D-Robotics

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RDK Stereo Camera GS130WI

V1.1

2026-04

D-ROBOTICS HOLDING LIMITED

1. Scope

This specification document contains the basic information of the camera module model D-Robotics RDK ™ Stereo Camera GS130WI, designed and manufactured by Shenzhen D-Robotics Co., Ltd. It includes the product features, main functions, and FPC connection direction instructions of the module.

2. Features

- Global exposure
- High light sensitivity
- Maintain high dynamic output
- High signal-to-noise ratio
- 850nm/940nm near-infrared enhancement
- External control exposure and multi-sensor synchronization

2.1.Features（ICM-42688-P）

- Wide scale range
- Provide programmable interrupts and low-pass filters
- Self-test

2.2 Applications

- Machine vision
- Barcode scanning
- Automotive electronics
- Security surveillance system
- High-speed photography system

2.2.1 Applications（ICM-42688-P）

- AR/VR Controllers
- Head Mounted Displays
- Wearables
- Sports
- Robotics

3. General Description

3.1 Stereo Camera

3.1.1 Module Specification

No.	Item	Specification
1	Sensor	SC132GS/ ICM-42688-P
2	Sensor amount	3（2Camera Lens+1IMU）
3	Baseline	70 mm
4	Sensor power supply	AVDD = 2.5 V; DVDD = 1.2 V; I/O = 1.8 V
5	Sensor output formats	RAW RGB/RAW MONO
6	Max Resolution & Frame Rate	1080Hx1280V@10bit 120fps ; 1080Hx1280V@10bit<60fps (HDRC on) ; 1080Hx1280V@10bit 120fps (HDRC off)

3.1.2 Camera Lens Specification

No.	Item	Specification
1	Lens Size	1/4 inch
2	Pixel Size	2.7 μm × 2.7 μm
3	Focal Length	1.75 mm
4	Focusing Range	20 cm – ∞ (AT = 70 cm)
5	F/NO.	2
6	Field of View Angle (Diagonal)	157.2° (D) / 96.8° (H) / 115.6° (V) ±3°
7	OP Distortion	< -74%
8	Sensor image area	Diagonal 4.522mm
9	Image Quality	0F ≥ 600 LW/PH; 0.6F ≥ 500 LW/PH
10	IR Filter	650 nm
11	SNR	40 dB

3.1.3 IMU (ICM-42688-P)

No.	Item	Specification
1	Sensor	ICM-42688-P
2	Full-scale range(Gyroscope)	±15.625, ±31.25, ±62.5, ±125, ±250, ±500, ±1000, ±2000 (degrees/sec)
3	Full-scale range(Accelerometer)	±2g, ±4g, ±8g, ±16g
4	External clock input	31kHz-50kHz
5	Data format support	19-bits（Gyroscope） 18-bits（Accelerometer） 16-bits (ADCs, programmable digital filters, embedded temperature sensor)
6	Sensor power supply	1.71-3.6V
7	Communication	I^2C

4. Sensor Electrical Specification

4.1 SC132GS

4.1.1 Absolute Maximum Ratings

Item	Symbol	Absolute Maximum Ratings	Unit
Analog supply voltage	V_{AVDD}	-0.3 ~ 3.0	V
I/O supply voltage	V_{DOVDD}	-0.3 ~ 2.2	V
Digital supply voltage	V_{DVDD}	-0.3 ~ 1.4	V
I/O input voltage	V_I	-0.3 ~ V_{DOVDD} + 0.3	V
I/O output voltage	V_O	-0.3 ~ V_{DOVDD} + 0.3	V
Operating temperature	T_{OPR}	-30 ~ +85	℃
Best operating temp.	T_{SPEC}	-20 ~ +60	℃
Storage temperature	T_{STG}	-40 ~ +85	℃

4.1.2 DC Characteristics

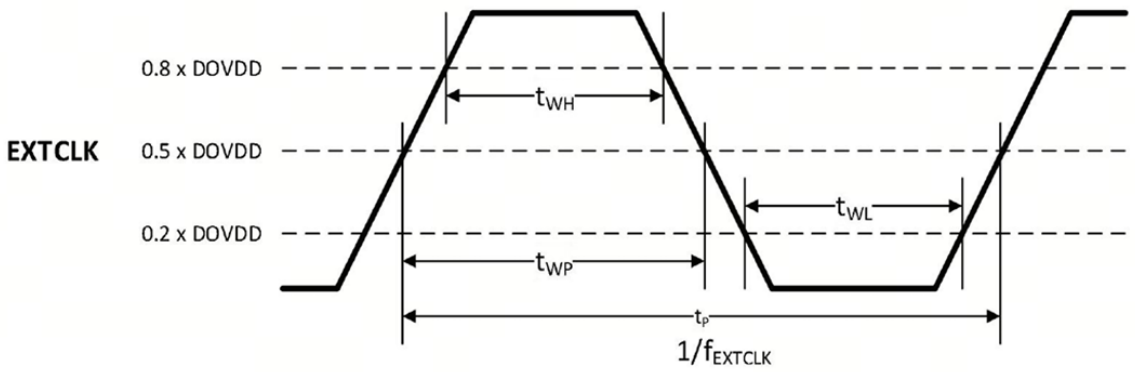
Item	Symbol	Min	Typical	Max	Unit
Power Supply					
Analog supply voltage	V_{AVDD}	2.4	2.5	2.6	V
I/O supply voltage	V_{DOVDD}	1.7	1.8	1.9	V
Digital supply voltage	V_{DVDD}	1.14	1.2	1.26	V
Current (Operating, linear mode, MIPI 4-lane output)					
Analog supply current	I_{AVDD}	–	24.9	–	mA
Digital supply current	I_{DVDD}	–	57.4	62	mA
I/O supply current	I_{DOVDD}	–	0.5	0.6	mA
Current (Standby)					
Analog supply current	I_{AVDD}	–	7800	–	μA
Digital supply current	I_{DVDD}	–	2300	–	μA
I/O supply current	I_{DOVDD}	–	200	–	μA
Total power consumption	Power	–	22620	–	μW
Digital Input					
Input low level	V_{IL}	–	–	0.3×DOVDD	V
Input high level	V_{IH}	0.7×DOVDD	–	–	V
Input capacitor	C_{IN}	–	10	–	pF

Item	Symbol	Min	Typical	Max	Unit
Digital Output (25pF load)					
Output high level	V_{OH}	0.9×DOVDD	–	–	V
Output low level	V_{OL}	–	–	0.1×DOVDD	V
Serial Interface Input (SCL, SDA)					
Input low level	V_{IL}	-0.5	0	0.3×DOVDD	V
Input high level	V_{IH}	0.7×DOVDD	DOVDD	DOVDD+0.5	V

4.1.3 AC Characteristics

TA = 25 ° C, AVDD = 2.5 V, DOVDD = 1.8 V

Item	Symbol	Min	Typical	Max	Unit
DC differential linearity deviation	DLE	–	< 1	–	LSB
DC integral linearity deviation	ILE	–	< 2	–	LSB
Input clock frequency	f_{EXTCLK}	6	–	27	MHz
Input clock high pulse width	t_{WH}	5	–	–	ns
Input clock low pulse width	t_{WL}	5	–	–	ns
Input clock duty cycle	–	45	50	55	%



Input clock waveform

4.1.4 Optical Characteristic (Chief ray angle(CRA))

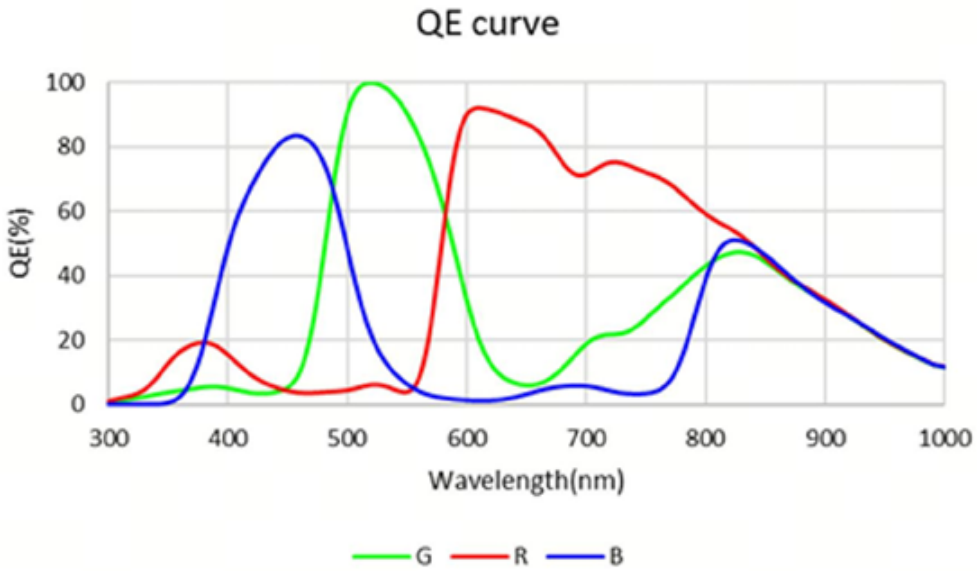
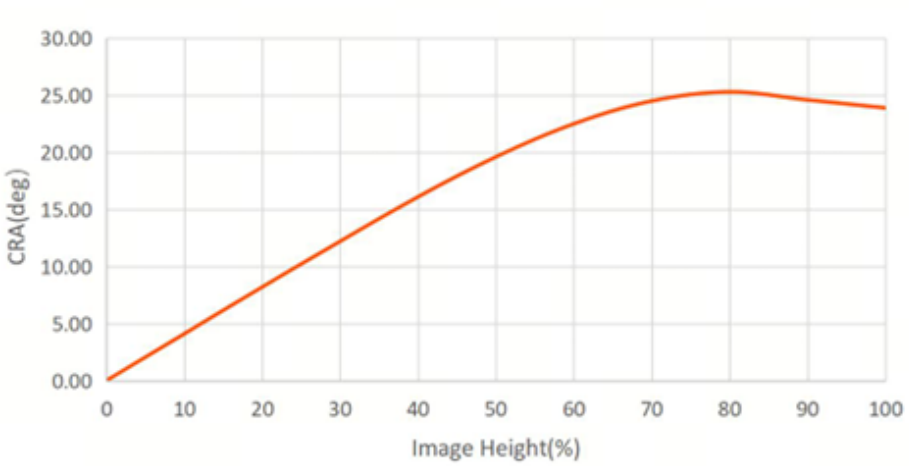


	Image Height		CRA
	%	mm	Deg.
	0	0.000	0.00
	10	0.226	4.10
	20	0.452	8.20
	30	0.678	12.20
	40	0.904	16.10
	50	1.130	19.60
	60	1.357	22.50
	70	1.583	24.50
	80	1.809	25.30
	90	2.035	24.60
	100	2.261	23.90

4.2 ICM-42688-P

4.2.1 DC Characteristics

Typical Operating Circuit, VDD = 1.8 V, VDDIO = 1.8 V, TA = 25 ° C, unless otherwise

Parameter	Conditions	Min	Typ	Max	Units	Notes
Supply Voltages						
VDD		1.71	1.8	3.6	V	1
VDDIO		1.71	1.8	3.6	V	1
Supply Currents						
6-Axis Gyro+Accel	Low-Noise Mode	0.88	0.95	–	mA	2,3
3-Axis Accelerometer	Low-Noise Mode	0.28	0.35	–	mA	2,3
3-Axis Gyroscope	Low-Noise Mode	0.73	0.85	–	mA	2,3
Full-Chip Sleep Mode	At 25 ºC	7.5	–	10	µA	2,3
Temperature Range						
Specified Range	Performance parameters not applicable beyond range	-40	–	85	° C	1

4.2.2 AC Characteristics

Typical Operating Circuit, VDD = 1.8 V, VDDIO = 1.8 V, TA = 25 ° C, unless otherwise

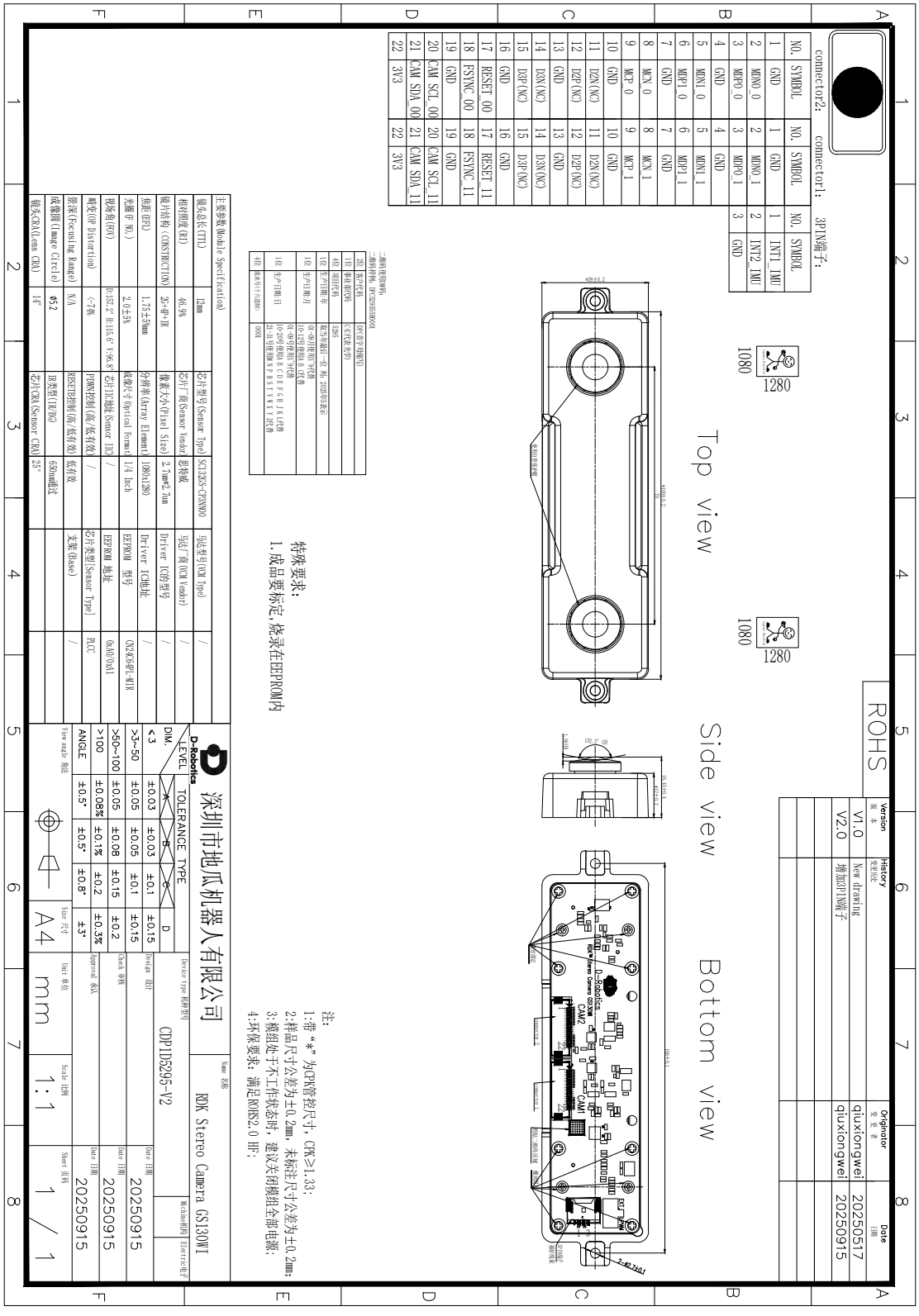
Parameter	Conditions	Min	Typ	Max	Units	Notes
Supplies						
Supply Ramp Time	Monotonic ramp.Ramp rate is 10% to 90%of the final value	0.01	–	3	ms	1
Power Supply Noise	–	–	10	–	mV	1
Temperature Sensor						
Operating Range	Ambient	-40	–	85	° C	1
25 ° C Output		–	0	–	LSB	3
ADC Resolution	Output in two's complement format	–	16	–	bits	2

Parameter	Conditions	Min	Typ	Max	Units	Notes
ODR	With Filter	25	–	8000	Hz	2
Room Temp Offset	At 25 ° C	-5	–	5	° C	3
Stabilization Time	–	–	–	14000	µs	2
Sensitivity	Untrimmed	–	132.48	–	LSB/° C	1
Sensitivity (FIFO data)	–	–	2.07	–	LSB/° C	1
Power-On Reset						
Start-up time for register read/write	From power-up	–	–	1	ms	1
I²C Address						
I²C Address	AP_AD0=0 AP_AD0=1	–	1101000 1101001	–	–	
Digital Inputs (FSYNC, SCLK, SDI, CS)						
V_{IH} (High Level)		0.7×VDDIO	–	–	V	
V_{IL} (Low Level)		–	–	0.3×VDDIO	V	
C_I (Input Capacitance)		–	–	<10	pF	
Digital Outputs (SDO, INT1, INT2)						
V_{OH} (High Level)	RLOAD=1 MΩ	0.9×VDDIO	–	–	V	
V_{OL} (Low Level)	RLOAD=1 MΩ	–	–	0.1×VDDIO	V	
$V_{OL.INT}$, INT Low-Level Output	OPEN=1, 0.3	–	–	0.1	V	
Voltage	mA sink Current	–	–	–	–	1
Output Leakage Current	OPEN=1	–	100	–	nA	
t_{INT}, INT Pulse Width	int_tpulse_duration=0,1 (100 µs, 8 µs)	8	–	100	µs	

Parameter	Conditions	Min	Typ	Max	Units	Notes
I²C I/O (SCL, SDA)						
V_{IL} (Low Level Input)		-0.5	-	0.3×VDDIO	V	1
V_{IH} (High Level Input)		0.7×VDDIO	-	VDDIO+0.5	V	
V_{hys},Hysteresis		-	0.1×VDDIO	-	V	
V_{OL} (Low Level Output)	3 mA sink current	0	-	0.4	V	
I_{OL} (Low Level Output Current)	VOL=0.4V VOL=0.6V	-	3 6	-	mA mA	
Output Leakage Current	-	-	100	-	nA	
t_{of}, Output Fall Time from VIHmax to VILmax	Cb bus capacitance in pF	20+0.1Cb	-	300	ns	
Internal Clock Source						
Clock Frequency Initial Tolerance	CLK_SEL=`2b00 or gyro inactive; 25° C	-3	-	3	%	1
	CLK_SEL=`2b01 and gyro active; 25° C	-1	-	1	%	1
Frequency Variation over Temperature	CLK_SEL=`2b00 or gyro inactive; -40° C to +85° C	-	-	±3	%	1
	CLK_SEL=`2b01 and gyro active;-40° C to+85° C	-	-	±2	%	1
External Clock Source						
Clock Frequency		31	32	50	kHz	1

5. 模块配置说明

5.1 Module Configuration Specification



NO.	SYMBOL	NO.	SYMBOL
1	GND	1	GND
2	MDN0_0	2	MDN0_1
3	MDP0_0	3	MDP0_1
4	GND	4	GND
5	MDN1_0	5	MDN1_1
6	MDP1_0	6	MDP1_1
7	GND	7	GND
8	MCN_0	8	MCN_1
9	MCP_0	9	MCP_1
10	GND	10	GND
11	D2N (NC)	11	D2N (NC)
12	D2P (NC)	12	D2P (NC)
13	GND	13	GND
14	D3N (NC)	14	D3N (NC)
15	D3P (NC)	15	D3P (NC)
16	GND	16	GND
17	RESET_00	17	RESET_11
18	FSYNC_00	18	FSYNC_11
19	GND	19	GND
20	CAM_SCL_00	20	CAM_SCL_11
21	CAM_SDA_00	21	CAM_SDA_11
22	3V3	22	3V3

NO.	SYMBOL
1	INT1_IMU
2	INT2_IMU
3	GND

特殊要求:
1.成品要标定,烧录在EEPROM内

注:
1:带 "*" 为CPK管控尺寸, CPK≥1.33;
2:样品尺寸公差为±0.2mm, 未标注尺寸公差为±0.2mm;
3:模组处于不工作状态时, 建议关闭模组全部电源;
4:环保要求: 满足ROHS2.0 HF;

注意参数(Module Specification)			
输入总线(TTL)	12mm	芯片型号(Sensor Type)	SC132S5-CP6NW0
相机视角(AA)	46.9%	芯片厂商(Sensor Vendor)	思特威
镜片结构(CONSTRUCTION)	2G+4P+IR	像素大小(Pixel Size)	2.7um*2.7um
焦距(EFL)	1.75±5%mm	分辨率(Array Element)	1080x1280
光圈(F NO.)	2.0±3%	输像尺寸(Optical Format)	1/4 Inch
视场角(FOV)	D:157.2° H:115.6° V:96.8°	芯片IIC地址(Sensor IIC)	/
畸变(OP Distortion)	<-7.6%	PWM控制(高/低有效)	/
景深(Focusing Range)	N/A	RESET控制(高/低有效)	低有效
成像圈(Image Circle)	Φ5.2	芯片类型(Sensor Type)	双类型(IR/RGB)
镜头CRA(Lens CRA)	14°	芯片CRA(Sensor CRA)	25°

驱动IC型号	Driver IC的型号	/
Driver IC地址	/	/
EEPROM 型号	EEPROM 型号	/
EEPROM 地址	0xA0/0xA1	/
芯片类型(Sensor Type)	FLCC	/
支架(Base)		

TOLERANCE TYPE	A	B	C	D
DIM. LEVEL				
<3	±0.03	±0.03	±0.1	±0.15
>3~50	±0.05	±0.05	±0.1	±0.15
>50~100	±0.05	±0.08	±0.15	±0.2
>100	±0.08%	±0.1%	±0.2	±0.3%
ANGLE	±0.5°	±0.5°	±0.8°	±3°

History			
Version 版本		Originator 发起者	Date 日期
V1.0	New drawing	qiuxiongwei	20250517
V2.0	增加3PIN端子	qiuxiongwei	20250915

5.2 Module PIN Description

CAM 1:

PIN	Number	Name	Pin type	Function/Description
Pin	1	GND	GND	GND
Pin	2	MDN0_1	O	MIPI TX data negative output(lane 0)
Pin	3	MDP0_1	O	MIPI TX data positive output(lane 0)
Pin	4	GND	GND	GND
Pin	5	MDN1_1	O	MIPI TX data negative output (lane 1)
Pin	6	MDP1_1	O	MIPI TX data positive output (lane 1)
Pin	7	GND	GND	GND
Pin	8	MCN_1	O	MIPI TX clock negative output
Pin	9	MCP_1	O	MIPI TX clock positive output
Pin	10	GND	GND	GND
Pin	11	NC	-	NC
Pin	12	NC	-	NC
Pin	13	GND	GND	GND
Pin	14	NC	-	NC
Pin	15	NC	-	NC
Pin	16	GND	GND	GND
Pin	17	RESET_11	I	RESET Signal Input
Pin	18	FSYNC_11	I/O	Frame sync input/output
Pin	19	GND	GND	GND
Pin	20	SCL_11	I	Serial Clock Line
Pin	21	SDA_11	I/O	Serial Data
Pin	22	3V3	POWER	Power supply 3.3V

CAM 2:

PIN	Number	Name	Pin type	Function/Description
Pin	1	GND	GND	GND
Pin	2	MDN0_0	O	MIPI TX data negative output(lane 0)
Pin	3	MDP0_0	O	MIPI TX data positive output(lane 0)
Pin	4	GND	GND	GND
Pin	5	MDN1_0	O	MIPI TX data negative output (lane 1)
Pin	6	MDP1_0	O	MIPI TX data positive output (lane 1)
Pin	7	GND	GND	GND
Pin	8	MCN_0	O	MIPI TX clock negative output
Pin	9	MCP_0	O	MIPI TX clock positive output
Pin	10	GND	GND	GND
Pin	11	NC	-	NC
Pin	12	NC	-	NC
Pin	13	GND	GND	GND
Pin	14	NC	-	NC
Pin	15	NC	-	NC
Pin	16	GND	GND	GND
Pin	17	RESET_00	I	RESET Signal Input
Pin	18	FSYNC_00	I/O	Frame sync input/output
Pin	19	GND	GND	GND
Pin	20	SCL_00	I	Serial Clock Line
Pin	21	SDA_00	I/O	Serial Data
Pin	22	3V3	POWER	Power supply 3.3V

5.3 Switch Mode Description

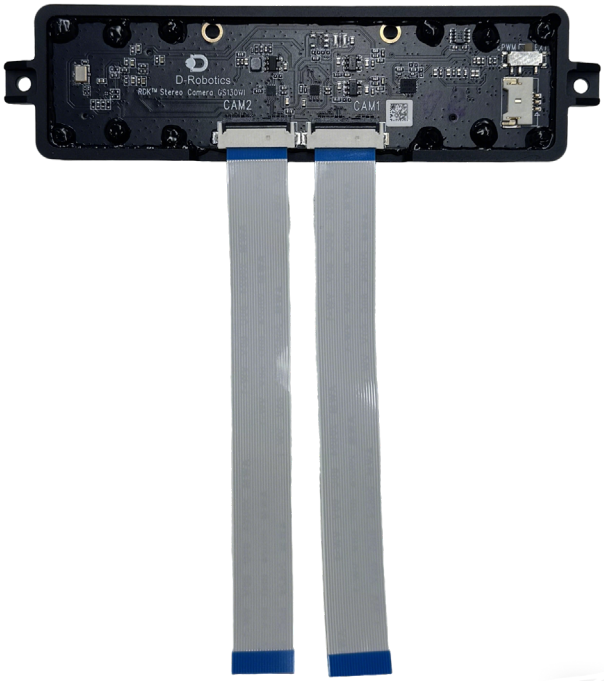
Type	Description
EXT	IMU outputs an interrupt signal from pin 2 of the 3 PIN Header.
LPWM	IMU receives the camera frame sync signal from pin 18 of CAM1.

5.4 3-Pin Header Description

PIN	Number	Name	Pin type	Function/Description
Pin	1	INT1	I	INT1
Pin	2	INT2	I/O	INT2; Available when "EXT" is turned on
Pin	3	GND	GND	GND

6. FPC Connection Direction

1. Both FPCs are flexible cables extending coplanarly.
2. The contact point is oriented towards the camera direction



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