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# Video-formats

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## Quick Start

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## 1 Video formats and signaling

The Adatis door stations with color camera offer video in two different formats:

### 1.1 H.264

This format is used in conjunction with SIP. As soon as a SIP connection is established, in which the H.264 as video format was negotiated, the H.264 stream is output via RTP. The transfer of the video stream is according to RFC6184.

### 1.2 MJPEG, JPEG

This format is used in conjunction with HTTP/TCP. The video is not offered via the WEB server port, but via its own configurable port. It can be requested either a single JPEG image or an MJPEG stream via an HTTP get. Up to 15 streams can be displayed simultaneously.

- a. single image : <ip-Adresse>:<videoport>/singleframe or  
<ip-Adresse>:<videoport>/video.jpg
- a. Video stream: <ip-Adresse>:<videoport>/stream or  
<ip-Adresse>:<videoport>/video.mjpg

## 2 Configuration of resolution and bandwidth

The resolution for MJPEG and H.264 cannot be displayed in the LCD GUI, only in the WEB GUI. In the WEB GUI of the door station, the MJPEG video setting can be found in the Audio/Video menu under JPEG video settings. The H264 video settings can be found in the same menu under SIP Video Settings.

### 2.1 Possible resolutions

As H.264 and MJPEG are simultaneously retrievable and use the same sensor image, there are dependencies between the resolution for MJPEG and H.264: The H.264 resolution is either

- 2\* MJPEG resolution
- = MJPEG resolution
- ½ \* MJPEG resolution
- ¼ \* MJPEG resolution

The maximum resolution of H.264 is VGA (640x480).

The maximum resolution of MJPEG is product dependent:

- TouchEntry-XS: SXGA (1280\*1024)
- TouchEntry/FaceEntry and TouchEntry-XT/FaceEntry-XT: t.b.d.
- FaceUP: SXGA

## 2.2 Optimizing resolution and bitrate

In order to achieve the best possible H264 video quality, the door station should be set as follows:

- For more frames per second the MJPEG resolution should correspond to the H264 resolution.

Example: If 640\*480 resolution is set for both video formats, the H264 video stream will deliver more frames per second than if 1280\*960 resolution is set for MJPEG and 640\*480 resolution is set for H264. This makes the video stream run more smoothly.

- Basically, the bit rate should be lowered first and then the resolution. This is particularly true if the video stream has to be transmitted via the Internet.

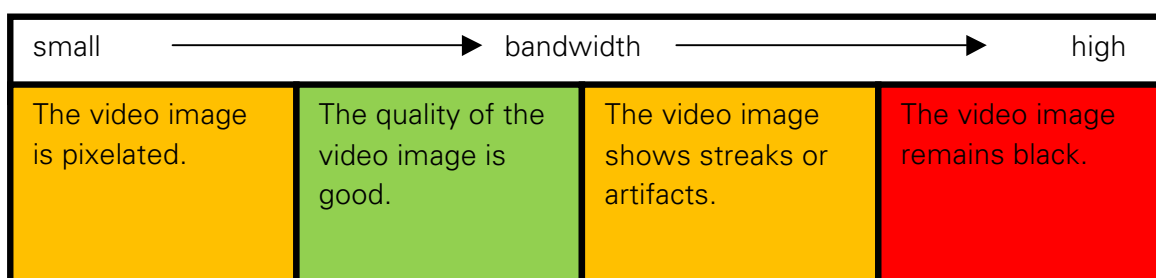
Example: The quality is better if the video has 640\*480 resolution and 400kbit/s bitrate than 320\*240 resolution and 800kbit/s bitrate.

## 2.3 Optimizing the video stream during transmission via the Internet

Below is a brief explanation of how you can improve video quality if it does not match your expectations if connected over the Internet.

Chapters 2.3.2 to 2.3.5 explain how to act if errors are displayed in the video stream or if it is not displayed at all. With the exception of chapter 2.3.3, all errors are related to the bandwidth.

The following diagram shows how the bandwidth should be changed to improve the quality of the video stream depending on the errors:



### 2.3.1 Internet Connection Bandwidth Requirements

Before optimizing the video stream, it is important to check how the door station is connected to the Internet.

In this case not the download speed but the upload speed is decisive. This can be checked by searching for "DSL Speed Test" in your browser and performing one of the speed tests. At this point, the reference value is not the average upload speed, but the lowest speed reached during the test.

This speed is usually given in MBit/s. A conversion of kbit/s, as specified in the door station, to MBit/s is performed with a factor of 1000.

The following table explains this:

1,0 Mbit/s	equals	1000 kbit/s
0,1 Mbit/s	equals	100 kbit/s

For the video connection to be stable, the result of the measurement should be multiplied again by the factor 0.8.

From this, about 120kbit/s must be subtracted again for the audio connection.

#### Sample calculation:

If the result of the speed measurement is 1.0 Mbit/second, the available bandwidth for the video connection is calculated as follows:

$$1,0 \text{ Mbit/s} * 0,8 - 120 \text{ kbit/s} = 680 \text{ kbit/s}$$

This means that there is about 680kbit/s available for the video connection.



Any other use of the Internet connection is not yet included. This additional load on the bandwidth of the Internet connection must be taken into account accordingly.

#### 2.3.2 The video image remains black.

If the video image remains black, the available bandwidth is most likely not sufficient for the video setting of the door station. In order to display the video stream, the video bandwidth for SIP video should be reduced.

#### 2.3.3 The video stream slows down and is faltering.

If the video shows few frames per second, first determine whether the MJPEG video setting and the H264 video setting differ in resolution. If this is the case, both settings should be set to the same resolution.

Otherwise increasing the number of frames per second is only possible by reducing the resolution or disabling MJPEG video, if it's enabled. However, reducing the bitrate does not lead to any visible effect.

#### 2.3.4 The video image shows streaks or artifacts.

If the video shows streaks or artifacts in the form that certain areas get stuck after a movement, then the bandwidth of the Internet connection is most likely not sufficient for the video setting of the door station. Reducing the bandwidth should lead to an improvement.

### 2.3.5 The video image is pixelated.

If there are many small rectangles in the video image that blur the image, the resolution or bandwidth might be set too small. First the resolution should be increased and only then the bandwidth should be increased.



While increasing the bandwidth, it is important to ensure that the Internet connection can provide the bandwidth. If streaks or artifacts are displayed instead of the pixelations, the bandwidth is set too high.

## 3 Pan, Tilt, Zoom – Configuration of image section

The settings can be made in the WEB GUI or in the LCD GUI. Furthermore, the image section can be changed via DTMF commands with an existing SIP connection and via the DoorKeeper. Only one image section can be displayed at the moment. The image section is the same for MJPEG and H.264. This means that a change of the image section is visible for all the remote stations. Adatis GmbH & Co. KG page 3 of 4 Up to three (for products with Fisheye two) fixed positions can be stored. This is possible via the LCD GUI as well as via the WEB GUI. But not via DTMF, as this is considered as a configuration and not every user should be able to make the change.

### 3.1 Zoom factor and resolution

The adjustable zoom factor is dependent on the selected resolution for products without fisheye. The larger the resolution, the less the image can be zoomed. Corresponds to the image resolution to the camera resolution you cannot zoom and thus also not pan.

### 3.2 Setting in the LCD GUI

- The configuration page is opened with the red RFID card (alternatively PIN code for terminals without RFID).
- Then select Camera menu.
- The live image shows the currently displayed camera cut.
- The position buttons (1, 2, 3) call up the fixed positions.
- The slider below the live image changes the zoom factor.
- If the zoom factor is  $>1$ , the picture section can be changed via the control in the live picture. Here products differ with fisheye of products without fisheye lens.
  - Without fisheye: Here the image section will be changed planar by moving the image in the live image with the finger.
  - With Fisheye: here it is optically a swinging movement to which a shift does not fit well. For panning, the areas within the live image are used as buttons (up, down, right, left).
- To store the current position as a fixed position, the active button is pressed until the memory is acknowledged by a short tone.

### 3.3 Settings in the WEB GUI

- On the Audio/Video menu of the web page, the live image and control panel therefore are displayed with the "Show" button.
- Use the arrow keys + and - to change the image section. With the keys Pos1 to Pos3, already stored fixed positions can be selected.
- Using the Save button, the current image section for the corresponding fixed position can be stored.