CCD-11000

11 MPixel Ultra-High Resolution Progressive-Scan CCD Camera with 12-bit Digital-Output

Features

- 4024 (H) x 2680 (V) square pixels
- 3 frames/sec.
- Progressive scan
- Interline-transfer sensor (36 x 24 mm)
- Asynchronous shutter up to 1/8000 sec. (image on demand)
- Effective camera dynamic ≥ 1:1000 (≥ 60 dB)
- Digital RS-644 output with 12-bit (LVDS)
- Very compact design
- Optional: color sensor (Bayer filter)

VDS Vosskühler

With a resolution of 4024 x 2680 effective pixels, the **CCD-11000** is a further member of the VDS highest resolution CCD camera family

The **CCD-11000** supplies 3 frames/sec. at the full resolution. Even 6 frames/sec. can be achieved in the binning mode 4024 (H) x 1340 (V).

By means of the very big sensor in 35 mm format (36 x 24 mm) many applications can be much better realized than by smaller sensors. In addition to the 35 mm format many F-mount lenses are available without any changing in the illustration scale.

By means of the progressive interline transfer sensor very short exposure times up to 1/8000 sec. can be achieved at a full resolution. The exposure time can be regulated in steps of approx. 122 µs. Due to the asynchronous operation (image on demand) the exposure starts 15 µs after an external trigger pulse. Therefore the camera is especially useful for recording moved objects.

The effective dynamic of the complete camera

$$D = \frac{Sat_{(count)} - Dark_{(count)}}{RMS\,Noise_{(count)}}$$

is more than 1000 and therefore offers reserves even at difficult lighting conditions or very short exposure times. The RS-644 digital output supplies image data with 12-bit precision. The **CCD-11000** is mostly identical regarding the mechanic and pin-compatible to the CCD-1300 camera line.

Technical Data

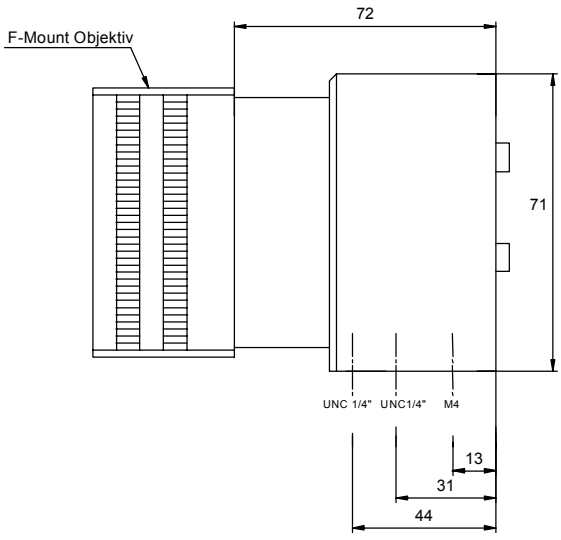
- Resolution: 4024 (H) x 2680 (V) pixels
- Progressive scan
- Image rate: up to 3 frames/sec. (4024 x 2680) or up to 6 frames/sec. (4024 x 1340)
- Pixel size: 9 µm x 9 µm
- Active sensor size: 36.18 (H) mm x 24.12 (V) mm
- Interline transfer sensor (no mech. shutter required)
- Electronic shutter up to 1/8000 sec.; adjustable in 122 µs steps
- Image on demand
- Effective dynamic: ≥ 1:1000 (≥ 60 dB)
- Sensor saturation: ≥ 60000 e
- Anti-blooming circuit
- Exposure time up to approx. 1 sec.
- Digital output: 12-bit, RS-644 (LVDS)
- Frame system: 2732 lines
- Pixel clock: 40 MHz
- Video gain: 1 or 2 (+ 6 dB)
- Power supply: + 12 V (SELV), approx. 0.6 A
- Ambient temperature: 0° to 40° C
- Lens mount: F-mount
- Option: color version (with Bayer filter)
- CE standard
- Made in Germany

RS-644 Digital Output (37-pin D-SUB Jack)

Pin	Function	Pin	Function
1	PCLK	20	$\overline{\text{PCLK}}$
2	LEN	21	$\overline{\text{LEN}}$
3	FEN	22	$\overline{\text{FEN}}$
4	D0 (LSB)	23	$\overline{\text{D0}}$
5	D1	24	$\overline{\text{D1}}$
6	D2	25	$\overline{\text{D2}}$
7	D3	26	$\overline{\text{D3}}$
8	D4	27	$\overline{\text{D4}}$
9	D5	28	$\overline{\text{D5}}$
10	D6	29	$\overline{\text{D6}}$
11	D7	30	$\overline{\text{D7}}$
12	D8	31	$\overline{\text{D8}}$
13	D9	32	$\overline{\text{D9}}$
14	D10	33	$\overline{\text{D10}}$
15	D11 (MSB)	34	$\overline{\text{D11}}$
16	GND	35	GND
17	$\overline{\text{TREX}}$	36	TREX
18	SV2	37	Mode
19	$\overline{\text{BIN}}$		

Power and Control Input (15-pin D-SUB Jack)

Pin	Function
1, 2	+ 12 V DC
3, 4	GND
5	-
6	-
7	-
8	-
9	Mode: (Open) ⇒ Continuous Mode; (GND) ⇒ Image on Demand
10, 11	- / + Trigger Input (Opto-Coupler)
12, 13	- / + Exposure Output (Opto-Coupler)
14	Line Sync Output (active low)
15	Frame Sync Output (active low)



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