

## Extreme Performance for Research, Ballistics and Testing



The i-SPEED 720 utilizes the same high-resolution 3.1 megapixel image sensor of the high-end of the i-SPEED 7 Series camera line. Clocking in at 20 gigapixels per second throughput, this camera can stop the world's fastest events. With internal memory options up to 288 GB, the i-SPEED 720 is the ideal instrument for the test engineer, scientist or researcher.

This camera is loaded with innovative features, from the heralded i-CHEQ on-board performance monitoring system to the reinforced internal hardware designed to reduce vibrations during critical testing. The multiple on-board computers move data quickly into internal or external hot-swappable SSD cards for quick review of data.

Each camera is supplied with the industry leading i-SPEED Software Suite 2.0 PC software for control, analysis, editing and playback.



### **i-SPEED 720R shown in heavy duty, rugged environmental package**

Choose from the sleek new instrumentation package or elect to upgrade your camera to the high-G rated rugged package with its environment resistant aluminum frame.



### **Multiple HDSDI, HDMI and other outputs allow data to flow freely**

## FEATURES

- High-resolution 2048x1536 pixel sensor
- Full resolution to 6,642 frames/second
- 1080p resolution at 9,942 frames/second
- Up to 288 GB of on-board memory for long recordings
- Internal or external SSD drive for fast data transfer
- Ultra-fast 20 GP/sec throughput
- Microlens sensor for exceptional light sensitivity
- Wide Dynamic Range recording
- Global electronic shutter to 1  $\mu$ s
- 1 hour battery life
- Compatible with all Nikon F and Canon EF mount lenses
- Maximum frame rate – 1,000,000 fps
- Flexible frame synchronization from 10 Hz to 200 kHz
- Environmentally rugged package available
- 32 point integrated real-time health monitoring system

## IMAGER

<b>Sensor type</b>	Custom CMOS
<b>Sensor resolution</b>	2048 x 1536 pixel
<b>Sensor size</b>	27.972 mm x 20.736 mm
<b>Sensor diagonal</b>	34.82 mm
<b>Pixel size</b>	13.5 µm
<b>Bit depth</b>	12 bit (36 bit color)
<b>ISO (12232-2:2006, D, sat)</b>	Mono 5,000 / 40,000 (max) Color 1,800 / 14,400 (max)
<b>Maximum frame rate</b>	1,000,000 fps
<b>Shutter type</b>	Global exposure
<b>Shutter time, standard</b>	1 µs minimum
<b>Shutter time, fast mode</b>	293 ns
<b>WDR</b>	Wide Dynamic Range

## SYNCHRONIZATION and CAPTURE

<b>Trigger</b>	TTL T0 to 0-100%
<b>Trigger modes</b>	Circular, ROC, BROCC
<b>Sync</b>	10 Hz – 200 kHz
<b>Luminance histogram</b>	Iris setting aid tool
<b>i-CHEQ 360</b>	Camera status LEDs
<b>i-FOCUS</b>	Focusing aid tool
<b>i-EXPOSE</b>	High/low exposure highlight
<b>Control</b>	PC or CDUE
<b>IRIG input</b>	IRIG – B to sub 1 µs
<b>IRIG sync</b>	Camera sync to IRIG
<b>Internal memory</b>	72 GB standard, upgrade to 288 GB

## PHYSICAL and ENVIRONMENTAL

<b>Dimensions</b>	
<b>Instrumentation package</b>	
inches	14.3 (W) x 6.2 (H) x 6.2 (L)
mm	363 (W) x 157 (H) x 154 (L)
<b>Rugged package</b>	
inches	14.75 (W) x 6.0 (H) x 5.75 (L)
mm	374 (W) x 150 (H) x 143.5 (L)
<b>Weight</b>	18.7 lb (8.5 kg) with battery
<b>Input voltage</b>	12-36 V
<b>Power consumption</b>	150 W nominal, 200 W max
<b>Mounting</b>	¼x20 and 3/8x16 tripod plate
<b>Battery</b>	2x 14.4 V 90 Wh
<b>Battery life</b>	1 hour
<b>Lens mount</b>	Custom, swappable lens plate
<b>EMC</b>	EN55032-A, EN55024
<b>Safety</b>	BS EN61010-1 (camera), IEC60950 (PSU)
<b>CE marking</b>	EMC directive (camera), EMC directive, LV directive (PSU)
<b>Lead free</b>	RoHS directive
<b>WEEE</b>	Compliant
<b>IP Rating</b>	IP 20
<b>Temperature °F</b>	32 to 104 operation, -4 to 140 storage
<b>Temperature °C</b>	0 to 40 operation, -20 to 60 storage
<b>Pressure</b>	71 kpa to 106 kpa
<b>Relative humidity</b>	95% at 104°F non-condensing
<b>G-shock, Instrumentation package</b>	10 G
<b>G-shock, Rugged package</b>	30 G @ 11 ms IEC 68-2-27 Ea, 30 G @ 2 ms IEC 68-2-29 Eb
<b>Power input connector</b>	6 pin Lemo
<b>Trigger input</b>	BNC 75 Ω
<b>Feature connector</b>	18 pin Lemo, trigger in / sync / sync out / exposure out / remote power

## CONNECTIVITY

<b>Video outputs</b>	2x HD-SDI, HDMI
<b>USB</b>	USB 3
<b>Network</b>	1 Gb RJ45
<b>Video</b>	AVI (compressed or uncompressed)
<b>Image sequence</b>	TIFF, JPG, RAW
<b>Ethernet control</b>	1 Gb
<b>Remote control</b>	Via supplied software

## PC SOFTWARE

<b>Standard control</b>	Control ONE
<b>Premium control</b>	Control MULTI-DAQ
<b>Editing</b>	i-SPEED Movie Maker
<b>Analysis</b>	ProAnalyst <sup>®</sup> Lite by Xcitem
<b>Viewer</b>	i-SPEED Viewer
<b>Utilities</b>	i-SPEED Lens Calculator, i-SPEED Viewer
<b>Software Developers Kit</b>	C++, LabView
<b>Synchronized data acquisition</b>	USB DAQ, 8 options

## PURCHASING OPTIONS

<b>CDUE</b>	Portable Control Unit
<b>Sensor</b>	Color / Mono
<b>Memory</b>	72 GB / 96 GB / 144 GB / 288 GB
<b>Shutter time</b>	1 µs (std) / 293 ns (subject to export restrictions)
<b>Internal SSD</b>	500 GB / 1 TB
<b>External SSD</b>	250 GB / 500 GB / 1 TB
<b>Lens mounts</b>	F mount (Nikkor D) / F mount (Nikkor G) C mount / EF mount
<b>Package type</b>	Instrumentation / Rugged
<b>Warranty</b>	1 yr (std) / 2 yr / 3 yr
<b>Internal Batteries</b>	Set of 2 batteries

## FRAME RATES, RESOLUTION and DURATION

FPS	Resolution	36GB	72GB	96GB	144GB	288GB
1,000	2048x1536	–	16.2 sec	21.6 sec	32.4 sec	64.8 sec
2,000	2048x1536	–	8.1 sec	10.8 sec	16.2 sec	32.4 sec
5,000	2048x1536	–	3.2 sec	4.3 sec	6.5 sec	12.9 sec
6,642	2048x1536	–	2.4 sec	3.2 sec	4.9 sec	9.7 sec
7,500	1960x1428	–	2.5 sec	3.3 sec	4.9 sec	9.8 sec
9,942	1920x1080	–	2.4 sec	3.3 sec	4.9 sec	9.8 sec
10,000	1680x1242	–	2.5 sec	3.3 sec	4.9 sec	9.9 sec
15,000	1344x1008	–	2.5 sec	3.4 sec	5.1 sec	10.1 sec
20,000	1176x864	–	2.5 sec	3.4 sec	5.1 sec	10.1 sec
30,000	952x696	–	2.6 sec	3.5 sec	5.2 sec	10.4 sec
50,000	840x462	–	2.7 sec	3.5 sec	5.3 sec	10.6 sec
100,000	840x216	–	2.8 sec	3.8 sec	5.7 sec	11.4 sec
200,000	840x96	–	3.2 sec	4.3 sec	6.4 sec	12.8 sec
500,000	896x24	–	4.8 sec	6.4 sec	9.6 sec	19.2 sec
750,000	448x36	–	4.3 sec	5.7 sec	8.5 sec	17.0 sec
1,000,000	448x24	–	4.8 sec	6.4 sec	9.6 sec	19.2 sec

*Note: Other resolutions and speeds are available.*



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