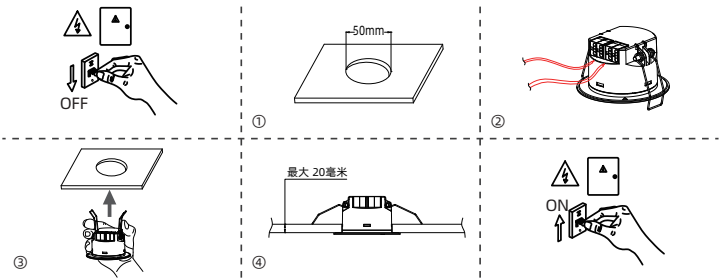


接线建议

1. KNX 总线布线建议手拉手一线到底，不建议星型或树形布线以保证信号传输的稳定性；
2. KNX 总线布线线材推荐 KNX 标准 EIB 屏蔽线或者 6 类网线，总线布线长度建议不超过 400 米，并且一条总线接的感应器数量建议不超过 12 个；
3. 一条总线接入的感应器个数需要充分考虑电源的电流负载能力：即所有 KNX 设备（含感应器）的电流和不得大于 KNX 电源的负载电流。

安装方式

吸顶嵌装



MH18 遥控

遥控面板设置	按键	功能说明
	ON/OFF	关闭感应功能。
	1 2 3... 4 5 6 7 8	MSA237K 99 A 按键 1 2 3 4 5 6 7 8 感应灵敏度 0.5m 1m 1.5m 2m 2.5m 3m 3.5m 4m MSA237K 99 D 按键 1 2 3 4 5 6 7 8 感应灵敏度 30% 40% 50% 60% 70% 80% 90% 100%
	Single mode	长按3秒进入单机模式。（仅针对MSA237K 99 A）
	Sensor reaction	启用感应功能。（仅针对MSA237K 99 A）
	Presence enable	短按可开启存在检测，长按关闭存在检测。（仅针对MSA237K 99 A）
	Sensitivity	短按切换 高感模式 / 中感模式 / 低感模式（仅针对MSA237K 99 A）
	Hold time	短按切换延时时间 10s/30s/60s。
	Reset	Reset: 短按感应功能恢复同时感应器参数恢复出厂设置。 Indicator: 短按打开指示灯，长按 3s 关闭指示灯。 Enhance: 短按进入自学习模式。（仅针对MSA237K 99 A）

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