In Focus: Sanyo HD4000

Since its launch in 2008, the VCC-HD4000P has attracted a great deal of interest and was named as CCTV Product of the Year at the Ifsec 2009. The Sanyo HD4000P is a Full High Definition (HD) network camera, equipped with a 4 megapixel progressive scan sensor. An integrated autofocus 10x optical zoom makes the camera an ideal solution for all applications in which detailed close-up images are required. In addition, the VCC-HD4000P utilises technological advances with dual-streaming (H.264 and JPEG to enable simultaneous high resolution H.264 live surveillance in real time.

CAMERA TEST

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Performance

Performance at 1000 Lux

In comparison with the reference image, at full resolution the Sanyo HD 400P has a clear colour range with very good sharpness. In addition, the Sanyo high-end model has a good to very good contrast ratio, which indicates a minimal reduction in image contrast.

Performance at less than 1000 Lux

Below 100 Lux, blurring of moving objects can be detected in the lower half of the sequence. This minimally increases down to 10 Lux, but shows no significant deterioration. From 5 Lux to to 0.5 Lux, blurring of moving objects can result in them becoming completely unrecognisable. At 2.5 Lux there is slight image noise, although this is only significantly noticeable during the switchover from day to night mode at 2.5 Lux.

Performance in backlight situations

The compensation time with backlight is approx. 3 seconds and shows adequate to poor dynamic characteristics. The size of the cone of illumination partially extends over more than half of the sequence and severe traces of blooming are visible around the backlight.

Performance in use: bandwidth measurement

On closer examination of the characteristic curve, the compensation characteristics of the H.264 codec become clearly apparent. Depending on the illumination conditions and movement in the image, only a slight increase or decrease can be detected, from which it can be deduced that a constant compression method is used, which always attempts to provide good image quality with limited data transfer capacity. With comparable quality, an MPEG stream provides a measured average data rate of *20 Mbps, corresponding to a reduction in bandwidth by a factor of 3.1 in comparison to the measured *6.4 Mbps for the H.264 stream.

*Average value.

Technical data for the camera test

Manufacturer	Sanyo
Model	VCC-HD4000P
Firmware version	MAIN Ver.: 1.04-00 <090514-00> SUB Ver.: 1.00-03 <090302-00>
*Distance from test chart	0.90 m
Objective used	6.3-63 mm; F1.8-2.5
*Set focal length	6.3 mm
*Compression method	H.264
*Resolution	1920 x 1080
Compression	50 %
I-Frame spacing	1 second
*Set stream bandwidth	Unlimited
Measured frame rate	25 fps
Average measured bandwidth	6.40 Mbit/sec

The camera was integrated into the test system with the "default" settings and correspondingly modified with the test criteria listed above

Assessment with differing illumination conditions

Criteria | Lux values	1000 Lux	100 Lux	10 Lux	0,5 Lux	0 Lux + *BL1
Colours	2	2	2	b/w	b/w
Contrast	2	2	2	4	–
Sharpness	2	2	2.5	3	2.5
Motion sharpness	2	2.5	2.5	4	2.5
Image noise	2	2	2	4.5	2.5
Compensation time for backlight	–	–	–	–	4
Backlight characteristics	–	–	–	–	4.5

Assessment according to the following grades: 1 (excellent), 2 (good), 3 (average), 4 (satisfactory), 5 (limited), 6 (poor)

Conclusion

The Sanyo VCC-HD4000P is the first 4 megapixel camera with a 10x motor zoom and provides a very good image in combination with the autofocus function. The SD/SDHC slot and USB port enable the recorded data to be stored directly on an SD card or a hard drive. Further features of the HD4000P include face recognition by the software and a clipping function, which enables several areas to be continuously monitored and recorded. Possible fields of application of the high performance Sanyo camera include e.g. airports, casinos, banks or department stores, where high quality images are required.

CAMERA TEST

In Focus: Axis Q1755

With the high end model Q1755, Axis has a HDTV high resolution network camera in its range, which should offer advantages in areas in which detailed images are necessary, e.g. in airports, passport control or in casinos and high security areas. The Q1755 provides day and night functionality and progressive scanning. It is equipped with intelligent video functions such as improved video motion detection, audio detection and detection of tampering with the camera. It features a 10x optical and 12x digital zoom with autofocus.

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Performance

Performance at 1000 Lux
In comparison with the reference image, at maximum resolution the Axis Q1755 shows a slightly cloudy but clear colour range and good to very good sharpness. In addition, the high end model from Axis has a very good contrast ratio.

Performance at less than 1000 Lux
Even with a Lux value of 1000, blurring of moving objects can be detected in the lower half of the sequence. This continuously increases down to 0 Lux and results in objects becoming unrecognisable at 5 Lux. Slight image noise occurs at 2 Lux, although this only becomes noticeable during switchover from day to night mode at 0.5 Lux.

Performance in backlight situations
The compensation time with backlight is approx. 2 seconds and shows good dynamic characteristics. The size of the cone of illumination extends to just beyond the edge of the backlight and slight to moderate traces of smearing are detectable.

Performance in use: bandwidth measurement
On closer examination of the characteristic curve, the compensation characteristics of the H.264 codec become clearly apparent. Depending on the illumination conditions and movement in the image, a slight to severe increase or reduction can be detected, from which it can be deduced that a variable bit rate is used, which provides a higher quality with overall less storage requirements. With comparable quality, an MPEG stream provides an average data rate of approx. *20 Mbps (average value), corresponding to a reduction in bandwidth by a factor of about 9.6 in comparison with the measured 2.08 Mbps (average value) for the H.2.64 stream.

*Average value.

Technical data for the camera test

Manufacturer	Axis
Model	Q1755
Firmware version	5.02
*Distance from test chart	0.7 m
Objective used	Autofocus; f 5.1 – 51 mm; f 1.8 – 2.1
*Set focal length	Approx. 6 mm
*Compression method	H.264
*Resolution	1920 x 1080 (1080i)
Compression	30 %
I-Frame spacing	1 second
*Set stream bandwidth	Unlimited
Measured frame rate	25 fps
Average measured bandwidth	2.08 Mbit/sec

The camera was integrated into the test system with the "default" settings and correspondingly modified with the test criteria listed above

Assessment with differing illumination conditions

Criteria | Lux values	1000 Lux	100 Lux	10 Lux	0,5 Lux	0 Lux + *BL1
Colours	2	2.5	2.5	b/w	b/w
Contrast	2	2.5	3	5	–
Sharpness	2	2.5	3	4	2.5
Motion sharpness	2.5	3	3	4.5	3
Image noise	2	2	2	4	2
Compensation time for backlight	–	–	–	–	2.5
Backlight characteristics	–	–	–	–	3.5

Assessment according to the following grades: 1 (excellent), 2 (good), 3 (average), 4 (satisfactory), 5 (limited), 6 (poor)

Conclusion
The high resolution of HDTV 1080i and good image sharpness in combination with a 10x motor zoom and the autofocus function characterise the Axis Q1755 as a worthy and improved successor to the 221/223M range. The SD/SDHC slot enables the recorded data to be directly recorded on an SD card. The high performance HDTV camera is ideally suited for surveillance systems which require sharp images and great detail. The wise screen format makes the high end camera a perfect solution for securing areas in which high quality images are necessary, e.g. in airports, passport control or casinos.