CONTRASTECH

Application Note

Choosing a Industrial Camera For Your Machine Vision System

Industrial Cameras, compared with common cameras, has a super advantage in image stability, anti-interference, and data transmission. It's the key component of Machine Vision System. The performance of industrial camera determines the stability of the machine vision system. Then how to choose the right industrial camera?

First, we need to confirm what kind of industrial cameras that we need. There are few things that we need to make sure:

1. Is there any requirement for color analyze?
2. The maximum size of the component.
3. Minimum detection precision.
4. Camera for static Object or moving object?
5. The distance from Lens to object.

Second, we need to confirm the Hardware type. It means a lot of the performance of camera hardware parameters. So, before we confirmed the hardware type, we need to know these important parameters.

The camera interface: Different camera interfaces have its own advantages and Limitations: Below is a comparison of the most common digital interface technologies in vision technology.

	USB2.0	USB3 Vision	FireWire A	FireWire B	GigE Vision	Camera Link
Bandwidth	50 MB/s	400 MB/s	50 MB/s	100 MB/s	125 MB/s	850 MB/s
Cable Length	5 m	8 m	4.5 m	10 m	100 m	10 m
Camera Standard	N/A	USB3 Vision	IIDC(DCAM)	IIDC(DCAM)	GigE Vision	Camera Link
CPU Usage	High	Low	Medium	Medium	Medium	Low
Cost	Low	Low/ Medium	Medium	Medium	Medium	High
Power Over Cable	Yes	Yes	Yes	Yes	Yes	Yes

So you can see that it's hard to see which type of camera interface can fit all the applications. But considering the current trends of higher resolution and higher speed, the usb2.0 and FireWire are disappearing in vision technology over time. The most popular camera interface should be USB3 Vision and GigE Vision at present.

Camera Resolution. Generally speaking, there are more imaging processing the host computer need to do for a higher resolution. So we'd better to choose the lowest resolution that could fit our applications. We usually determine the right resolution by this calculation:

Camera resolution(X&Y)=FOV(X&Y)/Minimum detection precision

Many manufacturers can provide a whole series cameras with various resolution. For example, the resolution of our new series-Mars series cameras ranges from VGA to 25 Megapixels resolution.

Camera Software. You can either use a third party machine vision software package for your application, like OpenCV, Matlab, VisionPro, Labview and etc. Or you can use the software development kit (SDK) which will be provided by the industrial camera supplier to develop your own software. But when you choose to use a third party software, please make sure that the camera interface standard supports it. And if you choose to use the SDK to develop your own software, a high performance camera SDK could be very important. A good SDK will help you to save integration time and system cost. Hangzhou ContrasTech's new developed SDK(icentral) for our Mars Series Camera could be a good chioce.

Follow GenICam ™ Standard
Optimized Package, Compact Interface, More Simple Development
GigE Vision and USB3 Vision High Performance Drivers
Strong Protocol Layer Plug-in Unit,More Convenient to Extend
iCentral Friendly Setup and Preview Interface

Industrial Cameras have a variety of Categories, so it's very important to know how to choose the right industrial camera for your vision system. For different machine vision application, there are different industrial cameras. At the same time, we can see industrial cameras in various industrial fields because of its super high performance and advanced technology.

About

Due to continual product development, technical specifications may be subject to change without notice.
All trademarks are acknowledged as property of their respective owners. We are convinced that this information is correct. We acknowledge that it may not be comprehensive. Nevertheless,Hangzhou ContrasTech cannot be held responsible for any damage in equipment or subsequent loss of data or whatsoever in consequence of this document.

Contact

Hangzhou ContrasTech Co.,Ltd

Add.: No.11, Xiyuan 8th Road West Lake District,
Hangzhou 310030 China
TEL: 86-571-89712238
Fax: 400-8266-163*01460
Web site: www.contrastech.com
E-mail: market@contrastech.com