

Special Documentation

Proline Promass 500

Web server

PROFINET over Ethernet-APL



Table of contents

1	About this document	4
1.1	Document function	4
1.2	Target group	4
1.3	Using this document	4
1.4	Symbols	4
2	Basic safety instructions	6
2.1	Requirements for the personnel	6
2.2	Designated use	6
2.3	Workplace safety	6
2.4	Operational safety	6
2.5	Product safety	6
2.6	IT security	7
2.7	Device-specific IT security	7
3	Product features and availability ...	10
3.1	Product features	10
3.2	Availability	10
3.3	Identification in the measuring device	10
4	Commissioning	12
4.1	Prerequisites - computer	12
4.2	Prerequisites - measuring device	17
4.3	Connecting the computer to the measuring instrument	18
4.4	Establishing a connection to the web server ..	21
4.5	Setting the IP address	23
4.6	Overview of the web server parameters	23
5	Operation options	25
5.1	Logging on	25
5.2	User interface	26
5.3	Logging out	27
5.4	Addressing Ethernet-based fieldbuses	27
6	Diagnostics and troubleshooting ...	32
6.1	General web server troubleshooting	32
6.2	Diagnostic information in the Web browser ..	32
6.3	Diagnostic information in the measuring device	33
6.4	Checking the network connection	34
7	Technical data	35

1 About this document

1.1 Document function

This manual is a Special Documentation; it does not replace the Operating Instructions pertaining to the device. It serves as a reference for using the Web server integrated in the measuring device.

1.2 Target group

The document is aimed at specialists who work with the device over the entire life cycle and perform specific configurations.

1.3 Using this document

1.3.1 Information on the document structure

This Special Documentation contains a range of information, including:

- Prerequisites for use on the computer and measuring device
- Configuration of the communication interface
- Establishing a connection
- Diagnostics and troubleshooting

 The information and safety instructions in the Operating Instructions pertaining to the measuring device must always be observed →  4.

1.3.2 Device documentation

 For an overview of the scope of the associated Technical Documentation, refer to the following:

- *Device Viewer* (www.endress.com/deviceviewer): Enter the serial number from the nameplate
- *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

 Technical documentation can also be downloaded from the Download Area of the Endress+Hauser website: www.endress.com → Download. However this technical documentation applies to a particular instrument family and is not assigned to a specific measuring device.

1.4 Symbols

1.4.1 Safety symbols

DANGER

This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

WARNING

This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

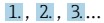
CAUTION

This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE

This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

1.4.2 Symbols for certain types of information

Symbol	Meaning
	Permitted Procedures, processes or actions that are permitted.
	Forbidden Procedures, processes or actions that are forbidden.
	Tip Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
	Notice or individual step to be observed
	Series of steps
	Result of a step

1.4.3 Symbols in graphics

Symbol	Meaning
1, 2, 3, ...	Item numbers
	Series of steps

2 Basic safety instructions

2.1 Requirements for the personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:

- ▶ Trained, qualified specialists must have a relevant qualification for this specific function and task.
- ▶ Are authorized by the plant owner/operator.
- ▶ Are familiar with federal/national regulations.
- ▶ Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
- ▶ Follow instructions and comply with basic conditions.

The operating personnel must fulfill the following requirements:

- ▶ Are instructed and authorized according to the requirements of the task by the facility's owner-operator.
- ▶ Follow the instructions in this manual.

2.2 Designated use

The designated use of the measuring device is described in the Operating Instructions pertaining to the device →  4.

2.3 Workplace safety

For work on and with the device:

- ▶ Wear the required personal protective equipment according to federal/national regulations.

If working on and with the device with wet hands:

- ▶ It is recommended to wear gloves on account of the higher risk of electric shock.

2.4 Operational safety

Risk of injury!

- ▶ Operate the device only if it is in proper technical condition, free from errors and faults.
- ▶ The operator is responsible for the interference-free operation of the device.

Modifications to the device

Unauthorized modifications to the device are not permitted and can lead to unforeseeable dangers!

- ▶ If modifications are nevertheless required, consult with the manufacturer.

2.5 Product safety

This measuring device is designed in accordance with good engineering practice to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate.

It meets general safety standards and legal requirements. It also complies with the EU directives listed in the device-specific EU Declaration of Conformity. Endress+Hauser confirms this by affixing the CE mark to the device.

Furthermore, the device meets the legal requirements of the applicable UK regulations (Statutory Instruments). These are listed in the UKCA Declaration of Conformity along with the designated standards.

By selecting the order option for the UKCA marking Endress+Hauser confirms the successful testing and assessment of the device by affixing to it the UKCA mark.

Contact address Endress+Hauser UK:

Endress+Hauser Ltd.
Floats Road
Manchester M23 9NF
United Kingdom
www.uk.endress.com

2.6 IT security

Our warranty is valid only if the product is installed and used as described in the Operating Instructions. The product is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the product and associated data transfer, must be implemented by the operators themselves in line with their security standards.

2.7 Device-specific IT security

The device offers a range of specific functions to support protective measures on the operator's side. These functions can be configured by the user and guarantee greater in-operation safety if used correctly. The following list provides an overview of the most important functions:

Function/interface	Factory setting	Recommendation
Write protection via hardware write protection switch →  7	Not enabled	On an individual basis following risk assessment
Access code (also applies for Web server login or FieldCare connection) →  8	Not enabled (0000)	Assign a customized access code during commissioning
WLAN (order option in display module)	Enabled	On an individual basis following risk assessment
WLAN security mode	Enabled (WPA2-PSK)	Do not change
WLAN passphrase (password) →  8	Serial number	Assign a customized WLAN passphrase during commissioning
WLAN mode	Access point	On an individual basis following risk assessment
Web server →  8	Enabled	On an individual basis following risk assessment
CDI-RJ45 service interface →  9	–	On an individual basis following risk assessment

2.7.1 Protecting access via hardware write protection

Write access to the parameters of the device via the local display, web browser or operating tool (e.g. FieldCare, DeviceCare) can be disabled via a write protection switch (DIP switch on the main electronics module). When hardware write protection is enabled, only read access to the parameters is possible.

Hardware write protection is disabled when the device is delivered.

2.7.2 Protecting access via a password

Different passwords are available to protect write access to the device parameters or access to the device via the WLAN interface.

- **User-specific access code**
Protect write access to the device parameters via the local display, Web browser or operating tool (e.g. FieldCare, DeviceCare). Access authorization is clearly regulated through the use of a user-specific access code.
- **WLAN passphrase**
The network key protects a connection between an operating unit (e.g. notebook or tablet) and the device via the WLAN interface which can be ordered as an option.
- **Infrastructure mode**
When the device is operated in infrastructure mode, the WLAN passphrase corresponds to the WLAN passphrase configured on the operator side.

User-specific access code

Write access to the device parameters via the local display, web browser or operating tool (e.g. FieldCare, DeviceCare) can be protected by the modifiable, user-specific access code.

When the device is delivered, the device does not have an access code and is equivalent to 0000 (open).

WLAN passphrase: Operation as WLAN access point

A connection between an operating unit (e.g. notebook or tablet) and the device via the WLAN interface, which can be ordered as an optional extra, is protected by the network key. The WLAN authentication of the network key complies with the IEEE 802.11 standard.

When the device is delivered, the network key is pre-defined depending on the device. It can be changed via the **WLAN settings** submenu in the **WLAN passphrase** parameter.

Infrastructure mode

A connection between the device and WLAN access point is protected by means of an SSID and passphrase on the system side. Please contact the relevant system administrator for access.

General notes on the use of passwords

- The access code and network key supplied with the device should be changed during commissioning.
- Follow the general rules for generating a secure password when defining and managing the access code or network key.
- The user is responsible for the management and careful handling of the access code and network key.

2.7.3 Access via Web server

The Web server is enabled when the device is delivered. The Web server can be disabled if necessary (e.g. after commissioning) via the **Web server functionality** parameter.

The device and status information can be hidden on the login page. This prevents unauthorized access to the information.



For detailed information on device parameters, see:
The "Description of Device Parameters" document

2.7.4 Access via service interface (CDI-RJ45)

The device can be connected to a network via the service interface (CDI-RJ45). Device-specific functions guarantee the secure operation of the device in a network.

The use of relevant industrial standards and guidelines that have been defined by national and international safety committees, such as IEC/ISA62443 or the IEEE, is recommended. This includes organizational security measures such as the assignment of access authorization as well as technical measures such as network segmentation.



Transmitters with an Ex de approval may not be connected via the service interface (CDI-RJ45)!

Order code for "Approval transmitter + sensor", options (Ex de): BA, BB, C1, C2, GA, GB, MA, MB, NA, NB

3 Product features and availability

3.1 Product features

Thanks to the integrated web server the device can be operated and configured via a web browser via Ethernet-APL, the service interface (CDI-RJ45) or via the WLAN interface. The structure of the operating menu is the same as for the local display. In addition to the measured values, device status information is also displayed, allowing users to monitor the status of the device. Furthermore the device data can be managed and the network parameters can be configured.

Access to the network is required for the Ethernet-APL connection.

A device that has a WLAN interface (can be ordered as an option) is required for the WLAN connection: order code for "Display; operation", option G "4-line, illuminated; touch control + WLAN". The device acts as an Access Point and enables communication by computer or a mobile handheld terminal.

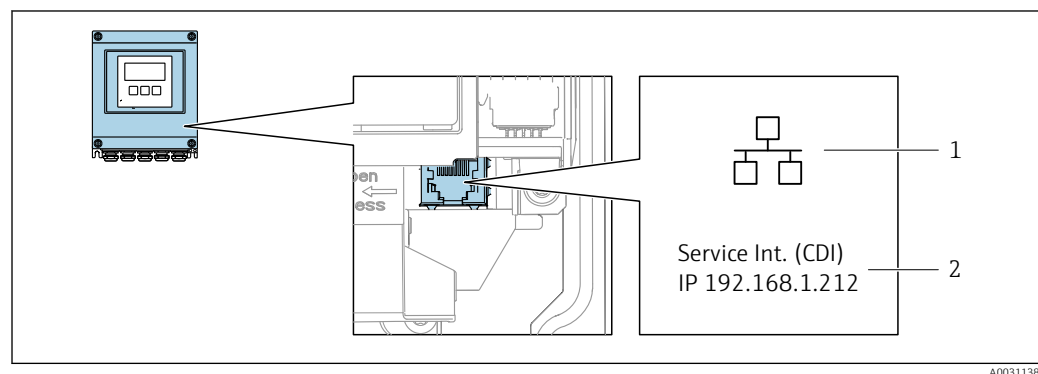
3.2 Availability

The integrated web server is a standard feature. It does not need to be ordered for the device ex works as it is provided as standard when the device is delivered to the customer. Connection is via the APL field switch or Ethernet switch.

3.3 Identification in the measuring device

An adhesive label on the inside of the electronics compartment cover or the connection compartment describes all the available hardware components, and their functions, for the measuring device. The service interface (CDI-RJ45) has the following identification:

3.3.1 Proline 500 – digital

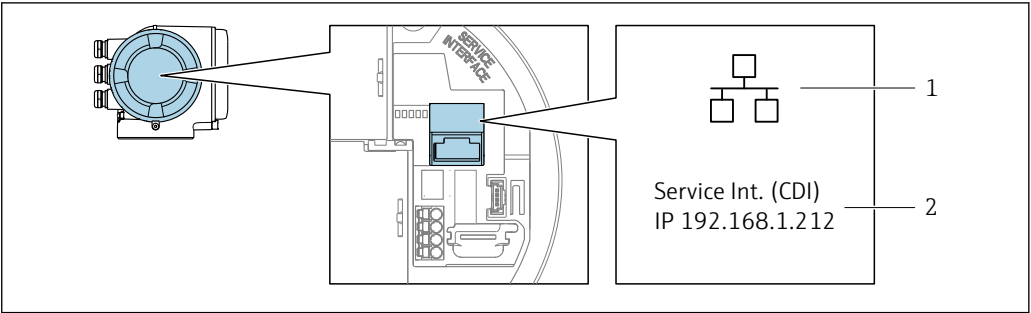


1 Example of the CDI-RJ45 service interface

1 Symbol for service interface

2 Information on the default setting for the IP address

3.3.2 Proline 500



A0030874

- 2 Example of the CDI-RJ45 service interface
- 1 Symbol for service interface
- 2 Information on the default setting for the IP address

4 Commissioning

Establishing a connection to the integrated web server

1. Configure the computer →  12.
2. Check the settings on the measuring device and change them if necessary →  17.
3. Connect the measuring device to the computer →  18.
4. Establish a connection to the web server →  21.
5. Start the web browser and access the operating menu →  22.
 - ↳ The measuring device can be operated via the web server.

4.1 Prerequisites - computer

4.1.1 Hardware

Hardware	Interface	
	CDI-RJ45	WLAN
Interface	The computer must have a RJ45 interface. ¹⁾	The operating unit must have a WLAN interface.
Connection	Standard Ethernet cable	Connection via Wireless LAN.
Screen	Recommended size: ≥12" (depends on the screen resolution)	

- 1) Recommended cable: CAT5e, CAT6 or CAT7, with shielded plug (e.g. YAMAICHI product; part no. Y-ConProfixPlug63/Prod. ID: 82-006660)

4.1.2 Software

Software	Interface	
	CDI-RJ45	WLAN
Recommended operating systems	▪ Microsoft Windows 8 or higher. ▪ Mobile operating systems: ▪ iOS ▪ Android  Microsoft Windows XP and Windows 7 is supported.	
Web browsers supported	▪ Microsoft Internet Explorer 8 or higher ▪ Microsoft Edge ▪ Mozilla Firefox ▪ Google Chrome ▪ Safari	

4.1.3 Configuring the computer

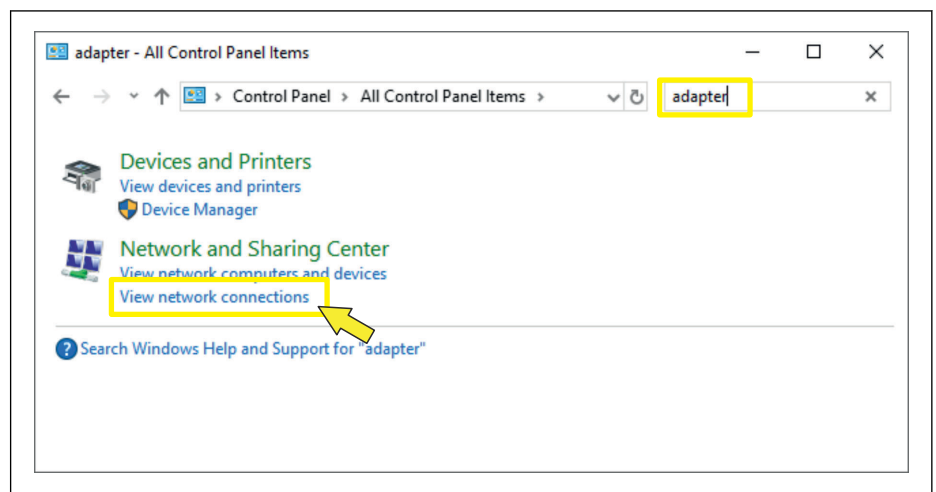
Settings	Interface	
	CDI-RJ45	WLAN
User rights	Appropriate user rights (e.g. administrator rights) for TCP/IP and proxy server settings are necessary (e.g. for adjusting the IP address, subnet mask etc.).	
Proxy server settings of the web browser	The web browser setting <i>Use a proxy server for your LAN</i> must be disabled →  12.	

Settings	Interface	
	CDI-RJ45	WLAN
JavaScript	JavaScript must be enabled. i If JavaScript cannot be enabled: Enter <code>http://192.168.1.212/servlet/basic.html</code> in the address bar of the web browser. A fully functional but simplified version of the operating menu structure starts in the web browser. i When installing a new firmware version: To enable correct data display, clear the temporary memory (cache) under Internet options in the web browser.	JavaScript must be enabled. i The WLAN display requires JavaScript support.
Network connections	Only use the active network connections to the measuring device.	
	Switch off all other network connections such as WLAN for example.	Switch off all other network connections.

Configuring IP settings for Windows

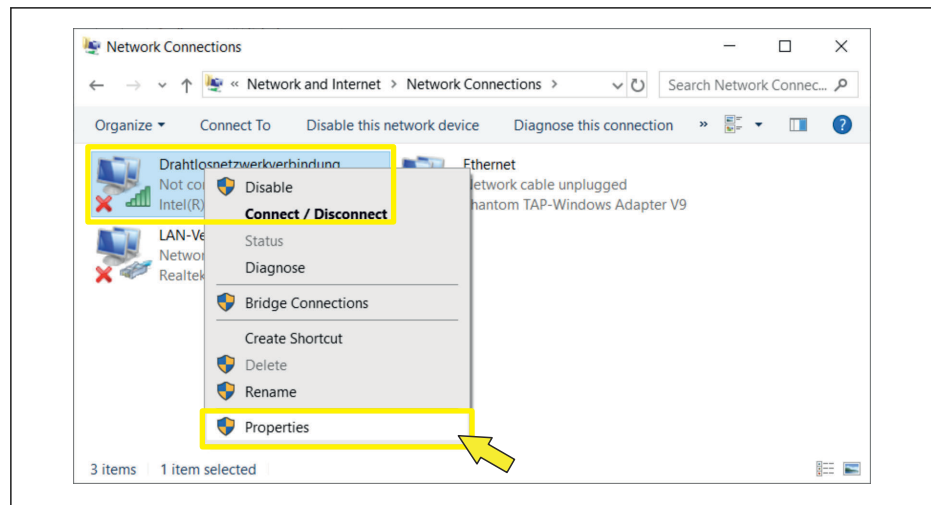
- i** ■ To configure the IP settings, appropriate user rights (e.g. administrator rights) are required for the computer.
- Before configuring the IP settings, close all the windows of the Web browser.

1. Click *Start* (Windows icon).
↳ The Start menu appears.
2. In the Start menu, select *Control Panel*.
↳ This opens a new window with the control panel elements.



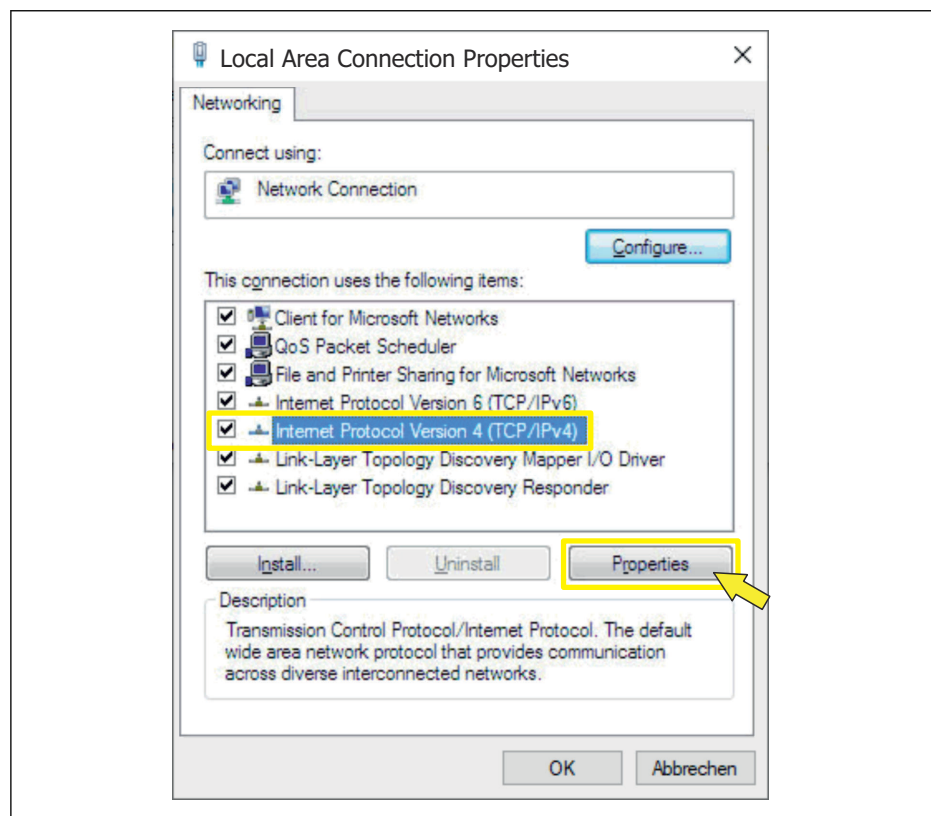
3. Enter the term "adapter" in the search field.
↳ The *Network and Sharing Center* is listed in the search results.

4. Select the *Network Connections* option under *Network and Sharing Center*.
 - ↳ This opens a new window with the network connections.



A0024293

5. In the window, select the *Ethernet or wireless network connection* network adapter for the connection.
6. Right-click to open the picklist and select *Properties*.
 - ↳ The *Local Area Connection Properties* dialog box opens.

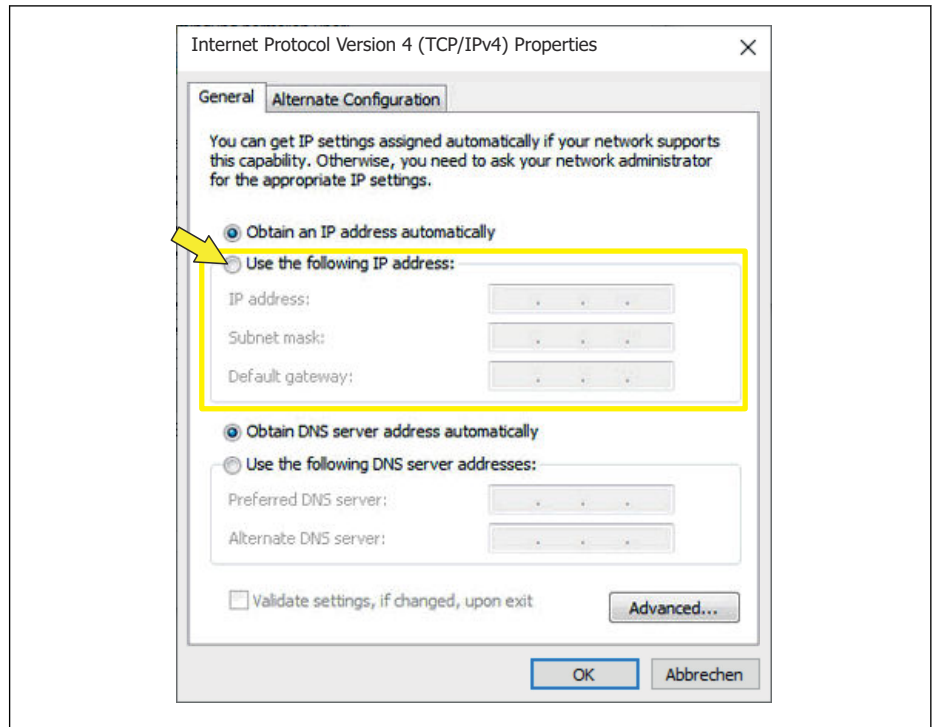


A0024300

7. Select the *Internet Protocol Version 4 (TCP/IPv4)* item.

8. Click the *Properties* button.

↳ The *Internet Protocol Version 4 (TCP/IPv4) Properties* window opens.



A0024309

9. In the *General* tab, select the *Use the Following IP Address* option.

10. Enter the IP address, subnet mask and default gateway as indicated in the following table and then click *Ok* to confirm.

Standard settings for IP address, subnet mask and default gateway

IP address	192.168.1.XXX  For XXX, all sequences of numbers apart from: 0, 212 and 255 → e.g. 192.168.1.213
Subnet mask	255.255.255.0
Default gateway	192.168.1.212 or leave cells empty

-  The standard settings correspond to those for private networks. In the case of Ethernet-based networks, the settings can deviate from this standard setting and may need to be changed.

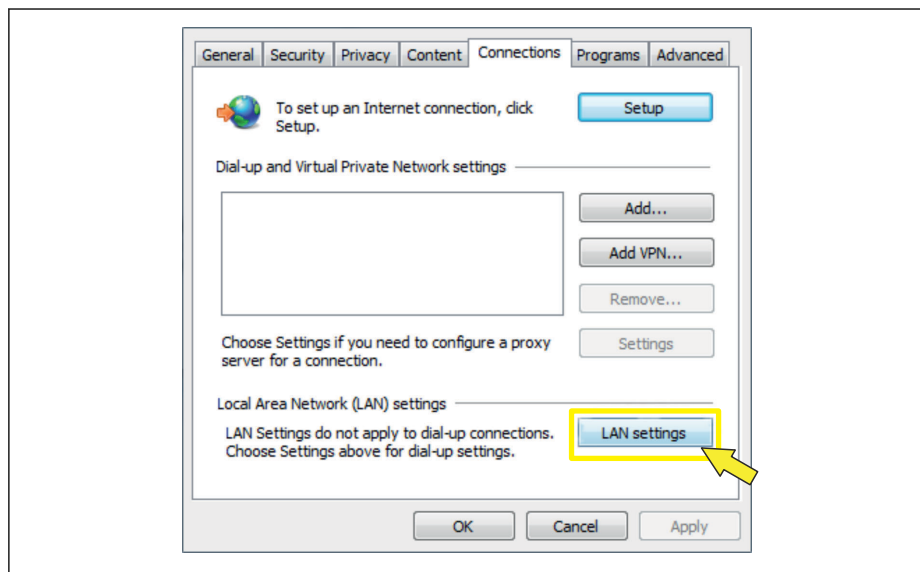
Changing the proxy server settings

To establish communication, the proxy server setting *Use a Proxy Server for Your LAN* must be deselected for the Web browser.

-  To change the proxy server setting, appropriate user rights (e.g. administrator rights) are required for the computer.

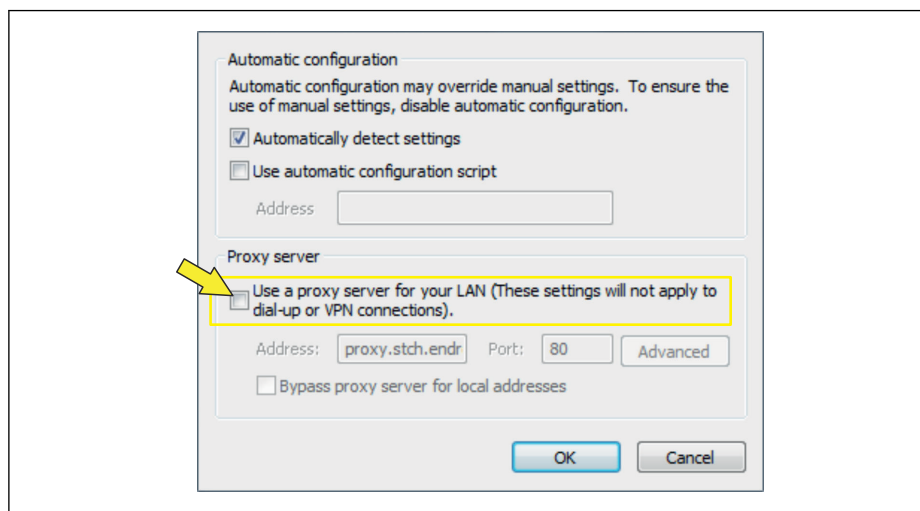
Changing the proxy server settings taking Internet Explorer as the sample browser

1. Open the Web browser.
2. In the *Options* menu, select the *Internet Options* item.
 - ↳ This opens a new window with the Internet options.



A0024310

3. Select the *Connections* tab.
4. Under *Local Area Network Settings* click the *LAN Settings* button.
 - ↳ This opens a new window with the *Local Area Network Settings*.



A0024311

5. Deselect the *Use a Proxy Server for Your LAN* checkbox and then click *Ok* to confirm.

4.2 Prerequisites - measuring device

4.2.1 Enabling the web server

The web server must be enabled in the measuring device (default setting).

If the web server is disabled, it can be enabled again via the **Web server functionality** parameter (→  24). To do so, users can choose from the following operation options:

- Local display
- Operating tool e.g. FieldCare, DeviceCare, SIMATIC PDM

4.2.2 Determining the IP address of the measuring device

The IP address of the device is required to establish communication between the device (web server) and a computer (client). The device has 2 independent interfaces:

- Service interface (CDI-RJ45)
- PROFINET interface

Each of these interfaces has its own IP address to connect to the network. The service interface (CDI-RJ45) has the default IP address 192.168.1.212. The PROFINET interface has the default IP address 192.168.2.212. With the integrated web server, you can only ever communicate via one interface. The default IP addresses of both interfaces must be configured in such a way that prevents IP address conflicts due to overlapping subnetworks. This makes sense if using both interfaces at the same time.

The IP address can be assigned to the measuring device in a variety of ways:

IP address of the service interface (CDI-RJ45)

- Software addressing:
The IP address is entered via the **IP address** parameter.
- DIP switch for "Default Ethernet Network Settings":
For establishing the network connection via the service interface (CDI-RJ45). The fixed IP address 192.168.1.212 is used.

IP address of the service interface (CDI-RJ45) assigned or specified via:	Determine IP address settings via parameters or DIP switches		
	Local display (if available)	Operating tool e.g. FieldCare, DeviceCare, AMS Device Manager, SIMATIC PDM	DIP switch in the electronics compartment
Software addressing of the IP address via the IP address parameter			
DIP switch for "Default Ethernet Network Settings", use the fixed IP address: 192.168.1.212			
 Position of the DIP switches →  10			

IP address of the PROFINET interface

- Software addressing:
The IP address is entered via the **IP address** parameter.
- Dynamic Configuration Protocol (DCP), factory setting:
The IP address is automatically assigned to the measuring device by the automation system (DCP server).

IP address of the PROFINET interface assigned or specified via:	Determine IP address settings via parameters or DIP switches		
	Local display (if available)	Operating tool e.g. FieldCare, DeviceCare, AMS Device Manager, SIMATIC PDM	DIP switch in the electronics compartment
Dynamic Configuration Protocol (DCP), factory setting			
Software addressing of the IP address via the IP address parameter			

Using the local display or operating tool

The **IP address** parameter can be used to determine the IP address via the local display or an operating tool e.g. FieldCare, DeviceCare, SIMATIC PDM.

4.3 Connecting the computer to the measuring instrument

The measuring device can be connected to the computer via:

- Service interface (CDI-RJ45)
- WLAN interface
- Ethernet-based fieldbuses

4.3.1 Via service interface (CDI-RJ45)

Preparing the measuring device

Proline 500 – digital

1. Loosen the 4 fixing screws on the housing cover.
2. Open the housing cover.
3. The location of the connection socket depends on the measuring device and the communication protocol.
Connect the computer to the RJ45 plug via the standard Ethernet cable →  10.

Proline 500

1. Depending on the housing version:
Loosen the securing clamp or fixing screw of the housing cover.
2. Depending on the housing version:
Unscrew or open the housing cover.
3. Connect the computer to the RJ45 plug via the standard Ethernet connecting cable. →  10.

Configuring the Internet protocol of the computer

The following information refers to the default Ethernet settings of the device.

IP address of the device: 192.168.1.212 (factory setting)

⚠ DANGER**Risk of electric shock from live parts!**

- ▶ Never open the measuring device when it is connected to the supply voltage.
- ▶ Disconnect the measuring device from the power supply.
- ▶ The information and safety instructions in the Operating Instructions pertaining to the measuring device must also be observed →  4.

The IP address can be assigned to the measuring device in a variety of ways:

- Software addressing:
The IP address is entered via the **IP address** parameter .
- DIP switch for "Default IP address":
To establish the network connection via the service interface (CDI-RJ45): the fixed IP address 192.168.1.212 is used →  27.

To establish a network connection via the service interface (CDI-RJ45): set the "Default IP address" DIP switch to **ON**. The measuring device then has the fixed IP address: 192.168.1.212. The fixed IP address 192.168.1.212 can now be used to establish the connection to the network.

-  If the IP address of the measuring device is assigned via or the DIP switch for "Default Ethernet network settings" and the IP address is known, the network connection can also be established directly via the Ethernet network →  18.

1. Via DIP switch 2, activate the default IP address 192.168.1.212: →  29.
2. Switch on the measuring device.
3. Connect the computer to the RJ45 plug via the standard Ethernet cable →  10.
4. If a 2nd network card is not used, close all the applications on the notebook.
 - ↳ Applications requiring Internet or a network, such as e-mail, SAP applications, Internet or Windows Explorer.
5. Close any open Internet browsers.
6. Configure the properties of the Internet protocol (TCP/IP) as defined in the table:

IP address	192.168.1.XXX; for XXX all numerical sequences except: 0, 212 and 255 → e.g. 192.168.1.213
Subnet mask	255.255.255.0
Default gateway	192.168.1.212 or leave cells empty

4.3.2 Via WLAN interface

Configuring the Internet protocol of the mobile terminal

NOTICE

If the WLAN connection is lost during the configuration, settings made may be lost.

- ▶ Make sure that the WLAN connection is not disconnected while configuring the device.

NOTICE

Note the following to avoid a network conflict:

- ▶ Avoid accessing the measuring device simultaneously from the same mobile terminal via the service interface (CDI-RJ45) and the WLAN interface.
- ▶ Only activate one service interface (CDI-RJ45 or WLAN interface).
- ▶ If simultaneous communication is necessary: configure different IP address ranges, e.g. 192.168.0.1 (WLAN interface) and 192.168.1.212 (CDI-RJ45 service interface).

Preparing the mobile terminal

- ▶ Enable WLAN on the mobile terminal.

Establishing a WLAN connection from the mobile terminal to the measuring device

1. In the WLAN settings of the mobile terminal:
Select the measuring device using the SSID (e.g. EH_Promass_500_A802000).
 2. If necessary, select the WPA2 encryption method.
 3. Enter the password:
Serial number of the measuring device ex-works (e.g. L100A802000).
 - ↳ The LED on the display module flashes. It is now possible to operate the measuring device with the web browser.
-  The serial number can be found on the nameplate.
-  To ensure the safe and swift assignment of the WLAN network to the measuring point, it is advisable to change the SSID name. It should be possible to clearly assign the new SSID name to the measuring point (e.g. tag name) because it is displayed as the WLAN network.

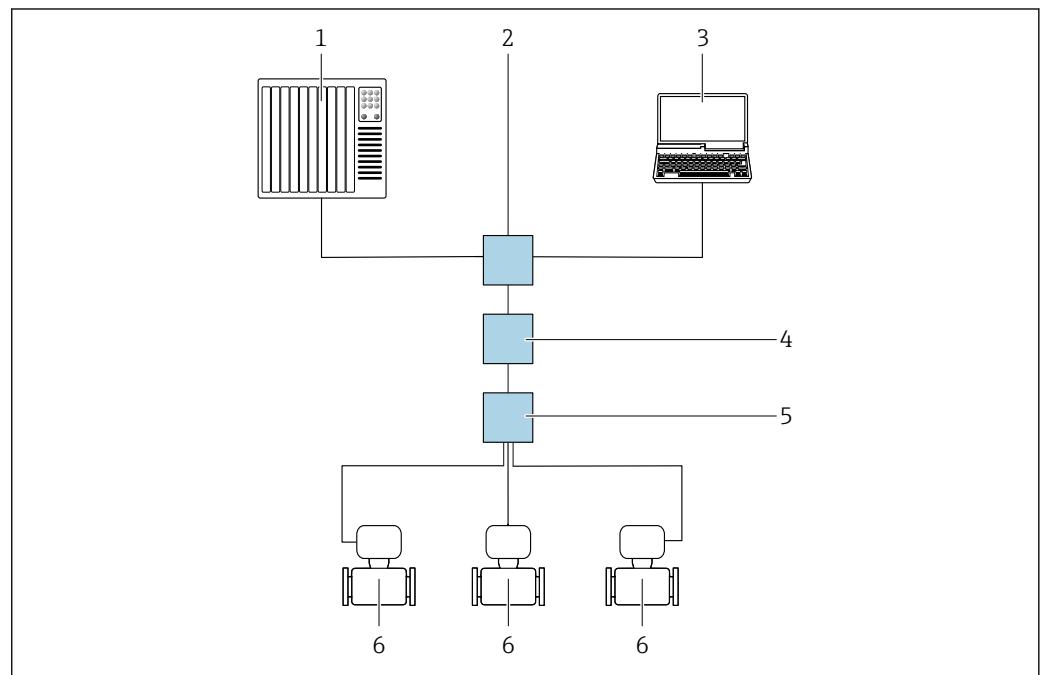
Terminating the WLAN connection

- After configuring the device:
Terminate the WLAN connection between the mobile terminal and measuring device.

4.3.3 Via Ethernet-based fieldbus

If the IP address of the measuring device is assigned via , the network connection can be established directly via the Ethernet network.

i The measuring device works with the Dynamic Configuration Protocol (DCP) on leaving the factory, i.e. the IP address of the PROFINET interface of the measuring device is automatically assigned by the automation system (DCP server), (e.g. Siemens S7). The host system assigns an IP address to the measuring device. The assigned IP address can be used to establish the connection to the network → 18.



A0046117

3 Options for remote operation via APL network

- 1 Automation system, e.g. Simatic S7 (Siemens)
- 2 Ethernet switch, e.g. Scalance X204 (Siemens)
- 3 Computer with web browser (e.g. Internet Explorer) for access to integrated web server or computer with operating tool (e.g. FieldCare or DeviceCare with PROFINET COM DTM or SIMATIC PDM with FDI-Package)
- 4 APL power switch (optional)
- 5 APL field switch
- 6 Measuring device

4.4 Establishing a connection to the web server

4.4.1 Prerequisites

The IP settings in the measuring device and computer must match before a connection can be established successfully. In particular this concerns the IP addressing and Web browser settings.

The following conditions must be met to connect:

- The web server of the measuring device is enabled → 17.
- The IP address of the measuring device is known → 17.
- The computer used meets the requirements for hardware and software → 12.
- The measuring device and computer are connected to one another → 18.
- The measuring device is switched on.

4.4.2 Starting the web browser



If JavaScript cannot be enabled:

Enter `http://192.168.1.212/servlet/basic.html` in the address bar of the web browser. A fully functional but simplified version of the operating menu structure starts in the web browser.



When installing a new firmware version:

To enable correct data display, clear the temporary memory (cache) under **Internet options** in the web browser.

Prerequisite: The IP address of the measuring device is known.

1. Start the Web browser on the computer.
2. Enter the defined device address in the address line of the Web browser.
 - ↳ The login page appears.

Prerequisite: The IP address of the measuring device is not known.

1. Start the web browser on the computer.
2. Read out the IP address via local operation (Setup → Communication → APL port).
 - ↳ Alternatively, the top DIP switch no. 2 can be set to **ON**.
3. Restart the device.
4. Enter the default IP address `192.168.1.212` → 17.
 - ↳ The login page appears.



If a login page does not appear, or if the page is incomplete → 32

4.5 Setting the IP address

The IP address of the measuring device is required to establish communication between the measuring device (Web server) and a computer (client).

Assign or specify the IP address via:	Description
DCP (Dynamic Configuration Protocol) ¹⁾	The PROFINET interface of the measuring device is automatically assigned the IP address by the automation system.
Software addressing	The PROFINET and service interface of the measuring device use the IP address set in the IP address parameter.
Use the DIP switch: default Ethernet network settings ²⁾	■ The service interface (CDI-RJ45) of the measuring device is assigned the fixed IP address 192.168.1.212. ■ DIP switch: Default Ethernet network settings = ON ■ The device is connected via the service interface (CDI-RJ45). ■ Following a restart, the measuring device can be connected via the service interface (CDI-RJ45) or via the Ethernet network. ■ To avoid IP address conflicts, this DIP switch must never be used on 2 measuring devices simultaneously within an Ethernet network.

1) Factory setting

2) For a temporary connection when servicing, for example, or if the IP address is not known. The measuring device must not be disconnected from the network/automation system.

4.6 Overview of the web server parameters

4.6.1 Language

Navigation

"Operation" menu → Web server language

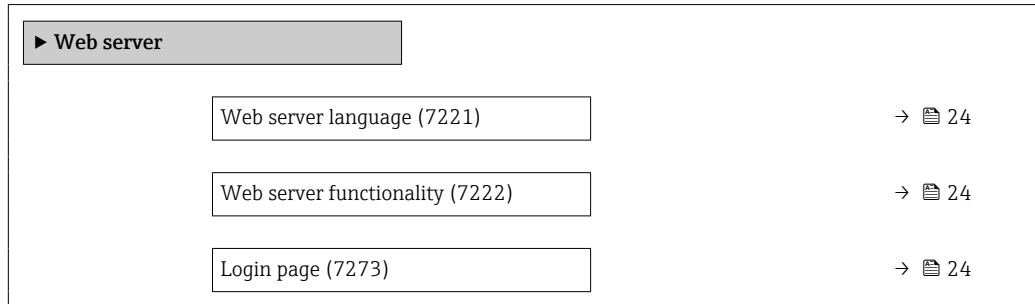
Parameter overview with brief description

Parameter	Description	Selection	Factory setting
Web server language	Set web server language.	■ English ■ Deutsch ■ Français ■ Español ■ Italiano ■ Nederlands ■ Portuguesa ■ Polski ■ русский язык (Russian) ■ Svenska ■ Türkçe ■ 中文 (Chinese) ■ 日本語 (Japanese) ■ 한국어 (Korean) ■ tiếng Việt (Vietnamese) ■ čeština (Czech)	English

4.6.2 "Web server" submenu

Navigation

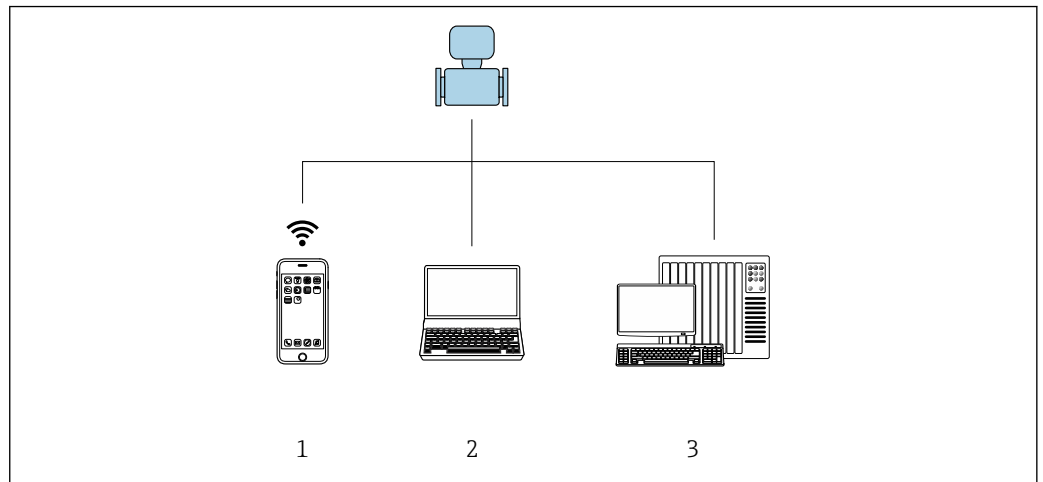
"Expert" menu → Communication → Web server



Parameter overview with brief description

Parameter	Description	Selection	Factory setting
Web server language	Set web server language.	■ English ■ Deutsch ■ Français ■ Español ■ Italiano ■ Nederlands ■ Portuguesa ■ Polski ■ русский язык (Russian) ■ Svenska ■ Türkçe ■ 中文 (Chinese) ■ 日本語 (Japanese) ■ 한국어 (Korean) ■ tiếng Việt (Vietnamese) ■ čeština (Czech)	English
Web server functionality	Switch the Web server on and off.	■ Off ■ HTML Off ■ On	On
Login page	Select format of login page.	■ Without header ■ With header	With header

5 Operation options



A0031139

4 Example of a Proline flowmeter with an integrated web server

- 1 Mobile end device with web browser (e.g. Internet Explorer) and WLAN interface
- 2 Computer with web browser (e.g. Internet Explorer), connection via cable or WLAN interface
- 3 Control station via network

5.1 Logging on

The screenshot shows the web interface of the Proline flowmeter. It features a header with the Endress+Hauser logo. The main content area includes a 'Login' section with a 'Web server language' dropdown menu set to 'English'. Below this, there are fields for 'Access Status', 'Maintenance', and 'Enter access code'. A 'Login' button is positioned below the 'Enter access code' field. At the bottom, there is a 'Reset access code' button. Numbered callouts (1-10) point to various elements: 1. Device picture, 2. Device name field, 3. Device tag field, 4. Signal Status field, 5. Current measured values section, 6. Web server language dropdown, 7. Maintenance field, 8. Access code input field, 9. Login button, and 10. Reset access code button.

A0053670

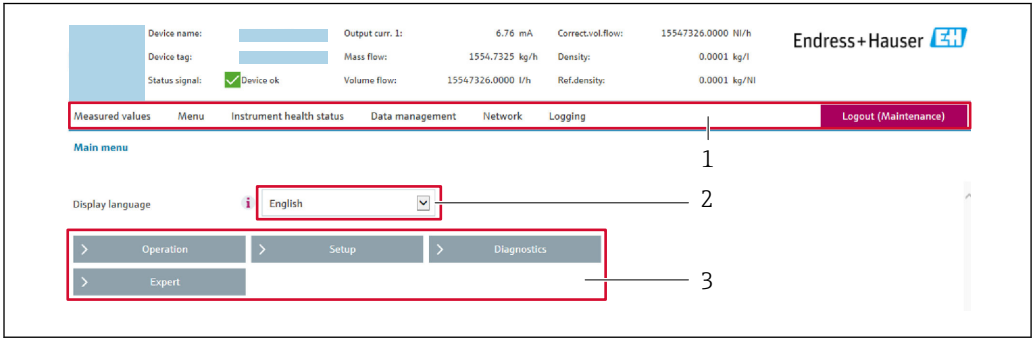
- 1 Picture of device
- 2 Device name
- 3 Device tag
- 4 Status signal
- 5 Current measured values
- 6 Web server language
- 7 User role
- 8 Access code
- 9 Login
- 10 Reset access code

1. Select the required operating language for the web browser (6).
2. Enter the user-specific access code (8).
3. Confirm entry with **Login**(9).

Access code	0000 (factory setting); can be changed by customer
-------------	--

 If no action is performed for 10 minutes, the Web browser automatically returns to the login page.

5.2 User interface



A0029418

- 1 Function row
- 2 Local display language
- 3 Navigation area

5.2.1 Header

The following information appears in the header:

- Device name
- Device tag
- Device status with status signal →  33
- Current measured values

5.2.2 Function row

Functions	Meaning
Measured values	Displays the measured values of the device
Menu	■ Access to the operating menu from the measuring device ■ The structure of the operating menu is the same as for the local display  Detailed information on the operating menu structure: Description of Device Parameters
Device status	Displays the diagnostic messages currently pending, listed in order of priority
Data management	Data exchange between computer and measuring device: ■ Device configuration: ■ Load settings from the device (XML format, save configuration) ■ Save settings to the device (XML format, restore configuration) ■ Logbook - Export Event logbook (.csv file) ■ Documents - Export documents: ■ Export backup data record (.csv file, create documentation of the measuring point configuration) ■ Verification report (PDF file, only available with the "Heartbeat Verification" application package) ■ Firmware update - Flashing a firmware version

Functions	Meaning
Network	Configuration and checking of all the parameters required for establishing the connection to the measuring device: ▪ Network settings (e.g. IP address, MAC address) ▪ Device information (e.g. serial number, firmware version)
Logout	End the operation and call up the login page

5.2.3 Navigation area

The menus, the associated submenus and parameters can be selected in the navigation area.

5.2.4 Working area

Depending on the selected function and the related submenus, various actions can be performed in this area:

- Configuring parameters
- Reading measured values
- Calling up help text
- Starting an upload/download

5.3 Logging out

 Before logging out, perform a data backup via the **Data management** function (upload configuration from device) if necessary.

1. Select the **Logout** entry in the function row.
↳ The home page with the Login box appears.
2. Close the Web browser.
3. If no longer needed:
Reset the modified properties of the Internet protocol (TCP/IP) →  18.

 If communication with the web server was established via the default IP address 192.168.1.212, DIP switch no. 10 must be reset (from **ON** → **OFF**). Afterwards, the IP address of the device is active again for network communication.

5.4 Addressing Ethernet-based fieldbuses

5.4.1 Setting the device address

The IP address of the measuring device can be configured for the network via DIP switches.

Addressing data

IP address and configuration options			
1st octet	2nd octet	3rd octet	4th octet
192.	168.	1.	XXX
↓		↓	
Can only be configured via software addressing		Can be configured via software addressing and hardware addressing	
IP address range		1 to 254 (4th octet)	
IP address broadcast		255	

Addressing mode ex works	Software addressing; all DIP switches for hardware addressing are set to OFF.
IP address ex works	DHCP server active

i Software addressing: The IP address is entered via the **IP address** parameter.

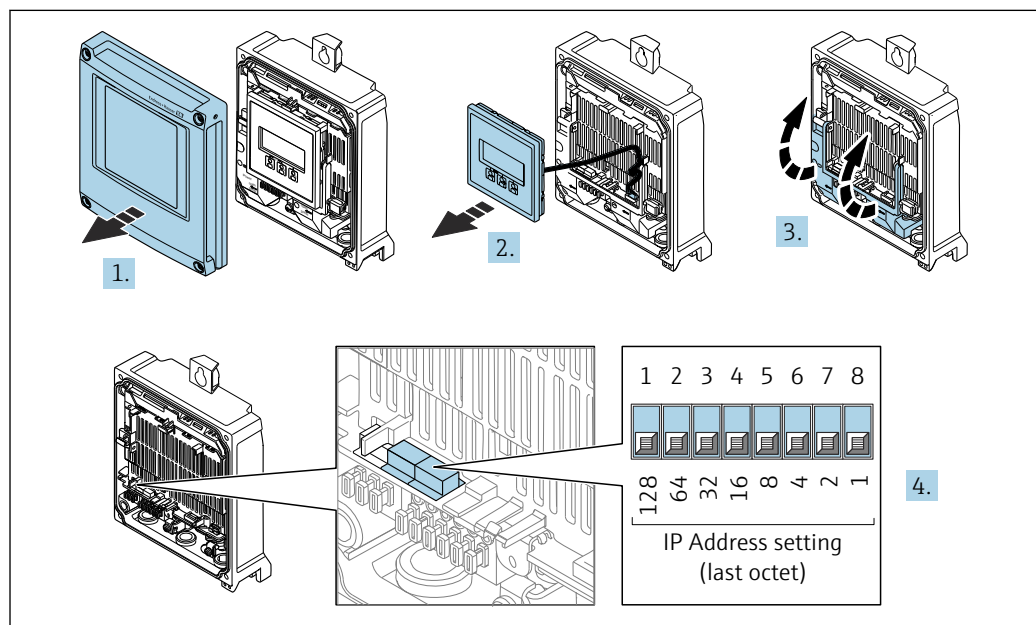
Setting the IP address: Proline 500 - digital

⚠ DANGER

Risk of electric shock from live parts!

- ▶ Never open the measuring device when it is connected to the supply voltage.
- ▶ Disconnect the measuring device from the power supply.
- ▶ The information and safety instructions in the Operating Instructions pertaining to the measuring device must also be observed → 4.

i The default IP address may **not** be activated → 29.



A0029678

1. Loosen the 4 fixing screws on the housing cover.
2. Open the housing cover.
3. Fold open the terminal cover.
4. Set the desired IP address using the corresponding DIP switches on the I/O electronics module.
5. Reassemble the transmitter in the reverse order.
6. Reconnect the device to the power supply.
 - ↳ The configured device address is used once the device is restarted.

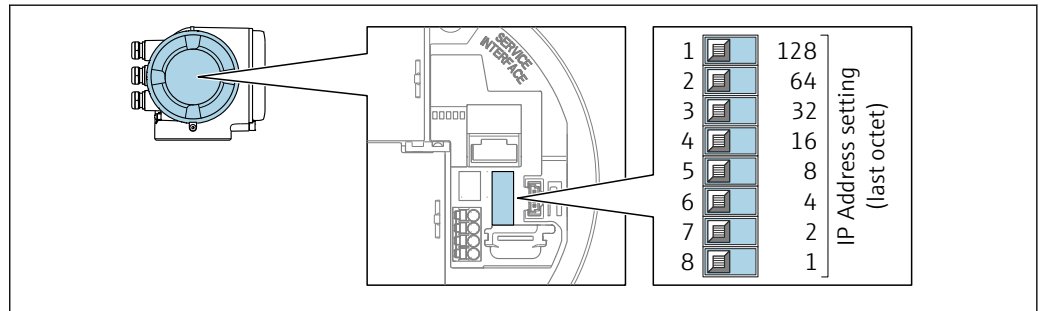
Setting the IP address: Proline 500

⚠ DANGER

Risk of electric shock from live parts!

- ▶ Never open the measuring device when it is connected to the supply voltage.
- ▶ Disconnect the measuring device from the power supply.
- ▶ The information and safety instructions in the Operating Instructions pertaining to the measuring device must also be observed → 4.

i The default IP address may **not** be activated → 29.



A0029635

1. Depending on the housing version:
Loosen the securing clamp or fixing screw of the housing cover.
2. Depending on the housing version:
Unscrew or open the housing cover and disconnect the local display from the main electronics module where necessary.
3. Set the desired IP address using the corresponding DIP switches on the I/O electronics module.
4. Reassemble the transmitter in the reverse order.
5. Reconnect the device to the power supply.
↳ The configured device address is used once the device is restarted.

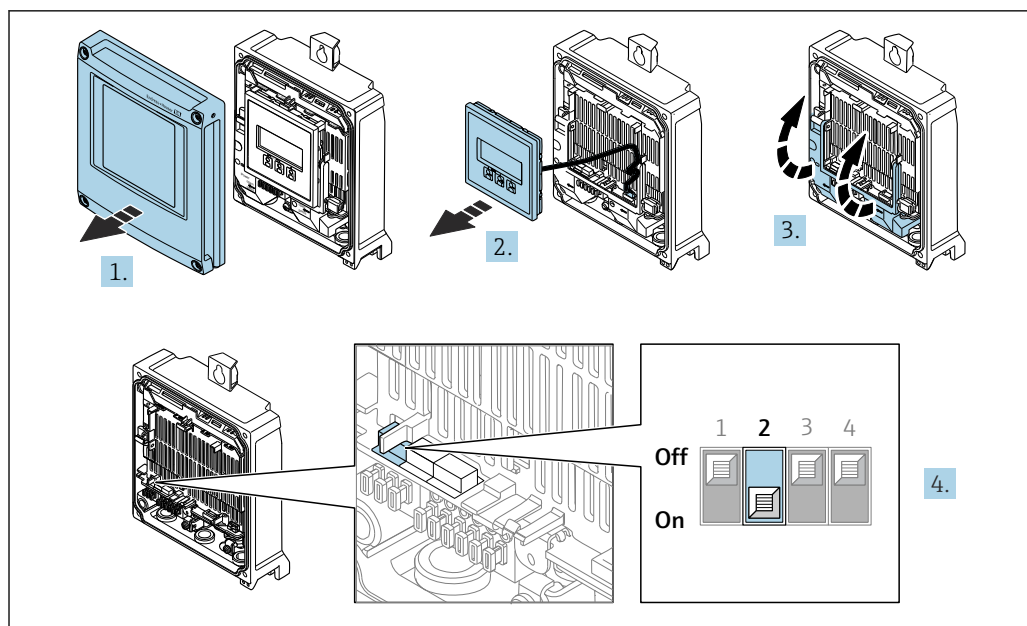
5.4.2 Activating the default IP address

Activating the default IP address by DIP switch: Proline 500 - digital

⚠ DANGER

Risk of electric shock from live parts!

- ▶ Never open the measuring device when it is connected to the supply voltage.
- ▶ Disconnect the measuring device from the power supply.
- ▶ The information and safety instructions in the Operating Instructions pertaining to the measuring device must also be observed → 4.



A0034500

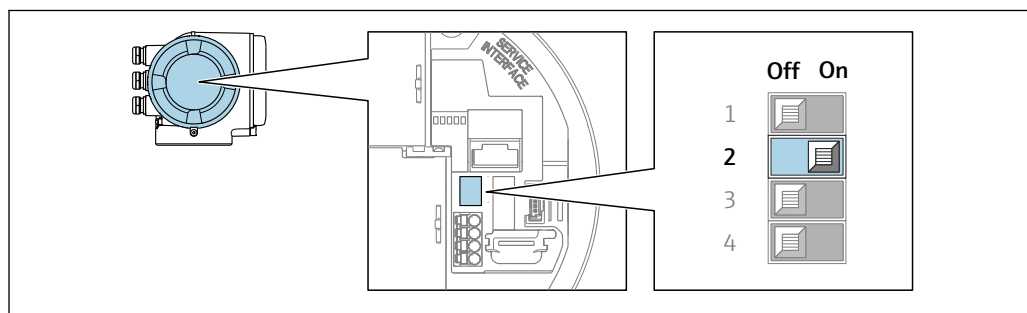
1. Loosen the 4 fixing screws on the housing cover.
2. Open the housing cover.
3. Fold open the terminal cover.
4. Set DIP switch no. 2 on the I/O electronics module from **OFF** → **ON**.
5. Reassemble the transmitter in the reverse order.
6. Reconnect the device to the power supply.
 - ↳ The default IP address is used once the device is restarted.

Activating the default IP address via the DIP switch: Proline 500

⚠ DANGER

Risk of electric shock from live parts!

- ▶ Never open the measuring device when it is connected to the supply voltage.
- ▶ Disconnect the measuring device from the power supply.
- ▶ The information and safety instructions in the Operating Instructions pertaining to the measuring device must also be observed → 4.



A0034499

1. Depending on the housing version:
Loosen the securing clamp or fixing screw of the housing cover.
2. Depending on the housing version:
Unscrew or open the housing cover and disconnect the local display from the main electronics module where necessary.
3. Set DIP switch no. 2 on the I/O electronics module from **OFF** → **ON**.
4. Reassemble the transmitter in the reverse order.

5. Reconnect the device to the power supply.
 - ↳ The default IP address is used once the device is restarted.

6 Diagnostics and troubleshooting



For details on the diagnostic information, see the Operating Instructions for the device → 4.

6.1 General web server troubleshooting

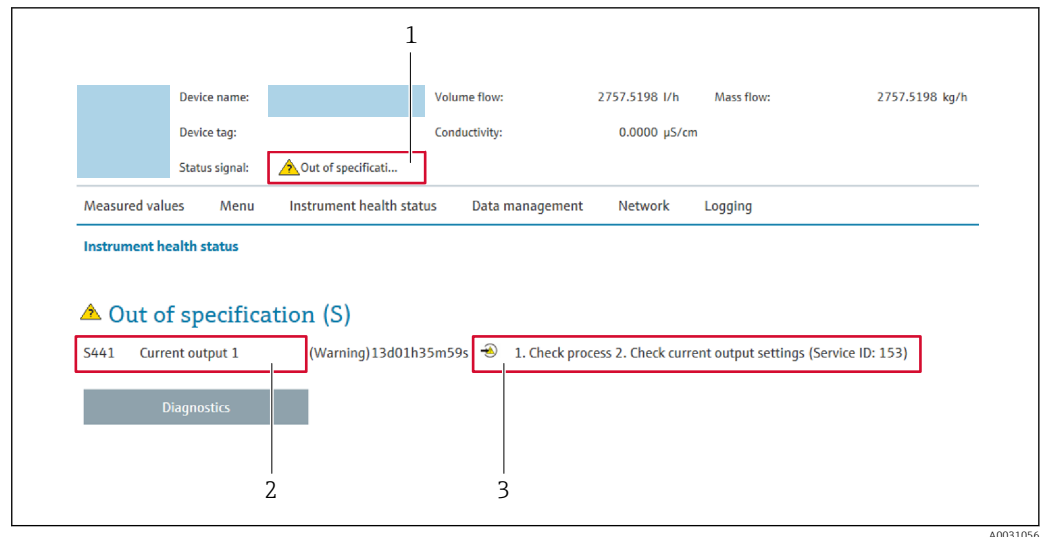
For access

Problem	Possible causes	Remedy
No connection to web server.	Web server is disabled.	Using the "FieldCare" or "DeviceCare" operating tool, check whether the Web server of the measuring device is enabled, and enable it if necessary.
	Incorrect settings for the Ethernet interface of the computer.	1. Check the properties of the Internet protocol (TCP/IP) → 18. 2. Check the network settings with the IT manager.
No connection to web server.	Incorrect WLAN access data.	- Check WLAN network status. - Log on to the device again using WLAN access data. - Check that WLAN is enabled on the measuring device and operating device .
	WLAN communication is disabled.	–
Not connecting to web server, FieldCare or DeviceCare.	No WLAN network available.	- Check if WLAN reception is present: LED on display module is lit blue - Check if WLAN connection is enabled: LED on display module flashes blue - Switch on instrument function.
Network connection not present or unstable.	WLAN network is weak.	- Operating device is outside of reception range: Check network status on operating device. - To improve network performance, use an external WLAN antenna.
	Parallel WLAN and Ethernet communication.	- Check network settings. - Temporarily enable only the WLAN as an interface.
Web browser is frozen and operation no longer possible.	Data transfer is active.	Wait until data transfer or current action is finished.
	Connection lost	1. Check cable connection and power supply. 2. Refresh the Web browser and restart if necessary.
Content of web browser is incomplete or difficult to read.	Not using optimum version of Web server.	1. Use the correct Web browser version . 2. Clear the Web browser cache and restart the Web browser.
	Unsuitable view settings.	Change the font size/display ratio of the Web browser.
No or incomplete display of contents in the web browser.	- JavaScript is not enabled - JavaScript cannot be enabled	1. Enable JavaScript. 2. Enter http://XXX.XXX.X.XX/servlet/basic.html as the IP address.

6.2 Diagnostic information in the Web browser

6.2.1 Diagnostic options

Any faults detected by the measuring device are displayed in the Web browser on the home page once the user has logged on.



- 1 Status area with status signal
- 2 Diagnostic information
- 3 Remedial measures with service ID

i In addition, diagnostic events which have occurred can be shown in the **Diagnostics** menu:

- Via parameter
- Via submenu

Status signals

The status signals provide information on the state and reliability of the device by categorizing the cause of the diagnostic information (diagnostic event).

Symbol	Meaning
	Failure A device error has occurred. The measured value is no longer valid.
	Function check The device is in the service mode (during a simulation, for example).
	Out of specification The device is being operated: Outside its technical specification limits (e.g. outside the process temperature range)
	Maintenance required Maintenance is required. The measured value is still valid.

i The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107.

6.2.2 Calling up remedy information

Remedy information is provided for every diagnostic event to ensure that problems can be rectified quickly. These measures are displayed in red along with the diagnostic event and the related diagnostic information.

6.3 Diagnostic information in the measuring device

6.3.1 Overview of Web server information events

Unlike a diagnostic event, an information event is displayed in the event logbook only and not in the diagnostic list.

Information event	Event text
I1000	----- (device OK)
I1110	Write protection switch changed
I1361	Web server login failed
I1627	Web server login successful
I1631	Web server access changed

6.4 Checking the network connection

The network connection between the computer and measuring device can be checked using the "ping" utility of the Internet Control Message Protocol (ICMP).

 The "ping" utility sends an ICMP(v6) "echo request" packet (ping, ICMP packet type 8 (0x08)) to the target address of the measuring device. According to the protocol specification, the measuring device must send back a response: ICMP "echo reply" (pong, ICMP packet type 0 (0x00)).

1. Click *Start* (Windows icon).
 - ↳ The Start screen opens along with the search field.
2. In the search field, enter "cmd" (command).
 - ↳ A link to "cmd.exe" is displayed in the results field.
3. Select the "cmd.exe" link.
 - ↳ A new command window opens.
4. Enter ping and the IP address, e.g.: ping 192.168.1.212
 - ↳ The network connection status is displayed.

 Depending on the operating system used, or the version of the operating system, other tools can also be used, such as Powershell.exe, prompt etc.

If the measuring device cannot be reached the router responsible delivers the following response:

- "Network unreachable"
- or
- "Host unreachable"

1. Check the IP address settings →  17.
2. Check whether the Web server is enabled →  17.

7 Technical data

Web server	Stack: standard TCP stack with IPv4 functionality
Connection and session management	▪ Open ports: ▪ 80 (HTTP for Web server) ▪ 8000 (for Endress+Hauser Service communication) ▪ Only one connection possible at any one time via Hypertext Transfer Protocol (HTTP) ▪ Time out after 10 minutes
Supported functions	▪ Java Script ▪ Hypertext Markup Language (HTML) ▪ Cascading Style Sheets (CSS)
Functions not supported	▪ Domain Name System (DNS) ▪ Hyper Text Transfer Protocol Secure (HTTPS)



www.addresses.endress.com
