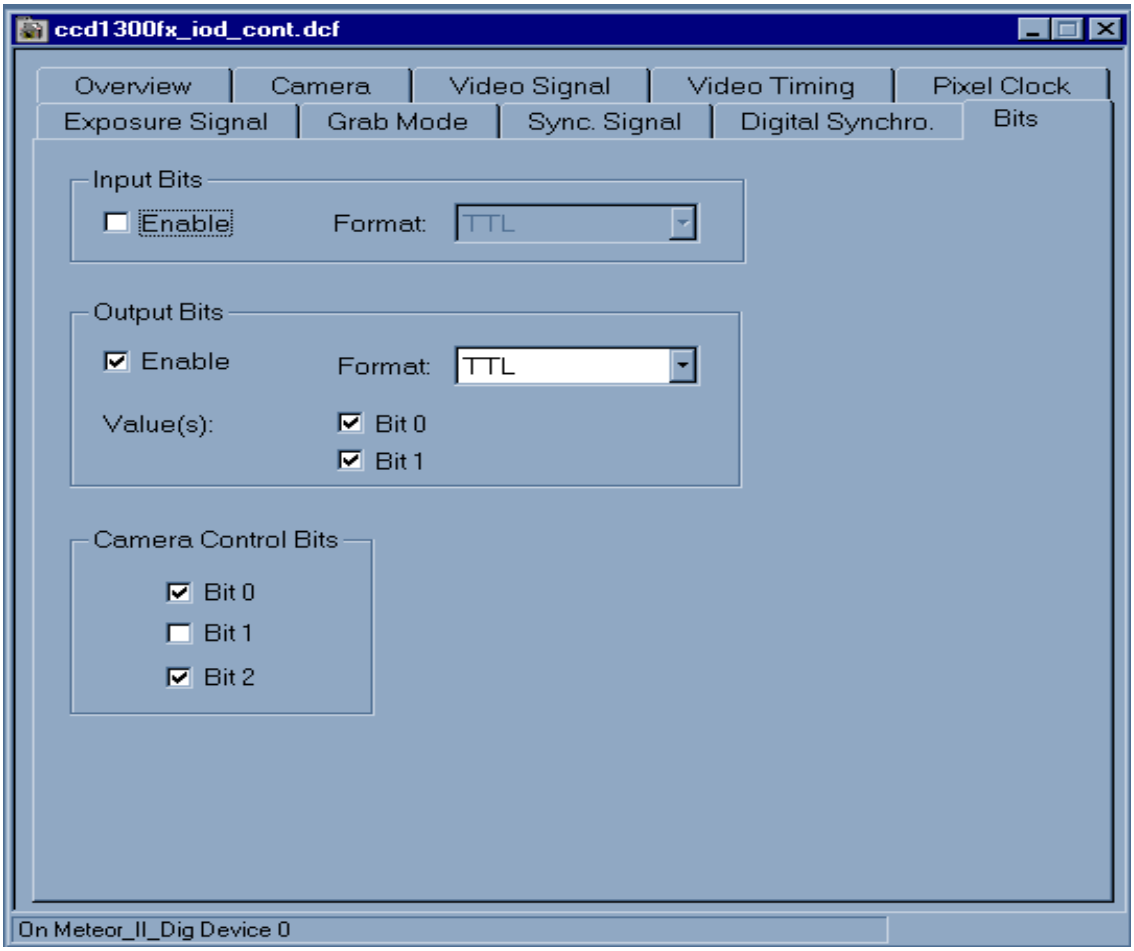
CCD-1300FX/B/F/LN etc.

in connection with the Matrox Framegrabber Meteor II / Dig

On condition of, that the connection between the camera and the grabber has been made like it is described in the connection plan in the appendix, the camera can be controlled with the following control outputs:

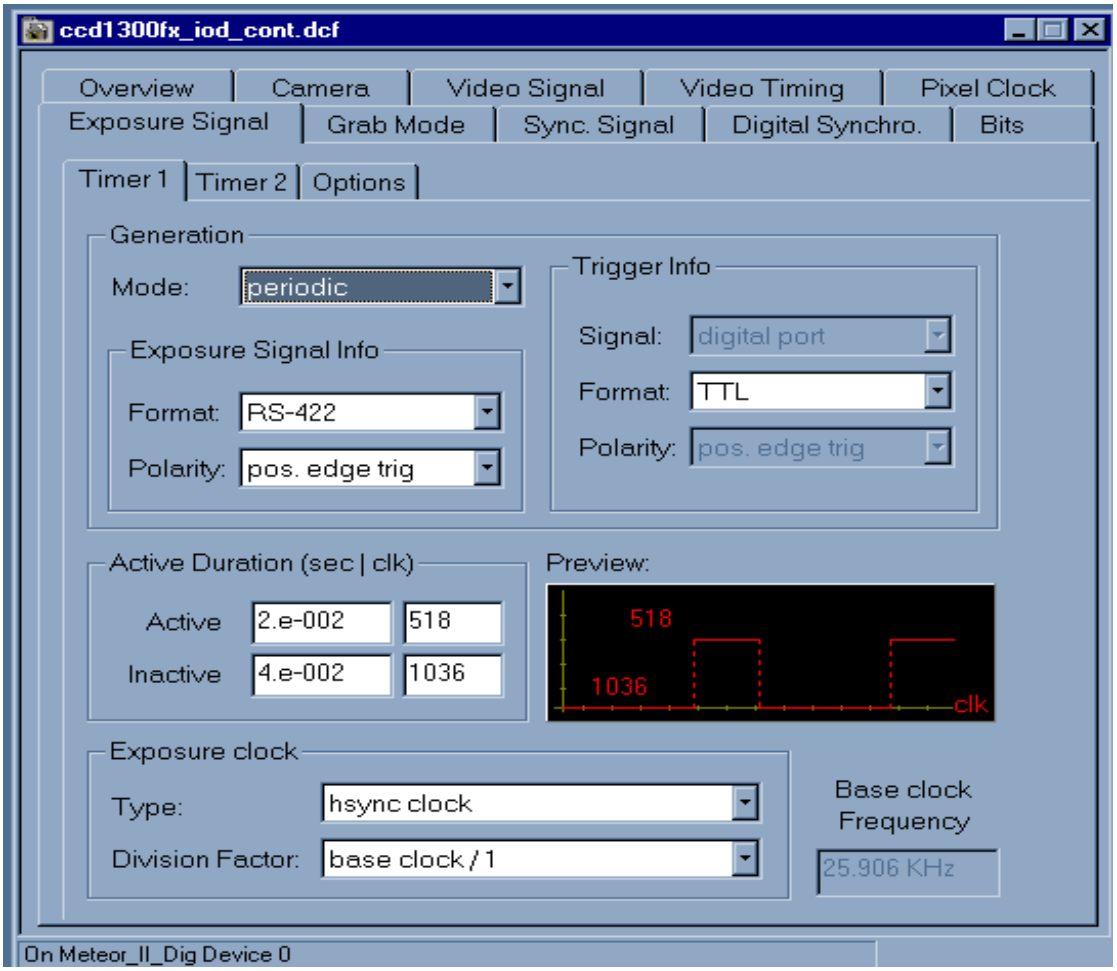


- **USER OUTPUT 0+ (Output Bit 0) = Amplification**
  The amplification can be switched as desired. If the **Output Bit 0** is marked, the TTL-output contains high level and the amplification is set to 1. If the **Output Bit 0** is not marked, the amplification is set to 2.

- **USER OUTPUT 1+ (Output Bit 1) = Binning Mode**
  With BIT 1 the binning mode of the camera can be switched. Please note, that the video timing must be adapted to the binning mode. It is recommended to use different DCF files for each mode.
  If the **Output Bit 1** is marked, the camera works in full resolution mode. If the **Output Bit 1** is not marked, the camera works in binning mode.

- **Camera CTRL Bit1, Output (Camera Control Bit 1) = I**mage**O**n**D**emand-**Mode**
  The camera distinguishes between continuous mode and the image on demand mode. If the „**Camera Control Bit 1**“ is marked, an image will be transfered every 40, 80 or 120 ms according to the used camera. If the „**Camera Control Bit 1**“ is not marked, the camera works in continuous mode and the grabber controls the exposure time. The operation is controlled by an external trigger at the camera or with the framegrabber, through a software trigger or the Timer1.

- **Exposure1,Output = Exposure time**
  The exposure time can be controlled with the Timer1 because the „TREX“ input of the camera is connected with the „Exposure1 Output“ of the grabber.

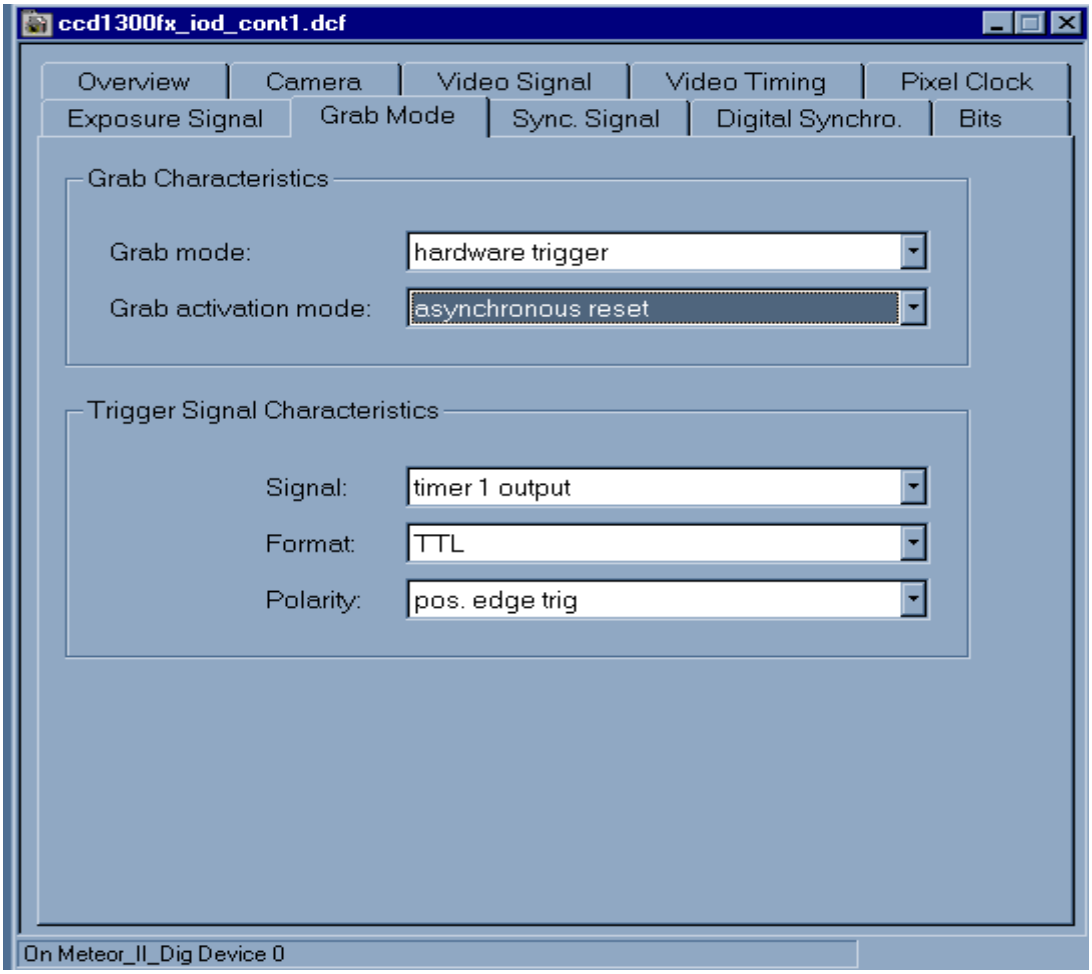


The timer can be programmed in seconds or number of lines (clk = hsync clock).

The parameter „Active“ is equivalent to the exposure time. The parameter „Inactive“ contains the transfer time of the image to the PC, which requires 40, 80 oder 120 ms (depends on the used camera). This also defines the frame rate.
The „Inactiv“ time must always be greater than the active time.

„Active“ and „Inactiv“ time must not exceed **65536 lines** !

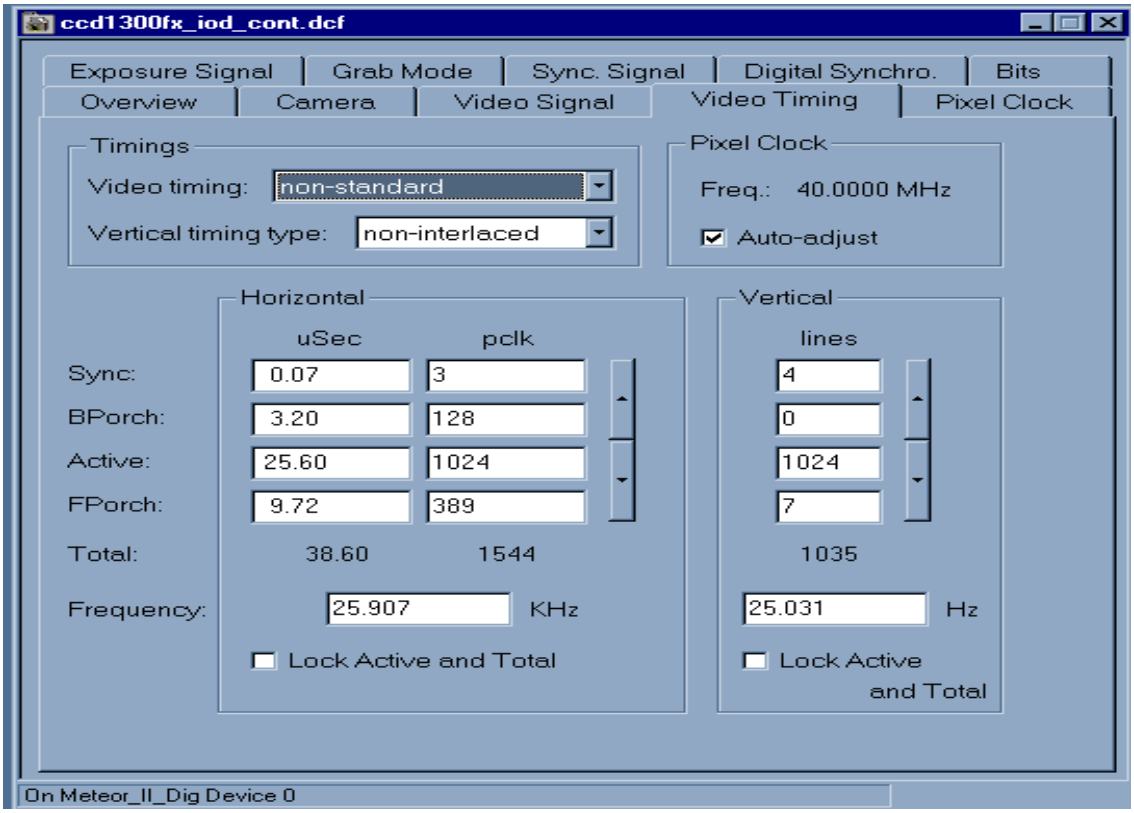
- **Grabmode**



If the camera should work in IOD timer mode, the grab mode must be set to „hardware trigger“ with „asynchronous reset“. The trigger signal will be derived from Timer 1.

If the camera should work in continuous mode, the grab mode must be set to „continous“.

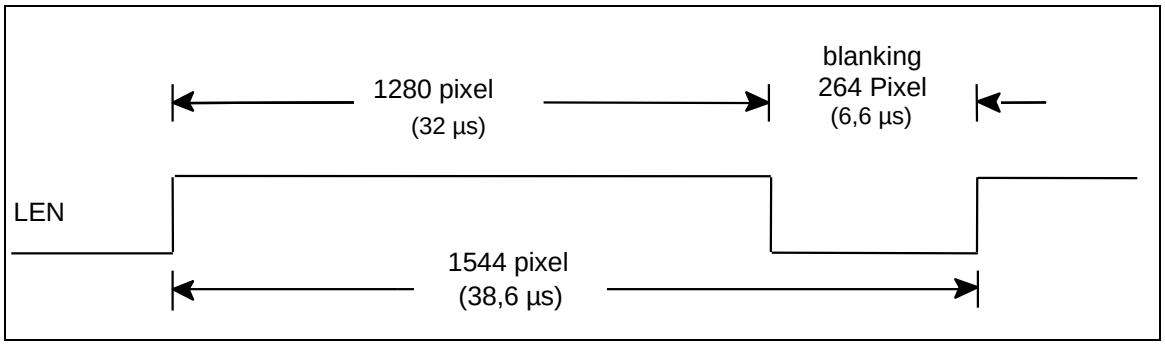
- **Adjustment of the video timing**

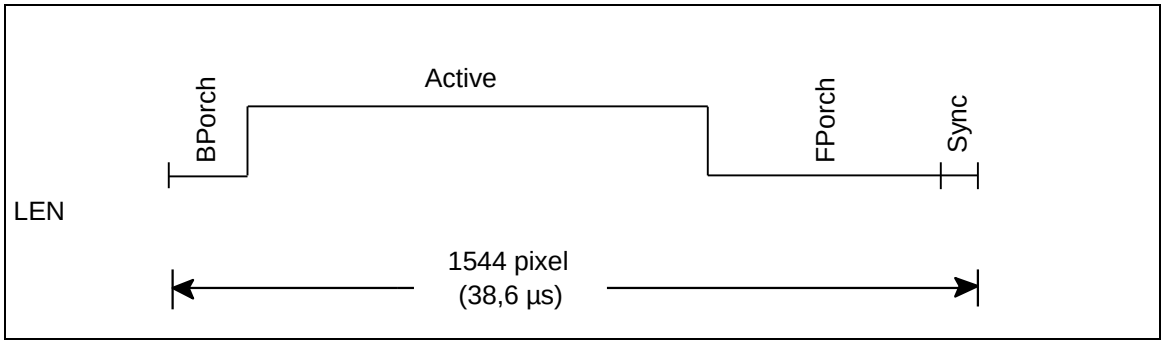


One line of the camera contains 1280 active and 264 (CCD-1300F) or 320 inactiv pixels (= 1544/1600 pixels). With the correct settings of the parameters „Sync“, „Bporch“, „Active“ and „Fporch“ you can also grab only 1024 pixels of the delivered 1280 pixels from the middle of the sensor.

While working in binning mode the number of active lines (vertical) must be changed from 1024 to 512.

Timing of the CCD-1300F





Connection between CCD-1300 camera and Matrox Meteor-II/DIG/L

CCD-1300	CCD-1300	M-DIG	M-DIG
Pin	Function	Pin	Function
1	PCLK	39	CLOCK, INPUT, +
2	LEN	33	HSYNC, INPUT, +
3	FEN	35	VSNYC, INPUT, +
4	D0 (LSB)	1	DATA, INPUT, 0+
5	D1	3	DATA, INPUT, 1+
6	D2	5	DATA, INPUT, 2+
7	D3	7	DATA, INPUT, 3+
8	D4	9	DATA, INPUT, 4+
9	D5	11	DATA, INPUT, 5+
10	D6	13	DATA, INPUT, 6+
11	D7	15	DATA, INPUT, 7+
12	D8	17	DATA, INPUT, 8+
13	D9	19	DATA, INPUT, 9+
14	D10	21	DATA, INPUT, 10+
15	D11 (MSB)	23	DATA, INPUT, 11+
16	GND	37	GROUND
control input 17	$\overline{\text{TREX}}$ (trigger input; activ low)	96	EXPOSURE1, OUTPUT, -
control input 18	$\overline{\text{SV2}}$ (gain * 2; activ low)	91	USER, OUTPUT, 0+
control input 19	$\overline{\text{BIN}}$ (binning mode; activ low)	93	USER, OUTPUT, 1+
20	$\overline{\text{PCLK}}$	40	CLOCK, INPUT, -
21	$\overline{\text{LEN}}$	34	HSYNC, INPUT, -
22	$\overline{\text{FEN}}$	36	VSNYC, INPUT, -
23	$\overline{\text{D0}}$	2	DATA, INPUT, 0-
24	$\overline{\text{D1}}$	4	DATA, INPUT, 1-
25	$\overline{\text{D2}}$	6	DATA, INPUT, 2-
26	$\overline{\text{D3}}$	8	DATA, INPUT, 3-
27	$\overline{\text{D4}}$	10	DATA, INPUT, 4-
28	$\overline{\text{D5}}$	12	DATA, INPUT, 5-
29	$\overline{\text{D6}}$	14	DATA, INPUT, 6-
30	$\overline{\text{D7}}$	16	DATA, INPUT, 7-
31	$\overline{\text{D8}}$	18	DATA, INPUT, 8-
32	$\overline{\text{D9}}$	20	DATA, INPUT, 9-
33	$\overline{\text{D10}}$	22	DATA, INPUT, 10-
34	$\overline{\text{D11}}$	24	DATA, INPUT, 11-
35	GND	38	GROUND
control input 36	TREX (trigger input)	95	EXPOSURE1, OUTPUT, +
control input 37	Mode high $\Rightarrow$ Continuous low $\Rightarrow$ Image on Demand	99	CAMERA CTRL BIT1, OUTPUT, TTL