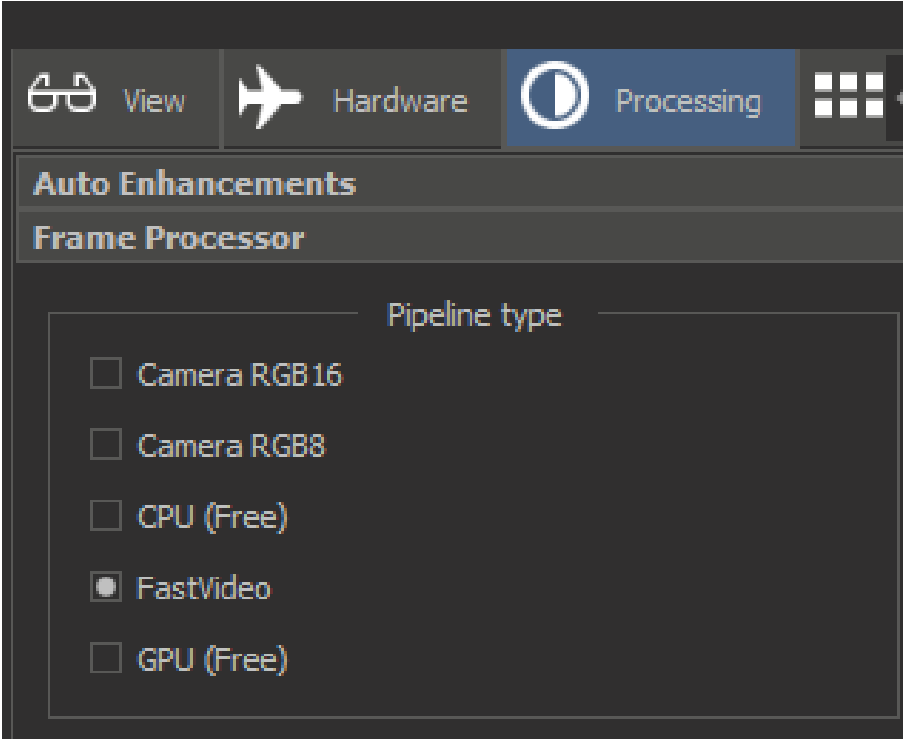


DM frame processing pipeline

Starting from DM Beta 27, you may select several pipelines for processing frames captured by camera:

- Camera RGB16
- Camera RGB8
- CPU (Free)
- FastVideo
- GPU (Free)

The pipeline is selected in **Processing** tool tab:



Camera RGB16

In this mode the program gets color RGB16 frame, which is the result of conversion of RAW frame by camera SDK. After this the frame is stereo-transformed and the tonemapped resut is shown on monitor. Camera RGB16 is the renamed CPU pipeline (in versions earlier than Beta27).

Camera RGB8

This mode - is the direct frame from camera captured in RGB8 mode. In versions before Beta 27 it was called RGB8.

FastVideo

This is the pipeline based on FasVideo library (commercial usage - not free). Here is the main options of the pipeline:

Pipeline settings

Debayering HQLI

Enhance 1,0

Black Point 0

☒ Use color profile ...

Exposure 0,0

☐ Grayscale mode

☐ Denoising

☒ Local Contrast

☒ Simple ☐ Advanced

Sigma 2,0

Amount 1,0

Threshold 100

☐ Tone Curve

Linear	Dibox	Vibox	Custom
Medium Contrast	More Contrast	Increased Contrast	Much more Contrast
Brighter	Much Brighter	Darker	Much Darker

Debayering - you may select the debayering algorithm, by default we recommend to use HQLI

Enhance - experimental feature of FastVideo for extra enhancement of debayering

Black point - values less than selected are assigned to null (removing noise in dark areas)

Use color profile - turn on/off color calibration. Profiles are calculated manually at the time.

Exposure - adjust brightness of the frame (in pipeline, not using camera)

Grayscale mode - convert RGB to grayscale

Denoising - apply denoising

Local contrast - apply local contrast, **amount** is the strength, **threshold** defines the area of application of filter (what kind of details).

Tone curve - apply one of the presets for global contrast.

FastVideo is the fastest available pipeline working on GPU, but is not free, and at the time its quality is the best one. We recommend to use it by default.

Also the fastvideo pipeline includes fast stereo transform and tonemapping on GPU.

CPU (Free)

This mode is a free analog for fastvideo pipeline working on CPU. It has the same options as FastVideo. As for quality in this pipeline the local contrast of details is slightly worse than in FastVideo due to quality of debayering algorithm. It is approximately 3-8 times slower than FastVideo pipeline.

GPU (Free)

This mode is a free analog for fastvideo pipeline working on GPU. It has the same options as FastVideo. As for quality in this pipeline the local contrast of details is slightly worse than in FastVideo due to quality of debayering algorithm. It is approximately 1.5-2 times slower than FastVideo pipeline.

Time comparison of pipelines

<i>FPS</i>	Simple	ToneCurve	LocalContrast	LocalContrast + ToneCurve
Camera RGB8	27	–	–	–
Camera RGB16	21	–	–	–
CPU Free	12	7	5	4
FastVideo*	36	36	39	39
GPU Free	28	25	20	18

Measurements were done for 2 Point Grey Cameras 2.3 Mpxls (stereo), on Octotech4, with GPUs GeForce GTX 980 Quadro 4000 (GTX 980 is the main GPU).