

C3-1280 Camera



Hightspeed CMOS-Camera

**Built-in 3D-profile algorithm:
up to 28800 Profiles/s with 36 Million 3D-Points/s**

Standard camera interface: Camera Link™ or USB2.0

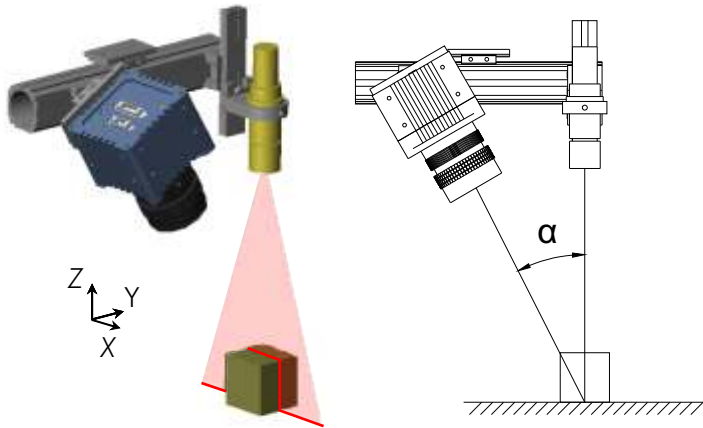
**Flexible trigger interfaces: RS422 resolver interface,
opto coupled trigger inputs and Camera Link™ trigger**

Multiple Sensor AOIs



C3-1280 unmatched performance and flexibility for 3D imaging

The C3-1280 is a revolution for three dimensional shape measurement. It offers unique key benefits for OEMs and Vision Integrators while making 3D imaging as easy as 2D vision.



Measurement Principle

The C3 sensor acquires height profiles and height images by means of laser triangulation technique: a laser line is projected on the object, the resulting sensor image is evaluated by the C3 camera core and converted into a single height profile. By scanning the laser line over the object a complete height image of the object can be acquired.

Fastest 3D-Sensor on market

By using the C3-Technology of high speed parallel hardware processors the complete 3D data calculation is done inside the camera. This enables the C3-1280 to acquire up to 28800 profiles with more than 36 million 3D points per second. For a maximum of flexibility, three profile algorithm are included in the C3-core: TRSH, MAX and COG. Furthermore, the choice of the profile algorithm does not influence the profile speed. This means that the profile data are always output at the same maximum speed.

Multiple Sensor-AOIs and Multiple-Feature output

The C3-sensor is capable of delivering position data as well as additional features (e.g. intensity, line width) without sacrificing profile speed. Furthermore up to eight sensor AOIs can be defined for dividing the sensor in separate subwindows.

High quality profile data

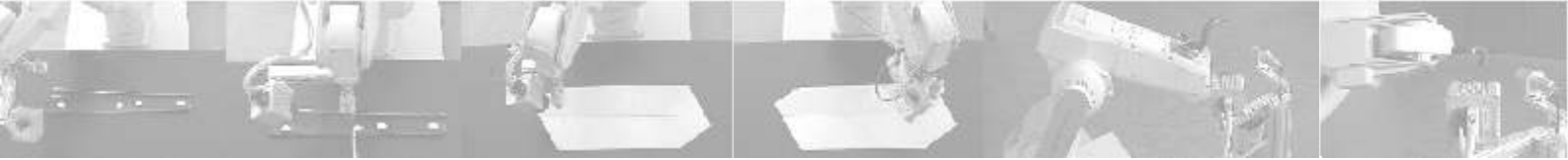
All C3-sensors are equipped with a full frame snap shutter for capturing sharp, undistorted image and profile data even for fast moving objects.

Flexible Trigger Interface

The C3-camera contains a configurable trigger interface based on opto-coupled I/O lines and a RS422 shaft encoder with tick counter and direction evaluation. Using this advanced trigger options assures precise profile triggering even at changes of movement velocity.

Easy Integration in Machine Vision Systems

The C3-concept is based on standards in machine vision. Using C3-cameras you are free to choose your preferred hardware and software components. We support our customer with an API and a standalone tool for configuring the camera. Once the camera is configured it boots up using the predefined configuration without any camera specific programming.

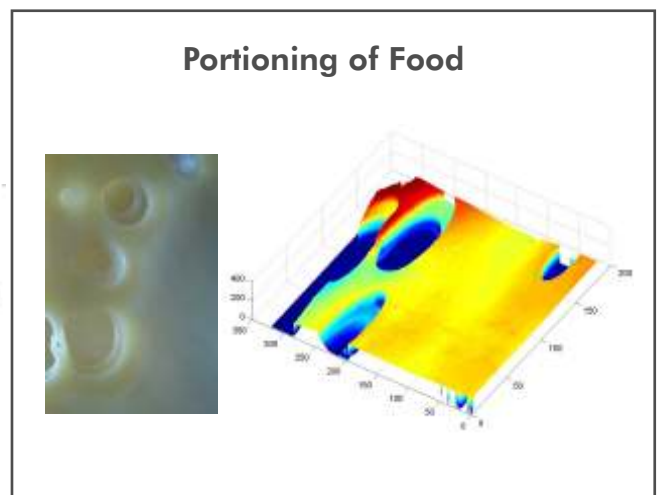
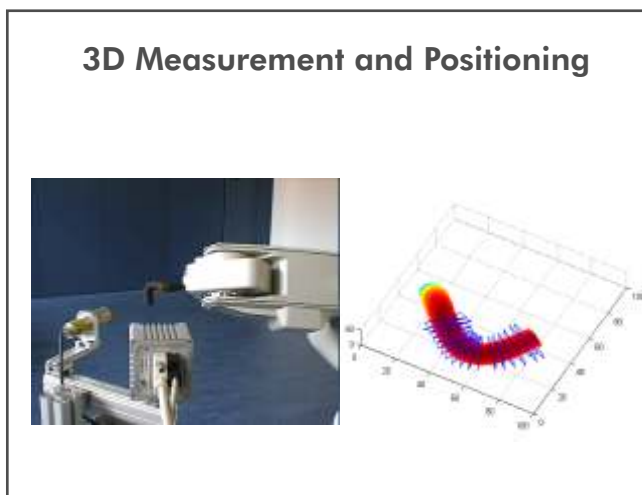
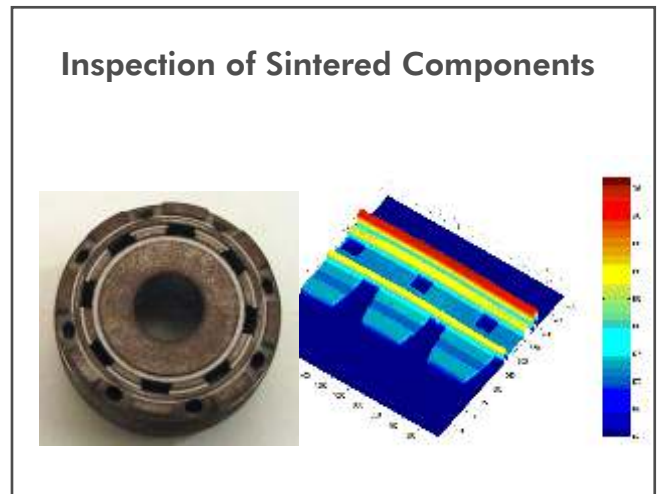
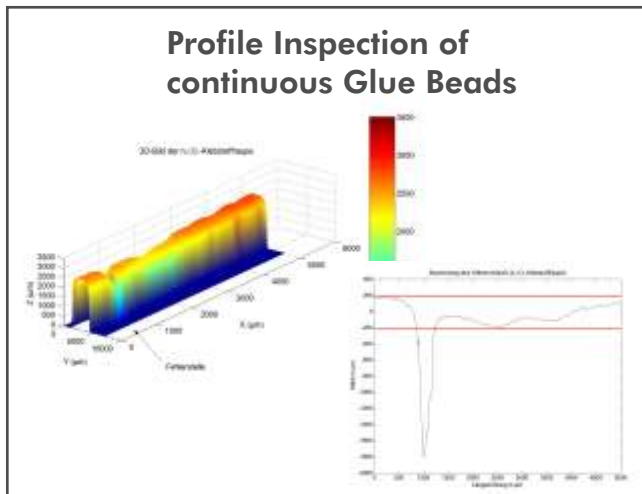


3D - Imaging solution for numerous applications

The C3-1280 provides a powerful solution to a broad field of industrial 3D-applications including:

- 3D profile measurement
- Quality inspection of surface geometries
- Seam tracking and inspection for welding and glueing
- Robot guidance
- Control of sorting systems
- Surface inspection
- Inspection of electronic components and printed circuit boards
- Rail inspection for high speed trains and magnetic levitation trains
- Size sorting of components and food
- Food portioning
- Wood inspection
- Tire inspection
- Volume measurement
- ... and much more

Some Application Examples



Sensor Specifications	
Pixels	1280 (H) x 1024 (V)
Pixel Size	12µm x 12µm
Dynamic Range	59dB
Digitization	10Bit
Shutter	full frame snap shot shutter (interleaved and sequential) and rolling shutter
Sensor Algorithm	Image, Profile-MAX, Profile-TRSH, Profile-COG
Length of profile in 3D-mode	1280 pixels
Typical profile speed depending on range of height values (including one subpixel). Height resolution can be increased by five to ten at same profile speed using COG-Profile algorithm.	typical height ranges vs. profile speed 2048 @ 450 Profile/s 512 @ 1800 Profile/s 256 @ 3600 Profile/s 64 @ 14400 Profile/s 32 @ 28800 Profile/s
Max. Frame Rate for image mode over Camera Link™ (full frame)	61fps with 40Mhz Camera Link™ – clock (2 tap mode) 76fps with 50Mhz Camera Link™ – clock (2 tap mode)
Max. Frame Rate for image mode over USB2.0 (full frame)	10fps with 10 Bit 20fps with 8 Bit
Max. Number of Sensor-AOI's	8
Interface Specifications	
Digital I/O's and external synchronisation signals (MDR14 connector)	Camera Link™ version : 2 opto-coupled inputs, 2 opto-coupled outputs USB version : 3 opto-coupled inputs, 3 opto-coupled outputs Inputs can be configured as image and profile trigger RS422 Resolver interface with signals A,/A,B,/B, tick divider and direction evaluation
Video output	Camera Link™ (base connector MDR26), USB2.0
Power Requirements	
Power Supply	5 - 9V
Power Consumption	< 3W
Mechanical Specifications	
Lens Mount	C-Mount, 1"
Size	72mm x 72mm x 58.4mm
Mass	330g (without optics)
Housing Mount	4 x M3 on each side
Environmental Specifications	
Operating Temperature	0°C to +50°C (non condensing)
Storage Temperature	-30°C to +70°C (non condensing)
General	
PC Requirements	Camera Link™ board with base connector or USB2.0 interface
Operating systems	Windows 98, WIN NT, 2000, XP
Software environment	Configuration tool C3-Explorer C3Lib-API with source code (C++) Compatible with standard image processing libs, e.g. CVB, MIL, IFC



AT-Automation Technology GmbH
 Technologiepark 24
 D-22946 Trittau, Germany
 Phone: +49 (0)4154 9898-0
 Fax: +49 (0)4154 9898-20
 www.AutomationTechnology.de
 Email: info@AutomationTechnology.de

Sales contact:

