photon focus

High-Precision Laser Line Detection with optimized FPGA Programming

Welcome

Your Presenter

Thomas Wimmer
Field Application Engineer

Content

- Photonfocus at a glance
- Modular camera concept
- 3D laser triangulation: Theory and real life

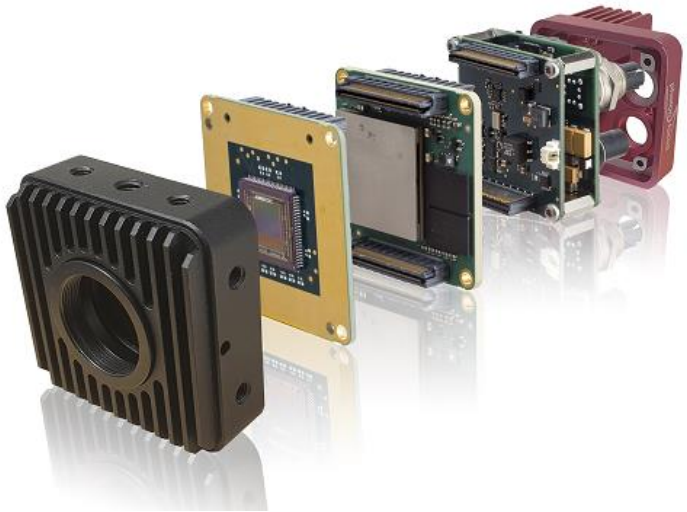
About Photonfocus

Main Product Lines

- Cameras for 2D applications (VIS, UV, SWIR, Hyperspectral)
- Cameras for 3D applications (VIS, UV)
- Modular embedded systems
- CMOS sensors

What Are We Known For?

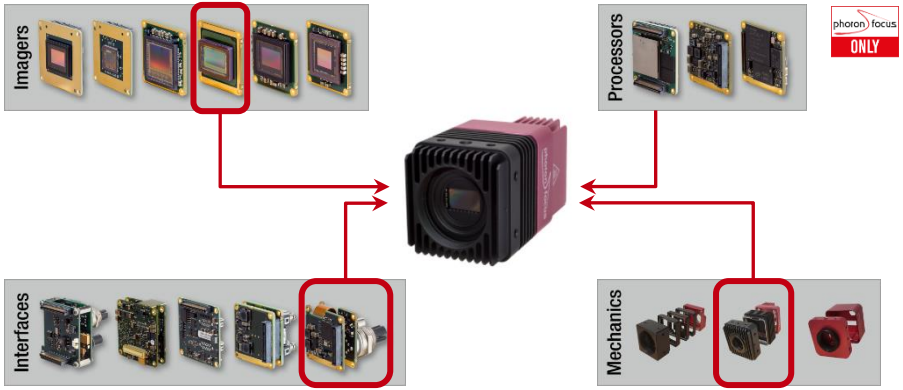
- One of the first in the market for CMOS (fast cameras)
- Designing our own sensors with large full well capacity (@100 ke-) vs Sony IMX174 (@32 ke-)
- Being the leader in high dynamic range imaging with our LinLog® technology



Modular Camera Concept Matching All Your Needs!

Modular Camera Set-Up

➡ Thanks to our modular camera concept, we can quickly and easily adapt to meet your requirements.



Standard Camera Models

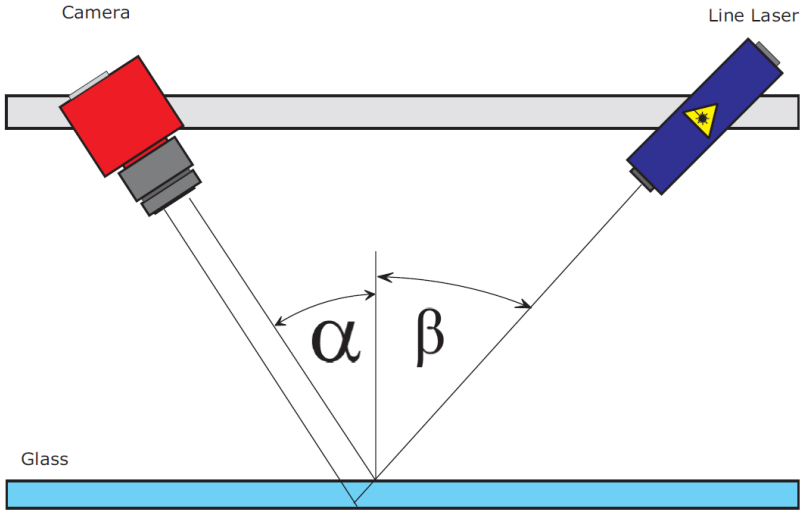
➡ Choose from a wide range of standard cameras.

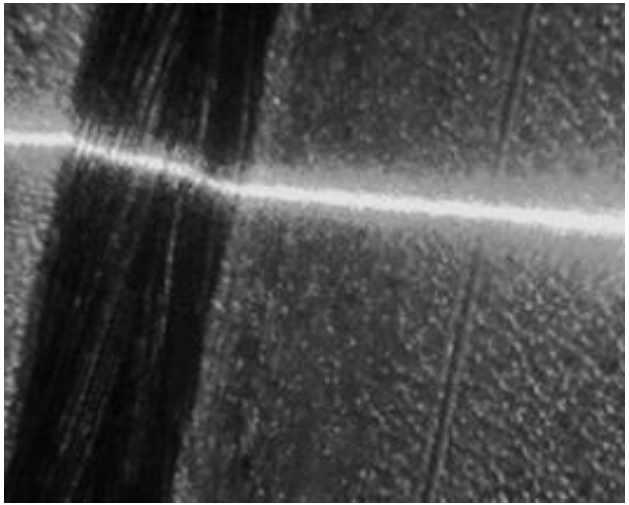
Custom-Design

➡ With 20 years of experience in camera and sensor development, we are ready to discuss your projects!

3D Laser Triangulation

- Known and calibrated angles between laser and camera.
- Profile of bright line in image contains height information of object.

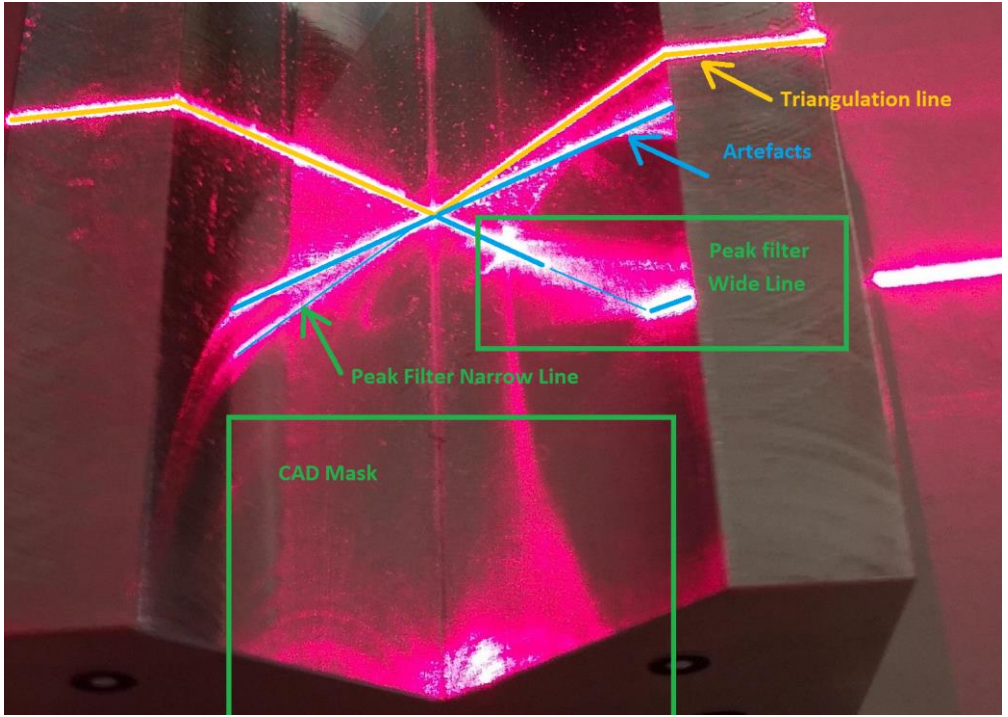




3D Laser Triangulation in Real Life

What Can Happen?

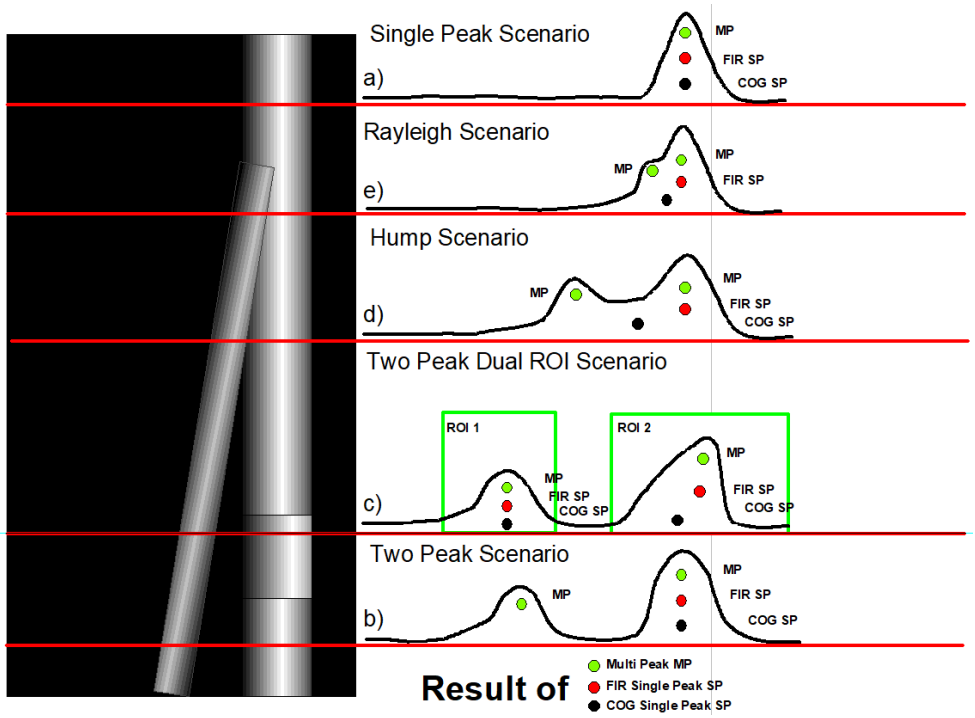
- Reflections
- Mirroring
- Transparency
- Absorption



Solutions With Photonfocus 3D Cameras

On-Board FPGA Features

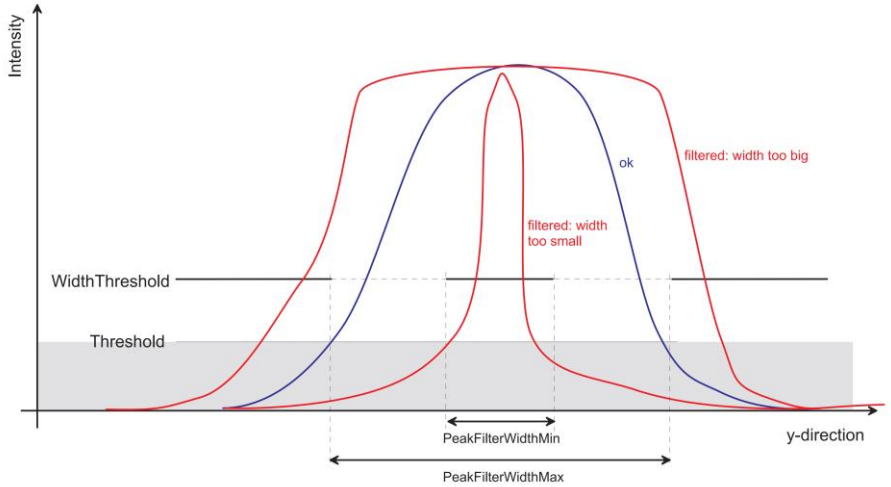
- COG and FIR
- Single and multi peak
- Filtering
- MROI
- Moving ROI

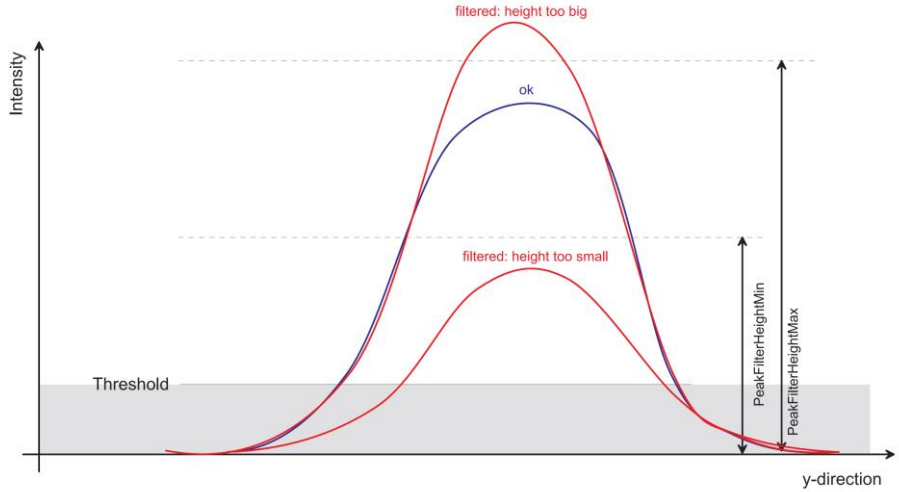


On-Board Peak Filter Reduces Interferences

On-Board FPGA Features

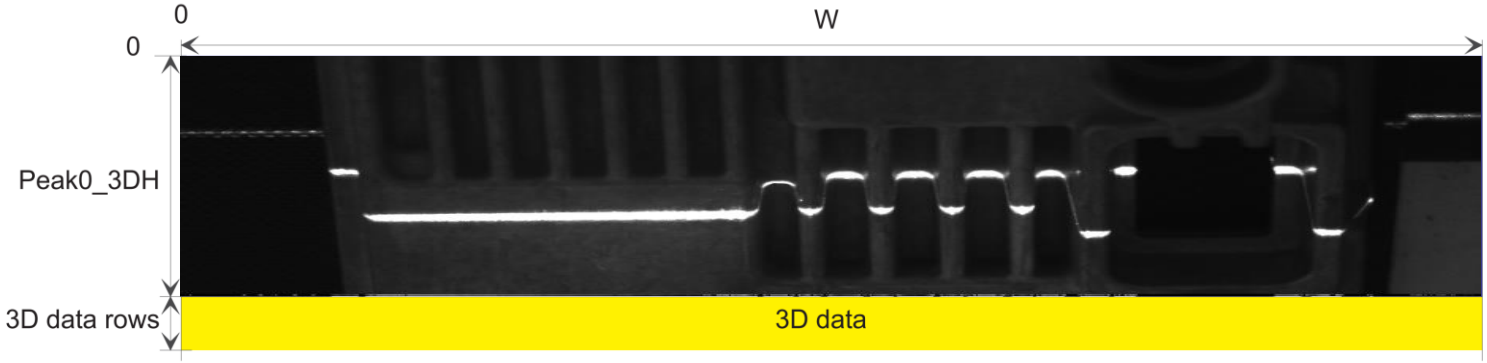
- Filtering by maximum and minimum height and width of laser profile.
- All Peaks out of these limits are ignored and not transmitted.





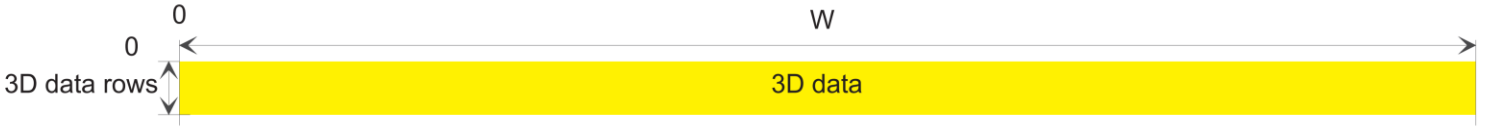
On-Board Peak Filter Reduces Interferences

2D + 3D Data



3D data rows: 2 (DataFormat3D=2) or 4 (DataFormat3D=3 or 4)

3D Data Only

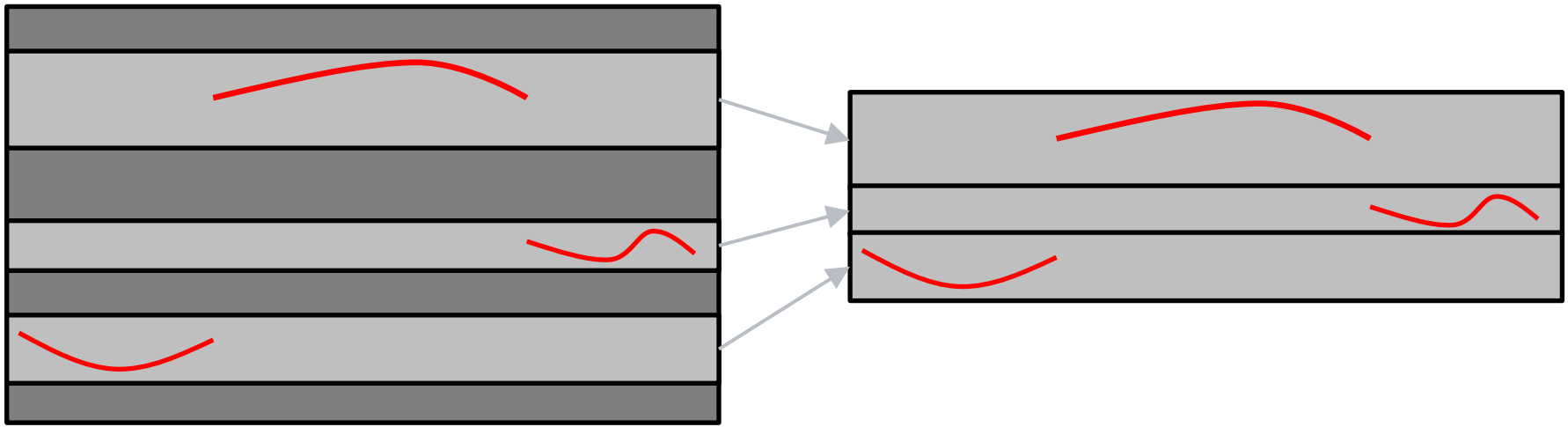


3D data rows: 2 (DataFormat3D=2) or 4 (DataFormat3D=3 or 4)

Filtering by Multi ROI

Up to 4 ROIs Can be Defined for Laser Line Detection

➡ This feature is included in the Photonfocus 3D07 tool.

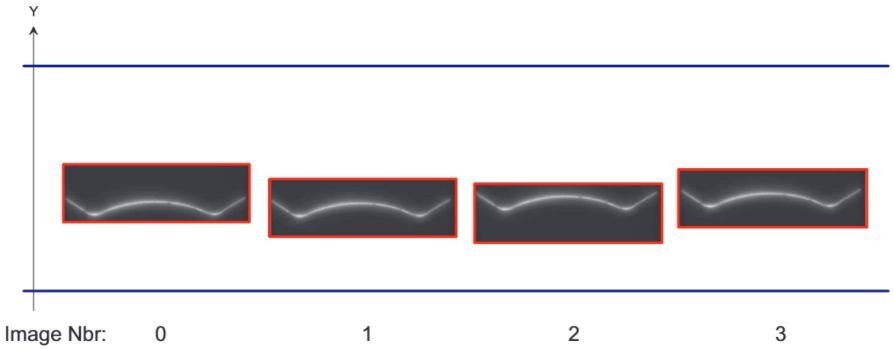


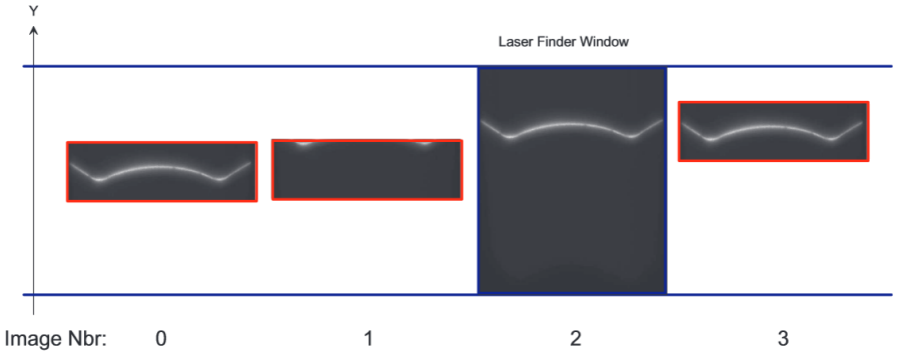
Filtering by Moving ROI

Automatic Tracking of a ROI

Y position of ROI is updated along the Y position of the laser line in the last image.

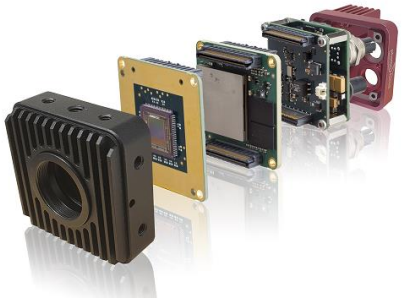
If the laser line in a subsequent image moves outside the ROIs current position, the position is recalculated in the entire imageBullet text (2nd level bullet).

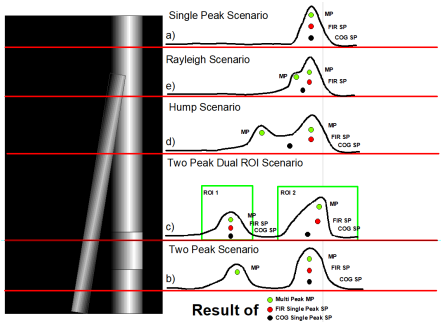


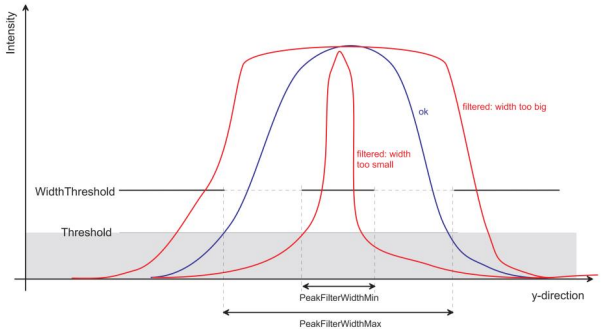


Summary

- Photonfocus – modular camera concept – get the camera tailored to your needs!
- On-board algorithms in real-time to improve results and lowers CPU load
- FIR algorithm and point filtering increase reliability







photon focus

Thank You Very Much For Your Attention!

modular camera experts

Questions & Answers

Your Contact For Your Project:

Thomas Wimmer
Field Application Engineer
+49 172 2980 344
wimmer@photonfocus.com

Photonfocus AG

www.photonfocus.com
+41 55 451 00 00
sales@photonfocus.com