

## In Focus: Basler BIP2 1920c dn

The ultra-compact and price-sensitive Basler BIP2-1920c IP camera is equipped with a 1920 x 1080 pixel CMOS sensor and delivers real-time video data at 30 fps with Full HD resolution. H.264 compression ensures minimal bandwidth. Basler's BIP2 line of box cameras are the smallest, cameras on the market. Multi-Encoding offers the full range of video compression techniques: H.264, MPEG4 or MJPEG. The Area of Interest (AOI) feature allows users to define customized regions within the field of view. Selected AOIs can be streamed and encoded separately as virtual cameras.



## CAMERA TEST

### Performance

#### Performance when used at 1,000 Lux

With good illumination the camera delivers a good image. The colours are clear and warm, with a slight red tinge. The contrast range is very good with saturated blacks and very clear whites. However dark surfaces tend to blur a little. Image sharpness is good. A slight smearing effect is apparent with moving objects. Only minimal image noise is detectable.

#### Performance when used under 1,000 Lux

The colours become slightly dull as the illumination reduces. The camera cannot fully compensate for the lack of light; subject brightness and contrast reduce somewhat and image noise increases. In the test, the camera switched to night mode at 0.5 Lux. In this case, compensation took approx. 4 seconds. The b/w image which was then displayed was a little dark and had a low contrast. Image blurring with moving objects definitely increases with reduced illumination.

#### Performance when used in backlight situations

With the sudden occurrence of backlight in a dark environment the camera delivers the first b/w image after approx. 1.5 seconds, with definite smearing. Completion of the compensation process takes a further 2 seconds. Finally, a colour image with a low contrast range is displayed. Details in the image background can still be perceived. There is definite blooming of the backlight source (about four times the area). Slight smearing effects are also detectable.

#### Performance in use: bandwidth measurement

The camera uses an average bandwidth of 6.57 MBit/s at 15 – 29 images per second. With good illumination the use of the bandwidth is largely linear – the data transfer rate only reduced in the poor illumination area due to the lower image rate, while with backlight the rate increases considerably to up to 16.9 MBit/s.

### Summary

The full HD camera with day/night capability features an extremely compact design. Powered via PoE, the camera can provide two parallel video streams in MJPEG, MPEG4 or H.264 and supports motion detection and definition of areas of interest.

#### Technical data for the camera test

|                        |                     |
|------------------------|---------------------|
| Manufacturer           | Basler              |
| Model                  | BIP2 1920c dn       |
| Firmware version       | 3.4.2               |
| Distance to test chart | 1 m                 |
| Lens used              | MP5 CS 9-30mm F 1.8 |
| *Focal length set      | 9 mm                |
| *Compression method    | H.264               |
| *Resolution            | 1,920 x 1,080       |
| *Compression           | 50%                 |
| I-Frame-interval       | 1 second            |
| Max. stream bandwidth  | unlimited           |
| Measured frame rate    | 16–29 fps           |
| Average bandwidth      | 6.57 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.

#### Assesment with differing illumination conditions

| Criteria   Lux values         | 1000 Lux | 100 Lux | 10 Lux | 0,5 Lux | 0 Lux + *BL1 |
|-------------------------------|----------|---------|--------|---------|--------------|
| Colours                       | 2        | 2       | 2.5    | b/w     | 3            |
| Contrast                      | 2        | 2.5     | 2.5    | 4       | 4            |
| Focus                         | 2        | 2       | 2.5    | 3       | 3            |
| Motion sharpness              | 2        | 2.5     | 3      | 4.5     | 2            |
| Image noise                   | 2        | 2       | 2.5    | 3       | 2            |
| Recovery from backlight       | –        | –       | –      | –       | 4            |
| Performance against 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.