



## USER GUIDE

### ONBOARD S RECORDER RECORDING ARRIRAW 4:3

REVISION 11.22.2012



## Safety Warnings

Please observe any warnings and follow all instructions.

- Do not use this equipment near water and clean only with a dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other equipment (including amplifiers) that produce heat.
- Do not expose to excessive vibration, or drop this product.
- Do not defeat the safety purpose of the polarised or grounding-type plug. A polarised plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade, or the third prong, is provided for your safety.
- If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched, particularly at plug ends, convenience receptacles, and the point where they exit from the equipment.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the equipment.
- Unplug this equipment during lightning storms or when not in operation for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the equipment has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the equipment, has been exposed to rain or moisture, does not operate normally, or has been dropped.
- To reduce the risk of fire or electric shock, do not expose equipment to rain or moisture.
- To avoid electrical shock, do not attempt to open this equipment. Refer servicing to qualified personnel only.

## Disclaimer

Codex products are continually developed to remain at the forefront of the industry, and as such the information in this guide is subject to change without notice. Whilst Codex endeavour to ensure that all documentation provided is correct at the time of writing, this document is not guaranteed to be error-free.

Codex does not assume responsibility for issues or losses due to misinterpretation of the information in this document, errors in this document, or incorrect configuration or installation of the equipment described herein.

Please report any errors found in this document to **[support@codexdigital.com](mailto:support@codexdigital.com)**

## Support and Servicing

For assistance with your Codex Onboard S Recorder please contact **[support@codexdigital.com](mailto:support@codexdigital.com)**  
For servicing please contact **[service@codexdigital.com](mailto:service@codexdigital.com)**

## 1. Shooting ARRIRAW 4:3 (2D camera)

This document describes how to configure the Onboard S to record ARRIRAW 4:3 images from a single ARRI Alexa camera.

There is a **Quick Settings Guide** for configuring the Alexa and Onboard S available from [www.codexdigital.com/support/recorders](http://www.codexdigital.com/support/recorders)

The **Codex Onboard S Getting Started Guide** covers the general functions of the Codex Onboard S Recorder (Onboard S), including how to use the Control Panel to interact with the menu system. It is available from here:

[www.codexdigital.com/assets/downloads/Codex\\_Onboard\\_S\\_Getting\\_Started\\_Guide\\_r29.05.12.pdf](http://www.codexdigital.com/assets/downloads/Codex_Onboard_S_Getting_Started_Guide_r29.05.12.pdf)

## 2. Software versions

We assume the following hardware/software versions:

**ARRI Alexa Studio, Alexa Plus 4:3, or Alexa M - SUP7.0**  
**Codex Onboard S Recorder - 2012.r2.2610**

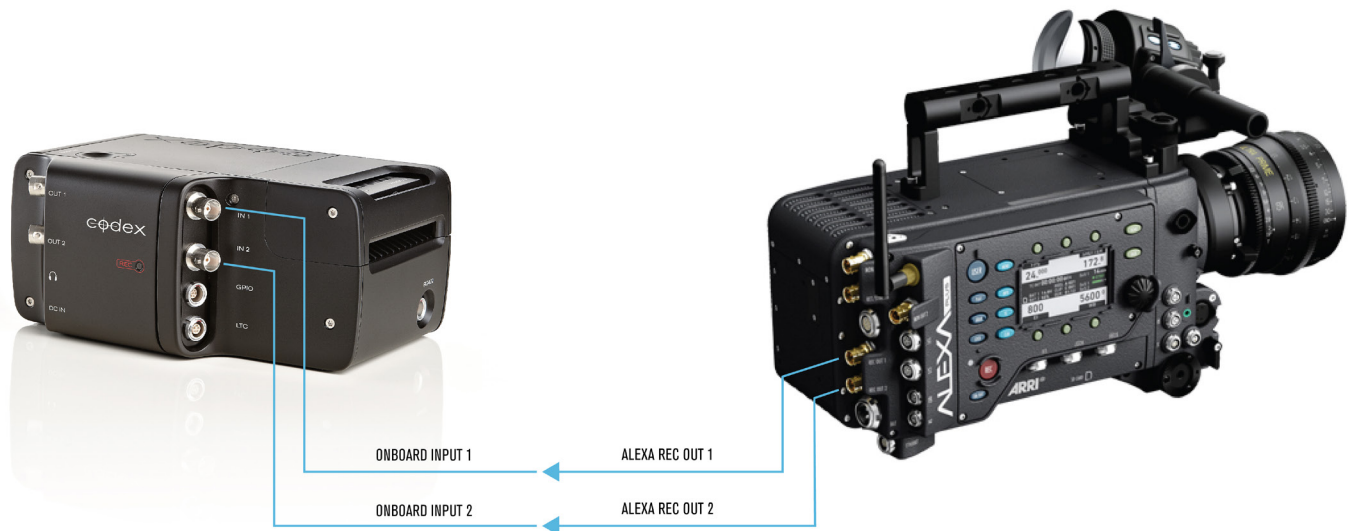
To view the software version on a Onboard S use the Control Panel to navigate to the "Setup->System" menu screen. The version number will be shown at the top of the screen. If the Onboard S needs to be updated, installation packages and instructions can be found at <http://www.codexdigital.com/software>

The Alexa firmware version can be viewed using the menu system on the side panel of the camera; press the "INFO" button, then the multipurpose button labelled "SYSTEM".

## 3. Connecting the Alexa to the Onboard S

Connect a BNC cable from the **REC OUT 1** connector on the Alexa to **IN 1** on the Onboard S, and from the **REC OUT 2** connector on the Alexa to **IN 2** on the Onboard S.

**Note:** if using an Onboard M connect **REC OUT 1** to **IN 1** and **REC OUT 2** to **IN 3**.



Whilst some formats only require the first cable (up to 30fps), for simplicity both cables can always be connected.

## 4. Menu settings for the Alexa

The Alexa's MENU ► RECORDING ► REC OUT should be configured as follows:

Frame Rate: <your choice>

HD-SDI format: **ARRIRAW 3G SL** (for up to 30fps) or **ARRIRAW 3G DL** (for above 30fps)

Scan format: **p**

Output range: **Raw**

REC OUT fps sets sensor fps: **On** (when shooting at 23.98, 24.00, 25.00, 29.97, 30.00, 48.00) or **Off** (when shooting offspeed/vari-frame)

SDI remote: **On**

Variflag: **On**

Set the HD-SDI format first and most other settings will be set automatically.

If you want the Onboard S to record the timecode from the Alexa, set the Alexa's TIMECODE ► OPTIONS as follows:

Source: **Int TC** or **Ext LTC** (depending on user requirements)


Mode: **Free Run**

## 5. Menu settings for the Onboard S

The majority of menu settings on the Onboard S can be set at the start of a shoot and kept for the duration of the project. We will cover these menu items first, then move on to the settings that a camera crew might change on a day-to-day basis.

### 5.1 Quick review on entering the Setup menu using the Control Panel

Press the  **Main Menu** button. The main menu options of "Monitor | Play | Setup | Storage" will be displayed at the bottom of the screen.

Press the  Setup button. The list of all Setup pages will be displayed. You can scroll through the page titles using the wheel on the Control Panel. Press the centre of the wheel to select a particular Setup page.

### 5.2 Before a shoot: Project-wide settings



This menu allows you to set global metadata that is applied to recorded clips. When a recording is made, the current values are stored with the new clip. The default values are shown below (most are blank).

► Production:	CODEX
Production Company:	
Unit:	
Director:	
DP:	
Location:	
Codex Operator:	

The "Production" metadata is the only significant field. Here you should enter the name of your production (usually in UPPERcase). MXF file deliverables will use this to set the Avid Bin name.



This menu defines how the shot and roll names are applied to recordings. These settings are usually decided in advance of a shoot - often in consultation with Editorial and Post Production departments. There are presets that are suitable for the vast majority of shoots.

(However, expert users may choose to customise these settings.)

Press the 'Next' button of the Control Panel to move through the presets for 'Shot Naming Rule' and 'Roll Naming Rule' on the Setup->Slate menu.

There are two basic ways to work: record to the Onboard S only, or record to Onboard S and in-camera SxS at the same time.

If using an Onboard S only workflow then all deliverables will be generated from the same source, and these naming rules may be used:

► Shot Naming Rule: | "{Scene}-{Take}\_{r}"  
Roll Naming Rule: | "{SourceId}{Datapack}"

If recording to Onboard S and in-camera SxS you may want the naming to match on the two systems. In this case these naming rules may be used:

► Shot Naming Rule: | "{AlexaSxSName}"  
Roll Naming Rule: | "{AlexaReel}"

Note: The {AlexaSxSName} contains the date. This is generated by the Onboard from it's internal clock, since the date is not currently passed in the video stream. Therefore it's important to check the Onboard clock matches the Alexa if this metadata is to be used. The Onboard time and date can be set from the SETUP->Date/Time menu.

Note: When on set, the take number only increments when a recording has been started on the Alexa, so whilst in Monitoring mode the take on both the camera display and the Onboard refers to the previous rather than the next recording.



For a typical 2D camera shoot, the most important setting on this page is "Source ID". This is usually set to be the camera identification letter, the default being "A". It is important that each Onboard S on a production uses a different "Source ID", so that Editorial can differentiate between them.

The other fields such as "Source Name" and "Serial No" can be filled out for information and tracking purposes.

► Source Name: | ARRI Alexa  
Source ID: | A  
Serial No: | <This is auto detected by the Onboard S>



This menu controls how recording is triggered.

It is possible to start/stop the Codex Onboard recorder using the Alexa's "REC" button.

Set "Record Trigger" to "SDI" trigger recording from the camera and/or if you wish to synchronise with SxS recording.

Set "Record Trigger" to "GPI" if you wish to use a custom electrical trigger into the GPIO connector, or "None" if you intend to use the RECORD/STOP buttons on the recorder to start/stop recording.

**WARNING:** the "Hold" button on the Control Panel should be engaged when using the SDI record trigger from ARRI Alexa, otherwise the "Stop" button will still be active during recording and takes could be cut by accidentally pressing the button.

► Record Trigger: | None or SDI or GPI

The other menu items only affect “GPI” triggering:

▶ GPI Polarity:	Low or High
GPI Type:	Latching or Momentary
GPO Polarity:	Low or High

These should describe the type of electrical GPI trigger that is being used. These items are ignored if “Record Trigger” is set to “SDI” or “None”.



The Onboard S has a network port for remote control and software updates. The network IP configuration can be set here:

▶ IP:	10.82.95.101
Mask:	255.255.255.0
Gateway:	10.82.95.1
DNS:	INVALID

The “System control” setting determines whether remote Codex UI software is allowed to take control of the recorder. This can be set to “Locked” to prevent a network user from taking control of the recorder.

▶ System control:	Unlocked
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The next three settings determine the brightness level of the Codex light rings and the Control Panel LCD display. The user can pick a level in the range 0 (dim/off) to 15 (bright), and the default level is 12.

▶ Screen contrast:	12
Control ring bright:	12
Main ring bright:	12

The Onboard S recorder can take an input voltage from 10.5-34V (24V or above is normally used). By default it will shut down if the voltage drops below 10V. You can increase the voltage level at which the recorder shuts down in order to protect some types of battery, but this is not commonly done:

▶ Shutdown volts:	Default
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### 5.3 During a shoot: Video/Audio/Timecode settings

Here we describe the menu settings that are likely to change during a shoot; Video, Audio, and Timecode..

There is a Quick Settings Guide available from [www.codexdigital.com/support/recorders](http://www.codexdigital.com/support/recorders)

First we will deal with the video settings on the Onboard S.



To configure the Onboard S for ARRIRAW 4:3, first set the format to match the output from the Alexa:

▶ Format:	ARRIRAW-2160p (this is the technical name for ARRIRAW 4:3)
Storage:	12-bit Bayer

The [Fps] setting on the recorder should match the REC OUT frame rate from the camera.

▶ Fps:	23.98, 24.00, 25.00, 29.97, 30.00, 48.00
Quality:	1:1 (Uncompressed)
Channels:	1
Aspect:	Square (for spherical lenses) or Anamorphic x1.3 or Anamorphic x2

The Alexa supports variframe flags over the HD-SDI outputs, so it is possible to record ARRIRAW at non-HD speeds such as 36fps. When shooting variframe you must ensure that:

- The Onboard recorder's "SETUP->VIDEO->Variframe" setting is set to "On".
- The Alexa's "MENU->RECORDING->REC OUT->Variflags" setting is set to "On".
- The camera's REC OUT is set to a frame rate that is equal to or higher than the frame rate you wish to capture. For example, to capture 36fps you would have to set the camera REC OUT to 48.00, and configure the recorder to match.

► Variframe: | **Off** (for standard frame rates) or **On** (for non-standard frame rates)

**Note:** It is important to only set Variframe to On when recording non-standard frame rates. This is because audio capture on the Onboard recorder is disabled and also it will only record 'flagged' frames when in variframe recording mode, so it is good practice to set the Onboard recorder's variframe setting to "Off" when shooting at normal HD frame rates (23.98, 24.00, 25.00, 29.97, 30.00, 48.00).

► Input: | 3G  
Output: | 422  
Play Sync: | Internal



If you require that the timecode for the ARRIRAW recording exactly matches the timecode recorded to in-camera SxS media, or you would simply like to use the camera as a timecode source, then set "TC source: HD VANC".

If you do not require that ARRIRAW timecode matches SxS recordings, then choose any "TC source" or "AUX source".

The Onboard S can capture Focus, Iris, and Zoom data (if an LDS compatible lens is used) as well as Tilt and Roll data from the Alexa. To capture this data per-frame set Metadata as ARRI.

When using the "TC source: HD VANC" setting it is important to set "Fix TC Breaks" to "No" and not to use any delay settings:

► TC source: | HD VANC  
AUX source: | HD VANC UB  
Metadata: | ARRI  
Fix TC break: | No  
Video delay: | None  
TC delay: | None



Configure the audio settings to your projects' requirements. The Onboard S recorder supports up to 8 channels of embedded digital audio (HD AiV):

► Input: | HD AiV  
Channels: | None, 1, 2, 4, 6, 8 [Number of channels. Set to "None" if no audio is required]  
Bits: | 24

## 5.4 During a shoot: Monitor and Play settings

When on the Monitor and Play screens the "Options" button is available on the left button under the display.



The following are sensible defaults:

► LUT:	<off>
Volume:	15
Play loop:	Repeat
Play range:	All
Tc/Play rate:	Default, 23.98, 24.00, 25.00, 29.97, 30.00, 47.95, 48.00, 50.00, 59.97, 60.00
Play chans:	All
TC source:	TC
TC type:	Standard

It is possible to force a particular Tc/Play rate. It is recommended to set this to the correct rate for your project, which will mean that:

1. The Timecode displayed on the Onboard S matches the timecode displayed on the Alexa when shooting off-speed.
2. Off-speed / varispeed clips are always played back at the intended projection rate.

**Note:** when shooting high frame rates the timecode will count faster than real-time. For example, if shooting 48fps for a 24fps project, the timecode will count up at twice real speed.



## Notes

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