CCD-4000 / C

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

Features

- 2048 (H) x 2048 (V) square pixels
- 7.5 frames/sec. at 2048 (H) x 2048 (V) pixels or
  15 frames/sec. at 2048 (H) x 1024 (V) pixels
- Progressive scan
- Interline-transfer sensor (IT)
- Asynchronous shutter up to 1/10000 sec. (image on demand)
- Effective camera dynamics ≥ 1:1000 (≥ 60 dB)
- Digital RS-644 output with 12-bit
- Single output (40 Mpixel/sec.)
- Optional: color sensor (Bayer filter)

With a resolution of 2048 x 2048 effective pixels, the **CCD-4000** is a further member of the VDS high resolution high fidelity CCD camera family.

The **CCD-4000** gives out the full resolution with 7.5 fps. In the binning mode 2048 (H) x 1024 (V) even 15 fps are reached.

By means of the progressive interline transfer sensor very short exposure times up to 1/10000 seconds can be achieved at a full resolution. The exposure time can be regulated in steps of approx. 64 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 moving objects.

The effective dynamic of the complete camera

$$D = \frac{Sat_{(count)} - Dark_{(count)}}{RMSNoise_{(count)}}$$

is more than 1000 and therefore offers reserves even for difficult lighting conditions or very short exposure times.

The RS-644 (LVDS) digital output supplies image data with 12-bit precision.

Because of the C-mount connector different C-mount objectives and adaptors for F-mount can be used.
The **CCD-4000** is identical in the mechanic and pin-to-pin compatible to the CCD-1300 camera line.

Technical Data

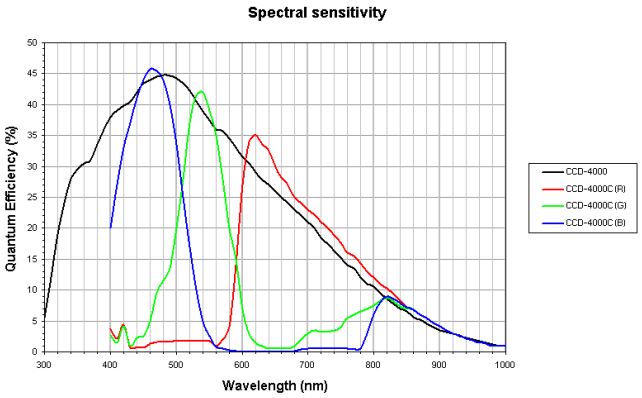
- Resolution: 2048 (H) x 2048 (V) pixels
- Progressive scan
- Image rate: up to 7.5 frames/sec. (2048 x 2048) or up to 15 frames/sec. (2048 x 1024)
- Pixel size: 7.4 µm x 7.4 µm
- Active sensor size: 15.15 (H) mm x 15.15 (V) mm
- Interline transfer sensor (no mech. shutter required)
- Electronic shutter up to 1/10,000 sec.; adjustable in 64 µs steps
- Image on demand
- Further binning modes as option
- Effective dynamics: ≥ 1:1000 (≥ 60 dB)
- Sensor saturation: ≥ 40,000 e
- Anti-blooming circuit
- Exposure time up to approx. 1 sec.
- Digital output: 12-bit, RS-644 (LVDS)
- Frame system: 2082 lines
- Pixel clock: 40 MHz
- Video gain: 1 or 2 (+ 6 dB)
- Optional: color sensor (Bayer filter)
- Power supply: + 12 V (SELV), approx. 0.65 A
- Ambient air temperature: 0° to 40° C
- Lens mount: C-mount or F-mount with adaptor
- CE standard
- Made in Germany

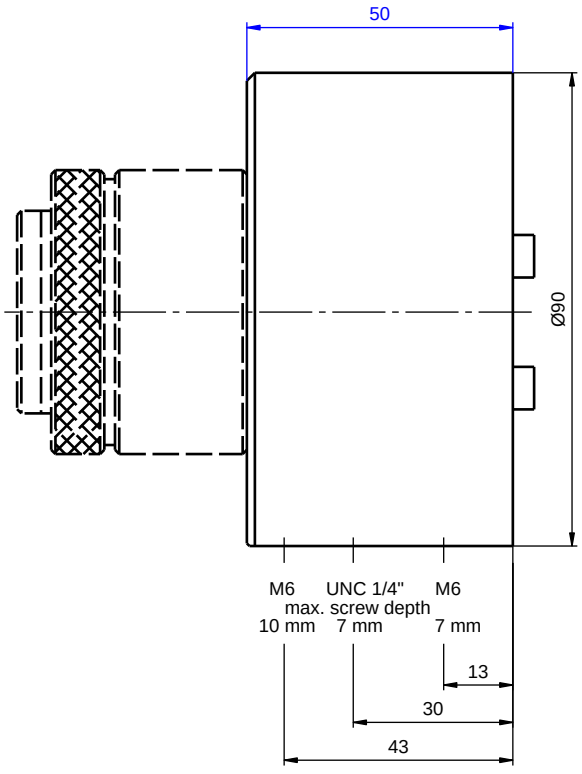
RS-644 Digital Output (37-pin D-SUB Jack)

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

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

Pin	Function
1	+12V DC
2	
3	GND
4	
5	
6	
7	
8	
9	Mode: (Open) → Continuous (GND) → IOD
10	- Trigger Input (Opto Coupler)
11	+
12	- Exposure Output (Opto Coupler)
13	+
14	Line Sync Output
15	Frame Sync Output





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