ADC-100 RANGE

VIDEO FRONT-END MODULES

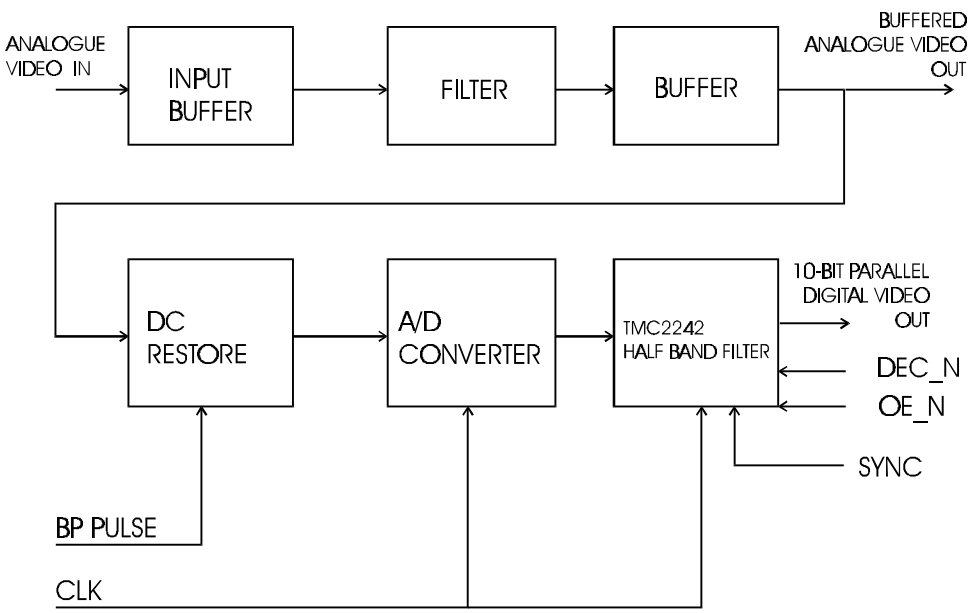
The ADC-100 range converts analogue video in various formats to 10 or 12 bit parallel digital video. The range provides a complete front end solution for the digitising of high quality component, composite or s-video. The module incorporates a tightly specified anti-aliasing filter, an A-D converter and a digital filter all on a board measuring no more than 1044mm^2 (1.65sq in).

Features

- ± 5V operation
- High impedance input stage
- Filtered and buffered video o/p
- User just provides pixel clock and clamp pulse
- Choice of 10 or 12 bit A-D
- Matched digital delay Y,Pb/Pr units
  (to eliminate additional delay lines)

Typical applications

- Video Broadcast and studio equipment
- Digital Cameras
- Telecommunications equipment
- Video Frame Grabber Cards for PCs
- Closed Circuit Security



ADC-100 BLOCK DIAGRAM

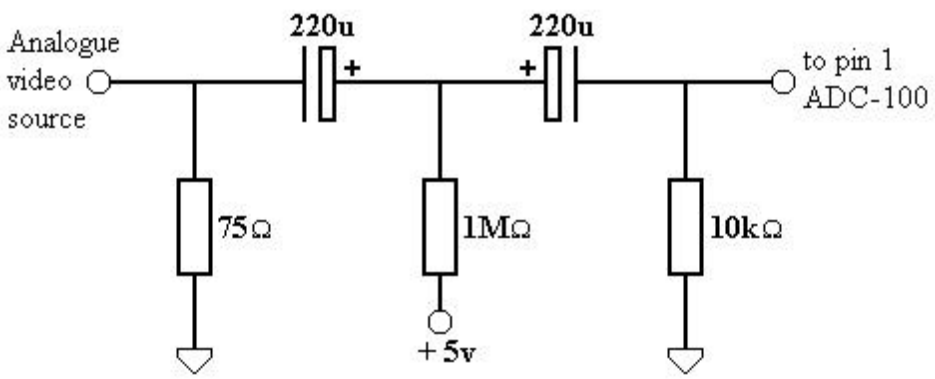
Technical Description

The ADC-100 range of modules are a complete front end solution for digitising analogue video. They comprise all buffering and filtering components required - allowing the user to connect directly to the video source. A dc clamp is provided to ensure that the black level is accurately set before being presented to the A-D converter. The modules utilise 2x oversampling to minimise the size of the filter components and achieve high performance. The subsequent data is decimated by high performance low pass digital filters to provide output data with standard sampling rates.

All this is achieved transparently to the user; the only control signals required are a back porch clamp signal, a sync pulse to align the digital filter and an appropriate clock.

For further details of the digital filter functionality consult Fairchild datasheet TMC2242.

Typical I/P circuit for minimal tilt



Specification

High Spec. analogue filter	ADC-100, ADC-101, ADC-120, ADC-122	ADC-121
Analogue Filter Passband	6.0 MHz with ripple of ± 0.05 dB.	2.75 MHz with ripple of ± 0.05 dB.
Analogue Filter Start of Stopband	21.0 MHz	10.5 MHz
Analogue Filter Stopband rejection	45 dB	45 dB
Analogue Filter Group delay ripple	< 3 ns to 3.58 MHz < 10 ns to 6.0 MHz	< 6 ns to 1.64 MHz < 20 ns to 2.75 MHz
Differential gain	1% typical	1% typical
Differential phase	1° typical	1° typical
Supply current	+ 300 mA +5v 20 mA -5v	+ 300 mA +5v 20 mA -5v

Relaxed analogue filter	ADC-110R, ADC-111R,	
Analogue Filter Passband	6.0 MHz with ripple of ± 0.1 dB.	
Analogue Filter Start of Stopband	21.0 MHz	
Analogue Filter Stopband rejection	35 dB	
Analogue Filter Group delay ripple	< 3 ns to 3.58 MHz < 16 ns to 6.0 MHz	
Differential gain	1.5% typical	
Differential phase	1.5° typical	
Supply current	+ 300 mA +5v 20 mA -5v	

Digital Filter details

	ADC-100, ADC-101, ADC-110, ADC-111, ADC-120, ADC-121	ADC-122
Filter Type	TMC2242A	TMC2242C
Passband	± 0.01 dB to 0.22 fs	± 0.014 dB to 0.22 fs
Attenuation at 0.25 fs	- 6 dB	- 6 dB
Stopband attenuation	> 59 dB from 0.28 fs	> 56 dB from 0.29 fs
Data latency	34 clk periods	68 clk periods

Note: The ADC-122R uses the TMC2242C digital filter which features a double delay mode enabling the luminance module (fs = 27 MHz) to output data synchronously with the colour difference modules (fs = 13.5 MHz). This eliminates the need for a digital delay of the luminance data by 34 clock cycles. For further information consult Fairchild datasheet TMC2242C.
An absolute delay difference of 37 ns exists between the ADC-122R and ADC-121R due to the differences in the analogue filters.

Module Details

Order Code	Gain	Black Level	Comments	Application	MMC Equivalent
ADC-100R	1.6	230	10-bit	Composite, Luminance (S-video), digital video decoder front end. High performance applications. fs = 27 MHz	FE-100H10-1
ADC-100B	1.6	230	12-bit		FE-100H12-1
ADC-101R	1.6	512	10-bit	Chrominance , digital video decoder front end. High performance applications. fs = 27 MHz	FE-100H10-2
ADC-101B	1.6	512	12-bit		FE-100H12-2
ADC-110R	1.6	230	10-bit relaxed filter	Composite, Luminance (S-video), digital video decoder front end. fs = 27 MHz	FE-100M-1
ADC-111R	1.6	230	10-bit relaxed filter	Chrominance , digital video decoder front end fs = 27 MHz	FE-100M-2
ADC-120R	2.475	64	10-bit CCIR-601-2 levels	Y input (Component Video) , Expanded active video range. fs = 27 MHz	not available
ADC-121R	2.475	512	10-bit CCIR-601-2 levels 2.75 MHz Filter	Pb,Pr input (Component video), Expanded active video range. fs =13.5 MHz	not available
ADC-122R	2.475	64	10-bit CCIR-601-2 levels Double delay	Y input (Component Video) , Expanded active video range. fs = 27 MHz Matched digital filter delay. **Note: PROVISIONAL DATA**	not available

The modules are fitted with a high performance 10-bit analogue to digital converter as standard (R-suffix) but they are also available with a 12-bit analogue converter (B suffix)

Devices are normally supplied with a Fairchild half band filter. The units can be optionally supplied with other compatible half band filters, or with no digital filter at the customers request.

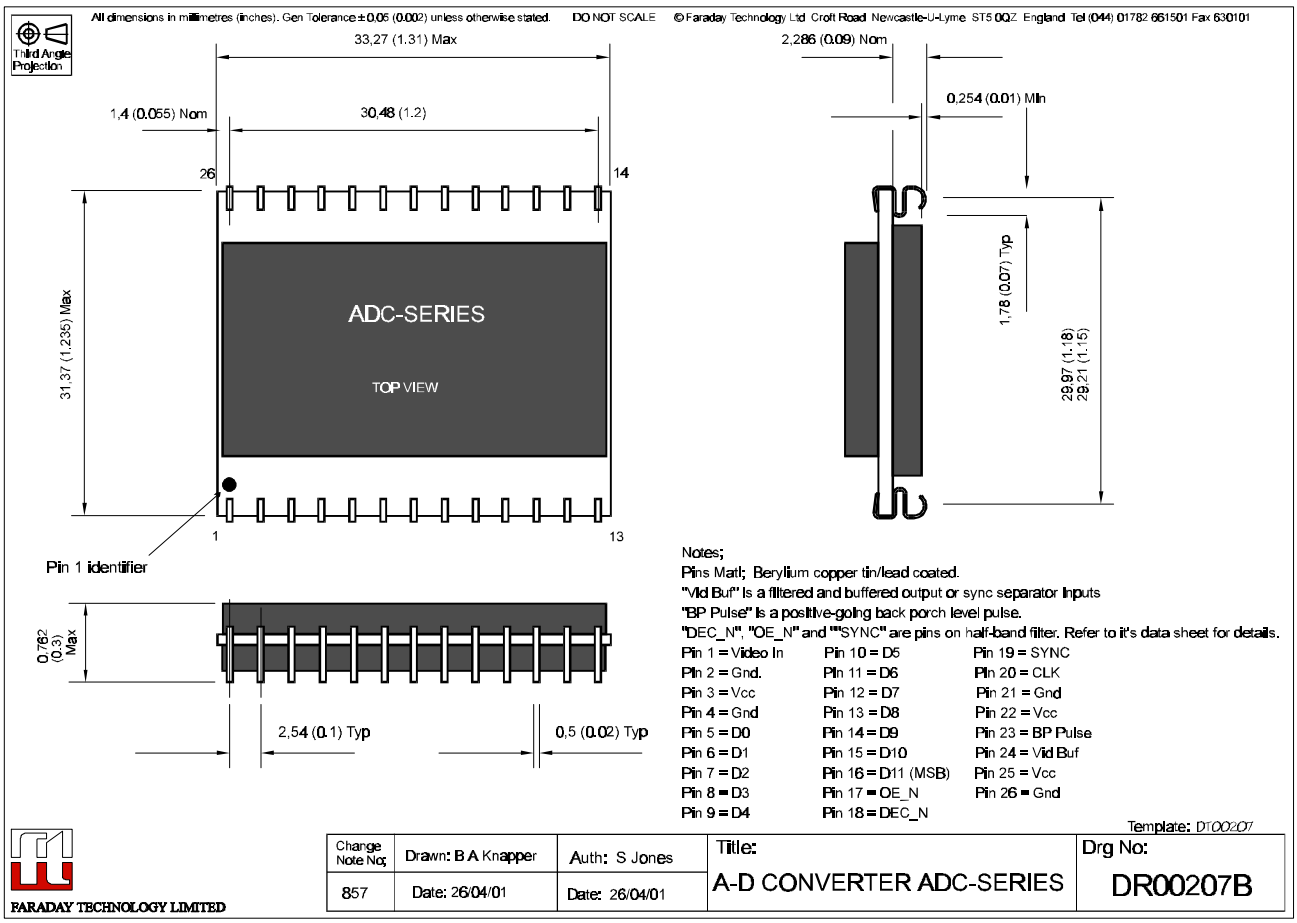
Application Notes

The ADC modules incorporate a clamp circuit which must be fed with a back porch signal derived on the users pcb. This can easily be generated using standard sync separators.

The user has control over digital filter inputs DEC_N, OE_N and SYNC appropriately. These inputs allow the user to synchronise the decimation of pixel data and multiplex the outputs from modules. For further details the user should consult the Fairchild datasheet TMC2242.

The insertion delay difference between the component modules ADC122R and ADC121R can be eliminated by latching the Luminance data for 1 clock cycle within the application.

Note: This product is Aqueous Washable.



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