

# SLAMCUBE

Robot Autonomous Localization & Navigation Suite

## Product Selection Guide

Version: V1.1

\*K1M1 photos for reference only



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SLAMCUBE Robot Autonomous Localization & Navigation Suite, designed by Slamtec, is the new generation of systematical modular control solution for service robot market, which meets the requirements from robot manufacturers, solution integrators and industry customers to realize a quick and high efficient robot product integration.

The suite, adopting modular design, helps outdoor and indoor commercial robots to realize autonomous localization and navigation. It integrates power control management, sensor signal collection management, motor control management, automatic/emergency management into one system and meets the different requirements of customers by supporting various sensors, motors and batteries, which finally helps the customers to quickly set up an exclusive robot platform system in a building-block way.



<b>Name</b>		Main Control Module	
<b>Function Description</b>		As the system control core—receiving RPlidar and sensor data, realizing SLAM and navigation, and outputting motor control command and supporting IPC extension.	
<b>Input Voltage</b>		24V	
<b>Structure Parameters</b>	Dimensions	(L) 153mm * (W) 79.5mm * (H) 34mm	
	Weight	288g	
<b>Interfaces</b>		<b>Description</b>	<b>Remark</b>
1	M.SIG	Motor communication interface	CAN communication
2	RPLIDAR	SLAMTEC RPlidar communication interface	•Lidar: support SLAMTEC A2/A3/S1 *Lidar cable comes with cube(the cable is 35cm in length)
3	SEN1	Sensor hub power supply communication interface_1	5V
4	SEN2	Sensor hub power supply communication interface_2	•Optional
5	LAN/USB	IPC communication interface	
6	U.SIG	User signal	
7	12V.1	IPC power supply interface	12V*3A
8	12V.2	TOF lidar power supply interface	
9	C.PWR	Power management module communication interface	CAN communication
10	ANT2	4G Antenna	
11	A	Indicator	•Error status indicators. For details, please refer to troubleshooting guide.
12	B	Indicator	
13	C	Indicator	
14	D	Indicator	



<b>Name</b>		Power Management Module	
<b>Function Description</b>		As the power management module, receiving battery input, providing power supply for external devices(main control module, user system and motor) , providing overcurrent protection, supporting battery automatic and emergency charging loop.	
<b>Input voltage</b>		18V~28V	
<b>Output voltage</b>		5V power supply for automatic charging board 24V power supply for main control module, user system and motor	
<b>Structure parameters</b>	Dimensions	(L) 153mm * (W) 79.5mm * (H) 34mm	
	Weight	370g	
<b>Interfaces</b>		<b>Description</b>	<b>Remark</b>
1	IR.SIG	Power supply communication interface for automatic charging board	5V
2	C.PWR	Power supply communication interface for main control board	24V
3	EM.CHC	Emergency charging port	•work with Slamtec general purpose robot charging station(C1M1)
4	AT.CHC	Automatic charging port	
5	BAT.IN	Battery input power supply interface	
6	BAT.OUT	Battery output power supply interface	
7	U.PWR	User power supply interface	24V
8	M.PWR	Motor power supply interface	24V
9	F1(Vertical)	Indicator	•Charging fuse status
10	F2(Vertical)	Indicator	•Main control module fuse status
11	F3(Vertical)	Indicator	•User fuse status
12	F4(Vertical)	Indicator	•Motor fuse status
13	F1(Horizontal)	Charging fuse	15A
14	F2(Horizontal)	Main control module fuse	5A
15	F3(Horizontal)	User fuse	5A (customizable, 10A supported for maximum)
16	F4(Horizontal)	Motor fuse	10A



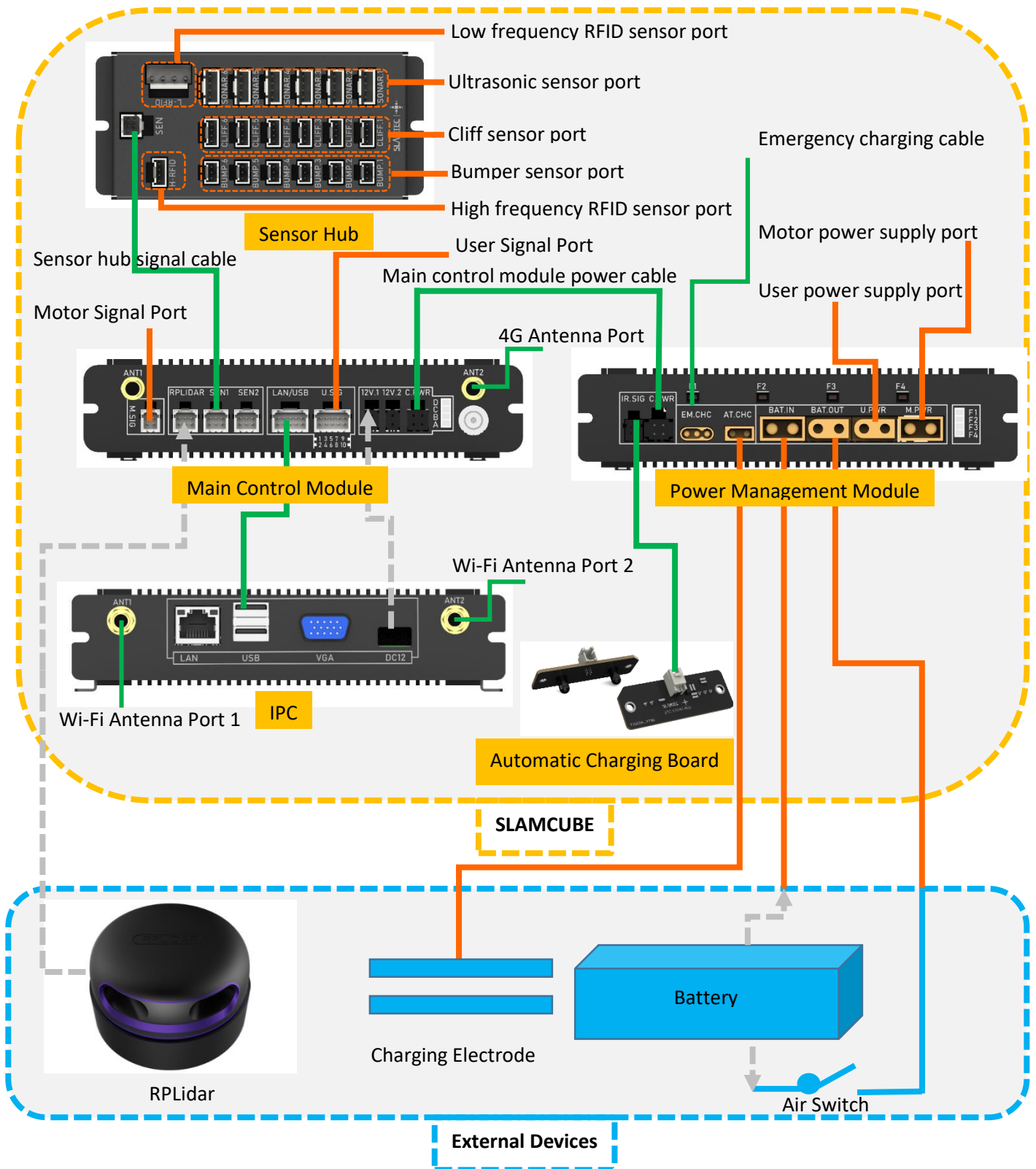
<b>Name</b>		Sensor Hub	
<b>Function Description</b>		Collect sensor data and upload to main control module.	
<b>Input Voltage</b>		5V	
<b>Structure Parameters</b>	Dimensions	(L) 116mm * (W) 52.4mm * (H) 13mm	
	Weight	173g	
<b>Interfaces</b>		<b>Description</b>	<b>Remark</b>
1	SEN	Main control module communication interface	RS422 communication
2	H-RFID	High Frequency RFID	•Support: 1
3	L-RFID	Low Frequency RFID	•Support: 1
4	BUMP.1~BUMP.6	Bumper	•Maximum support: 6
5	CLIFF.1~ CLIFF.6	Cliff sensor	Maximum support: 6 •Magnetic sensor should be configured with the same number of cliff sensor.
6	SONAR.1~ SONAR.6	Ultrasonic sensor	•Maximum support: 6



<b>Name</b>		Automatic charging board	
<b>Function Description</b>		Communicate with Slamtec general purpose robot charging station(C1M1) to make the robot platform realizing autonomous recharging.	
<b>Input Voltage</b>		5V	
<b>Structure Parameters</b>	Dimensions	(L) 54mm * (W) 19mm * (H) 17mm	
	Weight	3g	
<b>Interfaces</b>		<b>Description</b>	<b>Remark</b>
1	J1	Power Management Module Communication Interface	•Work with SLAMTEC charging station C1M1

In this case, we take SLAMCUBE K1M1 for example.

- K1M1 includes the following modules: main control module, power management module, sensor hub, automatic charging board, IPC.
- External devices: Lidar, battery, air switch, automatic charging electrode (installed on the robot platform and for realizing autonomous recharging)



— Connection inside SLAMCUBE    
 — Connection with external devices    
 —> Cables come with SLAMCUBE



<b>Product name</b>		Robot Autonomous Localization & Navigation Suite SLAMCUBE		
<b>Application scenarios</b>		Commercial		
<b>Maximum map building area</b>		500m*500m		
<b>Product model</b>		K1M2	K1M1	
<b>Product overview</b>				
<b>Slamware IPC hardware configuration</b>	Appearance			
	Dimension	(L)217.8mm(W)220mm (H)195mm	(L)153mm*(W)79.5mm* (H)34mm	
	Net weight	950g	338g	
	Processor	J1900	J1900	
	Storage	4G		
	HDD(Hard Disk Drive)	64G		
	System	Linux*support customized development		
	Power supply voltage	12V*3A*Remark1		
	Standby power consumption	5W~10W		
	Maximum power consumption	20W		
	Wi-Fi	5G & 2.4G 802.11a/b/g/n/ac		
	Seral port	Support/Not Support	×	○
		Maximum support		2
	Ethernet	Support/Not Support	○	○
		Maximum support	1	1
USB2.0	Support/Not Support	○	○	
	Maximum support	3* Remark 2	1* Remark 2	
USB3.0	Support/Not Support	○	○	
	Maximum support	1* Remark 3	1* Remark 3	

	<b>Remark 1:</b> IPC power cable comes with IPC. <b>Remark 2:</b> One USB 2.0 is reserved for main control board <b>Remark 3:</b> One depth camera is connected with IPC by default	
<b>Slamware software configuration</b>	SLAM version	3.0
	Dynamic map-building	<input type="radio"/>
	Close loop correction	<input type="radio"/>
	Sharp Edge	<input type="radio"/>
	Multi-sensor integration	<input type="radio"/>
	High-level primitives	<input type="radio"/>
	Autonomous recharging	<input type="radio"/>
	Partial re-localization	<input type="radio"/>
<b>Main control module</b>	Global re-localization	<input type="radio"/>
	Support/Not Support	<input type="radio"/>
<b>Power management module</b>	Maximum support	1
	Support/Not Support	<input type="radio"/>
<b>Sensor hub</b>	Maximum support	1
	Support/Not Support	<input type="radio"/>
<b>Automatic charging board</b>	Maximum support	2
	Support/Not Support	<input type="radio"/>
<b>SLAMCUBE product performance parameter</b>	Standby current	<0.1A
	Continuous operating current	20A
	Maximum power	<20W
	Standby power	<5W
	IP rating	IP5X
	Fire rating	UL94V-0
	ESD performance	Touch: ±4KV Air: ±8KV
	Operating temperature	0°C~40°C
	Operating humidity	0%~95%
	Storage temperature	-10°C~60°C
	Certificate	CQC self-test* <b>Remark 4</b> , CE
<b>Remark4:</b> meets GB/T9254、GB/T17618、GB4943.1 standards		
<b>SLAMCUBE Wheel Type</b>		
Differential driving	<input type="radio"/>	
Forward driving	<input type="radio"/>	
<b>SLAMCUBE Sensor Type</b>		
RPlidar	Support/Not Support	A2/A3/S1 *supports T1 Lidar
	Maximum support	1
Depth camera	Support/Not Support	<input type="radio"/>
	Maximum support	2
Ultrasonic sensor	Support/Not Support	<input type="radio"/>

	Maximum support	12
Cliff sensor	Support/Not Support	○
	Maximum support	12
Magnetic sensor *work with cliff sensor	Support/Not Support	○
	Maximum support	12
Air bumper	Support/Not Support	○
	Maximum support	12
Bumper	Support/Not Support	○
	Maximum support	12
RFID(High frequency)	Support/Not Support	○
	Maximum support	2
RFID(Low frequency)	Support/Not Support	○
	Maximum support	2
RGB camera	Support/Not Support	○
	Maximum support	1