

Operating Manual - English

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# Option Ethernet

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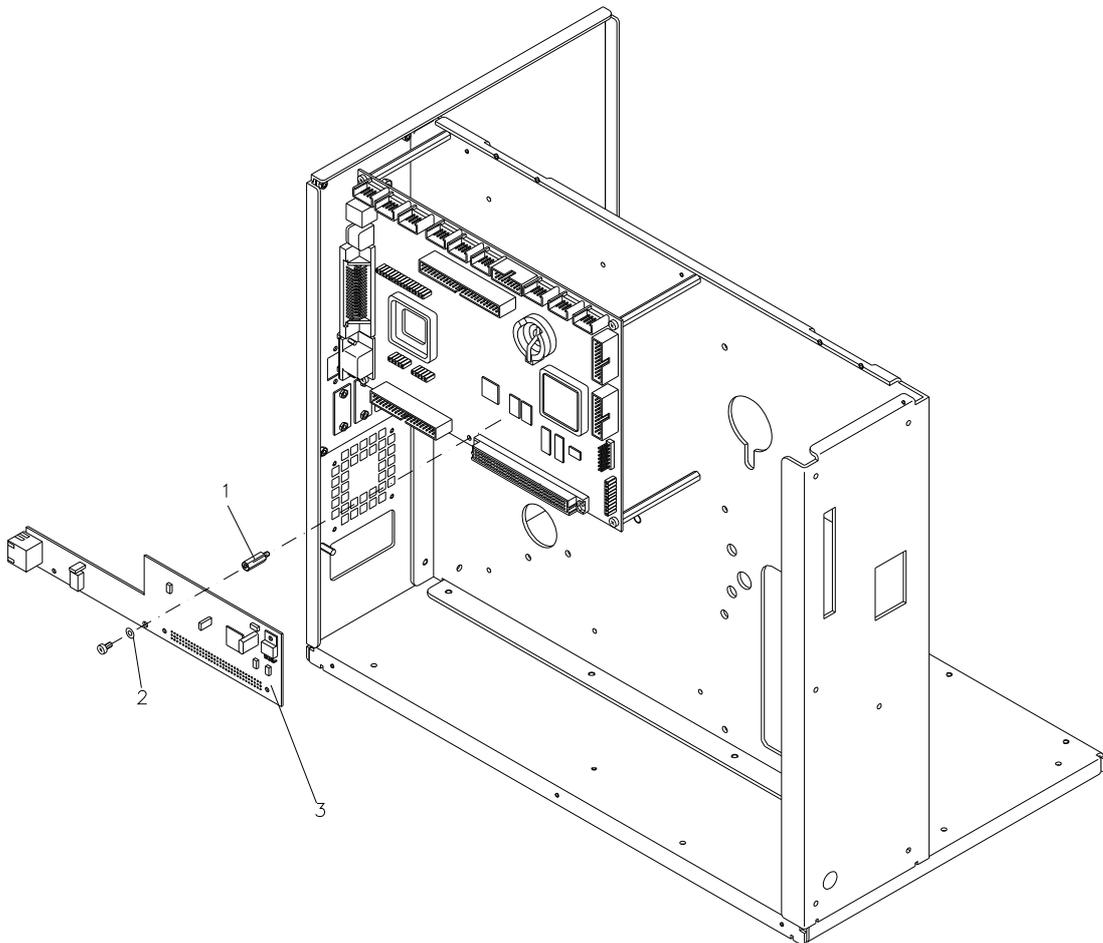


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## RETROFIT OPTION ETHERNET



Unscrew left cover of printer.

Screw dispensing pillar (1).

Remove interface cover for Ethernet socket.

Attach Ethernet plate (3).

Fasten Ethernet plate (3) with screw and washer.

If necessary start a printer update.

## TECHNICAL DATA

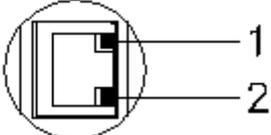
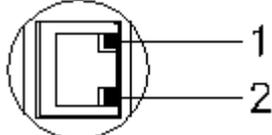
Physical/Datalink protocols	IEEE 802.3 ('Ethernet') 10BaseT 100BaseT
Transmission speede	10 MBit/s 100 MBit/s
Reachable data transmission speed	40 KB/s
Duplex-Modes	Halbduplex Vollduplex
Connections	RJ-45
Cabel	Twisted Pair from Kat. 3 (10 MBit/s) Twisted Pair from Kat. 5 (100 MBit/s)
Network/transport protocols	ARP ICMP DHCP IP TCP
Print protocols	TCP/IP direct print (Raw TCP/IP) LPR
Administration protocols	IP autoconfig CVPL by Raw TCP/IP CVPL by (Raw) UDP
PC software	CV TCP/IP Port Monitor for Windows 9x/Me and NT 4.0
Support by operating systems	UNIX und UNIX similar (AS/400, Linux, BSD, ...) by LPR Windows NT 3.51 by LPR Windows NT 4.0 by LPR Windows 2000 by LPR and Raw TCP/IP Windows XP by LPR and Raw TCP/IP
Support of operating systems by Valentin software	Windows 95 with CV TCP/IP Port Monitor by Raw TCP/IP Windows 98 with CV TCP/IP Port Monitor by Raw TCP/IP Windows Me with CV TCP/IP Port Monitor by Raw TCP/IP Windows NT 4.0 with CV TCP/IP Port Monitor by Raw TCP/IP

## GENERAL INFORMATION ABOUT NETWORKS

Networks provide the possibility to connect different devices and permit the exchange of data for all members. In the network sector are different technologies, standards and protocols available. For the hardware sector we use for our label printers the currently most used network technology, the so-called Ethernet. A lot of different Ethernet versions are available and they differ mainly by transmission speed and used cables. At the moment we use for our devices a 10/100 T-Ethernet, i.e. a max. transmission speed of 100 Mbit/s is possible.\* As cable we use Twisted Pair. The printers can be used in 10 Mbit/s-(10 Base-T) as well as in 100 Mbit/s networks (100 Base-TX). The speed recognition is as default automatically but it is also possible to set it manually.

The printer software operates by the Internet standard. This standard defines in an order of data transmission protocols, based on Internet protocol (IP protocol) data transmission and addressing. The necessary parameters have to be inquired from the network administrator. For printers equipped with display and keyboard the parameters can be set in the network menu at the printer res. for other printers the parameters can be transferred by the interfaces.

Some printer models have two LEDs at the Twisted-Pair network socket.

SH2 printers	SH3 printers
 <p>1 - LED orange Flashing = Data transfer Off = No data transfer</p> <p>2 - LED green Lighting: Connection active Off: No connection</p>	 <p>1 - LED orange Lighting = Connection active Flashing = Data transfer Off = No connection</p> <p>2 - LED green Lighting: Speed 100 MBit Off: Speed 10 MBit</p>

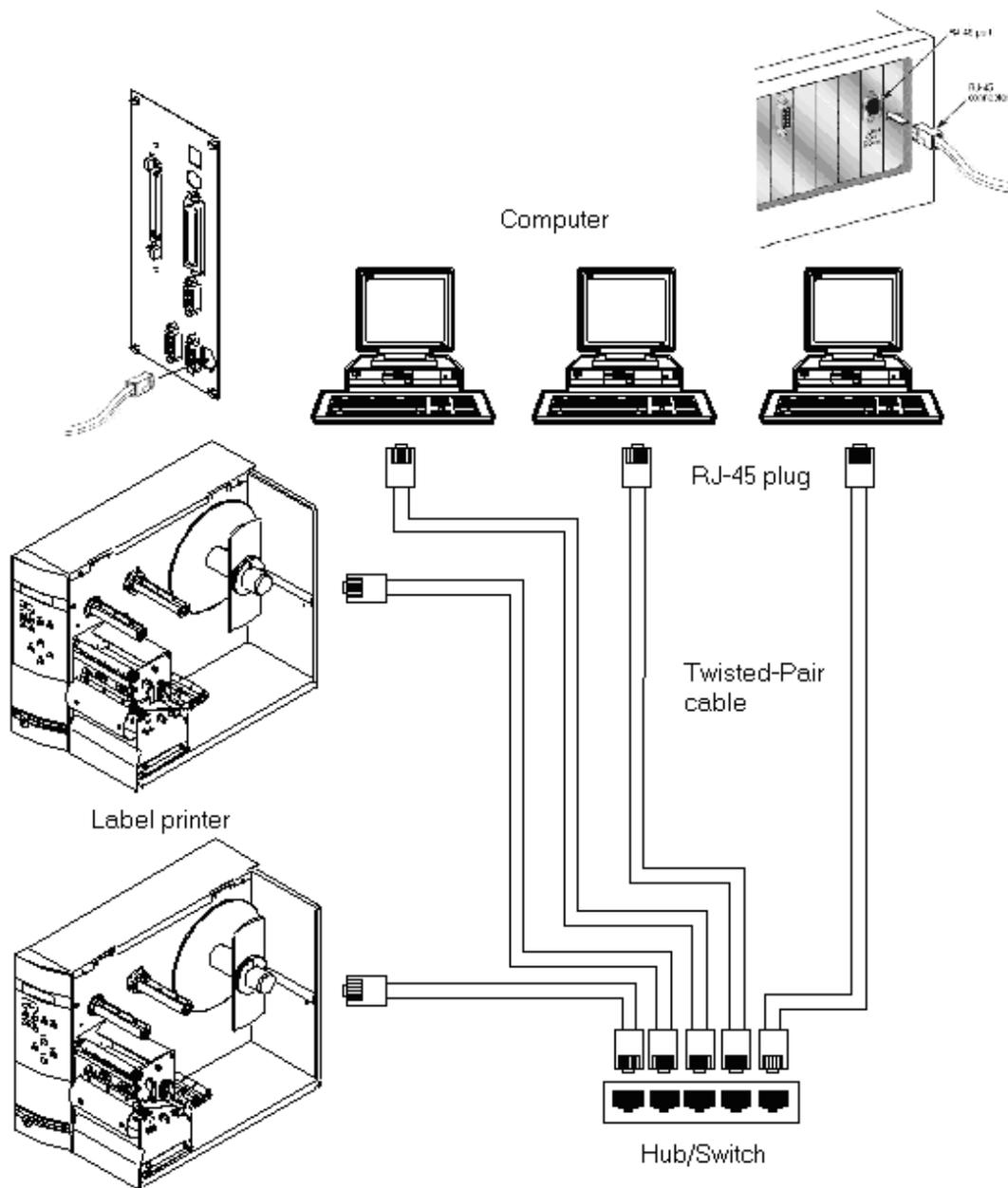
\* The specification of speed is theoretical. The real transmission rate depends on many factors. Depending upon network architecture, the number of users and the actual data rate. For network printers normally real data rates are attained, similar to the parallel interface.

## CONNECTION TO A 10/100BASE-T NETWORK

10/100Base-T networks have a star shaped architecture, i.e. all members are connected to a central terminal block. Two types of terminal blocks exist: Switches or Hubs. Hubs give out information which come in to a port (input/output) to all ports. Switches are more 'intelligent' because they give out data only at the place where the data is real needed and this reduces the network load. Because of this reason the use of Switches is more recommended but normally the switches are more expensive than normal hubs.

The cables which are necessary for the connection to the hubs are divided in quality categories - a higher category indicates the higher quality. For 10Base-T networks a cable quality of at least category 3 is necessary and for 100Base-T at least cables of category 5 have to be used. However to have the possibility of increasing the speed it is recommended to use generally cables of category 5 or 7.

The used plugs and sockets have the indication RJ-45.



## EXPLANATION TO INTERNET PROTOCOL FAMILY

This is a brief explanation concerning the protocols of internet protocol family which are supported by our printers. This explanation is **not** to replace already available literature but can be used as memory res. overview or as reference book for network-experienced users. If you are not versed in networks then please contact your network administrator to execute further steps in printer setup.

### IP Protocol

The IP protocol designates that each member receives a clear 32-Bit address, the so-called IP Address. The IP Address is separated by points and is structured in four parts. Each part has an own number section from 0 to 255.

Example: 192.168.0.21 or 244.123.11.254

corresponds binary: 11000000.10101000.00000000.00010101 (192.168.0.21)  
11110100.01111011.00001011.11111110 (244.123.11.254)

The decimal figure '255' is reserved and is not allowed to assigned. Addresses starting with a decimal '127' or finish with a decimal '0' are reserved and are not allowed to set.

Example for reserved addresses: 127.0.0.1, 192.168.0.0, 192.255.255.11

In order to structure a network in several subnetworks exists a bitmask which indicates which parts of the IP Address are used local as network address and which are used as address of computer. The bitmask is also structured in four parts.

Example: IP Address: 192.168. 0. 21  
Mask: 255.255.255. 0

The network address is e.g. '192.168.0' and the address of computer '21'. The ones (1) of the mask indicate the parts of the IP Address which should be used as network address. The zeros (0) indicate the part which is used as computer address. This organisation in different networks is a clear logic division and is mainly used to manage a large network more clear.

Only members of the same network can communicate together.

Example: Member 1: IP Address: 10.102.0.21, mask: 255.255.0.0  
Member 2: IP Address: 10.102.1.33, mask: 255.255.0.0  
Member 3: IP Address: 10.103.1.29, mask: 255.255.0.0  
Member 4: IP Address: 10.102.0.14, mask: 255.255.255.0

Member 1: Can send data directly to all members of its network (address: 10.102), also to all members with IP Address 10.102.x.x (x indicates any figure). In this example to member 2 and 4.

Member 2: same as member 1; be careful when sending data to member 4 (see member 4)

Member 3: Can send data directly to all members with IP Address 10.103.x.x - here to nobody!

Member 4: Can send data directly to all members with IP Address 10.102.0.x, also only to member 1! Data is received from member 2 because from its view member 4 is in its network. Member 4 returns no answer because from the view of member 4 the member 2 is **not** in the same network. Because the TCP/IP protocol needs **always** a connection in both directions for the exchange of data so member 2 and 4 cannot change data directly!

In order to send data to a member of an other network the data has to be send by a so-called router. The IP Address of this router is called Gateway Address and because of this the Router also Standard Gateway. So that two members from different nets can communicate together it is necessary to indicate in each device the address of the Standard Gateway in the corresponding network.

Summarised there are different parameters for the communication by the Internet Protocol which are depending on the situation to set at the printer:

In case only access to the printer in the own network is necessary and if this is not structured in subnetworks, then only the IP address is to set. The remaining parameters are set to '0.0.0.0'. The printer then uses appropriate default parameters for the transmission.

In case the network is structured in further subnetworks it is necessary to have IP Address and also network mask for the installation.

In case it should be possible to have access to the printer form other nets then additionally the address of the Standard Gateway has to be indicated at the printer. However, this is not needed, then it is possible to indicate as Gateway address the (otherwise forbidden) IP Address 0.0.0.0

## ICM protocol

At this time the ICMP protocol is principally used for the Ping program to test machines which are based on IP level. With the ping command at the command prompt (for Windows user: MS-DOS window) it is possible to test if a machine reacts by IP:

```
ping 192.168.0.21
```

If everything is correct the printer should answer with the following message:

```
answer from 192.168.0.21: Bytes=32 time<10ms TTL=30
```

In case of an error you receive timeouts:

```
exceeding time of requirement
```

## TCP protocol (Transmission Control Protocol)

IP protocol defines the addressing of printer and a minimum of main rules for data transmission. But this does not refer to error recognition and flow control. The rules for this are defined in other protocols not in TCP protocol.

TCP protocol defines rules for data transmission and guarantees a secured connection orientated data transfer. Secured mean that TCP protocol takes care that definitively all data receives the printer and that no data goes lost.

IP protocol defines an address format to contact each network machine clear. But it does not define the way to address different programs at one machine. This is effected by TCP protocol by so-called ports. Each program gets a port number which is necessary to contact it. E.g. most web server use Port 80. It is possible to assign port numbers from 1 to 65535.

Our printers have the following ports and applications available:

Port 515: LPD-Server: Process print orders in LPR format

Port 9100: RAW-Server: Process print orders and remote statements in printer format

Port 9099: Process status enquiry also during printing

## UDP protocol (User Datagram Protocol)

UDP protocol operates similarly as TCP protocol with the difference that the transmission is connectingless and unsecured. This means that UDP does not guarantee that data really arrive the printer. Because of the connectingless transfer UDP is possible to send data by the so-called Broadcast address. Broadcast means that it is possible to address with one address all network clients at the same time. This can be used e.g. to send all printers at the same time the same data or to browse for the printers in network.

The opened UDP ports are the following:

Port 9100: RAW-Server: Process print orders and remote statements in printer format

## DNS protocol (Domain Name Service)

DNS protocol was defined to address printers also by their names. It guarantees compatibility to IP addresses by not replacing these but assigns an IP address to a name. The protocol operates server-based, i.e. the allocations are saved onto a server. These allocations are static and have to be entered by hand at the DNS server. Exceptions are programs which can make entries by special interfaces at the server. Normally it is necessary to have programs from developers of DNS server. Unfortunately a standard does not exist.

Example for the function mode of DNS: In case a program wants to contact a machine with name 'Merlin' then it asks the DNS server for the IP address of 'Merlin' and sends data to this IP address.

## WINS protocol (Windows Internet Name Service)

Actually this protocol is a descendant of the special NetBIOS protocol which is used from IBM and Microsoft operating systems. However, because of its far spreading (especially the spreading of Windows) it was taken on to the Internet protocol family.

In principle it operates similarly as DNS protocol, with the difference that the allocation from IP address to names and in reverse order is dynamically. This means a network machine can convey on its part its name and IP address to the WINS server, which registers these information automatically into its allocation table.

## **DHCP protocol (Dynamic Host Configuration Protocol)**

DHCP allows the automatic referring of network parameter such as IP address, network mask and standard Gateway of a DHCP server. Our printers can refer from a DHCP server the IP address, network mask, the address of the standard Gateway as well as the address of a WINS server. If you have a DHCP server, then it is not necessary to set network parameter at the printer. After connecting the printer to the network everything runs automatically.

Unfortunately it is necessary to have the IP address to contact the printer. However, after purchasing a DHCP server the IP address is different after each switching on the printer. There are several possibilities to solve this problem:

1. Configure the DHCP server in the way that the printer receives always the same IP address.
2. By means of a DNS server it is possible to contact the printer by a name. However, this is only possible if the DHCP server can communicate the name to the DNS server (usually runs only if DHCP and DNS server come from the same manufacturer -> see DNS protocol).
3. The printers are contacted by means of a WINS server. A condition for this is that the DHCP server transmits the address of the WINS server to the printer.

## **LPR protocol**

Originally this protocol was created for the print of Postscript file under UNIX. Because of its simplicity and flexibility it forms today the smallest common denominator under print protocols and in the meantime it is no longer only used for Postscript print. All UNIX operating systems (incl. Linux) control the lpr protocol, so under these operating systems it is possible to send finished print files by this protocol (usually with command 'lpr') to our printers. The Windows NT operating system family controls the protocol also.

## SETTINGS AT NETWORK MENU OF PRINTER

(only for printers with keyboard and display)

After switching on the printer the display shows the following:

```
** POS 108-12 **  
20/01/00 07:18
```

Press the **F** key so switch to the function menu of the printer.

Press the **X** key as long as you are in the menu Network.

```
Function Menu  
Network
```

This menu item can only be selected in case a network card is recognised when switching on the printer as otherwise the message appears (see display below) that this option is not available.

```
Option Ethernet  
not available
```

Press the **B** key to select the menu Network.

```
IP-Address  
192.168. 0. 21
```

Set the IP Address in the first menu item.

Press the  key to switch to the next menu item.

```
Netmask  
255.255.255. 0
```

Set the network mask.

Press the  key to switch to the next menu item.

```
Standard Gateway  
0. 0. 0. 0
```

Set the IP Address of the Standard Gateway.

Press the  key to switch to the next menu item.

```
Speed   Duplex
100Bit  Full
```

In the last menu item you have the possibility to set the speed manually.

The following possibilities are available:

Automatic:	This is the default setting. The speed is automatically recognised. This procedure is normally very reliable. In most cases it is not necessary to change this setting.
10MBit Half:	Speed 10MBit/s at Semi duplex transmission procedure
10MBit Full:	Speed 10MBit/s at Full duplex transmission procedure
100MBit Half:	Speed 100MBit/s at Half duplex transmission procedure
100MBit Full:	Speed 100MBit/s at Full duplex transmission procedure

Press the  key to switch to the next menu item.

```
DHCP
On
```

DHCP allows the automatic referring of network parameters IP address, network mask and standard Gateway of a DHCP server which has to be installed in the network.

Is DHCP set to 'On', then it is no longer necessary to set the corresponding parameter in the previous menu items. After leaving the network menu the printer tries to find a DHCP server to receive from this the network parameters. In the menu items IP address, network mask and standard Gateway the received parameters were indicated. The note '(DHCP)' shows that the parameters were referred automatically. However, if all parameters show zero, then the printer could not find a DHCP server.

When switching off the printer, it does not log out from DHCP server in hope when switching on to receive the same IP address. However, this depends on DHCP server and the name validity which is set here. When setting to 'Off' the printer logs out itself from the server. In case of possible errors you can try to switch DHCP off and then again on. Please note that in case of modifications you first have to leave the network menu because only then the modifications are accepted.

Press the  key to switch to the next menu item.

```
Printer name
LabelPrt01
```

The printer name can be used in connection with DHCP to contact the printer. It is send to DHCP server when referring configuration data. However, a condition is on the one hand a DNS server and on the other hand a DHCP server which can communicate the name to the DNS server.

Alternatively you can operate also with a WINS server instead of a DNS server. The address of WINS server has to be sent from DHCP server to the printer. The printer has to log in itself with its name at WINS server.

In case DHCP is active and the name is changed, then the printer logs out from DHCP server and afterwards again logs in. This means that after changing the name the printer could have a new IP address.

Press the  key to switch to the next menu item.

```
MAC-Address:
```

This window indicates the MAC address (Media Access Control). The MAC address is the hardware address of each individual network adapter and serves for the clear identification of the printer in network.

## **SETTING PARAMETERS VIA PRINTER INTERFACES**

### **Own software**

For all network settings exist corresponding parameter statements. With help of these statements it is possible to create applications for configuration or to integrate the configuration in existing software.

### **ConfigTool**

The ConfigTool which is included in delivery is a comfortable possibility to make settings. It is possible to browse for printers in network and to configure not already installed printers per Broadcast by network. For more information please see the corresponding documentation.

## NETWORK SETTING IN PRINTER STATUS PRINT

In status print which can be released in the Service Function menu, also some information about the network are indicated. Following data is to see in paragraph 'NETWORK SETTINGS':

```
NETWORK SETTINGS
=====
MAC-Address       : 00:07:4a:1c:e6:85
IP-Address        : 192.168.0.21
Netmask           : 255.255.255.0
Gateway           : 0.0.0.0
Link              : Connected
Transfer Mode     : 100Mbit/s
                  : Half Duplex (Auto)
DHCP              : OFF
Printer Name      : LabelPrt01
```

Data which is here issued is not necessary to correspond with the data which is set in the menu. In the status print not the set values are shown but the ones which are really used. So it is e.g. possible that the netmask '0.0.0.0' was set at the printer, however the status print shows '255.255.255.0'. The setting '0.0.0.0' signifies in this case that the printer should use for the corresponding IP Address a default value. '255.255.255.0' is here the used default value.

- **MAC-Address:**  
The MAC address is a worldwide clear identification for a network device. By means of this identification it is possible to identify and configure printers in the network.
- **IP-Address**  
This is the communication address of the printer. The address by which the printer is contacted per software to the Internet standard. If this was referred by DHCP then the parentheses show ('DHCP')
- **Netmask**  
The network mask of IP address. If this was referred by DHCP then the parentheses show ('DHCP')
- **Gateway**  
The IP address of network gateway. If this was referred by DHCP then the parentheses show ('DHCP')
- **Link**  
The status item 'link' shows principally the same as some green LED at some printer plugs: it shows if the printer has a so-called link, a physical connection with the network. Only if here 'Connected' is showed it is possible to send data to the printer. In case 'Not Connected' is indicated so this is a message that something is wrong with the cable (defective, not inserted etc.).
- **Transfer Mode**  
The 'Transfer Mode' shows the transmission mode of the printer. In case in brackets '(Auto)' is indicated so the setting was automatically recognised. In case the printer has no connection and the speed is automatically to recognise so at 'Transfer Mode' is 'Auto' shown as at a missing connection it was not possible to execute the speed recognition.
- **DHCP**  
Indicates if DHCP is set either to on or off.
- **Printer Name**  
Corresponds to network name of printer (is only used with DNS or WINS)

## Printing from the command line/MS-DOS Command Prompt

It is possible to send a print order for Windows systems which are based on NT (NT/2000/XP) also from the command line via lpr command to the printer. For this procedure it is necessary to have a label as prn file. Prn files can be created e.g. with Labelstar PLUS.

Example: Send the file 'eti1.prn' to the printer with IP Address 192.168.0.21:

```
lpr -S192.168.0.21 -Plp1 eti1.prn
```

Option '-S' indicates IP Address, and '-P' the name of the waiting queue.

## In case of problems

It is possible to use the 'ping' command to check if there is really a connection to the printer. With the following call you can test in the command line/MS-DOS command prompt if the printer with IP address 192.168.0.21 answers:

```
ping 192.168.0.21
```

In case everything is correct the printer should answer with the following message:

```
Answer from 192.168.0.21: Bytes=32 time<10ms TTL=30
```

In case of error you receive timeouts:

Exceeding time of request.

In case an error occurs please check the following:

Shining LED or display?	--No→	Check current supply (cable, plugs, ...)
Yes		
Is the network cable correct plugged in and has the printer a link (see status print)?	--No→	<ul style="list-style-type: none"> <li>• Is the correct cable used (perhaps a crossed cable)?</li> <li>• Is the connection linked with a Hub/Switch?</li> <li>• Is the Hub/Switch set to on?</li> <li>• Possibly the printer cannot set print speed automatically: Set print speed at printer by hand, depending on capability of Hub/Switch</li> </ul>
Yes		
Answers the printer to a 'ping'?	--No→	<ul style="list-style-type: none"> <li>• Are the network parameter IP address, network mask and Gateway correct configured (please contact you network administrator)?</li> <li>• DHCP: Is a IP address assigned to the printer?</li> <li>• DHCP: Does the ping not function with IP address or name? If IP function but name not then there is probably an error in the name resolution (network problem).</li> </ul>

Yes		
Receives the ping an answer even the printer is switched off?	--Yes→	There is an address conflict! The set IP address is already used from another network client!
No		
Is the printer found in the configuration software by 'Browse'?	--No→	Possibly switch the printer off and again on
Yes		
Is it possible to read out the settings in the configuration software by network?	--No→	Possibly switch the printer off and again on
Yes		
Is it possible to save settings by the configuration software?	--No→	Possibly switch the printer off and again on
Yes		
The printer is full operational by the network. Check the correct setting of start/stop sign and printer type.		

## PRINTING VIA ETHERNET

### Requirements

For printing via TCP/IP different requirements are necessary.

#### Hardware

- PC with network card
- Label printer (CV) with Option Ethernet

#### Software

- Operating condition -> Windows 9x, Windows NT 4.0, Windows 2000, Windows XP installed and configured TCP/IP protocol (Settings -> Network -> Protocols -> TCP/IP Protocol)
- local administrator rights

### Support by operating systems

Depending on Windows version there is different support for printing on network printers via TCP/IP.

Operating system	Support from	supported protocols
Windows 95/98/Me	CV TCP/IP Port <sup>*</sup>	Raw TCP/IP <sup>*</sup>
Windows NT 4.0	Microsoft TCP/IP Print service <sup>**</sup>	LPR <sup>***</sup>
Windows 2000	Standard TCP/IP Port	Raw TCP/IP, LPR
Windows XP	Standard TCP/IP Port	Raw TCP/IP, LPR

<sup>\*</sup> For Windows 9x there is no and for Windows NT4.0 only limited support. For this reason we supply a port monitor for these operating system which is called 'CV TCP/IP Monitor', which supports Raw TCP/IP protocol.

<sup>\*\*</sup> This service has to be installed separately by Settings/Network/Services/Add.

<sup>\*\*\*</sup> LPR Protocol supports the unidirectional communication to the printer

Note: As the 'Standard TCP/IP Port' is a component under Windows 2000/XP the installation is not necessary. For the other operating systems it is necessary to install the 'CV TCP/IP Port Monitor'.

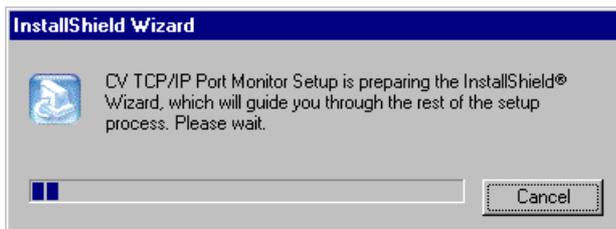
## Installation of CV TCP/IP Port Monitor

For the installation of CV TCP/IP Port Monitors there is an own installation program of the corresponding printer driver CD which installs besides the real port monitor additionally a configuration program (CV TCP/IP Port Manager) for the easy setup of corresponding printer ports.

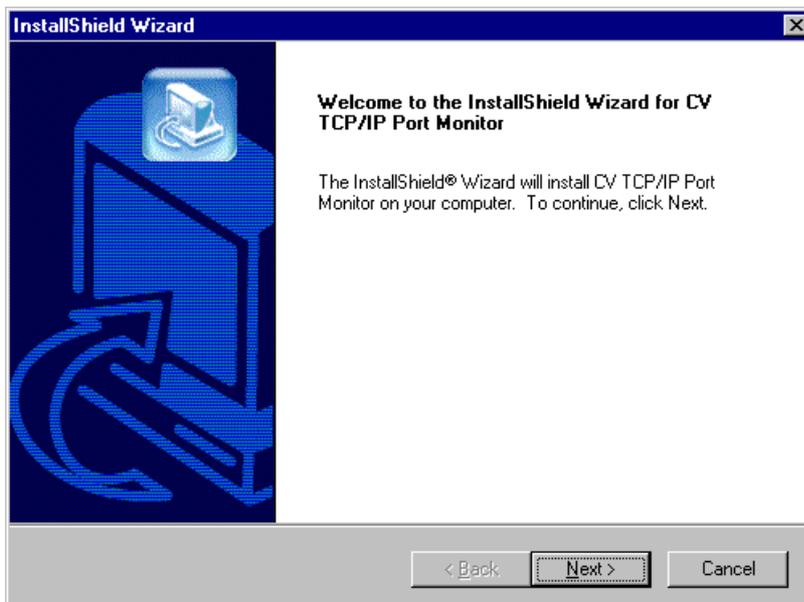
After you have started the Setup Program the following box is displayed at the screen.



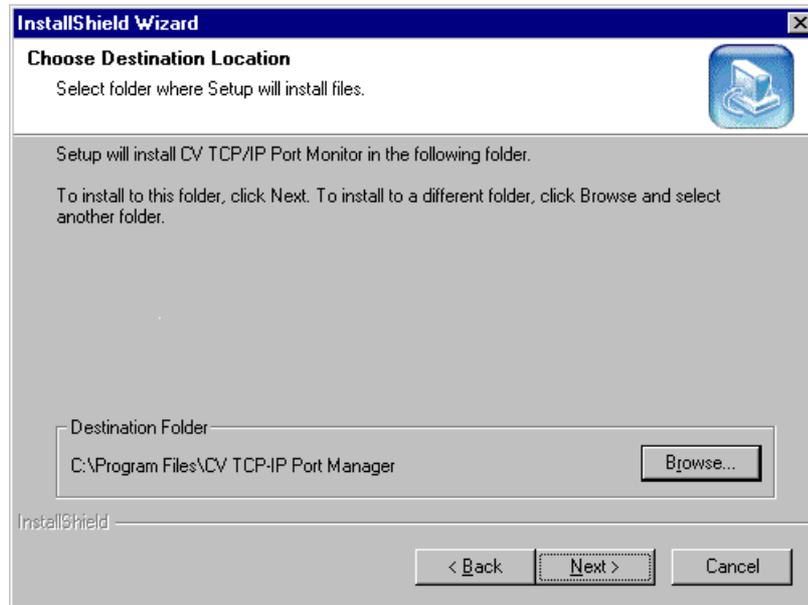
Select the desired Setup language, confirm your selection with OK and the installation wizard is started. At the moment you can select either German or English.



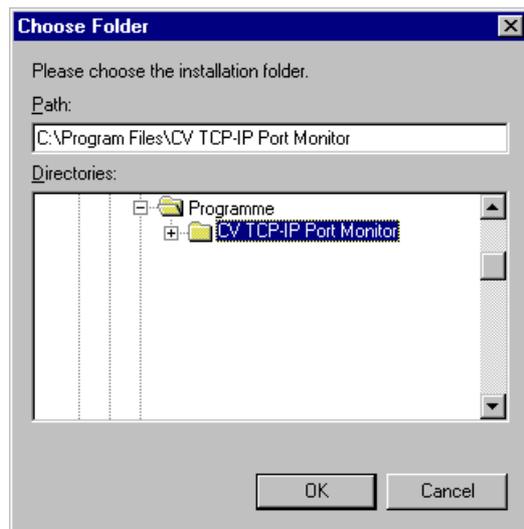
After the Setup program has prepared the InstallShield Wizard, the first page of the InstallShield Wizard is displayed.



Click **Next**, to continue the installation of CV TCP/IP Port Monitors.

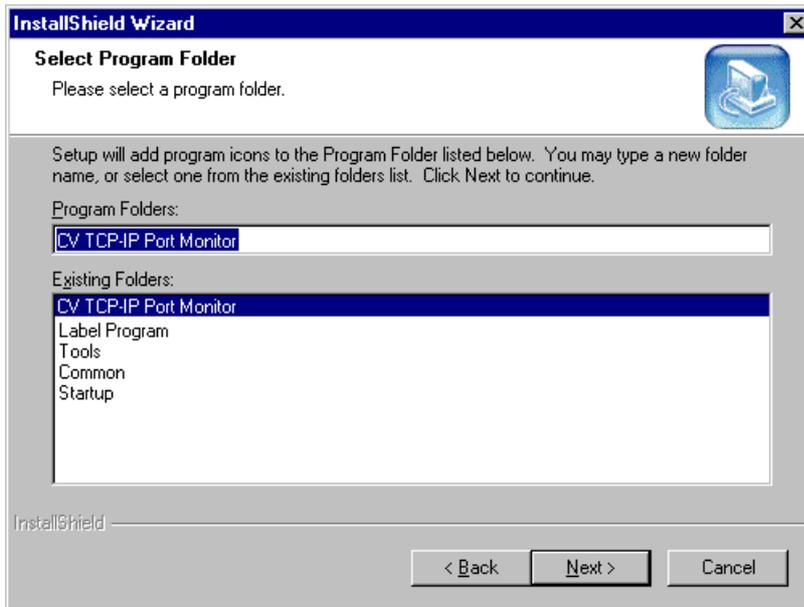


It is possible to define the directory in which the Port Manager is to install (the Port Monitor is automatically installed in the system directory). In case you select **Browse** then the following dialog for the selection of installation folder is displayed:

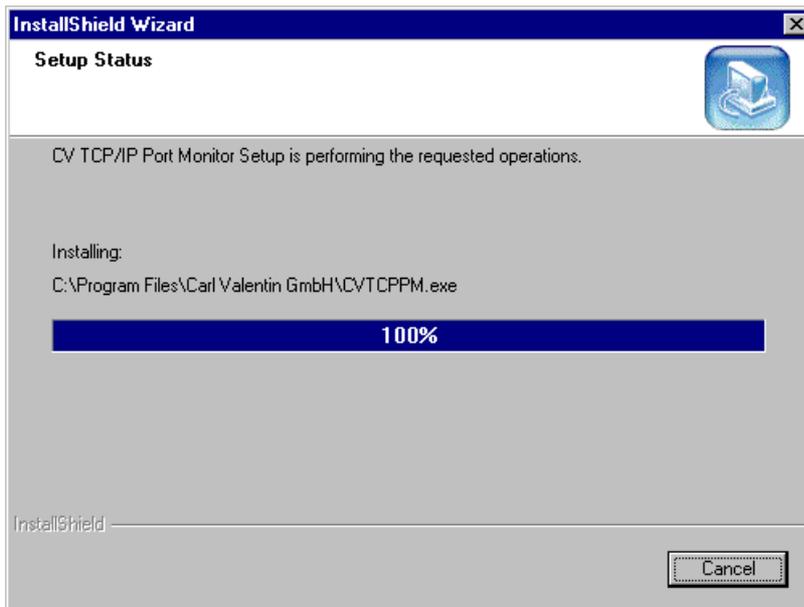


Select the desired directory, confirm your settings with OK and you return to the dialog box **Chose Destination Location**.

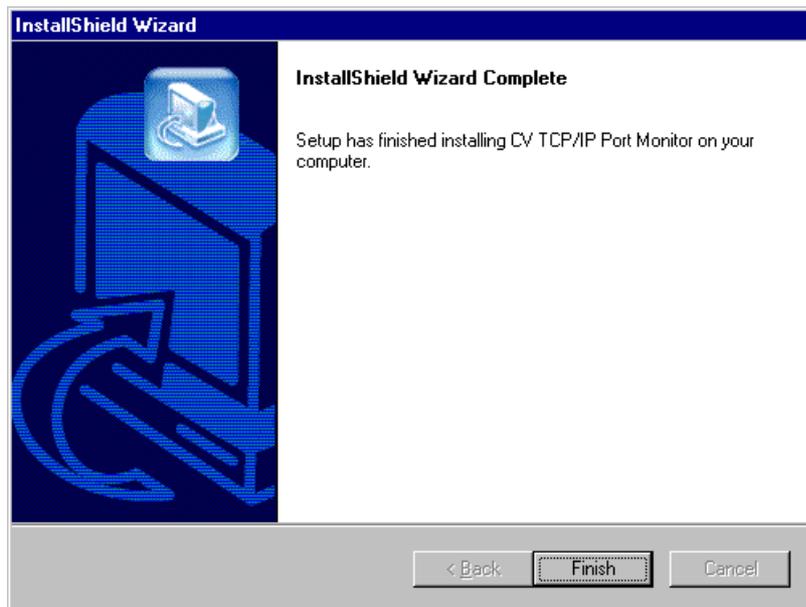
Confirm the selection of the desired directory with **Next** and the next dialog box appears.



Select the program folder and confirm your selection by clicking the **Next** button. The necessary files are copied to the harddisk.



After the corresponding files have been copied to the harddisk, the last dialog box of the InstallShield Wizard is displayed.

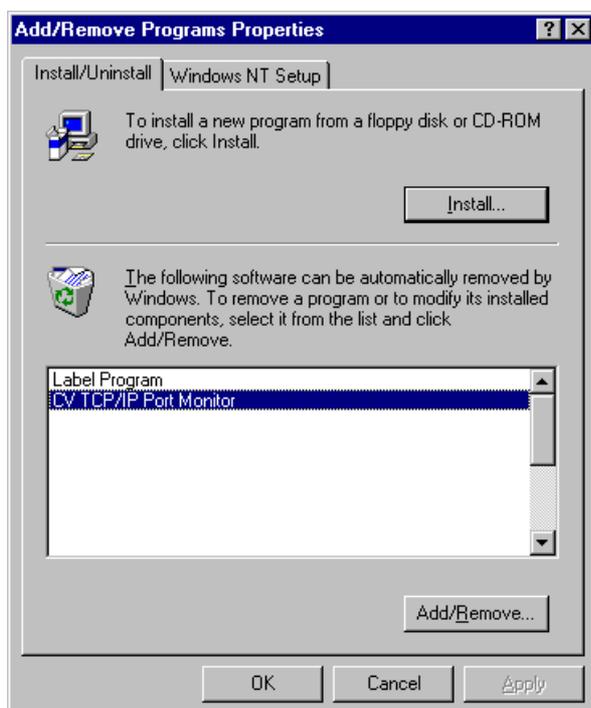


Click **Finish** to finish the installation of CV Port Monitor.

## Remove CV TCP/IP Port Monitor

Click Settings -> Control Panel -> Add/Remove Programs, then select CV TCP/IP Port Monitor and click the Add/Remove button.

Please note that the remove of the Port Monitor is only possible if no printer port is available which uses this Port Monitor.

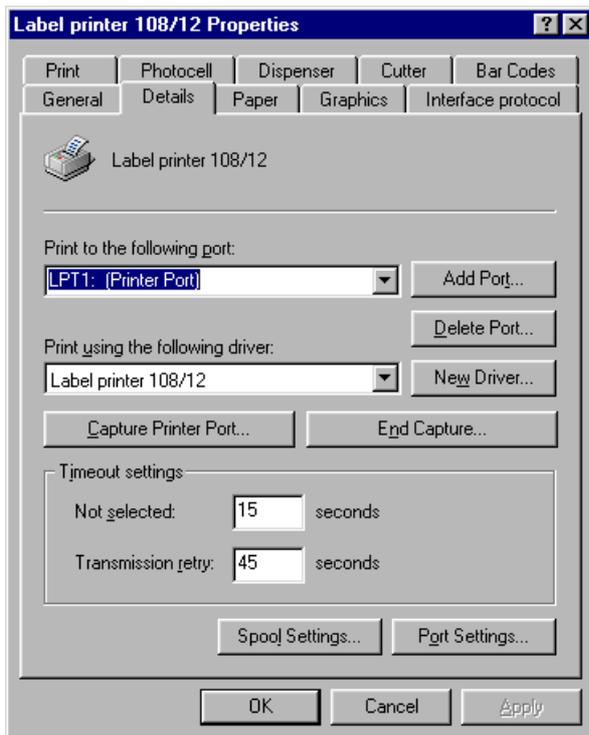


## Setup printer ports when using Windows Windows 95/98/Me

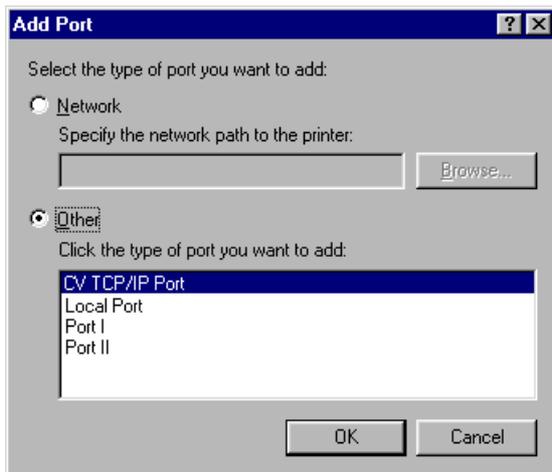
When using this operating system the setup is only possible by the properties of an already installed printer.

Click the **Start** button, place the mouse indicator onto **Settings** and select **Printer** or select **Control Panel** and click the printer symbol.

Select the desired printer with a right mouse click, select from the context menu the menu item Properties and the following dialog box appears:



Click the Add Port button and the following dialog box appears.



Select the type of port you want to add.

In case you select the check box **Other** and select **CV TCP/IP Port** then the InstallShield Wizard of Port Monitor is started.

## Setup printer ports when using Windows NT/2000/XP

### 1. Setup at printer installation

Start the Setup program of the printer driver CD, select the desired language, printer driver and then installation and the dialog box of the **Add Printer Wizard** appears.

In case that no network printer is available, select the check box **My Computer**, confirm your selection with **Next** and the following dialog box appears.



Click the **Add Port** button and select from the next window **CV TCP/IP Monitor** from the list of **Available Printer Ports**.

Activate **Add Port**, select **CV TCP/IP Port** and click the **New Port** button.

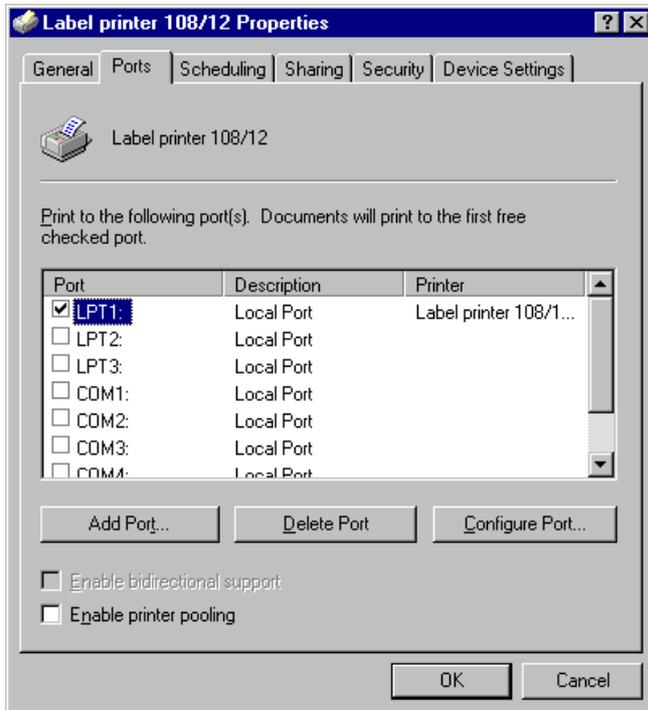
The **Add Standard TCP/IP Printer Port Wizard** appears.

## 2. Setup by the properties of an already installed printer

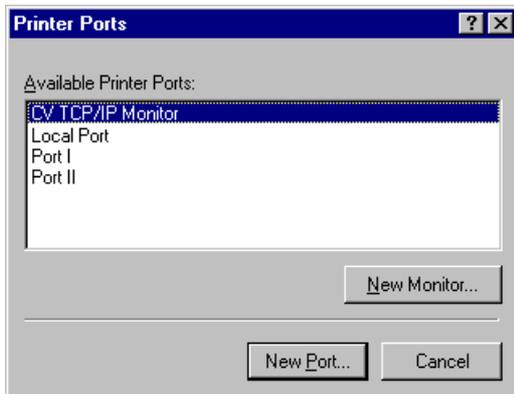
Click the **Start** button, place the mouse indicator onto **Settings** and select **Printer** or click on **Control Panel** and double click the printer symbol.

Click the right mouse button onto the desired printer and select from the context menu the menu item **Properties**.

Select the **Ports** tab and the following dialog appears.



Activate the **Add Port** button and the following window is displayed at the screen.

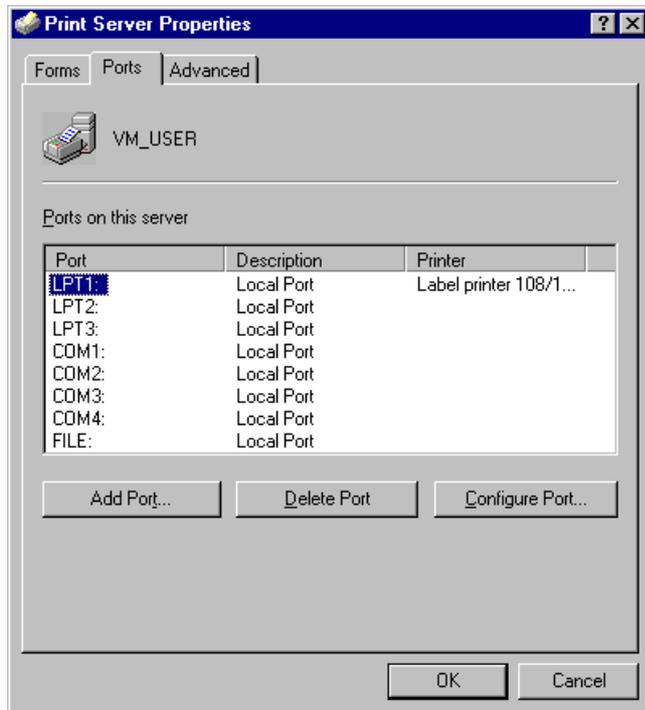


Select **CV TCP/IP Monitor** from the list of **Available Printer Ports**, activate the **New Port** button and the Wizard for adding a Standard TCP/IP Printer Ports appears.

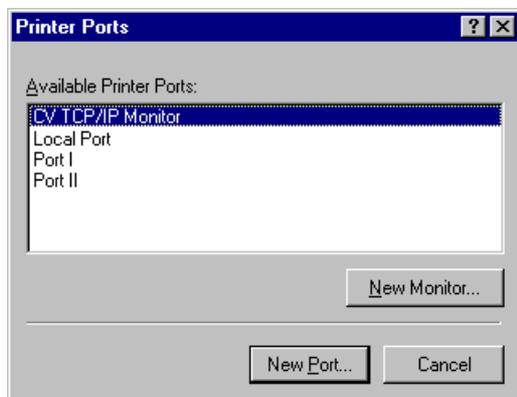
### 3. Setup by the server properties

Click the **Start** button, place the mouse indicator onto **Settings** and select **Printer** or click on **Control Panel** and double click the printer symbol.

From the **File** menu click **Server Properties** and the following dialog box appears on the screen.



Click the **Add Port** button and the following dialog box appears:

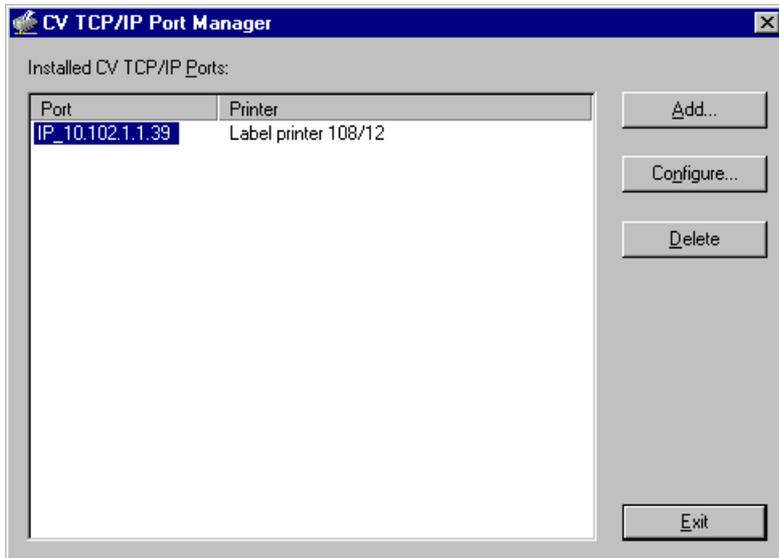


Select **CV TCP/IP Port** from the list of **Available Printer Ports**, click the **New Port** button and the **Add TCP/IP Printer Port Wizard** appears.

## CV TCP/IP Port Manager

The CV TCP/IP Port Manager provides the user the possibility to setup printer ports, especially when using Windows 9x.

Double click the program symbol and the following dialog box is displayed at the screen.



The left part of the dialog shows all our available printer ports as well as the linked printers.

Click the **Add** button and the **Add CV TCP/IP Printer Port Wizard**. By means of this wizard it is possible to add a port for a network printer.

Click the **Configure** button and the **Configure CV TCP/IP Port** dialog box appears. This dialog box provides the possibility to change **Printer Name and IP Address** as well as **Port Number**. However, it is not possible to change the **Port Number** because this is only displayed.

Click the **Delete** button to delete an already existing port and a message appears if you really want to delete the port.

Click the **Exit** button and the dialog box disappears.

## ADD A CV TCP/IP-PORTS

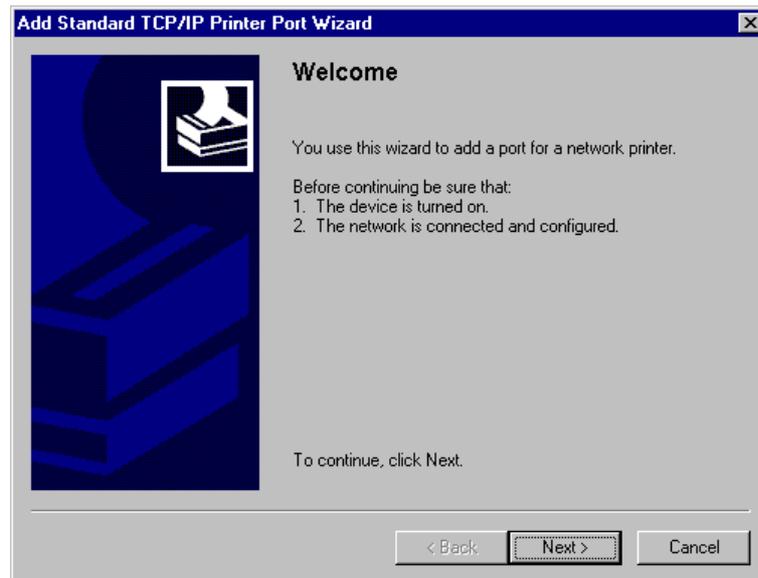
The CV TCP/IP Port can be added by means of a wizard which is based to the 'Standard TCP/IP Port' from Windows 2000/XP.

Click the **Start** button, place the mouse indicator onto **Settings** and select **Printer** or click **Control Panel** and click the printer symbol.

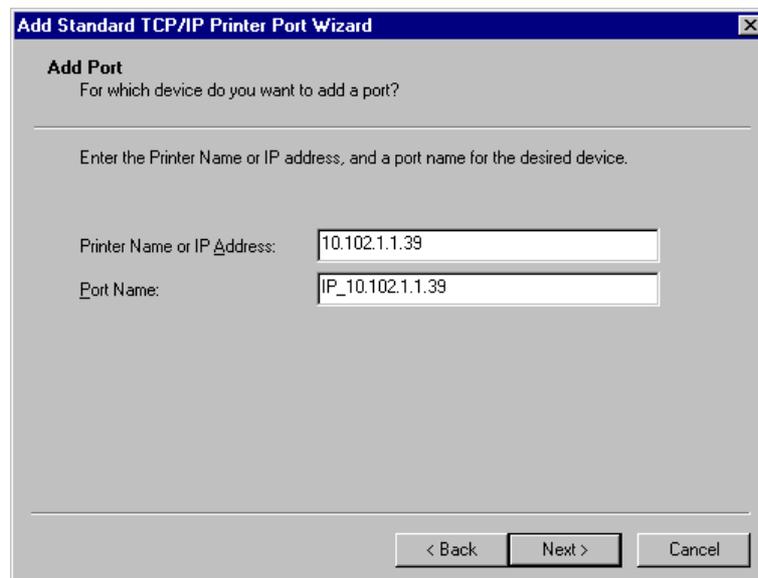
From the **File** menu select the menu item **Server Properties**.

Select the **Ports** tab and then click the **Add Port** button.

From the list of Available Printer Ports select Standard TCP/IP Port, click the New Port button and the Add Standard TCP/IP Printer Port Wizard appears.



Click the **Next** button to continue the procedure.



Enter **Printer Name or IP Address** and **Port Name**.

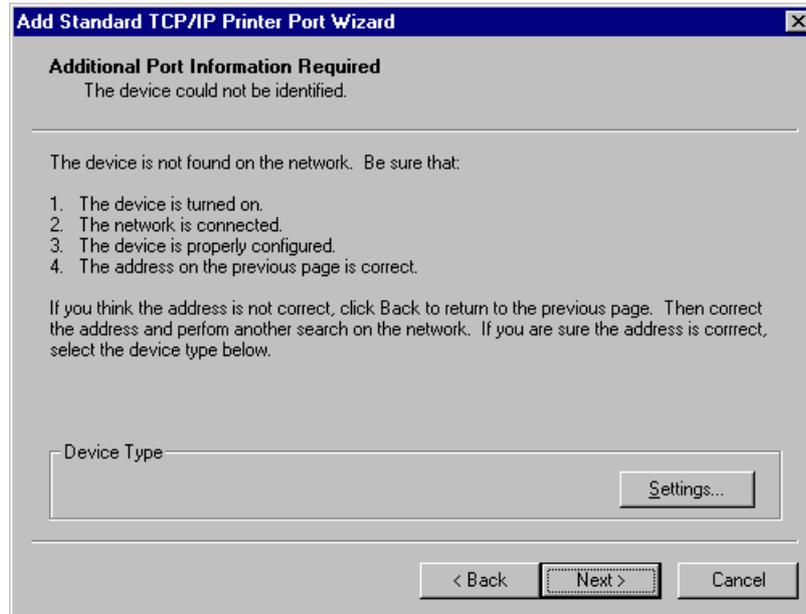
Please note that in case of clicking the Back button to change the IP Address then the Port Name is not changed automatically.

It is possible to note the IP Address of the printer with a status print at the printer. When using a DNS Server or by means of Host files it is possible to enter the printer name.

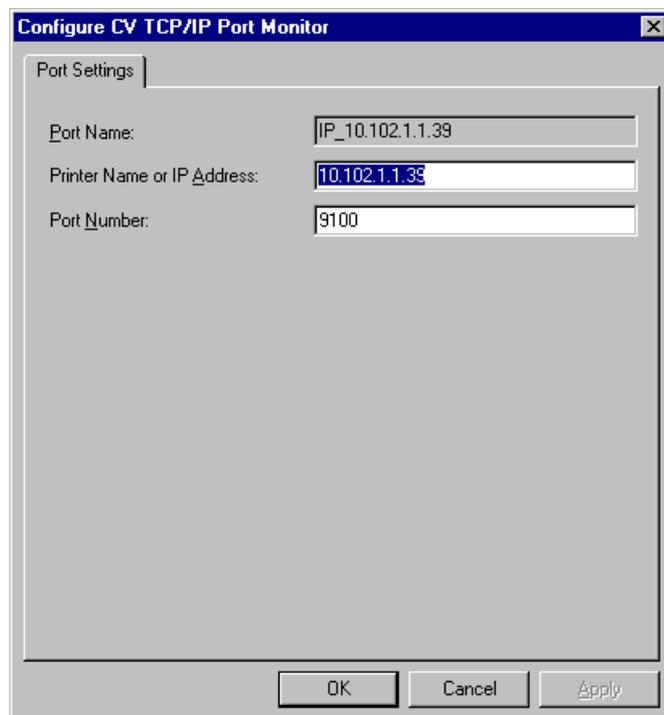
Enter for this connection a **Port Name** which is free to select and confirm your entries with **Next**.

Afterwards the system tries to create a connection to the entered address. In case this is possible then the **Completion** page is displayed.

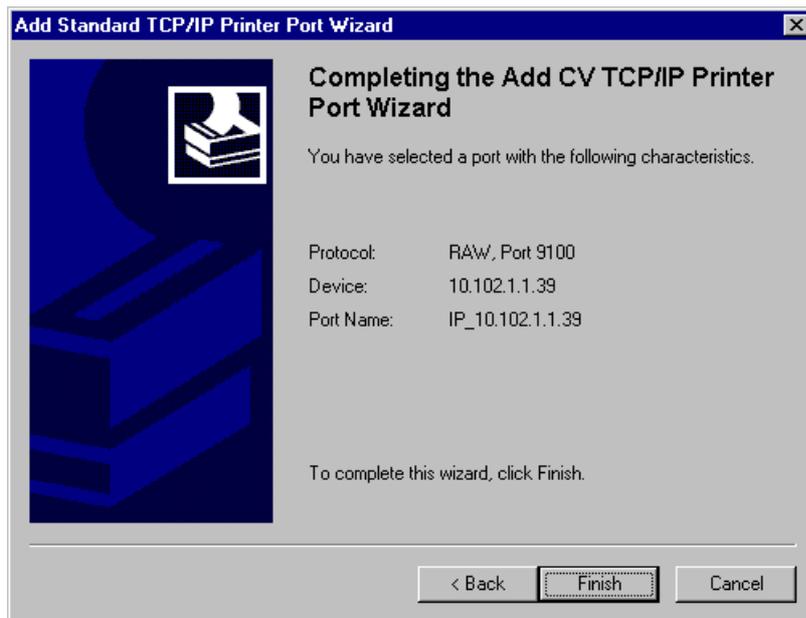
In case this was not possible, then the following dialog is displayed.



Click the **Settings** button to adjust the port with the following configuration dialog.



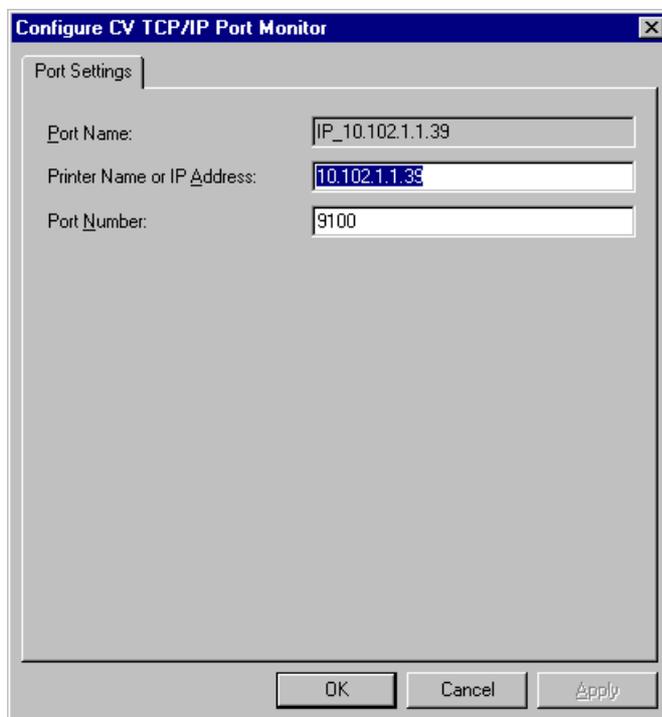
After you have entered **Port Name**, **Printer Name** or **IP Address** and **Port Number** click the **OK** button and you switch to the **Completion** page.



The **Completion** page shows a summary of entered settings.

## CONFIGURE CV TCP/IP PORTS

The properties of an already installed port can be changed by **Configure res. Port Settings**. For this procedure the following display appears.



Here it is possible to change **IP Address** res. **Printer Name** in network and if necessary the **Port Number** (as default this should always be 9100).

## DELETE CV TCP/IP PORT

An already existing CV TCP/IP Port can be deleted by **Delete res. Delete Port**. This is only possible in case no printer uses this port, i.e. connected with a printer. After an additional request if you really want to delete the port, the port is deleted.

## SETUP STANDARD TCP/IP PORT

The setup of Standard TCP/IP when using Windows 2000/XP is analogue to the CV TCP/IP Port. Some differences are only in the extended configuration possibility. See the following dialog box.

The screenshot shows a Windows dialog box titled "Configure Standard TCP/IP Port Monitor". The dialog is divided into several sections:

- Port Settings:** "Port Name" is "IP\_10.102.1.39" and "Printer Name or IP Address" is "10.102.1.39".
- Protocol:** The "Raw" radio button is selected, and the "LPR" radio button is unselected.
- Raw Settings:** "Port Number" is "9100".
- LPR Settings:** "Queue Name" is empty. The "LPR Byte Counting Enabled" checkbox is unselected.
- SNMP Settings:** The "SNMP Status Enabled" checkbox is unselected. "Community Name" is "public" and "SNMP Device Index" is "1".

At the bottom of the dialog are "OK" and "Cancel" buttons.

Additionally to the known settings it is also possible to the LPR protocol. In this case you have to enter the name of the print queue (see illustration).

As our printers do not support the SNMP Protocol it is not allowed to select this option.

The screenshot shows a Windows dialog box titled "Configure Standard TCP/IP Port Monitor". The dialog is divided into several sections:

- Port Settings:** "Port Name" is "IP\_10.102.1.39" and "Printer Name or IP Address" is "10.102.1.39".
- Protocol:** Two radio buttons are present: "Raw" (unselected) and "LPR" (selected).
- Raw Settings:** "Port Number" is "9100".
- LPR Settings:** "Queue Name" is "lp1". There is an unchecked checkbox for "LPR Byte Counting Enabled".
- SNMP Status Enabled:** This checkbox is unchecked. Below it, "Community Name" is "public" and "SNMP Device Index" is "1".

At the bottom of the dialog are "OK" and "Cancel" buttons.

## PRINTER SETUP

The setup of TCP/IP printers under Windows and in Labelstar PLUS is described in the corresponding documentation. Please note, when adding a printer by means of the Printer Installation Wizard that TCP/IP printers are to install as local printers (do not select network printer).

## PARAMETERS FOR NETWORK

### General

Example:

SOH	F	C	L	A	-	-	r	C0A80015	ETB
-----	---	---	---	---	---	---	---	----------	-----

All network parameters start in column 3 with 'L'. In column 4 follows the identification for the corresponding network parameter. In column 5 can follow a further sub-identification. Contrary to other columns, column 8 can have more than 1 sign.

For each parameter exist statements which are taken the rule (limited argument size of 8 signs) into consideration.

Moreover for each parameter exists also a statement with unlimited argument size.

For statement with a limited argument size (8 signs), IP addresses (IP address, network mask, Gateway address) which consist of 32-Bit are transmitted in Hex.

For data which is transmitted in Hex (also for MAC address) capital letters as well as small letters can be used.

Contrary to the parameter settings in the other interfaces the settings of the following statements are saved immediately onto Flash, i.e. it is not necessary to force first the saving of current configuration by the corresponding parameter statement before switching off the printer so the modifications are still available after switching on.

#### **Question and answer statements according to the old schema:**

The question statement is the one with 'w' instead of 'r' in column 7 and with 8 sign ID as argument. The answer statement starts with 'A', 8 signs argument then 8 signs ID.

Statements which are not limited to the argument size of 8 signs are analog. Argument and sign ID are separated with a semi-colon (example see printer name).

So the set modifications become active, even without a printer reset a corresponding Z statement which results in a reset of the network device (see below).

## Parameter statements

### IP address (e.g. '192.168.0.21')

SOH	F	C	L	A	A	-	r	C0A80015	ETB
SOH	F	C	L	A	B	-	r	192.168.0.21	ETB

For reaction at DHCP, see statement DHCP On/Off.

### Netmask (e.g. '255.255.255.0')

SOH	F	C	L	B	A	-	r	FFFFFF00	ETB
SOH	F	C	L	B	B	-	r	255.255.255.0	ETB

For reaction at DHCP, see statement DHCP On/Off.

### Gateway address (e.g. '192.168.0.1')

SOH	F	C	L	C	A	-	r	C0A80001	ETB
SOH	F	C	L	C	B	-	r	192.168.0.1	ETB

For reaction at DHCP, see statement DHCP On/Off.

### Transmission mode (e.g. automatic recognition)

SOH	F	C	L	D	-	-	r	00-----	ETB
-----	---	---	---	---	---	---	---	---------	-----

- A:
- 0 - Auto recognition
  - 1 - 10 MBit/s half duplex
  - 2 - 10 MBit/s full duplex
  - 3 - 100 MBit/s half duplex
  - 4 - 100 MBit/s full duplex
- B:
- 0 – Keep-Alive-Check deactivate (at this moment only with Port 9100 possible)
  - 1 – Keep-Alive-Check activate (Default)
  - 2 – Keep-Alive-Check deactivate for this connection
  - 3 – Keep-Alive-Check activate for this connection (Default)

**Keep-Alive-Check:** As default the printer sends after a certain period of inactivity (normally 60 seconds) of a TCP connection a Byte (Hex: 0x00) to the communication partner to check if the partner already exists. For the most programs this does not show problems. For this few exceptions it is possible to switch off this Check. In case of a not normal separation of connection (crash of partner, cut network cable, loss of routers/hubs/switches, ) the printer cannot recognise that the partner is lost and is no longer ready to address at this port for other network clients.

**MAC address (e.g. 00-07-4A-43-19-08)**

SOH	F	C	L	M	B	-	r	00074A	ETB
SOH	F	C	L	M	A	-	r	431908	ETB
SOH	F	C	L	M	C	-	r	00-07-4A:43:1908	ETB

A MAC Address consists of 48 Bits and is usually indicated hexadecimal.

With the B statement it is possible to change our identification for the MAC address. As default, all our devices start with 00-07-4A. This corresponds to the Memory Pool which assigned the MAC address committee to us, to grant the MAC address is world-wide unique for all producers.

With the A statement it is possible to set any address in our Pool. As default IP addresses higher than 7F-FF-FF are not assigned. This section is reserved for later applications.

For C statement it is possible to indicate the MAC address as a whole or in pairs separated with '-' or ':'  
 00074A431908, 00-07-4A-43-19-08, 00:07:4A:43:19:08

**DHCP On/Off**

SOH	F	C	L	E	-	-	r	0-----	ETB
-----	---	---	---	---	---	---	---	--------	-----

0 = DHCP Off

1 = DHCP On

In case DHCP is set to 'On', the statements necessary to set IP address, network mask and Gateway address were ignored and in case of read out these values, the addresses assigned by the DHCP server were returned. If no address is assigned to the printer, there are '0' in the address fields.

**Printer name (e.g. 'Printer\_EWS')**

SOH	F	C	L	F	-	-	r	Printer.EWS	ETB
-----	---	---	---	---	---	---	---	-------------	-----

The name is allowed to consist of a maximum of 15 characters, i.e. the printer cuts the name automatically after 15 signs. Allowed signs are letters 'A' to 'Z' res. 'a' to 'z', numbers '0' to '9', hyphen '-' and underscore '\_'.

**Attention:** Because of the fact that the underscore is also used as ETB it must be transmitted as point '.'.

This statement interrupts the rule of limited argument size (8 signs).

Answer statement shows the following:

**Request printer name**

SOH	F	C	L	F	-	-	w	pppppppp	ETB
-----	---	---	---	---	---	---	---	----------	-----

**Answer**

SOH	A	Printer_EWS	;	pppppppp	ETB
-----	---	-------------	---	----------	-----

## NTP Server

NTP (Network Time Protocol) is a standardised Internet protocol permitting the synchronisation of real-time clocks of network participants. The printer connects itself with a time server and align every 60 minutes its internal real-time clock with that of the time server in order to correct possible differences. The address of server (IP address) can be freely configured in the printer. The communication is effected by UDP and the fixed set port 123. The service in the printer is deactivated by transmitting the server address 0.0.0.0.

The time servers work together with the coordinated world time (UTC) and therefore an additional time shift is needed compared to the reference time. For Germany it is e.g. +1 hour. The current state of the connexion can be queried with a status set.

### Set NTP Server IP

SOH	F	C	L	N	I	-	r	N	ETB
-----	---	---	---	---	---	---	---	---	-----

N = X.X.X.X (X = 0..255)

### Enquire NTP Server IP

SOH	F	C	L	N	I	-	w	pppppppp	ETB
-----	---	---	---	---	---	---	---	----------	-----

### Answer

SOH	A	N	N	N	N	N	N	N	N	p	p	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

0.0.0.0 deactivates the NTP service

### Set time zone (hour offset)

SOH	F	C	L	N	Z	-	r	N	ETB
-----	---	---	---	---	---	---	---	---	-----

N: -12, 12

### Enquire time zone (hour offset)

SOH	F	C	L	N	Z	-	w	pppppppp	ETB
-----	---	---	---	---	---	---	---	----------	-----

### Answer

SOH	A	N	N	N	N	N	N	N	N	N	p	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

### Readout NTP status

SOH	F	C	L	N	S	-	w	pppppppp	ETB
-----	---	---	---	---	---	---	---	----------	-----

### Answer

SOH	A	N	-	-	-	-	-	-	p	p	p	p	p	p	p	p	ETB
-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----

N: OK / ERROR / OFF

**Authentication frame**

SOH	F	C	L	X	-	-	r	MAC statement	ETB
-----	---	---	---	---	---	---	---	---------------	-----

This statement creates a frame around any other printer statement. It consists of 2 arguments: MAC address and statement.

**MAC address:** The statement is only processed by the printer if the correct MAC address is indicated. This is necessary in case a wrong setup printer is to be new configured by means of Broadcast. The same rules as for C statement to set MAC address (FCLMC) are valid.

It is also possible to use the MAC Broadcast address (FF:FF:FF:FF:FF:FF). In this case the statement is processed from all printers. However, the answer statement contains the MAC address of each printer.

**Statement:** Any printer statement  
MAC address and statement have to be separated by a separator sign. We recommend to use blanks or hyphen '-'.

**Examples: (MAC: 00-07-4A-43-19-08)**

```
FCLX---00-07-4A-43-19-08 FCLAB-r192.168.0.21
FCLX---00:07:4A:43:19:08-FCLAA-rC0A80015
FCLX---FFFFFFFFFFFFFF S
FCLX---FF:FF:FF:FF:FF:FF FCLAB-w-
```

**Format of answer statements**

SOH	A	MAC	;	answer	ETB
-----	---	-----	---	--------	-----

**Example:**

Question statement: FCLX---FF:FF:FF:FF:FF:FF FCLAB-w-

Answer statement: A00:07:4A:43:19:08;A192.168.0.21;-

**Reset network device**

SOH	F	C	L	Z	-	-	r	-----	ETB
-----	---	---	---	---	---	---	---	-------	-----

This record causes that the modifications made by the transfer of the previous records become effective.