SIEMENS

SIMATIC Ident

Code Reader Systems
SIMATIC MV420 / SIMATIC MV440

Compact Operating Instructions

10/2015
C79000-G8976-C335-03

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.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Preface

License conditions

Note

Open source software

Read the license conditions for open source software carefully before using the product.

You will find license conditions in the following document, which can be found on the supplied data medium:

- OSS License Summary.pdf (> Documentation > Licenses & Copyrights)

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. For more information about industrial security, visit http://www.siemens.com/industrialsecurity.

To stay informed about product updates as they occur, sign up for a product-specific newsletter. For more information, visit https://support.industry.siemens.com.

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SIMATIC, SIMATIC MV, SIMATIC RF, SIMATIC NET

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Installation

1

Use in the vicinity of plants with high-energy radiation

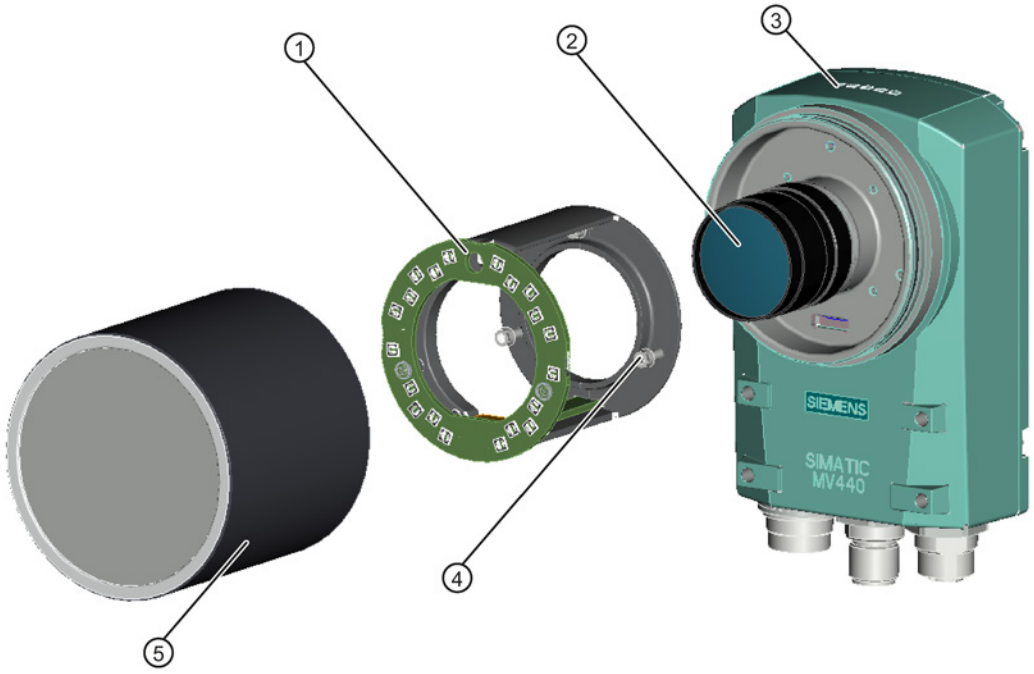
NOTICE
Protection of the image sensor from damaging radiation When the SIMATIC MV440 reader is used in the vicinity of plants with high-energy radiation, for example, laser light or arcs, the image sensor of the reader must be protected from damaging radiation. The image sensor is protected by means of suitable daylight filters: • Radiation outside the visible light spectrum (IR and UV radiation) is filtered out. • Visible light can pass without problems.

Mounting SIMATIC MV420/SIMATIC MV440

The readers are separate compact devices that need to be mounted in a suitable location and only require a lens, a power supply cable and a communication connection. The SIMATIC MV440 reader has four threaded holes each on the front and back (SIMATIC MV420 has two threaded holes on each side), allowing flexible mounting.

Mounting of the reader with protective lens barrel

Several options are available to provide lighting for reading the codes. The simplest and most space-saving option is the ring light integrated in the protective lens barrel.



① Built-in ring light
② Lens
③ Reader
④ M2.5 hexagon socket-head screws
⑤ Protective lens barrel ∅ 65

Figure 1-1 Design of SIMATIC MV440 reader with protective lens barrel and built-in ring light

Connecting

2

⚠ WARNING

Connecting the 24 V DC power supply

The device should only be connected to a 24 V DC power supply which satisfies the requirements of safe extra low voltage (SELV).

When the device is operated on a wall, in an open rack or other similar locations, an NEC Class 2 current source is required for compliance with the UL requirements (in accordance with UL 60950-1). In all other cases (according to IEC/EN/DIN EN 60950-1), a current source with limited power (LPS = Limited Power Source) is required.

24 V DC supply voltage (19.2 to 28.8 V)

The generation of the 24 V DC supply voltage by the line-side power supply must be implemented as functional extra-low voltage with safe electrical isolation (floating) according to IEC 80364-4-41, or as SELV according to IEC/EN/DIN EN 60950-1 and LPS/NEC class 2.

NOTICE

Protection of the external power supply

If the reader is supplied via extensive supply lines or networks, interference by strong electromagnetic pulses on the supply lines is possible, e.g. from lightning or the switching of large loads.

The connection of the external power supply is not protected against strong electromagnetic pulses. An external overvoltage protection module is required for this purpose. The requirements according to EN 61000-4-5, Surge test on power supply lines, are only met when a suitable protective element is used. A suitable device would be, for example, the Dehn Blitzductor BVT AVD 24, article number 918 422, or a comparable protective element.

Manufacturer:
DEHN+SOEHNE GmbH+Co.KG, Hans-Dehn-Str.1, Postfach 1640, D-92306 Neumarkt, Germany

Connect the reader to the components of your application.

① Combined cable socket for the power supply, I/O connectors, ASM and RS-232
② Ethernet socket
③ Combined cable socket for the power supply, I/O connectors and RS-232
④ ASM connection socket
⑤ Ethernet connection socket (PoE) M12, 4-pin, D-coded

Figure 2-1 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 the communication interface of a programmable controller via the RS-232 interface, for example. The pin assignment of the Power IO RS-232 cable is shown in the table below.

Pin assignment of the Power IO RS-232 cable

NOTICE
INPUT - COMMON or OUTPUT - COMMON must be connected INPUT - COMMON or OUTPUT - COMMON must be connected before you can use the inputs and outputs described below.

Table 2- 1 SIMATIC MV440

Pin	Color	Signal name	Possible values	Default	Meaning
H	Red	DC 24 V			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	IN - / 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	IN - / 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	IN - / 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 flashes
F	Pink	RS-232 TXD			RS-232 send line
M	Red/blue	RS-232 RXD			RS-232 receive line

Table 2- 2 SIMATIC MV420

Pin	Color	Signal name	Possible values	Default	Meaning
H	Red	DC 24 V			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 of the ASM interface
B	Brown	ASM TxD_P			TxD_P signal of the ASM interface

Pin	Color	Signal name	Possible values	Default	Meaning
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 flashes
F	Pink	RS 232 TxD or ASM RxD_P	RS-232 TxD, ASM RxD_P	RS-232 TXD	RS-232 send line or ASM RxD_P of the ASM interface
M	Red/blue	RS-232 RxD or ASM RxD_N	RS-232 RxD, ASM RxD_N	RS-232 RXD	RS-232 receive line or ASM RxD_N of the ASM interface

MV400 push-pull power cable pin assignment

Table 2- 3 MV400 push-pull power cables with article numbers 6GF3400-1BH20 and 6GF3400-0BH15

Power interface (socket)		
Connection	Wire color	Signal
H	Red/orange	24 V
G	Black/brown	0 V

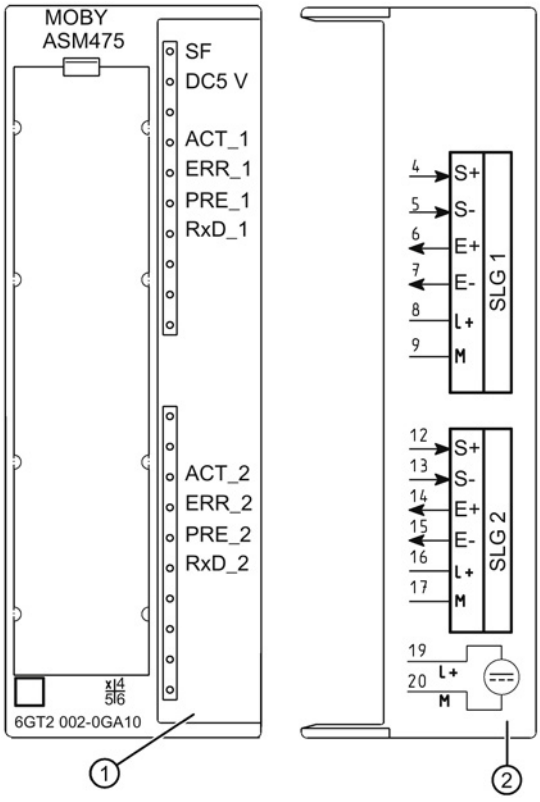
ASM cable

The ASM cable is pre-assembled.

- You connect the communication modules, for example RF180C and ASM456, using the ASM cable.

  A special ASM cable with M16 socket is available for SIMATIC MV420.

The following cable assignment is defined for the connection to the ASM 475 module:



① Status and error displays

② Wiring diagram; the numbers of the connection refer to the X1 connector of the upper housing

Figure 2-2 Front cover and inside of the front door of the ASM 475 module

Pin M16 socket	Wire color of the connecting cable	Terminal ASM475 (Channel 1/Channel 2)
H	Red	8 / 16
G	Blue	9 / 17
F	Pink	4 / 12
M	Red/blue	5 / 13
B	Brown	6 / 14
C	Green	7 / 15

Ethernet cable M12/RJ-45

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

Commissioning

3

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

- Operating system Windows XP Professional SP 1 or Windows 7; .NET Framework v4.0 must be installed in addition.
- An Internet browser with Java Runtime Environment as of V1.2
  - Always use the latest Java version. You will find information on this on the Internet at (www.java.com) or ask your system administrator.
  - The user interface is optimized for viewing with Microsoft Internet Explorer 8 and Java Runtime Environment V.1.7.x.

Note

Names of "Java Runtime Environment"

Different names exist for "Java Runtime Environment":

- Java Runtime
- Runtime Environment
- Runtime
- JRE
- Java Virtual Machine
- Virtual Machine
- Java VM
- JVM
- VM
- Java download

- PRONETA is installed.

  You will find PRONETA and the corresponding documentation (application description):

  - On the supplied product DVD of the reader.
  - As a free download on the Internet pages of the Siemens Industry Online Support (https://support.industry.siemens.com/cs/us/en/view/67460624).
    Refer to the documentation for information on how to install the tool.

  PRONETA is a free commissioning and diagnostics tool for PROFINET networks.
  The required WinPcap driver is part of the PRONETA installation package.

  You can find more information on the Internet pages on PRONETA (http://www.siemens.com/proneta).

- There is a network connection via Ethernet TCP/IP.

Notes on installation

- You need administrator rights to edit the network settings of your PC:
  - Check the settings of your PC.
- To work with the user interface, you require Java Runtime Environment. Java could be installed on your PC but not activated:
  - Check the settings of your Internet browser.
- For initial commissioning, you need the PRONETA or the SIMATIC Manager.
  Using PRONETA or SIMATIC Manager:
  - You can browse your network for the reader.
  - Integrate the reader in your network.
  - Configure the network connection of your reader.

Note

These operating instructions contain a practical example of the PRONETA procedure.

Steps for initial commissioning

Step	Activity
1	Connect the reader and PC using an Ethernet cable.
2	Turn the reader on.
3	Select the network adapter. Configure the Ethernet connection between reader and PC.
4	Start the user interface.
5	Adjust the reader using the user interface.

Note

The user interface 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 9).

- 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

Select network adapter

Before you can work with PRONETA, you need to select the network adapter via which you want to connect the reader to the PROFINET network.

1. Start PRONETA by double-clicking on the "Proneta.Gui.exe" file.
2. Click the "Settings" module in the PRONETA start screen.

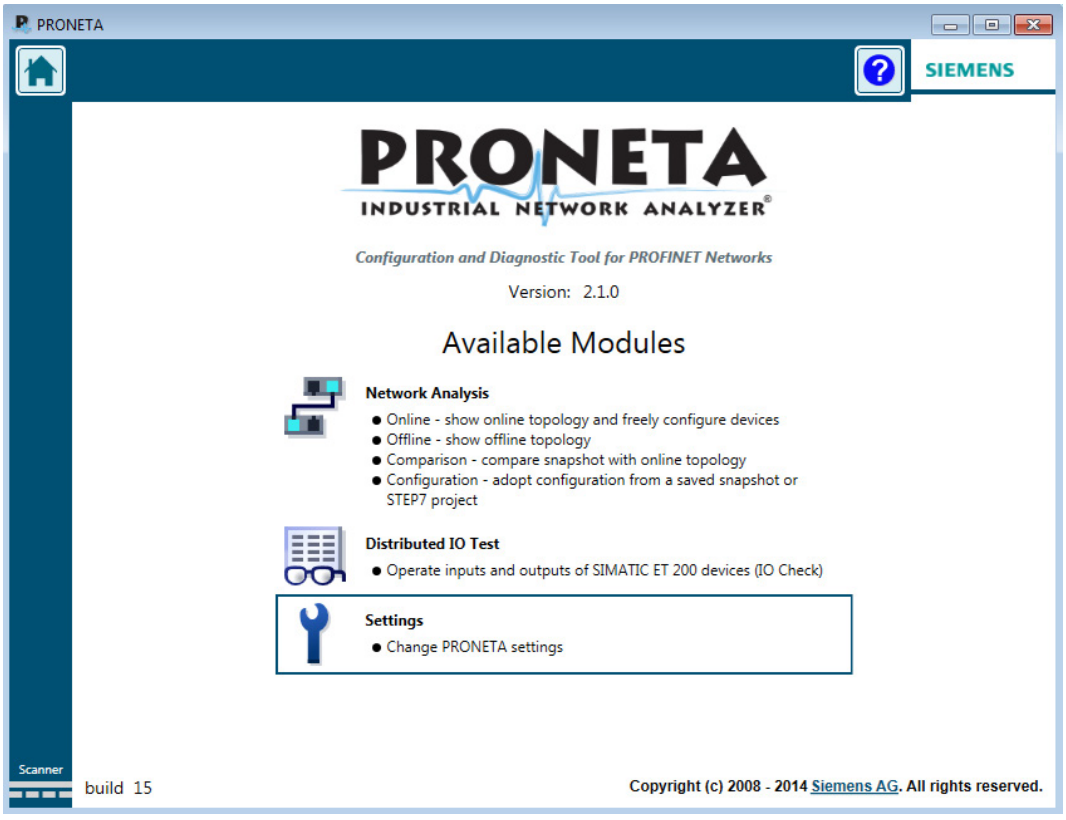


Figure 3-1 Start screen - Settings

The "Settings" menu opens.

3. Close the "Network Adapter Selection" dialog.
4. Select the hardware interface to be used with a double-click.

   A green checkmark shows you the interface being used.

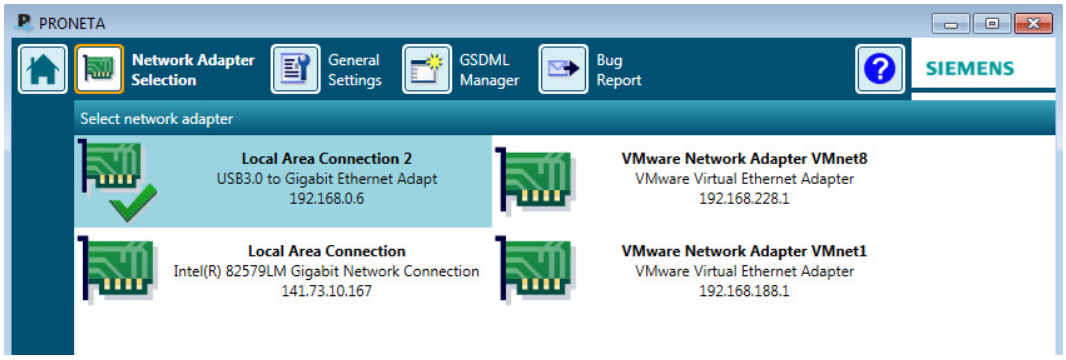


Figure 3-2 Select network adapter

Configuring the Ethernet connection between reader and PC

1. Start PRONETA by double-clicking on the "Proneta.Gui.exe" file.
2. Click the "Network Analysis" module in the PRONETA start screen.

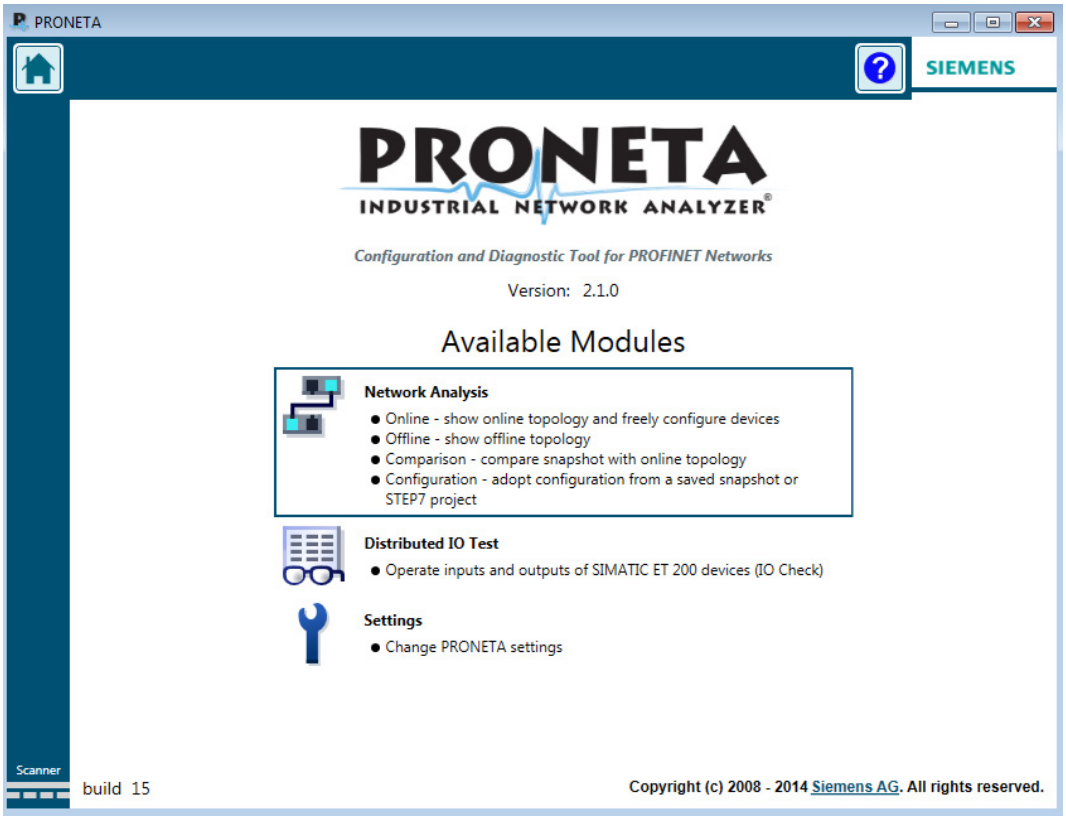


Figure 3-3 Start screen - Network Analysis

The "Topology View" network overview opens.

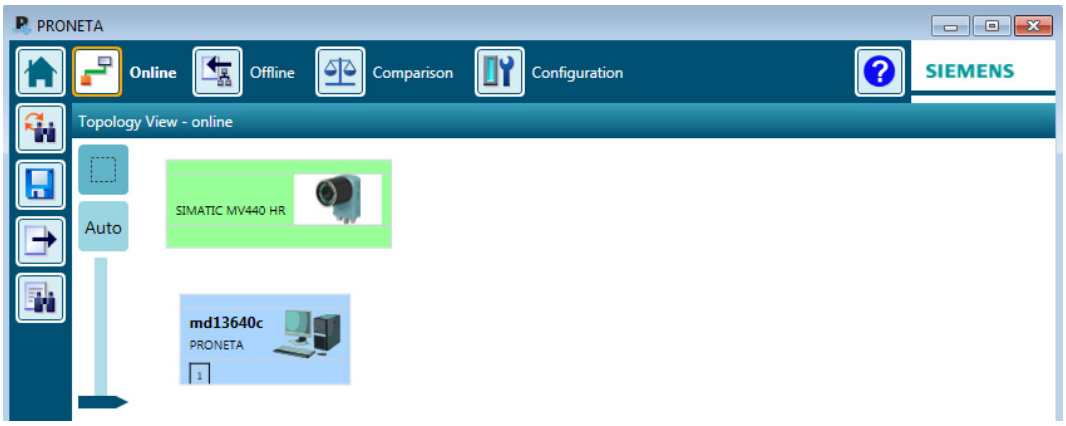


Figure 3-4 Network overview

3. Select the reader in the "Topology View".
4. Right-click and select "Configure Device" in the short-cut menu:

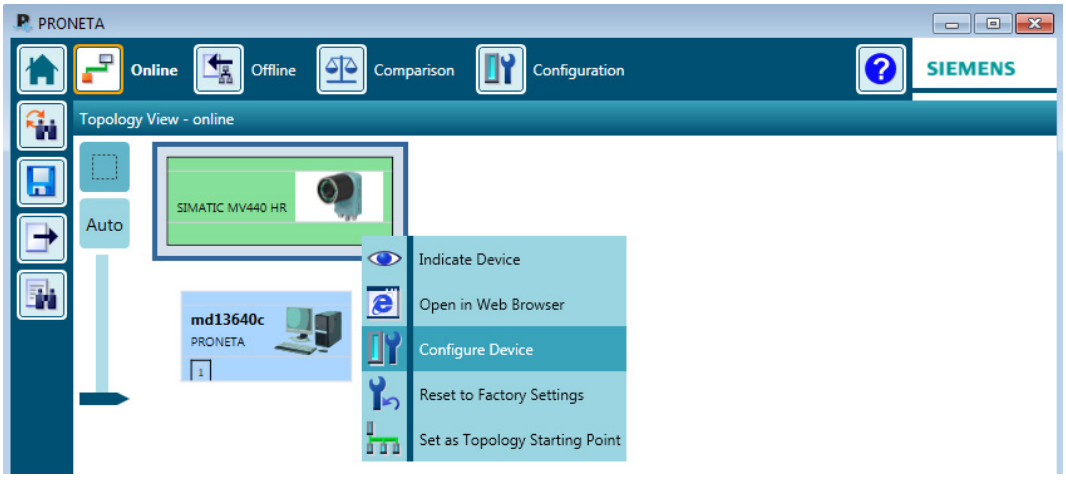


Figure 3-5 Network overview - Configuring the reader

5. The "Set Network Parameters" dialog box opens.
6. Activate the option "IP configuration".

7. Enter values for the IP address and subnet mask as shown below in the "IP address" and "Network mask" input fields.

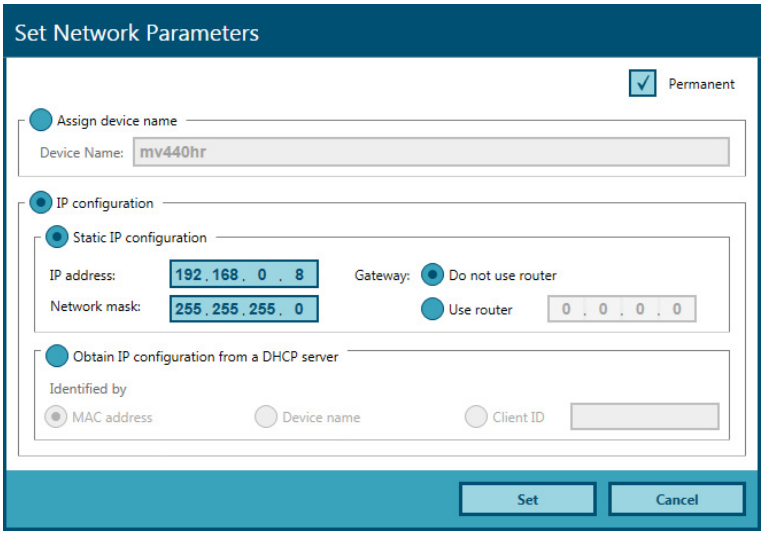


Figure 3-6 Entering network parameters

Alternatively, you can make the "Configure Device" settings in the "Accessible Devices" list.

8. Click "Set" to adopt the changed properties.

Note

Displaying the updated parameters

The updated parameters are not shown in the "Topology View"/"Accessible Devices" list immediately:

- Complete the parameters by clicking "Refresh"  .

IP address 192.168.100.100

- Using the IP address 192.168.100.100 simultaneously configures the reader as a DHCP server, which means that a connected PC can obtain an IP address from the reader. You may use addresses that differ from this IP address and from 0.0.0.1 to manually assign a static IP address to the reader. PCs operating 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 network administrator.

Result

The reader now has the manually assigned IP address 192.168.0.8 and can be accessed at 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 with PRONETA

1. Select the reader in the "Topology View" in PRONETA.
2. Right-click and select "Open in Web Browser" in the short-cut menu.

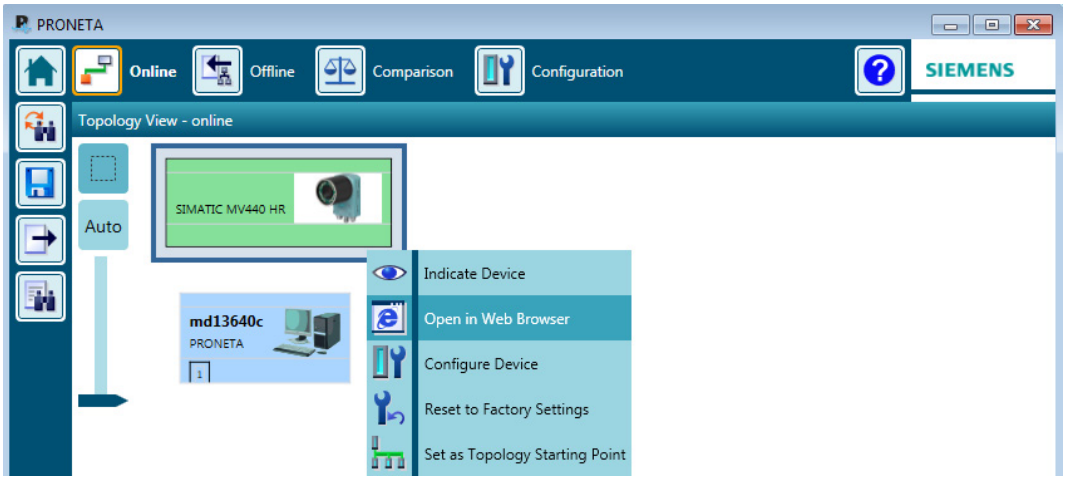


Figure 3-7 Network overview - opening the user interface of the reader

Note

Alternative: Starting the user interface with your Internet browser

You can also start the user interface of the reader with your Internet browser:

1. Enter the IP address of the reader in the address field of your Internet browser.
2. Confirm the instruction with the Enter key.

The home page of the reader is loaded.

Note

Check the signature during the first call of the user interface

Check the following signature data during the first call of the user interface. Make sure that the user interface is actually that of the Siemens AG:

- Name: SIMATIC MV400
- Supplier, SIEMENS AG

The validity of the signature is indicated with the symbol  .

Note

Certification check when calling the user interface

As of Java Runtime Environment version 1.7 update 25, a certificate revocation check is performed when you call the user interface. Internet access is required for this check. If no Internet access is available, the start of the user interface is delayed by about one minute, and a safety warning is displayed. In the Java Control Panel, carry out the following steps to avoid the delay and the safety warning:

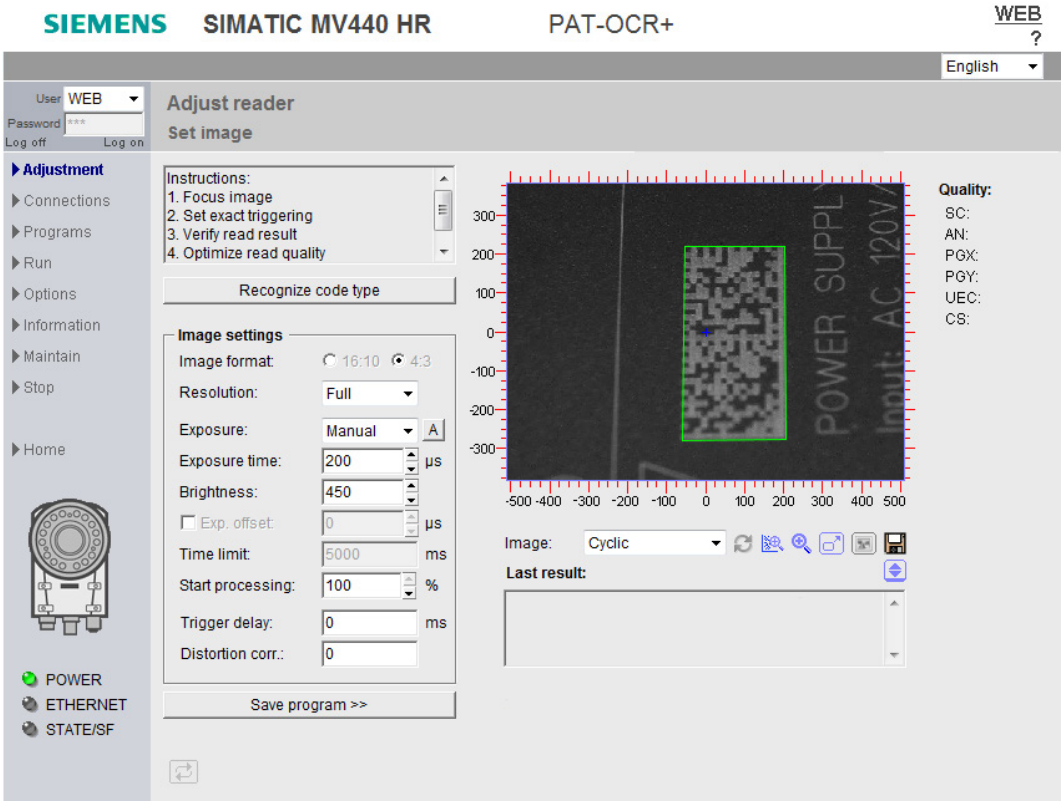
1. Select the "Advanced" tab.
2. In the "Conduct certificate revocation check on signed code for" area, select the "Do not check (not recommended)" option.

Note that security will be compromised when you disable the certificate revocation check. Therefore, the certificate revocation check should only be disabled in administered environments.

3. Now click on the image of the reader or the "Adjust" menu command.

   The user interface of the reader will open after a brief loading period.

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



Result

- The reader is now connected and can be operated from the user interface.
- You can now perform the next step and adjust the reader and display the first read results.

Step 5

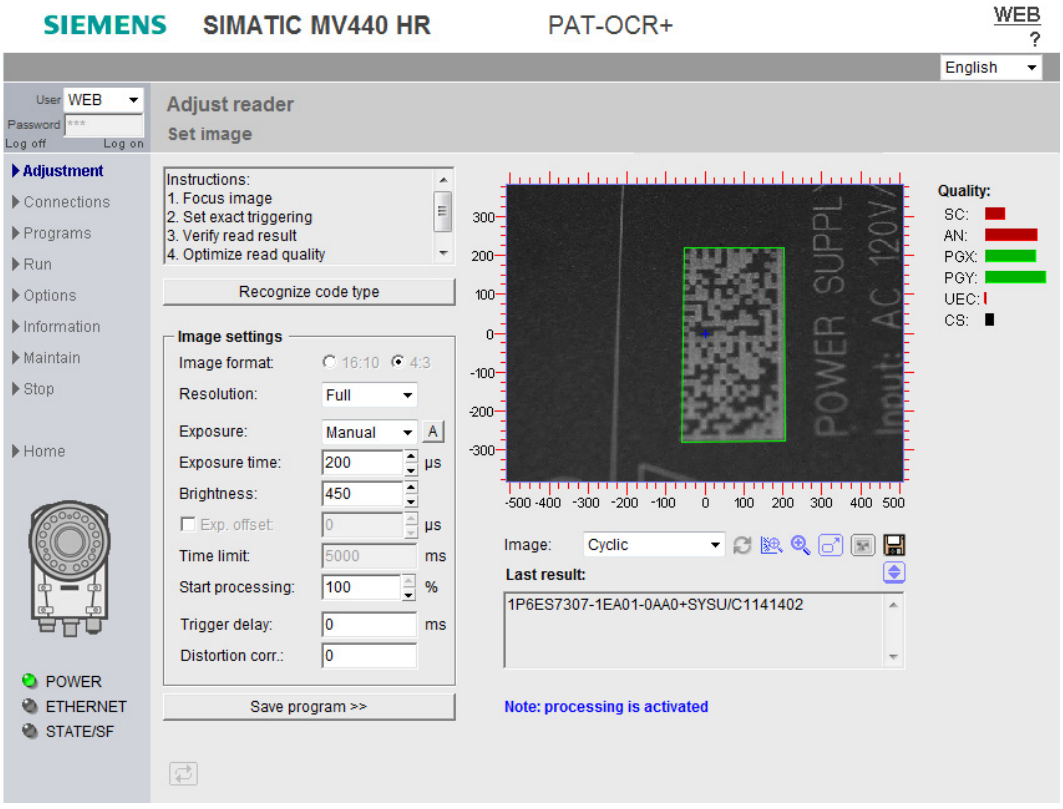
Aligning the reader

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 the image as seen by the reader.

Note

Focusing the image (SIMATIC MV440 only)

You may need to unscrew the set screws in the lens to focus.



Note

Access online help with the "?" button

Each screen of the user interface provides a "?" button on the top right that you can use to access 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 and decode a data matrix code. You can recognize a successful read result by the green frame around the code. The more precise the triggering and greater the contrast in the code, the greater the read reliability.
2. If necessary, correct the settings on this page:
   - Exposure settings
   - If, for example, you wish to read an EAN13 code rather than a data matrix code, press the "Recognize code type" button. The reader will launch code type recognition and remember the code type it finds for subsequent read operations.
   - Correct the trigger settings to find the right image acquisition time for moving objects.
   - Adjust distortion settings to correct significant distortion by the lens (only rarely necessary!).

   Note

   If exposure = Auto, the code must be completely in the image after the triggering at least 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 to individual programs.

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

Documentation and service

4

Documentation for SIMATIC MV420 and SIMATIC MV440

- SIMATIC MV420/SIMATIC MV440 Operating Instructions
- SIMATIC MV420 / SIMATIC MV440 Compact operating instructions

  Step-by-step instructions for fast initial commissioning.

Free documentation downloads on the Internet

SIMATIC MV420 (https://support.industry.siemens.com/cs/us/en/ps/15148/man)

SIMATIC MV440 (https://support.industry.siemens.com/cs/us/en/ps/15149/man)

SIMATIC Manual Collection on DVD

SIMATIC Manual Collection (https://support.industry.siemens.com/cs/us/en/ps/6ES7998-8XC01-8YE0)

All manuals for S7-1500/1200/200/300/400, C7, LOGO!, SIMATIC DP, PC, PG, STEP 7, engineering software, runtime software, SIMATIC PCS 7, SIMATIC HMI, SIMATIC NET, SIMATIC Ident.

- In 5 languages
- Article number: 6ES7998-8XC01-8YE0

Technical Support

You can contact Technical Support for all Process Industries and Drives products as follows:

- Phone: + 49 (0) 911 895 7222
- Fax: + 49 (0) 911 895 7223
- Internet: Online support request form: (https://support.industry.siemens.com/My/ww/en/requests)

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