

# High Speed *megaPixel* CMOS Camera

## MC1302/03

- MC1302 monochrome
- MC1303 RGB colour with BAYER Filter
- Up to 100 fps @ 1280 (H) x 1024 (V) resolution
- 8 or 10 Bit
- "Base" Camera Link® output with 132 MB/s max. data rate
- Random selection of window size and position
- Asynchronous global shutter
- Horizontal and vertical pixelbinning
- Low power consumption
- Small, compact size



### Flexible resolution and speed

The MC1302/03 of Mikrotron is a high-speed *megaPixel* CMOS camera with a resolution of 1280 (H) x 1024 (V) pixel and up to 100 fps. Contrary to high resolution CCD sensors, modern CMOS sensors offer high resolution and extremely high data rates. Because window size, position (ROI), and clock frequency is randomly programmable, resolution and frame rate of MC1302/03 can be easily adapted to any specific requirements.

### Easy configuration

MC1302/03 configuration is done via the Camera Link® interface. Eight sets of camera configuration schemes can be stored in non-volatile memory of the cameras microcontroller. Even the FPGA configuration file can be downloaded for very special customer needs e.g. image preprocessing in MC1302/03 hardware.

Window size and position (ROI) on the sensor plus clock speed are programmable. With a pixel clock of 33 MHz on the "Base" Camera Link® connector and a window size of 100 x 100 pixel a frame rate of more than 5.000 fps can be achieved. Maximum video data rate at the 2 x 8 -Bit "Base" Camera Link® connector is 132 MB/s.

### "Freeze Frame" full frame shutter

The MC1302/03 has a "Freeze Frame" shutter. This shutter "freezes" and stores the complete full frame at the end of the exposure time while exposing the next image.

This results in extremely sharp, high-quality images, even if the object moves very fast.

MC1302/03 can expose images synchronously or asynchronously. In synchronous (free run) mode exposure time equals frame time or, for shorter exposure times, the electronic shutter can be activated with a minimal shutter time of 4µs. In asynchronous mode an image is exposed by an external trigger.

### Camera Link® compatible data output

Using 2x10-Bit data output the full dynamic range of the sensor is available on the output. If less bandwidth and more speed is desired, any 8-Bits out of the 10-Bits of the sensor can be selected and output as 2x8-Bit within the "Base" Camera Link® output format.

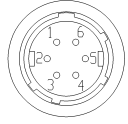
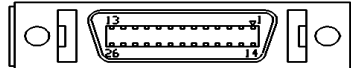
### Horizontal and vertical Pixelbinning

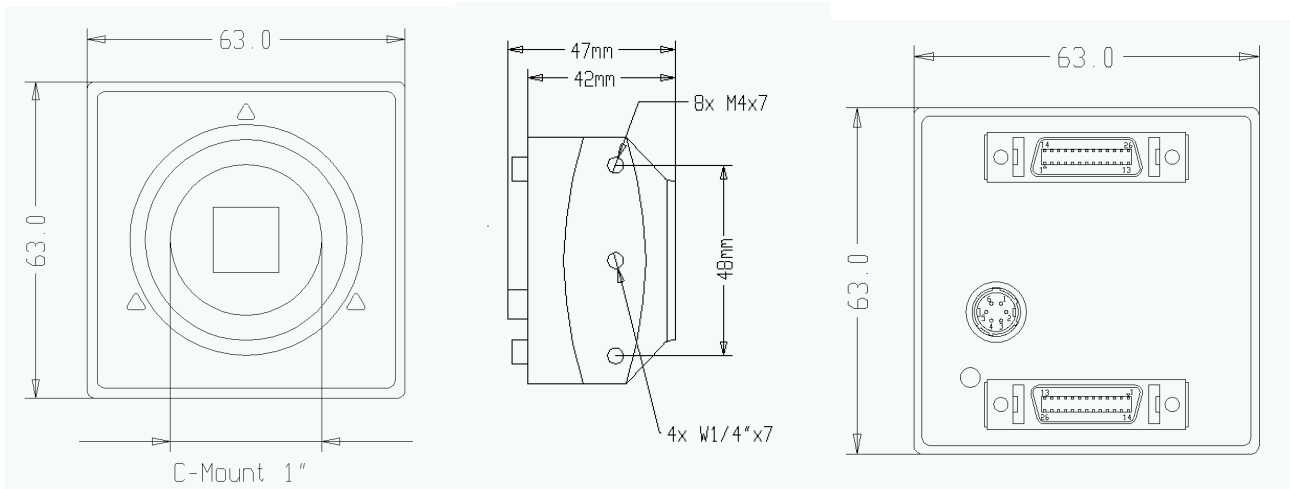
With high frame rates the exposure time is short. For more sensitivity the level of two adjacent or pixel in one row or one column or both can be summed.

### Camera configuration tool

The MC1302/03 is delivered with a configuration program for Windows® operating systems. The clearly defined control surface allows to work with it intuitively. All parameters of the camera, e.g. image size and position, speed, shutter, exposure time may be set directly or via sliders. The resulting commands are transmitted by the serial interface of Camera Link®. The selected settings may be stored in the camera or in a separate file. Also integrated is a monitor to show the transmitted commands and answers from the camera.

Technical Data	
MC1302 Sensor	linear response, monochrome
MC1303 Sensor	RGB colour with BAYER filter and UV-IR filter
Number of pixel	1280(H) x 1024 (V)
Pixel size	12 x 12 $\mu\text{m}$
Optical active area	15,36 (H) x 12,29 (V) mm 19,67 mm diagonal
Fill factor	40%
Spectral bandwidth	400 ... 800 nm
Illumination @ ADC Vref = 1V	1600 LSB/lux-sec at 550 nm
Internal dynamic	59 dB
Frame rates	100 fps @ 1.280 x 1.024 Pixel 1.155 fps @ 360 x 360 Pixel 5.099 fps @ 100 x 100 Pixel
Video output	"Base" Camera Link®, 2 x 8-Bit or 2 x 10-Bit
Pixel clock	20 - 85 MHz
Synchronisation	Internal or external pixel clock
Asynchronous shutter	Internal timer, 1024 steps, 4 $\mu\text{s}$ to 32 ms or by pulse width of trigger signal
Gain	Digital x 1, 2, 4
Camera configuration	"Base" Camera Link®
Power supply	8 ... 24 V DC
Power consumption max.	4.5W
Thermal resistance typ.	0.17°/W
Case temperature	+5...50°C
Shock & vibration	70g, 7grms
Lens	C-mount, F-mount with adapter
Dimensions (W x H x D)	63 x 63 x 47 mm
Weight	app. 300 g

Connectors			
<b>6-pin. Hirose power connector</b>			
Pin	Signal	Pin	Signal
1	VCC	4	DGND*
2	VCC	5	GND
3	STRB	6	GND
*DGND...digital GND for STRB signal			
			
<b>"Base" Camera Link® Connector</b>			
All signals according to "Base" Camera Link® specification			
Signal	Description		
CC1	EXP		
CC4	External Clock		
			



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