SIMATIC VS720A and VS720-S series

Intelligent cameras with PROFINET

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simatic sensors

SIEMENS

SIMATIC VS720A series
For universal use

With the VS720A series, you have your production safely in view round the clock and your production process firmly under control. A wide range of intelligent cameras is available to suit the different requirements in the fields of automatic inspection, quality checking, production monitoring or parts recognition.

Individual requirements and demanding tasks can be solved with particular ease and efficiency using the smart, universally applicable intelligent cameras of the SIMATIC VS720A series.

All the important functions such as image recording, image processing, preparation of results and communication are combined in a compact housing. They are ideal when several inspection tasks have to be performed in a single inspection cycle.

The cameras are characterized by their high degree of accuracy and prompt response. Seven camera types offer scalable performance, resolution, color and monochrome image processing. Thanks to their fast, high-performance hardware architecture, they can directly evaluate the acquired displays in accordance with the memory-resident inspection program.

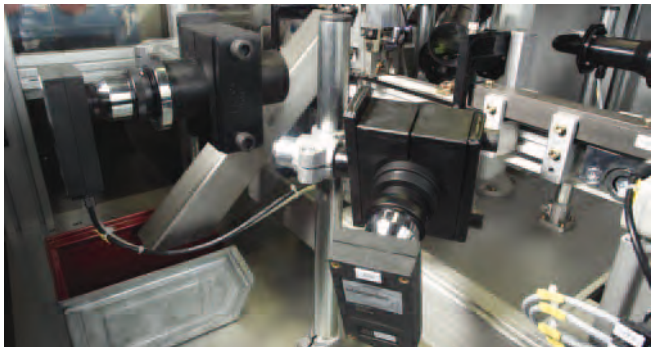
The monochrome SIMATIC VS721A camera and color SIMATIC VS725A camera are economical entry-level models. They can be used to perform inspection tasks such as presence checks, counting tasks (e.g. drilled holes) or pattern recognition (identification of object surfaces).

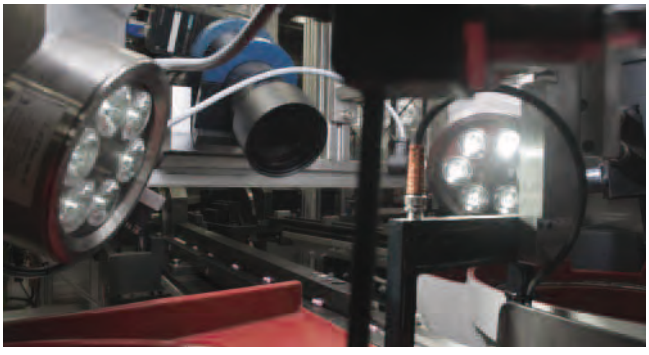
highlights

- Small, compact design
- Stand-alone operation or integration in flexible factory automation environments
- All-in-one housing for image capture, image processing and communication interface
- Performs several inspection tasks in one inspection cycle
- High-performance online and offline configuration with SIMATIC Spectation
- Simple and fast operation through configuration and parameter assignment
- Visualization of live or error images, frame/detail and result tables
- WinCC flexible and WinCC Integration with HMI Controls VS720
- Scalability: Performance, resolution, monochrome or color image processing

Flexible communication options – through to PROFINET IO

Apart from the well-proven PROFIBUS DP communication, all VS720A cameras also offer PROFINET IO capability for high-performance realtime communication on Ethernet basis. Standard function blocks support easy communication to the PN/PB CPUs of SIMATIC S7-300 and S7-400. Alternatively, communication is possible via TCP/IP to the CPs of SIMATIC S7-300 and S7-400. Standard function blocks also support easy communication here between the camera and SIMATIC S7 PLCs.





SIMATIC VS720A series
The technology at a glance

	VS721A	VS722A	VS723A	VS724A	VS725A	VS726A
	CMOS	**Basic**	**Performance**	**High Resolution**	**Color**	**High Speed/Color**
Camera						
■ Performance	Basic	Basic	Medium	Medium	Basic	Medium
■ Resolution	VGA	VGA	VGA	SVGA	VGA	VGA
■ Image capture	CMOS 1/3“ 6.0 x 6.0 µm	CCD 1/3“ 7.4 x 7.4 µm		CCD 1/2“ 4.65 x 4.65 µm	CCD 1/3“ 4.65 x 4.65 µm	CCD 1/4“ 5.6 x 5.6 µm
■ Exposure time	10 µs to 1 s (electronic shutter)					
■ Frame transfer	60 fps			8 fps	23 fps	30 fps
■ Lens mount	CS-Mount (C-Mount adapter ring optional)					
■ Additional features	Partial scan, integrated flash control of up to 4 light sources					
Interfaces						
■ Integrated interfaces	■ 1 x Industrial Ethernet (RJ45,10/100 Mbaud) ■ 1 x power supply / digital I/O (RJ45)					
■ Digital inputs Industrial Ethernet	32					
■ Digital outputs Industrial Ethernet	64					
■ Digital channels (24 V DC)	8 freely configurable non-floating channels					
■ Digital inputs	Input current up to 1.5 mA, NPN (current-sinking)					
■ Digital outputs	50 mA, short-circuit-proof, PNP (current source), active high signal					
■ Monitor connection	via VS Link or VS Link PROFIBUS					
■ HMI operation	HMI Controls VS720 for WinCC flexible, ProTool/Pro and WinCC					
■ PROFINET	PROFINET IO real-time onboard interface					
■ PROFIBUS	via VS Link PROFIBUS					
■ Protocols	TCP/IP native, MODBUS, VDX, PROFIBUS DP (DPV0, VS Link PROFIBUS required)					
■ Power supply	24 V DC / 210 mA					
Housing						
■ Degree of protection	IP51					
■ Protective housing	Optional					
■ Housing material	Plastic					
■ Environment	0 ... 45 °C (32 to 113 °F), no condensation					
■ Dimensions (W x H x D) in mm	60 x 112 x 30 (without lens) and additional 50 mm for cable connection					
Product selection code	6GF172...					

SIMATIC VS720 S series
For harsh industrial use

Cameras work close to the production process. The SIMATIC VS720 S series has a high-quality stainless-steel housing with all-round protection for the camera, lens and connected cables. This ensures that the cameras are resistant to harsh environmental conditions.

In the food and beverage industry, no foreign matter is permitted to enter the food products. A high degree of protection as well as ruggedness is demanded due to the cleaning process.

Ruggedness is also required in the production systems. It is recommended that the VS720-S is used to the IP68 degree of protection for situations in which flying sparks are a problem or machining is performed that involves the removal of chips.

The cameras are characterized by their high degree of accuracy and prompt response. Three camera types offer scalable resolution, color and monochrome image processing. Thanks to their fast, high-performance hardware architecture, they can directly evaluate the acquired displays in accordance with the memory-resident inspection program.

highlights

- Rugged stainless-steel housing made of V4A steel
- Compact, space-saving design
- Lens protection barrel made of plastic or stainless-steel with optical glass
- Insensitive to humidity – high IP68 degree of protection
- Highly flexible cables with rugged connector system

Flexible communication options – through to PROFINET IO

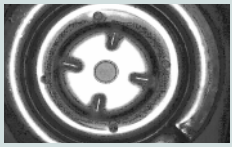
Apart from the well-proven PROFIBUS DP communication, all VS720-S cameras also offer PROFINET IO capability for high-performance realtime communication on Ethernet basis. Standard function blocks support easy communication to the PN/PB CPUs of SIMATIC S7-300 and S7-400. Alternatively, communication is possible via TCP/IP to the CPs of SIMATIC S7-300 and S7-400. Standard function blocks also support easy communication here between the camera and SIMATIC S7 PLCs.

SIMATIC VS720 S series
The technology at a glance

	VS723-S	VS724-S	VS725-S
	High Speed	**High Speed/ Resolution**	**High Speed/Color**
Camera			
■ Performance	High	High	High
■ Resolution	XGA	SVGA	VGA
■ Image capture	CCD 1/3" 7.4 x 7.4 µm	CCD 1/2" 4.65 x 4.65 µm	CCD 1/4" 5.6 x 5.6 µm
■ Exposure time	10 µs to 1 s (electronic shutter)		
■ Frame transfer	75 fps	8 fps	30 fps
■ Lens mount	CS-Mount (C-Mount adapter ring optional)		
■ Additional features	Partial scan, integrated flash control of up to 4 light sources		
Interfaces			
■ Integrated interfaces	■ 1 x Industrial Ethernet (M12x8, 10/100 Mbaud) ■ 1 x power supply / digital I/O (M12x8)		
■ Digital inputs Industrial Ethernet	32		
■ Digital outputs Industrial Ethernet	64		
■ Digital channels (24 V DC)	6 freely configurable non-floating channels		
■ Digital inputs	Input current up to 1.5 mA, NPN (current-sinking)		
■ Digital outputs	50 mA, short-circuit-proof, PNP (current source), active high signal		
■ Monitor connection	via VS Link or VS Link PROFIBUS		
■ HMI operation	HMI Controls VS720 for WinCC flexible, ProTool/Pro and WinCC		
■ PROFINET	PROFINET IO real-time onboard interface		
■ PROFIBUS	via VS Link PROFIBUS		
■ Protocols	TCP/IP native, MODBUS, VDX, DVP0 (with VS Link PROFIBUS DP)		
■ Power supply	Input current up to 1.5 mA, NPN (current-sinking)		
Housing			
■ Degree of protection	IP68		
■ Housing material	Stainless steel V4A		
■ Environment	0 ... 45 °C (32 to 113 °F), no condensation		
■ Dimensions (W x H x D) in mm	60 x 112 x 30 (without lens) and additional 50 mm cable connection, for stainless steel variants: 66 x 120 x 73.2 (including lens barrel) and additional 50 mm cable connection		
Product selection code	6GF172...		

Intelligent cameras
The inspection task decides

The application areas for intelligent cameras lie in the automotive industry, electrical engineering, semiconductor industry, food and beverages industry, packaging industry, pharmaceuticals, mechanical engineering and printing industry.

Intelligent cameras	VS721A	VS722A	VS723A VS723-S	VS724A VS724-S	VS725A VS725-S	VS726A
Moving objects	■	■	■	■	■	■
Complex inspection, high speed 			■			■
Completeness check 	■	■	■	■	■	■
Shape inspection 	■	■	■	■	■	■
Pattern comparison 	■	■	■	■	■	■
Measurement 		■	■	■	■	■
Position/orientation detection 	■	■	■	■	■	■
Plain text reading, comparison 	■	■	■	■	■	■
1D/2D code reading 	■	■	■	■	■	■
Color recognition 					■	■

Software for the intelligent cameras SIMATIC VS720A and VS720-S

SIMATIC Spectation

The intelligent cameras of the VS 720 series are configured easily and conveniently with SIMATIC Spectation. A large range of preprogrammed inspection and recognition functions is already integrated. Test programs can be created, tested and loaded onto the camera - online or offline, on a programming device or PC, under Windows 2000 and XP. Even more of these test programs can be stored on the camera and can be called up via interfaces as required. Parameter optimization and pattern learning can take place online or offline via an emulator. Several cameras can be configured via Industrial Ethernet using the PC or programming device.

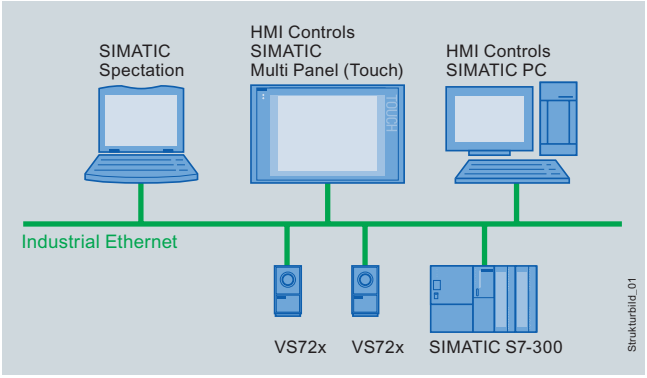
Example for color analysis
assignment, segmentation and preprocessing of objects of different colors, e.g. for checking the presence/type of automobile fuses

highlights

- Simple development of inspection programs for solving inspection tasks - selection from an existing range of inspection tools
- User-friendly handling of parameters
- Fast placement of test elements on the frame section under consideration using drag & drop
- Integrated offline configuration (emulator) using process images saved previously
- Boolean operation of soft sensors through scripts

SIMATIC HMI Controls

Images from SIMATIC VS720 intelligent cameras can be displayed and edited easily on HMI systems using HMI Controls VS720. HMI Controls VS720 use Microsoft DCOM and ActiveX technology and were developed specially for SIMATIC Multi Panels and PC-based solutions with the WinCC, WinCC flexible and ProTool/Pro visualization systems. They are integrated in the visualization system like standard HMI functions and connected to the HMI system via Industrial Ethernet.



highlights

- Central operation and monitoring by one or more VS720 intelligent cameras during operation
- Image processing is linked to HMI functions of SIMATIC HMI
- Visualizing/saving live images
- Displaying and saving of inspection results
- Error diagnostics during operation or subsequently
- Operation of the VS720 intelligent cameras in the Industrial Ethernet network

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