



# Fundamentals of Industrial Measurement Technology

## Camera



ProDSP Post Series Nr.21.



## What is the role of cameras?

The camera system performs the final step of imaging: it **converts the light** coming from the real world **into a digital signal**, which is then interpreted by the image-processing software. How do we choose?





## **Resolution → measurement accuracy**

- Industrial cameras have minimal sensor noise, so measurement repeatability can be **directly** calculated **from pixel resolution**.
- Manufacturers often specify “subpixel” accuracy as well, but best practice is to **design based on the pixel value**.





## Monochrome vs. color cameras

- For geometric measurements, a **monochrome camera** is almost always the optimal choice
  - Higher sharpness
  - Lower noise
  - Color information is not needed





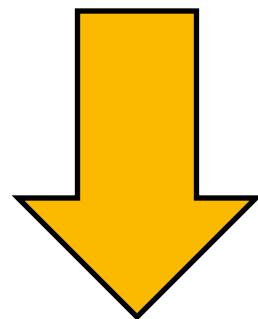
# Mechanical and interface compatibility

- Industrial cameras typically follow standards
  - C/CS-mount optics
  - GigE, USB3, CoaXPress communication
  - Universal mounting and connector solutions





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