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USB-CAN Adapter

TRIPLE drivers

V4.5

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Overview

The USB-CAN adapter is a device for an easy dynamic debugging of CAN applications and for the transparent diagnostic of a CAN bus. The adapter is controlled by USB bus from USB-CAN application or your own application created by modification of CAN-Start application in Delphi development environment.

The hardware construction of the USB-CAN adapter – TRIPLE drivers is established at the FTDI FT245RL chip, Atmel T89C51CC01 microprocessor and PCA80C251 (High speed - ISO11898), PCA80C252 (Low speed - ISO11519) and AU5790 (One wire - J2411) into one adapter. Integrated microprocessor with cache memory reduce of the operating system load when receiving messages from CAN bus and at the same time providing precision transmitting eight parallel messages.

Main Features

- High speed, Low speed and One wire CAN drivers into one adapter
- Fully compliant with CAN 2.0A and CAN 2.0B
- 15 Independent Message Centres
- 10kbps to 1Mbps Transfer Rate, support users speed setting
- Dynamic data receiving and showing of CAN messages (using processor cache memory 256B)
- · Real and average time of receiving messages displayed in resolution 1ms
- The immediate, delayed, periodical or auto transmission 8 messages at the same time (1ms to 65,5s)
- Display of received messages Number, Period, Load and Errors of CAN bus
- Replay function for replaying recorded data
- Receiving messages without ACK bit (Listening Mode)
- The extended searching in a received message list
- Messages transmission and reception from REMOTE FRAME
- The automatic insert of received messages description
- CANopen protocol support
- User setting saving
- Multiple adapters connection to single PC
- Power supply and initialization LED signalization (Red / Green)
- Standard layout CANNON connector
- Power supply from USB bus
- Over voltage protection

Setup of USB bus driver for Windows

The working USB-CAN adapter is a conditional of driver for USB bus. After USB-CAN adapter connection to computer, the operating system Windows will automatically detect a new device and start Add Hardware Wizard. If Windows does not successfully find your new hardware, you must use the Add Hardware Wizard in Control Panel to tell Windows what type of device you are installing. The Add Hardware Wizard may ask you to insert media (a compact disc is provided with the device).





According to the Guide choose *Install hardware that I manually select from a list (Advanced)* and click *Next.* In the next step choose Search plug in media such as disc or *CD-ROM*. Insert the installation CD provided with the USB-CAN adapter in CD ROM unit and press *Next*.

ound New I	Hardware Wizard
Please ch	oose your search and installation options.
💽 Sea	rch for the best driver in these locations.
Use path	the check boxes below to limit or expand the default search, which includes local s and removable media. The best driver found will be installed.
5	Search removable media (floppy, CD-ROM)
	Include this location in the search:
	Browse
🔿 Don	't search. I will choose the driver to install.
Cho the d	ose this option to select the device driver from a list. Windows does not guarantee that driver you choose will be the best match for your hardware.
	Cancel

In the following window you might see information about possible driver incompatibility with windows system. In this case press *Next* or *Continue* again.

The setup will be now realized and the driver will be registered in the Windows system. If you look into Control panel -> System -> Hardware -> Hardware administrator you will see the name of just installed driver, FTDI FTU2XX Device, after clicking USB Bus controller.

Warning: USB-CAN adapter must be connected to the computer.



Removal

If you want to remove the adapter controller, uninstall USB-CAN adapter from the computer and uninstall the controller in Control panel, Add or remove program named *FTDI FTD2XX USB Drivers*.



Installation of the application

The application of USB-CAN adapter works under the Windows 95 and higher. It requires 4MB of empty space in hard disc. The minimum PC configuration is influenced by demand for quantity of massages displayed in application in real time. Pentium 233MHz, 32MB RAM is accurate.

The installation of the application USB-CAN adapter is done from installation CD and running file *Setup.exe.* Then click Next.



Removal of the application

Uninstall the application in Control panel, Add or remove program.

CANNON connector bus up

The CAN bus busage for CANNON connector is standard. The connector is of male plug type. Only outlets 2, 3, 5, 7 and 9 are connected. The USB-CAN adapter don't contain any load impedance 120 Ω . This load impedance needs to be already included in CAN bus. For very short conducting there is no necessity for load impedance. When using One Wire drivers then is necessary connect adapter to extern voltage supplay Vbat in range from 6 to 24V.





Application servicing

The USB-CAN adapter application was projected to be served easily and offers wide range of possibilities in displaying, conversion and data saving as well.

The main application Windows contains a number of items for setting required CAN bus parameters in the right part. This part is called CAN bus control board. The main Windows contains bookmarks *Messages*, *Signals*, *Trends* a *Records*, where each of them offers a different form of processing data from CAN bus. Except *Messages* bookmark every bookmarks requires setting of value database through *Signals database configuration* windows.

Messages bookmark

Message bookmark enables immediate CAN message display with a possibility to insert a message description about importance of the message. The immediate and diagnostic message list serves to display received messages. The immediate display prints data in lines with a print out of receiving message time, the identification, data and description of the message.

The diagnostic display represents the messages with a different *Identification ID*, the immediate display of number of messages and an average time or receiving.

🏂 USB-C	CAN adapter V4.5	· Device Preser	nt			
<u>File E</u> dit	<u>Control</u> C <u>o</u> nfig <u>H</u> elp	Info				
۵ 🗖) 👍 😫 M	1í 🖻 🗐		? 1		
Message	es Signals Trends	Records CANo	pen			CAN driver
Line	Arrival Time [ms]	ID [Hex]	Dir	Data [0, 1, 2, 3, 4, 5, 6, 7] Description	~	High speed
7059	20:35:47.233	201	Rx	OF A6 OF A6 OF A6 OF A5 A13-0		C Low speed
7060	20:35:47.237	202	Rx	OF A6 OF A7 OF A8 OF A9 A17-4		🔿 One wire
7061	20:35:47.243	201	Rx	OF A6 OF A6 OF A6 OF A4 A13-0		CAN setting
7062	20:35:47.247	202	Rx	OF A6 OF A7 OF A7 OF AA A17-4		Bit Rate 🗉
7063	20:35:47.253	201	Rx	OF A6 OF A6 OF A6 OF A6 A13-0		250 🔻 [kbps]
7064	20:35:47.257	202	Rx	OF A6 OF A9 OF A9 OF AA AI7-4		Sample position
7065	20:35:47.261	200	Rx	00 00 00 00 DI15-0, DI015-0		
7066	20:35:47.261	204	Rx	08 00 02 05 Device Status		02.5 • [%]
7067	20:35:47.263	201	Rx	OF A6 OF A6 OF A7 OF A6 A13-0		Sample point
7068	20:35:47.267	202	Rx	OF A6 OF A9 OF AA OF AB AI7-4		⊙ 1x C 3x
7069	20:35:47.273	201	Rx	OF A6 OF A6 OF A7 OF A6 A13-0		🔲 Listening Mode
7070	20:35:47.277	202	Rx	OF A6 OF A8 OF A8 OF AB AI7-4		ID setting
7071	20:35:47.283	201	Rx	OF A6 OF A6 OF A7 OF A6 A13-0		Tag [Hex]
7072	20:35:47.287	202	Rx	OF A6 OF A7 OF A7 OF AB AI7-4		200 -
7073	20:35:47.293	201	Rx	OF A6 OF A6 OF A5 OF A6 A13-0		Maak [Hau]
7074	20:35:47.297	202	Rx	OF A6 OF A7 OF A8 OF A9 AI7-4		Mask [nex]
7075	20:35:47.303	201	Rx	OF A6 OF A6 OF A6 OF A4 A13-0		
7076	20:35:47.307	202	Rx	OF A5 OF A7 OF A8 OF AA AI7-4		Enable
7077	20:35:47.313	201	Rx	OF A6 OF A6 OF A6 OF A6 A13-0		Туре
7078	20:35:47.317	202	Rx	OF A7 OF A7 OF A9 OF AA AI7-4		💿 2.0A (11b)
7079	20:35:47.323	201	Rx	OF A6 OF A6 OF A7 OF A8 A13-0		🔘 2.0B (29b)
7080	20:35:47.327	202	Rx	OF A7 OF A8 OF A9 OF A9 A17-4		CAN message
7081	20:35:47.333	201	Rx	OF A6 OF A6 OF A7 OF A7 A13-0		Error: 0
7082	20:35:47.337	202	Rx	OF A7 OF A9 OF A8 OF AA AI7-4		Count: 0
7083	20:35:47.343	201	Rx	OF A2 OF A6 OF A6 OF A7 A13-0		Load [%]: 0
709/1	20+25+47 347	202	Dv	0E A7 0E A6 0E A7 0E AA A17.4		Time (ms): 0
Count	Average Time[ms]	ID [Hex]	Dir	Data [0, 1, 2, 3, 4, 5, 6, 7] Description	<u> </u>	
11377	10,0	201	Rx	OF 9F OF 9F OF 9F AI3-0		
11377	10,0	202	Rx	OF A1 OF A3 OF A2 OF A6 A17-4		0
114	998,6	200	Rx	00 00 00 00 DI15-0, DI015-0		N =
38	2996,4	204	Rx	08 00 02 05 Device Status	~	
Load settin	a C:\Settina4.sf			MC Initialization		



Signals bookmark

This bookmark enables the conversion and CAN data display in format of real values transferred on CAN line. The configuration is needed to be done before through the window *Signals database configuration* or straight when choosing values to display. It is possible to display 144 discrete values, 64 numeric or text values and 9 numeric values in a form of the analog meter.



Value choice

¥.	US	B-CAN	adapte	r V4.5 -	Device Pre	sent						_ 🗆 🔀
E	le [idit ⊆a	ontrol Co	nfig <u>H</u> elp	Info					1.4		
	B			ML 81	5 U S					?		
N	less	ages	Signals	Trends F	Records C/	ANopen						CAN driver
П	Dis	crete -	1			-			-	_	Analog	High speed
	⊢	DI7 DI15	DI6	DI5	DI4	DI3	DI2	DI1	DIO	-		C Low speed
		0107	DIO6	DIO5	DIO4	DIO3	DIO2	DIO1	DIOO		0 10 12	-CAN setting
		1015	DIO14	DIO13	DIO12	DIO11	DIO10	DIO9	DIO8		6 A01 14	Bit Rate <i>∈</i> ⊺
											[[-4 <u> </u>	250 v [kbps]
											18	Sample position
												62.5 🔻 [%]
											0,000 🗙	Sample point
												⊙ 1x ⊖ 3x
												🔲 Listening Mode
												-ID setting
											🌾 💙 🌾 💙	Tag [Hex] €L
											9.748 9.753	
Ιr	Nur	nerical								- <u>×</u>		7FF V
		AI3 AI7	9,756 9,761	A A	12 9,758 16 9,761	Al1 Al5	9,753 9,756	AIO AI4	9,751 9,758		(AI2) (AI3)	
			0,000			1.10	0,.00		0,000			Time
											9.748 9.753	• 2.0A (11b)
												C 2.0B (29b)
											AI4 AI5	-CAN message
												Error: 0 Count: 0
											9.753 9.756	Load [%]: 0
												Time (ms): 0
											9 751 9 762	0
											0.01 0.00	
L										×	X	
Lo	ad se	ttina C:	Setting4.	sf						ОШТ	Initialization	



Trends bookmark

This bookmark provides an objective display up to 15 values in the real trend. The configuration is needed to be done before through the window *Signals database configuration* or straight when choosing values to display. The real trend rises till the chosen time (e.g. 20s) and then rotates 1s till the time of overflow (60 - 120s), when running are set to zero and their rising again. Whenever during displaying depicture might be interrupted. The function Zoom can also be used when interrupting. The print, the saving trend (in format *.bmp) or a background change can be realized on the desktop of trend by right button of mouse as well.

►

Running the trend display

Disrupting the trend display



Value choice





Records bookmark

This bookmark enables parallel saving of the received messages or values into a text file. The configuration is needed to be done before through the window *Signals database configuration* or straight when choosing parameters to display. It is possible to save up to 160 values in the same time. The number of so written data is limited only by the size of the used hard disc of the computer. The saved file with messages or values can be processed through MS Excel application.

Þ

Running the record to the file

Stop the active record

Value choice

Edit (optrol Cor	fig Help Jofe	Ace Present						
		ing <u>n</u> eip ⊥ind Inn i∧da	, Maria (A		
	25 5	n 78	u <i>s</i>				7		
essages	Signals	Trends Reco	ords CANope	en					CAN driver
Record si	gnals								High speed
	DI7	DI6	DI5	DI4	DI3	DI2	DI1	DIO	C Low speed
	DI15	DI14	DI13	DI12	DI11	DI10	DI9	DI8	CAN setting
	DIO7	DIO6	DIO5	DIO4	DIO3	DIO2	DIO1	DIOO	Bit Rate <i>≧</i> ⊺
	DIO15	DIO14	DIO13	DIO12	DIO11	DIO10	DIO9	DIO8	250 V [kbps
	AI7 [V]	Al6 [V]	AI5 [V]	Al4 [V]	AI3 [V]	Al2 [V]	Al1 [V]	Al0 [V]	Sample position
									62.5 v [%]
									Sample point
									● 1x ○ 3x
									📙 🔲 Listening Ma
									-ID setting
									Tag [Hex] 🐔
									200 🔻
									Mask [Hex]
									7FF _
									🔽 Enable
									Туре
									• 2.0A (11b)
									C 2.0B (29b)
									Error: 0
									Count: 0
									Load [%]: 0
									Time (ms): 0
ecord na	ame					Record ty	pe	X	
Path: C1						1 C Mas	sanes		
with 1971							, ougeo		0
lame: Re	cord					💌 Sigr	als		
							0		



CANopen bookmark

This bookmark provides the tool for one device controlling via communication standard CANopen CiA DS-301. It permit a few operation with object *NMT*, *Node Guarding, Sync, Time Stamp, Emergency, PDO* a *SDO*. The object range of periodic message timing it may be choosen from 10ms to 10s. The PDO object configuration is needed to be done before through the window *Signals database configuration* or straight when choosing parameters to display. More information in apendix.

Transmit data fram	ie	
Abort transmitting		
PDO signals choice	e	
🍌 Upload SDO		
y Download SDO		
🔀 USB-CAN adapter V4.5 - Device Pr	resent	
File Edit Control Config Help Info		
🕒 🖬 🖨 🖏 🗛 🔏 🖻 🕯)	
NMT control Start Remote Node Start Remote Node Enter Pre-Operational Reset Communication Reset Node All - Node ID Sync Period: 1000 ▼ [ms] SD0 directory Properties Values 1000 48 UINT 1001 0	Time Stamp Time 6. 1.2006 Time Days: Date Days: Vactual Msec: Period: Period: 1000 Time Error Code Error Reg 21:00:58.081 Generic Error Manufacturer specific V	CAN driver ⓒ High speed C Low speed O one wire CAN setting Bit Rate €[250 ▼ [kbps] Sample position 62.5 ▼ [%] Sample point ⓒ 1x ○ 3x Listening Mode ID setting Tag [Hex] €[200 ▼
1002 0 INT 1006 0 LONG 1008 DIO 841 ULONG 1009 1.1. FLOAT 100A 1.1. TEXT 100C 1000 HEX 100D 5 UINT 1018 4 UINT 1400 3 UINT 2 0 UINT	AI3 0,000 AI2 0,000 AI1 0,000 AI0 0,000 AI7 0,000 AI6 0,000 AI5 0,000 AI4 0,000	Mask [Hex] 7FF ▼ Fable Type C 2.0A (11b) 2.0B (29b) CAN message Error: 0 Count: 0 Load [%]: 0 Time [ms]: 0
□ 1600 3 UINT □ 1600 3 UINT Index: 1000-1020,1200- [Hex] Load setting C:\SettingCanOpen.sf	OUT Initialization	*



Value database configuration

First the displayed values must be set in the window *Signals database configuration*, and then they can be displayed in the real form. It is possible to set Name, Unit, Description, Identification CAN ID, Data type, beginning position of saving data Position, Length of the saved data, Storage data format, parameters for conversion Multiplier and Offset and format of displaying the defined number of Decimal Places, Maximum and Minimum.

Data types which user might chose from: BYTE (8b), UBYTE (8b), INTEGER (16b), UINTEGER (16b), LONG (32b), ULONG (32b), BOOL (1b), TEXT (8-64b). Those with *Uxx* characterize no marked type.

Storage data format enable choice of two main formats:

 $0 >> \overline{63}$ (Intel) – chooses data from received message from the lowest bit up to the highest bit. 63 >> 0 (Motorola) – chooses data from received message from the highest bit up to the lowest bit. Lo-Hi – this format exchanges the order of individual Byte data Lo-Hi-Lo-Hi instead of Hi-Lo-Hi-Lo.

<mark>gnals database</mark> Signals list:	e configuration		
	Tuno		Labels setting
DI15	POOL	<u> </u>	
	BOOL		Name Al1 Unit V
	BOOL		
	BOOL		Descrip. Analog Input 1
DI02	BOOL		Polost mocoogo
	BOOL		Select message
	BOOL		CAN ID 201 [Hex] CAN OPEN
	BOOL		
	BOOL		Descrip. Al3-0
	BOOL		Numerical parameters
	BOOL		Storage data format
	BOOL	1	Data type INT ▼ ● 0 >> 63, Hi-Lo
	BOOL		C 0 >> 63, Lo-Hi
	BOOL	F	Possition 16 - Ibit) Length 16 - Ibits C 63 >> 0, Hi-Lo
DI012	BOOL		C 63 >> 0, Lo-Hi
DI013	BOOL		
DI014	BOOL	<u> </u>	Multiplier 0,00244200 Offset 0,00000000
DI015	BOOL		
AIU		-6	Showing parameters
	INI	1	Decimal places 3 👻
AI2	INT		
AI3	INI	h	Minimum 0,000 Maximum 10,000
AI4	IN I	¥	, ,
脊 Delete	iff Insert I _€ Add		✓ Ok X Cancel

The input value database might be saved to the user's file with the *.sf



Attach, indication and USB CAN adapter activity conduct

The active adapter attach is signalized in upper bar of application through information *Device Present*. This information signalizes he right activity of USB bus but not complete activity of USB adapter. The confirmation replies signalize the processor activity of the adapter. These are the reaction on individual commands sent to microprocessor. The replies of the adapter are displayed in form of short texts in the bottom state bar on the right:

- Adapter Ready
- CAN Initialization
- MC Initialization
- OUT Initialization
- Time Initialization
- CAN Disable
- MC Disable
- OUT Disable
- Pause

The communication with USB-CAN adapter is conducted through press buttons from the control panel of the main application window and press buttons from the window for transmitting Can messages. Every press button sends data sequence that realizes the adapter configuration. Only *Resetting message list* button doesn't transmit any message.

Adapter initialization

It makes required time and CAN bus register setting. The CAN bus register set up is influenced by user's choice. After changing CAN parameters in set up, the changes need to be written in USB-CAN adapter through this press button. Or use automatic user's set up for automatic initialization



Abort adapter initialization

It cancels all CAN bus register set ups. It stops from both receiving and transmitting data.



Clear message list

It makes immediate resetting of the received message list. It doesn't transmit any message to the adapter.



Pause

It makes immediate stop receiving and transmitting data on CAN line. After the next click the primary action refreshes. The activity refresh happens also when pressing Adapter initialization button.



Message transmitting

It opens the setting message window for transmitting. The press button is not displayed in *Listening mode* regime because in this regime it is not possible to transmit messages on CAN line.



CAN bus parameter set up

CAN setting – The transmitting speed optional in 10kbps to 1Mbps volume is a definite parameter for CAN bus set up. The select of transmitting speed is realized in CAN setting panel, *Bite Rate*. If the select is not accurate the reception nor required data display aren't realized.

💦 Bit rate	registers c	onfiguratio	n 💶 🗆 🔀	
BBP	PRS	PHS1	PHS2	
1 -	0 -	7 -	5 -	
System frequency: 16.000MHz				
🔲 Calcu	lator	🖌 ()k	Y Cancel	
		VOK		

It possibility for users selection bit rate speed through window. *Bit rate registers configuration* and *Calculator function*. Active this window by click the symbol *CAN setting panel*.

The important item is *Listening Mode*, which enables reception CAN messages without their confirmations by non-active bit *ACK*. The sampling position choice and number of sampling point set up don't influence CAN message reception or transmitting

ID setting – The selection of received CAN identification is realized in *ID setting* panel, items *Tag* and *Mask*. The set up is realized by defining the identification bit mask in format *Hex*. The *Tag* serves for the basic set up. The *Mask* serves for validity specification of individual *Tag* bits.

Tag and mask set up for CAN 2.0A, e.g.:

Reception of all ID 000H -7FFHReception of ID 100HReception of ID 100H-103H volumeTag000 0000 0000B = 0HTag001 0000 0000B = 100HTag001 0000 0000B = 100HMask000 0000 0000B = 0HMask 111 1111 111B = 7FFHMask111 1111 1100B = 7F8HThe right CAN 2.0A or CAN 2.0B frame specification is needed for message reception and transmitting on CAN bus. This selection is realized in *ID setting* panel, 2.0A (11bit) a 2.0B (29bit) items.

CAN message transmitting

The window *Transmit Frames* serves transmitting the messages. It enables easy transmitting of own messages on CAN line. *Messages bookmark* provides possible to transmit up to 8 messages at the same time. The message is completely defined by the transmitting regime (once, periodic in data or enquiry combination), by the time (delayed or period), by the identification and by data for transmitting. To gain sequence information there is *Show transmitting Frame* function that enables the reception and display of transmitted messages in the list of immediate and diagnostic message display. The set messages can be saved in user's file with an extension *.sf.

🔀 Trai	nsmit Fram	es		_ 🗆 🖂	
<u>E</u> ile <u>E</u> d	it <u>C</u> onfig				
🕞	- 🗈 🕯	8			
Messa	ges Signa	ls Replay			
	Time[ms]	ID [Hex]	Data [0, 1, 2, 3, 4, 5, 6, 7]		
C	2000	206	FF FF FF		
C	1000	701			
-	1000	20B	22 22 22 22 22 22 22 22 22		
C	100	201	00 00 00 00 00 00 00 00		
C	100	181	00 00 00 00 00 00 00 00		
-	1000	20C	00 00 00 00 00 00 00 00		
-					
	0	201	00 00 00 00 00 00 00 00		
	,		· · · · · · · · · · · · · · · · · · ·		
X	X Close Show transmitting Frame				



The window *Transmit Frames* works in four regimes of message transmitting. The regimes are subsequently switched by clicking vertical press buttons on the left. One press button attaches to just one message to transmitting.

- Data FRAME Once transmit simple message transmitting Data FRAME with delay Time [ms] set in 0 to 65535ms volume.
- C Data FRAME Periodic transmit periodic message transmitting *Data FRAME* with period *Time [ms]* in 1 to 65535ms volume.
- Remote FRAME Once transmit simple message transmitting Remote FRAME with delay Time [ms] set in 0 to 65535ms volume.
- **Remote FRAME Periodic transmit** periodic message transmitting *Remote FRAME* with period *Time* [*ms*] in 1 to 65535ms volume.
- AUTO RESPONSE automatic message transmitting after receive with delay *Time [ms]* set in 0 to 65535ms volume.

The CAN identifications need to be set in the definite volume according to chosen specification CAN 2.0A and CAN 2.0B in format HEX.

Also data need to be set in HEX format in volume 0 to 8 byte. It is possible to separate the set bytes by a gap, comma or by another separating character. The number of set bytes is decisive for transmitting Remote FRAME, not their content.

The press buttons *Transmit Frame* on the right make run the message transmitting.

Transmit Frame

It sends a set message to USB-CAN adapter. The adapter sends the message to CAN line according to set parameters immediately, with delay or periodically.

Abort transmitting

It cancels periodical or delayed message transmitting.

Signals bookmark provides transmitting the own signals. The configuration is needed to be done before through the window **Signals database configuration** or straight when choosing values to transmitting. Simple or Periodic data transmitting are getting from actual signals value with identical ID. The data transmitting are showing in Messages bookmark. You must on mouse click (Discrete) or change position on the scroll bar (Numerical) for change signals state. The periode you can change through the window **Transmitting setting** (double click on signals + key CTRL).

🎽 Transmit Frames 📃 🗆 🔀	Transmitting setting 🛛 🔀
<u>File Edit Config</u>	Signal Nome: DOD
🗠 🔒 🐚 🖏	ID [Hex]: 200
Messages Signals Peolau	Transmit type: 🕑
Discrete	Periode [ms]: 10
DIO7 DIO6 DIO5 DIO4 DIO3 DIO2 DIO1 DIO0	
DIO15 DIO14 DIO13 DIO12 DIO11 DIO10 DIO9 DIO8	V X Cancel
×	
Numerical	
AO1 14,440 AO0 15,180	
×	
🗙 Close 🔲 Show transmitting Frame 📃 📃	



Replay bookmark provides replaying records from Records bookmark or receive data from Messages bookmark. It possible Loop check for periodically replaying records. You must click to Load buton after record play.

🔀 Transmit Frames	_ 🗆 🛛
File Edit Config	
😕 🔒 🐚 🕺	
Messages Signals Replay	
Path: C:\	
Name: Record.txt Yes Load 197 / 22087	
Line From: 100 Line To: 200 🔽 Loop Delay: 20	[ms]
	-
X Close Show transmitting Frame	

The extended search in the received CAN message list

The extended search in the received CAN message list shortens searching time represented by *Find Data*. It enables to combine several parameters for rising up the search effect.

- Line search according to list lines
- Time search according to time. The time doesn't have to be complete
- D search according to CAN ID identification

The parameter line, type and ID enables search in intervals *from*, *to* or *from* – *to*. They can be used individually or in combination with searched data, or only data can be searched data. The data set is made in Hex format. When setting it is possible to insert XX symbol between searched data which will cause that a searched byte won't be important during the search.

Find data	×
C Line C Time C ID From 201	Data [0, 1, 2, 3, 4, 5, 6, 7] OF 8E xx xx OF 8F xx xx
To	🗸 Ok 🗙 Cancel



The automatic message description insert

The CAN bus enables transmitting of messages with various identifications. The high number of sent identifications might cause a difficult orientation. The identification message description enables easier work with the high number of identifications.

The *Define ID Description* window serves to create the identification description. The identification description is realized in single lines of the table. The confirmation of description setting is realized by pressing *Next ID*. The order of setting identification can be random. When pressing *OK* button they will be sorted ascending.

Such a set description will be automatically displayed in immediate and diagnostic message list in *Description* column with appropriate identification value displayed in *ID[Hex]* column.

The identification set can be also saved in user's file with an extension *.sf.

ID [Hex]	Data [0, 1, 2, 3, 4, 5, 6, 7]	Description [Text]	
200	00 XX XX XX XX XX XX XX XX	DI15-0, DI015-0	
201	xx xx xx xx xx xx xx xx xx	AI3-0	
202	xx xx xx xx xx xx xx xx xx	AI7-4	
203	xx xx xx xx xx xx xx xx xx	RS485 Transmit	
204	08 00 02 05 XX XX XX XX	State	
206	xx xx xx xx xx xx xx xx xx	DI015-0	
207	xx xx xx xx xx xx xx xx xx	A01-0	
208	xx xx xx xx xx xx xx xx xx	RS485 Receive	
209	xx xx xx xx xx xx xx xx xx	DI15-0 Config	
20A	xx xx xx xx xx xx xx xx xx	DI31-16 Config	
20B	xx xx xx xx xx xx xx xx xx	Al3-0 Config	
20C	XX XX XX XX XX XX XX 30	AI7-4 Config	



The user's application CAN Start and CAN Start DII

The CAN Start application provides you with creating user's own application using USB-CAN adapter. The application source code of CAN Start and CAN Start DII application is written for Delphi 5 development environment and higher. This application is in Delphi 7.

TAN start V1.2 - Device Present			
<u>File</u> <u>H</u> elp			
	?		
Receive CAN Data FRAME Arrival Time ID[Hex] Data [0, 1, 2, 3, 4, 5, 6, 7] 9:12:48.584 00000206 FF FF FF	CAN speed High speed Cone wire CAN setting Bit Rate 250 r [kbps] Listening Mode		
Transmit CAN data FRAME Rem. Per. Time[ms] ID[Hex] Data [0, 1, 2, 3, 4, 5, 6, 7] Image: Stress of the stress	ID setting Tag [Hex] 0 Mask [Hex] 0 Type (~ 2.0A (11b) (~ 2.0B (29b)		
Control Panel	CAN message Error: 0 Count: 59954		

The easy use enables procedures ReceiveCanData and TransmitCanData. In case of large application changes study the commented application source code. With help of reports it is possible to set an individual register configuration of the used CAN microprocessor.

ReceiveCanData (Hour, Minute, Second, Millisecond: integer; RTR: Boolean; ID, Count: Integer; Data: array of Byte);

This procedure is automatically executed when receiving the Can report. It includes all information needed for the report identification.

Hour, Minute, Second, Millisecond – the exact time of report reception [23:59:59:999] RTR – the report type Data Frame (RTR=false)/Remote Frame (RTR=true) ID – CAN identificator of a report Count – the number of received data Data – the array of received data

TransmitCanData (MCx, Per, Sys: Integer; RTR: Boolean; ID, Count: Integer; Data: array of Byte)

This procedure enables to enter a report to transmitting at CAN line. The reports can be transmitted through various Message centres to which the counters of periodical or delayed transmitting are assigned. It is possible to transmit 8 reports at the same time.

- MCx Message centre [0..7]
- Per the period of message transmitting/delaying [0..65525][ms]
- Sys the transmitting mode
 - 1= one transmitting with delay = per [ms]
 - 3= periodical transmitting with period = per [ms]
 - 4= immediate transmitting independent on per parameter
 - +8= receiving and display of a transmitted message
- RTR the report type Data Frame (RTR=false)/Remote Frame (RTR=true)
- ID CAN identification of a report
- Count the number of received data
- Data the array of received data

News: http://imfsoft.com/hardware/produkty/usb-can-adapter-triple-drivers.asp

USB-CAN Adapter V4.5