# **IPETRONIK**





IPEmotion\_PlugIn\_Protocols\_V03\_02\_00

10. Februar 2022

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# **IPETRONIK**

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# 1 Important and general information

#### 1.1 Important information

#### Please follow these instructions before and during the use and application on any IPETRONIK product!

#### 1.1.1 Safety and Warning instructions

Please follow the instructions and information as contained in the user manual!

- 1. The user can **influence an electronic system by applying the IPETRONIK product**. This might cause risk of personal injury or property damages.
- 2. The use and application of the IPETRONIK product is permitted only to qualified professional staff, as well as, only in appropriate manner and in the designated use.
- 3. Before using an IPETRONIK measurement system in the vehicle it has to be verified that no function of the vehicle, which is relevant for secure operation, might be influenced:
  - by the installation of the IPETRONIK measurement system in the vehicle,
  - by an potential malfunction of the IPETRONIK system during the test drive.

In order to avoid possible danger or personal injury and property damages, appropriate actions are to be taken; such actions have to bring the entire system into a secured condition (e.g. by using a system for emergency stop, an emergency operation, monitoring of critical values).

Please check the following points to avoid errors:

- Adaption of sensors to components of the electrical system / electronics, brake system, engine and transmission control, chassis, body.
- Tap of one or several bus systems (CAN, LIN, ETHERNET) including the required electrical connection(s) for data acquisition.
- Communication with the vehicle's control units (ECUs), especially with such of the brake system and/or of the engine and transmission control (power train control system).
- Installation of components for remote data transmission (mobiles, GSM/GPRS modems, WiFi and Bluetooth components).



The products can be operated in extended temperature ranges greater  $70 \,^{\circ}C$  and therefore the operator has to take safety measures to avoid any skin burnings on hot surfaces while touching the products.

- 4. Before directly or indirectly using the data acquired by an IPETRONIK measurement system to calibrate control units, please review the data regarding to plausibility.
- 5. With regard to the application of IPETRONIK products in vehicles during use on public roads the manufacturer and/or registered user of the vehicle has to ensure that all changes/modifications have no influence concerning the license of the vehicle or its license of operation.
- 6. User does agree to the instructions and regulations as mentioned above. In case the user does not agree with the instructions and regulations as mentioned above, he has to notify this expressly and immediately in writing to IPETRONIK before confirming the sales contract.

## 1.2 Terms and conditions

See IPETRONIK website for details: www.ipetronik.com

#### 1.2.1 Legend of used icons

<b>e</b>	Тір	This icon indicates a useful tip that facilitates the application of the software.
i	Information	This icon indicates additional information for a better understan- ding.
$\triangle$	Attention!	This icon indicates important information to avoid potential error messages.

#### 1.2.2 Support

#### Headquarter:

IPETRONIK GmbH & Co. KG Im Rollfeld 28 76532 Baden-Baden, Germany Phone +49 7221 9922 0 Fax +49 7221 9922 100 info@ipetronik.com Website: www.ipetronik.com

Limited commercial partnership with its head office in Baden-Baden, registry court HRA No. 201313 IPETRONIK Verwaltungs-GmbH Baden-Baden is an individually liable society, registry court Mannheim HRB No. 202089 CEOs: A. Wocke, C. Buchholz

Technical support and product information e-mail: support@ipetronik.com

# 2 PlugIn Overview

# 2.1 PlugIn description

The Protocols PlugIn is supporting the measurement of traffic and bus networks protocols. A large range of different hardware interfaces from various vendors is supported. The PlugIn can measure bus network data, but you can also send traffic data to your network and ECUs. The IPEmotion software is providing instruments and function for traffic analysis and traffic generation and output.

# 2.2 PlugIn installation

In order to use the PlugIn together with IPEmotion you need to install it. The PlugIn is available for download from the IPETRONIK website: https://www.ipetronik.com/ When you have installed the PlugIn, you need to launch the IPEmotion software. Then you need to access the application menu and open the OPTIONS. In the OPTIONS you can activate the PlugIn as indicated below.

File	New	Recent projects lis	t						
	Open Save				A	ctivate PlugIn	in OPTIONS	a a	[1_PRO
			net IPEmotion options						
Ē	Save as		Frequently used	Active	1	Title	Version	Description	Manufactu
	App-Export I Runtime version Compare Print I View I	6 6 •	Basic settings Appearance View Data manager Import Export Analysis Maps Directories Units Hotkey User administration			IPETRONIK CAN IPETRONIK X IPETRONIK LOG GPS Video Protocols ETAS - ES4xx Velleman Demo	01.16.00 02.05.02 03.59.01 01.05.00 01.02.00 02.00.00 01.01.00.13 02.01.00 01.05.00	Connection of IPETRONIK CAN acquisitio IPETRONIK CAN and Ethernet devices IPETRONIK Data logger (M-LOG, S-LOG, Serial interface for GPS mouse Synchronic recording of video data f (2) Protocol acquisition with any CAN hardwa Connection of ETAS ES4xx Series Micro M Velleman devices Generation of demo signals DOWNIOAD MANU	IPETRONI IPETRONI IPETRONI IPETRONI
	Options About Close	Options Show/edit general	IPEcloud PlugIns User displays User operations	The used	he plugi I plugin t	ns to be used.		Do n number is selected that ends with a '=' chara	wnload

The PlugIn is supporting the following Windows operating systems:

- ▶ 32 bit
- 64 bit

# 2.3 Overview of supported vendors

Within the PlugIn a large rang of hardware interfaces is supported from different vendors, to perform you network measurements. The list of vendors and devices is continuously growing. If your specific vendor or interface is missing, please contact our support to see if the implementation is possible in the oncoming releases.

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Protocols	System	Component	ts Function	s Import	Expor
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		Vector			,
		Kvaser			•
		PEAK			•
		NI			•
		Softing			•
		TRAMA			•
		ICS-CAN			•
		DrewTech			•
		I+ME Acti	a		,
		ETAS			•
		EthernetS	ystem		
		Import System imp	w)		

# 2.4 Detailed list of vendors and devices

► IPETRONIK	IPEhub2
► IPETRONIK	IPEcan FD
► IPETRONIK	IPEcan FD PRO
► IPETRONIK	IPEcan
► IPETRONIK	IPEcan PRO
► IPETRONIK	M-WiFi
► IPETRONIK	ETHgateway CLFD V1.1
► IPETRONIK	ETHgateway CLFD V1.2
► IPETRONIK	CAN FD Satellite
► IPETRONIK	FlexRay Satellite
► VECTOR	CANcardXLe
VECTOR	CANcardXL
VECTOR	CANcaseXL
VECTOR	CANboardXL
VECTOR	CANboardXLcompact
VECTOR	CANcardX
VECTOR	VN1610
VECTOR	VN1611
VECTOR	VN1630
VECTOR	VN1640
VECTOR	VN5610
VECTOR	VN5610A
VECTOR	VN7570
VECTOR	VN7572
VECTOR	VN7600
VECTOR	VN7610
► VECTOR	VN8900
► VECTOR	VN8950
VECTOR	VN8970

► VECTOR VN8972

	VECTOR	VX0312
	VECTOR	VX1121
	VECTOR	VX1131
►	National Instruments	PCI-CAN
►	National Instruments	PXI-CAN
►	National Instruments	PCMCIA-CAN
►	National Instruments	AT-CAN
	National Instruments	USB-CAN
	Kvaser	LAPcan
	Kvaser	PCIEcan
	Kvaser	PCcan
	Kvaser	PCIcan
	Kvaser	PCIcan II
	Kvaser	USBcan II
	Kvaser	Leaf II
	Kvaser	Leaf
	Kvaser	PCIcanx II
	Kvaser	Memorator Professional II
	Kvaser	MemoratorPro
	Kvaser	Memorator Light
	Kvaser	USBcan Pro 5xHS
	Kvaser	USBcanPro
	Kvaser	USBcan Light
	Kvaser	BlackBird
	Kvaser	BlackBird V2
	Kvaser	Hybrid
	Softing	CANcard2
	Softing	EDICcardC
	Softing	EDICcard2
	Softing	CAN-Acx-PCI
	Softing	CAN-Acx-PCI/DN
	Softing	CANusb
	Softing	CAN-PBOx-PCI

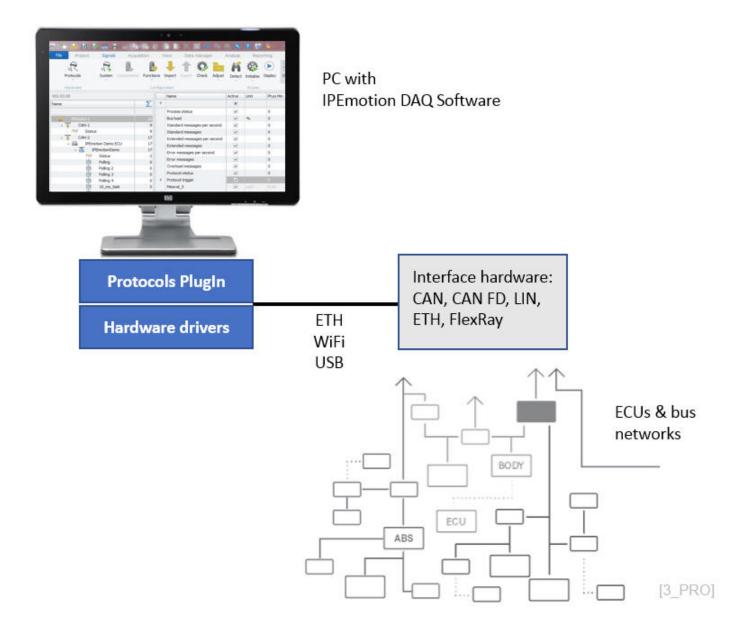
Softing CAN-PROx-PCI

Peak	PCAN-USB X6
Peak	PCAN-PCI
Peak	PCAN-PCle
Peak	PCAN-PCle FD
TRAMA	CW-ISUB
ICS	ValueCAN
ICS	ValueCAN3
ICS	ValueCAN4
ICS	ValueCAN4-4
DREWTECH	Mongoose
I+ME ACTIA	Basic+24 XS
ETAS	ES581
ETAS	ES593
ETAS	ES595
EthernetSystems	

# 3 PlugIn configuration

# 3.1 Functional architecture

The following diagram shows the schematic system architecture when you would like to perform network traffic and protocol measurements. You need the IPEmotion software and the corresponding Protocols PlugIn. Alos you need to install the hardware drivers for your specific interfaces. For IPETRONIK interfaces the drivers are included in the setup and installed automatically.



## 3.2 Creating interface systems

In order to start your measurement, you need to change to the SIGNALS work space and select the Protocols PlugIn from the hardware system drop down box. After that you need to create a hardware interface system form the list of devices.

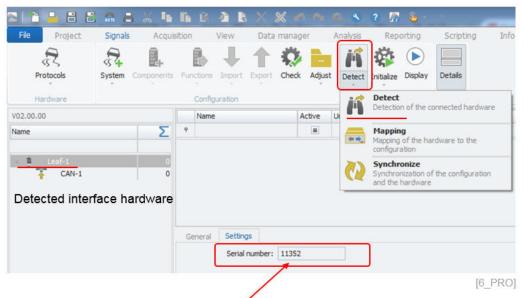
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File Project	Signals	Acquisi	tion	View	Data	a manag	er	Analysis	Rep	orting
Protocols	System	Components	Functions	Import	1 Export	Check		K Detect	<b>E</b> Initialize	) Display
Hardware	IPE	IPETRONIK		-	•		IPEhub2		Access	
V02.00.00				~	۲L	•== B			Phys M	n Ph
Name	IPE	ETH Gateway	Y		+		IPEcan FC	)		
		Vector			•		IPEcan FD	PRO		
		Kvaser			•		IPEcan			
		PEAK					IPEcan PR	10		
					•	$\bigcirc$	M-WiFi			
		NI			•					
Create new inter	face ma	nually							1	4_PRO]

Create new interface manually

When the systems are manually created you have to enter de device serial number or IP-address to establish a connection for your measurement.

2 1 🔒 🗄 🕹	auto 📑	<b>00</b> 16	G	Ē	è 6	$\mathbf{x}$	*	<b>n n</b>	4. 😵	?	۰ 🤒
File Project	Signals	Acquis	ition		View	Data	a mana	ger	Analysis	Rep	orting
Protocols	System C	omponents *		Config	Import Tration	Export	Ched	k Adjus	t Detect	Initialize Access	Display
V02.00.00				Name				Active	Unit	Phys Mi	n P
Name		Σ	9								
IPEhub2-1 CAN-1 CAN-2	eated	0	G	eneral	Settin Serial	gs number:	0				
					Ente	er seria	al nur	nber		[5]	PRO]

Some devices support automatic hardware detection. In this case you do not need to create the systems manually. You can use the detect function from the ribbon.



Device serial number is detected

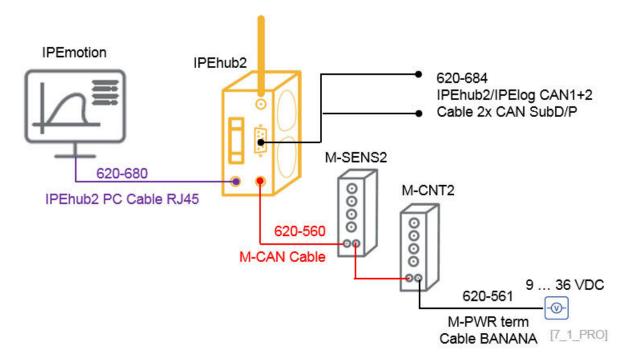
Information

Note that the PlugIn might not support the same set of functions which are available through the vendors own software platforms. This can have several reasons, e.g. that the provided programming API from the vendor is not offering all functions to external developers. Another reason can be that IPETRONIK did not implement the function.

# 4 Device specific configurations

## 4.1 IPEhub2 specific functions

The cable sets to interface IPEhub2 to the PC and the M-CAN modules on CAN2 or to the CAN bus network via the SUB D9 interface are presented below:



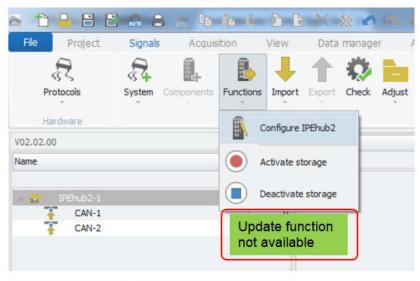
The IPEhub2 device can be detected automatically over the LAN interface. The devs running a DHCP server and when your LAN network interface of the PC is configured for automatic IP-address you can directly detect it.

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File	Project	Signals	Acquis	sition	View	Data	manage	er i	Analysis	Rep	porti
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P	rotocols	System Comp	onents	Functions	Import	Export	Check	Adjust	Detect	Initialize	Dis
H	ardware			<b>(</b>	Configure	IPEhub2				Access	
V02.01.0	00.59840 RC							Unit	Phys	Min	Phy:
Name		Σ	9		Activate st	orage		-			
- 📾	IPEhub2-1	0			eactivate	storage					
	CAN-1 CAN-2	0		<b>1</b>	Jpdate firr	nware IP	Ehub2				
	<b>1</b>		1.								
Symbol	Туре	Source	М	essage							
0	Information	IPEhub2-1	T	'he firmwa	re has b	een upo	lated. P	lease re	start the	e device	
Update	e IPEhub2 o	device firmv	vare	over LA	N only					17 P	RO

The IPEhub2 device firmware is installed in the following directory of the Protocols PlugIn

C:\Program Files (x86)\IPETRONIK\IPEmotion PlugIn Protocols V02.0x.0x\IPEhub2

The firmware update function is only available when you have detected the IPEhub2 device over the LAN cable. Over WiFI connection the firmware update is not supported because the update process is not stable.

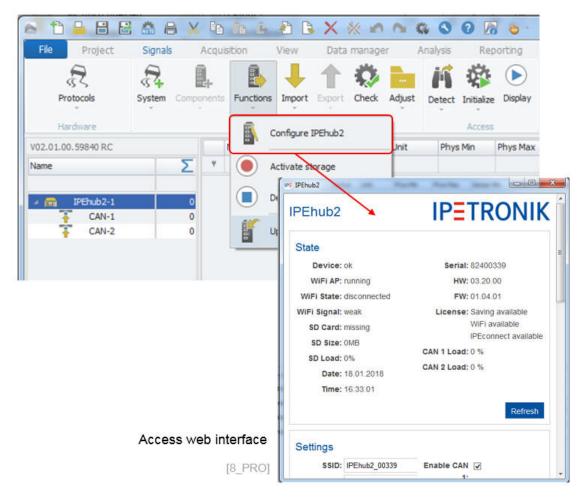


WiFi and dry config do not show update button

[7\_2\_PRO]

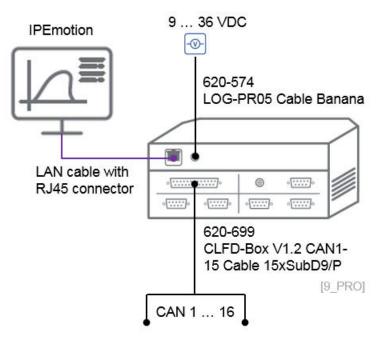
Besides the firmware update you can access the web interface to configure the unit and you can start and stop the data recording from the PlugIn. The web interface is also available from the following IP-address in your prowser:

IP-address to access web interface 192.168.232.1

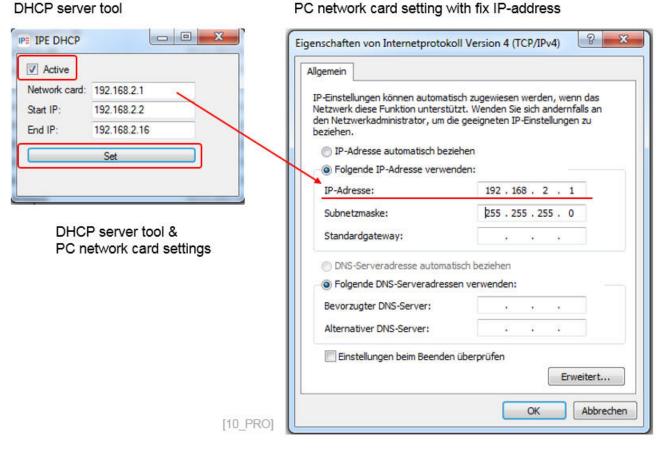


# 4.2 ETHgateway-CLFD specific function

The cable sets to interface ETHgateway-CLFD to the PC and bus network are presented below:



The ETHgateway CLFD is supporting an automatic hardware detect provided the IPETRONIK.IPEdhcpServerTool server tool is activated in the CAN-Server. The tool is available in the following directory.



C:\Program Files (x86)\IPETRONIK\IPETRONIK CAN-Server V01.17.xx\IPETRONIK.IPEdhcpServerTool

ipetronik.com

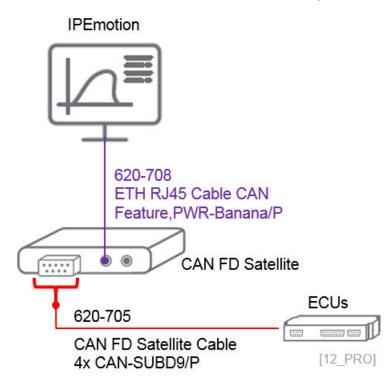
The ETHgateway CLFD is not supporting an internal DHCP server, therefore an external DHCP server tool is required to assign the device a fixed IP-address in order to be automatically detected by the PlugIn. You need

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to activate the Server Tool by checking the Active check box and you need to use the SET operation to assign the IP-address to the ETHgateway. The SET function needs to be executed after you have defined a fixed IP-dress to your PC network card.

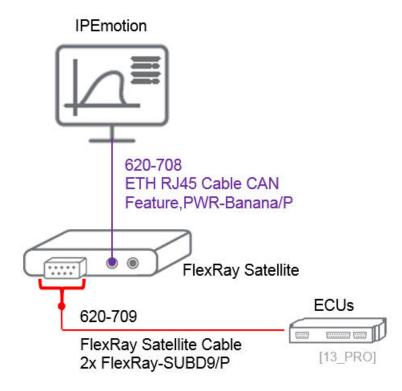
# 4.3 CAN FD Satellite

The cable sets to interface CAN FD Satellite to the PC and bus network are presented below:



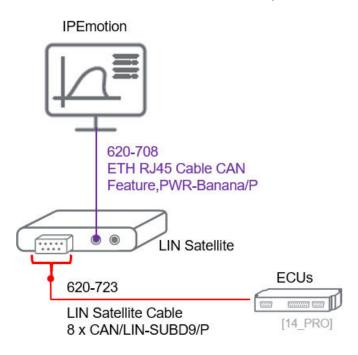
#### 4.4 FlexRay Satellite

The cable sets to interface CAN FD Satellite to the PC and bus network are presented below:



## 4.5 LIN Satellite

The cable sets to interface LIN Satellite to the PC and bus network are presented below:



# 5 Measurements on CAN FD, LIN, ETH, FlexRay interfaces

3rd Party Data Acquisition System Integration - DBC & A2L Export and Import: https://youtu.be/dTE7ymj3ho8

The interface hardware (logger, CAN/LIN interface or Network card) may supports or several of the following functions. The supported functions are also depending on if you are using the Protocols PlugIn of IPEmotion or a data logger. In general the data logger includes functions of Protocols PlugIn and additonal features which are logger specific. Especially on the ETH connector you will see more function on the data logger

- CAN Free running
- CAN CCP and XCP (1.4 packed mode)
- CAN Traffic
- CAN J1939
- CAN FD Free running
- CAN FD XCP (1.4 packed mode)
- CAN FD Traffic
- CAN FD UDS Diagnostics
- LIN Free running
- LIN Traffic
- FlexRay Free running
- FlexRay Traffic
- FlexRay XCP
- ETHERNET Free running (TCP and UDP)
- ► ETHERNET SOME/IP
- ETHERNET Status and statistics
- ETHERNET Traffic
- ETHERNET IPETRONIK-X (Logger)
- ETHERNET IP Cameras (Logger)
- ETHERNET PLP devices (Probe Logger Protocol Technica, Automotive Ethernet)
- ▶ ETHERNET WWH-OBD
- ► ETHERNET Active client AK Protocol
- ETHERNET IPETRONIK OPC HVPA0001
- ETHERNET DLT Diagnostic Log and Trace
- ► ETHERNET DoIP Dignostics over IP
- ► ETHERNET Siemens PLC TCP
- ETHERNET Modbus TCP Master
- ▶ ETHERNET Aerospace ARINC 429 (optional item selected during installation)

X

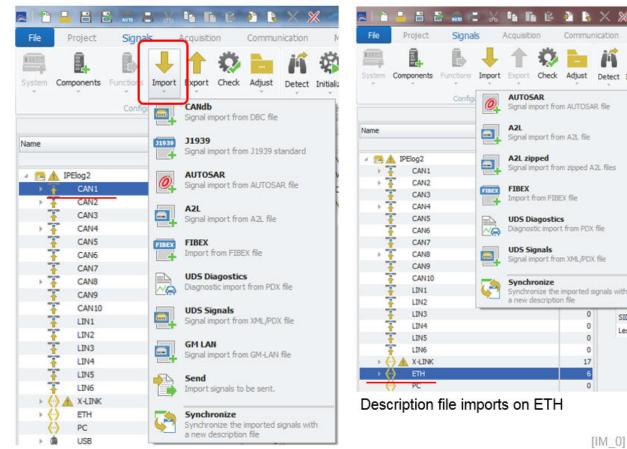
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Detect Initia

2

#### 5.1 Description file import format overview

In order to measure data from your bus networks and ECUs you need to perform a description file import. The available import functions and file formats are deepening on the selected interface type. The screenshot below shows as an example import dialog and files for a CAN connector.



Description file imports on CAN

[IM 0]

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On the CAN interface the follwing import formats are supported:

- CAN db (.dbc, .xml)
- Autosar (.arxml)
- A2L (.a2l) with Seed & Key .skb support
- Fibex (.xml)
- UDS (.pdx,.XML)
- GM-LAN (.odx)
- CAN-Send (swichting formats into output direction)

On the LIN interface the follwing import formats are supported:

CAN db (.dbc, .xml, .ldf)

On the FlexRay interface the follwing import formats are supported:

- Autosar (.arxml)
- FlexRay Parameter (.xml)
- Fibex (.xml)

On the ETHERNET interface the follwing imports are supported:

- Autosar (.arxml)
- ▶ A2L (.a2l)
- A2L zipped (.zip)
- Fibex (.xml)
- ► UDS Diagnostic (.pdx)
- UDS Signals (.pdx)

# 5.2 CAN interface

The CAN interface setting can vary in regard to the selected CAN hardware. The CAN hardware can be one of the supported vendors like VECTOR, KVASA, PEAK, etc.. or an IPETRONIK data logger. On the General interface tab sheet you have the following settings.

and the second se		-		9							
Name		Σ		-							
			*								
4 🔜 IPElo	g2	73									
> 🏋 🖸	AN1	16									
	AN2										
	AN3	0									
	AN4	0									
	AN5	0	General	CAN	Extended						
CAN6	0										
	AN7	0				Active:	~				
	AN8	0				Name:	CAN2				
	AN9	0			Dec	cription:	-				
	AN 10	0			Des	cripuon.					
	IN1	0			Re	ference:	CAN2/IPE	ig2			
- E	IN2	0									
									[IM_0		

- Active
   Activate the interface
- Name Default channel name
- Description Add an additional description to the interface
- Reference Is automatically generated by the system and stored in the data file to back refere the data source.

On the CAN tab sheets the following settings are supported:

General	CAN	Extend	led				
	Ba	aud rate:	500 kBd	•	Sample point:	80	%
	2000 1000 100	X mode: CAN FD:			Sync jump width:	1	
	D	ata rate:					
						[IM_0	_2]
Baud rate			Here you	can define t	he baud rate of the	e CAN bus	
Send ACK m	ode		operating nowledge	in scielence	box for normal mo mode. The interfa ages to the bus in o twork.	ce will not se	nd any ack-
CAN FD					only be activated, ssages which are l		
Data rate			This refere	ence to the	CAN FD data rate.		
Sample point					D measuremens a ring the import pro	•	taken from
Sync jump wi	ith				D measuremens a ring the import pro	•	taken from

On the Extended tab sheet, the Wake on Bus (WoC) and the NML (No Message Lost) can be activated. This function is only supported by IPElog2, ETHOS, mCROS SL, CAN FD Statellite interfaces.

General	CAN	Extended
	Wak	eOnBus: 🗌
	Qu	uickstart: 🗌
	Fault	tolerant: 🗌
	Bus terr	mination:
		[IM 0 3

- Wake on Bus With an activated Wake setting the logger can be automatically started when CAN or LIN traffic is detected on the interface.In wake mode the logger power consumption is higher. The Quickstart function records all early bus traffic until th elogger Quickstart is fully up and running. The configuration of Wake conditions to record CAN of LIN traffic can be separated from the DMA Quick-Start storage function, if needed. That gives the user now the ability to record quick start traffic without any mandatory Wake on Bus configurations. However, when using No Message Lost (NML) function the quick start and Wake on Bus functionality is by design included. NML No Message Lost. The Logger IPElog2 supports the No Message Lost (NML) functionality. When the logger is in NML mode the Power LED is blinking every 3 seconds. When bus traffic is received on the NML configured interface, the logger is booting up and stores all bus traffic data in the storage group. During the boot phase only CAN traffic is stored. The measurement of protocols or M-CAN / X-LINK measurement modules and other periphery devices like IP- and USB cameras, Satellite interfaces etc. is only stored in the data file, when the logger is completed booted and all systems are properly initialized. This is related CAN low speed supported e.g. by IPElog2 Fault-tolerand
- Bus termination
   Activating 120 Ohm bus termination on CAN 1 / M-CAN of IPElog 2

The Option tab sheet provides the following settings.

Baudrate initializing	~	
Output mode	Off	

Baud rate initializing
 With this check box setting the baud rate of the CAN controller is updated to the setting defined on the previous CAN tab sheet.
 Output mode
 Off – no impact. Configuration – provides extended output messages in the message window about the ECU communication.

The Bit timing tab sheets is available on all CAN FD supporting interfaces.

General CAN Option:	s Bit timing
Tseg1:	0
Tseg2:	0
Sjw:	0
Data Tseg1:	0
Data Tseg2:	0
Data sjw:	0

CAN FD networks require a detailed timing setting for Tseg 1 and Tseg2, in order to capture the data from the right timing segments of the CAN FD message. For more details see the manuals of the CAN interface vendors or in the internet e.g. www.bittiming.can-wiki.info

The CAN interface in an IPEmotion RT loggers support also a wider range of additional functions which will be discussed below.

PEmotion	PC: CAN Interface of	components		buon RT.	Logger CAN	Interface	component
		b X X 🕫 🗠 🖘	8		and the second s	the second s	X 🖉 🖓 🖏
File Project	Signals Acquisition View	Data manager Ana	alysis File	Project	Signals Acquisition	Communicat	ion Mobile displa
Protocols	System Components Functions Impor	rt Export Check Adjust De	etect System C			eck Adjust De	tect Initialize Display
2.06.00.73932 RC	N N	ame Activ	ve	. (	Configuration IPEmot	tion RT log	ger
me	Σ *	rance and a second	# Name			c compon	.uve
IPEhub2-1	0	_	× 🛤	IPElog2	0		
CAN-2	Change into	↓ 9 Diagnostics J1939		CAN1 CAN2	a second de contra de		IPETRONIK CAN
	Functions     Import	7 Status	-	CAN3 E CAN4 B CAN5	Concerne and Concerne and Concerne		
	1 Export  Use as default	Traffic	÷	CAN5 CAN7			IPEout
	Cut Ctrl+X	Manual messages	- 7	CANB CAN9		Ctrl+X	Traffic
	Paste Ctrl+V	WWH-OBD	-	CAN10	Сору	сянс	Status
	Paste behind     Delete     Ocan	OBD-2		CAN12 CAN13 CAN14	Paste behind	CRIHA	Manual messages
	P Copy to file	OBD-2 mode 21	-	CAN15 CAN16			WWH-OBD
	Paste from file	GM-LAN		X-LINK / 1 🐔 ETH / ETH	1		060-2
	Remove from subconfig  Properties	Multiple selection		PC / ETH USB DIN	Add to subconfig Remove from subconfig		OBD-2 mode 21
	PC: CAN interface o			DOUT AUDIO		Ų	DiagnosticsJ1939

IPEmotion PC: CAN interface components

#### IPEmotion RT: Logger CAN interface components

IPEmotion PC: CAN interface components

Traffic

Manual messages

RT Logger: CAN interface components [IM 0 6]

- IPETRONIK CAN
   On this interface all M-CAN modules can be created. This function is only supported on IPEmotion RT data loggers.
   IPEspeed
   This interface will create all channels of the IPEspeed GPS receiver
   IPEout
   This interface will create all channels of the analog and digital
  - This interface will create all channels of the analog and digital in/out module from PEAK
    - With this channel you can perform CAN bus traffic measurements.
  - Status This refers to CAN interface status channels
    - Here you can create manual CAN messages.
  - WWH-OBD THis refers to world wide harmonized OBD measurements.
  - OBD-2 With this interface a large grange of on board diagnostic channel (OBD) are created which are accessible on almost all cars via the OBD connector.
- OBD-2 mode 21
   This covers a special OBD mode.
- GM-LAN This covers a special GM diagnostic mode.
  - GM-LAN job-based This covers a special GM diagnostic mode.
  - J1939 Diagnostic messages

The overview of the CAN status channels is presented below.

V02.02.00			Name	Active	Unit
Name	Σ	9			
			Process status	~	٦
🖌 🚘 IPEhub2-1	15       Process state         15       Bus load         15       Standard m         15       Standard m         15       Extended m         16       Extended m         17       Extended m         18       Standard m         19       Extended m         15       Error mess         15       Standard R         15       Standard R         15       Standard R         16       Extended F         17       Extended F         18       Standard R         19       Standard R         10       Extended F         11       Extended F         15       Extended F         15       Extended F         15       Extended F         16       Extended F         17       Extended F         18       Extended F         19       Extended F         10       Extended F         11       Extended F <t< td=""><td>Bus load</td><td>~</td><td>%</td></t<>	Bus load	~	%	
🛛 🏹 CAN-1	15		Standard messages per second	~	
	15		Standard messages	~	
CAN-2	0		Extended messages per second	~	
			Extended messages	~	
			Error messages per second	~	
			Error messages	~	
			Chip status	~	
			Standard Remote messages p	~	
			Standard Remote messages	~	
			Extended Remote messages p	~	
			Extended Remote messages	~	
			Overload messages per second	~	
			Overload messages	~	

CAN interface - Status channels

[IM\_0\_7]

#### 5.3 LIN interface

On the LIN tab sheets the following settings are supported:

General	LIN	Extended
	Active:	~
	Name:	LIN1
Des	scription:	LIN port
Re	ference:	LIN1/IPElog2

- Active Activate the interface
- Name
   Default channel name
  - Description Add an additional description to the interface
- Reference Is automatically generated by the system and stored in the data file to back referce the data source.

On the LIN tab sheet the following settings are supported:

	General	LIN	Extende	ed		
		В	aud rate:	9,6 kBd	*	
		LIM	Version:	2.0	*	
					[IM_0_11]	
Baud rate			•	down list you car 1, 9.6, 10.417 kB		different baud rates
LIN version		The	LIN versio	on referes to the	standars 1.3, 2.	0 and 2.1.

In the Extended tab sheet the Wake on LIN (WoL) function can be activated. The WoL function is only supported by data loggers.

General	LIN	Mode	
		Mode	Master
			<ul> <li>Slave</li> <li>Listen</li> </ul>
			[IM_0_12]

Mode

Here you define Master, Salve or Listen mode.

The LIN interface of IPEmotion RT loggers supports also some additional functions which will be discussed below.

*	LIN2	E.	Components	•	1011001	Traffic
Ŧ	LIN3	E.	Change into	÷.		
Ŧ	LIN4	8	Functions	÷.	100	Manual messages
Ŧ	LIN5		Import			Manual messages
Ŧ	LIN6			· ·		
O	X-LINK	T	Export	- P.,	2	Multiple selection
11	-	1	11 d-E		-	

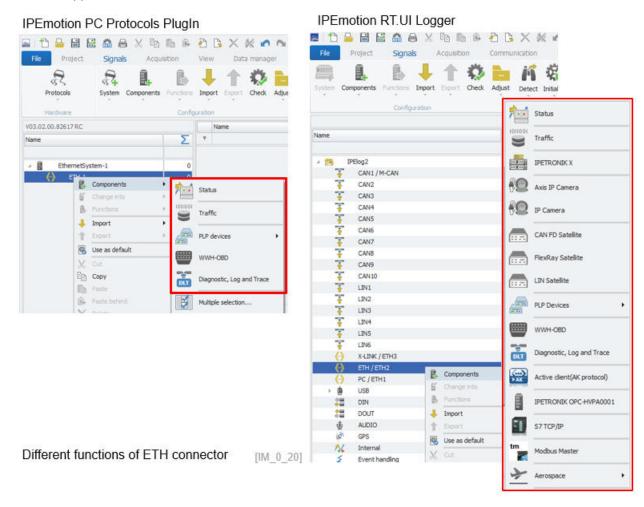
- Traffic
   With this channel you can perform LIN bus traffic measurements.
  - Manual messages Here you can create manual LIN messages similar to CAN messages discussed above.

When the LDF import file includes multiple scheduled tables, you can select during the import process which scheduled table to use:

Select schedule table 🛛 🗙	IPEmotionDemo.ldf - Editor
There is more than one schedule table specified in the LDF file. Each of these schedule tables may specify different messages to be used. In case all messages should be used select the "Ignore schedule tables" entry. Please select the one that should be used.	<pre>Datei Bearbeiten Format Ansicht Hilfe SIM_50199999_ID_11 : 17, Sensor, 4 {     Exhaust_1 ,0;     Exhaust_2 ,16;   } }</pre>
Ignore schedule tables SendTable SendTable_2	<pre>Schedule_tables {    SendTable {       SIM_51499999_ID_A delay 333 ms;       SIM_50199999_ID_10 delay 333 ms;       SIM_50199999_ID_11 delay 334 ms;    }    SendTable 2 {       SIM_51499999_ID_A delay 222 ms;    } }</pre>
OK Cancel	SIM_501999999_ID_10 delay 223 ms ; SIM_501999999_ID_11 delay 225 ms ; } }
Select scheduled tables on LIN interface	[IM_0_14]

## 5.4 ETH interface

The ETHERNET interfaces on the Protocols PlugIn of IPEmotion PC and IPEmotion RT.UI data loggers software support different functions.



For data loggers the default IP-addresses of the two ETH interfaces 1 and 2 are predefined. For M-LOG V3 the interfaces are named:

- ETH 1: IP. 192.168.232.1
- ETH 2: IP. 192.168.234.1

For IPElog2 the ETH interfces are named as below:

- X-LINK/ETH3: IP. 192.168.232.1
- ETH/ETH2: IP. 192.168.234.1
- PC/ETH1: IP. 192.168.236.1

The ETH interfaces on an IPEmotion RT loggers support the following main functions:

- Status
   Ethernet interface statistics.
- Traffic
   With the traffic channel you can record ETH traffic.
   IPETRONIK X
   On this interface all X-Modules and M-CAN in the tunneling mode can be configured. This function is only supported on IPEmotion
- RT data loggers only.
  - IP camera AXIS
     Here you can create an IP-camera interface for pre-configured AXIS IP-camera system.
- IP camera
   Here you can create an general IP-camera interface system.
- Satellites You can add additional CAN FD, LIN, FlexRay interfaces to the logger.
- PLP Devices The Technica Automotive Ethernet devices of the latest generation CM 100 and 1000 HIGH (Capture Modules) are supported using the PLP (Logger Probe Protocol).
- WWH-OBD World Wide Harmonized-OBD.
- DLT Diagnostic Log and Trace.
- Active Client AK Protocol
   Interface to get data from MAHA roller benches.
- Siemens PLC TCP Here you can interface to Siemens PLC via the TCP communication based on S7 plc programs. The interface to the TIA portal is not jet supported.
- Modbus Master
  With Modbus PlugIn you can interface any type of external devices supporting Modbus protocol communication. The PlugIn support different function codes (01, 02, 03, 04) to read and write single and multiple registers and coils.
- Aerospace The ARINC 429 is a separate licensed protocol.

The ETH node has the following General configuration functions:

- Active
   Activate the interface
- Name Default channel name
- Description Add an additional description to the interface
- Reference Is automatically generated by the system and stored in the data file to back reference the data source.

#### 5.4.1 ETH Status channels

On all ETH / LAN and PC interfaces status channel can added to monitor the interface status. This statistics about the ETH bus load, link speed, bytes, packets, error etc...

System Components Functions Imp		Adjust D		etails		
Configurati	on	Name	Access	Aew Current value	Active	Unit
Name	۶					
	- F	ETH / ETH	2 Link status	1 🔊	2	
A TRA IPElog2	27	and the second second second	2 Link speed	1000,000000 MBit	1	MBit/s
CAN1/M-CAN	0	ETH / ETH	2 Bus load	0%	1	%
CAN2	0	ETH / ETH	2 Bytes per second	0 B/s	2	B/s
CAN3	0	ETH / ETH	2 Bytes total	0,0056076 MB	4	MB
CAN4		ETH / ETH	2 Packets per second	0 Packets/s	1	Packets/s
CANS	0	ETH / ETH	2 Packets total	126	~	Packets
CAN6	0	ETH / ETH	2 Dropped per second	0 Packets/s	1	Packets/
CAN7	0	ETH / ETH	2 Dropped total	0	4	Packets
CANS	0	ETH / ETH	2 Errors per second	0 Packets/s	1	Packets/
CAN8 CAN9 CAN10	0	ETH / ETH	2 Errors total	0	4	Packets
CAN10	0					
T LIN1		12000004800				
TIN2	IPEmo	tion: Com	ponents selection - S	tatus		
T LIN3	Count	Symbol	Type	Description		
T LIN4	1	M	Packets per second	Packets per seco	od	
T LINS	1	100	Packets total	Total number of p		
T LIN6	1		Dropped per second	Dropped packets		and
X-LINK / ETH3	1			and the second se		
- 🔶 ETH / ETH2			Dropped total	Total number of o	10.000	packets
🚾 Status			Errors per second	Errors per secon		
PC / ETH1	1	M	Errors total	Total number of e	errors	

#### 5.4.2 ETH Traffic

For the ETHERNET Traffic measurement on the PC, you need to define the name of the LAN card of the PC which is PC dependent. This configuration is not required for data loggers where the ETH interface names are pre-defined by the hardware setup of the system.

	Name	Current	tvalue		
	PC / ETH1 Traffic channel	00 13	95 28 E1 F6 0	0 0A CD	35 1C 65 08 00 45 00 00
Ō	X-LINK / ETH3	0			
$\langle \cdot \rangle$	ETH / ETH2	0			
4 ()	PC / ETH1	1			
	Traffic	1			
► @	USB	11			
	DIN	4			
	DOUT	4			
١	AUDIO	0			
Ś	GPS	6	General		
14	Internal	6		Active:	~
\$	Event handling	3		Name:	Traffic
4 kt	Status	4			
ę	🖗 Global	4	Descr	ription:	Traffic recording
4 🚔	Demo system	18	Refe	rence:	Traffic/PC / ETH1/IPElog2
	Periodic signals	0	Con	nment:	
1	A Outputs	18			[IM_0

If you like to perform Ethernet traffic measurements on the Ethernet interface of your computer, you must identify the Ethernet port name. For this you need the help of IPETRONIK support. To identify the ETH name you need to open windows PowerShell. Within the programm you run the command:

wmic nicconfig get ServiceName,description,macaddress,settingid

# IPEmotion PC - ETH Settings of the Protocols PlugIn

V02.02.00.65048 RC		Name	Active	Unit
Name S	9			
EthernetSystem-1 0	Ge	eneral Connection Active: 🗹 Name: ETH- Description: Reference: ETH-1/E	hemetSystem	
General Connection				
	{12	D 189A6-DE 10-4EA8-8E	41-FA6EEC	29A485}

PC ETHERNET network name (extracted via PowerShell) [IM\_0\_22\_1]

The following screen shot indicates the windows PowerShell software to extract the detailed names of all Ethernet network interfaces.

Command: wmic nicconfig get ServiceName,description,macaddress,settingid

🔀 Windows PowerShell			- 0
indows PowerShell			
opyright (C) Microsoft Corporation. Alle Rechte	vorbehalten.		
ernen Sie das neue plattformübergreifende Powers	bell kennen - https	·//aka ms/nsco	ure6
ernen sie das nede procerormober greifende rower.	nerr kennen sneeps	.,, aka may pace	
S C:\Windows\system32> wmic nicconfig get Servio	eName,description,m	acaddress.sett	ingid
Description	MACAddress	ServiceName	SettingID
licrosoft Kernel Debug Network Adapter		kdnic	{55553138-D2F1-4C73-8E92-79BF86DC376A}
ntel(R) Ethernet Connection (13) I219-V	38:F3:AB:3D:60:83	eldexpress	{3A818232-38C0-4BB1-8067-4F6416944652}
luetooth Device (Personal Area Network)	A4:68:86:35:38:73	BthPan	{EC8A0B94-1384-42ED-BFCC-46B4CE7795EB}
ntel(R) Wi-Fi 6E AX210 160MHz	A4:68:86:35:38:6F	Netwtw10.	{EBCD3727-B65B-4BCE-BC2C-E879313DB9E5}
licrosoft Wi-Fi Direct Virtual Adapter	A4:68:86:35:38:70	vwifimp	{5D755F87-B067-4FA5-B6EB-A692088588B3}
licrosoft Wi-Fi Direct Virtual Adapter	A6:68:86:35:38:6F	vwifimp	{1D677449-5BBF-4EF1-B15D-2B2394AB6756}
eneric Mobile Broadband Adapter	80:9D:81:5D:59:40	cxwmbclass	{B775B583-43DA-4B1D-85AA-604FD573B54B}
IAN Miniport (SSTP)		RasSstp	{8BE59784-4609-4CC5-8954-A5C34A9F8A0E}
IAN Miniport (IKEv2)		RasAgileVpn	{70B73B68-4899-4C4F-A5C6-5285AC377A24}
IAN Miniport (L2TP)		Ras12tp	{0D2D8B32-7085-4128-A3A2-967C56C14327}
IAN Miniport (PPTP)		PptpMiniport	{B7D45847-2985-48C2-91B7-2FA52FA9B158}
IAN Miniport (PPPOE)		RasPppoe	{C1E47579-61B3-430C-90A2-D109E3742644}
IAN Miniport (IP)	4E:98:20:52:41:53	NdisWan	{9309F9D4-ED6B-4FA3-926C-5BFD8BE04A62}
AN Miniport (IPv6)	52:4C:20:52:41:53		{DFB401AB-9CB6-448C-96AE-43171CDA2EA4}
AN Miniport (Network Monitor)	56:DC:20:52:41:53	NdisWan	{6F4ED5E4-1819-4BEE-9120-ED471349F76C}
SIX AX88179 USB 3.0 to Gigabit Ethernet Adapter		AX88179	{12D189A6-DE10-4EA8-8E41-FA6EEC29A485}
enovo USB Ethernet	08:3A:88:5C:B6:9A	rtump64x64	{A3E21E36-18E5-4D1E-B443-1BEB9E5FF36A}
enovo USB Ethernet		rtump64x64	{68A94196-1B56-43E0-9076-22C3D71D534E}
ople Mobile Device Ethernet		Netaap1	{3E8FC9FB-F79C-4512-9DD9-9AF81FA51BDA}

PowerShell software

[IM\_0\_22\_2]

#### 5.4.3 IPETRONIK X

The configuration of the IPETRONIK-X Module is discussed in section ??.

#### 5.4.4 IP Cameras

The configuration of Ip cameras is discussed in section ??.

#### 5.4.5 Satellites for CAN FD, LIN, FlexRay

The CAN FD satellite interface supports extended wake functions.

$\langle \cdot \rangle$	X-LINK / ETH3	N 0		
4 <b>(</b> :)	ETH / ETH2	63 O		
A (0	CAN FD Satellite-1	0		
	🐺 🕖 CAN-1	0		1
	CAN-2	0	General CAN	Extended
	CAN-3	0	Wak	eOnBus: 🗹
	T CAN-4	0	Q	uickstart: 🗌
$\langle \cdot \rangle$	PC / ETH1	0	-	NML:
	USB	0		nudli 🗌
	D Satellite: NML / Wak	oOnCAN / Ouick	retart	[IM 0 2

CAN FD Satellite: NML / WakeOnCAN / Quickstart

- Wake on Bus (WoC) CAN LEDs of the satellite are flashing to indicate the wake configuration.
- Quickstart Will record CAN traffic of the early measurements and buffer it inside the FPGA up to the logger is fully boote
- No Message Lost (NML) To indicate the NML configuration the CAN LED of the configured input is permanently on. NML will record all CAN traffic from the very first message.

On the ETH node also the satellite interfaces for CAN FD, LIN, FlexRay are detected. Device information about the firmware is availabel.

🕨 🛞 🛞 IP Camera 1	0	General Settings Info
A CAN FD Satellite-2	9	Interfaces: 4 CAN FD
CAN-1	0	FW version: 2.96
▶ 🕌 CAN-2		
T CAN-3	0	MSP version: 0.22
CAN-4	0	FPGA version: 3.16

Firmware information of statellites

[IM\_0\_24]

With the update function the device firmware can be updated with progress bar information.

→ 💮 ETH → 🕸 🛞 IP Camera 1	10			
CAN FD Satellite-2 CAN-1 CAN-2 CAN-3 CAN-4 Traffic PC		Components Change into Functions Import Export	) ) ) ) )	Update devices
			late devices re update 0.5 °	%
		0		
Satellite Firmware update	progre	SS		[IM_0_

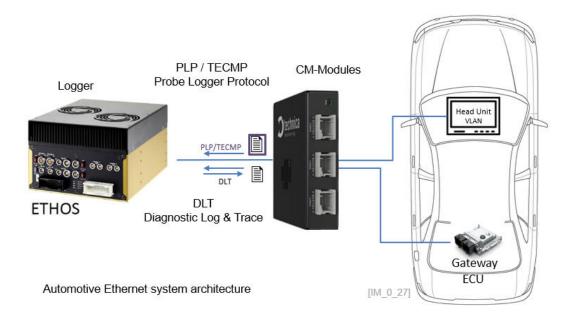
#### 5.4.6 PLP Devices - Automotive Ethernet

To measure automotive Ethernet networks the following interfaces from Technica Engineering are supported:

- Technica CM 100 High
- ► Technica CM 1000 High
- Technica CM LIN Combo
- Technica CM CAN Combo
- Technica CM Ethernet Combo

Ŧ	LIN3			0	1	Status	1	
Ŧ	LIN4			0	1	and a second s		
Ŧ	LIN5			0	100001	Traffic		
Ŧ	LING			0	))			
→ ⊖	X-LINK / ETH	3		0		IPETRONIK X		
$\Theta$	ETH / ETH2	2	Components		[man-			
θ	PC / ETH1	Et la	Change into		10	Axis IP Camera	I	
	USB						I	
	DIN	В	Functions		- 12	IP Camera	I	
	DOUT	+	Import	•	1.1.1		-	
ġ.	AUDIO	1	Export			CAN FD Satellite	I	
3	GPS	-	Use as default					
14	Internal Event handl	X	Cut	Ctri+X		FlexRay Satellite		
1.15		CD.	Сору	Ctrl+C	-			
		lin.	Paste	Ctrl+V		LIN Satellite		
		■× ※	Paste behind Delete Oean			WWH-OBD		Technica CM 100 High Technica CM 1000 High
			Copy to file Paste from file			Diagnostic, Log and Trace		Technica CM LIN Combo
		30 <b>30</b>	Add to subconfig Remove from subconfig		()))   )   ()   ()   ()   ()   ()   ()	Active client(AK protocol)		Technica CM CAN Combo
	1	4	Properties		Î	IPETRONIK OPC-HVPA0001		Technica CM Ethernet Combo
					1	S7 TCP/IP		1
e					tm	Modbus Master	6	
Messager	i 🗏 Status		🖼 Storing 🕷 Output		+	Aerospace		-1 =1 =

The system architecture below provides an overview of the ETHOS and other loggers with Ethernet ports can be used to store the automotive Ethernet data.



#### 5.4.7 WWH-OBD

The WWH-OBD (World Wide Harmonized on Board Diagnostics) protocol is now supported on the ETH connector. The protocol is also supported on CAN.

8			edk	Adjust Detect Initialize Display Details	r scripting	View	Data manager	Analys	5	
	Configurat	ion		Access View	Active	Unit	Phys Min	Phys Max	Senso	
Name		Σ				-		- informate	aren ipre	
				001 - Number of emission-related DTCs	-		0	127	0	
	Ælog2	4		001 - Malfunction Indicator Lamp (MIL) status			0	1	0	
T	CAN1/M-CAN	0		001 - Misfire monitoring supported			0	1	0	
· · +	CAN2 CAN2	0	5	061 - Fuel system monitoring supported			0	1	0	
Ŧ	CANS	0		001 - Comprehensive component monitoring suppo.	- E	-	0	1	0	
Ŧ	CANA	0		001 - Compression ignition monitoring supported	0		0	1	0	
Ť	CANS	0		001 - Misfire monitoring ready	6					
Ŧ	CAN6	0		001 - Fuel system monitoring ready	10	Pre-defined channels				
Ŧ	CAN7	0		001 - Comprehensive component monitoring ready	E	-	0	1	0	
Ŧ	CAN8	0		002 - DTC that caused required freeze frame data .			0	65535	0	
÷ 🕆	CAN9	0		004 - Calculated load value	E	96	0,0	100,0	0	
Ŧ	CANID	0		005 - Engine coolant temperature	1	°C	-40	215	-40	
Ť	LIN1	0		006 - Short term fuel % trim Bank 1	5	96	-100,0	99,2	-100	
Ŧ	LIN2	0		006 - Short term fuel % trim Bank 3	1	%	-100,0	99,2	-100	
Ť	LIN3	0		007. Lana Jarm & al M. Jule Dauls 4	-		+00.0		100	
Ŧ	LIN4	0	G	Seneral Extended						
Ť	LIN5	0		CAN-ID mode:	-	Maxim	m reconnect attempts	Infinitely		
T	LIN6	0		Stored trouble codes:						
- 0	X-LINK / ETH3	4		Sporadic trouble codes:						
	WWH-060	-								
$\leftrightarrow$	ETH / ETH2	0		Vehicle identification number:						
$\langle \rangle$	PC / ETH1	0		Software version:						
	USB	0		Single PID requests:						
	DIN	0		Request delay:						
	DOL OF			Inclinear app 13						

#### 5.4.8 DLT Diagnostic Log and Trace

On the Ethernet ports of the logger and the PC using the PROTOCOLS PlugIn the diagnostic log and trace protocol from AUTOSAR is supported. The DLT protocol is used in the development phase of an ECU. It is assumed to use an external logging- and tracing tool to store the debug information generated by the ECU.

On the DLP interface node the ECU connection IP-address settings and the log level is defined.

General	LT Extende	ed .	
	IP address:	0.0.0.0	
	IP port:	2400	DLT_LOG_DEBUG
	IP port:	000	DLT_LOG_ALL
E	CU identifier:	ECUX	DLT_LOG_OFF
	Log level:	DLT_LOG_DEBUG	DLT_LOG_FATAL DLT_LOG_ERROR
Default	t trace status:		DLT_LOG_WARN DLT_LOG_INFO
			DIT LOG DEBUG
ECU addres	ss and log	level setting	[IM_0_29]

For the measurement, 2 status channels for the communication status and the start trigger are provided. The message channel will record the log information.

V03.00.00.79385 RC			Name	Active	Unit	F
Name	Σ	٩				
			Protocol status			(
A EthernetSystem-1	0		Protocol trigger			1
	0		Message			
- CD DLT-1	0					
Status	0					

Diagnostic Log & Trace on ETH interfaces

# [IM\_0\_30]

#### 5.4.9 IPETRONIK OPC-HVPA0001

On the ETH interface of the data logger a high voltage power analyzer is supported. To establish a communication to the device the IP-address has to be defined. The default IP address of 192.168.10.1.

	HVPA0001-1	1		
$\langle \rangle$	ETH / ETH2	0		
$\langle \cdot \rangle$	PC / ETH1	0		
	USB	10	General	Connection parameters
28	DIN	4		IP address: 0.0.0.0
	DOUT	4		
Ś	AUDIO	0		

In the first stage of implementation 2 measurement channels for current and voltage are supported.

	Name	Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate
٩								
Þ.	Voltage	×	V	-2000,00	2000,00	-2000	2000	1 MHz
	Current	~	A	-2000,00	2000,00	-2000	2000	1 MHz

Measurement channels (Volt & Current)

[IM\_0\_32]

#### 5.4.10 SIEMENS S7 PLC

The Siemens S7 PLC PlugIn from the IPEmotion PC software was implemented for the data logger ETH interfaces too. For the communication to the PLC via TCP/IP protocol is available. You create a PLC interfaces node and can than start the communication to PLC. The interface configuration is more detailed specified in the Siemens PLC PlugIn manual.

File	Project	Signals	Acquisition	Commu	inica	con	4	tobile dis	pay L	ogger scripting	
stem Co	nponent	s Functions Imp	-	Adjust	De	tect	Initial		by Details		
							Name			Symbol	
me				Σ		۴					
Ŧ	CANI	2		0							
+ + + +	CANI	3		0							
Ŧ	CANI	4		0							
	CANI	5		0							
-	CANI	6		0							
$\Theta$	X-LIN	K/ETH3		0							
- 😔		ETH2		0							
100		7 TCP/IP-1	10 U	0							
	24	Inputs		0							
	84	I/O inputs		0							
	82	Outputs		0		G	eneral	Connec	tion paramet	ers	
	20	I/O outputs		0				Active:	4		
	-	Flag		0				Name:	S7 TCP/IP-1	C.	
	0	Timer Counter		0			Der	cription:	S7 with com	munication via TCF	one
		Data blocks		0							
		Status		0			Re	ference:		/ETH / ETH2/IPElo	
()	PC / E			0			C	omment:			
	USB			0			Samo	ling rate:	1 Hz		

#### 5.4.11 Modbus TCP

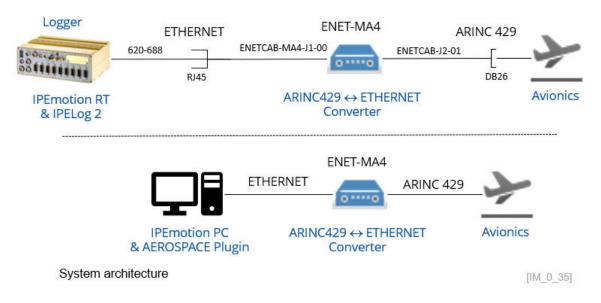
The Modbus TCP protocol on Ethernet and Modbus RTU on the USB port of the logger is supporting the following function codes:

- Function Code 1 Read Coil Status (Add. 0xxxx)
- Function Code 2 Read Input Status (Add. 1xxxx)
- Function Code 3 Read Holding Registers (Add. 4xxxx)
- Function Code 4 Read Input Registers (Add. 3xxxx)

$\langle \cdot \rangle$	X-LINK / ETH3	0			
- (·)	ETH / ETH2	2			
*	Modbus Master	2			
	Modbus Master Devi	1			
	Modbus Master Devi	1	General Connection		
$\langle \cdot \rangle$	PC / ETH1	0	Type:	TCP	
> 💼	USB	10			
	DIN	4	● TCP	IP address:	192.168.234.100
28	DOUT	4		IP port:	502 d
é	AUDIO	0	C RTU over TCP		
3	GPS	6			

### 5.4.12 Aerospace ARINC 429

The ARINC 429 protocol is implemented on all Ethernet interfaces of the data loggers and also available in the Aerospace PlugIn for IPEmotion PC measurement software. To measure data an ARINC to Ethernet converter is required. At this stage of implementation, the eNet-MA4 converter is implemented. The following system architectures using a data logger or the measurement software are supported.



For data loggers the ARINC protocol is a sperate PlugIn installation options which must be activated in the installation process. However also a separate license is required too.

	🛃 IPEmotion - Licensing
Select the components to be installed	License key
v IPEmotion	VYK03-MM00C-KE0DZ-00000-001NS-10004-G0000-00000-00000-0008
+ PEmotionRT.UI	License information:
Plugin Aerospace	Professional-Edition: + Automation
Plugin Demo	+ Macro recording + Control
Quickstarter	+ Climate
Excel Add-In	+ Acoustics + Data service (MDM)
License stick / Dongle	PlugIn
SDK	Leaser 2022 22000505.
Data service	Logger - 2022 - 82900606: + 14 (+4) interfaces
<u> </u>	+ Unlimited storage groups + Protocols
Additional languages	+ Seed & Key-SK8 + Communication
	+ Multimedia
PEmotion 2022 R1 RC Build 82826 (x64)	+ Comfort display + Control
	+ Climate
RINC Installation option	- Aerospace ARINC Licensing option
rarto motandaon option	

When the PlugIn is installed and activated on the data logger, you can create a standard interfaces template for the NET-MA4 interface converter.

💮 X-I	INK / ETH3	0				
4 💮 ET	H/ETH2	0				
a	eNet-MA4(RX and TX)	0				
-	Channel-1	0				
1	Channel-2	0	General	Device Setup		
-	Channel-3	0	Se	erver IP Address:	192, 168, 0, 12	8
-	Channel-4	0				-
-	Channel-5	0		BoardNumber	112	d
	Channel-6	0				
	Channel-7	0				
	Channel-8	0				
RINC 429					IM	0 3

On channel level you can then create the labels you require for measurement.

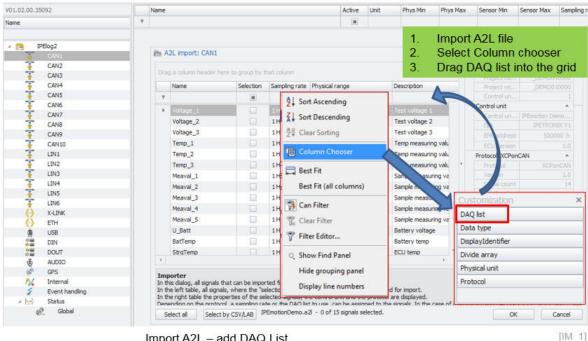
4 6	e e	Net-MA4(RX an	d TX)	0			
	1	Channel-1	1	0			
		Channel-2	E.	Components	ح ک	AA	Label 001 to Label 077 🕨
	-	Channel-3	6	Change into		118	
	- 34	Channel-4	B	Functions		AA	Label 100 to Label 177 🕨
	-	Channel-5	L	Import		-/ v	
	-	Channel-6	4	Export			Label 200 to Label 277 +
	-	Channel-7				-1'.V.	
	1	Channel-8	8	Use as default			Label 300 to Label 377 🕨
( )	PC / E	ETH1	X	Cut	Ctrl+X	1 V	
× 💼	USB		EB	Сору	Ctrl+C	$ \ \$	Custom Label
	DIN		fib	Paste	Ctrl+V	1	
			R4	Paste behind		3	Multiple selection
ame				Delata			

ARINC 429 Labels

[IIM\_0\_38]

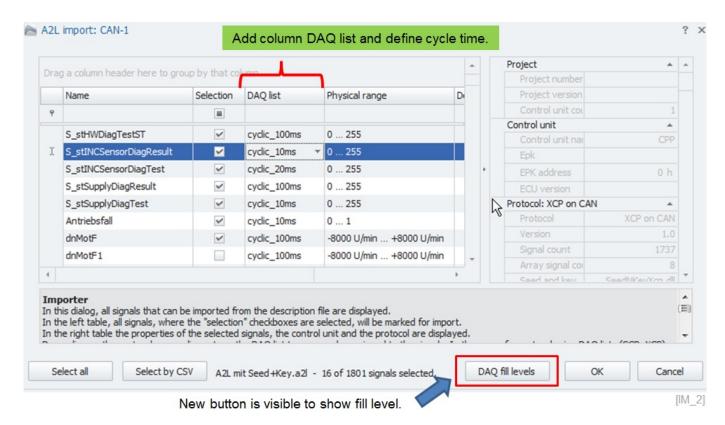
#### A2L import - DAQ list with graphical filling level indication 5.5

Measurements on ECUs can easily reach the performance limits if many measurements are required. With this graphical import and filling level indication overview you can now clearly identify which signals are measured and which signals are rejected. To activate the DAQ list filling level indication, you have to add the DAQ list from the column chooser to your channel grid as shown below.

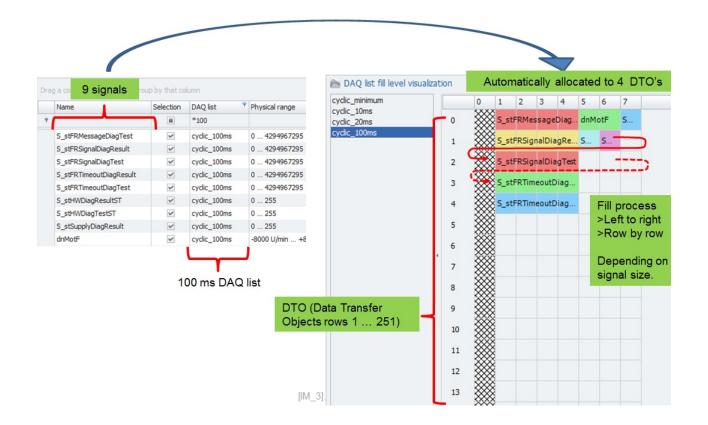


Import A2L - add DAQ List

Then you will see a new button to open the graphical DAQ filling level indication.



When you open the graphical filling level indication you will see how the signals are allocated to the Data Transfer Objects (DTO). The number of supported DTO's is defined by the A2L file. In one DTO row you can have several signals. The color is randomly selected and is a visual aid showing how many byte a signal is utilizing from a DTO.



### 5.5.1 DAQ list filling process

The import dialog fills the DAQ list in an optimized way in order to use as much of the available capacity as possible. The maximum capacity for signal measurement of a DTO is 7 byte for CCP measurements and XCPonCAN. The first byte is used for the address header.

Example 1:

In comparison of you take an A2L file and measure XCPonETH on the Ethernet interface of IPETRONIK aata loggers like M-LOG have a lot more byte capacity on the DTO. The number of available bytes is defined in the A2L file. In the screenshot below you can see the import dialog and the DTO fill level for an XCPonETH measurement with 60 byte capacity on each DTO.

Drag	a column header here to grou	p by that co	lumn										oject Proje	ectinu			MO01														
	Name	Selection	DAQ list	Physic	cal rang	e	0	Desc	ription	1			Proje	ect ver																	
Ŷ														rol un	t c			1													
	Voltage_1	~	100_ms_task	o v	. 996 mV			Test	voltag	e 1		Co	ntrol					*													
	Voltage_2	~	100_ms_task				_	-	voltag				Epk																		
	Voltage_3	~	100_ms_task						voltag									0 h													
	Temp_1	~	DAQ list																												
	Temp_2	~	10_ms_task			0 1	2	3	2 4	1	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
	Temp_3	~	30_ms_task		-		200	885		000																				24	
	Meaval_1	~	100_ms_tas	k .	0		***	***	****	***	Volta	ge_3	Tem	p_1	Tem	p_2	Tem	p_3	V	V	M	М	М	M	M	U	B	St	S		
	Meaval_2	~			1	×××																									
	Meaval_3	~	1						_	_	_	_							_	-	-						-	_	-		J
	Meaval_4	~			2	***																									
	Meaval 5	~			3	***												-													
6					4	***														ple											
n th n th	orter is dialog, all signals that can be e left table, all signals, where i e right table the properties of ending on the protocol, a samp	the "selection the selected	n" si		5 6 7										CF	Pon	hΕΤ	Η:	60	by	tes	by	DT	0							
	elect all Select by CS	V IPEmo			4																										Ŀ

#### Example2:

In the screenshot below you can see that 4 DTOs are used for four 32-bit signals It is not possible to fill 2 signals of 32-bit signals in one 7 byte DTO.

cyclic_minimum			0 1 2 3 4 5 6 7				
cyclic_10ms cyclic_20ms		0	S_stFRMessageDiag	S_stFRMessageDiagResult	~	cyclic_100ms	32-Bit integer unsigned
cyclic_100ms		1	S_stFRMessageDiag	S_stFRMessageDiagTest	~	cyclic_100ms	32-Bit integer unsigned
		2	S_stFRSignalDiagRe	S_stFRSignalDiagResult	~	cyclic_100ms	32-Bit integer unsigned
				S_stFRSignalDiagTest	~	cyclic_100ms	32-Bit integer unsigned
	*	3	S_stFRSignalDiagTest	4 signals <b>32 bit</b> size 4 DTOs are used	e		
		5 6					
		7	***	[IM_5]			

#### Example 3:

In the following example, 3 additional 8-bit signals are activated. Now you can see that the IPEmotion software automatically fills up the 3 empty bytes on the first DTO (Data Transfer Object).

🙈 DAQ list fill level visualizat	tion				×				
cyclic_minimum cyclic_10ms		0 1 2 3 4 5	6 7		-	S_stAutocodingDiagResult	~	cyclic_100ms	8-Bit integer unsigned
cyclic_20ms	0	S_stFRMessageDiag. S	S S			S_stAutocodingDiagTest	~	cyclic_100ms	8-Bit integer unsigned
cyclic_100ms	1	S_stFRMessageDiag				S_stFRMessageDiagResult	~	cyclic_100ms	32-Bit integer unsigned
				1		S_stFRMessageDiagTest	~	cyclic_100ms	32-Bit integer unsigned
	2	S_stFRSignalDiagRe				S_stFRSignalDiagResult	~	cyclic_100ms	32-Bit integer unsigned
	3	S_stFRSignalDiagTest				S_stFRSignalDiagTest	~	cyclic_100ms	32-Bit integer unsigned
						S_stFRTimeoutDiagResult		cyclic_100ms	32-Bit integer unsigned
	4					S_stFRTimeoutDiagTest		cyclic_100ms	32-Bit integer unsigned
	5	XXX				S_stHWDiagResultST	<b>~</b>	cyclic_100ms	8-Bit integer unsigned
	6					- 3 additional signals <b>Optimized</b> filling-u			[IM_6]
	7	****			-	opunized ming-u	h oi e	mpty spaces	on the DTOS.



## Information

The allocation of signals to DTOs is optimized by IPEmotion, internally. It cannot be influenced by users. Some A2L files support the reading of multiple signals from one common DTO address. In this case several signals are allocated to the same DTO address and the mouse over tip text is indicating all channels grouped together in this DTO.

### 5.5.2 DAQ list overflow - rejected signal export

If you activate more channels than the DAQ list is able to support, you can create a list of rejected channels which can be exported to CSV. With the mouse over function you can read the channel names which are included in the DAQ list.

10ms 20ms       0       S_stFRMessageDiag       dnMotF       S         100ms       S_stFRMessageDiag       dnMotF1       S         2       S_stFRSignalDiagRe       iGes       S       S         3       S_stFRSignalDiagRe       iGes       S       S       Mouseover indicates channel name.         4       S_stFRTimeoutDiag       mAnK       S       S       S         6       MILEKM       mAnVorh       S       S       CSV export – rejected sign         9       idvKurvSum       mMotxFp       A       Auschneiden       Saternigen         10       ivHmSum       mMotxFp       A       Auschneiden       Cibioi         11       istemsum       istemsum       Saternigen       F.K. II -	minimum	0	1 2	3 4	5 6	7		
1       S_stFRMessageDiagdnMotFt       S       S       Mouseover indicates channel name.         3       S_stFRSignalDiagTet iGet       S       S.stFNDiagResultST       Mouseover indicates channel name.         4       S_stFRSignalDiagTet iGet       S       S.stFRMeoutDiag.       MANK       S         5       S_stFRTimeoutDiag.       mAnK       S       S       S       S         6       MLLEKM       mAnVorh       S       S       S       S       S         7       TSECCOUREL       mAnVorh       S       S       S       S       S         8       UdvVhSum       mMotSR       R       S       S       S       S         9       UdvUnst.utMobagErrMT       (2 byte)       N       S       S       S         10       VHmSum       mMotSR       R       S       S       S       S         10       VHmSum       MouseSever       Columet and betrage for the fo	_10ms		×					
1       S_stFRImessageDiagdnMotF1       S         2       S_stFRSignalDiagReGes       S         3       S_stFRSignalDiagTet       Ges         3       S_stFRImeoutDiagmAnK       S         4       S_stFRTimeoutDiagmAnK       S         5       S_stFRTimeoutDiagmAnK       S         6       MLEKM       mAnVork         7       TSECCOUREL       mAnVork         8       dvKurvSum       mKuppMin A         9       dvVkimSum       mMotxFp         10       utmSum       mMotxFp         10       utmSum       mMotxFp         W_Dutput_idxDiagErrMT       (2 byte)       FK III         W_Dutput_idxDiagErrMT       (2 byte)       Rejected Signals         W_DiDtPhiCalDiff (2 byte)       Rejected Signals list       W_Output_idxDiagErrMT         W_DiDtPhiCalDiff (2 byte)       Rejected Signals       Ist         W_DiDtPhiCalDiff (2 byte)	_20ms	• ×	S_stFRMe	ssageDiag	dnMotF	S		
3       S_stFRSignalDiagTest       iGet       S       S_stHWDiagResultST       name.         4       S_stFRTimeoutDiag       mAnK       S       S       S       S         5       S_stFRTimeoutDiag       mAnVorh S       S       S       S       S         6       MILEKM       mAnVorh S       TSECCOUREL       mANVorh K.S       S       S         7       TSECCOUREL       mANVorh K.S       S       S       S       S         9       IdvKhruSum       mMotxF       A       S       S       S       S         10       vHimSum       mMotxF       A       S       S       S       S         10       vHimSum       mMotxF       A       S       S       S       S         10       vHimSum       mMotxF       A       S       S       S       S       S         10       vHimSum       mMotxF       A       S       S       S       S       S       S         10       vHimSum       (2byte)       V       Rejected Signals list       W       S       S </td <td>_100ms</td> <td>1</td> <td>S_stFRMe</td> <td>ssageDiag</td> <td> dnMotF1</td> <td>s</td> <td></td> <td></td>	_100ms	1	S_stFRMe	ssageDiag	dnMotF1	s		
3 S_stFRSignalDiagTest iGet S 4 S_stFRTimeoutDiagmAnK S 5 S_stFRTimeoutDiagmAnVorh S 7 TSECCOUREL mAnVorh S 7 TSECCOUREL mAnVorh S 8 divKurvSum mKuppMin A 9 ldvVhSum mMotxFp A 10 vVHmSum mMotxFp A 11 UHmSum mMotxFp A 12 Votput_idxDiagErrMT (2 byte) W_Output_stidxDiagErrMT (2 byte) W_Output_stidxDiagErrMT (2 byte) W_Output_stidxDiagErrMT (2 byte) W_DisMicroCorrOffset (2 byte) W_phiSMisePointCutchOp (2 byte) W_phiSMisePo		2	S_stFRSig	nalDiagRe	iGes	s8	m	Mouseover indicates channel
5       5_stFRTimeoutDiagmAnPu       S         6       MILEKM       mAnVork         7       TSECCOUREL       mAnVork         8       IdvKurvSum       mKuppMin A         9       IdvVhSum       mMotoF         10       VHmSum       mMotoF         11       VHmSum       mMotoF         12       VHmSum       mMotoF         W_Output_idxDiagErrMT       (2 byte)         W_Output_idxDiagErrMT       (2 byte)         W_phiDiePhiCalDiff (2 byte)       Permat UndviseErVoint (2 byte)         W_phiSMSetPoint (2 byte)       V_phiSMSetPoint (2 byte)         W_phiSMSetPointClutchOp       (2 byte)		3	S_stFRSig	nalDiagTe	st iGet	S	S_stHWDiagResultST	name.
6       MILEKM       mAnVorh       S         7       TSECCOUREL       mAnVorh       S         8       idvKurvSum       mKuppMin       A         9       idvVhSum       mMotoGR       R         10       ivHmSum       mMotoFp       A         11       i vHmSum       mMotoFp       A         12       i vHmSum       mMotoFp       A         13       ivHmSum       mMotoFp       A         14       V_Output_idxDiagErrMT       (2 byte)       V         W_Output_idxDiagErrMT       (2 byte)       V       A         W_Output_idxDiagErrMT       (2 byte)       Rejected Signals list       V         W_phiDeltaPhicaDiff       (2 byte)       Rejected Signals list       V         W_phiSMKetPoint       (2 byte)       V       V       V         W_phiSMSetPointCalutchOp       (2 byte)       V       V       V </td <td></td> <td>4</td> <td>S_stFRTin</td> <td>neoutDiag.</td> <td> mAnK</td> <td>S</td> <td></td> <td></td>		4	S_stFRTin	neoutDiag.	mAnK	S		
7       TSECCOUREL       mAnVorhK       S         8       idvKurvSum       mKuppMin A         9       idvVhSum       mMotoGR       R         10       ivHimSum       mMotoFp       A         11       ivHimSum       mMotoFp       A         12       ivHimSum       mMotoFp       A         13       ivHimSum       mMotoFp       A         14       velocitadgerrMT       (2 byte)       Ausschneiden         V_Output_idxDiagErrMT       (2 byte)       Ausschneiden       Calibri         V_Output_idxDiagErrMT       (2 byte)       Ausschneiden       Calibri         V_DicharCorrOffset       (2 byte)       Ausschneiden       Calibri         V_phiSMInit       (2 byte)       Ausschneiden       Ausschneiden         V_phiSMSetPointCal       (2 byte)       Ausschneiden       Ausschneiden         V_phiSMSetPointClutchop       (2 byte)       Ausschneiden       Ausschneiden         V_phiSMSetPointClutchop       (2 byte)       Velocitadie       Auschneiden         V_phiSMSetPointClutchop       (2 byte)       Velocitadie       Weinbilden         V_phiSMSetPointClutchop       (2 byte)       Velocitadie       Velocitadie		5	S_stFRTin	neoutDiag.	mAnPu	S		
8       idvKurvSum       mKuppMin A         9       idvVhSum       mMotxGR         10       ivHmSum       mMotxFp A         11       ivHmSum       mMotxFp A         12       ivHmSum       mMotxFp A         13       ivHmSum       mMotxFp A         W_Output_idxDiagErrMT       (2 byte)         W_Output_idxDiagErrST       (2 byte)         W_DiblethPrisMinit       (2 byte)         W_phiCharCorrOffset       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMSetPoint       (2 byte)		6	MILEKM		mAnVorh	S		
9       idvVhSum       mMotGR       R         10       ivHmSum       mMotxFp       A         11       i vHmSum       mMotxFp       A         11       v.Output_idxDiagErrMT       (2 byte)         W_Output_idxDiagErrMT       (2 byte)         W_output_stidxDiagErrMT       (2 byte)         W_phiDHeatPhisMInit       (2 byte)         W_phiSMsetPointCal       (2 byte)         W_phiSMsync       (2 byte)         W_phiSMsync       (2 byte)         W_phiSMsetPointCal       (2 byte)         W_phiSMsetPointCal       (2 byte)         W_phiSMsync       (2 byte)         W_phiSMsetPointCal       (2 byte)         W_phiSMsetPointCal       (2 byte)         W_phiSMsetPointCal       (2 byte)         W_phiSMsetPointCal       (2 byte) <t< td=""><td></td><td>7</td><td>TSECCOU</td><td>REL</td><td>mAnVorh</td><td>&lt; s</td><td></td><td></td></t<>		7	TSECCOU	REL	mAnVorh	< s		
9 widvVhSum mMotGR R 10 wHmSum mMotxFp A 11 wHmSum mMotxFp A 11 wHmSum mMotxFp A 11 wHmSum mMotxFp A 11 wLi vHmSum mMotxFp A 11 wLi vHmSum mMotxFp A 11 wLi vHmSum mMotxFp A 12 wLoutput_idxDiagErrMT (2byte) W_Output_idxDiagErrMT (2byte) W_Output_stidxDiagErrMT (2byte) W_ohiCharCorrOffset (2byte) W_ohiSMStelPoint (2byte) W_ohiSMSetPoint(2byte) W_ohiSM		8	k idvKurvSu	m	mKuppMi	n A		
10       ivHmSum       mMobxFp       A         11       ivHmSum       mMobxFp       A         Rejected signals:       MobxFp       A         W_Output_idxDiagErrMT       (2byte)         W_Output_stidxDiagErrMT       (2byte)         W_Dutput_stidxDiagErrMT       (2byte)         W_DibharCorrOffset       (2byte)         W_phiDeltaPhiSMInit       (2byte)         W_phiSMStrint       (2byte)         W_phiSMsetPoint (2byte)       Rejected Signals list         W_phiSMsetPoint(2byte)       (2byte)         W_phiSMsetPoint(2byte)       (2byte)         W_phiSMsetPoint(2byte)       (2byte)         W_phiSMsetPoint(2byte)       (2byte)         W_phiSMsync       (2byte)         W_phiSMsync       (2byte)         W_phiSMstrint       (2byte)         W_phiSMsync       (2byte)         W_phiSMsync       (2byte)         W_phiSMsync       (2byte)         W_phiSMstrint       (2byte)         W_phiSMstrint       (2byte)         W_phiSMstrint       (2byte)         W_phiSMstrint       (2byte)         W_phiSMstrint       (2byte)         W_phiSMstretointCluthoop       (2byte)		. *	×.					CSV export – rejected sign
11       MotyF       Ausschneiden       Calibri         Rejected signals: <ul> <li>W_Output_idxDiagErrMT</li> <li>(2 byte)</li> <li>W_Output_stidxDiagErrMT</li> <li>(2 byte)</li> <li>W_output_stidxDiagErrMT</li> <li>(2 byte)</li> <li>W_ohiDeltaPhiSMInit</li> <li>(2 byte)</li> <li>W_ohiSMSetPointClutchOp</li> <li>(2 byte)</li> <li>W_ohiSMSetPoint</li> <li>(2 byte)</li> <li>W_ohiSMSetPoint</li> <li>(2 byte)</li> <li>W_ohiSMSetPoint</li> <li>(2 byte)</li> <li>W_ohiSMSetPoint</li> <li>(2 byte)</li> <li>(3 w_ohiSMSetPoint</li> <li>(4 w_ohiSMS</li></ul>		, ° 💥			MMOTOR	R		🗶 🛃 🖤 • (° • ) =
11       Calibri         Rejected signals:       Kopieren *         W_Output_idxDiagErrMT       (2 byte)         W_Output_stidxDiagErrMT       (2 byte)         W_Output_stidxDiagErrMT       (2 byte)         W_Output_stidxDiagErrMT       (2 byte)         W_DhiDletaPhiSMInit       (2 byte)         W_phiDletaPhiSMInit       (2 byte)         W_phiSMSetPoint(2 byte)       W_phiSMSetPoint(2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSetPoint       (2 byte) <td></td> <td>10</td> <td>× ivHmSum</td> <td></td> <td>mMotxFp</td> <td>A</td> <td></td> <td>Datei Start Einfügen Seitenlayout</td>		10	× ivHmSum		mMotxFp	A		Datei Start Einfügen Seitenlayout
Rejected signals:       K 里 →         W_Output_idxDiagErrMT       (2 byte)         W_Output_idxDiagErrMT       (2 byte)         W_Output_stidxDiagErrMT       (2 byte)         W_DhiDeltaPhiSMInit       (2 byte)         W_DhiDitPhiCalDiff       (2 byte)         W_DhiSMSetPoint (2 byte)       Rejected Signals list         W_DhiSMSetPoint(2 byte)       W_DhiSMSetPoint(2 byte)         W_DhiSMSetPoint(2 byte)       (2 byte)         W_DhiSMSetPoint (2 byte)       (2 byte)         W_DhiSMSetPoint(2 byte)       (2 byte)         W_DhiSMSetPoint       (2 byte)         W_DhiSMSetPoint       (2 byte)         W_DhiSMSetPoint       (2 byte)		×	×.				-	Ausschneiden Calibri
Rejected signals:       Zwischenablage       Sch         W_Output_idxDiagErrMT       (2 byte)         W_Output_stidxDiagErrMT       (2 byte)         W_Output_stidxDiagErrMT       (2 byte)         W_phiCharCorrOffset       (2 byte)         W_phiDitPhiCalDiff       (2 byte)         W_phiSMInit       (2 byte)         W_phiSMEtPoint       (2 byte)         W_phiSMSetPoint(2 byte)       W_phiSMSetPoint(2 byte)         W_phiSMSsetPoint(2 byte)       W_phiSMInit         W_phiSMSync       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMInit       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMInit       (2 byte)         W_phiSMSetPointCal       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMErPoint       <		11 00	Ai vHmSun	۱ ۲	mMotyF	4		Copieren *
W_Output_idxDiagErrMT       (2 byte)         W_Output_idxDiagErrST       (2 byte)         W_Output_stidxDiagErrST       (2 byte)         W_DhiDeltaPhiSMInit       (2 byte)         W_phiDeltaPhiSMInit       (2 byte)         W_phiSMS(2 byte)       W_output_stidxDiagErrST         W_phiSMS(2 byte)       W_phiSMSetPoint         W_phiSMSetPoint(2 byte)       W_phiSMSetPoint(2 byte)         W_phiSMSetPoint(2 byte)       (2 byte)         W_phiSMsetPoint       (2 byte)         W_phiSMsetPoint       (2 byte)         W_phiSMsetPoint       (2 byte)		Rejected sign	als:					<ul> <li>Format übertragen</li> </ul>
W_Output_idxDiagErrST (2 byte) W_Output_stidxDiagErrST (2 byte) W_Output_stidxDiagErrST (2 byte) W_phiCharCorrOffset (2 byte) W_phiSMSitPoint (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint(2 byte) W_phiSMSetP			D:	(2)				
W_Output_stldxDiagErrMT (2 byte) W_Output_stldxDiagErrST (2 byte) W_phiCharCorrOffset (2 byte) W_phiDltPhicalDiff (2 byte) W_phiSMSnit (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPointCal (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint (2 byte) W_phiSMSetPoint (2 byte)							<u>^</u>	B5 ▼ (* <i>f</i> x
W_phiCharCorrOffset       (2 byte)         W_phiDeltaPhiSMInit       (2 byte)         W_phiDItPhiCaDiff (2 byte)       (2 byte)         W_phiSM(2 byte)       (2 byte)         W_phiSMS(2 byte)       (2 byte)         W_phiSMSetPoint (2 byte)       (2 byte)         W_phiSMSetPoint(2 byte)       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMSetPoint       (2 byte)								
W_phiDeltaPhiSMInit       (2 byte)         W_phiDItPhiCalDiff       (2 byte)         W_phiSMInit       (2 byte)         W_phiSMInit       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMSetPointCal       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMIt       (2 byte)								
W_phiDltPhiCalDiff (2 byte)       Rejected Signals list       3       W_output_stidxDiagErrMT         W_phiSM(2 byte)       W_phiSMstrit       (2 byte)       5       W_phiCharCorrOffset         W_phiSMsetPointCal       (2 byte)       6       W_phiDltPhiCalDiff       8         W_phiSMSetPointClutchOp       (2 byte)       9       W_phiSMSetPoint       8         W_phiSMsetPoint       (2 byte)       9       W_phiSMSetPoint       10         W_phiSMsetPoint       (2 byte)       10       W_phiSMsetPoint       10								
W_phiSM (2 byte)       W_phiSMInit       (2 byte)         W_phiSMSetPoint (2 byte)       W_phiSMSetPointCal       (2 byte)         W_phiSMSetPointCal       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)					=)			
W_phiSMInit       (2 byte)         W_phiSMSetPoint       (2 byte)         W_phiSMSetPointCal       (2 byte)         W_phiSMSetPoint       (2 byte)				.ej		Reje	ected Signals list	
W_phiSMSetPoint (2 byte)       5       W_phiCharCorrOtSet         W_phiSMSetPointCal       (2 byte)       6       W_phiDeltaPhiSMInit         W_phiSMSetPointClutchOp       (2 byte)       7       W_phiDeltaPhiSMInit         W_phiSMSync       (2 byte)       7       W_phiSMSync         W_phiTouch       (2 byte)       9       W_phiSMSInit         10       W_phiSMSetPoint       10       W_phiSMSetPoint				e)				
W_phiSMSetPointCal       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         W_phiSMSync       (2 byte)         W_phiSMSetPointClutchOp       (2 byte)         U       (2 byte)								
W_phiSMSync     (2 byte)       W_phiSMSync     (2 byte)       9     W_phiSMInit       10     W_phiSMSetPoint       10     W_phiSMSetPoint					2)			
W_phiTouch (2 byte) 9 W_phiSMInit 10 W_phiSMSetPoint		W_phiSMSet	PointClutchO	p (2 byte	e)			7 W_phiDltPhiCalDiff
10 W_phiSMSetPoint		W_phiSMSyn						8 W_phiSM
		W_phiTouch	(2 by	te)				9 W_phiSMInit
Except selected sized server as CCV III W phiSMSetPointCal								10 W_phiSMSetPoint
		1	Evenet	a stad sizes		CV	TIN .	11 W phiSMSetPointCal

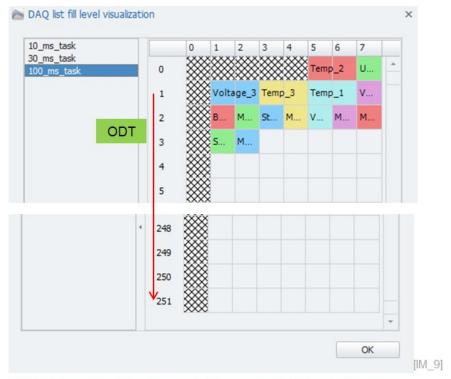
# 5.6 Edit A2L dynamic DAQ list ODT values during the import

When you import an A2L file for dynamic DAQ list measurements e.g. for XCPonCAN on your ECU the import dialog considers by default the maximum ODT count = 252. (ODT = Object Descriptor Table). The DAQ list fill level calculation is based on the default assumption that the 252 ODT can be serviced by the ECU.

In practice the user tend to overload the dynamic DAQ list why adding to many ODT. This problem can be solved in the way that the user can define in the import dialog the appropriate values for the MAX ODT and MAX ODT entries to calculate the fill level correctly.

Name         Selection         DAQ list         Physical range         Number         2           DAO bype         TimeSync		a a column boads	r here to group	by that column				1/60 (theoretical limit)	^
Name       Selection       DAQ tyst       Physical range         Voltage_1       Image       Image       DAQ type       TimeSync         Voltage_1       Image       Image       Image       Image       Image         Voltage_1       Image       Image       Image       Image       Image         Voltage_2       Image       Image       Image       Image       Image         Voltage_3       Image       Image       Image       Image       Image       Image         Voltage_3       Image       Image       Image       Image       Image       Image       Image         Voltage_3       Image       Image       Image       Image       Image       Image       Image       Image         Temp_1       Image       Image </th <th></th> <th>g a column neade</th> <th>a nere to group</th> <th>by that column</th> <th>_</th> <th></th> <th>100_ms_task</th> <th><u>^</u></th> <th></th>		g a column neade	a nere to group	by that column	_		100_ms_task	<u>^</u>	
Voltage_1       Image: Constraint of the second secon		Name	Selection	DAQ list	Physical range			2	
Voltage_1       ✓       100_ms_task       0 V 996 mV         Voltage_2       ✓       100_ms_task       0 V 996 mV         Voltage_3       ✓       100_ms_task       0 V 996 mV         Voltage_3       ✓       100_ms_task       -10 V +9,999 V         Temp_1       ✓       100_ms_task       0 °C 255,996 °C         Temp_2       ✓       100_ms_task       -60 °C +1370 °C         Temp_3       ✓       100_ms_task       -20 °C +107,998 °C         Meaval_1       ✓       100_ms_task       0 m/s² 127,5 m/s²         Meaval_2       ✓       100_ms_task       0 m/s² 100 m/s²	q								
Voltage_2       Image: Constraints       0 V 996 mV         Voltage_3       100_ms_task       -10 V +9,999 V         Temp_1       100_ms_task       0 °C 255,996 °C         Temp_2       100_ms_task       -60 °C + 1370 °C         Temp_3       100_ms_task       -20 °C + 107,998 °C         Meaval_1       100_ms_task       0 m/s² 127,5 m/s²         Meaval_2       100_ms_task       0 m/s² 100 m/s²		Voltage 1		100 ms task	0 V 996 mV			✓	J
Voltage_1       Image_1       Image_2       Imagee_2       Imag				and the second se		_			
Voltage_3       Io0_init_task       100 vii +9,999 v       Io0         Temp_1       Io0_ms_task       0 °C 255,996 °C       Io0         Temp_2       Io0_ms_task       -60 °C +1370 °C       Io0         Temp_3       Io0_ms_task       -20 °C +107,998 °C       Max ODT       20 (ignored)         Meaval_1       Io0_ms_task       0 m/s² 127,5 m/s²       NoValue timeout       0         Meaval_2       Io0_ms_task       0 m/s² 100 m/s²       Io0 m/s²       Io0 m/s²						_			
Temp_1       ✓       100_ms_task       0 °C 255,996 °C         Temp_2       ✓       100_ms_task       -60 °C +1370 °C         Temp_3       ✓       100_ms_task       -20 °C +107,998 °C         Meaval_1       ✓       100_ms_task       0 m/s² 127,5 m/s²       Max ODT       20 (ignored)         Meaval_2       ✓       100_ms_task       0 m/s² 100 m/s²       Fill level       Incalculable						•			
Temp_3       Image: 100_ms_task       -20 °C +107,998 °C       Max OD1       20 (gnored)         Meaval_1       Image: 100_ms_task       0 m/s² 127,5 m/s²       Max OD1       Max OD1       0 m/s²         Meaval_2       Image: 100_ms_task       0 m/s² 100 m/s²       Image: 100 m/s²       0 m/s²       Image: 100 m/s²       0 m/s²		Temp_1	~	100_ms_task	0 °C 255,996 °C				
Temp_3         ✓         100_ms_task         -20 °C +107,998 °C         Max ODT entries         7 (ignored)           Meaval_1         ✓         100_ms_task         0 m/s² 127,5 m/s²         NoValue timeout         0           Meaval_2         ✓         100_ms_task         0 m/s² 100 m/s²         Fill level         incalculable ····		Temp_2	~	100_ms_task	-60 °C +1370 °C		Max ODT	20 (ignored)	1
Meaval_1       Image: Ima		Temp_3	~	100_ms_task	-20 °C +107,998 °C				F
Fill level incalculable		Meaval_1	~	100_ms_task	0 m/s <sup>2</sup> 127,5 m/s <sup>2</sup>			0	-
· · · · · · · · · · · · · · · · · · ·		Meaval_2	~	100_ms_task	0 m/s <sup>2</sup> 100 m/s <sup>2</sup>		Prescaler	1	
							Fill level	incalculable ····	
							- C - C - C - C - C - C - C - C - C - C	8.70 e 11:03	
	his	value determines	s the maximum n	umber of OTDs (Object	ct Descriptor Table) in the DAQ li	st.			
his value determines the maximum number of OTDs (Object Descriptor Table) in the DAQ list.									-

Dynamic DAQ list setting: Where the MAX ODT values are not considered (ignored) for fill level calcualtion.



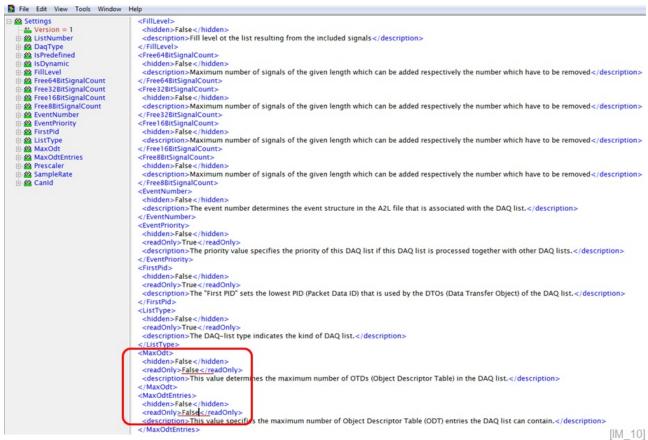
252 ODT's are considered as availabel capacity for fill level calcualtion.

If you now like to calculate the DAQ list fill level correctly you must correct the values for **MAX ODT** and **MAX ODT Entries**. In order to do this you can take a template file from the following directory:

C:\ProgramData\IPETRONIK\IPEmotion 2022 R1\Template\DaqListXcpCan.xml

This file has to be transferred into the following directory:

C:\ProgramData\IPETRONIK\IPEmotion 2016 R1 RC\UserSettings \DaqListXcpCan.xml



Change the value from "True" into "False" to make the field editable.

You need to close IPEmotion and edit the XML file and set the values for Max ODT and max ODT Entries for read only into "FALSE".

With this setting in the XML file you are able to modify the ODT setting in the import dialog.

						space for sz-bic:	ta (nisorencer innit)
ra	g a column heade	r here to group	by that column			Space for 16-bit :	58 (theoretical limit)
_	Name	Selection	DAQ list	A Physical range		Space for 8-bit si	136 (theoretical limit)
9						100_ms_task	
					_	Number	2
•	Voltage_1	~	100_ms_task			DAQ type	TimeSync 🔻
	Voltage_2	~	100_ms_task	0 V 996 mV		Dynamic	✓
	Voltage_3	~	100_ms_task	-10 V +9,999 V		Event number	2
	Temp_1	~	100_ms_task	0 °C 255,996 °C		Priority	96
	Temp_2	~	100_ms_task	-60 °C +1370 °C		First PID	40
	Temp_3	~	100_ms_task	-20 ℃ +107,998 ℃		Sampling rate	10 Hz
						List type	DAQ
	Meaval_1	4	100_ms_task	0 m/s <sup>2</sup> 127,5 m/s <sup>2</sup>		Max ODT	10
	Meaval_2	~	100_ms_task	0 m/s <sup>2</sup> 100 m/s <sup>2</sup>		Max ODT entries	1
	Meaval_3	~	100_ms_task	0 m/s <sup>2</sup> 127,5 m/s <sup>2</sup>		NoValue timeout	0
	Meaval_4	~	100_ms_task	0 m/s <sup>2</sup> 100 m/s <sup>2</sup>		Prescaler	1
						Fill level	19 of 66 Bytes (28, ···

Editable fields for user defined ODT count. [IM\_11]

In the example above the MAX ODT count was set to 10 and the fill level calculation is now considering this value.

10_ms_task		0	1	2	3	4	5	6	7
30_ms_task 100_ms_task	0		***	***	***	***	Temp	_2	U
	1		Volta	age_3	Temp	_3	Temp	_1	V
	2		В	м	St	М	v	м	м
	3		s	м					
ODT count is	4								
ser definition.	6								
	7								
	8								
	9								

#### 5.6.1 A2L Import for array signals

The A2L import is supporting array signals. Array signals are basically grouping several measurements together to one channel. In order to import the array signals you need to add in the import dialog from the column chooser the field "**Divide array**" to the channel grid.

Drag a column header here to group by that column       Project         Name       Selection       Sampling rate       Physical ranne       Description         ?       Image: Column header here to group by that column       Image: Column header here to group by that column       Project m         ?       Image: Column header here to group by that column       Image: Column header here to group by that column       Project m         Project m       Image: Column header here to group by that column       Image: Column header here to group by that column       Project m         Project m       Image: Column header here to group by that column       Image: Column header here to group by that column       Project m         DLAHISATO       Image: Column header here to group by that column       Image: Column header here to group by that column       Control unit         DLAHISATU       Image: Column header here to group by that column       Image: Column header here to group by that column       Control unit         DLAHISATU       Image: Column header here to group by that column       Image: Column header here to group by that column       Control unit         DLAHISATU       Image: Column header here to group by that column       Image: Column header here to group by that column       Project m         Idahisa       Image: Column header here to group by that column       Image: Column header here to group by that column       Project m	ersi _716G6508 nit 1	
♥     ■     Image: Control up       DLAHISATO     1Hz     -0,05 - 2X     Sort Ascending       DLAHISATU     1Hz     -0,05 - 2X     Control up       DLAHISATU     1Hz     -0,05 - 2X     Clear Sorting       diahisa     1Hz     -0,05 - 2X     Clear Sorting       ladiff_u     1Hz     -0,05     - Control up	it 1	
DLAHISATO       1 Hz       -0,05       \$\$\vee \$\vee\$ Sort Descending       nze für dl       Control unit         DLAHISATU       1 Hz       -0,05       \$\$\vee \$\vee\$ Clear Sorting       nze für dl       Control unit         DLAHISATU       1 Hz       -0,05       \$\$\vee\$ Clear Sorting       nze für dl       Epk         dlahisa       1 Hz       -0,05       \$\$\vee\$ Clear Sorting       EPK addro       EPK addro         ladiff_u       1 Hz       -0,25        Baet Eit       Edung Li       ECU versite	*	
DLAHISATO     1 Hz     -0,05 X <sup>+</sup> sort Descending     hze für dl     Control u       DLAHISATU     1 Hz     -0,05 2 <sup>+</sup> Clear Sorting     nze für d     Epk       dlahisa     1 Hz     -0,05 1 <sup>+</sup> Column Chooser     SHt Sign     EPK addr       ladiff_u     1 Hz     -0,25     Enter Eit     ECU version		
DLAHISATU     1 Hz     -0,05 - 2 <sup>+</sup> Clear Sorting     nze für d     Epk       dlahisa     1 Hz     -0,05 - 1 <sup>+</sup> Column Chooser     SHI Sign     EPK addre       ladiff_u     1 Hz     -0,25     Rest Eit     Edung Li     ECU version	vit ME92	
dlahisa     1Hz     -0,05     Ili Column Chooser     SH# Sign.     EPK addr.       ladiff_u     1Hz     -0,25     Ili Column Chooser     SH# Sign.     ECU version		
ladiff_u 1Hz -0,25 Rest Eit		
Rest Fit		
lamsam_u I Hz -0,25		
	CCP	
kva_korr 1 Hz -0,128 % Can Filter aktor fu		
dlahi_u 1Hz -0,0625 📡 Clear Filter stetig		
A0 1Hz -0,0625 Tilter Editor hgsfunk DAQ list		
A1 1Hz -0,0625 hgsfunk Data type		
A2 1 Hz -0,0625 Hide grouping panel ngsfunk DisplayIdentifier		
dlaso 1 Hz -0,03125 Display line numbers ert Lan		
Divide array		
Physical unit		
nporter this dialog, all signals that can be imported from the description file are displayed. Protocol		

Select "Divide Array" column.

[IM\_13]

When the array column is included in the channel grid, you can activate the check boxes which include array signals.

-	g a column header		handland and some				Project	*
Ura	g a column rieader	nere to group	by that column				Project numb	_716G650B
	Name	Selection	Sampling rate	Divide array	Physical range 🔺	Descrip	Project versi	_716G650B
9						-	Control unit	1
	UDKP 1VOMI		1 Hz		-5,00409 V 0 V	min	Control unit	*
	KRDWKLA		1 Hz		-6 Grad KW +6 Grad KW	Der	Control unit I	ME92
T	C		1Hz				Epk	
Y	Vsa_adp_fl	~			-6,4 Grad KW +6,35 Gra		EPK address	0 h
	Vse_adp_fl	~	1 Hz		-6,4 Grad KW +6,35 Gra	Flai	ECU version	basisme9
	dkhc_w		1 Hz		-6,125 1/s +6,12481 1/s	Eing	Protocol: CCP	*
	FZAB2		1 Hz		-8 +7,938 -	Ver	Protocol	CCP
	dlam_w		1 Hz		-8 +7,99976 -	del	Version	2.1
	flub1_w		1 Hz		-8 +7,99976 -	Mit	Signal count	11174
	flub2 w		1 Hz		-8 +7,99976 -	Mit -	Array signal Seed and ke	625
4			1.000		J	•	CAN baudrat	500 kBd
this the the	right table the pro	als, where the operties of the	"selection" check selected signals,	boxes are select the control unit	are displayed. ted, will be marked for import. t and the protocol are displayed. he assigned to the signals. In the	e rase of a	protocol using D&O lists	

After the import the array signals are all listed and available for measurement.

	8 👬 8 X 🖪 🖍	i 🔒	🕒 🗙 🕅 🖍		00
File Project	Signals Acquisition	View	Data manage	er Anal	lysis I
Protocols	System Components Fund	tions Impo	rt Export Check	Adjust De	etect Initia
Hardware		Configuration	i	÷ [	* • Acc
V01.03.00.38871RC=			Name	Active	Unit
Name		Σ	9		
			Vse_adp_fl[0]		Grad KW
🔺 📋 Leaf-1		5	Vsa_adp_fl[0]	~	Grad KW
4 🛉 CAN-1		5	Vsa_adp_fl[1]	~	Grad KW
4 📾 ME92		5	Vsa_adp_fl[2]	Image: A start and a start	Grad KW
	16G650B_500k - DAQ_Arry	5	Vsa_adp_fl[3]		Grad KW
0	Polling	0			
8	Polling 2 Polling 3	0	All array signa	ls are visi	ble and
8	Polling 4		available for m	easurem	ent.
Ö	time synchronous event	0			
Ö	time synchronous event	5			
Ö	segment synchronous ev	0			
					IM 15

[IM\_15]

When the A2L file includes array signals you can import specific signals with a CSV file selection. The standard process is that the complete array is imported. However, if you like to import only specific signals from the array the CSV file selection is only possibility. In the CSV file you define array signal name and the ID in brackets.

						Bit.cou	unt:		32	-	
ag a col	umn header here to g	group by that co	lumn			Start	bit				
Name		Selection	Sampling rate	Divide array	Physical range	Bit ma	sk	FF	FFFFFF h		
r						Physic	cal minimum		0		
Array	/Messstelle		1 Hz		0 4294970000		al maximun	n – 45	294970000		
homento	Messstelle2		1 Hz		0 4294970000	Unit					
10000	aleMessstelle		1Hz		0 4294970000	Pactor			0		
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						united at	-le-				
						Array	size		28	-	
						Abure	405		1000480 N	-	
						Addre	ss extensio	n	0 h		
the left		ere the "selection	om the description n° checkboxes are rayMessstelle.a2l	e selected, w	I be marked for import.			ок	Cancel		
the left Select al Automat	table, all signals, whe I Select by CSV isches Speich m C Start Einfüger	re the selection //LAB ZZZ_Arr	n" checkboxes are	e selected, w	I be marked for import.						
the left   Select al	table, all signals, whe I Select by CSV isches Speich m Start Ehfüger	ILAB ZZZ_Arr	n" checkboxes are	e selected, w	I be marked for import.			ок		Active	
the left   Select al Automat atei	table, all signals, whe I Select by CSV isches Speich m C Start Einfüger	re the selection //LAB ZZZ_Arr	n" checkboxes are	e selected, w	I be marked for import.	Σ	9				l
the left   Select al Automat itei	table, all signals, whe I Select by CSV isches Speich m Start Ehfüger	n Sei	n" checkboxes are ayMessstelle.a2l	e selected, w	I be marked for import.	Σ	• •			Active	l
the left   Select al Automat itei	table, all signals, whe Select by CSV isches Speich m Start Einfügen Calori F K U F K U S I - S	n Sei 11 1 ~ A^ ~ A	Name	e selected, w	I be marked for import.		÷	Name Protocol status	5	Active	
the left : Select al Automat itei fügen [ Chenabla	table, all signals, whe Select by CSV isches Speich m Start Einfügen Calori F K U F K U S I - S	n Sei 11 1 ~ A^ ~ A	n" checkboxes are ayMessstelle.a2l	e selected, w - 0 of 37 sig IPElog2	ill be marked for import.	Σ 101	• •	Name Protocol status Protocol trigger	5 F	Active	
the left Select al Automat itei	table, all signals, whe Select by CSV isches Speich m Start Einfügen Calori F K U F K U S I - S	n Sei 11 1 ~ A^ ~ A	Name	PElog2	il be marked for import.	<b>101</b> 3	÷	Name Protocol status Protocol trigger ArrayMessstelle	s r e[0]	Active	
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the left Select al Automat atei Gugen Chenabla ArrayM ArrayM	table, all signals, whe Select by CSV isches Speich m Start Einfüger Calbri T F K U S ← F K U S ← Schri A	re the "selector //LAB ZZZ_Arr N Sei 11 2 A 3 A 4 A 3 A 4 A 5 A 5 A 5 A 5 A 5 A 5 A 5 A 5	Name	IPElog2 CAN1 IPE EC	ill be marked for import. inals selected. 20 ZZZ_ArrayMessstelle 5 Status	101 3 3	÷	Name Protocol status Protocol trigger ArrayMessstelle ArrayMessstelle	5 F e[0] e[3]	Active	

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### 5.6.2 A2L import with additional FlexRay parameters import

For FlexRay measurements you need to create a FlexRay interface. For IPEmotion RT and PC based FlexRay measurements a FlexRay Satellite Interface is available.

X 0 0

Data manager

# IPEmotion Protocols PlugIn

Signals

Project

File

1 4 8 8 4 C X N N C 1 B

# Add FlexRay Satellite interface

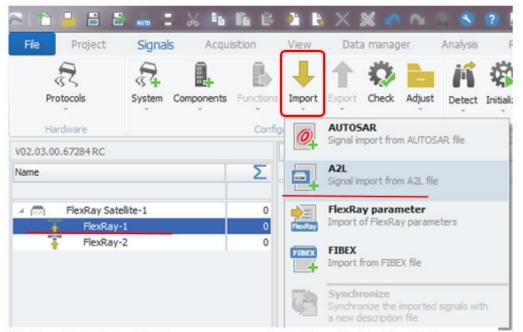
IPEmotion	RT	logger

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Analysis	File	Project		Signals	1	Acquisitio	on	Con	nmun	ication	Mo	obil
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A				Configura	tion						Access	
Active Uni	V01.02.00	0.35092					Name					
1	Name											
2	4 18	IPElog2										
atellite	7	CAN1										
	1	CANZ	(									
atellite	7	CAN3										
	1	CAN4										
	1	CANS										
	1	CAN6										
	1	CAN7										
	1	CANS										
	1	CAN9										
	1	CAN1	0									
	1	LIN1										
	4	LIN2										
	4	LIN3										
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				Constanting Party of the			1		Flex	Ray Sal	teilite	
			Tites	Paste		Ctrl+V						
			<b>胎</b>	Paste Paste beh	ind	Ctrl+V	1	1		de est	ction	J



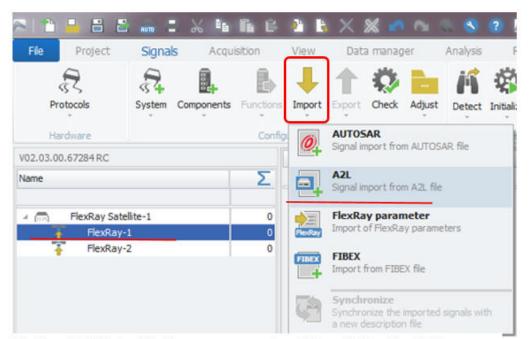
Acquisition

View



FlexRay Satellite for FlexRay measurement on PC and IPEmotion RT loggers. [IM\_16]

When you have an A2L description file for a FlexRay protocol measurement and the A2L is not including any FlexRay parameter the import process will open automatically a file open dialog to load the parameter file.



FlexRay Satellite for FlexRay measurement on PC and IPEmotion RT loggers. [IM\_16]

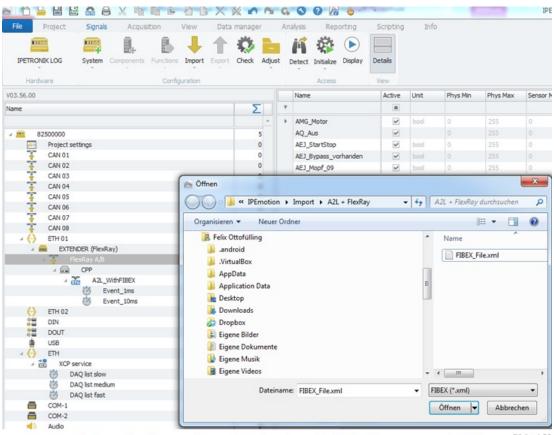
Import dialog to select the FlexRay signals.

	a column header here ti	aroun by t	hat column				Command timeout	2			
							Waiting time after erro	0			
	Name	Selection	Sampling rate	Physical range	Description		FlexRay Version	1.			
٩					*		FlexRay Cluster ID.	Cluster			
	AEJ_Bypass_vorhan	~	100 Hz	0 bool 1 bool	AEJ_Bypa:		FIBEX File name	LabNet_2.1_2010-06-23			
	AEJ_Mopf_09	~	100 Hz	0 bool 1 bool	AEJ_Mopf		11	1000.0			
	AEJ_StartStop	~	100 Hz	0 bool 1 bool	AEJ_Start		NAX	13			
	AMG_Motor	~	100 Hz	0 bool 1 bool	AMG_Moto	1	FlexRay Header Forma FlexRay Packet Alignm	NAX Fill2 Lengt 4 Byt			
	AQ_Aus	~	100 Hz	01			DAQ lists	T DY			
I	ARV_erlaubt	~	100 Hz	-3,4028234663			Event_1ms				
	Abschalten_durch_P		100 Hz	0 1	Messwert		Number	6451			
	AbsenkDisable		100 Hz	0 bool 1 bool	Messwert					DAQ type	TimeSync 1
	Akt elektrischerfehler		100 Hz	01	skaliert vo		Dynamic	~			
					•		Event number				
	rter			=							
	dialog, all signals that car left table, all signals, whe										

Import dialog to select the XCPonFlexRay signals. Link to the FlexRay pamater XML file for Ecu communication.

[IM\_17]

When the FlexRay parameter file as defined in the A2L is not available a second import dialog will be opened automatically.



Automatically new import dialog to select FlexRay parameter file. [M\_18]

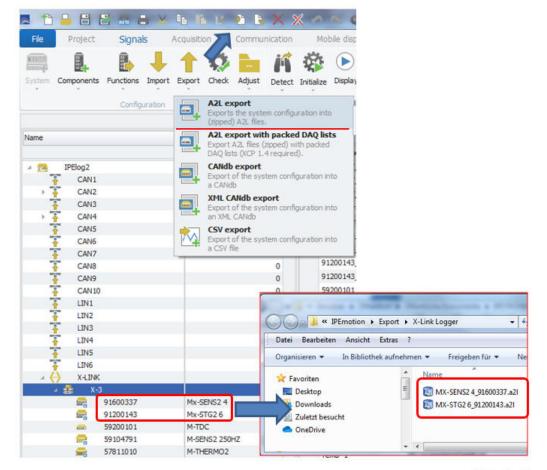
New dialog, to select FlexRay parameters.

	Name	Description	Reference
9			
	XCPMaster_LabNet		XCPMaster_LabNet
•	XCPSlave_LabNet		XCPSlave_LabNet
			OK Cance

Select FlexRay parameters for ECU communication. [IM\_19]

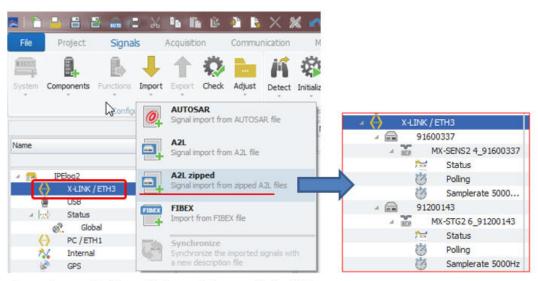
#### 5.6.3 A2L import from zip files (X-Modules)

When X-Modules are configured on the ETH interface in the of the logger or on the PC with the IPETRONIK PlugIn X the export function is creating one ZIP file which includes all A2L files of each X-Module. The dedicated import of A2L ZIP format is then automatically importing all A2L files to create the configuration. On the activated channels are included in the A2L file.



Export of multiple X-Modules in one ZIP file

[IM\_19\_1]



Import one zip file which contains multiple A2L

[IM\_19\_2]

#### 5.6.4 XCP and CCP with Seed & Key with SKB licensing

For the ECU measurements over the XCP and CCP protocol some ECU require a Seed & Key .SKB file in order to establish an ECU communication. The SKB file can be linked on the XCP and CCP CAN node in order to get access to the ECU.

the second se	<b>1</b> 6 <b>1</b> 6				<u>.</u>
File Project Signals /	Acquisition		00	mmunication Mobile display Logger sc	npung
System Components Functions Import	Export C	eck	A	fjust Detect Initialize Display Details	
Configuration				Access View	
				Name	Active
Name	Σ		Ŷ		
			÷.	Protocol status	
🔺 🥅 🛕 IPElog2	339			Protocol trigger	
> 👬 🛦 CAN1	15			Meaval_5	~
F CAN2	9			Meaval_4	~
🔺 ∓ 🛦 CAN3	15			Meaval_3	~
🔺 🚍 🛕 IPEmotion Demo ECU	15			U Batt	~
🔺 🐹 🛕 IPEmotionDemo	15				-
Status	0		G	eneral XCP Extended	
🕐 Polling	0			Resume active:	
10_ms_task 30_ms_task	0			Seed & Key file: 🗹	
	14				
100_ms_task Ram00060000	14			EPK check:	

XCP & CCP protocol measurement with Seed & Key file [IM\_19\_3]

The SKB license file is based on a Windows .DLL. This file cannot be directly used on the LINUX based IPEmotion RT logger. The conversion support to a LINUX supported SKB file in .SO or .DLI file is provided by IPETRONIK.

Organisieren 👻 🛛 N	leuer Ordner		le • 🔟 🌔
🔆 Favoriten	Name	<u>ہ</u>	Änderungsdatum Typ
<ul> <li>Downloads</li> <li>Zuletzt besucht</li> <li>OneDrive</li> </ul>	E	Es wurden keine Suche	rgebnisse gefunden.
🔚 Bibliotheken			
📔 Bilder			
and the second second			
Bilder			

Upload S&K file from the file pick dialog [IM\_19\_4]

The Seed & Key functionally requires a license on the IPEmotion RT Data logger. The availability of the license will be checked when the Seek & Key functionally is initialized on the logger. The availability of the license can be checked in the license dialog when the logger is detected.

IPEmotion - Licensing		
3X703-GN00M-KE0BZ-00000-	-00XYF-10005-G0000-00000-00000-00080	-
Jeense information: Developer-Edition: + Automation + Macro recording + Control + Control + Climate + Acoustics + Data service (MDM) <u>ogger - 2020 - 82900606:</u> + 14 (+4) interfaces + Unlimited storage groups + Protocols + Seed8Key-SKB + Comfort display + Control + Climate	Seed & Key license for data logg	er
Assign Read	from dongle	Close

Seed & Key licensing on the logger enabled [IM\_19\_5]

On the XCP protocol to measure data from ECUs in the extended tab sheet the number of reconnect can be configured. The default setting is indefinitely.

- ▶ With second tester time out you can define the time span until the measurement will start.
- Firmware synchronization can be deactivated.
- ECU re-connect attempts

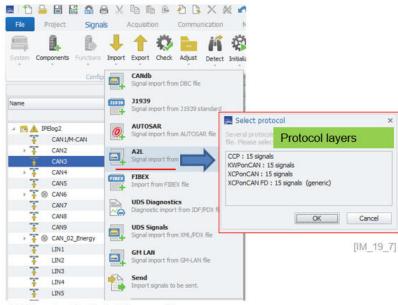
Image: The second se	tand L	3 X	, í 🖍 💊 🍇 🛇 🥝 🔏 🐌 ion Mobile display Logger script	• •	/iew
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N			Name	Active	Unit
lame	Σ	9			
			Protocol status		
IPElog2	348		Protocol trigger		
A 🕌 CAN1	15		Meaval_5	~	m/s <sup>2</sup>
4 📾 IPEmotion Demo ECU	15		Meaval_4	~	m/s²
A KCP IPEmotionDemo	15		Meaval_3	~	m/s²
Status	0		II Batt		
0 Polling	0	G	eneral XCP Extended		
10_ms_task	0		Second Tester Timeout: Off	1	
30_ms_task	0				
100_ms_task	14		Firmware synchronisation:		-
Ram00060000	1		Maximum reconnect attempts: Infinitely	*	
CAN2     Status	9				

XCP protocol - ECU communication settings

[IM\_19\_6]

#### 5.6.5 XCP transport layers

The A2L import for the XCP protocol supports different transport layers. The latest layer implemented is based on CAN FD. CAN FD can only be selected when it is defined in the A2L file.



XCP protocol - Select transport layers

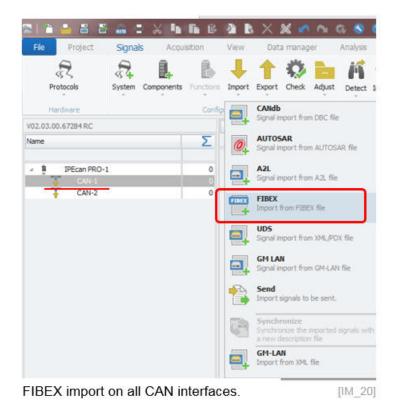
When CAN FD is selected in the impot dialog above the following dialog appears where additional protocol settings from the A2L file can be modified, when needed.

)	XCPonCAN FD settings
1.0	XCPonCAN FD version:
500 kHz 🔻	CAN bus baud rate:
std 7AD h	CAN id master:
~	Master will use CAN FD messages:
std 784 h	CAN id slave:
~	Slave will use CAN FD messages:
	DLC required:
2 MHz 🔻	CAN FD bus data rate:
64 🔻	CAN FD max. DLC:
~	CAN FD max. DLC required:
80	CAN FD sender sample point:
20	CAN FD bit timing logic (BTL) cycles:
80	CAN FD receiver sample point:
4	CAN FD synchronization jump width (SJW):
Single 🔻	CAN FD sync edge:
~	CAN FD transceiver delay compensation:
Abort	OK

# 5.7 FIBEX import

#### 5.7.1 Import CAN signals from FIBEX files

You can import on all PlugIn supporting CAN interfaces for CANdb measurements a FIBEX file. When the FIBEX file includes CAN messages it is an adequate replacement for the DBC file.



The import dialog is indicating in the protocol header "Free running".

	a column header	here to group b	v that column				Project	-
	-					_	Project numb	
	Name	Selection	Sampling rate	Physical range	Description		Project versie	
9							Protocol: FreeRu	
Þ	Request	~	1 Hz				Protocol	FreeRunning
	Response	~	1 Hz	0 65535 -	Response signal		Signal count CAN baud rat	500 kBd
	Sinus	~	1 Hz	0 65535 -	Sinus signal		J1939	
	SinusCRC	~	1 Hz	0 65535 -	CRC of sinus signal	-	Message	*
	Counter	~	1 Hz	0 65535 -	counter signal		Name	frmRequest
	CounterCRC	~	1 Hz	0 65535 -	CRC of counter signal		CAN ID	std 10 h
							Length	
							Sampling rate	1 Hz
							Description	transports requ
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						•	Signal	
	tocol							
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		operties are liste	d.					
4						<u> </u>	Signal	

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V01.06.00.47150 RC		Com	- Gara	Name	Active	Unit
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		_		Request	~	-
🖌 📋 IPEcan FD-1		6	×	Response	~	
4 👬 CAN-1		6		Sinus	~	-
FIBEX_With		6		SinusCRC	~	-
frmRequ		1		Counter	~	-
/ V	onse ationSinus ationCounter	1 2 2		CounterCRC	×	-
	🚵 Import: FIBE	X_With	CAN		×	
	General		rotoc	ol: FreeRunning	]	
CAN message from FIBEX file.		Dir		ry: C:\Users\Public\Documer 39: 🔲	nts\IP	

After the import you see you CAN messages and the channel.

## 5.7.2 Import CAN FD signals from FIBEX files

The FIBEX XML file is supports CAN FD protocol imports.

0		Signals	Acquisition	View	Data ma	nager	Analysis	R			
55	4	54	+		1 5	ž 🖬	1	23			
Protocols	S	ystem Comp	onents Funct	ion Import	Export Che	ck Adjust	Detect I	nitializ			
*				-	CANdb			-			
Hardware			C	onfig 🔤	Signal import	from DBC fil	e				
.00.66058 Betz	3										
				2 (0).	AUTOSAR Signal import	from AUTOS	SAR file				
IPEcan FD		1		÷ =	A2L Signal import	from A2L file	2				
CAN-2											
1 0111				FIREX	FIBEX Import from i	TOTY Re					
				+	anport iron i	TDCA He					
				-	UDS					ाम	M 22
					Signal import	from XML/PI	DX file			- Lu	VI_22
	ên P	IBEX import: C	CAN-1								3
	_										
	Dra	g a column head	ler here to group	by that column					Project		*
	Dra		ler here to group		Physical range	Description	Data tune	Mess	Project number		*
		ng a column head	Selection	by that column Sampling rate	Physical range	Description	Data type	Mess	Project number Project version		•
	9	Name	Selection	Sampling rate				-	Project number	Free	
		Name	Selection	Sampling rate	0 255	LogicalIn	8-Bit intege		Project number Project version Protocol: FreeRunning	Free	
	9	Name GRG ALIV	Selection	Sampling rate	0 255 0 15	Logicalin Logicalin	8-Bit intege 8-Bit intege	* . s	Project number Project version Protocol: FreeRunning Protocol	Free	
	9	Name GRC ALIV ST_C	Selection	Sampling rate	0 255 0 15 0 15	LogicalIn LogicalIn LogicalIn	8-Bit intege 8-Bit intege 8-Bit intege	• • •	Project number Project version Protocol: FreeRunning Protocol Signal count	Free	eRunning 2827
	9	Name GRG ALIV	Selection	Sampling rate	0 255 0 15	LogicalIn LogicalIn LogicalIn	8-Bit intege 8-Bit intege	• • •	Project number Project version Protocol: FreeRunning Protocol Signal count CAN baud rate	Free	sRunning 2827 500 kBd
	9	Name GRC ALIV ST_C	Selection	Sampling rate	0 255 0 15 0 15	Logicalin Logicalin Logicalin Logicalin	8-Bit intege 8-Bit intege 8-Bit intege	• • •	Project number Protocol: FreeRunning Protocol: SteeRunning Protocol Signal count CAN boud rate CAN FO data rate 21959 Message	Free	sRunning 2827 500 kBd
	9	Name GRC ALIV ST_C ST_L	Selection	Sampling rate	0 255 0 15 0 15 0 15	LogicalIn LogicalIn LogicalIn LogicalIn LogicalIn	8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	*	Project number Protect version Protocol: FreeRunning Protocol Signal count CAN boud rate CAN FD data rate 71559		Running 2927 500 kBd 2 MBd
	9	Name GRC ALIV ST_C ST_L ST_E	Selection	Sampling rate 1Hz 1Hz 1Hz 1Hz 1Hz 1Hz	0 255 0 15 0 15 0 15 0 255	Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin	8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	*	Project number Protocol: FreeRunning Protocol: SteeRunning Protocol Signal count CAN boud rate CAN FO data rate 21959 Message	Free	sRunning 2827 500 kBd 2 MBd
	9	Name GRC ALIV ST_( ST_1 ST_1 ST_1 ST_1	Selection	Sampling rate 1Hz 1Hz 1Hz 1Hz 1Hz 1Hz 1Hz	0 255 0 15 0 15 0 15 0 255 0 3	LogicalIn LogicalIn LogicalIn LogicalIn LogicalIn LogicalIn LogicalIn	S-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	*	Project number Protocol: FreeRunning Protocol Signal count CAN boud rate CAN PD data rate 73555 Message Name		Running 2927 500 kBd 2 MBd
	9	Name ALIV ST_( ST_1 ST_1 ST_1 ST_1 TR_1	Selection	Sampling rate 1Hz 1Hz 1Hz 1Hz 1Hz 1Hz 1Hz 1Hz	0 255 0 15 0 15 0 15 0 255 0 3 0 3 0 3 0 15	LogicalIn LogicalIn LogicalIn LogicalIn LogicalIn LogicalIn LogicalIn	3-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	*	Project number Protocol: FreeRunning Protocol: SreeRunning Protocol Signal count CAN boud rate CAN FD data rate 71555 Message Name CAN ID		Running 2927 500 kBd 2 MBd
	9	Name CRC ALIV ST_C ST_L ST_J ST_J TR_J CTR	Selection	Sampling rate 1 Hz 1 Hz 1 Hz 1 Hz 1 Hz 1 Hz 1 Hz 1 Hz 1 Hz 1 Hz	0 255 0 15 0 15 0 15 0 255 0 3 0 3 0 3 0 15 0 3	Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin	3-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	*	Project number Protocol: FreeRunning Protocol: FreeRunning Protocol Signal count CAN boud rate CAN FD data rate 71559 Message Name CAN ID Length		* eRunning 2827 500 kBd 2 MBd 1 32 <b>h</b> 8 1 Hz
	9	Name ALIV ST_C ST_L ST_L ST_J TR_1 CTR CRC	Selection	Sampling rate	0 255 0 15 0 15 0 15 0 255 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0 255	Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin	3-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	*	Project number Protocol: FreeRunning Protocol: SereeRunning Protocol Signal count CAN BD data rate CAN BD data rate T1959 Message Name CAN ID Length Sampling rate Cyclic Description	std	* eRunning 2827 500 kBd 2 MBd 1 32 <b>h</b> 8 1 Hz
	9	Name ALIV ST_C ST_L ST_L ST_J ST_J TR_J CTR CTR CTR CTR CTR CTR CTR	Selection	Sampling rate	0 255 0 15 0 15 0 255 0 3 0	Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin	3-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	* * * * * * * * * * * * * * * * * * *	Project number Protocol: FreeRunning Protocol: GreeRunning Protocol Signal count CAN boud rate CAN FD data rate 71939 Message Name CAN ID Length Sampling rate Cyclic Description Sender name	std	* Running 2827 500 kBd 2 MBd 2 MBd 32 <b>h</b> 32 <b>h</b> 8 1 Hz
	9	Name ALIV ST_C ST_L ST_L ST_J TR_1 CTR CRC	Selection	Sampling rate	0 255 0 15 0 15 0 15 0 255 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0 255	Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin	3-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	* * * * * * * * * * * * * * * * * * *	Project number Protocol: FreeRunning Protocol: FreeRunning Protocol Signal count CAN boudrate CAN FD data rate 2009 Message Name CAN ID Length Samping rate Crycic Description Sender name CAN FD	std	* Running 2827 500 kBd 2 MBd 2 MBd 32 <b>h</b> 32 <b>h</b> 8 1 Hz
	<b>9</b> <b>3</b>	Name ALIV ST_C ST_L ST_L ST_J ST_J CTR CTR CTR CTR CTR CTR CTR CTR	Selection	Sampling rate	0 255 0 15 0 15 0 255 0 3 0	Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin	3-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege	* * * * * * * * * * * * * * * * * * *	Project number Protocol: FreeRunning Protocol: GreeRunning Protocol Signal count CAN boud rate CAN FD data rate 71939 Message Name CAN ID Length Sampling rate Cyclic Description Sender name	std	* Running 2827 500 k8d 2 M8d 2 M8d 32 h 32 h 31 Hz
	7 ,	Name ALIV ST_C ST_L ST_J ST_J TR_J CTR CRC ALIV CTR N baud rate	Selection	Sampling rate	0 255 0 15 0 15 0 255 0 3 0	Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin	3-Elt intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege		Project number Protocol: Freedmining Protocol: Signal count CAN boud rate CAN boud rate CAN FD data rate 79595 Message Name CAN ID Length Sampling rate Cyclic Description Sender name CAN FD Signal	std	* Running 2827 500 kBd 2 MBd 2 MBd 32 <b>h</b> 32 <b>h</b> 8 1 Hz
	7 ,	Name ALIV ST_C ST_L ST_L ST_J ST_J CTR CTR CTR CTR CTR CTR CTR CTR	Selection	Sampling rate	0 255 0 15 0 15 0 255 0 3 0	Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin Logicalin	3-Elt intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege 8-Bit intege		Project number Protocol: FreeRunning Protocol: FreeRunning Protocol Signal count CAN boudrate CAN FD data rate 2009 Message Name CAN ID Length Samping rate Crycic Description Sender name CAN FD	std	* Running 2827 500 kBd 2 MBd 2 MBd 32 <b>h</b> 32 <b>h</b> 8 1 Hz

#### 5.7.3 Display of Sender name for FIBEX, DBC, AUTOSAR messages

The import properties of the CAN, FIBEX and AUTOSAR messages include now the sender name when defined in the description file.

	a column header he	re to group by t	hat column				Name	SIM_51499999_ID_A
				Dia dia 1	Description		CAN ID	std A h
	Name	Selection	Sampling rate	Physical range	Description		Length	
٩						-	Sampling rate	1 Hz
	Pressure_Abs	~	1 Hz	0 bar 2 bar			Description	
	Pressure_Rel	~	1 Hz	-2 bar +2 bar			Sender name	PETRONIK
	MAP		1 Hz	0 bar 3 bar			Signal	A Drawner Da
	TPS_Volt		1 Hz	-8 V +8 V			Name Display identifier	Pressure_Re
	Front_left		1 Hz	-50 C +200 C			Byte order	INTEL
	Front_right		1 Hz	-50 C +200 C			Data type	16-Bit integer unsigned
	Rear left		1 Hz	-50 C +200 C		-	Bit count	16
						+	Start bit	16

# 5.8 Description file import with CSV file for channel reference

The CSV reference file significantly improves the description file import and channel activation. Especially when you are working with large description files with many channels, sometimes you are uncertain if all required channels are included in the description file. It is also time-consuming to search and activate only the relevant channels for your specific measurement manually.

With the CSV reference file you can compare your description file to a CSV channel list. This comparing process covers two functions:

- All matching channel names from the CSV reference list are automatically activated. This saves a lot of time compared to activating channel by channel. The channel selection is not cases sensitive. Channels are selected even when the lower and upper cases do not match.
- All the channels which are included in the CSV file but not in the description file are listed in a separate "missing channels" list. Missing channels can be saved in a separate CSV file for later analysis purposes.

Name	Sele	Samplin	Physical range	Description							
C_56199999_1		1 Hz	-100 V +100 V	Analog acquis							
C_56199999_2		1 Hz	-100 V +100 V	Analog acquis							
C_56199999_3		1 Hz	-100 V +100 V	Analog acquis		CANdb import: CAN-1					
C_56199999_4		1 Hz	-100 V +100 V	Analog acquis	20	AND IMPORT: CAN-1					List of 3 missin
C_57399999_1		1 Hz	-60 °C +1370 °C	Analog therma,	1						signals in the
C_57399999_2		1 Hz	-60 °C +1370 °C	Analog therma	1	Drag a column header h	ere to gr	oup by that	column		DBC file.
C_573999999_3		1 Hz	-60 °C +1370 °C	Analog therms		Name	Sele	Samplin	Physical range	Description	DBC file.
C_573999999_4		1 Hz	-60 °C +1370 °C	Analog therms		Ψ					🚵 Missing signals
C_57399999_5		1 Hz	-60 °C +1370 °C	Analog therms		C_573999999_1	Image: A start a st	1 Hz	-60 °C +1370 °C	Analog therme	CSV file: Demo.csv
C_57399999_6		1 Hz	-60 °C +1370 °C	Analog therms		C_57399999_2		1 Hz	-60 °C +1370 °C	Analog therms	C_Reference Channel_1
C_57399999_7		1 Hz	-60 °C +1370 °C	Analog therms		C_573999999_3		1 Hz	-60 °C +1370 °C	Analog therms	C Reference Channel 2
C_57399999_8		1 Hz	-60 °C +1370 °C	Analog therma		C_57399999_4		1 Hz	-60 °C +1370 °C	Analog therms	C_Reference Channel_3
	_					C_573999999_5		1 Hz	-60 °C +1370 °C	Analog thermc,	
he DBC file	e cont	tains 1	2 signals.			C_573999999_6		1 Hz	-60 °C +1370 °C		
orter						C_573999999_7	1	1 Hz	-60 °C +1370 °C	Analog therms	
e left table, all sign	hals, when	e the "select	from the description fi tion" checkboxes are se ed signals, the control	elected, will be mari		C_573999999_8		1 Hz	-60 ℃ +1370 ℃	Analog therms	
ending on the prote	ocol, a san	pling rate o	r the DAQ list to use, c specify via the column	an be assigned to t					only 8 signa		
						which are	in co	mmor	to the DBC	2.	
lect al	Select by (	CSV				> Automat	tic ac	tivatio	n		Save as CSV
					K :					<u> </u>	
					1	Importer In this dialog, all signals In the left table, all sign In the right table the pro Depending on the proto	als, when	e the "select	ion" checkboxes are se ed signals, the control	elected, will be ma	col are displayed.

	a column header here t	to group by that or					Project		÷	*
				1-2-2		100	Project numb	)er		
	Name	Selection	Sampling rate	Divide array	Physical range	м	Project versi			
							Protocol: FreeR	unning	*	
	Pressure_Abs		1 Hz		0 bar 2 bar		Protocol		FreeRunning	
	Pressure Rel		1 Hz		-2 bar +2 bar		Signal count			
	MAP		1 Hz		0 bar 3 bar		CAN baud ra		Not specified	
	TPS Volt		1 Hz	the second se	-8 V +8 V	•	Sample point		Not specified	
	A DECEMBER OF A	77154	1111111				31939			
	Front_left		1 Hz		-50 C +200 C		Message			
	Front_right		1 Hz		-50 C +200 C		Name		SIM_51499999_ID_A	
	Rear_left		1 Hz		-50 C +200 C		CAN ID	std	A h	
	Read_right		1 Hz		-50 C +200 C		Length			
	Public at a		433-	-	50.0 V200.0		Sampling rat Cyclic		1 Hz	
h	orter is dialog, all signals that ie left table, all signals, v elect all Select by C	where the "selectio	n" checkboxes a onDemo.DBC -	re selected, w	ill be marked for impo	rt.			OK Cancel	-
h	is dialog, all signals that le left table, all signals, v elect all Select by ( tomatische Speichern	where the "selection CSV/LAB IPEmoti	n" checkboxes ai onDemo.DBC -	re selected, w	ill be marked for impo	rt. ,			OK Cancel	•
	is dialog, all signals that e left table, all signals, v elect all Select by C tomatische Speichern ei Start Einfüg Calibri F K	where the "selection CSV/LAB IPEmoti	n" checkboxes ar onDemo.DBC -	o of 10 signals	ill be marked for impo		column :		OK Cancel	•
	is dialog, all signals that e left table, all signals, v elect all Select by C tomatische Speichern ei Statt Einfüg P & Calibri	where the selection CSV/LAB IPEmotion Gen Seitenla v 11 v	n" checkboxes ar onDemo.DBC -	o of 10 signals	III be marked for impo a selected.				OK Cancel Physical range	•
	is dialog, all signals that e left table, all signals, v elect all Select by C tomatische , Speichern ei Start Einfüg gen gen F K H	where the selection CSV/LAB IPEmotion gen Seitenla U ~ A^A	n" checkboxes a onDemo.DBC -	candb imp	III be marked for impo a selected.	p by that				•
	is dialog, all signals that e left table, all signals, v elect all Select by C tomatische , Speichern ei Start Einfüg gen gen F K H	where the selection CSV/LAB IPEmotion gen Seitenla U ~ A^ A` A ~	n" checkboxes a onDemo.DBC -	CANdb imp rag a column Name	III be marked for impo a selected. Nort: CAN1 header here to grou	p by that Selection		Divide array		•
	is dialog, all signals that ie left table, all signals, v elect all Select by C tomatische - Speichem ei Start Einfüg Gen G gen G enablare fs Sc	where the selection CSV/LAB IPEmotion gen Seitenla U ~ I1 ~ U ~ A^A A ~ chriftart Fs	n" checkboxes a onDemo.DBC -	CANdb imp rag a column Name	Ill be marked for impo a selected. ort: CAN1 header here to grou	p by that	n Sampling rate	Divide array	Physical range	•

Channels are selected even when the lower and upper cases do not match.



Information

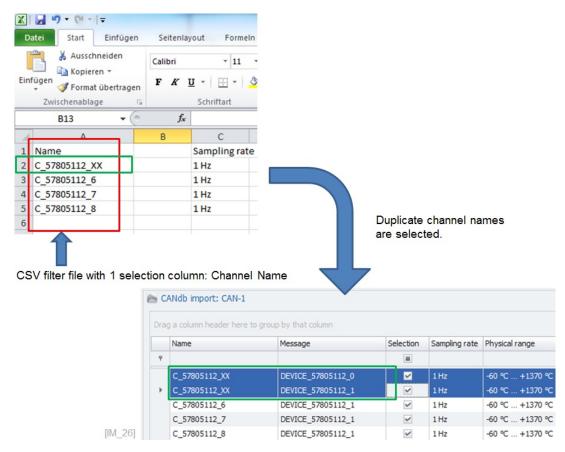
A second filter criteria can be added to the CSV file to optimize the import, e.g. to specify sample rate or DAQ list settings in the import process.

#### 5.8.1 Multi column CSV selection for description file imports (DBC, A2L)

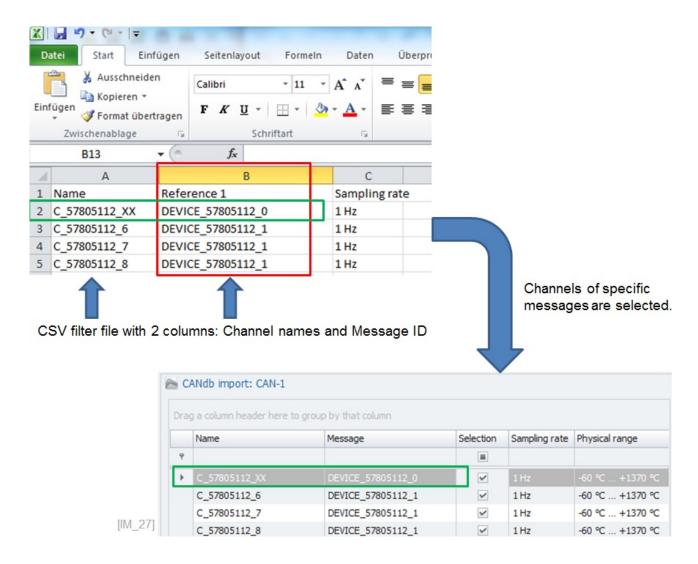
The CSV filter can support additional columns apart from the channel name to select dedicated channels in your description file import. In the example below you see how a DBC import can be improved by adding the message name as a second selection criteria.

	to group by that column				Project Project number	<b>^</b>
Name	Message	Selection	Sampling rate	Physical range	Project versio	
- Harrie	i i cooge		bumping rate	i nysicarrange	Protocol: FreeRu	
					Protocol	FreeRunning
C_57805112_XX	DEVICE_57805112_0		1 Hz	-60 ℃ +1370 ℃	Signal count	12
C_57805112_2	DEVICE_57805112_0		1 Hz	-60 ℃ +1370 ℃	CAN baud rat	500 kBd
C_57805112_3	DEVICE_57805112_0		1 Hz	-60 °C +1370 °C	J1939	
C_57805112_4	DEVICE_57805112_0		1 Hz	-60 ℃ +1370 ℃	Message	-
C_57805112_XX	DEVICE_57805112_1		1 Hz	-60 ℃ +1370 ℃	Name	
C 57805112 6	DEVICE 57805112 1		1 Hz	-60 ℃ +1370 ℃	CAN ID	
C 57805112 7	DEVICE_57805112_1		1 Hz	-60 °C +1370 °C	Length	8
C 57805112 8	DEVICE_57805112_1		1 Hz	-60 °C +1370 °C	Sampling rate	1 Hz
C 58600779 1	DEVICE 58600779 0		1 Hz	1 Hz 200 kHz	Description Sender name	
					Signal	
C_58600779_2	DEVICE_58600779_0		1 Hz	1 Hz 200 kHz	Name	C 57805112 XX
C_58600779_3	DEVICE_58600779_0		1 Hz	1 Hz 200 kHz	Display identif	
C_58600779_4	DEVICE_58600779_0		1 Hz	1 Hz 200 kHz	Byte order	INTEL
					Data type	16-Bit integer sig
				÷	Bit count	

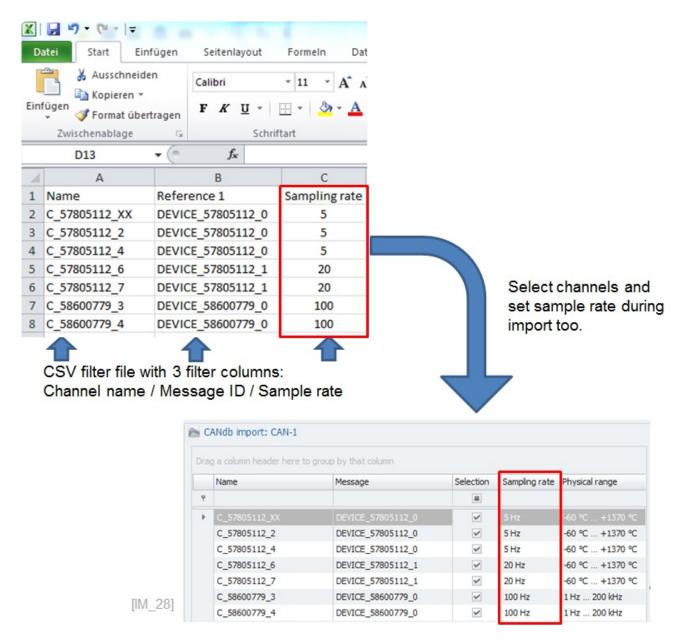
In this example we define only the channel names as selection criteria. In this case duplicate channels across the whole DBC file get selected during the import process.



If you add the message ID to the selection criteria in column 2, you can pick the specific channels of the messages you are interested in.



If you like you can set during the DBC import the sample rate by message ID too.



The sample definition can be located on column 2 also. It is not required that the sample rate definition must be located on column 3 at any time.

When you are using CSV filter for A2L import you can select channels by channel name in the first column and associated to the signal a DAQ list or sample rate during the import too.

#### 5.8.2 Check duplicate channel names during description file import

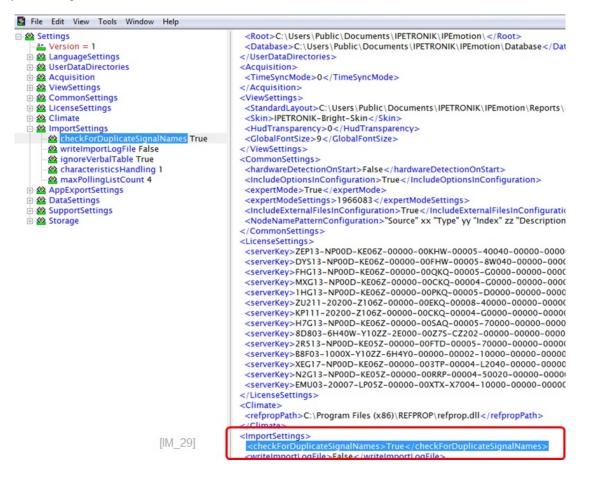
When run an import of any description file (DBC, FIBEX, A2L, ....) the import process can check for any duplicate channel name and provide a dialog to resolve duplicate channel name conflicts.

In order to activate this feature you have to make an additional entry in the Settings.XML file.

C:\ProgramData\IPETRONIK\IPEmotion 2022 R1\Settings.XML

The new entry in the XML file should be:

#### <ImportSettings> <checkForDuplicateSignalNames>**True**</checkForDuplicateSignalNames> <ImportSettings>



File Project	Signals /	cquis	ition	View Da	ta manager	An	alysis	Reporting	Scripting	Info			
9	24			1 4	Ö		16						
55								<b>%</b>	Datala				
Protocols	System Compo	ients	Functions	Import Expor	t Check A	djust (	Detect Ir	itialize Display	Details				
Hardware			Config	uration				Access	View				
.06.00			Name		Active	Unit	Phys	Min Phys Max	Sensor Min	Sensor Ma	x Samp	oling rate	
ne	Σ	9											
IPEhub2-1	0		CANd	b import: CAN	-1								
CAN-1	0				and the second he	, then haved						Project	
CAN-2	0		Drag a c									Project numb	
			Nar	ne	Selection	n Samp	oling rate	Physical range	Phy	sical unit		Project versic	
			9								^	Protocol: FreeRu	
			Sec	tonds	<b>~</b>	20 H	z	0 s 59 s	s			Protocol Signal count	FreeRunnin
			Min	utes	~	20 H	z	0 min 59 min	min				
			Mill	seconds	~	20 H	z	0 s 999 ms	ms				
			Hou	r	~	20 H	z	0 h 23 h	h			Message	
			Sta	tus	~	20 H	z	01				Name	TIM
			Spe	ed	~	20 H	z	-10 mph +10 m	ph mpł			CAN ID	std 389
				ed		20 H		-10 km/h +10 k				Length	
			Spe		~	20 H		-10 knots +10 k				Sampling rate	20 H
				urse	- 	20 H	_	-10 ° +10 °	0	<u> </u>		Description	
				ellites_in_View	<ul> <li>Image: A start of the start of</li></ul>	20 H		0 255				Sender name Cyclic	~
				igitude	•	20 H		-10 ° +10 °	0			Signal	<b>V</b>
				itude		20 H		-10 ° +10 °	•			Name	Second
				gitude		20 H	7.00	-10 +10				Display identi	
				itude	~	20 H		-10 +10				Byte order	
			Lat	lube	¥	20 H	2	-10 +10				Data broe	R-Rit integer up
			In the lef	alog, all signals t ft table, all signa ht table the pro	ls, where the perties of the	"selection selected	" checkbo signals, th	cription file are disp xes are selected, w e control unit and t	ill be marked for he protocol are d	isplayed.			
		Ge	Deselec		ct by CSV			8 of 18 signals sele	i faran in i		ŕ	OK	Cance

With the new entry in the Settings.XML file the import dialog will guide you to a new dialog highlighting all duplicate channels out of the selected channel list. There are to functions available in the drop down list:

#### Duplicate signal names

The configuration contains the following signals with duplicate signal names. This may lead to problems when the acquired data is saved in a file format that uses the signal name to distinguish the signals or when the data is analyzed with a tool that cannot handle signals with identical names.

Conflict resolution strategy:	Accept duplicate signal names	<b>v</b>	
Original signal name	Accept duplicate signal names Rename signals manually		
Speed	Speed	$\otimes$	
Speed	Speed	$\otimes$	
Speed	Speed	Ō	
Longitude	Longitude	<b>Ö</b>	
Latitude	Latitude	$\otimes$	
Longitude	Longitude	Ň.	
Latitude	Latitude	Ō	
		OK	Cancel
Dialog to resolve dur	olicate channel entries.		[IM_3

Accept duplicates 

Rename signals 

With this function you accept the duplicates and confirm them

When you select the rename function you have to edit the channel names in the grid

#### 🚵 Duplicate signal names The configuration contains the following signals with duplicate signal names. This may lead to problems when the acquired data is saved in a file format that uses the signal name to distinguish the signals or when the data is analyzed with a tool that cannot handle signals with identical names. Ŧ Conflict resolution strategy Rename signals manually New signal name Original signal name Conflict resolved 0 Speed-1 Speed S. s. Speed-2 Speed V. Speed-3 Speed 0 Longitude Longitude-1 Latitude-3 Latitude Longitude Longitude-2 1 Latitude Latitude-3 Visual feedback if duplicate New channel names names are removed. Cancel [IM\_32]

#### Apply column chooser to get information about the channel reference.

Conflict resolution strategy	y: Rename signals manu	ally	-			
Original signal name	New signal name Conflict resolved					
Speed	Speed-1		Z Sort Descending			
Speed	Speed-2		✓ 2 <sup>*</sup> Clear Sorting			
Speed	Speed-3		🖌 🛅 Column Chooser			
Longitude	Longitude-1					
Latitude	Latitude-3		Ouctomizatio			
Longitude	Longitude-2		Best Fit (all col Reference			
Latitude	Latitude-3		Clear Filter			
			P Filter Editor			
Original signal pame	New circul page	Reference	OK Cance			
Original signal name	New signal name	Reference	OK Cancel			
			OK Cancel			
Speed	Speed-1	IPEspeed / SPEED_MPH	OK Cancel			
Speed Speed	Speed-1 Speed-2	IPEspeed / SPEED_MPH IPEspeed / SPEED_KM	OK Cancel			
Speed Speed Speed	Speed-1 Speed-2 Speed-3	IPEspeed / SPEED_MPH IPEspeed / SPEED_KM IPEspeed / SPEED	OK Cancel			
Original signal name Speed Speed Speed Longitude Latitude	Speed-1 Speed-2 Speed-3 Longitude-1	IPEspeed / SPEED_MPH IPEspeed / SPEED_KM IPEspeed / SPEED IPEspeed / POSITION_RAD	OK Cancel			
Speed Speed Speed	Speed-1 Speed-2 Speed-3	IPEspeed / SPEED_MPH IPEspeed / SPEED_KM IPEspeed / SPEED	OK Cancel			

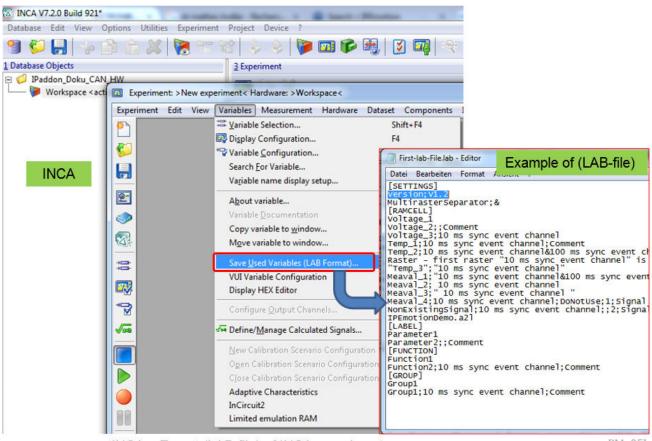
When all duplicate conflicts are resolved the import can be finalized and all channels are renamed.

V01.06.00				Name	Active	Unit
			۴			
			•	Seconds	~	S
4 🚍 IPEhub2-1 18		18		Minutes	~	min
4 👔 CAN-1		18		Milliseconds	~	ms
IPEspeed		18		Hour	~	h
/ V	TIME	4		Status	~	
N	STATUS	1		Speed-1	~	mph
N	SPEED	1		Speed-2	~	km/h
N	SPEED	1		Speed-3	~	knots
	SPEED SATELL	2		Course	~	0
Ň	POSITI	2		Satellites_in_View	~	
Ň	POSITI	2		Longitude-1	~	0
Ň	DATE	3		Latitude-3	~	0
N	ALTITU	1		Longitude-2	~	
CAN-2	2	0		Latitude-4	~	
				Year	~	
				Month	~	
				Day	~	
				Altitude	~	m

Channels are all renamed. [Ⅲ\_34]

# 5.9 Description file import with INCA LAB file

To support the workflow between INCA and IPEmotion measurements an INCA experiment (LAB-file) import is supported besides the CSV import. You can save part of your INCA experiment in the LAB file format. This LAB file can be used to create easily the same measurement configuration for IPEmotion.



INCA > Export (LAB-file) of INCA experiment

[IM\_35]

All description file imports on all PlugIns support the CSV and LAB file filter.

Protocols	Signals	Components	Functions	J. Import	Data manager Analysis	<b>K</b> italize	ep e			
Hardware			Config		CANdb Signal import from DBC file		s		-	
2.03.00.66058 Beta						Res A	2L import: CAN-1			Import dialog
me			Σ	0	AUTOSAR Signal import from AUTOSAR file	Dras	g a column header l	here to group by t	hat column	
				0.000	ang na mapara mani ma na ana sina		Name	Selection	Sampling rate	Physical range
IPEcan FD	PRO-1		0		A2L Signal import from A2L file					
CAN-1			0	-	Signal inport in one way me	-	Voltage_1		1Hz	0 V 996 mV
1 CHI1-2				FIBER	FIBEX		Voltage 2		1 Hz	0 V 996 mV
				+	Import from FIBEX file		Voltage_3		1 Hz	-10 V +9,999 V
				-	UDS		Temp_1		1 Hz	0 °C 255,996 °C
				-	Signal import from XML/PDX file		Temp_2		1 Hz	-60 °C +1370 °C
				-	GM LAN		Temp_3		1 Hz	-20 °C +107,998 °C
				Ξ.	Signal import from GM-LAN file		Meaval_1		1 Hz	0 m/s² 127,5 m/s²
				Annual Property in the local division of the			Meaval_2		1 Hz	0 m/s² 100 m/s²
					Send Import signals to be sent.		Meaval_3		1 Hz	0 m/s² 127,5 m/s²
					Import signals to be send		Meaval_4		1 Hz	0 m/s² 100 m/s²
				9	Synchronize Synchronize the imported signals with a new description file	In th				scription file are displayed.
					GM-LAN Import from XML file	In th	ne left table, all sign	als, where the "se	lection" checkbo	ixes are selected, will be ma

All IPEmotion description file imports support CSV / LAB filters for channel selection [IM\_36]

After you have imported your complete description file you can use the CSV and LAB reference to select only those channels which are relevant for your measurement application.

) 🖉 🕌 « Ir	nport 🕨 INCA LAB file		- inca L	AB file durchsuchen
Organisieren 👻	Neuer Ordner			II • 🔟 🌘
0	Demo PLC S7 300	^	Name	Änderungsdatum
	FIBEX + CAN		First-lab-File.lab	22.08.2018 16:32
	FIBEX + CAN FD		Second-lab-File.lab	22.08.2018 16:34
	Flexray Demo GM LAN HUSCOINT		Test_1_1.lab	30.11.2018 14:05
	INCA LAB file			
	LDF			
	old			
	PDX			
N	s7			
	\$7_2	-	<m< td=""><td></td></m<>	
	Dateiname: First-lab-Fi	le.lab	- All suppo	orted (*.csv;*.lab)
			All support CSV (*.cs LAB (*.la)	

Example: Select LAB-file for channel activation

[IM\_37]

When the LAB file was selected the associated channels from the description file are automatically activated in the import dialog. A message box is also returning all channels which are included in the LAB-file and missing in the description file.

Name         Selection         Sampling rate         Physical range         Project number         OPENO0100           P         Image: Control unit         Image: Control unit count         Openo0100         Control unit count         Control unit count           Voltage_1         Image: Control unit count         Image: Control unit count         Control unit count         Control unit count           Voltage_2         Image: Control unit count         Image: Control unit count         Control unit count         Control unit count           Voltage_3         Image: Control unit count         Image: Control unit count         Control unit count         Control unit count           Temp_1         Image: Control unit count         Image: Control unit count         Control unit count         Control unit count           Temp_1         Image: Control unit count         Image: Control unit count         Control unit count         Control unit count           Temp_2         Image: Image: Control unit count         Image: Control unit count         Control unit count         Control unit count           Meaval_1         Image: Control unit count         Image: Control unit count         Image: Control unit count         Image: Control unit count           Meaval_3         Image: Image: Control unit count         Image: Control unit count         Image: Control unit count         Image: Control	-	a column header h	are to aroun by t	hat column		Project		*	
Voltage_1         V         1Hz         0 V996 mV         Control unit count           Voltage_2         Image: High and the second sec				and the second second second	L'ANNE DE L	Project number			
Voltage_1         V         I Hz         0 V996 mV           Voltage_2         I Hz         0 V996 mV         II Hz         0 V996 mV           Voltage_3         I Hz         0 V996 mV         II Hz		Name	Selection	Sampling rate	Physical range	Project version	_DEMO0		
Voltage_1         Image: None of the i	2					Control unit count		1	
Voltage_2         Image: I	5	Voltage_1		1 Hz	0 V 996 mV			*	
Voltage_3         ✓         1 Hz         -10 V +9,999 V         Epk address         500000           Temp_1         ✓         1 Hz         0 °C 255,996 °C         EDK address         500000           Temp_2         ✓         1 Hz         -60 °C +1370 °C         EDK address         500000           Temp_3         ✓         1 Hz         -20 °C +107,998 °C         Meaval_1         ✓         1 Hz         0 m/s² 127,5 m/s²         LAB file: First-lab File.lab         ✓         Onc           Meaval_3         ✓         1 Hz         0 m/s² 127,5 m/s²         NonExistingSignal         ✓		Voltage 2		1 Hz	0 V 996 mV				
Temp_1         ✓         1 Hz         0 °C 255,996 °C         ECX version         S00000           Temp_2         ✓         1 Hz         -60 °C +1370 °C           Protocol: VCBonCAN           Temp_3         ✓         1 Hz         -20 °C +107,998 °C          Missing signals         ×           Meaval_1         ✓         1 Hz         0 m/s² 127,5 m/s²         LAB file: First-lab-File.lab         ×         onC           Meaval_3         ✓         1 Hz         0 m/s² 127,5 m/s²         NonExistingSignal		Voltage 3	-	1 Hz	-10 V +9,999 V				
Temp_2         ✓         1 Hz         -60 °C +1370 °C         Protocol: YCRonCAN           Temp_3         ✓         1 Hz         -20 °C +107,998 °C         Missing signals         ×           Meaval_1         ✓         1 Hz         0 m/s² 127,5 m/s²         LAB file: First-lab-File.lab         ×           Meaval_3         ✓         1 Hz         0 m/s² 127,5 m/s²         NonExistingSignal         ✓		Temp 1		1 Hz	0 °C 255,996 °C		5000	1.0	
Temp_3         Image: Hz         -20 °C +107,998 °C         Missing signals         ×         on C           Meaval_1         Image: Hz         0 m/s² 127,5 m/s²         LAB file: First-lab-File.lab         LAB file: First-lab-File.lab         Image: Hz         Image: H				1 Hz				1.0	
Meaval_1         Image: Meaval_2         Image: Heaval_2         Image: Heaval_3         Image: Heaval_3 </td <td></td> <td>distribution and</td> <td></td> <td>1 Hz</td> <td>-20 °C +107,998 °C</td> <td>and the second se</td> <td>×</td> <td>nCAN</td> <td></td>		distribution and		1 Hz	-20 °C +107,998 °C	and the second se	×	nCAN	
Meaval_2         Image: Hz         0 m/s²         100 m/s²         NonExistingSignal         Image: Hz         Image: Hz         Image: Hz         Image: Hz         NonExistingSignal         Image: Hz         Image: Hz         Image: Hz         Image: Hz         NonExistingSignal         Image: Hz         Image:		Meaval 1		1 Hz	0 m/s <sup>2</sup> 127,5 m/s <sup>2</sup>	LAB file: First-lab-File.lab		1.0	
		Meaval 2		1 Hz	0 m/s <sup>2</sup> 100 m/s <sup>2</sup>	NonExistingSignal		14	
		Meaval 3	-	1 Hz	0 m/s <sup>2</sup> 127,5 m/s <sup>2</sup>				
				27 180				1	
								FREE	
Channels activation		Cha		tivation				INTEL	
		Cha	anneis aci	livation				1	
	Ņ	orter							l
porter									1
this dialog, all signals that can be imported from the description file are displayed.									
this dialog, all signals that can be imported from the description file are displayed. the left table, all signals, where the "selection" checkboxes are selected, will be marked f	-					List of missin	g channels	ancel	-
the signals that can be imported from the description file are displayed. the left table, all signals, where the "selection" checkboxes are selected, will be marked for the sight table the properties of the selected signals, the control upit and the protocol are Select all Show all signals IPEmotionDemo.a2l - 9 of 15 signals selected. List of missing channels Can	50	Sect di	w dii signais				•	dificer	

### 5.10 Synchronization of description files

You can use the description file synchronization function to compare your existing measurement configuration against a new description file. The description file synchronization is useful to get a direct view about the differences between a new ECU description file and your current measurement configuration. The following file formats are supported for synchronization:

File Format	Object type	Protocol	Properties
A2L	Signal	CCP, XCP, KWPonCAN	Name
A2L	DAQ-Liste	CCP, XCP	DaqType, ListNumber, EventNumber
A2L	Characteristic	CCP, XCP, KWPonCAN	Name
AutoSar (ARXML)	Botschaft	FreeRunning	Name
AutoSar (ARXML)	Frame	FlexRay	Name
AutoSar (ARXML)	Signal	FreeRunning	Name, Message
AutoSar (ARXML)	Signal	FlexRay	Name, Frame
DBC	Botschaft	FreeRunning	Name
DBC	Signal	FreeRunning	Name, Message
DBC	Signal	J1939	Name, Message-Sender
DBC	Signal	GMLan	PID
FIBEX (XML)	Frame	FlexRay	Name
FIBEX (XML)	Signal	FlexRay	Name, Frame
IDF	dol	KWP-, UDS-Diagnose	Name
LDF	Botschaft	LIN	Name
LDF	Signal	LIN	Name, Message
PDX	dol	KWP-, UDS-Diagnose	Name
UDS-Messen (XML)	Signal	UDS	Name

Supported files for synchronization [IM\_41]

The default setting of the file synchronization is based on message ID and and message name. In the standard setup the description file is compared on Message ID and channel name. When one of two parameters is different, the synchronization will not take place and you will get a notification in the message window. The standard synchronization behavior can cause an additional workload when e.g. a channel is switched to a different message ID because then the synchronization does not take place and the related links to the VIEW instruments and formulas or storage in the ACQUISITION work space etc. is removed as well. In the follwing example the default synchronization behaviour is presented by selecting the synchronization function on description file level.

File Project Signals Acquisition	i View		D	ata	manage	r	Analysis	Rep	orting
IPETRONIK LOG System Components Fur	inctions Impo		1 Exp	ort	Check	Adjust	Detect	Initialize	Displa
	Configuratio							Access	1
V03.59.00					Name			Active	Unit
Name	Σ		9	2					
		*		- 1	Exhaust_1	i.		~	C
a 🔤 8000000	68			1	Front_left			~	C
Project settings	0			1	Exhaust_2	2		~	C
🗸 🖌 🐺 Case0_Unchecked	6			1	Pressure_	Abs		~	bar
4 08C CONF_Case_0_182	omponents				TPS_Volt			~	V.
Message_ID_A				1	MAP			~	bar
// Message_ID_b	hange into		2						
// hessage_io_c	unctions		>						
Message_ID_D	nport		+		CAI				
A T Case0_Checked	port		>	1	Sign	al impor	t from DBC	file	
CONF_Case_0_182     M     Message ID A     M     Use	se as default			1					
			_	6		chronize	ze the impor	ted signals	with
Message_ID_B	ut Ctrl	+X		7			iption file	and anglituna	00001

Synchronize function on decrition file level [IM\_42]

In the next step you select the descrition file you like to compare against and the processing treatment operation. Here you can enable a message window to get an overview of the differences detected and how to treat the differences. In this example we will get an message window to see the differences. The treatmetn seleted is: Deactivate the channels which cannot be synchronized

### Dialog to select description file to sync and define configure sync process.

Previous file	New file	
CONF_Case_0_182.dbc	SYN_Case_0.dbc	
Show differences: 🔽 Missing s	Selected new descri	
Show differences: 🗹 Missing si		iption file OK Cancel

Defined actions after synchronization

The message popup window is now indicating that the channel Exhaust1 could no the synchronized and was therefore accordingly to the treatement operation was deactivated.

SYN\_C

	Property	Old value	New value	Transfer
9				
+	Missing signal: SYN_Ca	se_0   FreeRunning   Me	ssage_ID_A   Exhaust_1	
	Missing signal handling	Do not disable signal	Disable signal	<b>v</b>
			operatio	on
	M	issing channel		
	IVI	issing channel		
old f	le name: X.\DATA\OS\01 Pro	viekte 100 IDEmotion 103 Test	aten\Alloemein\IPEmotion\dbr\DBCs For IM	-28182\CONE Case 0 182 dbc
old f New	ile name: X: \DATA \QS\01_Pro file name: X: \DATA \QS\01_Pr	ojekte \00_IPEmotion \03_Test ojekte \00_IPEmotion \03_Test	aten \Allgemein \IPEmotion \dbc\DBCs_For_IM ten \Allgemein \IPEmotion \dbc\DBCs_For_IM	-28182\CONF_Case_0_1&2.dbc ^ M-28182\SYN_Case_0.dbc
Old f New	ile name: X: \DATA\QS\01_Pro file name: X: \DATA\QS\01_Pr	ojekte \00_IPEmotion \03_Test ojekte \00_IPEmotion \03_Test	aten \Allgemein \IPEmotion \dbc\DBCs_For_IM Dten \Allgemein \IPEmotion \dbc \DBCs_For_IM	-28182\CONF_Case_0_1&2.dbc M-28182\SYN_Case_0.dbc
New	file name: X:\DATA\QS\01_Pr	ojekte \00_IPEmotion \03_Test ojekte \00_IPEmotion \03_Test	aten \Allgemein \IPEmotion \dbc\DBCs_For_IM D ten \Allgemein \IPEmotion \dbc\DBCs_For_IM	M-28182\SYN_Case_0.dbc
New	le name: X:\DATA\QS\01_Pro file name: X:\DATA\QS\01_Pr aport	ojekte \00_IPEmotion \03_Test ojekte \00_IPEmotion \03_Test	aten \Allgemein \IPEmotion \dbc\DBCs_For_IM D ten \Allgemein \IPEmotion \dbc\DBCs_For_IM	-28182\CONF_Case_0_1&2.dbc M-28182\SYN_Case_0.dbc
New E	file name: X:\DATA\QS\01_Pr cport	ojekte\00_IPEmotion\03_Test	aten\Allgemein\IPEmotion\dbc\DBCs_For_IN	VI-28182\SYN_Case_0.dbc
New E	file name: X:\DATA\QS\01_Pr cport	ojekte\00_IPEmotion\03_Test ojekte\00_IPEmotion\03_Test ng the differences to	aten\Allgemein\IPEmotion\dbc\DBCs_For_IN	M-28182\SYN_Case_0.dbc
New E	file name: X:\DATA\QS\01_Pr oport sage dialog inticatin	ojekte\00_IPEmotion\03_Test	aten\Allgemein\IPEmotion\dbc\DBCs_For_IN	VI-28182\SYN_Case_0.dbc
New E	file name: X:\DATA\QS\01_Pr oport sage dialog inticatin	ojekte\00_IPEmotion\03_Test	oten\Allgemein\IPEmotion\dbc\DBCs_For_IN	VI-28182\SYN_Case_0.dbc
New	file name: X:\DATA\QS\01_Pr oport sage dialog inticatin	ojekte\00_IPEmotion\03_Test	Do.	VI-28182\SYN_Case_0.dbc

### Message window indicating the differences and the selected treatement

The configuration is now indicating the deactived channel Exhaust 1.

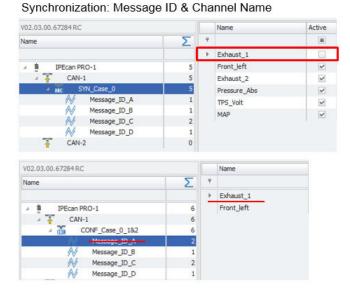
V02.03.00.67284 RC			Name	Active	Unit
Name	Σ	9			
			Exhaust_1		C
4 🛔 IPEcan PRO-1	5		Front_left	~	С
4 ∓ CAN-1	5		Exhaust_2	~	C
A DEC SYN_Case_0	5		Pressure_Abs	~	bar
Message_ID_A	1		TPS_Volt	~	V
Message_ID_B	1		MAP	~	bar
Message_ID_C	2			1 120	
Message_ID_D	1				
CAN-2	0				

Result: missing channel is deactivated [IM\_45]

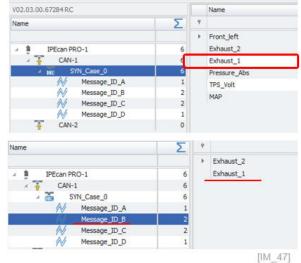
With the EXPERT setting "Synchronize signals by name" the synchronization mechanism is focusing only on the channel name and not any more on the message ID and channel name together. The benefit for the user is that the synchronization will take place and the links to the VIEW instruments etc. remain intact to display online data.

Frequently used	Preferred configuration type:	Hardware configuration	General options	
Basic settings		Signals configuration	Additional warnings:	~
Appearance	Grouped by interface type:	-	Name pattern:	"Type"-"Source"-"In
View	Signal database:		Configuration options	
Data manager	Accurate acquisition chain required:		Variable configuration:	~
Data service	Expert mode:	v	Extended tabs:	<ul> <li>Image: A start of the start of</li></ul>
Import	Automatic service administration:	2	Allow newer versions:	~
Export	Additibile activite builtings built.		Data acquisition options	
Analysis			Maximum size of acquisition data files:	1.68
Maps			No value timeout:	0 s
Directories			Limit message duration:	5 s
Units			Description files import options	
Hotkey			View protocols:	~
User administration			Edit protocol channel scaling:	4
IPEdoud			View diagnostic jobs:	~
Logger			Ignore verbal tables:	
User displays	Expert mode Edit extended expert mode settings.		Max. polling lists:	
User operations	cur extended expertinude setungs.		Use characteristics:	
			Support J1939:	
			Synchronize signals by name:	
			Logging import:	~
			0	Cance

The screenshot below in indicating on the right hand side, that the channel Exhaust 1 was successfully synchronized even so that it is included on a different CAN message ID.



### Synchronization: Only by Channel Name



#### 5.11 **J1939 Diagnostics**

IPEmotion 2020 R1 - Newly implemented J1939 Features: https://youtu.be/dyqk3jh2V5c

You need to select on your CAN interface of your CAN card or data logger the J1939 diagnostic function. In order to use the J1939 protocols function on a logger a license is required. For more details see RT licensing table. ??

File	Project	Signals	1	Acquisitio	n	Commu	nication	
		B	↓	1	0		K	Đ,
System Co	omponents	Functions	Import	Export	Check	Adjust	Detect	Initi
		Configu		CANdb Signal im	nport fro	m DBC file		
Name		ſ	<b>11939</b>	<b>J1939</b> Signal im	port fro	m J1939 s	tandard	٦
- 🖪 🛦	IPElog2		6	AUTOS			in file	
· · · · · · · · · · · · · · · · · · ·	CAN1			Signal in	port fro	m AUTOSA	ar nie	
- F 🛉	CAN2			A2L				
+	CAN3		<b>a</b>		port fro	m A2L file		
- F 🛉	CAN4		-					
1	CAN5		FIBEX	FIBEX				
Ť	CAN6		-	Import f	rom FIBE	EX file		
- <del></del>	CAN7				anactio	-		
Ť	CAN8				agostic tic impor	s t from PD)	file	
+	CAN9		( <u>_</u>					
1	CAN10			UDS Sig				
1	LIN1			Signal in	port fro	m XML/PD	X file	
+	LIN2		_					
+	LIN3		<b>—</b> ]	GM LAI	T	m GM-LAN	file	
1	LIN4			orginarin	porciro		100	
· · · · · · · · · · · · · · · · · · ·	LIN5		A	Send				
+	LIN6			Import s	ignals to	be sent.		
· · (-).	🔥 X-LINK			-				

J1939 diagnostic measurement

The J1939 import dialog provides a list of over 3000 default channels defined in the standard. With the bus scan functionality, you can identify which channels are available on the connected ECU. The default CAN bus baud rate is set during the bus scan to 250 kB.

-	Name	Sele	tion	Sampling rate	Message	Physical range	CAN	ID	-	Project nu.			
,	- Contente	Sec		Sumpling force	ricoouge	ritysical tange	Grit	10	- 1	Protocol: J193	20		-
		7	-		NAME AND A	10.55 Die		No. of the Arriver of the	2	Protocol			
	EngineOverrideControlMode			100 Hz	TSC1	0 3	ext	A CONTRACTOR OF		Signal cour	st	3153	3
	EngineRequestedSpeedCo			100 Hz	TSC1	03	ext	COOFEFE h		CAN baud		250 kBd	d
	OverrideControlModePriority			100 Hz	TSC1	03	ext	COOFEFE h		Sample poi	nt	Not specified	d
	EngineRequestedSpeedSp			100 Hz	TSC1	0 rpm 803	ext	COOFEFE h		Message		*	
	EngineRequestedTorqueTo			100 Hz	TECI	105.9/	muk	coorers h	1	Name		TSC1	1
	TSC1TransmissionRate		•	List of sta	indard	J1939 ch	anı	nels sh		CAN ID	ext	COOFEFE h	1
	TSC1ControlPurpose			100 Hz	TSC1	0 31	ext	COOFEFE h		Length			
	EngineRequestedTorqueFr			100 Hz	TSC1	0 % 0,87	ext	COOFEFE h		Sampling r		100 Hz	Z
	MessageCounter		6	100 Hz	TSC1	0 15	ext	COOFEFE h		Cyclic		~	
	MessageChecksum			100 Hz	TSC1	015	ext	COOFEFE h		Description		TE - Retarde	
	TransmissionGearShiftInhi			20 Hz	TC1	03	1000	C01FEFE h		Sender nar	ne		
	Transmission deal Shin thinn	<b>.</b>		20112	ICI.	0	CAL	COBCEII	*	Priority Source ad.			
tt	orter is dialog, all signals that can be left table, all signals, where t e right table, the properties of i	the "se	lectio	n" checkboxes ar	e selected,	will be marked for							
Se	elect all Select by CSV/LA	в	Select	by bus scan	1939.JBC ·	0 of 3153 signa	ls sele	ected.			Ж	Cancel	1
9	39 bus scan func	tior	1			Sca	nnina	DBC imp		the bus		[][]	A

When the bus scan is performed the available channels are activated.

	a column header here to group	o by that col							Project	*
									Project num	
	Name	Selection *	Sampling rate	Message	Physical range	CAN I	ID		Project vers	
9		~							Protocol: J1939	
	AcceleratorPedal 1LowIdleS		Event-based	EEC2	03	ext	CF003FE h		Protocol	J193
	AcceleratorPedalKickdown	~	Event-based	EEC2	03	ext	CF003FE h		Signal count	315
	RoadSpeedLimitStatus	~	Event-based	EEC2	03	ext	CF003FE h		CAN baud rate Sample point	250 kB Not specifie
	AcceleratorPedal2LowIdleS	~	Eve				03FE h		Message	(vor specifie
	AcceleratorPedalPosition 1	~	Eve Avai	lable o	channels	are	03EE h		Signal	
	EnginePercentLoadAtCurre	~		tified a	and activa	ated			orginar	
	RemoteAcceleratorPedalPo	~	Event-based	EEC2	0 % 100 %	ext	CF003FE h			
	AcceleratorPedalPosition2	~	Event-based	EEC2	0 % 100 %	ext	CF003FE h			
	VehicleAccelerationRateLim	~	Event-based	EEC2	03	ext	CF003FE h			
	MomentaryEngineMaximum	~	Event-based	EEC2	03	ext	CF003FE h	-		
			)				+			
<	[Selection] = 'Checked'						Edit Fil	ber		
										5
	orter									-
	is dialog, all signals that can be e left table, all signals, where t					or impo	rt.			
	a right table the properties of t		cionale the con	trol unit a	The Arathral sta		176A			
Se	lect all Show all signals	Show	all signals	1939. JBC -	198 of 3153 sig	nals se	lected.		OK	Cancel

File Project Sign	als Acquisition	Comn	nunicati	on Mobile display Logger scriptin	g View
system Components Function Conf	J 1 Chec	k Adjus	t Det	Access View	
				Name	Current value
lame		Σ	1		. (1)
			- 1	AcceleratorPedal 1LowIdleSwitch	0
🖌 🦰 🛦 IPElog2		313		AcceleratorPedalKickdownSwitch	3
CAN1		0		RoadSpeedLimitStatus	3
> 👬 CAN2		9		AcceleratorPedal2LowIdleSwitch	3
CAN3		0		AcceleratorPedalPosition 1	0,0 %
F CAN4		16		EnginePercentLoadAtCurrentSpeed	0%
CAN5		0		RemoteAcceleratorPedalPosition	NoValue
CAN5 CAN6 CAN7		0		AcceleratorPedalPosition2	NoValue
CAN7		0 198		VehicleAccelerationRateLimitStatus	3
AND 11939	_	190		MomentaryEngineMaximumPowerEnableFeed.	3
EEC2	1	14		DPFThermalManagementActive	3
EEC1		8		SCRThermalManagementActive	3
KL 1		8		ActualMaximumAvailableEnginePercentTorgue	NoValue
₩ KL2	-	8		EstimatedPumpingPercentTorque	NoValue
₩ KL3		8		EngineTorqueMode	15
TFAC		4		ActualEnginePercentTorqueFractional	1,9 %
EFL_P10		5		DriverSDemandEnginePercentTorque	NoValue

When you start the measurement the actual messages and channel readings are displayed.

On the J1939 interface you can select diagnostic messages too.

	-	🗄 👬 🖶	χ ι	1	Ē	A 🗟	$\times$	X 🔘	<u>n</u> 6	8 (	? 🗖 🍇
File	Project	Signals	Acq	uisitio	n	Commu	nication	Mob	ile displa	ay l	.ogger scrip
81111		<u>.</u>	1 4		Ö		iń	10			
System C	Components	Functions In	nport Ex	port	Check	Adjust	Detect	Initialize	Display	Details	
*	-	*	port Li		Check	- Hojost	Petert	-	Dispice)	Detallo	
		Configura	tion					Access		View	
					Name				Active	Unit	Phys M
lame				٩							
					Diagn	ostic Mess	age DM1				
- 📾 🗛	IPElog2				Accele	eratorPeda	l 1LowIde	eSwitch			0
-	CAN1				Accele	eratorPeda	Kickdow	nSwitch	~		0
	CAN2					SpeedLimit			~		
Ť	CAN3					eratorPeda		Switch			0
- > <del>1</del>	CAN4					eratorPeda			~	56	0,0
Ŧ	CANS							- rentSpeed	~	9%	0
+	CAN6					teAccelera			~	5	0.0
Ŧ	CAN7				1 Contractor	eratorPeda			~		
1	CAN8		R.	Com			Position.	•		%	0,0
a.		939			ponents	_			IF IF	ETRONIK	CAN
	Lt.	Diagnostics	1	Chan	ge into			> 20	-		
	N	EEC2	B	Func	tions			16	IF	Espeed	
	Ň	EEC1 KL1	1	Impo	rt			E	<u> </u>		
	Ň	KL1 KL2	- i	Expo	rt			•	E IF	Eout	
	Ň	KL3							8	Look	
	Ň	TFAC	1	Use a	as defau	lt		10	11001	~	
	N	EFL_P10	X	Cut			Ctri	+X	3	affic	
	Ň	EAI	Cp	Сору			Ctrl	+C		1275	
	Ň	ACS	lin.	Paste			Ctrl		•• S	tatus	
	Ň	EOI	164								
	Ň	SEP1			e behind			1	SV M	anual mes	sages
	N	EEC6	X	Delet	12				_		
	N	EFL_P3	*	Clear	1			6		WH-OBD	
	N	IC2	3	Сору	to file				-		
	N	EFS		Paste	from f	le		6	•	BD-2	
	$\sim$	EI1	101000	-		57. (A)	_	-	_		
	N	IMT2			to subco	9 T		6	•	BD-2 mod	e 21
	N	IMT1	2	Remo	ove from	n subconfi	9		-		
	N	EEC3	-	Prope	erties			ĩ	Jo D	agnostics.	11939
	N	SHUTDN	-		_						100000

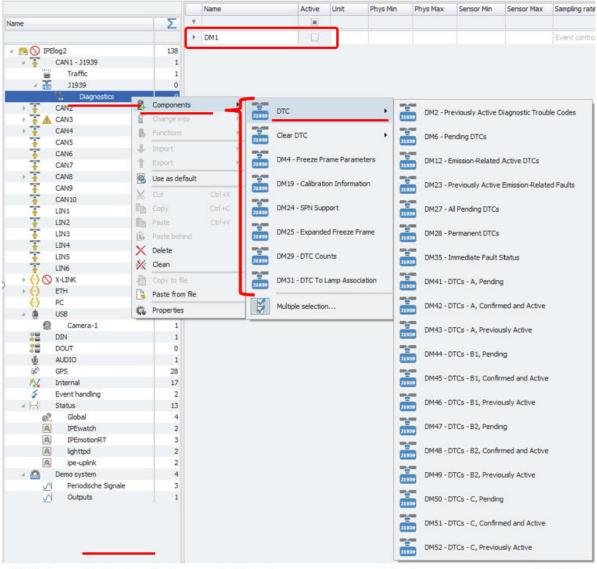
J 1959 Diagnostics

[IIVI\_34]

When the channel is activated you select from a wide range of components. The DM1 channel is created by default.

- **DTC**: 1, 2, 6, 12, 23, 27, 28, 35, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52
- Clear DTC: 3, 11
- DM 4, 19, 24, 25, 29, 31
- Multiplexed signals are supported too

# **IPETRONIK**



DM1 is available by design - additional messages are listed

[IM\_55]

The readability of the data in the channel is very limited. Therefor a dedicated diagnostic instrument is available. This instrument is explained in chapter **??** 

File Project Signals Acq	uisiti	ion Commu	nication Mo	bile display Logger scripting View	Data ma
System Components Functions Import Ex	¢port	Check Adjust	Detect Initialize	Stop Details	
		Name		Current value	Active
Name	9				
		Diagnostic Mess	Rg( 0111	SA: 0x14 MIL: Off RSL: Off AWL: Off Protec	: <u>t:</u>

DM01 Diagnostic channel readings

[IM\_56]

## 5.12 UDS Diagnostics

On CAN and ETH interfaces you can run UDS diagnostic measurements.

File	Project	Sign	-	ta lia	n 🖻	Commu		Mol	bile displa	S ?	gger scrit
	-	-		-	-	Contra	-	-			gger seri
ACCOUNTS NO.				T	$\mathbf{Q}$	-	14	20			
System Cor	mponents Fu	inctions	Import	Export	Check	Adjust	Detect	Initialize	Display	Details	
*		*	L.								
		Conti	guration		1			Access	1	View	100
					Name				Active	Unit	Phys N
Name				9							
- 🖪 🛕 🛙	PElog2 CAN1										
, ‡	CAN2	E.	Componen	ts			•				
Ť	CAN3	6	Change int				5				
- F	CAN4	8.	Functions				,				
Ŧ	CAN5	1	Import					CANd	h.		
Ŧ	CAN6	*							import from	n DBC file	
±.	CAN7	T	Export				노르				
· ‡	CAN8 CAN9	8	Use as def	ault			3193			n J1939 sta	ndard
÷	CAN10	X	Cut			Ctrl+X		- Signai	inport iro	11 3 1 3 3 3 5 10	riuaru
++ ++ ++ ++	LIN1	Ep	Сору			Ctrl+C	6	AUTO			
Ť	LIN2	1 In	Paste			Ctrl+V	e	Signal	import from	n AUTOSAR	t file
Ŧ	LIN3	12		nd				A2L			
Ť	LIN4	X	Delete					Signal	import from	n A2L file	
1	LIN5	84									
	LIN6 X-LINK		-				FILE		t from FIBE	X file	
24	ETH	1	Copy to file								
Ä	PC	3	Paste from	file				1000	Diagostic	s t from PDX 1	100
> m	USB	2	Add to sub	config			~6	a Diagni	suc import	C ITOM PDX I	ie.
	DIN	2	Remove fr	om subc	onfig				Signals		
÷=	DOUT	-	Properties	y				Signal	import from	n XML/PDX	file
Ū	AUDIO	-		11	_		-	GML	AN		
6	GPS									n GM-LAN f	le
14	Internal	les a						10			
\$	Event hand Status	ur)g		G	eneral	CAN	E	Send	t signals to	be sent.	
4											

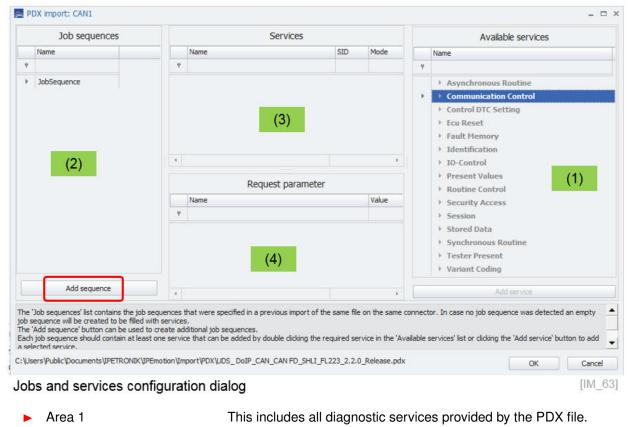
The .PDX and .IDF import file format is currently supported.

Organisieren 👻 🛛 N	leuer	Ordner		III • 🗍	0
🚺 Downloads	^	Name	Änderungsdatum	Тур	Grö
🔛 Zuletzt besucht		Example 1	10.11.2017 11:55	Dateiordner	
OneDrive		Example_2	10.11.2017 11:55	Dateiordner	
	Ħ	IPEmotionDemo.pdx	26.04.2020 19:55	Acrobat Catalog-I	
Bibliotheken Bilder		IPEmotionDemo_CommRefT	30.11.2018 15:28	Acrobat Catalog-I	
		JUDS_DoIP_CAN_CAN FD_SHL	29.04.2020 09:51	Acrobat Catalog-L	
Musik Videos		UDS-ExampleEcu.pdx	11.07.2014 17:18	Acrobat Catalog-I	
🖳 Computer					
🏭 Windows (C:)	-	4	m		
D	atein	ame: UDS_DoIP_CAN_CAN FD_SHLI_F	1223 2 All supp	oorted (*.idf;*.pdx)	-
		www.lau.e.com.eu.g.e.g.g.g.e.g.g.g.g.g.g.g.g.g.g.g.g.		orted (".īdf;".pdx)	-

The PDX file can contain several software versions. You need to select the one relevant for the ECU in place.

The second second second second		×
There are several ECU variant	ts available.	
HLI_FL223		
HLI_FL223_Boot_Developmen	nt	
HLI_FL223_Boot_Production		
HLI_FL223_Boot_wrongFinge	rprint	
HLI_FL223_R5		
HLI_FL223_R6		
HLI_FL223_R7		
HLI_FL223_R7_1		
HLI_FL223_R8		
		1
	-	
	ОК	Cancel

In the last stage you reach the jobs and service configuration dialog. This dialog consits of 4 distinctive areas with different functions.



Area 2	Here you define the job sequences. You can have several se- quences and trigger them individually.
Area 3	Here you drag and drop the service you like to execute.
Area 4	Here you can define for some specific jobs which require a output values the corresponding parameter to get data back from the

In this example a sob sequence with several service is configured. Within a job sequence the service can operate in different modes.

- Start of measurement
- End of measurement
- Cyclic and Start of measurement
- Cyclic and End of measurement

ECU.

Job sequences			Service	es /			Available services			
Name	Name	2	SID	Mode	Request rate		Name			
	9					9				
JobSequence	Fault	Memory ReportNbrOfDT	19	Cydic and start of	10 Hz		Asynchrono	us Routine		
	Fault	Memory ReportDTCBySt	19	Cyclic and start of	10 Hz		Communication	tion Control		
	Fault	Fault Memory ReportDTCSnap Fault Memory ReportDTCExte		Cyclic and start of	10 Hz		Control DTC	Setting		
	► Fault			Cydic and start of	10 Hz		▶ Ecu Reset			
	Fault	Memory ReportSupporte	19	Cyclic and start of	10 Hz		✓ Fault Memo	ry		
		0. 	101 101				14 - Fault M	Memory Clear		
		)rag service to	job se	equence 🚽			19 01 - Fau	ult Memory ReportNb	rO	
							19 02 - Fau	ult Memory ReportDT	CE	
		Req	uest par	ameter		-	19 04 - Fau	ult Memory ReportDT	cs	
	Name			Value	В		19 06 - Fau	ult Memory ReportDT	CE	
	9						19 0A - Fai	ult Memory ReportSu	ιpp	
	PapartOtrEuter		rtDtcExtendedDataRecordByDtcNumber 06				19 14 - Fault Memory ReportFa			
	Repor			0	0		31 01 02 41	- Fault Memory Rea	ad	
	Repor			U						
	DTCR			Enter val	ue.		14 - Fault M	Memory Clear DTC		
	DTCR	ecord			ue.	4	14 - Fault 1	Memory Clear DTC		
Add sequence	DTCR	ecord			ue.	+		Memory Clear DTC	*	
		ecord			ue.	+			•	
Add sequence It Memory ReportSuppo 19 ReadDTCInformatic If ECU is supporting a Fault	tedDTCs	ecord x tendedDataRecordNumber		Enter vak	•				*	

When you have activated in OPTIONS > EXPERT MODE > View Diagnostics Jobs (see section **??**)you can see all configured job sequences and the selected services. For each service a list of channels for PR = positive responses and NR = negative responses is listed.

File         Project         Signals         Acquisition         Communication         I           Image: Signals         <	Vobile display	Logger scripting View Dat	a man
Configuration Acce		View	
		Name	Activ
lame	Σ	Ŷ	
		DTCRecord	
A TRA A IPElog2	357	DTCRecord	
CAN1	43	TestFailed (1Bit)	5
4 📾 HLI_FL223	43	TestFailedThisOperationCycle (1Bit)	5
UDS_DoIP_CAN_CAN FD_SHLI_FL223_2.2.0_Release	43	Pending DTC (1Bit)	E
- └ Extended Start	0	Confirmed DTC (1Bit)	6
Ly Extended Start	0	Test not completed since last clear (1Bit)	6
TesterPresent	2	Test failed since last clear (1Bit)	1
Us NR TesterPresent	2	Test not completed this operation cycle (	
4 Ur JobSequence	41	Warning indicator requested (1Bit)	5
Fault Memory ReportDTCExtendedDataRecordByDT	18	ExtendedDataRecordNumber	5
PR Fault Memory ReportDTCExtendedDataReco	15	MULTIPLEXER DTCExtendedDataRecord	1
Vg NR Fault Memory ReportDTCExtendedDataReco	2	Occurrence Flag	Ī
Fault Memory ReportSupportedDTCs	3	External Tester Present Flag	6
PR Fault Memory ReportSupportedDTCs	1	Frequency Counter	5
V NR Fault Memory ReportSupportedDTCs	2	Operation Cycle Counter	
Fault Memory ReportDTCSnapshotRecordByDTCNbr	16	SIDRQ-NR	1
PR Fault Memory ReportDTCSnapshotRecordBy	12	Response Code	5
Us NR Fault Memory ReportDTCSnapshotRecordBy     ✓ Us Fault Memory ReportDTCByStatusMask	2		
PR Fault Memory ReportDTCByStatusMask	1		
Ur NR Fault Memory ReportDTCByStatusMask	+		

Channels with responses of each service are listed

[IM\_65]

## 5.13 OBD-2 diagnostics

On all CAN interfaces you can measure data from the standard OBD-2 protocol to get standard vehcile diagnostic information.

System Com	ponents Fi	Configuration	T Export	Chec	k Adjust	Detec	t Initialize Display	
					Name			1
Name				٩				
	Elog2		333					
, ‡	CAN1 CAN2	Components			•	(*** # **)	IPETRONIK CAN	
Ŧ	CAN3	Change into			P	(00 00)?	FEROID CON	
> 🚹	CAN4	Functions			F	12	IPEspeed	
1	CAN5	J. Import			÷.			_
· 1	CAN6 CAN7	Export					IPEout	
-	10000	Use as default						_
+ + + + + + + +	CANO	K Cut		-	trl+X	1011001	Traffic	
Ť	CAN10	Copy			trl+C	<b>.</b>		
1	LUNI			- 33	trl+V	7	Status	
+		Paste			an carls			-
-	LIN4	X Delete				1	Manual messages	
Ť	LIN5					-	-	
Ŧ.	LING					-	WWH-OBD	
	and the second second	Copy to file					OBD-2	
X	PC	Paste from file					080-2	
> 🗑 🔺	USB 4	Add to subconf	-				OBD-2 mode 21	
	DIN 6	Remove from s	ubconfig			-		
3		Properties				Ų,	DiagnosticsJ1939	
6	AUDIO GPS		1					
1	Internal		28 18			3	Multiple selection	

When you activate the OBD-2 measurement over 200standard OBD channels are created. You can then activate the channels you require. Not all channels will provide data as this is vehicle manufacturer specific.

5			Name	Active	Unit
Name		۴			
		٢	Protocol status	~	
🔺 🚌 🔺 IPElog2	558	1	Protocol trigger	~	
4 👬 CAN1	225	Т	001 - Number of emission-related DTCs	~	
a 🔤 OBD-2	225 -	4	001 - Malfunction Indicator Lamp (MIL) status	~	
tatus 📩 📩	2		001 - Misfire monitoring supported	~	
CAN2	9		001 - Fuel system monitoring supported	~	
CAN3	0		001 - Comprehensive component monitoring	~	
CAN4	10		001 - Compression ignition monitoring suppor	~	
CAN5	0		001 - Misfire monitoring ready	~	
CAN6     CAN7	217	Т	001 - Fuel system monitoring ready	~	
CAN9	0		001 - Comprehensive component monitoring	~	
CAN9	0		002 - DTC that caused required freeze frame	~	
CAN10	0		004 - Calculated load value	-	%
LIN1	0		005 - Engine coolant temperature	~	°C

OBD-2 Standard channels

[IM\_71]

Besides the standard OBD-2 channel you can activate additional components for measurement as indcated below.

System Components Functions Configu	Import Export	Che	k Adjust Detect Initializ		tails				
			Name		Active	Unit	Phys		
Name		9							
			Protocol status		~		0		
🔺 🥅 🛕 IPElog2	558		Protocol trigger		~		0		
A CAN1				lated DTCs			0		
OBD-2	225			amo (MII ) atabus			0		
📁 🕅 Status	Charles to be set	onents	·	User-defin	ed OBD sig	nal	r		
CAN2	🖬 Chang	je info							
CAN3	B Funct	tions   Vehide ident			otification	tification			
CAN4	I Impor	nport P							
CAN5	1 Expor					on			
CAN6		-	· · ·						
CAN7	🚳 Use a	s defa	lt		ored trouble code				
CAN8 CAN9	X Cut		Ctrl+	V Stored tro	ubie cooe		- 1		
CAN9 CAN10	EP Copy		Ctrl+						
CAN6 CAN7 CAN7 CAN8 CAN8 CAN8 CAN10 CAN10 CAN10 LIN1 LIN1 LIN2 LIN2 LIN3			Cti+	Sporadic t	rouble code		- 1		
	Paste				0	5			
LINZ	Paste	behind		OBD-2 mo	de 4 - Clear	Fault Code	es O		
	X Delete	9							

OBD-2 additional components

With the user defined signals, you can request PID which are outside of the standard and not available to the public. The identification and trouble code channels you can get additional information too. With mode 4 you can use a trigger channel to clear fault codes.

System Co	Project Signals	mport i	cquisitio	Che	* * *	tails	r scripting	Vie	
					Name	Active	Unit	Phys	
Name				9					
					Protocol status			0	
- 🕋 🛦	19 A IPElog2 558				Protocol trigger	y y		0	
A CAN1			225		001 - Number of emission-related DTCs			0	
4 🗰 OBD-2					Ana aa 10 11 a alaan ah 1 ama Matti Yataha			0	
	Status EL Compor				🚽 ' 🕮 User-def	ned OBD sig	nal		
) 🚹	CAN2	li	Change	into					
-, <del>‡</del>	CAN3	ß	Function	ns 🕨 🔨 Vehicle identi		entification	ification		
`‡	CAN4 CAN5	4	Import			Calibration identification			
	CANS	1	Export		Calibration				
1	CAN7		Use as i	dafa.					
*	CAN7     CAN8     CAN8     CAN9     CAN0     CAN0     CAN10     COpy     LIN1     LIN2     LIN2     LIN2     CAN3     Copy     Copy			Stored troub					
Ť				Ctrl+ / V					
Ŧ	CAN10	C.	Copy		Ctrl+ A Sporadic	trouble code		- 1	
Ŧ	LIN1	in.	Paste		Ctrl+			_	
Ŧ	LIN2 Pastel						le 4 - Clear Fault Codes 0,		
- T									

OBD-2 additional components

[IM\_72]

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