Sipeed MaixFace(MF1) Datasheet

v1.0

Key Features:

- CPU : RISC-V Dual Core 64bit, with FPU， 400Mhz-500Mhz
- Image Recognition: Living Body Recognition
- Dual Camera: Infrared + Normal light
- Infrared fill light: 3W Infrared LED
- Display: 1.33 inch TFT LCD 240*320 Resolution
- Other peripherals: One Capacitive Touch Button / 3W speaker / MEMS mic / SD NAND / RGB LED
- Wireless: 2.4G 802.11.b/g/n SPI Connector
- Scalability: Components can be stacked with double row of pins

UPDATE	
V1.0	2019/7/11 Published original document

SPECIFICATION	
CPU	RISC-V Dual Core 64bit, 400Mhz~500Mhz Powerful dual-core 64-bit open architecture-based processor with rich community resources ; Built-in hardware APU(FFT,BF) Built-in KPU
DC Input	USB Type-C
SD NAND	Support 3.3V SD NAND
Camera Connector	24P 0.5mm pitch FPC connector Support GC0328 dual camera\GC0328 single camera\OV2640\OV5640\OV7740 etc.
Display Connector	24P 0.5mm pitch FPC connector Support 1.33 inch TFT 240x320 LCD 2.4-inch, 2.8-inch, and universal RGB screens can be connected via adapter board(Existing sample)
Infrared Fill Light	3W 700mA high brightness infrared lamp beads Reliable LED dedicated drive circuit Replaceable infrared lens(14.5mm)
Audio output	Onboard DAC , Audio PA(3W max) and Speaker connector
Audio input	Onboard MEMS microphone
Button	One capacitive touch button

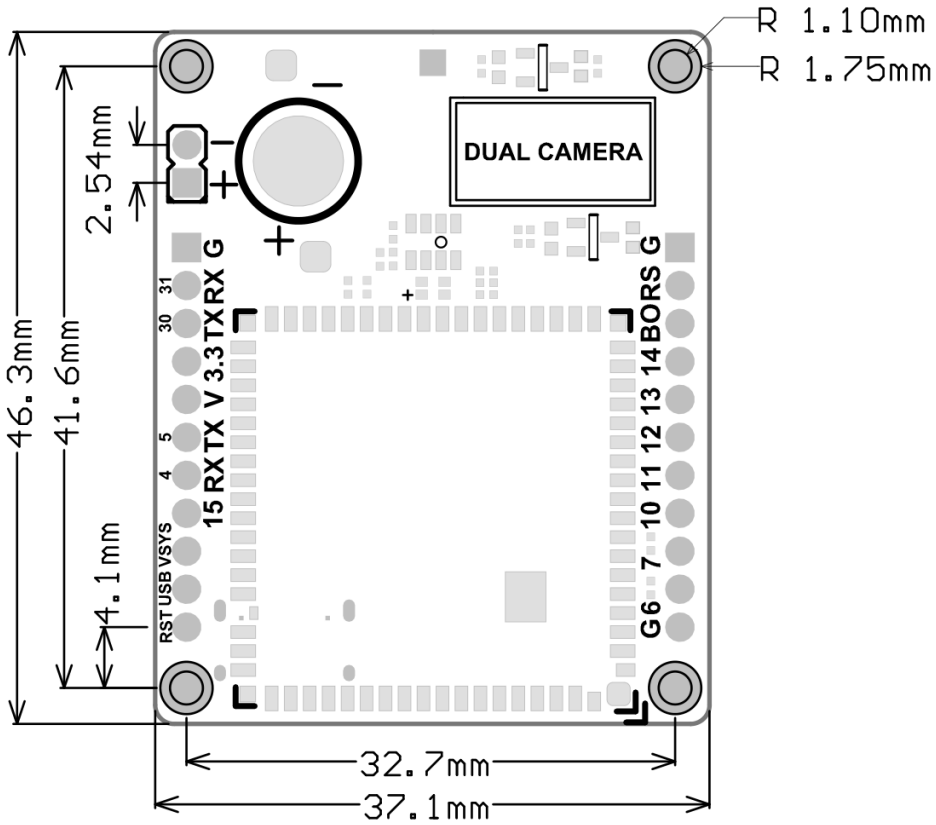
SOFTWARE FEATURES	
FreeRtos & Standard SDK	Support FreeRtos and Standrad development kit.
MicroPython Support	Support MicroPython
Machine vision	Machine vision based on convolutional neural network
Machine hearing	Hardware accelerate FFT, BF I2S record/play sound
Living body face recognition	The face library contains up to 1000 faces 98% accuracy @ 0.1% FAR

	Anti-Spoofing: Color printed paper, LCD photo, LCD video

HARDWARE FEATURES	
Supply voltage of external power supply	4.0V ~ 5.2V
Supply current of external power supply	>800mA
Temperature rise	<30K
Range of working temperature	-20℃ ~ 50℃

RF FEATURES	
MCU : ESP8285	Tensilica L106 32-bit MCU
Wireless Standard	802.11 b/g/n
Frequency Range	2400Mhz - 2483.5Mhz
TX Power(Conduction test)	802.11.b : +15dBm(±2dBm) 802.11.g : +10dBm(±2dBm)(54Mbps) 802.11.n : +10dBm(±2dBm) (65Mbps)
Antenna Connector	IPEX 3.0x3.0mm
Wi-Fi mode	Station/SoftAP/SoftAP+Station
The connection between K210 and ESP8285	Please read the schema of M1w_V1.11 for the specific connection.(dl.sipeed.com)

SIZE	
Length	68mm
Width	54mm



Battery expansion board:

Onboard TF card slot

Onboard charge and discharge IC

Up to 2.5A Max charging current (Programmable)

Switching Charger with Power Path Management

Dual 16340 lithium battery

Relay control expansion board.

Electric shock load: 1A 30VDC or 0.3A 125VAC

Maximum switching current: 2A

Mechanical durability: 1×10^8 times

DC(5.5x2.1mm) connector

DC-DC circuit: 6-25VDC input

TF card slot

MaixFace PIN ASSIGNMENT TABLE					
Maix-Face Silk	K210 IO	ESP8285 IO	Function	Remark	IO Voltage
RST	Dedicated pin		K210_RST	10K pull up	1.8V
	IO0	IO15(SPI-CS)	JTAG_TCK	12K pull down	3.3V
	IO1	IO14(SPI-CLK)	JTAG_TDI		
	IO2	IO12(SPI-MISO)	JTAG_TMS		
	IO3	IO13(SPI-MOSI)	JTAG_TDO		
4(RX)	IO4		K210_ISP_RX		
5(TX)	IO5		K210_ISP_TX		
6	IO6	IO1(U0TX)			
7	IO7	IO3(U0RX)			
	IO8	EN		12K pull up	
	IO9		LCD_Backlight	0:On 1:off	
10	IO10				
11	IO11				
12	IO12				
13	IO13				
14	IO14				
15	IO15				
BO	IO16		BOOT		
	IO17		Audio_PA_EN		
	IO18		MIC_BCK	MEMS microphone (Left channel)	
	IO19		MIC_WS		
	IO20		MIC_DAT3		
	IO21		LED_R		
	IO22		LED_G		
	IO23		LED_B		
	IO24		Cap_touch_button		
	IO25		DVP_RST		
	IO26		SPI0_MISO	TF card	
	IO27		SPI0_SCLK		
	IO28		SPI0_MOSI		
	IO29		SPI0_CS0		
30(TX)	IO30		IIC1_SCL		
31(RX)	IO31		IIC1_SDA		
	IO32		Infrared_LED_EN	0:Off 1:On 10K pull down	
	IO33		I2S_WS	Audio DAC	
	IO34		I2S_DA		
	IO35		I2S_BCK		

Sipeed DUAL CAMERA FACE RECOGNITION ACCESS CONTROL SELECTION TABLE			
Component	Option	Description	Selection
Master module	Without WIFI	M1 module	
	With WIFI	M1w module (WIFI : ESP8285) It has obtained CE and FCC certification	
Camera	gc0328 650/850 dual camera	Default ; Living recognition	
	gc0328 single camera	Without living recognition	
	Other sensors and lenses	Negotiable	
Screen	1.3 inch 240x240 IPS	Default	
	2.4 inch 240x320 TFT		
	2.8 inch 240x320 TFT	Resistive touch and capacitive touch (optional)	
	4.3 inch 480x272 TFT	Need adapter pcb Resistive touch and capacitive touch (optional)	
	5.0 inch 800x480 TFT	Need adapter pcb Resistive touch and capacitive touch (optional)	
	7.0 inch 800x480 TFT	Need adapter pcb Resistive touch and capacitive touch (optional)	
	VGA interface adapter board	Can be connected to VGA display	
Onboard storage	Built-in 16MB Flash	Default ; About 8MB remaining	
12	On board 128MB SD NAND	Optional	
Microphone	On board MEMS microphone	Default	
14	Don't need		
Speaker	3W mono audio PA	Default	
BO	3W mono audio PA +Speaker		
	Don't need		
Button	One way capacitive touch button	Default	
	More buttons	Negotiable	
On board DC	Yes	Default	
	Don't need		
Demo extension board	No need for this component USB power supply	Default	
	Battery expansion board (Dual 16340 lithium battery)		
	Relay control expansion board		

RESOURCES	
Official Website	www.sipeed.com
Github	https://github.com/Lichee-Pi
BBS	http://bbs.sipeed.com
Wiki	maixpy.sipeed.com
Sipeed Model Store	https://maixhub.com/
SDK Reference	dl.sipeed.com/MAIX/SDK
HDK Reference	dl.sipeed.com/MAIX/HDK
E-mail (Technical Support)	support@sipeed.com
Telegram Link	https://t.me/sipeed
QQ Group	878189804

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