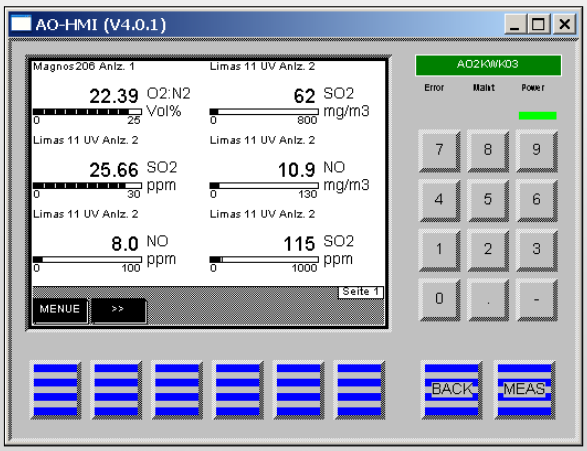
ABB MEASUREMENT & ANALYTICS | USER MANUAL | UM/AO-HMI-EN REV. E

AO-HMI Remote Control Interface

Emulation of the AO2000 Series Display and Control Unit



Measurement made easy

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AO-HMI

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Chapter 1 Description

Description

AO-HMI

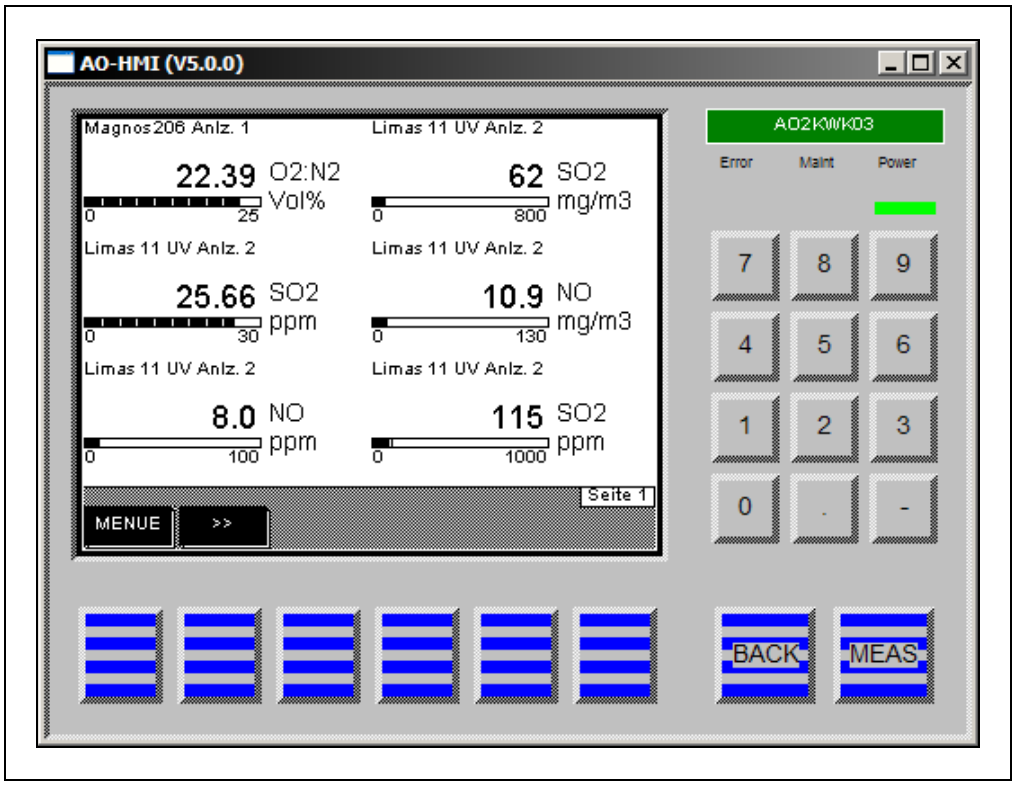
The AO-HMI program displays the display and control unit of the AO2000 Series gas analyzers on a PC or Laptop (see Figure 1). By means of this program a gas analyzer can be remote-controlled via Ethernet.

It provides the same functionality as the built-in display and control unit. The complete functionality can be drawn from the AO2000 Series operator's manual.

Note: "HMI" means "Human Machine Interface".

Figure 1

AO-HMI



HMI Emulation

The HMI emulation is used for remote control of an AO2000 Series gas analyzer.

HMI Simulation

The HMI simulation simulates the AO2000 display and control unit on a PC without connection to an AO2000 Series gas analyzer.

Software Version

The AO-HMI software version number is displayed in the title bar.

Chapter 2 Installation

System Requirements

HMI Emulation

- PC with Windows 7, 8.1 or 10, TCP/IP protocol installed, Ethernet interface, approx. 10 MB hard disk space available
- Ethernet connection
- AO2000 Series gas analyzer with appropriate network settings

HMI Simulation

- PC with Windows 7, 8.1 or 10, TCP/IP protocol installed

Our software and technical documentation can be downloaded free of charge from our download website.
For further information on downloading, please refer to the supplementary sheet enclosed with the device or contact ABB Service!

Installing AO-HMI

Installing AO-HMI

Step	Action
1	Download zip file from the website and unzip it to a local folder on your hard drive.
2	Run the “ao_hmi_XX_X_XX_X.exe” file.
3	Follow the instructions of the installation program. Accept the recommendation of the installation program for the name of the folder in which AO-HMI shall be installed. All software tools are installed in this folder.

Setting TCP/IP Parameters in AO2000

Setting TCP/IP Parameters in AO2000

The TCP/IP parameters in AO2000 have to be checked and changed if necessary for proper operation of the HMI emulation.

The TCP/IP parameters are irrelevant for operation of the HMI simulation.

Menu Path in AO2000

`MENUE → Configure → System → Network → TCP/IP Network`

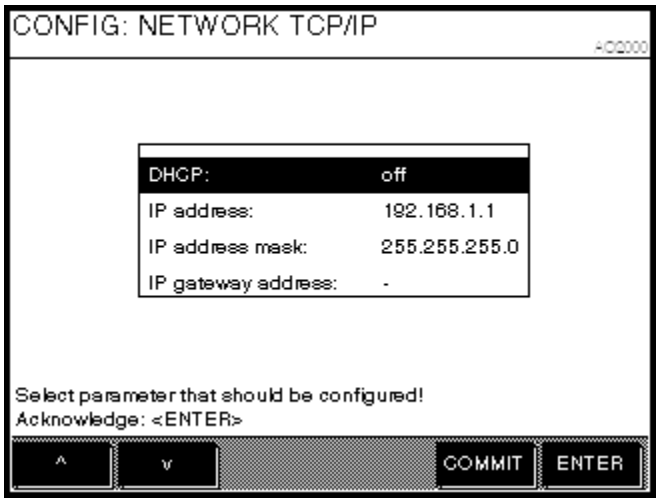
Point-to-Point Connection

The IP address of AO2000 is factory-set to 192.168.1.1. When using a point-to-point connection the IP address in AO2000 must be harmonized with the setting in the PC (see “Setting TCP/IP Parameters in the PC”, page 6).

Figure 2

TCP/IP Settings for a Point-to-Point Connection

(Example)



Network Connection

Both Ethernet 10/100/1000BASE-T interfaces can be used to link the gas analyzer to an Ethernet network (with TCP/IP protocol). The first Ethernet interface is referred to as X9 and the second one as X8.

The parameters to be set depend on the DHCP (Dynamic Host Configuration Protocol) setting:

DHCP on: Device name (max. 20 characters, no blanks and special characters),
DHCP off: IP address, IP address mask und IP gateway address.

Addresses

The IP address, IP address mask and IP gateway address must be obtained from the system administrator.

- Addresses of TCP/IP classes D and E are not supported.
- The address bits that can be varied through the address mask cannot all be set to 0 or 1 (broadcast addresses).

Setting TCP/IP-Parameters in the PC

Point-to-Point Connection

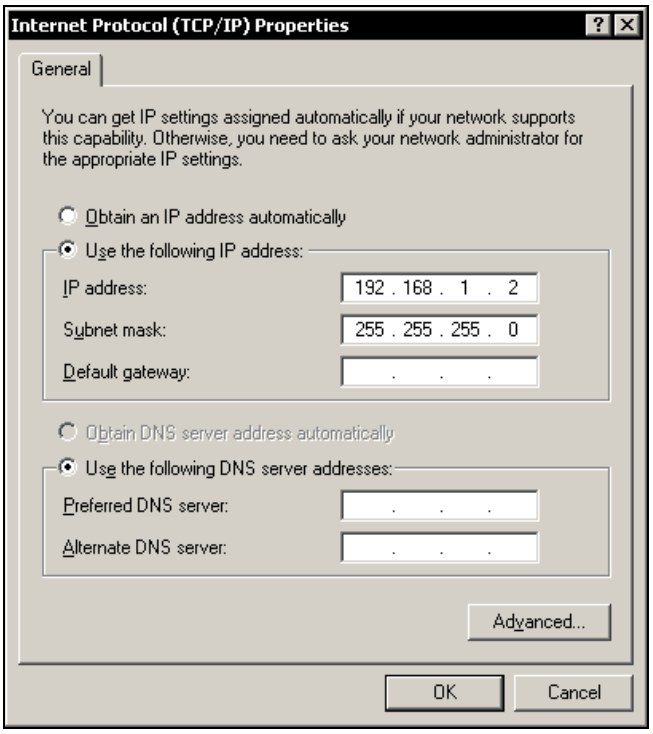
When using a point-to-point connection enter the IP address and subnet mask in the Internet Protocol Properties according to Figure 3.

The IP address of AO2000 is factory-set to 192.168.1.1 (see “Setting TCP/IP Parameters in AO2000”, page 5).

Figure 3

TCP/IP Properties for a Point-to-Point Connection

(Example)



Network Connection

When using a network connection ask the system administrator for the IP address, subnet mask and IP gateway address and enter these data likewise in the Internet Protocol Properties.

Ethernet Connection

Versions and Required Cables

- Point-to-point connection: Twisted-pair cable with RJ45 plugs, pin configuration: 1–3, 3–1, 2–6, 6–2
- Connection via an Ethernet network: Twisted-pair cable with RJ45 plugs

Cables are standard Ethernet cables and are not delivered with AO-HMI or AO2000.

Test the Ethernet Connection

In order to test the Ethernet connection enter “ping *IP address*” (where *IP address* is the IP address of AO2000) in “Start → Execute”.

In case of a working connection the gas analyzer should prompt with “Reply from *IP address*: bytes=32 time<10ms TTL=255” (the numbers are device specific).

If you get the following prompt “Request timed out” the network connection is not working properly. Please consult your system administrator.

The *network name* can be entered instead of the *IP address*.

Chapter 3 Operation

Starting AO-HMI

Network Connection: Enter IP Address or Network Name

It is recommended to enter either the IP address or the network name of the AO2000 Series gas analyzer in the AO-HMI program prior to starting the HMI emulation via a network connection.

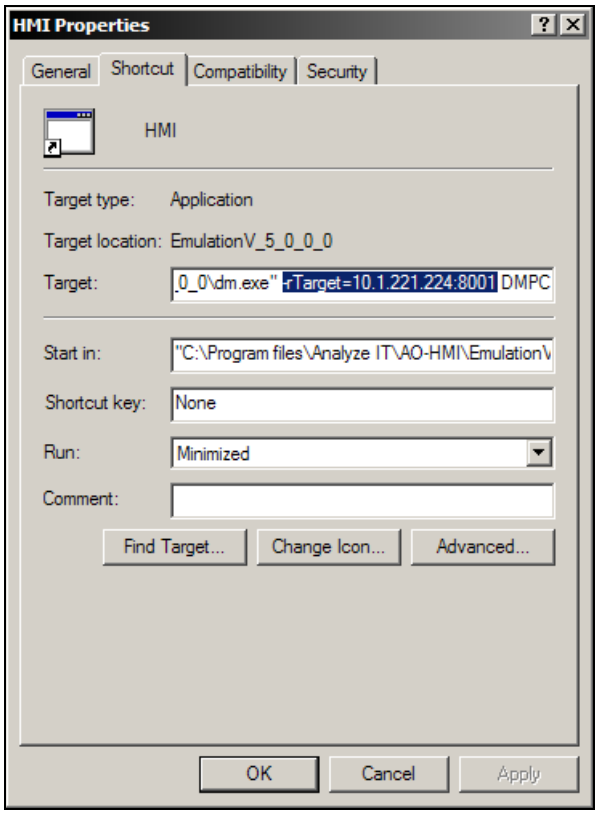
It is also possible to enter the gas analyzer's IP address or network name after starting in the status display of the program (see the "Terminating or Establishing a Connection to a Gas Analyzer", see page 11).

Step	Action
1	Select the "Properties" menu of AO-HMI.
2	Enter • either the IP address in "*IP Address*:8001" format • or the network name in "*Network name*:8001" format at the "-rTarget" parameter in the "Target" field on the "Shortcut" tab. Example (see Figure 4): „-rTarget=10.1.221.224:8001".

Figure 4

AO-HMI Properties

(Example)



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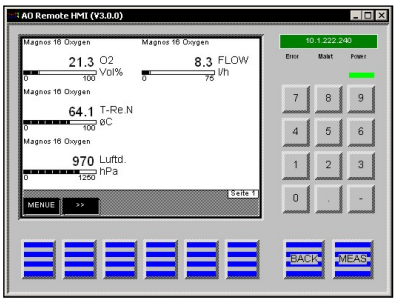
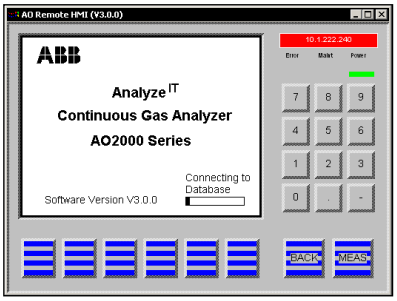
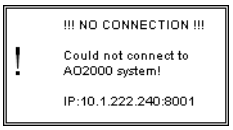
Point-to-Point Connection

In AO-HMI the default IP address 192.168.1.1 of the AO2000 Series gas analyzer is factory-set. Thus when using a point-to-point connection it is not necessary to enter the IP address as long as the IP address in the AO2000 Series gas analyzer has not been changed.

Start the HMI Emulation

Step	Action
1	Start the HMI Emulation.
2	After the connection to the gas analyzer has been established the image of the display and control unit with the screen in measurement mode is displayed: 
	When no connection to a gas analyzer can be established the following image is displayed: 
	After approx. 5 minutes the attempt to establish the connection will be aborted. The following error message is displayed: 

Start the HMI Simulation

Step	Action
1	Start the database simulation “Database Simulation”.
2	Start the HMI simulation “HMI Simulation”.

Operating

Operating Using Mouse and PC Keyboard

An AO2000 Series gas analyzer can be operated with the AO-HMI just as directly on the instrument.

- Click on the keys of the display and control unit.
- Click on the display elements. e.g. value entry or key entry.
- The functions keys F1 to F8 on the PC keyboard correspond to the six softkeys, the Back key and the Meas key.
- Use the arrow keys, the Del key, the backspace key, the Esc key and the Enter key on the PC keyboard for operating.
- Use the PC keyboard to enter digits and characters.

User Interface Priority

When two users attempt to operate the same gas analyzer the second user is informed by a message box when accessing the main menu that this gas analyzer is already being operated. By entering the appropriate password the second user can gain control on the operation.

The first user's HMI is then automatically reset to measurement mode. All entries not acknowledged with ENTER are getting lost, and current procedures, e.g. a calibration, are aborted.

The message display "Remote access" is displayed on the screen of a gas analyzer which is remote-controlled via AO-HMI.

Status Display

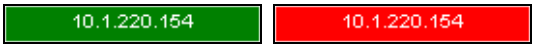
Status Display

The image of the display and control unit shows a color-shaded status display in the upper right corner which indicates the IP address or the network name of the gas analyzer:

Status Display	Color	Meaning
	green	The connection is active. Measured values and status are being updated, operation is enabled
	red	The connection is interrupted. AO-HMI is trying to establish the connection to the gas analyzer.
	dark-gray	The connection has been terminated and is inactive.
	light-gray with cursor	The connection has been terminated and is inactive. Enter an IP address or network name.

Terminating or Establishing a Connection to a Gas Analyzer

Terminating a Connection

1. Click with the left mouse button into the green- or red-shaded status display:
   

2. The status display color changes to dark-gray:
   

Re-establishing a Connection

1. Click with the left mouse button into the dark-gray-shaded status display:
   
2. The status display color changes to green:
   
   or – on error– to red:
   

Establishing a Connection to Another Gas Analyzer

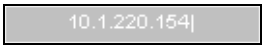
1. Click with the right mouse button into the dark-gray-shaded status display:
   
2. The status display color changes to light-gray:
   
3. Enter IP address or network name, acknowledge with Enter.
4. The status display color changes to green:
   
   or – on error– to red:
   

ABB Measurement & Analytics

For your local ABB contact, visit:
www.abb.com/contacts

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www.abb.com/analytical

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