

TOTOKU

PROCALIX

EXACT COLOR CALIBRATOR

21 inch Calibration display — **PROCALIX**

Stable black and high-level colors reproduced.
Fitted with calibrating function for professionals.

Best suited for graphic, photographic, printing and medical purposes.



Image precision and long-term stability

A professional display system integrating colorimeter and calibration software

Colors are always reproduced accurately; brightness and uniformity are delivered without deviation or instability. TOTOKU professional display system, PROCALIX, the solution wherever display performance is mission-critical.



Setting a new standard for display calibration and control

Precision in color rendering

PROCALIX simultaneously delivers maximum gamut and color standard match. Any PROCALIX display can be set up to match another.

Flat field uniformity

Exclusive ASICs and 25-point measurement protocol deliver color and brightness uniformity, top-to-bottom, edge-to-edge.

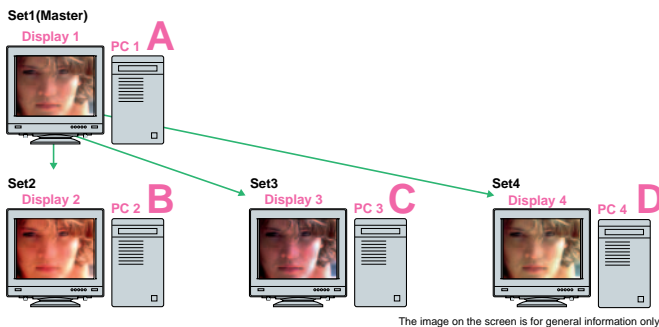
Constant color stability

Totoku's A²KB circuit assures image stability throughout a long day over months of intense use.

PROCALIX display system removes the limitations of conventional display products

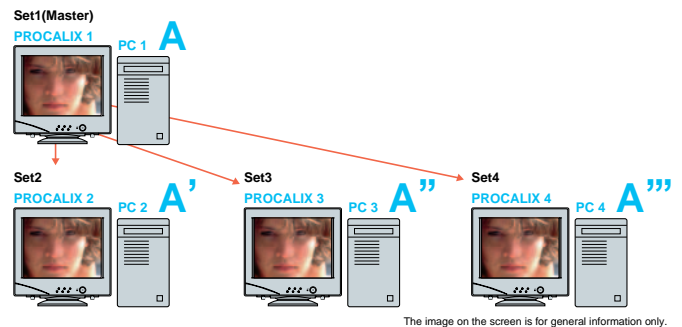
(1) Color matching from display to display

With conventional products, variations in manufacturing show up as variations in color reproduction: no two displays look alike.



Conventional

Want all workstations to look like A, but workstations 2, 3, and 4, show variation colors B, C, and D.



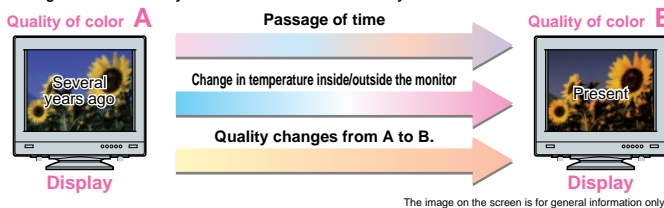
PROCALIX

Using the calibration application, workstations 2, 3 and 4 are brought into professional match with target A colors on workstation 1. (System spec: Δe variation less than 3 among workstations.)

(2) Minimizing the effects of the operating

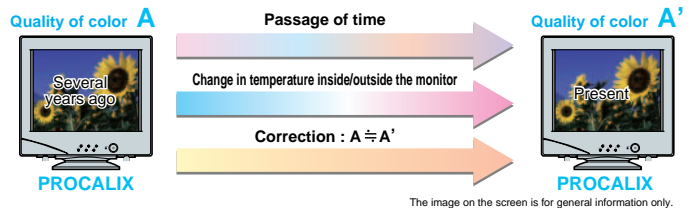
environment and time – Inside a display, the electron gun is impacted by temperature variations and the passage of time.

Change of color caused by environment and the use for many hours.



Conventional

With the conventional display, when the temperature changes, either inside or outside the display, the color and luminance change. Color A changes to color B.



PROCALIX

With the PROCALIX system, calibration updates the performance to current gun condition. The colors in A are the same whenever imaged.

Calibration and Color management

In graphic arts, medicine, video production, CAD, photography, and other professional imaging situations, shortfalls in color performance impact both the quality of work and the time it takes to reach professional standards. The trouble is caused, first, by subtle variations within a group of displays, or cameras. The second cause is large variations in color rendering from one type of device to another.

The Totoku display system attacks each of these problem areas with a separate weapon. Variations from display-to-display are the focus of the calibration functions delivered with the system. Rendering differences from camera to display and from display to printer are the focus of the ICC profiling functions delivered with the system. Two problems, one total system solution.

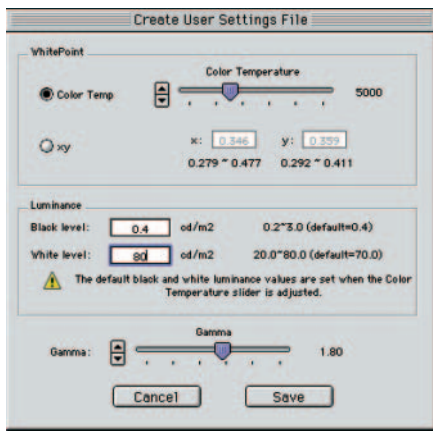
Always a professional image

Calibration functionality

Calibration has two distinct components. The first involves matching an operating configuration — color temperature, white level, black level, and gamma — to a user's industry requirement or personal preference. The second is adjusting to match uniformity objectives. In the PROCALIX system, this functionality utilizing the colorimeter and calibration software that ship together with the display.

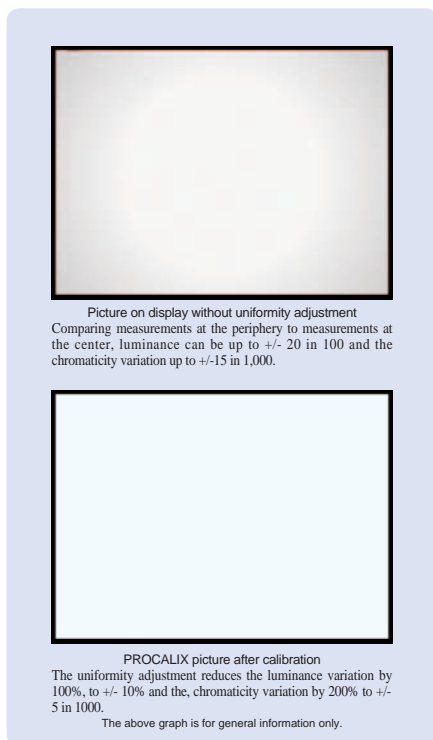
Center calibration

The user attaches the colorimeter at the center of the display, and selects the target values for each of the configuration parameters within these ranges: Color temperature can be set to any value within the range 2,800 to 10,000 deg. K, for color temperature; 1.0 to 2.4 for gamma; 20 to 100 cd/m² for white level; and 0.2 to 3.0 cd/m² for black level.



Uniformity adjustment

Next, moving the colorimeter through a sequence of measurements at 25 different grid points on the display, the user sets the uniformity adjustment so that the color and luminance are everywhere the same, regardless of variations in the radiation of the electron beam.

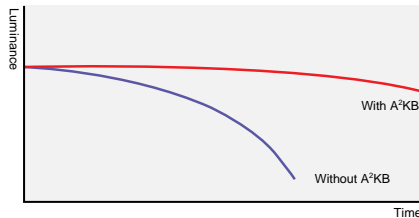


Protection against age effects

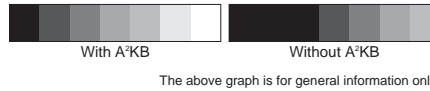
TOTOKU's A²KB circuit

The physics of an electron gun are such that the R,G, and B beams have a tendency to deteriorate over time. PROCALIX includes protection against this effect with Advanced Automatic Kinematic Bias control circuit, A²KB. The circuit minimizes the fluctuations in luminance and white level, and insures a stable black level.

[Deterioration of luminance with the passage of time]



[Indication of Gray scale]



The above graph is for general information only.

Assuring beam convergence

TOTOKU Integrated Tube Technology (ITT)

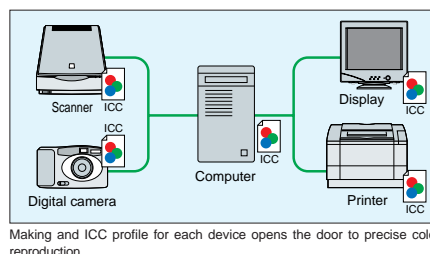
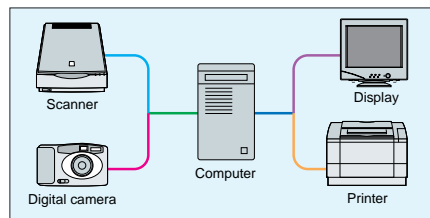
Professional-level imaging requires the highest standard of beam convergence. During manufacture, TOTOKU technicians use ITT procedures to make a specific match of tube and deflection yoke for each PROCALIX system. ITT assures that, misconvergence in chromaticity is below 10% at shipment.

Support for color ICC color matching

ICC profile creation functionality

The PROCALIX system complies with International Color Consortium (ICC) standards. Paging the system colorimeter, the calibration software measures pertinent data and computes and saves the ICC display profile that corresponds to the users operating preference. Subsequently, the ICC display profile can be accessed for use in Color Management System (CMS) applications that allow precision color matching from PROCALIX display to print, as well as from scanner or digital camera to display.

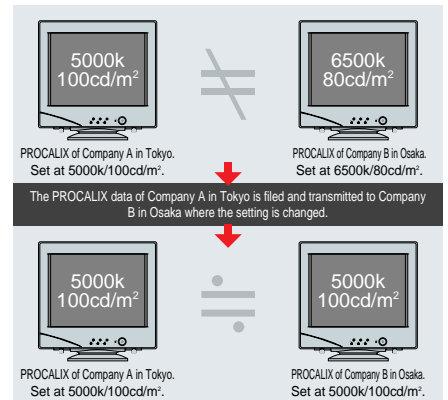
we do not manufacture or sell the CMS software.



Snapshot and Clone functionality

PROCALIX introduces the Snapshot and Clone to professional imaging. The **Snapshot** function precisely records the current operating characteristics of a single PROCALIX display. The **Clone** function applies those characteristics to another PROCALIX display, so they can match over time and over space.

The cloning takes place when on a second PROCALIX system, the user imports the snapshot data. Another professional application is when a user clones a prior snapshot, setting the monitor back to a prior configuration.



Magnetic Field Compensation (MFC) circuit

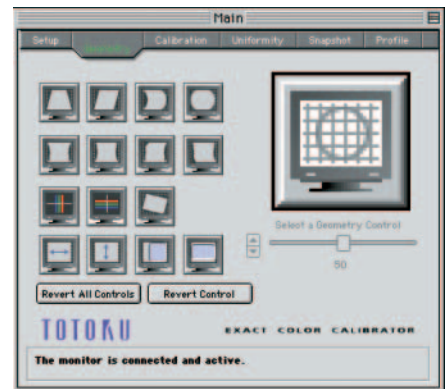
The purity of the PROCALIX image is further enhanced by TOTOKU's proprietary Magnetic Field Compensation (MFC) circuit. Without MFC, earth's magnetic field acts to cause a slight misalignment of beam and shadow mask in the image corners, shifting the color at the corners relative to the center. With MFC, alignment and color purity is preserved.

Ambient Temperature Compensating (ATC) system

Without compensation, variations of the ambient temperature in the user's environment will cause variations in the CRT bias. For PROCALIX, the solution is the Ambient Temperature Compensation (ATC) system that consists of a temperature sensor built in to the display and feedback circuit that compensates for temperature variations.

Geometric adjustments

PROCALIX provides access to 15 different geometric adjustments, accessible from a Geometry Panel in the calibration software.



Advanced USB hub

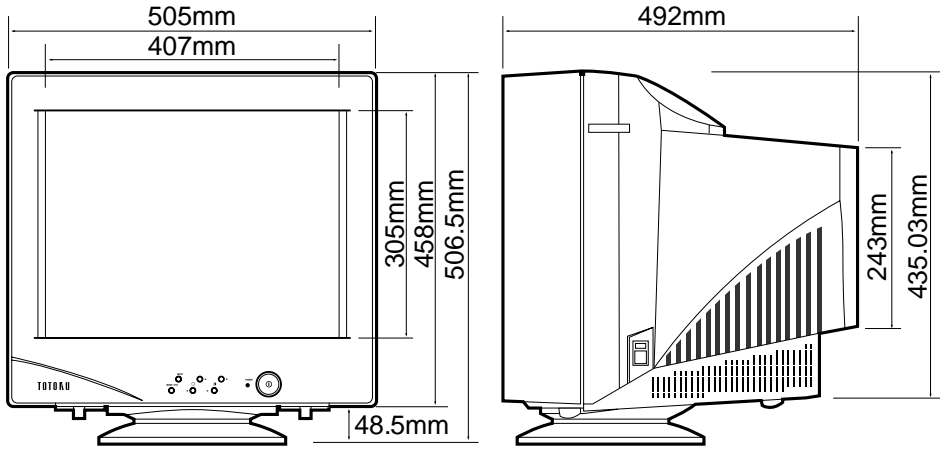
PROCALIX system is designed with two up-link USB connections, one more than conventional. This allows two CPU's to be hooked to one display, for higher productivity in digital video production and other professional imaging segments.


Highest resolutions for special imaging

To support the demands of special imaging situations, PROCALIX supports resolutions up to 2048 x 1536 (at 85hz). In particular, HDTV video files can be imaged at one-to-one.

• Main items of specifications for PROCALIX

Model		PROCALIX
CRT	Size	21 inch, shadow mask type.
	Dot pitch	0.22mm (horizontal), 0.26mm (trio).
	Transmittance	43%.
	Surface treatment	AR-coated.
Maximum resolution		2048 x 1536@85Hz.
Horizontal frequency		30k ~ 140kHz.
Vertical frequency		50 ~ 200Hz.
Display area		395 x 295mm.
Input signal	Video	Analog RGB (0.714Vp-p), input impedance 75 Ω.
	Sync	Separate/composite: TTL level (negative/positive).
Signal input connectors		D-sub 15pin (mini)/5BNC.
User controls		Brightness, contrast, horizontal/vertical size, horizontal/vertical position, side pincushion, bow, trapezoid, parallelogram, horizontal pincushion, horizontal pin balance, rotation, moiré reduction, color temperature control, purity correction, horizontal/vertical convergence, auto size, horizontal/vertical focusing, zooming.
USB hub		UP stream x 2, DOWN stream x 4.
Agency Approvals		UL1950, CSA950, IEC60950, TUV-GS, ZH1/618, ISO9241-3, 7, 8, TCO'95, FCC-B, LVD/CE, EMC/CE, DHHS.
Power source required		90-240V AC, 50/60Hz.
Power consumption		160W (3W or less when power management is on.)
Dimensions		Net (hood not attached) : 505 x 506.5 x 492 mm (W x H x D) Packed : 615 x 650 x 655 mm (W x H x D)
Weight		Net: approx. 31kg. Packed: approx. 40kg.
Accessories		Shading hood, color sensor, video signal cable, Mac adaptor, communication cable, USB cable, power cord, color calibration software, etc.



	WARNING	For the safe operation of the display, please read the Instruction Manual thoroughly before using it.
To prevent the fire, malfunction of the display, electric shock or the like, install the display away from water, dust, moisture or oil.		

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