

SIEMENS



SIMATIC Ident

Code Reader Systems

SIMATIC MV420 / SIMATIC MV440

Compact Operating Instructions

Edition

10/2012

Answers for industry.

SIEMENS

SIMATIC Ident

Code Reader Systems




SIMATIC MV420/SIMATIC MV440

Compact Operating Instructions

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

| |
|--|
|  DANGER |
| indicates that death or severe personal injury will result if proper precautions are not taken. |
|  WARNING |
| indicates that death or severe personal injury may result if proper precautions are not taken. |
|  CAUTION |
| indicates that minor personal injury can result if proper precautions are not taken. |
| NOTICE |
| indicates that property damage can result if proper precautions are not taken. |


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

| |
|--|
|  WARNING |
| Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed. |

1 Security messages

Note

For its automation and drives product portfolio, Siemens provides IT security mechanisms to support secure operation of the plant/machine. Our products are continuously being further developed also taking into account the aspect of IT security. We therefore recommend that you regularly check for updates of our products and that you only use the latest versions. You will find information on this topic under:

Industrial Security (<http://www.siemens.com/industrialsecurity>)

Here, you can register for a product-specific newsletter.

For the secure operation of a plant/machine, it is also necessary to integrate the automation components in a full IT security concept for the entire plant/machine that represents the state of the art in IT technology. You will find notes on this topic under:

Industry Online Support (<http://support.automation.siemens.com/WW/llisapi.dll?func=cslib.csinfo2&aktprim=99&lang=en>)

Products from other manufacturers that are being used must also be taken into account.

2 Installation

Installing SIMATIC MV420/SIMATIC MV440

These readers are compact standalone devices that, when mounted in a suitable location, need only be equipped with a lens, a power supply cable, and a communications link. The SIMATIC MV440 reader has four threaded holes (SIMATIC MV420: two threaded holes) each on the front and back, which allows flexible mounting.

Installing the reader with protective lens housing

To provide lighting when reading the codes, you have several options available. The simplest and most economical option in terms of space is the ring light integrated in the lens protective housing.

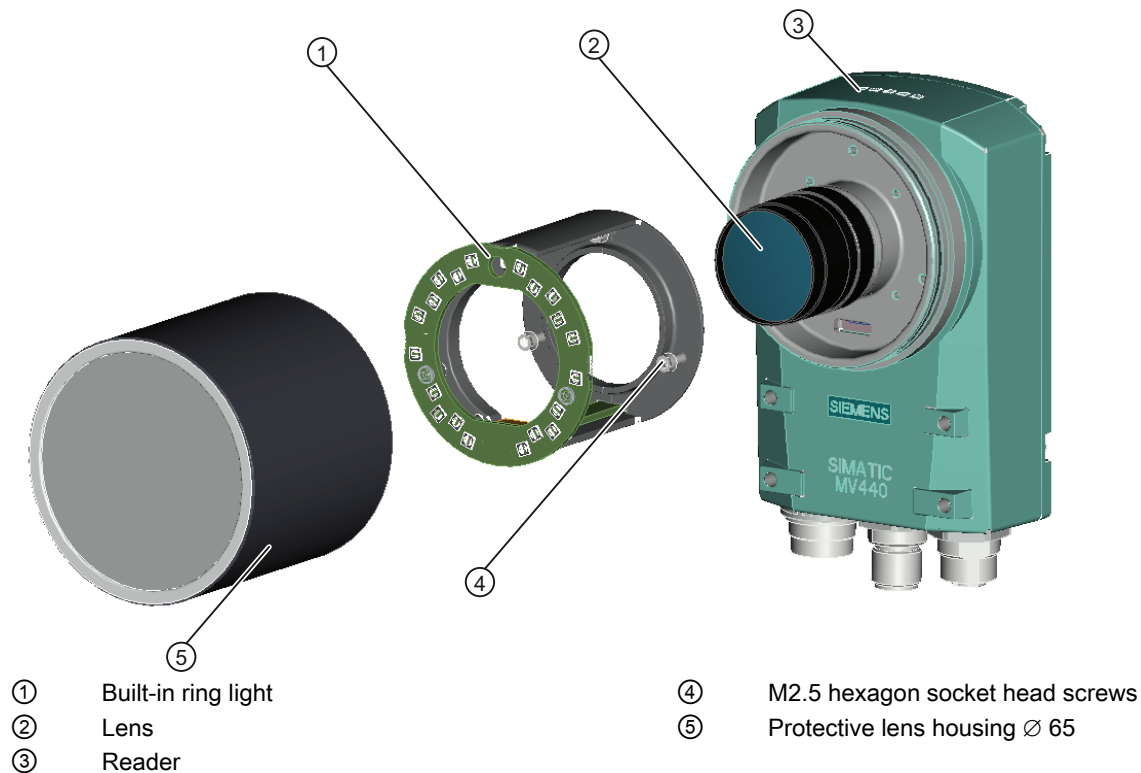


Figure 2-1 Mounting the SIMATIC MV440 reader with a protective lens housing and built-in ring light

3 Connecting

Connect the reader to the components of your application.

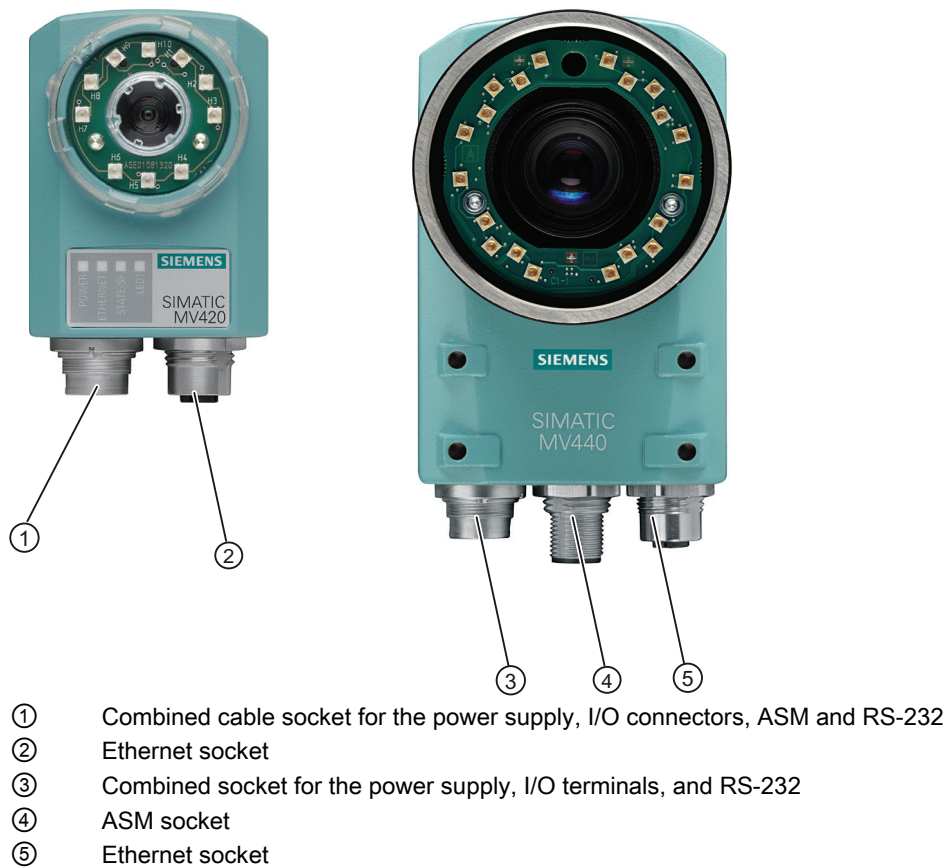


Figure 3-1 Cable sockets for SIMATIC MV420 (left) and SIMATIC MV440 (right)

Power IO RS-232 cable

The power IO RS-232 cable is used for the power supply, to connect to the digital I/O connectors and, for example, for the communications interface of a programmable controller via the RS-232 interface. The pinout of the Power IO RS-232 cable is provided in the table below.

Pinout of Power IO RS-232 cable

NOTICE
INPUT - COMMON or OUTPUT - COMMON must be connected
 To be able to use the inputs and outputs described below, it is imperative that the INPUT - COMMON or OUTPUT - COMMON is connected.

Table 3-1 SIMATIC MV440

| Pin | Color | Signal name | Possible values | Default setting | Meaning |
|-----|---------------|--------------------|--|-----------------|---|
| H | red | 24 V DC | | | Power supply |
| G | blue | 0 V | | | Power supply |
| K | violet | INPUT1 | TRG | TRG | Trigger input |
| D | yellow | INPUT / OUTPUT2 | DISA, SEL0, SEL1, SEL2, SEL3, TRN, RES, IN_OP, TRD, RDY, READ, MATCH, N_OK, EXT_1, EXT_2, EXT_3, EXT_4 | IN_OP | Freely selectable input or output. |
| L | Gray/ pink | INPUT / OUTPUT3 | DISA, SEL0, SEL1, SEL2, SEL3, TRN, RES, IN_OP, TRD, RDY, READ, MATCH, N_OK, EXT_1, EXT_2, EXT_3, EXT_4 | RDY | Freely selectable input or output. |
| C | green | INPUT / OUTPUT4 | DISA, SEL0, SEL1, SEL2, SEL3, TRN, RES, IN_OP, TRD, RDY, READ, MATCH, N_OK, EXT_1, EXT_2, EXT_3, EXT_4 | READ | Freely selectable input or output. |
| B | brown | INPUT / OUTPUT5 | DISA, SEL0, SEL1, SEL2, SEL3, TRN, RES, IN_OP, TRD, RDY, READ, MATCH, N_OK, EXT_1, EXT_2, EXT_3, EXT_4 | N_OK | Freely selectable input or output. |
| A | white | INPUT - COMMON | P-type inputs/outputs: INPUT - COMMON = 0 V and OUTPUT - COMMON = + 24 V DC N-type inputs/outputs: INPUT - COMMON = + 24 V DC and OUTPUT - COMMON = 0 V | | Reference point, 0 V or 24 V for inputs. |
| E | gray | OUTPUT - COMMON | | | Reference point, 0 V or 24 V for outputs. |
| J | black | STROBE (OUTPUT) | | | Signal output for connecting external strobe lights |
| F | pink | RS-232 TXD | | | RS-232 send line |
| M | red/blue | RS-232 RXD | | | RS-232 receive line |

Table 3-2 SIMATIC MV420

| Pin | Color | Signal name | Possible values | Default setting | Meaning |
|-----|---------------|------------------------|--|-----------------|---|
| H | Red | 24 V DC | | | Power supply |
| G | Blue | 0 V | | | Power supply |
| K | violet | INPUT1 | TRG | TRG | Trigger input |
| D | yellow | OUTPUT2 | IN_OP, TRD, RDY, READ, MATCH, N_OK, EXT_1, EXT_2, EXT_3, EXT_4 | RDY | Freely selectable output. |
| L | Gray/ pink | OUTPUT3 | IN_OP, TRD, RDY, READ, MATCH, N_OK, EXT_1, EXT_2, EXT_3, EXT_4 | READ | Freely selectable output. |
| C | green | ASM TxD_N | | | TxD_N signal from ASM interface |
| B | brown | ASM TxD_P | | | TxD_P signal from ASM interface |
| A | white | INPUT - COMMON | P-type inputs/outputs: INPUT - COMMON = 0 V and | | Reference point, 0 V or 24 V for inputs. |
| E | Gray | OUTPUT - COMMON | OUTPUT - COMMON = + 24 V DC N-type inputs/outputs: INPUT - COMMON = + 24 V DC and OUTPUT - COMMON = 0 V | | Reference point, 0 V or 24 V for outputs. |
| J | Black | STROBE (OUTPUT) | | | Signal output for connecting external strobe lights |
| F | pink | RS232 TxD or ASM RxD_P | RS232 TxD, ASM RxD_P | RS-232 TXD | RS232 send line or ASM RxD_P from ASM interface |
| M | red/blue | RS232 RxD or ASM RxD_N | RS232 RxD, ASM RxD_N | RS-232 RXD | RS232 receive line or ASM RxD_N from ASM interface |

MV400 push-pull power cable assignment

Table 3-3 MV400 push-pull power cables with order numbers 6GF3400-1BH20 and 6GF3400-0BH15

| Power interface (socket) | | |
|--------------------------|-------------|--------|
| Port | Wire color | Signal |
| H | Red/Orange | 24 V |
| G | Black/brown | 0 V |

ASM cable

The connectors are already fitted to the ASM cable. Using the ASM cable, you connect the interface modules, for example RF180C and ASM456. For SIMATIC MV420, a special ASM cable with M16 socket is available.

Ethernet cable M12/RJ-45

With a preassembled Ethernet cable, you connect a PC/PG to control and operate the reader. You can also connect the Ethernet cable to a switch to link the reader to an automation system via onboard PROFINET IO.

4 Commissioning

To commission the device, you require a PC that meets the following requirements:

- Operating system Windows XP Professional SP 1 or higher
- Internet browser with Java Runtime Environment as of V1.2
- SIMATIC Primary Setup Tool (PST) is installed.
- There is a network connection via Ethernet TCP/IP.

Note

- Java Runtime Environment is also known as:
 - Java Runtime
 - Runtime Environment
 - Runtime
 - JRE
 - Java Virtual Machine
 - Virtual Machine
 - Java VM
 - JVM
 - VM or
 - Java Download.Whenever possible use the latest Java version. You can find information on this topic on the Internet under (www.java.com), or ask your system administrator.
 - You will find the Primary Setup Tool (PST):
 - In your SIMATIC installation
 - On the product CD of the reader
 - As a free download on the SIMATIC Support Internet pages (<http://support.automation.siemens.com/WW/view/de/19440762>).
-

Steps for initial commissioning

| Step | Activity |
|------|--|
| 1 | Connect the reader and PC using an Ethernet cable. |
| 2 | Turn the reader on. |
| 3 | Configure the Ethernet connection between reader and PC. |
| 4 | Start the user interface with the Internet Explorer. |
| 5 | Adjust the reader using the user interface. |

Note

The user interface of the reader is known as the setup support. The setup support takes the form of a Java applet stored on the reader and this can be activated using an Internet browser.

Step 1

Connect the reader and PC using an Ethernet cable

Connect the reader directly to your PC/programming device over an Ethernet cable.

Note

You do not need a crossover cable because the reader is capable of autocrossing and automatically detects the type of cable you are using.

Step 2

Turn the reader on

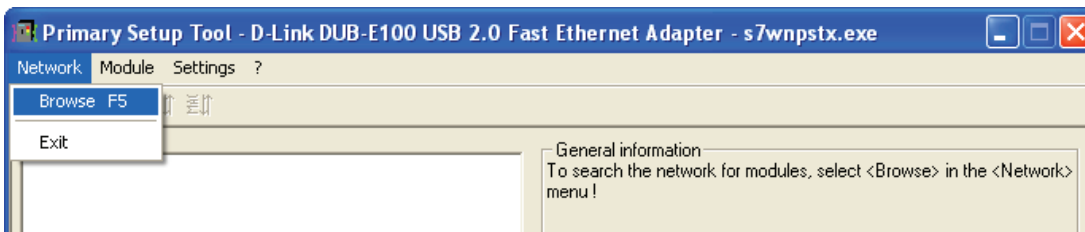
Turn on the power supply for the reader. The reader is supplied with power either via a connected ASM cable or via the power IO RS232 cable or PoE cable; see also chapter Connecting (Page 4).

- Each time it is started, the reader runs a self-test which is indicated by the Power LED flashing.
- After a period of between several seconds and 2 minutes, the self-test is completed and the Power LED lights up permanently in green. The reader is ready for operation

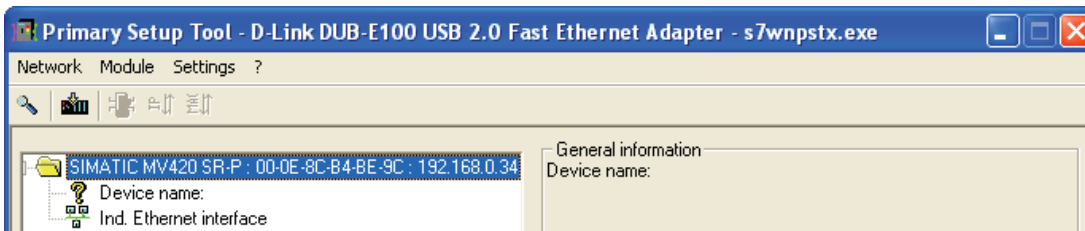
Step 3

Configure the Ethernet connection between the reader and PC

1. Start the Primary Setup Tool (Start menu → **Start** → **SIMATIC** → **Primary Setup Tool** → **Primary Setup Tool**).
2. Start the network browsing function in the PST menu (**Network** → **Browse**).

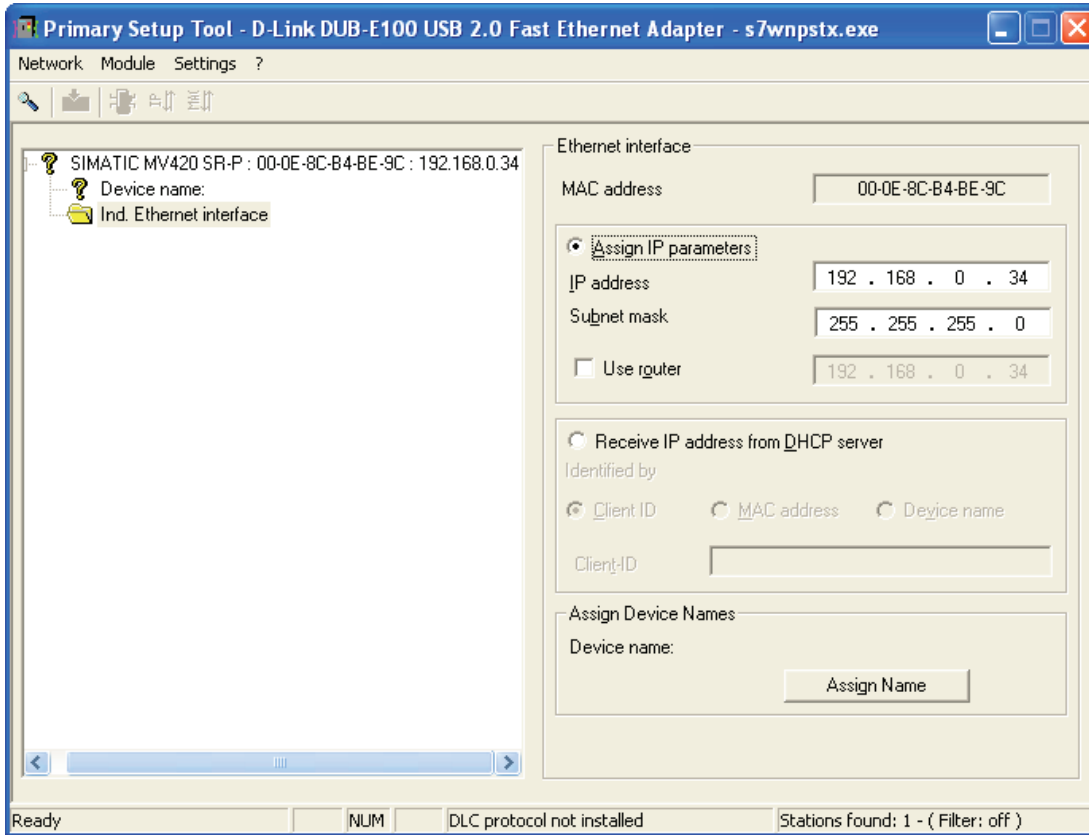


3. Select the displayed device and double-click on it.



4. Clicking on the displayed Ethernet interface displays the properties of the interface.

- Select "Assign IP parameters" and enter the values for the IP address and subnet mask as shown below.

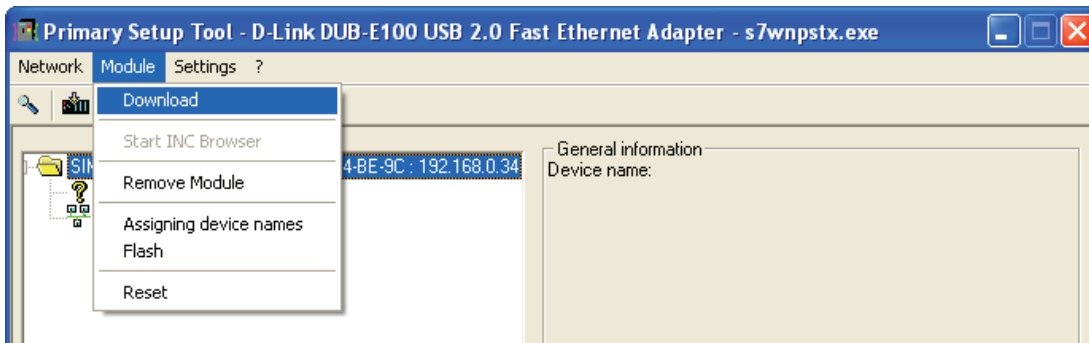


Note

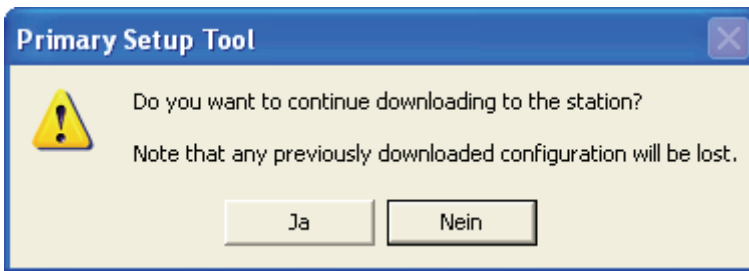
IP address 192.168.100.100

- Using the IP address 192.168.100.100, the reader is configured as a DHCP server at the same time, which means that a connected PC can obtain an IP address from the reader. By manually assigning addresses that differ from this IP address and that are not 0.0.0.1, you configure a static IP address for the reader. PCs operated in a network are usually configured as DHCP clients and obtain their IP addresses from a server.
- If your PC network is configured differently or you do not know how your PC is configured, check with your system administrator.

- Now select the MV440 or MV420 module again and then load the configuration on the reader by clicking the "Download" menu command in the "Module" menu



7. Confirm the following message by clicking the "Yes" button.



Result

The reader now has the manually assigned IP address 192.168.0.34 and can be reached under this address by your PC.

Note

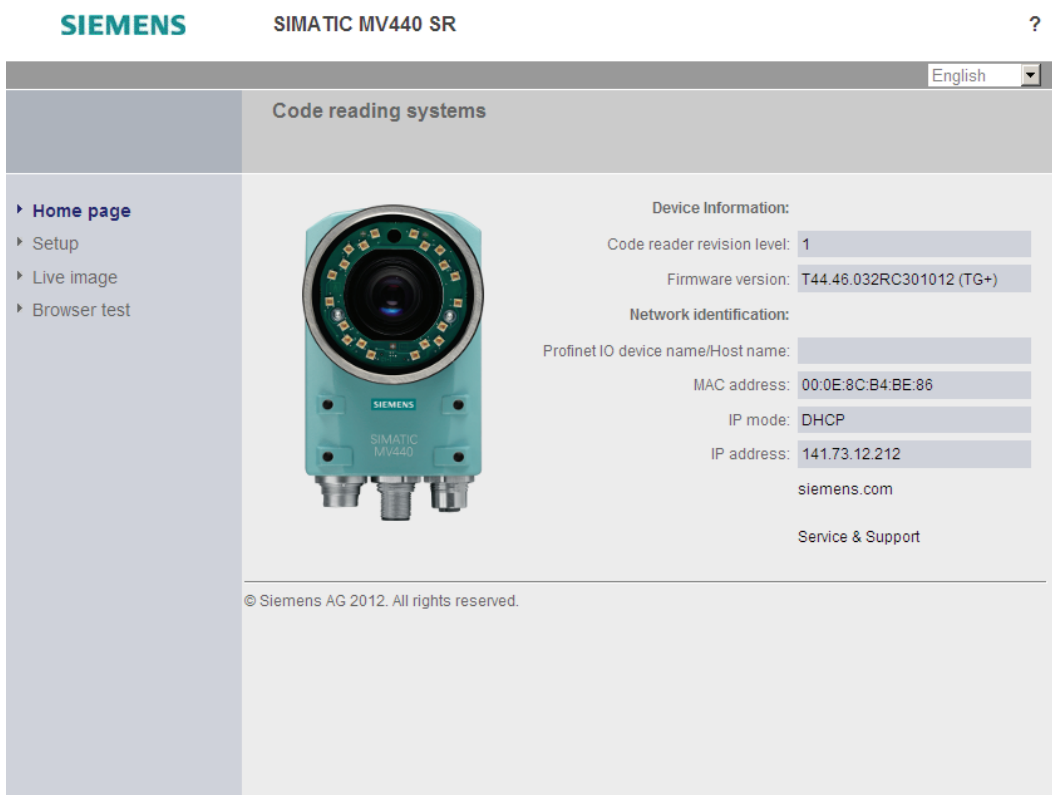
Depending on the mode being used, you may need to restart the reader by turning the power off and on again.

Step 4

Starting the user interface

1. Open Internet Explorer and enter the IP address of the reader in the address bar.
2. Confirm with the Enter key.

The home page of the reader is loaded.



3. Now click on the image of the reader or the "Adjustment " menu command.
The user interface of the reader opens after a short loading time.

4. This is followed by the Adjustment page of the user interface in the Internet Explorer.

The screenshot shows the SIMATIC MV440 SR OCR user interface. At the top, the text 'SIEMENS SIMATIC MV440 SR' and 'OCR' is visible. A 'WEB' button with a question mark is in the top right. Below the title bar, there is a user login section with 'User: WEB', 'Password: ****', and 'Log off / Log on' buttons. The main content area is titled 'Adjust reader Set image'. On the left is a navigation menu with options like 'Adjustment', 'Connections', 'Programs', 'Run', 'Options', 'Information', 'Maintain', 'Stop', and 'Home'. Below the menu is a diagram of the reader hardware and status indicators for 'POWER', 'ETHERNET', and 'STATE/SF'. The central panel contains 'Instructions' (1. Focus image, 2. Set exact triggering, 3. Verify read result, 4. Optimize read quality, 5. Save settings with 'Apply'), a 'Recognize code type' button, and 'Image settings' (Image format: 16:10 / 4:3, Resolution: Full, Exposure: Manual, Exposure time: 800 µs, Brightness: 630, Exp. offset: 0, Trigger delay: 0 ms, Distortion corr.: 0). A 'Save program >>' button is at the bottom of this panel. The right side features a large image of a barcode with the text '1P6ES7 321-1' and a 'Quality' section with fields for SC, AN, UEC, PG, MID, MAD, QZ, BD, and TA. An 'Image: Cyclic' dropdown and several icons are also present.

Result

- You are now connected to the reader and can operate it via the user interface.
- You can now perform the next step and adjust the reader and display the first read results.
- You can also get further support by clicking the "?" button at the top right. This opens the online help.

Step 5

Aligning the reader

Before you put the reader into productive operation, you must first align it correctly. You do this with the user interface by selecting the "Adjust sensor" menu command. The dialog window shows you an image as seen by the reader.

Note

Focusing the image (SIMATIC MV440 only)

To be able to focus the image, you may need to loosen the fixing screws on the lenses.

Note

Access to online help via the "?" button

Each screen of the setup support has a "?" button at the top right with which you can open the online help at any time. The help text of the online help relevant to the currently displayed dialog then opens.

1. Position the reader so that the code to be read appears in the center of the image and is focused sharply. The reader automatically attempts to recognize a data matrix code and decode it. You can recognize a successful read by the green frame around the code. The more precise the triggering and the greater the contrast in the code, the higher the read reliability will be.

2. If necessary, correct these settings:

- The exposure settings
- If you wish to read an EAN13 code instead of a data matrix code, for example, press the button "Recognize code". The reader starts code type recognition and remembers the code type found for later read processes.
- In order to find the correct image acquisition time for moved objects, correct the trigger settings.
- To rectify strong irregularities through the optics (rarely necessary), correct the distortion.

Note

If exposure = Auto, the code must be completely in the image after the triggering until the automatic exposure is completed (approximate value: 50 to 100 ms).

3. If you make modifications, save your new settings by clicking the "Apply" button.

Result

You have successfully commissioned the reader. You can now read codes for your application. You can now make specific settings and save them under individual programs.

For more details, refer to SIMATIC MV420/SIMATIC MV440 Operating Instructions.

5 Documentation and service

Documentation for SIMATIC MV420 and SIMATIC MV440

| Documentation | Content |
|---|---|
| Documentation CD SIMATIC MV420/SIMATIC MV440 6GF3440-8FA | <ul style="list-style-type: none">• SIMATIC MV420/SIMATIC MV440 Operating Instructions• SIMATIC MV420 / SIMATIC MV440 Compact operating instructions• Online help• Sample programs for FB79 for communication over PROFINET IO• Sample program for archiving of diagnostics information |
| SIMATIC MV420 / SIMATIC MV440 Compact operating instructions | Step-by-step instructions for fast initial commissioning |

Available from

Free download from the Internet

SIMATIC MV420 (<http://support.automation.siemens.com/WW/view/en/39620218/133300>)

SIMATIC MV440 (<http://support.automation.siemens.com/WW/view/en/33391594/133300>)

SIMATIC Manual Collection on DVD

SIMATIC Manual Collection (<http://support.automation.siemens.com/WW/view/en/4073541>)

All manuals for S7-200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, ENGINEERING software, RUNTIME software, PCS 7, SIMATIC HMI, SIMATIC NET, SIMATIC MACHINE VISION, SIMATIC SENSORS

- in 5 languages
- Order number: 6ES7998-8XC01-8YE0

Technical Support

You can access technical support for all IA/DT projects via the following:

- Phone: + 49 (0) 911 895 7222
- Fax: + 49 (0) 911 895 7223
- E-mail (<mailto:support.automation@siemens.com>)
- Internet: Online support request form: (<http://www.siemens.com/automation/support-request>)

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Siemens AG
Industry Sector
Postfach 48 48
90026 NÜRNBERG

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Siemens AG
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P.O. Box 48 48
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