

## In Focus: Axis M 1104

The professional and affordable fixed network camera in the AXIS M11 series is intended for a wide spectrum of video surveillance applications, e.g. in retail trade shops and banks as well as in hotels and other office buildings. The manufacturer promises pin-sharp, crisp images under good as well as poor lighting conditions. Several H.264 video streams as well as Motion JPEG video streams can be provided simultaneously either with the full range of frame rates or individually optimised for different quality requirements and bandwidth restrictions.



CAMERA TEST

### Performance

#### Performance at 1000 Lux

Under good lighting conditions the camera provided a clear image with generally good contrast. The colours reproduced were warm, with slight oversaturation a slight tendency towards a red tint, although colour tones were very clear. Image sharpness was in general slightly poor, thus fine lines were blurred in the test image. Moving objects however were reproduced correctly and without smearing.

#### Performance at less than 1000 Lux

At a lighting level of approx. 10 lux, the camera provided a clear image without any noteworthy impairment. Below 10 lux, image sharpness worsened significantly. Below 5 lux, image noise was also noticeable and this increased as lighting levels decreased. Moving objects were reproduced even under poor lighting conditions without smearing effects. The camera does not have a toggle between day and night mode, but nevertheless even under poor lighting conditions, it still provides an acceptable image.

#### Performance in backlight situations

The camera reacts extremely quickly (when tested, 1.5 seconds) when confronted with sudden backlight situations. The backlight source dominated the image and the spill was clear, especially when the surrounding lighting was poor. Lens reflections were visible, and object details were no longer clearly recognisable.

#### Performance in use: bandwidth measurement

Bandwidth usage clearly demonstrates the camera's adjustment features – the camera's data rate adjusts to the surrounding lighting because the camera attempts to deliver a frame rate and image quality that is as constant as possible. On average, the frame rate was approx. 1.6 MB/s. A frame rate of 3.31 MB/s was achieved as a temporary maximum.

### Summary

Thanks to its compact design and its favourable cost/performance ratio, the HD-ready (720 p) fixed camera is highly suited to the surveillance of interior rooms of branch outlets with defined lighting levels, for example in retail shops. The camera provides several image streams in H.264 and MJPEG and is powered via PoE. Using interchangeable lenses, it is possible to optimise the camera to the relevant surveillance situation in question. An onboard motion-detection component enables the mounting of simple trigger scenarios directly onto the camera..

#### Technical data for the camera test

|                          |   |
|--------------------------|---|
| Manufacturer             | Axis  |
| Model                    | M 1104  |
| Firmware version         | 5.09  |
| Distance from test chart | 0,40 m  |
| Lens used                | 2.8 mm: 80° Sichtwinkel, F2,0, feste Blende, CS-Anschluss |
| *Focal length set        | 2,8 mm  |
| *Compression method      | H.264   |
| *Resolution              | 1028 x 720  |
| *Compression             | 50%   |
| I-frame interval:        | 1 Sekunde   |
| Max. stream bandwidth    | unbegrenzt  |
| Measured frame rate      | 30 fps  |
| Average bandwidth        | 1,57 Mbit/s   |

\*The camera was integrated into the test system with the "default" settings. The settings were modified according to the test criteria listed above.

#### Assessment for various lighting conditions

| Criteria   Lux values            | 1000 Lux | 100 Lux | 10 Lux | 0,5 Lux | 0 Lux + *BL1 |
|----------------------------------|----------|---------|--------|---------|--------------|
| Colours                          | 2,5      | 2,5     | 2,5    | 3       | –            |
| Contrast                         | 2        | 2       | 2,5    | 3       | –            |
| Sharpness                        | 2        | 2,5     | 3      | 3,5     | 3            |
| Motion blur                      | 2        | 2,5     | 3      | 3,5     | 2,5          |
| Image noise                      | 2        | 2,5     | 2,5    | 3,5     | 3            |
| Compensation time with backlight | –        | –       | –      | –       | 2            |
| Behaviour with backlight         | –        | –       | –      | –       | 3,5          |

Assessment was performed according to the rating system of 1 (very good) to 6 (unsatisfactory). By setting various parameters on the camera interface itself, it is possible to obtain an improved image quality.