
Users Manual



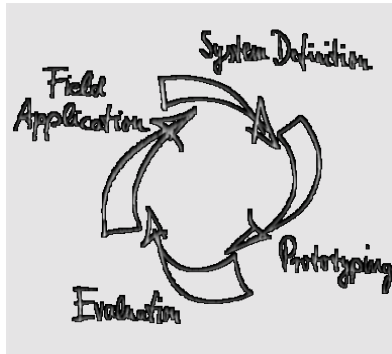
NetTest III+

L+ME Company of the ACTIA group
ACTIA
Systems, Support & More

Welcome to **I+ME** ACTIA !

Before acquainting you with your new **I+ME** Hardware we would first like to thank you for purchasing our product. We are extremely pleased that you have chosen to place your trust in **I+ME** ACTIA and will do our best to satisfy whatever needs you may have. The following is a brief explanation highlighting our background, areas of expertise and general product lines. This products and the list of our world-wide branch offices show that you have found a competent partner in **I+ME** ACTIA.

Since its foundation in 1986, **I+ME** ACTIA has made quite a name for itself. Our employees are dedicated to producing high-quality solutions in the field bus and multiplexed systems sectors. The knowledge of our experts allows to develop a spectrum of products which have been used in the automotive field as well as in general industrial environments. Our products can be used in all phases of system development: system definition, prototyping, evaluation and field application.



I+ME *Informatik und MikroElektronik*

Whether your professional background is into industry-process-control or development and test tools, we offer six product groups to fulfill your sophisticated needs. Tried and tested under the most severe conditions the automotive industry has to offer, our products have proved themselves again and again. Our six products groups are:

1 CAN System Test & Design Tools



diagnosis and tests.

Support of various user application phases: Learning, prototyping, testing and evaluation of networked systems. Comfortable Real-Time simulation of message transfer characteristics in CAN networks. Tools for mobile

2 CAN PC Interfaces



applications under DOS/Windows according to Real-Time requirements is supported

Easy interfacing between PCs, Laptops, notebooks and networks with automotive fieldbus – protocols. Available for all PC standard interfaces such as ISA-slot, PCI, backplane, RS232, Centronics and PCMCIA. Development of

3 CAN Industrial I/O



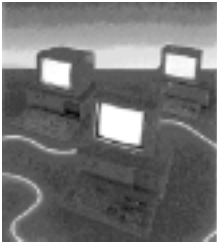
NiPC is an intelligent hardware concept for sensor / actuator interfacing. A modular architecture allows the flexible change target micro controllers for process control.

4 CAN System Application Software



Enabling Real-Time system modeling, testing of networked systems as well as application support. Offering basic services for network communication which is applicable for various processors and programming languages. Facilitating the application interface for distributed industrial process control according to the CAL standard by CiA. Support of Windows 3.1, Windows 95 & NT.

5 CAN System Know How



Promoting the understanding of various network protocols in practice. Understanding of CAN networks with CAL in practice. Developing HW/SW solutions for customer specific problems. We offer CAN / CAL workshops and in-house seminars to enable CAN users to benefit from I+ME ACTIA's extensive knowledge.

6 Automotive Diagnostics



Assistance during the development phases. Diagnostic tools for quality control in production lines as well as after sales diagnostic, control and servicing tools are provided to manufacturers, suppliers and dealers of the car industry by I+ME ACTIA.

If you have any questions concerning our products or you look for specific solutions within our product groups,

don't hesitate to call us and benefit from I+ME's extensive knowledge - your need is our desire.

Our merger with the french corporation ACTIA in 1995 allowed us to become a powerful supplier for the European automotive industry. ACTIA products include diagnostic systems for automotive service and maintenance as well as development and production of high-quality on-board electronics. joining forces with ACTIA has enabled I+ME to better service it's international customers not only in Europe, but throughout the world.

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Manual

NetTest 3+

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General dokumentation 1.21

I+ME *NetTest III+*. Overview
System Requirements, Delivery Contents and
Specifications.

1 Introduction

1.1 Your I+ME NetTest III+

The *NetTest III* is an improved portable network tester. It is designed for hand-held diagnostics and configuration of CAN based networked components. With its features it is an ideal general purpose hardware for automotive diagnostics.

With *NetTest III+* you can visualize bus traffic within a CAN network. Moreover you can store data on PCMCIA memory cards to transfer them to the PC. The data can be arranged to be understandable for standard PC programs like Excel. In this way the user can generate statistic diagrams, etc. to analyze the CAN communication and to verify the timing on the CAN bus.

The software allows you to set bus specific values. Some parameters will be detected automatically after plug into a specified CAN network. The configuration of the screens can be done quickly on the base of ASCII files which contains all necessary information. The ASCII files can be generated by standard editors or imported by other tools. You can also interpret frames data content in various ways and display text commands.

In addition to the above mentioned features you can transfer your own programs or configurations to *NetTest III* by the use of a PC card. A PC application for handling of the PC cards is included into the standard delivery contents.

I+ME ACTIA is always eager to fulfil the needs of our customers. If problems should occur, please refer to **Troubleshooting**. If the problem persists, then feel free to contact our after-sales support hotline using the following number:

After-sales service

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1.2 Optional System Requirements

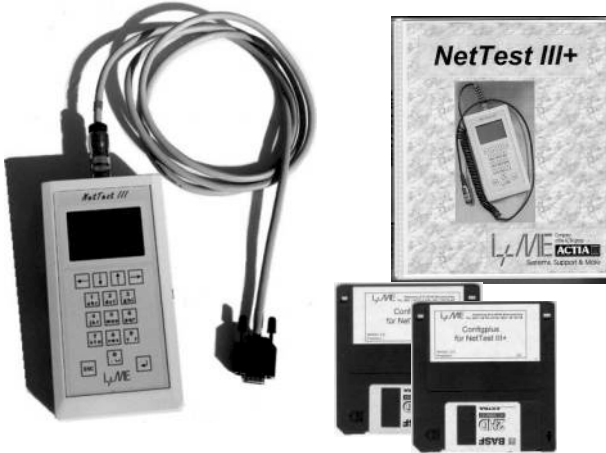
PC requirements for the optional use of PCMCIA cards for different configurations, to update system and to exchange data.

- standard PCMCIA drive with standard memory access drivers
- PC with Pentium 133 MHz
- 16 MB RAM min.
- Windows 95/98 or Windows NT

1.3 Delivery Contents

1.3.1 Standard

Your **NetTest III+** delivery package includes:
(Order code: 2003 402)

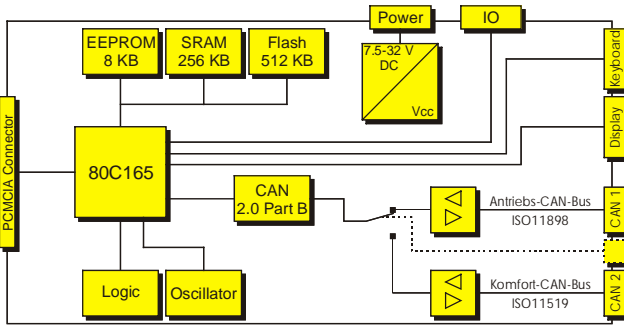


- 1x **NetTest III+**
- 1x System user manual (hardware/software).
- CAN firmware as HEX file.
- “ConfigPlus” configuration program.
- “TransLog” program to convert logged data.
- Transfer tools for data exchange between PC and PC cards.
- Adapter cable set:
1x SUB-D 9

1.3.2 Supplementary Support

- ChipSetup software
- SRAM cards
- Flash cards
- Different cables for protocol interfacing (on request)
- Protection Case

1.4 Technical Specifications



General characteristics of NetTest III+

Processor	80C165 , @18,432 MHz
Protocol Interface	SJA100, @ 16 MHz
Physical Interface	CAN I: according to ISO 11898 (PCA 82C251) CAN II: according to ISO 11519 (TJA1053)
Memory	512 KB x 8 Flash 256 KB x 16 SRAM 8 KB x 8 EEPROM
Temperature Range	-20°C .. + 65 °C
Connector	9pin sub-min-D CAN according to CiA/DS 102 or customer specific
Housing	ABS plastic, protection class IP30
Display	LCD illuminated , 64 x 128 pixel, 62,5 x 43,5 mm
PCMCIA Interface	according to Type II, Level 1 of PCMCIA standard
Keyboard	PET foil keyboard with 16 keys
Dimensions	100 x 119 x45 mm
Power Supply	switched-mode power supply 12/24V DC (7-32V DC)

Options

UART	On request
RS232	For programming and debugging
Cable	1 m cable for adaptation
I/O	1 x analogue input

The components which make up your *NetTest III+* and the way they work together.

2 Hardware

2.1 General

The *NetTest III+* electronics includes the following components:

- **Power Supply** - the regulated power supply has an input voltage range of 7.5V .. 32V. The nominal output current is 0,6A @ 12V.
- **CAN Transceiver (High Speed)** - as high speed CAN transceiver a circuit Philips PCA82C251 is used as certificate in the ISO 11898.
- **CAN Transceiver (Low Speed)** - as low speed CAN transceiver a circuit Philips TJA1053 is used as certificate in the ISO 11519.
- **PCMCIA Slot** - for data transfer and program download via one 16 bit memory card a PCMCIA slot is integrated in the *NetTest III+*. Hot plug-in is allowed.
- **Cable ID detection** - three digital input lines are used for an identification of the connected cable and its using. In a first step the lines are used CAN high speed / low speed selection only. This means depending on the logic levels on these lines either the "Low Speed CAN"transceiver or the "High Speed CAN"transceiver is selected.

- **Digital IN** - the digital input port (1 Bit) is designed for voltages of $0 \dots U_{bat}$. The threshold for a logic "High" level is 6V. The input impedance is greater than 20kOhm. This input is protected against overvoltages.
- **Digital OUT** - the digital output port (1 Bit) is designed for voltages of $0 \dots U_{bat}$. It is an "Open Drain Output" for currents up to 20mA. This output is protected against short circuit.

2.2 Powersupply

The Power Supply is realized as a regulated power supply. *NetTest III+* has an input voltage range of 7.5V .. 32V- The power have to be connected via the CAN connector pin 9 and 6 or via the Binder connector.

2.3 Microcontroller

The I+ME *NetTest III+* includes the 16-bit Siemens 80C165 micro controller on a piggy back. The controller's clock frequency is 18,432 MHz to realize the baud rates on the RS232 interface.

The following baud rates are supported:

Baudrate / Bd	Tolerance
19200	1%
9600	1%
4800	1%
2400	1%
1200	1%

2.4 Memory

The *I+ME NetTest III+* is equipped with

256 KB x	16 bit SRAM
512 KB x	8 bit Flash
8 KB x	8 bit EEPROM

This constellation is supported today, in future other configurations are possible.

2.5 Protocol Interface

The product has one SJA 1000 CAN-protocol chips at a frequency of 16 MHz.

2.6 Physical CAN Interface

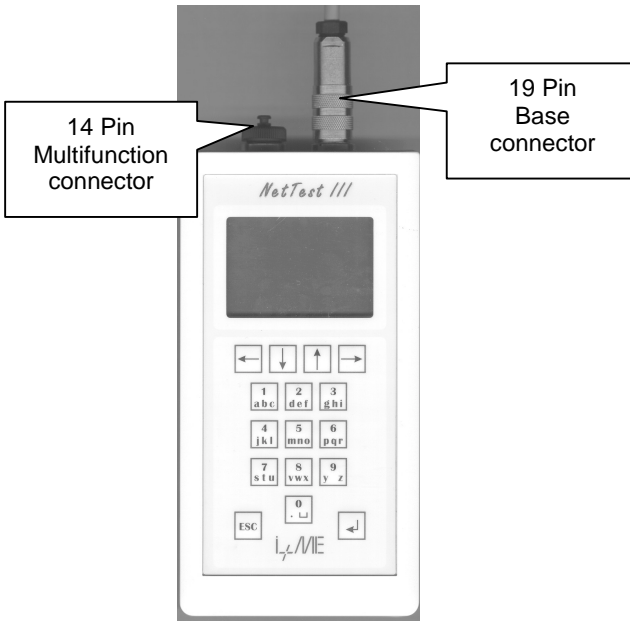
NetTest III+ is designed to fulfil the requirements of in-vehicle applications. Therefore it is equipped with two transceiver chips.

One of them is in accordance to the standard ISO 11898.

The other physical line driver is in accordance to the standard ISO 11519. It is realized by the usage of the transceiver chip TJA1053.

The selection of the physical line driver is done automatically. For each exists a special cable which is encoded and assigned to the suitable physical line driver.

2.7 Physical Cable connections

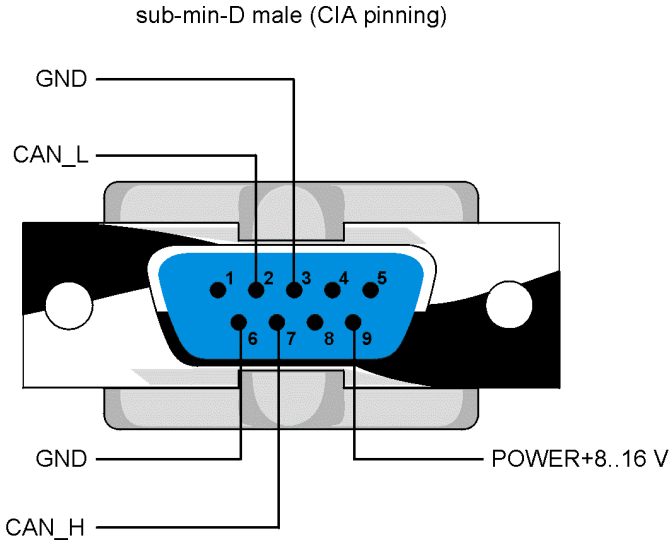


2.7.1 19 Pin connector

At the top of *NetTest III+* you reach two connectors from company BINDER. One 19 pin and one 14 pin connector. The 19 pin connector is used to plug in the CAN-Base-Cable. For pinning see next page.

2.7.2 CAN-SUB-D cable

Pinning of CAN-SUB-D Cable:



2.7.3 High-Low speed adaptation cable

To separate the cable for different application fields three digital input lines are used for an identification of the connected cable and its use.

The table below describes the coding and the usage of these adaptation cable.

Coding of adaptation cable:

Cable ID 2	Cable ID 1	Cable ID 0	Cable type / Used for
0	0	0	0, t.b.d ¹
0	0	1	1, Low-Speed CAN
0	1	0	2, High-Speed CAN
0	1	1	3, t.b.d
1	0	0	4, t.b.d
1	0	1	5, t.b.d
1	1	0	6, t.b.d
1	1	1	Not used

- 0: the corresponding ID line is connected to GND
- 1: the corresponding ID line is left open

Note: Pin N = ID 2 is connected with GND in the 19 pin connector cable (CAN-Base-Cable).



¹ t.b.d: to be defined

2.7.4 14 Pin connector

Optional the *NetTest III+* is equipped with the 14 Pin mode. The table below describes the pinning of the 14 pin BINDER (Series 1678) connector at the top of *NetTest III+*.



Note: These function only supported if you ordered the corresponding package.

Pin	Signal
A	GND (Signal)
C	Schmitt-Trigger In
E	Optional I/O 1
G	Optional I/O 2
J	Optional I/O 0
L	GND (Signal)
M	SCLK
N	/SCLK
O	GND (Signal)
P	MTSR
R	/MTSR
S	GND (Signal)
T	MRST
U	/MRST

2.8 PCMCIA Card Connector

NetTest III+ has a PCMCIA card connector according to type 11 standard, 16 bit PC card host adapter for memory cards. The adapter is in accordance to the PCMCIA "PC Card Standard" dated February 1995. The following restrictions are given:

- 1 socket
- memory card supply 5V DC only
- maximum power supply current 250mA @ 5V
- 1 memory window with max 64 KB size to the PC cards common or Attribute memory 8 bit access

The *NetTest III+* standard firmware makes it possible to work with all SRAM PC cards. You can also work with e.g. Flash-cards or all type 11 standard cards because you can control every line of the PC card connector.

Fore the usage of Flash memory cards make sure that the programming voltage of the memory card is in the range of the supply voltage.

2.9 Inputs/Outputs

Digital IN (1 bit)

The digital input port is designed for voltages of $0 \dots U_{\text{bat}}$. The threshold for a logic "High"- level is 6V (at the input pin). The input impedance of this port is greater than 20kOhm. The input is protected against overvoltages (+/- 30V).

Digital OUT (1 bit)

The digital output port is designed for voltages of $0 \dots U_{\text{bat}}$. It is an "Open Drain Output" for currents up to 20mA. The output is protected against short circuit up to 30V.

2.10 Casing components

2.10.1 Housing

The housing is a modified type "OKW Datec-Mobil-Box M". The housing is made of ABS plastic. Inside the housing is coated with aluminum. It is resistant against Diesel oil, sea water, weak caustic solutions and it is limited resistant against petrol, hydrochloric acid (10%) and atmospheric conditions. The external dimensions are approximately 195mm * 101mm * 44mm. (See annex for more information). The modifications are milling of wholes for the display and connectors as well as shorten of fixing points for the internal electronics.

2.10.2 Keyboard

The handling of the *NetTest III+* is realized by a 16 key foil keypad. The base material is structured polyester (PETP) with 150µm thickness. The keys are arranged in a 4 * 4 matrix (electronically). Each key has a lifetime grater than 1.000.000 cycles. The contact bounce is 100ms maximum. The foil is resistant against petrol, Diesel Oil, Kerosin, weak acid solutions, weak caustic solution, cleaning agents. The dimensions are 81mm * 168mm. The keypad is fixed to the housing with the adhesive 3M 467.

2.12.3 Display

The *NetTest III+* is equipped with a 128 x 64 pixel illuminated graphical display. The illumination is realized by a green-yellow LED back light. The display type is AG64128LGS-NY-H-202 by ACTRON.

How to work with your *NetTest III+*.

3 I+ME Software

3.1 Power On And Main Menu

When you switch on *NetTest III* the following screen will be displayed for two seconds.

```
-----NetTest 3-----  
Version: X.x  
Date: dd/mm/jjjj  
I+ME GmbH - a company  
of the ACTIA group
```

Please remember the number of the version, if you call the I+ME After Sales Service.

After that the following display is shown:

```
NetTestIII by I+ME  
Version: X.x  
SerialNo: xxx  
ANTrieb  
high speed CAN
```

Version and SerialNo are shown. The next line shows the name of the downloaded configuration file (e.g. ANTrieb) and the type of physical layer (e.g. high speed CAN).

NOTE: The first three characters of the configuration file name are for interest (here ANT). The *NetTest III+* detect in this case the right config file. It is possible to work with other filenames but expedient to use the following ones:



ANTxxx.cfc for Antriebs-CAN-Bus config-files
KOMxxx.cfc for Komfort-CAN-Bus config-files
XXXxxx.cfc an error occurs (warning only)

After a few time the following screen is displayed.

```
↓ Mainmenu
1  CAN messages
2  CAN diagnostics
3  Select config.
4  Select filter
```

With help of the arrow buttons the high lighted line can be moved up and down to choose the wanted item. In which direction the high lighted line can be moved is shows left sided in the first line by the arrow.

After moving the high lighted line to the button of the screen the next item became visible

```
↑ Mainmenu
4 select filter
5 Update config.data
6 Special functions
7 Restart
```



NOTE: As long as *NetTest III+* is not in the item CAN messages , it does not have any impact on the CAN bus (acknowledge slot).

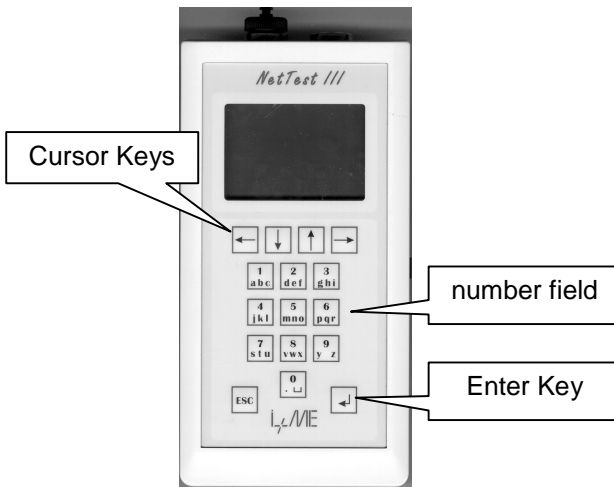
3.2 Editing Data With *NetTest III+*

- *NetTest III+* reacts on keyboard strokes after the pressure has been released.

NOTE: If the CAN bus is very busy, that means the busload is very high, it is possible that the keyboard react torpidly. In this case the button must be pressed for a longer time.



- Number input can be achieved by keystrokes, to select letters you have to press multiple sometimes.
- By using the “**cursor**” you get to the next menu-field.
- Use the key “↵” to get to the next menu item.
- The “**ESC**” key takes you back to the previous menu.



3.3 CAN messages

After selecting the item “1 CAN messages” the following screen is displayed.

Nodename Selection	
ZKE	F
BSG	1
Gateway	8
TSG_HR	A

On the screen the Nodenames are displayed (normally ECU-names). This screen shows an example, because the contents of the display depends on the definitions in the configuration file. This file can be edit by the user or by I+ME ACTIA, if you like. How to edit a configuration see chapter **PC-Software** with the explanation of **ConfigPlus**.

If messages be received from the CAN bus for a defined Node(ECU), on the right side an activity mark is running.



NOTE: The screen above shows only a screenshot, the character runs from 0..9, A..F.

After selecting one of the Nodenames by using the highlighted line and pressing “↓” key, the messages are displayed with their names.

Message Display		
Bremse_1	1a0	10
Bremse_2	5a0	9
Bremse_3	4a0	10
Kombi_1	320	9999

The screen shows the identifier in hex-format and the cyclic times in ms. If time is 9999 is displayed no message is receive.

If one message is selected the hidden information of the data bytes is shown in text comments. These text comments of data are defined in the config file.

Sig. Bremse_1	
ABS_Brems	ok
Diagnose	aktiv
Geschw.	125km/h
Drehz.	3000U/min

3.4 CAN diagnostics

After selecting the item “**2 CAN diagnostics**” you see the following screen.

CAN diagnostics	
Busload	: 30%
BusOff	: 0
WarnState	: 0
Errframe	: 0

Busload

shows the traffic on the CAN Bus in %

BusOff

counts how often the CAN-controller is set on bus off. Normally the CAN-controller is set in BUSOFF mode if the Errframe counter is reached the 255 limit. In this case the controller gets a reset to prevent that diagnostics stopped.

Warnstate

counts how often the CAN-controller reached the ErrorPassivMode.

Errframe

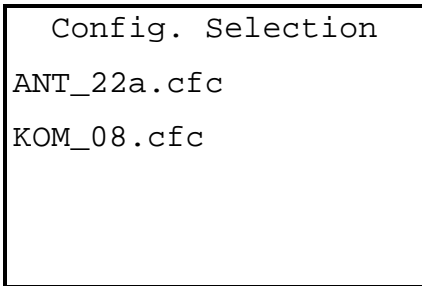
counts the received Errframes.



NOTE: The counters in this menu can reset if you press the “↑”-key for a longer time. Importing if you are log data with a triggerpoint into an Errorframe.

3.5 Config. Selection

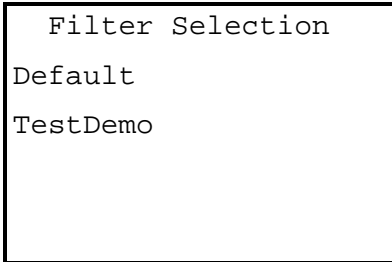
After selecting the item “**3 Select config.**” you see the following screen.



In this submenu one of the two configurations can be selected. If a new configuration should be loaded one of these must be overwrite.

3.6 Select filter

After selecting the item “**4 select filter**” you see the following screen.



In this item filter which defined in the configuration can be selected by moving the highlighted line. How to define a configuration file see chapter **PC-Software**.

3.7 Update config. data

After selecting the item "5 Update config. data" one of the following screen will display:

PCMCIA card not present

If no PCMCIA card is in the PCMCIA slot the following information is displayed.

```
Error occurred
No PCMCIA inside
Hit any key to
continue
```

After pressing one key you go back to the main menu.

PCMCIA card inside

If a PCMCIA card is in the PCMCIA slot the following information is displayed.

```
Config. Update
ANT_T05C.CFC
ANT_T004.CFC
ANT_T05E.CFC
KOM_061Y.CFC
```

The lines under the topic Config. Update show the configuration files which were saved on the PCMCIA

card. To select a file move the high lighted line by using the arrow keys and press “↵”-key.

After your selection the following screen is displayed.

```
Config. Seletion
ANT_T05C
ANT_T004

for overwriting
```

In the *NetTest III+* the last two configurations are available. If a new configuration should be downloaded one of the old configurations must be overwrite.

After choosing the configuration file which should be overwrite the following screen is displayed.

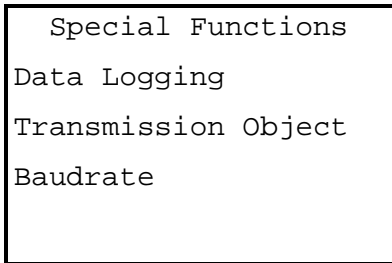
```
Config. Update

Writing .....
```

The *NetTest III+* loads all necessary information from the PCMCIA card.
After finish the downloading *NetTest III+* goes back to the main menu.

3.8 Special functions

After selecting the item “**6 Special functions**” you see the following screen.



The following sides described the menu items:

- Data Logging
- Transmission Object
- Baudrate

3.8.1 Data Logging

After selecting the item Data Logging the *NetTest III+* collects the CAN Bus messages on the PCMCIA card.

You have to format the PCMCIA card by using the following display:

```
PCMCIA card format

Format the card ?

ESC-Cancel
Ret-Format
```

Start the formatting of the card by pressing the “↵”-key. You reach the “Trigger Define” display after formatting the memory card. The PCMCIA card can be read by the tool **TransLog** from I+ME ACTIA.

3.8.1.1 Explanation of trigger define

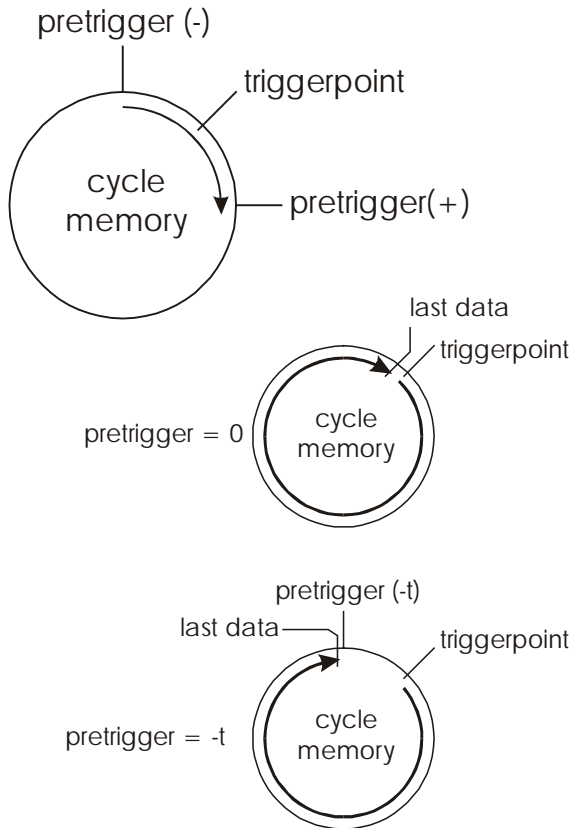
After formatting the PCMCIA card you have to define some trigger options. For better understanding the following paragraph described th memory mechanism.

```
Trigger Define

Type   : No Trigger
Value  : 0
Pretrg.:      0ms
Acquire :all
```

The architecture of the memory saving algorithm is like a circle. The logged data were saved on the card in a circle buffer mode. If the last written position is reached, the oldest data on the card was overwrite.

For event controll it is possible to define one triggerpoint and one pretriggerpoint. If the trigger event is occur, the data saving ends bevor the triggerpoint is reached twice or the pretriggerpoint is reached (see pictures below).



Menuitem Type

To define the trigger you can choose under 7 conditions they are selectable by pressing “←” or “→”.

1. No trigger
If you choose this item the datalogging starts immediately. It stops if the card memory is still full.
2. On key
Start logging if you press “↑”-key and stops if the pretriggerpoint is reached or you interrupt logging with the “↓”-key.
3. On CAN Err
Start logging if the first ErrorFrame on bus is occur and stops if the pretriggerpoint is reached or you interrupt logging with the “↓”-key.
4. On CAN Rx
Start logging if a dataframe with a special identifier (defined in value) is received and stops if the pretriggerpoint is reached or you interrupt logging with the “↓”-key.
5. DIN Level
Start logging if a high or low level is detect on digital input and stops if the pretriggerpoint is reached or you interrupt logging with the “↓”-key.
6. DIN trans.
Start logging if a rising edge or falling edge is detect on digital input and stops if the pretriggerpoint is reached or you interrupt logging with the “↓”-key.
7. ADU trg.
(Not implemented in this version)
Start logging if the sample voltage is reached (defined by value). Stops if the pretriggerpoint is reached or you interrupt logging with the “↓”-key.

Menuitem Value

In this menuitem you can select values by using the “←” and “→” key. The input is possible only if you choose trigger type 4 – 7. In dependence on your choice the values have other meanings:

4. Value can only reached values wich are defined in the configuration file.
5. Value can only reached 0 or 1. These values are the level of the digital input channel , 0 for LOW and 1 for HIGH.
6. Value can only reached 0 or 1. These values corresponding with the edge signals. The 0 is the falling edge and the 1 is the rising edge.
7. (Not implemented in this version)
Value defined the sample point of voltage from the AD unit. The steps are defined by the used AD unit.

Menuitem Pretrigger

The pretrigger defines the time bevor or after the triggerpoint. Is the pretrigger reached, no more data was overwrite.

Example: You choose “On CAN Err”. In this case the data before the triggerpoint is reached are very interesting in many times. So you define a pretrigger as -500. The pretrigger time scale is [ms].

Menuitem Aquire

With this item you choose if all data are logged, or if only the data wich are in the config file defined be logged.

Advantage: By choosing “Msg. list” the time to log data can be rised up considerable.

You can read data on PC from PCMCIA card by using the tool TRANSLOG from I+ME ACTIA.

After the input of trigger configuration you have a possibility to type in a comment. Choose this possibility to save the history of the data you have logged.

Insert comment

3.8.2 Transmission Object

After selecting the item Transmission Object you see the following screen.

```
Transmission Object
CAN Object Definition
CAN Select Menu
```

With these two menuitems you can control all transmit-funktions of the NetTest III+.

3.8.2.1 CAN Object Definition

After selecting the item CAN Object Definitions you see the following screen.

```
↓CAN Tx Definition →
TKey: 0
ID :0x 0
Name: tx0
Len : 8
```

On this screen you can define transmission objects without using a personal computer. You can define maximal two transmission objects in online mode.

If you press “↓”-key you can reach more items of the menu “CAN Tx Definition”

```
↓CAN Tx Definition →  
Len : 8  
Cyc : 100 ms  
Mode: 0  
Dat0:0000000000000000
```

The following describes the items you can define:

- Tkey
... is the number of transmission objekt
- ID
... define the identifier of the transmitted object in HEX-format.
- Name
... gives the transmit object a name.
- Len
...defines the length of the databytes.
- Cyc
... defines the transmit cycle time in range to 5 .. 9000 ms.
- Mode
... decides between cyclic and burst transmit:
0 = cyclic transmit mode
1 = burst transmit mode
- Dat0
... define the content of the databytes of the transmit object.
- Dat1
... the same as Dat0 only for transmission object 1.

3.8.2.2 CAN Select Menu

After selecting the item Transmission Object you see the following screen.

CAN Tx Selection	
Fenster1	01 nor
Tuer	00 alt 8
Test	00 nor
Klima	01 alt

On this menu you can choose witch transmit object shall be send by *NetTest III+*. You can select max. 2 object from a list consist of the object from the config file and the two object you have define direct on *NetTest III+*.

The tool ConfigPlus help you to define the transmit object on your PC.

The selected objekts get an activity mark if you choose them with pressing the “↵”-key..

Send data on mode 0 (cyclic)

Press key “→” ones, the Tx object with content Dat0 will be transmit.

Press key “→” twice, the Tx object with content Dat1 will be transmit.

Press key “←”, the transmittion will be stoped.

Key: → → → → ←
 Object: Dat0 Dat1 Dat0 Dat1 stop

Send data on mode 1 (burst)

Press key "→" ones, the Tx object with content Dat0 will be transmit cyclic.

Press key "→" twice, the Tx object with content Dat1 will be transmit for 5 cycles, then transmsion is stop.

Key: → →
Object: Dat0 5x Dat1 stop

3.8.3 Baudrate

After selecting the item Baudrate you see the following screen.

```
Baudrate Selection
Manuel Selection
Detection
Edit Baudrate
```

3.8.3.1 Manuel Selection

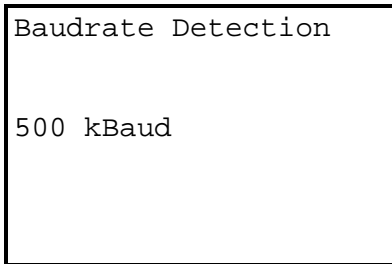
After selecting the item Manuel Selection you see the following screen.

```
Manuel Selection
500 kBaud
250 kBaud
62 kBaud
```

One of the shown baudrates can be selected by moving the high lighted line and press “↓”-key.
To edit a new baudrate see Edit Baudrate.

3.8.3.2 Detection

After selecting the item Detection you see the following screen.



The *NetTestIII* analyses the CAN bus transmission rate and shows the result in the high lighted line.



Note: Only defined baudrates can be detect by this menu item.

The baudrate detection depends on a defined table. This table includes all possible detectable baudrates. For faster detection you should be place the probable entry on the first position of this table. For more information see next chapter.

3.8.3.3 Edit Baudrate

After selecting the item Edit Baudrate you see the following screen.

```
Baudrate Editing
500 kBaud
250 KBaud
62 kBaud
```

On this submenu a new baudrate can be defined. On the screen all defined baudrates are displayed.

To define a new baudrate move the high lighted line to the end of the list.

Press the “→” key to increase the new baudrate.

Press the “←” key to decrease the new baudrate.

If you choose an empty line, you can clear the entry.

Note: You are only able to clear the last entry on the list.



If you choose a defined baudrate you can change the defined speed.

3.9 Restart

After selecting the item Restart *NetTestIII+* is reset and starts new.

*Using your I+ME PC-Software to configure
your NetTest III +*

4 PC-Software

4.1 An overview of ConfigPlus

ConfigPlus is a product of I+ME ACTIA. Using ConfigPlus you can configure the CAN-tester *NetTest III+* easily using PC-support. ConfigPlus integrates three tools under a easy to use Graphical User Interface and simplifies the configuration of the *NetTest III+*.

The preparation of a configuration file that the *NetTest III+* can read is done in three phases. In each of the phases the user must first activate the tool and then open the corresponding file. The active tool is marked with a check in the Edit menu.

- In the first phase a *.dbc file is converted into a source file(*.ime) through the Windows-consoleapplication LISAdb.
- In the second phase the *.ime file can be edited in the configuration-editor. It can change the *.ime file by adding to or deleted entries. Furthermore database-sections can be extracted, message- and signal-filters, as well as a table for transmitted messages can be inserted. The alterations of the user can be examined with Syntaxchecks. The modified data is then saved in the *.cfg file-format.
- In the third and final phase the *.cfg file is converted into binary using Transnet.exe. The binary data is saved as a *.cfc file which *NetTest III+* can read. This file can then be copied on a PCMCIA-SRAM-card and used in the *NetTest III+*.

4.2 Installing ConfigPlus on your PC

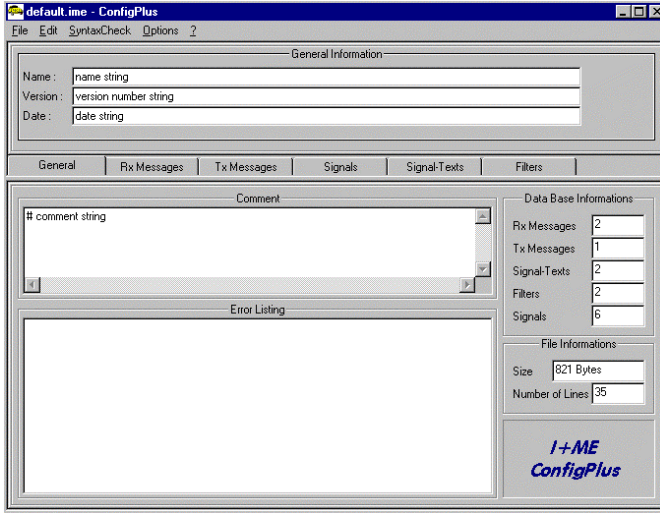
To install the configuration tool ConfigPlus requires a PC or laptop with the operating system Windows 9X or Windows NT and PCMCIA-card slot.

To install the software start the program "setup.exe" and follow the instructions for the installation program. The program copies the necessary files to the hard disk of the PC and makes the program ConfigPlus ready to run.

To starts the program click the start button and find ConfigPlus in the start menu.

4.3 Working with ConfigPlus

After starting the program ConfigPlus you see the following window on your monitor.



Looking at the upper section of the application you found the section “General Information”. Type in name, version-number and date about your configuration. Located in the lower section of the application is found the Information “ General” of the loaded configuration-file, Rx messages, Tx messages, Signals, the Signal-texts and the Filters.

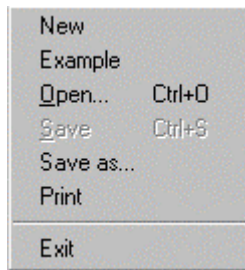
4.3.1 The Menus

The 4 menus shown across the top of the application are dropdown menus. The menus are labeled File, Edit, SyntaxCheck and Options.

4.3.1.1 The File Menu



NOTE: Before a new file or an existing file can be opened from the "File" menu the correct data type must be selected from the "Edit" menu. !!(see section 4.3.1.2)



New

Generates an empty *.ime session.

Open Example

Opens an included example file named "default.ime". With the help of this file you can get an overview of the editing possibilities of ConfigPlus.

Open

Opens an existing *.ime- or *.dbc-file

Save

Saves the configuration under the already assigned file name.

Save As...

Saves the configuration under a new file name.

Print

Prints the configuration file as text file. The document is printed in landscape mode.

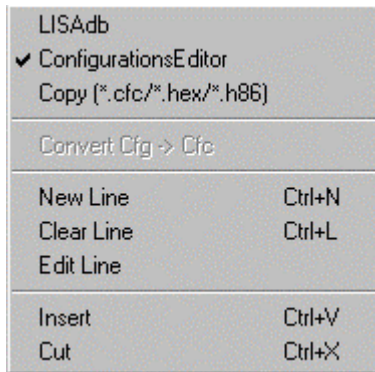
Exit

Exits the program "ConfigPlus".

4.3.1.2 The Edit Menu

From the "Edit" menu you can select the type of file to be worked on.

From here you can convert the generated *.cfg-files into *.cfc-files. The lines can be edited and the **Cut** and **Paste** function can be used.



LISAdb

When "LISAdb" is activate the Menu option "File-Open" converts a *.dbc file into a *.ime file with help of the program LISAdb.exe. Compiling mistakes are shown in the failure list.

Configuration Editor

When "Configuration Editor" is activate the Menu option "File-Open" opens a *.ime file. This *.ime file can be edited with help of the ConfigPlus program editor.

Copy To

Saves file(*.cfc/*.hex/*.h86) onto a chosen medium, for example a SRAM-card.

Convert Cfg -> Cfc

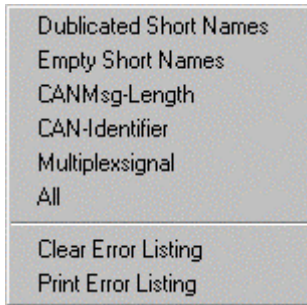
After the *.ime file is saved as a *.cfg file the function of the menu option "File-Save as" generates a *.cfc file. This file can be directly loaded into the NetTest III+.

Paste/Cut

The standard windows functions used to paste or cut from the clipboard.

4.3.1.3 SyntaxCheck

To make sure that the number of configuration-mistake is as low as possible ConfigPlus can perform a series of Syntaxchecks. Syntax checks can only be made with *.ime or *.cfg files.



Duplicated Short-names

The use of double short-names in the message table is not allowed. ConfigPlus executes a Syntaxcheck examining short-names by parity. This function is 'case sensitive' meaning the capitalized- and lowercase letters are looked at as different symbols.

When a double short-name is recognized a warning appears in the error list.

Empty Short-names

Checks to if the Message- or Signaltable includes empty short-name-fields. If there is an error then a warning appears in the error list.

CANMsg-Length

The field message length in the message table can only include values of 0...8 (byte).

When the CANMsg is to long then a warning is added to the error list.

CAN Identifier

There can not be a double CAN-Identifier in the message table.

When a double CAN-Identifier recognized then a warning appears in the error list.

Multiplexsignals

The Multiplex field in the signal-table may only include definite values. Therefore ConfigPlus executes a Syntaxcheck examining the content of the Multiplex field. Only the values (-1), (-2) and 0...1023 may be entered for the Signalkey in the Multiplex field.

If the Signalkey value in the multiplex field has a value of (-1) then the SignalValue in the Multiplexfield must have a value of (-1).

If the Signalkey value in the multiplex field has a value of (-2) then the SignalValue in the Multiplexfield must have a value of (-2).

If the Signalkey value in the Multiplex Field has a value of 0...1023 then the SignalValue in the Multiplex field must have the value of 0...1023.

If there is an error then a warning appears in the error list.

All

Runs through the all the Syntaxchecks and shows any errors as warnings in the errorlist.

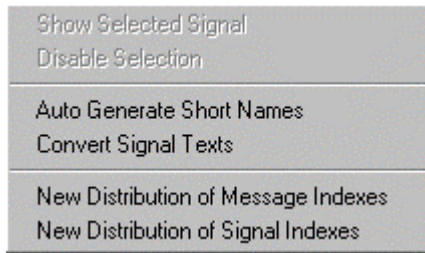
Clear Error List

Clears the error list of any previously log errors.

Print Error List

Prints the error list to a local or network printer.

4.3.1.4 Options



Show Select Signal

After selecting of one Rx message and call this menu item only the signals of this Rx message should be shown.

Disable Selection

Disables the function “Select Signals Shown”

Auto Generate Short Names

Configplus has the ability to generate automatically shortnames from the longnames

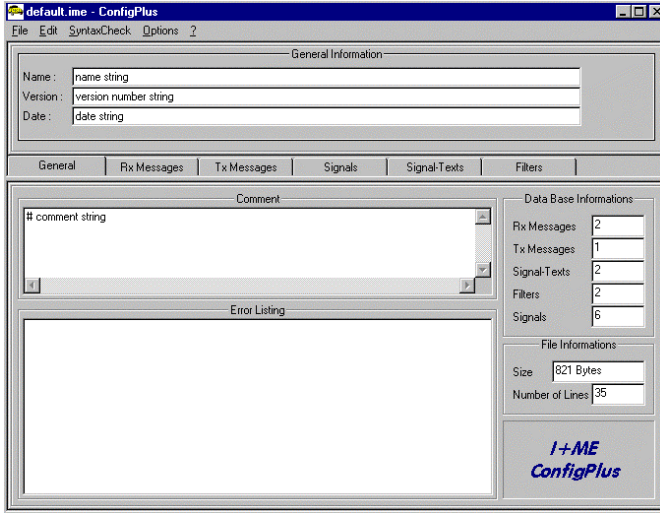
Convert Signal Texts

With ConfigPlus it is possible to optimize existing signal texts into short texts

Sort

ConfigPlus can define new index of the table for messages and signals. This should be useful after deleting or adding new items.

4.3.2 The “General” Tab



General Information

In these three fields one can entered the Name, the Version Number and Data.

Comments

In this field one can enter comments. The comments must start with a #.

Errorstring

When performing SyntaxChecks on a open *.dbc file, the error messages are shown in this window.

Data Base Information

The elements in a configuration file have certain size restrictions. They are:

Rx Messages:	Max. 128 Messages
Tx Messages:	Max. 16 Messages
Signal:	Max. 512 Signals
Signal Text:	Max. 1024 Texts
Filter:	Max. 16 Filters
	Max. 32 Messages in one Filter
	Max. 32 Signals in one Filter

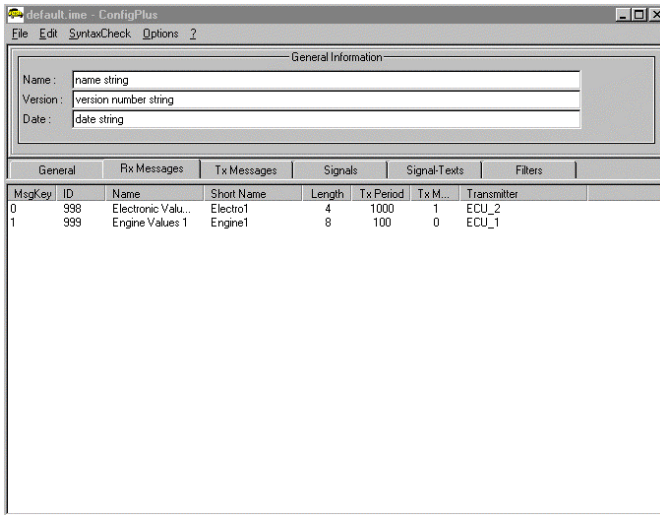
When the one goes pass the maximum from one of these elements a warning message is shown in the Errorstring window.

File Information

This window show the configuration file's size in bytes and how many line are contained with in the opened file.

4.3.3 The “Rx Message” Tab

When using ConfigPlus you have the possibility to manually insert new fields in the Rx message table. The new structure must be completely filled out. If it is not then a warning message will be shown in the error field. All existing fields are also editable.



In the Rx Message window can be seen a table with 8 columns. To add another line to the table look in the Menu under “Edit” then chose “New Line”.

4.3.3.1 New Line/Edit Line

After choosing the option “New Line” or “Edit Line” The following window will appear. This window can also be opened by double clicking on an existing** line.

MSGKey	CAN-ID	Message-Name	Short Name
1	999	Engine Values 1	Engine1

CAN-Len	Tx Period	Tx Mode	Transmitter
8	100	0	ECU_1

Integer value, domain 0..127

In these window fields it is possible to edit or enter new data into the Rx message table.

The following parameters must be entered into the fields:

MSGKey

Servers as the number for the Rx message.

CAN-ID

Defines the receiving identifier.

Message Name

Defines the name for the configuration.

Short Nmae

Defines the name to be shown on the NetTest III+ display.

CAN-Len

The number of databytes (1-8) in the receiving message.

SAbstand

Is set to 0. This is not used by the current version of ConfigPlus.

SMode

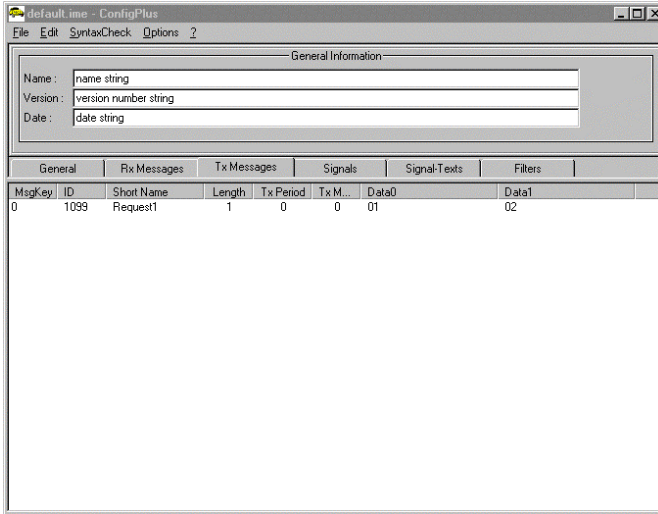
Is set to 0. This is not used by the current version of ConfigPlus.

SName

Defines the name of the station of the message.

4.3.4 The “Tx Message” Tab

When using ConfigPlus you have the possibility to manually insert new fields in the Tx message table. The new structure must be completely filled out. If it is not then a warning message will be shown in the error field. All existing fields are also editable.



In the Tx Message window can be seen a table with 8 columns. To add another line to the table look in the Menu under “Edit” then chose “New Line”. To edit an existing line one must choose from the file menu “Edit-Edit Line” or one can double-click on an existing line.

4.3.4.1 New Line/Edit Line

After choosing the option “New Line” or “Edit Line” the following window will appear. This window can also be opened by double clicking on an existing** line.

MSGKey	CAN-ID	Short Name	CAN-Len	Tx Period
0	1099	Request1	1	0

Tx Mode	TxValue1	TxValue2
0	01	02

Integer value, domain 0...127

In these window fields it is possible to edit or enter new data into to the Tx message table.
The following parameters must be entered into the fields:

MSGKey

Servers as the number for the Tx message.

CAN-ID

Defines the sending identifier.

Short Name

Defines a small name for the sending message.

CAN-Len

The number of databytes (1-8) in the sending message.

SAbstand

Shows the reputation time [5ms-9s].

SMode

Defines the send mode to reputation or burst. (see chapter 1.8.2.1 CAN Object Definitions)

SWert1

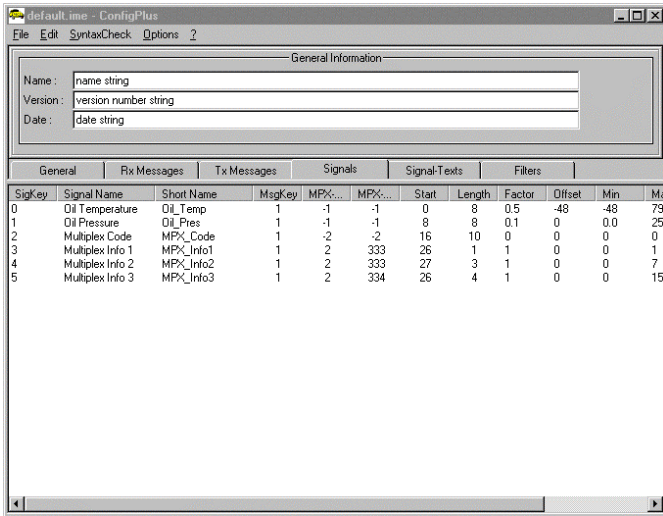
Defines the standard message content in the message. The single databytes must be separated by a space.

SWert2

Defines the alternative message content in the message. The single databytes must be separated by a space.

4.3.5 The “Signal” Tab

When using ConfigPlus you have the possibility to manually insert new signal fields in the Signal table. The new structure must be completely filled out. If it is not then a warning message will be shown in the error field. All existing fields are also editable.



In the Signal window can be seen a table with 15 columns. To add another line to the table look in the Menu under “Edit” then chose “New Line”. To edit an existing line one must choose from the file menu “Edit-Edit Line” or one can double-click on an existing line.

4.3.5.1 New Line/Edit Line

After choosing the option “New Line” or “Edit Line” the following window will appear. This window can also be opened by double clicking on an existing** line.

SIGKey	Signal Name	Short Name	MSGKey	Mpx-Key	Mpx-Value	StartBit	Len in Bit
0	Oil Temperature	Oil_Temp	1	-1	-1	0	8
Factor	Offset	Min	Max	ErrValue	Unit	Receiver List	
0.5	-48	-48	79.5	err	°C	ECU_10	

Integer value, domain 0...1023

OK Cancel

In these window fields it is possible to edit or enter new data into to the Signal table.

The following parameters must be entered into the fields:

SIGKey

Serves as the number for the Signal.

Signal Name

Defines a name for the signal in the configuration.

Short Name

Defines the name to be shown on the NetTest III+ display.

MSGKey

The link to the Rx message table and defines which message the signal shows.

Mpx-Key

Defines a Multiplexsignal. -1 is no Multiplexsignal, -2 defines the multiplex code and values from 0-1024 show the link the Signal.

Mpx-Value

Defines a Multiplexsignal. -1 is no multiplexsignal, -2 defines the multiplex code or shows the value of the multiplex message.

StartBit

Defines the startbit of the signal.

Bit Length

Gives the length in bits of the signals.

Factor

Gives the multiplying value for the signal.

Offset

Gives the adding value of the signalvalue.

Min

Gives the minimal value of the singlevalue.

Max

Gives the maximum value of the signalvalue.

End Value

Gives the error value and the default setting of the "err"

Unit

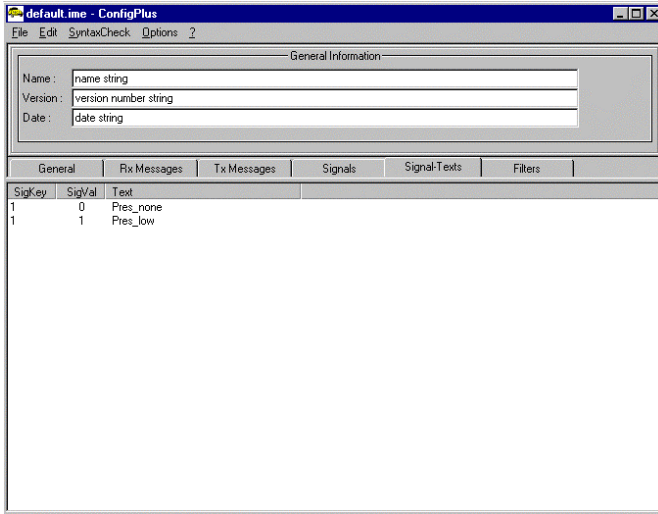
Points out the signal to an unit.

Reciver List

Shows the receiver.

4.3.6 The “Signal Text” Tab

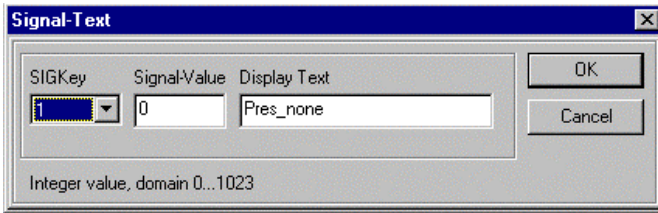
When using ConfigPlus you have the possibility to manually insert new Texts in the Text table. The new structure must be completely filled out. If it is not then a warning message will be shown in the error field. All existing fields are also editable.



In the Signal Text window can be seen a table with 3 columns. To add another line to the table look in the Menu under “Edit” then chose “New Line”. To edit an existing line one must choose from the file menu “Edit-Edit Line” or one can double-click on an existing line.

4.3.6.1 New Line/Edit Line

After choosing the option “New Line” or “Edit Line” the following window will appear. This window can also be opened by double clicking on an existing** line.



In these window fields it is possible to edit or enter new data into to the Signal Text table.

The following parameters must be entered into the fields:

SIGKey

Serves as the number for the Signal Text.

Signal-Value

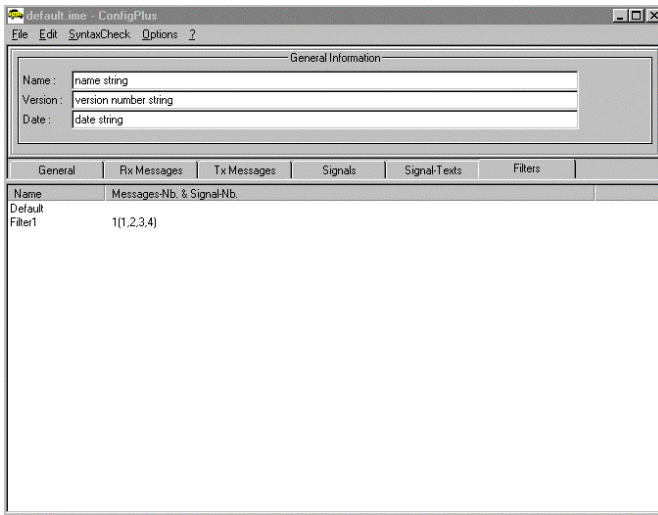
Defines the value of the text.

Display Text

Defines the text which is shown.

4.3.7 The “Filter” Tab

When using ConfigPlus you have the possibility to manually insert new Filters in the Filter table. The new structure must be completely filled out. If not, a warning message will be shown in the error field. All existing fields are also editable.



In the Filter window you see a table with 3 collums. To add another line to the table choose Menu “Edit / New Line”.

To edit an existing line you must choose from the file menu “Edit / Edit Line” or you can double-click on an existing line.

4.3.7.1 New Line/Edit Line

After choosing the option “New Line” or “Edit Line” the following window will appear. This window can also be opened by double clicking on an existing** line.



In these window fields it is possible to edit or enter new data into the Filter table.

The following parameters must be entered into the fields:

Name

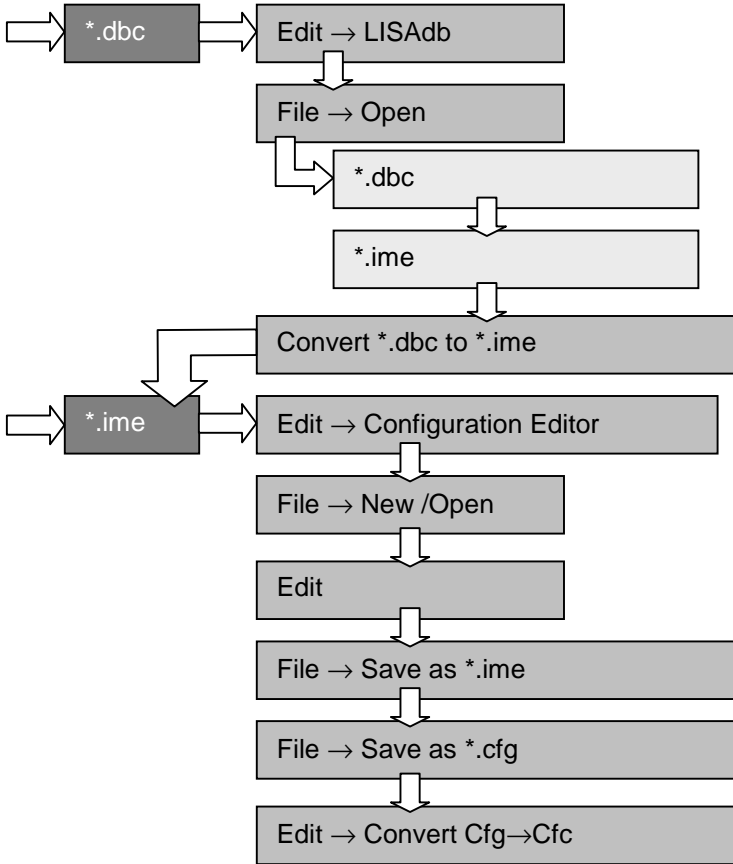
The name of the filter.

MessageNr & SignalNr

Format: [MSGKey],[SIGKey1],[SIGKey5],[SIGKey7])

Defines the Rx message number and the Signal when the activated Filter which should be only shown or logged.

4.4 Service Structure



4.5 Editing configuration file

With the help of a configuration file and the compiler Transnet it is possible to define a specific *NetTestIII* configuration.

Structure of the Configuration file *.cfg

```
<HEAD> Begin of header-section  
    <TITLE> name of the CAN-data-basis </TITLE>  
    <VERSION> CAN-Version </VERSION>  
    <DATE> date </DATE>
```

```
</HEAD> End of header-section  
<MSGTAB>\n Begin of the message table
```

Message table

```
\n</MSGTAB> End of message table  
<SIGTAB>\n Begin of signal table
```

Signal table

```
\n</SIGTAB> End of signal table  
<TXTTAB>\n Begin of text table
```

Text table

```
\n</TXTTAB> end of Text table  
<CNFTAB>\n Begin of configuration table
```

Configuration table

```
\n</CNFTAB> End of configuration table
```

4.5.1 Elements of the Message Table

Elements	Data Type	Meaning
MsgKey	Integer	Referenz to the signal table
ID	Integer	Identifier
Name	String	Message name
Shortname	String	Name for the screen
Message Length	Integer	Length of the message
Multiplex-code	Integer	Signal key of the Multiplex-Code, if the message is a multiplex message else -1
Multiplex-Info	Integer	Signal key of the Multiplex-info if a multiplex message is used, else -1
Transceiver	String	Name of the transmitting note
Transmitting distance	Integer	Transmitting interval
Transmitting modus	Integer	0=const, 1= on action asynchrony; 2= on action synchrony

4.5.2 Elements of the Signal table

Element	Data Type	Meaning
Signal key	Integer	Referenz of the Text table and the MPX-Messages
Signal name	String	Name of the signal
Signal short name	String	Short name for the screen
MsgKey	Integer	Referenz to the message
Start	Integer	Startbit in the message
Length	Integer	Signal length
Factor	Real	Calculation factor
Offset	Integer	Offset for the calculation
Minimal value	Real	min. allowable value
Maximal value	Real	max. allowable value
Error value	Integer	Error sign
Receiver list	String [256]	List of receiver notes, separation mark = ,.

There can be upto 512 defined signals.

4.5.3 Text Table

Elements	Data Type	Meaning
Signal key	Integer	Signal, to the text
Signal value	Integer	Signal value for the displayed text
Display text	String	Displaying text

There can be only upto 1024 texts link defined.

4.5.4 Configuration table

Elements	Data Type	Meaning
Configuration name	String	Name of configuration
List with MsgKeys	String	Referenz to the configuration of messages, MsgKey separation = ; .

Example for the filter settings:

```
<CNFTAB>\n
default
CAN_Info      8(85,88,91,96);6(62,65,64,68,69)
\n<CNFTAB>
```

The filter CAN_Info uses the signals 85, 88, 91, 96 for message 8 and the signals 62, 65, 64, 68 and 69 for message 6.

There can be a maximum of 16 different defined filters within maximum of 32 messages and upto 32 signals.

4.6 Example for Creating a Configuration File

The following section describes a simple example for creating a configuration file. This example uses the movement of the powerwindows.

The represent information is found in 3 databytes.

- Still = 00
- Upwards = 10
- Downwards = 20

A configuration file *.cfg begins with a document header. The document header must include the title of the configuration, version number and the data.

```
<HEAD>
  <TITLE>Tuerbr</TITLE>
  <VERSION>1.0</VERSION>
  <DATE>01.09.1999</DATE>
</HEAD>
```

The next step is to enter the data for the message table. The elements of the message table can be found in chapter 3.10.2.

```
<MSGTAB>
0      1544  eWindow      eWindow      4
      Door   0           0
</MSGTAB>
```

All elements must be separated by a TAB.

To set up the signal table the message must be configured.

It is very helpful to use the following tables.

Position of bits for configuration.

8 databytes: 00 01 20 03 40 05 66 07 (example)

0				0				0				1			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8

2			0					0			3				
0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
23	22	21	20	19	18	17	16	31	30	29	28	27	26	25	24

4				0				0				5			
0	1	0	0	0	0		0	0	0	0	0	0	1	0	1
39	38	37	36	35	34	33	32	47	46	45	44	43	42	41	40

6				6				0				7			
0	1	1	0	0	1	1	0	0	0	0	0	0	1	1	1
55	54	53	52	51	50	49	48	63	62	61	60	59	58	57	56

The power window information that is interesting is the bitposition 20-23.

<SIGTAB>

```
0      powerwindow  Richt  0      -1      -1
      20      4      1      0      0      2
      255
```

</SIGTAB>

In next step the value of the 4 configured bits must be linked to the text.

```
<TXTTAB>
0      0      still
0      1      upwards
0      2      downwards
</TXTTAB>
```

For this example we need no Filtermask.

```
<CNFTAB>
Default
</CNFTAB>
```

4.7 Working with Logging Data

After data is logged (as seen in chapter 3.8.1 Data Logging) on a PCMCIA-card this data can be worked on the PC with the help of a application ex. Excel. To help convert the Data.par and Data.run into *.txt files is a program called TransLog.

To perform this function the program TransLog must be started.

The program exists out of only an input-mask in the source and distribution-files will write down.

In both lines the Parameter-File and the Logged Data-File generated from the NetTest III+ must be entered. These files are Data.par **Fehler! Keine Indexeinträge gefunden.**and Data.run.

So that the program TransLog can convert the drawn data a comprehensible meaning the Configuration File must be entered into the Configuration File field. This file must be the configuration file that was used before the data was logged.

In the last field must be entered the name of the text file.

The File will be save as *.txt.

To start the conversion click on the start button..

To exit the program click on the exit button..

The file can then be work on in Excel. If the file is to large to be worked on in Excel the file can be broke down into smaller files with the help of WordPad and then work on in Excel.