

## scanCONTROL integration

### COMPACT/HIGHSPEED - profile transmission

Overview of possible programming languages, interfaces and software packages being used for the integration of scanCONTROL sensors (Compact/Highspeed) as provider of raw or profile data into an application.

Environment	Operating systems	Description
<b>C++</b>	Windows Linux	Very frequently used programming language. Linux version runs on ARM – Embedded Systems (e.g. Raspberry Pi).
<b>C#</b>	Windows	Modern Windows programming language for .NET.
<b>LabVIEW</b>	Windows	Graphic programming system. Widely used in measurement technology.
<b>Python</b>	Windows Linux*	Strongly growing programming language with comprehensive, scientific libraries. <small>*Examples for Windows only</small>
<b>C</b>	Windows Linux	Standard programming language. Examples for Linux available. Popular in the embedded area: this is why Linux version also runs on ARM – Embedded Systems (e.g. Raspberry Pi).
<b>GigE Vision / GenICam</b>	Windows Linux Mac	Transmission or communication interface for numerous image processing systems. Quasi-industry standard for image processing.
<b>Halcon</b>	Windows Linux Mac	Image processing software package (uses GigE Vision). Specific integration examples available.
<b>VB.NET</b>	Windows	Alternative for .NET but less used than C#
<b>Delphi</b>	Windows	Relatively obsolete programming language.
<b>Matlab</b>	Windows Linux* Mac*	Scientific programming environment. Windows integration via DLL. <small>*Linux/Mac using additional Matlab-specific GigE Vision Toolbox.</small>


Information about integration possibilities with other programming languages/environments on request

- Consulting expertise + detailed examples
- Basic support / Examples
- Integration is possible

## SMART - measurement data output

Overview of available protocols used for transferring calculated measurement results of a scanCONTROL Smart or Gap sensor to a control system or a computer.

Protocol	Transmission standard	Description
Modbus	Ethernet (TCP) RS422 (RTU)	Simple and stable communication protocol for communicating with control systems. Was quasi-standard in many industry areas and is therefore still widely used.
UDP	Ethernet (UDP)	Protocol-independent ASCII data flow via Ethernet/UDP. As pure measurement value flow nearly suitable for any control system or computer architecture.
Serial	RS422	Protocol-independent ASCII data flow via RS422 interface. As pure measurement value flow nearly suitable for any control system or computer architecture.
PROFINET IO	Via scanCONTROL Gateway	PROFINET ( <b>P</b> rocess <b>F</b> ield <b>N</b> etwork) is a real-time capable, Ethernet-based fieldbus protocol. De facto standard for Siemens control systems.
EtherCAT	Via scanCONTROL Gateway	EtherCAT ( <b>E</b> thernet for <b>C</b> ontrol <b>A</b> utomation <b>T</b> echnology) is a high speed, real-time capable, Ethernet-based fieldbus protocol from Beckhoff. Increasingly common.
EtherNet/IP	Via scanCONTROL Gateway	EtherNet/IP ( <b>E</b> ther <b>N</b> et <b>I</b> ndustrial <b>P</b> rotocol / EIP) is a real-time capable, Ethernet-based fieldbus protocol from Allen-Bradley. Mainly used in the USA.
Analog	Via Output Unit (WAGO)	Analog value output via bus coupler. Available variants are 0-10V, -10-10V, 0-20mA and 4-20mA.
Digital	Via Output Unit (WAGO)	Output of evaluated measurement values (IO/NIO) using digital signals via bus coupler (24V).

 Test program + TechNote available

 Detailed TechNote available

 Test program available

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