

LCUBE CUB-2 LBUS to ENG Protocol Converter

USER MANUAL

Date: 17th April 2019



Imprint

Copyright © 2019 Arnold & Richter Cine Technik GmbH & Co. Betriebs KG. All rights reserved. No parts of this document may be reproduced without prior written consent of Arnold & Richter Cine Technik GmbH & Co. Betriebs KG. Specifications are subject to change without notice. Errors, omissions, and modifications excepted.

ARRI, ALEXA, AMIRA, Master Grip, LDS and LENS DATA SYSTEM are trademarks or registered trademarks of Arnold & Richter Cine Technik GmbH & Co. Betriebs KG. All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such. Original version

For Further Assistance

ARRI Cine + Video Geräte Gesellschaft m.b.H.

Pottendorferstraße 23-25/3/1

A-1120 Vienna Austria

E-mail: service@arri.com
Website: www.arri.com

Scope

This User Manual applies to the following product:

KK.0013217 LCUBE CUB-2 with Software Update Packet SUP

(equals to 1.2.1

K0.0012983)

Revision history

Version	ID	Order#	Release	Date
01	10001998	K5.0013264	F06071	21.02.2017
02	10001998	K5.0013264	W01513	17.04.2019

Disclaimer

Before using the products described in this manual, be sure to read and understand all the respective instructions.

The ARRI LBUS to ENG Protocol Converter LCUBE CUB-2 is/are only available to commercial customers. By utilization, the customer agrees that the LCUBE CUB-2 or other components of the system are deployed for commercial use only. Otherwise the customer must contact ARRI before utilization

While ARRI endeavors to enhance the quality, reliability and safety of their products, customers agree and acknowledge that the possibility of defects thereof cannot be eliminated entirely. To minimize the risk of damage to property or injury (including death) to persons arising from defects in the products, customers must incorporate sufficient safety measures in their work with the system and heed the stated canonic use.

ARRI or its subsidiaries do not assume any responsibility for losses incurred due to improper handling or configuration of the LCUBE CUB-2 or other system components.

ARRI assumes no responsibility for any errors that may appear in this document. The information is subject to change without notice.

For product specification changes after this manual was published, refer to the latest published ARRI data sheets or release notes, etc., for the most upto-date specifications. Not all products and/or types are available in every country. Please check with an ARRI sales representative for availability and additional information.

Neither ARRI nor its subsidiaries assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from the use of ARRI products or any other liability arising from the use of such products. No license, express, implied or otherwise, is granted under any patents, copyrights or other intellectual property right of ARRI or others.

ARRI or its subsidiaries expressly exclude any liability, warranty, demand or other obligation for any claim, representation, cause, action, or whatsoever, express or implied, whether in contract or not, including negligence, or incorporated in terms and conditions, whether by statue, law or otherwise. In no event shall ARRI or its subsidiaries be liable for or have a remedy for recovery of any special, direct, indirect, incidental, or consequential

damages, including, but not limited to lost profits, lost savings, lost revenues or economic loss of any kind or for any claim by a third party, downtime, good-will, damage to or replacement of equipment or property, any cost or recovery of any material or goods associated with the assembly or use of our products, or any other damages or injury of the persons and so on or under any other legal theory.

In the event that one or all of the foregoing clauses are not allowed by applicable law, the fullest extent permissible clauses by applicable law are validated.

Table of Contents

1	For Y	our Sate	ty	6
2	Audi	ence and	Intended Use	8
3	Scop	e of Deliv	very and Warranty	9
4	LBUS	3		11
5	Intro	duction		12
	5.1	Sample	e setup	13
6	Layo	ut		14
	6.1	Status.		14
	6.2	Setup I	button	15
7	Oper	ation		16
8	Softv	vare upda	ate	17
9	Appe	ndix		19
	9.1	Part No	umbers	19
	9.2	Pinouts	S	23
	9.3	Compa	tibility	25
		9.3.1	Cameras and lenses	25
		9.3.2	Hand units	25
		9.3.3	Stabilized Remote Head SRH-3	25
	9.4	Specific	cations	26
		9.4.1	Dimensions and weight	26
	9.5	Service	Contacts	27
	9.6	Interna	tional declarations	28

1 For Your Safety

Before use, please ensure that all users read, understand, and follow the instructions comprehensively in this document.

Vital Precautions

A DANGER

Risk of electric shock and fire!

Short-circuits may entail lethal damage!

Before use, read and follow all valid instructions.

Use solely and exclusively as described in the instructions.

Never open. Never insert objects.

For operation, always use a power source as indicated in the instructions.

Always unplug the cable by gripping the plug, not the cable.

Never try to repair. All repair work should be done by a qualified ARRI Service Center.

Never remove or deactivate any safety equipment (incl. warning stickers or paint marked screws).

Always protect from moisture, cold, heat, dirt, vibration, shock, or aggressive substances.

DANGER

Risk of fire!

Short-circuits and back currents to power supplies/batteries may entail lethal damage!

Always use original ARRI/cmotion LBUS cables to external power sources (D-Tap, XLR)! ARRI/cmotion LBUS cables to external power sources provide a protection circuit to prevent back currents to power supplies/batteries.

2 Audience and Intended Use

ADVICE

The product is solely and exclusively available for commercial costumers and shall be used by skilled personnel only. Every user should be trained according to ARRI guidelines. Use the product only for the purpose described in this document. Always follow the valid instructions and system requirements for all equipment involved.

The LCUBE CUB-2 is solely and exclusively for use on professional camera setups.

3 Scope of Delivery and Warranty

ADVICE

Product and packaging contain recyclable materials. Always store, ship, and dispose of according to local regulations. ARRI is not liable for consequences from inadequate storage, shipment or disposal.

Delivery

On delivery, please check that the package and content are intact. Never accept a damaged or incomplete delivery. A complete delivery includes:

- LCUBE CUB-2
- LCUBE bracket
- User manual
- Original packaging

10 Warranty

Warranty

For scope of warranty, please ask your local ARRI Service Partner. ARRI is not liable for consequences from inadequate shipment, improper use, or third-party products.

LBUS 11

4 LBUS

LBUS is an ARRI/cmotion bus standard designed to allow multiple lens motors and control devices to communicate with each other.

12 Introduction

5 Introduction



The LCUBE CUB-2 is a miniature signal converter that integrates the 12 pin Hirose ENG protocol into the LBUS ecosystem. It provides two options for iris control: Auto-iris from the camera or manual iris from a Master Grip.

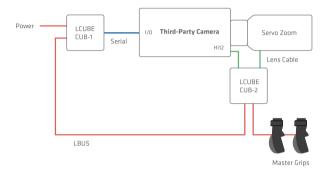
Main features

- Adapts servo-zoom lenses (Hirose 12 pin) to LBUS (Lemo 4 pin).
- Enables Master Grips to directly control focus, iris and zoom of a servo-zoom lens.
- Provides a switch to select between iris control from camera (autoiris via camera Hirose 12 pin interface) or Master Grips (via LBUS).
- Supported by the ARRI Stabilized Remote Head SRH-3.

Introduction 13

5.1 Sample setup

3rd party camera with ENG lens and Master Grips



14 Layout

6 Layout

1 ENG IN - camera

2 ENG OUT - lens

3 Setup button

4 Indicator: Iris control via camera

5 Indicator: Iris control via LBUS

6 LBUS connectors



6.1 Status

The LED of the SETUP button indicates the current status.

Solid green Device is ready, no warnings

Green/red flashing No LBUS master device connected

Solid red Power supply is below 11V

Red flashing No LBUS data is available

Blue flashing Device is executing the bootloader

Layout 15

6.2 Setup button

IRIS source

The source of iris control can be either set to camera or LBUS. The currently active iris source is indicated by two arrows underneath the SETUP button (see "Layout", page 14, (4) and (5)).

Press the SETUP button momentarily to indicate the current iris source. Press the SETUP button momentarily again to change the assignment. Toggle through until you reach the desired setting.

16 Operation

7 Operation

 Connect the ENG input of CUB-2 to the camera Hirose 12 pin lens interface (optional).

- Connect the ENG output of CUB-2 with the ENG lens cable.
- Connect the control devices (e.g. Master Grips, Operator Control Unit OCU-1 or Stabilized Remote Head SRH-3) via LBUS with the CUB-2.
- Power the LBUS.
- Select the source of the iris on the CUB-2

NOTE: The setup does not require the CUB-2 to be connected to the camera Hirose 12 pin lens interface.

NOTE:It is not recommended to use the CUB-2 in the following combination: ARRI AMIRA with PL LDS Lens Mount (with 12 Pin Hirose connector).

8 Software update

The LCUBE CUB-2 can be updated from external devices through its LBUS interface.

The following devices provide update functionalities for LCUBE CUB-2:

- Al FXA Mini
- ALEXA Mini LF
- ARRI Wireless Compact Unit WCU-4
- ARRI Active Motor Controller AMC-1
- ARRI Universal Motor Controller UMC-4
- cmotion compact hand unit
- cmotion cworld

Please refer to the respective user manuals for further information.

ADVICE

For updating LBUS devices, a voltage of 12V and above is required. When using a WCU-4, which is powered by battery an additional power cable is mandatory. It is reccommended to use one of the following cables:

- K2.0006758 Cable LBUS to D-Tap 0.8m/2.5ft
- K2.0006759 Cable LBUS to RS 0.8m/2.5ft
- K2.0006760 Cable LBUS to XLR-4 0.8m/2.5ft

AMC-1 and UMC-4 do not need additional back powering of the LBUS device.

WARNING

Before starting the update, make sure that there are no devices connected to the LCUBE CUB-2, except LBUS devices necessary for the update itself.

WARNING

Do not switch off power and do not remove the storage media during the update, as this may damage the LCUBE CUB-2.

9 Appendix

9.1 Part Numbers

Part numbers

KK.0013217 (equals K0.0012983)	LCUBE CUB-2 Basic Set
contains	
K2.0010681	LCUBE CUB-2
K2.0022328	Cable LENS/ENG (12p) - Hi (12p) analog
K2.0009620	LCUBE Bracket Quick release bracket with 3/8" screw for LCUBE converters

ADVICE

The LCUBE CUB-2 Basic Set does not include an LBUS cable. LBUS cables are available in various lengths and need to be ordered separately.

Mechanical accessories

K2.0009620 LCUBE bracket (included)



K2.0006176 CLM-5/cforce mini clamp console 19/15

mm (not included)



LBUS cables

K2.0006749	Cable LBUS 0,2 m/8" LCB-3
K2.0006750	Cable LBUS 0,3 m/1 ft LCB-4
K2.0006751	Cable LBUS 0,5 m/1.6 ft LCB-A
K2.0006752	Cable LBUS 0,8 m/2.6 ft LCB-1
K2.0006753	Cable LBUS 1,5 m/5 ft LCB-5
K2.0006754	Cable LBUS 3 m/10 ft LCB-1-01
K2.0006755	Cable LBUS 6 m/20 ft LCB-2
K2.0006756	Cable LBUS 15 m/49 ft LCB-1-15
K2.0007318	Cable LBUS to LCS 0,8 m/2.6 ft
K2.0006757	Cable LBUS to D-Tap 1,2 m/4 ft LPS-7-01
K2.0006758	Cable LBUS to D-Tap 0,8 m/2.6 ft LPS-7
K2.0006759	Cable LBUS to RS 0,8 m/2.6 ft LPS-1
K2.0006760	Cable LBUS to XLR-4 0,8 m/2.6 ft LPS-6
K2.0012630	Cable LBUS (2x angled), 0,8 m/2.6 ft
K2.0013042	Cable LBUS (angled, straight), 0,35 m/1.15 ft
K2.0013041	Cable LBUS (angled, straight), 1 m/3.3 ft
K2.0013040	Cable LBUS (2x angled), 0,6 m/2 ft
K2.0013043	Cable LBUS (angled, straight), 0,8 m/2.6 ft
K2.0013044	Cable LBUS (angled) to LCS 0,8 m/2.6 ft
K2.0012785	Cable LBUS (2x angled), 0,2 m/8"
K2.0009643	Cable AMIRA/ALEXA MINI EXT to LBUS (straight) 0,8 m/2.6 ft
K2.0012628	Cable AMIRA/ALEXA MINI EXT to LBUS (angled) 0,8 m/2.6 ft

A DANGER

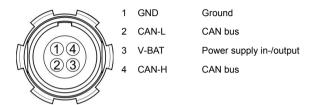
Risk of fire!

Short-circuits and back currents to power supplies/batteries may entail lethal damage!

Always use original ARRI/cmotion LBUS cables to external power sources (D-Tap, XLR)! ARRI/cmotion LBUS cables to external power sources provide a protection circuit to prevent back currents to power supplies/batteries.

9.2 Pinouts

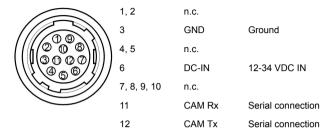
LBUS Connector



12 Pin LENS connector

	1, 2	n.c.	
	3	GND	Ground
	4, 5	n.c.	
(6	+12V	Regulated 12V/1A lens sup- ply
	7, 8, 9, 10	n.c.	
	11	CAM Rx	Serial connection
	12	CAM Tx	Serial connection

12 Pin CAM connector



9.3 Compatibility

9.3.1 Cameras and lenses

The CUB-2 supports most cameras and lenses with Hirose 12 pin connector.

9.3.2 Hand units

The following hand units can be connected directly to the LCUBE CUB-2 for servo motor control or REC start/stop functionality. In such a case, use the Cable LCUBE CUB-2 to camera Hi12 (K2.0013194) to connect the camera 12 pin Hirose lens interface to the CUB-2 ENG input (for camera REC start/stop functionality) and connect the hand unit to a CUB-2 LBUS connector (see page 14).

	REC Start/ Stop	Servo control
Master Grips	Yes	Yes
Operator Control Unit OCU-1	Yes	Yes
cmotion pan-bar zoom		Yes

NOTE: The recording status of the camera is not indicated on the Master Grip screen when using the LCUBE CUB-2 directly connected to the camera 12 pin Hirose lens interface.

9.3.3 Stabilized Remote Head SRH-3

The CUB-2 supports the ARRI Stabilized Remote Head SRH-3 and is connected directly to the SRH-3 Remote Head.

9.4 Specifications

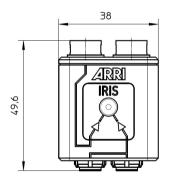
Temperature range: -20 to +50° C (-4 to +122° F)

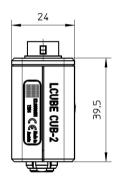
Supply voltage: 12 - 34 VDC

Current consumption: 50mA @ 24 V

9.4.1 Dimensions and weight

Dimensions





Weight

CUB-2: 60g/2.12oz LCUBE Bracket: 13g/0.46oz

9.5 Service Contacts

Munich, Germany

Arnold & Richter Čine Technik +49 89 3809 2121 service@arri.de Business hours:

Mo. - Fr. 9:00 - 17:00 (CET)

London, Great Britain

ARRI CT Limited +44 1895 457 051 service@arri-ct.com Business hours:

Mo. - Thu. 9:00 - 17:30 Fr. 9:00 - 17:00 (GMT)

Burbank, USA

ARRI Inc. West Coast +1 877 565 2774 service@arri.com Business hours: Mo. - Fr. 8:15 - 17:00 (PST)

Mississauga, Canada

ARRI Canada Limited +1 416 255 3335 service@arri.com Business hours: Mo. - Fr. 8:30 - 17:00 (EDT)

Beijing, China

ARRI China Co. Limited +86 10 5900 9680 service@arrichina.com Business hours: Mo. - Fr. 9:00 - 18:00 (CST)

Vienna, Austria

ARRI Cine + Video Geräte Ges.m.b.H. +43 1 8920107 30 service@arri.at Business hours: Mo. - Fr. 9:00 - 17:00 (CET)

Milan, Italy

ARRI Italia S.r.l. +39 (02) 262 271 75 info@arri.it Business hours: Mo. - Fr. 9:00 - 18:00 (CET)

New York, USA

ARRI Inc. East Coast +1 877 565 2774 service@arri.com Business hours: Mo. - Fr. 8:00 - 17:30 (EST)

Hong Kong, China

ARRI Asia Limited +852 2537 4266 service@arriasia.hk Business hours: Mo. - Fr. 10:00 - 18:30 (HKT)

Sydney, Australia

ARRI Australia Pty Ltd +61 2 9855 4305 service@arri.com.au Business hours: Mo. - Fr. 8:00 - 18:00 (AEST)

9.6 International declarations

EC Declaration of Conformity

The product conforms with the specifications of the following European directives:

- Directive 2014/30/EU of the European Parliament and the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility
- Directive 2011/65/EU of the European Parliament and the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

The compliance with the requirements of the European Directives was proved by the application of the following harmonized standards:

EN 55103-1:2009: EN 55103-2:2009



FCC Class A Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Compliance Statement

Complies with the Canadian ICES-003 Class A specifications. Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada. This device complies with RSS 210 of Industry Canada. Cet appareil est conforme à CNR-210 d' Industrie Canada. This Class A device meets all the requirements of the Canadian interference-causing equipment regulations. Cet appareil numérique de la Classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.