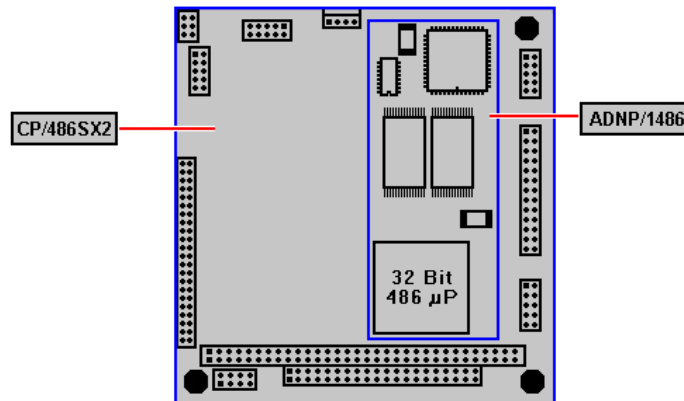


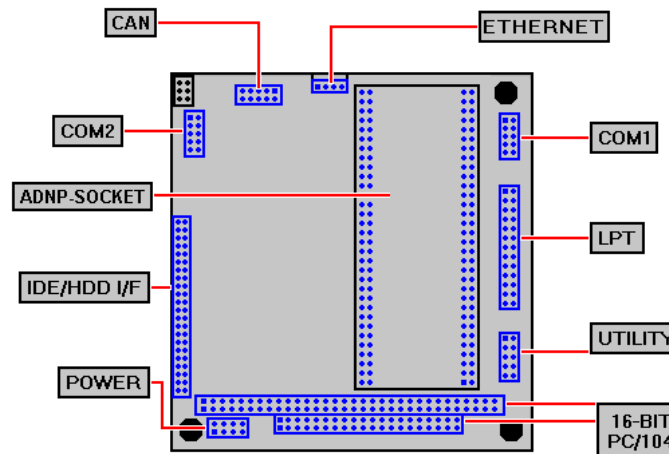
# Using the DIL/NetPC-Starterkit DNP/SK4

The central component of the DIL/NetPC-Starterkit DNP/SK4 is the base board called CP/486SX2. On this board there is a QIL-128-Format socket (QIL=Quad-In-Line) to mount the (ADNP/1486-3V).



**Figure 1:** CP/486SX2 base board with ADNP/1486

The special features of the DNP/SK4 are at first the PC/104 interface for expansion cards, a CAN-Interface (CAN=Controller Area Network) based on a SJA1000 circuit as well as an optional IDE connector or a compact flash slot. Furthermore the CP/486SX2 base board is equipped with numerous PC-typical interfaces, which are available by different connectors.



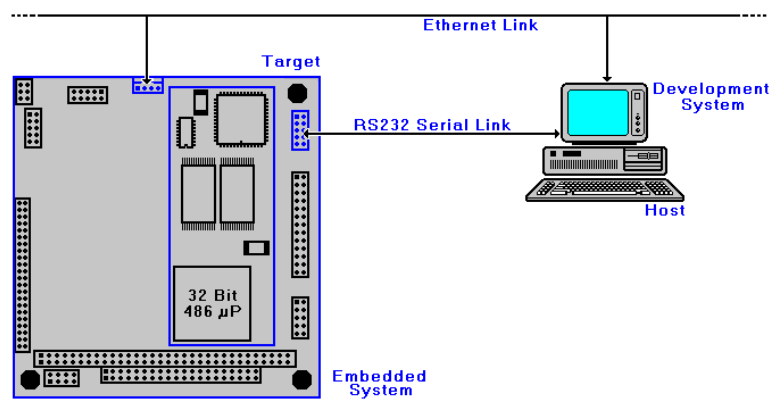
**Figure 2:** Connectors of the CP/486SX2 base board

Figure 2 shows the connectors of the Base Board. The position and pin assignment is largely compatible to the SSV-PC/104 Single Board Computers (SBCs). The CP/486SX2 owns an additional 3.3V power supply, which generate the 3.3V supply voltage for the ADNP/1486 from the PC/104 typical input

voltage of 5VDC. Through that, the DNP/SK4-Starterkit can be used with a standard 5VDC power.

## Connections between embedded system and development system

Before you start to work with the DNP/SK4 DIL/NetPC Starterkit, a development system has to be created. Within this environment a further computer that acts as development system is necessary. This development system should run under MS-Windows or Linux in an ideal manner. Between this personal computer and the DIL/NetPC Starterkit there are two cable connections necessary: First a **RS232 Serial Link** and second an **Ethernet Link**.



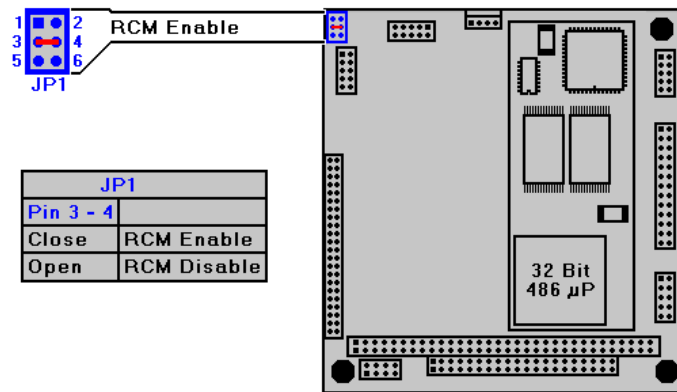
**Figure 3:** Overview about the required cable Connections

Figure 3 shows the cable connections between the personal computer as development system (**Host**) and the DIL/NetPC Starterkit (embedded system) as target. The cable connections (**COM-I/F cable, Null-Modem cable**) for the RS232 Serial Link normally come along with your Starterkit. For the Ethernet Link you will find a so-called **10BASE-T-I/F cable** in the delivery volume. Here an extra 10BASE-T patch cable or a 10BASE-T cross over cable is necessary. Such a cable is not included in the delivery volume of the Starterkit.

## The RCM operating mode

Before you begin the cable installation between the DIL/NetPC Starterkit and the development system the RCM jumper should be fitted on the CP/486SX2 base board. The figure 4 shows you the position of this jumper. As default this jumper is fitted already before the delivery.

The RCM operating mode (RCM=Remote Console Mode) allows to control the DIL/NetPC via terminal program. By the RCM apparently a serial console mode is implemented. All outputs are spent about the COM1 port. The DIL/NetPC expects all keyboard inputs about the same interface. The transmission speed in the RCM is firmly set from the BIOS to 115.200 bps. Eight data bits, no parity as well as one stop bit are used.

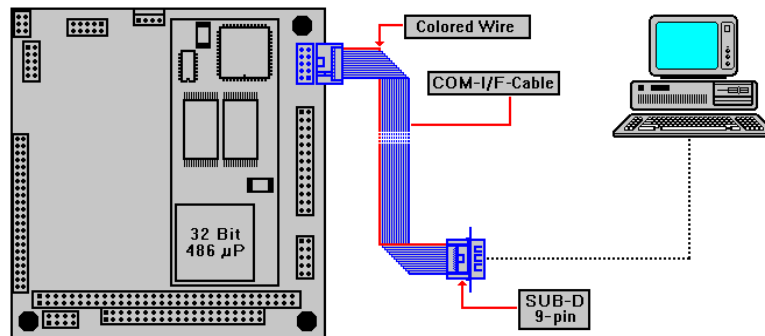


**Figure 4:** Position of the RCM jumper

The RCM operating mode is only activated if jumper JP1 is placed. Figure 4 shows this state. The jumper JP1 of the CP/486SX2 base board is directly combined to the corresponding pins at the ADNP/1486. If this jumper is not placed, the COM1 port can be used by a customer-specified application. Please consider that JP1 will only be scanned by the BIOS during the boot procedure of the DIL/NetPC – for example after a reset.

## Serial Link

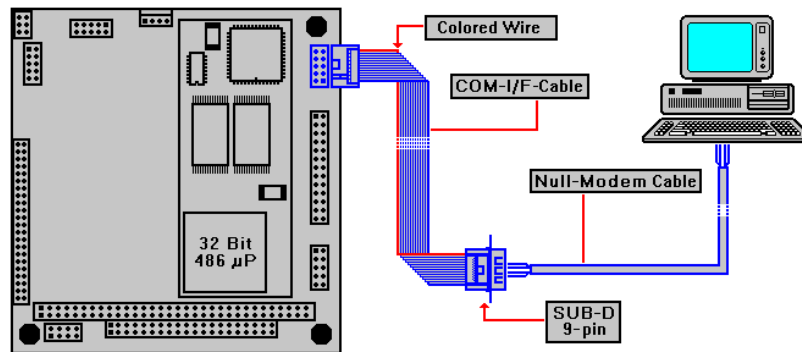
For the RS232 Serial Link, you need two cables. The COM-I/F cable and a Null-Modem cable. Both cables come along with your Starterkit.



**Figure 5:** Installation of the COM-I/F cable

First of all, connect the COM-I/F cable with the COM1 connector of the CP/486SX2 base board. Please note, that this ribbon cable has a colored wire in order to label the pin 1. You can see the position of this colored wire in figure 5. This COM-I/F cable has a 10-pin plug connector for the CP/486SX2 base board on one end and a 9-pin SUB-D plug connector at the other end. This plug has the pin allocation of a standard COM port like this of your PC.

Now combine this plug via the Null-Modem cable with a free COM port of the PC.

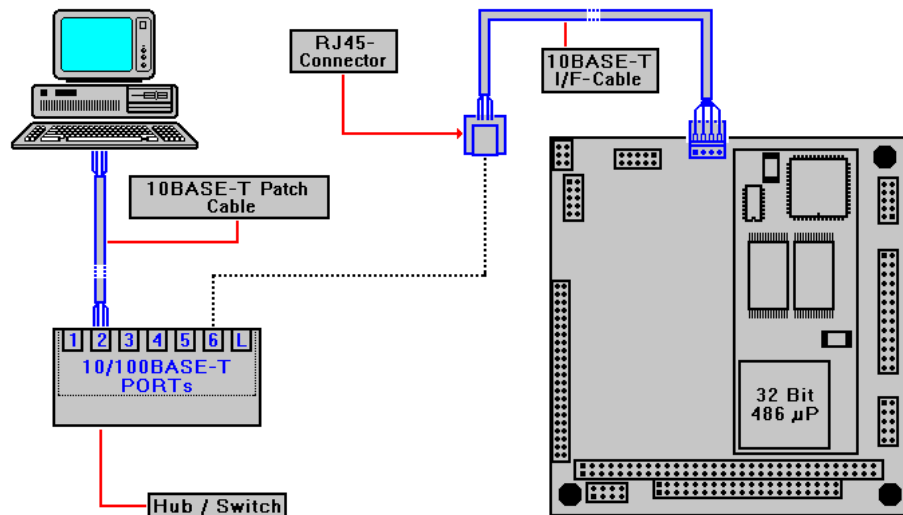


**Figure 6:** Installation of the Null-Modem cable

In view of the RS232 Serial Link that is all. With this two cable connections you can communicate with the ADNP/1486 in the RCM operating mode at a later point of time.

## Ethernet Link

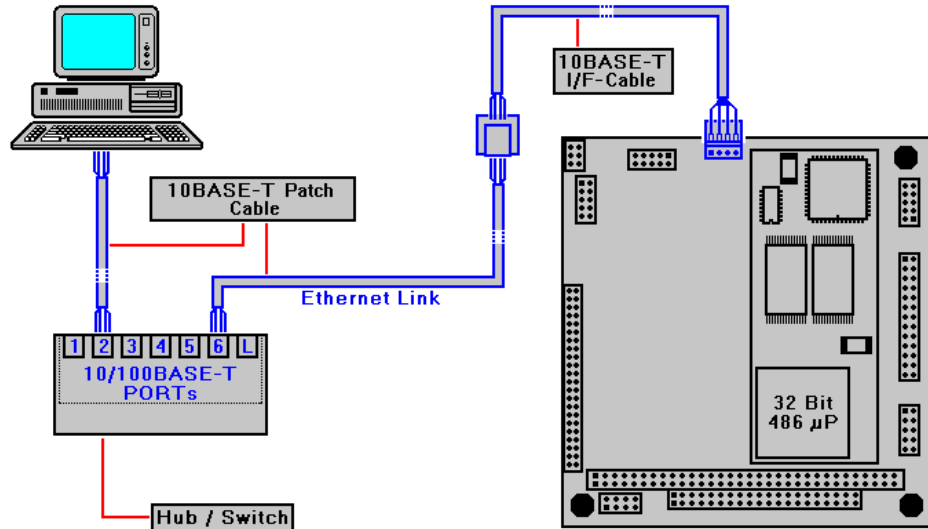
The Ethernet Link connections require some detailed knowledge about the different types of Ethernet connections. A typical source of errors for inexperienced users is the exchanging of a normal RJ45 patch cable with a RJ45 cross-over cable.



**Figure 7:** Ethernet connection via hub/switch

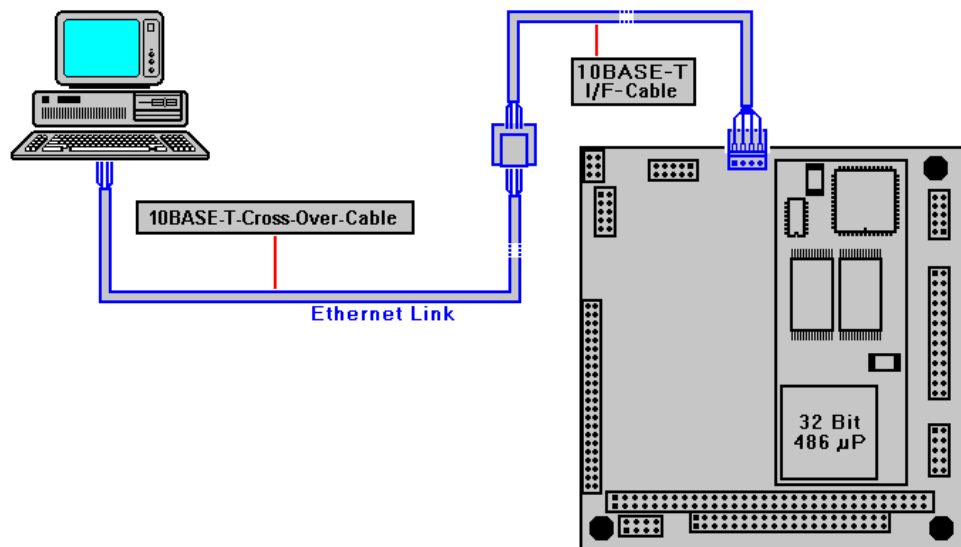
Figure 7 gives you an overview about the cable installation for the Ethernet Link. First of all, the 10BASE-T-I/F cable (that is a part of the Starterkit delivery volume) has to be installed. This cable owns a 4-pin plug connector as well as a RJ45 connector. The 4-pin plug connector must be connected with the corresponding connector of the CP/486SX2 base board.

The 4-pin plug connector owns a protection against incorrect polarity. This protection is made by the plastic mold. Please consider the special design of this protection against incorrect polarity of the plug connector is ineffective if you are using an excessive expenditure of energy.



**Figure 8:** Installation of the 10BASE-T patch cable

Now connect the RJ45 connector of the 10BASE-T-I/F cable with the hub or switch via a standard 10BASE-T patch cable. Figure 8 shows such a connection. The patch cables in this figure are named as **10BASE-T Patch Cable**.



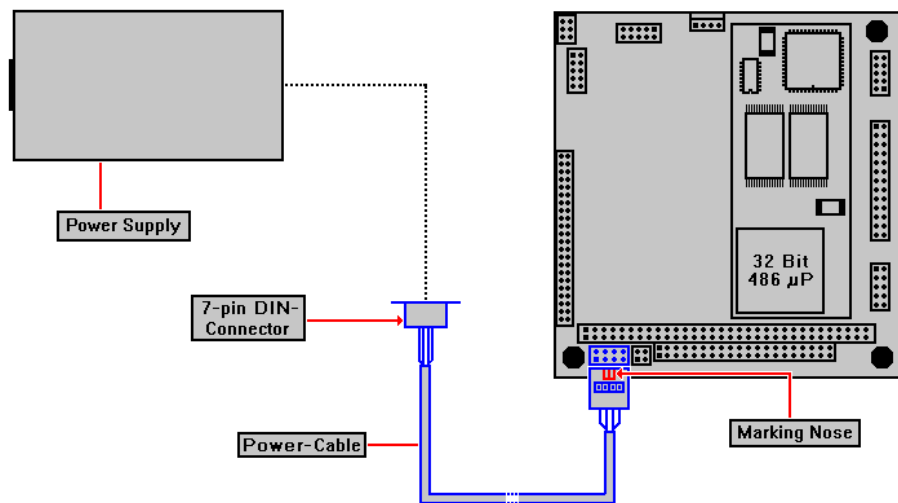
**Figure 9:** Cable installation via 10BASE-T cross-over cable

As alternative to the hub or switch you can work also with a 10BASE-T cross-over cable. Such a cable is used for the direct Ethernet connection between two systems. You can see such a configuration in figure 9. In a 10BASE-T cross-over cable the wire pairs for send and receive data are crossed. At a 10BASE-T patch cable there are no cables crossed. From this reason the different cable types do not

be exchanged. Patch cables are fundamentally thought only for the connection between a computer and a hub or switch. Cross-over cables are used for the direct connection of two computer systems.

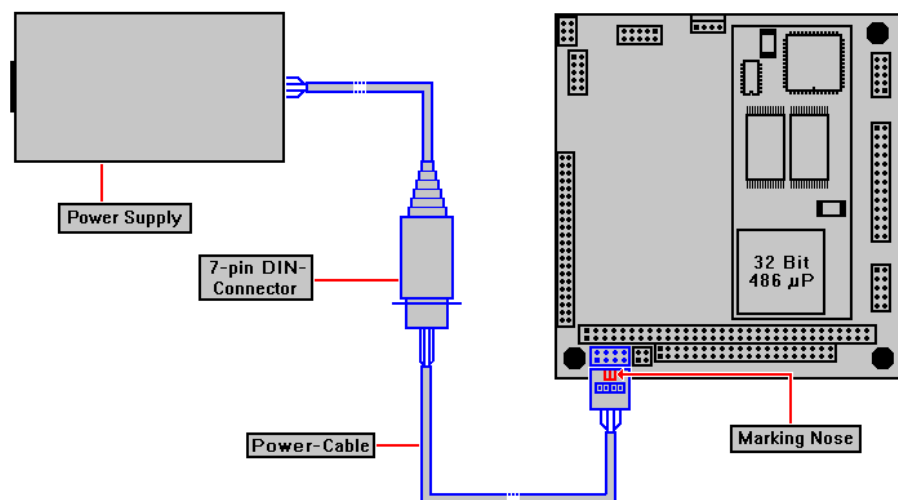
## Power Supply

The DIL/NetPC-Starterkit DNP/SK4 needs a supply voltage of 5VDC. For the power supply a **power cable** as well as a **5VDC power supply unit** is included in the scope of delivery of the Starterkit.



**Figure 10:** Installation of the power cable

The power cable owns a 7-pin DIN socket at one side and a 10-pin female connector with a plastic case at the other end.



**Figure 11:** Connection between power unit and base board

At next you have to connect the 10-pin female connector with the corresponding plug connector at the CP/486SX2 base board. Figure 10 shows this step of the

cable installation. Please note absolutely that there is a connection designation in the plastic mold of the 10-pin plug socket. This designation must show above (see figure 11).

As last step you have to connect the power supply unit via the DIN connector with the power cable (see figure 11).

### **Important note for the system start-up**

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The Ethernet controller of the DIL/NetPC ADNP/1486 requires an active LAN link to a hub, switch or other computer during the power-on. Otherwise the network driver can not initialize the controller completely. Then you will receive an error message.

## Figures

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- Figure 1: CP/486SX2 base board with ADNP/1486
- Figure 2: Connectors of the CP/486SX2 base board
- Figure 3: Overview about the required cable Connections
- Figure 4: Position of the RCM jumper
- Figure 5: Installation of the COM-I/F cable
- Figure 6: Installation of the Null-Modem cable
- Figure 7: Ethernet connection via hub/switch
- Figure 8: Installation of the 10BASE-T patch cable
- Figure 9: Cable installation via 10BASE-T cross-over cable
- Figure 10: Installation of the power cable
- Figure 11: Connection between power unit and base board

## Contact

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## Notes (Emblinx13e.doc)

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Revision	Date		Name
1.00	15.08.2001	First Version	KDW
1.01	21.08.2001	Some corrections	KDW
1.02	03.06.2002	First translation	JNE
1.03	04.06.2002	Pictures with Labels in English	KDW

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