





IPEmotion_PlugIn_VIDEO_V01_02_00

22. Januar 2018

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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 $70 \,^{\circ}\mathrm{C}$ 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: https://www.ipetronik.com/

1.2.1 Legend of used icons

e	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 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

www.ipetronik.com e-mail: support@ipetronik.com

2 PlugIn overview

2.1 PlugIn description

With the Video PlugIn you have access to a large range of USB cameras supporting the Windows WDM driver and IP-Network cameras supporting the Real Time Streaming Protocol (RTSP).

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 list							
	Open Save				Ac	tivate PlugIn	in OPTIO	NS	[1
3	Save as		in IPEmotion options			28.93 			
<u>- 1</u>	5672 65		Frequently used	Active		Title	Version	Description	Manufacturer
	App-Export	•	Basic settings		-	IPETRONIK LOG	03.59.01	IPETRONIK Data logger (M-LOG, S-LOG,	IPETRONIK
9	. Ab - days		Appearance		A	Advantech APAX	01.00.04	Advantech APAX	IPETRONIK
A	Runtime version		View		8	BEOKHOFF	01.05.00	BEORHOFF Bus Coupler	IPETRONIK
			Data manager		R	GPS	01.05.00	Serial interface for GPS mouse	IPETRONIK
3	Compare		Import			STEMENS PLC	01.05.00.58	Access to process data of Siemens PLCs	IPETRONIK
2	compare		Export	~		Status	01.00.00	Monitoring system parameters	IPETRONIK
1	Print		Analysis	1	8	Video 🤇	01.02.00	Synchronic recording of video data f 🔞	IPETRONIK
	PHIL	5.	Maps	Ш.	24	WAGO	01.03.01	WAGO Bus coupler	IPETRONIK
			Directories		1	WAGO PLC	01.00.00	WAGO Controller	OSRAM
N	View	•	Units	1	5	Protocols	02.00.00	Protocol acquisition with any CAN hardwa	IPETRONIK
			Hotkey		標	PROFIBUS	01.01.00	PROFIBUS connector as master or slave	IPETRONIK
-	Administration	•	User administration		5	HBM QuantumX	01.00.00.20	Universal data acquisition system	IPETRONIK
9	Options	Options Show/edit general IPE	PlugIns				[Download manual	Download
ð	About		User operations	The used	he plugin I plugin v	ns to be used.		ersion number is selected that ends with a '='	character,

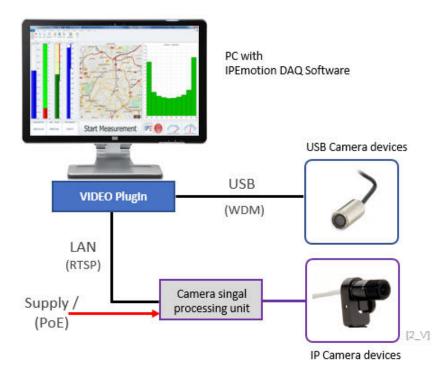
The PlugIn is supporting the following Windows operating systems:

- 32 bit
- 64 bit

3 PlugIn configuration

3.1 Functional architecture

You can interface multiple USB- and IP-cameras to your PC and record the data. The USB cameras get the power supply via the USB port of the computer and can be automatically detected. The IP-Cameras are connected to the Ethernet interface of the computer. They require more configuration settings using fixed IP-addresses for the camera and the Ethernet interface of the PC. Also, framerate, GOV size, codec, login authentication, stream link address and port numbers need to be defined.



3.2 Create USB interface system

In the SIGNALS work space, you can create video interfaces manually. For USB cameras it is recommended to use the hardware detect function. Due to the standard USB drivers the cameras are automatically detected. Over the USB interface it is also possible to use the PlugIn settings to update frame rate, compression and picture pixel resolution on the USB camera. This is different to IP cameras where the setting have to be done in the web based configuration interfaces of the camera itself.

2 🗅 🔒 🗄 💈	🛲 🗆 X 🖪 🖪 🖻 🐴 🗮 X 🗶 🕋	🗠 🔅 🚫 🕐 🌆 🖕 -
File Project	Signals Acquisition View Data manager	Analysis Reporting
0		늘 🕅 🏶 🕒
Video	System Components Functions Import Export Check	Adjust Detect Initialize Display
Hardware	Video system Camera supporting DirectShow	Access
V01.02.00	Camera supporting Directsnow	Active Unit Phys Min
Name	IP Camera Camera supporting RTSP (Real Time Streaming Protocol)	
	System import	Detect USB cameras
		[3_V]
	Detecting hardware Video	
	Cancel	

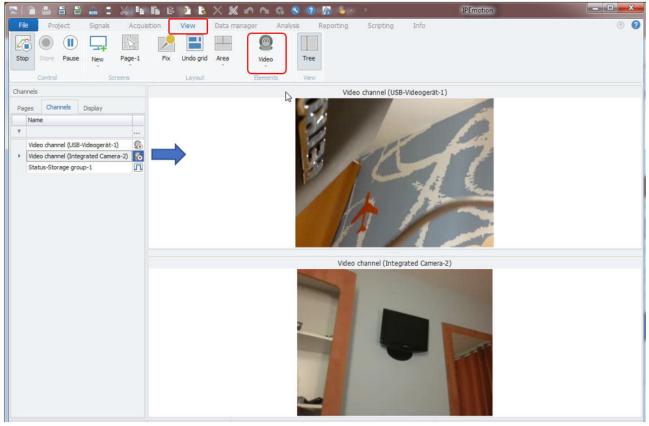
After successful detection the USB video interfaces is created and for every camera a video channel is created too. The frame rate is automatically detected from the camera device and set to the maximum value. The frame rate can be reduced but not increased.

	1117	- N		4					
Components F	unctions	Import Export Check	Adjust	Detect	t Initialize D	isplay Deta	ls		
				*					
	Configur	ration			Access	Viev	V		
	Name		Ac	tive Un	it Phys Mir	Phys Max	Sensor Min	Sensor Max	Sampling rat
۶									
•	Video ch	annel (USB-Videogerät-1)	~					30 Hz
1	Video ch	annel (Integrated Came	-a-2)	⊻					30 Hz
1									
		Configure Name ? Video ch	Configuration Name Video channel (USB-Videogerät-1	Configuration Name Ac	Configuration Name Active Un ? Image: Configuration Image: Configuration Video channel (USB-Videogerät-1) Image: Configuration	Configuration Access Name Active Unit Phys Mir Video channel (USB-Videogerät-1)	Configuration Access View Name Active Unit Phys Min Phys Max ? Image: Configuration Image: Configuration Image: Configuration Image: Configuration . Video channel (USB-Videogerät-1) Image: Configuration Image: Configuration Image: Configuration	Configuration Access View Name Active Unit Phys Min Phys Max Sensor Min ? Image: Configuration Image: Configuration Image: Configuration Image: Configuration View View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View View Image: Configuration Image: Configuration Image: Configuration Image: Configuration	Configuration Access View Name Active Unit Phys Min Phys Max Sensor Min Sensor Max ? Image: Configuration Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration View Image: Configuration Image: Configuration Image: Configuration Image: Configuration <

When you start the measurement you can see message picture data indicated as a measurement value on video channel level.

File Project	Signals	Acquis	ition	View	Data manager	·	Analysis	Repo	rting	Scrip	oting	Info
Video Video Hardware	System C	omponents	Functions	Import Ex	kport Check	Adjust		Acces	Stop	Details		
01.02.00			Name			Curr	ent value	Y	Active	Unit	Phys Min	Phys Ma
lame	•	Σ.	and a second second		-Videogerät-1) grated Camera-		ture data ture data					
 Integrated Can USB-Videogerät 		1	VILLEO	channer (inte	grated Caniera-		ure uata		×			

You can view the video data in the VIEW workspace too. To see the online video stream, you can drag and drop the video channels into the video instrument.



Display online data in video instrument

[6_V]

3.3 USB channel settings

On video channel level you can select from the following 3 data formats. Additional information about the data processing mechanism are provided in the last chapter.

File Project Signals Acquisition		View Data	a manager 🛛 /	Analysis	Rep	orting	Scripting	Info	
Video System Components Fur		Import Export	Check Adjust	R	Initialize	Display	Details		
Hardware		guration	v v	Detect	Access	Display	View		
/01.02.00		Name		Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Ma
lame 🔺 ∑	۴								
	•	Video channel (Int	tegrated Camera-2)	~					
Integrated Camera-2 1 USB-Videogerät-1 1									
		neral Format	Display Video	settings					
		neral Format ata type Type:		settings		-	Task: Defau	ılt	
	Da	ata type Type: Value / DefaultVal	Image Image Motion						
	Da	ata type Type:	Image Image					ult ue and use De	fault Value
	Da No	ata type Type: Value / DefaultVal	Image Image Motion						fault Value

•	Image	Every incoming frame is stored as a separate image (JPEG) pic- ture in the data file. In incoming data stream from the camera (USB or Ethernet) can have various formats like h264 or JPEG, MJPEG, RAW, etc .At any case the PlugIn is transforming one common output format JPEG for display and data storage. This format is storing the data with lowest compression method.
•	Motion	This format can process video streams in the h264 or MJPEG format. The data stream is directly stored in the incoming format e.g. (h264 or MJPEG). There no transformation done by the Plu- gln. The data compression is depending on the incoming data stream. For h264 format the camera setting of the GOP (Group of Picture) factor has an impact on the data storage volume. Note: Data streams in the h264 format will cause a delay between the movements in front of the camera and the updates in the video instrument in the VIEW work space.
•	Motion with live picture	This format is similar to the Motion format and the data is stored in h264 format in the data file which leads to lower stored data volumes as the GOP (Group of Picture) factor is considered. Ho- wever, the PlugIn is internally processing additionally a MJPEG picture which will be used to display the live data on time to the user.

In the video settings tab sheet you have additional configuration functions to define the resolution of the stored pictures. 4 different modes with defined quality settings are provided. Depending on the selected quality rate an estimated data transfer rate is calculated. With the USB interface and the WDM driver it is possible to update the camera settings from the PlugIn

Mod	: Standard ·	-]	Mode:	High resolution		
Resolutio	: 320 × 240	1	Resolution:	640 x	4 80	
JPEG Qualit			JPEG Quality:	60		
Frame rai] fps	Frame rate:	10		fp
			Data rate (estimated):	720 kB/s		7
	play Video settings]	General Format Dis	play Video se	ttings	
eneral Format D			General Format Dis		ttings	•
eneral Format D	play Video settings]	General Format Dis	play Video se : User defined	ttings x 480	- -
eneral Format D	play Video settings : Low memory - : 160 x 120		General Format Dis	video se User defined		•
eneral Format D Mod Resolutio	play Video settings : Low memory ▼ : 160 × 120 : 40]]] fps	General Format Dis Mode: Resolution:	video se User defined 640 60		

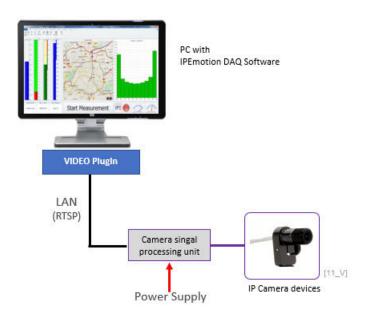
USB camera video settings

4 Configure IP network cameras

The Video PlugIn is supporting IP cameras too. In the following the configuration is explained based on a one channel AXIS IP camera model P1214-E. The picture below shows the camera including a suction cup mounting system which is not part of the standard delivery.



In the first step you need to perform the hardware installation including power supply to the signal conditioning unit. Connecting the camera lenses unit and establishing an Ethernet connection between your PC and the conditioning unit. When the camera is powered up all LEDs are the signal conditioning unit are in green color.



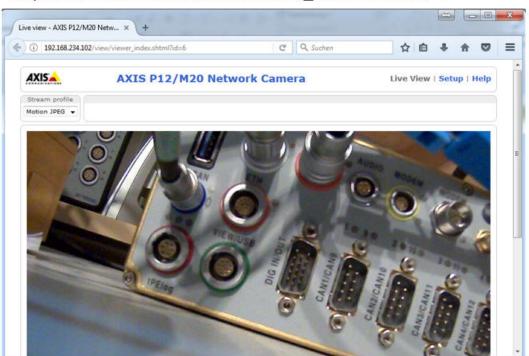
4.1 PC network card settings

In order to establish a data communication connection to the camera, you need to define a static IP address on the LAN interface of your computer, which is connected to your network camera. The network IP and subnet mask should be in the same range to that of the IP-camera. The network address of the IP-camera is mentioned in the manual. In this example the address of the camera is this: 192.168.234.102 For the PC LAN network setting the IP-address 192.168.234.200 was selected.

Allgemein						
IP-Einstellungen können automatisch zu Netzwerk diese Funktion unterstützt. V den Netzwerkadministrator, um die gee beziehen.	Venden	Sie si	ch an	dernf	alls an	
IP-Adresse automatisch beziehen						
• Folgende IP-Adresse verwenden:						
IP-Adresse:	192 .	168	. 234	. 200)	
Subnetzmaske:	255 .	255	. 255	. 0		
Standardgateway:			- C	312 312		
DNS-Serveradresse automatisch b	peziehen					
Folgende DNS-Serveradressen ve	rwender	n:				
Bevorzugter DNS-Server:	1		21	31		
Alternativer DNS-Server:	Ú			à.		
Einstellungen beim Beenden über	prüfen					
			ſ	Erw	eitert.	
			-	10000	100100/0	

Define static IP for PC LAN IPv4 network settings [12_V]

With a web browser you can access the configuration interface. The link to the web browser is part of the manual. In this example you enter the static IP-address to the browser to the live pciture: http://192.168.234.102/

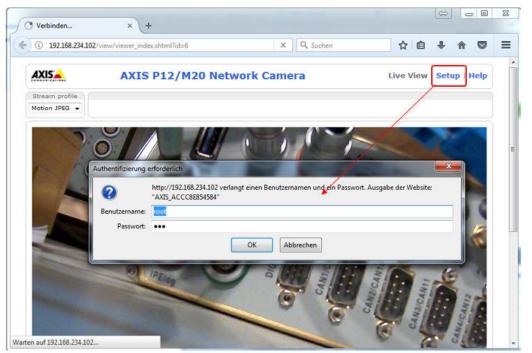


http://192.168.234.102/view/viewer_index.shtml?id=6

Data live view in browser [13_V]

4.2 IP camera settings

From the web interface you can access the settings area. The default user name and password for this product is root.



Login to device configuration browser [14_V]

In the configuration menu you need to create an administrative user who is later used by IPEmotion to retrieve the data from the camera. In the example below the user is called ipe with the corresponding password ipe.

) (i) 192.168.234.102/adm	nin/users.shtml?basic= C Q Suchen 🔂 🛍 🖣	
	S P12/M20 Network Camera Live View	w Setup Help
Basic Setup	Users	e
Instructions	User List	
1 Users 2 TCP/IP	User Name User Group	•
3 Date & Time	ipe Administrator	
4 Video Stream		
Video Live View Config Detectors	Add user	
Applications		*
Events	Add Modify Remove	
Recordings		
1 anguagos	HTTP/RTSP Password Settings	
Languages	Allow password type: Encrypted & unencrypted 👻	
System Options	User Settings	
	-	
System Options About	Enable anonymous viewer login (no user name or password re	quired)

Create user [15_\

In the TCP/IP setup you may change the IP-address. However, in this example the default fixed IP is used. The fixed IP-address is an important setting to retrieve the video data in IPEmotion.

() () 192.168.234.102/adm	in/tcpip.shtml?basic= C Q Suchen	☆ 自 ♣ ♠ ♥
	S P12/M20 Network Cam	Live View Setup Help
Reals Cature	Basic TCP/IP Setting	IS 🔮
Basic Setup Instructions	Network Settings	-
1 Users	View current network settings:	View
2 TCP/IP 3 Date & Time	IPv4 Address Configuration	
4 Video Stream	Enable IPv4	
Video	Obtain IP address via DHCP	
the Man Carl	Use the following IP address:	
Live View Config	IP address:	192.168.234.102 Test
Detectors	Subnet mask:	255.255.255.0
Applications	Default router:	0.0.0.0
Events	IPv6 Address Configuration	
Evenes	Enable IPv6	
Recordings	Services	
Languages	Enable ARP/Ping setting of IP Add	dress
Contract Continue	Enable AVHS	
System Options	One-click enabled O Always	6
About	Proxy:	
	Proxy port:	3128
	Proxy login:	
	Proxy password:	-
	Proxy authentication method:	Basic Digest Auto
	AXIS Internet Dynamic DNS Service	Settings
	Sav	Reset
	See also the advanced TCP/IP settin	

Another important configuration part are the image settings. Her you can define the image size in pix and the compression. The compression is ranging in percent from 0 = no compression to 100 = maximum compression. In this example we will use 50 percent compression as an initial recommendation. As standard frame rate 15 Hz is selected. The frame rate has to be considered for the settings in the PlugIn too. The impact of the different settings will be explained at the end of the manual.

(i) 192.168.234.102/op	erator/videostream.shtmli C Q Suchen 🔂 🖻 🦊 🎓 💟 🗄
4XISA AXI	S P12/M20 Network Camera Live View Setup Help
Basic Setup Video	Video Stream Settings
Video Stream Stream Profiles Camera Settings Overlay Image Privacy Mask	Image Appearance Resolution: 800x600 (4:3) • pixels Compression: 50 [0100] Mirror image
Live View Config Detectors Applications	Rotate image; 0 ▼ degrees Video Stream Maximum frame rate: O Unlimited Imited to 15
Events Recordings	Overlay Settings Include overlay image at the coordinates: X 0 Include date Include time
Languages System Options About	Text overlay size: small Text color: white Text background color: black Place text/date/time at top of image
	Preview View image stream while configuring, Video format: MJPEG Open

This camera is providing a h264 video stream. For the h264 codec you can define a GOV length. GOV is a setting for the Group of Pictures. This factor has a considerable impact on the amount of data you store. The factor is determining how many differential frames are transferred together with a full picture. Large GOV factor will group many different frames together with one full frame. If configure the GOV factor to one ever frame transferred is a full frame including all data which will cause high data storage volumes. In our example we will use a GOV factor of 16. The GOV factor will be configured in IPEmotion too.

AXIS AXI	5 P12/M20 Network Camera Live View Se	etup Help
Basic Setup	Video Stream Settings	0
Video	Image H.264 MJPEG	
Video Stream	Encoder Settings	
Stream Profiles	GOV length: 16 [161440]	
Camera Settings	BIT KATE CONTROL	
Overlay Image	Use: Variable bit rate	
Privacy Mask	Constant bit rate	
Live View Config	Target bit rate: kbit/s	
Detectors	Priority: None -	
Applications		
Applications	GOV	
Events	001	
Recordings		
Languages		
System Options		
About		
novit	8	
	Preview	
	View image stream while configuring. Video format: MJPEG - Open	

GOV = Group of Picture for h264 codec settings [18_V]

Finally, we need to enable the RTSP stream and define the port number. This are important settings so that data is retrieved by the IPEmotion. The Port number will be used for the connection parameters in IPEmotion too.

) (i) 192.168.234.102/adm	in/advanced_tcpip.shtm C Q Suchen	☆自◆☆♡
	S P12/M20 Network Camera	Live View Setup Help
Basic Setup	Advanced TCP/IP Settings	0
	DNS Configuration	
Video	Obtain DNS server address via DHCP	View
Live View Config	Use the following DNS server address:	
Detectors	Domain name:	(use ; to separate names)
	Primary DNS server:	
Applications	Secondary DNS server:	
Events	NTP Configuration	
Recordings	O Obtain NTP server address via DHCP	View
Recordings	Use the following NTP server address:	
Languages	Network address:	(host name or IP address)
System Options	Host Name Configuration	(
 Security 	 Use the host name: axis-accc8e854584 	
Date & Time Network +TCP/IP	Enable dynamic DNS updates	
	Register DNS name:	(Axisproduct.example.com)
Basic Advanced	TTL: 30	(compared to the second s
SOCKS	Link-Local IPv4 Address	
QoS SNMP		View
UPnP	Auto-Configure Link-Local Address	
RTP Bonjour	HTTP port: 80	
 Storage 	нттря	
Ports & Devices	HTTPS port: 443	
Maintenance Support	NAT traversal (port mapping) for IPv4	
Advanced	NAT traversal is disabled.	Enable
About	Use manually selected NAT router:	(LAN IP address)
	Alternative HTTP port: 0	
	* If set to blank or 0, a port number will be set	automatically upon eaching
	FTP	automatically upon enable.
	Enable FTP server	
	RTSP	
	Enable RTSP	
	RTSP port: 554	
	* H.264 video streams will be unavailable if this Save	is disabled. Reset

5 PlugIn configuration for IP camera

5.1 Create IP camera interface

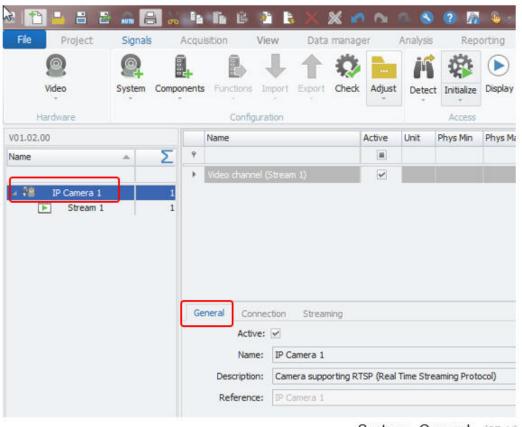
For IP cameras you need to create manually an interface system. An automatic hardware dietetic is not supported for IP camera devices.

File Project	Signals	Acquisition View D	ata ma	nager		Analysis
© Video	System	Components Functions Import Exp	et Ch	eck.	Adjust	Detect
Hardware	0	Video system Camera supporting DirectShow				
V01.02.00	-	when the substant as the put of sectors to the			Name	
Name	<u>89</u>	IP Camera Camera supporting RTSP (Real Time Streaming Protocol)	Σ	Ŷ		
	P	Import System import				
			-			

Create IP Camera system [25_V]

If the camera system is supporting several video streams you can create additional streams in the IP camera system.

File Project	Signals	A A	quisition	View	Data	manager
Video	System	Compone		tions Import	t Export	Check A
Hardware				Configuration		
V01.02.00			Name			Act
Name		Σ	9			
			Video	channel (Strea	im 1)	
IP Camera 1 IP Camera 1 Stream 1 Stream 2	15	Componen Change int	ts 🕨	street Street	am 2) eam	
Stream 3		functions))	Mul	tiple select	ion



In the General tab sheet you define interface name and description.

System - General [27_V]

In the Connection tab sheet you define the fixed IP-ddress of the camera, the user and the password, which was defined in the web interface of the camera. See section 4.2

File Project S	ignals	کل الک Acqu			2 R View	2200	a manager		alysis (? / Keporti	Ng -
Video Sys	stem C	Component:	s Fu	Confi	Import i guration	Export	Check /		Petect 1	Access	S play
V01.02.00				Name				Active	Unit	Phys Min	Phy
Name		Σ	Ŷ								
				Video	channel (Str	cam 1)	~			
			-		Connectio						
			Ge	neral		_	Streaming			1	
					IP add	ress:	192.168.23	4.102		1	
				Enab	le authentica						
				Enab	le authentica Login n]	

System - Connection [28_V]

In the Streaming tab sheet you have a check box to activate a function called

Automatic sample rate

When this check box is activated the PlugIn will check during an initialization process which is the sample rate setting of the camera.

File Project	Signal	s /	Acqu	isition	View	Data	manag	er	Analysis	Rep	orting	Scripting	Info	
Video Video	System	Compo		Functions	Import	t Export	Check	Adjust	Detec	t Initialize) Display	Details		
Hardware				Config	juration					Access	, i	View		
V01.02.00				Name				Active	Unit	Phys Min	Phys Max	Sensor Min	Sensor Max	Sampling rate
Name	*	Σ	٩											
			•	Video chann				~						10 Hz
🔹 🛍 🔢 IP Camera 1		1											,	
Stream 1		1									ream frame rat mited ted to 30	*	[130]	fps per viewer
			0	neral Cor	nection	Stream	ning							

Information

It is recommended to deactivate this check box because is it extending the initialization time for each measurement. You can only identify the defined frame rate of the camera when all connection parameters which are discussed below are defined.

Information

When you make any updates in the web interface of the camera like frame rate, compression, GOP factor, resolution, etc you have to execute the initialize function in IPEmotion to make the changes in the web interface also affective to the PlugIn.

System - Streaming [29_V]

5.2 Stream configuration

On Stream level you have to define the stream configuration setting. When you use e.g. AXIS F44 camera you have 4 cameras in one IP interface system. In this case you need to add 3 more streams to your configuration as discussed above. In the General tab sheet you define stream name and description.

8 1 8	2 🙃 🔒	X B		ð 🖪	× 🗶 🖌	10	0 8
File Project	Signals	Acqu	lisition	View	Data manage	er	Analysis
Video 	System Con	ponent	s Functions	Import Ex	port Check	Adjust	Detec
V01.02.00			Name			Active	Unit
Name	_ Σ	9					
▲ 將型 IP Camera ► Stream		1		el (Stream 1)		Y	
		G		nection			
				e: 🗹	~		
			Nam Description	· · · ·	1		
			Reference	e: Stream	1/IP Camera 1		
				Stream	n - Genera	al	[30_V]

In the Connection tab sheet the stream specific parameters are defined.

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Stream - Connection [31_V]

Access name
 The access name cannot be directly obtained from the web interface of the AXIS camera. To identify the correct access name, you must consult the camera vendors user manual. In this example the stream is defined as: axis-media/media.amp
 Port number
 The port number was defined in the advanced settings of the web interface of the AXIS camera 4.2.
 Transport protocol
 The transport protocol can be selected UPD or TCP. The default setting for RTSP protocols is the UPD protocol. However, the correct setting of the transport protocol is depending on the camera vendor. In some cases both TCP or UPD work alike.

When the settings are all defined you can use the initialize function to test the communication to the camera. When the automatic sample rate check box is still active, the PluIn retrieves the sample rate / frame rate setting of the camera. Which match quite close to the setting in the web interface.

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Test the settings [32_V]

5.3 Video channel settings

Similar to the USB cameras you can define on channel level the data format. For IP cameras the following 3 formats are supported.

- Motion
- Motion with live picture
- Image

The default setting is the Motion format. With the Motion (Motion with live picture) format the h264 stream is stored in the data file considers the GOP factor. The GOP factor (Group of Picture) was defined in the web interface of the camera and should match with the PlugIn settings. In this example the GOP factor was set 16. See chapter: 4.2

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						GOP size	e: 16					

GOP factor for h264 streams [34_V]

When you select the Image format for the channel, you have in the video settings tab sheet a configuration function of the JPEG quality. The quality factor is ranging between 0 and 100 percent. High quality settings will lead to higher stored data volumes and better pictures in the video instrument. However, the picture quality can be influenced with the compression setting in the web interface of the camera too. Some test data file are presented in section 6.4.2

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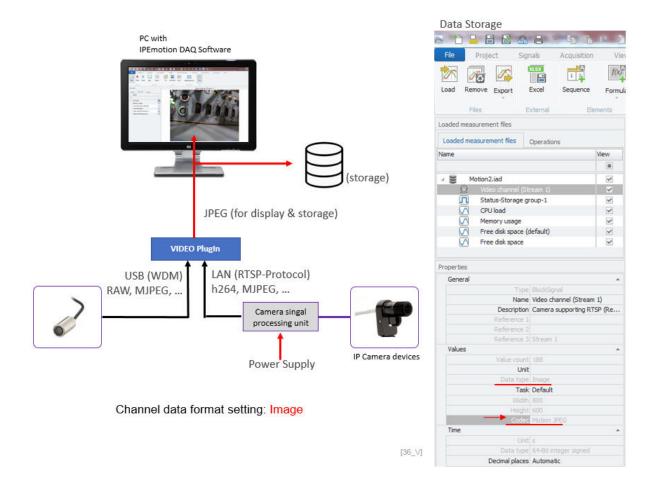
The Image data format is not supporting a GOP factor setting. The Image format requires more processing CPU resources because h264 stream from the IP camera in this case is transformed into MJPEG picture data stream for storage.

6 Video stream processing examples

Depending on the camera interface (USB / Ethernet) and the related drivers (WDM / Direct X) for USB cameras or protocols like RTSP (Real Time Streaming) for IP cameras different processing mechanisms can be applied. Not all drivers and data formats are compatible from all camera vendors. Therefor it is recommended to test the camera together with the video PlugIn before to purchase the product.

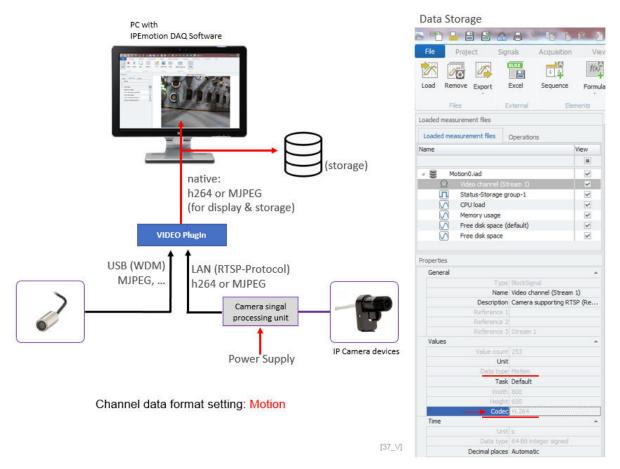
6.1 Image format

The Image format is taking incoming data streams and converting them to JPEG pictures. However, this format is consuming plenty of storage space.



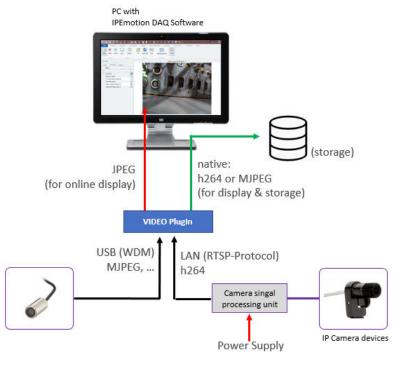
6.2 Motion format

The Motion format is basically routing the incoming data stream in the same format to the data storage. That means incoming h264 data streams are also stored in the format. An incoming MJPEG stream will be stoerd in the MJPEG format. However, the driver of the camera hardware and the PlugIn must be compatible. Not all cameras support the Motion format.



6.3 Motion with live picture format

This format is a derivate from the Motion format. The main difference is that the PlugIn is processing the incoming data stream to an additional MJPEG picture in order to have a good update rate of the online picture for the user. The Motion format supports for h264 streams the GOP factor. The GOP factor is a good setting to save storage capacity, but it is causing on the downside a delay in the online picture screen update.



Channel data format setting: Motion with live Picture	
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[38_V]

6.4 Examples of IP camera settings

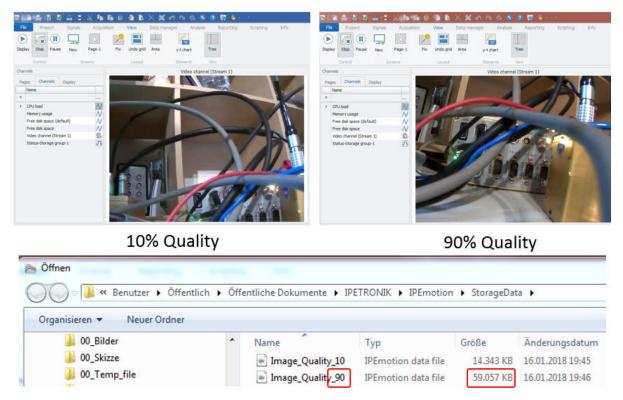
6.4.1 GOP factor

In the example below a data files was recorded for 30 second with the resolution of 800x 600 pixel. As you can see an increased GOP/GOV factor leads to smaller data files. However, when the GOP factor is getting larger than for example 32 the impact on the storage volume is not much lower compared to the factor 16.



6.4.2 Quality factor

Another setting is the quality when you store the data in the Image (MJPEG format). In this case the h264 stream is converted to MJPEG pictures by the PlugIn and you can change the storage and online display quality. The data was stored again from a 800 x 600 pixel picture for 30 seconds duration. As you can see the quality has a significant impact on the storage volume.



Quality - impact to data file size

[40_V]

Author: FOT