

蓝牙钥匙控制器
Bluetooth Key Controller
BLEF-H-01

1. 产品简介/Product Introduction

独立蓝牙钥匙控制器，支持 BLE5.1 满足 BLE 唤醒、连接、认证和远控要求，在无服务器（即无 PKI/DCK/TSP 等服务器）等情况下，实现 APP 钥匙开通、配对、控车、注销等功能。

The independent bluetooth key controller supports BLE5.1, meeting the requirements for BLE wake-up, connection, authentication, and remote control. It enables functions such as APP key activation, pairing, vehicle control, and logout without the need for servers (i.e., without PKI/DCK/TSP servers) or other infrastructure.

2. 功能使用说明/Function usage instructions

2.1 蓝牙钥匙申请/Bluetooth key request

车主在 4S 店可通过诊断仪完成 APP 与蓝牙钥匙的绑定，绑定后可通过手机 APP 使用智能钥匙近程控制功能。

The car owner can complete the binding of the APP and Bluetooth key through the diagnostic instrument in the 4S shop, and can use the smart key short-range control function through the mobile APP after binding.

2.2 蓝牙钥匙控制车窗/Bluetooth key control window

在 BLE 有效范围内，用户通过手机 APP，可对车窗进行升降窗操作，若车窗升降成功则提示用户操作成功；若车窗升降失败，则通过手机 APP 提示用户车窗控制失败。

Within the valid range of BLE, the user can lift the window through the mobile phone APP. If the window is lifted successfully, the user is prompted that the operation is successful; If the window lift fails, the mobile phone APP will prompt the user that the window control fails.

2.3 蓝牙钥匙解闭锁/Bluetooth key unlock and lock

在 BLE 有效范围内，用户通过手机上蓝牙钥匙 APP，可对车辆进行解闭锁控制，若解闭锁成功则提示用户操作成功；若解闭锁失败，则通过手机 APP 提示用户车窗控制失败。

Within the valid range of BLE, the user can unlock the vehicle through the Bluetooth key APP on the mobile phone. If the unlock is successful, the user will be prompted to operate successfully; If unlocking fails, the user will be informed through the mobile APP that the window control fails.

2.4 蓝牙寻车/Bluetooth find vehicle

在 BLE 有效范围内，用户通过手机 APP，可对车辆进行寻车操作，若寻车成功则提示用户寻车成功；若寻车失败，则通过手机 APP 提示用户寻车失败。

Within the valid range of BLE, the user can search for the vehicle through the mobile APP, if the search is successful, the user will be prompted to find the car successfully; If the search fails, the mobile APP prompts the user that the search fails.

3. 电气参数/Electric parameter

类别/Category	项目/Project	要求/Requirement	备注/Remark
电气要求 Electrical requirement	工作电压范围 Operating voltage range	9-16Vdc	诊断电压范围:8.5V-16.5Vdc Diagnostic voltage range
	工作温度 Operating temperature	-40℃~+85℃	-
	存储温度 storage temperature	-45℃~+85℃	-
	相对湿度 Relative humidity	5~95%RH	-
	静态电流 Static current	< 4mA	
定位 Location	精度 Precision	20cm, 车内溢 <30cm 20cm, Car overflow<30cm	-
	距离 Distance	寻车距离>40m Search vehicle distance>40m	地库场景 Basement scene
CAN	rate	2Mbps	CANFD
	Number of channels on the primary node	1	1 Route gateway CAN
防护 Defend	Waterproof and dustproof grade	IP52	-
MCU	Frequency	120MHz	
	RAM	256KB	
	Flash	1MB	
Bluetooth	Clock	48MHz	
	RAM	128KB	
	Flash	512KB	
	Frequency	2.4GHz~2.484GHz	
	Modulation system	GFS	
	Low power mode	Receiving current 6mA	
		Transmitting current (0dBm) 6.5mA	

FCC Caution:

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.

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.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.