

Advance Operation

Optima Remote HMI

Simulation and Emulation of the Display and Control Unit of Advance Optima

Technical Information

30/24-311-1 EN

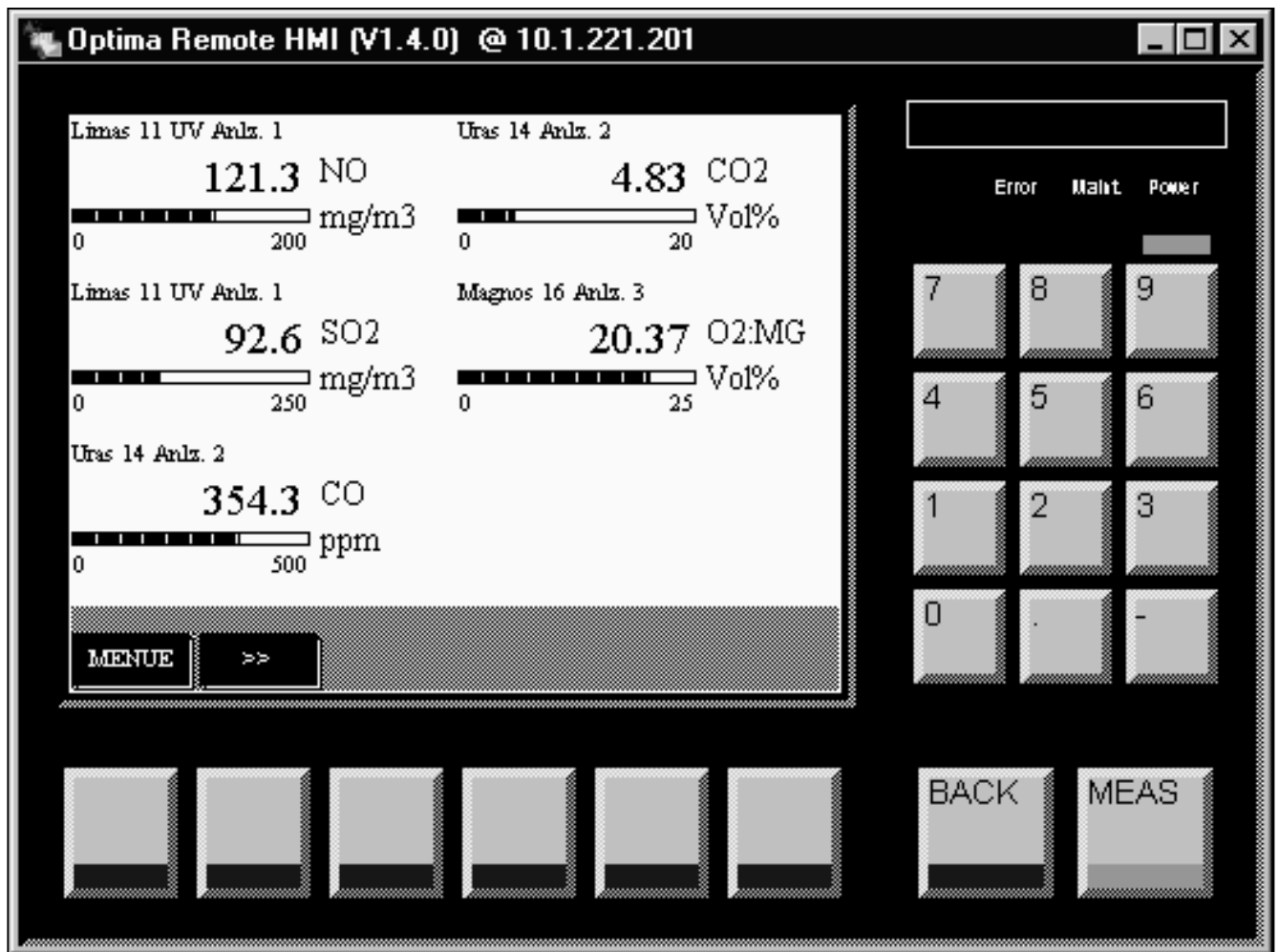


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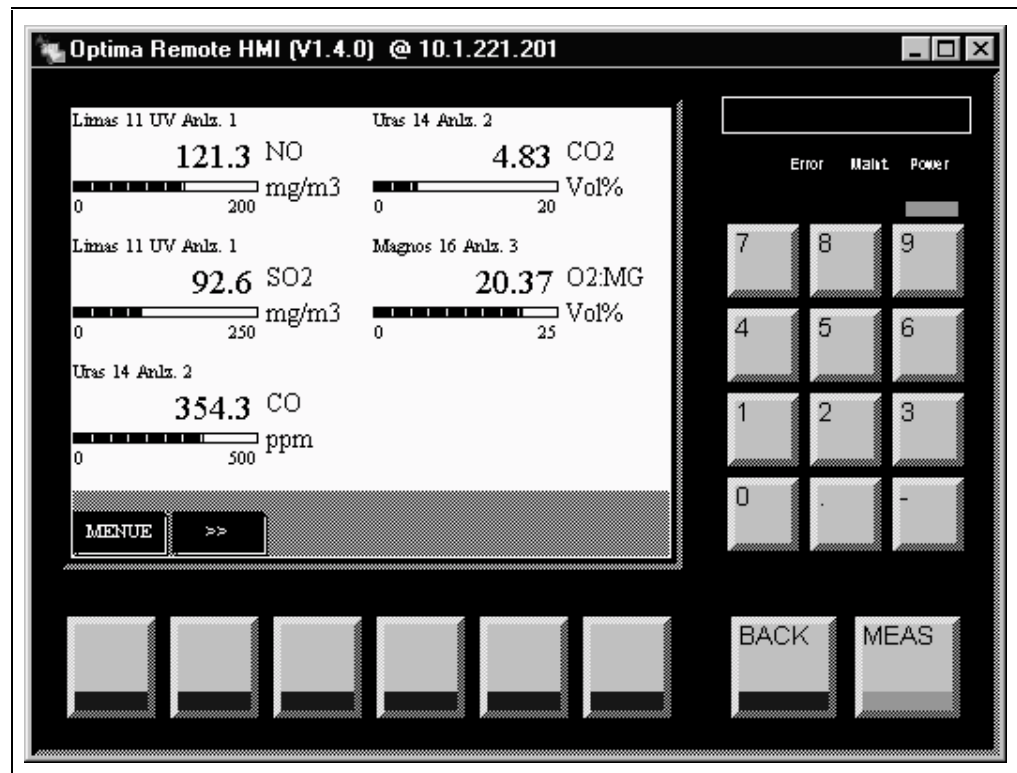
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Description

Optima Remote HMI The Optima Remote HMI program displays the display and control unit of Advance Optima on a PC/Laptop (see Figure 1). By means of this program an Advance Optima can be remote controlled over an Ethernet. It provides exactly the same functionality as the built in front panel. The complete functionality can be drawn from the Advance Optima manual (42/24-10 EN).

“HMI” means “Human Machine Interface”.

Figure 1
Optima Remote HMI



HMI simulation and HMI emulation

The software package comprises a HMI simulation and a HMI emulation.

- The HMI simulation is a software that runs on your PC/Laptop and does not require any other hardware.
- The HMI emulation connects to an Advance Optima device and can be used as a remote control.

Versions

Demo versions The versions of the HMI emulation lower than V 1.2.0.8 are demo versions only. The version number appears in the title bar of Optima Remote HMI program. The first released demo versions did not show a number at all.


Software bug in the demo versions The demo versions must not be installed as emulation in operation because of a known software bug.
This bug switches off the data acquisition during the start-up sequence of the HMI emulation. In the end of the start-up sequence, when the HMI front panel is completely drawn on the screen, the data acquisition is turned on again. If the start-up sequence gets cancelled the data acquisition in Advance Optima can only be reactivated by resetting the analyzer!

Released versions In all versions of the HMI emulation equal and greater than V 1.2.0.8 the above mentioned bug has been removed.

Exclusive operation Software versions smaller or equal V 1.2.0.8 do not have synchronization mechanism implemented; i. e. the user from the PC and the Advance Optima having equal rights. A remote attachment gets displayed by a status message to the user, that operates Advance Optima directly at the front panel, that – in case of remote control – his analyzer is already operated.

Software versions greater V 1.2.0.8 have installed an exclusion mechanism. That means, if two users want to operate Advance Optima simultaneously, the second user will be informed by an info-box before entry into the main menu, that the analyzer is already being operated. He can get the control over the operation through input of a password. The HMI of the first user gets back automatically into measuring display.

For this reason it is the responsibility of the operator to take care of exclusive operation of Advance Optima.

 During a remote attachment over Ethernet a status message is displayed on Advance Optima which indicates the remote access.

Simulation – Emulation

HMI simulation For a simulation you only need a PC/Laptop running Windows 95 or Windows NT with a TCP/IP stack installed. In this case the possibilities are limited due to the lack of analyzer and I/O modules.

HMI emulation In order to be able to utilize the remote access capabilities of an Advance Optima system you need to have

- an Advance Optima device with appropriate network settings
- a PC/Laptop running Windows 95 or Windows NT with appropriate network infrastructure and approx. 10 MB of hard disk space available
- an Ethernet connection
- HMI emulation software package

 Optima Remote HMI does not run under Windows 3.1x.

Possibilities for Ethernet Connection

Two possibilities Two possibilities for setting up an Ethernet connection are possible

- a point-to-point connection
- a connection over an Ethernet network

Network connection The following table lists the point-to-point and the network connection between Advance Optima and a PC/laptop.

Infrastructure	Point-to-Point Connection		Network	
	10BaseT connector	10Base2 Adapter board ¹⁾ 10Base2 connector	10BaseT connector	10Base2 Adapter board ¹⁾ 10Base2 connector
Advance Optima				
Cable	Twisted pair cable with RJ45 connectors Pin configuration: 1 ↔ 3 3 ↔ 1 2 ↔ 6 6 ↔ 2	Coaxial cable with BNC connectors, T connectors and terminators	Twisted pair cable with RJ45 connectors Pin configuration: non twisted	Coaxial cable with BNC connectors, T connectors and terminators
Media converter (if necessary)	–	–	e.g. hub or repeater, to connect Advance Optima to network	e.g. hub or repeater, to connect Advance Optima to network
Office network	–	–	Ethernet	Ethernet
Media converter (if necessary)	–	–	e.g. hub or repeater, to connect PC/laptop to network	–
PC²⁾ or Laptop³⁾	10BaseT	10Base2	AUI, 10BaseT or 10Base2	AUI, 10BaseT or 10Base2

1) Is part of Advance Optima in case that the 10Base2 option was ordered

2) Ethernet connection, either on board or network interface card

3) docking station with Ethernet interface or Ethernet PC card

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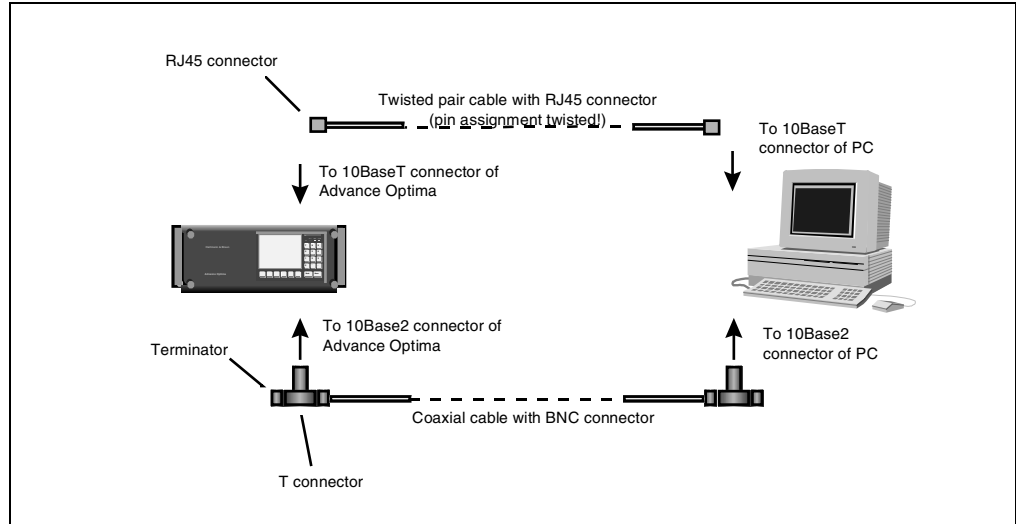
Possibilities for Ethernet Connection, Continued

Point-to-point connection

Figure 2 shows two possible point-to-point connections.

☞ Both depicted connections – coaxial cable and the twisted pair cable – are varieties and only one at a time is possible.

Figure 2
Two possibilities for a point-to-point connection

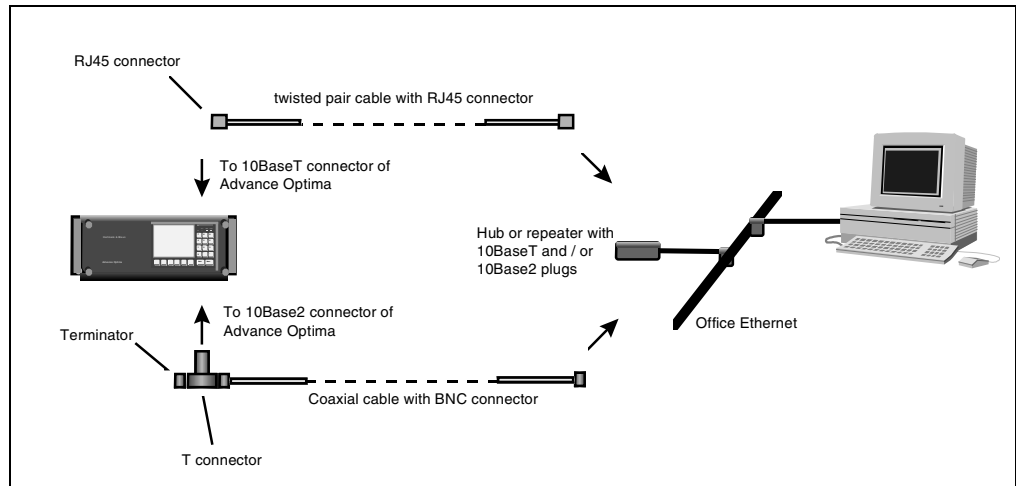


Network connection

Figure 3 shows two possible network connections.

☞ Both depicted connections – coaxial cable and the twisted pair cable with non twisted pin configuration – are varieties and only one at a time is possible.

Figure 3
Two possibilities for a network connection



Overview

Installing Optima Remote HMI


For installing an Optima Remote HMI the following steps need to be performed:

Step	Action	Page
1	Set-up TCP/IP parameters on Advance Optima (if you only want to run the simulation this step can be skipped)	9
2	Install a TCP/IP protocol on PC/Laptop	10
3	Set-up of TCP/IP parameters on PC/Laptop	12
4	Establish an Ethernet connection (if you only want to run the simulation this step can be skipped)	13
5	Install the HMI software package on PC/Laptop	14
6	Start the HMI software package on PC/Laptop	15

Checking TCP/IP Parameters on Advance Optima

Check TCP/IP parameters of Advance Optima


For networking the settings of the Advance Optima's TCP/IP parameters have to be checked.

 If you only want to run the simulations this step can be skipped.

Point-to-point connection

In case that you want a point-to-point connection the following parameters have to be set up in the menu of Advance Optima (MENUE → CONFIG → SYSTEM → NETWORK).

Parameter	Setting	Comment
IP address:	192.168.1.1	default value
IP subnet mask:	255.255.255.0	default value
IP gateway address:	0.0.0.0	default value
Ethernet type:	10BaseT or AUI	AUI ↔ 10Base2
BIOS IP address:	192.168.1.1	default value
BIOS IP subnet mask:	255.255.255.0	default value
BIOS IP gateway address:	0.0.0.0	default value
BIOS Ethernet type:	10BaseT or AUI	AUI ↔ 10Base2

 The setting of Ethernet type and BIOS Ethernet type corresponds to the physical connection of an Advance Optima.

Network connection

For a network connection you need to check with the system administrator for a valid parameter set.

Advance Optima rebooting

In case that you have changed parameters Advance Optima has to be rebooted.

Installing a TCP/IP Protocol

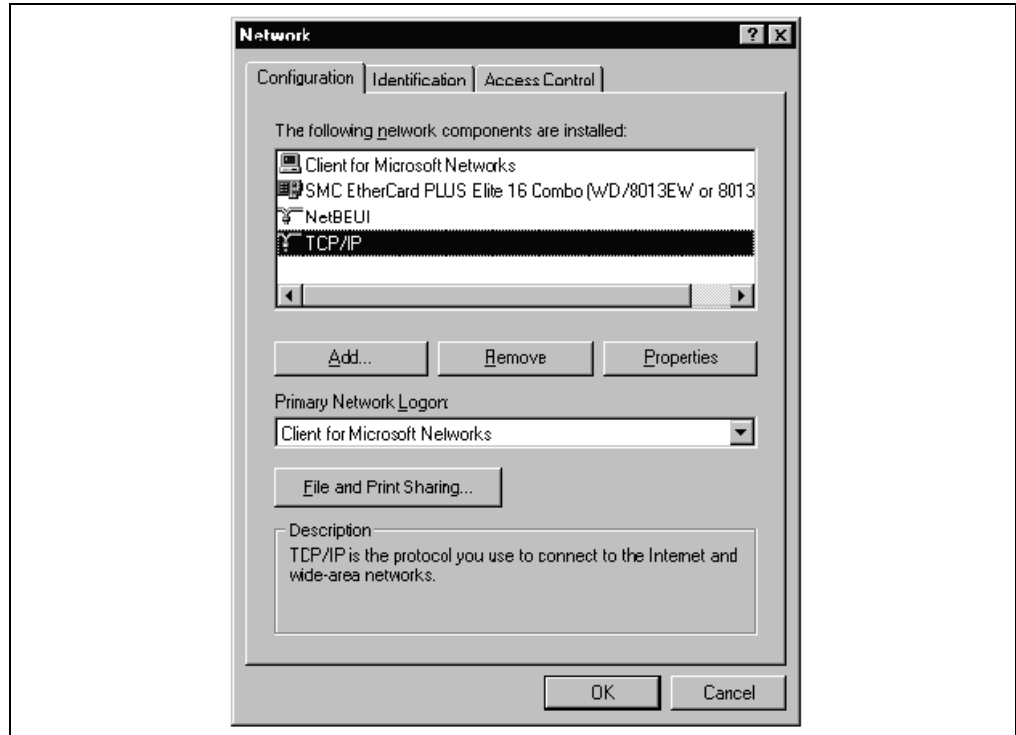
Install a TCP/IP protocol

For installing a TCP/IP protocol on your PC/laptop do the following steps:

First check

Check whether this protocol is already installed by looking into “Start → Settings → System Control → Network → Configuration” (see Figure 4).

Figure 4
Network



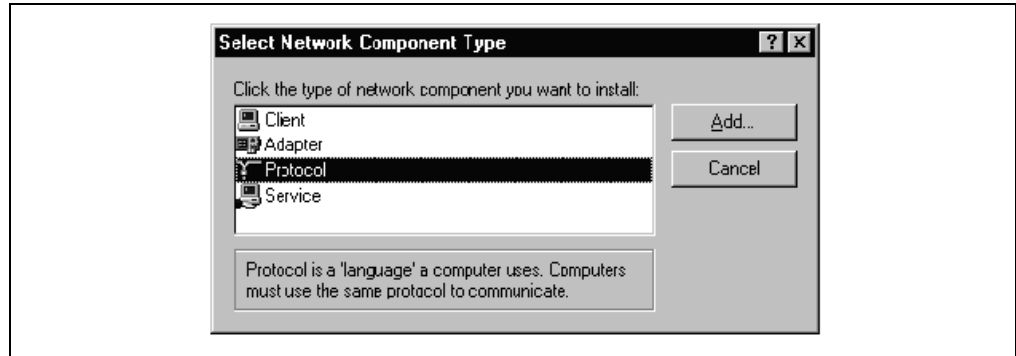
Add TCP/IP protocol

If not installed add the TCP/IP protocol. Click the “Add...” button and follow the steps described below.

In case that you have to install the TCP/IP protocol you need a Windows 95 or Windows NT installation CD, which you can get from your system administrator.

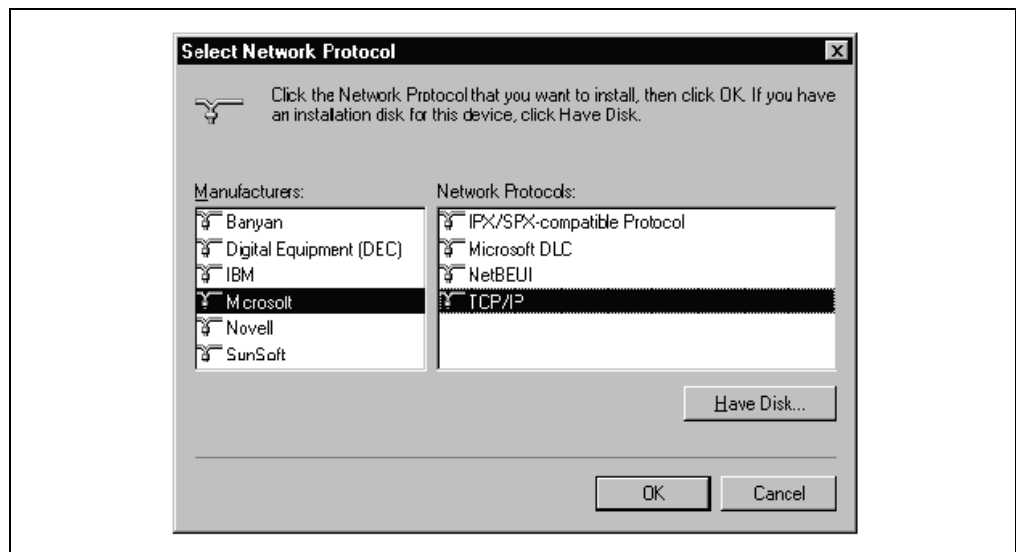
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Figure 5
Select network component type



Select "Protocol" and click "Add..."

Figure 6
Select network protocol



Select "Microsoft" and "TCP/IP" and click "OK". Further information can be drawn from your WIN 95/NT manual.

Setting of TCP/IP Parameters

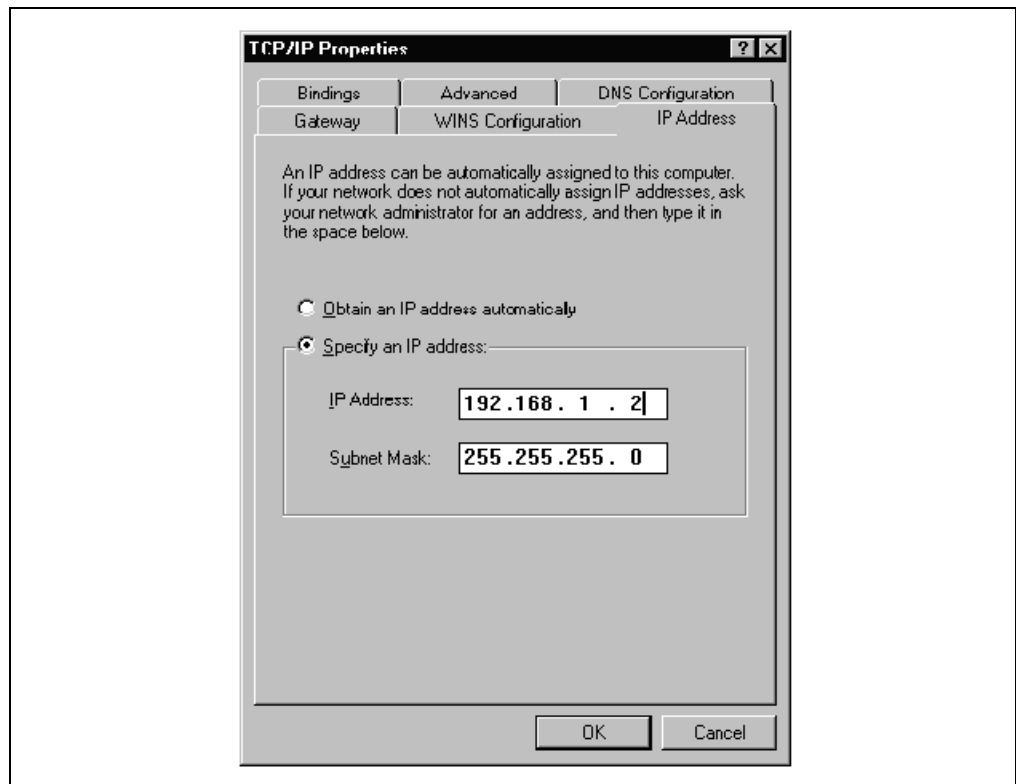
Basic settings The TCP/IP protocol requires a couple of basic settings for proper operation.

IP-address One parameter is a unique identification number, a so called IP-address for every network node. This address has to be configured on your PC/Laptop in “Start → Settings → System Control → Network → Properties” (see Figure 7).

Point-to-point connection If you plan to establish a point-to-point connection enter the IP-address 192.168.1.2., in case that the Advance Optima IP address has not been changed. The default address from Advance Optima is 192.168.1.1. The subnet mask is to adjust like shown in Figure 7.


Ethernet For a connection to an existing Ethernet you need to ask the system administrator for an available IP address, subnet mask and possibly a gateway address.

Figure 7
TCP/IP properties



After changing the setting click “OK”.

Establishing an Ethernet Connection

 If you only want to run the simulations this step can be skipped.

Cable connections

Establish all cable connections (see table “network connections” in section “possibilities for Ethernet connection”, Page 6).

Which material is necessary?

Since all used cables are standard Ethernet cables they can be purchased in the appropriate computer shops.

Test the Ethernet connection

In order to test the Ethernet connection enter “ping IP address” (where IP address is the IP address of Advance Optima) either in the DOS window or in „Start → Execute“.

In case of a working connection the system should prompt with “Reply from IP address: bytes=32 time=3ms TTL=255” (the numbers are system specific).

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

Installing the HMI Software Package

Install the software For installing the HMI software package perform the following steps:

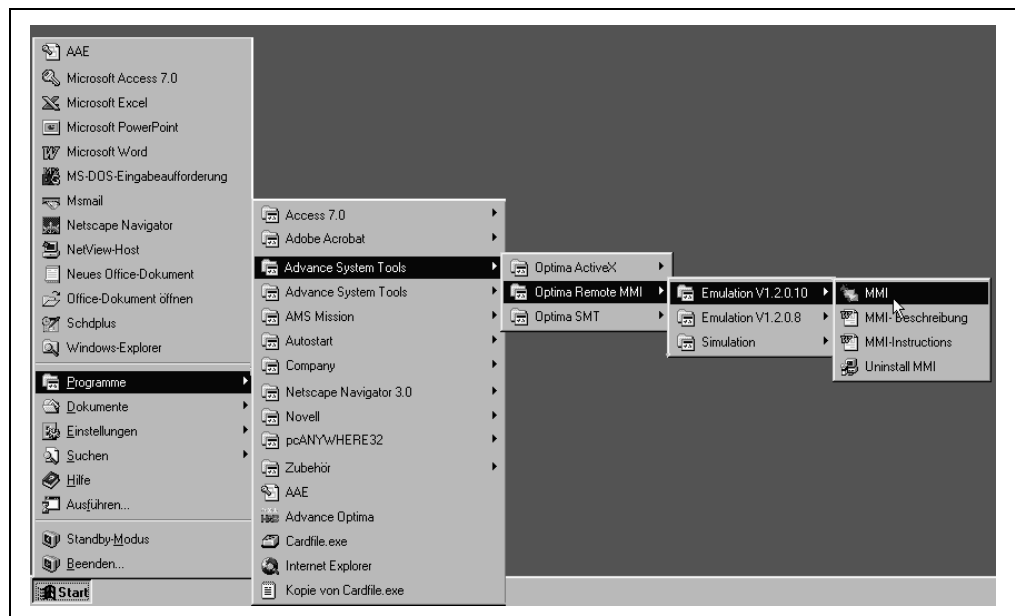
Uninstall an old version If you want to uninstall an old version, this should happen before the new installation is realized. Click “uninstall”.

☞ Note the instructions of the software package; possibly some files must be unpacked with double-click before installation.

Setup Run the program “HMI-XXX.exe” (“XXX” represents the software version) on the CD-ROM. This program performs all necessary steps to install the software.

Directories If you do not have specified any other path during the installation the following directories are added to your C-drive:

Figure 8
Directory tree
(Example)



Starting the HMI Software Package

HMI software start After the successful installation you can start the simulation or the emulation with Ethernet connection.

- HMI simulation**
- Start the data base simulation program
 - Start the HMI simulation program. The starting procedure lasts a couple of seconds. Please wait for software versions smaller or equal V 1.2.0.7 until the complete front panel of Advance Optima is visible on your screen before you try to resize or move it.

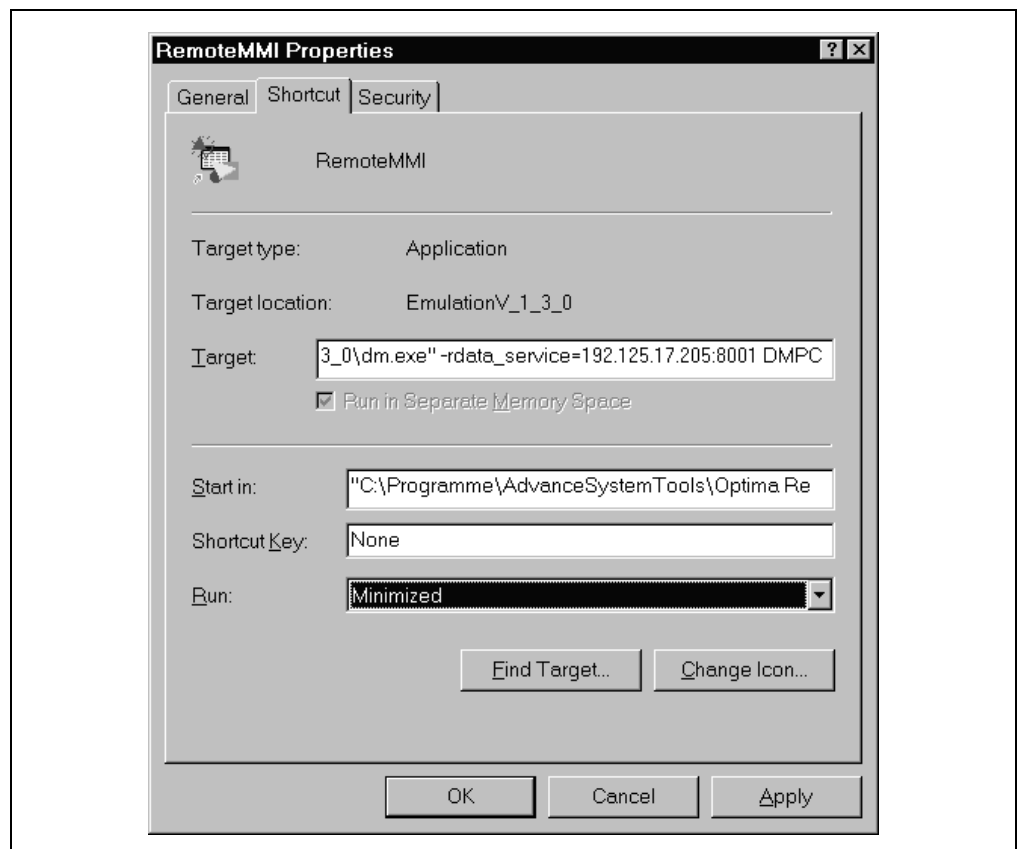
Network connection Before starting the HMI emulation via a network connection you need to specify an IP address in the “Properties” menu item of the emulation program.

On the “Link” tab, enter in the “Target” field (see Figure 9):

```
"C:\Programs\AdvanceSystemTools\Optima Remote HMI\EmulationVXXX\dm.exe" -rdata_service=IP address:8001 DMPC
```

- ☞ The path depends on the actual software installation.
XXX corresponds to the Advance Optima system software
IP address Advance Optima IP address

Figure 9
Properties of Remote HMI
(Example)



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Starting the HMI Software Package, Continued

Point-to-point connection

For a point-to-point connection the previously mentioned steps do not need to be performed when you do not have changed the IP address of Advance Optima.

Start the HMI emulation

Start the "HMI emulation XXX" program. The starting procedure lasts a couple of seconds. Please wait for software versions smaller or equal V 1.2.0.7 until the complete front panel of Advance Optima is visible on your screen before you try to resize or move it.

☞ The versions of the HMI emulation lower than V 1.2.0.8 are demo versions only and may not be installed as emulation in operation (see section "Versions", Page 4). In these older versions the data acquisition is switched off if the start-up sequence gets cancelled at the wrong time. It can only be reactivated by resetting the analyzer.

Operation

You can now operate the HMI program like a real Advance Optima. Use your mouse or the function keys on your PC/Laptop to press keys on the front panel. F1–F8 on the PC/Laptop correspond to the softkeys below the display, the "Back" key and the "Meas" key.

You can also use the arrow keys, the Enter and the Esc(=Back) key and add texts with the keyboard.

