REFLECTION™ PORTFOLIO

CL-410, CL-420, CL-610, CL-610LT,

CL-810, CL-810 ULTRA

RUNCO

THE WORLD'S FINEST
HOME THEATER PRODUCTS™

With the Reflection™ Series, Runco brings its famous video performance to a new level of sophistication, while putting Runco quality within reach of many aspiring home theater aficionados. These six new Reflection™ Series models combine a highly efficient SuperOnyx™ DLP™ light engine with broad installation and integration options, establishing the perfect balance between performance, versatility and a variety of budgets.

The CL-410 features a native resolution of 1024 x 576, and provides a DVI input for pure digital video signal transmission. The CL-420, CL-610, 610LT (long throw lens), CL-810 and CL-810 Ultra offer a native resolution of 1280 x 720 and HDMI (DVI on the CL-420) connectivity for pure digital video signals.

Runco has implemented a host of advancements into all of these projectors' light engines to take full advantage of their 16:9 widescreen, high definition (enhanced definition on the CL-410) DMD™ chips. They feature Runco's Enhanced GEN 3™ technology to produce deeper blacks, greater contrast ratio and brightness, and richly saturated colors. A sophisticated color-balancing system is engineered into the Reflection Series that results in the industry's best gray scale tracking, and far surpasses the capabilities of CRT projectors.

Runco's acclaimed Vivix™ video processing and scaling assure pristine video imagery with every model and generous light output capabilities on these projectors are powerful enough to handle larger screen sizes with ease.

All models feature discrete power, aspect ratio and input selection, as well as IR and RS-232 controls, making it simple to partner these projectors with other audio/video components and automated control systems for a truly high-end home theater system.

In addition, the CL-610/610LT and CL-810/810 Ultra incorporate SLIC™ or Selectable Lamp Intensity Control™, with a two-stage lamp output level to more closely match projector light output to room and screen size and lighting conditions. The CL-810 and CL-810 Ultra also provide an electronically controlled iris, zoom, and focus adjustment for precision installation and calibration. The CL-810 Ultra adds AxiShift™ multidirectional lens shift capabilities.

CL-410

CL-420

CL-610

CL-810

As a finishing touch, Runco engineers gave special consideration to the CL-610/610LT and CL-810/810 Ultra cooling systems. These refined systems are more efficient, fostering longer projector and lamp life, while noise levels have been reduced to a whisper quiet for your home theater enjoyment.

The CL-810 Ultra shares the heritage of Runco's top of the line models, incorporating O-Path™ technology for an enhanced optical light path and CinOptx™ *Proteus* premium lenses for superior image quality and the flexibility of six lens choices for a wide variety of throw distance ranges.

For the ultimate in viewing flexibility and enjoyment, Runco's exclusive, award winning CineWide™ technology is available on the CL-610/610LT and CL-810/810 Ultra. CineWide with AutoScope is also offered on the CL-810 Ultra. This ground breaking option can transform these superb *home theater* systems into a true *home cinema* experience, reproducing 2:35 CinemaScope™ movies with breathtaking accuracy and full vertical screen image height, eliminating useless black bars for the first time.

SDC-1 HIGH DEFINITION DIGITAL VIDEO CONTROLLER

T he optional SDC-1 Controller is a versatile system expansion device designed to centralize all video signal and system control connections for the projector in the equipment rack with other video source and system control components. This simplifies connections to the projector and preserves all video signals in the digital domain.

The SDC-1 provides connections for a variety of components and includes both RGB and HDMI inputs. In addition, it offers configurable serial control for both RS-232 and RS-422, as well as two assignable 12 volt triggers and one dry contact closure. A USB port control is included for ethernet or PC communication. The SDC-1 is available with the CL-610/610LT and CL-810 and CL-810 Ultra.

SDC-1 CONTROLLER SPECIFICATIONS

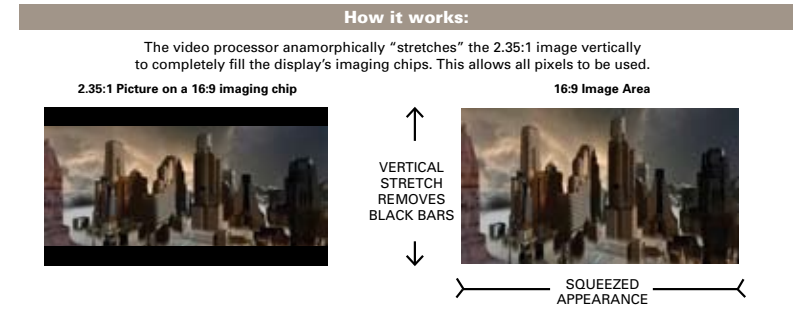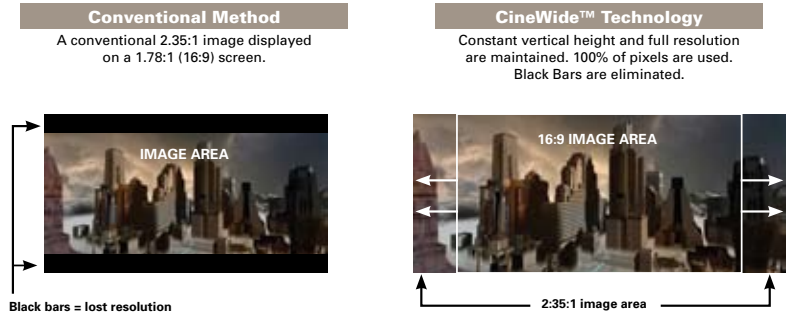|					
Inputs (from video sources):	2 x HDMI, 2 x HD (RGBHV or YPbPr, auto-detecting), Composite Video, S-Video	**Trigger Outputs:**	2 x 12 VDC, 800 mA	**Dimensions: (w/out feet)**	Width: 17 1/2 in. (444.50 mm) Depth: 11 1/8 in. (282.58 mm) Height: 3 1/2 in. (88.24 mm) Weight: 13 lbs. (5.9 kg)
Outputs (to projector):	Digital Video/Control (HDMI connector) Analog Video (8-pin DIN connector)	**Dry Contact Output:**	Floating; Tip (normally-open) and Ring (common) shorted together when engaged		
Control Options:	Discrete infrared remote, Serial (RS-232 or RS-422, selectable), USB, Front-panel input select, Wired IR remote	**Power Requirements:**	100 to 240 VAC (auto-sensing) 50/60 Hz, 160W	**Regulatory Approvals (pending):**	Complies with FCC, CE, C-Tick
		Operating Environment:	41°–95° F, (5°–35° C), 0%–90% Humidity (non-condensing)	**Limited Warranty:**	(2) Two years parts and labor from the date of delivery to the end user

TRANSFORMING HOME THEATER INTO TRUE HOME CINEMA

Runco's award winning development of CineWide™ and CineWide with AutoScope™ technology has created a revolution in faithful movie reproduction, for the first time transforming *home theater* into *home cinema*.

This technology provides uncompromised widescreen reproduction of movies originally filmed in the CinemaScope™ 2:35:1 format. It maintains constant vertical height on the screen just as in a movie theater. When a viewer transitions from 1.78:1 (16:9) program material to superwide 2.35:1, the image simply gets wider while full screen image height is maintained, eliminating black bars.

This is done through an ingenious combination of software, electronics and precision anamorphic optics. With the AutoScope option, the anamorphic lens is motorized and remote controlled.

With CineWide the projector is able to use the full pixel array on its SuperOnyx™ DMD™ chip, thereby producing a 2.35:1 image with enhanced resolution and increased brightness. No resolution or image area is lost to useless black bars on the top and bottom of the screen that contain no picture information. CineWide is available on the CL-610/610LT and CL-810/810 Ultra. AutoScope is available on the CL-810 Ultra.

Conventional Method
A conventional 2.35:1 image displayed on a 1.78:1 (16:9) screen.

IMAGE AREA

Black bars = lost resolution

CineWide™ Technology
Constant vertical height and full resolution are maintained. 100% of pixels are used. Black Bars are eliminated.

16:9 IMAGE AREA

2:35:1 image area

How it works:
The video processor anamorphically "stretches" the 2.35:1 image vertically to completely fill the display's imaging chips. This allows all pixels to be used.

2.35:1 Picture on a 16:9 imaging chip

16:9 Image Area

VERTICAL STRETCH REMOVES BLACK BARS

SQUEEZED APPEARANCE

The anamorphic lens then "stretches" the image width to 2.35:1. Correct geometry is restored, while 100% of the pixels are now used to maintain full resolution and eliminate black bars.

STRETCH
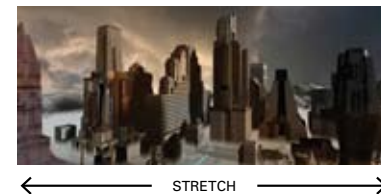
CineWide requires the use of a 2.35:1 or similar aspect ratio superwide format screen.

CineWide and AutoScope technology is the talk of the industry. These are among the awards and acknowledgements we have already received.

best of rave CEDIA	The RESI Awards 2005	CEDIA 2005 Electronic Lifestyles Award Winner	ELECTRONIC HOUSE 2005	Sound&Video contractor
2005 Overall Most Creative New Product	Best Video Product 2005	Manufacturer's Excellence Award for Best New Product 2005	Electronic House Product of the Year 2005	Best New Product 2005

CL-810 Ultra

OPATH™ CINOPTX™

O-Path™ Technology and CinOptx™ Premium Grade Lens Systems are featured on the CL-810 Ultra. O-Path efficiently collimates the light energy from the lamp though the optical path to maximize light output and eliminate stray light that can reduce brightness and compromise contrast ratio performance. The broad variety of lenses in the CinOptx family are designed to bring images faithfully to the screen without the geometric and color spectrum aberrations common among "production" lenses.

CSMS™

Runco International has carefully developed a full set of specification standards for our video projectors that is founded upon more realistic and easier to understand criteria for expressing the light output or brightness capability of a display device, as well as its contrast ratio. The Cinema Standards Measurement System™ was developed based on the actual experience one has in a movie theater, providing the consumer with an objective reference point to compare specifications.

CineWide
Bringing Hollywood Home™

Runco's exclusive CineWide™ and CineWide with AutoScope™ technology ensures uncompromised widescreen reproduction of movies originally filmed in the CinemaScope 2.35:1 format. Through a combination of software, electronics and anamorphic optics, the projector is able to use the full pixel array on its DMD chip, thereby producing a 2.35 image with enhanced resolution and increased brightness. The full vertical height of the screen is filled with the image and useless black bars are eliminated. (Not available on the CL-410 and CL-420).

LiveLink™

The LiveLink™ DVI cabling system is Runco's exclusive solution for reliable, pure digital video signal transfer. This is the first DVI cabling system capable of truly supporting longer runs while preserving all essential high-resolution video signal quality. LiveLink is nothing short of a revolution for home theater design.

isf

The new Reflection Portfolio products incorporate the Imaging Science Foundation's "ISF 3c™" (Certified Calibration Configuration) setup and calibration standards in projector GUI menus to facilitate picture quality conforming to the highest standards in the industry.

Specifications	CL-410	CL-420	CL-610/CL-610LT	CL-810	CL-810 Ultra
Projector Type:	Digital Light Processing (DLP™), Single-Chip DMD™	Digital Light Processing™ (DLP™) Single-Chip SuperOnyx™ DMD™	Digital Light Processing™ (DLP™) Single-Chip SuperOnyx™ DMD™	Digital Light Processing™ (DLP™) Single-Chip SuperOnyx™ DMD™	Digital Light Processing™ (DLP™) Single-Chip SuperOnyx™ DMD™
Native Resolution:	1024 x 576	1280 x 720 (16:9)	1280 x 720 (16:9)	1280 x 720 (16:9)	1280 x 720 (16:9)
Aspect Ratios:	4:3, Letterbox, 16:9 Anamorphic, VirtualWide™, Cinema, Virtual Cinema™	4:3, Letterbox, 16:9 Anamorphic, Virtual Wide™, Cinema, Virtual Cinema™	4:3, Letterbox, 16:9 Anamorphic, Virtual Wide™, Cinema, Virtual Cinema™	4:3, Letterbox, 16:9 Anamorphic, Virtual Wide™, Cinema, Virtual Cinema™	4:3, Letterbox, 16:9 Anamorphic, Virtual Wide™, Cinema, Virtual Cinema™
Video Standards:	NTSC, PAL	NTSC, PAL, SECAM	NTSC, PAL, SECAM	NTSC, PAL, SECAM	NTSC, PAL, SECAM
DTV Compatibility:	480p, 720p, 1080i	480p, 720p, 1080i	480p, 576p, 720p, 1080i	480p, 576p, 720p, 1080i	480p, 720p, 1080i
Picture Size (16:9 screens)	Recommended Width: 72–96 in. Maximum Width: 150 in.	Recommended Width: 72-96 in. Maximum Width: 150 in.	Recommended Width: 72-96 in. Maximum Width: 200 in.	Recommended Width: 72-96 in. Maximum Width: 200 in.	Recommended Width: 72–96 in Maximum Width: 200 in.
Throw Distance (Factor x Screen Width)	Zoom 1.37–1.67	Zoom 1.40–1.70	CL-610 : Zoom 1.37–1.82 CL-610 with CineWide: 1.55–1.82 CL-610LT : Zoom 1.86–2.47	1.80 to 2.43	**Proteus Lens Options:** **A:** Fixed 0.67 (for rear-screen applications) **B:** Zoom 1.22–1.44 **C:** Zoom 1.45–1.75 **D:** Zoom 1.82–2.38 (with CineWide 1.38–1.79) **E:** Zoom 2.42–3.57 (with CineWide 1.84–2.70) **F:** Zoom 3.65–5.68 (with CineWide 2.77–4.29) *(Proteus A, B or C options not available with CineWide or CineWide w/AutoScope)*
Horizontal and Vertical Offset Without CineWide Option: (Note: With CineWide option offsets vary per lens. Please contact Runco Technical Support for more information.)	Horizontal shift: ± 8%, Vertical shift: ± 50%	Horizontal shift: ± 8%, Vertical shift: ± 50%	Lens is fixed	Lens is fixed horizontally Vertical shift 50% up or down from screen center	Horizontal 13% of screen width left or right Vertical (ceiling mount) Up to 71% above screen center, up to 13% below screen center (depending on lens) Vertical (floor mount) Up to 13% above screen center, up to 71% below screen center (depending on lens)
Light Output:	CSMS™** Specifications: Home Theater Calibration: 412 ANSI Lumens; 16 Foot-Lamberts (fL); 800 ANSI Lumens*	CSMS** Specifications: Home Theater Calibration: 421 ANSI Lumens; 16.3 Foot-Lamberts (fL) 850 ANSI Lumens	CSMS** Specifications: Home Theater Calibration: 395-526 ANSI Lumens; 12.3-19.3 Foot-Lamberts (fL) 1150 ANSI Lumens	CSMS Specifications: Home Theater Calibration: 442-587 ANSI Lumens; 14.5-21.6 Foot-Lamberts (fL) †Variable depending on RVR calibration; 1150 ANSI Lumens	CSMS Specifications: Home Theater Calibration: 442–587 ANSI Lumens; 14.5–21.6 Foot-Lamberts (fL) †Variable depending on RVR calibration; 1250 ANSI Lumens
Contrast Ratio:	CSMS** Contrast Ratio: 221:1; 2500:1	CSMS** Contrast Ratio: 228:1; 2600:1	CSMS** Contrast Ratio: 185:1-205:1; 1400:1-2200:1	CSMS** Contrast Ratio: 200:1-220:1; 1500:1-3100:1	CSMS** Contrast Ratio: 200:1-220:1; 1500:1-3100:1
Lamp:	250W NSH	250W	250W	250W	250W
Lamp Life:	2000 hours	2000 Hours	2000 Hours	2000 Hours	2000 Hours
Inputs:	(1) Video, (1) S-video, (2) Component, (1) DVI w/HDCP, (1) RGB DB15 (1) RS-232	(1) Video, (1) S-video, (2) Component, (1) DVI w/HDCP, (1) RGB DB15 (1) RS-232	(1) Composite Video, (1) S-video, (1) RGB/Component (via BNC), (1) Component (via RCA), (1) HDMI, (1) RS-232	(1) Composite Video, (1) S-video, (1) RGB/Component (via BNC), (1) Component (via RCA), (1) HDMI, (1) RS-232	(1) Composite Video, (1) S-video, (1) RGB/Component (via BNC), (1) Component (via RCA), (1) HDMI, (1) RS-232
12V Output:	Max. 0.25 Amps, active when the projector is on	Max. 0.25 Amps, active when the projector is on	Max. 0.25 Amps, active when the projector is on	Max. 0.25 Amps, active when the projector is on	Max. 0.25 Amps, active when the projector is on
Power Requirements:	100–240V AC, 50/60Hz, 370W	100-240V AC, 50/60 Hz, 370W	100-240V AC, 50/60 Hz, 310W	100-240V AC, 50/60 Hz, 310W	100-240V AC, 50/60 Hz, 310W
Operating Environments:	41 to 95°F (5 to 35ºC); 20-80% humidity (non-condensing)	41° - 95° F, (5° - 35° C), 0% - 90% Humidity (non-condensing)	41° - 95° F, (5° - 35° C), 20% - 80% Humidity (non-condensing)	41° - 95° F, (5° - 35° C), 20% - 80% Humidity (non-condensing)	41° - 95° F, (5° - 35° C), 20% - 80% Humidity (non-condensing)
Dimensions (w/o feet):	Width: 14 in. (356.00 mm) Depth: 16 7/8 in. (429.00 mm) Height: 7 3/8 in. (188.00 mm) Weight: 25lbs. (11.34kg)	Width: 14 in. (356.00 mm) Depth: 16 7/8 in. (429.00 mm) Height: 7 3/8 in. (188.00 mm) Weight: 25lbs. (11.34kg)	Width: 16 1/2 in. (419.00 mm) Depth: 16 3/8 in. (416.00 mm) Height w/feet: 6 1/8 in. (156.00 mm) Weight: 32 lbs. (14.6 kg) (includes lens)	Width: 19 5/8 in. (499.00 mm) Depth: 17 5/8 in. (448.00 mm) Height: 8 3/4 in. (222.00 mm) Weight: 34 lbs. (15.42 kg) (includes lens)	Width: 19 5/8 in. (499.00 mm) Depth: 22 in. (559.00 mm) Height: 8 7/8 in. (226.00 mm) Weight: 36 lbs. (16.32 kg) (includes lens)
Regulatory Approvals:	Complies with FCC Class B, CE, C-Tick	Complies with FCC, CE, C-Tick	Complies with FCC Class B, CE, C-Tick	Complies with FCC Class B, CE, C-Tick	Complies with FCC Class B, CE, C-Tick
Limited Warranty:	Projector: (2) Two years parts and labor from the date of delivery to the end user. Lamp Warranty: 1000 hours or (6) Six months, which ever comes first.	Projector: (2) Two years parts and labor from the date of delivery to the end user. Lamp Warranty: 1000 hours or (6) Six months, which ever comes first.	Projector: (2) Two years parts and labor from the date of delivery to the end user. Lamp Warranty: 1000 hours or (6) Six months, which ever comes first.	Projector: (2) Two years parts and labor from the date of delivery to the end user. Lamp Warranty: 1000 hours or (6) Six months, which ever comes first.	Projector: (2) Two years parts and labor from the date of delivery to the end user. Lamp Warranty: 1000 hours or (6) Six months, which ever comes first.

*ANSI Lumen specification:
This is the typical projector luminosity (brightness) specification found in most sales literature. This measurement is included in RUNCO literature to allow for direct comparison with other manufacturer's projectors. These measurements can be taken at 9,000 to 13,000° Kelvin to get expected performance data when the projector is used in professional, commercial, and industrial displays.

**CSMS Home Theater Calibration ANSI Lumen Specification:
These measurements are taken from the projector as set up in a home theater environment. The projector is calibrated to ISF specifications including setting the color temperature to 6500° Kelvin, the standard for reproducing video.

**CSMS Home Theater Calibration foot-Lambert (fL) Specification:
This is the unit of measurement used in commercial movie theaters to express image brightness. The Society of Motion Picture and Television Engineers (SMPTE) specifies 16 fL as the target image brightness for film-based projectors using an open gate (without film in the projector). More importantly, today SMPTE specifies 12 fL as the target image brightness in Digital Cinema theaters using DLP™ technology. The foot-Lambert is dependant on screen size, screen gain, and projector light output.

All measurements are made at RUNCO to ANSI/NAPM IT7.228-1997 specifications using the Photo Research PR-650 SpectraColorimeter and Minolta LS-100 Luminance Meter, Video Essentials test DVD, and a Stewart Filmscreen StudioTech 130, 1.3 gain 72-inch wide screen. The projector is calibrated to a color temperature of 6500° Kelvin and has a minimum of 150 hours of usage.

Specifications are subject to change without notice. Optional ceiling bracket available.

isf®
Engineered for ISF® calibration.

Installer ID Dependent

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