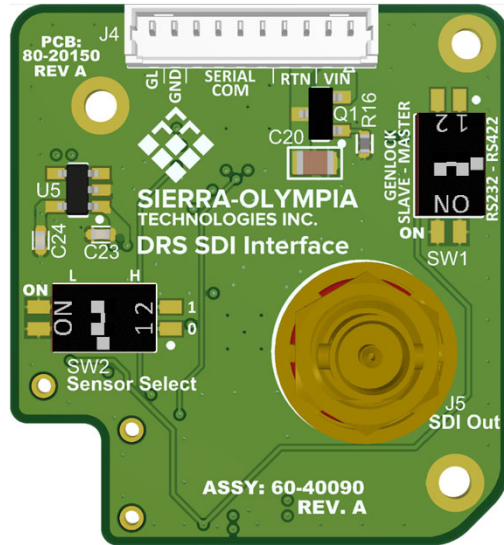


NOTES:

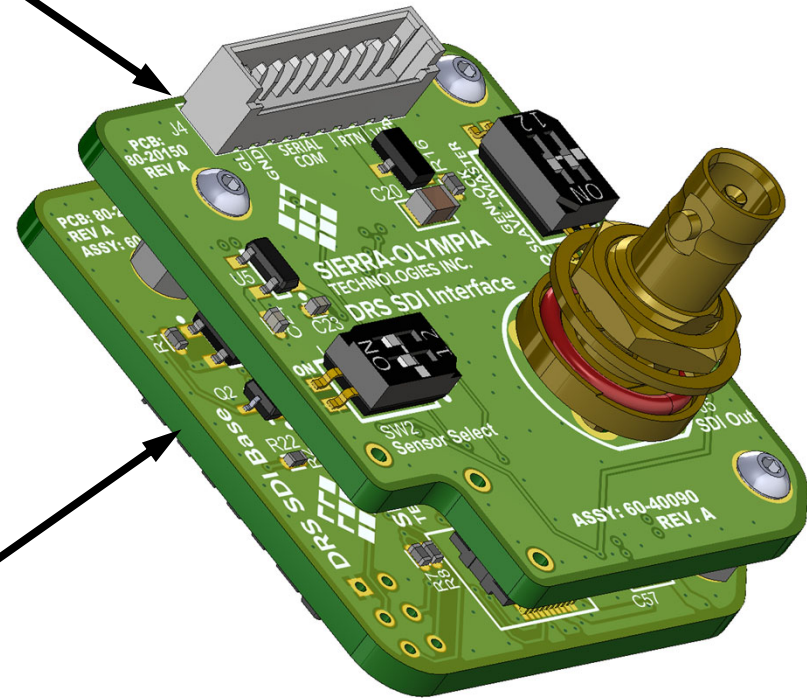
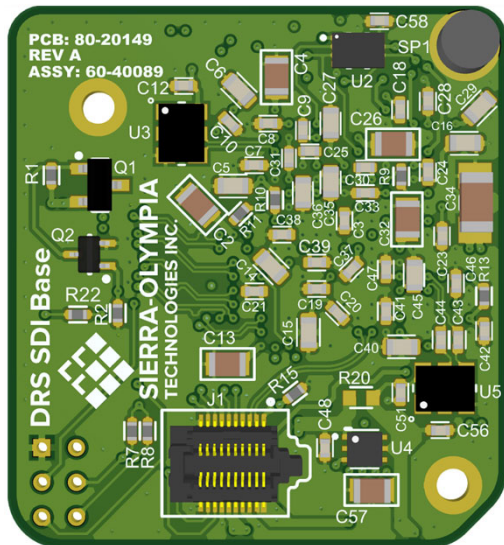
1. Mating connectors, pinouts, and signal names on Sheet 3.
2. Observe ESD precautions while handling.
3. System could be used in an OEM configuration by removing the upper interface board. For more information, reach out SOTI Engineering.


| REVISIONS | | | | |
|-----------|-----------------|------|------------|------|
| REV | DESCRIPTION | ECO | DATE | Eng. |
| A | Initial Release | 1756 | 2024-05-16 | GO |

DRS SDI Interface Board
(upper PCA in stack)




DRS SDI Base Board
(lower PCA in stack)




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| N T S | Drawn: G. Ogden | SHEET 1 OF 6 |

NOTES:

4. LEGEND:  Position 1 indicator

 Changes to SW1 take immediate effect.

 SW2 Configurations on Page 4.

SW1 - CONFIGURATIONS

SW1-1 – Serial Com

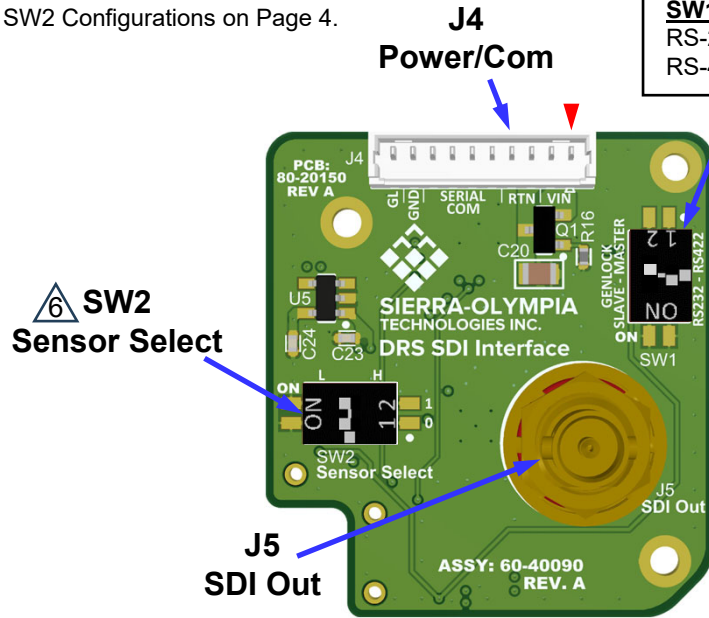
RS-232 (default)
RS-422

SW1-1 ON
SW1-1 OFF

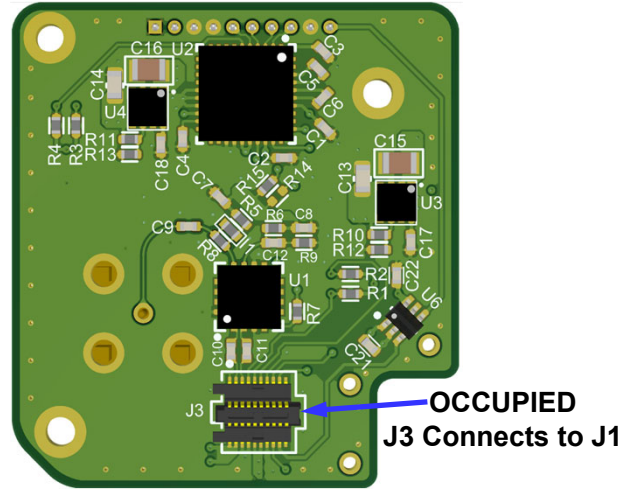
SW1-2 – Genlock Control

Slave
Master (default)

SW1-2 ON
SW1-2 OFF

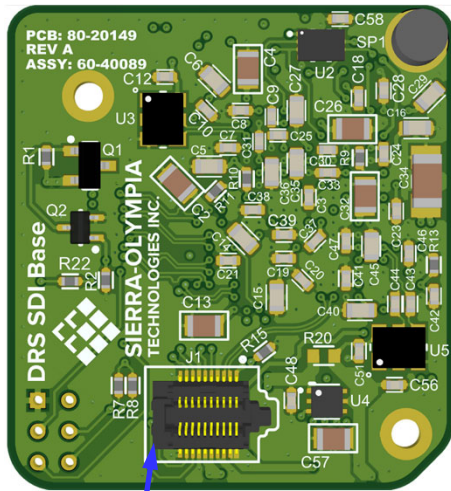


Board Top

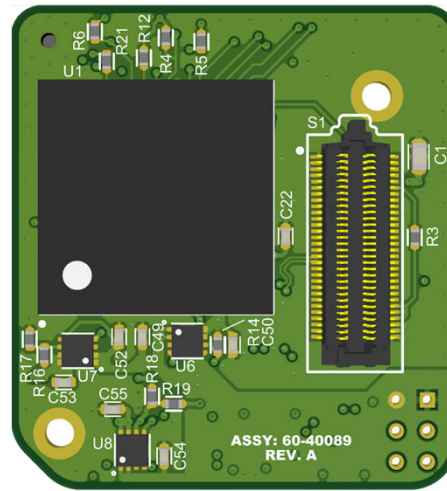


Board Bottom

DRS SDI Interface Board DRS SDI Base Board



OCCUPIED
J1 Connects to J3



S1
DRS SENSOR
CONNECTOR

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SHEET 2 OF 6

NOTES:

7. RX indicates input to camera from external system.
TX indicates output from camera to external system.
8. Exceeding Max Ratings could cause damage to components.

J4 - Power/Com

Molex PicoBlade 10-pin, 1.25mm pitch
 Mating connector housing: Molex 0510211000
 Connector terminals: Molex 0500588000 (28-32 AWG)

Suggested Mating Cable: Molex 2181121004

| Camera Model | Steady State Power @12Vin | Momentary Peak Power (Shutter) |
|--------------|---------------------------|--------------------------------|
| Tenum 1280 | 4.1W | 7.7W for 100ms |
| Tenum 640 | 3.1W | 8.3W for 100ms |

NOTE: In an enclosure, stirred air is recommended.

| Position | Name | Max Rating |
|----------|----------------------------|----------------|
| 1 | 12 VDC Nominal Input Power | 5.0 - 17.0 VDC |
| 2 | | |
| 3 | Input Power Return | |
| 4 | | |
| 5 | TX_422_P | +/- 5V Nominal |
| 6 | TX_422_N / TX_RS232 | +/- 12.5V Max |
| 7 | RX_422_P | +/- 25V |
| 8 | RX_422_N / RX_RS232 | |
| 9 | Ground | |
| 10 | 3.3V Genlock IO | 0 - 5.5V |

| | |
|---------------------------|---------------------------------|
| Genlock Direction: | Genlock Input Threshold: |
| Master Mode - Output | $V_{IL} = 0.8V$ |
| Slave Mode - Input | $V_{IH} = 1.7V$ |

UART Settings: 57600 8-N-1

For available DRS UART commands, see the DRS SW ICD:

1031753_Tenum 640 Software ICD
 1040046_Tenum 1280 Software ICD

* Connecting to the DRS Camera Control Software will change the camera settings, and the image may not look correct. The settings will be corrected when the camera is power cycled.

SOTI specific UART commands listed on Page 6.

J5 - SDI Out


HD-BNC Connector

Suggested Mating Cable: Amphenol 095-850-218-072

SMPTE 292M, 1.485GHz HD-SDI, 75Ω impedance.

Output image mapping for the different sensors is pictured on page 5.

| Camera Model | SMPTE ST | Supported Modes |
|--------------|-----------|-----------------|
| Tenum 1280 | 274M:2008 | 1080p30 |
| Tenum 640 | 296:2012 | 720p60/30 |

| | | |
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| N T S | | SHEET 3 OF 6 |

Sensor Select Switch Definition

SW2 - Sensor Select

SW2 has different function depending on the sensor attached. Switch settings are sampled at startup. Changes made during operation require a reset to take effect.

NOTE: Because HD-SDI is always a YUV422 format, the data presented on the SDI output will always be YUV422. The sensor select switch changes what the sensor outputs, 8-bit or YUV. In 8-bit mode you are limited to white-hot/black-hot, but YUV allows the user to select between the different DRS color palettes, including white-hot/black-hot.

Tenum 640 function:

While in Genlock Master:

| SS[1:0] | Function |
|---------|--------------------|
| 00 | 60Hz Output, YUV |
| 01 | 30Hz Output, YUV |
| 10 | 60Hz Output, 8-bit |
| 11 | 30Hz Output, 8-bit |

While in Genlock Slave:

| SS[1:0] | Function |
|---------|----------|
| 0X | YUV |
| 1X | 8-bit |

Tenum 640 with P2 processor is usable only in 8-bit modes.

Selecting YUV on a P2 processor will result in no output video.

Tenum 640 with P3 processor is usable in any mode.

The part number tells if the sensor is a P2 or a P3. P2 has a 0 in the sixth digit after the dash, and P3 has a 1. For example:

P3 PN = 1027621-0110610

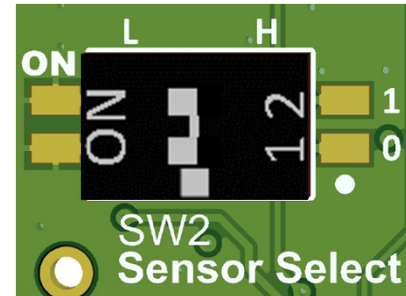
P2 PN = 1027621-0110600

SW2 function not yet defined for Tenum 1280. Changing the switches has no effect; the sensor is always in YUV output.

Switch Position

ON = OFF =
Logic 0 Logic 1

← →



Switch Number Mapping Sensor Select - SS[1:0]

2 = SS[1]

1 = SS[0]

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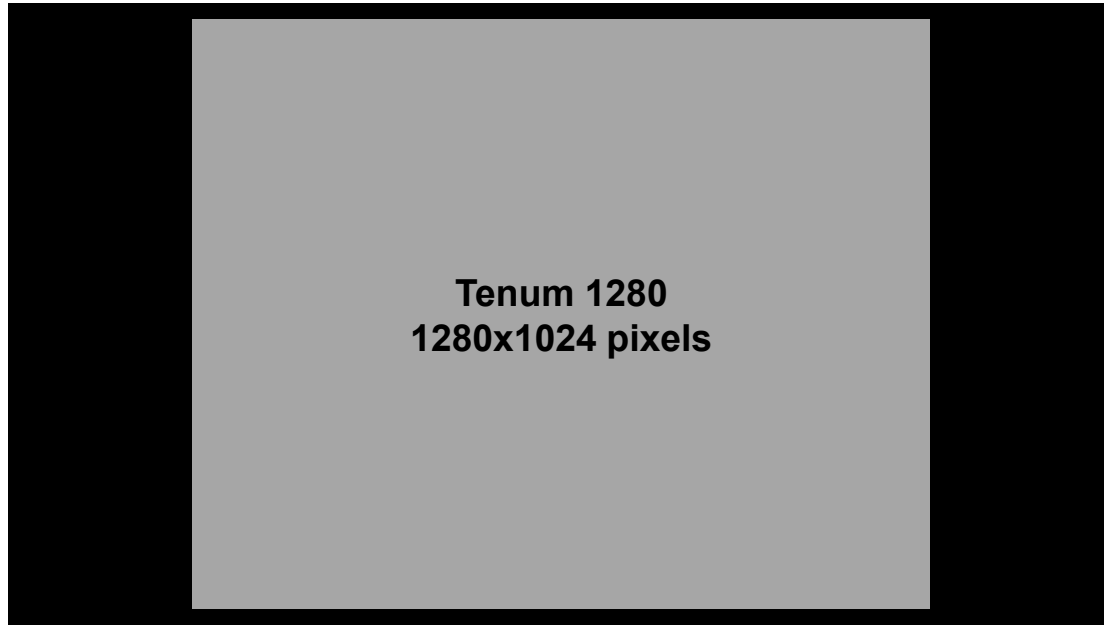
Document Rev: **A**

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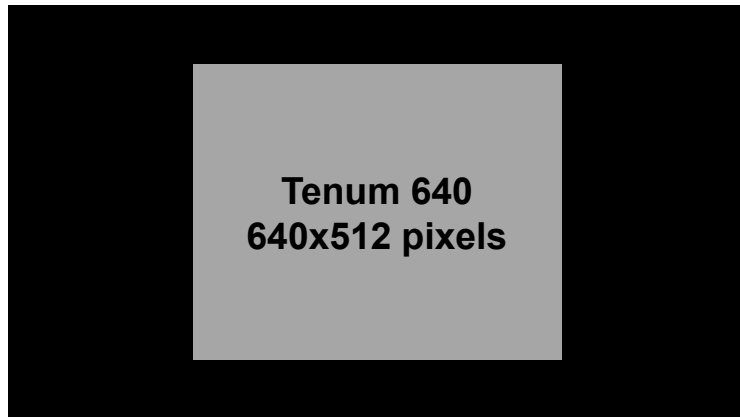
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SHEET 4 OF 6


Output Image Mapping



SMPTE 274M 1080p
1920x1080 pixels
 Image to the left depicts a Tenum 1280 frame centered in a 1080p frame with black borders.



SMPTE 296 720p
1280x720 pixels
 Image to the left depicts a Tenum 640 frame centered in a 720p frame with black borders.

| | | |
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SOTI UART Commands

The SOTI FPGA has a limited UART command set, and shares the same UART as the sensor. All of the FPGA commands follow the format "soti-xxxx." The values and descriptions of "-xxxx" are listed below. These commands are ignored by the sensor.

The commands can be in all lower case or all upper case (i.e. soti-xxxx or SOTI-XXXX), but mixed case is not valid. Format of the end of line characters on the transmit message does not matter. An invalid command will result in no reply from the FPGA.

All reply messages end in an ASCII Line Feed character (0x0A).

-vers (-VERS)

Prints out the SOTI FPGA build version.

FPGA Version : <xx.xx.xxxx>

-info (-INFO)

Prints out the SOTI FPGA build version and timestamp of the build, along with details reflecting the sensor attached and the state of the SW1 and SW2 switches:

FPGA Version : <xx.xx.xxxx>

Timestamp: <MM-DD-YYYY, HH:MM>

Sensor : <Tenum 640 or Tenum 1280>

Genlock Mode : <Master or Slave>

Frame Rate : <30Hz or 60Hz>

Pixel Format : <YUV422 or 8-bit Mono>

-srst (-SRST)


Performs a reset of the system. This is useful if you change the SW2 states and want to update with the changes.

-tpen (-TPEN)

Enables the SMPTE RP 219:2002 720p60 Test Pattern on the SDI output.

-tpds (-TPDS)

Disables the Test Pattern on the SDI Output.

| | | |
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