

SIS1-p18M

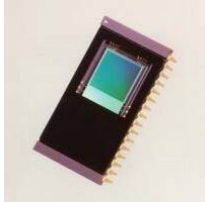
HIGH RESOLUTION 1 MEGAPIXEL 15-BIT DYNAMIC SCIENTIFIC IMAGING SYSTEM



The Scientific Imaging System SIS1- p18M is a high resolution 1 megapixel camera system with 2 megapixel interlaced image resolution and 15-bit dynamic designed for all kinds of industrial and scientific applications. The square 2/3" frame transfer CCD image sensor Philips FT18 with 7.68mm x 7.68mm active image area and square pixel of 7.5 μ m x 7.5 μ m size fits optimally for quantitative intensity measurements with its high intensity and spatial resolution due to the high electron full well capacity, the 100% fill factor and the low dark current. The flexible timing modes of the camera incorporate the framing mode for very fast kinetic studies.

Features	
Highest sensitivity ⇨	Low readout noise with SNR of 4e ⁻ rms because of the special "correlated double sampling" signal processing technique.
14-Bit digitalization ⇨	14-digitalization and 16-bit data transfer provide 16384 greyscale, 64 times better than 8-bit systems, important for photometric and low contrast measurements. Averaging of statistical noise with image accumulation offers 15-bit dynamic.
Low dark current ⇨	The special internal chip structure of the CCD image sensor reduces the dark current down to 100e ⁻ /pixel/s @ 15°C for μ -Lux imaging with long time integration.
Photometric linearity ⇨	Proportionality of measured counts to incoming light intensity better than 0.4%, can be optimized to linearities < 0.1% with correction tables.
High spatial resolution ⇨	1 megapixel frame transfer CCD image sensor Philips FT18 with 7.68mm x 7.68mm active image area and square pixel of 7.5 μ m x 7.5 μ m size, 2 interlaced megapixel.
External timing ⇨	Asynchronous electronic integration time control with an external gate input. Integration time control from 19ms up to > 100s, optionally expandable.
Super pixel binning ⇨	Selectable binning of charges of adjacent pixels onto the CCD Chip with single read out increases linearly the signal to noise ratio with reduced spatial resolution.
Antiblooming function ⇨	Blooming from one overexposed pixel to adjacent pixels will be avoided by an efficiency of an overexposure factor of > 200 relative to the full well capacity.
High full well capacity ⇨	Photon statistics $S/N = \sqrt{S}$ determines the signal to noise ratio SNR even at 2% of max. intensities. High dynamics therefore require a high electron capacity of the sensor.
100% fill factor ⇨	For high precision intensity measurements a full sensitivity of the whole image area is necessary because otherwise small image structures result in moiré-effects.
WinSIS-Software ⇨	WinSIS4.2 for Win9x/NT controls all camera functions and integration timing. The concept of intuitive easy-to-use operation for all imaging and processing functions with integrated job creation and macro definition offers a fast realisation of complex applications without long training periods. SDK for personal programming.

SIS1-p18M

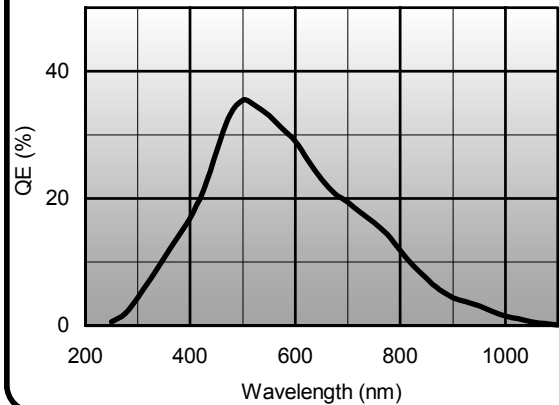


CCD image sensor Philips FT18

Specifications

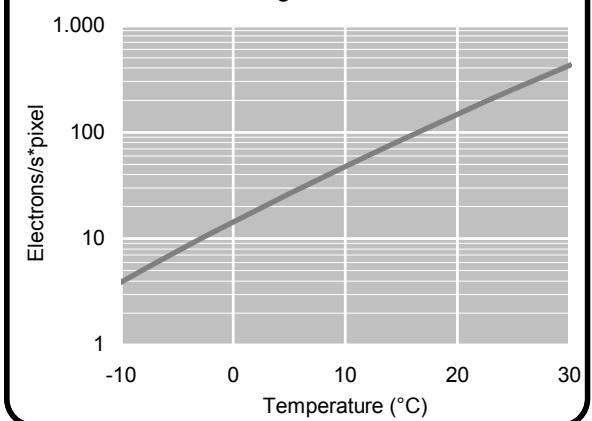
CCD image sensor	Philips FT18
Sensor type	Frame transfer
Sensor format	1 : 1, 2/3"-sensor
Image size	7.68mm x 7.68mm, 10,9mm diagonal
Pixel size	7.5µm x 7.5µm
Pixel number	1024 (H) x 1024 (V)
Interlaced	1024 (H) x 2048 (V)
Electron capacity	120,000e ⁻
Readout noise	4e ⁻ rms
Dynamic	30,000 : 1
Dark current @ 15°C	100 e ⁻ / Pixel s
Quantum efficiency	> 30%
Binning	horizontal, vertical
Antiblooming	> 200 x e ⁻ capacity
Digitalization	14 bit, 16,384 : 1 16(18) bit, 65,536 : 1
Readout frequency	10MHz, 3MHz (14 bit) 1 MHz (16(18) bit)
Frame rate	7 Hz, 2.3 Hz, 0,7 Hz
Integration time	10ms to >100s
Optical connection	c-mount. special
Mech. dim. (BxHxL)	100x80x165mm
Weight	800g
Operational temperature	0 ... 40°C

Quantum efficiency QE, Philips FT18



The quantum efficiency QE is defined as the percentage of the generated electronic charges by the incoming photons.

Dark signal, FT18



The temperature-dependent dark current of a CCD image sensor results from the thermal generation of electrons. An increase of temperature from 6°C to 9°C doubles the dark current.

SIS1 product range with highlights

SIS1-p1010	1 Mpix, 1" FT, 16bit, 100% fillfactor
SIS1-p3020M	6.3 Mpix, FF bw, 45mm dia, 16bit, 100% fill
SIS1-p3020C	6.3 Mpix FF color, 45mm diag, 16bit
SIS1-m30oe	27mm FF spectrosc., <200nm, QE >55%
SIS1-m30bi	27mm FF spectrosc., <200nm, QE >90%
SIS1-s285M	1.45 Mpix, SNR 2.5e ⁻ ; sq. 6.45µ, 2/3" IT bw
SIS1-s285C	1.45 Mpix, SNR 2.5e ⁻ ; sq. 6.45µ, 2/3" IT col
SIS1-s205M	1.45 Mpix, sq. 6.45µ, 1/2" IT bw
SIS1-s205C	1.45 Mpix, sq. 6.45µ, 1/2" IT color
SIS1-s249	0.22 Mpix, 8.6µ, 1/2" IT bw, QE >65%
ISIS-xxx	Intensified, gated Systems
SPI	Single Photon Imaging

We deliver custom and OEM camera systems with nearly all available sensors, developed for your specific application based on our modular design concept and our 14 years of experience in scientific camera systems.

Ask for all kind of objectives, illuminations, high power LED-pulsers, high stability flashlamp systems and other options.

THETA SYSTEM Elektronik GmbH

Rathausstraße 13, D-82194 Gröbenzell

Tel +49 (0)8142-4678 0

Fax +49 (0)8142-4678 90

Email: theta@theta-system.de