



LCD Display Controller Board Engineer Specification V1.1

Model Name	KEC-SCM07 V1.1
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Release Version	V1.1

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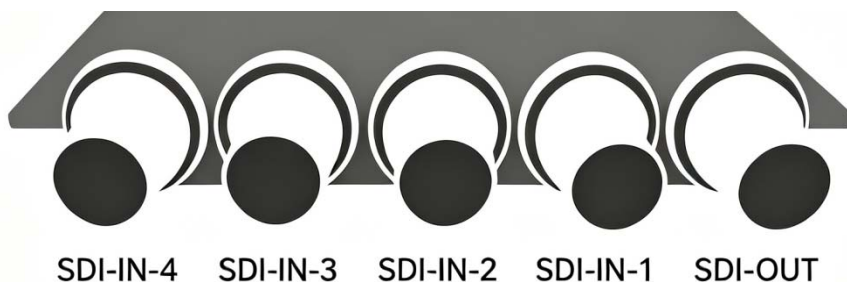
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Revision History

Revision	Date	Page	Description	Author
1.1	2026-09-14	All	First issued.	

1.Features

- ✚ Resolution up to 4K-UHD@60fps
- ✚ 4-channel 3G-SDI receiver (BNC1~BNC4), support Quad 3G-SDI mode, support SQD/2SI pixel mapping
- ✚ Support Single(SDI-IN-1) / Quad(SDI-IN-1~SDI-IN-4) 12G-SDI mode;
- ✚ SDI-IN-1 Bypass Mode, Single mode 4K-UHD@60fps
- ✚ 1-channel SDI loop-back output
- ✚ 1-channel HDMI output , output 4K-UHD video
- ✚ I2S IN / I2S OUT audio interface
- ✚ system MCU for host control, key & LED status indication
- ✚ FPGA firmware storage, Master-SPI boot mode
- ✚ JTAG debug port, UART debug serial port
- ✚ Fan control interface (max 200mA driving capability)
- ✚ Wide DC input voltage: +8V ~ +20V
- ✚ On-board clock generator provide reference clock for FPGA GTH transceivers

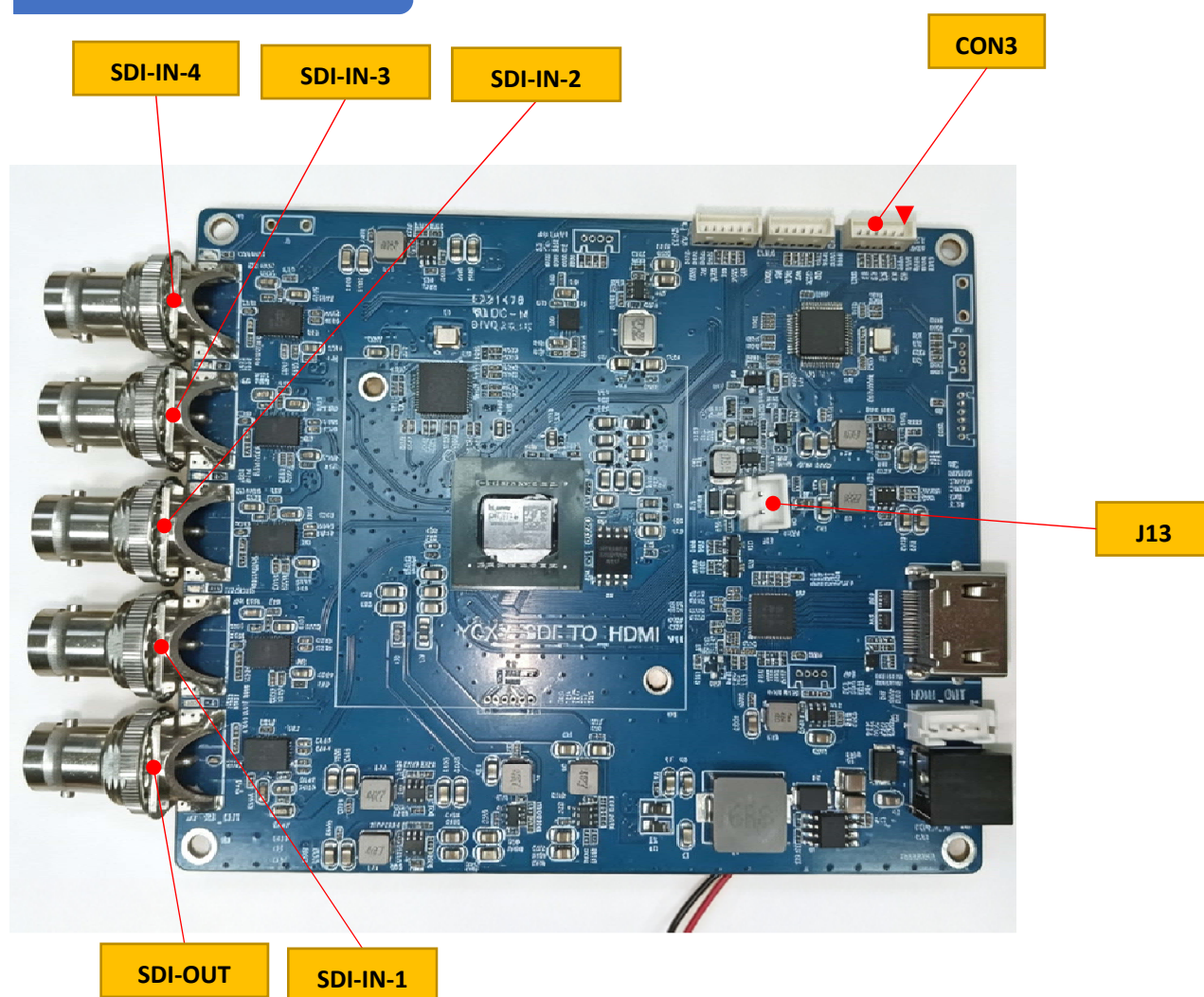


*: Single-port 12G-SDI input via SDI-IN1; support regenerated 12G-SDI loop-out on SDI-OUT and 4K-UHD video output on HDMI-OUT simultaneously.

2.Specification

Chipset	Xilinx AU10P-1		
Target Market	Medical and Broadcasting Applications		
Video Input	SDI	4-CH 3G-SDI BNC Input; Support Quad-Link 3G-SDI (SQD/2SI); SDI-IN1 supports 12G-SDI input	
Video Output	SDI	1-ch SDI BNC output; 2-SDI-OUT supports regenerated 12G-SDI loop-out	
	HDMI	19P Type-A, max resolution 3840×2160@60Hz	
Power	Power Input	+8V~+20V DC	
	Normal Consumption	≥8.3W	
Special Function	Chip	SDI Operation Mode	Support Single/Quad-Link 3G-SDI mode
		SDI1 Bypass Mode	
		System Control	STM32L071CB for key; LED and I2C configuration
		Debug Interface	JTAG, UART debug port
		Fan Driver	Fan control output, max 200mA driving current

3.Function Layout



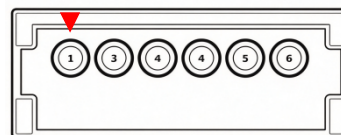
Position No	Description	Encapsulation
COM3	SDI Lock Status	PH1.25 6P
J13	Fan connector	PH2.50 2P
SDI-IN-4	supports 3G-SDI signal	BNC Right Angle
SDI-IN-3	supports 3G-SDI signal	BNC Right Angle
SDI-IN-2	supports 3G-SDI signal	BNC Right Angle
SDI-IN-1	supports 3G-SDI / 12G-SDI signal	BNC Right Angle
SDI-OUT	supports 3G-SDI / 12G-SDI signal	BNC Right Angle

4.Interface Definition

4.1 SDI Lock Status

Location – CON3: 6P wafer pitch = 1.25mm

Pin assignment and definition:



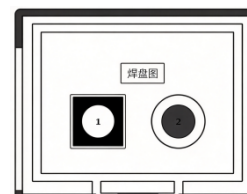
Pin No.	Symbol	Description
1	K5	SDI4 lock status output:High=Locked, Low=Unlocked.
2	K4	SDI3 lock status output:High=Locked, Low=Unlocked.
3	K3	SDI2 lock status output:High=Locked, Low=Unlocked.
4	K2	SDI1 lock status output:High=Locked, Low=Unlocked.
5	K1	NC
6	GND	Ground

4.2 Fan Connector

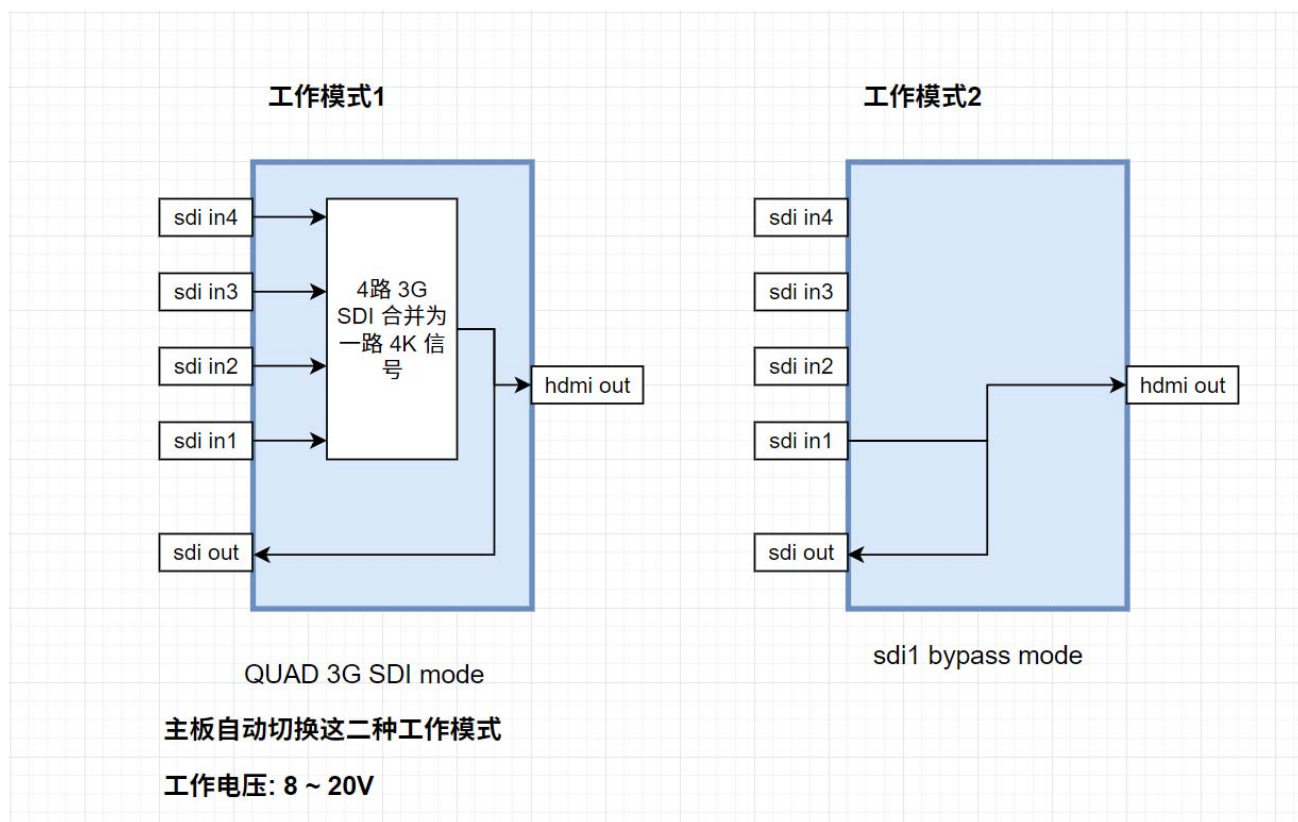
Location – J13: 2P wafer pitch = 2.50mm

Pin assignment and definition:

Pin No.	Symbol	Description
1	GND	Ground
2	VIN	+12V output



5.Work Mode



Mode 1: 4-CH 3G-SDI Quad Split to 4K

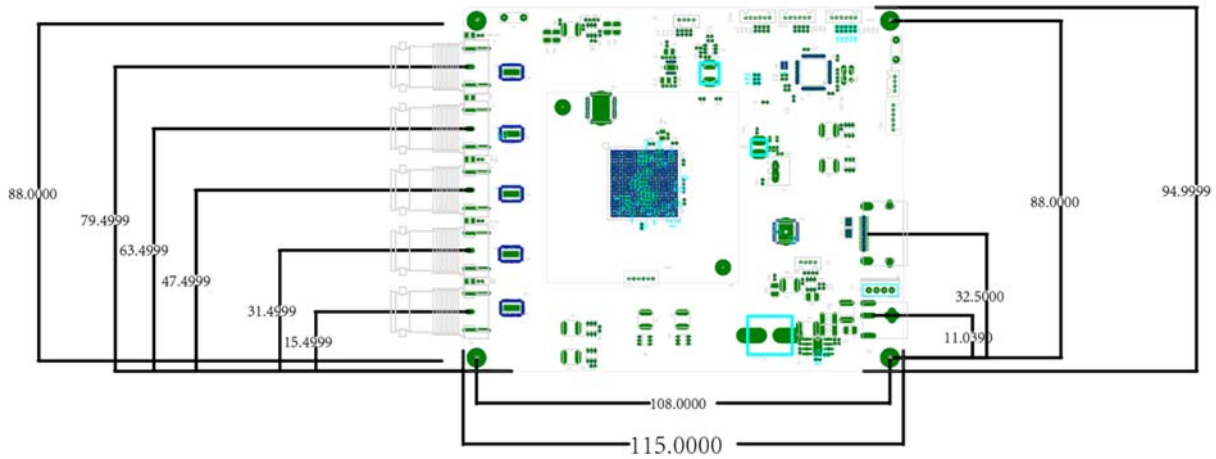
The device accepts 4-channel 3G-SDI inputs, integrates and merges them into one 4K video signal, and outputs dual synchronous signals via SDI and HDMI interfaces simultaneously.

Mode 2: 1-CH 12G-SDI Pass-through

The device supports single-channel 12G-SDI input with pass-through processing. The original signal is output synchronously through both SDI and HDMI dual interfaces without transcoding loss.

The mainboard automatically switches between the two operating modes.

6. Mechanical Dimension



PCB Dimension

- PCB Length = 115.0mm
- PCB Width = 95.0mm
- PCB Thickness = 1.6mm
- PCBA(PCB + Component) Thickness $\leq$ 16.0mm
- Screw Hole Diameter = 3.5mm

7.Configuration and Precautions

6.1 Temperature

 Storage: -20°C~+80°C

 Operation: 0°C~+80°C

8.Key Materials List

No.	Part Number	Function Description	Vendor
1	AU10P-1	FPGA	Xilinx
2	MP1471AGJ	DC-DC	MPS
3	STM32L071CB	MCU	ST
4	W25Q128	FLASH	Winbond
5	PCB	1.6mm FR-4 E=4.2 ±10% 4-Layers 1.0oz 115.0x95.0mm	BYF