# **IPETRONIK**





# IPEmotion\_PlugIn\_Demo\_Signals\_V01\_05\_00

2. Januar 2019

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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>8</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:

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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 Demo PlugIn is a very useful PlugIn to test and simulate different wave forms and CAN and FlexRay traffic. With this PlugIn you can test many functions of IPEmotion with having any specific measurement hardware connected.

# 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.

D	New		Recent projects li	st						
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5	Surces			Frequently used	Active		Title	Version	Description	Manufacturer
	App-Export	*		Basic settings			technikmedia Universa	01.01.12	Universal Modbus PlugIn	Technikmedi
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<u> </u>				Data manager		1	ETAS - ES4xx	01.01.00.13	Connection of ETAS ES4xx Series Micro M	IPETRONIK
5	Compare			Import			IOtech	01.00.01.23	PlugIn for IOtech DaqBook 2005. Support	IPETRONIK
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				Directories			OPTRIS	01.00.00.123	OPTRIS PI acquisition plugin	PMR Hande.
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ч.				IPEdoud						
9	Options		Options Show/edit general	PlugIns IP User displays					Download manual	Download
0	About			User operations	Plugin s Specify t The used	ettings he plugin d plugin v	s ns to be used, version can be changed wit late is run at installing later	hin the list. If a v	ersion number is selected that ends with a '='	character,

The PlugIn is supporting the following operating systems:

- 32 bit
- 64 bit

# 3 PlugIn configuration

# 3.1 Functional architecture

The Demo PlugIn requires no hardware interface. It is a pure software simulation with IO channels to generate waveforms and traffic to use other functions of the IPEmotion software.



# 3.2 Creating interface systems

The PlugIn is supporting an automatic system detection function. When you execute the detection a demo interfaces system will be created automatically. However the system can be created manually too.



# 4 Demo PlugIn – Periodic signals configuration

The periodic signals can be created when you select the periodic signal interfaces. The different signals



Create waveform signals

[4 DEM

- Rectangle
- Sine
- Sawtooth
- Digital output

When you change the sample rate in the channel grid it has an impact in how man samples are taken to generate the waveform. It can also impact the frequency of the when they respond to ticks like it is the case for a rectangle signal.

#### 4.0.1 Rectangle

This signal supports thee configuration function for amplitude and the distribution / ratio of the UP (high) and DOWN (low) ticks. The high / low duration is depending on the number of defined in the column sample rate. Example:

- ▶ 100 Hz sample rate and 100 ticks high = 1 s high
- ▶ 10 Hz sample rate and 100 ticks high = 10 s high



#### 4.0.2 Sine

In the Sine signal you can configure only the amplitude. However with the channel scaling for the Physical min and max you can modify the amplitude and the offset as well. The frequency of the Sine signal cannot be changed.

![](_page_7_Figure_9.jpeg)

#### 4.0.3 Sawtooth

This signal generator has 3 configuration parameters for start value, increment and end value. With every tick the slope will rise by the defined increment. The sample rate has an impact how fast the end value is reached. The increment has an impact how large the steps are. Large increments will lead to stair case types of diagrams with a higher signal frequency. Small increments with high sample rates will lead to very smooth and slow rising graphs.

![](_page_8_Picture_4.jpeg)

#### 4.0.4 Digital output

This signal can be configured like the rectangle waveform. The amplitude is statically defined to 1 and the ratio between high and low values is defined in ticks.

![](_page_8_Figure_7.jpeg)

# 4.1 Output channels

The characteristic of the output channels is that you can write data to this type of channels. There are to types supported. An analog output and a digital output.

![](_page_9_Picture_4.jpeg)

In the tab sheet format you can see the data direction is indicated as output. The impact of data direction output is also that alphanumerical instruments in the VIEW workspace show spin buttons to enter values. Also the slide controller and switch can write data the output channels.

	Demo	System	Components	Funct	ions Import E	xport d	keck Adjus	Detect
Ha	rdware			-Traffic				
V01.05.00	)		10110.01			Active	Unit	Phys Min
Name			Flex	Ray-Tr	affic			
			-		1			0
10	Demo system	(	Muit	iple sel	ection	~		-10
5	Periodic s	ignals		11	Sawtooth U3	~		-10
5	Outputs		2	2	Digital input 04	~		0
				1	AnalogOut 01	~		0,0000
				1.1	DistalOut 02	~		

The configuration of the analog output covers a start value and the settings of the output level. The output level is related to the user administration. Here you can control which user profile can operate outputs at all. The configuration of the user administration is in detailed explained in the IPEmotion manual.

V01.05.00			Name	Active	Unit	Phys Min	Phys M						
Name	Σ	9											
		Þ	AnalogOut 01	~		0,0000	10,000						
A 📇 Demo system	6		DigitalOut 02	~		0	1						
Periodic signals	4												
🕢 Outputs	2												
		General Format Scaling Output Display Set start value:											
			Set start value:										
			Start valu	e: 0,000	)								
			Output lev	el: 1		*							
		Ou	tputs settings			[1]	1_DEM]						

The Digital channel has no separate configuration tab sheet.

## 4.2 Traffic simulator

The Demo PlugIn is also providing a traffic simulation function for CAN and FlexRay. With this demo traffic stream you can test the functions of the Traffic Analyzer instrument in the VIEW work space.

		<b>A</b> .	6	L		<b>↑</b> 4	Ö.	16
Demo	System	Components	Func	tions Import	E	oport C	heck Adjust	Detec
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01.05.00						Active	Unit	Phys Mir
Name		Flexe	FlexRay-Traffic					
					1			0
🖌 🔔 🛛 Demo sys	tem	Multip	Multiple selection			~		-10
N Period	ic signals		-	Sawtooth U	3			-10
Outpu	ts	2		Digital input	04			0
				AnalogOut (	01			0,0000
			•	DigitalOut 0		~		

Create traffic simulators

[12\_DEM]

## 4.2.1 CAN traffic simulator

For CAN traffic you can activate a couple of additional traffic messages which are part for a real traffic scream from bus networks.

2   1 🗳 💾 🖽 💼	a X h h	B 🛛	1 B × 8	8 👩	
File Project Sign	hals Acquisition	Vi	ew Data	manager	Analy
Demo Syste	m Components Fun	tions I	mport Export	Check	Adjust Det
V01.05.00		Name		Active	Unit
Name	Σ ,	8			
		Traffi	c channel	~	
<ul> <li>Demo system</li> <li>Periodic signals</li> <li>Outputs</li> <li>CAN-Traffic</li> <li>FlexRay-Traffic</li> </ul>	8 4 2 1				
		General	Traffic setting	s	
			Data frames Status frames Remote frames Error frames Statistic frames Transmit frames	:	

CAN traffic settings for frames

[13\_DEM]

You can visualize the traffic stream in the VIEW workspace with the Traffic Analyzer instrument. You need a Demo Edition or Professional Edition to get access to this instrument. The functions of the Traffic Analyzer Instrument are explained in the IPEmotion manual.

File Display	Project Signals	Acquisition Page-5 Fix	View Undo grid	Data manager	Analysis	Reporting : Tree View	Scripting Info	•
Time	Data type	ID [hex]	Name	Type Data	ength	Data [hex]	Description	(1)
	44,189 CAN traffic 44,189 CAN traffic	11 10	11 10	Rx Rx	4	BB 00 00 00 BB 00 00 00		2Ан
	43,889 CAN traffic 43,689 CAN traffic 34,789 CAN traffic	70x	70 50	StatisticF Rx Rx	0	41	_	<b>ID</b>
	43,289 CAN traffic 4,689 CAN traffic 19.689 CAN traffic	27x	27	Status Tx Tx	4	Chip status error 27 00 00 00 15 00 00		
	10,389 CAN traffic 10,489 CAN traffic	16 25x	16 25	Tx Tx Status	2	16 00 25 00 00 00		<b>T</b>
	21,389 CAN traffic 36,889 CAN traffic	1B 1C	1B 1C	Tx Tx	0 6	1C 00 00 00		
	40,189 CAN traffic 40,889 CAN traffic	20x 14	20 14	Tx Tx	5	20 00 00 00 14 00 00 00		

## Traffic analyzer - CAN traffic

[14\_DEM]

When you import the IPEmotionDemo.dbc file you can convert the traffic stream into signals too.

12 4 8 8 4	6 8 (fe fe	e 🖭 🖪 🕺 🗶	n n <b>n 8 8 1</b>	<u>6</u>	IPEmotion		. 🗆 X
Fie Project S	gnals Acquisition	View Data mana	ger Analysis Rep	orting Scripting Inf	fo		۲
🧑 🖲 🕕 🕻		┦ 📑 📥					
Store Pause	lew Page-1 F	ix Undo grid Area 1	raffic analyzer Tree				
Control	Screens	Layout	Elements View				
me	ID [hex]	Name	Туре	Data length	Data [hex]	Description	0
204.69	2	11 STM 50100000 ID	11 Pv		4 00 00 00 00		i i
2.04,00		Exhaust_1	_44 NA		-50,00 C [00]		2/
		Exhaust_2			-50,00 C [00]		
204,68	9	10 SIM 50199999 ID	10 Rx		8 00 00 00 00 00	00	1
		Front_left			-50,000 C [00]		10
		Front_right	10 C		-50,000 C [00]		
		Rear_left			-50,000 C [00]		
204.20	0	Read_nght			-50,000 C [00]	00	
204,28	9	70X 70	KX Pu		2 22 00	UB	
186,10	9	30X 30	Status		Chin status error off	ine	
	General Use cr Table view Display Description Fi Highlight changed Max. message	Use as default	Assignation	on traffic description file type Interface Description All IPEmotion Convertion to	nile Demo.DBC	C file	×
	Legend	Show: 🔽	*		Clear	OK Cancel	

[15\_DEM]

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## 4.2.2 FlexRay traffic simulator

For the FlexRay traffic simulation no additional configuration functions are provided

File File Stop	Project  Project  Store Pause Control	Signals Signals New	Acqui Acqui Page-6	sition Fix	View Undo grid	Data Data Area		raffic analyzer	S Ri s Ri Tree View	porting	# Scri	IPEn pting	notion	Info	- •	×
Time	Da	ta type		Slot ID [he	x] Cycle		Name	е Туре	Data le	ength	Dat	a [he)	d		Descript	(1)
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	25,989 Fle	xRay traffi	c		C	0	С	Rx		8	05	00.0	0 00			24.
	5,889 Fle	xRay traffi	c		10	0	10	Tx		236	10	00 0	0 00			
	3,689 Fle	xRay traffi	c		25	0	25	Tx		110	25	00 0	0 00			ID
	10,689 Fle	xRay traffi	c		70	0	70	Rx		110	62	00 0	0 00			10110
	9,689 Fle	xRay traffi	с		50	0	50	Rx		69	34	00 0	0 00			(150)
	16,689 Fle	xRay traffi	c		1F	0	1F	Tx		60	1F	00 0	0 00			
	23,189 Fle	xRay traffi	c		17	0	17	Tx		175	17	00 0	0 00			<b>T</b>
1 Traffic	channel														,	

Traffic analyzer - FlexRay traffic

[16\_DEM]

Similar to the CAN traffic you can convert the FleRay traffic stream in to signals when you import the IPEmotionDemo Fibex.xml file.

File         Project         Signals           Stop         III         III           Stop         Pause         New           Control         Screet           Time         Data type	Acquisition View Page-2 Fix Undo gr slot ID [hex] Cycle	Data manager A	Analysis Rep zer Tree Wew	porting So	cripting Info		© <b>2</b>
Stop Store Pause New Control Scre	Page-2 Fix Undo gr ens Layout Slot ID [hex] Cycle	id Area Traffic analy: Bements	zer Tree View				
Control Screen	ens Layout Slot ID [hex] Cycle	Name	View	******			
Control Scree	Slot ID [hex] Cycle	Name	View				
Time Data type	Slot ID [hex] Cycle	Name	Type				*****
			Type	Data length	Data [hex]	Description	
		6	_				0
<ul> <li>78,552 FlexRay traffic</li> </ul>	D	0 fmSimulationCounte	er Rx		4 45 00 00 00	transports simulation sign	
		Counter			0,000 - [00]	counter signal	2A <sub>H</sub>
4 79 557 ElevPay traffic	c	0 frmSimulationSinus	Pv		8 45 00 00 00 00 00	transports simulation sign	ID
- 70,552 Pleakay trainc	L.	Sinue	NA.		60.000 - [45]	Sinus cianal	
		SinusCRC			0.000 - [00]	CRC of sinus signal	100
75.752 FlexRay traffic	70	0.70	Bx		163 51 00 00 00 00 00	cite of sinds signal	100
65.252 FlexRay traffic	50	0.50	Rx		8 3C 00 00 00 00 00		my
65,552 FlexRay traffic	10	0 10	TX		125 1C 00 00 00 1C 00		To
76,452 FlexRay traffic	15	0 15	Tx		142 15 00 00 00 15 00		
57,752 FlexRay traffic	14	0 14	Tx		34 14 00 00 00 14 00		•
24,652 FlexRay traffic	18	0 18	TX	×.	7 18 00 00 00 18 00		
25,952 FlexRay traffic	75	0.25	Tx	1	173 25 00 00 00 1B 00		
26,652 FlexRay tra 🔤 👘	ic analyzer configuration	×	Tx		241 16 00 00 00 16 00		
37,852 FlexRay tra	Use as default		Tx		246 1E 00 00 00 00 00		
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38,852 HexRay tra	l	* <b></b>	Traffic type	e Interface	Description file		
47,852 FlexRay tra	Use caption:		h Elevelau		IDEmotionDamo Ethey yml		
60,052 FlexRay tra	Name: Visual ele	ment-2	* [rickdy		archoloribeno_ribex.am		
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	• Hexad	decimal		Conve	ertion to signals w	Atth Fibex file	
	Pormat: O Decim	al					
Hig	hlight changed data: 🗹						
	Aax. message count: 1000						
Legend		4					
	Show:					Clear OK Cano	el
Traffic channel f	Store (*)						

[17\_DEM]

Author: FOT