

欢乐消 2 机器人
Puductor2 Robot

快速指南

V1.0

QuickGuide

CN	1-8
EN	9-16

声明

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快速指南

安全说明	1-2
产品组成	3-5
功能说明	5-7
售后服务	8

安全说明

- 本产品仅限于室内空气消毒，对室外消杀效果无法保证，故不建议使用； 本产品仅为超干雾化设备
- ，使用超干雾消毒时，需要严格依照消毒液的使用说明，并与消毒液供应 商确认人能否与干雾共处； 大部分消毒液遇热受光易分解，建议机器人喷雾消杀结束后将超声室消毒液回流回消毒液箱中
- ，并 将机器人停靠在冷暗处； 机器人紫外消杀时会发出紫外线强光，严禁直接照射眼睛和皮肤。紫外消杀时严禁人员靠近； 紫外装置只有在工作时才会旋出，并会在结束紫外消杀后会自动旋入。

- 如发现非工作状态紫外装置 处于未完全旋入状态，请点击复位按钮或重启机器人，以上不能解决请联系技术支持人员，切勿异 常状态下使用； 请勿在消毒液箱中有液体的情况下，将机器人打倒。否则会造成液体泄漏导致机器人电路损坏； 请勿在机器人作业过程中拖拽机器人，出现紧急情况请按下紧急按钮，或先通过远程控制终端暂停 机器人； 机器人需在平坦环境使用，如地板、瓷砖、薄地毯等，请勿用于户外（如开放式阳台）、崎岖地面（如 阶梯）等环境，请勿在湿滑地面使用； 请勿在机器人开机状态下，反向推机器人； 禁止遮挡机器人传感器，否则可能导致机器人行走异常； 使用前请先将环境中地面各种线材收起，避免主机运行时拖拽。请将地面尖锐物体（如装修废料、玻璃、铁钉等）清除，以免对机器底盘造成伤害；

为保证安全建议将机器人速度调整至 0.8m/s 及以下，禁止在机器人前方 1m 范围内嬉戏打闹以避免不必要的伤害，机器人有自动避障功能，但存在识别盲区，故严禁在机器人高速行驶期间突然阻挡机器人，否则可能引发安全事故；

机器人最佳通行宽度应大于 70cm，长通道需要宽度大于 1m 流畅性最佳，宽度大于 2m 通道可设置两台机器人对向会车行驶（具体宽度由技术人员根据实际场景评估）； 机器人设计最大爬坡角度为 5°，为防止机器人滑坡后溜导致可能风险，应避免在机器人上坡期间暂 停机器；为防止机器人斜坡上意外跌落，斜坡宽度不应小于最小通行宽度 70cm，侧翻角度不允许 超过 5°；

需要在阶梯边沿，下坡的入口等有机器人跌落风险的地方增加栅栏或者其他阻挡防护； 地面高度 16~22cm 之间有纯黑色（如踢脚线）、镜面（如墙面）、全透明（如落地玻璃窗）的物件，可能干扰机器人雷达反射，造成机器人行走异常，可能需要对场地进行一定的改造让雷达能反射（如 粘贴贴纸）；待机点机器人并列放置两台之间需有 35cm 空间，离后墙需有 15cm 空隙，与侧墙的距离需有 35cm；

机器人剩余电量小于 10%，请及时充电，长时间低电量运行可能会缩短电池使用寿命；充电完成后请及时断开电源，请勿在机器满电量状态下长时间充电；若长时间不使用机器人，请及时将产品断电以保护机器电池；务必使用原厂 专配的可充电电池与充电设备，严禁使用非原厂充电器对机器人充电；请指定专门负责人对机器充电，请勿在无人值守情况下为机器人充电或者单独为电池充电；

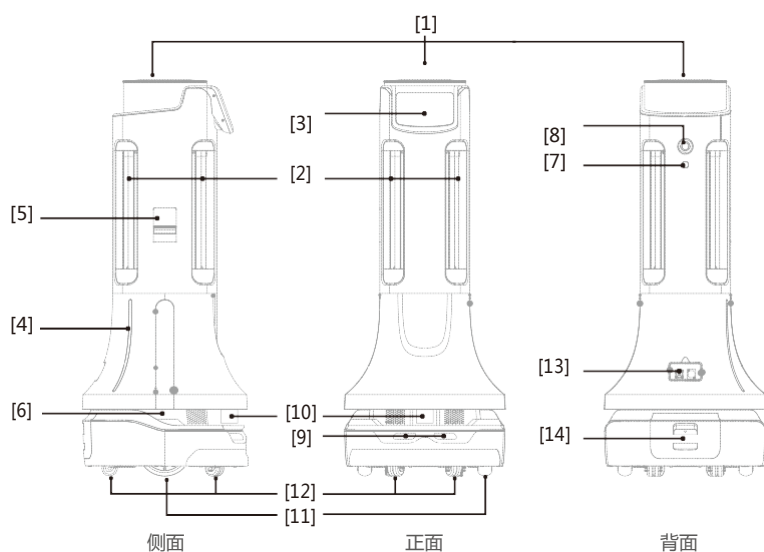
- 请勿将机器放置于易燃易爆物体附近充电；
- 机器人存放及充电位置请保持干燥、常温，严禁将机器以及充电器放置于高温区域（ $> 40^{\circ}\text{C}$ ），严禁机器以及充电器进水；
- 严禁充电器与外物碰撞，造成充电器损坏；发现充电器损坏，充电电流异常请及时更换充电器；充电时收到机器人报警，请立即断开充电设备

产品组成

包装清单

整机 ×1、《快速指南》×1、合格证 ×1、保修卡 ×1、充电线 ×1、定位标贴 ×1、电源钥匙 ×1

外观部件介绍



[1] 超声室
[2] 紫外灯
[3] 屏幕
[4] 液位显示
[5] 补液口

[6] 排液口
[7] 开机按键
[8] 急停开关
[9] 深度视觉传感器
[10] 激光雷达
[11] 驱动轮
[12] 辅助轮

[13] 充电插孔
[14] 钥匙开关

性能参数：

产品型号	标准型 PJ1
工作电压	DC 23-29V
电源输入	AC 100-240V, 50/60Hz
电源输出	29V-8A
充电时间	9h
连续消毒时间	6h
运行速度	0.1~1.2m/s
爬坡坡度	5°
整机材质	ABS/航空级铝合金
电池容量	51.2Ah
整机重量	60kg
整机尺寸	544x538x1290mm
额定功率	150W
超干雾	4 组碰头，30°喷洒
喷雾速率	0~2L/h 可调
水箱容量	15L
雾化颗粒	小于 10 μ m
支持消毒液	过氧化氢、次氯酸、二氧化氯等
紫外灯	4 组灯管
紫外波长	UV-C 254nm
紫外照度	1m 处大于 180 μ W/cm ²
紫外灯防护	自动收放
屏幕规格	7 寸高清触摸彩屏
音响功率	20W*2 立体声音响
设计寿命	5 年
工作环境	0~40℃，相对湿度 85%
存储环境	-40~65°，相对湿度 85%
充电方式	手动充电与换电
环境污染	等级 3

工作海拔	最大 4000m
路面要求	室内环境，平坦地面
防护等级	IP20
光照强度	支持最大 70000lux

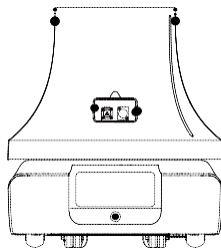
功能说明

开关机说明

钥匙开关：

钥匙开关可实现打开 / 关闭机器人整机电源，实现机器人锁定功能，位置如下图所示

KEY



开机：

激光版本：推至初始位置 - 打开钥匙开关 - 长按开关键 0.5 秒，底部灯带显示蓝色

关机：

长按开关机键 10 秒关机，灯管和屏幕熄灭

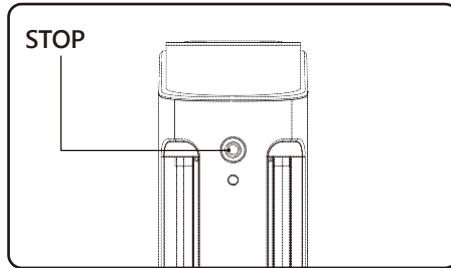
充电说明

将机器人充电接口连接充电线，保证机身充电口与充电线连接，如果连接成功，机器人将会提示正在充电 用电注意：

1. 为保证机器人的使用效率和电池寿命，请随时把机器人电量保持在 10% 以上；
2. 当电量低于 10% 时，机器人处于低电量状态，需尽快充电。

紧急处理

当机器人处于非正常运行状态或者出现意外情况，有可能对周围环境造成伤害等紧急情况时，用户可以通过背后的急停开关，使机器人停止运行。



消毒液操作

消毒补液：先确认待补充的消毒与机器人内的消毒液相同，或者消毒液箱中无液体。拉开机器补液口，将配好浓度的 消毒从注液口注入。同时观察液位指示管的液位装填，液位填满后请勿继续注液。

更换消毒补液：

先确认超声室消毒液提已经回流到消毒液箱中，否则先进行回流操作。打开消毒液排液口，拧开开关，将消毒液箱中溶液倒出。新的消毒液按照补充消毒液方式进行。

紫外线操作：

使用中的灯管，在灯管前方垂直距离 1m 的中心处，测量辐照度值应 $\geq 70 \mu\text{W}/\text{cm}^2$ ，低于此值者应予更换。更换灯管时，先按压紫外线灯管头部弹簧固定座，取下灯管即可。

功能说明



快速消毒：快速消毒功能指用户可将机器人推到某个地点，选择消毒时长、消毒方式，即可开始消毒。消毒完成后机器人停在原地等待下一次消毒指令。

定点消毒：

定点消毒功能指用户可设置某些消毒的固定位置，选择每个位置消毒时长、消毒方式，机器人会自动运行到这些定点，进行自动的消杀作业，作业完成后会自动回到起始停靠点。

巡线消毒：

巡线消毒功能指用户可设置巡航消毒路线，选择消毒总时长、消毒方式，机器人会按照道路路线巡航往复消杀，消毒完成后机器人会自动回到起始停靠点。功能不定期更新，详细功能说明可

在 www.pudutech.com 下载《欢乐消 2 操作手册》

售后服务

1. 免费保修服务

公司承诺符合以下情况，自产品收货之日起，在产品有效保修期内（产品的不同部件保修期限有所不同），符合如下情况的将提供免费的产品保修服务。

- 自购买产品在规定的产品保修期限内正常使用，出现非人为的质量问题；
- 无擅自拆机、无非官方说明书指引的改装或加装、其它非人为引起的故障；产品序列号、出厂标签及其他标示无撕毁、涂改迹象；提供有效的购买证明、单据及单号；免费保修期内更换的损坏备件属公司所有，应按公司要求寄回。

2. 保修范围外的售后服务

对于不在免费保修范围内的售后服务（超出保修期或者在保修期内不符合免费保修条款），公司提供收费售后服务；

公司官方提供线上和远程技术支持渠道，客户需配合技术工程师进行问题诊断和故障处理；经技术工程师诊断必须上门解决问题的，指派专业技术人员提供上门服务；提供有效的购买不在免费保修范围内的售后服务，需按照要求填写《售后服务记录表》。服务费用包含：售后维护费用以及备件费用；

3. 售后服务咨询

如果您有任何问题需要咨询，请联系普渡科技客服热线：400-0826-660。普渡科技售后人员服务工作时间是：每周一至周六，上午9：30至12：00，下午13：30至18：30。售后这里增加邮箱：售后邮箱：techservice@pudutech.com

Statement

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Quick Guide

Safety Instructions	11-12
Product Components	13-15
Instructions for	15-17
Use After-sales	18
Service	

Safety Instructions

- This product is suitable for indoor air disinfection only, and is not recommended to be used outdoors.
- This product is intended as an ultra-dry atomization device only. When using it for disinfection, make sure to follow the user instructions for your disinfectant and check with your disinfectant supplier whether it is safe for people to be in the same space with dry mist.
- Most disinfectants are prone to decompose when exposed to heat and light. After the robot completes disinfection, we recommend that you return the disinfectant in the ultrasonic chamber to the disinfectant tank and park the robot in a cool and dark place.

While the robot is performing UV disinfection, it emits strong UV rays, to which direct exposure of eyes and skin should be avoided. Keep off the robot while it is performing UV disinfection.

The UV device will be screwed out only when it is working, and it will be screwed in automatically after the UV disinfection is over. If the UV device is not fully screwed in while not working, click the reset button or restart the robot. If the problem persists, please contact technical support for help. Do not use the device if anything is abnormal.

Do not knock over the robot when there is liquid in the disinfectant tank; otherwise it will cause liquid leakage which may damage the circuit in the robot.

Do not pull the robot while it is working. In case of emergency, press the emergency button, or stop the robot using the remote control terminal.

The robot can only be used in flat indoor environments, such as floorboard floors, tile floors, and floors with thin carpets, and may not be used in any outdoor environments such as an open balcony or on any rugged ground such as a staircase. Do not use it on any wet slippery ground surfaces.

Do not push the robot in the opposite position while it is powered on.

Do not block the sensor, or the robot may fail to move properly.

Before use, put away any wire or cable in the environment to prevent the robot body from being dragged around. Remove sharp objects on the ground, such as decoration waste, glass, and nails, to avoid any damage to the base.

A maximum speed of 0.8m/s is recommended for safe operation. No playing is allowed within 1m in front of the robot to avoid unnecessary harm. Although the robot features automatic obstacle avoidance, there is a blind spot. Blocking the robot moving at a high speed may cause accidents.

The aisle should be at least 70cm wide for the robot to pass. In the case of a long aisle, a width of 1m is recommended for smooth moving. A width of 2m allows two robots to move in two directions (The required width depends on the technician's evaluation of the scene).

The maximum possible slope is 5 ° for the robot. To prevent sliding, the robot should not be paused when moving uphill. To prevent falling, the slope should be at least 70cm wide, and

the roll angle should not exceed 5°.

- It is necessary to add fences or other barriers at the edge of a staircase, entrance to a downslope, or other places where the robot is at risk of falling.
- Pure black (such as baseboards), specular (such as walls) and fully transparent (such as floor-to-ceiling glass windows) objects that are 16 to 22cm high from the ground may interfere with the radar reflection of the robot and cause the robot to move abnormally. Make some necessary modifications to the space to allow the radar to reflect (such as sticking some stickers).
- Robots at the standby point, if arranged side by side, should stay apart from each other at a distance of 35 cm, from the back wall at a distance of 15 cm, and from the side wall at a distance of 35 cm.

When the battery drops to 10%, the robot should be charged timely. Running at a low battery for a long time may impair battery life.

Unplug the charger in time after the charging cycle is complete. Do not leave the charger plugged in for a long time if the robot is fully charged.

If not used for a long time, the robot should be shut down to protect the battery.

Always use exclusively original rechargeable batteries and chargers. Do not charge your robot using non-original chargers.

Designate a person to charge the robot. Do not charge the robot or the battery separately in an unattended manner.

Do not charge the robot near flammable and explosive objects.

Store and charge the robot in a dry area at room temperatures. Never place the robot and charger in an area of elevated temperatures (>40 °C). Never let water get into the robot and charger.

Avoid any damage to the charger due to its collision with other objects.

If your charger is damaged and the charging current is abnormal, swap it out for a new one.

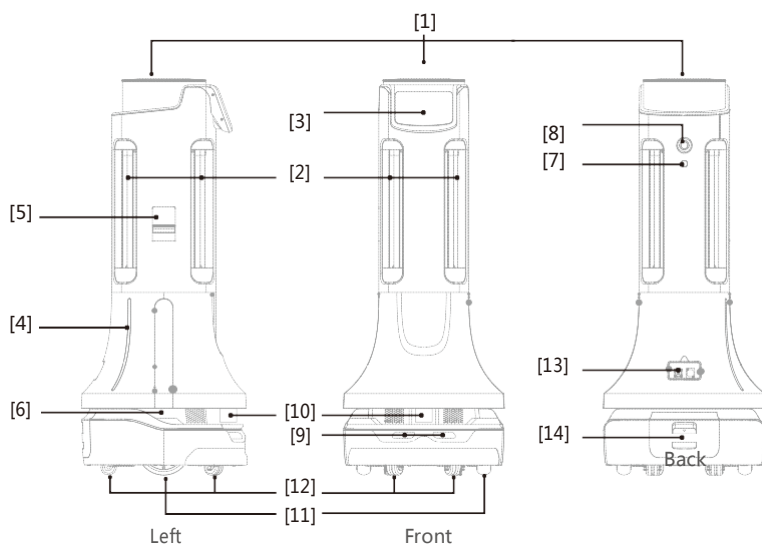
Disconnect the charger immediately upon receiving an alarm from the robot when charging.

Product Components

Packing List

Robot × 1, Quick Guide × 1, Certificate × 1, Warranty Card × 1, Charging Cable × 1, Power Key × 1, Positioning mark × 1

Exterior & Components



[1] Ultrasonic chamber
[2] UV lamp
[3] Screen
[4] Level indicator
[5] Liquid inlet

[6] Liquid outlet
[7] Power button
[8] Emergency stop switch
[9] Visual sensor
[10] Laser radar

[11] Drive wheel
[12] Auxiliary wheel
[13] Charging Jack
[14] Key switch

Specifications :

Model	PJ1 Standard
Working voltage	DC 23-29V
Power input	AC 100-240V, 50/60Hz
Power output	29V-8A
Charging time	9h
Continuous working time	6h
Moving speed	0.1~1.2m/s
Climbing angle	Slope $\leq 5^{\circ}$
Product material	ABS/aircraft grade aluminum
Battery capacity	51.2Ah
Weight	60kg
Dimension	544x538x1290mm
Rated power	150W
Ultra-dry atomization	4 sets of nozzles, spray angle: 30°
Spraying output	Adjustable between 0– 2L/h
Disinfection liquid capacity	15L
Spray particle size	$<10\mu m$
Applicable disinfectants	Hydrogen peroxide, hypochlorous acid, and chlorine dioxide
UV lamp	4 sets of lamps
UV wavelength	UV-C 254nm
UV illuminance	$>180\mu W/cm^2$ at 1m
Protection against UV rays	Autonomously retractable UV lamps
Screen size	7-inch HD color touch screen
Speaker power	2 × 20W stereo speakers
Design life span	5 years
Working environment	$0^{\circ}C$ to $40^{\circ}C$, RH: 85%
Temperature and humidity for storage	$-40^{\circ}C$ to $65^{\circ}C$, RH: 85%
Charging mode	Manual charging/replacement battery
Level of environmental pollution	3

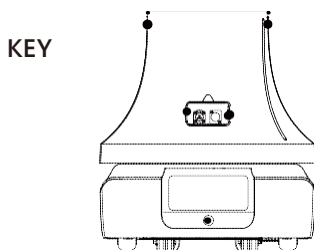
Working altitude	≤ 4000m
Operation environment	Indoor environment, flat and smooth ground
IP grade	IP20
Illuminance	Up to 70,000lux

Instructions for Use

Power on/off

Key switch :

Use the key switch to turn on/off the power of the robot and to lock the robot. See the following figure for where it is located.



Powering on:

Push to the initial position → Turn on the key switch → Press and hold the key switch for 0.5 seconds, and wait until the bottom appears in blue.

Powering off:

Press and hold the power switch for 10 seconds, at which point the light tube and screen are off.

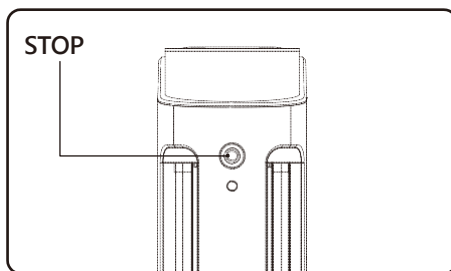
Charging

Instructions on power usage:

1. To maximize the efficiency and battery life of the robot, always keep the battery level above 10%.
2. A battery level lower than 10% means that the robot will soon run out of power and needs to be charged as quickly as possible.

Emergency handling

When the robot is not working properly, in an unexpected condition or in any other emergency that may cause harm to the surrounding environment, you can stop the robot by pressing the emergency stop switch on the top.



Working with the disinfectant

Refill the disinfectant tank:

First, verify that the disinfectant for refilling is the same as that in the robot, or there is no liquid in the disinfectant tank. Open the liquid inlet, and fill in the prepared disinfectant from the inlet. Meanwhile, observe the liquid level through the level indicator, and stop the refill once the maximum level is reached.

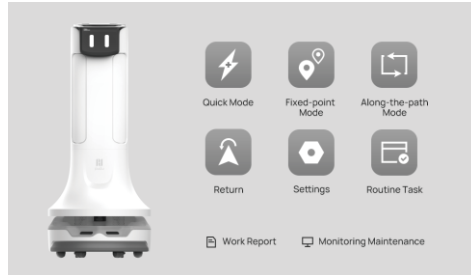
Replace the disinfectant:

Make sure that the disinfectant in the ultrasonic chamber has been returned to the disinfectant tank. If this is not the case, make it so first. Open the liquid outlet, unscrew the switch, and empty the disinfectant tank. Add the new disinfectant in the same way as you perform a refill.

Working with the UV lamp:

Measure the irradiance of a UV lamp in use at a vertical distance of 1m in front of and at the center of the lamp. The measured value should be $\geq 70 \mu\text{W}/\text{cm}^2$. If not, replace the lamp. First press the spring holder on the head of the lamp, and then remove the lamp.

Product features



Quick Mode:

Move the robot to a given position, and then select a disinfection time and method to get started. After completing disinfection, the robot will stay put and wait for the next disinfection task.

Fixed-point Mode:

Specify some fixed destinations to disinfect, and select a disinfection time and method for each destination. The robot will automatically go to and disinfect each destination. After completing disinfection, the robot will automatically return to the original place.

Along-the-path Mode:

Specify a disinfection path, and select the total disinfection time and the disinfection method. The robot will circulate along the specified path for disinfection. After completing disinfection, the robot will automatically return to the original place.

The features are updated from time to time. For more information on the features, you can download a Puductor 2 User Manual at www.pudurobotics.com

After-sales Service

1.Free Warranty

When the robots are under warranty (different warranty periods for different components, calculated from the receipt of the robot), Pudu offers a free warranty if.

- Defects are caused by non-human factors.
 - There are no unauthorized disassembly, modification or addition not included in the user manual, or other faults caused by non-human factors.
- The robot S/N sticker and other labels are not removed or altered.
Effective purchase certificate, receipt, and order number are provided.
Damaged components are sent back to Pudu as required.

2.Paid Services

Pudu offers paid after-sales services when the robot is out-of-warranty or the policy of free warranty is not applicable.

Online and remote technical support is provided, and customers should cooperate with engineers for diagnosis and troubleshooting.
Technicians will offer on-site service when necessary.
The "After-sales Service Form" should be filled when the policy of free warranty is not applicable; Customers should pay for both maintenance and spare parts.

3. Contact Us

For any questions, please call +86-400-0826-660.

Working hours: 9:30 - 12:00, 13:30 - 18:30, Monday to Saturday (GMT+8)

Technical support e-mail : techservice@pudutech.com

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance

could void the user's authority to operate the equipment.

NOTE: 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.

FCC ID: 2AXDW-PJ1

IC Caution:

- English:

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

- French:

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radio électrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC:26126-PJ1

To maintain compliance with RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

