Elbex was about to release Digital Signal Processed (usually referred to as DSP) camera earlier to combat a wave of specifications calling for digital cameras, and above all, to combat the back light compensation (BLC) specifications that were unleashed onto the market and vigorously demanded by many. However, on the basis of pure technical/price considerations it was, to our opinion, premature to rush with DSP and therefore we have delayed the new DSP cameras introduction until now.

Our technical advice was that back light compensation is inappropriate solution, particularly for observing entrances or interior scenes with windows at the background. Some have queried if the Elbex objection to the back light compensation is because Elbex does not have cameras with back light, etc. This was not the case and, as it can be seen in our catalog for the new EXC2 and EXC4 series cameras, we do not "glorify" the back light compensation. Again, this is because we do not recommend to use the back light compensation indiscriminately.

Back light compensation requires good understanding of what it is all about and under which condition it offers an advantage. The back light compensation is called for, or specified in tenders, with the expectation that the face of a person that is highly illuminated from its back, as illustrated below, will be visible and recognizable on the monitor screen.

The displayed faces of people entering the main door of a bank or a supermarket, while the sun is at their back, are unrecognizable because the faces appear as a very dark or black silhouette with no visible details. This is because the interior lights illuminating the faces of the entering visitors are very dim in comparison, or relative, to the extreme bright light of the sun illuminating the entire surround of the visitors from their back. Moreover, because the dark signal level of the portion displaying the face is very low (almost pedestal level), the inner signals of the darkened silhouette (the detail of the person face), are correspondingly small.

Under normal condition, such low level small signals can be amplified by the AGC (Automatic Gain Control) amplifier of the monitor and/or the camera. But the camera AGC along with the monitor AGC do not amplify the small signals (the detail of the person face) because the extreme white light signal surrounding the visitor face increases the average video signal to almost its maximum level of 1.0V P-P, thereby reducing...
the AGC amplification to zero. Yet, even though we do not see the face details, the small signals are there and can be made visible by increasing the monitor’s brightness control to its maximum.

Increasing the monitor’s display brightness is one of the ways to reveal a “back-lighted” object and it forms the basis or the method for the back light compensation. However, an increase in the overall picture brightness distorts the entire picture contrast, colors and may reverse a portion of the picture to depict a sort of a negative display, etc. In other words, the increasing of the entire picture brightness may reveal a visitor’s face details, but it distorts other picture parameters and details.

It would have been a logical solution therefore to compensate a back light condition by a method to adjust the brightness of only a zone inside the monitor screen. But no one has ever suggested such a back light compensation method. Yet, many have found the back light compensation method through the camera, by increasing the brightness of a portion of the picture, confined to zones or a specific area, to be a “clever” solution. Even though such a solution calls for a method to elevate a portion of the pedestal of the zone, covering the anticipated black silhouette (to let’s say 0.5V as shown) distorts the basic video signal and this is what the back light compensation is all about, it simply elevates a portion of the pedestal of a certain zone or area of the picture, i.e., a portion of a picture is modified to have a brighter surface and a very limited contrast as seen in the illustration.

In theory the back light compensation has its merits, in practice it is only good if the observed area is illuminated by a fixed back light source, such as a sun that is “standing still” at the front of an entrance. This is because with no back light, the elevated pedestal transforms a darker object into a shining bright object, and erases all details of a visitor face in the evening, or when clouds cover the sun. Since the incidents under which visitors enter a bank exactly at times when the sun is at their back, lasts less than an hour or two a day, the rest of the time the camera displays a distorted contrast and unrecognizable details throughout. Such solution is not a solution for entrances or windows or any observation facing an orbiting light sources, such as the sun.

Back light compensation can be successfully used in fixed illuminated areas, but such observation can be similarly improved by better camera positioning and counter lighting.

This brings us to the other compensating method for a back light, which is to illuminate the visitor face by a front illuminator as
Front illuminator solution is a proper solution for all times, ensuring high contrast and clearly recognized faces, day and night. Regretfully very few really make the effort to study such basics, or design a CCTV system along with the surrounding light, in harmony for a perfect results. So, it is our duty to hammer this issue time and again, thereby help to improve the market awareness to fundamentals instead of specifying pseudo remedies, that do more harm than good.

Outside the featuring of the back light compensation with zone selection, some manufacturers took advantage of the wrongly interpreted meaning of a “digital” camera by implying as if the camera is generating digital video signals in their marketing campaign of DSP camera. In fact, outside the marketing slogans, there were literally no advantages to use DSP camera versus our superior quality color cameras. For this reason we decided not to rush with DSP until the next generation DSP components will become available, and with which we can offer additional meaningful features and/or when the DSP components will present a saving in the manufacturing cost.

As we are about to introduce our new advanced dome shaped DSP cameras (the EX8000 series), we were debating the introduction of a lower cost DSP cameras in a similar size and shape of the B/W EX2 and its dome version, the EX4. Another debate centered around the question whether to offer such lower cost DSP cameras with the FRAMELOCK® and the I-D-CODE®. After lengthy debates and with the understanding that there is a need for a competitive high quality DSP camera with FRAMELOCK® and with I-D-CODE® we decided to offer such high quality 2nd generation DSP with FRAMELOCK® external sync as standard and with I-D-CODE® as optional.

In conclusion, the new 1/2” DSP color cameras, the EXC2 and the domed EXC4, are superior cameras to all the DSP camera you have seen. These fine cameras offer you a clear advantage and a price value to compete with others on a better footing. Even though the lens range is somehow limited, never forget that our 4.5mm is equal to the 3mm of the 1/3” or the 2.2mm of the 1/4”. And ... because of the 1/2” CCD, you have far better optics and far higher sensitivity, higher resolution and overall far superior picture quality.

We are preparing now some innovative outdoor and vandal proof housings to extend the use of the EXC2 into outdoors, jails and the like. The new housings will be released in the coming months.

Another important item to note is the maintenance and adjustments of the new DSP cameras which are all processed via PC. There are no mechanical adjustments on the modules excluding one trimmer (the clock frequency) which requires a frequency counter for adjustment. We provide an alignment system comprising of: interface unit ERC2PC, wire harnesses and a software package. The adjustments are carried on a step by step designated through the software program and menus.

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