FEATURES

- sCMOS Evaluation Kit
  - BAE / Fairchild Imaging sCMOS
  - XGA 1280x1024 (CIS1210)
  - HD 1920x1080 (CIS1910)
  - 6.5 Micron square pixel
  - Rolling / Global Shutter
- Integrated TE Cooling
  - 10 Deg. C below ambient
  - Temperature stabilization only ± 0.1 ℃
- Integrated Digital Signal Processing
  - Utilizes MityDSP technology
  - Can be customized for application specific processing
- Interface Options
  - USB 2.0
  - 100 Mbit Ethernet
- Programmable General Purpose I/O
  - Use as trigger inputs or drive as shutter / frame strobes

APPLICATIONS

- Embedded Instrumentation
- Low Light Imaging Applications
- Portable Scientific Instrumentation
- Astronomy

Figure 1: MityCAM-CIS1210/CIS1910 (Enclosed Body)

DESCRIPTION

The MITYCAM vision development kit from Critical Link features the Fairchild Imaging high performance sCMOS image sensors from BAE Systems. Detailed datasheets regarding the sensor performance curves for sensitivity, well depth, quantum efficiency and dark current, etc. may be located on the manufacturer's website ([2]). The kit is available with an HD or XGA type device.

Combined with Critical Link's MITYCAM acquisition electronics and Vision DK software tools, the MITYCAM vision development kit makes the sensor evaluation process quick and easy.

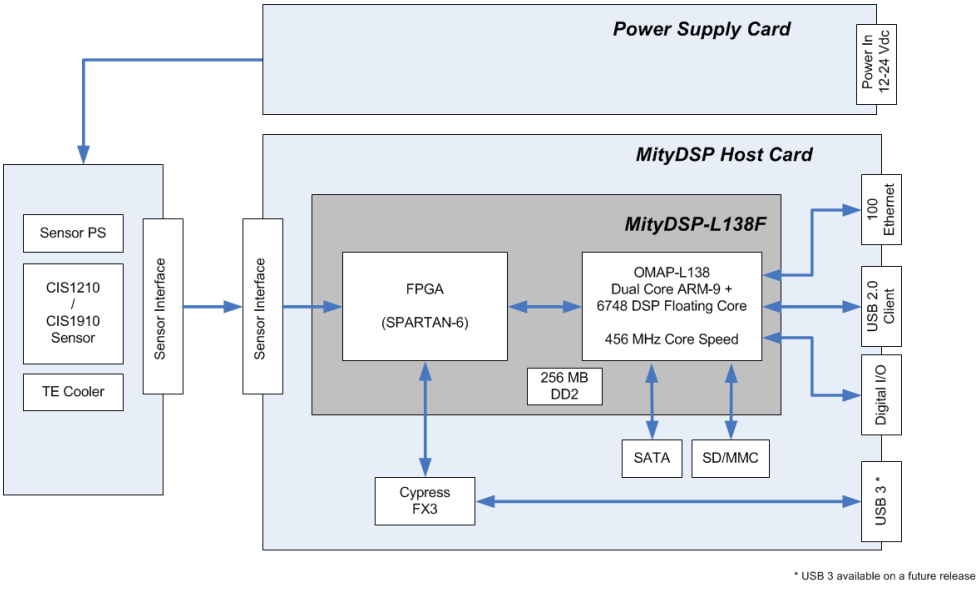


Figure 2: MityCAM-CIS1210/CIS1910 system diagram.

Critical Link, LLC
6712 Brooklawn Parkway
Syracuse, NY 13211
PHONE 315.425.4045
FAX 315.425.4048
www.CriticalLink.com

TECHNICAL SPECIFICATIONS

A summary of the imaging performance of the MityCAM-CIS1210/CIS1910 family of cameras is included below.

PERFORMANCE

	Min	Typical	Max	Units
Active Pixels (CIS1210)	-	1280x1024	-	H x V
Active Pixels (CIS1910		1920x1080		H x V
Pixel Size	-	6.5 x 6.5	-	W x H ; µm
Imaging Area (CIS1210)	-	8.32 x 6.65	-	W x H ; mm
Imaging Area (CIS1910)	-	12.48 x 7.02	-	W x H ; mm
Gain, Setting – High Gain Channel		30x		
Gain, Setting – Low Gain Channel		1x		
ADC resolution (dual channel output)	-	2 x 11	-	bits
Readout Noise @ 75 MHz, Gain 1 / 2	-	tbd	tbd	e^-
Dynamic Range, Gain 1 / 2	-	tbd	-	
Readout Rate[1]		75		MHz
Full Frame Rate (Rolling Shutter)[1]	-	25	-	Frames / s
Full Frame Rate (Global Shutter)[2]	-	15	-	Frames / s
Cooling capability below ambient[3]	-	5	10	℃
Power Utilization[4]	-	tbd	tbd	Watts
Power Input[5]	12	18	24	V DC

Table 1: MityCAM-CIS1210/CIS1910 performance.

Notes:

1 – The frame rate for rolling shutter mode is 25 frames / sec when streaming data into the on-board memory. This frame rate is for a CIS1210 sensor with full region of interest (1280x1024) and is limited by on board memory to 35 frames. Higher frame rates are achievable by reducing the vertical region of interest (i.e. reducing the number of rows increases the frame rate). The frame rate for a CIS1910 sensor is 12 frames / sec and the maximum number of frames is 17.

2 – The frame rate for global shutter mode is 15 frames / sec when streaming data into the on-board memory. This frame rate is for a CIS1210 sensor with full region of interest (1280x1024) and is limited to 17 frames. Higher frame rates are achievable by reducing the vertical region of interest. The frame rate for a CIS1910 sensor is 6 frames / sec and the maximum number of frames is 8.

3 – Single stage TE cooler provides temperature stability 5 ~ 10 Deg. C below ambient. See page 3 on precautions when using the integrated TE Cooling.

4 – Power utilization when TEC not operational is < 2 W.

5 – The camera must be powered by the MityCCD-PS power supply assembly, which uses a 12-24 DC input in order to generate all necessary voltages to run the camera.

Critical Link, LLC PHONE 315.425.4045
6712 Brooklawn Parkway FAX 315.425.4048
Syracuse, NY 13211 www.CriticalLink.com

QUANTUM EFFICIENCY

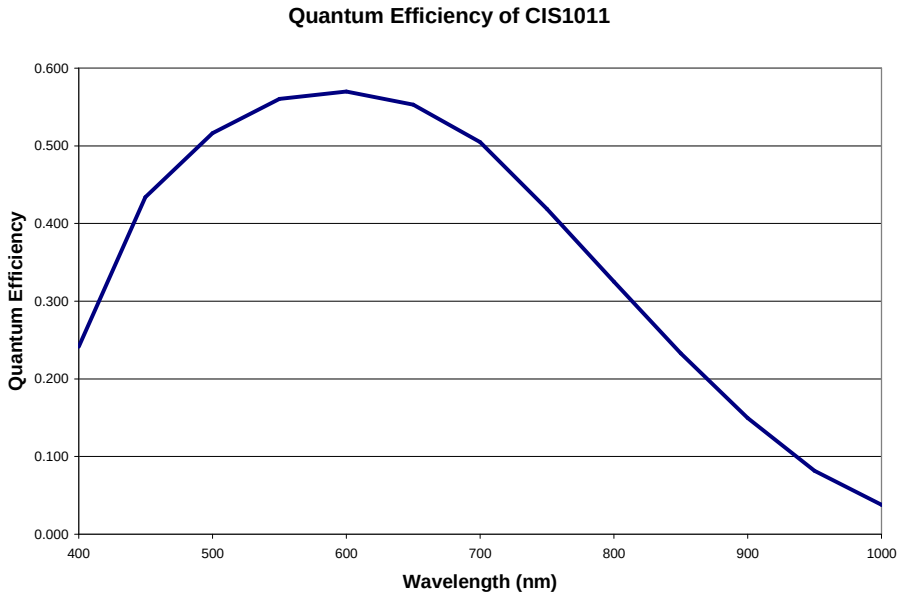


Figure 3: Spectral Response for a CIS1210 Monochromatic Sensor ([1])

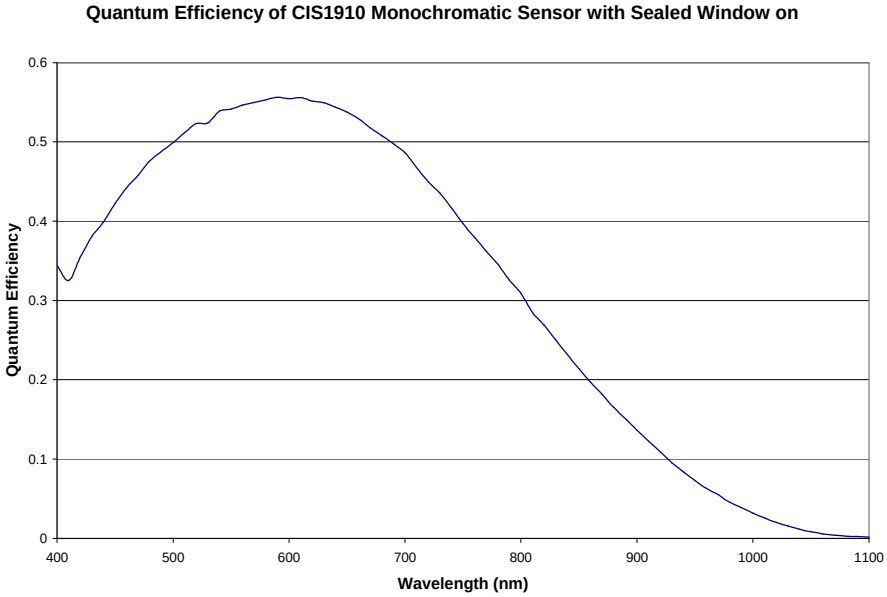


Figure 4: Spectral Response for a CIS1920 Monochromatic Sensor ([1])

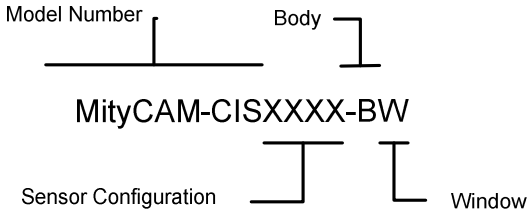
Critical Link, LLC PHONE 315.425.4045
6712 Brooklawn Parkway FAX 315.425.4048
Syracuse, NY 13211 www.CriticalLink.com

OPERATING AND STORAGE CONDITIONS

Ambient Temperature Range	0 ℃ to 50 ℃
Humidity	< 80%, Non-Condensing
Storage Temperature Range	-40 ℃ to 55 ℃

Table 2: MityCAM-CIS1210/CIS1910 Operating and Storage Conditions

ORDERING INFORMATION



Model Number	Description
MityCAM-CIS	MityCAM sCMOS Dev. Kit

Sensor Config.	Description
1210	1280 x 1024
1910	1920 x 1080

Body	Description
C	Enclosed Body

Window	Description
E	Sealed Window

Additional Notes:

1. *A MityCAM-CIS1210/CIS1910 camera also requires a software package. For more information contact Critical Link, LLC for details.*
2. *A MityCAM-CIS1210/CIS1910 camera can be ordered with optional accessories. For more information contact Critical Link, LLC for details.*

PRECAUTIONS

WARNING: The sCMOS sensor and thermoelectric cooler (TEC) are not housed in a vacuum chamber; therefore great care must be taken when operating the TEC as condensation may occur. Critical Link recommends maintaining the sensor at 5 deg. C below the **sensor's** ambient temperature. Contact Critical Link if condensation appears on the senor

Critical Link, LLC
6712 Brooklawn Parkway
Syracuse, NY 13211
PHONE 315.425.4045
FAX 315.425.4048
www.CriticalLink.com

EXTERNAL DIMENSIONS

Unless otherwise noted, all dimensions are in mm [inches].

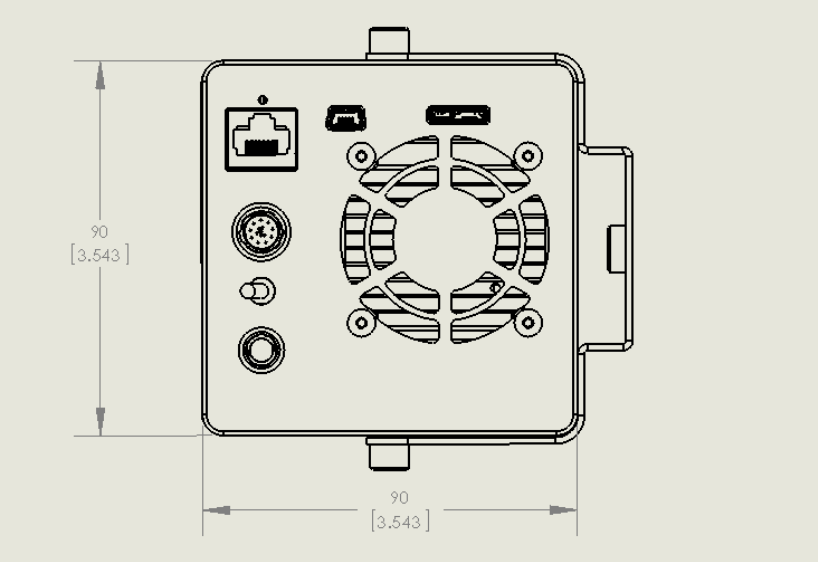


Figure 5: Enclosed Body, Back View.

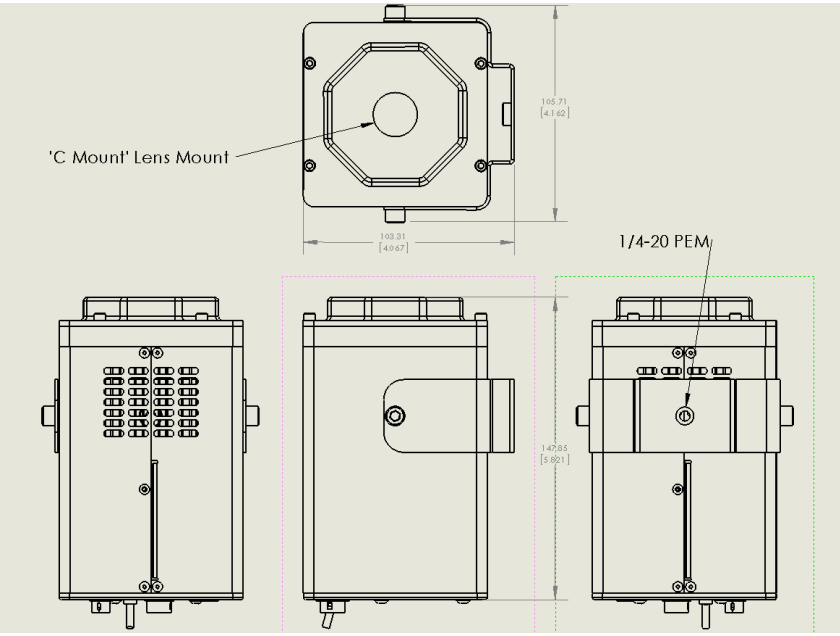


Figure 6: Enclosed Body with 'C' Mount Lens Mount - Side View

Critical Link, LLC
6712 Brooklawn Parkway
Syracuse, NY 13211
PHONE 315.425.4045
FAX 315.425.4048
www.CriticalLink.com

ELECTRICAL CONNECTIONS

The development kit has the following electrical connections on the back panel.

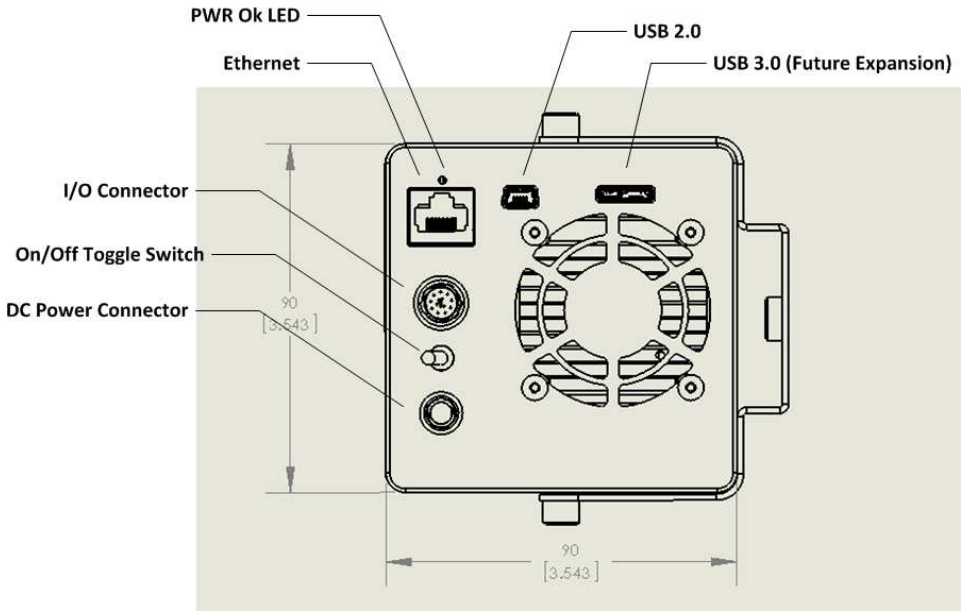


Figure 7: Input / Output Connections on Back Panel.

Critical Link, LLC
6712 Brooklawn Parkway
Syracuse, NY 13211
PHONE 315.425.4045
FAX 315.425.4048
www.CriticalLink.com

DC Power Connector

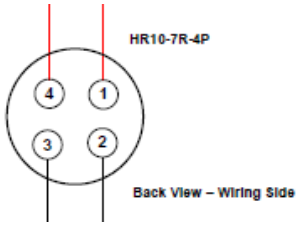


Figure 8 - DC Power Connector (Rear View)

Pin	I/O	Description
1	PWR	+12 – 24 VDC
4	PWR	+12 – 24 VDC
2	GND	Ground
3	GND	Ground

Table 3: Input power connector pin out.

I/O Connector

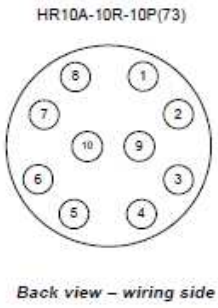


Figure 9 - I/O Connector (Rear View)

Pin	I/O	Description
1	I/O	General Purpose TTL I/O 3
2	I/O	General Purpose TTL I/O 1
3	O	+5 Vdc (800 mA Max)
4	I	RS232 RX
5	-	GND
6	-	GND
7	I/O	General Purpose TTL I/O 2
8	I/O	General Purpose TTL I/O 0
9	-	GND
10	O	RS232 TX

Table 4: General purpose I/O connector pin out.

REFERENCES

[1] BAE Systems, “CIS1210 1.3MP XVGA CMOS Image Sensor,” July 2011.
[2] Fairchild Imaging, Available: http://www.fairchildimaging.com. [Accessed: August 15, 2012]

Critical Link, LLC
6712 Brooklawn Parkway
Syracuse, NY 13211
PHONE 315.425.4045
FAX 315.425.4048
www.CriticalLink.com