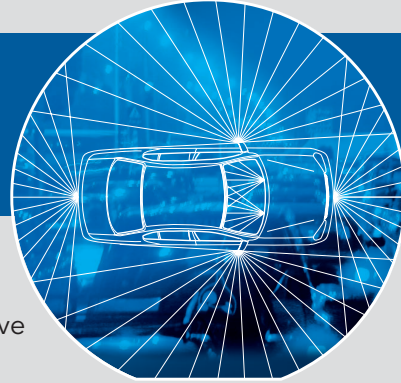


# Automotive SVGA Imager „Saentis“ (ZMD33220)



This CMOS HDR (High Dynamic Range) image sensor boasts outstanding parameters and is especially suited for automotive applications such as:

- Exterior: Blind spot, lane departure warning, rear view, night vision...
- Interior: Compartment protection, occupant detection, child restraint detection, out of position detection...
- Industrial quality control and inspection
- Indoor and outdoor security cameras

## Example: Back lit, high glare situation



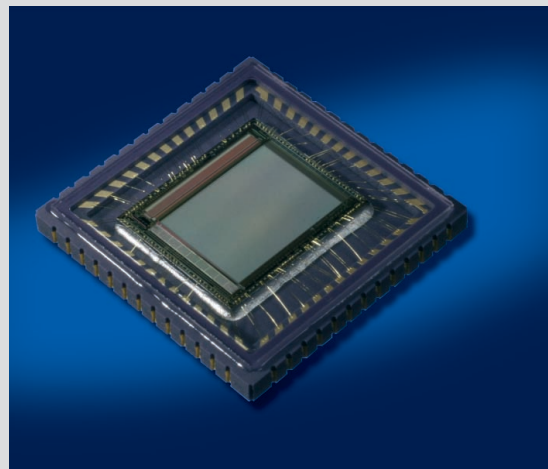
Conventional camera



Saentis in LinLog™ mode

## Key Features

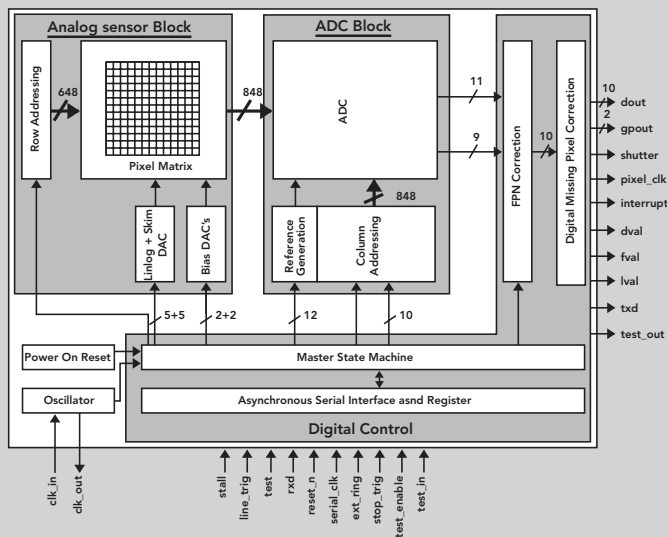
- 840 x 640 pixel resolution (SVGA+)
- 10bit/8bit digital output
- Max. frame rate 100fps (full area readout)
- 120dB in scene contrast (handles changes between sunlight and tunnel entry situations)
- Automotive operation range: -40...+125°C
- Global (snapshot) synchronous shutter
- Different response curve modes:  
Linear, logarithmic, piecewise linear LinLog™, LinLog2™ (harsh light), Skimming (low light conditions)
- Anti-blooming, no image lag or smear
- Near infrared sensitivity for night vision



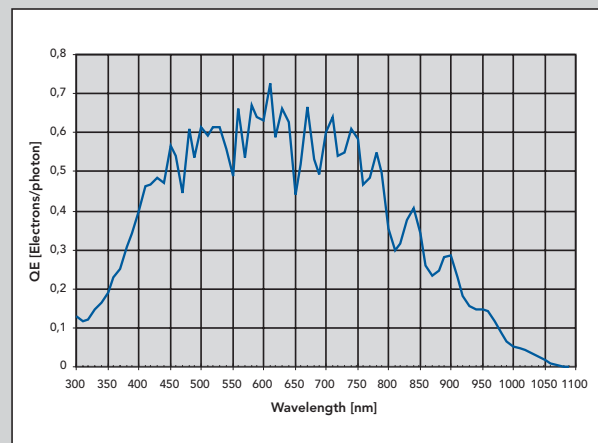
## ZMD33220 (Saentis IC – Preliminary) Characteristics

Technology	CMOS active pixel
Max. Resolution	840 x 640 pixels
Multiple Region of Interest (ROI)	≤ 3/frame (supporting panoramic and other resolutions)
Pixel Size	10.6µm x 10.6µm
Sensing Area	8.904mm x 6.784mm
Recommended Optics	2/3" (1/2" possible; or others with smaller ROIs)
Optical Fill Factor	36%
Response	Adjustable linear to logarithmic (LinLog™), Skimming
Dynamic Range	> 120 dB (LinLog™)
Shutter Mode	Interleaved shutter, sequential shutter
Shutter Efficiency	> 99.5 %
Integration Control Mode	Free running, external hardware trigger and external serial trigger
Minimum Integration Time	0.5µs
Maximum Integration Time	400ms (internal timer) ∞ (external stop signal)
Color	Monochrome / RGB Bayer color option
Frame Rate	≤ 100 fps (full area readout; or higher depending on ROI)
Pixel Frequency	≤ 66MHz
Operation Temperature	-40°C...+125°C
Storage Temperature	-65°C...+150°C
Spectral Sensitivity	350 nm ... 1000nm
Responsivity (Gray Values per Energy)	> 3 DN/nJ cm <sup>2</sup> @550nm (without gain) > 4 DN/nJ cm <sup>2</sup> @630nm (without gain) > 2 DN/nJ cm <sup>2</sup> @850nm (without gain)
Fixed Pattern Noise (FPN)	< 1% RMS
Digital Control Features	FPN correction, digital missing pixel correction (optional)
Interface	Digital output 8 bit/ 10 bit (video data) Asynchronous serial interface (control data)
Power Supply	3.3V DC; 4.5V DC
Power Consumption	< 300mW typically
Package	Automotive LCCC52 or other packages on request

### Block Diagram



### Quantum Efficiency



**Photonfocus AG**  
 Bahnhofplatz 10 · 8853 Lachen SZ  
 Switzerland  
 Tel +41.55.451.0131  
 Fax +41.55.451.0001  
 sales@photonfocus.com  
[www.photonfocus.com](http://www.photonfocus.com)



**ZMD AG**  
 Grenzstrasse 28 · 01109 Dresden  
 Germany  
 Tel +49.351.8822.319  
 Fax +49.351.8822.606  
 sales@zmd.de  
[www.zmd.biz](http://www.zmd.biz)