



## S-PRI – the modular, compact high speed camera for industrial and research applications

S-PRI is a light sensitive high speed camera providing outstanding image quality, serving the needs of those searching for good performance at an outstanding price.

S-PRI cameras have a unique modular concept, allowing addition of options where desired. Options can be added at time of purchase or any time later. Updates are performed in the field without returning the camera to the manufacturer. Further extensions such as in-camera compact flash card, live SDI or analog video out, extended battery pack for up to 3 hrs of autonomous operation and IRIG-B, to name a few, are available.

### Unique features

- **Compact** – 'all-in-one camera' with built-in image memory and battery.
- **Fast** – record up to 1000 fps with high image resolution of 900 x 700 pixels to see fine details.
- **Standard data interface** – the S-PRI plus connects via standard Gigabit Ethernet ('GigE') data interface to any standard WIN PC. No need for dedicated camera interfaces and cables.
- **High sensitivity** – the S-PRI plus offers high light sensitivity, well suited for mobile applications. In many applications the camera delivers well-lit images without added illumination, while in others only minimal extra light is necessary.
- **Powerful yet simple to operate control software** – the S-PRI plus includes the award winning 'AIS - AOS Imaging Studio' control software. Despite many features and functions, this Imaging Studio is easy to operate.
- **Economical** – buy the performance you need and add extensions later in case the need arises.

# S-PRI – Key Specifications

## Frame rate vs resolution vs recording time (partial)

Resolution ▶	Resolution @ fps Option 2 required	Resolution @ fps Basic camera	Resolution @ fps Basic camera	Resolution @ fps Option 3 required	Resolution @ fps Option 3 required	Resolution @ fps Option 3 required	Resolution @ fps Option 3 required	Resolution @ fps Option 3 required
	1280 x 1024 @ 500 fps	900 x 700 @ 1000 fps	800 x 600 @ 1250 fps	640 x 480 @ 1925 fps	512 x 512 @ 2110 fps	320 x 240 @ 6110 fps	256 x 256 @ 6680 fps	128 x 128 @ 16'500 fps
Memory ▼	Sec recording time	Sec recording time	Sec recording time	Sec recording time	Sec recording time	Sec recording time	Sec recording time	Sec recording time
1.3 GB	2.0	2.1	2.2	2.2	2.3	2.8	3.0	4.9
2.6 GB	4.0	4.2	4.4	4.4	4.6	5.6	6.0	9.8
5.2 GB	8.0	8.4	8.8	8.8	9.2	11.2	12.0	19.6
10.4 GB	16.0	16.8	17.6	17.6	18.4	22.4	24.0	39.3

Table shows typical resolution vs. fps, Resolution is freely adjustable, fps = max fps @ resolution, fps adjustable by software in steps of 1 fps, max 16'500 fps with option 3

## Optical/Sensor specifications

<b>Image Sensor</b>	1280 x 1024 pixel with 10 Bit dynamic range, monochrome or color version Basic max. resolution of S-PRI is 900 x 700 pixel (see Option 2)
<b>Sensor Size</b>	14 µm pixel size / 17.8 x 14.3 mm @ 1280 x 1024 pixel
<b>Light Sensitivity</b>	ISO 3200 (monochrome), ISO 2400 (color)
<b>Dynamic Range</b>	– Standard 8 Bit – With option 1: 5-8-10 Bit adjustable by user
<b>HDR Mode</b>	High Dynamic Range Mode for higher image dynamic up to 14 Bit, free adjustable by slider in control software
<b>Pixel Correction</b>	Built-in pixel correction for highest image accuracy
<b>Shutter Type</b>	Global, independent of frame rate
<b>Exposure Time</b>	Free adjustable from 2 µsec to 1 / framing rate by software
<b>Mount</b>	C-Mount, optional F-Mount

## Camera and control features

<b>Image Memory</b>	Standard: 1.3 GB, optional 2.6 / 5.2 / 10.4 GB
<b>Nonvolatile Memory</b>	Optional flash card interface for up to 128 GB flash disk in camera. Camera can save image data on flash disk w/o PC attached
<b>Power</b>	9–16 VDC/12–15 Watts depending on options and extensions Optional: 24–36 VDC input
<b>I/O Tolerance</b>	TTL level, all I/O are 0–24 V tolerant
<b>LED Control</b>	LED on back and front for indication of camera status
<b>Reset</b>	Reset function to reset camera status w/o affecting image memory
<b>Power On/Off</b>	Switch on/off, Remote Switch on
<b>Battery</b>	Re-chargeable NiMH battery for up to 45 mins autonomous operation of camera: Optional NiMH battery for up to 3 hrs autonomous operation is available. Note: Operation time depends on camera configuration
<b>Trigger Delay</b>	Programmable up to 65 sec
<b>Trigger Windowing/ De-bouncing</b>	User programmable trigger window to eliminate false triggering by external devices
<b>Trigger Modes, Positions</b>	Pre-post recording, user adjustable in steps of 1% of total camera memory
<b>Timing</b>	High precision time base, temperature compensated
<b>Multi-Buffer</b>	Split buffer for up to 32 individual sub-buffers
<b>Auto-Download</b>	Auto download to PC for 24/7 recording or automatic download to optional flash card until flash card full
<b>Pre-Program of Camera</b>	S-PRI may be preprogrammed with a specific set of commands. Ideal when camera can no longer be accessed before test. Switch on is possible only by remote switch on
<b>OSD</b>	Information on camera, recording features, time stamp, event marker and user specific text may be added in image data. Position of OSD is set by user
<b>IRIG-B</b>	Optional IRIG-B 122 input for synchronization and/or time stamp

## Data Interface

<b>Data Interface</b>	– Gigabit Ethernet (10/100/1000) with RJ45 connector – Hot plug function of Ethernet link, no need to restart Imaging Studio software on PC when re-connecting camera to PC
<b>I/O Interface</b>	Solid 14 pin Lemo connector
<b>Synchronization</b>	Sync in / Sync out for phase-locked master-slave operation with other cameras or synchronization to external frequency (Option 5)
<b>Armed Out</b>	Armed out indicates camera is working well in record mode and is ready to receive trigger
<b>Trigger In</b>	Trigger input, rising, falling edge, TTL, switch closing/opening
<b>Triggered Out</b>	Indicates camera is triggered
<b>Set_To_Rec</b>	Used to set the camera from idle to recording mode
<b>Remote Switch On</b>	Switch on camera through simple 2 wire connection over a distance of up to 100 m (300 feet)
<b>Event Marker</b>	1 event marker in basic camera, 3 additional event markers with Option 4
<b>Strobe</b>	Strobe out to synchronize external equipment to camera. Pulse width represents shutter time

## Physical specifications

<b>Size/weight</b>	72 x 72 x 122 mm, 900 gr ( 2.8 x 2.8 x 4.8", 1.9 lb)
<b>Operating Temperature</b>	0 ... + 45 °C / 32 to +113 °F
<b>Storage Temperature</b>	-40 ... +70 °C / -40 ... +158 °F
<b>I/O Connector</b> (type required for cable)	LEMO Type: FGG.2B.314.CLAD82Z ODU: S22LOC-P14MFG0-8200
<b>CE</b>	In compliance with relevant standards
<b>Mounting</b>	¼" UNC thread

## Options

<b>Option 1</b>	Gain control (5-, 8- or 10-bit, low-, mid- or high-gain) allows full control of sensor gain
<b>Option 2</b>	Extends basic resolution of 900 x 700 pixel to full sensor resolution of 1280 x 1024 pixel
<b>Option 3</b>	Extends fps up to 16'500 fps
<b>Option 4</b>	3 additional event markers (total of 4)
<b>Option 5</b>	Frame synchronization, multi camera operation on same PC
<b>Option 11</b>	Auto Exposure
<b>Option 12</b>	Motion Detection

## Extensions

<b>Video Out</b>	PAL or NTSC format, SDI or analog Video out on camera for live view during set-up, recording. Playback sequence on screen, OSD function on video screen
<b>Flash Card Interface</b>	Flash card interface with card lock and protection cover for up to 128 GB flash card memory
<b>Extended Battery</b>	Internal NiMH battery for up to 3 hrs of autonomous recording. No change of camera size
<b>IRIG-B</b>	IRIG-B 122 input for phase lock/time stamp of recording to/with IRIG-B signal
<b>Motion Analysis</b>	TEMA Starter 2D Motion Analysis packages

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