

SIMATIC MV440 code reading system

All-round reliability and versatility

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SIMATIC Sensors

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All-round reliability and versatility

For state-of-the-art production systems, tracing products and parts with machine-readable identification is a central requirement. A unique coding system permits the planning of each and every step of production for every part manufactured and changes within the production process or in the materials used. Direct marking of products also allows the implementation of legally specified requirements for tracing production batches throughout the production system, for example, for product liability.

The stationary 1D/2D code reading system SIMATIC MV440 impresses customers with highly reliable reading and a wide range of different communication and connection possibilities. It is designed for reading Data Matrix Codes, e.g. DPM (Direct Part Marking), under difficult environmental conditions in industrial applications. Flexible lighting options and compact size allow the MV440 to be used in many industrial applications, for example, in the automobile, packaging, pharmaceuticals, cosmetics and electronics industries as well as in the food and beverages sector.

Typical application examples for SIMATIC MV440 include:

Product tracking

- Quality assurance between sub-suppliers and assembly plants in the automotive industry
- Protection against counterfeiting
 - with regard to liability in the pharmaceuticals industry
 - with regard to tax in the tobacco industry
 - of CPUs in the electronics industry
- Measuring the delivery flow in the packaging industry
- Batch identification with regard to product liability in the food and beverages industry

Production control

- Engine production (controlling the CNC machining) in the automotive industry
- Checking container filling (vials) in the pharmaceuticals industry
- Controlling the analysis sequence in the laboratory
- Controlling surface mounting and programming of components (e.g. MAC address) in electronics production

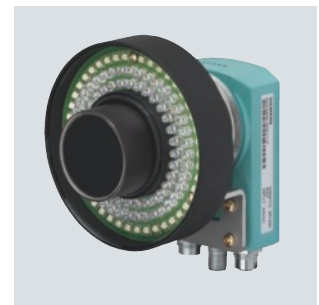
Checking the marking quality (verification)

Highlights

- **Compact design to IP67 degree of protection**
- **Auto trigger**
- **Various device variants**
 - Resolutions 640 x 480 pixels or 1024 x 768 pixels
 - Optional verification
 - Connection of external lighting
- **High reading speed**
 - Up to 80 codes per second
 - Up to 15 code types can be stored
 - Multi-code reading (reading of up to 50 codes in the field of vision)
- **Interfaces**
 - PROFINET IO, Ethernet or RS232
 - PROFIBUS DP or PROFINET IO via ASM module
 - Mixed mode is possible with RFID and MV440 on the same communication module
- **Functionality of the user interface:**
 - Commissioning using adjustment support on the PG / PC with Internet Explorer installed
 - Web-based user interface
 - Extensive operator control and monitoring functions even in processing mode
 - Customized user interface can be created with SIMATIC WinCC flexible/WinCC
 - Flexible diagnostics and logging functions

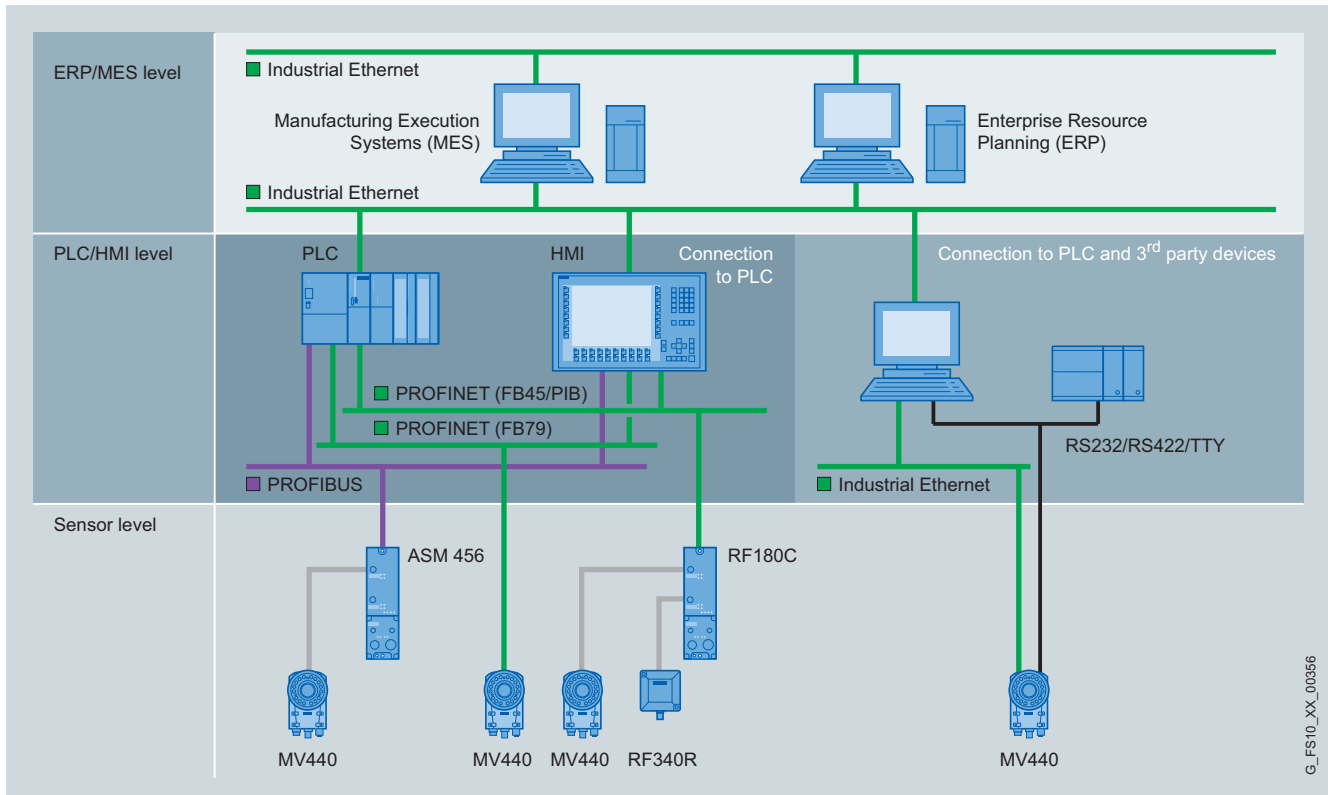
Variants at a glance

- With integrated lighting, up to 80 cm working distance
- With external lighting, up to 300 cm working distance
- With and without verification (via license)



SIMATIC MV440 with integrated and with external lighting

Flexible communication and connection possibilities



The communication and connection possibilities that are available for integrating SIMATIC MV440 into the automation solution are listed below complete with the functions that can be used with them:

Connection No. 1:

- Direct connection to PROFINET (over FB79) or Ethernet (TCP/IP native)
- Commissioning / user interface
- Image transfer (Data Logging)
- Output of results

Connection No. 2:

- Connection through communication modules to PROFIBUS (with ASM456; FB45) or PROFINET (with RF180C; FB45)
- Power supply
- Output of results

Connection No. 3:

- Direct serial connection via RS232 or with interface converter on RS422/TTY
- Integrated DI/DO connection
- Power supply
- Output of results
- Trigger and flash connection



Functionality overview

In addition to the functions for reading and decoding code, SIMATIC MV440 features numerous functions for easier image capture, commissioning, operation and monitoring, as well as diagnostics and logging the results of reading.

Auto trigger

With the auto trigger, codes that enter the field of vision of the reader are automatically read. The reader itself searches a sequence of images over any preferred time span for code visibility. In this case, it does not require any external trigger signals, for example from a light barrier. This option is particularly useful for objects that move slowly or those for which accurate triggering via a light barrier is difficult.

Multi-code reading

In multi-code reading, up to 50 codes can be decoded for each image capture, e.g. when several objects are bulk read in one stack. The codes in an image to be read may be of different types. The processing time is increased due to the multiple decoding.

Verification

The quality of markings can be measured using verification functionality. High quality marking must be used if maximum reading reliability is to be achieved despite pollution in the production process. Verification also reduces production costs because the demands on material quality and marking quality are not so stringent. For early detection of deterioration, it may be appropriate to check the readability at every reading position in the production process and not only immediately after marking.

Installation and startup

For most applications, the parameter settings are made automatically. If changes nevertheless become necessary, parameters can be set using the integrated Web server and an Internet browser without prior software installation.

Web-based user interface

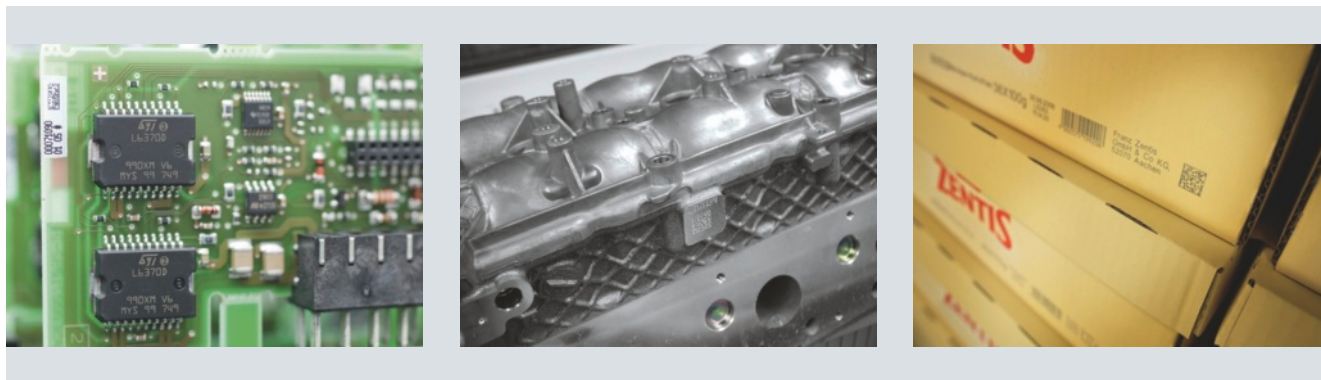
The user interface of the reader uses the Microsoft Internet Explorer of your PC. This is stored on the reader and is downloaded during startup and executed in the Internet Explorer. There is no need to install software on the PC. The user interface can be started from any PC, or additional Windows-based devices can be started.

Visualization

Apart from the web-based user interface, pre-existing HMI units in the plant can be used to display the image information. In the case of a decoding error, it is extremely helpful when the user can read the image information directly on the HMI unit. The programmer can create the user interface for the MV440 as an integral component of the user interface for a machine using professional software such as SIMATIC WinCC and WinCC flexible as a customized user-interface.

Diagnostics and logging

The diagnostics and logging functions support, for example, the transfer of time stamps, fault patterns and results to database systems for generating trend analyses or statistics.



Technology overview

SIMATIC MV440	
Housing	Compact IP67 unit with lens housing
Optical resolution	640 x 480 or 1024 x 768 pixels
Field of vision (W x H) for specified working distance	Variable field of vision Reading distance and sensor resolution is dependent on: <ul style="list-style-type: none"> ■ Selected lens ■ Selected sensor head resolution 640 x 480 or 1024 x 768 pixels
Working distance ¹⁾	With integrated lighting: Up to 80 cm With external lighting: Up to 300 cm
Minimum element size	dependent on the selected lens
Speed	Up to 80 read operations per second
Decoding capability	2D codes: DMC, PDF417, QR 1D codes: Int. 2/5 (without checksum), Int. 2/5+CS (with checksum), Code 128, Code 39 (without checksum), Code 39+CS (with checksum), EAN 13, EAN 8, UPC-A, UPC-E, UPC Suppl., GS1 Databar 14, GS1 Databar Stacked, GS1 Databar Limited, GS1 Databar Expanded, Pharmacode, POSTNET, Code 93, Codabar
Verification	<ul style="list-style-type: none"> ■ ISO/IEC 16022:2000 AIM specification ■ ISO/IEC 15415:2004 DMC (license) ■ AS9132 Rev A, 2005 DMC – previously IAQG (license) ■ SO/IEC 15416:2000 BC - ANSI X3.182-1990 (license) ■ Siemens DPM (license)
Interfaces	
Integral interfaces	PROFIBUS DP (over ASM module); PROFINET I/O (onboard and over ASM module); RFID ASM, Ethernet (onboard), RS232 (onboard), RS422/TTY (by means of converter)
Digital I/O	<ul style="list-style-type: none"> ■ 4 parameterizable digital I/Os ■ High-speed trigger input ■ Image-synchronous flash output
General data	
Power supply	24 V DC
Operating temperature	0 to 50 °C
Storage temperature	-30 °C to +70 °C
Humidity	Max. 95% at 25 °C, no condensation
Product selection code	6GF3440...

1) Working distance measured from last physical element to the component

Get more information

SIMATIC code reading systems:

www.siemens.com/simatic-sensors/mv

3D data on SIMATIC code reading systems:

www.siemens.com/simatic-sensors/mv-cad

References for SIMATIC Sensors:

www.siemens.com/simatic-sensors/references

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www.siemens.com/automation/mall

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www.siemens.com/automation/partner

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www.siemens.com/automation/newsletter

Information material available for downloading:

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