

ARTCAM-130MI Exposure Time

Compliant with camera clock speed of 24MHz

Remark: These calculations are not for cameras with half clock speed, modified clock speed or in sub-sampling mode.

(1) When image size is 1280*1024, exposure time is calculated by the following method:

$$(\text{Shutter value} * 1514 - 180) * 0.00004166 \text{ (msec)}$$

(2) When the size is changed

(*Reg0x09 used below refers to shutter value of Artray's SDK).

Calculation method for exposure time:

tINT = Reg0x09 x row time - overhead time - reset delay, where:

Row time = ((Reg0x04 + 1) + 244 + Reg0x05 - 19) pixel clock periods

Overhead time = 180 pixel clock periods

Reset Delay = 4 x Reg0x0C pixel clock periods

For example:

Reg0x09	=	0x419 (1049)	< = Vertical size + 25
Reg0x04	=	0x4FF (1279)	< = Horizontal size - 1
Reg0x05	=	0x9 (9)	< = Fixed value of 9
Reg0x0C	=	0x0 (0)	< = Fixed value of 0

$$1 \text{ pcp(pixel clock periods)} = 1 / 24\text{MHz} = 1/24 \text{ us}$$

Then

$$\begin{aligned} \text{tINT} &= \text{Reg0x09} \times \text{row time} - \text{overhead time} - \text{reset delay} \quad \text{pixel clock periods} \\ &= (\text{Reg0x09} \times ((\text{Reg0x04} + 1) + 244 + \text{Reg0x05} - 19) - 180 - 4 \times \text{Reg0x0C}) * \text{pcp} \\ &= (1049 \times ((1279 + 1) + 244 + 9 - 19) - 180 - 4 \times 0) * (1/24\text{us}) \\ &= (1049 \times (1280 + 244 + 9 - 19) - 180) * (1/24 \text{ us}) \\ &= (1049 \times 1514 - 180) * (1/24 \text{ us}) \\ &= 66166.92 \text{ us} \end{aligned}$$

For example:

To set exposure time to 50msec at 964×964, shutter value X will be calculated as below:

$$\begin{aligned} X &= (24\text{MHz} * 50\text{msec} + 180) / (\text{Horizontal value} + 234) \\ &= 1001 \end{aligned}$$