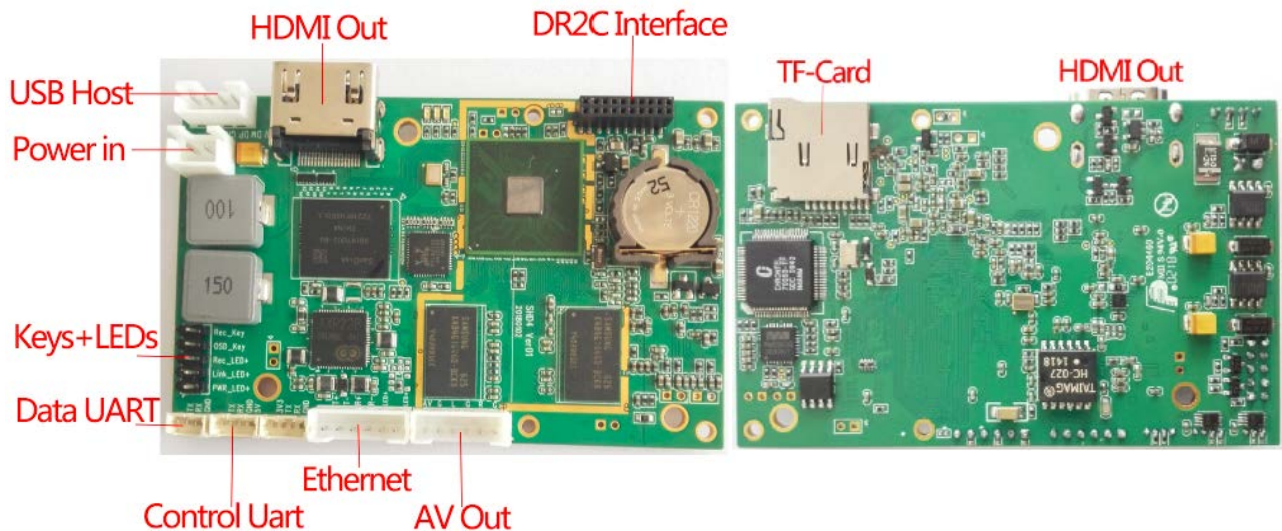# SHD4 video decoder board

-- H.264 video decoder, high definition output up to 1920*1080@60

-- Ethernet input, HDMI+AV output

-- Audio codec with audio output

-- Video record with Micro SD card or USB disk

-- Web UI or uart for management

-- The normal video latency is about 200ms when paired with Sihid encoder module

-- Support proprietary H.264 video decompression only used p-frames for lowest latency as 50ms to 130ms

SHD4 video decoder board implements H.264 video decoding and audio codec, the video stream input via Ethernet is decoded and sent to display via HDMI and AV interface. The SHD4 decoder board features a range of comprehensive signal outputs including HD video at 1080P/720P, down-converted HD CVBS monitor video, and two analog audios is supported. SHD4 baord includes DVR record functionality with Micro SD card or USB disk using record switch controls. Additionally, the SHD4 board supports a built-in RTSP sever that enables video streaming over Ethernet for remote software or hardware decoders(option). This board is in compact size and suitable for embedded application and real time live video monitor via wireless link or Ethernet.

Specification:

IO

HD video output	HDMI type A connector
Composite video output	6PIN PH2.0mm connector
Audio output	Embedded HDMI and 6PIN PH2.0mm connector
Power in	2PIN PH2.54mm connector
USB Host	4PIN PH2.0mm connector
Keys+LEDs	Extension port for assemble keys and LEDs on necessary
3.3V TTL data uart	3PIN PH1.25mm connector
3.3V TTL control uart	4PIN PH1.25mm connector
TF-Card	TF-Card slot
Ethernet	6PIN PH2.0mm connector

Video and Audio

Video output	HDMI and CVBS
Video formats	1080P or 720P 720*480 60I(NTSC), 720*576 50I(PAL)
Video Decoding	H.264
Audio output	Embedded HDMI and AV audio
Audio Decoding	AAC
Decryption	AES256
Storage	USB disk or micro SD card
Ethernet stream protocol	Support UDP TS stream decoding, RTSP client decoding, RTSP server forward

Monitoring and control
Web UI or control uart.

Temperature range
Full specification: 0° to +70°C Ambient (Optional: -40° to +85°C)
Storage: –40° to +85°C

Physical Characteristics
Dimensions: 80.4 * 50.8mm(not including connectors out of the board)
PCB thickness: 1.2mm, maximum height of up components less than 7mm, maximum height of bottom less than 2.5mm.
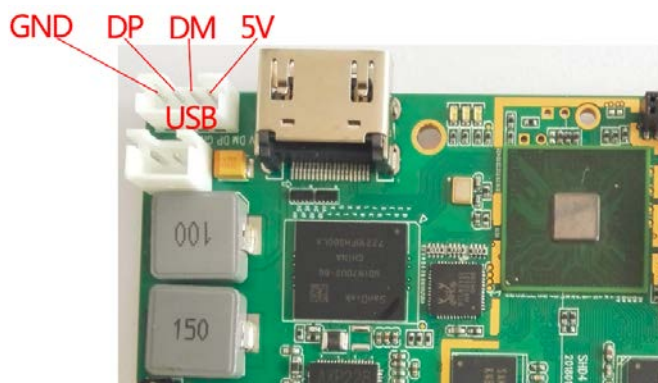Weight: 27.3g

Power requirements
Input range: 9~30VDC
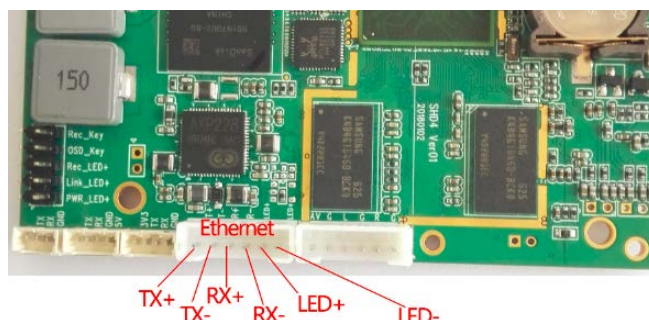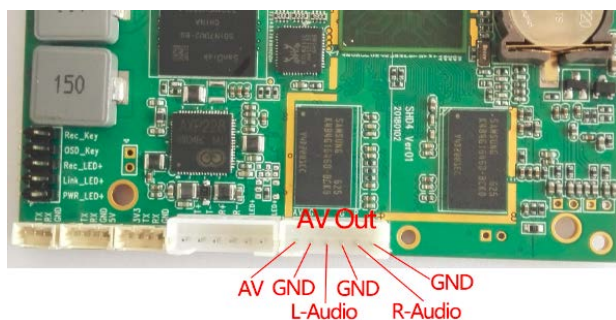Power consumption: <250mA@12V

I/O signals:

Power in and USB Host
The power input interface is a 2PIN PH2.54mm connector. The USB host is a 4PIN PH2.0mm connector.
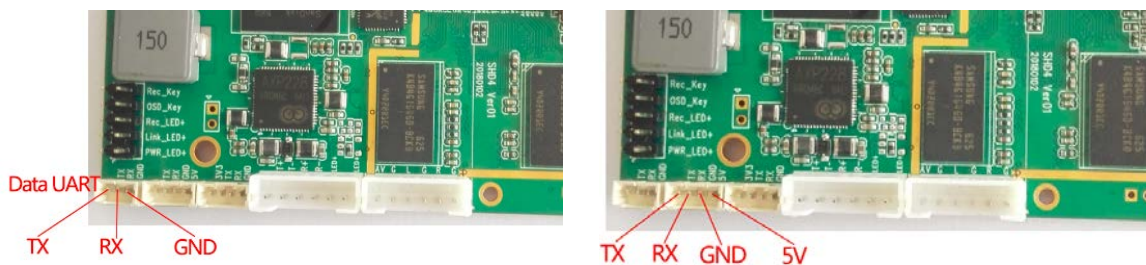

AV out and Ethernet

The AV out is a 6PIN PH2.0mm connector. The Ethernet port is a PH2.0mm connector, 100M ethernet port. SHD4 baord supports UDP TS video stream decoding, RTSP client decoding, and also RTSP server forward.

Data-uart and control-uart

Data uart: 3PIN PH1.25mm connector, TTL 3.3V. When SHD4 board works paired with Sihid video encoder module (SUE1, SUE2, SUE3, SUE5, SUE5SA, etc.) and Ethernet linker (wireless or wire), the uart data of the encoder module will be transferred to this uart.

Control uart: 4PIN PH1.25mm connector, TTL 3.3V. The SHD4 board system can be set-up via this control uart with AT command.

LEDs and Keys
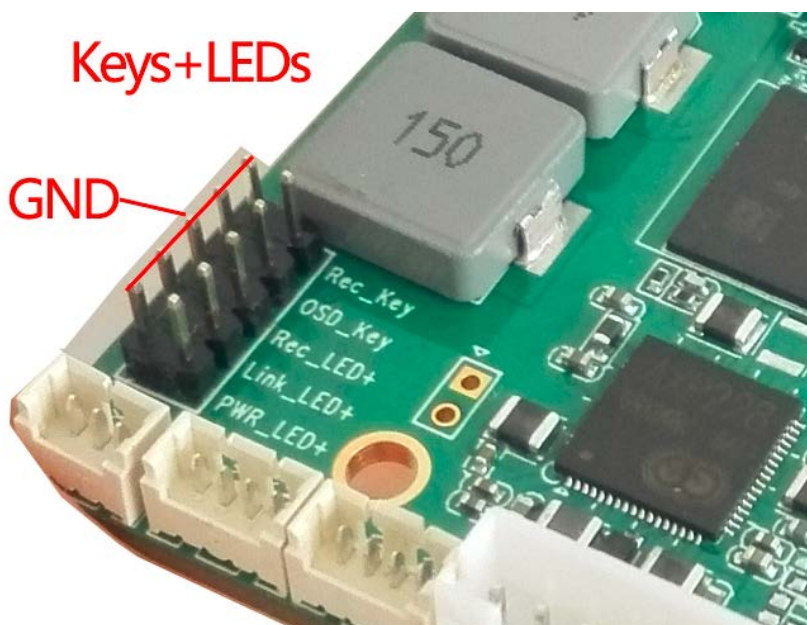
The extension port is designed for assemble keys and LEDs on necessary, it's a 2.0mm 5*2PIN connector, please view the PCB silk printing for its' signals(as the photo above).

LED	Description
Power-LED	Light on when SHD4 board is normal powered
Video-LED	Blinks when video stream is normal received and decoding
Record-LED	Light on when video is being recorded with USB disk or TF card

OSD_key
OSD key: turn on/off the status of the OSD displaying, long press it to switch(more than 1s). the status will be kept after reboot. When the OSD status is on without any OSD data input from the data uart, the system will display video information (video bitrates, etc.) on the video screen. When the OSD status is on with data input from the data uart, the system will display text information of the uart data on the video screen.

Rec_Key
Record key: switch button for video recording, short press to change its' status. The system will automatically check the storage device(TF card or USB disk, priority TF card) after power on and start to record video when the storage device is inserted. Just press the button to stop or record again.