

Panasonic
ideas for life



Adaptive Black Stretch



Auto Back Focus

TECHNICAL REPORT
on the Latest Camera Technologies



Dehumidification Device

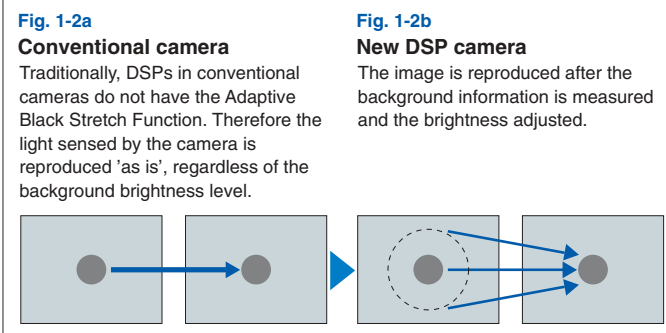
Panasonic's Latest Technologies Leading Security Cameras into the Future

Panasonic security cameras are the result of unique technological developments from years of expertise in image signal processing and mechanical control. Taking another step forward in pursuit of the ideal image.

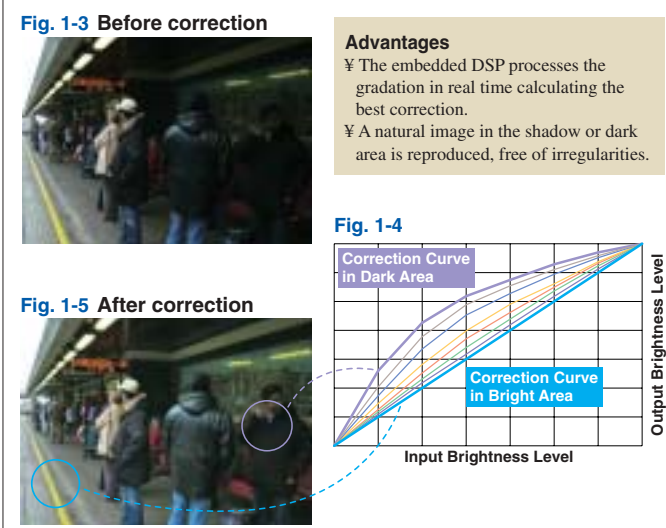
This time, we introduce three technologies, "Adaptive Black Stretch" to establish a higher quality image, "Auto Back Focus (ABF)" to enhance operability, and a "Dehumidification Device" to enhance environmental resistance.

Adaptive Black Stretch technology reproduces an image with the intensity of light captured by the human eye

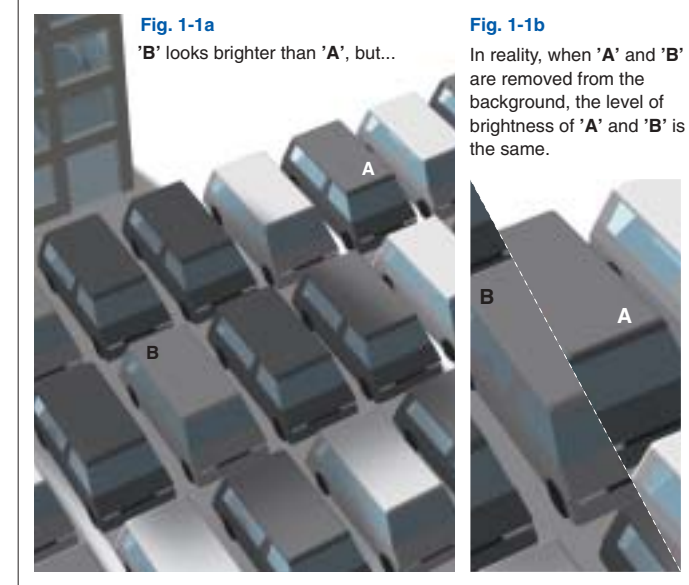
Human vision has characteristics which best recognize light when the background is dark; and best recognize dark images when the background is bright. Fig. 1-1 illustrates these human characteristics. In Fig. 1-1a, 'B' looks brighter than 'A' however in reality as shown in Fig. 1-1b, both 'A' and 'B' have the same brightness level when the effect of the background is eliminated. With human vision, the brightness of 'B' is compensated to the brighter side so that the image becomes more conspicuous, because 'B' is in the shadow of the building. As a result, the brain recognizes that 'B' is brighter than 'A'. This effect is a wonder of human vision that makes observation of dark places clear. In the same scene, the level of brightness in the brighter section is recognized as is, and in the dark section, the brightness is enhanced so that the entire scene is more visible.



First, the new DSP automatically detects dark sections within the image. Next, the DSP detects the brightness data of the dark background Fig. 1-2b and corrects the gradation in real time calculating the best correction curve Fig. 1-4 for each section. As a result of this signal processing algorithm, a natural image is reproduced, free of irregularities. The dark sections and shadows are corrected Fig. 1-5. Therefore using "Adaptive Black Stretch", the image obtained is close to the vision of the human eye.



The new embedded DSP with Adaptive Black Stretch is found on these cost effective cameras: WV-CF294, WV-CF284, and WV-CP280 Series. Our cost effective models meet the same high image quality standards you expect from Panasonic.



However, in the case of conventional cameras, the image is reproduced without compensation for brightness, and where it is bright, the image is also bright and where it is dark, the image is also dark. When compared with human vision, dark sections are unnaturally subdued and identification of the object becomes difficult. This is a problem with conventional cameras.

Panasonic has solved this problem through the evolution of our image processing technology embedded in the camera DSP. Fig. 1-2 and Fig. 1-3 illustrate the basic principle.

Fig. 1-3 shows an image reproduced by a conventional camera. Bright sections are reproduced in high fidelity, but dark sections are subdued and object identification is difficult. Panasonic has introduced "Adaptive Black Stretch" technology that solves this problem.

Auto Back Focus (ABF) for Vandal Proof Cameras

Auto Back Focus

Panasonic has introduced Auto Back Focus (ABF) technology in the Super Dynamic III, WV-CP480 camera series. It eliminated blurred focus when switching between colour and black & white modes; and set the standard for easy installation in the market.

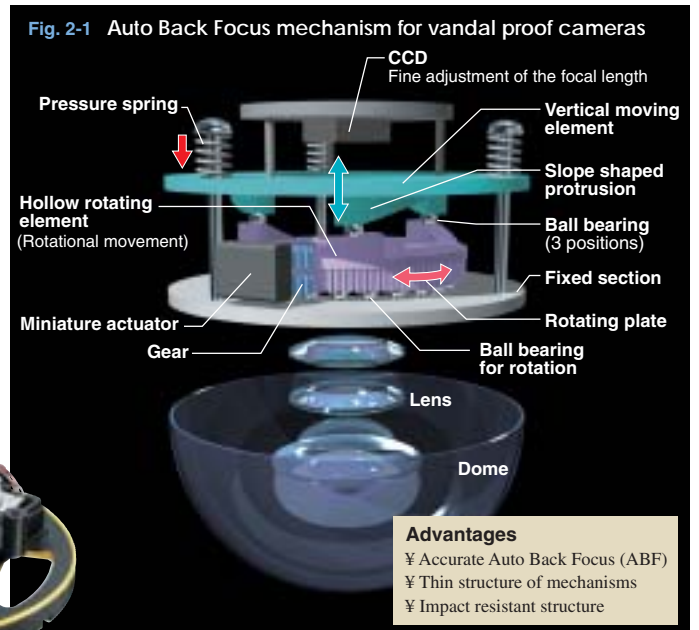
Auto Back Focus (ABF) technology in the Vandal proof dome camera category was strongly needed and requested by the market. It is based on the frequent problem encountered in dome type cameras, where the focus is blurred when the camera is switched into black & white mode even if the focus is correct in colour mode. Therefore the dome cover has to be removed to adjust the lens. However, the cover should always be installed while the camera is in operation.

To install Auto Back Focus (ABF) in the vandal proof dome, the following two issues must be addressed:

1. Maintain impact rating
2. Engineering development to install the device in a limited space

Panasonic has overcome these challenges by developing a new concept, the "Drive the Cam and Ball Bearing Mechanism by Mini Actuator."

As shown in Fig. 2-1, rotation of the miniature motor controlled by the microprocessor moves a rotating plate to the left or right, and such rotation of the rotating plate is converted to back and forth movement of the CCD plate via ball bearing and slope shaped protrusion. This is a CCD plate up and down movement along the slope on the ball bearing, and back focus is controlled by the movement of the CCD.



- Advantages**
- ¥ Accurate Auto Back Focus (ABF)
 - ¥ Thin structure of mechanisms
 - ¥ Impact resistant structure

Because this mechanism is supported by three ultra high precision ball bearings and slope shaped protrusion in micrometer order, adequate impact resistance is established. Furthermore, the CCD can be driven accurately by a miniature mechanism with small torque, making the miniature actuator possible.

Dehumidification Device Technology removes condensation in Vandal Proof cameras

Dehumidification Device

When a vandal proof camera is used in an environment where humidity is high and temperatures change significantly, condensation may form on the inside of the dome. This phenomenon is common to all vandal cameras that have a tight seal capability.

To solve this problem, Panasonic developed an electrolysis type dehumidification device. Fig. 3-1 illustrates the principle of the device.

When DC voltage is applied to a special electrolyte film, moisture (water vapor) close to the anode in the camera is decomposed to hydrogen ions and oxygen molecules, and the hydrogen ions move in the special electrolyte film to the cathode outside the camera. Hydrogen ions then react with oxygen in the air and are emitted as moisture. Based on this principle, moisture in the camera is expelled to the outside and humidity within the camera is maintained very low. Accordingly, condensation of moisture in the interior of the dome is minimized, even when a vandal proof camera is rapidly cooled.

Fig. 3-2 Effect of the dehumidification device

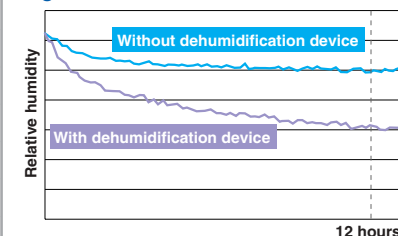
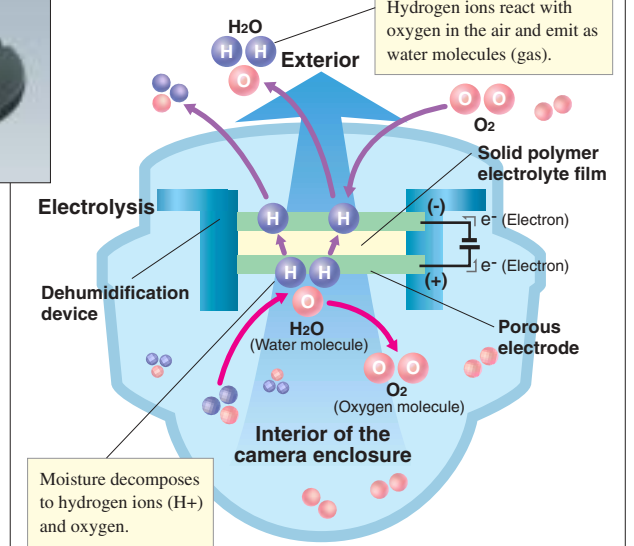


Fig. 3-2 illustrates the effect of the dehumidification device. Humidity within the camera is reduced up to 60% compared to no device (after 12 hours).

Fig. 3-1 Principle of dehumidification device (Schematics)



Both Auto Back Focus (ABF) and electrolytic type dehumidification device are standard in our new WV-CW480 Series vandal dome camera, and enables precise image quality and versatility in a variety of environments.

Introducing the latest models equipped with the most advanced technologies

Super Dynamic III Vandal Proof Camera reproduces high quality images in the toughest environments



Vandal Proof Super Dynamic III
Colour Dome Cameras

WV-CW480 Series

- Combined Auto Back Focus (ABF) function with vandal proof capability. Blurred focus is eliminated when switching between colour and black & white mode. Installation is quick and easy.
- Dehumidification device removes condensation of moisture.
- With the adoption of a detachable structure during installation, a water tight fit is achieved.
- Minimum illuminance 0.6 lux (Colour), F1.4
- Pixel Based 160x Dynamic Range
- Day/Night function (IR filter switchable)
- Available in both surface and flush mounting options
- Compatible with 24 V AC / 12 V DC (WV-CW480S is 220 ~ 240 V AC)
- Compatible with Multiplexed Vertical Drive (VD2)

High performance mini dome camera with Auto Back Focus (ABF) and 3.6x varifocal lens



Colour Dome Camera

WV-CF294

- Auto Back Focus (ABF) makes installation easy
- Newly developed DSP with embedded Adaptive Black Stretch and high magnification 3.6x varifocal lens (2.8 ~ 10.0 mm)
- Minimum illumination of 0.9 lux (Colour), F1.3
- High quality image with 540 TV lines of horizontal resolution in colour mode.
- Day/Night function switching between colour and black & white mode*
- Compatible with 24 V AC / 12 V DC
- Compatible with Multiplexed Vertical Drive (VD2)

High performance mini dome camera with 2x varifocal lens



Colour Dome Camera

WV-CF284

- Newly developed DSP with embedded Adaptive Black Stretch and 2x varifocal lens (2.8 ~ 6.0 mm)
- Minimum illumination of 0.9 lux (Colour), F1.4
- High quality image with 540 TV lines of horizontal resolution in colour mode.
- Day/Night function switching between colour and black & white mode*
- Compatible with 24 V AC / 12 V DC
- Compatible with Multiplexed Vertical Drive (VD2)

Cost effective fixed camera with exceptional colour resolution



Colour Surveillance Cameras

WV-CP280 Series

- Newly developed DSP with embedded Adaptive Black Stretch
- Minimum illumination of 0.8 lux (Colour), F1.4
- High quality image with 540 TV lines of horizontal resolution in colour mode.
- Day/Night function switching between colour and black & white mode*
- Compatible with 24 V AC / 12 V DC (WV-CP280 is 220 ~ 240 V AC)
- Compatible with Multiplexed Vertical Drive (VD2)

*No IR filter shifting

Important – Safety Precaution: carefully read the operating instructions and installation manual before using this product.

• All TV pictures are simulated. • Weights and dimensions are approximate. • Specifications are subject to change without notice. • These products may be subject to export control regulations.

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Panasonic is the brandname of Matsushita Electric.
Printed in Japan WV-JKANCTR(2N-780)