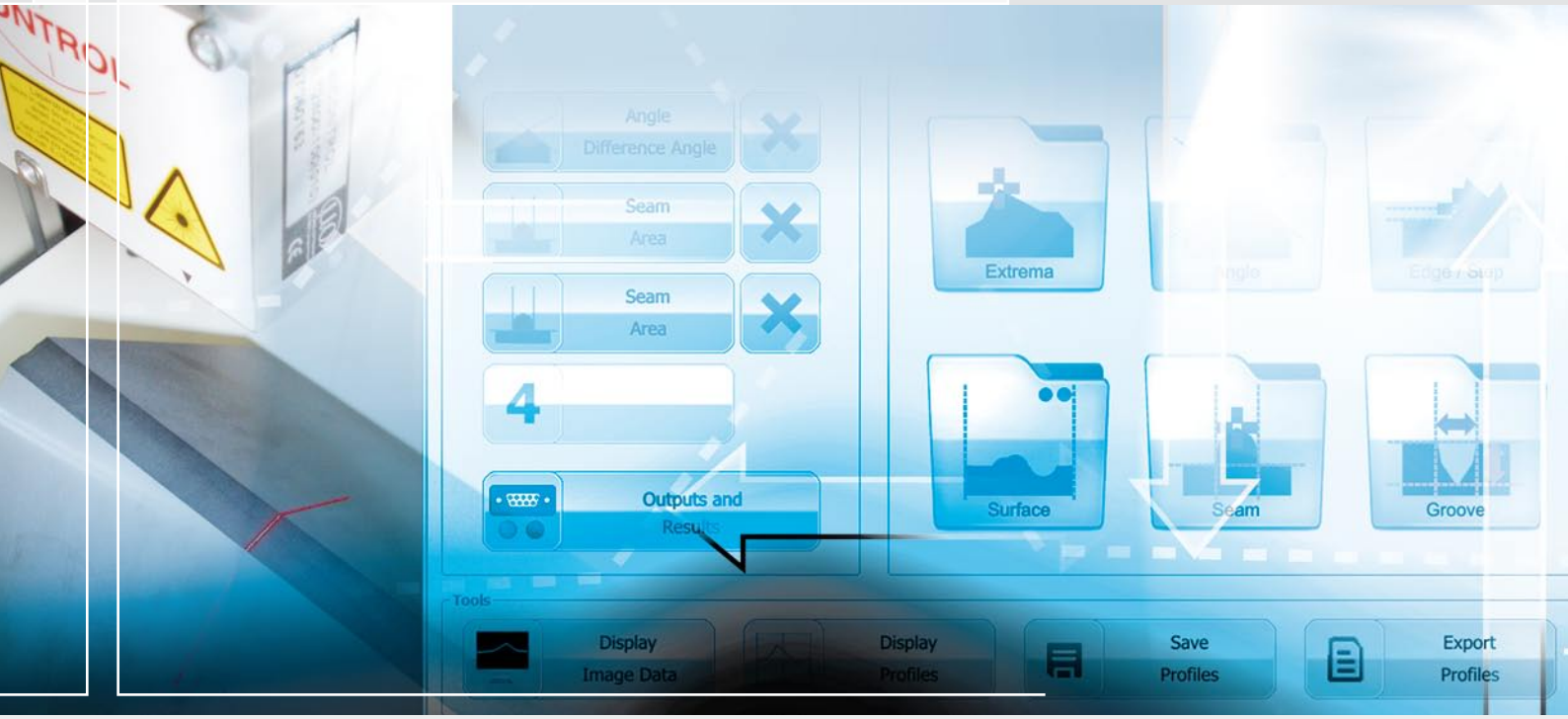
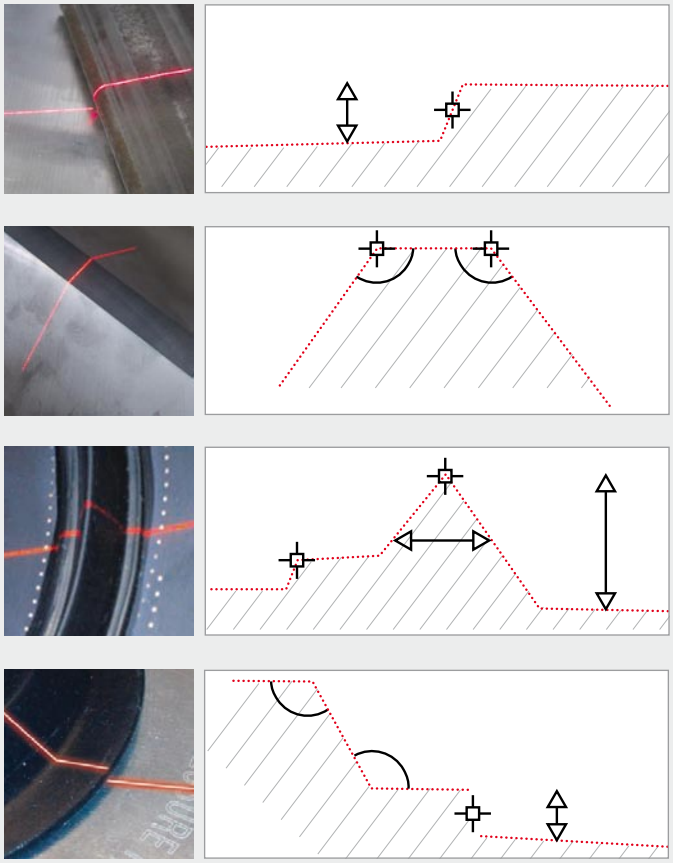
Configuration Tools software



- **Plug & Play solution for standard measurement tasks**
- **Real time profile analysis inside the controller**
- **Load and save parameters**
- **Data export**
- **Easy online and offline analysis**

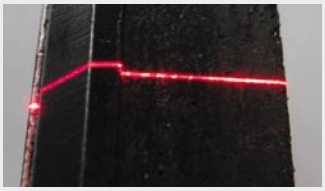
The sensors of the SMART series have an intelligent controller which allows simple profile analysis without an additional PC. The scanCONTROL Configuration Tools software is used for parameter setup of the profile analysis.
For offline testing of very fast processes, the functions of the software also run with recorded profiles without a sensor.
A complete profile analysis task can be programmed in four simple steps. After programming the sensor operates in standalone mode and outputs the analysed measurement results.

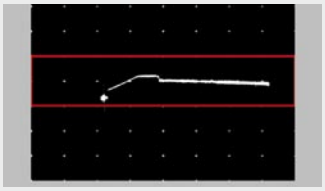


The system is freely configurable and can be quickly and easily adjusted for a variety of tasks

Step 1
Alignment of the sensor

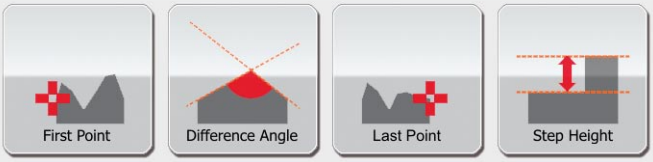
The ‚Display Image Data' module will help you to mount the sensor. This shows a live image of the sensor matrix and the optimum measuring range, as well as the reflection characteristics of the target.





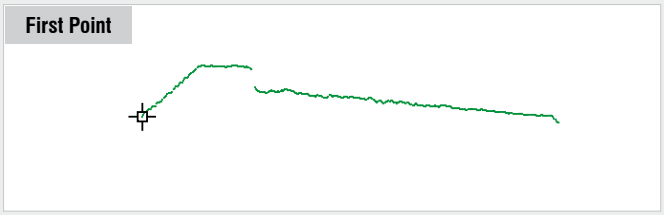
Step 2
Selection of measurement programmes

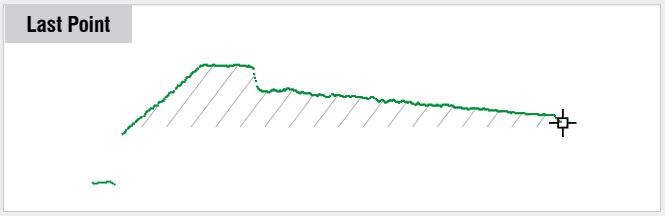
Depending on the measurement task, one or more measurement programmes can be selected with a simple mouse click. More than 25 modules are available. To the right four examples are shown for the profile above.

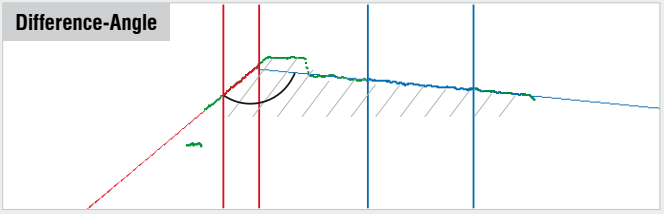


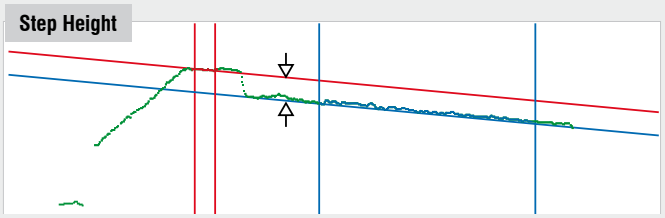
Step 3
Configuration of measurement programmes

Each of these measurement programmes can be individually configured. On a simple interface, different methods of interacting with the live measurement signal are available. Therefore, the relevant areas of the signal, for example, can be cut out and reference points set. The results of the individual measurement packages are displayed directly in the profile.



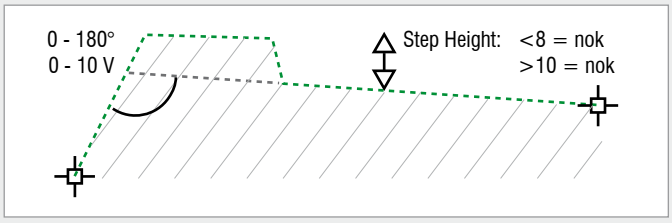






Step 4
Defining the outputs and displaying measured values

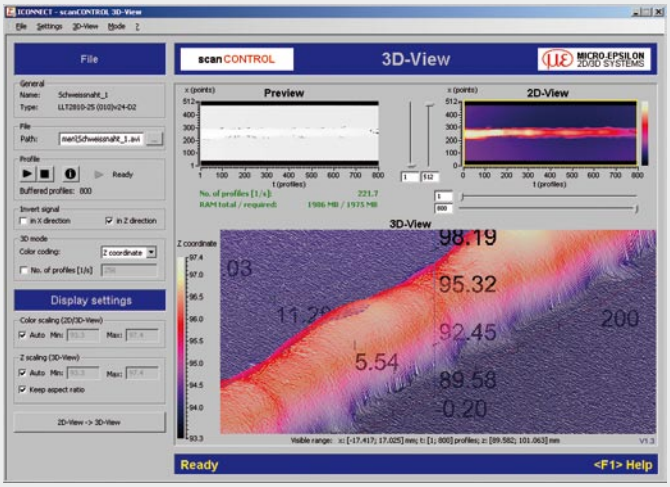
In the final step, all measurement values in the profile are displayed in an online overview, and assigned to the different outputs. Limits and interfaces can therefore be easily configured.

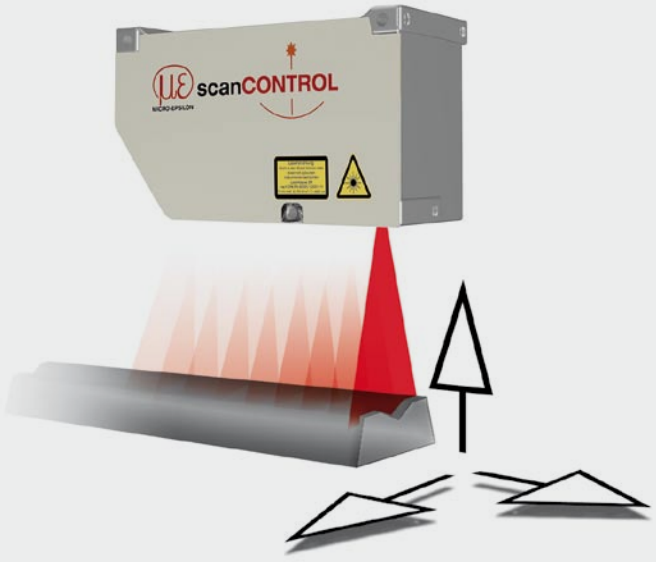


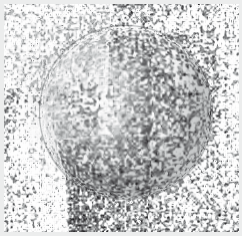
Interactive 3D visualisation for all scanCONTROL models

By means of the relative movement between sensor and target, the third dimension for the measurement data is obtained. The y-coordinates are assigned via a trigger or CMM counter.
The scanCONTROL 3D-View software is designed for viewing and exporting this 3D data. In addition, 3D-View also supports the configuration of the scanCONTROL sensor.
The software enables the interactive viewing of 3D data and the export of this measurement data to common data formats (ASCI, STL or PNG). Various display modes, views and colour palettes help in setting up the sensors and analysing the profiles. The software supports the online visualisation of the profiles as well as offline analysis of stored profile sequences.

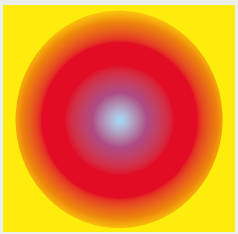
- **Display of profile sequences**
- **Offline or real-time display of 3D profiles**
- **Synchronisation of the direction of travel (e.g. by encoder)**
- **2D Export of the profile sequences (PNG)**
- **3D Export (ASC, STL) for CAD programmes**
- **Intensity per point can be displayed and exported**



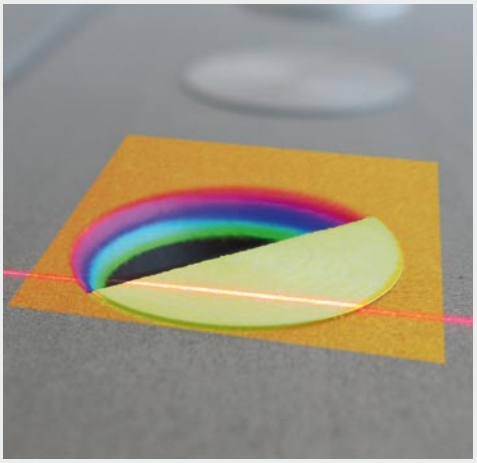




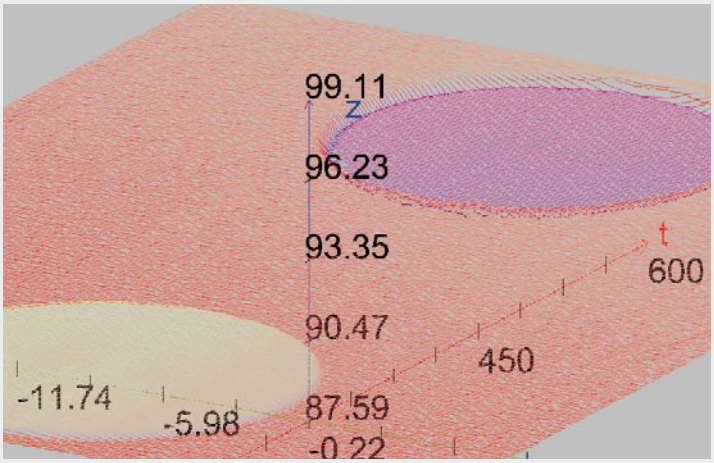
Intensity



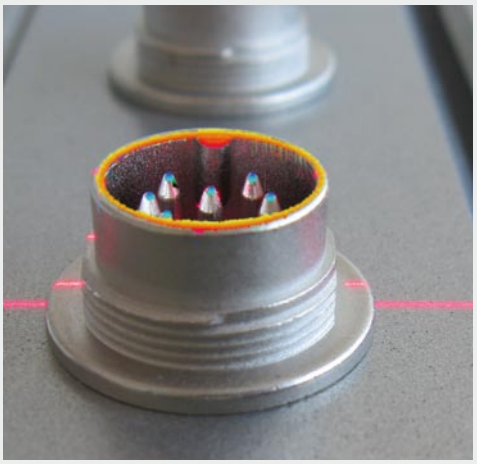
Height profile



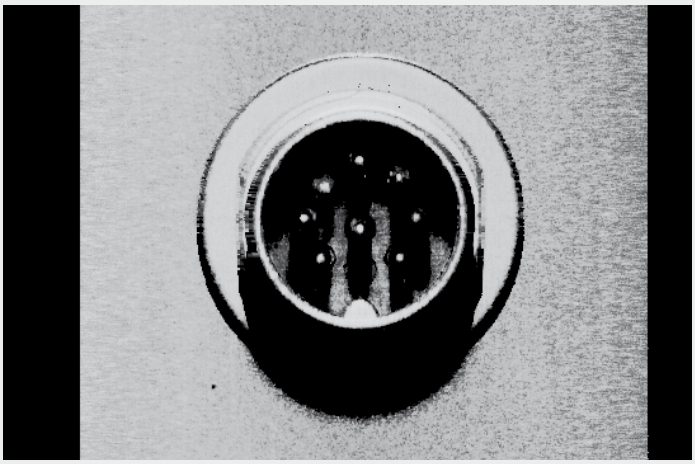
Rivet



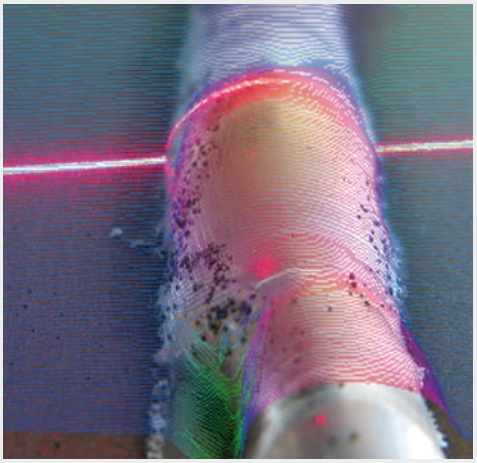
Display mode: "3D view lines"; Colour palette "z-coordinates"



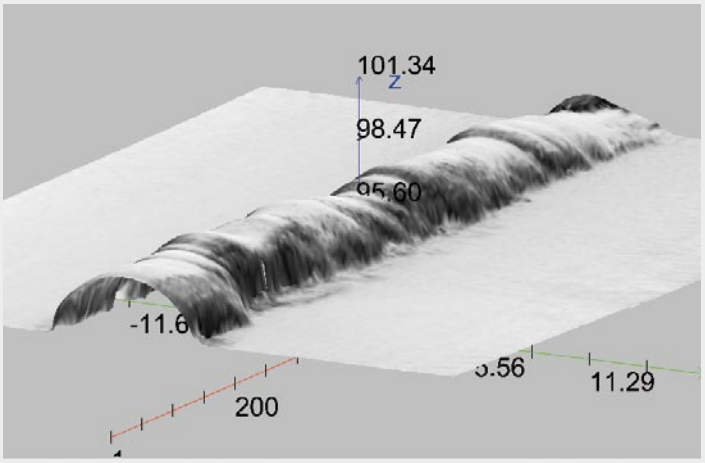
Pin



Display mode: "2D view"; Colour palette "intensity"



Weld seam



Display mode: "3D view triangles"; Colour palette coding "intensity"

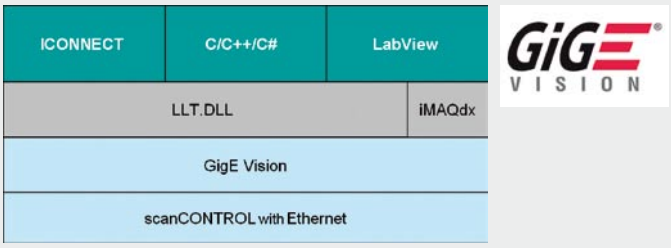
Integrating scanCONTROL in application software

The scanCONTROL 2700 and 2800 sensors record a profile from individual calibrated points for each measurement. These profiles can be used individually or combined in a container set, and transferred to your own applications as an array or matrix. In addition to the data transfer of individual measuring points and their additional information (e.g. intensity, counter reading) the entire configuration of the sensor can also be controlled from its own application software.
Micro-Epsilon provides a number of interfaces to access the parameter and data transfer functions.

The transmission interfaces primarily used by scanCONTROL sensors for communications and profile transfer are FireWire and Ethernet.

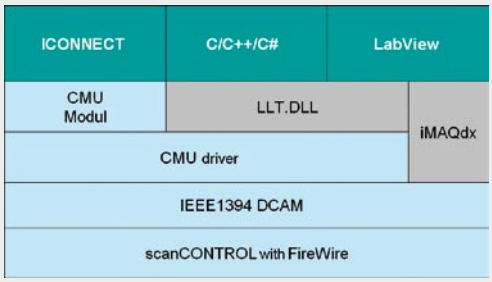
Ethernet and GigE Vision

The scanCONTROL with Ethernet interface complies with the GigE Vision (Gigabit Ethernet for machine vision) standard of the AIA (Automated Imaging Association).
GigE Vision ensures optimum data security, perfect performance and short design-in times during implementation. GigE Vision is based on Gigabit Ethernet and offers a maximum transfer rate of more than 100MB/s. Ethernet technology offers advantages such as long cable lengths without using repeaters/hubs, and it permits the use of inexpensive network components. The GigE Vision standard provides an open framework for data transmission (e.g. profiles, data sets) and control signals between scanCONTROL and a PC. The infrastructure topology provides numerous opportunities for single and multiple scanner applications.



FireWire and DCAM

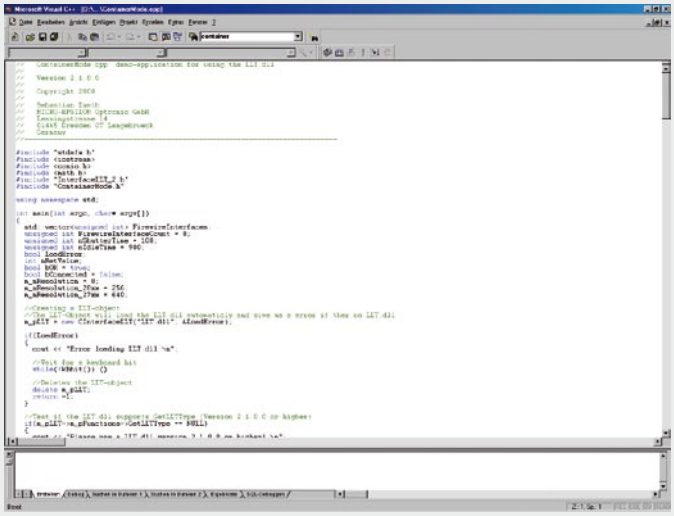
Communication between computers and scanCONTROL by FireWire is based on the widely used DCAM standard protocol. It was defined by the IIDC working group of the 1394 Trade Association and has been evolving constantly since then. IIDC stands for „Instrumentation and Industrial Digital Camera“. DCAM defines the structure of the data stream and the configuration of scanCONTROL (measuring fields, measuring frequency, and exposure time, etc.).
Communication from scanCONTROL sensors that are equipped with an IEEE1394 interface is compatible with the DCAM standard. As an interface, FireWire is either already available on most modern PCs, or is very easy to retrofit. The interface allows a quick and easy „Plug&Play“ connection of scanCONTROL sensors.



Integration with the C/C++ library

The C/C++ library for scanCONTROL supports both static and dynamic loading. Both stdcall and cdecl are supported as calling conventions. The individual functions of the library are clearly documented in the interface description and explained using examples.

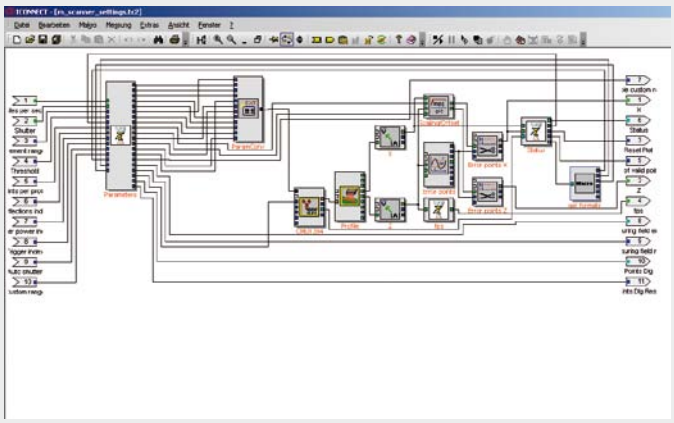
The scanCONTROL C-SDK integration package includes:
- The LLT.DLL library file
- Interfaces and scanCONTROL documentation
- Numerous programming examples for C++, e.g. for trigger and container mode
- Programming example for C # and .NET
- DeveloperDemo.exe demo for quick testing of the sensor configuration



Integration wtth ICONNECT

Even in the standard version supplied, ICONNECT already contains the modules necessary to enable easy and convenient integration of scanCONTROL sensors using Drag&Drop. This ready-made interface allows fast integration and configuration of the scanCONTROL sensors.

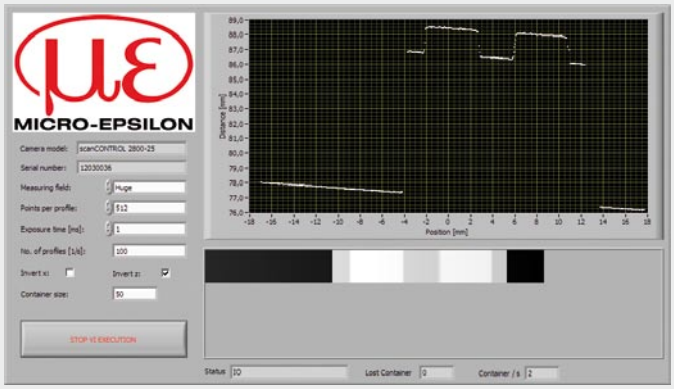
The scanCONTROL Development integration package contains:
- scanCONTROL documentation
- Programming examples for integration and visualisation in ICONNECT



Integration with LabView

The integration of scanCONTROL sensors in the LabView programming environment from National Instruments can be achieved in two ways: with the aid of the C/C++ library LLT.dll from Micro-Epsilon, or by using the IMAQdx driver that comes with the Vision Acquisition software from National Instruments. Both interfaces enable rapid and reliable integration of the scanCONTROL sensors in LabView.

The scanCONTROL LabView-SDK integration package contains:
- Several example VIs (individual profile transfer and container mode)
- Detailed documentation



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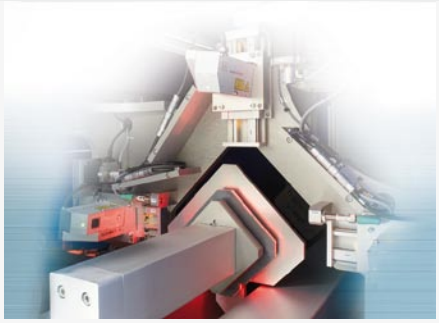

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