

USB3.0 Megapixel digital high speed camera HAS-U1

## USB 3.0 bus power 1.3M 1280 × 1024 200fps Embedded memory / DMA hybrid model

Digital high speed camera



HAS-U1 is a high speed camera with ½-inch CMOS sensor and 1. 3M 1280 × 1024 effective pixels that can shoot 200 fps at full resolution, 800 fps at VGA, and up to 4,000 fps by limiting the pixel area. Perfect for multiple high speed camera imaging, with embedded memory, in one compact solution.

- •Good balance between high resolution and high frame rates.
- It can use both embedded 2GB memory mode and direct memory access mode with USB3. 0 as the situation demands.
- •Fully synchronized multiple high speed cameras with just one laptop PC.
- •Large volume of memory by using 64bit OS.
- •The low power consumption design, made for USB3. 0 bus power, simplifies your cabling layout.
- Internal / External sync
- •10bit A / D
- •Data transmission rate at 250MB / sec.
- •Unit weight approx. 210g, unit size (W  $\times$  H  $\times$  D) 44  $\times$  44  $\times$  81. 5mm

## Perfect for all kinds of research / production engineering in behavior, fluid, sports science, biomechanical, robotics, machine vision, crash test, droplet, microscopy, trouble shooting, and more.

Product:		Palm size b	odv	Connection d	iagram
Camera unit	USB3. 0 cable			Embedded me	emory mode
Control softw	vare			Multiple cameras	
			D/1/T/E/C/T	HAS-U1	, maroner e.
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	A COMPANY AND AND				Laptop PC
	•				
rame rate and	d pixel size				USB 3. 0
Pix H 112 240	•	512 640 800 102	4 1280 1024 1280		
ps V 80 180		480 480 600 768		DMA transfer	
4000 •				Large volume of	memory available using 64bit (
3000 • •					
2500 •				HAS-U1	
2000 •	• •				
1500	• • •				Laptop PC
1000	• •	•			USB3.0
800		• •			
500		• • •		Specifications	
400		• •			
300		• • •		Camera	
250		• • •	• •	Camera type	Mono (HAS-U1M) Color (HAS-U1C)
200 150		•••		Sensor type	CMOS
150				Sensor type	
100				A/D	10bit
			• • •	A / D Effective resolution	10bit 1280 × 1024 (1, 3M pixel)
100 60			• • • • • •	A / D Effective resolution Sensor format	10bit 1280 × 1024 (1. 3M pixel) ½ inch
60	er. resolution ar	nd recording du	• • • • • •	Effective resolution	1280 $ imes$ 1024 (1. 3M pixel)
60	er, resolution ar			Effective resolution Sensor format Lens mount Recording mode	1280 × 1024 (1. 3M pixel) ½ inch C
60	er, resolution ar Resolution	nd recording du Recording frames (at 2GB)	• • • • • • ration table Recording time (at 2GB)	Effective resolution Sensor format Lens mount Recording mode Memory size	1280 × 1024 (1. 3M pixel) <sup>1</sup> / <sub>2</sub> inch C Embedded memory / DMA transfe 2GB
60 rame numbe Fps	Resolution	Recording frames (at 2GB)	Recording time (at 2GB)	Effective resolution Sensor format Lens mount Recording mode Memory size Data output	1280 × 1024 (1. 3M pixel) <sup>1</sup> / <sub>2</sub> inch C Embedded memory / DMA transfe 2GB USB 3. 0
60 rame numbe Fps 200	Resolution	Recording frames (at 2GB) 1632 f	Recording time (at 2GB) 8. 1 sec	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface	1280 × 1024 (1. 3M pixel) ½ inch C Embedded memory / DMA transfe 2GB USB 3. 0 Micro-B
60 rame numbe Fps 200 500	Resolution           1280×1024           800×600	Recording frames (at 2GB) 1632 f 4466 f	Recording time (at 2GB) 8. 1 sec 8. 9 sec	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface Shutter(exposure)	1280 × 1024 (1. 3M pixel) ½ inch C Embedded memory / DMA transfe 2GB USB 3. 0 Micro-B Minimum 1/100,000(10μ)
60 rame number 200 500 800	Resolution           1280×1024           800×600           640×480	Recording frames (at 2GB)           1632 f           4466 f           6982 f	Recording time (at 2GB) 8. 1 sec 8. 9 sec 8. 7 sec	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface Shutter(exposure) Sensitivity(at 550nm)	1280 × 1024 (1. 3M pixel) ½ inch C Embedded memory / DMA transfe 2GB USB 3. 0 Micro-B Minimum 1/100,000(10μ) 7.7 V / lux. s
60   rame number 200 500 800 2500	Resolution           1280×1024           800×600           640×480           320×240	Recording frames (at 2GB)           1632 f           4466 f           6982 f           27943 f	Recording time (at 2GB) 8. 1 sec 8. 9 sec 8. 7 sec 11. 1 sec	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface Shutter(exposure) Sensitivity(at 550nm) Power input	1280 × 1024 (1. 3M pixel) ½ inch C Embedded memory / DMA transfe 2GB USB 3. 0 Micro-B Minimum 1/100,000(10μ) 7. 7 V / lux. s 5 V
rame numbe Fps 200 500 800 2500	Resolution           1280×1024           800×600           640×480	Recording frames (at 2GB)           1632 f           4466 f           6982 f           27943 f	Recording time (at 2GB) 8. 1 sec 8. 9 sec 8. 7 sec 11. 1 sec	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface Shutter(exposure) Sensitivity(at 550nm) Power input Power delivery	1280 × 1024 (1. 3M pixel) ½ inch C Embedded memory / DMA transfe 2GB USB 3. 0 Micro-B Minimum 1/100,000(10μ) 7. 7 V / lux. s 5 V USB bus power / 12pin
60 rame number Fps 200 500 800 2500 You can use a large	Resolution $1280 \times 1024$ $800 \times 600$ $640 \times 480$ $320 \times 240$ ge volume of memory	Recording frames (at 2GB) 1632 f 4466 f 6982 f 27943 f on the PC in DMA mo	Recording time (at 2GB) 8. 1 sec 8. 9 sec 8. 7 sec 11. 1 sec de.	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface Shutter(exposure) Sensitivity(at 550nm) Power input Power delivery Electric requirement	1280 × 1024 (1. 3M pixel) ½ inch C Embedded memory / DMA transfe 2GB USB 3. 0 Micro-B Minimum 1/100,000(10μ) 7. 7 V / lux. s 5 V USB bus power / 12pin Under 4. 5W
60 rame number 200 500 800 2500 You can use a large	Resolution $1280 \times 1024$ $800 \times 600$ $640 \times 480$ $320 \times 240$ ge volume of memory	Recording frames (at 2GB) 1632 f 4466 f 6982 f 27943 f on the PC in DMA mo	Recording time (at 2GB) 8. 1 sec 8. 9 sec 8. 7 sec 11. 1 sec de. 3. 0(Micro-B)	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface Shutter(exposure) Sensitivity(at 550nm) Power input Power delivery	1280 × 1024 (1. 3M pixel) ½ inch C Embedded memory / DMA transfe 2GB USB 3. 0 Micro-B Minimum 1/100,000(10μ) 7. 7 V / lux. s 5 V USB bus power / 12pin
60 rame number Fps 200 500 800 2500 You can use a large	Resolution $1280 \times 1024$ $800 \times 600$ $640 \times 480$ $320 \times 240$ ge volume of memory	Recording frames (at 2GB) 1632 f 4466 f 6982 f 27943 f on the PC in DMA mo	Recording time (at 2GB) 8. 1 sec 8. 9 sec 8. 7 sec 11. 1 sec de. 3. 0(Micro-B)	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface Shutter(exposure) Sensitivity(at 550nm) Power input Power delivery Electric requirement Weight	1280 × 1024 (1. 3M pixel) ½ inch C Embedded memory / DMA transfe 2GB USB 3. 0 Micro-B Minimum 1/100,000(10μ) 7. 7 V / lux. s 5 V USB bus power / 12pin Under 4. 5W Approx. 210g
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60 rame number Fps 200 500 800 2500 You can use a large AS-U1 Dimer	Resolution         1280×1024         800×600         640×480         320×240         ge volume of memory         nsions	Recording frames (at 2GB) 1632 f 4466 f 6982 f 27943 f on the PC in DMA mo USB	Recording time (at 2GB) 8. 1 sec 8. 9 sec 8. 7 sec 11. 1 sec de. 3. 0(Micro-B) USB2. 0 (Aux power) USB2. 0 (Aux power) USB2. 0 (error) Green LED (sync)	Effective resolution Sensor format Lens mount Recording mode Memory size Data output Interface Shutter(exposure) Sensitivity(at 550nm) Power input Power delivery Electric requirement Weight Size Control software Trigger mode Aux function	1280 × 1024 (1. 3M pixel) <sup>1</sup> / <sub>2</sub> inch C Embedded memory / DMA transfer 2GB USB 3. 0 Micro-B Minimum 1/100,000(10μ) 7. 7 V / lux. s 5 V USB bus power / 12pin Under 4. 5W Approx. 210g 44mm × 44mm × 81. 5mm Start / End / Variable (3. 3 V TTL or contact signal) Histogram, Guide line, Focus peeking, Live image rotation Time stamp, Trimming, Text AVI, WMV, BMP / Jpeg, RAW
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