Scope

This document describes the components, the setup and programming of the DEH-1 Digital Encoder Head.

Disclaimer

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

Otherwise the customer must contact ARRI before using the product.

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 conditions of use.

ARRI or its subsidiaries do not assume any responsibility for losses incurred due to improper handling or configuration of the TRINITY 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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1 For your safety

⚠️ Warning

The DEH-1 in combination with the SRH-3 stabilized remote head and related products should only be used by experienced and trained operators. This product is not designed for inexperienced users and should not and must not be used without proper training.

ARRI recommends that all users of the DEH-1 and the stabilized remote head read the manual in its entirety prior to use.

NOTICE

The product is solely and exclusively available for commercial customers 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.

1.1 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

*NOTE* 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.
2 Functions

2.1 Functions front view

- LBUS sockets
- Rosette Pan Bar Attachment
- Pan Drag Selector
- Tilt Clamp Lever
- Top Cheese Plate
- Rosette Pan Bar Attachment
- Tilt drag selector
- Pan Clamp Lever

2.2 Functions back view

- Tilt Clamp Lever
- Rosette Pan Bar Attachment
- Pan Drag Selector
- Main Break

2.3 Functions bottom view

- Mitchell Mount Base
- Tie-Down Screw
3 DEH-1 Setup

3.1 Mounting the DEH-1

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>To ensure safe use of the DEH-1, only suitable heavy duty flat base Tripods should be used.</td>
</tr>
</tbody>
</table>

Place the DEH-1 on an appropriate flat base tripod by loosening the tie-down Screw under the fluid head.

Level the tripod legs using the level bubble.

**NOTE**
Lock both pan and tilt brakes, turn both tilt drag selector and counterbalance knob to 0.

Connect the pan bar attachment and select your desired operating angle.

Mount the counterweight bars.

Mount both Handgrip Pan Bar Adapters K2.0012919 to the pan bars.

The telescopic pan bar length can be adjusted through the clamp lever.
3.2 Mounting the Master Grip

After both handle handgrip bar adapters have been mounted on the pan bars, the Master Grip / OCU-1 can be added to the pan bars.

The steel rosette allows additional angle adjustments.

Mounting the OCU-1

Remove the standard bracket from the OCU-1 and attach the rosette adapter to the back of the OCU-1 as shown.

3.3 Counterbalance

Open the tilt break and set the friction to 0. Shift the counterweights fore and aft till the pan bar remains in a horizontal position.

4 LBUS Setup

4.1 Introduction

The entire digital communication of the DEH-1 is based on the LBUS.

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

The DEH-1 is equipped with two bi-directional LBUS interfaces providing power and control signals and daisy chain technology.

This allows the use of current LBUS controllers such as the Master Grips or OCU-1. Future LBUS controllers should become usable through according future SUPs.

---

NOTICE

Visit the ARRI website to verify that the Master Grips, OCU-1, DRW-1 and DEH-1, LBUS controllers you want to use have the latest firmware.

NOTICE

For more information, see the manuals for Master Grips and OCU-1.
### 4.2 LBUS Sockets

![LBUS Sockets Image]

#### DANGER

**Risk of fire!**
Risk of short-circuits and back currents to power supplies/batteries.

Do not connect any external battery or power supply via the LBUS cable to the DEH-1, the Master Grips, the OCU-1 or any other LBUS Controller.

Do not insert objects!

### 4.3 Master Grips

**NOTE**
When the Master Grips are connected to the remote control via the DEH-1, the Master Grips switch to the so-called Remote mode. The display shows Remote.

**NOTE**
If Remote is not shown in the display, the software on the Master Grip / OCU-1 is out of date and needs to be updated.

Master Grips are available in four versions: right-side and left-side with either a control rocker or a control wheel. All versions are equipped with a 5-way joystick and a toggle button. Joystick and button are fully customizable and can be assigned to camera functions, as well as Master Grip specific features.

**NOTE**
In the remote control, the Master Grips will be shown as:

- MASTER GRIP RIGHT ROCKER: MRR-1
- MASTER GRIP LEFT WHEEL: MLW-1
- MASTER GRIP RIGHT WHEEL: MRW-1
- MASTER GRIP LEFT ROCKER: MLR-1
4.4 OCU-1 Operator Control Unit

**NOTE**
When the OCU-1 is connected to the remote control via the DEH-1, the OCU-1 switch to the so-called Remote mode. The display shows **Remote**.

**NOTE**
If Remote is not shown in the display, the software on the Master Grip / OCU-1 is out of date!

**NOTE**
In the remote control, the OCU-1 will be shown as **OCU**.

4.5 Connecting LBUS cables

The DEH-1 sets are supplied with the following LBUS cables:

1 x K2.0006752 LBUS cable (Le 4p, Le 4p). Length: 0.8m/2.5ft.
2 x K2.0006753 LBUS cable (Le 4p, Le 4p). Length: 1.5m/5ft.

Connect the first LBUS controller (1) to the second LBUS controller (2), using the 0.8m LBUS cable.
Connect the second LBUS controller to the DEH-1 (3), using the 1.5m LBUS cable.
Finally connect the DEH-1 (4) to the remote control (5), using the 1.5m LBUS cable.
5 Main Brake

On the back of the DEH-1 facing the operator is the so-called Main Brake.

The brake button allows the operator to enable or disable the encoder head from the pan and tilt motor axes of the remote head.

NOTE
A disabled DEH-1 is indicated by a red LED.

NOTE
Disabling the DEH-1 may also aid operation.

If you need to reproduce a movement and the position of the remote head and the DEH-1 should be at a certain angle, disable the DEH-1 and set the handle bars to the desired angle. Enable the DEH-1 again and move the remote head back to the starting point. Start the entire movement from the beginning.

6 Remote Control Setup

6.1 Auto Assignment DEH-1

SUP2.2 introducing the so-called Auto Assignment.

For a fast and easy setup, this menu will show up, as soon the DEH-1 is connected to the remote control.

The Auto Assignment will set:

• DEH-1 Tilt and Pan axes
• SENSITIVITY to 0
• DEADBAND to 0
• RAMP to 0
• MODE to Angle

Selecting OK automatically sets all required values.

NOTE
Press Cancel if the DEH-1 has already been assigned and personal values have already been set.

Press OK to overwrite your previous settings.

The Auto Assignment function can be deactivated in the settings for the remote control.
6.1 Selecting the Mode

There are two ways to use the DRW-1: **Angle Mode** (preset) and **Speed Mode**.

**Angle Mode** is the right choice when extremely precise movements are needed. Every movement of the DEH-1 is transferred to the remote head with the exact degree of precision.

**Speed Mode** is a good mode when high dynamic action needs to be covered.

Touch **Menu** at the lower right corner of the home screen to reach the **Main Menu**.

In the **Main Menu** select **Head** to reach the head menu.

Touch **Mode** to toggle between **Angle** and **Speed**. Press **Save** after the Mode is selected.

6.3 Speed setup in **Angle Mode**

**NOTE**

In order to operate the DEH-1 correctly in **Angle Mode**, the following settings shall be made:

- **Speed**: 100
- **SENSITIVITY**: set to 0
- **DEADBAND**: set to 0
- **RAMP**: set to 0
- **Ratio**: set to 0

In the factory preset setup, the **Speed** is assigned to the knobs K1, K2 and K3.

**NOTE**

In order to achieve a faster movement in **Angle Mode**, the **Ratio** values must be adjusted. See page 12.

6.4 Speed setup in **Speed Mode**

**NOTE**

In order to operate the DEH-1 correctly in **Speed Mode**, the following settings shall be made:

- **Speed**: 80
- **SENSITIVITY**: set to 0
- **DEADBAND**: set to 0
- **RAMP**: set to 0
- **Ratio**: set to 0

A lower **Speed** value will **under crank** the movement of the remote head.

A higher **Speed** value will **over crank** the movement of the remote head.
6.5 Ramp (K4, K5, K6)
In the factory preset setup, ramp is assigned to the knobs K4, K5 and K6.

Initially, ramp should be set to 0.

**NOTE**
A high positive ramp value will delay the response of the remote head!

The DEH-1 will start and stop progressively softer as the value increases.

**NOTE**
By unassigning K4, K5, K6 you can set individual ramp values for start and stop for each axis.
The setting is then made via the touchscreen, by selecting: **Menu, Controls, Position, Ramp Start** and **Ramp Stop**.

6.6 Ratio (Angle Mode)

Selecting **Menu**, will open the **Main Menu**.

Selecting **Controls**, will open the controls menu.

Selecting **Ratio** opens a new submenu in which the required speed ratio of the Pan and Tilt axes can be adjusted.

**NOTE**
For the initial setup, set the **ratio values** to 0.

**NOTE**
If desired you can use the **Ratio** value to gear the DEH-1 up or down.

A ratio of 30 in **Angle Mode** will move the remote head 180°, while the DEH-1 has been moved only 90°.

**NOTE**
In **Angle Mode** changing the ratio value will move the remote head to a new position.

Therefore use the + and - keys to change the ratio value **carefully**.
6.7 Changing Direction

For a fast adjustment, the home screen of the remote control offers a short cut.

This field indicates the selected direction of the assigned controller.

Selecting Dir will open the Direction submenu.

Selecting the field in the middle toggles between Standard and Reverse.

Press OK

7 Additional Setups

7.1 Assigning the DEH-1

**NOTE**
The DEH-1 shall be assigned to the corresponding axes of the remote head.

For a fast selection, the home screen of the remote control offers a short cut.

Selecting the indicated area below the single axis will open the assignment submenu.

Select DEHP in the submenu to assign the Pan axis of the DEH-1 to the Pan axis of the remote head.

Press Assign.

Select DEHT in the submenu to assign the Tilt axis of the DEH-1 to the Tilt axis of the remote head.

Press Assign.

Unassigning Controllers

To unassign a selected controller, touch Unassign.

**NOTE**
After the controller has been unassigned, the function is only available via the touchscreen.
7.2 Selecting Position will open up a submenu for: Deadband, Sensitivity, Filter, Ramp and Ramp Mode.

7.3 Deadband
Selecting Deadband opens a new touchscreen slider that allows to change the Deadband values on the selected axis.

Deadband sets the starting point of the control. This value defines when the setpoint will react after the control was changed.

**NOTE**
If the DEH-1 encoder head is used as a controller, Deadband shall be set to 0 - 3.

7.4 Sensitivity
Selecting Sensitivity will open a new touchscreen slider that allows you to change the sensitivity of the control device for the selected axis.

**NOTE**
Redo the procedure for the other axes and press OK.

7.5 Filter
Additional low pass filter function for encoder based controllers, like the DEH-1.

When the DEH-1 is used in a car or a train, vibrations of the vehicle may be transmitted to the DEH-1’s encoders.

This can lead to irritations in the pan and tilt axis. In case of such irritations, the operator can use the Filter function to set a low-pass filter value, which allows to lowpass these disturbing vibrations.

**NOTE**
A too high filter value may cause a delay in response.
8 FIZ Setup

NOTE
The Master Grips and the OCU-1 will interact via the DEH-1 and the remote control in the so-called Remote mode.

The displays of the Master Grips and OCU-1 will show Remote as soon these LBUS controllers are connected the remote control via the DEH-1.

NOTE
If Remote is not shown in the display, the software on the LBUS controllers is out of date and needs to be updated before use!

8.1 Assigning Focus, Iris and Zoom

The FIZ home screen can be reached by Selecting FIZ in the Home Screen.

Assigning Focus and Zoom

The FIZ home screen allows to assign the wanted controllers by Selecting the marked areas.

Selecting the marked area will open a new submenu, where the desired controllers can be selected and assigned.

Selecting Assign will open the selection.

Select the needed LBUS controller and press Assign.

<table>
<thead>
<tr>
<th>MLW</th>
<th>Left Wheel</th>
<th>Master Grip Left Focus Wheel</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRW</td>
<td>Right Wheel</td>
<td>Master Grip Right Focus Wheel</td>
</tr>
<tr>
<td>MLR</td>
<td>Left Rocker</td>
<td>Master Grip Left Zoom Rocker</td>
</tr>
<tr>
<td>MRR</td>
<td>Right Rocker</td>
<td>Master Grip Right Zoom Rocker</td>
</tr>
<tr>
<td>OCU</td>
<td>OCU-1</td>
<td>OCU Focus Wheel</td>
</tr>
</tbody>
</table>

Unassigning Controllers
To unassign a selected controller, touch Unassign.

NOTE
After a controller was unassigned, the function will be only available through the touchscreen.
8.2 FIZ Controllers Adjustments

Selecting Menu, will open the Main Menu.

Selecting FIZ, will open the FIZ Menu

8.3 Calibration

By Selecting Calibrate, every single cforce mini motor will be calibrated.

NOTE Green Green indicates that the motor is calibrated. Red indicates that the motor needs to be calibrated.

NOTE When using the LCUBE CUB-2 with broadcast lenses, calibration is not required.

8.4 Torque

The Torque selection will open a new touchscreen display with a slider to allow the operator to set the needed Torque for the selected lens motor.
8.5 Mode

In the Motor Mode column, the motors can be adjusted from Position to Speed measurement.

**NOTE**

Focus Wheel must be set to Position.

Iris Slider must be set to Position.

Zoom Rocker must be set to Speed.

Selecting the marked area will toggle between Position and Speed.

8.6 Speed (FIZ motors in Speed Mode)

**NOTE**

In general, the speed of FIZ motors can only be adjusted while the motor is operating in speed mode.

To adjust the speed of the cforce mini motors, touch: Menu - FIZ

Selecting Speed selection will open a new touchscreen display with a slider to allow the operator to set the needed Speed for the selected lens motor.

8.7 Speed (FIZ motors in Position Mode)

**NOTE**

In Position mode, the speed cannot be changed in general.

Alternatively, you can change the Ratio between the controller and the focus motor.

For example

To cover the entire focus range of a broadcast lens, the Ratio should be set to +20 for a 360° rotation of the OCU-1.
8.8
Fine trimming the FIZ controller

Beside Speed you can also adjust: Deadband, Sensitivity, Ramp and Ramp Mode.

Selecting Position will open a submenu for each controller.

**NOTE**
To ensure direct response of the focus controller ensure that:
- Deadband set to 0
- Ramp Start set to 0
- Ramp Stop set to 0
- Ramp Mode set to Constant

For a smooth Zoom movement you can try following settings:
9 LCUBE CUB-2 Setup

9.1 LCUBE CUB-2 KK.0024836 (Not included in any DEH-1 set)

**NOTICE**

To control *selected* broadcast lenses with the Master Grips, OCU-1 or the internal controls of the remote control, you need the LCUBE CUB-2 (not older than Q1 2019) version with the latest SUP installed.

**Introduction:**

The LCUBE CUB-2 adapts servo-zoom lenses (Hirose 12 pin) to LBUS (Lemo 4 pin). Enables Master Grips and the OCU-1 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 or the OCU-1 (via LBUS).

**9.1 Functions**

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

**9.2 LED 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 boot-loader

**9.3 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.

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.
9.4 Quick setup

1. Connect the ENG input of LCUBE CUB-2 to the camera Hirose 12 pin lens interface.

2. Connect the ENG output of LCUBE CUB-2 with the ENG lens cable.

3. Connect the LCUBE CUB-2 via LBUS with the remote head.

4. Select the source of the iris on the LCUBE CUB-2 (RCP Camera or LBUS Controller).

5. Assign the focus and zoom at the remote control to the used LBUS controllers, like the Master Grips or OCU-1.

NOTE
If there is a problem with the LBUS communication, turn off the power of the remote head and turn it on again to restart the LBUS communication. It may also be helpful to restart the remote control when powered externally.

10 Power Disconnection

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>To disconnect the device safely from the power source, remove both cables from the remote head and remote control. Mount and operate the device in an orientation to ensure easy access to the connectors.</td>
</tr>
</tbody>
</table>
Sets

11

DEH-1 Pro Set, Left Wheel, Right Rocker K0.0033400
contains
Master Grip Left Wheel MLW-1 K2.0009363
Master Grip Right Rocker MRR-1 K2.0009493
Handgrip Pan Bar Adapter 20 mm K2.0012919
LBUS cable (Le 4p, Le 4p). Length: 0.8m/2.5ft. K2.0006752
LBUS cable (Le 4p, Le 4p). Length: 1.5m/5ft. (2x) K2.0006753

DEH-1 Pro Set, Right Wheel, Left Rocker K0.0033402
contains
Master Grip Left Wheel MLW-1 K2.0009363
Master Grip Right Rocker MRR-1 K2.0009493
Handgrip Pan Bar Adapter 20 mm K2.0012919
LBUS cable (Le 4p, Le 4p). Length: 0.8m/2.5ft. K2.0006752
LBUS cable (Le 4p, Le 4p). Length: 1.5m/5ft. (2x) K2.0006753

DEH-1 Pro Set, OCU-1, Left Rocker K0.0033403
contains
Operator Control Unit OCU-1 Basic Set K2.0020002
OCU-1 Rosette Bracket K2.0020003
Master Grip Left Rocker MLR-1 K2.0009490
Handgrip Pan Bar Adapter 20 mm K2.0012919
LBUS cable (Le 4p, Le 4p). Length: 0.8m/2.5ft. K2.0006752
LBUS cable (Le 4p, Le 4p). Length: 1.5m/5ft. (2x) K2.0006753

DEH-1 Pro Set, OCU-1, Right Rocker K0.0033404
contains
Operator Control Unit OCU-1 Basic Set K2.0020002
OCU-1 Rosette Bracket K2.0020003
Master Grip Right Rocker MRR-1 K2.0009493
Handgrip Pan Bar Adapter 20 mm K2.0012919
LBUS cable (Le 4p, Le 4p). Length: 0.8m/2.5ft. K2.0006752
LBUS cable (Le 4p, Le 4p). Length: 1.5m/5ft. (2x) K2.0006753
12 Technical Data

Electrical Data
Temperature range: -20 to +50°C (-4 to +122°F)
Supply voltage: 10.5 - 34 V
Power consumption: max. 6A – 2A

Head Data
Maximum Payload Capacity 25 kg (DEH-1)
Minimum Payload Capacity 0 kg (DEH-1)
Bowl Diameter Flat base
Pan Range 360° without end stop
Tilt Range 360° without end stop
Fluid Drag 7 steps + 0
Encoder Transmission Direct, no gears
Temperature Range -25°/+60°

Dimensions:
H / W / D 32cm / 38cm / 48cm

Weight 6.5 kg (DEH-1 head only)

13 Pinout

LBUS Connector

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>CAN-L</td>
</tr>
<tr>
<td>3</td>
<td>V-BAT</td>
</tr>
<tr>
<td>4</td>
<td>CAN-H</td>
</tr>
<tr>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td></td>
<td>CAN bus</td>
</tr>
<tr>
<td></td>
<td>Power supply in/output</td>
</tr>
</tbody>
</table>
Dear colleagues,

The products offered by ARRI are approved for use in a number of countries, including Canada, the European Union, Japan, and the USA. Product-specific information on approval can be found in the respective operating instruction manuals. Import and use in countries other than those mentioned in the respective operating instructions may be subject to legal, regulatory, or official requirements and regulations. Before the products are imported into these countries or used in these countries, compliance with the existing legal, regulatory, and administrative requirements and regulations must be ensured. It is the importer's or the user's responsibility, prior to importation or use, to inform themselves of the applicable legal, regulatory, and administrative requirements and regulations and to ensure compliance with these requirements and regulations, including applying for and obtaining any necessary approvals or registrations. As far as reasonable and legally possible, ARRI will support requests in relation to such applications by providing technical documents or declarations.

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You release ARRI from all obligations resulting from any legislative, regulatory, or administrative requirements regarding import or use of the products, except in countries where ARRI has obtained a registration or certification. You agree to indemnify, defend, and hold ARRI harmless from any and all claims, damages, losses, liabilities, costs, and expenses (including reasonable fees of attorneys and other professionals) that may arise out of a demand on ARRI in connection with your obligations mentioned above.

We have to ensure that this is known to all customers affected. Hence, the statement above must be included in all manuals and the following sales documents provided by SAP-System offer, order confirmation, invoice and delivery note. Any adaption of the presented wording must be approved by Quality and Legal department.

Dr. Sebastian Lange
Head of Quality Management
COMMERCIAl-IN-CONFIDENCE

Date: 2018-11-28
Document Number: TR-80986-45376-02 | Issue: 01

RESPONSIBLE FOR NAME DATE SIGNATURE
Project Management Thomas Winterberger 2018-11-28
Authorised Signatory Hannes Adelsberger 2018-11-28

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

ENGINEERING STATEMENT
The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR NAME DATE SIGNATURE
Testing Thomas Winterberger 2018-11-28

Executive Summary
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B and ICES-003:2017 and 2016.

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TÜV SÜD Product Service

Choose certainty. Add value.
1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Description of Change</th>
<th>Date of Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>First Issue</td>
<td>2018-11-28</td>
</tr>
</tbody>
</table>

Table 1

1.2 Introduction

Applicant: ARRI Cine & Video Geräte GmbH
Manufacturer: ARRI Cine & Video Geräte GmbH
Model Number(s): DEH-1
Serial Number(s): Prototype
Hardware Version(s): ---
Software Version(s): ---
Number of Samples Tested: 1
Test Plan/Issue/Date: ---
Order Number: 25468/OS/0133-00-12
Date: 2018-10-24
Date of Receipt of EUT: 2018-11-05
Start of Test: 2018-11-27
Finish of Test: 2018-11-27
Name of Engineer(s): Thomas Winterberger
Related Document(s): ANSI C63.4: 2014
# TEST REPORT

**IEC 60950-1: 2005 (2nd Edition) and/or EN 60950-1:2006**

**Information technology equipment – Safety –**

**Part 1: General requirements**

<table>
<thead>
<tr>
<th>Report Reference No.</th>
<th>TR-80986-44626-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of issue</td>
<td>December 12, 2018</td>
</tr>
<tr>
<td>Total number of pages</td>
<td>34</td>
</tr>
<tr>
<td>Testing Laboratory</td>
<td>TÜV SÜD Product Service GmbH</td>
</tr>
<tr>
<td>Address</td>
<td>Äußere Frühlingstr. 45, D-94315 Straubing, Germany</td>
</tr>
<tr>
<td>Applicant’s name</td>
<td>Arnold &amp; Richter Cine Technik GmbH &amp; Co Betriebs KG</td>
</tr>
<tr>
<td>Address</td>
<td>Türkensstr. 89, D-80799 München Germany</td>
</tr>
</tbody>
</table>

**Test specification:**

- **Standard**:
  - IEC 60950-1:2005 (2nd Edition) and/or
    A2:2013 + AC:2011

**Test procedure**:

- Standard

**Non-standard test method**:

- N/A

**Test Report Form No.**

- IECEN60950_1C

**Test Report Form(s) Originator**

- SGS Fimko Ltd

**Master TRF**

- Dated 2007-06

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**International Declarations**

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**Manufacturer**

- ARRI Cine + Video Geräte GmbH
  - Pottendorferstraße 23-25 3/11, A-1120 Wien

**Model/Type reference**

- DEH-1, K2.0022594

**Ratings**

- External power supply 12 V DC
- max. operating temperature of EUT: -20 °C to +50°C

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Prüfbericht Nr. / Test Report No. TR-80986-44626-01 (Edition 1)
Testing procedure and testing location:

- **Testing Laboratory:** TÜV SÜD Product Service GmbH
- **Testing location/address:** Äußere Frühlingstr. 45, D-94315 Straubing, Germany
- **Tested by (name + signature):** Stefan Weiherer
- **Approved by (name + signature):** Stefan Moser

Summary of testing:

The equipment under test in accordance with the conditions of acceptability complies with the requirements.

**Conditions of Acceptability:**

- In order to verify, if a component is already tested according to the applicable standard (IEC) following information-sources are accepted, in agreement with the customer: Copies of the type approval test certificate, markings on a component, brochures and prospectus from the manufacturer of the component, declarations of conformity from the manufacturer of the component, and information from the customer; all information the test-laboratory receives will not be verified.

- All safety instructions and equipment marking has to be in the language which is acceptable in the country in which the equipment is to be installed. Documentation, intended for service persons only, is permitted to be in English language only, except Germany where also this information has to be in the German language, too. The safety instructions are not evaluated in this report.

- The evaluation of the EUT is based on the fact, that the EUT is used inside a building / house, only.

- This safety test was performed without radiation test (clause 4.3.13). Please refer to separate test report for EN 62479.

- This safety test was performed without evaluation of mechanical parts of the system.

- All marking shall meet the requirements of durability according to clause 1.7.11.

- The power supply, shall meet the requirements according to clause 2.5 (LPS).
Summary

Prüfergebnisse / Test Results

<table>
<thead>
<tr>
<th>Durchgeführte Prüfung</th>
<th>Prüfergebnis Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiated Emissions (Class A limits)</td>
<td>Pass</td>
</tr>
<tr>
<td>Enclosure Port - Power-frequency magnetic field</td>
<td>Pass</td>
</tr>
<tr>
<td>Enclosure Port - Radio-frequency electromagnetic field Amplitude modulated</td>
<td>Pass</td>
</tr>
<tr>
<td>Enclosure Port - Electrostatic discharge</td>
<td>Pass</td>
</tr>
<tr>
<td>Signal Port - Radio-frequency continuous conducted</td>
<td>Pass</td>
</tr>
<tr>
<td>Signal Port - Electrical fast transient</td>
<td>Pass</td>
</tr>
<tr>
<td>DC Power Port - Radio-frequency continuous conducted</td>
<td>N/A</td>
</tr>
<tr>
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Bemerkungen / Remarks:
The EuT is Battery powered. Therefore a test of the DC line is not necessary according the used standard.

Die Prüfergebnisse beziehen sich ausschließlich auf das zur Prüfung vorgestellte Prüfmuster. Ohne schriftliche Genehmigung des Prüflabors darf der Prüfbericht auszugsweise nicht vervielfältigt werden. The test results relate only to the individual item which has been tested. Without the written approval of the test laboratory this report may not be reproduced in extracts.
## TEST REPORT

### IEC 60950-1: 2005 (2nd Edition) and/or EN 60950-1:2006

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N/A

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IECEN60950_1C

**Test Report Form(s) Originator**

SGS Fimko Ltd

**Master TRF**

Dated 2007-06

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**Digital Encoder Head**

**Manufacturer**

ARRI Cine + Video Geräte GmbH

Pottendorferstraße 23-25 3/1/1, A-1120 Wien

**Model/Type reference**

DEH-1, K2.0022594

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Die Übereinstimmung mit den Richtlinien erfolgte unter Anwendung nachfolgender genannter Normen:


Die Übereinstimmung mit den Richtlinien erfolgte unter Anwendung nachfolgend genannter Normen:

Grundlegende Anforderungen zu Nr. 1. - Essential Requirements regarding No 1

- Art. 31 a nach 2014/35/EU - following 2014/35/EU
  - EN 62479: 2010
  - Art. 31 b nach 2014/30/EU - following 2014/30/EU
  - EN 301 489: V2.1.1:
  - EN 301 489: V3.1.1:
  - EN 50581:
  - EN 60950:
  - EN 62368:

Grundlegende Anforderungen zu Nr. 2. - Essential Requirements regarding No 2

- EN 50581: 2012:

Für die Ermittlung der entsprechenden Normen haben wir die folgende Quelle verwendet:


Jahr der Anbringung des CE-Zeichens / Year of affixed CE-marking: 2018

München, den 15.07.2019

gezeichnet

Dr. Michael Neuhäuser
Geschäftsführer / Managing Director

Leiter Qualitätsmanagement / Head of Quality Management

Dr. Sebastian Lange