

Technical Data FWXC13c NC Edition

Preliminary



**Digital Color
Progressive Scan CMOS Camera**

System: **IEEE1394a**

Baumer FWXC13c NeuroCheck Edition

Art. No: **OD106436**

- IEEE1394a (FireWire™) Progressive Scan CMOS Camera
- 1280 x 1024 Pixels
- Up to 18 Frames per Second in Full Frame Mode
- True Partial Scan Function (ROI) for Increased Frame Rates
- External Synchronisation via Asynchronous Trigger and Flash Sync Function
- Integrated 8 MByte RAM for Temporarily Image Data Buffering
- Compact Robust Aluminium Housing
- Industrial IEEE1394 Connector
- Camera Parameter in Real Time programmable
- Powerful Baumer FCAM1394 Driver / Software Development Kit for Windows
- IEEE1394a Interface compliant to OHCI Standard
- User Friendly Baumer TWAIN compatible Image Capture and Camera Control Software



shown lens and cable need to be ordered separately

1. Overview

Sensor	CMOS technology 1/2" progressive scan				
Shutter / readout mode	rolling curtain type shutter / progressive scan readout				
Number of pixels	1280 x 1024				
Scan area	6.66 mm x 5.32 mm				
Pixel size	5.2 µm x 5.2 µm				
Color filter	RGB Bayer mosaic				
Operation modes					
Trigger mode	yes				
Free running mode	yes, rolling shutter operation				
Signal processing					
real time software programmable					
Pixel clock	29.5 MHz fast scan 8 Bit				
A/D converter	10 Bit				
Exposure control (t _{exp})	Full frame fast	Full frame *)	103 µsec .. 400 msec	step: 103 µsec	
		Center scan VGA			
		Center scan SVGA			
		Center scan XGA			
*) NOTE: when using partial scan in full frame mode the exposure time might be reduced depending on the set region of interest!					
Gain control	0 .. 6 dB				
Offset (black level)	permanent automatic offset correction				
Image data buffer	8 MByte				
Image acquisition					
Data format	raw image data from camera				
Camera image format modes (see item 3)	Format (pixel)	Bit per pixel	Pixel clock MHz	Frames per sec *)	t_{readout}
Full frame	1280 x 1024	8	29.5	18	55 msec
Partial scan function	yes, format freely programmable in full frame *)				
Test pattern function	yes, in all modes				
Data quality	at 20 °C, gain = 1, exposure time = 32 msec full frame mode, fast scan				
Readout noise	σ < 0.8 (8 Bit) typical				
Dynamic range	typ. > 50 dB				

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Optical interface	C-Mount
Optical filter	Hoya CM500S option: dust protection or no filter
Process interface functions	
Async. trigger	yes, trigger mode operation, software trigger and external trigger signal
Flash sync	yes, external signal and software flag
Readout active	yes, external signal and software flag
Software reset	yes, delay up to 55 msec
Image data header	yes
Electrical interface	
Data / control / power	standard single cable IEEE1394a / 6 pins option: screw lock type connector
Digital input	1: trigger signal, opto decoupled input 2.4 V .. 14 V / 20 mA trigger delay and minimal pulse length: 1 µsec
Digital output	1: flash sync signal or readout active signal selectable, output 12 V / 20 mA
LED	green: power on / yellow: data transmission active
Power consumption	app. 4 Watt
Environmental	
Storage temperature	-10 °C .. +70 °C
Operating temperature	+5 °C .. +50 °C
Humidity	10 % .. 90 % non condensing
Housing	Aluminium
Dimensions	73 x 56 x 55 mm ³
Weight	340 g
IEEE1394a interface	OHCI standard compliant
Software	Baumer FCAM1394 Driver / SDK for Windows 2000 / Windows XP

*) maximum frame rate in free running mode, effective frame rates depending on SDK video mode settings and set exposure time

2. Camera Factory Settings after Camera Start-Up

	camera factory settings after camera start up
Operation modes	free running mode
Signal processing	
Exposure control	50 msec
Gain control	factor 1 = 0 dB
Offset (black level)	-
Image acquisition	
Camera image format mode	mode ID = 20: full frame (see item 3)
Partial scan function	not active
Electrical interface	
Digital output	1: disabled, digital output set to low status default: readout active signal

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3. SDK Supported Image Formats

Camera Mode	SDK Image Mode				
	Mode ID	Description	Image Format	Color Coding	Functions / State
Full Frame fast	20	Full Frame	1280 x 1024	RawBayer8, Mono8, Color3x8, 3xColor8	PS, T , F, Color
	42	Center scan VGA	640 x 480	RawBayer8, Mono8, Color3x8, 3xColor8	T , F, Color
	44	Center Scan SVGA	800 x 600	RawBayer8, Mono8, Color3x8, 3xColor8	T , F, Color
	46	Center Scan XGA	1024 x 768	RawBayer8, Mono8, Color3x8, 3xColor8	T , F, Color

SDK - software development kit
 PS - partial scan
 T - trigger
 F - flash
 Color - color mode

RawBayer8 - unmanipulated pixel data in Bayer filter pattern in 8 bit
 Color3x8 - software corrected image data for color camera modes in the color data arrangement RGB...RGB in 8 bit
 3xColor8 - software corrected image data for color camera modes in the color data arrangement RRR...GGG...BBB in 8 bit
 Mono8 - software corrected image data for monochrome camera modes in 8 bit

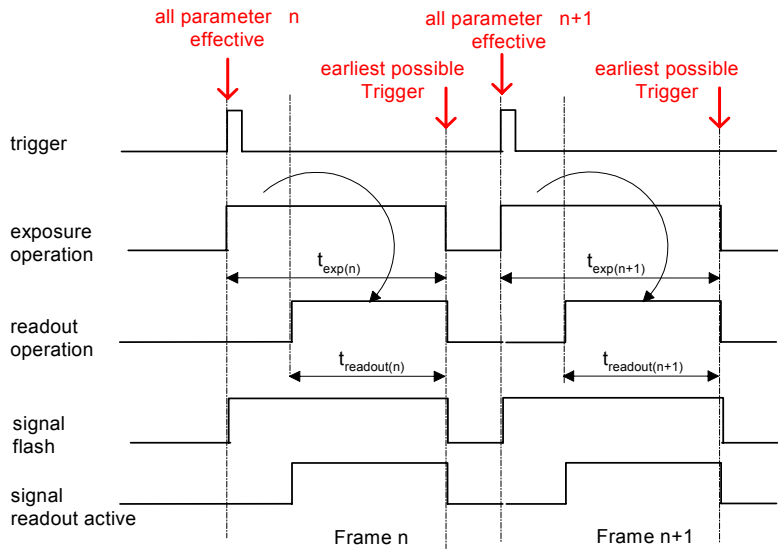
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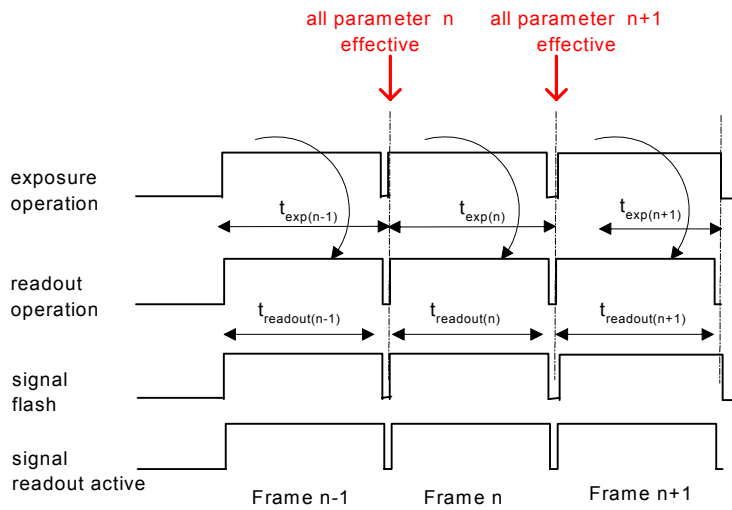


4. Timing Operation Modes

Trigger Mode: rolling shutter



Free Running Mode: rolling shutter



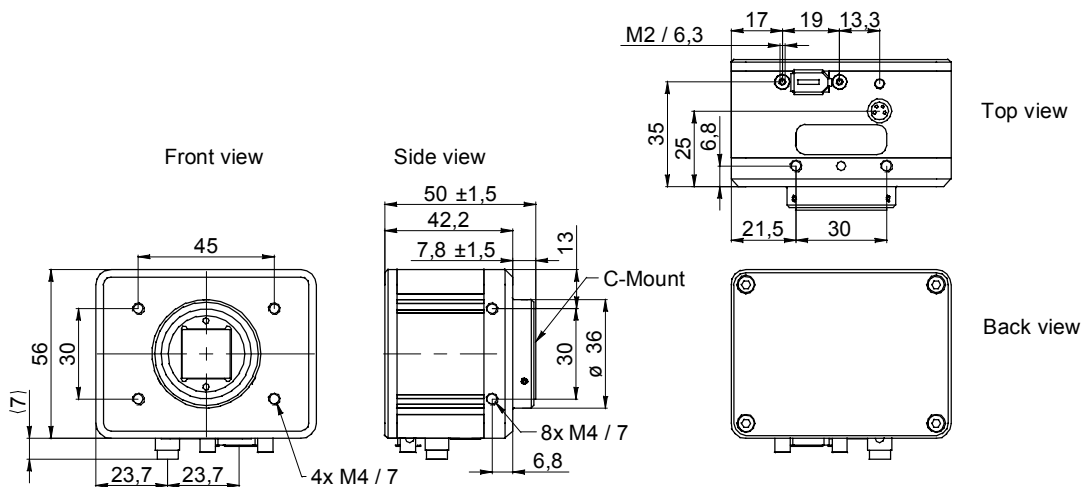
- * image parameter: offset
- exposure time
- global gain
- mode
- color gain
- partial scan

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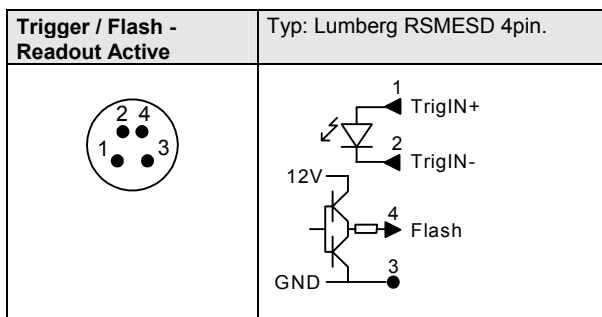


5. Housing



6. Connectors

	Pin
	1: Power
	2: GND
	3: TPB-
	4: TPB+
	5: TPA-
	6: TPA+



End of Document

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History of TDS FWXC13c NC Edition

Date	Version	Name	Pages/ Chapter	Change
07.10.2003	1.0	lsc	all	creation document
09.10.2003	1.0	lsc	1	art.no. added
09.01.2004	1.0	dni	all	document revised