

ARRI Offers X-Rite Hubble to ARRICUBE Customers for Precise Display and DCI Projection Measurement

Main Features:

- Benefits:
 - Professional Accuracy
 - Low Cost
 - Portable
 - Easy to use
- ARRI Calibrations:
 - Studio HDTV CRT monitor
 - Studio HDTV LCD display
 - DCI-compliant DLP projector
- ARRI Reference Instruments:
 - Bentham double monochromator with PMT detector (for displays)
 - LMT colorimeter (for the projector)

ARRI now offers a specially calibrated version of the X-Rite Hubble non-contact laser guided colorimeter. The Hubble enables ARRICUBE customers to make their own precise color measurements on all types of displays involved in the digital intermediate workflow at a fraction of the cost of high-end display color measurement devices traditionally used by postproduction professionals.



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The X-Rite Hubble is the ideal tool to help ARRICUBE customers profile all displays involved in the grading process, monitor the color temperature of the film projector and maintain the overall system calibration.

The Hubble is a non-contact, laser guided colorimeter that is uniquely capable of measuring precisely and quickly in the dark, which is a vital requirement when working with film images in a digital intermediate environment. A key advantage of the Hubble is that it is a single, portable device - able to measure monitors (CRT and LCD) as well as projectors, and yet very easy to use. Just set up the Hubble on a tripod, connect instantly to a USB port on your computer, point the laser, and measure.

As precise measurements of all sorts of different devices with a filter colorimeter can only be obtained by using specific calibrations, ARRI adds the custom calibrations required for the DI process to the Hubble and analyses them against high-end, non-portable reference instruments. In order to make this comparative calibration, the CIE tristimulus values of the primary colors on the display are measured simultaneously with the reference instrument and the filter colorimeter. A matrix calculation is used to improve the accuracy of the instrument. As the matrix is specific for each display, the calibration has to be done individually for CRT, LCD, and DLP devices.

Hubble Specifications:



High-accuracy colorimeter

- Four color sensors: one each for red and green, two for blue
- x, y : ± 0.002 Y : $\pm 1\%$ (full white)
- Integrated temperature compensation circuit

State-of-the-art technology

- Large area light-to-voltage light-sensing ICs
- Charge-pump technology to measure sensor output
- 8° field-of-view

User calibration support

- 14 user-addressable calibration matrices
- May be calibrated by user to other reference devices or to a specific display type
- Auto calibration software for calibrating to customer PR-650 via serial connection
USB interface to host for data and power

Communications

- Hubble sends measurement data in either xyY or XYZ under program control
- Hubble sends either a single measurement or continuous data stream under program control

Software

- Hubble ships with a tech-level software utility to enable the user to make measurements using a PC
- The software enables manual measurement via push-button or mouse click
 - Make multiple, continuous measurements
 - Store measurement data in a named file

Measurement examples with ARRI display-specific calibrations:

Sony BVM monitor

Chromaticity error with X-Rite factory calibration: max 0.05.

Chromaticity error with display specific calibration: max 0.003.

Error in luminance below 1% for all signals above 1 cd/m² and below 5% for signals between 0.3 and 1 cd/m².

DLP projector

Maximum chromaticity error with X-Rite factory calibration: max 0.026

Chromaticity error with display specific calibration: max 0.003 for all signals above 0.7 cd/m²; max 0.01 for all signals between 0.25 and 0.7 cd/m².

Error in luminance below 1% for all signals above 0.5 cd/m² and below 5% for signals between 0.2 and 0.5 cd/m²