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Product Manual

ise smart app KNX Axis

Order No. A-1-0001-008
Valid for ETS application software version 3.0
and *ise smart app KNX Axis version* 2.3

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1 Product description

1.1 Functions

- 30 binary communication objects are available for initiating an event trigger from KNX on the AXIS Communications IP product.
- 30 communication objects (1-bit, 8-bit, 16-bit and 14-byte char) are available for sending values from the AXIS Communications IP product to the KNX.
- Video recording can be controlled via event triggers.
- Image, video and/or camera message sending (e-mail, TCP, HTTP or HTTPS) can be initiated via event triggers.
- With PTZ cameras, predefined positions can be focused on.
- Camera settings (properties) can be read out and sent to the KNX.
- Sending of a message to the KNX with access to the camera's live stream.
- Monitoring of the camera itself, e.g. for overheating or breaking of the connection to the saving location for videos.
- By using the VAPIX API, nearly all camera functions can be operated via the KNX.
- Third-party applications can send values to the KNX.
- Configuration of the *ise smart app KNX Axis* is carried out using the latest version of the ETS 4 or ETS 5. The application accesses ETS functions not supported by earlier ETS versions. This is why previous versions of ETS cannot be used for configuration.
- Supports faultless KNX communication in a wireless network at all times (reliable communication).

2 The world's first KNX connection for AXIS Communications IP products

AXIS Communications offer an especially broad and optimally coordinated range of high-quality network cameras, from robust outdoor cameras for harsh climates to discrete products for sensitive environments. The cameras feature a host of functions which help ensure clear video images even in difficult lighting conditions, such as HDTV, wide dynamic range, infra red and light finder, to name just a few. AXIS Communications cameras also offer expanded video analysis functions, such as motion detection, audio detection and a tampering alarm.

From now on, the *ise smart app KNX Axis* will link KNX building control to the comprehensive portfolio of AXIS Communications IP products. Our application enables you to carry out bi-directional communication between the KNX and the world of AXIS Communications,

allowing you to benefit from the advantages of both systems.

Using the *ise smart app KNX Axis*, you can also link applications from other suppliers which run on the camera with the KNX system.
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2.1 Definitions and explanation of terms

- **VAPIX® -** VAPIX® is AXIS Communications' proprietary open API (Application Programming Interface). This API uses standard protocols to enable integration on different platforms. Nearly all the functionality of AXIS Communications products can be operated via VAPIX®.

- **ACAP –** The AXIS Camera Application Platform (ACAP) is an open application platform which enables users of the Application Development Partner (ADP) program to develop applications which can be downloaded and installed on AXIS Communications network cameras and video encoders.

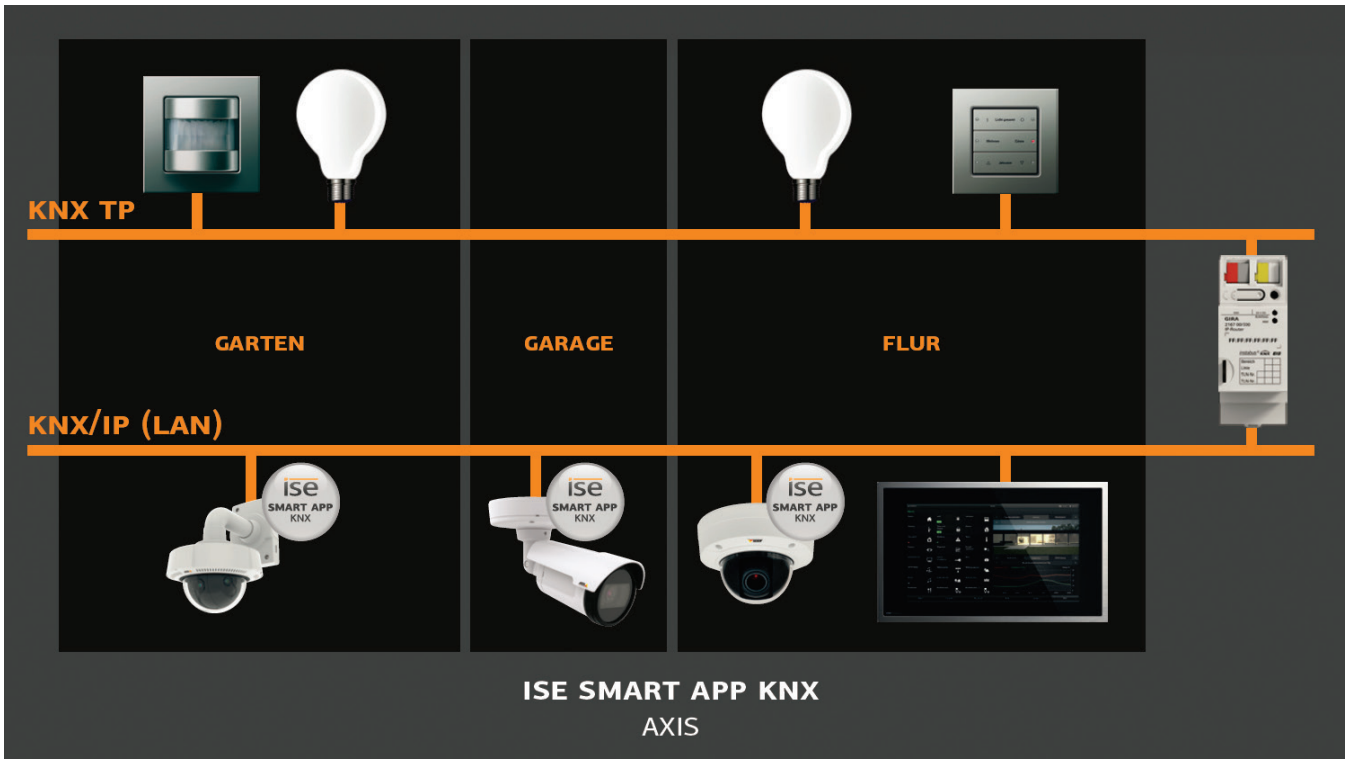
- **Action rule** – An action rule is a rule governing what the camera system can do and how it can do it when an event (trigger) occurs.

- **Recipient** – This refers to the recipient of messages. This is required, for example, for sending messages to the *ise smart app KNX Axis* and thereby to the KNX.

- **Reliable communication** – To ensure faultless KNX communication in a wireless network at all times. Only in combination with equipment that supports the “reliable KNX communication” function also (e.g. Gira KNX IP router).

3 Application scenarios

- **The camera detects motion:** The camera registers motion in a definable area and sends a message to the KNX.
- **The KNX detects motion:** The KNX motion detectors sense motion and initiate the recording of a video by the camera.
- **Outwitting made difficult:** A potential attempt at sabotage, such as by covering the camera or spraying it with paint, triggers an alarm on the KNX.
- **Perfect portrayal of graffiti artists:** To catch graffiti artists in the act, for example, selected areas can be monitored especially closely. If people remain in the area longer than average, an alarm is triggered and the location is optimally illuminated for good recording results.
- **KNX reports a camera fault:** If the camera experiences a technical problem, this is indicated to the user on the KNX.



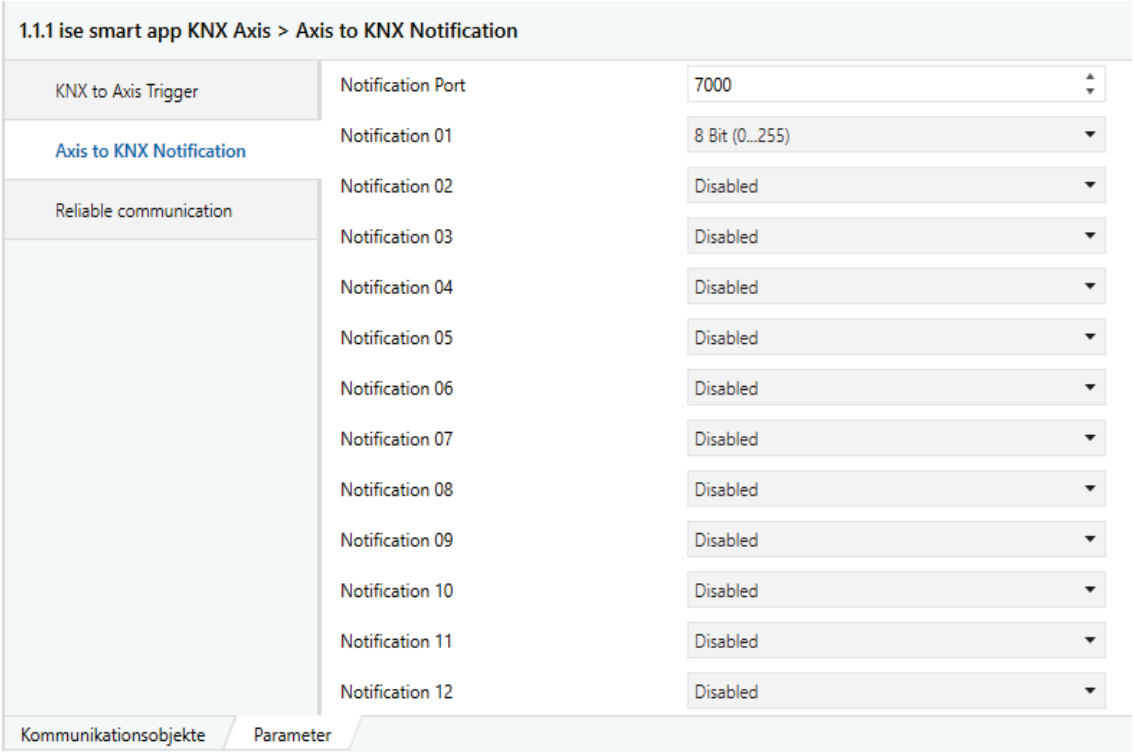
3.1 Examples

In the following sections, various examples are shown and the associated configuration described in more detail. The examples are presented using a model M1103 camera. With other camera models, the views or preinstalled software may vary. In the examples, it is assumed that the *ise smart app KNX Axis* is installed and started and that the *recipient* (Section4.5.1 Recipient) for receiving messages has the *ise smart app KNX Axis* set up as described in this document.

3.1.1 Motion detection on the camera

The camera can detect motion in programmable areas and then send a message to the KNX. In the following example, motion detection (AXIS Communications) which has already been preinstalled for the M1103 camera is used.

The project is created in the ETS as follows.



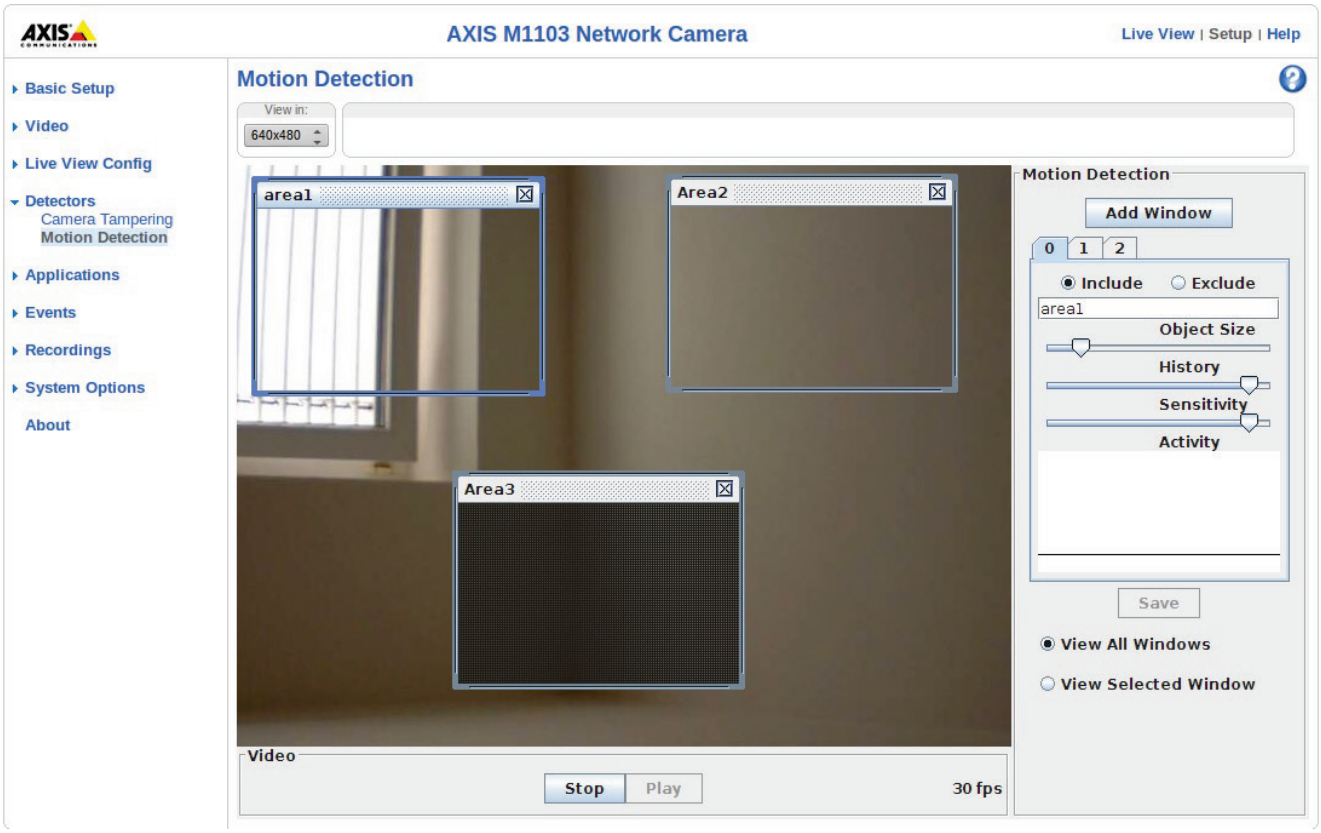
The notification port is left at the default port of 7000. The bit length for communication object 1 (notification 01) is set at 8 bits.

Nummer	Name	Objektfunktion	Beschreibung	Gruppenadresse	Länge	K	L	S	Ü	A	Datentyp	Priorität
1	Notification 01	Send a notification from Axis to KNX		2/1/1	1 byte	K	-	-	Ü	-	8-Bit vorze...	Niedrig
101	Trigger 01	Send a Trigger from KNX to Axis		1/1/1	1 bit	K	-	S	-	-	Boolesch	Niedrig
102	Trigger 02	Send a Trigger from KNX to Axis		1/1/1	1 bit	K	-	S	-	-	Boolesch	Niedrig
200	Error state	Indicates an error occured		3/1/1	1 bit	K	-	-	Ü	-	Boolesch	Niedrig
201	Last error	The last error as text		3/1/2	14 bytes	K	-	-	Ü	-	Zeichen (IS...	Niedrig

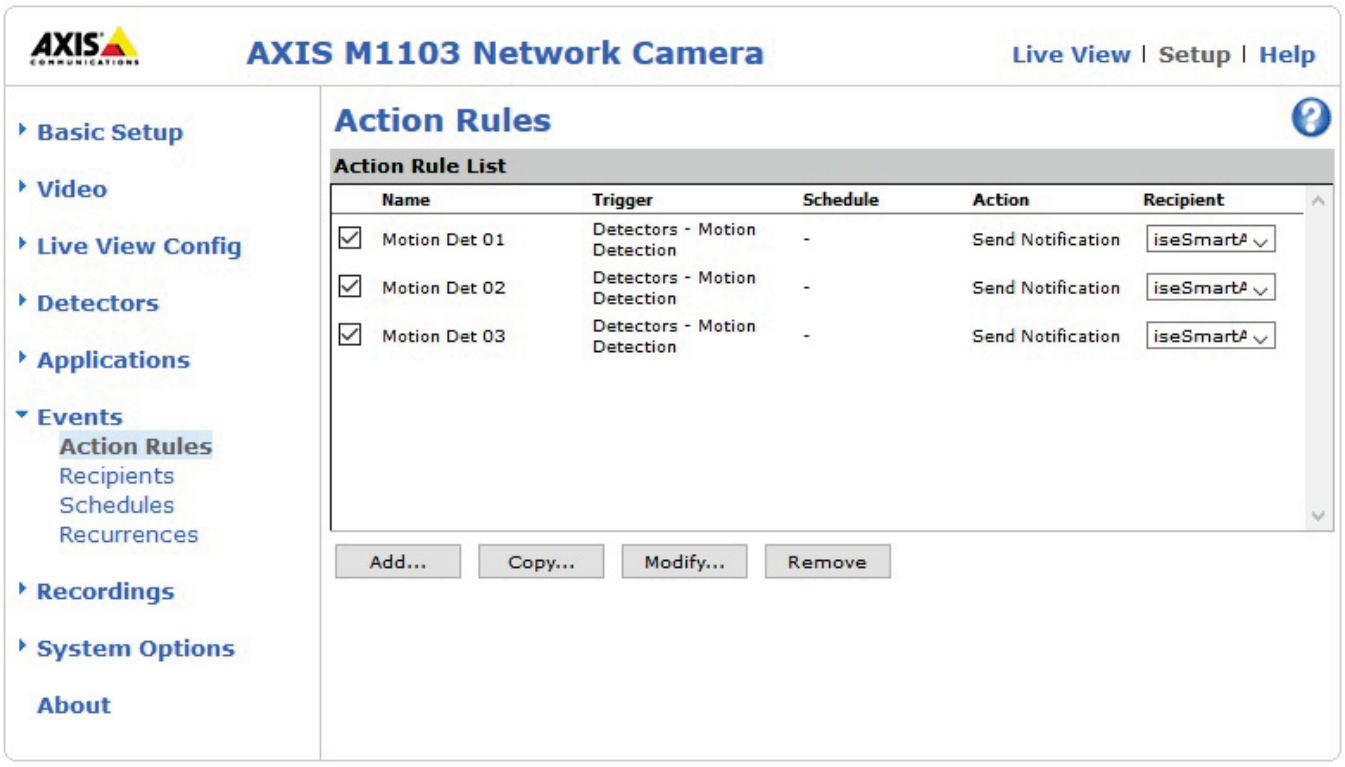
Communication object 1 is assigned the group address 2/1/1. The other communication objects are not considered further at this point in time. This configuration is first downloaded to the *ise smart app KNX Axis*.

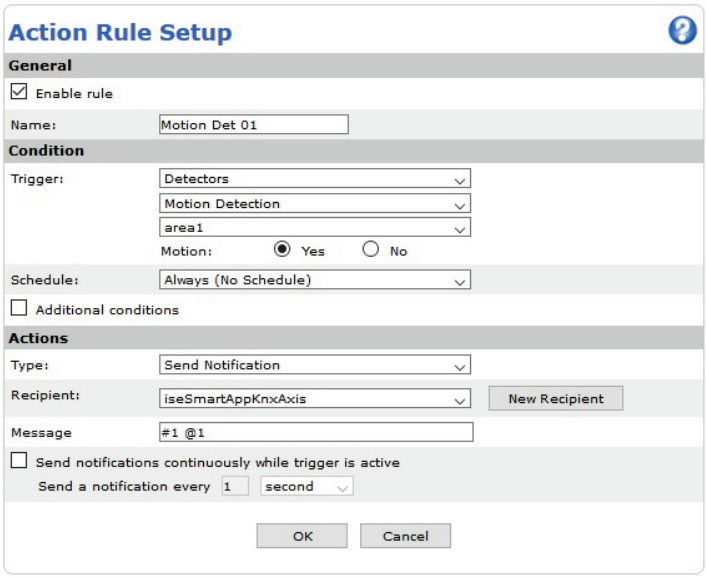
The configuration is then carried out on the camera.

First create new areas to be monitored under **Detectors/Motion Detection**. In this example, three areas are created.



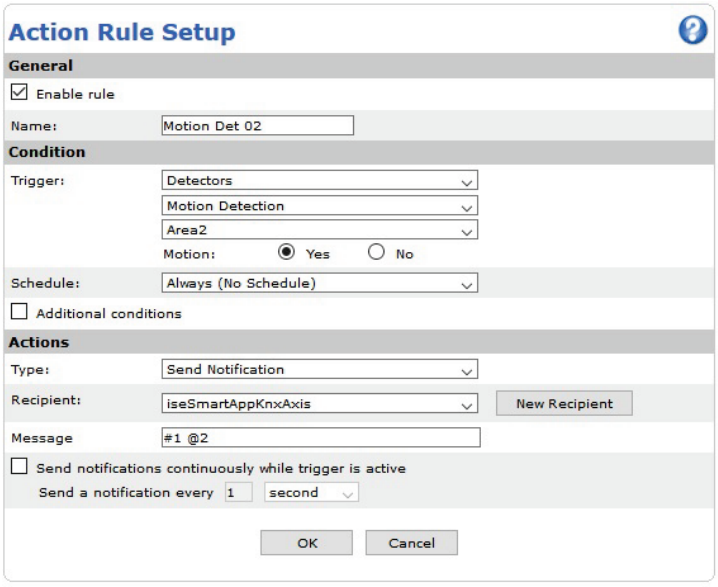
To initiate an action for motion detection, *action rules* are then created.

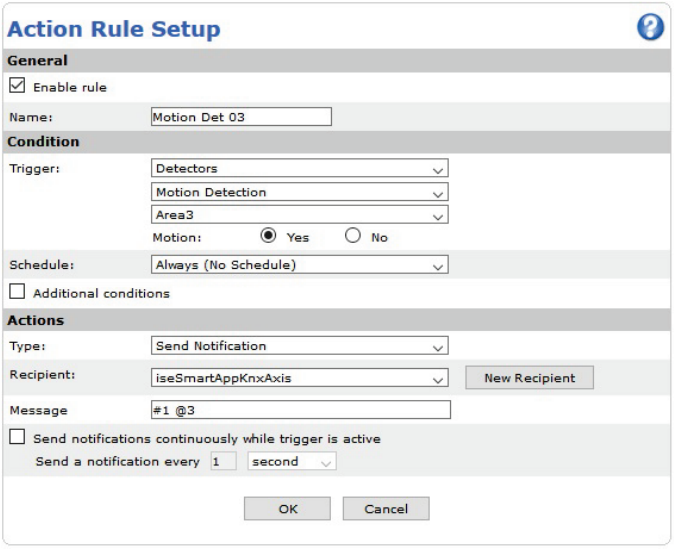




The "Motion Det 01" action rule is carried out for motion detection in the area called "area1" created previously. It sends the message "#1 @1" to the *recipient* of the *ise smart app KNX Axis.*
Using this message, the fixed value of 1 is sent to communication object number 1. In this example, value 1 means that triggering has occurred in area 1. This could be indicated in a visualisation, for example.

The action rules are now created for the two other areas.

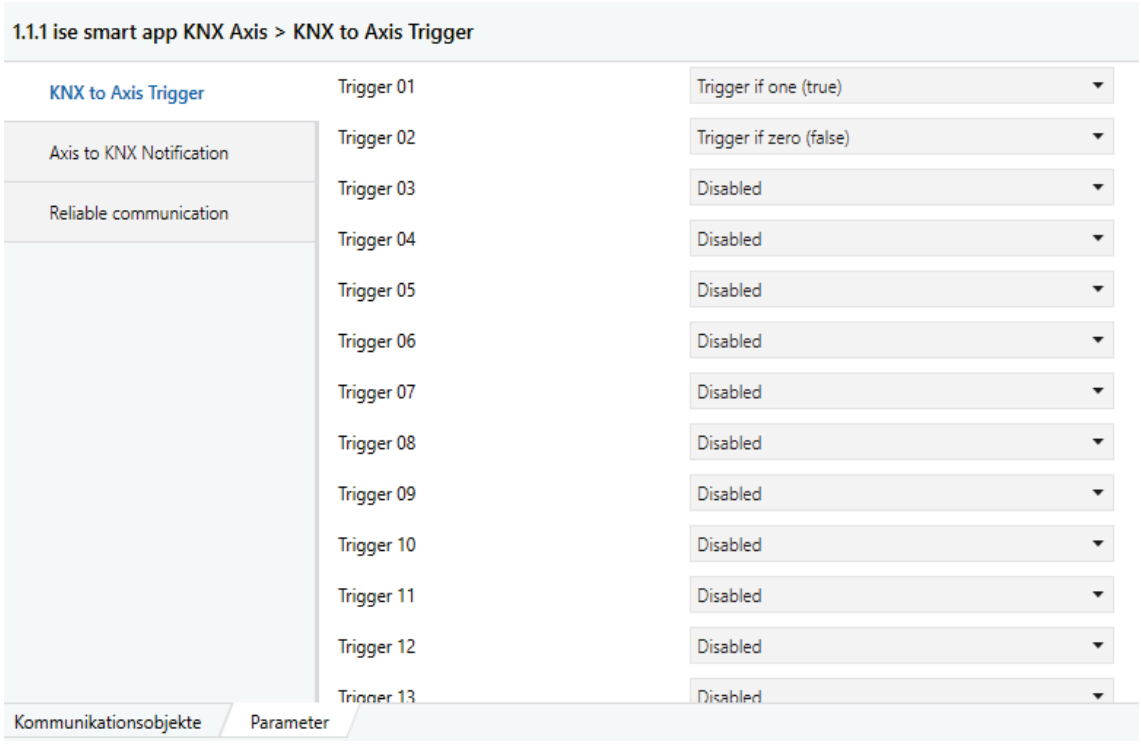




When motion is detected in the various areas, the values 1 through 3 are then sent to communication object 1.

You can also deactivate/activate created areas for motion detection via the KNX. For this purpose, you must send objects a so-called VAPIX message via the event trigger. An explanation of how to configure this is found in the following.

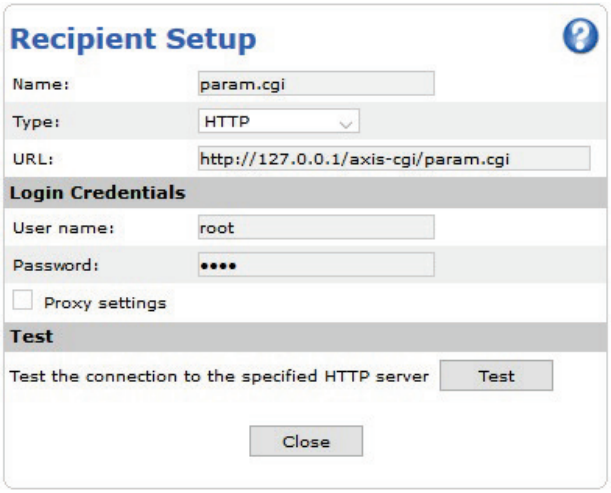
You must first make the settings for the event trigger and the communication objects in the ETS.



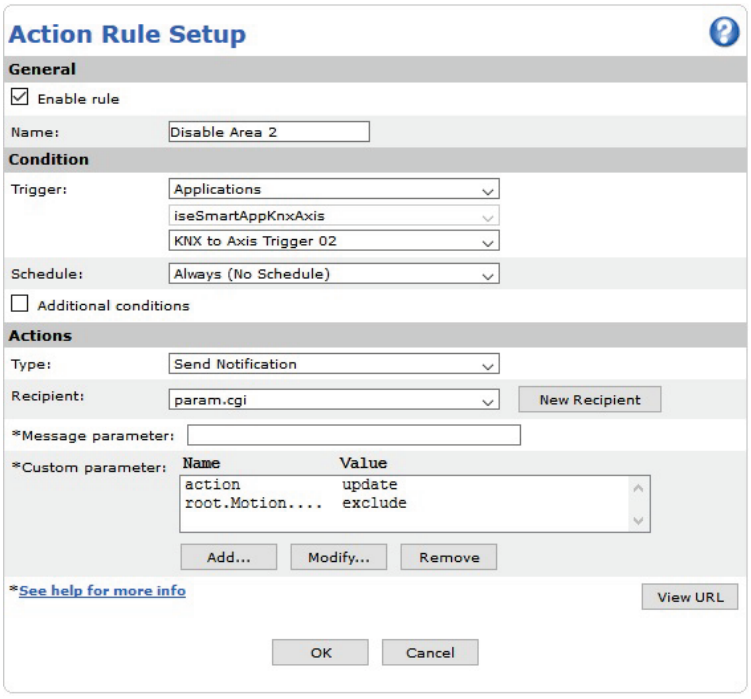
Nummer	Name	Objektfunktion	Beschreibung	Gruppenadresse	Länge	K	L	S	Ü	A	Datentyp	Priorität
1	Notification 01	Send a notification from Axis to KNX		2/1/1	1 byte	K	-	-	Ü	-	8-Bit vorze...	Niedrig
101	Trigger 01	Send a Trigger from KNX to Axis		1/1/1	1 bit	K	-	S	-	-	Boolesch	Niedrig
102	Trigger 02	Send a Trigger from KNX to Axis		1/1/1	1 bit	K	-	S	-	-	Boolesch	Niedrig
200	Error state	Indicates an error occured		3/1/1	1 bit	K	-	-	Ü	-	Boolesch	Niedrig
201	Last error	The last error as text		3/1/2	14 bytes	K	-	-	Ü	-	Zeichen (IS...	Niedrig

Communication objects 101 and 102 are assigned the same group address. In conjunction with the settings for the event triggers, it is possible to activate/deactivate the detection area using a group address in this way.

A recipient for VAPIX messages must first be set up on the camera.

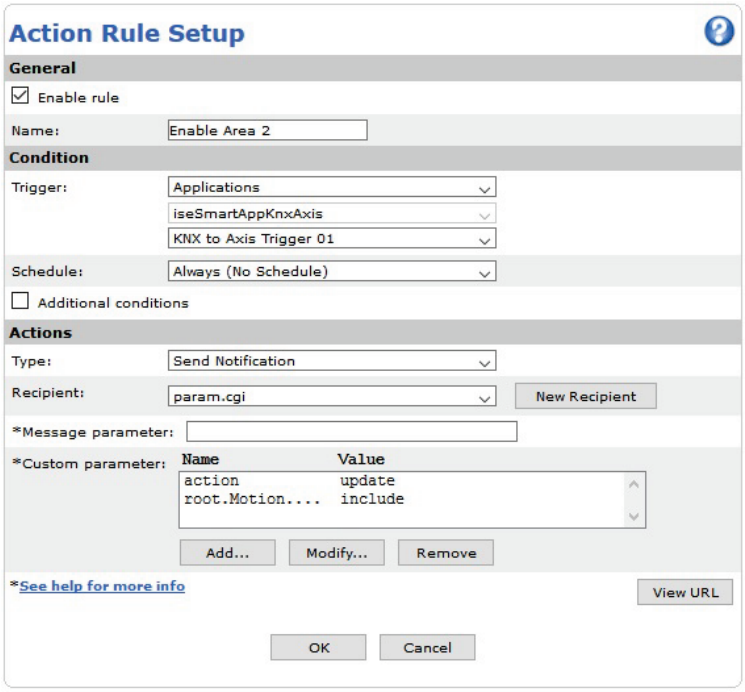


The action rules for activation and deactivation can now be created.



The *action* must now be defined as the parameter, for one thing. In this case, it is "update," as the next parameter is to be written. In the second parameter, the property to be changed is specified with the value to be set. For our area to be deactivated, it is: "root.Motion.M1.WindowType" "exclude".

For activation, set the value to "include".



You can now activate area 2 with event trigger 01 and deactivate with event trigger 02.

To find out which property must be set, all the properties of the camera can be displayed.

http://<serverIP>/axis-cgi/param.cgi?action=list

These are the properties for the areas created by us.

```
root.Motion.M0.Name=area1
root.Motion.M0.ImageSource=0
root.Motion.M0.Left=200
root.Motion.M0.Right=4000
root.Motion.M0.Top=200
root.Motion.M0.Bottom=4000
root.Motion.M0.WindowType=include
root.Motion.M0.Sensitivity=90
root.Motion.M0.History=90
root.Motion.M0.ObjectSize=15
root.Motion.M1.Name=Area2
root.Motion.M1.ImageSource=0
root.Motion.M1.Left=5530
root.Motion.M1.Right=9311
root.Motion.M1.Top=145
root.Motion.M1.Bottom=3916
root.Motion.M1.WindowType=include
root.Motion.M1.Sensitivity=90
root.Motion.M1.History=90
root.Motion.M1.ObjectSize=15
root.Motion.M2.Name=Area3
root.Motion.M2.ImageSource=0
root.Motion.M2.Left=2780
root.Motion.M2.Right=6561
root.Motion.M2.Top=5249
root.Motion.M2.Bottom=9019
root.Motion.M2.WindowType=exclude
root.Motion.M2.Sensitivity=90
root.Motion.M2.History=90
root.Motion.M2.ObjectSize=15
```

3.1.2 The KNX detects motion

The KNX motion detectors sense motion and trigger the camera to, for example, record a video or display an informational text (overlay text) in the camera image.

As not every camera type supports the setting of the overlay text using an action rule, this example is presented using the model M1145-L camera. The motion detector used is the GIRA 880xx automatic control switch.

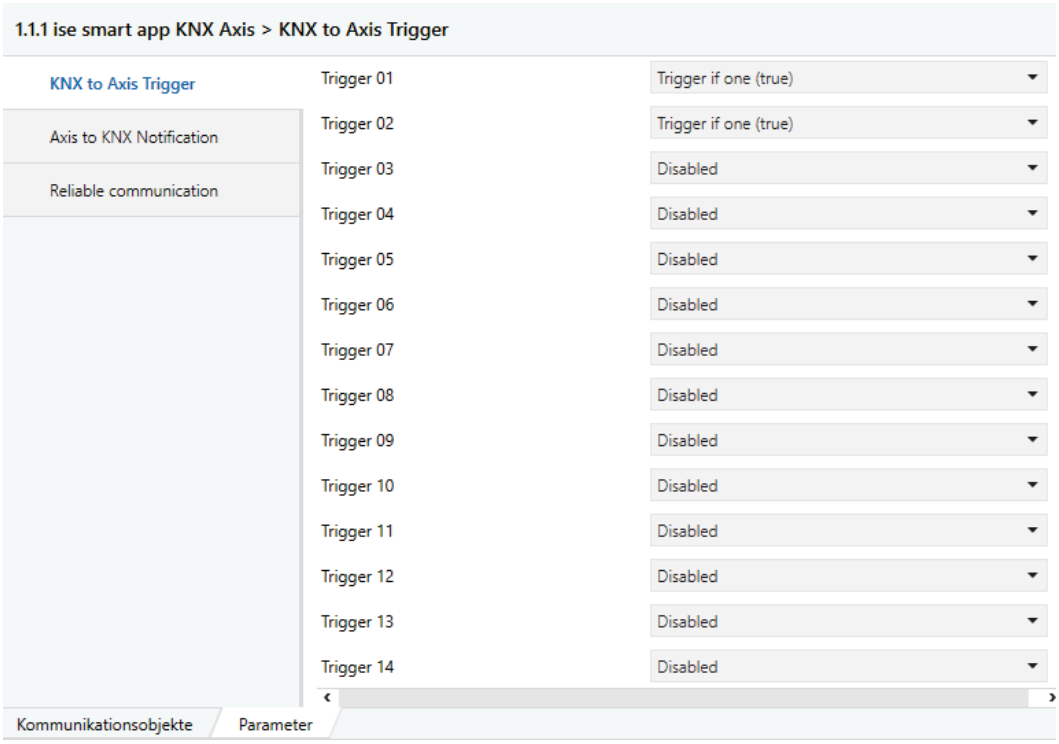
In the ETS (images from the ETS4), the project could be created as follows.

When motion is detected, a 1-bit telegram is sent to group address 1/1/1 by the automatic control switch. For motion detection at a closed auxiliary unit, a 1-bit telegram is sent to group address 1/1/2.

Nummer	Name	Objektfunkti...	Beschreibung	Gruppenadress...	Länge	K	L	S	Ü	A	Datentyp	Priorit...
0	Schalten	Schalten		1/1/1	1 bit	K	-	S	Ü	-		Niedrig
1	Sperren	Sperren			1 bit	K	-	S	-	-		Niedrig
2	Meldung von der Nebenstelle	Bewegung		1/1/2	1 bit	K	-	S	Ü	-		Niedrig

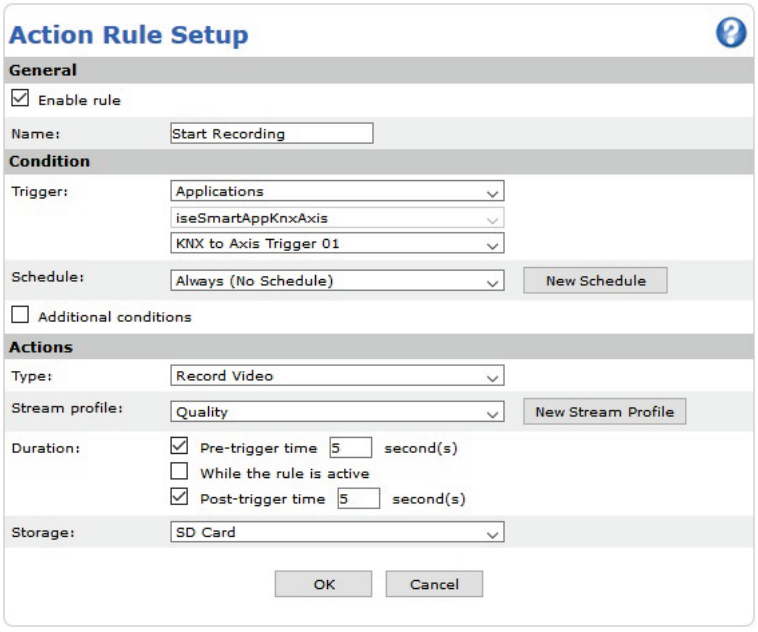
According to this specification, the configuration must also be made for the *ise smart app KNX Axis*.

Nummer	Name	Objektfunktion	Beschreibung	Gruppenadress...	Länge	K	L	S	Ü	A	Datentyp	Priorit...
101	Trigger 01	Send a Trigger from KNX to Axis		1/1/1	1 bit	K	-	S	-	-	Boolesch	Niedrig
102	Trigger 02	Send a Trigger from KNX to Axis		1/1/2	1 bit	K	-	S	-	-	Boolesch	Niedrig
200	Error state	Indicates an error occured			1 bit	K	-	-	Ü	-	Boolesch	Niedrig
201	Last error	The last error as text			14 Byte	K	-	-	Ü	-	Zeichen (ISC	Niedrig



If a 1 is sent to group address 1/1/1, the *ise smart app KNX Axis* initiates event trigger 01 on the AXIS Communications camera. For group address 1/1/2, this is event trigger 02 accordingly.

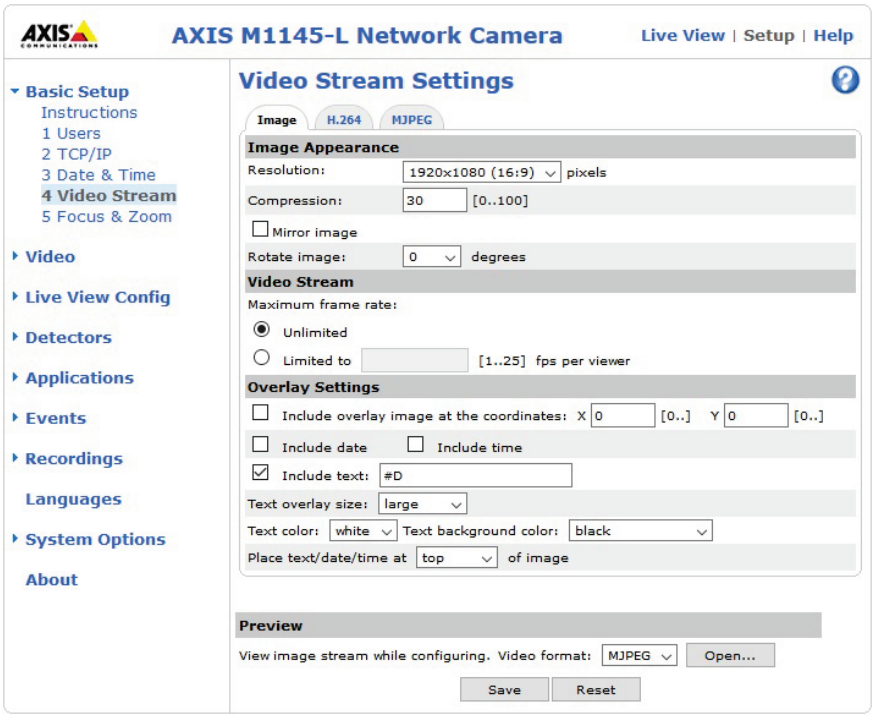
As only values from KNX are sent to the camera and processed in this example, the settings under "Axis to Notification" can be ignored.
The corresponding action rules must then be created on the camera to start recording. In the following image, you can see the action rule for starting recording with event trigger 01 and saving the video on the SD card.



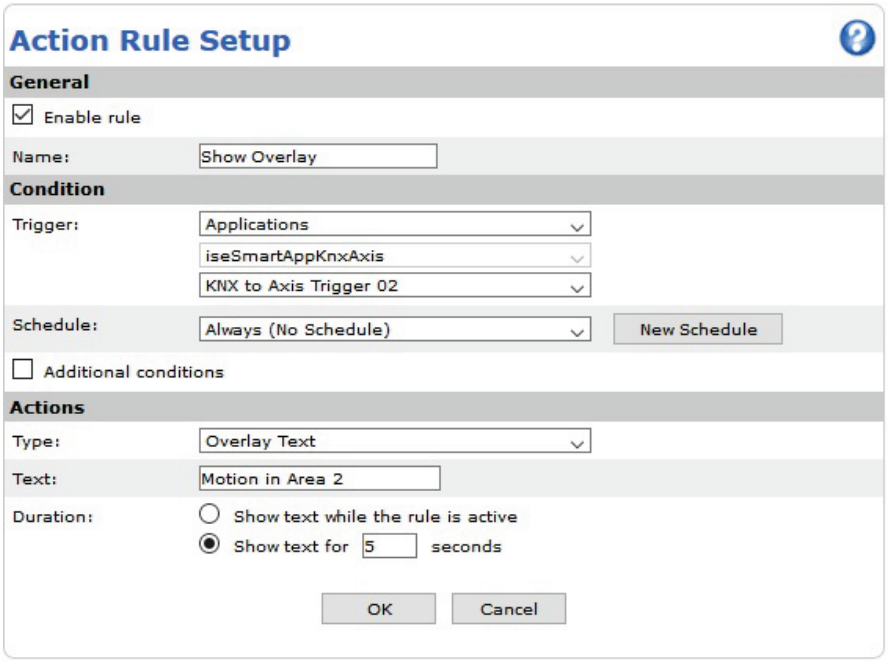
In order for an overlay text to be displayed, the corresponding setting must be activated on the camera in the video stream settings.

Under **Overlay Settings**, tick **Include text** and enter **#D** into the text field.
This is necessary in order for a text to be displayed via an action rule.

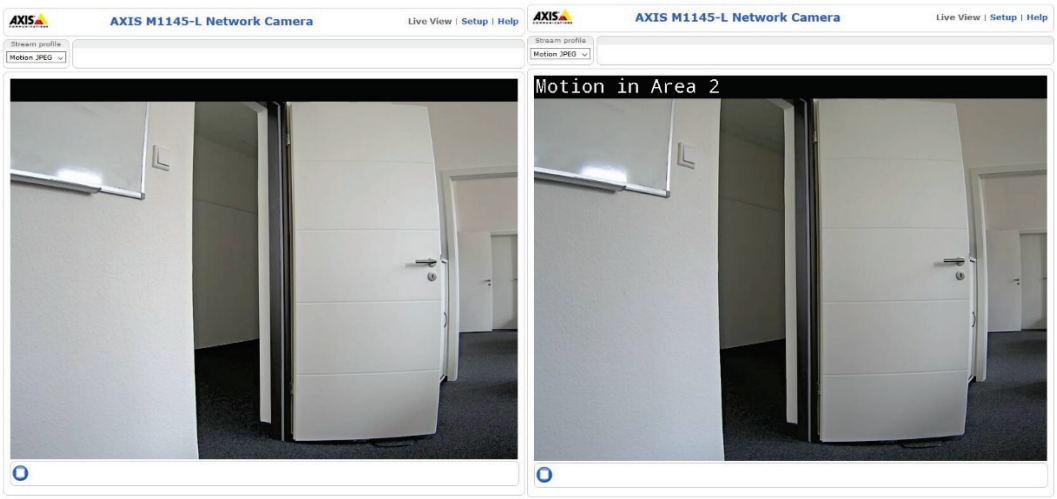
We would like to reiterate here that not all camera types support the display of overlay texts via action rules.



In the next section, you can define the action rule for displaying the text.



The displaying of the text "Motion in Area 2" on the screen for 5 seconds upon the occurrence of trigger 02 is specified in this action rule.

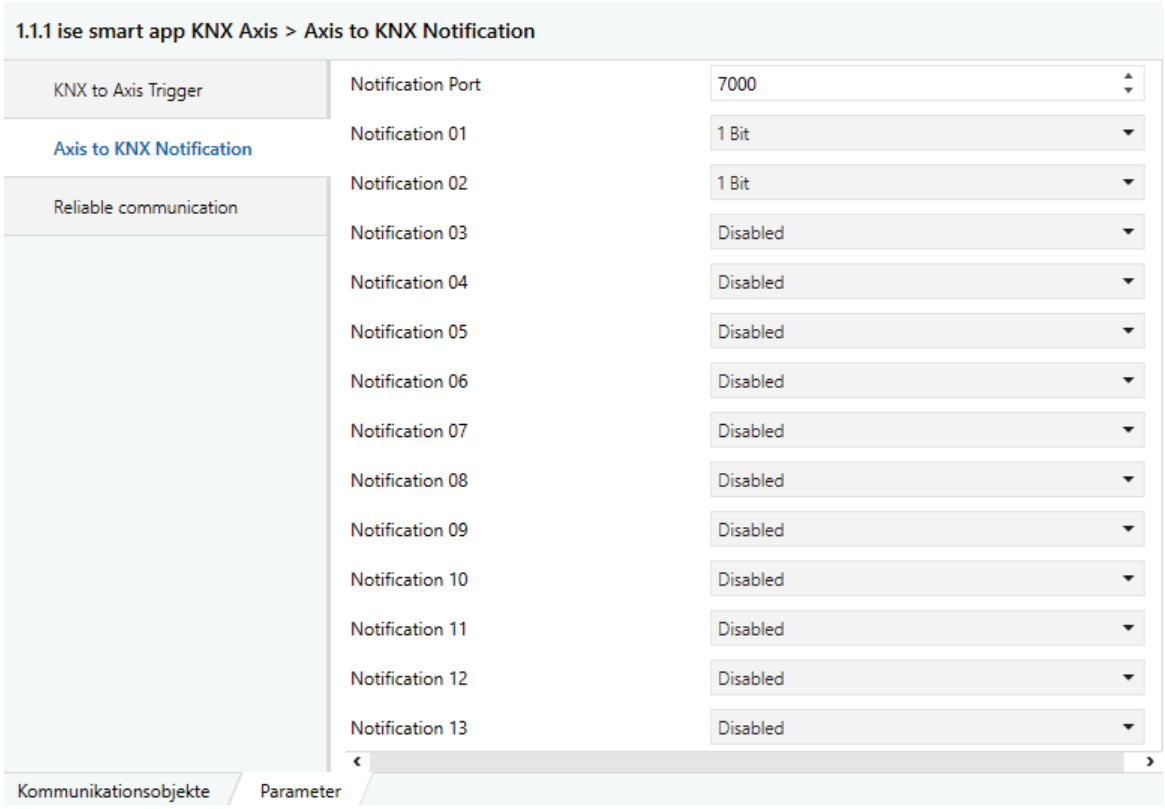


This could be used to provide information on motion detection at the auxiliary unit, which may not be in visible range.

3.1.3 Sending maintenance information to the KNX

It is possible to send maintenance information to the KNX. For example, you can receive information at the KNX if the camera is being used in an impermissible temperature range or the memory capacity, e.g. on an SD card, is full. The options are specified by the camera system itself. Anything which could trigger an action rule on the camera can send values to the KNX.

The ETS project (ETS5 in this case) could appear as follows.

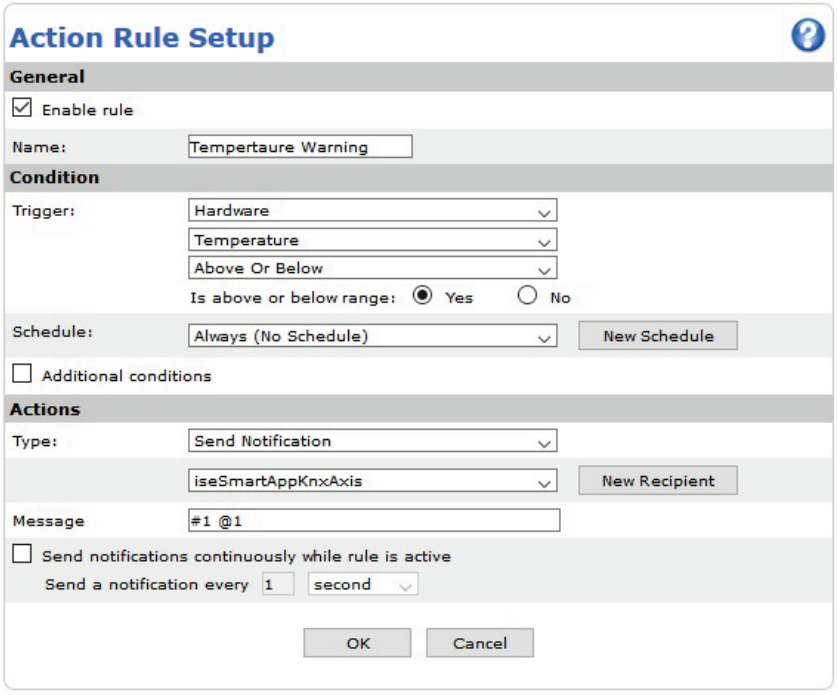


The first two notifications are configured to a length of 1 bit. The notification port remains at the default setting of 7000.

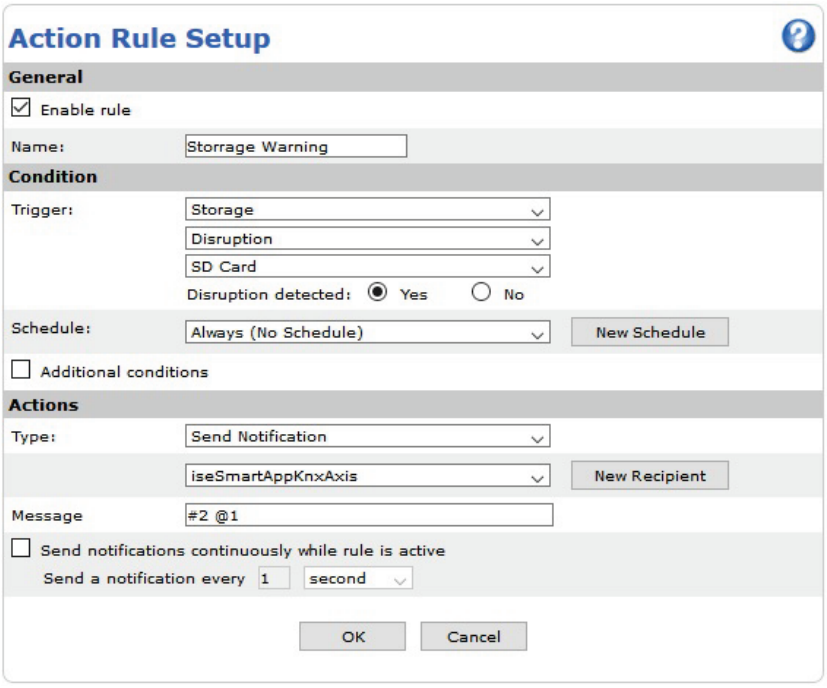
Nummer	Name	Objektfunktion	Beschreibung	Gruppenadresse	Länge	K	L	S	Ü	A	Datentyp	Priorität
1	Notification 01	Send a notification from Axis to KNX	Temperature Warning	1/1/1	1 bit	K	-	-	Ü	-	Auslöser	Niedrig
2	Notification 02	Send a notification from Axis to KNX	Storage Warning	1/1/2	1 bit	K	-	-	Ü	-	Auslöser	Niedrig
200	Error state	Indicates an error occured			1 bit	K	-	-	Ü	-	Boolesch	Niedrig
201	Last error	The last error as text			14 bytes	K	-	-	Ü	-	Zeichen (IS...	Niedrig

Should a temperature warning be issued, a 1 is to be sent to group address 1/1/1, and in the case of a warning regarding the memory capacity, a 1 is to be sent to group address 1/1/2.

The temperature warning is configured in the following action rule. Should the warning be issued, the value 1 is sent to communication object 1 (see the message field).



The action rule for the warning regarding the memory capacity could appear as follows. Should the warning be issued, the value 1 is sent to communication object 2.

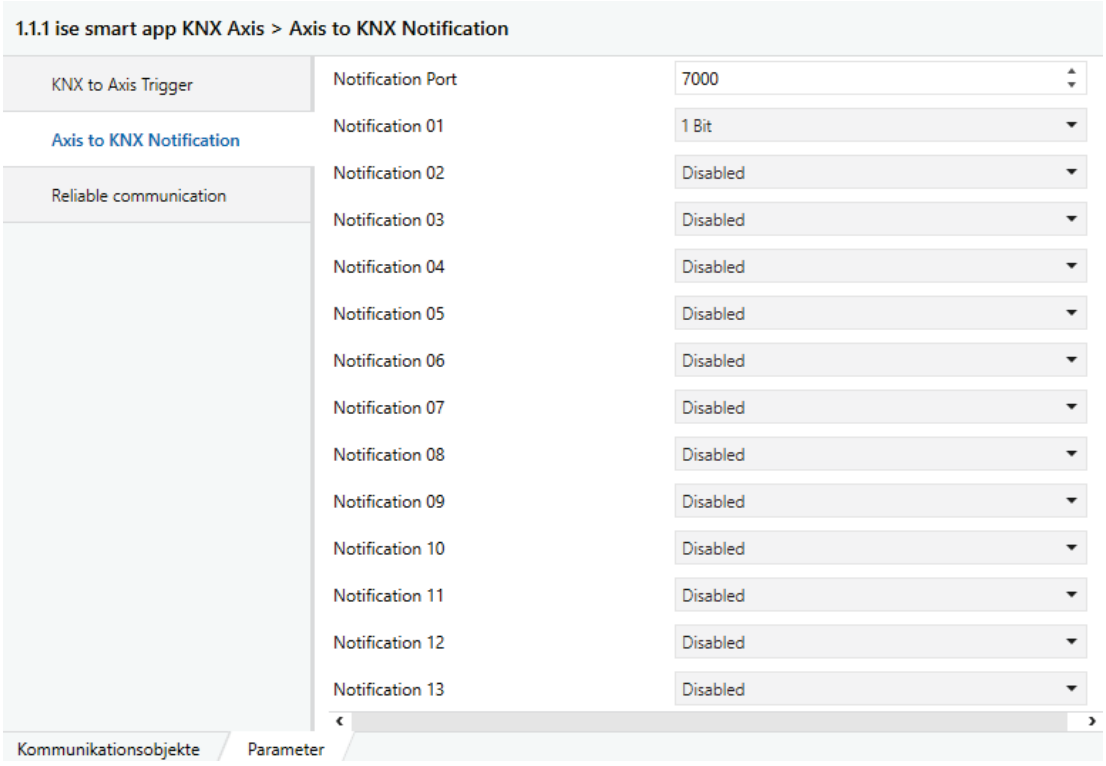


Please note that it is assumed in these examples that the recipient of the communication is already set up with the *ise smart app KNX Axis* as described in this document.

3.1.4 Cross Line Detection

The Cross Line Detection application detects when objects in motion cross a virtual line and triggers an event automatically. This event, in turn, can then send a value to the KNX to switch a light on, for example. In this example, the *AXIS Cross Line Detection* application was used.

The ETS project could appear as follows.

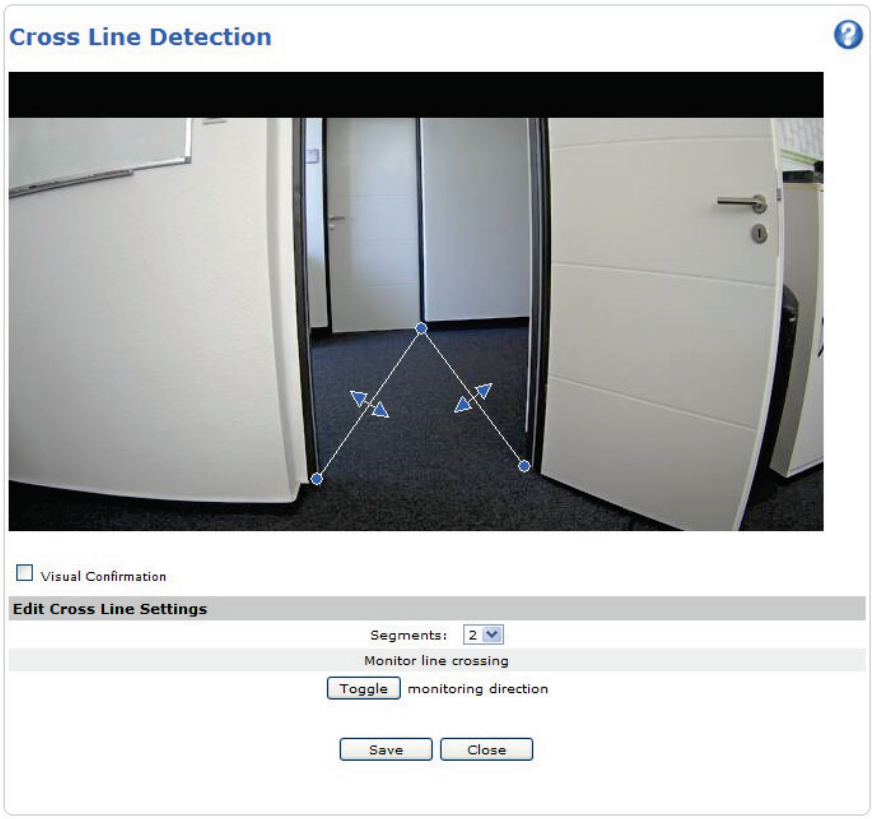


Only a notification object with bit length 1 is used. The group address 1/1/1 is assigned to this notification object 01.

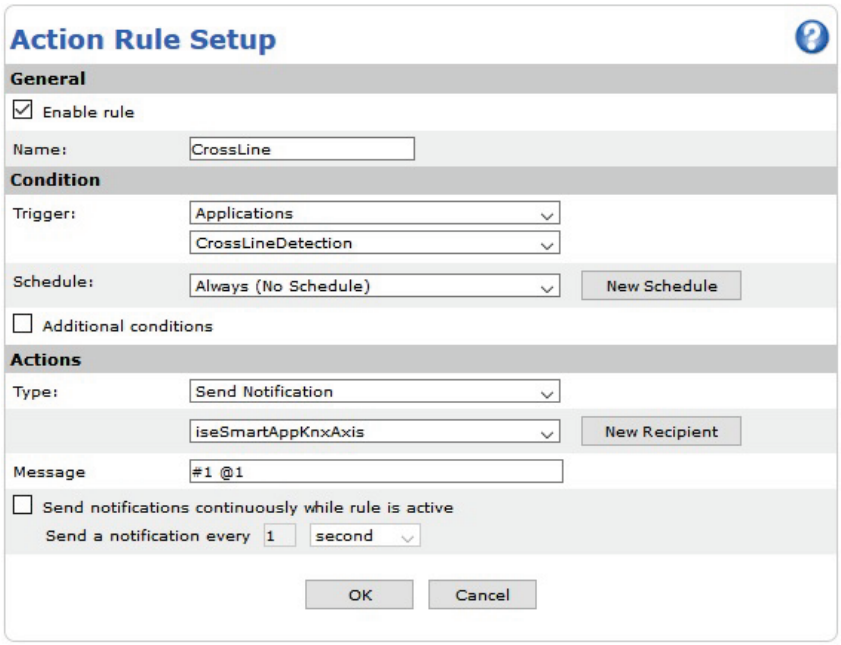
Nummer	Name	Objektfunktion	Beschreibung	Gruppenadress...	Länge	K	L	S	Ü	A	Datentyp	Priorit...
1	Notification 01	Send a notification from Axis to KNX		1/1/1	1 bit	K	-	-	Ü	-	Auslöser	Niedrig
200	Error state	Indicates an error occured			1 bit	K	-	-	Ü	-	Boolesch	Niedrig
201	Last error	The last error as text			14 Byte	K	-	-	Ü	-	Zeichen (ISC	Niedrig

The *AXIS Cross Line Detection* application must be configured on the camera, and the corresponding action rule must then be created to send a value to the KNX.

In *AXIS Cross Line Detection*, you then create the virtual lines which are to trigger an event when crossed.



Cross Line Detection is selected as the trigger in the action rule.



When the event is triggered, i.e. the virtual line is crossed, the event is triggered and the value 1 sent to the communication object on the KNX.

4 Installation on an AXIS Communications camera

NOTE! The license always applies to exactly one device. The license is registered/activated using the serial number on a device. If the license was registered to/activated for a serial number, it is not possible to undo it! It is not possible to return an activated license!

The views presented in these instructions feature the model M1103 camera from AXIS Communications. Under certain circumstances, the views with other camera models may differ.

4.1 Downloading the installation package

Please download the installation package suitable for your camera.

http://www.ise.de/de/produkte/ise_smart_app_KNX_Axis

If you are not sure which installation package you need, you can query the required processor type on your camera. Please replace <Camera IP> with the actual IP address of the camera.

http://<Camera-IP>/axis-cgi/param.cgi?action=list&group=root.Properties.System.Architecture

If you use Axis Firmware 5.60 and above, please use the installation file for the SDK2.

Less Firmwareversion < 5.60

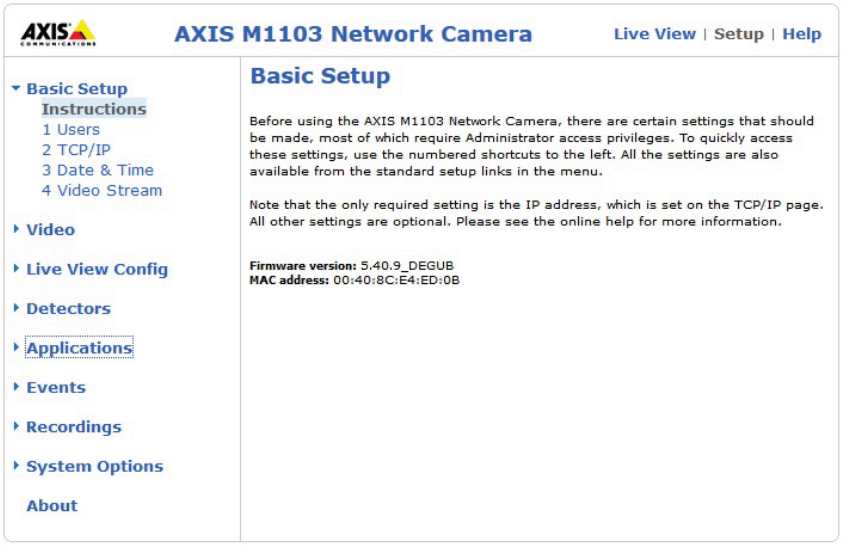
Architecture	Installation file
`crisv32`	iseSmartAppKnxAxis_X_X_XX_SDK1_crisv32.eap
`armv6l`	iseSmartAppKnxAxis_X_X_XX_SDK1_armv6.eap
`mips`	iseSmartAppKnxAxis_X_X_XX_SDK1_mipsisa32r2el.eap

From Firmwareversion >= 5.60

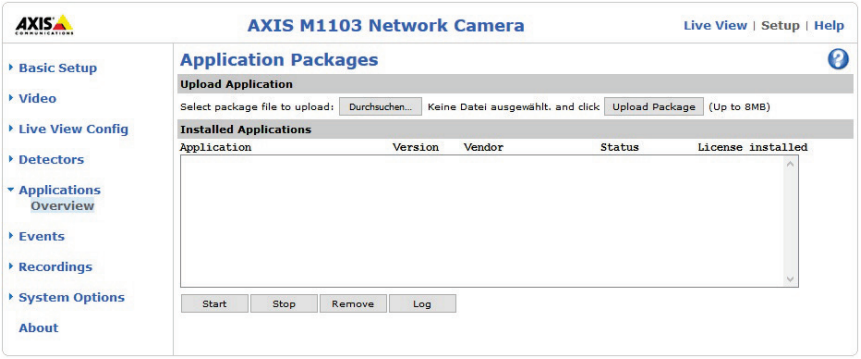
Architecture	Installation file
`armv6l`	iseSmartAppKnxAxis_X_X_XX_SDK2_armv6.eap
`mips`	iseSmartAppKnxAxis_X_X_XX_SDK2_mipsisa32r2el.eap
`armv7hf`	iseSmartAppKnxAxis_X_X_XX_SDK2_armv7hf.eap

4.2 Installation

Using your browser, call up the **Setup** website of your AXIS Communications IP product and select **Applications.**

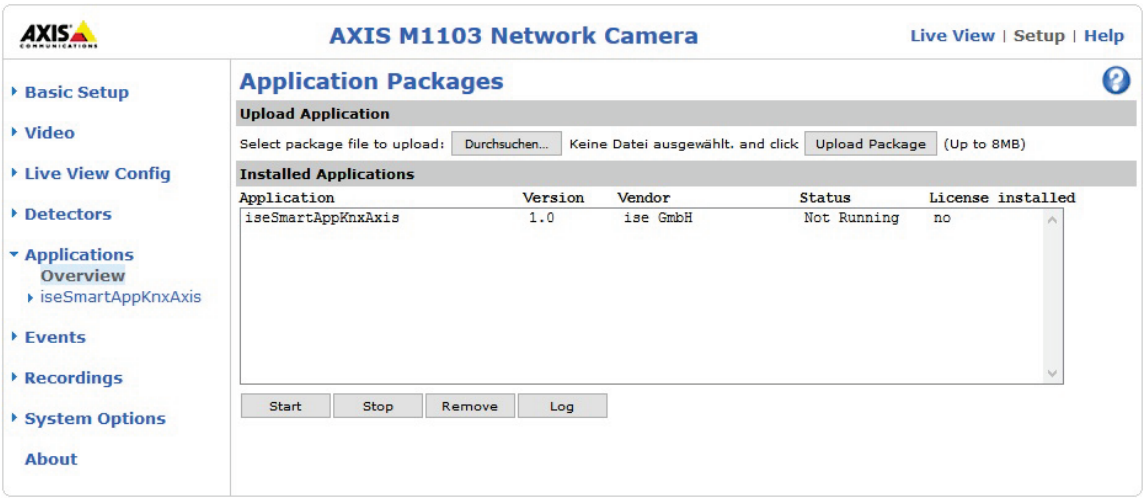


You should now see the website for installation of the application:



Press the ***Durchsuchen…*** ("Search") button and select your installation package. Then press the ***Upload Package*** button to install the application on the camera.

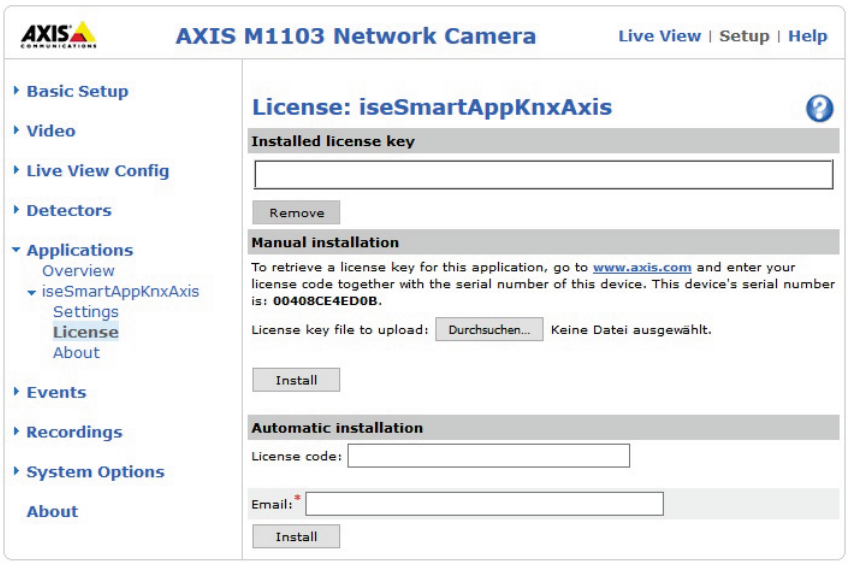
Once installation is complete, the *iseSmartAppKnxAxis* application appears under **Installed Applications**.



The application cannot be started yet, as you must install the license first.

4.3 Application licensing

To license the application, please open the *Setup* website and select **License** under *iseSmartAppKnxAxis*.



If your camera has an Internet connection, you can install the license automatically. Enter your license code under **Automatic installation** for this purpose. Specify your email address and press the ***Install*** button. Your license will be registered to the serial number of the camera, and the license key will be downloaded.

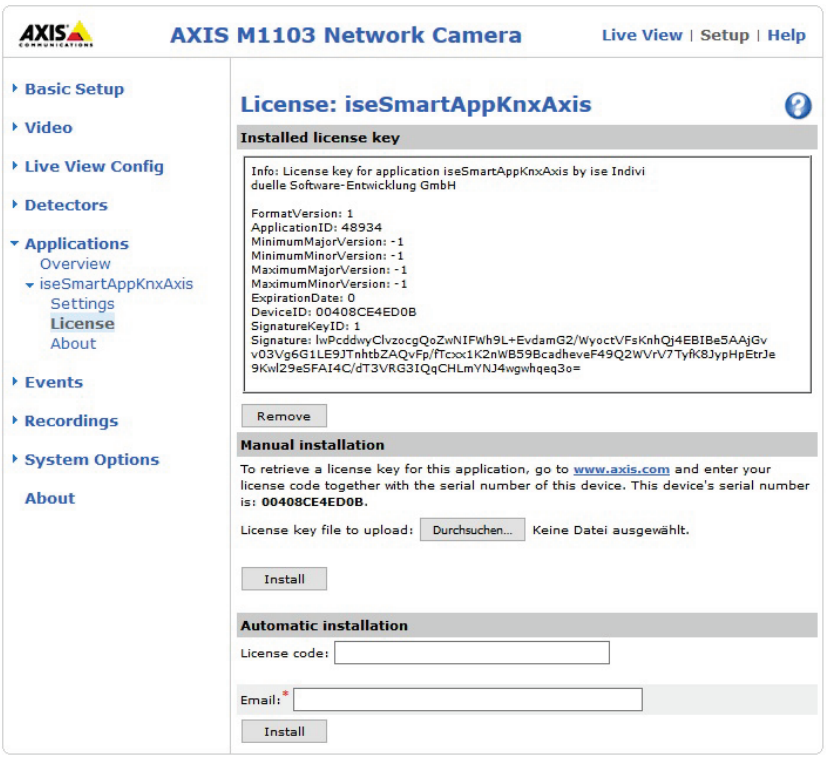
You can also install the license key file manually. For this purpose, you must first register/activate the license code for the camera to receive the license key file. License registration/activation is carried out via the AXIS Communications website.

http://www.axis.com/global/en/products/camera-applications/license-key-registration#/registration

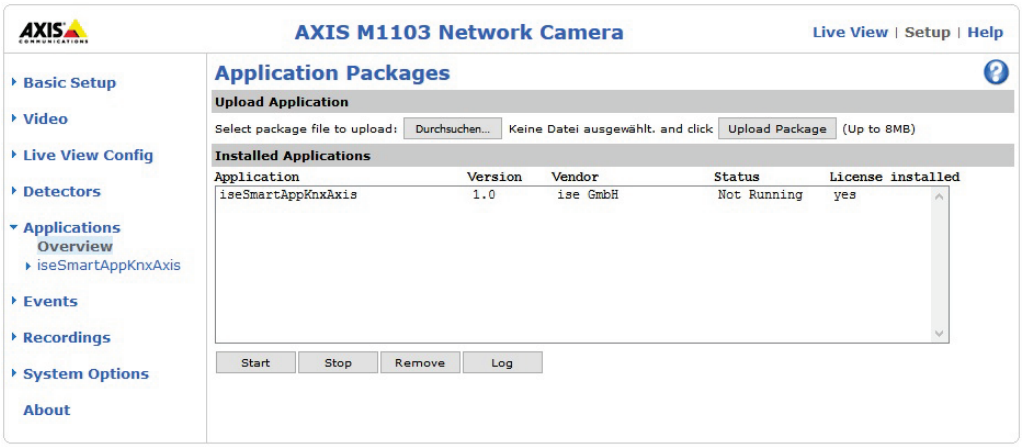
After successful registration/activation, please install the license on your camera.

Press the ***Durchsuchen...*** ("Search") button and select your license file. Then press ***Install*** to install the license.

After successful installation of the license, it is displayed under **Installed license key**.



Once licensing is complete, the *iseSmartAppKnxAxis* application will appear under **Installed Applications** with the information **License installed *yes***. You can then start the application by selecting it and pressing the ***Start*** button. The state will be saved permanently. This means that the application will be started automatically the next time the camera is started.



4.3.1 Trial version

You can also register the application with a 30-day trial license. To use the trial version, the time must be set correctly on the camera.

You can download the trial license from the AXIS Communications website.

http://www.axis.com/global/en/products/camera-applications/license-key-registration#/registration

IMPORTANT! In the trial version, communication with the KNX is cut off after **2 hours**. Communication will only work again after restarting the application.

Configuration

Configuration of the ise *smart app KNX Axis* is divided into the following steps:

Preparations:		**For explanations, see**
1	Installation of *ise smart app KNX Axis* on an AXIS Communications IP product.	→ Section 4 Installation on an AXIS Communications camera
2	Configuration via ETS	→ Section 4.4
3	Configuration on the camera	→ Section 4.5

4.4 Configuration via ETS:

Once installation and licensing of the application are complete, further configuration can occur. The preparatory configuration is carried out using the Engineering Tool Software, ETS, available from the KNX Association, see www.knx.org.

1	Create the *ise smart app KNX Axis* as a device in the ETS.	→ Section 4.4.1
2	Assign physical address as usual, corresponding to the KNX topology.	
3	Set IP address, IP subnet mask and default gateway address of the *ise smart app KNX Axis* or select "Obtain an IP address automatically (from a DHCP server)".	→ Section 4.4.3
4	Set general parameters for the ise *smart app KNX Axis*.	→ Section 4.4.4.1
5	Connect group addresses to group objects as usual.	→ Section 4.4.5
6	The *ise smart app KNX Axis* is now ready for commissioning via *"Program ETS"*.	

4.4.1 Configuration step 1 − Create *ise smart app KNX Axis* as a device in the ETS

If it has not yet been done, import the ETS device application to the *ise smart app KNX Axis* once in the device catalogue of your ETS, for example using the "*Import Products*" function on the start page of the ETS.

You can download the ETS application from our website under www.ise.de free of charge.

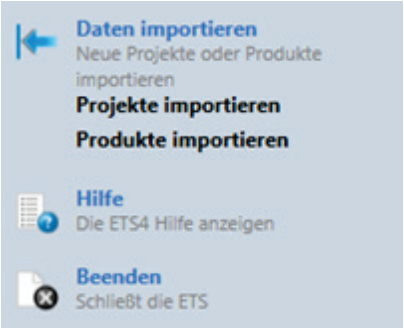


Figure 1: Product import via the ETS start page.

The other explanations in this document refer to

Hardware		Application software	
Device:	**ise smart app KNX Axis**	Application:	**ise smart app KNX Axis**
Manufacturer:	**ise GmbH**	Version**:**	**V3.0**
Order No.	**A-1-0001-008**		
Version:	**V2.3**		

If you already have an ETS project with a previous database entry, you can also update the application program. To do this, drag the new database entry to the project and then select the device with the old database entry. Then select *"Information"* and the *"Application"* (ETS 4.2) or *"Application program"* (ETS 5) tab in the *"Properties"* of the device.
You can use the *"Update application program"* (ETS 4.2) or *"Update"* (ETS 5) button to replace the old database entry there. Existing links with group addresses are not lost here. The newly added device can now be deleted again.
In ETS 4.2, you require a special license for this. From ETS 5 on, this is possible with every license.

4.4.2 Configuration step 2 – Assigning a physical address

In the ETS, assign the device a physical address as usual corresponding to the KNX topology.

4.4.3 Configuration step 3 – Setting the IP address, subnet mask and address of the standard gateway

In addition to the physical address on the KNX network, the *ise smart app KNX Axis* can also be assigned an address on the IP data network via the ETS. This setting is not absolutely necessary, though, as the camera can also be configured through the websites.

This includes the following information:

- IP address
- Subnet mask
- Address of the standard gateway

This can occur in two ways, either

- automatically by obtaining the data from a DHCP server (e.g. Integrated into the data network route) or
- via manual setting in the ETS.

If you would like to make the settings via the ETS, proceed as follows:

1. Select the device in the ETS.

2. Display the properties of the device in the sidebar of the ETS as shown in Figure 2 Device properties dialogue of the ETS**Fehler! Verweisquelle konnte nicht gefunden werden.**.

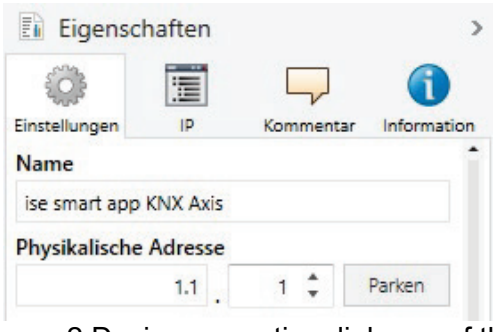


Figure 2 Device properties dialogue of the ETS

3. Select the "IP" tab accordingly. Then select either

   ⊙ *Obtain an IP address automatically (default)*

   The address data are obtained automatically from a DHCP server on the data network.

   or

   ⊙ *Use the following address*

   and enter the data manually.
   You can usually obtain the permissible IP address range and the subnet mask and default gateway from the router configuration interface.

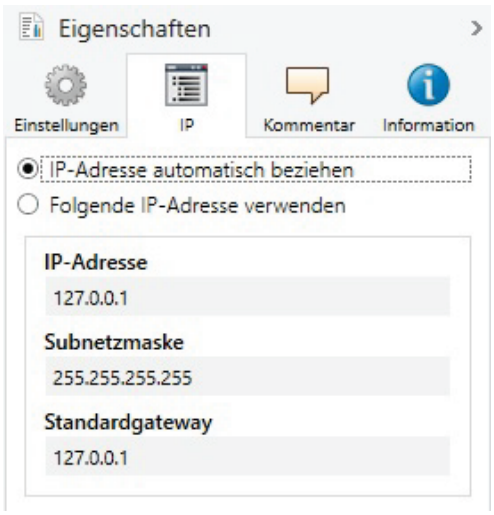


Figure 3 Setting of the IP address data of the device on the "IP" tab in the sidebar of the ETS

If the ⊙ *Obtain an IP address automatically* setting is used, a DHCP server must issue *the ise smart app KNX Axis* a valid IP address.

If a DHCP server is not available for this setting, the device starts up after a waiting time with an AutoIP address (address range from 169.254.1.0 to 169.254.254.255).

As soon as a DHCP server is available, the device is automatically assigned a new IP address.

4.4.4 Setting general parameters.

4.4.4.1 Parameter KNX to Axis Trigger

The default value of each parameter is marked in **bold**.
For reasons of clarity, not every individual parameter is listed, as only the number of the trigger (1 – 30) and the associated communication object (101 – 130) are continuously incremented. Starting with trigger 11, the default value is "Disabled".

Parameter	Entry/Selection	Remarks
Trigger 01	Disabled	CO101 is deactivated and hidden. The trigger is thus never initiated on the AXIS Communications IP product.
	Trigger if zero (false) **Trigger if one (true)** Trigger always	This setting determines whether trigger 01 is initiated on the AXIS Communications IP product only with the value 0 or 1, or with both values.
Trigger 02	Disabled	CO102 is deactivated and hidden. The trigger is thus never initiated on the AXIS Communications IP product.
	Trigger if zero (false) **Trigger if one (true)** Trigger always	This setting determines whether trigger 01 is initiated on the AXIS Communications IP product only with the value 0 or 1, or with both values.
Trigger NN	Disabled	CO1NN is deactivated and hidden. The trigger is thus never initiated on the AXIS Communications IP product.
	Trigger if zero (false) **Trigger if one (true)** Trigger always	This setting determines whether trigger NN is initiated on the AXIS Communications IP product only with the value 0 or 1, or with both values.
Trigger 30	**Disabled**	CO130 is deactivated and hidden. The trigger is thus never initiated on the AXIS Communications IP product.
	Trigger if zero (false) Trigger if one (true) Trigger always	This setting determines whether trigger 30 is initiated on the AXIS Communications IP product only with the value 0 or 1, or with both values.

4.4.4.2 Parameter Axis to KNX Notification

The default value of each parameter is marked in **bold**.
For reasons of clarity, not every individual parameter is listed, as only the numbers of the notification (1 – 30) and the associated communication object (1 – 30) are continuously incremented. Starting with notification 11, the default value is "Disabled".

Parameter	Entry/Selection	Remarks
Notification Port	**7000**	The TCP port is set here, over which *ise smart app KNX Axis* receives messages from the camera system.
Notification 01	Disabled	CO1 is deactivated and hidden.
	1 bit 8 bits (0 – 255) 16 bits (0 – 65535) 14 bytes	The bit width for communication object 1 is specified here.
Notification 02	Disabled	CO2 is deactivated and hidden.
	1 bit 8 bits (0 – 255) 16 bits (0 – 65,535) 14 bytes	The bit width for communication object 2 is specified here.
Notification NN	Disabled	CONN is deactivated and hidden.
	1 bit 8 bits (0 – 255) 16 bits (0 – 65535) 14 bytes	The bit width for communication object NN is specified here.
Notification 30	**Disabled**	CO30 is deactivated and hidden.
	1 bit 8 bits (0 – 255) 16 bits (0 – 65,535) 14 bytes	The bit width for communication object 30 is specified here.

4.4.4.3 Parameter Reliable communication

The default value of each parameter is marked in **bold**.

Parameter	Eintrag / Auswahl	Bemerkungen
Use reliable communication?	**No**	The reliable communication to ensure faultless KNX communication in a wireless network at all times is not activated.
	Yes	The reliable communication to ensure faultless KNX communication in a wireless network at all times is activated.

When changing this parameter, the application has to be restarted manually after downloading the ETS project.

4.4.5 Connect group addresses to group objects.

The following group objects are available for the connection of group addresses at the *ise smart app KNX Axis*:

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
1	Notification 01	Transfer	1 bit	1,017	C--T-
2	Notification 02		8 bits	5.x	
3	Notification 03		16 bits	7.x	
4	Notification 04		14 bytes	16,001	
5	Notification 05				
6	Notification 06				
7	Notification 07				
8	Notification 08				
9	Notification 09				
10	Notification 10				
...	...				
30	Notification 30				

Rubric: Message from camera system to KNX bus.

Function: Send a notification from Axis to KNX

Description:

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
101	Trigger 01	Write	1 bit	1,002	C--W-
102	Trigger 02				
103	Trigger 03				
104	Trigger 04				
105	Trigger 05				
106	Trigger 06				
107	Trigger 07				
108	Trigger 08				
109	Trigger 09				
110	Trigger 10				
...	...				
130	Trigger 30				

Rubric: Message from KNX bus to camera system.

Function: Send a trigger from KNX to Axis

Description:

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
200	Error state	Transfer Read	1 bit	1,002	C--T-
Rubric:	Error signalling				
Function:	Indicates an error occurred				
Description:	Signals that the last internal processing of a piece of information failed. Detailed information on the error can be found in object 201.				

Object	Name	Direction	Data width	DP type	Flags (CRWTU)
201	Last error	Transfer Read	14 bytes	16,001	C--T-
Rubric:	Error signalling				
Function:	Last error as text.				
Description:	The last error is displayed with a more detailed breakdown here. **"Unknown CO"** – Communication object does not exist. **"CO lookup err"** – Number of the communication object could not be determined from message. **"CAM read fail"** – Read-out of the camera properties failed. **"1Bit val err"** – Invalid value for 1 bit. **"8Bit val err"** – Invalid value for 8 bits. **"16Bit val err"** – Invalid value for 16 bits. **"14Byte val err"** – Fixed value for 14 bytes not placed in quotes. **"Val lookup err"** – Value could not be determined from message. **"Trigger err"** – Error while initiating an event trigger.				

4.5 Configuration on the camera

Configuration of the ise *smart app KNX Axis* on the camera is divided into the following steps:

Preparations:	**For explanations, see**
1 Creating a recipient for TCP messages.	→ Section 4.5.1 Recipient
2 Creating action rules.	→ Manufacturer Documentation

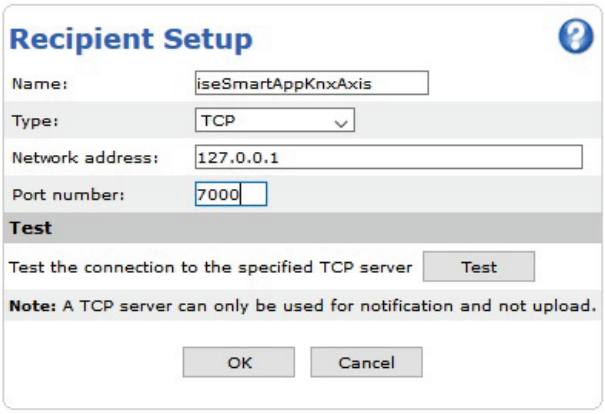
4.5.1 Recipient

To use *ise smart app KNX Axis* in the KNX direction, a recipient must be configured for TCP messages.

4.5.1.1 Add recipient using the software for SDK1

To open the recipient options, click **Events > Recipients** under the **Setup** menu of the camera.

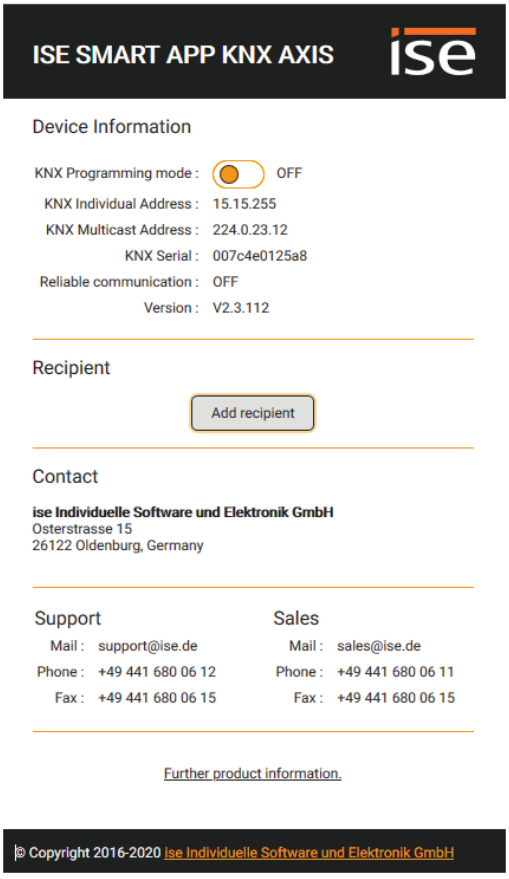
Press the ***Add...*** button and add a corresponding recipient.



Ensure that you are using the local host, *127.0.0.1*, as the network address. ***The port number must match the port configured as the notification port in the ETS.*** If this is not the case, the communication with the KNX bus will not work.

4.5.1.2 Add recipient using the software for SDK2

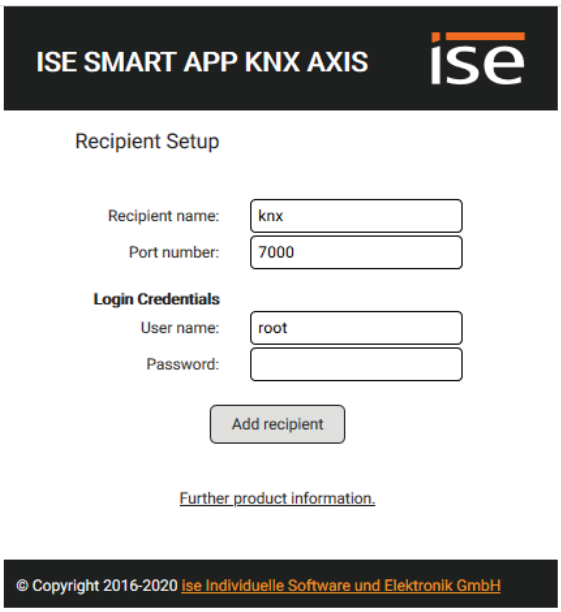
Open the website of the application and click the **Add recipient** button.



The input boxes **Recipient name**, **Port number** and **User name** are set with default values. The user name and the password are your login credentials (administrator rights are required).

Change these values according to your specification and confirm your entry with the **Add recipient** button.

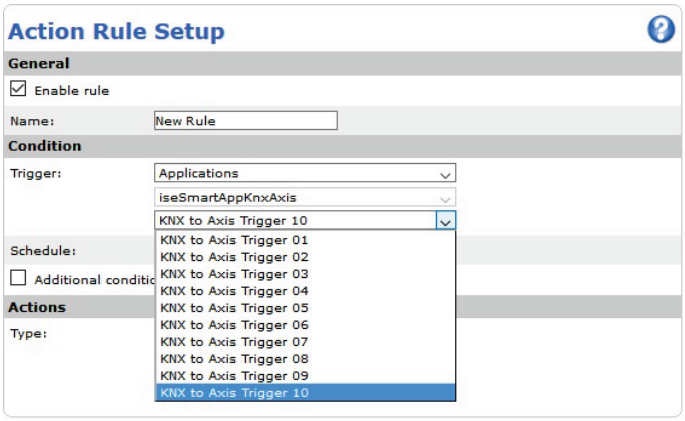
The port number must match the port configured as the notification port in the ETS. If this is not the case, the communication with the KNX bus will not work.



A confirmation message will be displayed after you have added the recipient successfully. Otherwise, an error message will be displayed.

4.6 Use of trigger objects from KNX toward AXIS Communications

The application provides 30 binary communication objects for communication from the KNX bus to the AXIS Communications event system. They appear as **Trigger 01** through **Trigger 30** in the camera system. These triggers can be used in so-called action rules to operate actions on the camera.



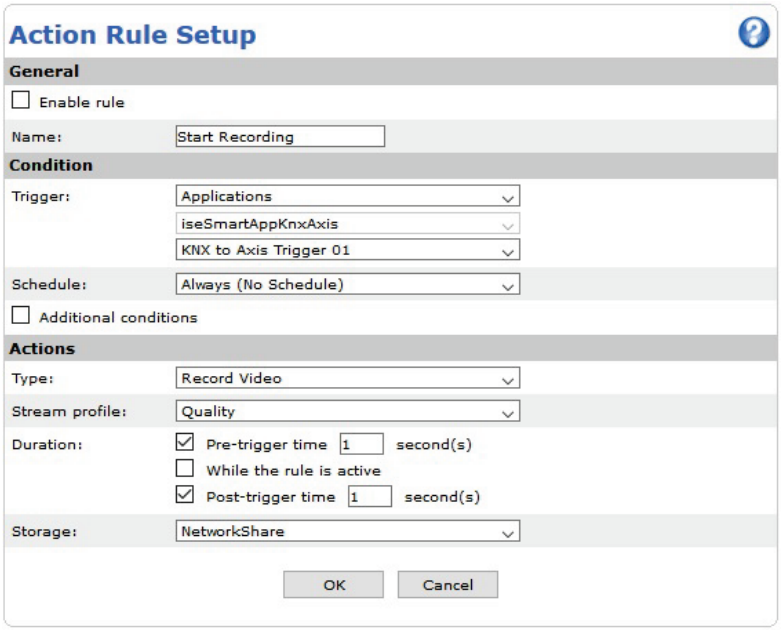
4.6.1 Action rules

If you would like to create new **action rules**, open the **Action Rules** page under **Setup/Events**. Action rules which have already been created are displayed here.

You can create, delete and change new rules here.

4.6.1.1 Start recording

If you would like to start recording a video, for example, you can create an action rule as follows.



Ensure that the application is started. Otherwise, it will not appear in the trigger selection.

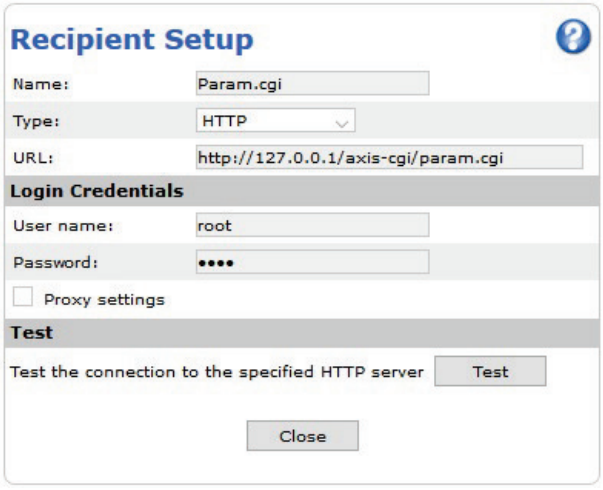
Under Trigger, please select **Applications**. Then select the application *iseSmartAppKnxAixs*.
You can now select one of the 30 KNX to Axis triggers.

Then define the action to occur when the trigger is initiated.

4.6.1.2 VAPIX

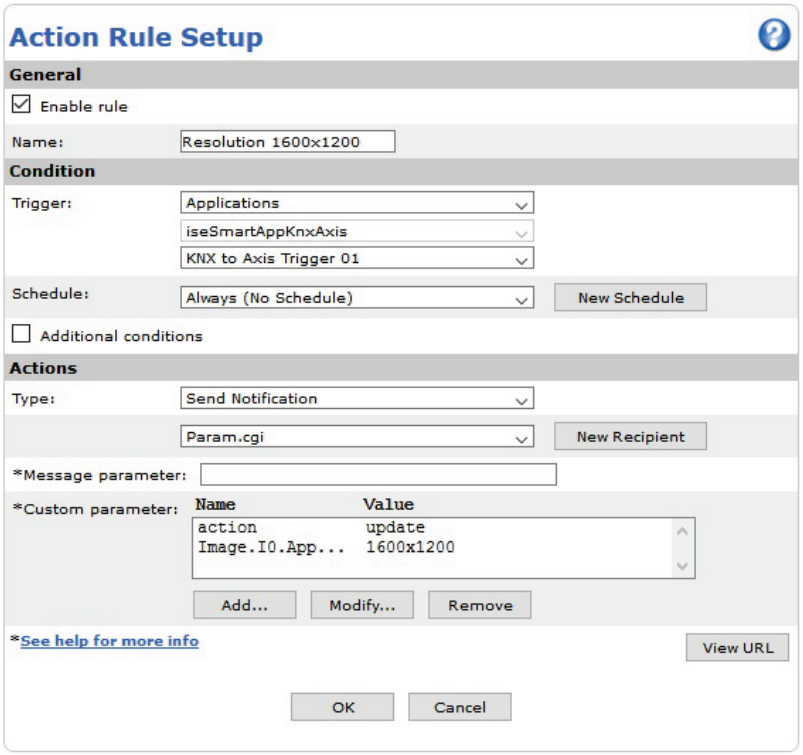
AXIS Communications provides an interface allowing nearly complete control of the camera via HTTP.
The documentation on this can be found on the manufacturer's website:
http://www.axis.com/au/en/support/developer-support/vapix

You can change the resolution of the camera for a stream, for example, using a trigger.
To carry out such an action using a KNX trigger, you must create a new **recipient** who will receive and process the message.



You must ensure that ***127.0.0.1*** is used as the IP address here as well.

To change the resolution of the display when the event trigger is initiated, create a new action rule. The **action** of this is then **Send Notification**. Then select the previously created HTTP recipient as the recipient (name: Param.cgi). Finally, specify the required parameters.



In this example, two parameters are specified.

Name: action
Value: update

Name: Image.I0.Appearance.Resolution
Value: 1600x1200

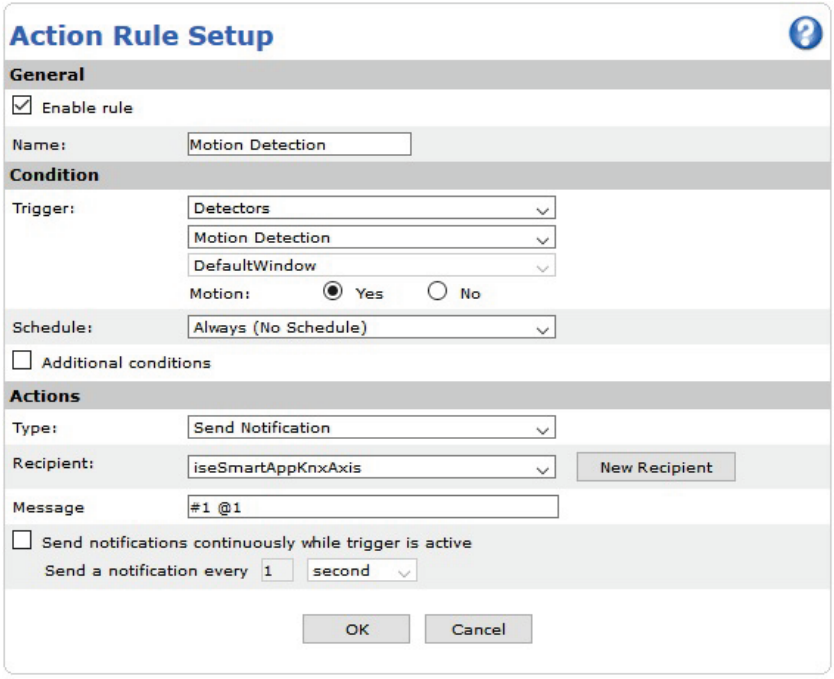
The exact descriptions of the parameters and the URL to be used can be found in the documentation from the manufacturer. http://www.axis.com/au/en/support/developer-support/vapix

Only "setting" commands can be carried out, as results from "reading" commands cannot be displayed.

4.7 Using objects from AXIS Communications toward the KNX

To send values from the camera system to the KNX, you must again use **action rules**. In order for values from the application to be processed, you must first create a **recipient**. With this recipient, it is important to note that the local host *127.0.0.1* is set as the network address. You must also ensure that the TCP port is identical to the *Notification Port* set in the ETS.

Select the created recipient and define the message to be transferred in the **Message field**. The message must correspond to a specified format. This format is described precisely in the following sections.



In the example shown, the value 1 is sent to communication object 1.

4.7.1 Message

To send values to the KNX, a corresponding TCP message must be created. This message must correspond to a fixed format so that the application can process it. There are two different options for determining the value to be sent. One is to define a fixed value which is then sent to the KNX. The other is to specify a parameter from the camera which is read out and then sent to the KNX.
With all values, it is important to ensure that the value limits are complied with. Invalid values will generate an error, and the value is not sent to the KNX.

Value type	Value range	Sample valid value	Sample invalid value
1 bit	0, 1, True, False	True	2
8 bits	0 – 255	123	1234
16 bits	0 – 65,535	32444	67212
14 bytes	14 characters	1234567890abcd	Excessively long values are shortened.

4.7.1.1 Fixed value

#<CO> @<Value>

The number of the communication object to which the value is to be sent is specified in ***#<CO>***. With #1, the value is sent to communication object 1, whereas with #2, it is sent to communication object 2, and so on.

The value to be sent is transferred in **@<Value>**. With the 1-bit, 8-bit and 16-bit values, the value is specified directly. With 14-byte values, the value must be placed in quotes.

Thus the value**@True** is valid for a 1-bit object and a 1 like the value **@1**. With 14-byte objects, quotes must be used: **@"Example"**.

4.7.1.2 Reading out parameters

#<CO> @@<Parameter>

It is also possible to read out parameters from the camera dynamically and to use them as a value. This also makes it possible to transfer values from the applications of other manufacturers.
You can read out the list of available parameters directly in the camera.

http://<serverIP>/axis-cgi/param.cgi?action=list

The number of the communication object to which the value is to be sent is specified in ***#<CO>***. With #1, the value is sent to communication object 1, whereas with #2, it is sent to communication object 2, and so on.

The parameter is specified by two **@@**s. You could display the name of the camera on a 14-byte object, for example. Use the *@@root.Brand.ProdShortNam* parameter for this.

Pay attention to the value range here as well.

4.7.2 Error objects

There are two communication objects which signal that errors have occurred under certain circumstances.

The 1-bit error object ***Error state*** is triggered each time an error occurs. An error is signalled again each and every time it occurs. The object is first set to 0 again if a successful run has occurred for each error case (parser error, property error or event error) which arises.

The 14-byte error object ***Last error*** sends the last error in triggered form. The possible error values are listed in the following. The last error which occurred is always displayed here. The object is not deleted and can thus still be read out once afterwards.

"Unknown CO" – Communication object does not exist.
"CO lookup err" – Number of the communication object could not be determined from message.
"CAM read fail" – Read-out of the camera property failed.
"1Bit val err" – Invalid value for 1 bit.
"8Bit val err" – Invalid value for 8 bits.
"16Bit val err" – Invalid value for 16 bits.
"14Byte val err" – Fixed value for 14 bytes not placed in quotes.
"Val lookup err" – Value could not be determined from message.
"Trigger err" – Error while initiating an event trigger.

5 Commissioning

5.1 Direct KNX IP connection

Programming (transfer from the ETS to the device) occurs in the programming environment of the ETS. An additional KNX data interface is not required for transfer (bus connection via bus connection terminal). The ETS can access the device from both the IP routing side and the KNX IP direction connection.

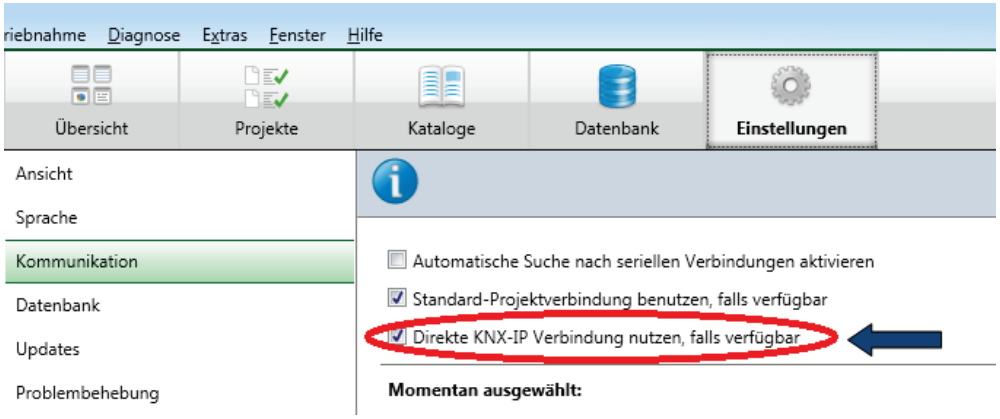


Figure 4 The "*Use direct KNX-IP connection if available*" setting.

For transfer of the ETS over the IP side, set the setting

☑ ***Use direct KNX-IP connection if available.***

on the ETS start page, → *Settings* tab → *Communication* entry.

5.2 Programming the physical address of the device

- Ensure that the camera is switched on.
- Ensure that programming mode is not activated (website).
- Press the *Switch Programming Mode* button.
- Program physical address using the ETS.

After a successful programming procedure:

- Programming mode is again set to Off on the **Settings** website of this application after it has been updated.
- The ETS shows the completed transfer with a green marking under *History* in the sidebar (normally at the right-hand window edge).
- The ETS sets the commissioning tick on the device for "Adr" and "Cfg".

5.3 Transferring application programs and configuration data

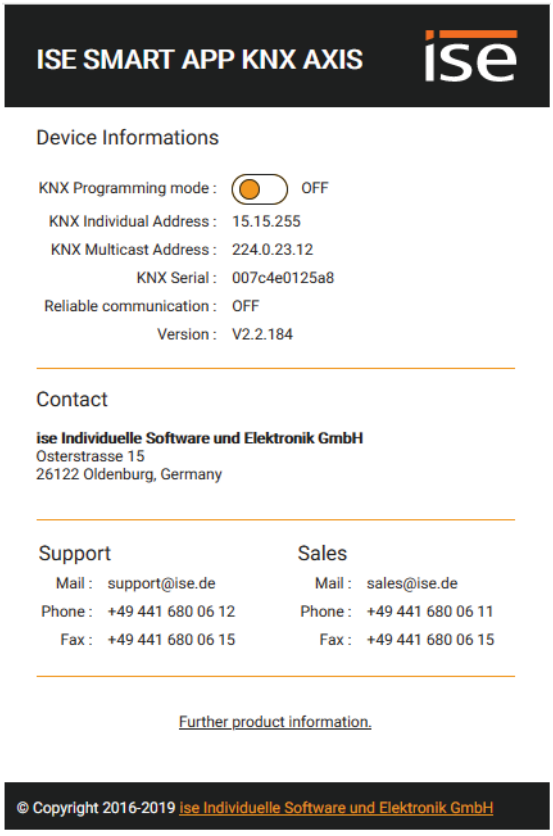
After programming the physical address, the application program, parameter settings and group address connections can be transferred to the device.

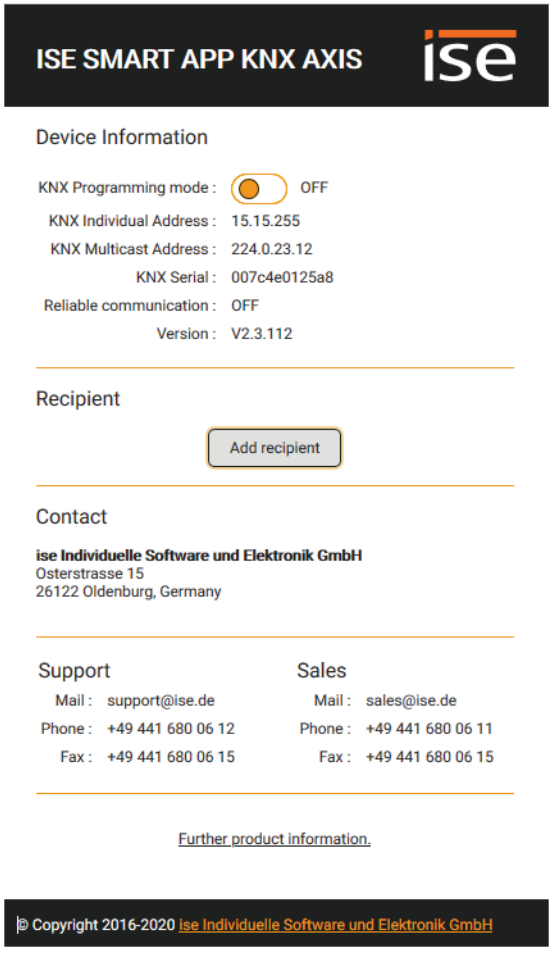
A connection to the device can be further established via IP or KNX for this purpose.

- For this purpose, select "*Programming application program*".
- Commissioning is complete.

5.4 Website

On the website of the *ise smart app KNX Axis* application you see the system information and you may switch the programming mode on or off.





The left screenshot shows the website of the application for SDK1.

The right screenshot shows the website of the application for SDK2 allowing you to add the local recipient.

6 Frequently asked questions (FAQ)

- **Why it is not possible to add the device *ise smart app KNX Axis* to my ETS project?**
  Please make sure that the mediatyp of the backbone and the line is set to **IP**.

- **Can I use a KNX IP-Interface to communicate with the camera?**
  No! The *ise smart app KNX Axis* uses KNX IP Routing. You need a KNX IP Router to communicate with the camera.

- **Can I carry out special camera actions/configuration using the KNX?**
  The options which can be initiated on the camera using the event trigger from KNX always depends on the camera model. For this purpose, please refer to the documentation of the manufacturer of your camera model to determine what can be carried out in an action rule under actions. In addition, it is also possible to address the VAPIX API from AXIS Communications. For this purpose, please read Section 4.6.1.2 VAPIX.

- **Are there software updates for my *ise smart app KNX Axis* device?**
  Available software updates can be found on the company website. Please visit www.ise.de for more information. The configuration MUST be downloaded again by the ETS after an update or installation.

- **Is the website of my *ise smart app KNX Axis* accessible using ise smart connect KNX Remote Access?**
  Yes, these products from ise are compatible with one another.

  The ise smart connect KNX Remote Access is a remote access solution which enables access to local device websites from any location as long as an Internet connection is available.

- **Why does the ETS report the error that a protected area cannot be written to when downloading the application program?**
  Please ensure that your ETS version is up to date. The *ise smart app KNX Axis* always requires the latest version of ETS 4 or ETS 5. The application accesses ETS functions not supported by earlier ETS versions. This is why previous versions of ETS cannot be used for configuration.

- **I have a WLAN router in my installation. Can I still use the *ise smart app KNX Axis*?**
  You can only use the app securely if the camera via WLAN if the feature “reliable communication” is activated. Only in combination with equipment that supports the “reliable KNX communication” function also (e.g. Gira KNX IP router).

- **How do I find out which installation package I need to use?**
  Please refer to *Section 4.1* Downloading the installation package to determine which installation package is suitable for you.

- **Why do I have to download the ETS project again after updating the application?**
  The application is also updated in the camera system, i.e. uninstallation followed by reinstallation. As a result, all project data saved by the application are deleted.

- **Do I also need to create the action rules and recipient again after an application update?**
  Only if you update from a version earlier than 2_2_XX_SDK2 to version 2_3_XX_SDK2, you have to check/edit your action rules. The version for SDK2 names trigger on a different way, so they does not match to your existing action rules.

7 Troubleshooting and support

If you have a problem with your *ise smart app KNX Axis* and require support, please send an e-mail with a detailed error description, exported ETS project, screen shots of the non-functioning action rule and recipient, if applicable, and the log file created after the error occurred to support@ise.de.

7.1 Downloading log files if a problem occurs

If a problem occurs, the log files are required for providing support. You can load the log files directly from the camera. Simply call up the log file via http and save the results.
Replace <Camera IP> with the actual IP address of your camera.

http://<kamera-ip>/axis-cgi/systemlog.cgi

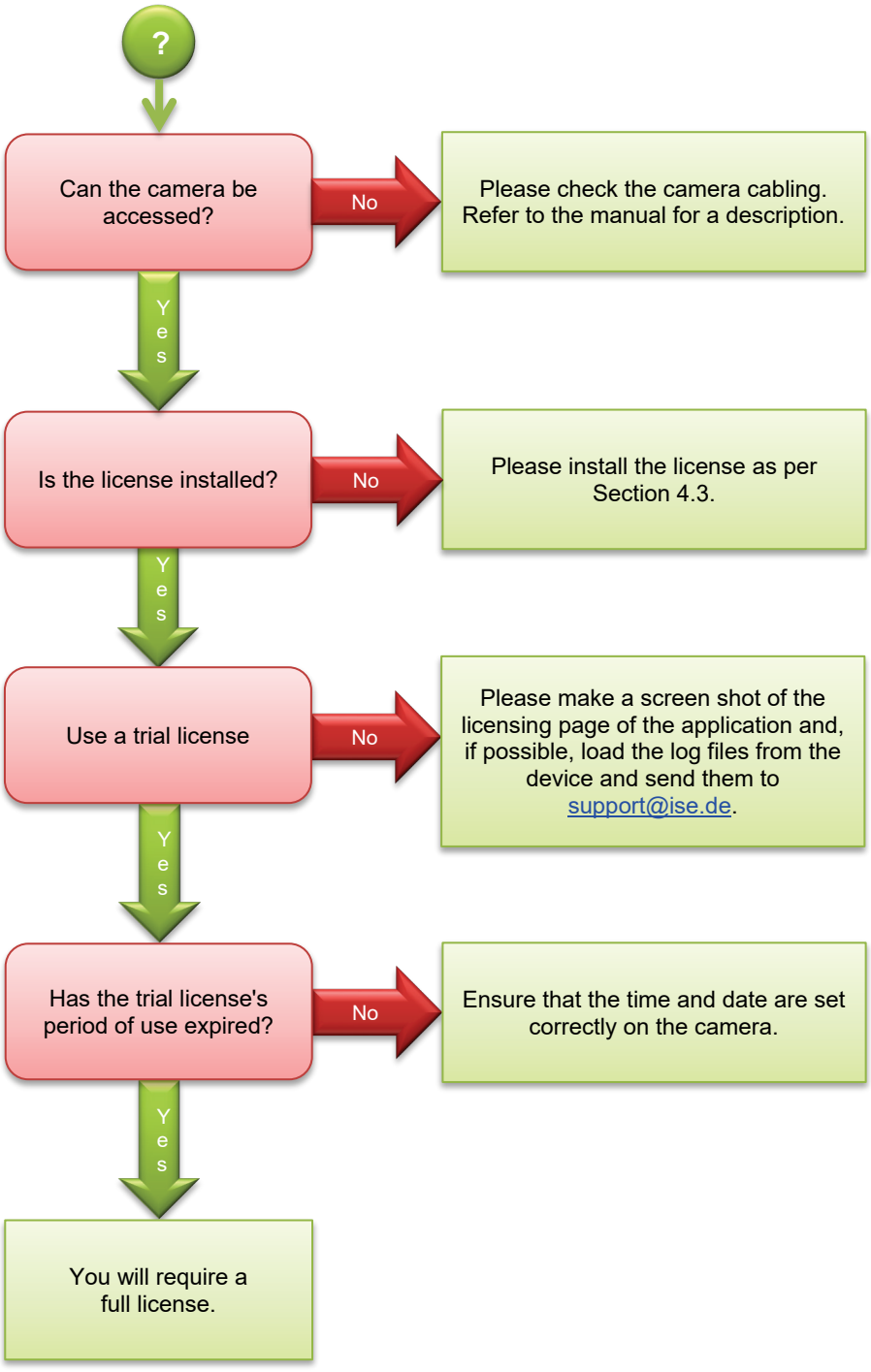
7.2 Status page of the *ise smart app KNX Axis*

Among other things, the installed software version and a few KNX settings are displayed on the website *ise smart app KNX Axis* (see Section 5.4). Should an error occur, please send us a screen shot of the status page.

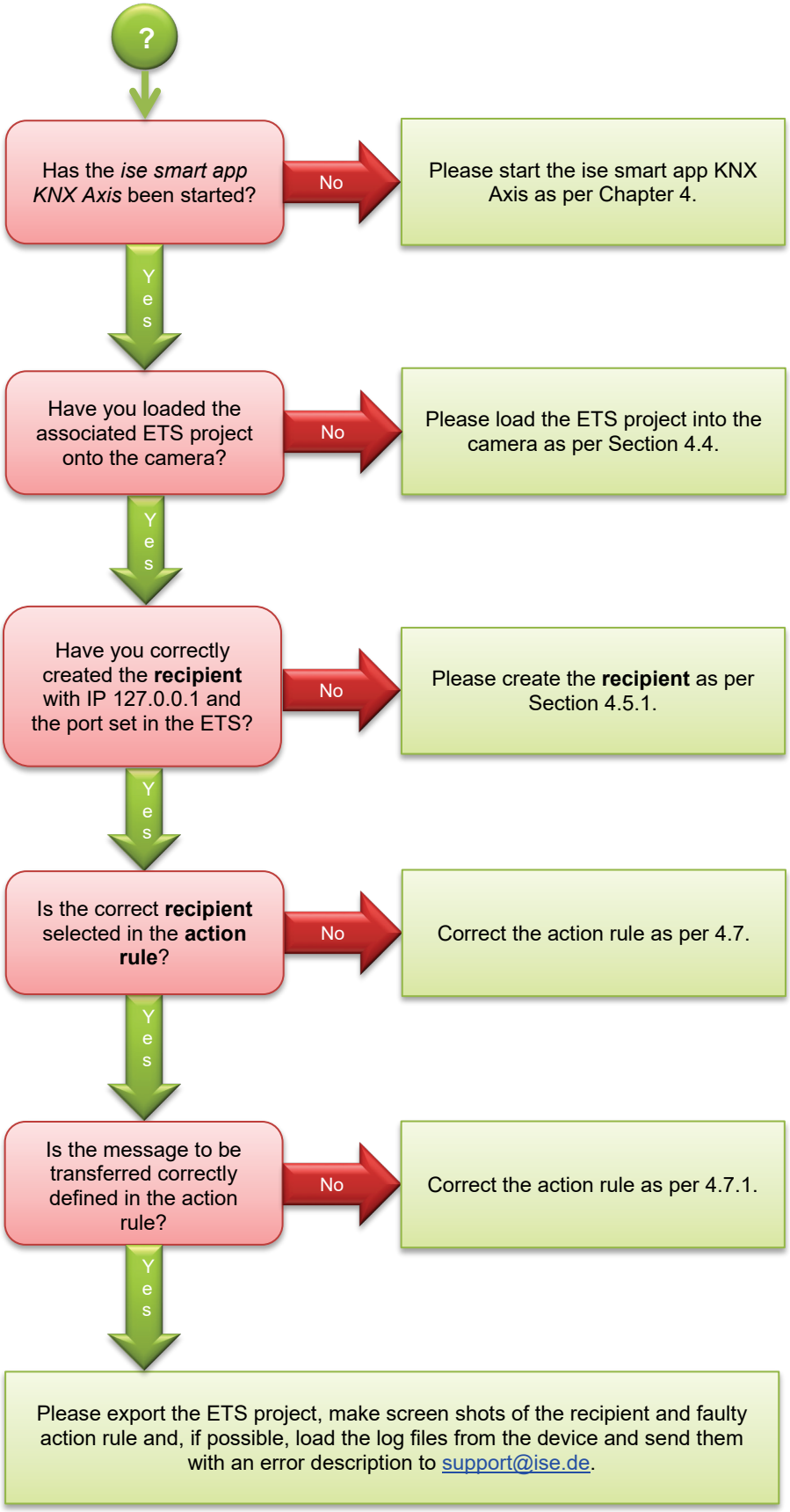
8 Troubleshooting

The following error flow charts are intended to help solve the most common problems. Should this be unsuccessful, please contact us at support@ise.de.

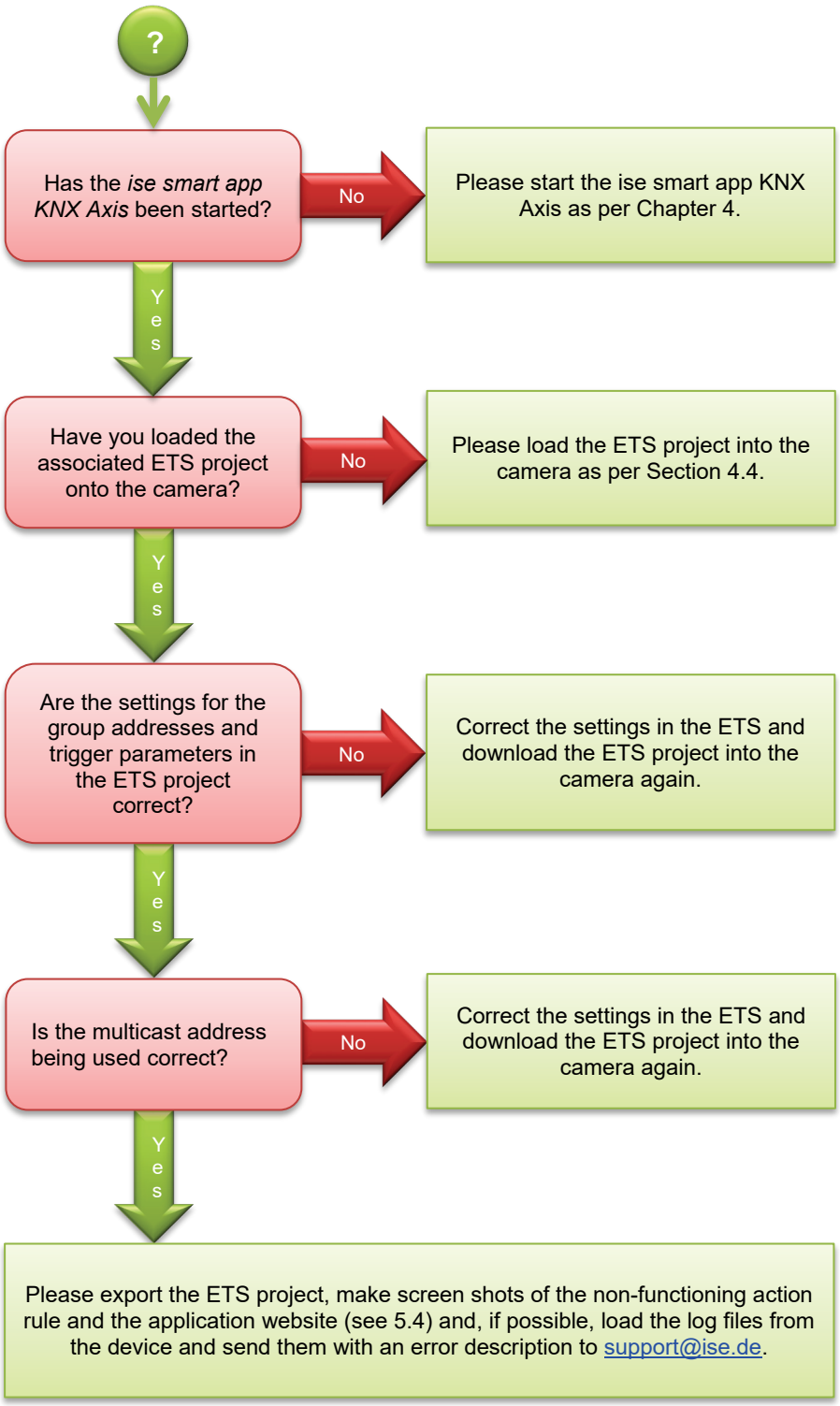
8.1 The *ise smart app KNX Axis* is not starting up



8.2 Camera values are not being sent to the KNX



8.3 The event triggers are not initiating on the camera



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