



PRODUCT LEAFLET

TECHNICAL SPECS

APPLICATION NOTE

X-TREME – the ultimate compact high speed camera for use under the most demanding environmental conditions.

Applications

The X-TREME camera is used in applications where no compromise in regards of camera reliability taking image data under severe environmental conditions is accepted. The self-containing camera is tested according MIL-810, DO-160, MIL 461 standards

Store separation tests – the camera meet and exceeds standard for most airborne applications. Due to its compact size the camera fits in existing installations. The flexible electronic interface grants an easy adaption to existing tests procedures. The camera adapts to the aircraft – not the aircraft to the camera.

UAV / UCAV – Where it is necessary to transmit live data recorded by the camera to the ground station for review X-TREME is ready to integrate into the aircraft telemetry system by the built in Gigabit Ethernet interface (Base 1000/100/10). During transfer the camera can record in the internal memory for up to 8'000 frames /second.

Naval Applications- When a camera is required close to the action where sea water is present X-TREME is the choice. The sealed camera will deliver data where other instruments quit

Why the X-TREME?

Self contain camera- The X-TREME is a self containing camera that reliable works in hot, cold and wet environments. Nothing to worry about the environmental conditions before start collecting image data.

All-in-one concept – Pre-programming of camera in the lab does not make any PC connection necessary to start recording. The video output gives all the required information to adjust the camera on the scene

Designed for its use – Unlike other camera the X-TREME is not just a ruggedized camera but is engineered for working in tough environments. The design with lots of inputs from world wide renowned defence application test engineers was tested by an independent test lab to proof its reliability in the field

Technical specifications

Product type	Digital high speed camera
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Image Sensor	CMOS Progressive Sensor
Image Sensor	Monochrome or color (with Bayer pattern)
Pixel size	12 µm
Dynamic range	8- or 10bit (user selectable)
Sensitivity	ISO 1200 (monochrome), ISO 600 (color)
Image Resolution	1280 x 1024 pixels
Frame rate	500 fps @ 1280 x 1024 pixels
Max. frame rate	8,000 fps
ROI	Free selectable by software
Shutter type	Global electronic shutter
Shutter exposure times	4 µsec to 1/frame rate
Frame synchronization	Sync in, sync out (TTL)
Multi-camera operation	

Image memory	Built-in, DRAM
Image memory type	Circular buffer
Standard capacity	1.3 GB
Optional	2.6, 5.2, 10.4 GB
Sequence length	2 secs @ 1280 x 1024 / 500 fps (1.3 GB image memory) 4 secs @ 1280 x 1024 / 500 fps (2.6 GB image memory) 8 secs @ 1280 x 1024 / 500 fps (5.2 GB image memory) 16 secs @ 1280 x 1024 / 500 fps (10.4 GB image memory) Sequence length can be extended by reducing the image resolution resp. frame rate

Data Interface	Gigabit Ethernet
Data Interface (Live Stream)	JPEG-compressed image via Gigabit Ethernet
Video Interface	PAL / NTSC (analog) or SDI (digital)
Memory Interface	Built-in CF interface, accepting CF cards for non-volatile data storage
Event markers	1 (TTL, input), control the 'event markers' Other configuration of status lines available on request

Power supply	28 VDC (24...36 VDC)
Power consumption	20W
Battery (optional)	Built-in, rechargeable NiMH battery.

Dimensions	85 x 85 x 200mm / 3 3/16 x 3 3/16 x 7 7/8"
Weight	2kg / 4lbs
Camera mounting	according user specifications

Resolution vs. frame rate

The X-TREME offers a frame rate of 500fps at full image resolution of 1280 x 1024 pixels. The following configurations can be selected via the included AOS Imaging Studio control software:

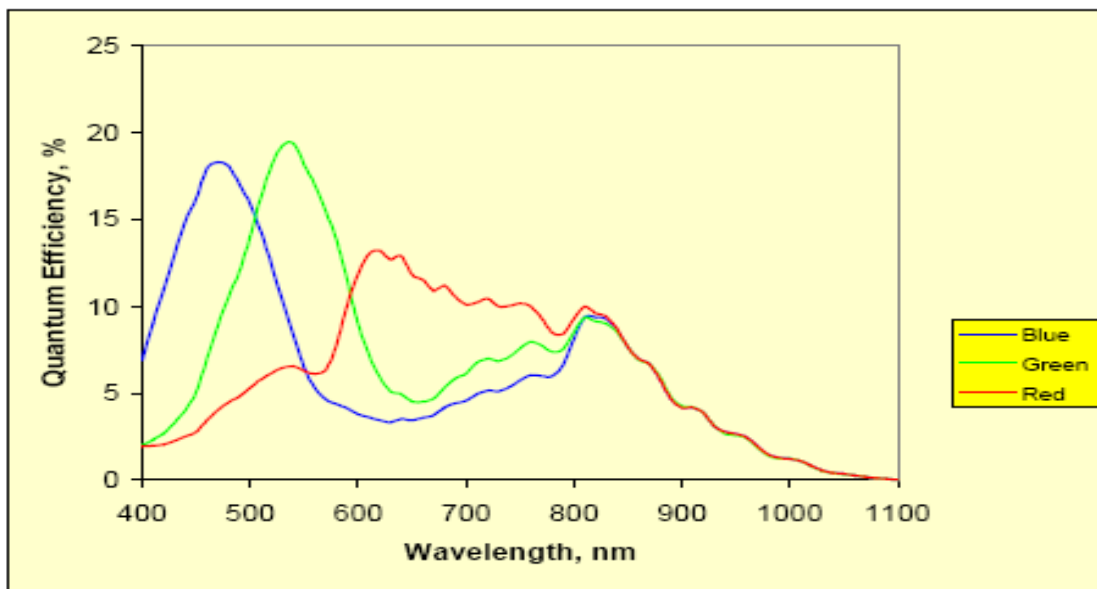
Image resolution	Frame rate (fps)
1280 x 1024	500
800 x 600	1,000
1280 x 512	1,000
1280 x 256	2,000
1280 x 128	4,000
1280 x 64	8,000

Control PC – minimum requirements

CPU	Pentium 4, 2 GHz with MMX
DRAM	2 GB
HDD	60 GB
Interfaces	GigE
OS	MS Windows 2000, XP PRO, VISTA, Win7

The control PC for an AOS high speed camera has to meet or exceed these minimum requirements for a reliable, convenient camera performance. PC's with lower specifications may result in a camera performance below the indicated ones.

Spectral response



Connectors

The X-TREME features 2 connectors:

Connector 1	8 pin connector for Gigabit Ethernet
Connector 2	External synchronization, trigger, video out etc.
Connector type	Mighty Mouse series 801

The X-TREME can also be equipped with different connectors for extended functionality from other manufacturers (please contact us for advise)

Tests and approvals

Shock

Shock (each direction)	100g
Saw tooth pulse with a peak acceleration	10g ± 10%
Total time duration	11msec (nominal)

Vibration

Vibration (RTCA/DO 160D, paragraph 8)	Test Category 5 Level Curves W	RTCA/DO-160E, paragraph 8, 8.5
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Acceleration

Acceleration Gust load factors	nz: 10g, -10g	MIL-STD-810E, Method 513
Acceleration Maneuvering load factors	nz: 10g, 10g nx: 10g, 10g ny: 10g, 10g	MIL-STD-810E, Method 513

Tests and approvals (cont. from previous page)**High altitude**

Low air pressure	35,000ft (11km)	RTCA/DO-160E, paragraph 4.6.1
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Temperature

Ambient temperature LOW	-50°C	RTCA/DP-160E, paragraph 4
Ambient temperature HIGH	+55°C	RTCA/DP-160E, paragraph 4
Survival temperature	-55 / +70°C	RTCA/DP-160E, paragraph 4
Temperature variation	-50°C / +55°C / -50°C Test Category A Temperature change rate is 5 degrees per minute	RTCA/DP-160E, paragraph 5
Temperature shock	-50°C / +55°C Change time < 1 minute from -50°C to +55°C and vice versa	MIL-STD-810E Method 503

Humidity, Waterproofness

Humidity	Category 10	RTCA/DP-160E, paragraph 6
Waterproofness	IPX5	IEC 60529: 1992 (higher standard optionally)

Salt, sand and dust

Sand and dust	Category D	RTCA/DP-160E, paragraph 12
Salt spray	Category S	RTCA/DP-160E, paragraph 14

Electromagnetic interference (EMI)

Bonding	EN 3371	Category I
Audio-frequency conducted susceptibility	RTCA-DO160D, paragraph 18	Category Z
Induced signal susceptibility	RTCA-DO160D, paragraph 19	Category A
Radio-frequency susceptibility	RTCA-DO160D, paragraph 20	Category T
Conducted RF interference	RTCA-DO160D, paragraph 21	Category H
Radiated RF interference	RTCA-DO160D, paragraph 21	Category H
Voltage spike	RTCA-DO160D, paragraph 17	600 V



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