Chronos 2.1-HD is a 1080p1000, 2.1 gigapixel-per-second handheld high-speed camera. Completely self-contained, you can take high-speed imaging with you anywhere! It records 1080p video at 1000fps, and can record at up to 100 000fps at lower resolutions. Video is saved to removable media in compressed h.264 or uncompressed dng format. You can shoot for hours, saving hundreds of shots on a single card.

## Main Features

1080p, 4/3" format image sensor captures 2.1 gigapixels per second for 1000fps at full resolution, and up to 100 000fps at lower resolutions.

8GB, 16GB and 32GB high-speed RAM buffer options for 2.5, 5.5 and 11 second record time respectively.

High sensitivity base ISO of 800 (Color) and 1600 (Monochrome) enables shooting with modest lighting.

Completely standalone, untethered operation. Field-swappable internal battery lasts for 1 hour of recording. Runs indefinitely on AC adapter or external power source.

Many lenses supported: Nikon F, Canon EF, Micro Four Thirds and C mounts available as field-swappable options.

Focus peaking highlights sharp edges for quick and perfect focus. Zebra lines help you set correct exposure.

## Resolutions and Frame rates

Resolution is adjustable in 32x2 increments. Some example combinations of resolution and frame rate are shown below:

| Resolution | Max FPS | Record time (sec) (8GB) | Record time (sec) (16GB) | Record Time (sec) (32GB) |
|---|---|---|---|---|
| 1080p | 1 004 | 2.75 | 5.51 | 11.03 |
| 1920x804 (scope) | 1 340 | 2.75 | 5.51 | 11.03 |
| 1920x512 | 2 100 | 2.75 | 5.51 | 11.03 |
| 1920x8 | 100 000 | 3.76 | 7.52 | 15 |
| 720p | 1 500 | 4 | 8 | 16 |

## Full Specifications

| | | |
|---|---|---|
| **Camera** | *Imaging* | 1920x1080 1 000fps, see resolution table for details |
| | *Memory* | 8GB, 16GB, or 32GB |
| | *Record time* | 2.7 seconds (8GB), 5.5 seconds (16GB), 11 seconds (32GB) |
| | *Lens mount* | CS/C mount. Nikon F, Canon EF, Micro Four Thirds with adapter |
| | *Backfocus* | Field adjustable |
| | *IR Filter* | 650nm, user removable, 24 x 16 x 1.1mm |
| | *Display* | 5" 800x480 capacitive touchscreen, 1000 nit daylight visible |
| | *Enclosure* | Anodized CNC machined aluminum |
| | *Cooling* | Active cooling, variable-speed fan |
| | *Dimensions* | 155mm x 96mm x 67.3mm (6.11" x 3.78" x 2.65") without lens |
| | *Weight* | 1.06kg (2.34 lbs) without lens |
| | | |
| **Video formats** | *H.264* | Industry-standard mp4 files at bitrates up to 60Mbps |
| | *cinemaDNG Raw* | Standard Adobe cinemaDNG raw files |
| | | |
| **Image Sensor** | *Resolution* | 1920x1080 @ 1 000fps |
| | *Speed* | 2.1Gpx/s |
| | *Dimensions* | 19.2 x 10.8mm (4/3" format) |
| | *Pixel pitch* | 10um |
| | *Sensitivity (ISO)* | Color - ISO 800 base (preliminary) |
| | | Mono - ISO 1600 base (preliminary) |
| | *Shutter* | Electronic global shutter, 1/fps to 10us (1/100 000 s) |
| | *Dynamic range* | 10.3 stops (62.4 dB) (preliminary) |
| | *Bit depth* | 12-bit |
| | | |
| **Battery** | *Type* | EN-EL4a |
| | *Runtime* | 1 hour recording |
| | *Charge time* | 1.5 hours (0-80%) with in-camera charger |

| | | |
|---|---|---|
| **IO** | Power Input | 17-20V 40W |
| | | 5.5/2.5mm barrel jack, positive tip |
| | Network | Gigabit Ethernet |
| | Trigger | Two Trigger inputs/frame strobe outputs (BNC and Aux) |
| | | Adjustable input threshold 0 to 6.6V |
| | | Electrically isolated trigger input (Aux connector) |
| | Audio* | Microphone/Line input, headphone output |
| | Video | HDMI monitor output |
| | USB | USB type A (host) and micro B (device) |
| | SATA | eSATA 3Gbps |
| | Analog input* | 1MSa/s 12-bit, 200kHz bandwidth, +/- 1V full scale |
| **Trigger modes** | Normal triggered | Camera records until a defined delay after a trigger |
| | Triggered start | Camera starts recording a defined delay after a trigger |
| **Trigger Sources** | Electrical | 0-6.6V threshold, optional button debounce and pullup |
| | Audio* | Trigger on loud sounds |
| | Acceleration* | Trigger on camera motion, tilt or shock |
| | Image* | Trigger on image changes |
| **Recording modes** | Normal | Records into the circular buffer. Once a trigger occurs, video can be reviewed and saved |
| | Segmented | RAM is divided into segments, each recording as in the Normal mode above. Number of segments is user selectable. |
| | Continuous* | Video is saved continuously at up to 60fps to mp4 files on removable storage. Operates like a normal video camera. |
| | Gated burst | Frames are captured while trigger is active |
| **Shutter timing** | Normal | Frame rate and exposure time are controlled by camera |
| | Edge triggered | A single frame is captured on each rising or falling edge of an external input. Exposure is controlled by camera |
| | Shutter gating | Image sensor shutter is directly controlled by an external input, exposing while the input is active |
| **Assistive** | Focus Peaking | Highlights sharp edges to aid focusing |
| | Zebras | Rolling diagonal lines indicate clipped (overexposed) areas |
| | Focus Aid | Zooms in to allow easier focusing |

*These features are fully supported in the camera's hardware, but are not yet supported in software. They will be added in a free software update after the camera's initial release.