COBALT®

FUSION 3G® Engineering Release Notes

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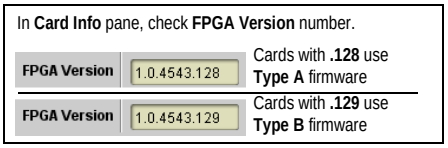
You can update your card by downloading the new Update software by going to the **Support>Firmware** link at www.cobaltdigital.com. Download "Firmware Update Guide", which provides simple instructions for downloading the latest firmware for your card onto your computer, and then uploading it to your card through DashBoard™. **Software updates are field-installed without any need to remove the card from its frame**.

The table below lists released software versions and describes the corresponding functions additions, improvements and/or corrections. The list is applicable for all Fusion3G® cards.

Notes:
- If your card is licensed (or is being licensed) for +ENCD or +ENCE Dolby® encoders, and the DSP version number indicated here is **not** the same as the DSP version shown on the card's current **Card Info** TI DSP Version 1.0.3165 display, an upgrade upload may take **up to 15 minutes** due to the extra time required in uploading the new DSP programming. Please plan accordingly if the card is expected to be used immediately after upload for on-air re-connection.
- To support some features, Fusion3G® cards may utilize different hardware builds, with the appropriate update software needing to be selected when doing an upload. (See right). This is described further on our **Support>Firmware** web page.
- Some features and/or functions described below are available on a card only when certain licensable features or hardware options are present.
- Date ranges are approximate. Software versions listed may not be available for all Fusion3G® cards; refer to **Support>Firmware** web page for specific card firmware availability.



Software Version (Date)	Description
7207 (12/2/2016 – present) (FPGA Version: 1.0.7148.128 (Type A card) 1.0.7150.129 (Type B card) (DSP Version: 7193)	**Improvements:** • Expanded DashBoard status messages shown on Closed Captioning page clarifies closed captioning and CGMS status reporting. **Additions:** • Adds DashBoard control to disable NULL CDP insertion when there are no incoming packets (default setting is Enabled setting which allows NULL CDP insertion even if no packets are incoming). ⚠ Due to production maintenance, this release contains new Dolby Encoder DSP code. Upload of this version will result in the card being offline for over 15 minutes. Perform upload only when this offline interval can be accommodated.
7167 (2/10/2016 – 12/2/2016) (FPGA Version: 1.0.7148.128 (Type A card) 1.0.7150.129 (Type B card) (DSP Version: 7079)	**Corrections:** • (Option +UM) Fixes factory default upmixing line-up to correspondingly use card Bus Channels 1 thru 6 as line-up for L-R-C-LFE-LS-Rs. • Fixed a control issue where upmixer speed of 100ms would jump to instant when 100ms was selected. This was a status-only issue; the DSP was correctly programmed for 100ms. **Additions:** • Adds card-edge reference LED support. If both REF1 and REF2 references are invalid the REF led will toggle on and off. If either reference is valid regardless of its use the LED will remain lit solid. • Adds a response to an automation control transition speed message.
7156 (4/22/2014 – 2/10/2016) (FPGA Version: 1.0.7148.128 (Type A card) 1.0.7150.129 (Type B card) (DSP Version: 7079)	**Improvements:** • Improved card reset actions when changing scaler settings with active input video. **Additions:** • Adds support for Ancillary Packet Reporter (+APR) option. This option allows entering a packet DID and packet SDID. For the entered DID, presence of the packet is shown, including details showing last presence and line location and any errors. • On scaler-equipped cards, adds an inter-frame motion detection optimization which optimizes performance for motion or still video usage (normal setting is Disabled – Optimized Motion Performance).
7082 (10/31/2013 – 4/22/2014) (FPGA Version: 1.0.7034.128 (Type A card) 1.0.7037.129 (Type B card) (DSP Version: 7079)	**Improvements:** • Significant expansion of multiple Dolby® Digital / Digital Plus encoding modes to now also include: - Single 3/2L Digital Plus + Dual 2/0 Digital/Digital Plus - Dual 3/2L Digital + Dual 2/0 Digital/Digital Plus - Quad 2/0 Digital/Digital Plus See Fusion3G® Dolby Digital Encoder Supplement (OPT-SW-F3GENCD-MS(V1.3) for full details. **Note:** Multiple encoding mode viability can be affected by program material complexity and encoding bit rates. ⚠ This release contains new DSP code. Upload of this version will result in the card being offline for over 15 minutes. Perform upload only when this offline interval can be accommodated.

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Software Version (Date)	Description
7039 (9/27/2013 – 10/31/2013) (FPGA Version: 1.0.6996.128 (Type A card) 1.0.6998.129 (Type B card) (DSP Version: 6349)	**Corrections:** • Fixes error where the AFD field 1 and field 2 insertion ranges were hard coded with values that were only appropriate for SD PAL. The field 1 and field 2 insertion ranges now cover the full range usable for all output formats. **Note:** The default settings in this software are appropriate for HD output formats. After upgrading using this software, if the default settings are not appropriate for your usage, set the AFD field 1 and field 2 settings now as desired. • If an SDI input on SDI IN B was lost (and an input was present on SDI IN A), the card could unexpectedly revert to SDI IN A. The input selection now remains in effect regardless of active input presence/absence or adjacent-input signal presence/absence. **Additions:** • Adds card-based SNMP support. **Note:** This is functional only where frame network controller card is licensed for SNMP support. • Adds sample rate display for AES inputs. **Improvements:** • The removal of incoming SMPTE2020 packets is now enabled when SMPTE2020 insertion is enabled. • With framesync enabled, improved handling of input switches specifically optimized when a scaler is bypassed (or on cards not equipped with a scaler) and alternate optimization applied in cases where a scaler is being used. • Where new SMPTE 2020 metadata is not being generated, duplication of “old” metadata is now disabled.
7039 (cont.)	**Known Issues:** • (**Events Based Presets** tab) In rare cases when using the **Events Based Presets** Dolby Decoder Detected Format controls, if an alternate go-to condition is not defined when a former condition and its defined preset goes inactive, while the row definitions may as expected show “Inactive”, a formerly engaged preset could however be unexpectedly engaged when going to the undefined go-to condition. For example, if 720p5994 - E8x1 and 720p5994 - D3/2 conditions are defined with respective go-to presets 4 and 6, a go-to condition of 720p5994 - E2+2 could erroneous engage preset 4 again (even though this condition is not defined and the event “LEDs” all display Inactive. This known issue is not limited to this release. This issue can be prevented through proper use of this tab by making certain all definable event conditions that the card might be expected to “see” are defined in any of the **Event 1** thru **Event 64** rows. This makes certain that the card will always have a defined “go-to” preset if a particular event occurs. For example, if the card is expected to “see” a 720p5994 / Dolby E5.1+2 stream or as an alternate, a 525i5994 / PCM stream, make certain both of these conditions are defined (with your desired go-to presets) in any two of the Event 1 thru Event 64 condition definition rows. • (**Output Audio Routing/Controls** tab) When using the **AES Port Direction** controls for an AES pair, only the even-channel control of the pair responds to DashBoard control. (For example, to change AES pair 1 from input to output, click on the **AES Ch 2 AES Out** direction radio button.) • (**Input Audio Status** tab) With **SRC** set to Off when receiving a PCM pair over an AES input, Status may display “NULL code 0, Line 0” or “Data” instead of the expected “PCM” message. The **Peak** field may also display “Data” instead of the dBFS levels for the pair. This issue is related only to the DashBoard display; the processing, control, and passthrough of PCM AES pairs is not affected in any way by this issue.

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Software Version (Date)	Description
6867 (2/25/2013 – 9/27/2013) (FPGA Version: 1.0.6861.128 (Type A card) 1.0.6865.129 (Type B card) (DSP Version: 6349)	**Corrections:** • Cards equipped with a scaler (and with the scaler enabled) use an extended interval to freeze a frame or output black frames while the scaler sets up during a reset on changed video. This functionality was erroneously extended to also be present when the scaler was bypassed, and also on cards not equipped with scaling. This unnecessary extended reset interval has been removed, allowing faster resumption to active, stable video output following an input change. • Support for Auto Downmix (+ADM) option. In the event of loss of SAP audio, automatically replaces the SAP stereo pair with an alternate downmix derived from 5.1 channels you select (for example, loss of SAP on Emb Ch 7/8 can be failed over to a downmix of Emb Ch 1-6). User-configurable trigger threshold and engage/revert-to-normal holdoff timing. **Known Issues:** • (**Events Based Presets** tab) In rare cases when using the **Events Based Presets** Dolby Decoder Detected Format controls, if an alternate go-to condition is not defined when a former condition and its defined preset goes inactive, while the row definitions may as expected show “Inactive”, a formerly engaged preset could however be unexpectedly engaged when going to the undefined go-to condition. For example, if 720p5994 - E8x1 and 720p5994 - D3/2 conditions are defined with respective go-to presets 4 and 6, a go-to condition of 720p5994 - E2+2 could erroneous engage preset 4 again (even though this condition is not defined and the event “LEDs” all display Inactive. This known issue is not limited to this release. This issue can be prevented through proper use of this tab by making certain all definable event conditions that the card might be expected to “see” are defined in any of the **Event 1** thru **Event 64** rows. This makes certain that the card will always have a defined “go-to” preset if a particular event occurs. For example, if the card is expected to “see” a 720p5994 / Dolby E5.1+2 stream or as an alternate, a 525i5994 / PCM stream, make certain both of these conditions are defined (with your desired go-to presets) in any two of the Event 1 thru Event 64 condition definition rows. • (**Output Audio Routing/Controls** tab) When using the **AES Port Direction** controls for an AES pair, only the even-channel control of the pair responds to DashBoard control. (For example, to change AES pair 1 from input to output, click on the **AES Ch 2 AES Out** direction radio button.) • (**Input Audio Status** tab) With **SRC** set to Off when receiving a PCM pair over an AES input, Status may display “NULL code 0, Line 0” or “Data” instead of the expected “PCM” message. The **Peak** field may also display “Data” instead of the dBFS levels for the pair. This issue is related only to the DashBoard display; the processing, control, and passthrough of PCM AES pairs is not affected in any way by this issue.
6812 (12/4/2012 – 2/25/2013) (FPGA Version: 1.0.6805.128 (Type A card) 1.0.6808.129 (Type B card) (DSP Version: 6349)	**Corrections:** • GPO1 and GPO2 are now functional for both Type A and B cards. **Known Issues:** • (**Events Based Presets** tab) In rare cases when using the **Events Based Presets** Dolby Decoder Detected Format controls, if an alternate go-to condition is not defined when a former condition and its defined preset goes inactive, while the row definitions may as expected show “Inactive”, a formerly engaged preset could however be unexpectedly engaged when going to the undefined go-to condition. For example, if 720p5994 - E8x1 and 720p5994 - D3/2 conditions are defined with respective go-to presets 4 and 6, a go-to condition of 720p5994 - E2+2 could erroneous engage preset 4 again (even though this condition is not defined and the event “LEDs” all display Inactive. This known issue is not limited to this release. This issue can be prevented through proper use of this tab by making certain all definable event conditions that the card might be expected to “see” are defined in any of the **Event 1** thru **Event 64** rows. This makes certain that the card will always have a defined “go-to” preset if a particular event occurs. For example, if the card is expected to “see” a 720p5994 / Dolby E5.1+2 stream or as an alternate, a 525i5994 / PCM stream, make certain both of these conditions are defined (with your desired go-to presets) in any two of the Event 1 thru Event 64 condition definition rows. • (**Output Audio Routing/Controls** tab) When using the **AES Port Direction** controls for an AES pair, only the even-channel control of the pair responds to DashBoard control. (For example, to change AES pair 1 from input to output, click on the **AES Ch 2 AES Out** direction radio button.) • (**Input Audio Status** tab) With **SRC** set to Off when receiving a PCM pair over an AES input, Status may display “NULL code 0, Line 0” or “Data” instead of the expected “PCM” message. The **Peak** field may also display “Data” instead of the dBFS levels for the pair. This issue is related only to the DashBoard display; the processing, control, and passthrough of PCM AES pairs is not affected in any way by this issue.

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Software Version (Date)	Description
6748 (10/18/2012 – 12/4/2012) (FPGA Version: 1.0.6742.128 (Type A card) 1.0.6746.129 (Type B card) (DSP Version: 6349)	**Note:** Due to functional additions, we recommend obtaining a new manual for your Fusion3G® card after uploading this firmware version to your card. Download the manual (pdf) from the card Product page or at Cobalt>Support>Documents>Product Information and Manuals. **Corrections:** • (+KEYER option only; Type B card) "Format Mismatch" nuisance DashBoard indication corrected. (See 6188 Known Issues for reference.) • Potential for AES embedding misalignment corrected, which in rare cases could result in noise on embedded AES audio. **Additions:** • Adds support for Auto Downmix (+ADM) option. In the event of loss of SAP audio, automatically replaces the SAP stereo pair with an alternate downmix derived from 5.1 channels you select (for example, loss of SAP on Emb Ch 7/8 can be failed over to a downmix of Emb Ch 1-6). User-configurable trigger threshold and engage/revert-to-normal holdoff timing. • Adds support for Auto Audio Failover (+AFO) option. In the event of loss of any audio input to the card, automatically fails over to any alternate input channel you select (for example, loss of Emb Ch 1 or 2 can be replaced with Analog Ch 1 or 2). User-configurable trigger threshold and engage/revert-to-normal holdoff timing. • Adds embedded audio group enable/disable controls. • Adds support for CGMS (+CGMS) option which allows insertion of CGMS data into the closed-captioning stream. **Improvements:** • New Event-Based loading allows a defined preset to be automatically engaged upon various received signal status (input video format, Dolby® formats detected, or audio silence on specified channels). Event-based loading is particularly useful for automated card setup when transitioning from normal processing to processing supporting an alternate format. • Revised timecode controls to allow timecode to be inserted on up to line 40 for 1080p timecode. • Embedded processing upgraded to better tolerate malformed HD audio packets (typically due to upstream switching outside of safe SAV/EAV areas). **Known Issues:** • (**Output Audio Routing/Controls** tab) When using the **AES Port Direction** controls for an AES pair, only the even-channel control of the pair responds to DashBoard control. (For example, to change AES pair 1 from input to output, click on the **AES Ch 2 AES Out** direction radio button.) • (Type B firmware only) GPO1 and GPO2 do not function. If GPO is required, do not use this release. • (**Input Audio Status** tab) With **SRC** set to Off when receiving a PCM pair over an AES input, Status may display "NULL code 0, Line 0" or "Data" instead of the expected "PCM" message. The **Peak** field may also display "Data" instead of the dBFS levels for the pair. This issue is related only to the DashBoard display; the processing, control, and passthrough of PCM AES pairs is not affected in any way by this issue.
6350 (6/20/2012 – 10/18/2012) (FPGA Version: 1.0.6337.129 (Type A card) (DSP Version: 6349)	**Corrections:** • Fixed Dolby bitrate output which now is set to the correct bitrate instead of bitrate+1. • Enabled EDH for SD outputs • Fixed Dolby E alignment – Also fixed Dolby E passthrough alignment to provide correct auto-align. • op47 field 2 now on correct line. • VI is now output when the input is lost and framesync is set to flat field freeze or tsg. • Fixed EDH insertion for SD (previously EDH may have been enabled for HD signals). **Improvements:** • Revised timecode controls to allow timecode to be inserted on up to line 40 for 1080p timecode. **Known Issues:** • When up-converting to a 1080p (3G) output, a channel pair timing error (imbalance exceeding 2 samples) can result in corruption of Dolby E encoded pair passed on an embedded channel pair. In this condition, the channel pair will not be recognized as Dolby data by downstream devices. (This issue is valid also for previous firmware versions. This issue is currently being addressed.)

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Software Version (Date)	Description
6188 (3/20/2012 – present) (FPGA Version: 1.0.6044.128 (Type A card) 1.0.6048.129 (Type B card) DSP Version: 6136)	**Additions:** • Adds Reference 2 frame input selection and failover rules. Allows automatic switchover between reference 1 and 2 as failover choices. • Adds Dolby® E alignment control that allows alignment to reference, output video, or no alignment. • (+AES option only) Adds SRC bypass on/off control for AES embedding. • Adds timecode priority choice of Disable to existing choices. **Improvements:** • Improved responsiveness to video input changes and output format changes. • Improved on-card Dolby encoder performance upon video input switching to only Dolby stream when stabilized, thereby preventing transient CRC errors. • Improved card remote control communications to speed up transactions. **Known Issues:** • (+KEYER option only) Although the card allows flexible selection from the four SDI inputs assignable for program video, key and fill inputs, the “Format Mismatch” DashBoard indicator may appear if the following input assignment is not used: - program (SDI B) - key (SDI C) - fill (SDI D) • (+COLOR option only) When a color corrector column gang is enabled, the DashBoard visual feedback of the control ganging has the master (“moved”) control moving normally, but the slaved controls may not immediately respond. The controlled parameters are indeed moved smoothly and in unison; only the DashBoard visual movement is affected.
5551 (12/8/2011 – 3/20/2012) (FPGA Version: 1.0.5523.128 (Type A card) 1.0.5557.129 (Type B card) DSP Version: 4529)	**Additions:** • Adds support for 1080psf 23.98/24/25 as input, pass-thru, or scale-to. **Note:** Format conversions from psf to other formats may experience some image motion irregularity in the converted output. • Adds support for PAL-M composite and Y/C analog video outputs. **Improvements:** • Improved card processing stability. In case of an internal error, an error message and diagnostic log file is automatically generated.