SEED-060A-06(G)

Handbook

(2022.12)

RECORD OF CHANGES

Version	Change Information	Reason	Data	Owner
1.00	New	-	2021-10	Manman Ma

Catalogue

1、 Functions and characteristics

- BLE，GPS，4G，and an exposed antenna

- MK Voice input，Audio output

- 5 sets of cameras

- Separate the display and the host device，display data transfer through FPD-Link III

- 2 couples of analogic input，1 couple of digital input

- Support 2 *CAN，and ISO11898 CAN2.0B、J1939

- Connector Type：TE 2315885-1，recommended matching connector type：TE 0-2209544-9。

- Function overview

No.	Function	No.	Function	Describe
1	Communication	1.1	CAN communication	Support ISO11898 CAN2.0B、J1939、CanOpen
		1.2	4G communication	Upload data to remote control center; Download data fromsurveillance center; Support 4G LTE high-speed transmission
		1.3	GPS communication	Get the latitude and longitude of satellite and other information
		1.4	USB communication	Support update through USB
		1.5	Bluetooth communication	Support connect to smart phone via Blutooth. The user can make calls or listen to music via Bluetooth.
2	HMI	3.1	FM	Integrated FM function.
		3.2	play music	Support listen to music via Bluetooth.
		3.3	Speech recognition	Support speech recognition and microphone noise reduction.
4	Input & output	4.1	Audio analog signal output.	Audio left and right channel output.
5	MIC	5.1	MIC input	Support MIC input and Bluetooth.

2 Product appearance, structure, function introduction

## (1) Appearance
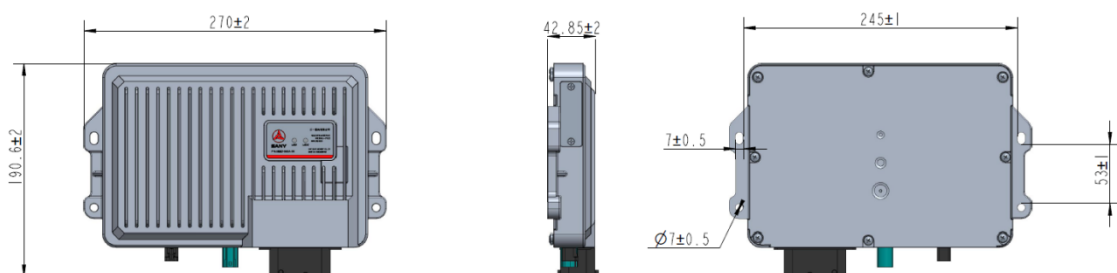
(2) Size parameters
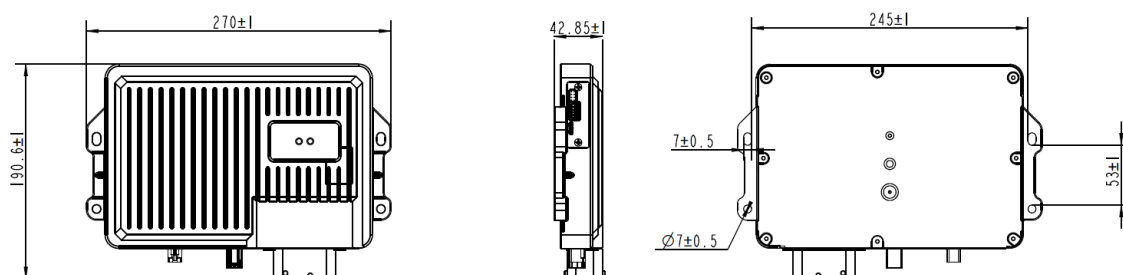
（3） Port capabilities definitions

Item		Function	Pin No.	Note
Analogic input	Voltage input	AI_V1	J2-21	Range：0~10V Acquisition accuracy：0.5% Resolution：0.025%
		AI_V2	J2-22	
Digital input	Voltage input	DI_L	J2-37	Door signal acquiition
Camera	Camera signal	CAMRA3	J2-14	
		CAMRA4	J2-29	
		CAMRA2	J2-30	
		CAMRA5	J2-27	
		CAMRA6	J2-26	
	Power	+12V	J2-49	Voltage：12V Current：1.2A
		GND	J2-50	GND
MIC	MIC signal	MIC_Signal_1_J	J2-10	
		MIC_Signal_2_J	J2-12	
	GND	MIC_GND_J1	J2-11	GND
		MIC_GND_J2	J2-13	
Communication	USB HOST	USB3_5V	J2-3	Voltage：5V,Current：1A max Without 120Ω resistor on host device；
		USB3_GND	J2-2	
		USB3_DP	J2-5	
		USB3_DM	J2-4	
	CAN1	CANA_L	J2-51	
		CANA_H	J2-52	
	CAN2	CANB_L	J2-53	
		CANB_H	J2-54	
Power	GND	GND	J2-47	GND
		GND	J2-45	
		GND	J2-36	
		GND	J2-25	
		GND	J2-24	
		GND	J2-20	
		GND	J2-19	
		GND	J2-17	
	Power	VIN	J2-1	Voltage：24V， Range：16V-32V
			J2-16	

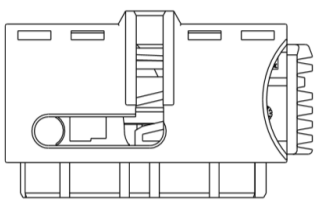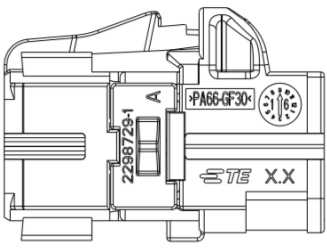|		VDD_24V	J2-31	The power supply of display board
		ACC	J2-18	SMI signal
		AI_5V	J2-46	5V power output
Audio output	Right channel output	Right channel signal +	J2-8	
		Right channel signal-	J2-9	
	Left channel output	Left channel signal+	J2-6	
		Left channel signal-	J2-7	
Reset	Software reset	LM_RESET	J2-48	LowPower Reset

3 Product Program download and update

(1) Hardware development platform
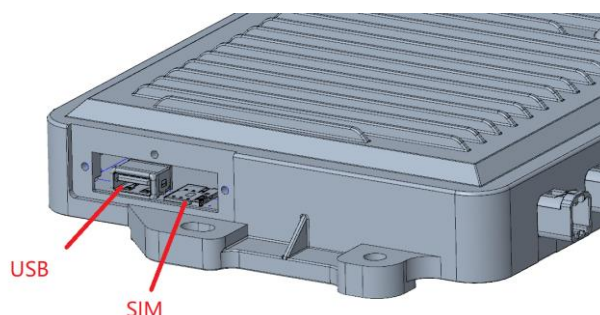
When the user need to download or update the program , please open the metal cap on the left of the device. Then connect the device to your computer via USB cable and download or update the program through the upper computer. Debugging Program can also through this USB connector.

When purchase our products, we command the matching connector to customers as follow：

No.	Item	Type	Diagram	Manufacturer
1	TE 60 Pin Connector	0-2209544-9		TE

| 2 | HSD connector | D4K14A-1D5A5-C | | Rosenberg |
| 3 | 4G/GPS ANT | 2298721-3 | | TE |

(2) Software development platform

Support HM configuration Software, adopt standard　IDE development environment, the programmer can develop HM application software base on requirements of the project.

Programmers can refer to common examples , then quickly develop applications.Include：

1）　HM human-machine inter，include normal Human-machine operation controls

2）　Based on HM communication function library, include CAN communication，4G communication，GPS communication.

(3) Program buming

3.1　HM Application buming

1）Creat an APP folder at the root of USB disk, place HM configuration.

2）Connect the USB disk to the USB connector, power on the host device，then screen pop-up options,

click"burn", LED on USB disk lighting and the screen shows burn progress.

3）When the updates have finished, you don't need to restart　the device, the display restarts automatically.

3.2　Core and device tree burning

1）Connect the computer and the USB connector on the host device via USB cable

2）Turn off the Windows system firewall

3）If in"Device Manager->Network adapter"，you can't find rndis network device,please　setup the rndis drivers.

4）Set the IP（Display IP）and　Servers IP（computer IP）must on the same network segment.

（1）Set the computer IP：192.168.1.66

（2）Set the display IP：192.168.1.62,It is not modifiable by default.

（3）Display restarts and enter Uboot mode, enter commands in the serial console：

setenv serverip 192.168.1.66

setenv ipaddr 192.168.1.62

saveenv

5）Creat a folder on the desk, put tftpd32.exe 、 core and device trees at the root of this folder.

（1）Run tftpd32.exe，"sever interface"choose local IP：192.168.1.66

（2）update device trees,enter commands in the serial console：run update_fdt

（3）Update core, enter commands in the serial console：run update_kernel

(4) Connection to external controller

4 Product parameters and environmental indicators

No.	Item	Description
1	Core	MCU：ARM M4 MPU：A53
2	Core frequency	MCU：180MHz MPU：1.5GHz
3	Normal parameters	Operate system：MCU：Linux MPU：LM DDR3 memory：2G Memory：8GB Power supply：16～32 V.DC （commamd voltage 24 V.DC，32 V can't work for long hours） Output voltage：12V.DC，1A Standby current：<10mA Camera*5
4	Communication	CAN*2，（500kbit／250kbit） USB*1 4G communication GPS/Beidou，Support switch to Beidou independently. Bluetooth：Support Bluetooth phone
5	Connector	60 pin
6	Development environment	Linux
7	Operating environment	Operating temperature：- 20～65°C Storage temperature：- 25～80°C Anti-vibration: 4 - 300 HZ 10mm 6.8G Shock resistance：50G 6ms & 11ms Relative humidity: 10 %～95 %

		Protection Class：IP 65
8	ESD Class	Air:±15kV，Contact:±8kV
9	ISO7637 EMI Class	Power：ISO7637－2 IV Signal: ISO7637－3
10	Anti-surge	IEC61000–4–5 IV
11	Size	270×190.6×42.85（mm）
12	Weight	2.3Kg

5 Note

1) The connection between the main engine shell and the grounded metal part should have a low impedance value. It is determined whether it is qualified by the following tests. In transient interference injection, the voltage drop is measured between the main engine shell and the grounded metal parts of the iron, and the maximum voltage on the housing is required to be not greater than 0.8V during the whole process of interference injection According to some characteristic parameters during interference injection, the required ground impedance range is calculated: in the 0~100MHz frequency band, the impedance value shall not exceed 60mΩ;

2) In addition to the good grounding of the host shell, all input and output points such as sensors and loads connected to the host must be connected into a closed loop That is, all input and output ground must be connected to the ground of the host;

3) It is forbidden to carry out hot plugging action of connectors with electricity, so as not to affect the stability of the product.

FCC Statement

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.