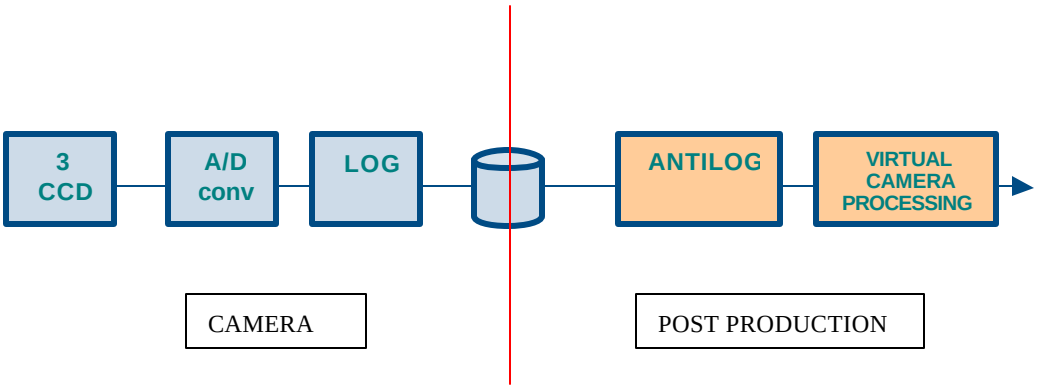
The FilmStream Interface of the Viper FilmStream™ Camera

The FilmStream™ interface:

FilmStream is a dual HD-SDI data stream with a 10 bit logarithmic representation of RGB values at real time speeds.

Simplified Schematics:



Camera Output Signals:

output of CCD + A/D converter:

linear out, 12 bit 0..4093
black level set at 64
sensor max level set at 3840

log curve and B/W clip

log curve (=Cineon Curve):
if x> 37
*then y= 500*log(0.02714*x)*
else y=0:

black and white clipper:
if y<3 then y=3
if y>1020 then y=1020

FILMSTREAM™

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Nominal Setting

For the nominal setting of the camera (F8 2000 lux, 0dB gain, 3200 Kelvin) the following table applies:

	LINEAR 12 bit LEVEL		
	Red	Green	Blue
sensor black level	64	64	64
18% grey 3200K	120	177	102
100% white level 0dB	379	693	274
sensor limiting level	3840	3840	3840

	LOG 10 BIT LEVEL		
	Red	Green	Blue
sensor black level	119	119	119
18% grey 3200K	258	341	221
100% white level 0dB	506	483	436
sensor limiting level	1009	1009	1009

Please note that these nominal settings for 100% white, or 18% grey are given for information purposes only. Only the black and limiting levels are mandatory. (See "Not specified" paragraph.)

The camera signal is mapped on a Dual Link 292M Interface for 1920x1080 picture raster according to the proposed SMPTE standard SMPTE 372M

Post Production

antilog curve:

$$y=10^{x/500} / 0.02714$$

The operation above result in a 12 bit unsigned linear RGB representation of the camera CCD signals, with reference black at 64 after the antilog curve. This is a virtual camera signal as if it was coming directly from the CCDs, where all normal camera signal processing operations can be performed, either with standard grading and postproduction tools or with specialised camera processing modules.

Non-proprietary

FilmStream is a registered trademark of Thomson multimedia S.A. We promote the use of the FilmStream interface since we see it as a very convenient way to transport real-time RGB-log, full-res, picture data. Therefore, any manufacturer or user is allowed to use the FilmStream interface and/or use the FilmStream name/logo under 2 conditions:

- When using the FilmStream name and/or logo the following message needs to be added: “FilmStream is a registered trademark of Thomson multimedia S.A.”

– The FilmStream log curve as specified is used in combination with dual-link HD-SDI, and full resolution RGB. (“422”-like YUV is not allowed).

Not specified

The RGB values of the FilmStream data interface are mapped on the interface before any matrix operation. This is done to prevent negative color values that would limit the available color space. Not specified however, is the exact location of the color primaries (manufacturer’s choice).

Also, the full range of the CCD is transferred. This means that the white point varies with the color temperature of the light source. Also, color filters change the white point of the FilmStream.