

Model 8090
HD/SD Analog to Digital Converter
12-bit A/D to HD/SD-SDI

Owner's Manual

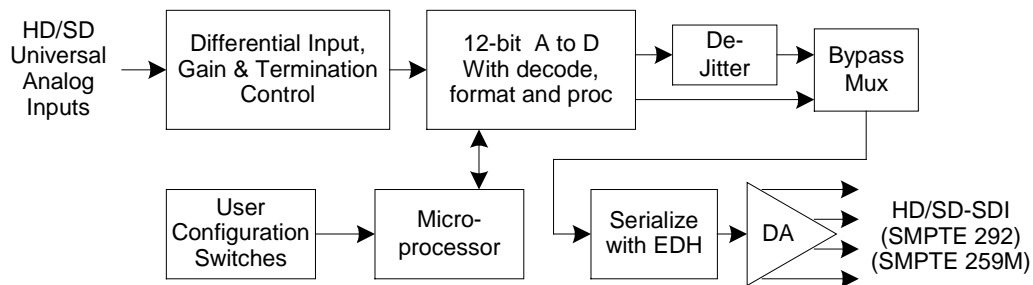
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Overview

The COBALT 8090 is a high-quality 12-bit analog to digital converter/decoder for converting HD and SD analog signals into the corresponding SMPTE 292/259M-C serial digital signals.

The 8090 has three differential BNC inputs that support both analog HD in YPbPr or GBR (tri or bi level sync) and analog SD composite, Y/C and component signals (YPbPr/GBR). For SD inputs, the 8090 features a 5-line adaptive comb with presets for SD component BetaCam™, MII™, SMPTE/N10 and GBR. The input standard is automatically detected, but input signal type for HD (YPbPr /RGB) and SD (Composite, Y/C, Component) must be pre-selected by the user via external switch settings.



8090 Block Diagram

Supported Formats

HD 1080 i, p, sF	23.98, 24, 25, 29.97, 30, 50, 59.94, 60
HD 720p	25, 29.97, 30, 50, 59.94, 60
SD 525, 625	59.94, 50

LED Indicator

The LED indicates video lock when On and loss of video when blinking. A dark LED indicates loss of power. The LED can be set to indicate signal standard (see rotary switch settings)

Video Processing (Proc.) Control Adjustments

Full digital control of Y-gain, Y-black level, color saturation and hue can be user controlled by internal rotary switches. Remove the bottom cover and locate S5, S6, S7, S8.

To set Proc. values set S5 & S6 as shown below and press UP or DWN (S4, S3).

To save settings set S5 & S6 to 9-9 and press UP or DWN.

To restore factory defaults set S5 & S6 to 8-8 and press UP or DWN.

To restore last user saved settings set S5 & S6 to 0-0 and press UP or DWN.

Y-Gain	Y-Black	Saturation	Hue
1-1	1-2	1-3	1-4

8090 Switch Settings

* = Default Settings

S1-1	S1-2	S1-3	SD Format
Off	Off	Off	Composite Adaptive Comb *
On	Off	Off	Composite Notch Filter
Off	On	Off	Y/C
Off	Off	On	YPbPr BetaCam™
On	Off	On	YPbPr MII™
Off	On	On	YPbPr SMPTE/N10
On	On	On	GBR

S1-4 SD Pedestal Removal

Off	Pass Pedestal
On	Remove Pedestal *

S1-5 SD VBI Blanking

Off	Pass SD VBI data *
On	Blank SD VBI data

S1-6 SD NTSC V-bit

Off	V-bit to Line 10
On	V-bit to Line 20 *

S1-7 SD/HD Dejitter

Off	Do not dejitter clock
On	Dejitter clock *

S1-8 SD/HD Gain

Off	Manual *
On	Automatic

S2-1 HD Format

Off	YPbPr *
On	GBR

S2-2 HD Sync

Off	Bi-level
On	Tri-level *

S2-3 HD VBI Blanking

Off	Pass HD VBI data
On	Blank HD VBI data *

S2-4 Auto Detect

Off	Auto Detect Off – Video remains at last detected standard until manually changed
On	Auto Detect Video Standard *

S2-5 Reserved

S2-6 LED Flashing

Off	LED flashes Normally: LED flashing = No signal, LED solid = Locked signal. *
On	LED flashes Video Standard: Either automatically detected or manually selected

S2-7 Test Pattern

Off	Output Video *
On	Output Test Pattern

S2-8 Test Pattern Color

Off	Black Field *
On	Blue Field

Internal Rotary Switch Settings

Video Proc Settings

Set rotary switches 10's and 1's to the desired Video Proc number.
Press either DOWN or UP to change the setting.
Press both DOWN and UP to reset the setting.
Settings will be applied to the currently active Format.
Separate settings are used for each of the 7 SD Formats and 2 HD Formats.
All settings are saved automatically after 10 seconds.

S5,S6	Video Proc
11	Y Gain
12	Y Offset
13	Saturation
14	Hue
15	Cb Gain
16	Cr Gain
17	Cb Offset
18	Cr Offset

Video Standard Settings

To manually force a video standard:
Set Auto standard detect Off (S2-4)
Set rotary switches 10's and 1's for desired video standard number.
Press Up.

S5,S6	Video Standard
21	525i59.94
23	625i50
33	720p25
34	720p29.97
35	720p30
36	720p50
37	720p59.94
38	720p60
41	1080sF23.98
42	1080sF24
43	1080i50
44	1080i59.94
45	1080i60
51	1080p23.98
52	1080p24
53	1080p25
54	1080p29.97
55	1080p30
61	Unknown (LED flashes this when unknown, not selectable as a standard)

Additional Internal Settings

Set Rotary Switches 10's and 1's to desired setting number.

Press DOWN to turn off or decrease. Press UP to turn on or increase.

S5,S6	Function
00	Normal Operation: LED flashing = No signal, LED solid = Locked signal.
01	LED flashes Video Standard (also selectable with S2-6)
05	LED flashes Build number
06	LED flashes FPGA version
08	LED flashes Firmware version
09	LED flashes Boot version (0xFF = boot not loaded)
19	SD Y Low Pass Filter: 0=Auto (default), 1=Lowest, 18=Highest
20	SD C Low Pass Filter: 0=Auto (default), 1=Lowest, 6=Highest
25	Up = Serializer uses TRS (Default), Down = Serializer uses HVF
26	Up = FPGA does TRS, Down = Decoder does TRS. (CP Only)
27	Horizontal Position (CP Only)
28	Vertical Position (CP Only)
62	SD Digital Noise Reduction: 0=Off (default), 1=Least, 255=Most
71	Up = Use FIFO (Default), Down = Bypass FIFO
72	Up (default) = Slow to lock but minimal jitter. Down = Fast to lock but more jitter.
73	Both Decoder & PLL Divider (0 = Bypass FIFO, Default = 2500, Stepsize = 100)
74	Up = Output/2, Down = Output/1 (Default)
75	Reset FIFO
70	Reset Decoder when detect non-standard line length. Up = Auto (default), Down = Off.
76	PLL Divider inside Decoder.
77	Initialize Decoder.
78	Reset Decoder.
79	SD Line Delay (Non-comb formats)
81	C Y Offset
82	CSC Y Gain
83	CSC Cb Gain
84	CSC Cr Gain
85	CSC Saturation
88	Factory Default (Recall Calibration Settings)
93	Reset Calibration Settings
94	Save SD Calibration Settings
95	Save HD Calibration Settings
96	Force into Boot Load mode (Also done automatically from PC)
99	Save All Settings (Also done automatically after 10 seconds of no switch changes)

Specifications

Analog Inputs:	Three differential inputs supporting HD YPbPr/RGB and SD universal
Differential Input	Common mode rejection >4V
Input Return Loss	> 35 dB at 5 MHz
Input A to D Quantization	12-bit
A/D sampling rate	SD (54MHz) / HD (74.25, 74.18MHz)
Frequency Response	HD: Y 0-28MHz, Pb/Pr 0-14 MHz SD: Y 0-6.75 MHz +/- 0.2 dB
SD: K-Factor	< 1%
SD: SCH Phase	< 1 degrees
SD: Differential Gain	< 1.2%
SD: Differential Phase	< 0.6%
S/N	HD/SD > 50 dB
Chroma Luma Delay	< 2 ns
SD: Y/C Separation	5-line adaptive comb / Notch
Conversion Time	>1H
Digital Outputs:	4 HD/SD (tracking input) with EDH
Quantization	Input & internal processing 12-bit
Output Return loss	SD>17 dB
Output Error Coding	SMPTE EDH
Jitter (Bar input)	HD: Meets SMPTE HD jitter spec. SD: <0.10
Operating Temperature Range	40 -110 degrees F (5-43C)
Humidity	(non-condensing)
Power Input	+5-20 VDC 4 W
Size	BNC-BNC 6"x3"x1" (153x76x25mm)

This product is not authorized for use in life support systems. Product liability limited only to the replacement of this unit. Cobalt Digital Inc. does not assume any liability for loss of use due to failure of this component.

Specifications subject to change without notice.

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