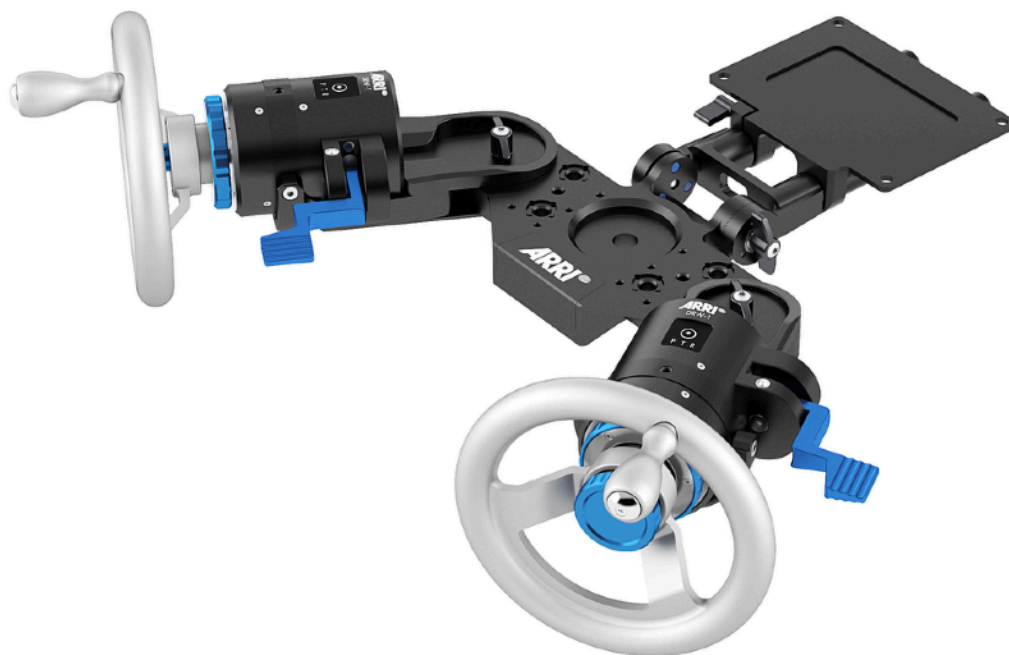


# Digital Remote Wheels

**DRW-1** SUP2.2

## USER MANUAL

Date 01.08.2019



## Imprint

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### Document revision history

Version	SUP	Order Nr	Release	Date
1.1	2.2	K4.0021085	F06781	01.08.2019

### Scope

This document describes the components, the setup and programming of the **DRW-1** Digital Remote Wheels.

## 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 endeavours 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.

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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.

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## Table of contents

1 For your safety .....	4
2 Functions .....	5
3 DRW-1 Setup .....	6
4 Connecting the LBUS cables .....	8
5 Selecting the axes .....	9
6 Brake.....	9
7 Fluid Drag Ring.....	9
8 Remote Control Setup / Auto Assignment.....	10
9 Remote Control Setup / Additional Setups .....	12
10 Power Disconnection .....	15
11 Sets.....	15
12 Technical Data.....	15
13 Pinout.....	15
14 International Declarations.....	16

# 1 For your safety

## Warning

The DRW-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 DRW-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

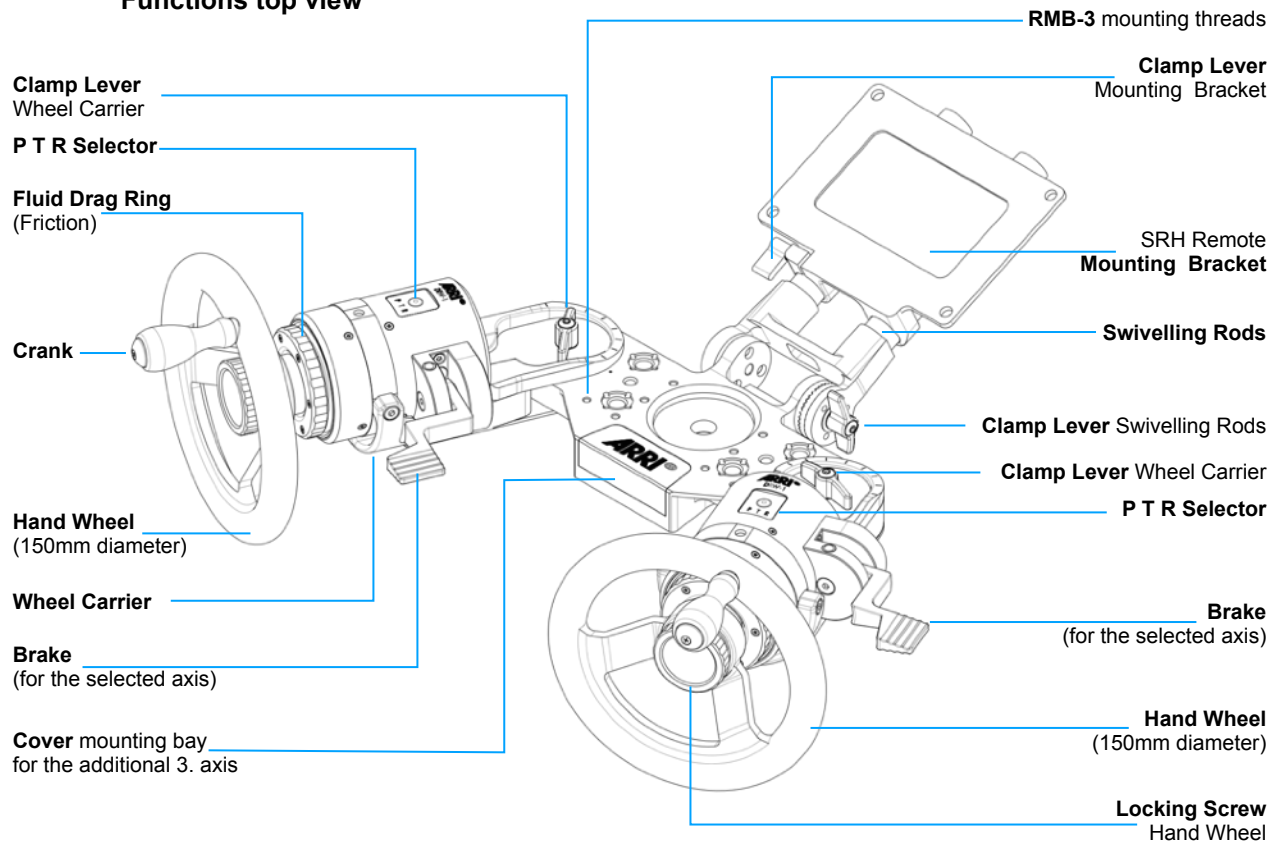
**NOTE** explains practices not related to physical injury. No safety alert symbol appears with this signal word.

## NOTE

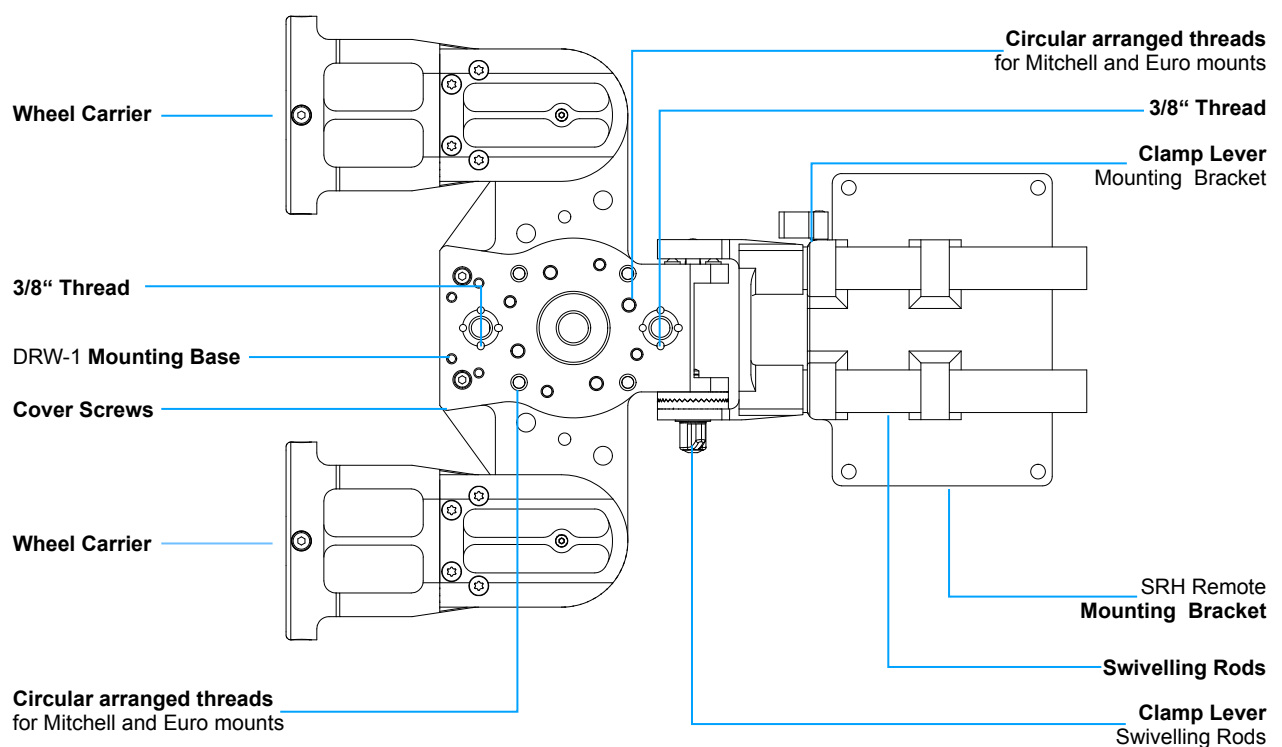
Provides additional information to clarify or simplify a procedure.

## 2 Functions

### 2.1 Functions top view



### 2.2 Functions bottom view



### 3 DRW-1 Setup

#### 3.1

##### Mounting the DRW-1 base

The bottom of the DRW-1 **mounting base** offers multiple mounting options:

3/8" threads for long camera dovetail plates, like the O'Connor plate (08283), Euro style quick release plate (2575-120), Sachtler sideload plate M (1164), Cartoni Camera plate Focus12-18-22 (AH859) Cartoni Camera plate - Cine style slide (AH833)

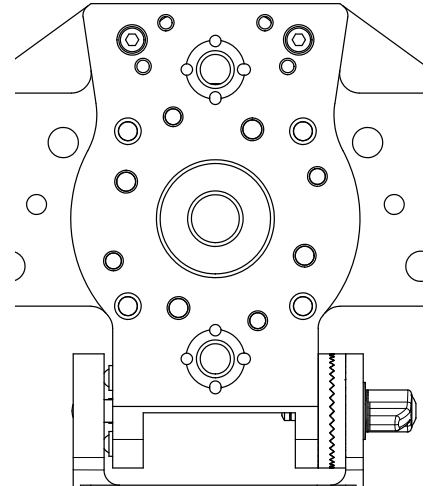
Below are three circular threaded sets for Mitchell and Euro mounts.

The following brackets can be used:

Mitchell Mount **K2.0010427**, Euro Mount **K2.0010426** and the O'Connor Mitchell Base **08281**.

#### NOTE

To ensure a tight fit, use a minimum of two 3/8" screws when a dovetail plate is used and four screws for the Euro Mount and the Mitchell Mount.



#### 3.2

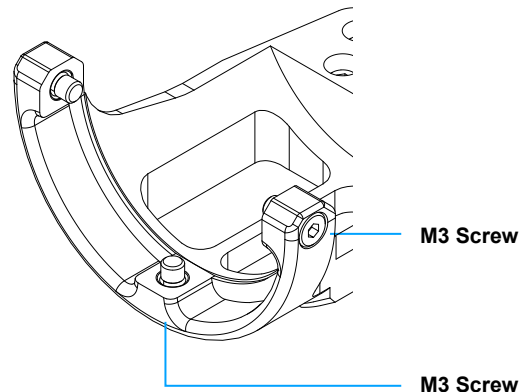
##### Mounting the DRW-1 modules

There are three M3 threads positioned at the left, at the bottom, and the right side of the DRW-1 module.

Place the DRW-1 module carefully into the DRW-1 carrier and tighten all three screws using a 3mm hex key.

#### NOTE

Ensure that all three screws are tightened evenly, otherwise the DRW-1 module will have a loose fit, which may affect the application.



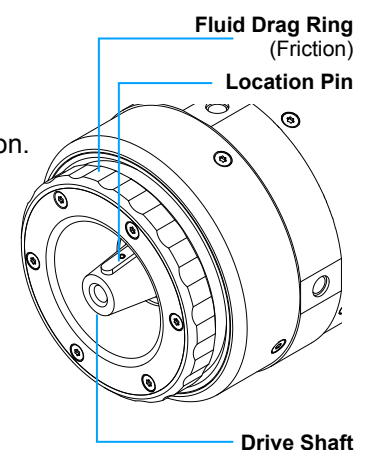
#### 3.3

##### Mounting the hand wheel

Turn the location pin of the drive shaft to a 12:00 o'clock position. Turn the blue **fluid drag ring** (friction) to the right to reach full friction. Locate the groove inside the mounting hole of the hand wheel and bring it into the 12:00 o'clock position too. Now place the wheel onto the conic drive shaft. When the hand wheel has reached its final position, tighten the blue locking screw.

#### NOTE

Turn the **fluid drag ring** (friction) fully back to the left to reach the lowest possible friction level.



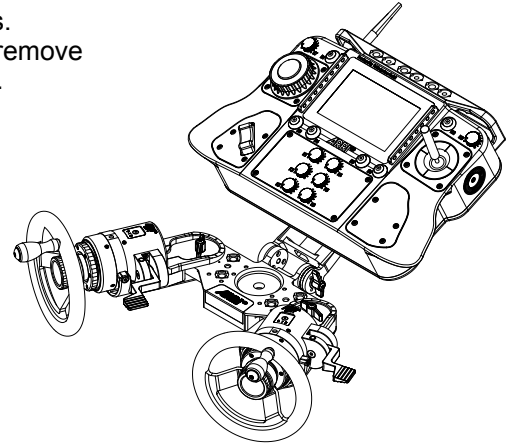
## 3.4

**Mounting the Remote Control**

The bottom of the remote control offers four M6 threads. Open the clamp lever of the remote mounting bracket, remove the bracket from the rods of the DRW-1 mounting base. Place the DRW-1 SRH remote mounting bracket to the bottom of the remote control. Tighten the four included M6 screws.

**⚠ Danger**

**Do not use any screws longer than M6x12. Longer screws may cause damage.**



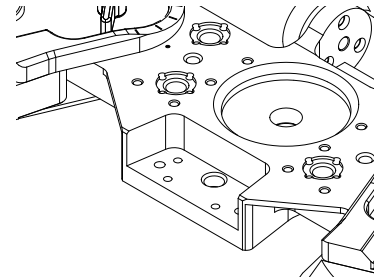
## 3.5

**Adding the optional third hand wheel**

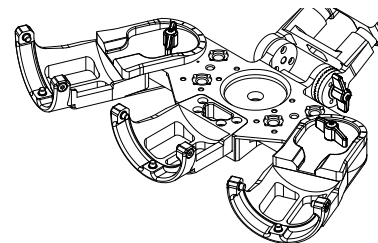
The ARRI engraved cover can be removed after the two screws at the bottom holding the cover have been unscrewed.

Now the third wheel carrier can be mounted to the bay.

Redo step 3.2.

**NOTE**

Ensure that all three screws are tightened evenly, otherwise the DRW-1 module will have a loose fit, which may affect the application.



## 4 Connecting the LBUS cables

### ⚠ DANGER

Risk of electric shock and fire!  
 Short-circuits may entail lethal damage!  
 Before use, read and follow all relevant 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!**

Risk of short-circuits and back currents to power supplies/batteries:  
 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.

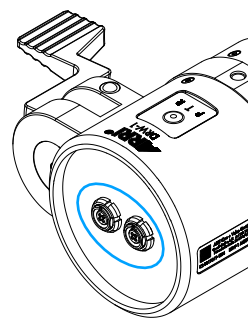
### NOTICE

**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.**

#### 4.1 Introduction

Each DRW-1 module is equipped with two LBUS connectors and daisy-chain technology. Up to three DRW-1 modules can be connected in series.

Each DRW-1 module has two identical bidirectional LBUS interfaces that provide the DRW-1 module with power and control signals.



#### 4.2 Connecting the DRW-1 modules

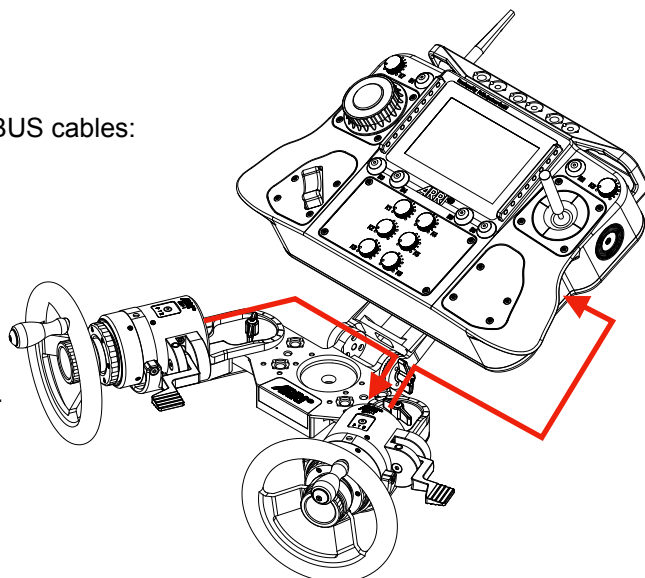
The DRW-1 Set comes with the following LBUS cables:

1 x Cable LBUS 0.3m/1ft     **K2.0006750**

1 x Cable LBUS 0.5m/1.5ft     **K2.0006751**

The illustration shows how one wheel is linked to the other and then with the remote.

The LBUS jacks are located on the sides of the remote control.





## 5 Selecting the axes

Each DRW-1 module has a selection button for **P**an, **T**ilt and **R**oll, at the top.

Initially **R**oll of P T R will be selected and visible, after the SRH remote panel had been connected to the LBUS.

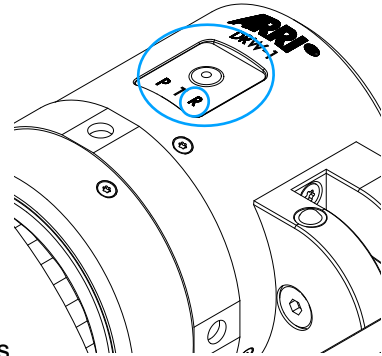
By pressing the button **P**an, **T**ilt and **R**oll, the desired axis for each wheel can be selected.

### NOTE

Ensure that each wheel is assigned to only one individual axis. Avoid assigning two wheels to the same axis.

### NOTE

A blue blinking LED indicates a problem in the LBUS daisy chain.



## 6 The brake

The DRW-1 wheels are equipped with a brake lever, which goes back to the ARRI Gear Head.

The brake lever allows the operator to engage or disengage the wheel from the selected motor axis.

### NOTE

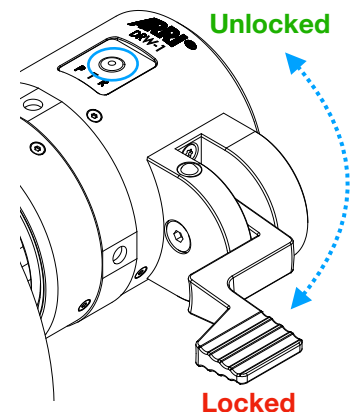
An **unlocked** wheel will be indicated by a **green** LED, A **locked** wheel will be indicated by a **red** LED.

### NOTE

Disengaging the wheels can also support operation.

When you need to reproduce a movement and you want the position of the crank to be at a certain angle, for example at the end of the movement, then first move the head to the desired end position, disengage the wheel and bring the crank to the required angle.

Now engage the wheel again and move the head backwards to the starting point. Start the movement from the beginning.

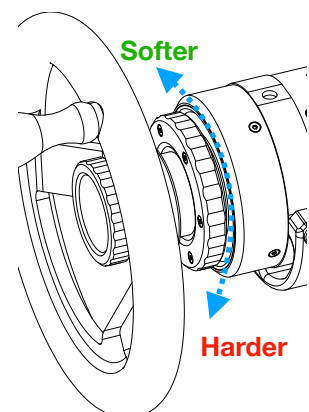


## 7 Fluid Drag Ring (friction)

The DRW-1 wheels are equipped with a fluid drag ring, which allows friction to be adjusted.

This unique feature allows the operator to control the accuracy of the head through a mechanical friction adjustment instead of a software value such as ramp.

Due to the mechanical friction, the ramp values in the remote control can be set to 0 or close to 0. The mechanical friction ensures that the DRW-1 wheels and remote head respond quickly and accurately.



## 8 Remote Control Setup

### 8.1

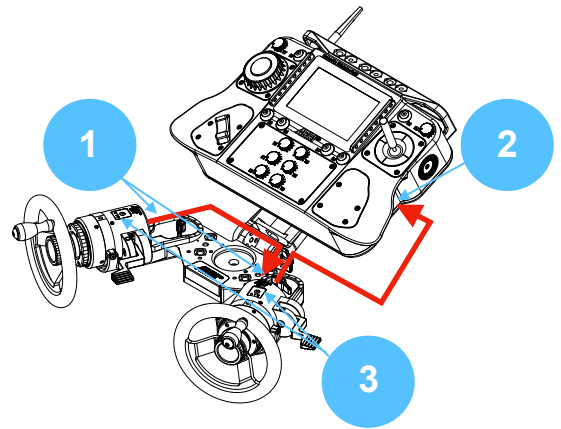
#### Auto Assignment DRW-1

**SUP2.2** introducing the so-called Auto Assignment.

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

The Auto Assignment will set:

- DRW-1                      Tilt, Pan and Roll axes
- SENSITIVITY              to **0**
- DEADBAND                to **0**
- RAMP                      to **0**
- MODE                      **Angle**



### 8.2

#### Quick Setup

1. Daisy chain the single modules with each other
2. Connect the LBUS cable to the remote control
3. Select Pan, Tilt, Roll for each DRW-1 module
4. Press **OK** at the the touchscreen

Selecting **OK** automatically sets all required values.

#### NOTE

Press Cancel if the DRW-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.

### 8.3

#### Selecting the Mode

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

**Angle Mode** the right choice when **extremely precise** movements are needed.

Every movement of the DRW-1 is transferred to the remote head with the exact degree of precision.

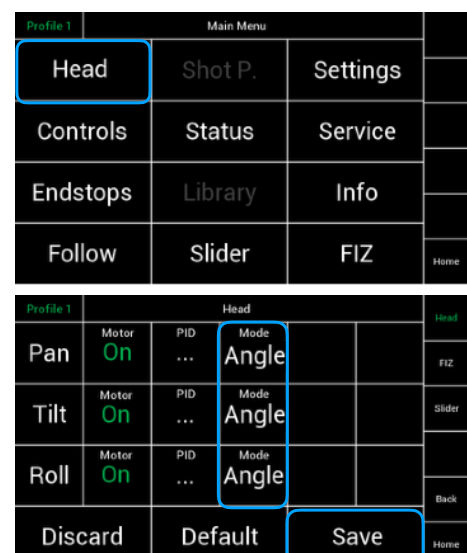
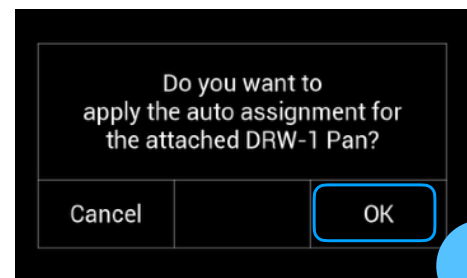
**Speed Mode** is the right mode when high **dynamic** action needs to be covered.

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.

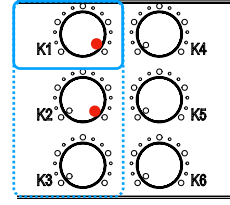




## 8.4

**Speed setup in Angle Mode****NOTE**

In order to operate the DRW-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**



Pan		Dir Std	
Joystick 1 H			
Angle	0		
	3	K4	
Speed	100	K1	
	3	K4	

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

**NOTE**

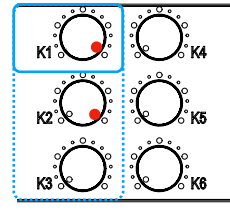
In order to achieve a faster movement in **Angle Mode**, the **Ratio** values must be adjusted. See page 12.



## 8.5

**Speed setup in Speed Mode****NOTE**

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

- Speed**                      **01 - 100**
- SENSITIVITY            set to **0**
- DEADBAND              set to **0**
- RAMP                     set to **0**
- Ratio                     set to **0**



Pan	Dir Std	
Joystick 1 H		
Angle	0	
	3	K4
Speed	100	K1
	3	K4

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.

## 8.6

**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**.

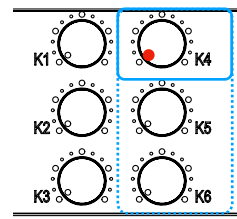
**NOTE**



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**.



Pan	Dir Std	
Joystick 1 H		
Angle	0	
	3	K4
Speed	13	K1
	3	K4

## 8.6

**Ratio** (Angle Mode)

Because the ARRI DRW-1 wheels are the digital version of the ARRI Geared Head 2, the DRW-1 wheels also offer the classic 3-speed drive with the original gear ratio.

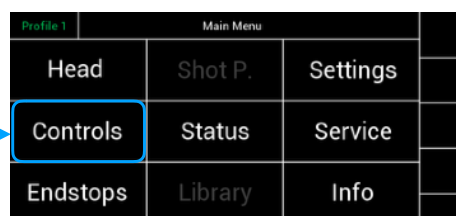
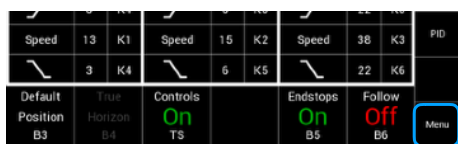
**NOTE**

Once the DRW-1 wheels are connected to the remote control, the **Ratio** value is set to the classic **Medium Speed** of the ARRI Geared Head 2.

Tilt Speeds:	Turns	Movement	Ratio value	Angle per one Turn
<b>Slow</b>	17.5	for 60° Tilt	<b>-21</b>	5,51°
<b>Medium (preset)</b>	9.25	for 60° Tilt	<b>0</b>	10,14°
<b>Fast</b>	4.75	for 60° Tilt	<b>22</b>	19,06°

Tilt Speeds:	Turns	Movement	Ratio value	Angle per one Turn
<b>Slow</b>	65	for full 360° Pan	<b>-22</b>	3,45°
<b>Medium (preset)</b>	35.5	for full 360° Pan	<b>0</b>	6,49°
<b>Fast</b>	19	for full 360° Pan	<b>23</b>	12,45°

Roll Speeds:	Turns	Movement	Ratio value	Angle per one Turn
<b>Slow</b>	17.5	for 60° Tilt	<b>-22</b>	3,45°
<b>Medium (preset)</b>	9.25	for 60° Tilt	<b>0</b>	6,49°
<b>Fast</b>	4.75	for 60° Tilt	<b>22</b>	12,45°

**NOTE**

To adapt the DRW-1 to the other classic gear ratios of the ARRI Geared Head 2, the gear ratios listed above must be programmed for each axle.

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

Selecting **Controls**, will open the **Controls Menu**

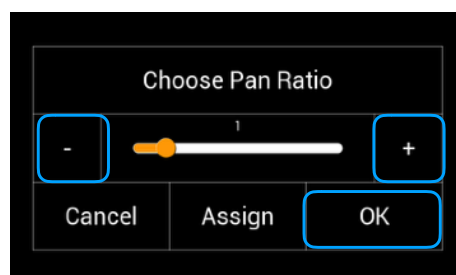
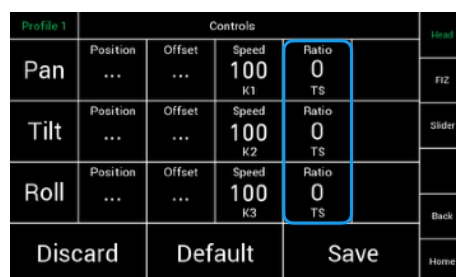
Selecting **Ratio** opens a new submenu in which the required speed ratio of the Pan, Tilt and Roll axes can be adjusted.

**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**.

Press **OK**



## 8.7

**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**

Profile 1	Head 24.1V	Remote 12.1V	H. Dyn	...
Pan	Dir Std	Tilt	Dir Std	Roll Dir Std
Joystick 1 H	Joystick 1 V			Knob 8

Choose Pan Setpoint Direction

Std  
B1

Cancel Assign OK

## 9 Additional Setups

## 9.1

**Assigning the DRW-1****NOTE**

The DRW-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 **DRWP** in the submenu to assign the **Pan axis** of the DHE-1 to the **Pan axis** of the remote head.

Press **Assign**.

Select **DRWT** in the submenu to assign the **Tilt axis** of the DHE-1 to the **Tilt axis** of the remote head.

Press **Assign**.

Profile 1		Head 24.1V		Remote 12.1V		H. Dyn.		 ..			
Pan		Dir Std		Tilt		Dir Std		Roll		Dir Std	
Joystick 1 H				Joystick 1 V				Knob 8			
Angle		0		Angle		0		Angle		0	

Assign Pan Setpoint

< J1 V J1 H DRWP DRWT K1 K2 >

Cancel Unassign Assign

Assign Pan Setpoint

< J1 V J1 H DRWP DRWT K1 K2 >

Cancel Unassign 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**.

K3: Roll Speed Multiplier Unassign

Assign Pan Setpoint

< J1 V J1 H K1 K2 K3 K4 >

Cancel Unassign Assign

## 9.2

Selecting **Position** will open up a submenu for: **Deadband**, **Sensitivity**, **Filter**, **Ramp** and **Ramp Mode**.

Profile 1	Controls					Head
Pan	Position ...	Offset ...	Speed 25 K1	Ratio 0 TS		Fit
Tilt	Position ...	Offset ...	Speed 25 K2	Ratio 0 TS		
Roll	Position ...	Offset ...	Speed 25 K3	Ratio 0 TS		Back
Discard		Default		Save		Home

## 9.3

**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 **DRW-1** wheels is used as a controller, **Deadband** shall be set to **0**!

Otherwise there would be a **delay** in response!

Profile 1	Controls: Position of Pan			Position
Control Joystick 1H	Deadband 0 Touchscreen	Ramp Start 0 Knob 5		Offset
Direction Standard Touchscreen	Sensitivity 0 Touchscreen	Ramp Stop 0 Knob 5		

Choose Pan Deadband

-

10

+

Cancel

Assign

OK

## 9.4

**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**.

Profile 1	Controls: Position of Pan			Position
Control Joystick 1H	Deadband 0 Touchscreen	Ramp Start 0 Knob 5		Offset
Direction Standard Touchscreen	Sensitivity 0 Touchscreen	Ramp Stop 0 Knob 5		
	Filter 0 Touchscreen	Ramp Mode Dynamic Touchscreen		Back
Discard		Default		Home

## 9.5

**Filter**

Additional low pass filter function for encoder based controllers, like the DRW-1.

When the DRW-1 is used in a car or a train, vibrations of the vehicle may be transmitted to the DRW-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 **eliminate** these disturbing vibrations.

**NOTE**

A **too high Filter value** may cause a **delay** in response.

Direction Standard Touchscreen	Sensitivity 0 Touchscreen	Ramp Stop 0 Knob 5	
	Filter 0 Touchscreen	Ramp Mode Dynamic Touchscreen	Back
Discard		Default	
		Save	

Choose Pan Filter

-

19.0

+

Touchscreen

Cancel

Assign

OK

10 Power Disconnection

**⚠ CAUTION**

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.

11 Sets

11.1	
<b>DRW-1, Two Wheels Set</b>	<b>KK.0021212</b>
contains	
2 x DRW-1 Module	K2.0019319
2 x Hand Wheel complete	50 N2.25004.A
1 x DRW-1 Mounting Base	K2.0019325
1 x Cable LBUS 0.3m/1ft	K2.0006750
1 x Cable LBUS 0.5m/1.5ft	K2.0006751
1 x DRW-1 Foam Set	90.0020791
4 x M6x12 stainless hex screws	O5.15436.0
1 x DRW-1 User Manual	K4.0021085

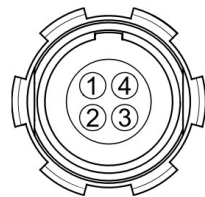
11.2	
<b>Optional Third Wheel Set</b>	<b>KK.0021211</b>
contains	
1 x DRW-1 Module	K2.0019319
1 x Hand Wheel complete 150mm	N2.25004.A
1 x Cable LBUS – LBUS (0.5m/1ft)	K2.0006751
1 x DRW-1 THIRD-WHEEL-SET-PACKING-SET	90.0021210

12 Technical Data

12.1	
<b>Weight / Dimensions</b>	
Weight:	
DRW-1 Modul	0,7kg / 1,5lb
DRW-1 Mounting Base	1,5kg / 3,3lb
Hand Wheel	0,8kg / 1,7lb
Outer dimensions foam	518 x 392 x 229 mm
	20,39 x 15,43 x 9,01“
12.2	
<b>Environment</b>	
Temperature Range	-20°C - 50°C
	-04°F - 122°F

13 Pinout

**LBUS Connector**



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

## EU-Declaration of Conformity

Brand Name: ARRI  
 Product Description: Camera Stabilizer System:

- **ARRI Stabilized Remote Head SRH-3 Pro Set including ARRI Stabilized Remote Head – SRH-3 and ARRI Remote Remote control – Remote control-1**

+ Europe Setting for Software 01.14.00 or later and Antenna Proant 333 Ex-It 2400 Foldable, Accessories regarding Appendix I

The designated products conform to the specifications of the following European directives:

1. Directive 2014/53/EU of the European Parliament and the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment - OJ L 153, 22 May 2014, p. 62–106
2. 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 - OJ L 174, 1 July 2011, p. 88–110

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

Essential Requirements regarding No 1

- Art. 3.1 a following 2014/35/EU
    - o EN 62368-1: 2014 + AC:2015-05 + AC:2015-11; EN 60950-1: 2006+A11:2009+A1:2010+A12:2011+AC2011+A2:2013 ; EN 62479 :2010
  - Art. 3.1 b following 2014/30/EU
    - o EN 301 489-1 V2.1.1; EN 301 489-17 V3.1.1; EN 61000-4-2:2009; EN 61000-4-3:2006 A1:2009 A2:2010 ; EN 55032: 2012, EN 55035 :2017
  - Art. 3.2
    - o EN 300 328 V2.1.1;
- Essential Requirements regarding No 2
- EN 50581: 2012;

To evaluate the respective information, we used:

[http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/index\\_en.htm](http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/index_en.htm)

Year of affixed CE-marking: 2018

Munich 13.12.2018

Sign

Sign

Walter Trauninger  
 Managing Director

Dr. Sebastian Lange  
 Head of Quality Management

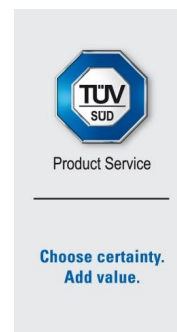
### APENDIX-I

List of additional accessories:

Item	Model name
<b>1</b>	<b>ARRI Digital Remote Wheels - DRW-1</b>



## 14 International Declarations



2018-11-27

Page 1 of 42

### Prüfbericht / Test Report

Nr. / No. TR-25880-43304-01 (Edition 01)

Auftraggeber <i>Applicant</i>	FoMa Systems GmbH
Geräteart <i>Type of equipment</i>	Digital Remote Wheel
Typenbezeichnung <i>Type designation</i>	DRW-1
Seriennummer <i>Serial number</i>	
Auftragsnummer <i>Order No.</i>	
Prüfgrundlage <i>Test standards</i>	EN 55032:2012 (KN32) EN 55035:2017 (KN35) CISPR 32:2015

Trade Register Munich  
HRB 85742  
VAT ID No. DE129484267  
Information pursuant to Section 2(1)  
DL-InfoV (Germany) at  
[www.tuev-sued.com/imprint](http://www.tuev-sued.com/imprint)

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Product Service

## Summary

<b>Prüfergebnisse / Test Results</b>	
Auftragsnummer / Order No. ---	
Die Prüfungen wurden nach folgenden Vorschriften durchgeführt: Tests were performed according to: <b>EN 55032:2012 (KN32); EN 55035:2017 (KN35); CISPR 32:2015</b>	
Durchgeführte Prüfung Test performed	Prüfergebnis Test result
Radiated Emissions (Class A limits)	Pass
Conducted Emissions at Mains Power Ports	N/A
Conducted Emissions at Communication Ports	N/A
Enclosure Port - Radio-frequency electromagnetic field Amplitude modulated	Pass
Enclosure Port - Power-frequency magnetic field	Pass
Enclosure Port - Electrostatic discharge	Pass
Signal Port - Radio-frequency continuous conducted	Pass
Signal Port - Electrical fast transient	Pass
DC Power Port - Radio-frequency continuous conducted	Pass
DC Power Port - Electrical fast transient	Pass

## Bemerkungen / Remarks:

The EuT is Battery powered. Therefore a test of the DC line is not necessary according the used standard.

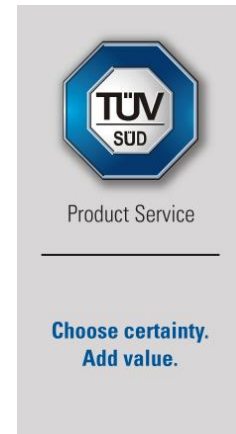
Die Prüfergebnisse beziehen sich ausschließlich auf das zur Prüfung vorgestellte Prüfmuster. Ohne schriftliche Genehmigung des Prüflabors darf der Prüfbericht auszugsweise nicht vervielfältigt werden. The test results relate only to the individual item which has been tested. Without the written approval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

Datum / Date	Geprüft von / Tested by	Freigabe durch / Checked by	Prüfergebnis / Test Result
2018-11-27	Thomas Winterberger Responsible for testing	Hannes Adelsberger Reviewer	<b>Pass</b>

**Report on the FCC and IC Testing of the  
FoMa Systems GmbH  
Digital Remote Wheel. Model: DRW-1  
In accordance with FCC 47 CFR Part 15B and  
ICES-003**

Prepared for: FoMa Systems GmbH  
Oskar-Sembach-Ring 11  
91207 Lauf - Germany

FCC ID: ---  
ICES: ---



**COMMERCIAL-IN-CONFIDENCE**

Date: 2018-11-28  
Document Number: TR-25880-43304-02 | Issue: 01

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
<b>Project Management</b>	Thomas Winterberger	2018-11-28	
<b>Authorised Signatory</b>	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
<b>Testing</b>	Thomas Winterberger	2018-11-28	

Laboratory Accreditation      Laboratory recognition      Industry Canada test site registration  
DAKS Reg. No. D-PL-11321-11-02      Registration No. BNetzA-CAB-16/21-15      3050A-2

**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.

 Bundesnetzagentur BNetzA-CAB-16/21-15	<b>DISCLAIMER AND COPYRIGHT</b> This non-binding report has been prepared by TÜV SÜD Product Service with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD Product Service. No part of this document may be reproduced without the prior written approval of TÜV SÜD Product Service. © 2018 TÜV SÜD Product Service.		
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	Trade Register Munich HRB 85742 VAT ID No. DE129484267 Information pursuant to Section 2(1) DL-InfoV (Germany) at www.tuev-sued.com/imprint		

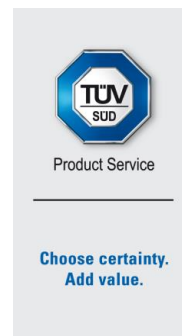
Managing Directors:  
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[www.tuev-sued.de](http://www.tuev-sued.de)

TÜV SÜD Product Service GmbH  
Äußere Frühlingstraße 45  
94315 Straubing  
Germany

**TÜV SÜD Product Service**

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December 12, 2018

Page 1 of 34

**Prüfbericht / Test Report****Nr. / No. TR-80986-44626-01(Edition 1)**

Auftraggeber <i>Applicant</i>	Arnold & Richter Cine Technik GmbH & Co Betriebs KG
Geräteart <i>Type of equipment</i>	Digital Encoder Head
Typenbezeichnung <i>Type designation</i>	DEH-1, K2.0022594
Auftragsnummer / <i>Order No.</i>	---
Prüfgrundlage <i>Test standards</i>	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 + AC:2011

Trade Register Munich  
HRB 65742  
USt-Id.-Nr.: VAT ID No. DE129484267  
Information pursuant to Section 2(1)  
DL-InfoV (Germany) at  
[www.tuev-sued.com/imprint](http://www.tuev-sued.com/imprint)

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Web: www.tuev-sued.de



Product Service

TEST REPORT	
IEC 60950-1: 2005 (2nd Edition) and/or EN 60950-1:2006 Information technology equipment – Safety – Part 1: General requirements	
Report Reference No.....:	TR-80986-44626-01
Date of issue.....:	December 12, 2018
Total number of pages.....:	34
Testing Laboratory .....	TÜV SÜD Product Service GmbH
Address.....:	Äußere Frühlingsstr. 45, D-94315 Straubing, Germany
Applicant's name .....	Arnold & Richter Cine Technik GmbH & Co Betriebs KG
Address.....:	Türkenstr. 89, D-80799 München Germany
Test specification:	
Standard .....	<input type="checkbox"/> IEC 60950-1:2005 (2nd Edition) and/or <input checked="" type="checkbox"/> EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + 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
Copyright © 2007 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.	
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If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.	
This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
If this Test Report Form is used by non-CCA members, the CIG logo and the reference to the CCA Procedure shall be removed.	
This report is not valid as a CCA Test Report unless signed by an approved CCA Testing Laboratory and appended to a CCA Test Certificate issued by an NCB in accordance with CCA	
Test item description.....:	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
Ratings.....:	External power supply 12 V DC max. operating temperature of EUT: -20 °C to +50°C

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 94315 Straubing  
 Germany

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 Fax: +49 9421 5522-99  
 Web: www.tuev-sued.de



Product Service

#### 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).



Arnold & Richter Cine Technik GmbH & Co. Betriebs KG

Business Unit Camera Systems, Türkenstr.89, D-80799 München

## EU-Konformitätserklärung EU-Declaration of Conformity

Markenname / Brand Name: ARRI

Produktbezeichnung / Product Description:

Kamerastabilisierungssystem / Camera Stabilizer System:

- **ARRI Stabilized Remote Head SRH-3 Pro Set including ARRI Stabilized Remote Head – SRH-3 and ARRI Remote Control Panel – RCP-1**
  - + Europa Setting der Software 01.14.00 oder höher und Antenne Proant 333 Ex-IT 2400, Zubehör gemäß Appendix I
  - + Europe Setting for Software 01.14.00 or later and Antenna Proant 333 Ex-IT 2400 Foldable, Accessories regarding Appendix I

Die bezeichneten Produkte stimmen mit den Vorschriften folgender Europäischer Richtlinien überein:  
The designated products conform to the specifications of the following European directives:

1. Richtlinie 2014/53/EU des Europäischen Parlaments und des Rates vom 16. April 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung von Funkanlagen auf dem Markt - OJ L 153, 22.5.2014, S. 62–106  
Directive 2014/53/EU of the European Parliament and the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment - OJ L 153, 22 May 2014, p. 62–106
2. Richtlinie 2011/65/EU des Europäischen Parlaments und des Rates vom 8. Juni 2011 zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten - OJ L 174, 1.7.2011, S. 88–110  
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 - OJ L 174, 1 July 2011, p. 88–110

Die Übereinstimmung mit den Richtlinien erfolgte unter Anwendung nachfolgend genannter Normen:  
The compliance with the requirements of the European Directives was proved by the application of the following standards:

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

- Art. 3.1 a nach 2014/35/EU –following 2014/35/EU
  - EN 62368-1: 2014 + AC:2015-05 + AC:2015-11;
  - EN 60950-1: 2006+A11:2009+A1:2010+A12:2011+AC2011+A2:2013 ; EN 62479 :2010
- Art. 3.1 b nach 2014/30/EU –following 2014/30/EU
  - EN 301 489-1 V2.1.1; EN 301 489-17 V3.1.1; EN 61000-4-2:2009; EN 61000-4-3:2006 A1:2009 A2:2010 ; EN 55032: 2012, CISPR 32 :2015, EN 55035 :2017
- Art. 3.2
  - EN 300 328 V2.1.1;

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:

To evaluate the respective information, we used:

[http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/index\\_en.htm](http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/index_en.htm)

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

München, den 15.07.2019

gez/sig

Dr. Michael Neuhäuser

Geschäftsführer / Managing Director

gez/sig

Dr. Sebastian Lange

Leiter Qualitätsmanagement / Head of Quality Management

Arnold & Richter Cine Technik GmbH & Co. Betriebs KG  
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Steuer-Nr. 144/232/20555  
Ust-ID: DE 129725260 WEEE-Reg.-Nr. DE 48968492

Bay.Landesbank: KTO: 111 43 68 BLZ: 700 500 00  
HypoVereinsbank: KTO: 7 940 009 BLZ: 700 202 70

Sitz: München, Register: Amtsgericht München, HRA-Nr. 57918  
Persönlich haftende Gesellschafterin: Arnold & Richter Cine Technik GmbH  
Sitz: München, Register: Amtsgericht München, HRB-Nr. 54477  
Geschäftsführung: Dr. Michael Neuhäuser; Dr. Jörg Pohlman;  
Stephan Schenk; Walter Trauringer

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