

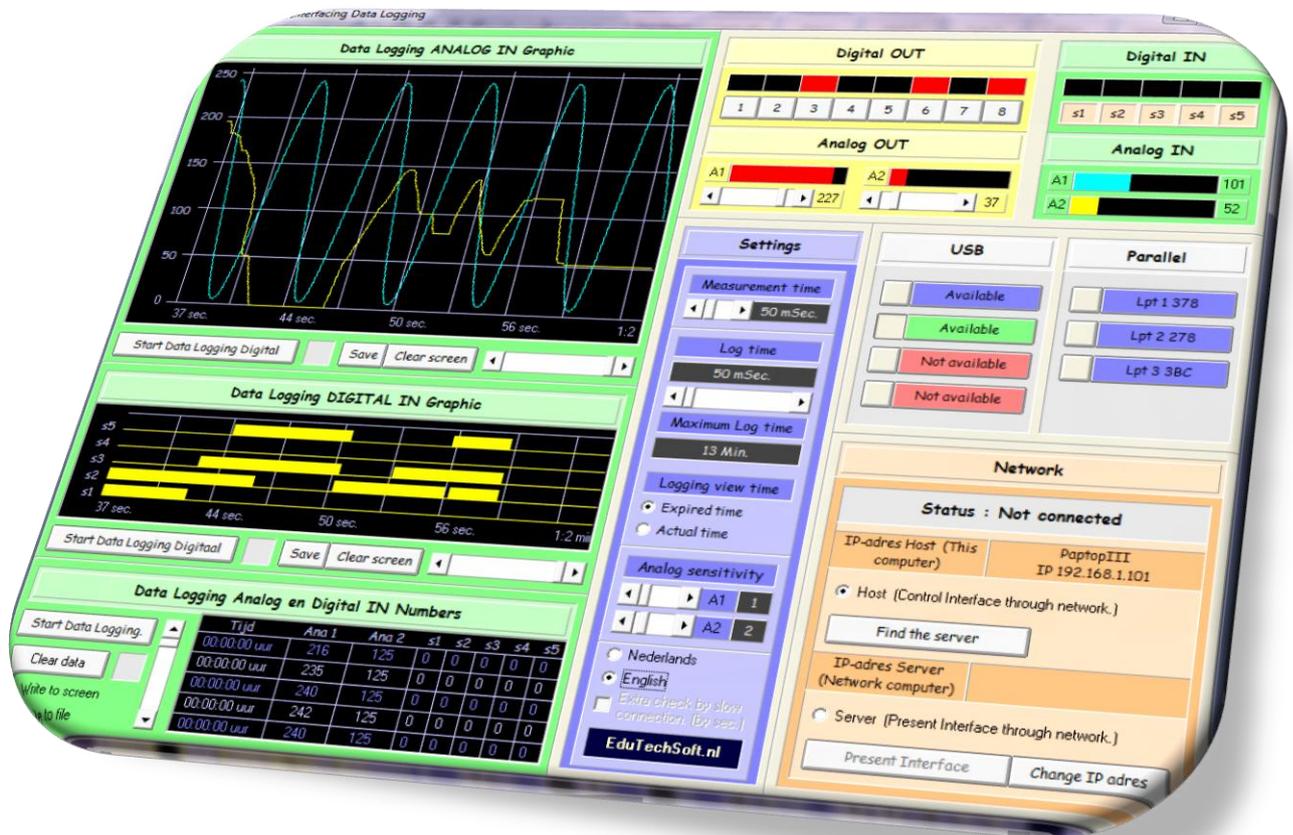
Manual...

Network

Interfacing

Data

Logging.



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Translated from Dutch by C.J. Boorsma.

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Introduction.

I have written this program to make several lessons more attractive for the use in Middle School. I am still working on developing these lessons and ideas.

One of the parts that I will elaborate is the IP-address of a computer. It is intended that a chapter will be added in the lessons of "Digitale Technieken."

The usage of this software is entirely at your own risk. The constructor cannot be held responsible for possible damage resultant from utilizing this software.

Description of the program.

The program is suitable for the following interfaces.

- Parallel port interface. - 8 digital output ports
 - 5 digital input ports.
- USB interface. - 8 digital output ports.
 - 5 digital input ports
 - 2 analogous input ports. (0...255 / 8 bits)
 - 2 analogous output ports. (0...255 / 8 bits)
 - Type Velleman k8055 or VM110.

Every computer is able to connect a maximum of 3 parallel and 4 USB interfaces.

The program enables you to select the connected interface and read or manage the input- and output ports. It is also possible to do this from a distance via networking. The term distance is relative since a connection is also possible through the internet.

Apart from that it is another eventuality to draw the value of the input ports in a graphic or to store them as a data file. The graphics can be stored as BMP and later be treated with for example 'mspaint'. The students will also be able to easily place the graphics they constructed in their report.

Program demands.

For the program to work it requires Windows XP; Vista; Windows 7 RC 32 bit and Windows 7 RC 64 bit. Yes, I wouldn't have expected that either. The 64 bit version does need to be executed with the program as administrator. (Right MouseKey etc.)

No installation is required, but it might be possible that certain parts need to be placed in certain folders. All of the files are in a ZIP file and can be opened in whatever folder you request/wish.

Dependent on the rights of the user, sometimes files must be placed in specified system folders.

If there are problems there will usually be an error-indication containing the name of the file that has a problem. Most of the time the problem will be solved by placing the defective file in the folder c:\windows\system32. Some of the files will already be in this folder.

Below is a description of the files followed by the function.

File	Function
ANIBTN32.OCX	Needed for special buttons.
COMDLG32.OCX	The completion of among other things file management.
inpout32.dll	Required for invoking of the printer port.
InterfaceNetwerk.exe	The program itself.
K8055D.dll	Needed for invoking of the USB interface.
MSWINSCK.DEP MSWINSCK.oca MSWINSCK.OCX	Required for setting up of networking.
THREED32.oca THREED32.OCX	Needed for special frames in the program.

Selection of the interface.

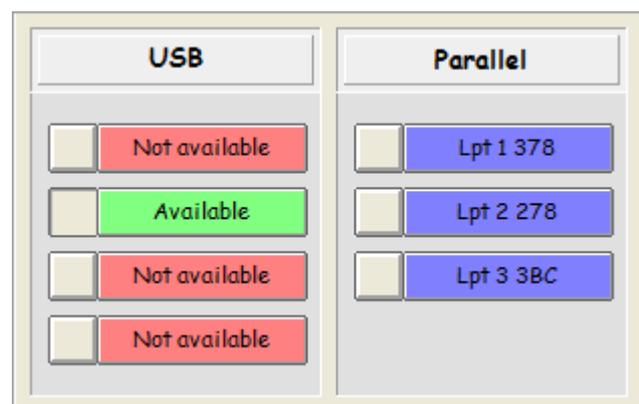
After starting the program the interfaces that are found will be showed.

Because it is impossible to detect if the printer ports are physically present, they will always be introduced as present. Windows will automatically turn on all the output ports of the parallel gate. Since it is undetectable to know if this is wanted, the ports will only be turned off when they are all on. That means when it says 255 on the port address. In all of the other cases the current value will be taken over by the program immediately.

The present USB interfaces are recognized and will be introduced with the text 'Available' with a blue or green background.

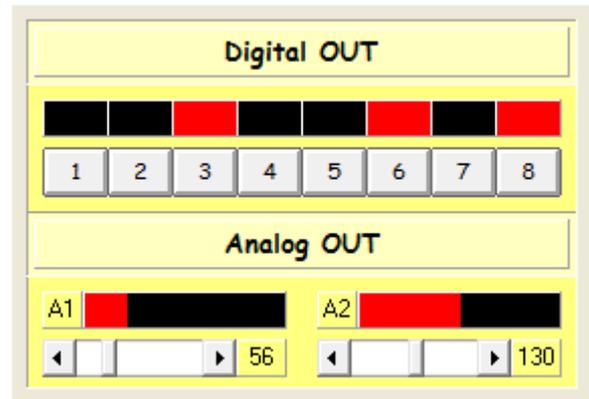
For example, the figure next to this shows that it found 1 USB interface.

The green interface is active at the moment. By clicking on the small buttons on the left you can select another interface, if it is available. When you connect an USB interface after starting the program it will not be found. You will have to start the program again.



Managing the output channels.

The Mouse enables you to easily manage the output channels. The parallel interface does not have analogous output channels, which means those cannot be managed. You can turn the digital output channels of the selected interface on- or off by clicking on the buttons 1 through 8. Red indicates that the output channel is active.



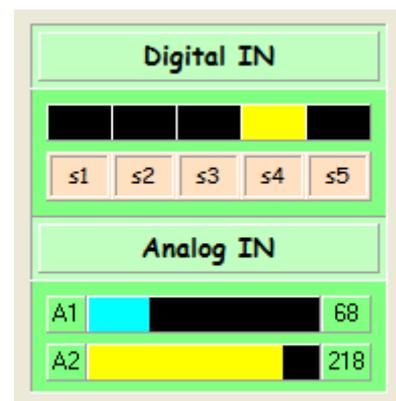
The analog output channels can be operated with the scroll bar. The value will be represented graphically in a rectangle. The scroll bar can either be clicked or dragged.

Electronic input of the input channels.

The input channels can obviously not be operated with the mouse. For this you will use the buttons on the interface, which makes it apparent that only the digital input channels of the parallel interface can be read.

At this moment input channel 3 of the selected interface is being operated.

It is normal that input channel 5 is high with the input channel of the parallel interface. That is because it is NOT a port. Maybe I will build in the option to reverse these in a later version.



The analog USB input channels will be represented graphically in a rectangle.

Settings.

Measurement time.

The measurement time is the time between 2 sequent measurements of the input ports.

The initiated time does not appear to be very accurate and impossible to achieve when you set it (up) to 10 milliseconds. Even though, the input channels will respond 'quicker' when you initiate the measurement time lower.

Several things are also dependent of the computer that is being used and, as will be described later, the speed of the (inter)network.

The scroll bar enables you to set the measurement time from 10 mSec through 1000 mSec.



Log time.

The log time is the time between 2 sequent assimilations, that is the drawing or writing, of information with data logging.

The log time can be set between 10 mSec and 10.000 mSec.

The maximum time in which logging is possible is strongly dependent of that initiated time.

In the graphic window a maximum of 16.000 information lines can be drawn horizontally. This multiplied with the initiated log time is the maximum log time.

Example.

With a setting of 10 mSec, the maximum log time is 10 times 16000 = 160.000 mSec. That is 160 Sec. which is a little more than two and a half minute.

Since the log time of 10 mSec. is not reachable, it means that the actual log time will be longer. It will be somewhere about 4 minutes. Several things are also dependent of the frequency of changes at the input ports.

So, the maximum time in which in theory it is possible to log, is 10.000 multiplied by 16.000 = 160.000.000 mSec is 160.000 sec which is about 44 hours. The current version will not give this outcome, because I still have to adjust the timer. For example at 24.00 h. the timer will turn back to zero.

With longer log times chance is that signals that take less time will not be represented. This accounts for the graphic reproductions.

Log time reproduction.

This is the time that is written in the graphic.

The setting **Expired time**, will render the time from the beginning of the logging.

The setting **Actual time** will render the current time.

Analog Sensitivity.

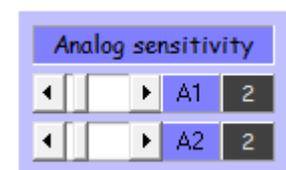
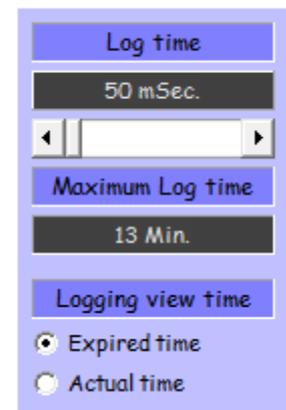
Here you can adjust the sensitivity of the analog inputs. With these settings (2) a change less then 2 will be ignored.

This setting also affects the drawing of the graphics.

Extra check with slow connection. (per sec.)

This can only be selected by the Host when there is a network connection.

When you have a slow network connection, sometimes not all of the information will get through correctly. The input ports will be updated every second by selecting this option. This will result in a constant information flow, even when there are no changes at the input ports.



Network

Host is the computer where the information comes in.

Server is the computer that sends the information from the Host to the interface and vice versa.

When you start the program, the IP-address of your computer will be shown in the window.

This IP-address is in a certain way unique, dependent on the network in which you are.

The **IP-address** of the Host is in this case **192.168.0.238**, the **name** of the host computer is **paptop_x2**.

See image on the right.

At the moment no address for the server has been inserted. When you want to connect this computer to another computer, then you will have to know the IP-address of the other computer.

You can read the IP-address by starting the program on the other computer.

The inserting of the server address will be done by clicking on the button **Change IP address**.

Type the IP-address of the computer that will be used as server in the window. After that, close the insertion window.

The screen will display the IP-address of the server.

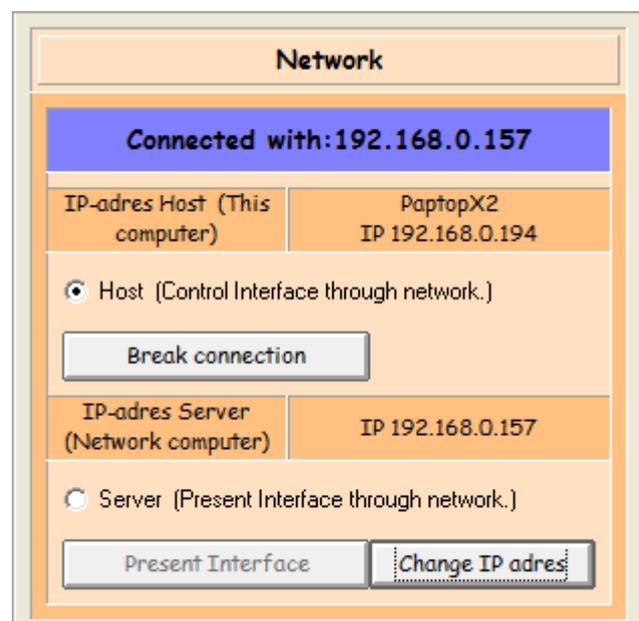
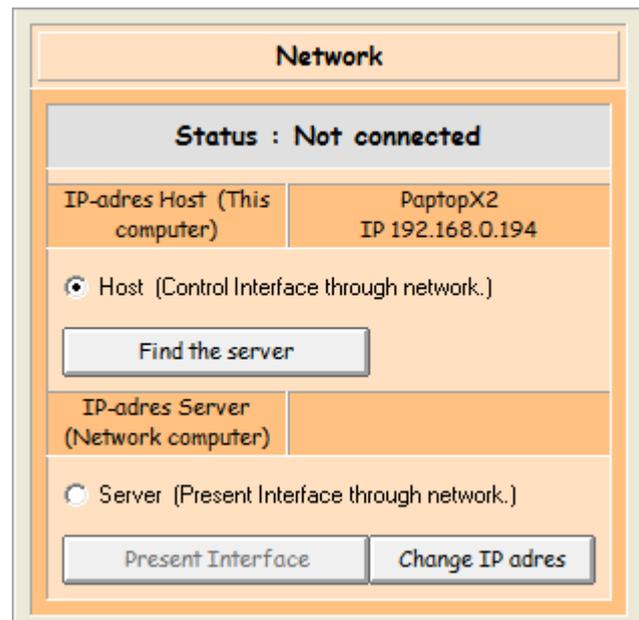
Select **Server (Present Interface through network)** on the server and after that **Present Interface**.

The server is waiting until a request to connect comes in.

Make sure that **Host (Control Interface through network)** is selected on the Host and then click on **Find the server**.

If all goes well a connection will be made. On the screen of the Host you will be able to see what USB Interfaces are connected to the server. So you can select, manage and read the connected interfaces of the server.

Connections through the internet are also possible, but A switched-on firewall



will have to be adjusted. When a server is 'working' or you are using an 'access' point, the port for example will have to be redirected.

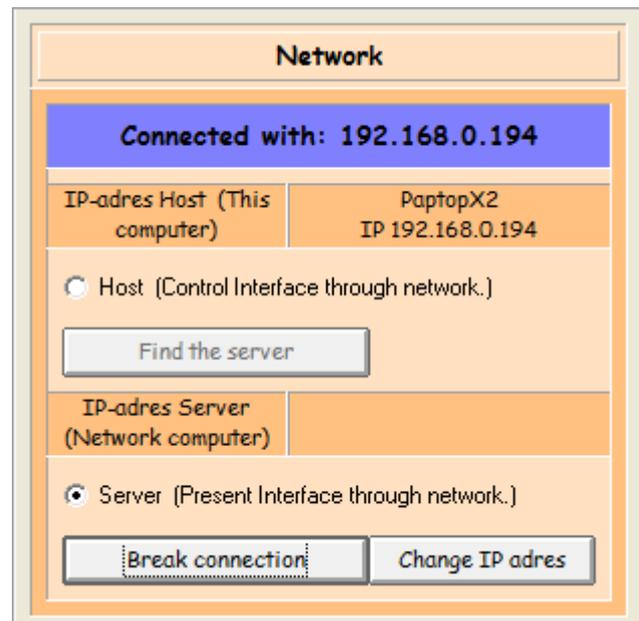
Usually something like redirecting 'port 2401' to the IP-address of the computer on which the server software is working.

This manual will not go into further detail about problems that may occur when there are connections via the (inter)network.

Connections through the internet are clearly slower than connections in your own network. By adjusting the Measuring time and/or the Log time reasonable results are possible.

Please do not manage nuclear plants or similar things using this software !

The image on the right shows you the network window of the server when it is connected to the Host.



Data logging ANALOG IN Graphic.

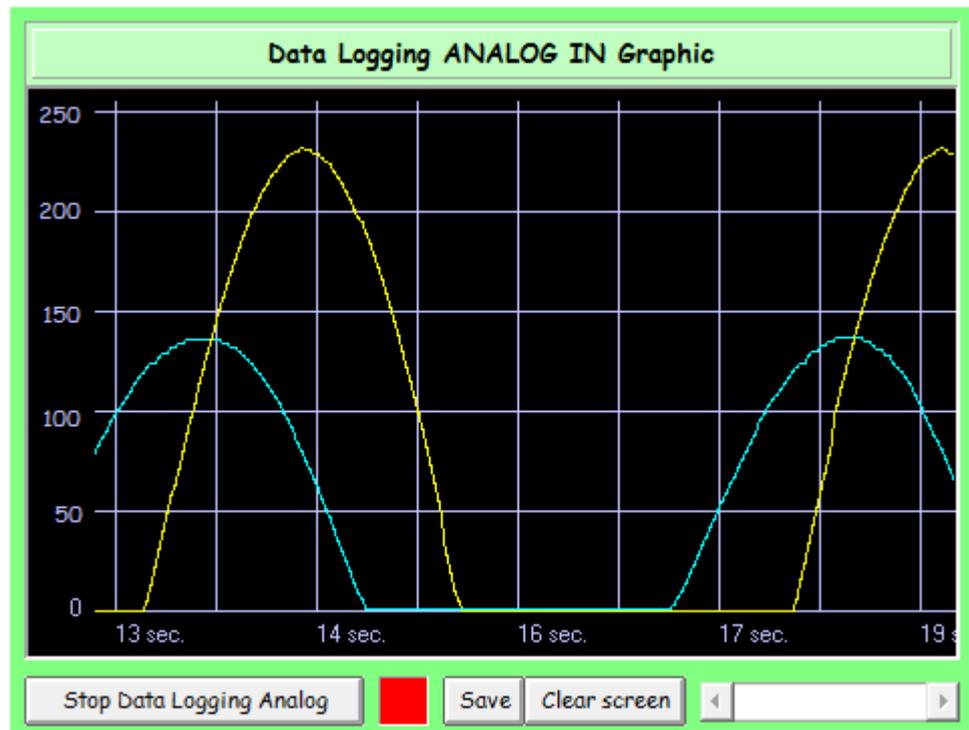
This module enables you to graphically render the value of both analogous input ports of the USB Interface.

When there is a network connection, the information of the server will be used for this.

You are able to start the rendering of the information by clicking

on **Start Data Logging Analog.**

The information shown in the image on the



right are from an audio generator at a low frequency at channel 1 and an capacitor connected between channel 1 and 2.

With an extra dc voltage you can ensure that the entire sinus will be drawn.

The window will slide through when it reaches the right side. The rendered time below the graphic is also adjustable to 'actual time'.

The logging will stop when you click on **Stop Data Logging Analog.** The scroll bar then enables you to slide through the graphic from beginning to end.

If you click **Start Data Logging Analog** again, you will be asked if you wish to continue with the previous information. If you choose No, the screen will not be deleted. This offers you the ability to let it draw more information in the graphic.

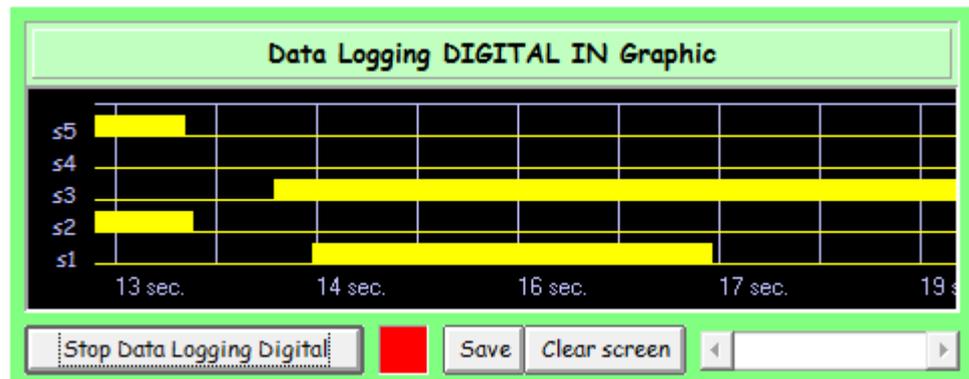
Clear screen will obviously delete the graphic.

Save proposes the possibility to save the graphic as a BMP image. Using paint you will be able to, for example, change the background from black to white, by choosing for example 'negative'.

Data Logging DIGITAL IN Graphic.

This module enables you to graphically render the value of the 5 digital input ports of the USB- or the parallel port interface.

When there is a network connection, the information of the server will be used for this.



You are able to start the

rendering of the information by clicking **Start Data Logging Digital**.

The operation is equal to that of analog logging. It is possible for them to log simultaneously. But the times will be in step.

Data Logging Analog and Digital IN Numbers.

With this module the value of the analogous and digital input ports, dependent on your choice, will be written to the screen and/or a file in numbers.

You can indicate to where you want the information written to.

Screen and/or file.

Tijd	Ana 1	Ana 2	s1	s2	s3	s4	s5
00:00:00 uur	000	069	0	0	0	0	0
00:00:00 uur	000	052	0	0	0	0	0
00:00:00 uur	000	034	0	0	0	0	0
00:00:00 uur	000	015	0	0	0	0	0
00:00:00 uur	000	000	0	0	0	0	0

The information on the screen will be written in the window. If you write it to a file you can choose the place and the name. The file will be given the extension .xls, this way you can easily open them in Excel.

Different from drawing the graphics, here it will only write a new line when the value of one of the input ports changes analogous or digital.

When you write it to the screen the maximum number of Lines is restricted. (16.000 / 18 = 888 lines) The restriction is less, when writing it to a file. At the moment I do not know the maximum capacity of this.

If you want to log 'long', then select only **Write to file**.

Data Logging ANALOG IN Graphic

37 sec. 44 sec. 50 sec. 56 sec. 1:2

Start Data Logging Analog
Save Clear screen

Data Logging ANALOG OUT

Digital OUT: 1 2 3 4 5 6 7 8

Analog OUT: A1 A2 227 37

Data Logging DIGITAL IN Graphic

s5	█
s4	█
s3	█
s2	█
s1	█

37 sec. 44 sec. 50 sec. 56 sec. 1:2

Start Data Logging Digital
Save Clear screen

Data Logging Analog en Digital IN Numbers

Tijd	Ana 1	Ana 2	s1	s2	s3	s4	s5
00:00:00 uur	216	125	0	0	0	0	0
00:00:00 uur	235	125	0	0	0	0	0
00:00:00 uur	240	125	0	0	0	0	0
00:00:00 uur	242	125	0	0	0	0	0
00:00:00 uur	240	125	0	0	0	0	0

Start Data Logging.
Clear data

Write to screen
 Write to file

Digital IN

s1 s2 s3 s4 s5

Analog IN

A1 101
A2 52

Settings

Measurement time: 50 mSec.

Log time: 50 mSec.

Maximum Log time: 13 Min.

Logging view time: Expired time Actual time

Analog sensitivity: A1 1 A2 2

Nederlands English

Extra check by slow connection. (by sec.)

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USB

Lpt 1 378 Available

Lpt 2 278 Available

Lpt 3 3BC Not available

Parallel

Lpt 1 378

Lpt 2 278

Lpt 3 3BC

Network

Status : Not connected

IP-adres Host (This computer) PaptopIII IP 192.168.1.101

Host (Control Interface through network.)
Find the server

IP-adres Server (Network computer)
 Server (Present Interface through network.)
Present Interface Change IP adres