



Operating Instruction Manual

**SyCon Systemkonfigurator**  
netLINK

Language: English

## List of Revisions

Index	Date	Version	Chapter	Revision
1	06.06.02	SyCon.exe 2.643 NetNode.dll 2.010	all	created NetNode (Conversion Ethernet to serial Protocols, NN40, NN42) NetLink (NL-MPI)
2	25.06.02	SyCon.exe 2.643 NetNode.dll 2.010	all	revised
3	16.06.08	SyCon.exe 2.703 NetNode.dll 2.100	all	SyCon for netLINK Supported devices: NL-MPI, NT 40-MPI, NL 50-MPI

Although this program has been developed with great care and intensively tested, Hilscher Gesellschaft für Systemautomation mbH cannot guarantee the suitability of this program for any purpose not confirmed by us in writing.

Guarantee claims shall be limited to the right to require rectification. Liability for any damages which may have arisen from the use of this program or its documentation shall be limited to cases of intent.

We reserve the right to modify our products and their specifications at any time in as far as this contributes to technical progress. The version of the manual supplied with the program applies.

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# 1 Overview SyCon

## 1.1 Main Functions

The main functions of the System Configurator are:

Function	Section	Short Description
Configuration	<i>Overview</i>	Overview about possible protocol conversions and description of configuration steps
Diagnostic	<i>Diagnostic Functions</i>	Extended Device Diagnostic, Message Monitor
Documentation	<i>Project Information</i>	Set the project information
	<i>Print</i>	Print out the configuration

Table 1: SyCon Main Functions

## 1.2 SyCon / SyConND

SyCon is a System Configurator for netLINK.

The software described in his manual supports the following devices:

- NL-MPI
- NT40-MPI
- NL50-MPI

For these devices the name

For these devices the name netLINK and with historical reasons the name netDEVICE is used in this document.

## 2 Installation and Licensing

### 2.1 System Requirements

- PC with 586-, Pentium processor or higher
- Windows 98/ME, Windows NT/2000/XP/Vista
- Free disk space: 30 - 80 MByte
- CD ROM drive
- RAM: min. 16 MByte
- Graphic resolution: min. 800 x 600 pixel
- Windows NT: Service Pack 6 or higher
- Keyboard and Mouse

## 2.2 Software Installation

Close all application programs on the system!

Insert the Hilscher netLINK CD in the local CD ROM drive. The installation program starts by itself (Autostart enabled). Otherwise change into the root directory on the CD and start exe file in the root (Autostart disabled).

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**Note:** Administrator privileges are required on Windows NT/2000/XP systems for installation!

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The installation program asks for the components you want to install. Answer these questions with **Yes** or **No**.

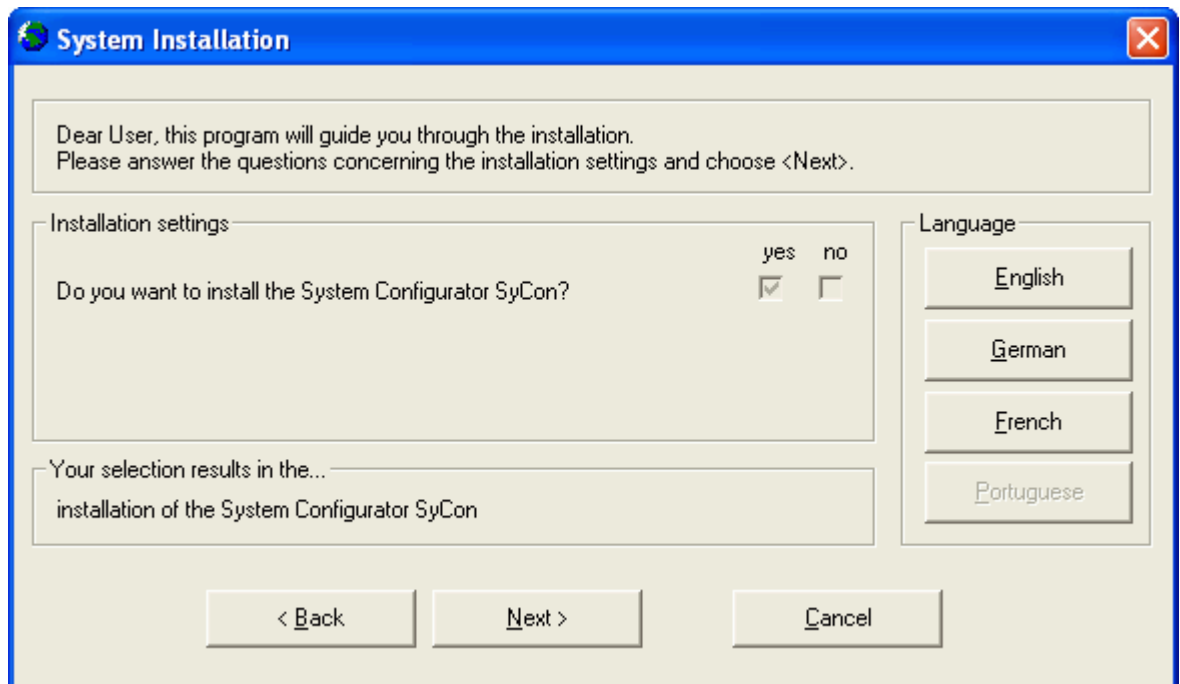


Figure 1: Selection for the Installation of the System Configurator

It can be installed:

- System Configurator SyCon (Configuration and diagnostic tool)

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**Note:** For SyCon (for netLINK) no license is needed, because the basic version includes all functions for operating the netLINK.

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## 2.3 Installation of the SyCon

In the basic version of the System Configurator all functions of SyCon for operating the netLINK are available.

Follow the instructions of the installation program and answer the questions with **OK** or **NEXT**.

The installation program offers the following selections:

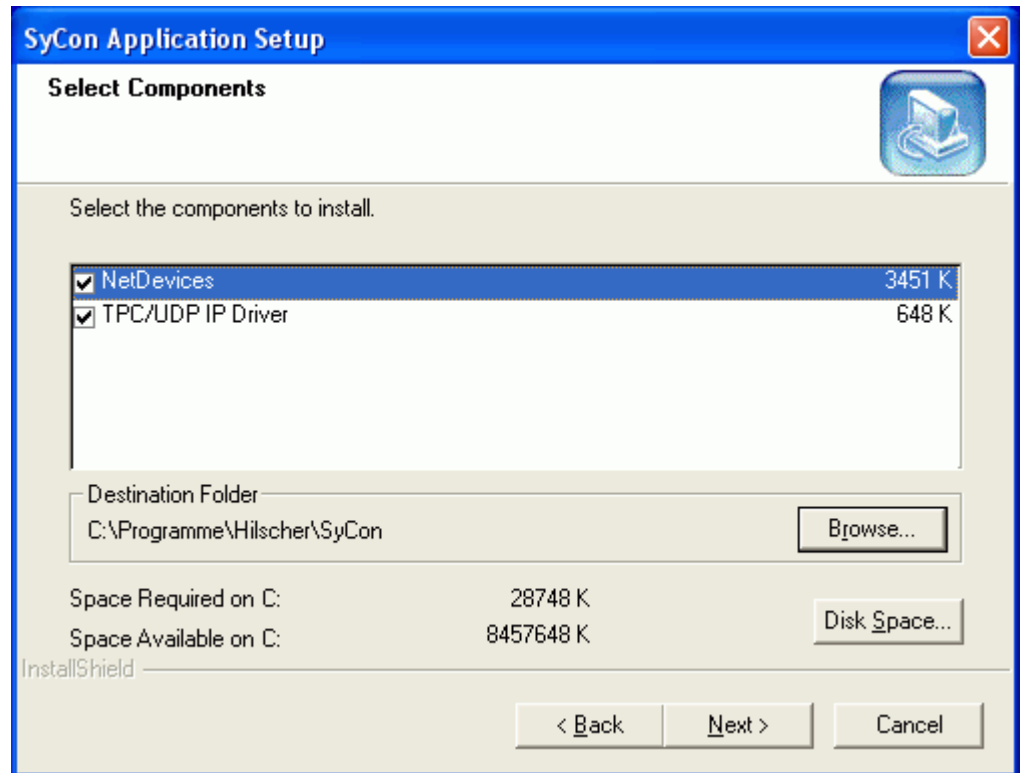


Figure 2: Selection of components during installation

The installation program copies the program files and Bitmaps to the PC. Finally the system DLLs and the application are entered into the Registry.

## 2.4 Scope of Functions

### 2.4.1 Scope of Functions of the Basic Versions

The basic version of the System Configurator SyCon has the following functionality:

- Full functionality for operating the netDEVICES/netLINK
- All diagnostic functions

## 3 Configuration Steps - Getting Started

### 3.1 Overview Protocol Conversions

Select from the following table the device you want to use. The configuration steps are described in the given section.

---

**Note:** At this point it is presupposed that the hardware installation was already done.

---

Device	Ethernet	Protocol	Described in section	Page
netLINK	Hilscher TCP/IP	PROFIBUS MPI	<i>Configuration netLINK MPI</i>	12

*Table 2: Overview NetLink Communication*

## 3.2 Configuration netLINK

### 3.2.1 Configuration netLINK MPI

The following table describes the steps to configure a Hilscher netLINK MPI/netTAP MPI device.

#	Action	Menu in the System Configurator	Detail information in section	Page
1	Create a new project	<b>File &gt; New &gt; netLINK</b>	<i>Setting up the netLINK Configuration</i>	13
2	Choose Hilscher netLINK device	<b>Insert &gt; Device &gt; netLINK</b>	<i>Insert Device</i>	14
3	Set Device Assignment	<b>Settings &gt; Device Assignment &gt; CIF TCP/UDP IP Driver</b>	<i>CIF TCP/IP Driver</i>	19
4	Set Protocol Parameter	<b>Settings &gt; NetLink Parameter</b>	<i>Device Parameter</i> <i>IP Address</i> <i>PROFIBUS Parameter</i>	23 24 26
5	Save project	<b>File &gt; Save</b>	<i>Save and Save As</i>	40
6	Download	<b>Online &gt; Download</b>	<i>Downloading the Configuration</i>	35

Table 3: Configuration netLINK MPI

## 4 Configuration of netLINK with SyCon

### 4.1 Setting up the netLINK Configuration

To create a new configuration, choose the **File > New** menu. This will offer a selection list of fieldbus systems. Choose the **netLINK**. If only the netDEVICES (netLINK) was installed, then the configuration window will open directly.

The name of the configuration file can be allocated when the configuration is finished or with **File > Save As**.

## 4.2 Insert Device

In order to insert a device into the configuration, choose the **Insert > Device** menu, in order to open the selection window, or click on the symbol:

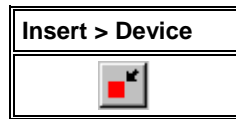


Figure 3: Symbol Insert > Device

A dialog box opens, from which exactly one device can be selected.

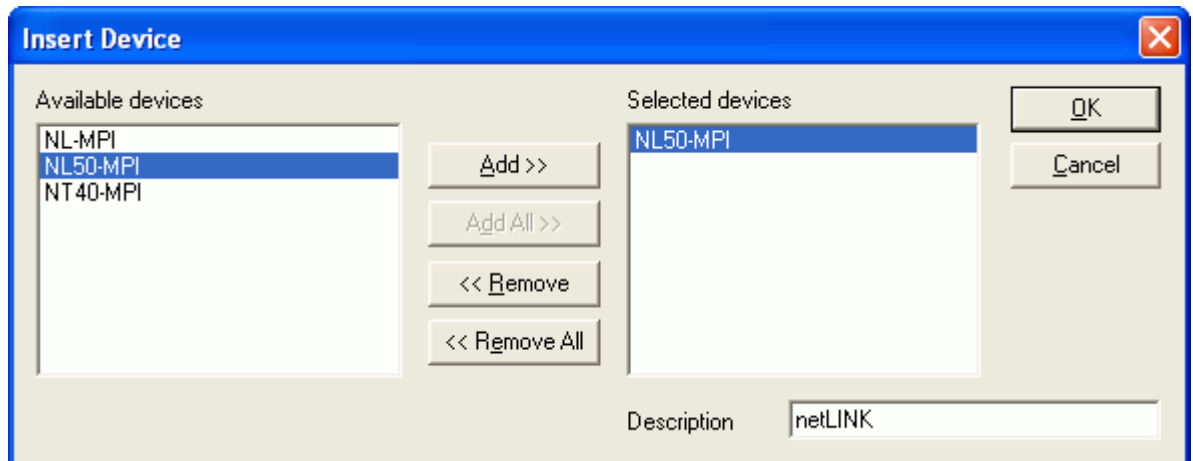


Figure 4: Insert > Device

In this window you select the device you want by clicking on it in the list **Available Devices** and then click the **Add** button or make a double click on the device to put the device to the list **Selected Devices**. With **OK** you confirm the selection.

This example shows a NL50-MPI device that is inserted with the **Description** netLINK. The shown description depends on the insert device and can be changed the user.

### 4.2.1 Replace Device

If a device already exists in the configuration and should be replaced against another device, you have to choose the menu **Insert > Device** or select the "Insert Device" Symbol.

The question appears if the device should be replaced.

If you click the **Yes** button a new window opens, where you can replace the device against another one.

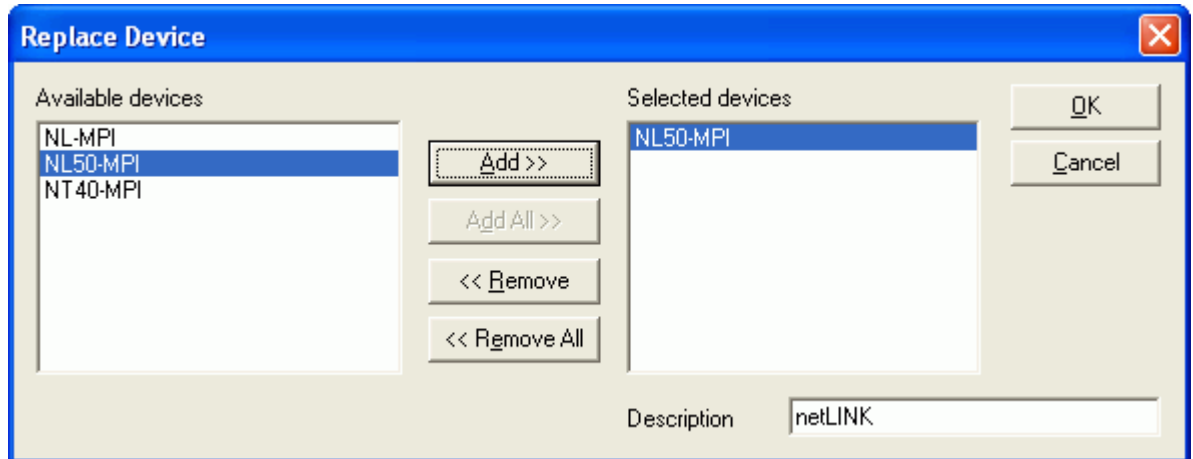


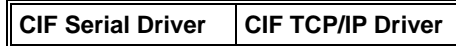
Figure 5: Edit > Replace Device

In this window you select the device you want by clicking on it in the list **Available devices**. By clicking the **Add** button you put the device in the list **Selected devices**. With **OK** you confirm the selection and the device will be replaced.

## 5 Settings

### 5.1 Device Assignment

The Device Assignment setting determines how the System Configurator communicates with the device. This is set in the device assignment via the menu **Settings > Device Assignment**. The following possibilities are available:



#### CIF Serial Driver:

- CIF Serial Driver: The System Configurator communicates with the NetNode over a serial connection. In this case, a COM port of the PC must be connected via a diagnostic cable with the diagnostic interface of the NetNode.
- This communication is utilized when the System Configurator has access the device over the diagnostic interface of the Hilscher device.

#### CIF TCP/IP Driver:

- CIF TCP/IP Driver: The System Configurator communicates with the Hilscher device via a TCP/IP connection.

### 5.1.1 CIF Serial Driver

The serial driver supports COM1 to COM 4, in order to communicate via the diagnostic interface with the device.

**Note:** A serial interface as available at the NT40-MPI device. A special cable is necessary. The devices NL-MPI and NL50-MPI have no serial interface.

The **Serial Driver** is selected via **Settings > Device Assignment**.

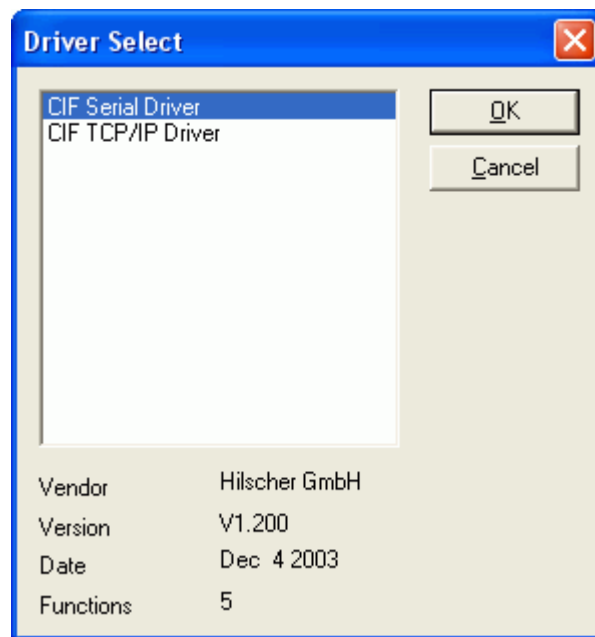


Figure 6: Driver Selection - CIF Serial Driver

Choose the **CIF Serial Driver** and then **OK**, in order to select the CIF Serial Driver.

The connection must first be established using the button **Connect COM1** or **Connect COM2** or **Connect COM3** or **Connect COM4**. They can be used depending on which COM ports are installed and free on the PC.

The System Configurator sends a request to the corresponding COM port and polls the Firmware name of the device. A display of the Firmware will indicate when a device is connected. In the other case, a Timeout error (-51) appears, which will state that no device is connected.

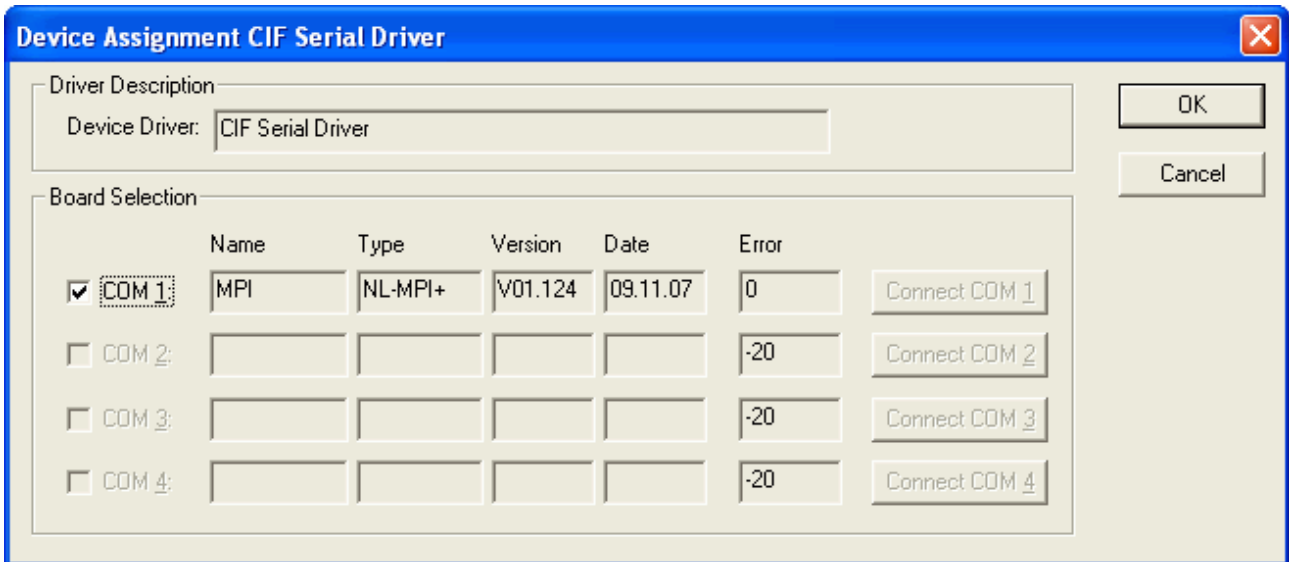


Figure 7: CIF Serial Driver - Device Assignment

The error number -20 indicates that this COM interface is not available or free.

## 5.1.2 CIF TCP/IP Driver

The TCP/IP driver connects up to four devices that can be accessed over a TCP/IP connection.

The TCP/IP driver is chosen via **Settings > Device Assignment**.

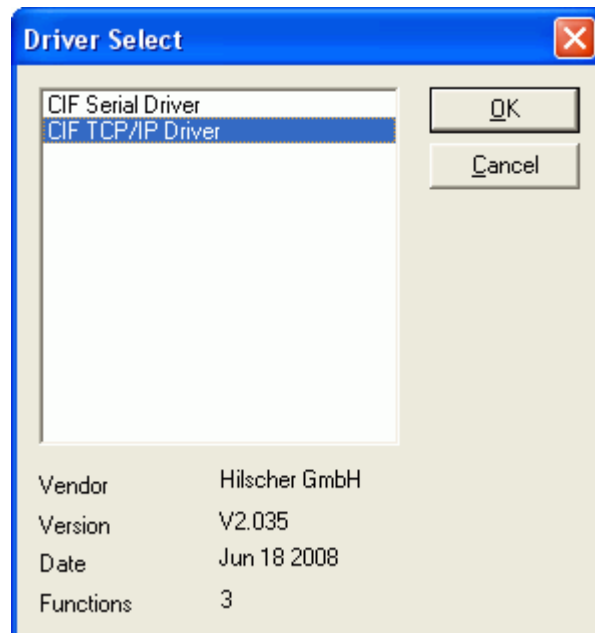


Figure 8: Driver Selection - CIF TCP/IP Driver

In order to select the CIF TCP/IP driver, choose **CIF TCP/IP Driver** and then **OK**.

The following window appears:

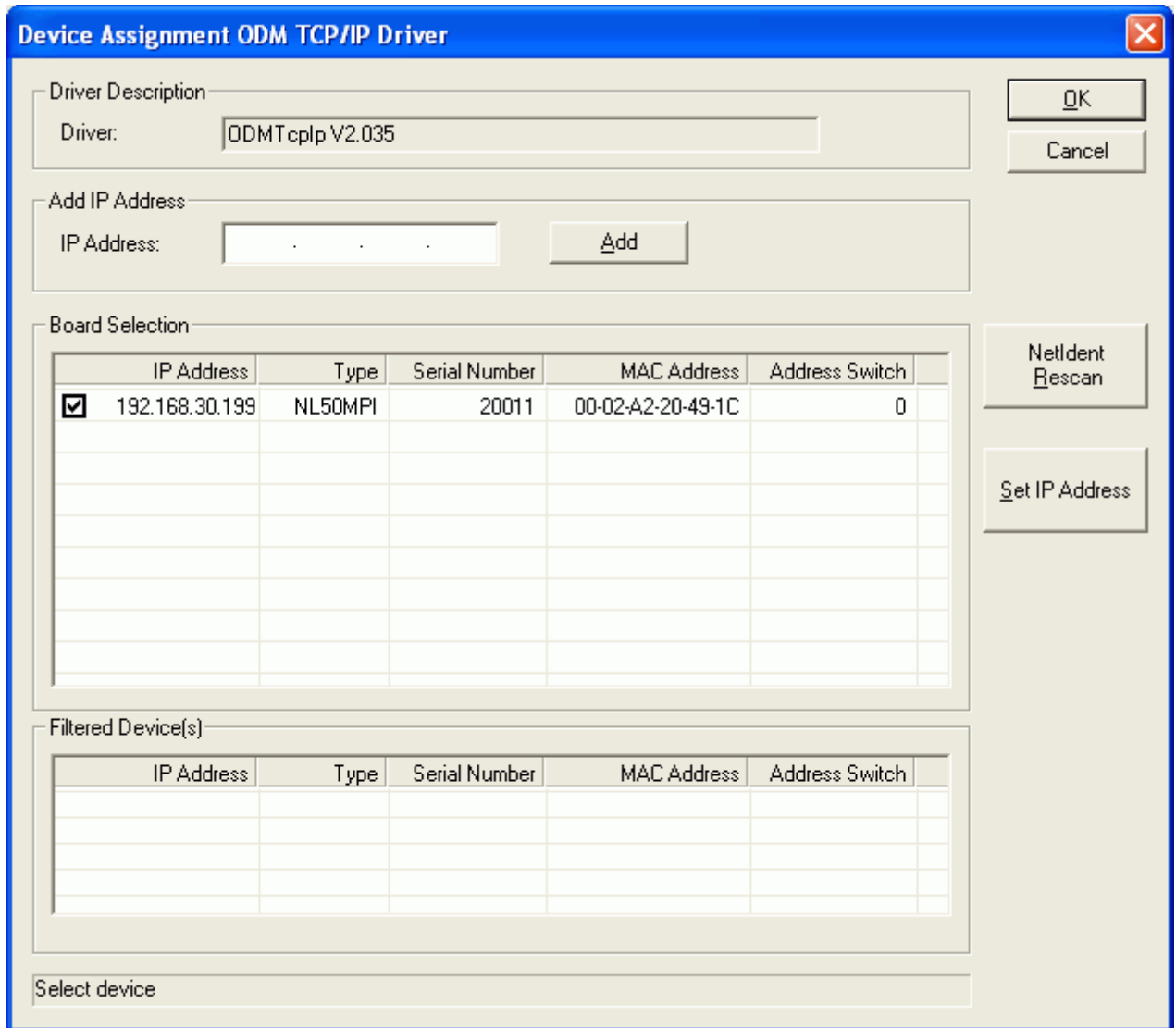


Figure 9: CIF TCP/IP Driver > Device Assignment

With the button **netIdent Rescan** the local Ethernet network is scanned for netLINK devices.

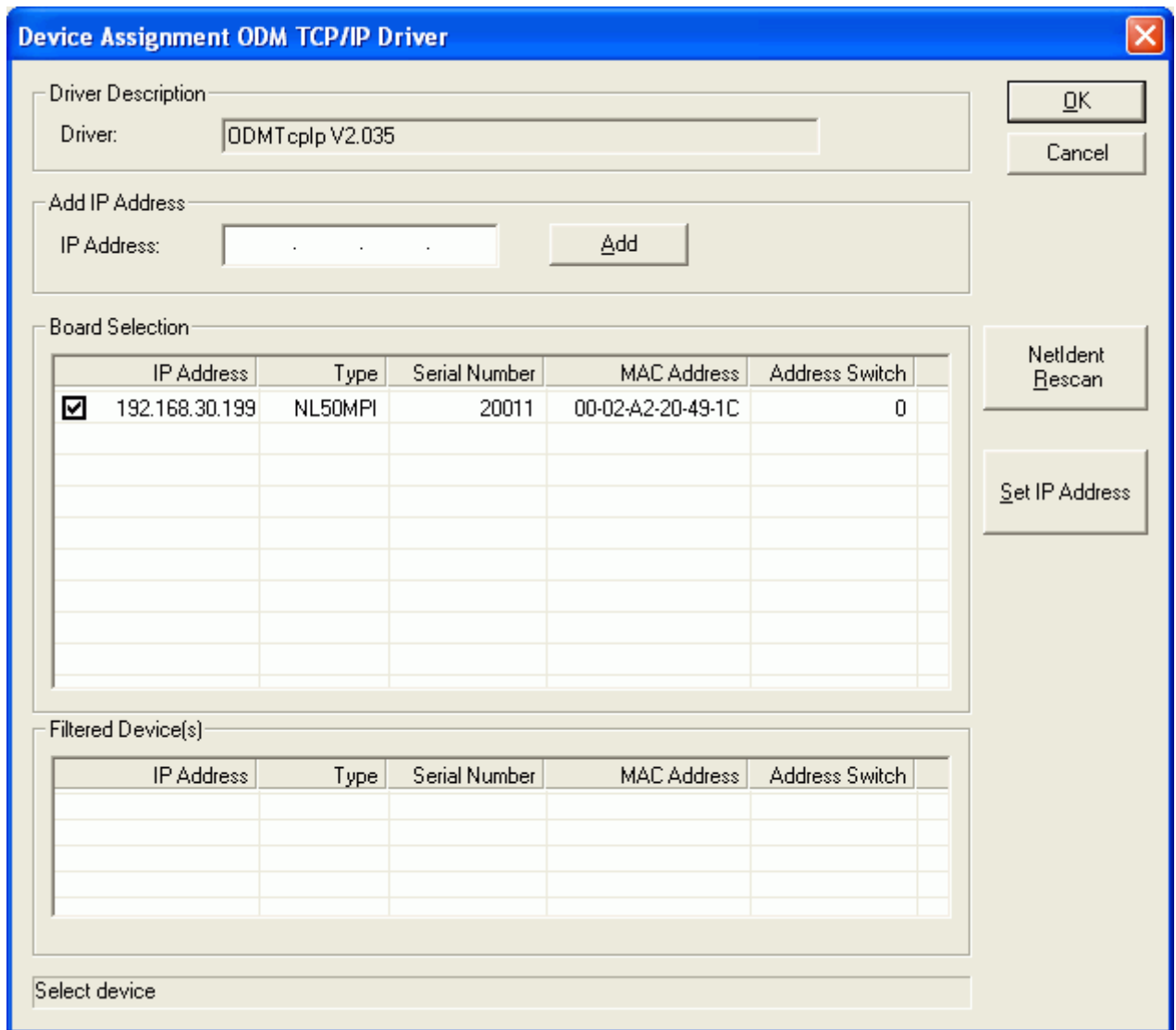


Figure 10: CIF TCP/IP Driver > Device Assignment – After Scan

If one or more devices were found, they are shown with their **MAC Address**. Further more the device **Type**, the **Serial Number** and the **IP Address** are displayed.

**Caution:** To find devices with NetIdent and to set their IP Address, the devices have to be in the same network as the used PC.

If a device with IP address 0.0.0.0 is shown, then a valid IP address needs to be set for this devices.

To set or to change an IP address select in **Board Selection** the device and then press the button **Set IP address**.

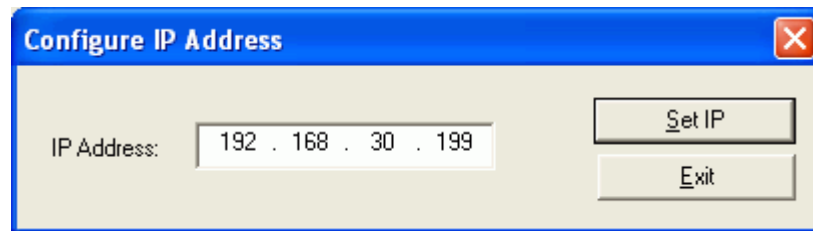


Figure 11: CIF TCP/IP Driver > Set IP address

Enter a valid IP address and press the button **Set IP** to send it to the device. Then a message appears if the IP address was set with or without success.

---

**Caution:** With **Set IP** only a temporarily IP address is set in the device. To set a permanent IP address a configuration download has to be done.

---

## 5.2 Device Parameter

The Device Parameter are the basis for the working data exchange. This section contains information for setting the Device Parameter and a description for the individual protocol- and busparameter.

NetLink
The NetLink device parameters can be called up with the menu <b>Settings &gt; NetLink Parameter</b> , if a NetLink configuration is loaded.

Table 4: Settings > Parameter

The settings of the individual parameter is described in the section given below.

Parameter	NetLink	Described in section	Page
IP-Address	Yes	<i>IP Address</i>	24
Ethernet	Yes	<i>Ethernet Parameter</i>	25
PROFIBUS	Yes	<i>PROFIBUS Parameter</i>	26

Table 5: Settings of Device Parameter

## 5.2.1 IP Address

IP Address	
Description	netLINK
DHCP	<input type="checkbox"/>
BOOTP	<input type="checkbox"/>
IP address	192 . 168 . 30 . 199
Net mask	255 . 255 . 255 . 0
Gateway	0 . 0 . 0 . 0

Figure 12: Settings > NetLink Parameter > IP Address

### Description:

The description of the device is shown in SyCon as the name of the device. The description is changeable in this field.

The handing over of the IP parameters (IP address, Net mask, Gateway) can result in three ways.

#### 1. DHCP:

The device gets the IP parameters from a DHCP server.

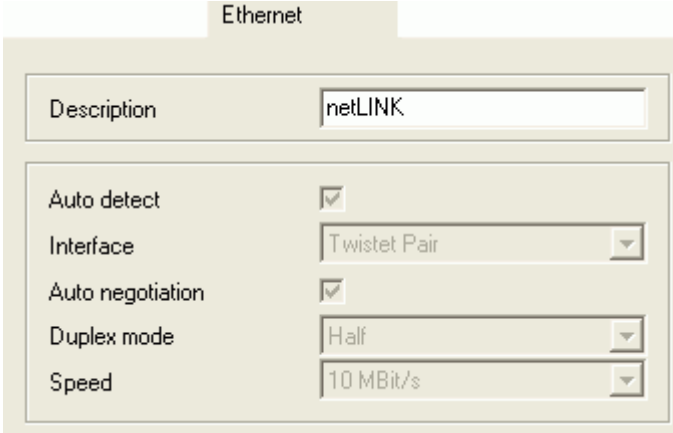
#### 2. BOOTP:

The device gets the IP parameters from a BOOTP server.

#### 3. IP address, Net mask and Gateway:

The IP parameters can be entered in this fields. If more than one configuration way is activated (for example DHCP and manually entered IP parameters), the device trys to process the different configuration way one after the other. As soon as it got an IP configuration in one of this ways, the device starts with this parameters.

## 5.2.2 Ethernet Parameter



Ethernet	
Description	netLINK
Auto detect	<input checked="" type="checkbox"/>
Interface	Twisted Pair
Auto negotiation	<input checked="" type="checkbox"/>
Duplex mode	Half
Speed	10 MBit/s

Figure 13: Settings > NetLink Parameter > Ethernet

### Description:

The description of the device is shown in SyCon as the name of the device. The description is changeable in this field.

### Auto detect:

This option is set. An automatic detection of the Ethernet interface is done by the device.

### Interface:

Is detected automatically.

### Auto negotiation:

Auto negotiation means, that in case of two connected devices the devices detect the hardware and the features (for example Half- or Full Duplex, 10 or 100 Mbits and so on) of the other device. This option is preselected.

### Duplex mode:

Duplex mode of the Ethernet interface. Is detected automatically.

### Speed:

Transmission speed of the data in MBits/s: 10 MBits/s and 100 MBits/s. Is detected automatically.

### 5.2.3 PROFIBUS Parameter

PROFIBUS

Description

Station Address

Bus profile MPI

Baud rate 187.5 kBaud

Slot Time  tBit

Min. Station Delay of Responders  tBit

Max. Station Delay of Responders  tBit

Quiet Time  tBit

Setup Time  tBit

Tid1  tBit

Tid2  tBit

Target Rotation Time  tBit

Target Rotation Time  ms

GAP Actualization Factor

Max Retry Limit

Highest Station Address

Figure 14: Settings > NetLink Parameter > PROFIBUS

The busparameters and their meaning:

- Station Address  
The Station Address of the NetLink
- Baudrate  
Transmission speed: Number of bits per second.

Baudrate	Bit Time (t <sub>Bit</sub> )
9,6 kBaud	104,2 us
19,2 kBaud	52,1 us
93,75 kBaud	10,7 us
187,5 kBaud	5,3 us
500 kBaud	2 us
1,5 Mbaud	666,7 ns
3 Mbaud	333,3 ns
6 Mbaud	166,7 ns
12 Mbaud	83,3 ns

Table 6: Baud rates and Bit times

- Minimum Station Delay of Responders (min  $T_{SDR}$ )

This is the shortest time period that must elapse before a remote recipient (Responder) may send an acknowledgement of a received query telegram. The shortest time period between receipt of the last Bit of a telegram to the sending of the first Bit of a following telegram.

Value range: 1 .. 65535
- Maximum Station Delay of Responders (max  $T_{SDR}$ )

This is the longest time period that must elapse before a Sender (Requestor) may send a further query telegram. Greatest time period between receipt of the last Bit of a telegram to the sending of the first Bit of a following telegram.

The Sender (Requestor, Master) must wait at least for this time period after the sending of an unacknowledged telegram (e.g. Broadcast only) before a new telegram is sent.

Value range: 1 .. 65535
- Slot Time ( $T_{SL}$ )

'Wait for receipt' – monitoring time of the Senders (Requestor) of telegram for the acknowledgement of the recipient (Responder). After expiration, a retry occurs in accordance with the value of 'Max. telegram retries'.

Value range: 52 .. 65535
- Quiet Time ( $T_{QUI}$ )

This is the time delay that occurs for modulators (Modulator-trip time) and Repeaters (Repeater-switch time) for the change over from sending to receiving.

Value range: 0 .. 255
- Setup Time ( $T_{SET}$ )

Minimum period "reaction time" between the receipt of an acknowledgement to the sending of a new query telegram (Reaction) by the Sender (Requestor).

Value range: 1 .. 255
- Target Rotation Time ( $T_{TR}$ )

Pre-set nominal Token cycling time within the Sender authorization (Token) will cycle around the ring. How much time the Master still has available for sending data telegrams to the Slaves is dependent on the difference between the nominal and the actual token cycling time.

Value range: 1 .. 16.777.215

- GAP Update Factor (G)  
Factor for determining after how many Token cycles an added participant is accepted into the Token ring. After expiry of the time period  $G \cdot T_{TR}$ , the Station searches to see whether a further participant wishes to be accepted into the logical ring.  
Value range: 1 .. 100
- Max number of telegram retries (Max\_Retry\_Limit)  
Maximum number of repeats in order to reach a Station.  
Value range: 1 .. 8
- Highest Station Address (HSA)  
Station address of the highest active (Master) Station.  
Value range: 2 .. 126

The device NL50-MPI supports the automatic baudrate detection.

The devices NL-MPI and NT40-MPI do not support the automatic baudrate detection.

To set the automatic baudrate detection, select in the list of **Bus profile** the setting PROFIBUS and then select in the list **Baud rate** the setting AutoBaud.

PROFIBUS

<div style="border: 1px solid #ccc; padding: 2px; margin-bottom: 5px;">                 Description <input style="width: 90%;" type="text" value="netLINK"/> </div> <div style="border: 1px solid #ccc; padding: 2px; margin-bottom: 5px;">                 Station Address <input style="width: 80%;" type="text" value="1"/> </div> <div style="border: 1px solid #ccc; padding: 2px; margin-bottom: 5px;">                 Bus profile <span style="border: 1px solid #ccc; padding: 2px;">PROFIBUS</span> ▼             </div> <div style="border: 1px solid #ccc; padding: 2px;">                 Baud rate <span style="border: 1px solid #ccc; padding: 2px;">AutoBaud</span> ▼             </div>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid #ccc; padding: 2px;">Tid1</td> <td style="border: 1px solid #ccc; padding: 2px; text-align: center;">37</td> <td style="border: 1px solid #ccc; padding: 2px;">tBit</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">Tid2</td> <td style="border: 1px solid #ccc; padding: 2px; text-align: center;">150</td> <td style="border: 1px solid #ccc; padding: 2px;">tBit</td> </tr> </table> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid #ccc; padding: 2px;">Target Rotation Time</td> <td style="border: 1px solid #ccc; padding: 2px; text-align: center;">2021</td> <td style="border: 1px solid #ccc; padding: 2px;">tBit</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">Target Rotation Time</td> <td style="border: 1px solid #ccc; padding: 2px; text-align: center;">1.#INF</td> <td style="border: 1px solid #ccc; padding: 2px;">ms</td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">GAP Actualization Factor</td> <td style="border: 1px solid #ccc; padding: 2px; text-align: center;">10</td> <td></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">Max Retry Limit</td> <td style="border: 1px solid #ccc; padding: 2px; text-align: center;">1</td> <td></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">Highest Station Address</td> <td style="border: 1px solid #ccc; padding: 2px; text-align: center;">124</td> <td></td> </tr> </table>	Tid1	37	tBit	Tid2	150	tBit	Target Rotation Time	2021	tBit	Target Rotation Time	1.#INF	ms	GAP Actualization Factor	10		Max Retry Limit	1		Highest Station Address	124	
Tid1	37	tBit																				
Tid2	150	tBit																				
Target Rotation Time	2021	tBit																				
Target Rotation Time	1.#INF	ms																				
GAP Actualization Factor	10																					
Max Retry Limit	1																					
Highest Station Address	124																					
Slot Time <input style="width: 60%;" type="text" value="300"/> tBit																						
Min. Station Delay of Responders <input style="width: 60%;" type="text" value="11"/> tBit																						
Max. Station Delay of Responders <input style="width: 60%;" type="text" value="150"/> tBit																						
Quiet Time <input style="width: 60%;" type="text" value="0"/> tBit																						
Setup Time <input style="width: 60%;" type="text" value="1"/> tBit																						

Figure 15: Settings > NetLink Parameter > PROFIBUS > Autobaud

---

**Caution:** The automatic detection of the PROFIBUS baudrate can only be used, when the control unit sends the PROFIBUS parameters on the PROFIBUS network.

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**Note:** A download of the configuration has to be done to activate these setting in the device.

---

## 5.3 Project Information

If the you create an own project, the project information can be typed in into the **Settings > Project Information** menu. Everybody can then read this entry when this menu is opened.

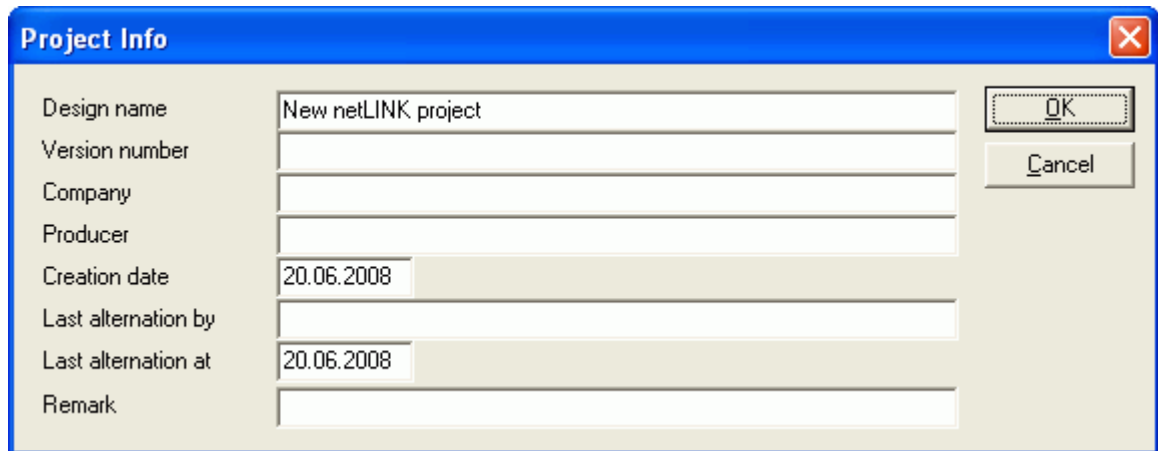


Figure 16: Settings > Project Information

## 5.4 Language

Choose the **Settings > Language** menu and the following window opens:



Figure 17: Settings > Language

Here can be set the language of the System Configurator. Select the required language and confirm the entry with the **OK** button.

A message appears that the System Configurator must be started again in order to activate the selected language. Please carry this out.

After restarting the System Configurator, the language will have changed to the selected one.

---

**Note:** Up to now not all languages are available for all fieldbusses!

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## 5.5 Start Options

Starting from the window Network View (menu **Window > Network View**) the menu **Settings > Startoptions** opens the window **Start Options**. The different start options or modes can be set. Some of these settings are only of importance for the OPC server.

**Note:** The menu option Start Options is only displayed in the selection Settings, if a project is loaded.

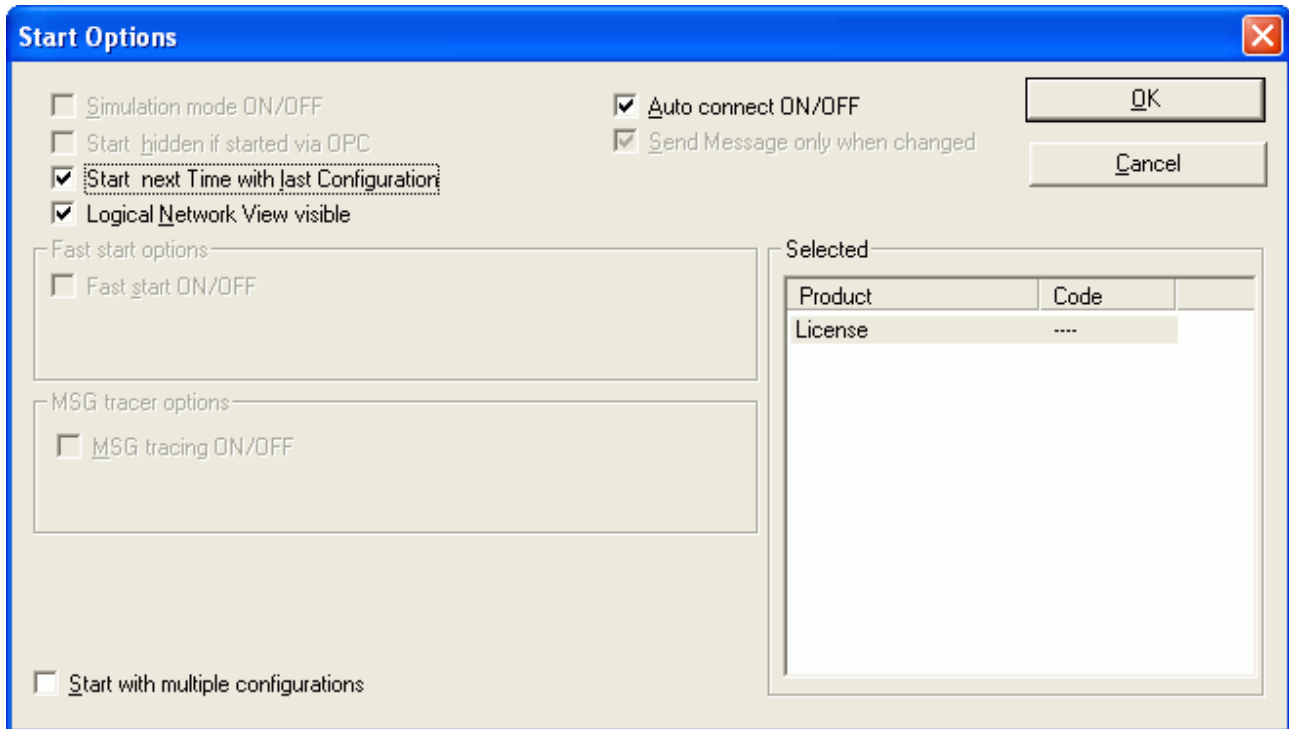


Figure 18: Settings > Start Options

- **Simulation mode ON/OFF**  
Only valid for the OPC Server.
- **Start SyCon hidden if started via OPC**  
Only valid for the OPC Server.
- **Start SyCon next time with last Configuration**  
When this is marked the last saved configuration in the SyCon is automatically loaded when the SyCon is started again.

- **Logic Network View visible**  
When this is marked, there is the possibility of diverting to the network mode without having to install the SyCon with OPC. It is also possible to use the Watch List from the network mode.
- **Fast start ON/OFF**  
Only valid for the OPC Server.
- **TAG tracing ON/OFF**  
Only valid for the OPC Server.
- **OPC tracing ON/OFF**  
Only valid for the OPC Server.
- **Auto connect ON/OFF**  
If this is marked, when opening a configuration automatically a connection to that Hilscher devices is manufactured without the device assignment additionally have to be executed.
- **Start with multiple configurations**  
If this option is selected you have the possibility to start SyCon with up to four configurations simultaneously. The paths are shown in the window and they are changable there.

## 6 Online Functions

### 6.1 Introduction

In this section, all the functions that directly influence Hilscher netLINK / netDEVICES.

---

**Note:** Please note that this also permits an interruption of the running communication or that input and output can be switched on or off.

---

## 6.2 Online to the NetDevice

### 6.2.1 Firmware Download

If you want to carry out a Firmware download, act as follow: Select the menu **Online > Firmware Download**. A warning appears, that the communication on the bus will be interrupted. This warning has to be confirmed.

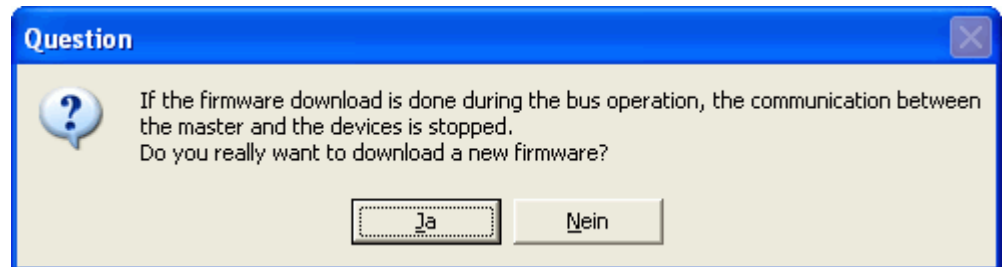


Figure 19: Security question before Firmware Download

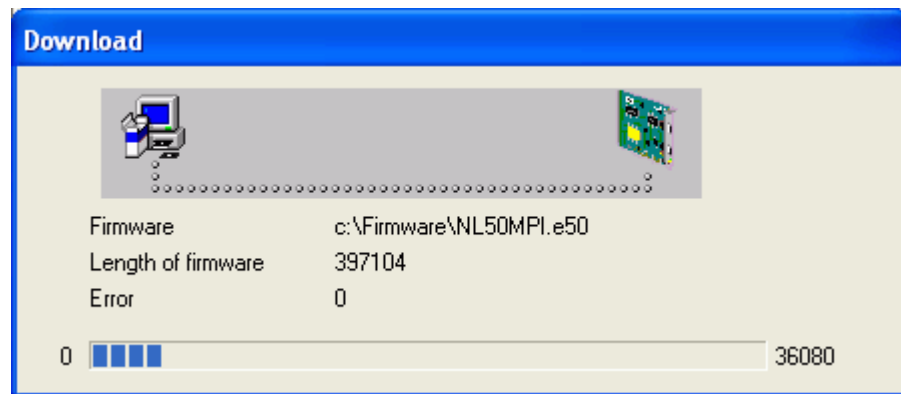


Figure 20: Online > Firmware Download

The Firmware is transferred into the selected device and stored there in a power failure protected FLASH memory.

After the download of the firmware a download of the configuration has to be done.

## 6.2.2 Downloading the Configuration

In order to transfer the configuration, a transfer download to the device must be carried out with the menu **Online > Download**. A warning appears that the communication on the bus will be interrupted. This warning must be confirmed.

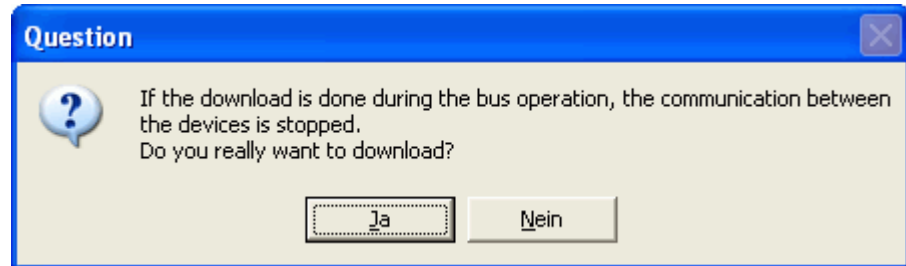


Figure 21: Security question before Download

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**Attention:** The download overwrites the configuration in the device.

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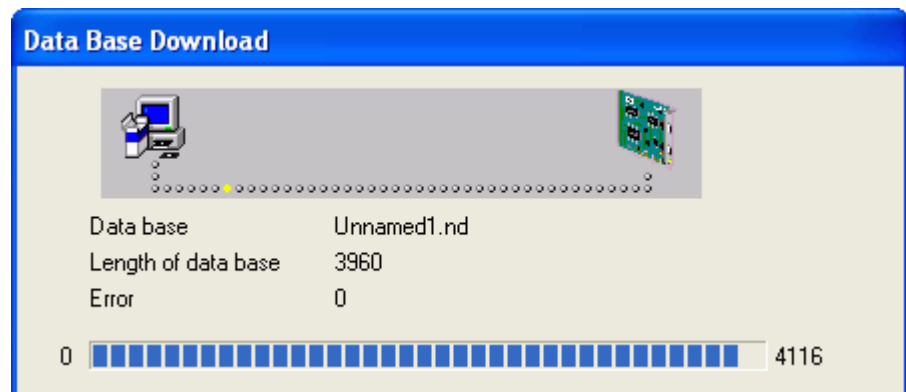


Figure 22: Online > Download

The configuration is transferred into the selected device and is stored there in FLASH memory in a zero voltage manner so that the configuration is available when the power supply is switched off and on again.

### 6.2.3 Firmware / Reset

First the device must be chosen with a left mouse click on the symbol of the device. Then the **Online > Firmware / Reset** menu has to be called up and the name and the version of the Firmware are displayed.

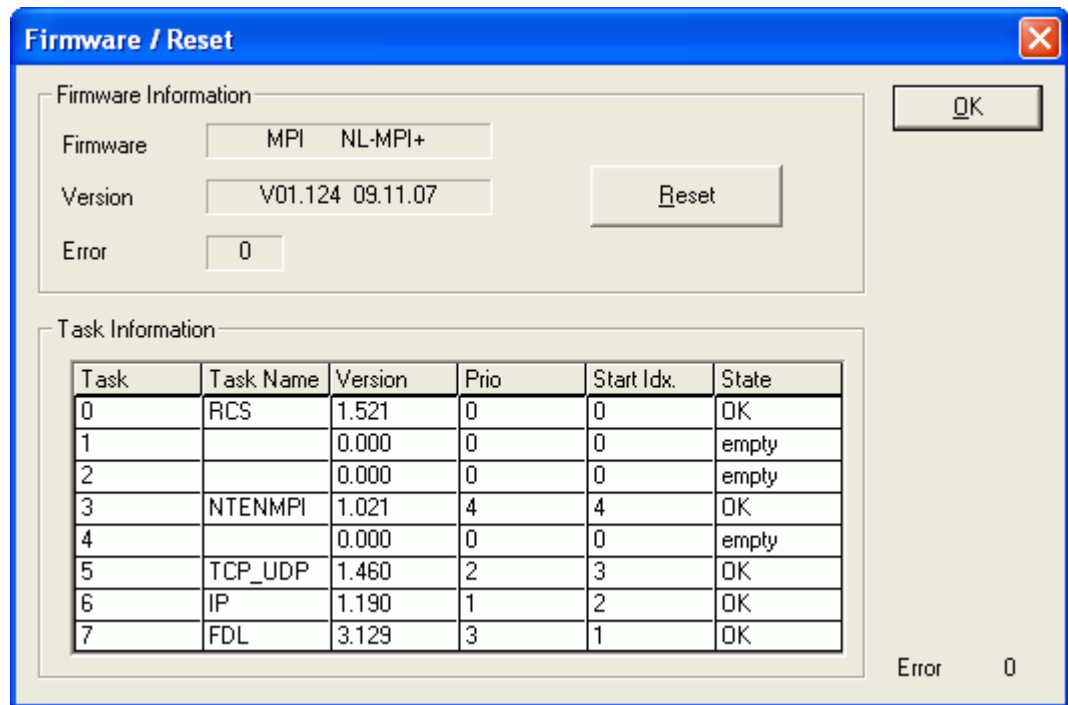


Figure 23: Online > Firmware / Reset

The device is resetted with the **Reset** button.

### 6.2.4 Device Info

Select the menu **Online > Device Info** in order to obtain information for the device.

The manufacturer date, the device number and the serial number of the device is read out and shown.

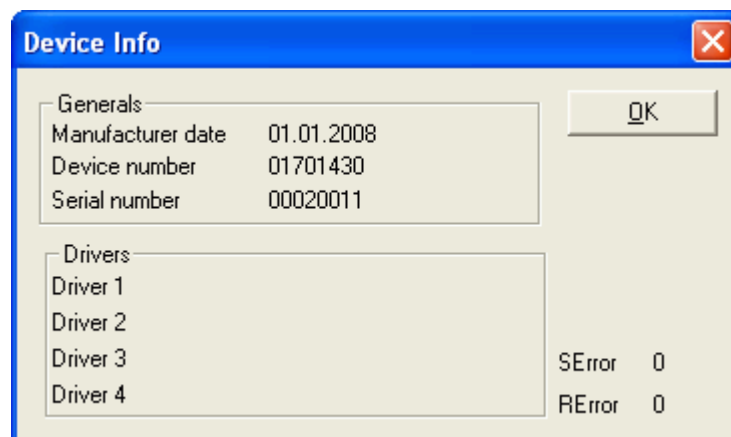


Figure 24: Online > Device Info

The section Drivers display show if and which licenses are available in the device.

## 6.3 Diagnostic Functions

### 6.3.1 Extended Device Diagnostic netLINK

The Extended Device Diagnostic helps to find bus and configuration errors when the SyCon menu functions are of no further help.

**Note:** The extended device diagnostic is supported by the devices NL-MPI and NT40-MPI. The extended device diagnostic is not supported by the device NL50-MPI.

First select the Hilscher device with a left mouse click on the symbol of the device. Then select the **Online > Extended Device Diagnostic** menu.

This menu opens a list of diagnostic structures. These contain online counters, states and parameter information:

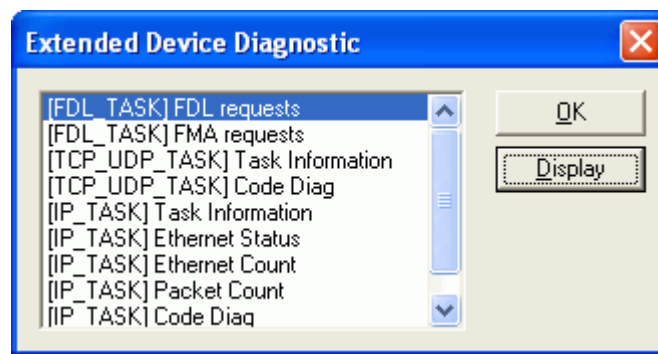


Figure 25: Online > Extended Device Diagnostic NetLink

Task / Task State	Page
<i>FDL_TASK Requests</i>	60
<i>FDL_TASK FMA Request</i>	61
<i>TCP_UDP_TASK Information</i>	55
<i>TCP_UDP_TASK Code Diag</i>	56
<i>IP_TASK Task Information</i>	57
<i>IP_TASK Ethernet Status</i>	57
<i>IP_TASK Ethernet Count</i>	58
<i>IP_TASK Packet Count</i>	59
<i>IP_TASK Code Diag</i>	59

Table 7: Online > Extended Device Diagnostic NetLink

## 6.4 Message Monitor

The Message Monitor permits access to the Mailbox of the device.

**Note:** The usage of the Message Monitor assumes advanced knowledge from the user.

Select the menu **Online > Message Monitor**.

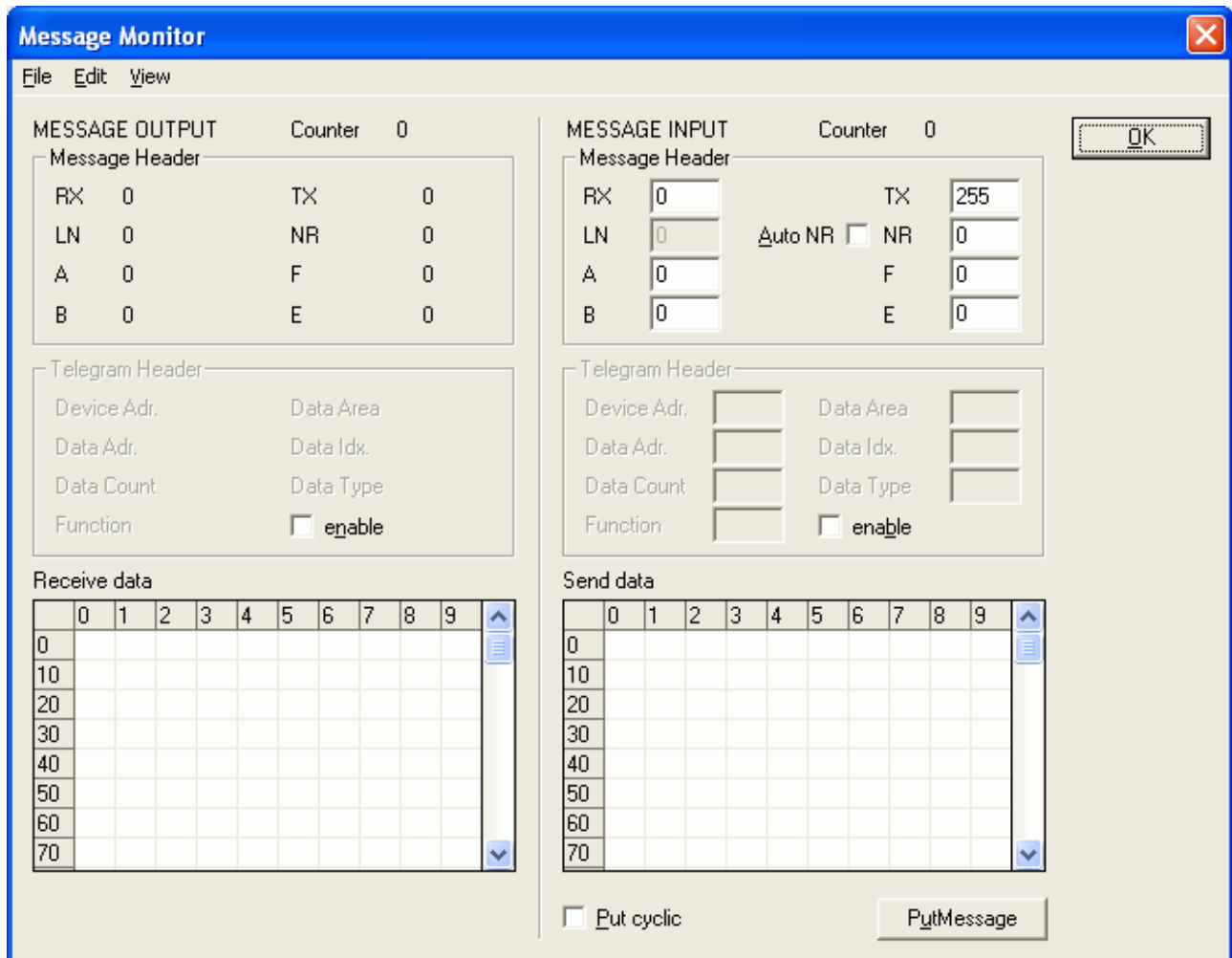


Figure 26: Online > Message Monitor

A Message can be saved and loaded and has the file extension \*.MSG.

**File > New:** clears the window

**File > Open:** opens a Message (Message can be loaded)

**File > Save** or **File > Save As:** saves a Message

**File > Exit:** ends the Message Monitor and returns to the SyCon.

**Edit > Create answer:** creates an answer Message

**Edit > Reset counter:** resets the Message counter

**View > Review the received data:** all received data is shown

**View > Review the send data:** all the send data is shown

**View > Number of receipt errors:** the number of the received errors is shown

**View > Decimal/Hexadecimal:** Switch the display format

It is recommend to create a sub-directory MSG and to save the messages in it.

## 7 File, Print, Export, Edit and View

### 7.1 File

#### 7.1.1 Open

An existing project can be opened with **File > Open**.

#### 7.1.2 Save and Save As

When the file name is known, then the configuration can be saved under the **File > Save** menu, otherwise the **File > Save As** menu must be selected.

#### 7.1.3 Close

The current project can be closed with **File > Close**.

## 7.2 Print

After the current printer has been selected in the **File > Printer Setup** menu, the configuration can be printed out under the **File > Print** menu. For a page view, select the **File > Page View** menu.

## 7.3 Export Functions

### 7.3.1 DBM Export

Select the **File > Export > DBM** menu in order to save the previously saved project file (\*.IB Microsoft Access Format) in a DBM file (Hilscher binary format). This DBM file can be loaded in the DOS Compro program. The configuration is stored in the Project directory in the path of the SyCon installation with the extension \*.DBM.

---

**Attention:** The file name can have max. 8 characters.

---

## 7.4 Edit

### 7.4.1 Delete

To delete a device you have to have to select the menu **Edit > Delete**. Before SyCon deletes the device a security question appears. If you really want to delete this device you have to confirm this question with **Yes**, and the device will be deleted.

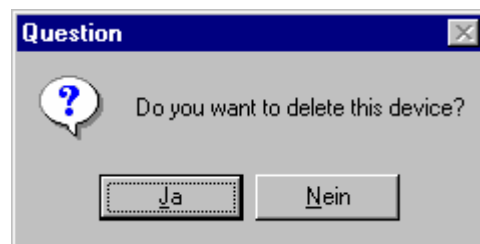


Figure 27: Security question delete device

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**Note:** When you delete a device the settings and the configuration of this device get lost.

---

## 7.5 View

### 7.5.1 Logical Network View

In the menu **View > Logical Network View** the user can activate or deactivate the network view by selecting it (with hook) or by not selecting it (without hook).

The network view is used for example for the Start Options.

### 7.5.2 Toolbars

In the menu **View > Toolbars** the user has the possibility to activate or deactivate the Toolbars **Standard** and **Fieldbus**. If this function is deactivated the toolbars are not shown.

### 7.5.3 Status Bar

In the menu **View > Status Bar** this bar can be activated (with hook) or deactivated (without hook).

## 8 Error Numbers

### 8.1 CIF Serial Driver Error Numbers (-20 .. -71)

These is the list of error numbers using the serial driver.

Error Number	Description
-20	Driver: No COM port found or COM port already in use.
-21	Driver: COM port already opened
-22	Driver: Function call into driver has failed
-23	Driver: Internal driver error
-24	Driver: Could not create read thread
-25	Driver: Could not create read event
-26	Driver: Could not create write event
-27	Driver: Could not create timer event
-28	Driver: Error by writing data
-29	Driver: Wrong COM state
-30	Driver: COM state error is set
-31	Driver: COM buffer setup failed
-32	Driver: COM set timeout failed
-33	Driver: Receive buffer overrun
-34	Driver: Receive buffer full
-35	Driver: Send busy
-36	Driver: Error during close driver
-40	User: COM port not opened
-41	User: Invalid handle value
-42	User: Invalid COM number
-43	User: Size parameter invalid
-44	User: Size parameter zero
-45	User: Buffer pointer is NULL
-46	User: Buffer too short
-47	User: Setup error

Table 8: CIF Serial Driver Error Numbers (-20..-47)

Error Number	Description
-50	User: Send message, timeout error
-51	User: Could not send a message Cable not connected. Wrong cable. Device does not respond.
-52	User: Send message, no device connected
-53	User: Error by send message, message receiving
-54	User: Telegram collision
-55	User: Telegram, no acknowledgement received
-56	User: Telegram, noise
-57	User: Telegram, data overrun
-58	User: Telegram, parity error
-59	User: Telegram, framing error
-60	User: Telegram, unknown error
-70	User: Timeout by receive a message
-71	User: No message received

Table 9: CIF Serial Driver Error Numbers (-20..-47)

## 8.2 RCS Error Numbers (4 .. 93)

This is the list of error numbers returned by the RCS (Realtime Communication System), that is the operating system of Hilscher devices. The error number is returned in an answer message. Command messages and answer messages are used to communicate between the application (e.g. the System Configurator) and the Hilscher device. An example of this communication is the download of a configuration.

Error Number	Description
4	Task does not exist
5	Task is not initialised
6	The MCL is locked
7	The MCL rejects a send command because of an error
20	The user will download a database into the device that is not valid for this device type.
21	Data base segment not configured or not existent
22	Number for message wrong during download
23	Received number of data during download does not match to that in the command message
24	Sequence identifier wrong during download
25	Checksum after download and checksum in command message do not match
26	Write/Read access of data base segment
27	Download/Upload or erase of configured data base type is not allowed
28	The state of the data base segment indicated an error. Upload not possible
29	The access to the data base segment needs the bootstraploader. The bootstraploader is not present
30	Trace buffer overflow
31	Entry into trace buffer too long
37	No or wrong licence. The OEM licence of the System Configurator allows only communication to devices that have the same licence inside
38	The data base created by the System Configurator and the data base expected by the firmware is not compatible
39	DBM module missing

Table 10: RCS error numbers (answer message) (4..39)

Error Number	Description
40	No command free
41	Command unknown
42	Command mode unknown
43	Wrong parameter in the command
44	Message length does not match to the parameters of the command
45	Only a MCL does use this command to the RCS
50	FLASH occupied at the moment
51	Error deleting the FLASH
52	Error writing the FLASH
53	FLASH not configured
54	FLASH timeout error
55	Access protection error while deleting the FLASH
56	FLASH size does not match or not enough FLASH memory
60	Wrong structure type
61	Wrong length of structure
62	Structure does not exist
70	No clock on the device
80	Wrong handle for the table (table does not exist)
81	Data length does not match the structure of this table
82	The data set of this number does not exist
83	This table name does not exist
84	Table full. No more entries allowed
85	Other error from DBM
90	The device info (serial number, device number and date) does already exist
91	Licence code invalid
92	Licence code does already exist
93	All memory locations for licence codes already in use

Table 11: RCS error numbers (answer message) (40..93)

## 8.3 Database Access Error Numbers (100 .. 130)

The following table lists the error numbers of the database access errors

Error Number	Description
100	Database already opened
101	Dataset could not be opened
103	Error while opening database occurred
104	No valid path name
105	No connection to data base. Call function DbOpen().
106	Error in parameter
107	Error during opening a table
108	Nullpointer occurred
109	Table not opened. Call function OpenTable() first.
110	The first record is reached
111	The last record is reached
112	Unknown type in the record found
113	Data has to be truncated
114	No access driver installed on the system
115	Exception received
116	This table is set to read only
117	There is no data set in the table
118	The requested table could not be edit
119	An operation could not be completed
120	User gives an unexpected length in WritsDs().
121	An assertion failed
122	DLL not found
123	DLL couldn't be freed
124	Specified function not found in the DLL
125	ODBC Function returns an error
126	Count of data bytes in the record exceeds 1938
127	DBM32 DLL is not loaded
128	Field with the given index was not found
129	This table contains no records
130	Invalid character ( ' ' ) found in a Table or Column

Table 12: Database Access Error Numbers (100..130)

## 8.4 Online Data Manager Error Numbers

### 8.4.1 Online Data Manager Error Numbers (1000 .. 1018)

The following table lists the error numbers of the Online Data Manager.

Error Number	Description
1000	Driver OnlineDataManager not opened
1001	Initialization of the OnlineDataManager has failed
1002	No DriverObject found. OnlineDataManager Sub DLL not found.
1003	No DeviceObject found. Device not found.
1004	Application not found
1010	Application has requested an unknown event
1011	Application has requested an unknown function mode, operating mode. Known function modes, operating modes are Reset, Download, Register Server, Unregister Server.
1012	Application has requested an unknown command
1013	Message Server already exists
1014	Message Server not registered
1015	Device already in use
1016	Device not assigned
1017	Device has changed
1018	Command active

Table 13: Online Data Manager Error numbers (1000..1018)

### 8.4.2 Message Handler Error Numbers (2010 .. 2027)

The following table lists the error numbers of the Message handler of the Online Data Manager.

Error Number	Description
2010	Message handler: Messagebuffer empty
2011	Message handler: Messagebuffer full
2021	Message handler: Invalid Message ID (msg.nr)
2022	Message handler: No entry
2023	Message handler: Message already active
2024	Message handler: Wrong Application
2025	Message handler: Message Timeout
2026	Message handler: Wait for Delete
2027	Message handler: No cyclic Message

Table 14: Error Numbers of the Message Handler of the Online Data Manager (2010..2027)

### 8.4.3 Driver Functions Error Numbers (2501 .. 2512)

The following table lists the error numbers of the Driver Functions of the Online Data Manager.

Error Number	Description
2501	OnlineDataManager Sub DLL not found
2502	Function missing
2503	'Read Thread' not created
2504	'Write Thread' not created
2505	'IO Thread' not created
2510	Function failed
2512	Assign reports error. Return neither OK or cancel

Table 15: Error Numbers of the Driver Functions of the Online Data Manager (2501..2512)

### 8.4.4 Online Data Manager Subfunctions Error Numbers (8001 .. 8035)

The following table lists the error numbers of the Subfunctions of the Online Data Manager.

Error Number	Description
8001	Driver not opened. E.g. CIF Device Driver
8002	Application has requested an unknown event
8003	Application has requested an unknown command
8004	Command has failed
8005	Command active
8006	Device invalid
8010	No device was assigned
8011	Device was already assigned
8020	Driver not connected
8021	Driver already connected
8030	Faulty 'GetState'
8031	Send error (PutMessage returns error)
8032	Send active (PutMessage active)
8033	Receive error (GetMessage returns error)
8034	Receive active (GetMessage active)
8035	IO Error (ExchangeIO returns error)

Table 16: Subfunction Error Numbers of the Driver Functions of the Online Data Manager (8001..8035)

## 8.5 Data Base Functions Error Numbers (4000 .. 4199)

The following table lists the error numbers of the converting functions.

Error Number	Description
4000	File does not exist
4001	Success in comprimizing
4002	Dataset does not exist
4003	Last respectively first entry reached
4004	Not enough memory
4005	File directory full
4006	Max number of entries reached
4007	No writing to this table possible, because the table is located in the FLASH
4008	Table name does already exist
4009	File name does not exist
4010	Free RAM length from RCS_CNF.P86 is smaller than E_F_INDEX * 2
4011	Parameter 'next' wrong
4012	Not enough free space to copy data set
4013	Set is deleted
4014	Value for Index is wrong
4015	Access not allowed
4016	open_file used before init_file
4017	Drive is not ready
4018	Not enough drive memory
4019	File name or path does not exist
4020	Cannot create path
4021	Wrong path
4022	Wrong flag
4023	The delete path is the root path
4024	Path file exists
4025	Write error during write a file
4026	Error during create a file
4027	Error during close a file
4028	No DBM file
4029	Length of the read data is unequal of the file length

Table 17: Error numbers of converting functions (4000..4029)

Error Number	Description
4030	Path too long
4031	Directory changed
4032	Directory created
4034	Length of converting stream is 0
4035	Non equal data set found
4036	Non equal data set found
4037	Non equal data set found
4038	Data set has length 0
4039	The function DbmInit has assigned a Zero pointer during RCS initialisation
4040	Printer not ready
4041	The data base is used from an other function
4042	New length of data base is smaller than used
4043	Unknown access mode
4044	Old data base has to be converted
4045	Error while converting. Function not known
4046	Unknown type in set 0 found
4047	No float function available
4048	Function not in RCS module
4049	Check failed
4050	Checksum check failed
4051	More segments are existing in file, than in the structure FILE_INFO_T in wMaxEintraege
4052	SegLen in structure FILE_INFO_T is smaller then the length in the file. Return of function dbm_restore_data
4053	The header file holds an other information for a length than in the segment itself
4054	Not enough memory for allocation on the PC
4055	No index for file handle in structure FLASH_DIR of RCS found
4057	File type 2 can not be printed because of too many definitions
4058	The definitions need too many lines to display them, than in the program available
4059	An unknown format for the parameter. Valid is U, H, or S
4060	Unknown parameter type

Table 18: Error numbers of converting functions (4030..4060)

Error Number	Description
4061	The data base was transmitted into the FLASH
4062	Set 0 contains no structure definition
4063	Set 0 can not be deleted
4064	Error during execution of a ODBC data base access
4065	Initialising of DBM through RCS had no success
4066	Passed data length incorrect
4067	Sorting function not linked
4068	Error in function parameter
4069	Error from ODBC table
4070	No free handle available. Too many data base links are already opened
4071	Unknown data type found in the table
4072	Structure of table GLOBAL not correct or no such table existing
4073	No name of an ACCESS data base
4074	Download window can't be created
4075	Download not fully performable

Table 19: Error numbers of converting functions (4061..4075)

Error Number	Description
4082	More than 32 tables should be created
4083	No entry in element szSourceFile
4084	ODBC connection initialisation not possible. This could happen when in file ODBCINST.INI in section [Microsoft Access Driver (*.mdb)] is no valid path to ODBCJT16/32.DLL.
4085	Error in structure in the ACCESS data base that is in DBM format
4086	Error in structure in the ACCESS data base that is in DBM format
4087	No data in a ODBC table
4088	No entry
4089	ODBC set length not valid
4090	Not enough data sets in ODBC table
4091	Table CreateTable not found
4092	Error in structure of table CreateTable
4093	No entry in element szSourceTable
4094	No entry in element szDestTable
4095	Entry in iSourceType of table CreateTable is wrong
4096	Entry in iTranslate of table CreateTable is wrong
4097	Function SQLAllocStmt reports an error
4098	ODBC source table not found
4099	ODBC data truncated
4100	Download timeout
4101	Library load error
4102	Library function error
4103	Error in description 'toggle'
4104	Error in description 'KB'
4105	Column does not exist
4106	ODBC structure different
4107	ODBC address error
4108	No CRC sum exists (table GLOBAL exists or old)
4109	Table GLOBAL is old
4110	Calculated CRC different to CRC in table GLOBAL
4199	Programming error

Table 20: Error numbers of converting functions (4082..4199)

## 8.6 Converting Functions Error Numbers (5001 .. 5008)

The following table lists the error numbers of converting functions.

Error Number	Description
5000	Function PackLongToByteShort: Not enough space in pvD (Number of elements greater than reserved memory)
5001	Function PackLongToByteShort: Not enough space in pvD. Detected during converting of pvS
5002	Function PackLongToByteShort: Not enough space in pvD
5003	Function StringToByte: Not enough space in pvD
5004	Function IntToByte: Not enough space in pvD
5005	Function LongToShort: Not enough space in pvD
5006	Function PackStringDumpToByteArray: Not enough space in pvD
5007	Function PackStringBumpToByteArray: A character was found, which is not convertible into a HEX value
5008	Function PackStringDumpToByteArray: Number of character odd
5009	Function PackStringDumpToByteArray: Not enough space in pvD
5010	Function PackStringDumpToByteArray: The current data set needs to be appended the previous one
5011	Function PackStringDumpToByteArray: No corresponding function to the given number exist
5012	Converting error

Table 21: Error Numbers of data base functions (5000 .. 5012)

# 9 Appendix

## 9.1 Extended Device Diagnostic

**Note:** The extended device diagnostic is supported by the devices NL-MPI and NT40-MPI. The extended device diagnostic is not supported by the device NL50-MPI.

### 9.1.1 Extended Device Diagnostic TCP UDP TASK

#### 9.1.1.1 TCP\_UDP\_TASK Information

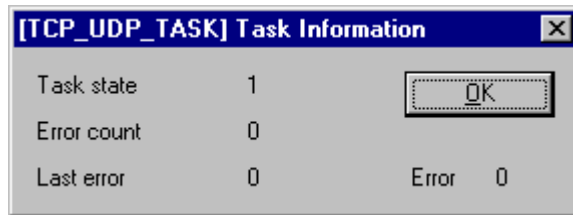


Figure 28: TCP\_UDP\_TASK Task Information

Variable	Meaning
Task state	State of the task
Error count	Number of appeared errors
Last error	Last appeared error

Table 22: TCP\_UDP\_TASK Task Information

9.1.1.2 TCP\_UDP\_TASK Code Diag

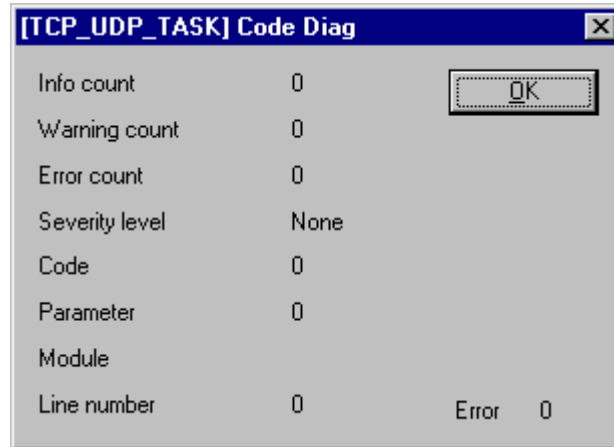


Figure 29: TCP\_UDP\_TASK Code Diag

Variable	Meaning
Info count	Counter for information reports
Warning count	Counter for warning reports
Error count	Counter for errors
Severity level	Level of the last appeared error
Code	Code of the last appeared error
Parameter	Additional information to the error
Module	Software-module
Line number	Line number inside the software-module

Table 23: TCP\_UDP\_TASK Code Diag

## 9.1.2 Extended Device Diagnostic IP TASK

### 9.1.2.1 IP\_TASK Task Information

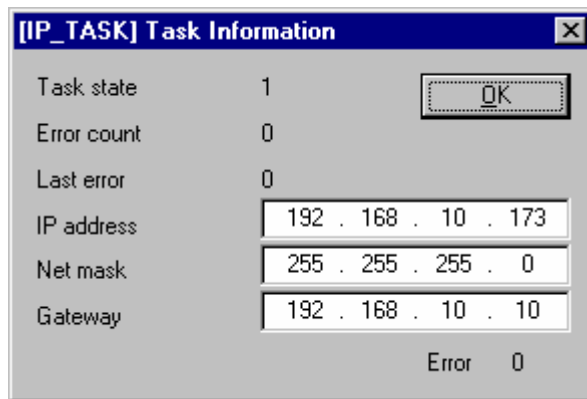


Figure 30: IP\_TASK Task Information

Variable	Meaning
Task state	State of the Task: 1 = Task is running 2 = initialization is running 3 = initialization has failed
Error count	Counter for appeared errors
Last error	Last appeared error
IP address	IP-Address of the device
Net mask	Net mask of the device
Gateway	Gateway of the device

Table 24: IP\_TASK Task Information

### 9.1.2.2 IP\_TASK Ethernet Status

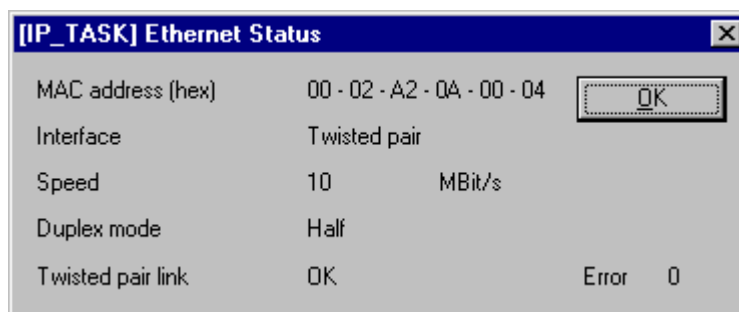


Figure 31: IP\_TASK Ethernet Status

Variable	Meaning
MAC address (hex)	MAC address of the device
Interface	Actual known Ethernet interface
Speed	Transmission rate
Duplex mode	Shows the actual Duplex mode: Half-/Full duplex
Twisted Pair link	State of the Twisted Pair connection

Table 25: IP\_TASK Ethernet Status

9.1.2.3 IP\_TASK Ethernet Count

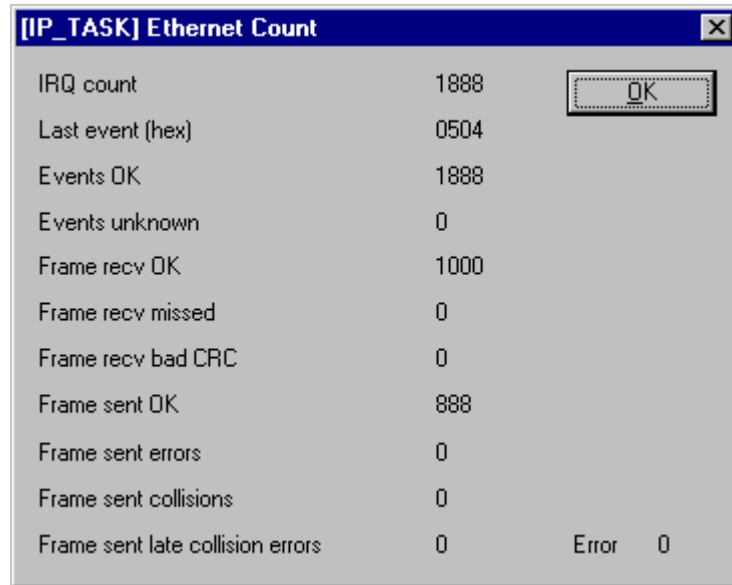


Figure 32: IP\_TASK Ethernet Count

Variable	Meaning
IRQ count	Counter for interrupts of the Ethernet controller
Last event (hex)	Last appeared interrupt type
Events OK	Counter for known interrupt types
Events unknown	Counter for unknown interrupt types
Frame recv OK	Counter for received Ethernet frames
Frame recv missed	Counter for missed Ethernet frames
Frame recv bad CRC	Counter for Ethernet frames with CRC errors
Frame sent OK	Counter for sent Ethernet frames
Frame sent errors	Counter for send errors
Frame sent collisions	Counter for sending collisions
Frame sent late collision errors	Counter for late sending collisions

Table 26: IP\_TASK Ethernet Count

### 9.1.2.4 IP\_TASK Packet Count

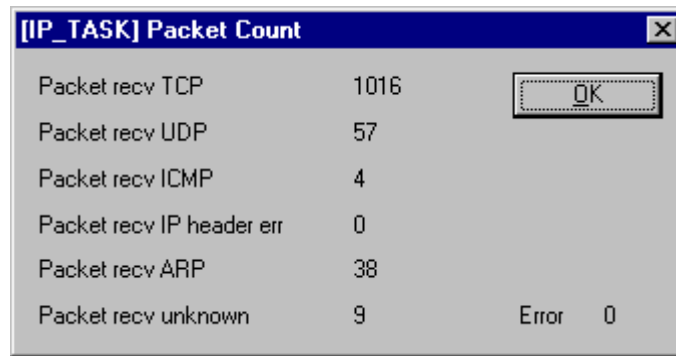


Figure 33: IP\_TASK Packet Count

Variable	Meaning
Packet recv TCP	Counter for received TCP packets
Packet recv UDP	Counter for received UDP packets
Packet recv ICMP	Counter for received ICMP packets
Packet recv IP header err	Counter for received IP packets with errors
Packet recv ARP	Counter for received ARP packets
Packet recv unknown	Counter for received packets of an unknown type

Table 27: IP\_TASK Packet Count

### 9.1.2.5 IP\_TASK Code Diag

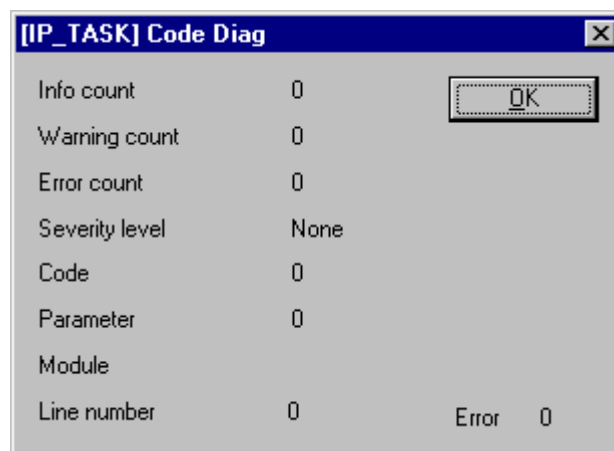


Figure 34: IP\_TASK Code Diag

Variable	Meaning
Info count	Counter for information reports
Warning count	Counter for warning reports
Error count	Counter for errors
Severity level	Level of the last appeared error
Code	Code of the last appeared error
Parameter	Additional information to the error
Module	Software-module
Line number	Line number inside the software-module

Table 28: IP\_TASK Code Diag

### 9.1.3 Extended Device Diagnostic PROFIBUS

#### 9.1.3.1 FDL\_TASK Requests

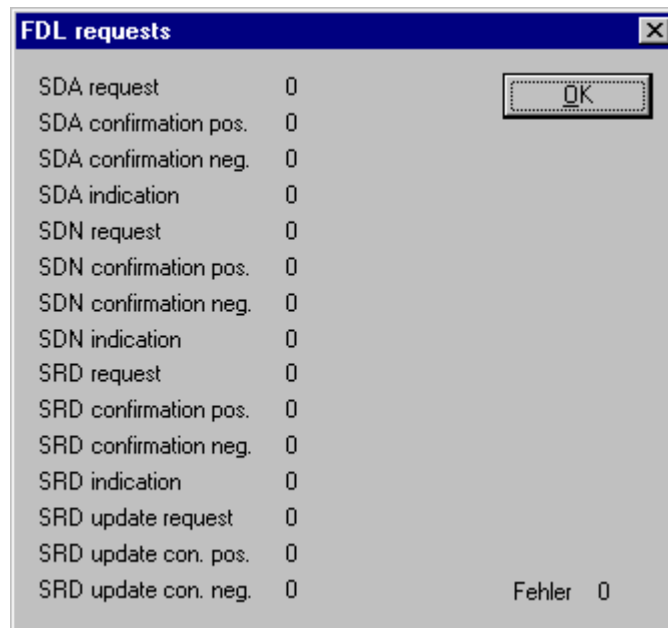


Figure 35: FDL\_TASK Requests

Variable	Bedeutung
SDA request	Number of 'SDA' Request
SDA confirmation pos.	Number of 'SDA' Confirmation, positive
SDA confirmation neg.	Number of 'SDA' Confirmation, negative
SDA indication	Number of 'SDA' Indication
SDN request	Number of 'SDN' Request
SDN confirmation pos.	Number of 'SDN' Confirmation, positive
SDN confirmation neg.	Number of 'SDN' Confirmation, negative
SDN indication	Number of 'SDN' Indication
SRD request	Number of 'SRD' Request
SRD confirmation pos.	Number of 'SRD' Confirmation, positive
SRD confirmation neg.	Number of 'SRD' Confirmation, negative
SRD indication	Number of 'SRD' Indication
SRD update request	Number of 'SRD' Update Request
SRD update con. pos.	Number of 'SRD' Update Confirmation, positive
SRD update con. neg.	Number of 'SRD' Update Confirmation, negative

Table 29: FDL\_TASK Requests

9.1.3.2 FDL\_TASK FMA Request

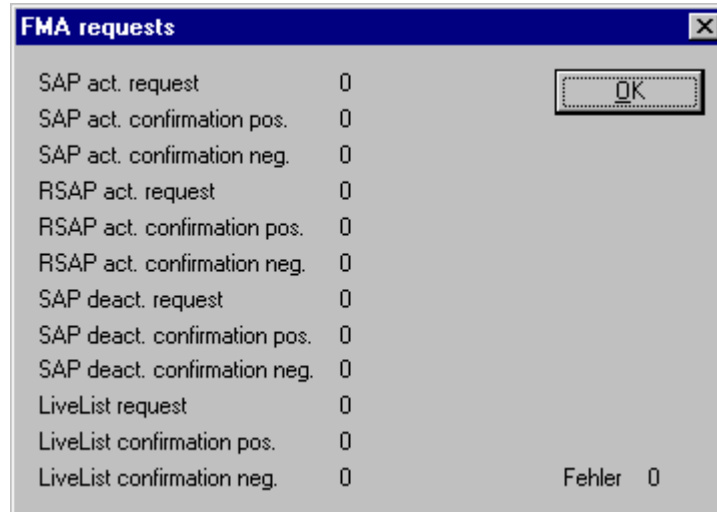


Figure 36: FDL\_TASK FMA Request

Variable	Bedeutung
SAP act. Request	Number of 'SAP Activate' Request
SAP act. Confirmation pos	Number of 'SAP Activate' Confirmation, positive
SAP act. Confirmation neg	Number of 'SAP Activate' Confirmation, negative
RSAP act. Request	Number of 'RSAP Activate' Request
RSAP act. Confirmation pos	Number of 'RSAP Activate' Confirmation, positive
RSAP act. Confirmation neg	Number of 'RSAP Activate' Confirmation, negative
SAP deact. Request	Number of 'SAP Deactivate' Request
SAP deact. Confirmation pos	Number of 'SAP Deactivate' Confirmation, positive
SAP deact. Confirmation neg	Number of 'SAP Deactivate' Confirmation, negative
LiveList request	Number of 'LiveList' Request
LiveList confirmation pos	Number of 'LiveList' Confirmation, positive
LiveList confirmation neg	Number of 'LiveList' Confirmation, negative

Table 30: FDL\_TASK FMA Request

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## 11.1 Contacts

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## 12 Glossar

### **SyCon**

System Configurator.

Configuration and Diagnostic tool.