Ethernet Gateway
EASY209-SE

E:T•N

Powering Business Worldwide

Emergency On Call Service
Please call your local representative:
http://www.eaton.com/moeller/aftersales
or
Hotline After Sales Service:
+49 (0) 180 5 223822 (de, en)
AfterSalesEGBonn@eaton.com

Danger!
Dangerous electrical voltage!

Before commencing the installation

- Disconnect the power supply of the device.

- Ensure that devices cannot be accidentally restarted.

- Verify isolation from the supply.

- Earth and short circuit.

- Cover or enclose neighbouring units that are live.

- Follow the engineering instructions (IL/AWA) of the device concerned.

- Only suitably qualified personnel in accordance with EN 50110-1/-2 (VDE 0105 Part 100) may work on this device/system.

- Before installation and before touching the device ensure that you are free of electrostatic charge.

- The functional earth (FE) must be connected to the protective earth (PE) or to the potential equalisation. The system installer is responsible for implementing this connection.

- Connecting cables and signal lines should be installed so that inductive or capacitive interference does not impair the automation functions.

- Install automation devices and related operating elements in such a way that they are well protected against unintentional operation.

- Suitable safety hardware and software measures should be implemented for the I/O interface so that a line or wire breakage on the signal side does not result in undefined states in the automation devices.

- Ensure a reliable electrical isolation of the low voltage for the 24 volt supply. Only use power supply units complying with IEC 60364-4-41 (VDE 0100 Part 410) or HD 384.4.41 S2.

- Deviations of the mains voltage from the rated value must not exceed the tolerance limits given in the specifications, otherwise this may cause malfunction and dangerous operation.

- Emergency stop devices complying with IEC/EN 60204-1 must be effective in all operating modes of the automation devices. Unlatching the emergency-stop devices must not cause restart.

- Devices that are designed for mounting in housings or control cabinets must only be operated and controlled after they have been installed with the housing closed. Desktop or portable units must only be operated and controlled in enclosed housings.

Eaton Industries GmbH
Safety instructions

I

- Measures should be taken to ensure the proper restart of programs interrupted after a voltage dip or failure. This should not cause dangerous operating states even for a short time. If necessary, emergency-stop devices should be implemented.

- Wherever faults in the automation system may cause damage to persons or property, external measures must be implemented to ensure a safe operating state in the event of a fault or malfunction (for example, by means of separate limit switches, mechanical interlocks etc.).

Contents

About This Manual

Target group

This manual has been produced for automation technicians and engineers. It describes the installation, commissioning and application of the EASY209-SE Ethernet gateway.

Other manuals

The EASY209-SE Ethernet gateway connects devices provided with an RS232 serial interface with the Ethernet network. Information on these devices is provided in the following manuals:

- easy800 control relays (MN04902001Z-EN; previous description AWB2528-1423GB)
- MFD-Titan multi-function display (MN05002001Z-EN; previous description AWB2528-1480GB)
- easyControl EC4-200 programmable controller (MN05003003Z-EN; previous description AWB2724-1584GB)
- XC-CPU121 modular PLC (MN05003002Z-EN; previous description AWB2724-1578GB)
- PS4-201-MM1 (AWB27-1184-GB)
- PS4-271-MM1 (AWB2700-1364GB)
- PS4-341-MM1 (AWB2700-1311GB)
- PS416-CPU-x00 (AWB27-1208-GB)

Device designations   • easy800 for
                          – EASY819-...
                          – EASY820-...
                          – EASY821-...
                          – EASY822-...

                          • MFD-CP8 for
                          – MFD-CP8-NT
                          – MFD-AC-CP8-NT
                          – MFD-CP8-ME
                          – MFD-AC-CP8-ME

                          • EC4-200 for EC4P-221-M….

                          • XC-100 for XC-CPU121-…

                          • PS4 for
                          – PS4-201-MM1
                          – PS4-271-MM1
                          – PS4-341-MM1

                          • PS416 for
                          – PS416-CPU-200
                          – PS416-CPU-300
                          – PS416-CPU-400

Abbreviations and symbols

Symbols used in this manual have the following meanings:

▶ indicates actions to be taken.

Caution!
Warns of a hazardous situation that could result in damage to the product or components.

Warning!
warns of the possibility of serious damage and slight injury.

Danger!
indicates the risk of major damage to property and serious or fatal injury.

→ Draws your attention to interesting tips and supplementary information.

For greater clarity, the name of the current chapter is shown in the header of the left-hand page and the name of the current section in the header of the right-hand page. This does not apply to pages at the start of a chapter and empty pages at the end of a chapter.

1 Fast ignition

```
┌─────────────────────────────┐
│     Start up EASY209-SE      │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│      Connect and switch on   │
│        serial interface,     │
│        Ethernet interface    │
│ and 24 V power supply, → page 19 ff. │
└─────────────────────────────┘
              │
              ▼
```

Yes ◄────── Configure via
             EASY209-SE ──────► No

① ②

▶ Start programming software,
 → section "Establishing an Ethernet
 connection with easySoft", page 42
▶ Start the application, → chapter
 "OPC connection", page 59

```
                                    ┌───┐
                                    │ 1 │
                                    └─┬─┘
                                      │
                                      ▼
                              ◇───────────────◇           No
                             ╱  Initial start of the ╲──────────────────┐
                             ╲   EASY209-SE       ╱                      │
                              ◇───────┬───────◇                         │
                                   Yes │                                │
                                      ▼                                 │
                    ┌─────────────────────────────────┐                │
                    │ Select the network card, → page 29 │              │
                    └─────────────────┬───────────────┘                │
                                      │         ◄──────────────────────┘
                                      ▼
                    ┌─────────────────────────────────┐
                    │ Look for EASY209-SE as Ethernet station, → page 30 │
                    └─────────────────┬───────────────┘
                                      │
                                      ▼
                              ◇───────────────◇        Yes
                             ╱ New EASY209-SE with valid ╲───────────────┐
                             ╲   IP address?      ╱                       │
                              ◇───────┬───────◇                          │
                                   No │                                  │
                                      ▼                                  │
                    ┌─────────────────────────────────┐                 │
                    │ Assign an EASY209-SE with an IP address, → page 30 │
                    └─────────────────┬───────────────┘                 │
                                      │          ◄──────────────────────┘
                                      ▼
                    ┌─────────────────────────────────┐
                    │ Set EASY209-SE parameters, → page 31 │
                    └─────────────────────────────────┘
```

②

Configuration via ...

... easy800 or MFD-CP8…
operator buttons, → page 32

…easySoft-PRO

Edit Ethernet profile...

...once for the current project

...reusable for several projects

Configuration in Communication view, → page 37

Activate configuration via easy800/MFD-CP8…, → page 38

Select previously created Ethernet profile or edit for the current project, → page 39

Transfer Ethernet parameters to the device, → page 40

Connect EASY209-SE with device, → page 41

2 About the Ethernet-Gateway EASY209-SE

The EASY209-SE Ethernet gateway connects a device provided with an RS232 serial interface such as easy500/700/800 or MFD-CP8… with an Ethernet network.

On the network side it operates in "Autonegotiation" mode. In this process the EASY209-SE detects the baud rate used and the duplex mode of the network port (network card, switch, hub) to which it is connected.

The EASY209-SE can be used in both building and industrial automation.

Setup of the EASY209-SE
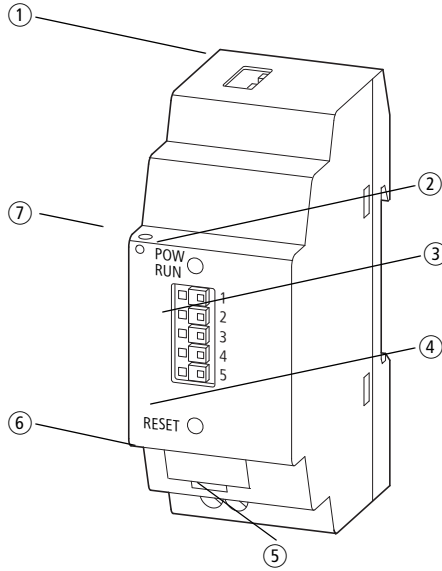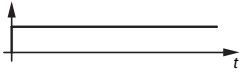
Figure 1: EASY209-SE device view

① Ethernet connection (RJ45 socket), → page 24
with Ethernet status LEDs, → page 14

② Status LED (POW/RUN), → page 13

③ Serial interface (RS232 COM terminal),
5 pole spring-cage terminal, → page 19

④ RESET button, → page 15

⑤ Connection terminals, 24V DC power supply, → page 26

⑥ Device label

⑦ Strain relief

Status LED (POW/RUN)

The Status LED indicates whether the EASY209-SE has established connection to the connected device via the RS232 serial interface.

Table 1:   Meaning of the status LED

|		
	Off	No power supply present.
	Continuous green	EASY209-SE is operational but the connection via the RS232 serial interface is inactive.
	Green flashing (up to EASY209-SE, version 02)	The connection via the RS232 serial interface to any device is active. Access to the device via Ethernet is possible.
	Single momentary flash (from EASY209-SE, version 04)	The connection via the RS232 serial interface to any device is active (except easy800/MFD-CP8…). Access to the device via Ethernet is possible.
	Double momentary flashing (from EASY209-SE, version 04)	Connection via the RS232 serial interface to easy800/MFD-CP8… is active. Access to the device via Ethernet is possible.

Ethernet Status LEDs
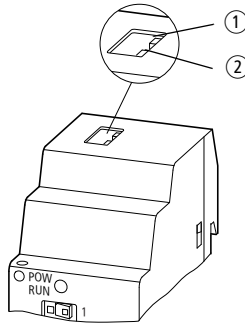
Figure 2:   Ethernet Status LEDs

①		②	
Color	**Meaning**	**Color**	**Meaning**
Off	No connection	Off	No activity
Yellow	10 Mbit/s	Yellow	Half Duplex
Green	100 Mbit/s	Green	Full Duplex

RESET button

The RESET button is only required in operation with an easy800-/MFD-CP8… It offers the following functions when pressed for more than two seconds:

• Starting the local configuration of the EASY209-SE via its RS232 serial interface
  This function is required if you wish to parameterize the EASY209-SE via easy800-/MFD-CP8… (→ section "Configuration via RS232 interface", page 32) during operation without switching off the power supply; e.g. if the devices were not switched on at the same time and the EASY209-SE has not detected a easy800/MFD-CP8…
• Closing of a permanent connection to an Ethernet destination address
  This function is required if you have defined the destination address of a remote Ethernet station via Remote Port and Remote IP Address and then established a permanent connection to the destination address. This connection is only used with D and SP function blocks. To close the connection the RESET button must be pressed and all SP function blocks deactivated with EN = 0 or the easy800 must be switched temporarily to STOP mode (→ section "Remote Port", „Removing a permanent connection", page 51).

Device functions

An EASY209-SE allows the following functions for Ethernet access to the connected controller:

• Programming via Ethernet

An EASY209 is suitable for programming via Ethernet with the following programming software:

– easySoft/easySoft-PRO from V 6.20
– S40 (via the Redirector, ⟶ chapter "COM routing (Com Port Redirector)", page 63
– easySoft-CoDeSys

• OPC connection

Furthermore, the EASY209-SE can be used with different Eaton OPC servers, ⟶ chapter "OPC connection", page 59.

• Supported TCP/IP protocols

The following standards are supported: TCP, Telnet, UDP, TFTP, ARP, AutoIP, DHCP, http, ICMP, SNMP.

Device versions

The different EASY209-SE device versions differ according to the maximum baud rate that can be set for the RS232 serial interface to the device. The maximum baud rate also depends on the connection cable used.

Table 2: Maximum baud rate depending on the EASY209-SE device version and the connection cable

EASY209-SE Version…[1]	Connection cable	Connected device	Maximum baud rate [Kbaud]
01…04	MFD-CP4-500-CAB5	easy500/700	4.8
01 and 02	MFD-CP4-800-CAB5	easy800, MFD-CP8…	up to 19.2
04	XT-SUB-D/RJ45 or XT-CAT5-X-2[2]	XC100	Up to 57.6
04	EU4A-RJ45-CAB1 or XT-CAT5-X-2[2]	EC4-200	Up to 57.6
01…04	ZB4-303-KB1[2]	PS4	9.6
04	PS416-ZBK-210[2]	PS416	Up to 57.6

1) The first two digits of the serial number on the left of the EASY209-SE device indicate the device version number, e.g. 04-xxxxxxxxxxxx

2) On the specified cable types remove the plug at one end and connect the three tin-plated cable ends using the spring-cage terminal on the EASY209-SE.
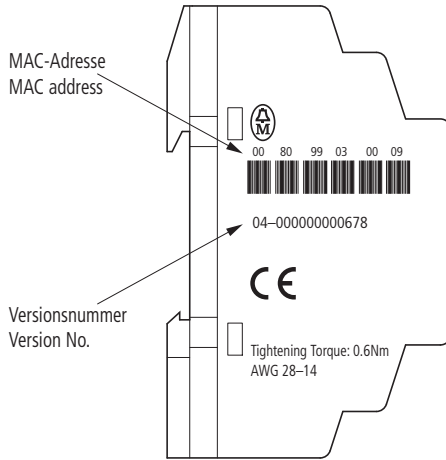
MAC-Adresse
MAC address

00   80   99   03   00   09

04–000000000678

C E

Tightening Torque: 0.6Nm
AWG 28–14

Versionsnummer
Version No.

Figure 3:   Label of an EASY209-SE with MAC address

→   The MAC address of an EASY209-SE shown is for device
version 04.

Factory Settings   The factory settings of an EASY209-SE for the RS232 serial
and Ethernet interface are shown in the Appendix,
→ page 67.

3 Engineering and installation

→ Notes on low-noise wiring are provided in the Section "EMC-compliant wiring", page 72.

Serial interface

The EASY209-SE is provided with an RS232 serial interface (COM terminal) via which it communicates with the connected device. The different devices require different connection cables and permit different maximum baud rates for communication via the serial interface → page 17.

The appropriate connection cable is connected on the EASY209-SE via the five-pole spring-cage terminal.
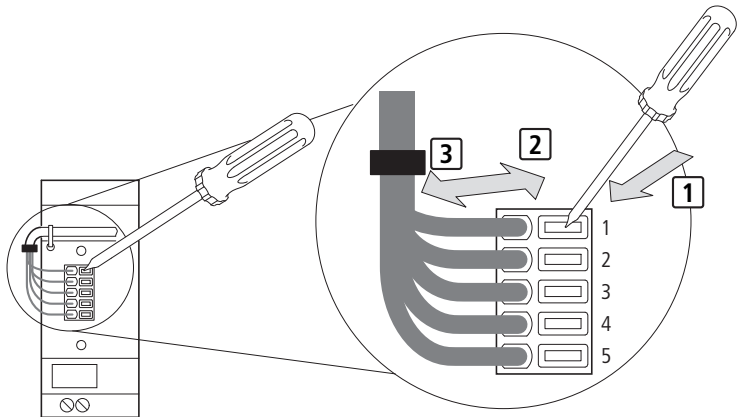
Figure 4:   Serial interface of the EASY209-SE

1 Press, 2 Insert, 3 Remove

The following sections show you the special features for a serial connection of the device concerned.

Connecting easy500/700/800 or MFD-CP8…

Connect one of the connection cables stated below to the COM terminal on the front of the Ethernet gateway and on the serial multi-function interface of the easy control relay or MFD visualization device.
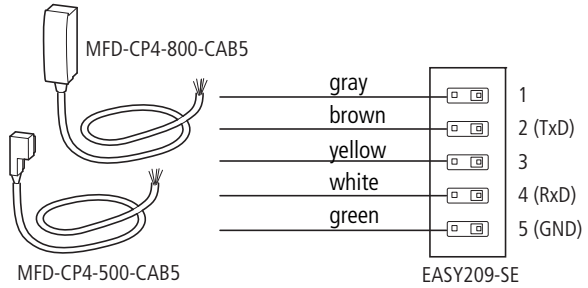

MFD-CP4-800-CAB5

gray — 1
brown — 2 (TxD)
yellow — 3
white — 4 (RxD)
green — 5 (GND)

MFD-CP4-500-CAB5

EASY209-SE

Figure 5:   Connection cable between EASY209-SE and easy500/700 (cable below) or easy800/MFD-CP8…

Connecting XC100 and EC4-200

→ These devices can be connected to the EASY209-SE from
device version 04.

Make a cable connection from the COM terminal on the
front of the Ethernet gateway to the COM1 (RS232)
programming interface of the XC100 or EC4-200 controller.
The interface is implemented physically as an RJ45 socket.
The following figure shows the assignment of the program-
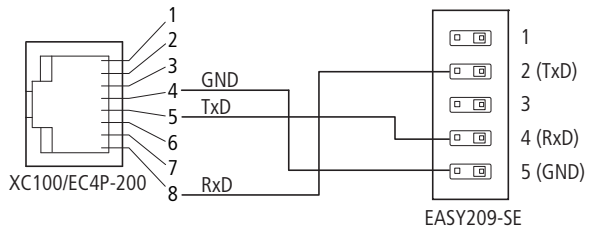ming interface.

Figure 6: Connection cable between EASY209-SE and XC100
or EC4P-200 controller (top view of socket)

An Eaton cable of part number XT-SUB-D/RJ45 or
XT-CAT5-X-2 can be used as a connection cable. For this you
remove the plug at one end and connect the three tin-plated
cable ends required via the spring-cage terminal.

When the PLC is started, the programming interface is initial-
ized with the default parameters 8N1 and a baud rate of
38.4 Kbaud. If you have not changed the parameters in the
easySoft-CoDeSys programming software, use these param-
eters in the EASY209-SE configurator, in order to configure
the connected EASY209-SE.

To access an XC100 or EC4-200 via the EASY209-SE using
easySoft-CoDeSys or the easySoft-CoDeSys OPC server you
must use the Redirector, → chapter "COM routing
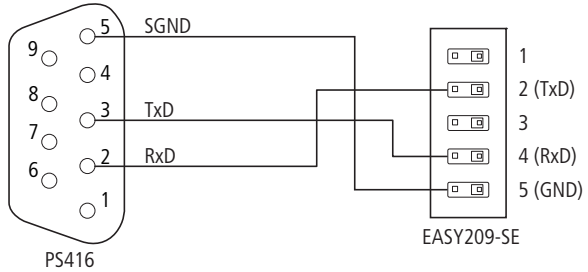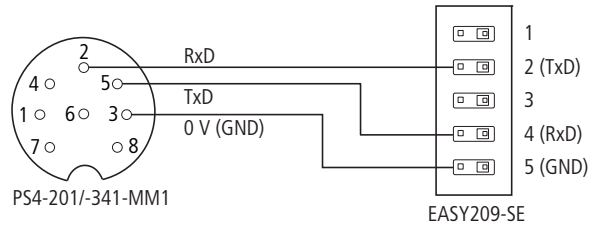(Com Port Redirector)", page 63.

Connecting PS416

Figure 7:   Connection cable between EASY209-SE and PS416
(plug view, solder side)

An Eaton cable of part number PS416-ZBK-210 can be used
as a connection cable. For this you remove the plug at one
end and connect the three tin-plated cable ends required via
the spring-cage terminal.

To access a PS416 controller via the EASY209-SE using Suco-
soft S40 or the S40 OPC server, you must use the Redirector,
→ chapter "COM routing (Com Port Redirector)",
page 63.

Connecting PS4

Figure 8:   Connection cable between EASY209-SE and PS4
             (plug view, solder side)

An Eaton cable of part number ZB4-303-KB1 can be used as a connection cable. For this you remove the plug at one end and connect the three tin-plated cable ends required via the spring-cage terminal.

To access a PS4 controller via the EASY209-SE using Sucosoft S40 or the S40 OPC server, you must use the Redirector, → chapter "COM routing (Com Port Redirector)", page 63.

Ethernet interface

The EASY209-SE is provided with an IEEE 802.3 compatible 10/100 Mbit/s Ethernet terminal (10BaseT/100BaseTX) that is located as a shielded RJ45 socket on the top of the device.

The assignment is the same as a PC-Ethernet network card so that the device can be connected to the hub or switch using a shielded 1:1 Ethernet cable.
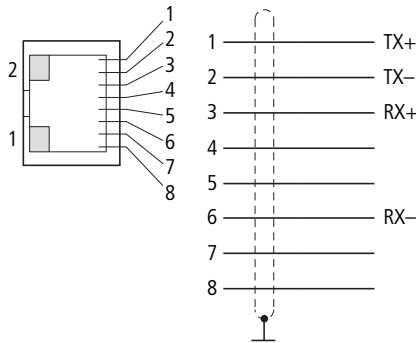

Figure 9:   RJ45 socket (LED 1/2 ➞ page 14)

Table 3:   RJ45-bus

Pin	Signal	Direction	Description
1	TX+	Off	Transmit Data +
2	TX-	Off	Transmit Data -
3	RX+	On	Receive Data +
4	–	–	Not used
5	–	–	Not used
6	RX-	On	Receive Data -
7	–	–	Not used
8	–	–	Not used

Ethernet cable

Use the 2-pair, symmetrical, shielded copper cable with specified transmission properties up to frequencies of 500 MHz. If you are planning a Fast-Ethernet transmission at 100 Mbit/s, the components must comply with CAT5 requirements.

→ | In environments susceptible to interference the shield of the Ethernet cable should be connected, → page 73.

Electrical isolation
The Ethernet connection is galvanically isolated from the power supply.

Connecting the terminal device (PC)

For a direct connection to a PC Ethernet network card use a shielded Ethernet crossover cable, for example a part number XT-CAT5-X-2 or XT-CAT5-X-5 cable from Eaton.

Connecting a hub or switch

To connect a hub or switch use a shielded 1:1 Ethernet cable.

Power supply

The EASY209-SE is operated with a 24 V DC power supply (⟶ page 70).

The power supply is connected to the bottom of the housing via screw terminals. The connection is protected against reverse polarity.

The EASY209-SE must be protected externally, e.g. via the power supply for the connected device.

⚠ **Warning!**
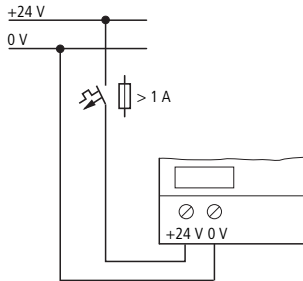Ensure a reliable electrical isolation of the low voltage (SELV) for the 24 V supply.

Figure 10:   Standard connection 24 V DC power supply

4 Configuring an EASY209-SE

You can configure the EASY209-SE in many ways.
The configurations described here cover all the possible
applications for Eaton devices.

- The device can be configured easily and conveniently via
  the Ethernet network using the EASY209-SE configurator,
  → page 28.
- A configuration via the RS232 serial interface requires that
  the EASY209-SE is run on an easy800/MFD-CP8…
  For this observe the required versions (page 32).
  When operating on any other device – such as an
  EC4-200, an easy500/700 or an XC100 – the configura-
  tion should be carried out with an EASY209-SE configu-
  rator via the Ethernet network.
- Other possible configurations:
  – „Configuration with web browser", → page 51
  – „Configuration with ARP and Telnet command",
    → page 56.

In order to access an EASY209-SE, it must first be assigned
an IP address.

Configuration methods

The following table shows you the possible configuration methods for Eaton devices.

Table 4: Configuration methods for Eaton devices

Device	Configuration via ...
easy800/MFD-CP8…	• Serial interface RS232 • EASY209-SE configurator • Any web browser • ARP and Telnet command
easy500/700	• EASY209-SE configurator • Any web browser • ARP and Telnet command
XC100	
EC4-200	
PS4	
PS416	

Configuring with EASY209-SE configurator

The EASY209-SE can be configured easily and conveniently via the Ethernet network using the EASY209-SE configurator from version 1.16. You can install the EASY209-SE Configurator from the easySoft-CD from version 6.21 or from the Support page of the Eaton website www.eaton.com.
The parameterization steps for the EASY209-SE configurator from version 2.00 are described in the relevant online help.

→ Adapt the configuration, if a firewall is installed on your PC when using the EASY209-SE configurator.

User interface of the EASY209-SE configurator
The user interface shows information about Ethernet gateways detected, parameter fields and a status display. Information about the number of Ethernet gateways detected and the parameters of the PC network card are shown on the far right.
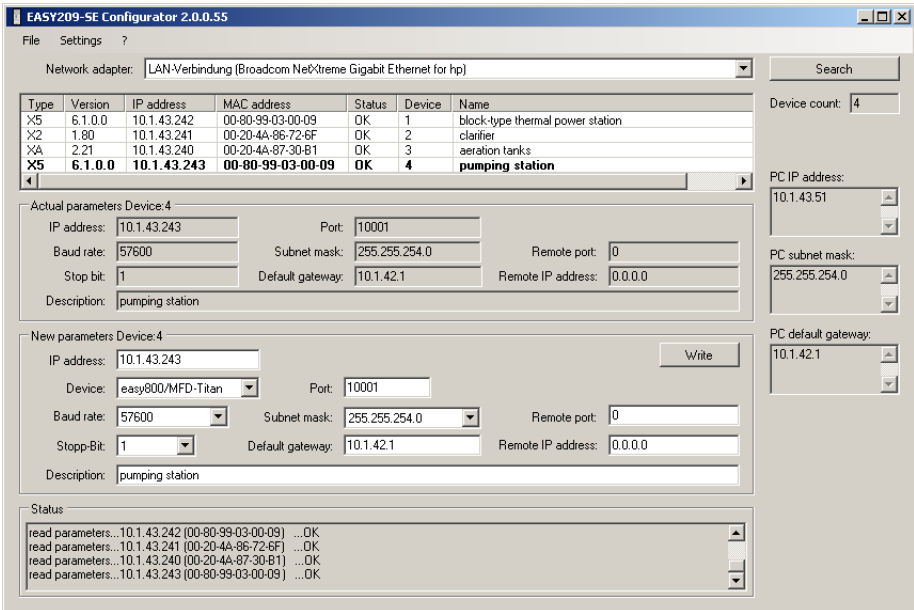
Figure 11:   User interface of the EASY209-SE configurator

Depending on their status, detected Ethernet gateways are displayed in black or red in the table. The current parameters of the Ethernet gateway highlighted in the table are displayed in the Actual parameters device area. The New parameters device area can be used to edit particular parameters. More information on this is provided in the following sections.

Initial startup of the configurator
When the EASY209-SE configurator is started for the first time, you will be requested to select the PC network card via which you wish to address the EASY209-SE to be parameterized. Network card and EASY209-SE must be connected to the same network.

→ With all subsequent starts of the EASY209-SE configurator the selected network card is proposed and you can start the immediate search for the Ethernet stations connected to the network. A different network card can be selected at any time.

▶ In the Network adapter list box select one of the network cards installed in the PC.

The parameters of the network card are shown on the right in the PC IP address (e.g. 10.1.43.51) and PC Subnet mask (e.g. 255.255.254.0) fields.

Searching for EASY209-SE as an Ethernet station
Once you have selected a PC network card, you can start the search for existing Ethernet stations, e.g. the EASY209-SE.

▶ Click the Search button.

The EASY209-SE configurator searches the Ethernet network by UDP broadcast (Port 30718). The parameters of the detected Ethernet stations are listed with information about type, IP address, MAC address, status etc. in a table. A new EASY209-SE does not have any valid parameters at first!

Assigning an IP address
A newly connected EASY209-SE for which you have not assigned a valid IP address is displayed in the table of the EASY209-SE configurator with its MAC address. This MAC address allows you to identify the EASY209-SE IP and assign it with an IP address.

▶ Click in the table line with the device to be parameterized (identified by the MAC address).
▶ Enter the new address (e.g. 10.1.43.243) in the IP address entry field of the New parameters device x area.
▶ Click the Write button. The IP address is assigned to the EASY209-SE.

→

EASY209-SE parameters
▶ Click in the table line with the device to be parameterized (can be identified by the IP address).
▶ Select the serially connected device in the Device list box (permissible baud rate + stop bit are proposed).
▶ Select a subnet mask that fits the IP address and enter the number 10001 under Port.
▶ If required set Standard gateway, Remote port, Remote IP address and a description.
▶ Click the Write button.

→ Further information on the Ethernet parameters can be found on page 44.

→ If you configure an EASY209-SE with the EASY209-SE configurator, and at the same time also enter parameters via the operator buttons of the device or have activated the Ethernet connection option in easySoft-PRO, you must ensure that the parameters used are identical. Otherwise the connected easy800 or MFD-CP8… will overwrite the parameters entered via the EASY209-SE configurator when the EASY209-SE powered up.

Configuration via RS232 interface

With the local configuration, the parameters are transferred to the serial interface of the EASY209-SE via the connected easy800/MFD-CP8... device. The parameters can be set via the operator buttons of the easy800/MFD-CP8… or via easySoft-PRO.

Table 5: Required versions for the configuration via the RS232 serial interface

easySoft-PRO from version	Device	From version number
6.20	easy800	10
	MFD-CP8…	08

Configuring with the operator buttons

In this mode you enter the parameters manually using the function keys of the easy800/MFD-CP8…
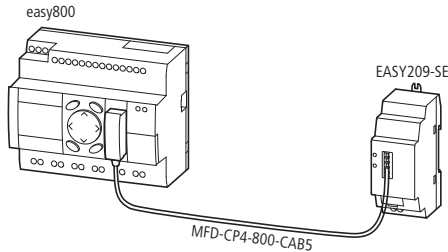
Figure 12: Configuration via operator buttons of the easy800 or MFD-CP8…

An easy800 or MFD-CP8… has the following factory settings for the Ethernet gateway:

Table 6: Factory settings for an Ethernet gateway on easy800 or MFD-CP8…

IP ADDRESS	0000.000.000.000
SUBNET-MASK	0000.000.000.000
GATEWAY-ADDRESS	0000.000.000.000 (standard gateway)
REMOTE-ADDRESS	0000.000.000.000
PORT-NUMBER	10001
REMOTE-PORT	00000
BAUD RATE	9600

Prerequisites
- The easy800 or MFD-CP8… must be in STOP mode.
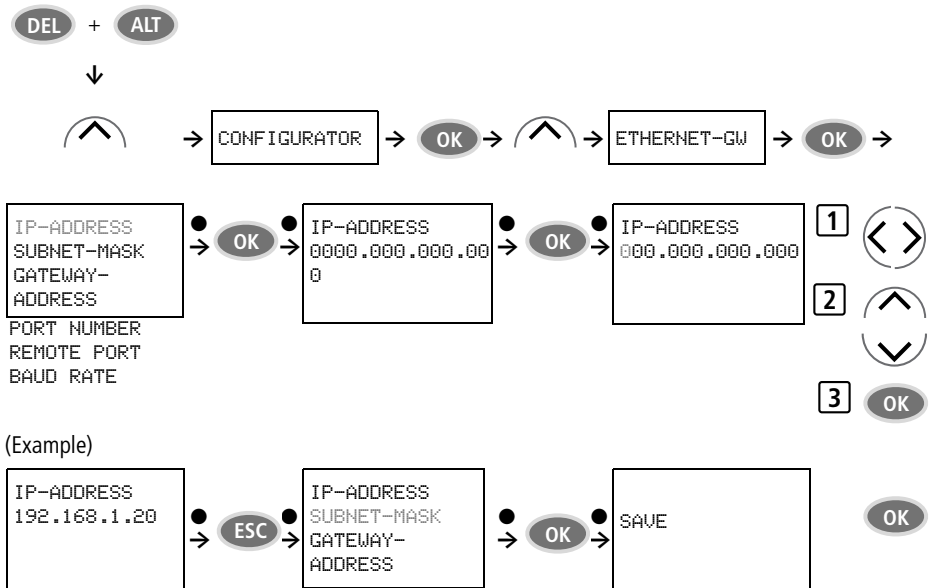- The device and the Ethernet gateway must be connected with a suitable connection cable.

(Example)

Figure 13: Setting the ETHERNET-GW system menu

▶ Switch to the System menu by pressing the DEL and ALT buttons at the same time and use the Up/Down cursor buttons to select the CONFIGURATOR menu.

▶ Press OK and use the Up/Down buttons to select the ETHERNET-GW menu.

▶ Press OK and use the Up/Down buttons to navigate in the parameter menu to the required parameter field, e.g. IP ADDRESS.

▶ Use the Left/Right buttons to navigate within the parameter fields IP ADDRESS, GATEWAY-ADDRESS and REMOTE-ADDRESS to the individual bytes.

▶ Pressing OK switches you from Selection mode, indicated by a flashing black rectangle, to Entry mode. This is indicated by a flashing digit.

▶ Use the Left/Right buttons to navigate within a byte of the parameter fields IP ADDRESS, GATEWAY-ADDRESS and REMOTE-ADDRESS to the appropriate digit.

▶ Use the Up/Down buttons to enter the parameters, press OK to complete the parameter entry and if required navigate to the next parameter entry.

The descriptions of the individual parameters are provided in Section "Ethernet parameters" from page 44. The device only allows the entry of valid parameters.

▶ Exit the ETHERNET-GW with ESC once you have entered all the parameters required.

The SAVE menu appears.

▶ Press OK to confirm the entry and store the Ethernet parameters in the device or use the Up/Down buttons to move to CANCEL if you do not wish to save it and then press OK.

After the SAVE menu is selected, the prompt in English appears that these new parameters will be active (valid) the next time the power supply for the EASY209-SE is switched on (ACTIVATE THE NEW PARAMETERS BY POWER OFF/ON AT THE ETHERNET_GW!).

▶ Confirm this prompt with OK or press ESC.

Parameterizing and initializing the EASY209-SE
The parameters are transferred from the easy800/MFD-CP8… to EASY209-SE as soon as it detects that the connected EASY209-SE is switched on or its Reset button is pressed. The EASY209-SE is then parameterized and initialized and can then be accessed via the entered IP address. These steps are executed automatically.

Configuring in easySoft-PRO

In this mode the EASY209-SE is configured according to the Ethernet parameters edited in easySoft-PRO. The parameters are then transferred via the RS232 serial interface of the connected easy800 or MFD-CP8…
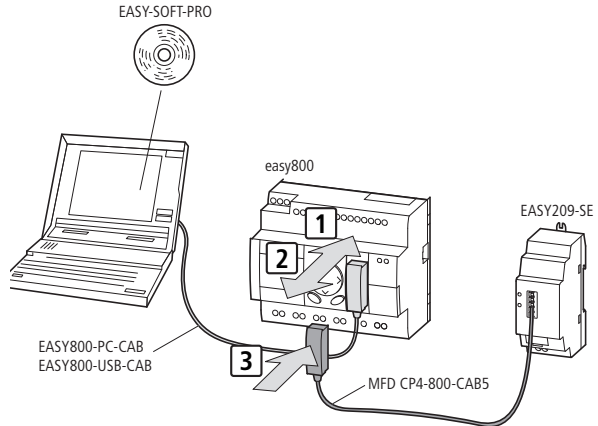
Figure 14:   Configuration via easySoft-PRO and easy800 or MFD-CP8…

Requirements for the parameter setting and configuration: In Project View of the easySoft-PRO programming software from version 6.20 you have dragged at least one easy800 or MFD-CP8… from the Toolbox onto the Workbench.

→ | In order for an easy800-/MFD-CP8… to configure the connected EASY209-SE automatically, you must have activated the Ethernet connection option in the Mode tab of Project View and then selected the Ethernet parameters in the Ethernet Settings dialog.

In the easySoft-PRO programming software you can edit the Ethernet parameter either in Project View or Communication View:

- Any Ethernet parameter settings that you have made in Project View only apply to the device with the connected EASY209-SE you are using in this project.
- Ethernet parameter settings that you make in Communication View and store as an Ethernet profile can be used in several projects as required. For this select this Ethernet profile in Project View in the Ethernet Settings dialog.

If you have already edited and stored an Ethernet profile, read further in Section "Activating the configuration via easy800/MFD-CP8…" on page 38.

Editing an Ethernet profile (Communication View)
In order to establish a connection to an easy500/700/800 or MFD-CP8… via an EASY209-SE using easySoft/easySoft-PRO an Ethernet profile must exist that fits the configuration of the Ethernet gateway.

→ If you create the Ethernet profile in Communication View first of all, you can use it in any other project for the easy800/MFD-CP8… configuration described below (→ section "Activating the configuration via easy800/ MFD-CP8…", page 38). This enables you to save editing work and avoid parameter errors since the Ethernet parameters for the connection and for the configuration of the Ethernet gateway must match.

▶ Switch to Communication View and open the Connection dialog.

The connection must be Offline.
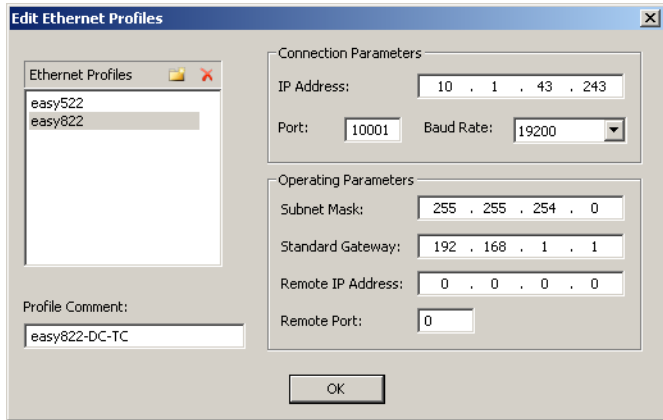
▶ Click the Edit button under Ethernet Profiles.

Figure 15: Editing an Ethernet profile in the Communication View

▶ Click the [▨] button and enter the name of the new profile.

▶ Then enter the Ethernet parameters for your application (→ section "Ethernet parameters" on page 44 or in the easySoft Help).

▶ Click OK to save the profile.

▶ Then activate the configuration of the EASY209-SE for easy800/MFD-CP8… in Project View or establish a connection via the Ethernet gateway if this is already configured (→ section "Establishing an Ethernet connection with easySoft" on page 42).

Activating the configuration via easy800/MFD-CP8…
The parameterisation and configuration requirements described above must be fulfilled.

▶ Switch to Project View.

▶ Activate the Ethernet connection option in the Mode tab.

▶ Click the newly added Ethernet parameters button. This will open the Ethernet settings dialog (device: x).
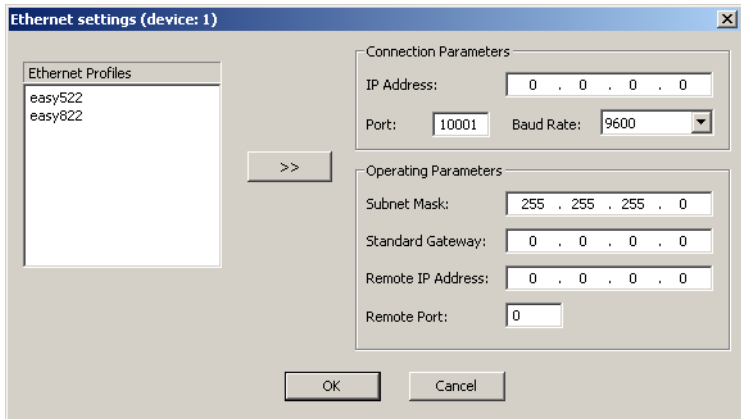
Selecting an Ethernet profile

Figure 16:   Ethernet settings in the Project View for the parameterisation of an EASY209-SE

▶ Use the double arrow button to transfer an already existing Ethernet profile from the left window.

→ | If there is no Ethernet profile, read the section Editing an Ethernet profile in Communication View on page 31. Alternatively you can also read "Editing Ethernet profiles" in the easySoft Help.

▶ Enter the required parameters in the areas Connection parameters and Operating parameters, → section "Ethernet parameters" on page 44.
▶ Confirm with OK.

Transferring Ethernet parameters to the device

▶ Connect the easy800 or MFD-CP8… to the COM serial interface of the PC, such as the EASY800-PC-CAB or EASY800-USB-CAB connection cable.

▶ Switch to Communication View and switch the connection Online.

▶ Select the COM interface in the Interface list box.

▶ Establish a logical connection from the PC to the connected device via the selected interface by clicking the Online button.

▶ Load the Ethernet parameters, if necessary with your program in the easy800/MFD-CP8 in the Program dialog via the PC => Device button.

▶ Switch the connection Offline.

Caution!

▶ Switch off the power supply for the EASY209-SE and the connected device without fail.

Connecting EASY209-SE with the device

▶ Remove the connection cable to the PC from the multi-function interface of the easy800 or MFD-CP8… and plug in there the connection cable to the EASY209-SE, → page 20 and 36.

▶ Switch off the power supply for the EASY209-SE and the connected device.

The parameters are transferred from the easy800/MFD-CP8… to EASY209-SE as soon as it is switched on. The EASY209-SE is then initialized and carries out a restart.

This initialisation procedure runs automatically and lasts about 4 seconds. During this time, the EASY209-SE cannot be addressed via the Ethernet network. After the initialisation it can be accessed via the IP address.

If the parameters are correct you can now access a connected easy800 or MFD-CP8… via the Ethernet network and the EASY209-SE (→ section "Establishing an Ethernet connection with easySoft", page 42).

If you have configured an easyNet project containing several NET stations of which several are to be connected to an Ethernet gateway, you must edit the corresponding number of Ethernet profiles with different IP addresses.

Establishing an Ethernet connection with easySoft

Requirement:

- The connection must be Offline.
- The Ethernet gateway and the device to which you wish to establish the Ethernet connection must be connected with a suitable connection cable.

▶ In the Interface list box of the Connection dialog in the Communication View, select the appropriate Ethernet interface for which an Ethernet profile is stored.

Ensure that the parameters of the Ethernet profile match the configured parameters of the Ethernet gateway.

▶ Switch the connection Online.

Designations for selectable Ethernet interfaces
The Interface list box of the Connection dialog of the Communication View first shows the available COM interfaces of the PC. After these are the Ethernet interfaces according to the Ethernet profiles set up. The Ethernet interfaces are indicated with the preceding 'Eth.' and the appended profile name.

- Name of an Ethernet profile without project reference
As soon as you have edited an Ethernet profile via the Ethernet profiles button without a project reference, easySoft also offers the appropriate interface to establish the Ethernet connection under the name you have assigned, such as Eth. (easy822).

- Name of an Ethernet profile with project reference
Ethernet profiles that are created for the current project in Project View contain the note "from project" and the program name if assigned.

As this can be an easyNet project with several NET stations of which several can be connected to one Ethernet gateway each, the corresponding NET-ID is shown in brackets, such as "Eth. from project (n-)".

Up to eight of these names can be listed as a separate profile can exist for each NET station of the project.

If you have assigned a name for the circuit diagram of this device under Program name, this is added as an additional identification such as Eth. from project (n-y).

n = 0 for the project with a basic unit
n = 1…8 for project with n NET stations.
y = Circuit diagram name

Example: Eth. from project (0-circuit diagram1)

Ethernet parameters

IP Address

If you wish to use an EASY209-SE in a corporate network or to enable Internet access for one, ask your network administrator for the appropriate parameters for IP addresses, subnet mask etc. Bear in mind that IP addresses within a network must be unique.

As an IPv4 address this consists of 32 bits or four bytes and consists of two sections: the network address and the device address. The network address consists of the more significant bits of the address, and the device address consists of the less significant bits.

Each byte can be represented here as a decimal number between 0 and 255, in which case a dot is used to separate the individual bytes.

Table 7:   Network classes A, B and C

Network Classes	Address range	Network section	Device section	Subnet mask
Class A	10.0.0.0 ... 127255255254	1 Byte	3 Byte	255.0.0.0
Class B	128.0.0.0 ... 191255255254	2 bytes	2 bytes	255.255.0.0
Class C	192.0.0.0 ... 223255255254	3 Byte	1 Byte	255.255.255.0

Example: IP address according to network class C

IP address (example)	192.	168.	1.	20
Subnet mask	255.	255.	255.	0
Structure	Network section			Device section

In accordance with network class C, the first 24 bit digits of the IP address cannot be changed. Eight bits with the decimal value 0…255 are provided for the device address. However, in each network two addresses are reserved and should not be used:

• A device section 0 is the address of the network.
• A device section 255 (all bits set to 1) is the broadcast address of the network.

The subnet mask 255.255.255.0 proposed by the network therefore allows 256 − 2 = 254 device addresses.

IP address for private networks
With a normal application for an EASY209-SE in a corporate network in which you can assign the IP address yourself, you select an address from the range that is reserved for private networks (⟶ table 8). These IP addresses can be used for the Ethernet gateway without a previous reservation required by IANA (Internet Assigned Numbers Authority).

⟶ | Devices with these addresses must not be connected directly to the Internet.

Table 8:   IP addresses reserved for private networks in accordance with RFC 1918

IP addresses reserved for private networks		Subnet mask	Network class
From…	**To …**		
10.0.0.0	10255255255	255.0.0.0	A
172.16.0.0	172.31.255.255	255.255.0.0	B
192.168.0.0	192168255255	255.255.255.0	C

→ For greater safety Eaton recommends that the IP address is permanently assigned to an EASY209-SE, i.e. to a MAC address (→ figure 3 on page 18).

Subnet mask

The subnet mask is a bit mask that divides an IP address into a network section and device section. Each bit of the subnet mask therefore refers directly to a bit of the IP address.

All bits set to 1 in the subnet mask indicate the corresponding bit of the IP address as a network section that addresses the corresponding subnet.

The bits (network section) masked out by the subnet mask are identical for all hosts (computers) of a network. The information whether a device is in the same network (i.e. same network section in the IP address) is required by a host in order to make routing decisions.

The bits set to 0 indicate the device section with which the individual device (e.g. easy800) connected to the RS232 serial interface is addressed in the subnet.

The bitwise ANDing of the entered IP address with the subnet mask determines the available address range for the device and the subnet to which the device belongs.

→ All stations that are to communicate directly with each other must be addressed so that they are in the same network (subnet).

Example:

	Decimal	Binary				
IP address:	192.168.1.20	11000000.	10101000.	00000001.	00010100	
Subnet mask:	255255255224	**11111111.**	**11111111.**	**11111111.**	**111**00000	AND
Network section:	192.168.1.0	11000000.	10101000.	00000001.	00000000	

	Decimal	Binary				
IP address:	192.168.1.20	11000000.	10101000.	00000001.	00010100	AND
Subnet mask:	255255255224	11111111.	11111111.	11111111.	111**00000**	NOT
Device section:	20	00000000.	00000000.	00000000.	00010100	

In this example, the first 27 digits of the IP address cannot be changed. Five bits with the decimal value 0…31 are provided for the device address. As the convention does not allow 0 to be used as an address and the highest value 31 is reserved for broadcast telegrams, the permissible device address range here is from 1...30. The value 20 set is therefore permissible.

→ | The configurator initially prevents the writing of a subnet mask that does not belong to the subnet of the selected PC network card. Only after the related question prompt is answered with "Yes" will the configurator transfer this subnet mask to the Ethernet gateway.

Port

The correct port number enables the Ethernet gateway to exchange data immediately with the device connected to its RS232 serial interface.

This port (a software interface) is continuously scanned by a service of the Ethernet gateway for new data packets.

Suitable port numbers for an EASY209-SE operating with different Eaton devices can be selected between 10001…10999.

→ The port number must always be specified in order to exchange data with a client application! This does not apply if you are using an S40 OPC server which sets the suitable port number automatically.

Example: Port 10001

Data that is sent from an Ethernet station on port 10001 is passed on directly to the RS232 serial interface to the connected device and vice versa. This can be, for example, data packets of a client application that are sent immediately to a process on the connected device.

→ Only one connection to the Ethernet gateway can be set up for each connected device via their RS232 serial interface. It is therefore not possible to set up simultaneous connections via different ports to several communications partners.

Standard gateway

You require a standard gateway in order to transfer via a router/gateway data packets from your network (defined by the subnet mask) to a different network.

A standard gateway is an intermediate network node in your network or subnet that has addresses for the network IDs of other subnets in the network. For example, a gateway could consist of a computer with more than one Ethernet card, each belonging to a different network.

If the Ethernet gateway (via the subnet mask) detects that the destination address is not located in its local subnet, it sends the data packets to the standard gateway. If you have not configured a standard gateway, communication is restricted to the local network (subnet).

Remote Port

Via the remote port (a software interface) you start in the addressed Ethernet device the service for further processing the data that is sent from the device (e.g. easy800) via the RS232 serial interface.

If you define the destination address of a remote Ethernet station by the parameter setting of Remote port and Remote IP address, the EASY209-SE establishes a permanent connection to the destination address as soon as it receives a character via the RS232 serial interface.

This feature is particularly useful if the EASY209-SE always receives data from the connected device for forwarding via the Ethernet, $\longrightarrow$ section "Typical application" on page 50.

$\longrightarrow$ This permanently established connection means that no other Ethernet station can be connected with this EASY209-SE.

Remote IP address

You parameterize the Remote IP address if the EASY209-SE is to establish an Ethernet connection automatically as soon as it receives a character via the serial interface.

Received data is sent via the gateway to the Ethernet station defined by the remote IP address.

Typical application
A typical application is the sending of texts and data that are output on an easy800 control relay via the RS232 serial interface using the D function block and SP function block programmed behind it.

The Ethernet gateway automatically establishes a connection to this destination address and sends data to it if:

• you have parameterized a valid remote IP address different to the factory setting (0.0.0.0.) and a remote port and

• the device receives a valid character via the RS232 interface.

This connection to the destination is permanently established.

→ | If a connection is already set up to the destination address, no other additional connection can be established to the connected device, for example from the programming software or via an OPC client! The programming software indicates in this case the communication fault "Ethernet gateway not responding".

Removing a permanent connection
To remove a connection to the destination address you must:

- deactivate all SP function blocks with EN = 0 or switch the
  device temporarily to STOP.
- reset the Ethernet gateway via the Reset button by
  rewriting the parameters.

→ | If no new connection to the remote IP address is to be
established, set the remote IP address to 0.0.0.0 and write
this modified configuration to the Ethernet gateway.

**Configuration with web
browser**

In addition to the procedures described above you can also
configure an EASY209-SE or any Xport-based Ethernet
gateway using the HTTP protocol via a web browser (stan-
dard Internet browser).

By entering an already assigned IP address such as
"http://10.1.43.243" you open the Device Server Configura-
tion Manager, a web page of the EASY209-SE.

If you configure an EASY209-SE with any web browser, and
at the same time also enter parameters via the operator
buttons of the device or have activated the Ethernet connec-
tion option in easySoft-PRO, you must ensure that the
parameters used are identical. Otherwise the connected
easy800 or MFD-CP8… will overwrite the parameters
entered via the web browser when the EASY209-SE is
powered up.

Requirement for configuration via web browser: The
EASY209-SE was already assigned a valid IP address that is
different to the factory setting (0.0.0.0).

Access to the web page depends on the version of the
Ethernet gateway:

EASY209-SE from version 6.1x.x
With an Ethernet gateway from version 6.1.x.x this access by
web browser is possible directly.

▶ Enter in your web browser the IP address of the Ethernet
gateway.

This opens the start page of the Device Server Configuration
Manager.
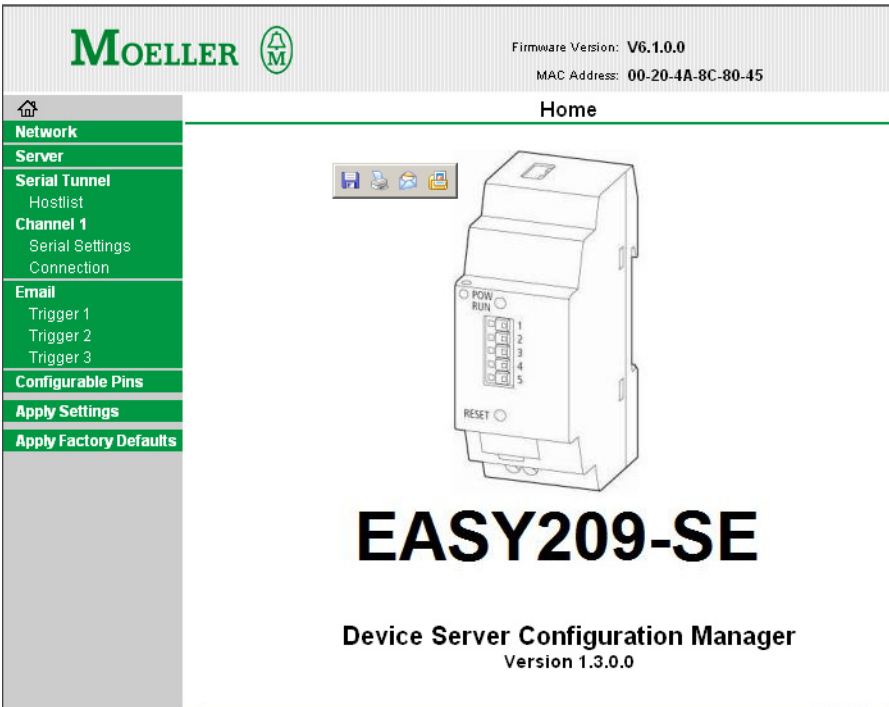
Figure 17:   Start page of the Device Server Configuration
                Manager

▶ Select the appropriate menu and enter the required
parameters, e.g. set the parameters in the Network menu
for the IP configuration, such as IP address, Subnet mask
etc.
▶ Save the configuration with the Apply Settings button.

The Configuration Manager transfers the parameters to the EASY209-SE, stores them and restarts the Ethernet gateway.

EASY209-SE up to version 1.80
With an older Ethernet gateway up to version 1.80, a Java applet is loaded from the Ethernet gateway. Your web browser must have a suitable Java Virtual Machine (as runtime environment for the Java applet).

▶ Enter in your web browser the IP address of the Ethernet gateway.
▶ The Java applet is loaded and the start page of the Web Manager is opened.

Figure 18:   Lantronix Web Manager

▷ Select the appropriate menu and enter the required parameters.

▷ Save the configuration with the Update Settings button.

The Web Manager transfers the parameters to the EASY209-SE, stores them and restarts the Ethernet gateway.

Establishing an Ethernet connection automatically

If the EASY209-SE is to establish an Ethernet connection automatically as soon as it receives a character from the connected device via the serial interface, you can configure this option via the web browser.

EASY209-SE from version 6.1x.x

▷ Select under Channel 1 the Connection page.

Figure 19:   Connection page of the Device Server Configuration Manager

▶ Select the Auto Start or With Any Character configurations in the Active Connect list box.

▶ Confirm the configuration with OK and save this with Apply Settings.

This creates the requirements for establishing the connection to this Ethernet gateway.

EASY209-SE up to version 1.80

▶ Choose the Port Properties menu and select the Auto Start or With Any Character configuration in the Startup list box.

▶ Save the configuration with the Update Settings button.

This creates the requirements for establishing the connection to this Ethernet gateway.

Configuration with ARP and Telnet command

As an alternative to the previously described methods, you can configure an EASY209-SE in Windows without any additional PC software using ARP (Address Resolution Protocol) and Telnet commands. The configuration can be carried out via the Ethernet network. In this case, the individual MAC address (hardware address) of the EASY209-SE is used as a unique identification (→ page 18).

ARP command

Requirements for address assignment using the ARP command via the Ethernet network:

- This Ethernet gateway must not have an established network connection, although it may have an IP address already assigned to it.
- The PC on which you wish to send the ARP command must be located in the same subnet as the Ethernet gateway and have the TCP/IP protocol installed on it.

Assigning an IP address
In Windows, IP addresses can only be entered without
leading zeros. Otherwise the entry will be misinterpreted by
the system.

For an initial configuration complete the following steps:

▶ Determine the MAC address on the label of the
EASY209-SE housing, ⟶ figure 3 on page 18.
▶ Start the command line interpreter via ‹Start → Run →
Cmd.exe›.
▶ Store the allocation temporarily in the ARP table (Address
Resolution Cache) of your PC with the command shown
below. Separate the individual bytes of the required IP
address with a ".", those of the MAC address with a "-".

Example in Windows:

```
arp -s [IP address] [MAC address]
arp -s 10.1.43.241 00-80-99-03-10-FF
```

⟶ | The PC only manages the above IP address setting for the
Ethernet gateway temporarily in the ARP table. It does not
send the address to the device.

Telnet command

▶ Open the Telnet connection to the configuration port 9999
of the EASY209-SE with the following command:

```
telnet 10.1.43.241 9999 [Enter]
```

The Telnet connection is then established and the following
information is displayed:

```
MAC address 008099030009
Software version V6.1.0.2 <060217> XPTEXE


Press Enter for Setup Mode
```

▶ Press Enter within five seconds in order to activate the
Setup mode. This opens the Change Setup configuration
menu.

```
Change Setup:
        0 Server
        1 Channel 1
        3 e-mail
        5 Expert
        6 Security
        7 Defaults
        8 Exit without save
        9 Save and exit        Your choice ? _
```

▶ Select here one of the available options (0…9) by entering
the appropriate number in the Your choice field and
confirm with Enter.
▶ Enter the required new parameter value in the appropriate
submenu and confirm the entry with Enter. For example
enter the IP address in the Server submenu.
▶ Press Enter to confirm a preset parameter value.
▶ Enter the option "9" in the Your choice field and press
Enter.

The EASY209-SE accepts the IP address as its own and stores
this retentively.

5   OPC connection

OPC (OLE for Process Control) offers a flexible and simple solution for standard data exchange between Windows applications, such as visualisation/control system software or office applications and automation devices. OPC operates according to the client-server principle, in which the objects of an OPC server are described by object interfaces with functions that the client can access. The universal OPC interface means that no special hardware dependent driver is required on the client side so that the devices can exchange data with any OPC clients.

The different Eaton controller systems are mapped in one of the OPC servers listed below.

easy-OPC Server

The easy-OPC server enables you to connect devices of the easy500/700/800 and MFD-CP8… series via this OPC interface to OPC clients. From easySoft/easySoft-PRO V6.10 you can create OPC symbol files (*.esd files).

Use the easy-OPC server from version 1.10 for data exchange via an EASY209-SE.

Installation of the easy-OPC server
▶ Install the easy-OPC server from the easySoft CD.
▶ If necessary, download an update for the easy-OPC server from the Support page of the Eaton website www.eaton.com. Enter "easy-OPC server" as a search keyword to find it as quickly as possible.

S40-OPC server

The S40-OPC server enables you to connect automation devices of the PS40 system (PS4/PS416 devices) via this OPC interface to OPC clients. The EASY209-SE offers an Ethernet communication partner access to the marker data of the controller concerned.

Use the S40-OPC server from version V1.1.0.67 for data exchange via an EASY209-SE.

Update of the S40-OPC server
Requirement: You have installed the S40-OPC server V1.0.

▶ Download the latest version of the S40-OPC server as an update from the Support page of the Eaton website www.eaton.com.

Use "S40-OPC server" as a search keyword to find it as quickly as possible.

→ | Entering "Ethernet" as a search keyword provides additional information.

The manual for the S40-OPC server (h1399g.pdf) is also available as a PDF file for downloading on this Support page.

Additional instructions on using an Ethernet gateway in conjunction with PS4/PS416 devices are provided in the application note "Communication via Ethernet TCP/IP with CoBox" (AN2700K14G). This application note describes the previous version of the EASY 209-SE, called the CoBox, and the current Com Port Redirector. This application note basically also applies to the latest Ethernet gateway EASY 209-SE. However, this is not provided with an RS485 terminal or a web server.

▶ Follow the instruction in the S40-OPC server manual and observe the instructions of the application note in order to commission an EASY209-SE with PS4/PS416 devices.

easySoft-CoDeSys OPC server

This OPC server enables you to connect controllers of the EC4-200, XC100 series that are programmed with easySoft-CoDeSys to OPC clients.

▶ Install the OPC server from your installation CD.
▶ If necessary, download an update for the easy-OPC server from the Support page of the Eaton website www.eaton.com. Enter "OPC server" as a search keyword to find it as quickly as possible.

6 COM routing (Com Port Redirector)

The Lantronix Com Port Redirector is a PC driver software that sets up virtual COM ports in Windows. This driver software is suitable for software systems that cannot communicate directly via an Ethernet network but only via COM ports. One example of this kind of software application, is Sucosoft S40, which exchanges data according to the SUCOM-A protocol.

The software application communicates via the Redirector as if via a normal COM port. The Redirector re-addresses data packets and communicates with the addressed remote Ethernet station via the Ethernet network. The resulting wait times are normally negligible.

As soon as the software application reactivates the port, the Redirector also clears the Ethernet (TCP) connection.

Fast entry to Com Port Redirector

The following steps are required to use the Redirector:

▶ Download the Redirector from the Lantronix website http://www.lantronix.com/device-networking/utilities-tools/com-port-redirector.html.

▶ Install the Redirector according to the Lantronix instructions on all PCs using software systems that can only communicate via COM ports.

▶ Configure the Redirector and the appropriate EASY209-SE with the necessary Ethernet parameters (IP address, port number).

The Redirector offers only virtual COM ports for the configuration. The list of the COM ports proposed starts with the first free, i.e. physically non-existent port.

Requirements for using the Redirector:

• You have assigned an IP address for the EASY209-SE via which the Redirector is to communicate with the connected device.

• The PC on which the Redirector is run is connected with the EASY209-SE.

→ If you wish to access a PS4/PS416 controller via an EASY209-SE using Sucosoft S40, you must set a port number between 10001…10999 for the Redirector configuration. You must also click the Raw Mode option in the Port Settings dialog.

7   What Happens If …?

Event	Explanation	Remedy
Front LED permanently lit	The EASY209-SE cannot establish an RS232 serial connection to the connected device.	• Check the serial connection cable between the device and EASY209-SE or press the RESET button. • Check whether the baud rates of both devices are identical.
Front LED flashes 1 x momentarily, although an EASY209-SE from device version 04 is being run in connection with easy800/MDF-CP8….	The EASY209-SE has not detected the type of easy800/MDF-CP8…	Press the RESET button.
LED 1 on the RJ45 socket not lit	No Ethernet connection	Check the Ethernet terminal
easySoft-CoDeSys indicates: "Communication error (#0): Logging out". This message appears after the start of the program transfer via ‹Online → Login›.	In the PLC configuration of easySoft-CoDeSys the baud rate of the device was modified and no longer matches the baud rate setting of the EASY209-SE and easySoft-CoDeSys.	• Acknowledge the error message with OK. • Set the new baud rate with the EASY209-SE Configurator. • Reconnect via ‹Online → Login› and transfer the program with the new baud rate selected.

Event	Explanation	Remedy
easySoft indicates a communication error when accessing via the selected Ethernet interface	• EASY209-SE not responding on Ethernet	
	– The Ethernet network terminal is faulty or not plugged in.	Repair the Ethernet terminal
	– The IP address in the Ethernet profile does not match the set IP address of the EASY209-SE.	Correct the IP address.
	– The subnet mask is incorrect	Correct the subnet mask
	– You have entered under Port a number outside of the permissible range 10001…10999.	Correct the port number
	– Another software application is already using this EASY209-SE.	Stop the other application or enable the port via the RESET button.
	– The EASY209-SE is faulty or without a power supply.	Check the power supply or change the device
	• Device not responding	
	– Device type was not detected	Select the project suitable for the device type.
	– The connection cable (programming cable) is faulty or not plugged in.	Check or change the connection cable.

Appendix

Factory settings (basic configuration)

The factory settings of an EASY209-SE for the RS232 serial and Ethernet interface are shown below.

RS232 serial interface

Baud rate, data bits, stop bits and parity of the serial interface of the EASY209-SE have the following factory settings:

Baud rate:	9600
Data bits:	8
Parity:	NO
Stop bits:	1
Handshake:	Is not supported.

Ethernet interface

IP address:	0.0.0.0
Subnet mask:	0.0.0.0
Standard gateway:	0.0.0.0
Remote IP Address:	0.0.0.0
Port number	10001
Remote Port	00000

As EASY209-SE devices are factory set to IP address 0.0.0.0, when commissioning several EASY209-SEs you should connect them to the Ethernet connection and configure them one after the other. You must assign each EASY209-SE with a minimum configuration of a unique IP address.

Technical data

General		
Standards		EN 55011, EN 55022, IEC/EN 61000-4, EN 50178
Dimensions (W x H x D)	mm	35.5 x 90 x 58 (2 space unit)
Weight	kg	0.15
Mounting		Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories).
Terminal capacity		
solid	mm^2	0.2 – 4 (AWG 22 – 12)
flexible with ferrule	mm^2	0.2 – 2.5 (AWG 22 – 12)
standard screwdriver	mm	3.5 x 0.8
max. tightening torque	Nm	0.6
Ethernet data cable		
Flexible with RJ45 plug	mm^2	LAN cable to Ethernet standard
Potential isolation to the power supply		Yes
RS232 data cable		
solid	mm^2	0.25/1.5 (AWG 24/16)
flexible with ferrule	mm^2	0.14/1 (AWG 26/17)
Potential isolation to the power supply		No
Ambient climatic conditions		
Operating ambient temperature	°C	−25 - +55
Condensation		Prevent condensation with suitable measures
Storage	°C	40 - 70
relative humidity, non-condensing (IEC/EN 60068-2-30)	%	5 - 95
Air pressure (in operation)	hPa	795 - 1080

Technical data

Ambient mechanical conditions		
Protection type, IEC/EN 60529		IP20
Vibrations (IEC/EN 60068-2-6)		
Constant amplitude 0.15 mm	Hz	10 - 57
Constant acceleration, 2 g	Hz	57 - 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms	Shocks	18
Drop (IEC/EN 60068-2-31)	Drop height mm	50
Free fall, packaged (IEC/EN 60068-2-32)	m	1
Mounting position		horizontal/vertical
Electromagnetic compatibility (EMC)		
Overvoltage category/pollution degree		II/2
electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)		
Air discharge	kV	8
Contact discharge	kV	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)	V/m	RS232 line without shield: 3, with shield: 10
Radio interference suppression (EN 55011)		EN 55011 Class B, EN 55022 Class B
Burst pulses (IEC/EN 61000-4-4, level 3)		
Supply cables	kV	2
Ethernet interface cable	kV	2
COM interface cable	kV	2
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)	kV	1 (supply cables, symmetrical)
Immunity to line-conducted interference to (IEC/EN 61000-4-6)	V	RS232 line without shield: 3, with shield: 10
Clearance and creepage distances		EN 50178, UL 508, CSA C22.2, No. 142

Insulation resistance		EN 50178
Power supply		
Rated operational voltage U_e	V	24 (-15/+20 %)
permissible range	V DC	20.4 - 28.8
Ripple	%	5
Max. current consumption (at 24 V DC)	mA	part no. 65
Voltage dips (IEC/EN 61131-2)	ms	–
Heat dissipation at 24 V DC	W	1.7
Protection against polarity reversal		
Power supply		Yes
LED indicators		
Front LED POW/RUN		On: Power supply OK Flashing: RS232 connection active
RJ45 socket, LED 1		Off: No connection Yellow: 10 Mbit/s Green: 100 Mbit/s
RJ45 socket, LED 2		Off: No activity Yellow: Half Duplex Green: Full Duplex
Reset		Front: per pushbuttons > 2s
Strain relief		by cable tie in fastener
Ethernet network		
TCP/IP protocols		ARP, AutoIP, DHCP, HTTP, ICMP, SNMP, TCP, Telnet, TFTP, UDP
Ethernet parameters, factory settings		IP address 0.0.0.0 SUBNET mask: 255.255.0.0 Gateway address: 0.0.0.0 Remote address: 0.0.0.0
Product declarations		
Approvals		
UL/CSA		Yes
CE Declaration of Conformity		Yes; according the EMC directive, Low-voltage directive

Dimensions
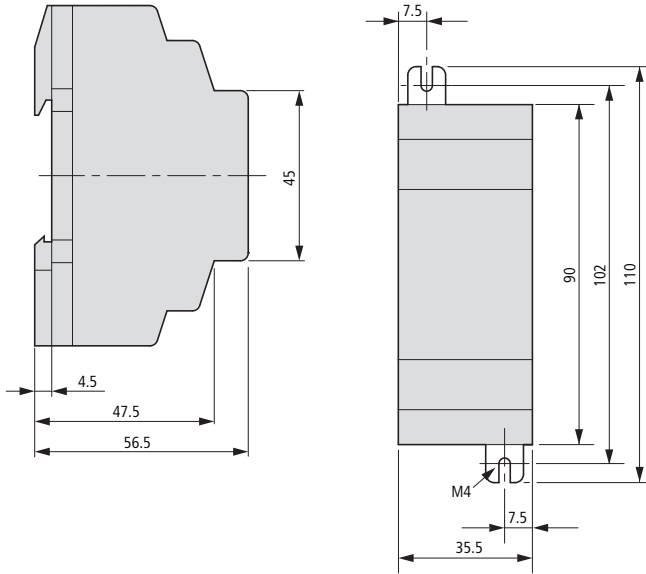
EMC-compliant wiring   Any electromagnetic interference on the Ethernet network and the serial connection of EASY209-SE to the connected device may produce undesired malfunctions. This can be minimized beforehand by the implementation of suitable EMC measures. These include:

- EMC-conformant system configuration
- EMC compliant cable installation with sufficient clearance between data and power supply cables,
- measures which do not allow potential differences to occur,
- the correct installation of the Ethernet network using the above mentioned shielded cable, a shielded RJ45 plug and the connection of the cable shield.

The EMC Engineering Guidelines for Automation Devices (h1287g.pdf) from Eaton provides support for wiring a safe system.

Screen earth kit

▶ Earth the shield of the Ethernet cable as shown in the following illustrations if there is a risk of electromagnetic interference.

The following illustrations indicate the correct method for connecting the shield.
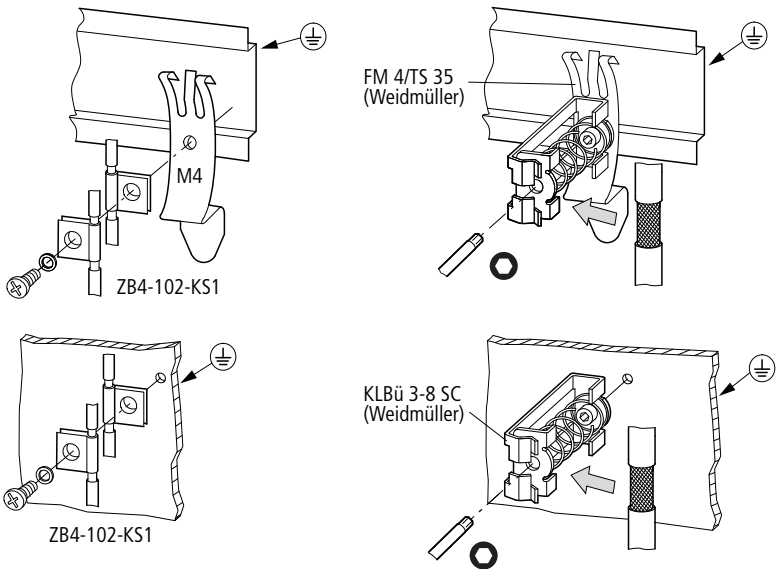
Figure 20: Shield fastening to top-hat rail (above) or mounting plate (below)

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