

Apollo DATASHEET

A High-Resolution Thermal Imaging Module

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1. System Overview

Module	Sensor Type	Thermopile far-infrared sensor
	Available Spectrum	8-14 μ m
	Resolution	320 (H) \times 240 (V)
	Pixel Size	12 μ m
	Maximum Frame Rate	Up to 30Hz
	Typical Target Temp.	-10~150 $^{\circ}$ C
	Target Temp. Range	-20~500 $^{\circ}$ C
	Maximum Temp. Range	-40~1000 $^{\circ}$ C
Environment	Working Environment Temp.	10~35 $^{\circ}$ C
	Storage Environment Temp.	-40~85 $^{\circ}$ C
Interface	Power Supply	USB 5.0V (\pm 10%)
	Power Consumption	<700mW
	Signal Interface	FPC/FFC、Micro-USB、SMA
	Output	Image /Video /Temp.
Layout	Size	28 x 28 x 37.5 (mm)
	FOV (Field Of View)	(H) 33 $^{\circ}$



2. Mechanical Specification

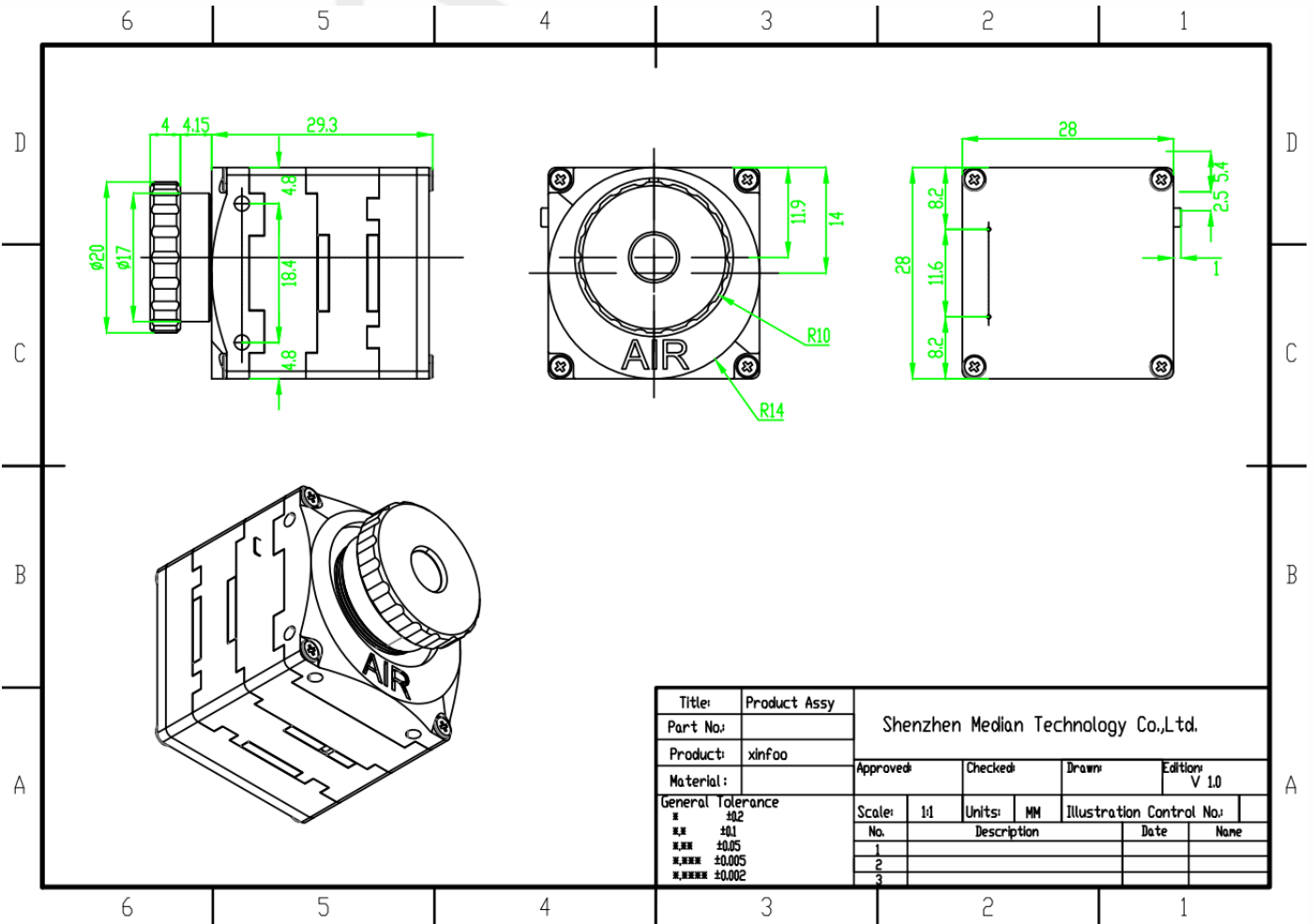


Figure 1 Engineering Drawing of Apollo

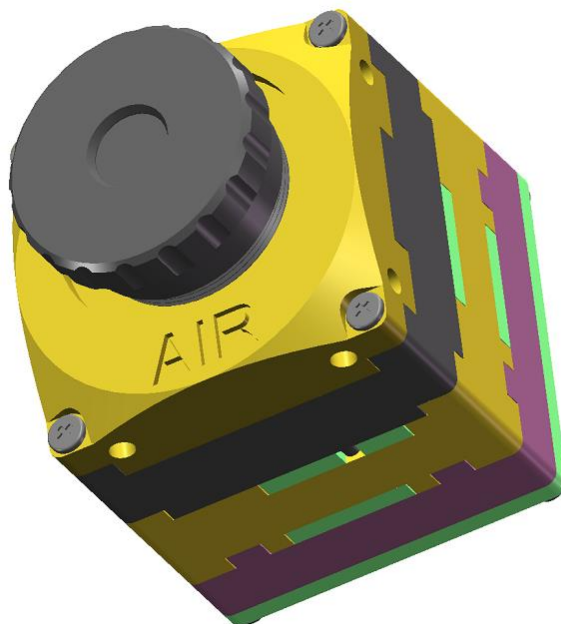


Figure 2 Stereoscopic rendering of Apollo

3. Interface Description

3.1. Pin Diagram

Apollo's connector is FFC/FPC dual contact side connector, 30pin, 0.5mm Pitch.

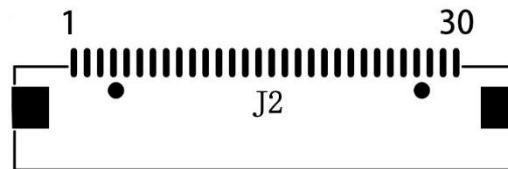


Figure 3 Pin diagram (PCB)

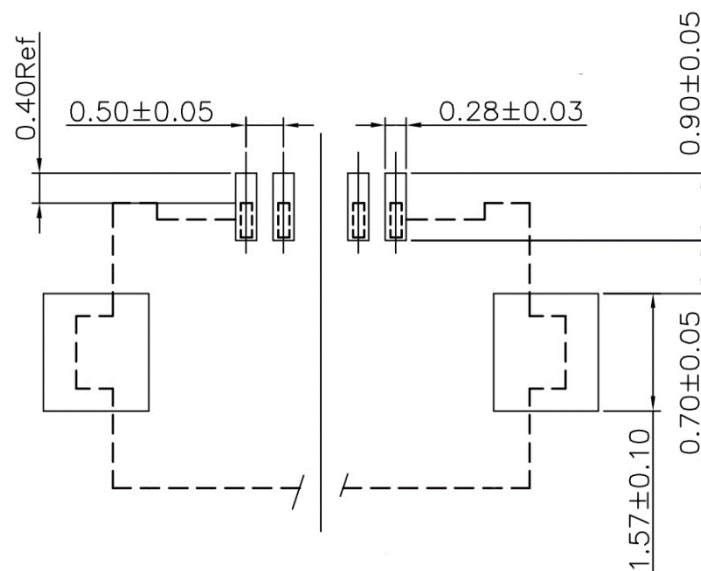


Figure 4 The dimensions of Apollo's connector

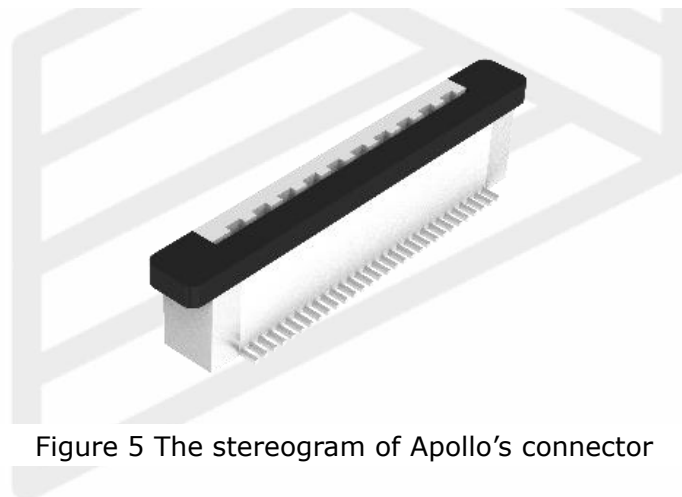


Figure 5 The stereogram of Apollo's connector



3.2. Pin Description

PIN_1	+5V	PIN_16	DVP_2V_HS
PIN_2	+5V	PIN_17	DVP_2V_SD06
PIN_3	DVS_LVDS_CLK+	PIN_18	DVP_2V_ACT
PIN_4	DVS_LVDS_CLK-	PIN_19	DVP_2V_SD04
PIN_5	DVS_LVDS_D1+	PIN_20	DVP_2V_SD07
PIN_6	DVS_LVDS_D1-	PIN_21	DVP_2V_SD02
PIN_7	DVS_LVDS_D0+	PIN_22	DVP_2V_SD05
PIN_8	DVS_LVDS_D0-	PIN_23	DVP_2V_SD00
PIN_9	GND	PIN_24	DVP_2V_SD03
PIN_10	GND	PIN_25	DVP_2V_CLK
PIN_11	CON_U-TX_S_MISO_3V	PIN_26	DVP_2V_SD01
PIN_12	CON_SPI_CS_3V	PIN_27	GND
PIN_13	CON_U-RX_S_MOSI_3V	PIN_28	GND
PIN_14	CON_SPI_CLK_3V	PIN_29	USB_D+
PIN_15	DVP_2V_VS	PIN_30	USB_D-

4. Communications Protocol

4.1. Portable thermal imaging device

Users can connect mobile phones or other intelligent devices through micro USB, Then, use APOLLO DEMO APP to obtain thermal map and basic temperature data (tracking display of center point, maximum temperature point and minimum temperature point of full screen).

App's Name: ShineX

Basic functions include:

1. Manual shutter correction
2. Image shooting and video recording
3. Color plate: 9 modes
4. Image flip: up and down, left and right
5. Temperature measurement: tracking display of the center point, the highest temperature point of the full screen and the lowest temperature point of the full screen
6. Brightness / contrast / detail enhancement
7. Manual temperature compensation
8. The input interface of target response rate, ambient temperature, distance, humidity and other parameters



Figure 6 ShineX interface

4.2. Real time full screen temperature measurement

In the scene where the human body temperature needs to be detected quickly, such as stations, security checkpoints, hospitals, etc. User can monitors temperature of



multiple areas through full screen temperature measurement by deploying the APOLLO ShineX Series module.

This solution needs to use the SDK provided by Median company to complete the interface development and module integration.

Full screen temperature measurement and dual light fusion scheme is as follows:

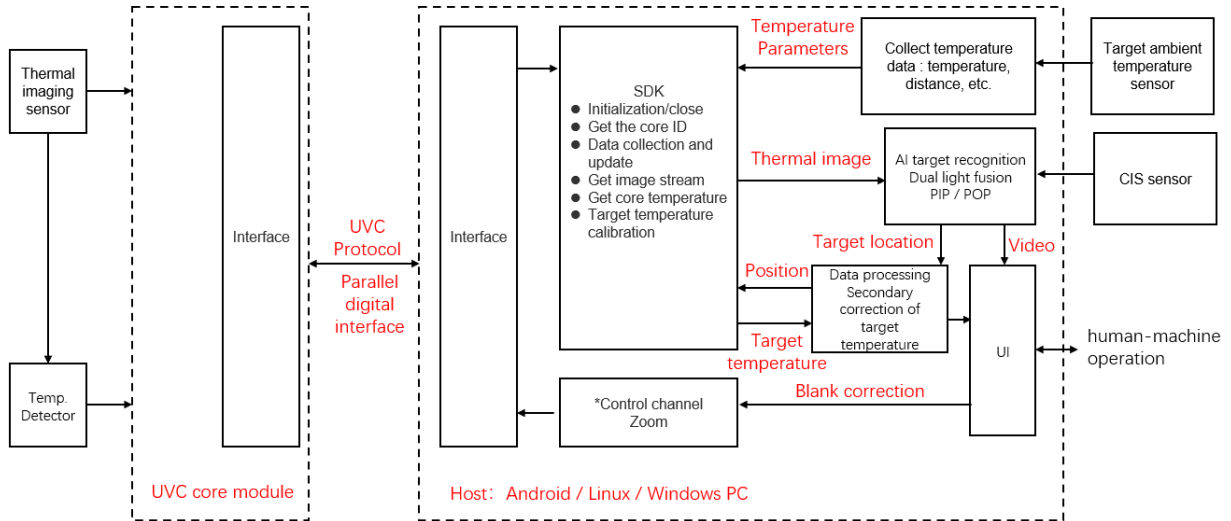


Figure 7 Full screen temperature measurement and dual light fusion scheme

There are some suggestion of using SDK provided:

1. The temperature of the target region is suggested to take the original value of 3×3 region, then filter by median and other parameters. Finally, do the temperature conversion. In addition, you can add the extreme value judgment to avoid the phenomenon of non-value.
2. It is suggested to add the LOG storage function in the upper computer software to facilitate the later tracin.