Special Documentation Web server for J22 and JT33 TDLAS gas analyzers

Web server platform







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1 About this document

1.1 Document function

This manual is a Special Documentation and does not replace the Operating Instructions included in the scope of supply. It serves as a reference for using the web server integrated in the measuring device.

1.2 Symbols

1.2.1 Safety symbols

Structure of Information Meaning							
	WARNING		This symbol alerts you to a dangerous situation. Failure to avoid				
Cause	s (/conseque	nces)	the dangerous situation can result in a fatal or serious injury.				
Conse	quences of nor	ncompliance (if applicable)					
► Corr	ective action						
	CAUTION		This symbol alerts you to a dangerous situation. Failure to avoid				
Cause	Causes (/consequences)		this situation can result in minor or more serious injuries.				
Conse	quences of noi	ncompliance (if applicable)					
► Corr	ective action						
	NOTICE		This symbol alerts you to situations which may result in damage				
Cause	/situation	to property.					
Conse	quences of noi	ncompliance (if applicable)					
► Acti	on/note						

1.2.2 Symbols for certain types of information

Symbol	Meaning
\checkmark	Permitted
	Procedures, processes or actions that are permitted.
×	Forbidden
	Procedures, processes or actions that are forbidden.
i	Tip
	Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
	Notice or individual step to be observed
1., 2., 3	Series of steps
L	Result of a step

1.2.3 Symbols in graphics

Symbol	Meaning
1, 2, 3	Item numbers
A, B, C,	Views
A-A, B-B, C-C,	Sections

1.3 Target group

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

1.4 Using this document

This Special Documentation contains a range of information, including:

- Prerequisites for use on the computer and measuring device
- Connection of the computer through the service interface, WLAN interface or Ethernet-based fieldbus
- 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.

1.5 Documentation

All documentation is available:

- On the media device supplied (not included in the delivery for all device versions)
- On the Endress+Hauser mobile app: www.endress.com/supporting-tools
- In the Downloads area of the Endress+Hauser website: www.endress.com/downloads

This document is an integral part of the document package, which includes:

Document title	Documentation code
J22 Technical Information	TI01607C
J22 Safety Instructions	XA02708C
J22 Operating Instruction	BA02152C
JT33 Operating Instructions	BA02297C
JT33 Brief Operating Instructions	KA01655C
JT33 Technical Information	TI01722C
JT33 Safety Instructions	XA03137C
J22 and JT33 Description of Device Parameters	GP01198C
Heartbeat technology for J22 and JT33 TDLAS gas analyzers Special Documentation	SD02912C
Validation of TDLAS gas analyzers	SD03286C

2 Safety

Each analyzer shipped from the factory includes Safety Instructions and documentation to the responsible party or operator of the equipment for the purpose of installation and maintenance.

WARNING

Technicians are expected to be trained and to follow all safety protocols, established by the customer in accordance with the area hazard classification, to service or operate the analyzer.

This may include but is not limited to toxic and flammable gas monitoring protocols, lockout/tagout procedures, personal protective equipment (PPE) requirements, hot work permits, and other precautions that address safety concerns related to the use and operation of process equipment located in hazardous areas.

2.1 Personnel qualifications

Personnel must meet the following conditions for mounting, electrical installation, commissioning, and maintenance of the device. This includes but is not limited to:

- Suitably qualified for their role and the tasks they perform
- Understand the general principles and types of protection and markings
- Understand the aspects of equipment design which affect the protection concept
- Understand the content of certificates and relevant parts of IEC 60079-14
- General understanding of inspection and maintenance requirements of IEC 60079-17
- Familiar with the techniques used in the selection and installation of equipment referenced in IEC 60079-14
- Understand the additional importance of permit to work systems and safe isolation in relation to explosion
 protection
- Familiar with national and local regulations and guidelines, such as ATEX/IECEx/UKEX and cCSAus
- Familiar with lockout/tagout procedures, toxic gas monitoring protocols, and personal protective equipment (PPE) requirements

WARNING

Substitution of components is not permitted.

• Substitution of components may impair intrinsic safety and alter Ex d ratings for non-intrinsic assemblies.

2.2 Product safety

The TDLAS gas analyzer 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 that is safe to operate.

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

2.3 Designated use

The designated use of the measuring device is described in the TDLAS gas analyzer Operating Instructions pertaining to the device.

2.4 IT security

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

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

2.5 Device-specific IT security

The device offers a range of specific commands to support protective measures on the operator's side. These commands can be configured by the user and guarantee greater operational safety if used correctly. An overview of the most important commands is provided in the following section.

Command/interface	Factory setting	Recommendation
Write protection from hardware write protection switch	Not enabled	On an individual basis following risk assessment
Access code (also applies for web server login)	Not enabled (0000)	Assign a custom 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)	Serial number	Assign an individual WLAN passphrase during commissioning.
WLAN mode	Access Point	On an individual basis following risk assessment
Web server	Enabled	On an individual basis following risk assessment
CDI-RJ45 service interface	_	On an individual basis following risk assessment

2.5.1 Protecting access through hardware write protection

Write access to the device parameters from the local display and the web browser can be disabled with a write protection switch (DIP switch on the motherboard). When hardware write protection is enabled, only read-only access to the parameters is possible.

Hardware write-protection is disabled when the device is delivered.

Set the write protection (WP) switch No. 1 on the main electronics module to the **ON** position.



Figure 1: Off/on DIP switch for write protection

2.5.2 Protecting access through a password

Different passwords are available through the WLAN interface to protect write access to the device parameters or access to the device,

- **User-specific access code.** Protect write access to the device parameters from the local display or web browser. Access authorization is clearly regulated with a user-specific access code.
- WLAN passphrase. The network key through the WLAN interface protects a connection between an operating unit (e.g., notebook or tablet) and the device; this 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.

2.5.3 User-specific access code

Write access to the device parameters through the local display and web browser 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).

2.5.4 Access through web server

The device can be operated and configured through a Web browser with the integrated Web server. The connection is through the service interface (CDI-RJ45), the connection for TCP/IP signal transmission (RJ45 connector) or the WLAN interface. The Web server is enabled when the device is delivered. The Web server can be disabled if necessary (e.g., after commissioning) through the **Web server commandality** parameter. See *JT33 TDLAS gas analyzer Operating Instructions (BA02297C)* for more information.

2.5.5 Access through service interface

The device can be accessed from the service interface (CDI-RJ45). Device-specific commands guarantee the secure operation of the device in a network.

NOTICE

Connection to the service interface (CDI-RJ45) are only be permitted by trained personnel on a temporary basis for the purpose of test, repair, or overhaul of the equipment, and only if the area where the equipment is to be installed is known to be non-hazardous.

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.

3 Product description

3.1 Product features

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

A device that has a WLAN interface (can be ordered as an option) is required for the WLAN connection.

3.2 Availability

The integrated Web server is a standard feature. No particular measures are required to put the feature into operation.

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 commands, for the measuring device. The service interface (CDI-RJ45) has the following identification:



Figure 2: Example of the CDI-RJ45 service interface

# Description 1 Symbol for service interface	
1 Symbol for service interface	
2	Information on the default setting for the WLAN IP address

4 Commissioning

Establishing a connection to the integrated Web server

- 1. Configure the computer $\rightarrow \square$.
- 2. Check the *settings on the measuring device* $\rightarrow \square$ and change them if necessary.
- 3. Connecting the computer to the measuring device $\rightarrow \cong$.
- 4. Establish a connection to the web server $\rightarrow \square$.
- 5. *Starting the Web browser* $\rightarrow \cong$ and access the operating menu.
 - → The measuring device can be operated through the Web server.

4.1 Computer requirements

4.1.1 Computer hardware

Hardware	Interface				
	CDI-RJ45	WLAN			
CDI-RJ45 Interface The computer must have an RJ45 interface. Connection Standard Ethernet cable with RJ45 connector. Screen Becommended size: >12 in depending on the		The operating unit must have a WLAN interface.			
Connection	Standard Ethernet cable with RJ45 connector.	Connection through Wireless LAN.			
Screen	Recommended size: ≥12 in, depending on the screen resolution				

4.1.2 Computer software

Software	Interface	erface		
	CDI-RJ45	WLAN		
Recommended operating systems	Microsoft Windows 7 or higherMobile operating systems			
	iOSAndroid			
Web browsers supported	 Microsoft Internet Explorer 8 or higher Microsoft Edge Mozilla Firefox Google Chrome Safari 			

4.1.3 Computer settings

Sottings	Interface			
Setungs	CDI-RJ45	WLAN		
User rights	Appropriate user rights, such as administrator rights, for TCP/IP and proxy server settings are necessary for adjusting the IP address, subnet mask, and other settings.			
Proxy server settings of the Web browser	The web browser setting Use a Proxy Server for Your LAN must be deselected.			
JavaScript	JavaScript must be enabled. If JavaScript cannot be enabled, enter http://192.168.1.212/basic.html in the address line of the web browser. A fully functional but simplified version of the operating menu starts in the web browser.			
	When installing a new firmware version: To enable correct data display, clear the temporary memory of the web browser under Internet options .			
Network connections	Only the active network connections to the measuring device can be used.			
	Switch off all other network connections such as WLAN.Switch off all other network connections.			

4.2 Configuring IP settings for Windows

- 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.

adapter - All Control Panel Iten	6				-	×
> 🖬 > Control P	anel > All Control Pan	ltems v	ۍ ه	dapter		>
e Edit View Tools						
Devices and Printer	rs					
Network and Shari View network computers View network connection	ng Center and devices s					
Search Windows Help and Sup	port for "adapter"					

Figure 3: 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 View network connections under Network and Sharing Center.

└ This opens a new window with the network connections.

E Network Connections	- 🗆 ×
$\leftrightarrow \rightarrow \checkmark \star$ E > Control Panel \rightarrow Network and Internet \rightarrow Network Connections	
Organize 🔻 Disable this network device Diagnose this connection Rename this connection View status of this connection	Change settings of this connection 🗧 😴 🔹 🚺 💡
Ethernet Network cable unplugged Realtek PCI GbE Family Controller	Bluetooth Network Connection Not connected Bluetooth Device (Personal Area
	A0024293

- Figure 4: Network connections
- 5. In this window, select the *Local Area Connection (LAN)*.6. Right-click to open the picklist and select **Properties**.
 - ← The Local Area Connection Properties dialog box opens.

Ethernet 2 Properties	×	
Networking Sharing		
Connect using:		
TN9710P 10GBase-T/NBASE-T Ethemet Adapter		
Configure This connection uses the following items:		
Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.		
OK Cancel	24300	

Figure 5: Local Area Connection Properties dialog box

- 7. Select Internet Protocol Version 4 (TCP/IPv4).
- 8. Click **Properties**.

└⊷ '	The Internet Protoco	ol Version 4	(TCP/IPv4)	Properties	window opens.
------	----------------------	--------------	------------	------------	---------------

Internet Protocol Version 4 (TCP/IPv4)	Properties	×		
General				
You can get IP settings assigned auton this capability. Otherwise, you need to for the appropriate IP settings.	natically if your network supports ask your network administrator			
Obtain an IP address automatical	у			
• Use the following IP address:				
IP address:	192.168.10.10			
Subnet mask:	255.255.255.0			
Default gateway:				
Obtain DNS server address automatically				
Use the following DNS server add	resses:			
Preferred DNS server:				
Alternate DNS server:				
Validate settings upon exit	Advanced			
	OK Cancel			
Figure 6: Internet	Protocol Version 4	024309		

- 9. In the General tab, select **Use the Following IP Address**.
- 10. Enter the IP address, subnet mask and default gateway as indicated in the following table and then click **Ok** to confirm.

IP address	192.168.1.XXX; for XXX all numerical sequences except: 0, 212 and 255 \rightarrow 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 these standard settings and must be changed if necessary.

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 **Internet Options**.

└ The Internet properties window displays.



Figure 7: Selecting LAN Settings

- 3. Select the **Connections** tab.
- 4. Under Local Area Network Settings click LAN Settings.
 - └► The Local Area Network Settings window displays.

Automatic con	figuration			
Automatic con use of manual	figuration may ove settings, disable a	rride man utomatic o	ual setting configurati	is. To ensure the
Automatica	ally detect settings			
Use autom	atic configuration s	cript		
Address				
Use a prox	y server for your L /PN connections).	AN (These	e <mark>se</mark> ttings	will not apply to
ular-up or v	35 192 168 49	Port:	80	Advanced
Address:	55.152.100.15			
Address:	proxy server for lo	ocal addre	sses	

Figure 8: Deselecting Proxy usage

5. Deselect Use a Proxy Server for Your LAN and then click Ok.

4.3 Measuring device requirements

4.3.1 Enabling the Web server

The Web server must be enabled in the measuring device (factory setting). If the Web server is disabled, it can be enabled again through the *Web server commandality parameter* $\rightarrow \square$. To do so, users can choose from the following operation options:

- Local display
- Operating tool

4.3.2 Determining the IP address of the measuring device

The IP address of the measuring device is required to establish communication between the measuring device (Web server) and a computer (client). The IP address used depends on the setting of the DIP switches or on the system settings.

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

- **Dynamic Host Configuration Protocol (DHCP), factory setting.** The IP address is automatically assigned to the measuring device by the automation system (DHCP server).
- Hardware addressing. The IP address is set through DIP switches.
- **DIP switch for "Default Ethernet Network Settings".** For establishing the network connection through the service interface (CDI-RJ45). The fixed IP address 192.168.1.212 is used.

	Determine IP address settings through parameters or DIP switches		
ip address assigned or specified through:	Local display (if available)	DIP switches in electronics compartment	
Dynamic Host Configuration Protocol (DHCP), factory setting			
Hardware addressing of the IP address through DIP switches			
Software addressing of the IP address through 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 $\rightarrow \square$.

Using the local display or an operating tool

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

4.4 Connecting the computer to the measuring device

The measuring device can be connected to the computer through:

- Service interface (CDI-RJ45)
- Modbus TCP protocol

4.4.1 Service interface connection (CDI-RJ45)

Preparing the measuring device

1. Depending on the housing version:

- Release the securing clamp or securing screw of the housing cover, or
- Unscrew or open the housing cover.
- └ The location of the connection socket depends on the measuring device and the communication protocol.
- 2. Connect the computer to the *RJ*45 connector $\rightarrow \square$ with a standard Ethernet cable.

Configuring the Internet protocol of the computer

NOTICE

Risk of electric shock! Components carry dangerous voltages!

- Never open the measuring device while it is connected to the supply voltage.
- The information and Safety Instructions in the Operating Instructions pertaining to the measuring device must always be observed.

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

- Dynamic Host Configuration Protocol (DHCP), factory setting. The IP address is automatically assigned to the measuring device by the automation system (DHCP server).
- Hardware addressing. The IP address is set through DIP switches.
- **Software addressing.** The IP address is entered through the *IP address parameter* $\rightarrow \triangleq$.
- **DIP switch for Default IP address.** To establish the network connection through the service interface (CDI-RJ45), the fixed IP address 192.168.1.212 is used.

The measuring device works with the Dynamic Host Configuration Protocol (DHCP), on leaving the factory, i.e., the IP address of the measuring device is automatically assigned by the automation system (DHCP server).

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

If the IP address of the measuring device is assigned through hardware or software addressing and the IP address is known, the network connection can also be established directly through the *Ethernet network* $\rightarrow \cong$.

- 1. With DIP switch 2, activate the default IP address 192.168.1.212:.
- 2. Turn on the measuring device.
- 3. Connect to the computer using a cable.
- 4. If a second network card is not used, close all the applications on the notebook.
 - Ensure all applications requiring Internet or a network, such as e-mail, SAP applications, Internet or Windows Explorer are closed.
- 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 \rightarrow e.g., 192.168.1.213
Subnet mask	255.255.255.0
Default gateway	192.168.1.212 or leave cells empty

4.4.2 Modbus TCP connection

If the IP address of the measuring device is assigned through hardware or software addressing, the network connection can be established directly through the Ethernet network.

The device is configured at the factory to work with the Dynamic Host Configuration Protocol (DHCP), i.e., the IP address of the measuring device is automatically assigned by the automation system (DHCP server). To establish a network connection through the service interface (CDI-RJ45): the Default Ethernet network settings DIP switch must be set to **ON**. The measuring device then has the fixed IP address: 192.168.1.212.

This address can now be used to establish the *network connection* $\rightarrow \square$.



Figure 9: Ethernet-based fieldbus system

#	Description
1	Automation system, e.g., "RSLogix" (Rockwell Automation)
2	Workstation for measuring device operation: with Add-on Profile Level 3 for "RSLogix 5000" (Rockwell Automation) or with Electronic Data Sheet (EDS)
3	Computer with Web browser (e.g., Internet Explorer) for accessing the integrated device Web server
4	Ethernet switch
5	TDLAS gas analyzer

4.5 Establishing a connection to the web server

4.5.1 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* $\rightarrow \cong$.
- The computer used meets the requirements for *hardware and software* $\rightarrow \square$.
- The measuring device and computer *are connected* $\rightarrow \square$ to one another.
- The measuring device is switched on.

4.5.2 Starting the Web browser

If JavaScript cannot be enabled, enter http://192.168.1.212/basic.html in the address line of the Web browser. A fully functional but simplified version of the operating menu starts in the Web browser.

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.
 - \vdash The login page appears.

The IP address of the measuring device is not known.

1. Start the Web browser on the computer.

- 2. Do one of the following:
 - Read out the IP address through local operation (Diagnostics \rightarrow Device information \rightarrow IP address), or

- Set the upper DIP switch No. 2 to **ON**.
- 3. Restart the device.
- 4. Enter the default IP address 192.168.1.212 .
 - └► The login page appears.

If a login page does not appear, or if the page is incomplete, refer to *General Web server troubleshooting* $\rightarrow \square$.

4.6 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). There are various options to assign or specify the IP address depending on the hardware and software settings.

Assign or specify the IP address through:	Description
DHCP (Dynamic Host Configuration Protocol) ¹	 The measuring device is automatically assigned the IP address by the automation system. Set the <i>DHCP client</i> → parameter.
Hardware addressing	 The measuring device uses the IP address configured through the "IP address setting" DIP switches. "IP address setting" DIP switch = ON/OFF, depending on the address.
Software addressing	The measuring device uses the IP address configured in the <i>IP address parameter</i> $\rightarrow \square$.
Use of the DIP switch: Default Ethernet Network Settings ²	 The measuring device uses the fixed IP address: 192.168.1.212 DIP switch: default Ethernet network settings = ON The device is connected through the CDI-RJ45 service interface. Following a restart, the measuring device can be connected through the CDI-RJ45 service interface or through the Ethernet network. To avoid conflict between IP addresses, the DIP switch can never be used simultaneously on two measuring devices in the same Ethernet network.

4.7 Overview of the Web server parameters

4.7.1 Language

Navigation Operation menu \rightarrow Web server language

Parameter overview with brief description

Parameter	Description	Selection	Factory setting
Web server language	Set web server language.	 English Français³ Italiano³ русский язык (Russian)³ 中文 (Chinese)³ 	English

4.7.2 Web server submenu

Navigation	Expert menu \rightarrow Communication \rightarrow Web server
	 ▶ Communication ▶ Web server

¹ Factory setting

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

Web server language	
MAC address	
DHCP client	
IP address	
Subnet mask	
Default gateway	
Web server commandality	
Login page	

Parameter overview with brief description

Parameter	Description	Selection / User interface / User entry	Factory setting
Web server language	Set web server language.	 English Deutsch³ Français Español³ Italiano Nederlands³ Portuguesa³ Polski³ pycский язык (Russian) Svenska Türkçe 中文 (Chinese) 日本語 (Japanese)³ 한국어 (Korean)³ Bahasa Indonesia³ tiếng Việt (Vietnamese)³ čeština (Czech)³ 	English
MAC address	Displays the MAC address of the measuring device. MAC = Media Access Control	Unique 12-digit character string comprising letters and numbers, e.g.: 00:07:05:10:01:5F	Each measuring device is given an individual address.
Default network settings	Select whether to restore network settings.	Off On	Off
DHCP client	Select to activate/deactivate DHCP client commandality. Result If the DHCP client commandality of the Web server is activated, the IP address, Subnet mask and Default gateway are set automatically. I Identification is through the MAC address of the measuring device.	• Off • On	Off

 $^{^{\}rm 3}$ Some languages may not be currently available.

Parameter	Description	Selection / User interface / User entry	Factory setting
IP address	Displays the IP address of the Web server of the measuring device.	4 octet: 0 to 255 (in the particular octet)	192.168.1.212
Subnet mask	Displays the subnet mask.	4 octet: 0 to 255 (in the particular octet)	255.255.255.0
Default gateway	Displays the default gateway.	4 octet: 0 to 255 (in the particular octet)	0.0.0.0
Web server commandality	Switch the Web server on and off.	 Off HTML Off On	On

5 Operation options



Figure 10: Operation options

#	Name
1	Local operation through the display module
2	Computer with Web browser, such as Internet Explorer
3	Mobile device, such as a cellular telephone or tablet, used on the network to access the web server or Modbus
4	Control system, such as PLC

5.1 Logging on



Figure 11: Login page

#	Description	#	Description
1	Picture of device	6	Operating language
2	Device name	7	User role
3	Device tag	8	Access code
4	Status signal	9	Login
5	Current measured values	10	Resetting the 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.

5.1.1 User interface

	Device name:	J22 H20 MB	Concentration:	46.2077	Cell gas press.:	0.9705 bar	Endress+Hauser
	Device tag:	H2O Analyzer	Select calibr.:	1	Cell gas temp.:	89.4295	
	Status signal:	VDevice ok					
Measured val	lues Menu	Instrument health s	status Data managem	ent Network			Logout (Maintenance)
Main menu							
Display la	nguage	i English	1	~			
	Onerables		Cature) Diam	and the		
>	Operation	>	setup	> Diagn	osucs		
>							
							A0029418

Figure 12: Web browser user interface

#	Description
1	Command row
2	Operating language
3	Navigation area

5.1.2 Information pane

The following information appears in the header:

- Device name
- Device tag
- Device status with *status signal* $\rightarrow \cong$
- Current measured values

5.1.3 Menu commands

Command	Meaning
Measured values	Displays the measured values of the measuring device
	 Access to the operating menu from the measuring device
Menu	 The structure of the operating menu is the same as for the local display
	🗊 For detailed information on the structure of the operating menu, see the Operating Instructions for the
	measuring device
Instrument	Displays the diagnostic messages currently pending, listed in order of priority
health status	
	Data exchange between PC 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:
Data	• Export backup data record. .csv file, create documentation of the measuring point configuration.
management	• Verification report. PDF file, only available with the "Heartbeat Verification" application package.
	 Firmware update - Flashing a firmware version
	SD card
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

If a command is selected in the command bar, the submenus of the command open in the navigation area. The user can now navigate through the menu structure.

Depending on the selected command 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

5.2 Logging out

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

1. Click Logout.

└ The home page with the Login field appears.

- 2. Close the Web browser.
- 3. If no longer needed, reset modified properties of *the Internet protocol (TCP/IP)* $\rightarrow \cong$.

If communication with the Web server was established using the default IP address 192.168.1.212, DIP switch No. 10 must be reset (from $ON \rightarrow OFF$). Afterwards, the IP address of the device is active again for network communication.

5.3 Addressing Ethernet-based fieldbuses

5.3.1 Setting the device address

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

Addressing data

IP address and configuration options				
let optot 2nd optot 2nd optot (th optot				
	2110 OCLET	JIU ULLEL	4111 00121	
192.	168.	1.	XXX	
\checkmark			\checkmark	
Can only be configured through software addressing		ware addressing	Can be configured through software addressing and hardware	

1 1	
addre	המוסספ
auur	Johny

IP address range	1 to 254 (4th octet)
IP address broadcast	255
Addressing mode default settings	Software addressing; all DIP switches for hardware addressing are set to OFF.
IP address default settings	DHCP server active

Software addressing: the IP address is entered through the IP address parameter $\rightarrow \square$.

Setting the IP address

NOTICE

Risk of electric shock when opening the transmitter housing.

• Before opening the transmitter housing, disconnect the device from the power supply.



The default IP address may not be activated.



Figure 13: DIP switches for setting the IP address

Preparing the measuring device

1. Depending on the housing version:

- Release the securing clamp or securing screw of the housing cover, or
- Unscrew or open the housing cover.
- disconnect the local display from the main electronics module where necessary.

└→ The location of the connection socket depends on the measuring device and the communication protocol.

- 2. Connect the computer to the *RJ*45 connector $\rightarrow \square$ with a standard Ethernet cable.
- 3. Set the desired IP address using the corresponding DIP switches on the I/O electronics module.
- 4. Reverse the removal procedure to reassemble the transmitter.
- 5. Reconnect the device to the power supply.
 - └→ The configured device address is used once the device is restarted.

5.3.2 Activating the default IP address

The DHCP command is enabled in the device at the factory, i.e., the device expects an IP address to be assigned by the network. This command can be disabled, and the device can be set to the default IP address 192.168.1.212 by DIP switch.

Activating the default IP address through the DIP switch

WARNING

Risk of electric shock when opening the transmitter housing.

• Before opening the transmitter housing, disconnect the device from the power supply.

- 1. Depending on the housing version:
 - Release the securing clamp or securing screw of the housing cover, or
 - Unscrew or open the housing cover.
 - disconnect the local display from the main electronics module where necessary.
 - └→ The location of the connection socket depends on the measuring device and the communication protocol.

2. Set DIP switch No. 2 on the I/O electronics module from OFF \rightarrow **ON**.



Figure 14: Off/on DIP switch for default IP address

- 3. Reverse the removal procedure to reassemble the transmitter.
- 4. 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.

6.1 General Web server troubleshooting

For access

Error	Possible causes	Solution
Not connecting to Web server	Web server disabled	Check whether the Web server of the measuring device is enabled and enable it if necessary.
	Incorrect setting for the Ethernet interface of the computer	1. Check the properties of the Internet protocol (TCP/IP) Internet protocol (TCP/IP) → \square .
		2. Check the network settings with the IT manager.
Not connecting to Web server	 Incorrect IP address IP address is not known 	 If addressing through hardware: open the transmitter and check the IP address configured (last octet). Check the IP address of the measuring device with the network manager. If the IP address is not known, set DIP switch no. 10 to ON, restart the device and enter the factory IP address 192.168.1.212. EtherNet/IP communication is interrupted by enabling the DIP switch.
	Web browser setting "Use a Proxy Server for Your LAN" is enabled	 Disable the use of the proxy server in the Web browser settings of the computer. Using the example of MS Internet Explorer: 1. Under Control Panel open Internet options. 2. Select the Connections tab and then double-click LAN settings. 3. In the LAN settings disable the use of the proxy server and select OK to confirm.
	Apart from the active network connection to the measuring device, other network connections are also being used.	 Ensure no other network connections are established by the computer (also no WLAN) and close other programs with network access. If using a docking station for notebooks, ensure that a network connection to another network is not active.
Web browser frozen	Data transfer active	Wait until data transfer or current action is finished.
and operation no longer possible	Connection lost	Check cable connection and power supply.Refresh the Web browser and restart if necessary.
Content of Web browser incomplete or difficult to read	Not using optimum version of Web server.	 Use the correct Web browser version. 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 not enabledJavaScript cannot be enabled	 Enable JavaScript. Enter http://XXX.XXX.X.XXX/basic.html as the IP address.

A0031056

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.

	Device name:		Volume flow:	2757.5198 l/h	Mass flow:	2757.5198 kg/h
	Device tag:		Conductivity:	0.0000 µS/cm		
	Status signal:	A Out of specificati				
Measured val	ues Menu	Instrument health state	us Data managem	ent Network	Logging	
Instrument health status						
▲ Out of specification (S)						
A Out o	f specifica	ition (S)				
S441 Cum	f specifica	(Warning)13d01h3	15m59s 🕘 1. Check	process 2. Check curre	nt output settings	(Service ID: 153)
S441 Cum	f specifica	(Warning)13d01h3	15m59s 🛞 1. Check	process 2. Check curre	ent output settings ((Service ID: 153)
S441 Cum	f specifica ent output 1 Diagnostics	Warning)13d01h3	15m59s 🖶 1. Check	process 2. Check curre	ent output settings ((Service ID: 153)
S441 Cum	f specifica ent output 1 Diagnostics	(Warning) 13d01h3	15m59s 🖶 1. Check	process 2. Check curre	nt output settings ((Service ID: 153)

Figure 15: Diagnostic information in the web browser

#	Name
1	Status area with status signal
2	Diagnostic information. Refer to the Operating Instructions.
3	Remedy information with Service ID

- In addition, diagnostic events which have occurred can be shown in the **Diagnostics** menu:
 - Through parameter
 - Through 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
A0042947	Failure. A device error has occurred. The measured value is no longer valid.
A0017278	Command check. The device is in service mode (e.g., during a simulation).
A0017277	Out of specification. The device is operated outside its technical specification limits (e.g., outside the process temperature range)
A0017276	Maintenance required. Maintenance is required. The measured value is still valid.

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).

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, such as the Powershell.exe prompt, can also be used.

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 $\rightarrow \square$.
- 2. Check whether the Web server is *enabled* $\rightarrow \cong$.

7 Technical data

Web server	Stack: standard TCP stack with IPv4 commandality
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 through Hypertext Transfer Protocol (HTTP) Time out after 10 minutes
Supported commands	 Java Script Communication protocol: Dynamic Host Configuration Protocol (DHCP) Hypertext Markup Language (HTML) Cascading Style Sheets (CSS)
Commands not supported	Domain Name System (DNS)Hyper Text Transfer Protocol Secure (HTTPS)

www.addresses.endress.com

