
Your I+ME PcCANControl.
The application for diagnostics and analyzing.

Application

PcCANControl

Overview PcCANControl

The CAN monitor software PcCANControl supports all I+ME ACTIA PC-Interfaces by using the same program. It traces the messages on the CAN bus to diagnose the data transfer.

After completely installation and start up PcCANControl shows two equal windows on the screen.

The window on the left side displays the functions of CAN channel no. 1 and on the right side of the screen the functions of CAN channel no. 2 are shown.

CAN channel no. 2 is only needed for PC-Interfaces which support to analyzing two CAN channels for example PCMCIA Key, PCI-IntelliCAN, or NetPorty II (optional).

To work successful with PcCANControl the user should have knowledge about the basics of CAN field bus technology and about the handling of Windows applications.

To be able to work comfortable with our application the computer system should be equipped in minimum with a Pentium 133 MHz processor and minimal 32 MByte RAM.

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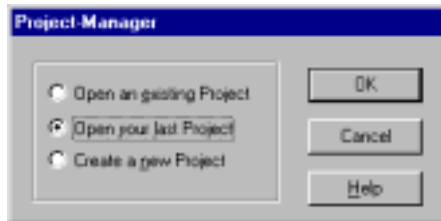
Administration of document

General document version 1.07

1 General Program

1.1 Start a project

PcCANControl operates on the basis of project. That means all settings for the CAN chip and for display handling can be stored for later projects.



If you start PcCANControl the "Project-Manager" ask you which kind of project you want to open. If your choice is "Create a new Project" you must select your used hardware.

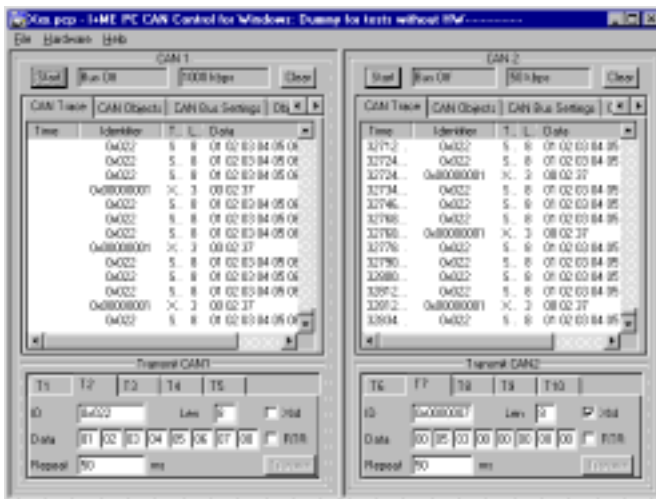


Application Start a project

If you choose "Open an existing project" you can choose one at the following screen.

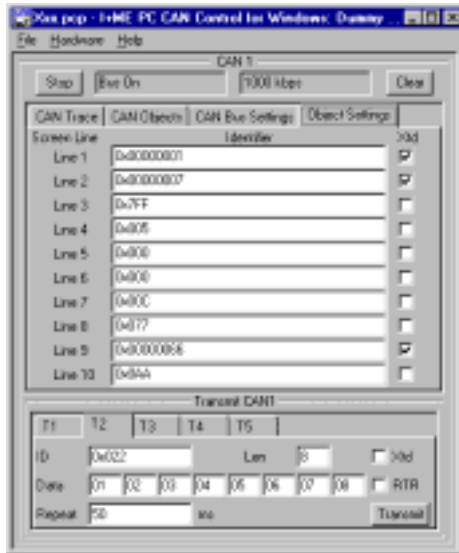
It is possible to operate only with **one** active project. A project is marked by >name.pcp<. You see the name of the active project as first entry at your title bar.

The start is complete, if no problem occur you see a screen like the following. Now you are able to work with this tool...



1.2 Working with PcCANControl

At this place we will give you a general of the handling of the application. In the following chapters the program settings and menus are described.



Working with ...

Start collecting messages

To start the tracing of CAN traffic on the field bus the button “Start” in the head of the window must be pressed.

Stop collecting messages

To stop the tracing of CAN traffic on the field bus the button "Stop" in the head of the window must be pressed.

The button "Stop" is only visible if the trace of CAN messages is started.

Delete collected messages

To delete collected messages press the right handed button "Clear"

Start transmission of CAN messages

To start transmission of CAN messages the messages must be set like the description in chapter 1.4.6 and the trace modus must be started. after that the button "Transmit" must be pressed.

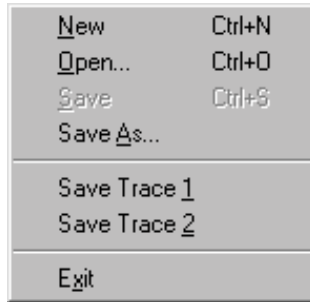
Stop transmission of CAN messages

To stop transmission of CAN messages the button "Stop" must be pressed.

The button "Stop" is only visible if the transmitter is activated.

1.3 The Menu of PcCANControl

1.3.1 File



Menu File

1.3.1.1 New

This menu item creates a new project with PcCAN-Control. This item can be selected with the hotkey **<ALT+N>**. After choosing the hardware, explained in (chapter 1.3.2) PcCANControl is reseted.

1.3.1.2 Open

This menu item loads an existing project pcp-file by using the standard Windows open routines.

Open loads the pcp-file, the DLL that belongs to the hardware. With the help of the DLL open downloads and starts the firmware and initiates the communication to the hardware

This item can be selected with the hotkey **<ALT+O>** too.

1.3.1.3 Save

This menu item saves the actual project in the chosen directory with the entered filename. If the project is saved at the first time, select a directory and enter a new name for the project.

This item can be called with the hotkey <ALT+S>.

1.3.1.4 Save As

This menu item saves the actual project in an adjusted directory and with an selected filename.

1.3.1.5 Save Trace 1

This item saves the collected CAN messages from trace table 1 in an adjusted directory under an asked filename with filename <name>.tr1. Specially to import in Excel or other tools for statistical evaluation.

1.3.1.6 Save Trace 2

This item saves the collected CAN messages from trace table 2 in an adjusted directory under an selected filename with filename <name>.tr2. Specially to import in Excel or other tools for statistical evaluation.

This item is only available, if the system use an I+ME ACTIA PC-Interface which supports 2 CAN channels.

The >*.tr1< and >*.tr2< files are standard ASCII files and can be read by standard Windows editors like Notepad etc. . The files uses “;” as separator.

1.3.1.7 Exit

Closes PcCANControl and save data which were changed after the last saving in the actual directory.

1.3.2 Hardware



Item hardware

This menu item selects the installed hardware on the system by picture of the available I+ME ACTIA PC-Interfaces.

In the last lines of this window you get information of the picture, a description about the host, the used library and the number of CAN channels.

1.3.3 Help



Item help

1.3.3.1 Help Topics

Gives a table with help topics.

1.3.3.2 About

Shows information about the version and the used hardware.



Item About

Interface info:

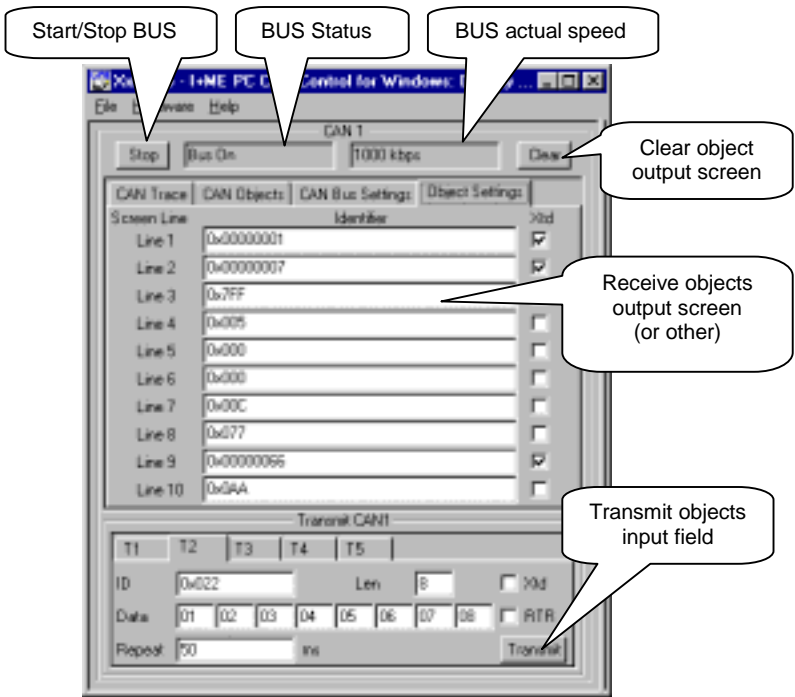
Gives information about the used DLL.

Device info:

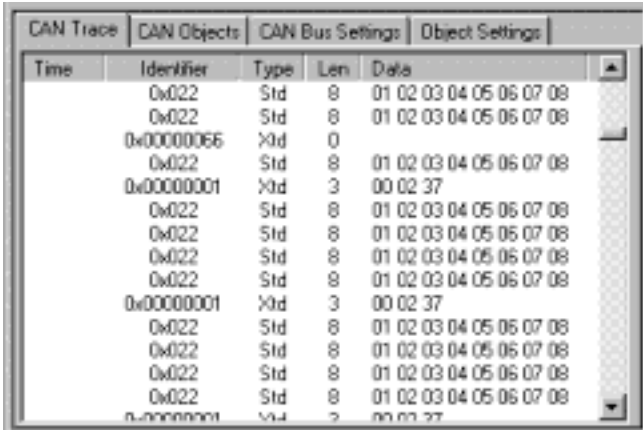
Gives information about the used firmware.

1.4 CAN windows control

1.4.1 General description



1.4.2 CAN Trace



Time	Identifier	Type	Len	Data
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x0000066	Std	0	
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x0000001	Std	3	00 02 37
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x0000001	Std	3	00 02 37
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x022	Std	8	01 02 03 04 05 06 07 08
	0x0000001	Std	3	00 02 37

CAN Trace

In the CAN trace table each collected CAN message is displayed in the following format.

Time	Identifier	Type	Length	Data
65699.100	0x003	Std	3	01 02 03
65699.900	0x010	Ext	1	FF

Application CAN windows control

Time

shows the actual time stamp in [ms].

The time stamp is generated by the micro controller if the selected hardware uses a micro controller, otherwise the host hardware generate it.

Identifier

displays the identifier of each message in [hex/dec].

Type

describes the length of identifier format: Std => 11 bit
Ext => 29 bit.

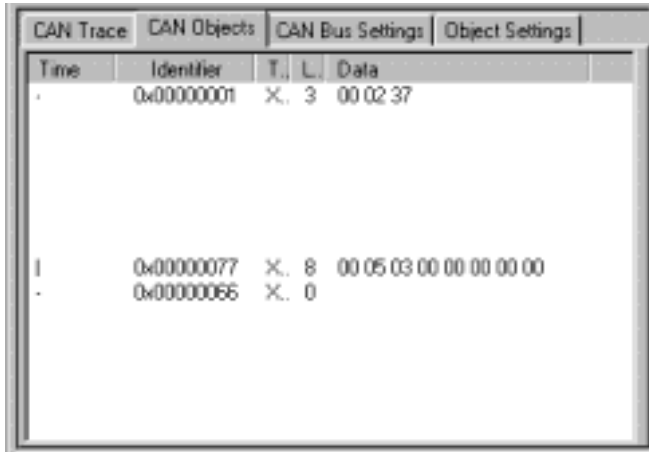
Length

shows how many data bytes are transmitted in this message.

Data

displays the data bytes transmitted with this CAN message.

1.4.3 CAN Objects



Time	Identifier	T.	L.	Data
.	0x00000001	X.	3	00 02 37
	0x00000077	X.	8	00 05 03 00 00 00 00 00
.	0x00000066	X.	0	

CAN Objects

In this window up to 10 special CAN object can be displayed in the format described under 1.4.2 CAN Trace.

If a new message is received with a adjusted the windows is updated

How adjust the CAN objects read 1.4.5 Object Settings. In the time row it is possible to display the time stamp or an activity mark. To switch from time stamp to activity mark or vice versa see chapter 1.4.4 under point *Time stamp*.

1.4.4 CAN Bus Settings

CAN Bus Settings

Chip Type

is defined by the used hardware. It displays the CAN protocol chip which is supported by the used hardware.

Transfer Speed

for changing the predefined transfer speed of the CAN bus by using the speed table. If BTR0 / BTR1 is selected from the speed table, the CAN Bus speed is defined by using the BTR0 and BTR1 in the next line.

BTR0 and BTR1

to declared the value for BTR0 and BTR1 for user specifically definition of the bit timing.

The value of BTR0 and BTR1 have to be calculated in accordance to the protocol chip specification. For easy calculations the program CAN Bit Timing can also be used.

CAN Clock

displays the hardware clock speed. It is defined by the used hardware.

Speed

shows the actual CAN transmission speed. It is almost equal with the value in the field "transfer speed" but if the CAN Bus transfer speed is defined by BRT0 and BRT1 the field "speed" displays the calculated CAN Bus transfer speed.

Identifier Format

possibility to choose the identifier format between decimal- and hexadecimal value.

Acceptance Filter

- Acceptance mask

specifies which of the corresponding bits in the identifier are relevant for acceptance filtering (see example below).

- Acceptance code

define the masked identifier setting (see example below).

Switches group

- Error Indication

activates the displaying of the noted errors by the CAN controller.

- Auto Error Bus On

activates to be always Bus on.



If both are switched off it is not possible that the CAN chip goes "BUS OFF" and no indication is displayed.

Application

CAN windows control

- *Transmit Confirmation*

activates the displaying of transmit confirmations in the trace window.

- *Time Stamp*

activates the displaying of the time stamp in the trace window.

If the I+ME ACTIA PC-Interface supports time stamping the time stamps been generated by the micro controller. The resolution of the time stamp depends on the firmware.

Example for Acceptance Filter:

The "mask" define if the bit is relevant(=1) or don't care(=0).

The "code" define which state the bit must have (0 or 1) to pass the filter.

1) Define std-filter (11bit) that pass all even addresses:
mask = 0x0001 == bit 0 is relevant !
code = 0x0000 == bit 0 must be ZERO !

2) Define std-filter (11bit) that pass only one address:
address = 78 dez = 4E hex
mask = 0x07FF == all bits are relevant !
code = 0x004E == only address 4E pass the filter!

3) Define std-filter (11bit) that pass addresses lower 4:
mask = 0x07FC == bit 0 and 1 are don't care !
code = 0x0003 or ...
code = 0x0002 or ...
code = 0x0001 or ...
code = 0x0000 == addresses lower 4 pass the filter!

1.4.5 CAN Object Settings

CAN Trace	CAN Objects	CAN Bus Settings	Object Settings
Screen Line	Identifier		Xtd
Line 1	0x00000001		<input checked="" type="checkbox"/>
Line 2	0x00000007		<input checked="" type="checkbox"/>
Line 3	0x7FF		<input type="checkbox"/>
Line 4	0x005		<input type="checkbox"/>
Line 5	0x000		<input type="checkbox"/>
Line 6	0x000		<input type="checkbox"/>
Line 7	0x00C		<input type="checkbox"/>
Line 8	0x077		<input type="checkbox"/>
Line 9	0x00000066		<input checked="" type="checkbox"/>
Line 10	0x0AA		<input type="checkbox"/>

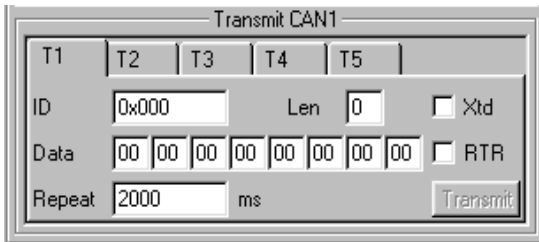
Object Settings

This item defines CAN objects which should be displaying for special control in the window CAN Object.

In the field "identifier" (line 1 - 10) the identifier been entered which should be shown in the windows CAN Object.

To choose the identifier format set a mark in the Xtd field for changing from standard- to extended identifier.

1.4.6 CAN Transmit



Transmit CAN

This windows define 5 different transmit objects for transmitting messages by one shot or for cyclically transmission for every CAN channel. Transmit object 1 to 5 for CAN channel no. 1 and transmit object 6-10 for CAN channel no. 2.

Every transmitter can be switched BusOn/BusOff by using ...

- "ctrl-1" to activate or deactivate T1
- "ctrl-2" to activate or deactivate T2
- "ctrl-3" to activate or deactivate T3
- "ctrl-4" to activate or deactivate T4
- "ctrl-5" to activate or deactivate T5
- "ctrl-6" to activate or deactivate T6
- "ctrl-7" to activate or deactivate T7
- "ctrl-8" to activate or deactivate T8
- "ctrl-9" to activate or deactivate T9
- "ctrl-0" to activate or deactivate T10

The distinct fields configure the individual transmit objects.

ID

declares the identifier of the message.

The identifier can entered in decimal- or hexadecimal format. For decimal identifier a value with two decimal positions are required and for the hexadecimal identifier see the entered value after starting the application. (for example 0x01)

Length

shows how many data bytes will following in this message.

Data

contains the value for byte 1 up to 8

Repeat

define the time [in ms] the message is repeated.

If the field "Repeat" is set to 0 the message is transmitted only by pressing on the button "Transmit".

Xtd

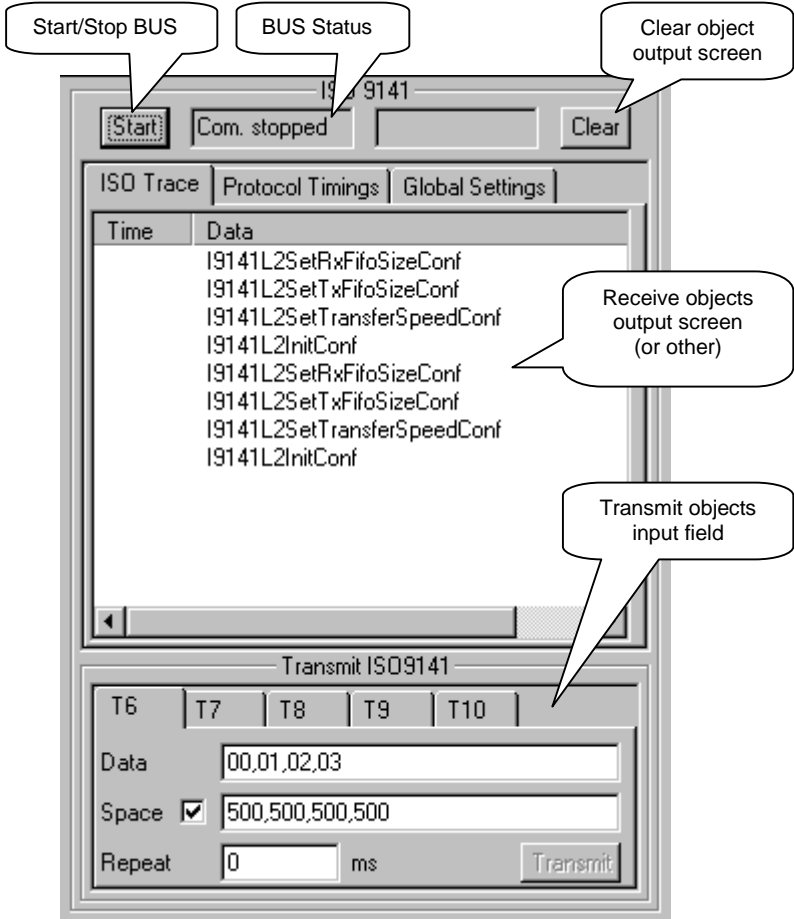
selected the format between standard- and extended identifier.

RTR

gives the possibility to transmit Remote-Frames. It is only usable if the I+ME ACTIA PC-Interface supports transmitting Remote-Frames.

1.5 ISO9141 windows control

1.5.1 General description



Start collecting messages

To start the tracing of the communication on the field bus the button "Start" in the head of the window must be pressed.

Stop collecting messages

To stop the tracing of the communication on the field bus the button "Stop" in the head of the window must be pressed. The button "Stop" is only visible if the trace of messages is started.

Delete collected messages

To delete collected messages press the right handed button "Clear"

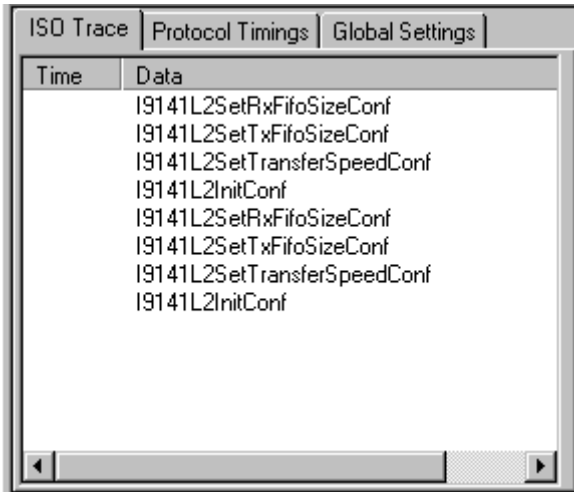
Start transmission of messages

To start transmission of messages the messages must be set like the description of the "Transmit-Setting" and the trace modus must be started. After that the button "Transmit" must be pressed.

Stop transmission of messages

To stop transmission of messages the button "Stop" must be pressed. The button "Stop" is only visible if the transmitter is activated.

1.5.2 ISO9141-Trace-window



The screenshot shows a window titled 'ISO Trace' with three tabs: 'ISO Trace', 'Protocol Timings', and 'Global Settings'. The 'ISO Trace' tab is active, displaying a table with two columns: 'Time' and 'Data'. The table contains seven rows of configuration messages.

Time	Data
	I9141L2SetRxFifoSizeConf
	I9141L2SetTxFifoSizeConf
	I9141L2SetTransferSpeedConf
	I9141L2InitConf
	I9141L2SetRxFifoSizeConf
	I9141L2SetTxFifoSizeConf
	I9141L2SetTransferSpeedConf
	I9141L2InitConf

In the ISO9141 trace table each collected message is displayed in the following format.

Time	Data
65699.100	01 02 03

Time

shows the actual time stamp in ms.

The time stamp is generated by the micro controller if the selected hardware uses a micro controller.

Data

displays the data bytes of request and response messages.

1.5.3 ISO9141 Protocol-Timings-window

The screenshot shows a dialog box titled "ISO Trace" with three tabs: "ISO Trace", "Protocol Timings", and "Global Settings". The "Protocol Timings" tab is active. It contains a table of timing parameters with their respective values and units. A "Use Defaults" button is located at the bottom of the dialog.

Parameter	min	max	Unit
Time P1	025	050	ms
Time P2	25		ms
Time P3	250		ms
Time P4	005	020	ms
Time W1	060	300	ms
Time W2	005	020	ms
Time W4	000	020	ms
Time W3	025	050	ms
Time W5	300	---	ms

Use Defaults

The window gives information about the timing parameter of the KWP2000 protocol.

The timing parameter P2 and P3 is variable.

Time P2

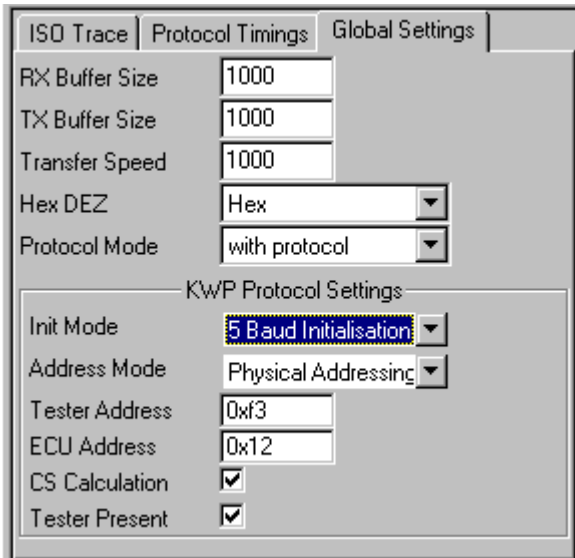
set the timing parameter P2 in ms.

Time P3

set the timing parameter P3 in ms.

The Button "Use Defaults" set the parameter P2 and P3 to default.

1.5.4 ISO9141 Global-Settings-window



RX Buffer Size
Size of the Read Buffer

TX Buffer Size
Size of the Transmitt Buffer

Transfer Speed
for changing the transfer speed of the communication.

Hex Dez
possibility to choose the Data format between decimal- and hexadecimal value.

Protocol Mode
possibility to choose between with or without protocol
If "with protocol" is selected in the protocol Mode the next section is enabled.

KWP Protocol Settings

Init Mode

possibility to choose between "Fast Initialisation" and "5 Baud Initialisation".

Adress Mode

choose between the various Adress Mode.

Tester Adress

declares the tester adress.

ECU Adress

declares the ECU (electronic control unit) adress.

CS Calculation

activate the Cecksum calculation.

Tester Present

repeated the request message.

1.5.5 ISO9141 Transmit Settings

The image shows a software dialog box titled "Transmit ISO9141". It features five tabs labeled T6, T7, T8, T9, and T10. The T6 tab is currently selected. Below the tabs, there are three input fields: "Data" containing the text "00,01,02,03", "Space" which includes a checked checkbox and the text "500,500,500,500", and "Repeat" containing the number "0" followed by the unit "ms". A "Transmit" button is positioned at the bottom right of the dialog box.

This windows define 5 different transmit objects for transmitting messages by one shot or for cyclically transmission. Transmit object 6 to 10 for ISO9141 communication. The distinct fields configure the individual transmit objects.

Data

contains the value for the request bytes.

Space

define the time in ms between the send bytes.

Repeat

define the time in ms the message is repeated.

If the field "Repeat" is set to 0 the message is transmitted only by pressing on the button "Transmit".