

# 360 DESIGNS

## J-Box Manual



### **Package Contents**

360 Designs custom made J-Box  
7-Pin DIN connector fly lead  
1 x Power In locking DC connector  
This manual

## INTRODUCTION

The Blackmagic J-Box, available exclusively from [360 Designs](#), is the world's first commercially available breakout box for the Blackmagic Micro Cinema Camera and Blackmagic Micro Studio 4k Cameras . With the breakout box you can readily take advantage of the many expansion capabilities of these pro-grade micro cameras, in a convenient and accessible way, to control and synchronize up to 4 cameras from a single box.

The box makes use of the DB-HD15 (DE-15) expansion connectors on the Blackmagic cameras, which use a proprietary pinout, to breakout all the key connectors – Power, Genlock, Audio, Timecode, LANC and Futaba S-BUS (via terminal block) and combine them in a single distribution or junction box for 4 cameras.

### Blackmagic Micro Cinema Camera Connectors



1 Ground	6 Power	11 Ground
2 S.Bus	7 Ground	12 Analog Servo Ch3
3 Analog Servo Ch1	8 Analog Servo Ch2	13 Analog Servo Ch4
4 Ground	9 LANC	14 +5v
5 Genlock	10 LANC Power	15 Composite Video Out

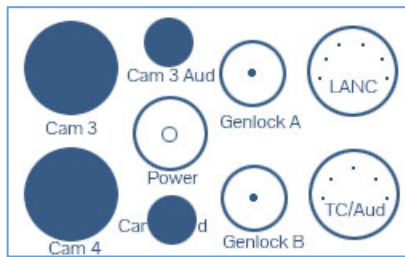
The box is primarily intended for 3D, 360 video and time slicing (aka Bullet Time) effects, where multiple Blackmagic cameras need to be conveniently controlled and synchronized.

The unit includes an onboard DC/DC converter, allowing the use of much higher capacity LiPo batteries, up to 10S (37v), to power multiple cameras from a single battery. A 12v accessory port (Power Out) is also provided.

While it is possible to solder your own cables for the Blackmagic cameras, the connectors are [hard to track down and spec](#), and are quite tricky to solder. Each J-Box includes almost 100 connections, are hand built, and take two days to make. Our product is designed to make connecting to these useful options on the Blackmagic Micro camera super easy and fun.

With a bit of creativity you can use take advantage of our custom J-Boxes to rapidly prototype a LiPo powered 360 video rig, or time slicing (Bullet Time) rig, using the Blackmagic micro cameras.

## INPUTS



The J-Box takes the following inputs (**LEFT SIDE OF BOX**):

- 18-37v Power In (any 18v to 37v power source)
- Genlock A In (optional)
- Genlock B In (optional)
- Timecode + Audio In (optional / optional)
- LANC In (optional)

These are distributed to 4 cameras via the following outputs:

- Cam 1 D-Sub + Cam 1 Audio Fly Lead
- Cam 2 D-Sub + Cam 2 Audio Fly Lead
- Cam 3 D-Sub + Cam 3 Audio Fly Lead
- Cam 4 D-Sub + Cam 4 Audio Fly Lead

There are also the following power outputs (**RIGHT SIDE OF BOX**):

- 18-37v Out (for daisy chaining)
- 12v Out (to power an accessory box)

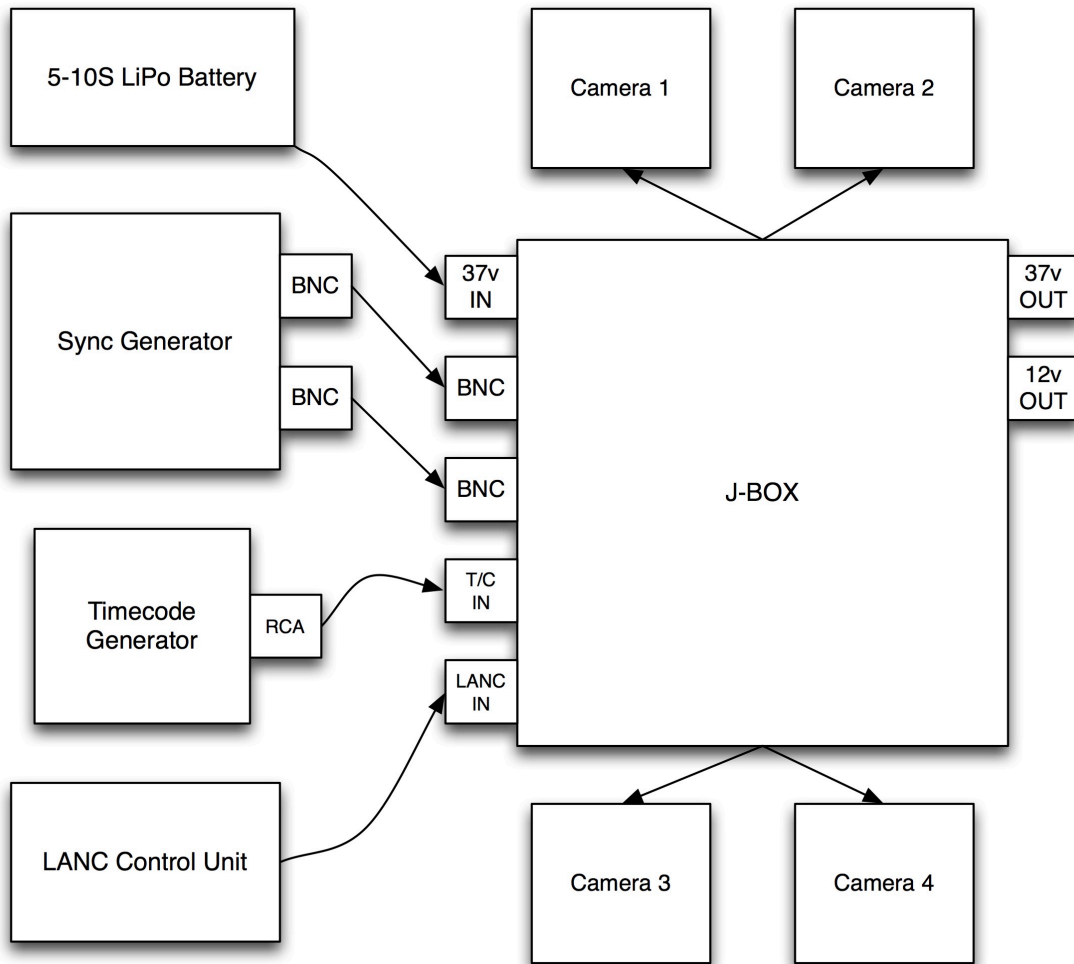
**\*\* DO NOT ACCIDENTALLY CONNECT 37v TO THE 12v CONNECTOR. THIS WILL DAMAGE THE DC/DC CONVERTER \*\***

**\*\* DO NOT REVERSE POLARITY ON THE DC CONNECTORS \*\***

## TYPICAL CONFIGURATION

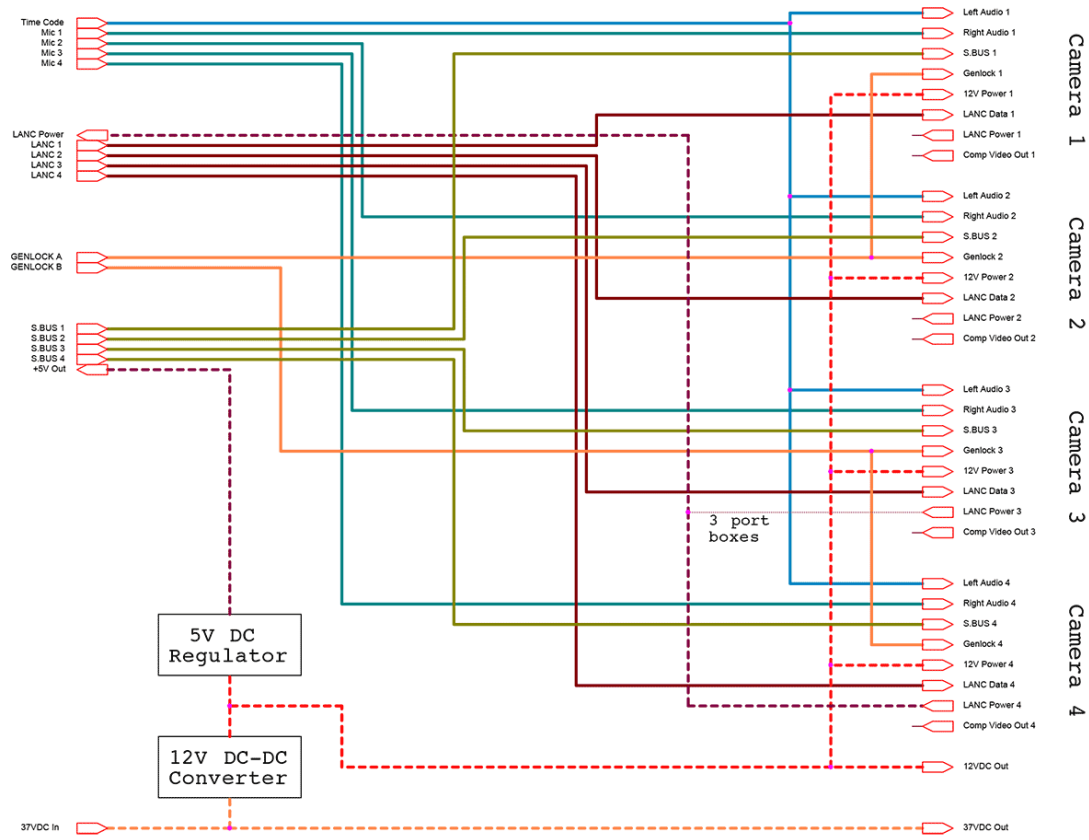
In a typical configuration you would connect a timecode generator, sync generator, LANC controller (or S-Bus controller) and a 5-10S LiPo battery to the J-Box, along with 4 cameras.

J-Box Connection Diagram (typical)



# SCHEMATIC / WIRING DIAGRAM

This diagram shows the connections inside the box. Note the S-Bus connections are not replicated externally, but are available internally via a terminal strip.

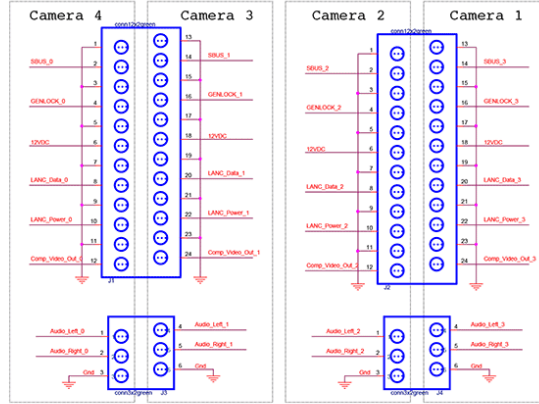


# PINOUT

These are the pinouts for the J-Box

DB15HD	
Ground	Pin 1
S.BUS	Pin 2
Ground	Pin 4
Genlock	Pin 5
Ground	Pin 7
12V Power	Pin 6
Ground	Pin 7
LANC Data	Pin 9
Ground	Pin 11
LANC Power	Pin 10
Ground	Pin 11
Comp Video Out	Pin 15

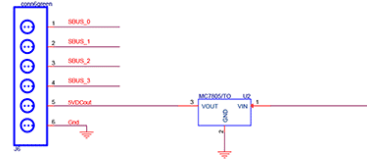
1/8" Mini Jack	
Left Audio	Tip
Right Audio	Ring
Ground	Sleeve



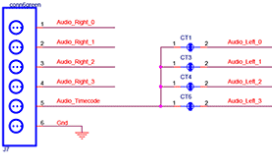
LANC Connector	
LANC Data	Pin 4
LANC Data	Pin 3
LANC Data	Pin 2
LANC Data	Pin 1
LANC Power	Pin 5
Ground	Pin 6



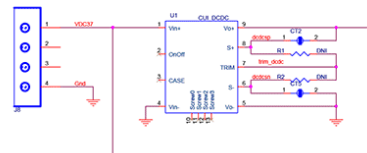
S.BUS Breakout	
S.BUS 1	
S.BUS 2	
S.BUS 3	
S.BUS 4	
+5V out	
Ground	



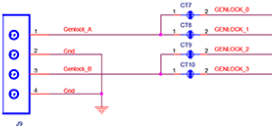
Timecode & Audio	
Mic 1	Pin 4
Mic 2	Pin 3
Mic 3	Pin 2
Mic 4	Pin 1
Timecode	Pin 5
Ground	Pin 6



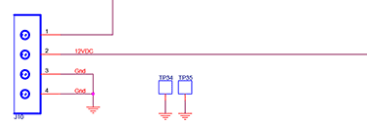
37VDC Power In/Out	
37VDC In	Tip
Ground	Sleeve



Genlock BNCs	
Genlock A	Tip A
Ground	Sleeve
Genlock B	Tip B
Ground	Sleeve



12V & 37 V Power Out	
37VDC Out	Tip
12VDC Out	Tip
Ground	Sleeve
Ground	Sleeve



## BLACKMAGIC J-BOX TECHNICAL SPECS BY 360 DESIGNS

- 4 x Expansion Port (DB-HD15/DE-15) connectors (on the end of 4 x variable 6-12" length cables), to directly connect up to 4 cameras to each box. The maximum distance between any 2 'furthest apart' cameras is approx. 22". A strain relief connector is included on each multi-core cable.
- 2 x 'Genlock' BNC inputs on each box (each BNC input is split to 2 cameras). Now you can use pro-grade timecode generators, with BNC connectors, such as the [Blackmagic Sync Generator](#) or [AJA GEN10](#), and distribute timing/synchronization signals to 4 Blackmagic cameras at once from a single generator. Since each of the above suggested generators have 6 BNC outputs, you can synchronize up to 12 cameras (using 3 J-Boxes) from a single sync generator, without the need for a distribution amplifier.
- 1 x Single LANC input using a [6-pin DIN plug](#). Each of the 4 camera's LANC pins is broken out (replicated) to a pin on this [6-pin DIN socket](#), along with common LANC Power and Ground. LANC is a two-way serial protocol and will require separate logical controllers for each camera. (We're working on a LANC accessory solution here – coming soon).
- 1 x Single Audio/Timecode input via a [7-pin DIN plug](#). 4 channels of mono audio can be fed in to the box and distributed to the 4 left channels on the cameras. A single timecode input can be fed in and distributed to the right channel of each camera, for ease of post-production workflow when dealing with multiple cameras in a 360 or multi-camera rig. We use a 7-pin DIN plug to avoid user confusion with the 6-pin LANC plug. (1 pin is unused).
- 1 x Included robust [DC/DC converter](#) (see [datasheet](#) – we use model VHB200W-Q48-S12) offers the capability for a single 18-37v power source for all 4 cameras. This allows use of higher capacity LiPo's up to 37v (10S). The power input connector is a standard larger 2.5mm barrel connector, with locking ring option. Use [this 2.5mm plug](#) for locking capability. (Note the full 75v input range of our included DC/DC converter is not recommended due to connector specification voltage limits)
- 1 x Single 18v-37v power output using the same 2.5mm connector as above, for daisy chaining power to up to 3 additional J-Boxes, for a total of 4 J-Boxes. More than this is not recommended due to the connector's specified power limit of 150w. Each BMMCC pulls around 8 watts.
- 1 x Single 12v regulated accessory output using a standard 2.1mm 12v connector (max. power 60w) with locking ring capability. Use [this 2.1mm plug for locking capability](#).

- For more details please refer to the schematics
- Total DC/DC converter rating per box: 200 watts
- Dimensions of box: 4.6" x 4.6" x 2.25"
- Weight: 2.5 lbs (inc. expansion cables)
- Model Number: 360-JBOX