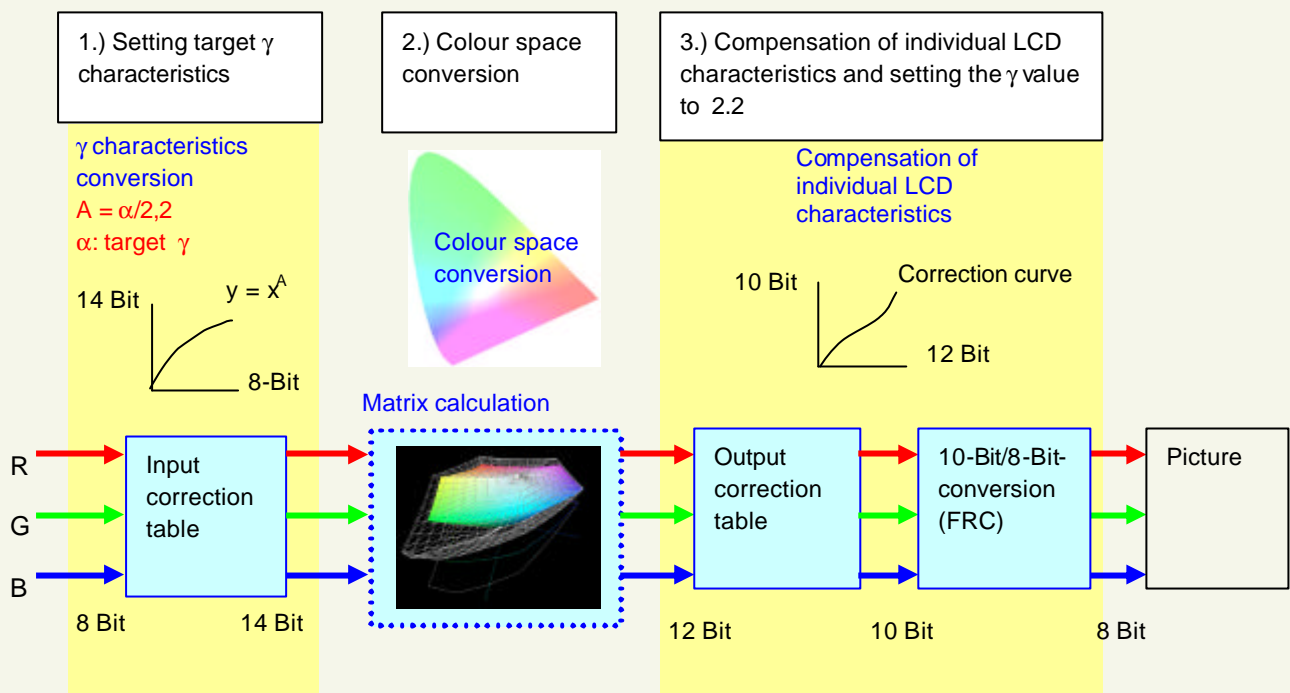


Colour management – behind the scenes

How exact tone curves are produced. How do the professionals do it? (part 3)

In order for ColorGraphic LCD monitors to display all colour gradations softly and smoothly, the gradation of all RGB elements are adjusted, during the production of each EIZO monitor, from 0 to 255. The highly accurate colour analyser (Color Analyser CA210) is used to make this possible. In this way, EIZO achieves completely smooth colour transitions.

The special integrated circuit (ASIC) for colour calculation and calibration in ColorGraphic LCD monitors contains two correction tables (LUT). The first LUT holds the required target values such as the white point and Gamma, used for user calibration. The second LUT contains the compensation of undesirable LCD tone curve characteristics. The following picture captures the basic processes and signal waveform as the colours are being processed inside the monitor.



Setting target γ (Gamma) characteristics: The required white point is determined in this LUT as the combination of measuring and calculating, and converting these to the greyscale. It is possible to mathematically determine the target characteristics of the γ curve (e.g. 1.8). The higher the calculation accuracy (EIZO uses 14 or 16 bits), the more precise and smoother the resulting γ characteristics.

Colour space conversion: If setting the target γ characteristics does not lead to the correct colour temperature, the colour temperature will also be determined mathematically. The same applies here – the more accurate the calculation is, the closer we get to the target colour temperature.

Compensation of individual LCD characteristics and setting the γ value to 2.2:

In this step, the undesirable characteristics of the tone curve for each LCD monitor (S-shape tone curve) are rectified in order to provide a smooth γ curve (2.2). Depending on the model, a 10bit or 12bit LUT table is used for each colour (RGB).