Info Sheet Cooling

In a class of its own – virtually noise-free!

The "cooled cameras" with controlled double-stage Peltier cooling present compelling performance in all areas. They offer outstanding performance for low light applications with extremely long exposure times, e.g. in the area of fluorescence microscopy, astronomy, electrophoresis and gel documentation.

The cooled cameras feature a high-quality 2/3" CCD sensor that stands out with its extremely high sensitivity, a high resolution and excellent quantum efficiency.

The low-noise cameras work with 12-bit pixel depth. The interface can be chosen between Fire Wire, Camera Link (also PCMCIA) or Gigabit Ethernet. The binning mode with reduced exposure times can be useful e.g. for fast fading scenes.

For virtually noise-free images: At room temperature the sensor is cooled to -15°C with the controlled double-stage cooling (unregulated max. Delta T = 42° K).
The enormous reduction of thermic noise guarantees an almost noise-free signal (66 dB SNR) even for exposure times of several minutes. The electronic noise is minimized due to the use of high-quality components and intelligent circuitry. Furthermore the readout noise can be reduced by using the switchable Slow Scan Mode with a lower clock rate.

Also the "signature cameras" are available as cooled versions with the 285 CCD sensor. They provide a special function which allows to authenticate images (together with additional data) directly with a camera-internal electronic signature. (See data sheet Signature Cameras).

1.4 Megapixel resolution
High quantum efficiency
12 bit digital pixel depth
Low-noise, 63dB (66 dB Slow Scan Mode)
Exposure time 1 µs up to 20 min
Binning | Partial Scan
Double-stage Peltier cooling regulated to – 15°C (at room temperature) unregulated to Delta T 42° K
Switchable Slow Scan Mode
Signature (optional)

Technical Data

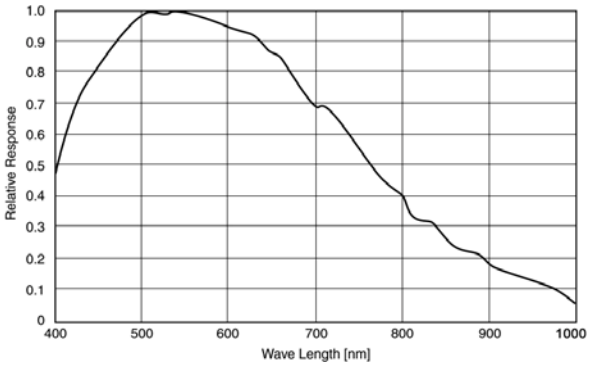
DX 4C – 285 | PS 4C – 285	**Interfaces Fire Wire, Camera Link and Gigabit Ethernet**	
CCD sensor	2/3" interline transfer CCD progressive scan with micro lenses (Sony ICX285AL, EXview HAD)	
Number of pixels (H x V)	DX models 1392 x 1040 effective, PS models 1434 x 1050 total	
Spectral sensitivity (without IR-filter)	320 nm – 1100 nm	
Full Well Capacity	23 000 e^-	
A/D-conversion factor	5.6 e^- / increment	
Dynamic Slow Scan Mode	63 dB (measured in dark image, at 66 ms exposure time and 0 dB gain) 66 dB (switchable on/off, camera-output 25% of the fps- default values)	
Sensitivity	(measured at 18 dB gain, gamma = 1, 50 % level, 3000 K) 0.0000017 lx	at 20 min exposure time
Exposure time	manual: automatic (AE):	1 µs up to 20 min 1 µs up to 66 ms
Camera output format	full frame:	up to 15 fps (depending on interface)
	binning:	2- up to 8 fold, up to 62 fps
	partial scan:	image size freely adjustable

DX 40C – 285 | PS 40C – 285	**Interfaces Fire Wire, Camera Link and Gigabit Ethernet**	
CCD sensor	2/3" interline transfer CCD progressive scan with micro lenses (Sony ICX285AQ, EXview HAD)	
Number of pixels (H x V)	DX models 1392 x 1040 effective, PS models 1434 x 1050 total	
Spectral sensitivity (without IR-filter)	320 nm – 1100 nm, color: B = 470 nm, G = 540 nm, R = 630 nm (peak sensitivity)	
Full Well Capacity	23 000 e^-	
A/D- conversion factor	5,6 e^- / increment	
Filter	RGB Bayer filter	
Dynamic range Slow Scan Mode	63 dB (measured in dark image, at 66 ms exposure time and 0 dB gain) 66 dB (switchable on/off, camera-output 25% of the fps-standard value)	
Sensitivity	(measured at 18 dB gain, gamma = 1, 50 % of the output level, 3000 K) 0.000029 lx	at 20 min exposure time
Exposure time	manual: automatic (AE):	1 µs to 20 min 1 µs to 66 ms
Camera output format	full frame:	up to 15 fps (depending on interface)
	binning:	2- up to 8 fold, up to to 62 fps
	partial scan:	image size freely adjustable

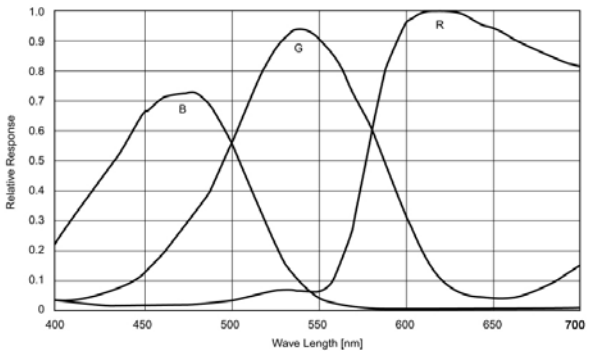
Cooling	
Double-stage Peltier cooling	via software switchable: on/regulated/max./Slow Scan Mode temperature of the sensor unregulated Delta T 42°K temperature of the sensor regulated -15°C (ambient temperature from 15°C up to 27°C)

Spectral Sensitivity Characteristics

DX 4 C – 285 | PS 4C – 285



DX 40 C – 285 | PS 40 C – 285



We are constantly checking the accuracy of the technical data. We are prepared to provide more detailed information on request.
Technical data are subject to change without notice!

TECHNICAL SUPPORT
Fon +49.1805.371371
Fax +49.551.30 77 211
support@kappa.de

Kappa opto-electronics Inc.
911 S. Primrose Ave., Unit P
Monrovia, CA 91016 | USA
Fon +1.626.256.4343
Fax +1.626.256.6484
info@kappa-vision.com
www.kappa-vision.com

Kappa opto-electronics GmbH
Kleines Feld 6
37130 Gleichen | Germany
Fon +49.5508.974.0
Fax +49.5508.974.100
info@kappa.de
www.kappa.de

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