**Imprint**

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**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:

<table>
<thead>
<tr>
<th>KK.0013217</th>
<th>LCUBE CUB-2 with Software Update Packet</th>
</tr>
</thead>
<tbody>
<tr>
<td>(equals to</td>
<td>SUP 1.0.0</td>
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</table>

**Revision history**

<table>
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<th>Version</th>
<th>ID</th>
<th>Order #</th>
<th>Release</th>
<th>Date</th>
</tr>
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<tr>
<td>01</td>
<td>10001998</td>
<td>K5.0013264</td>
<td>F06071</td>
<td>21.02.2017</td>
</tr>
</tbody>
</table>
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 up-to-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.

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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.
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1 For your safety

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

Risk levels and alert symbols

Safety warnings, safety alert symbols, and signal words in these instructions indicate different risk levels:

⚠️ DANGER!

DANGER indicates an imminent hazardous situation, which, if not avoided, will result in death or serious injury.

⚠️ WARNING!

WARNING indicates a potentially hazardous situation, which, if not avoided, may result in death or serious injury.

⚠️ CAUTION!

CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

NOTICE

NOTICE explains practices not related to physical injury. No safety alert symbol appears with this signal word.

Note: Provides additional information to clarify or simplify a procedure.
Vital precautions

⚠️ 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

**NOTICE**

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

NOTICE

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
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.
4 LBUS

LBUS is an ARRI/cmotion bus standard designed to allow multiple lens motors and control devices to communicate with each other.
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 (auto-iris via camera Hirose 12 pin interface) or Master Grips (via LBUS).
5.1 Sample setup

3rd party camera with ENG lens and Master Grips
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
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.
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) 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.
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:

- 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.

⚠️ 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

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>KK.0013217 (equals K0.0012983)</td>
<td>LCUBE CUB-2 Basic Set</td>
</tr>
<tr>
<td>K2.0010681</td>
<td>LCUBE CUB-2</td>
</tr>
<tr>
<td>K2.0013194</td>
<td>Cable LCUBE CUB-2 to camera Hi12 1.6ft</td>
</tr>
</tbody>
</table>
| K2.0009620 | LCUBE Bracket  
Quick release bracket with 3/8" screw for LCUBE converters |

**NOTICE**

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

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

1. GND  
   **Ground**
2. CAN-L  
   **CAN bus**
3. V-BAT  
   **Power supply in-/output**
4. CAN-H  
   **CAN bus**

**12 Pin LENS connector**

1, 2  
   n.c.
3  
   GND  
   **Ground**
4, 5  
   n.c.
6  
   +12V  
   **Regulated 12V/1A lens supply**
7, 8, 9, 10  
   n.c.
11  
   CAM Rx  
   **Serial connection**
12  
   CAM Tx  
   **Serial connection**
12 Pin CAM connector

- 1, 2: n.c.
- 3: GND - Ground
- 4, 5: n.c.
- 6: DC-IN - 12-34 VDC IN
- 7, 8, 9, 10: n.c.
- 11: CAM Rx - Serial connection
- 12: CAM Tx - Serial connection
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).

<table>
<thead>
<tr>
<th></th>
<th>REC Start/Stop</th>
<th>Servo control</th>
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<tbody>
<tr>
<td>Master Grips</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>cmotion pan-bar zoom</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

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.
9.4 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

<table>
<thead>
<tr>
<th>Location</th>
<th>Address/Contact</th>
<th>Phone Number</th>
<th>Email Address</th>
<th>Business Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Munich, Germany</strong></td>
<td>Arnold &amp; Richter Cine Technik</td>
<td>+49 89 3809 2121</td>
<td><a href="mailto:service@arri.de">service@arri.de</a></td>
<td>Mo. - Fr. 9:00 - 17:00 (CET)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vienna, Austria</strong></td>
<td>ARRI Cine + Video Geräte Ges.m.b.H.</td>
<td>+43 1 8920107 30</td>
<td><a href="mailto:service@arri.at">service@arri.at</a></td>
<td>Mo. - Fr. 9:00 - 17:00 (CET)</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>London, Great Britain</strong></td>
<td>ARRI CT Limited</td>
<td>+44 1895 457 051</td>
<td><a href="mailto:service@arri-ct.com">service@arri-ct.com</a></td>
<td>Mo. - Thu. 9:00 - 17:30</td>
</tr>
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<tr>
<td><strong>Milan, Italy</strong></td>
<td>ARRI Italia S.r.l.</td>
<td>+39 (02) 262 271 75</td>
<td><a href="mailto:info@arri.it">info@arri.it</a></td>
<td>Mo. - Fr. 9:00 - 18:00 (CET)</td>
</tr>
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<tr>
<td><strong>Burbank, USA</strong></td>
<td>ARRI Inc. West Coast</td>
<td>+1 877 565 2774</td>
<td><a href="mailto:service@arri.com">service@arri.com</a></td>
<td>Mo. - Fr. 8:15 - 17:00 (PST)</td>
</tr>
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<tr>
<td><strong>New York, USA</strong></td>
<td>ARRI Inc. East Coast</td>
<td>+1 877 565 2774</td>
<td><a href="mailto:service@arri.com">service@arri.com</a></td>
<td>Mo. - Fr. 8:00 - 17:30 (EST)</td>
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</tr>
<tr>
<td><strong>Mississauga, Canada</strong></td>
<td>ARRI Canada Limited</td>
<td>+1 416 255 3335</td>
<td><a href="mailto:service@arri.com">service@arri.com</a></td>
<td>Mo. - Fr. 8:30 - 17:00 (EDT)</td>
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<tr>
<td><strong>Hong Kong, China</strong></td>
<td>ARRI Asia Limited</td>
<td>+852 2537 4266</td>
<td><a href="mailto:service@arriasia.hk">service@arriasia.hk</a></td>
<td>Mo. - Fr. 10:00 - 18:30 (HKT)</td>
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<tr>
<td><strong>Beijing, China</strong></td>
<td>ARRI China Co. Limited</td>
<td>+86 10 5900 9680</td>
<td><a href="mailto:service@arrichina.com">service@arrichina.com</a></td>
<td>Mo. - Fr. 9:00 - 18:00 (CST)</td>
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<tr>
<td><strong>Sydney, Australia</strong></td>
<td>ARRI Australia Pty Ltd</td>
<td>+61 2 9855 4305</td>
<td><a href="mailto:service@arri.com.au">service@arri.com.au</a></td>
<td>Mo. - Fr. 8:00 - 18:00 (AEST)</td>
</tr>
<tr>
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</table>
9.6 International declarations

EC Declaration of Conformity

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


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


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 Règlement sur le matériel brouilleur du Canada.