Crystal Vision

LKEY HD

High Definition Linear Keyer

The LKEY HD is ideal for keying graphics over any video source.

Not only does this versatile linear keyer work with all common HD formats, it also works with SDI making it suitable for multi-standard environments or if you're planning to upgrade at a later date. Use it for the downstream keying of logos, captions, scoreboards and other graphics, or use it upstream before the mixer - the choice is yours.
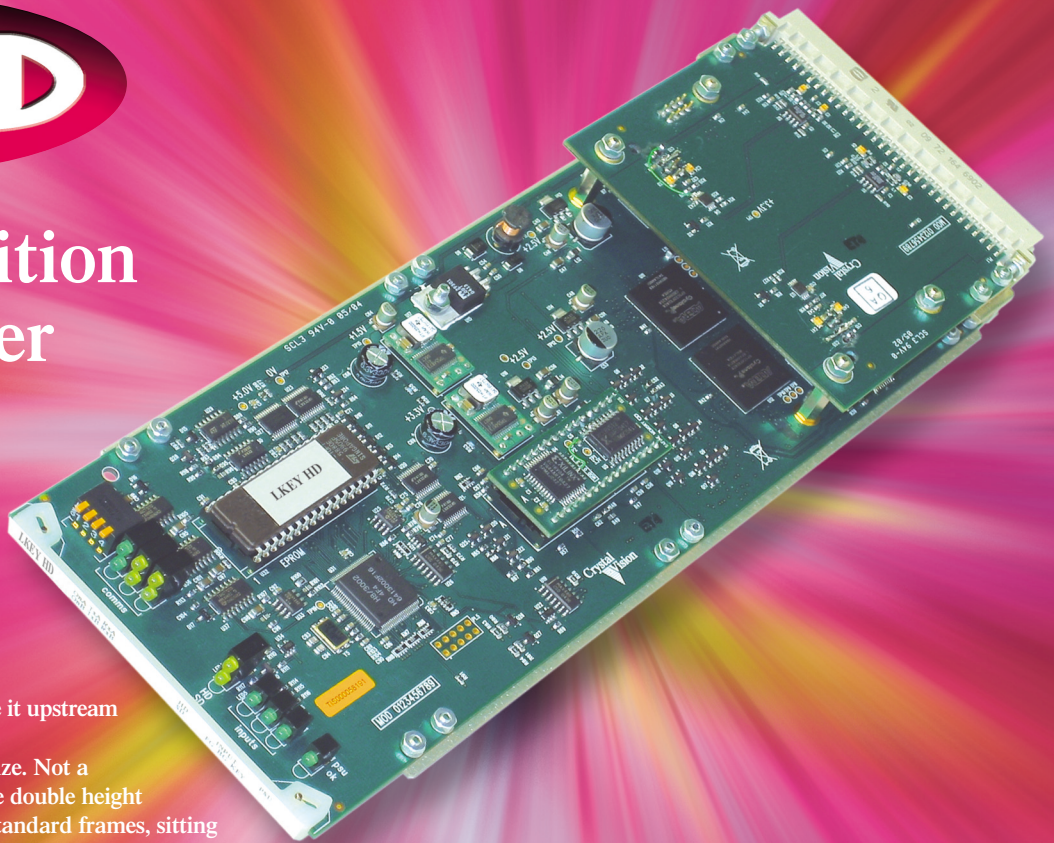
What sets LKEY HD apart is its size. Not a cumbersome box, this one. Instead the double height 100mm x 266mm module fits in the standard frames, sitting alongside any other board in the Crystal Vision range - including an HD chroma keyer and video delay. The ability to fit six HD linear keyers in 2U makes it the obvious choice for multi-layer keying.

It's amazing just how many features have been packed into a product that's so small. Choose how you generate the key. The external key mode uses the luminance of a key signal to cut a hole in the Background programme, while in self-key mode the luminance of the Foreground graphic is used to generate the key - useful if you don't want to use a dedicated key input. Fill video is then inserted, usually the Foreground signal or a colour produced by the internal matte generator. LKEY HD offers both additive and multiplicative linear keying, allowing you to choose a method to suit the graphics you're working with. Further flexibility is provided by two internal mask generators which can force areas of the picture to Foreground or Background, overruling the key signal.
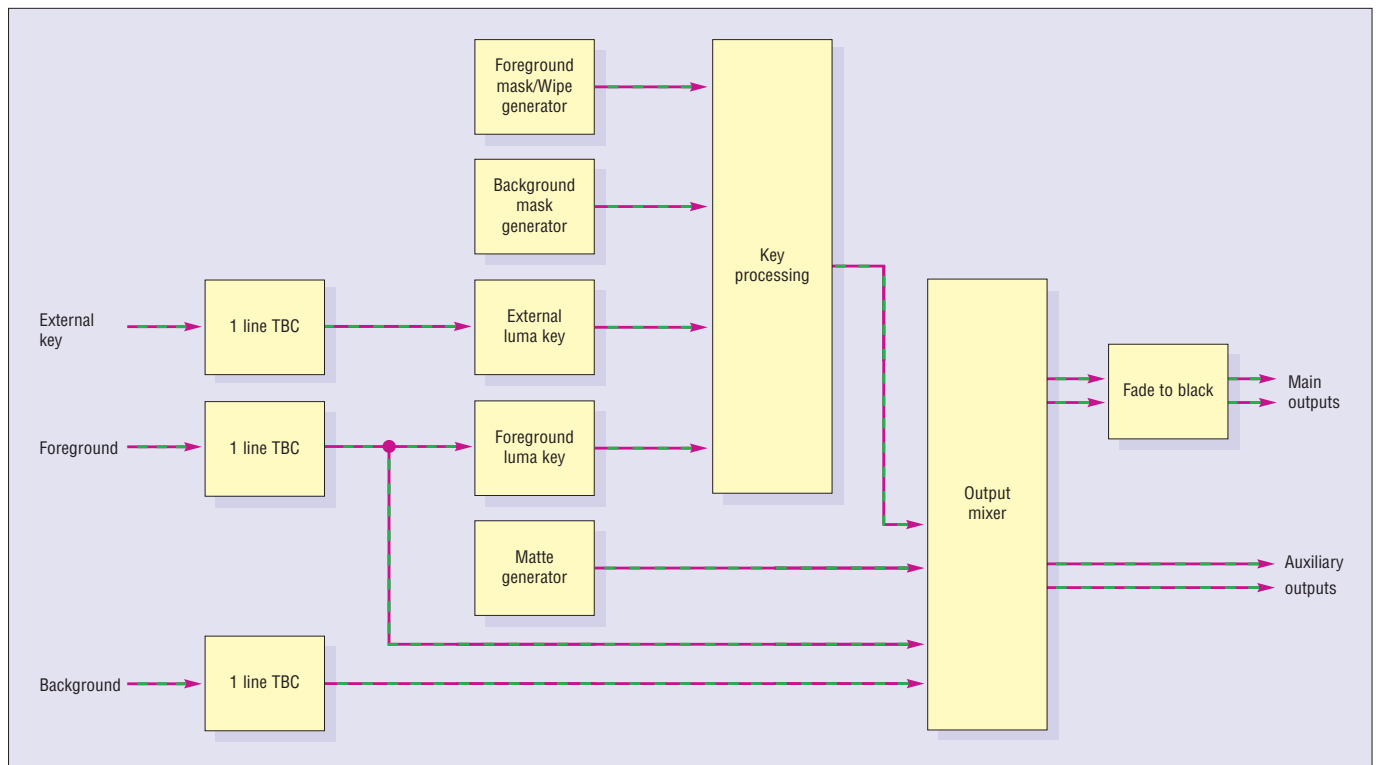
You can mix between the Foreground and Background inputs, while the inclusion of eight simple wipes (horizontal, vertical, horizontal blind, vertical blind, left corner, right corner, box and cross) means you may choose to use it as a basic two input mixer. The key can be faded in and out, either manually or as a timed transition, while you can fade to black on the main output. You won't be limited by the signals you've got: get just the effect you're looking for by amplifying, offsetting or inverting the key signal. Up to ten setups can be stored and recalled, while configurations can be easily transferred from one LKEY HD to another.

The two main and two aux outputs can independently show the video sources, the key or the combined picture.

The LKEY HD is a pleasure to operate. For those who enjoy the hands-on approach of T-bar activated transitions there is the Safire Controller, a dedicated 2U panel ideal for live use and able to control up to seven Crystal Vision keyers. If you are more at home in front of a computer screen, the Statesman software allows you to make your adjustments from any PC on a network. The LKEY HD is used with the RM32 frame rear module, which includes an RJ45 connector for easy wiring of the Safire Controller.

- HD/SDI linear keyer
- Small size makes it ideal for multi-layer keying: 100mm x 266mm 'double decker' module allows six linear keyers in 2U (12 in 4U, three in 1U or one in desk top box)
- Additive and multiplicative linear keying
- Self-key from Foreground
- Internal colour matte generator
- Mask generation
- Mix between Foreground and Background
- Eight simple wipes
- Fade key in and out
- Fade to black
- Manual or automatic activation of transitions
- Flexible control, including dedicated control panel and PC software

Block Diagram labels:

Foreground mask/Wipe generator

Background mask generator

Key processing

External key → 1 line TBC → External luma key

Foreground → 1 line TBC → Foreground luma key

Matte generator

Background → 1 line TBC

Output mixer

Fade to black → Main outputs

Auxiliary outputs

SPECIFICATION

MECHANICAL
'Double decker' module 266mm x 100mm (uses two frame slots)
Weight: 300g
Power consumption: 14 Watts

VIDEO INPUTS
Three HD or SDI inputs (Foreground, Background and key)
270Mbit to 1.485Gbit serial compliant to EBU 3267-E,
SMPTE 259M and SMPTE 292M
All common HD formats supported. All inputs must be same format
HD cable equalisation up to 140m with Belden 1694 or equivalent (approx. 100m with Belden 8281). Cable lengths are for new HD version of frames. SD cable equalisation >250m Belden 8281 or equivalent
Input return loss: -15dB for 5MHz to 1.5GHz
Reference timing can be selected to come from Foreground, Background or key input
Minimum input to output delay approx. 5us
Max input buffer length one line (selectable)

VIDEO OUTPUTS
Two main and two auxiliary HD or SDI outputs, accessed by using RM32 frame rear module. Outputs follow input format
Main and auxiliary outputs can be used to show main output, preview Foreground, Background, key, processed key or matte generator

KEYING MODES
Foreground and Background can be mixed, wiped or keyed
Wipes include: horizontal, vertical, horizontal blind, vertical blind, left corner, right corner, box and cross
Key processing can be additive and multiplicative (Additive keying is only required with some caption generators where the Foreground is already processed)
Separate Foreground Force and Background Force internal

rectangular masks can be combined with external keys in multiplicative (standard) keying
Internal colour matte generator can be used as a fill for keying
Self-key is available from Foreground input
Adjustable key gain, offset and inversion
Key fade function, to fade Foreground in and out
Main outputs have fade to black (available in all modes)

ANCILLARY DATA/EMBEDDED AUDIO
Ancillary data and embedded audio is taken from the selected timing reference

LED INDICATION OF:
HD or SDI input
Foreground, Background and key input present
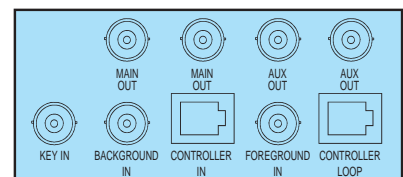Power supplies okay

GPI INPUT LEVELS
Electrically: Will tolerate 0V to 30V, pulled up to +5V through 1kOhm

GPI INPUTS
Auto fade to black
Auto fade external key
Auto mix
Recall of presets

REMOTE CONTROL
RS485 multi-drop 19200 baud, 8 bits, no parity
Safire Controller control panel operates up to seven LKEY HD modules
Statesman software allows control from any PC on a network

RM32 rear module connectors:
MAIN OUT | MAIN OUT | AUX OUT | AUX OUT
KEY IN | BACKGROUND IN | CONTROLLER IN | FOREGROUND IN | CONTROLLER LOOP

RM32

Foreground / A →
Background / B → **LKEY HD RM32** → Main x 2
Key → → Aux x 2

ORDERING INFORMATION

LKEY HD	HD/SDI linear keyer
Indigo 4	4U frame with passive front panel for up to 24 Crystal Vision modules
Indigo 4S	4U frame with passive front panel fitted with Statesman CPU for up to 24 Crystal Vision modules
Indigo 2	2U frame with passive front panel for up to 12 Crystal Vision modules
Indigo 2A	2U frame with active front panel for up to 12 Crystal Vision modules
Indigo 2S	2U frame with passive front panel fitted with Statesman CPU for up to 12 Crystal Vision modules
Indigo 1	1U frame with passive front panel for up to six Crystal Vision modules
Indigo 1A	1U frame with active front panel for up to six Crystal Vision modules
Indigo 1S	1U frame with passive front panel fitted with Statesman CPU for up to six Crystal Vision modules
Indigo DT	Desk top box with passive front panel for up to two Crystal Vision modules
Indigo DTA	Desk top box with active front panel for up to two Crystal Vision modules
Indigo DTS	Desk top box with passive front panel fitted with Statesman CPU for up to two Crystal Vision modules
RM32	Two slot frame rear module. Allows 12 LKEY HDs in 4U, six in 2U, three in 1U and one in desk top box. Gives access to the Foreground, Background and key inputs and the two main and two auxiliary outputs
Safire Controller	Remote control panel for up to seven LKEY HD modules
Statesman	PC Control System

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Performance and features are subject to change. Figures given are typical measured values.   LKEYHD0206