ARRI

UDM

Ultrasonic Distance Measure

Instruction Manual

As of: July 2013

1. Contents

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2. Safety Instructions and Legal Disclaimer

2.1. Safety instructions

The UDM has been thoroughly tested for quality of workmanship and operating functions before leaving the factory.

To ensure optimal performance, it is essential that you aquaint yourself with this instruction manual and that you follow the operating instructions described.

Warning signs

⚠ Possible risk of injury or damage to equipment.

⚡ This symbol indicates the risk of electric shock or fire danger that could result in injury or equipment damage.

General safety instructions

⚠ Read and understand all safety and operating instructions before you operate or install the system.

⚠ Retain all safety and operating instructions for future reference.

⚠ Do not use accessories or attachments not recommended by ARRI, as they may cause hazards and void the warranty.

⚡ Do not repair any part of the system. Repairs must only be carried out by authorized ARRI repair shops.

⚡ Do not remove any safety measure of the system.

⚡ Do not operate the system in high humidity areas or expose it to water or moisture.

⚡ Operate the system using only the type of power source indicated in the manual.

⚠ Do not use solvents to clean.

Any violation of these safety instructions or the non-observance of personal care could cause serious injuries (including death) and damages on the system or other objects.

Product Identification

When ordering parts or accessories, or if any questions should arise, please advise your type of product and serial number.

2.2   Disclaimer

Before using the products described in this manual be sure to read and understand all respective instructions. The ARRI Wireless Lens Control System is only available for commercial customers. The customer grants by utilization, that the ARRI Ultrasonic Distance Measure (UDM) or other components of the system are only deployed for commercial use. Otherwise the customer has the obligation to contact ARRI preceding the 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 risks 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 have to heed the statuted canonic use.

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3. General Description

The ARRI Ultrasonic Distance Measure (UDM) provides a continuous reflection-based distance measurement and automatic focus tracking, using the built-in Lens Data System of the ALEXA Plus, ARRICAM, ARRIFLEX 435 Advanced/Xtreme and ARRIFLEX 416plus cameras or the UMC-3 lens motor controller.
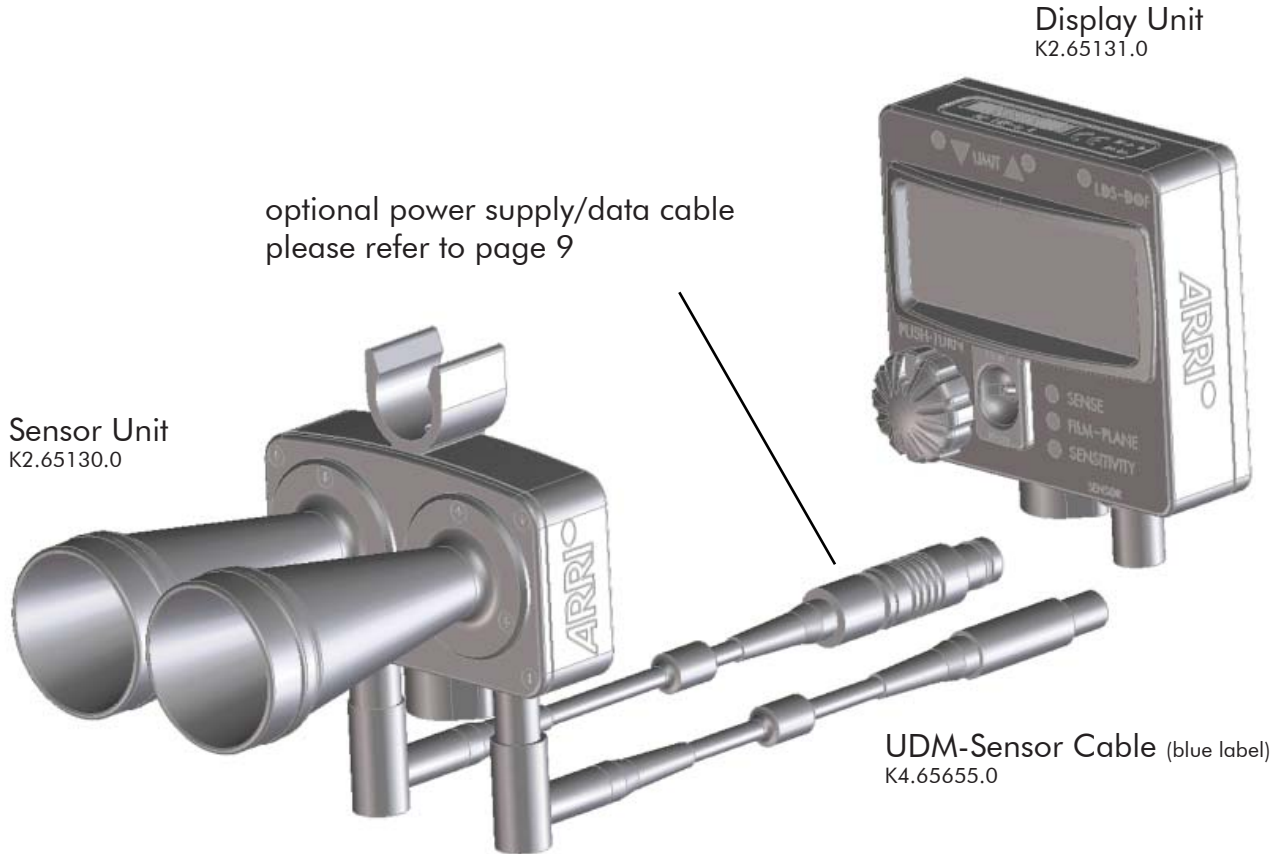
Main features

- Measurement range from approx.
  0,4 - 10m / 1ft 4in - 33ft
- Selectable Meter / Feet display
- Automatic focus tracking with ARRI Lens Data System equipment
- Pre-set measuring limits for exact object tracking
- Fine-trimming for best performance in different environments
- Large transflective LCD display for good readability under all light conditions

The UDM consist of two units, the Display Unit and the Sensor Unit. 3/8" UNC bushings allow the units to be mounted on standard supports in convenient positions. The UDM comes with an 1,5m (5ft) interface cable. Connection cables for interfacing to cameras and UMC-3 must be ordered seperately (page 9).
A large control wheel on the Display Unit allows easy setting of the UDM parameters, supported by a set of status LEDs.
The small toggle switch under the large LCD display changes the unit of measurement between meters and feet.

Display Unit
K2.65131.0

optional power supply/data cable
please refer to page 9

Sensor Unit
K2.65130.0

UDM-Sensor Cable (blue label)
K4.65655.0

3.1 ARRI Order Numbers

K0.60055.0 **Ultrasonic Distance Measure UDM complete**

The package includes:

K2.65130.0 **UDM Sensor Unit**

K2.65131.0 **UDM Display Unit**

K4.65655.0 **Cable UDM-Sensor** (1,5m/5ft)
connects Sensor Unit to Display Unit

K5.65999.0 **UDM User Manual** EN

Optional Accessory:

K4.65656.0 **Cable UDM-CAM** (1,5m/5ft)
connects UDM Sensor Unit to ARRICAM - CAC

K4.65672.0 **Cable UDM-435** (1,5m/5ft)
connects UDM Sensor Unit to
ARRIFLEX 435 Advanced/Xtreme or
ARRIFLEX 416 PLUS

K2.65144.0 **Cable UDM-UMC-3** ((1,5m/5ft))
connects UDM Sensor Unit to UMC-3/AUX

K2.65261.0 **Cable UDM-ALEXA** ((1,5m/5ft))
connects UDM Sensor Unit to ALEXA/EXT

K2.65240.0 **Cable UDM-RS** ((1,5m/5ft))
connects UDM Sensor Unit to ARRI-RS connector

K2.65262.0 **Cable UDM-PSC** ((0,7m/2.5ft))
connects UDM Sensor Unit to PSC cables

PSC Cables

ARRI order no.	Description	Length	connects to	Function
K2.65206.0	PSC-XLR3	1,5m/5ft	24volts battery	Power supply only
K2.65207.0	PSC-XLR4	1,5m/5ft	12volts battery	Power supply only
K2.65208.0	PSC-DTAP	0,6m/2ft	Anton Bauer D-Tap socket	Power supply only
K2.65209.0	PSC-HI12	0,6m/2ft	Hirose 12pin socket	Power supply only
K2.65210.0	PSC-FI11	0,6m/2ft	ARRIFLEX 435, SONY FF35	Power supply only
K2.65211.0	PSC-RS	0,6m/2ft	ARRI RS socket	Power supply only
K2.65212.0	PSC-FI2	1,5m/5ft	ARRI OBB-2 battery	Power supply only
K2.65213.0	PSC-LCS	0,6m/2ft	ARRI LCS bus	Power supply only

4. Setup

4.1. Standard Setup - Distance measurement only

Fasten the UDM units in convenient places on or around the camera using the 3/8" support on both units. Connect the Display to the Sensor Unit using the blue labeled cable. Choose the applicable supply cable either for ALEXA , ARRICAM, ARRIFLEX 435 / 435Advanced / 435Xtreme / 416 / 235 camera or the optionally available UMC-3 cable. You may create custom supply cables at your own risk.
Refer to chapter 6 for detailed information.

4.2. LCS Setup - Depth-of-Field Display and Focus Tracking

Using suitable cameras and accessories, the UDM provides the operator with actual Depth-of-Field information on the LDD-FP and controls automatic focus tracking when required.
The UDM sends the distance information repeatedly in a serial data stream to the connected unit. Applicable units are ARRI cameras providing a LDD connector and built-in lens motor drives, like the ALEXA Plus, the ARRICAM-ST/LT equipped with a Lens Data Box and an unit incorporating a LDD-FP connector, an ARRIFLEX 435 Advanced/Xtreme with FEM-2 or an ARRIFLEX 416 plus.
Alternatively a UMC-3 will also interface the UDM data to an LDD-FP in non-ARRI set-ups (e.g. video camera usage). As the LDD-FP provides the complete UDM information, the Display Unit may be disconnected after parameters have been set.

Applicable Cameras and Accessories

Cameras

- ARRICAM Studio, Studio Lens Data Box, Studio Readout
- ARRICAM Lite, Lite Lens Data Box, Lite Frame Glow or
  Remote Control Station with cable KC 65 or KC 69
- ARRIFLEX 435Advanced/Xtreme, FEM-2
- ARRIFLEX 416plus
- UMC-3, LDD-FP with Lens Table stored in Lens Data Archive
- ALEXA and ALEXA Plus

Cable Control
- LCS-bus cable LC-Z1/LC-Z2/LC-M1/LC-M2
- WHA-3 + WFU-1/3
- CLM-2

Metering
- LDD-FP with Cable LDD-RDO K2.54172.0
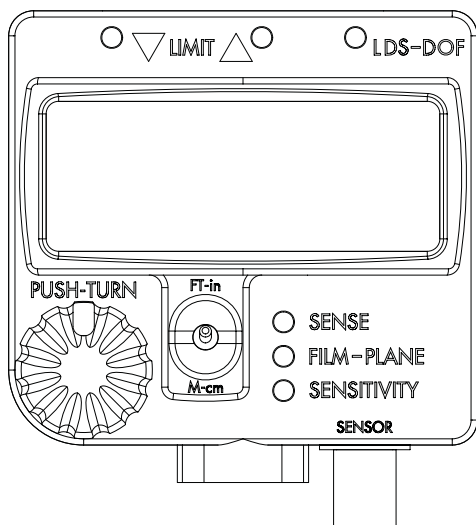
Wireless Control
- WMU-3, WFU-3, WEB-3, WBU-3/-4, LDD-FP

Always use the latest Camera- and UMC-3 software packets for secure operation.

5. Operation of the UDM

5.1 Switching on

The UDM has no dedicated power-switch.
Power-on the UDM by using the power switch of the connected supply source (Camera/UMC-3) or connect the appropriate UDM cable to the supply unit.

5.2 Controls and Status LEDs

The blue **Control Wheel** is used for configuration setup. Push to select and turn to change values.

The **Toggle Switch** changes the unit of measurement between Metres and centimetres and Feet and inches.

SENSE LED: steady green shows successful measurement
FILM PLANE LED: yellow blinking indicates film plane offset adjustment mode
SENSTIVITY LED: yellow blinking indicates sensitivity adjustment mode
LIMIT LEDs: yellow blinking indicates value setting mode, steady light indicates limits set to other than maximum (default) value.
LDS-DOF LED: steady light indicates the object as being within the calculated Depth-of-Field range, blinking indicates the object to being outside of the Depth-of-Field range. No light indicates, that no camera Depth-of-Field signal is available.

5.3 Operation Settings

During operation the following changes or adjustments are available:

Selection of the unit of distance measurement
Use the toggle switch to select either m/cm or ft/in

Setting of sensitivity
Press the control wheel briefly - the **SENSITIVITY** LED starts blinking, indicating the device is in sensitivity mode. Turn the control wheel and set the new sensitivity value. The value range starts at 0 (OFF) and ends at 100 (MAX). Adjust so that you achieve a steady green **SENSE** light in the desired measurement range. Press the control wheel briefly again to return to normal operation.

Setting of Film Plane offset
When the Sensor Unit is not mounted on the film plane, the Film Plane offset will need to be recalibrated. Measure the distance between the film plane and the object. Press and hold the Control Wheel for about 1.5sec, until the **FILM-PLANE** LED starts blinking. Turn the Control Wheel until the correct distance is displayed. Press the Control Wheel briefly again to return to normal operation.

5.4 Parameter Settings

Enter the parameter setting mode by pressing and holding the Control Wheel during power-on. Scroll through the parameter settings by repeatedly pressing the control knob briefly. The following settings are available:

Display backlight brightness
Default value: **L 100**
                             settings from 0 to 200

LOWER LIMIT display range (Lower LIMIT LED blinking)
Default value: **0.00** m / 0 ft 0 in
                             settings from 0 to 15.00 m / 49ft 2in

UPPER LIMIT display range (Upper LIMIT LED blinking)
Default value: **15.00** m / 49ft 2in
                             settings from 15.00 m / 49ft 2in to 0

Display Resolution - step width of least significant digit
Default value: **r 0**   settings from 0 to 5

Default Reset
Default value   **d no**   stores user set parameters
                          dEF   resets to default values

Press and hold the Control Wheel to return to normal operation.

5.5   Depth-of-Field and Focus Tracking

Using the settings and accessories described in chapter 4.2, the UDM uses the LDD-FP or the WRC-2 with LDD-FP software option as a display for the actual **Depth-of-Field**. As the LDD-FP provides the complete UDM information, the UDM Display Unit may be disconnected after parameters have been set.
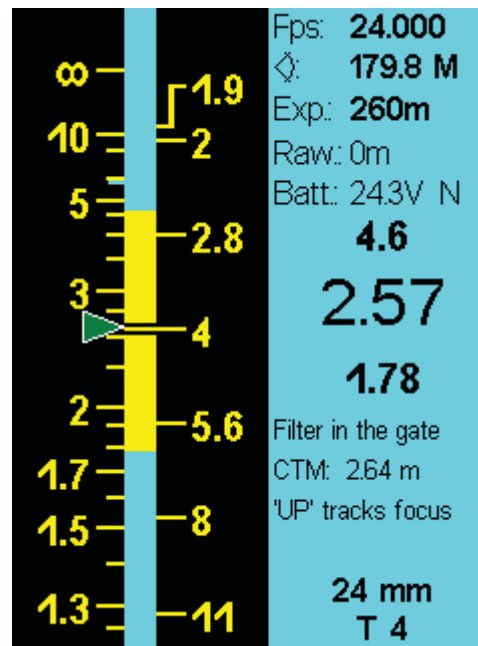
Indicators on the LDD-FP show the following:
An active UDM (or CTM), the measured distance and actual Depth-of-Field. Depth-of-Field is shown graphically as a bar graph and is also displayed as numeric value.

In a cabled configuration the **Focus Tracking** function can be activated by pressing and holding the blue tracking button on the left side of the WHA-3.

Using the wireless setup, press and hold the **BRIGHT - UP** button on the LDD-FP.
As long the button is kept pressed, the focus motor will follow the measured distance.

Typical LDD-FP image, indicating
- UDM (CTM) active
- measured distance   green dart and numeric value
- Depth-of-Field   bar-graph and numeric value

6. Specifications

Operating temperature
 -20 to +50 °C (-4 to +122 °F)

Operating voltage
 10 to 30 V DC (12/24V nominal)
 ARRICAM compatible

Typ. current consumption
 0,024A (24V) / 0,040A (12V)

Dimensions (h * w * d) with connector
 Display Unit: 83 * 75 * 32 mm
  3.3 * 2.9 * 1.3 in
 Sensor Unit: 73 * 74 * 91 mm
  2.9 * 2.9 * 3.6 in

Weights
 Display Unit: 140 g (5 oz)
 Sensor Unit: 120 g (4.2 oz)

Power connections
 pin1 GND
 pin4 +Vbat
 suitable connector: ARRI order no. 05.21182.0
 LEMO FHJ.0B.304.CYMD52Z or equivalent

Declaration of Conformity

We, Manufacturer
ARRI CINE + VIDEO GERÄTE GmbH
Pottendorferstrasse 25-27/3/2/1
A-1120 Wien
declare that the product
Ultrasonic Distance Measure
UDM-1

is in conformity with

DIN EN 61326-1: 2006-10
DIN EN 55011: 2003-08 (Group1/ClassB)

DIN EN61000-4-2: 2001-12
DIN EN61000-4-3: 2003-11
DIN EN61000-4-4: 2002-07

Date:
2007-05-27

Signature

Ing. Walter Trauninger

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.

ARRI Service Contacts

Zone	Availability	Service Center	E-Mail	Telephone Hotline
1	Monday – Friday: 09:00 – 17:00 (CET)	**Munich, Germany** Arnold & Richter Cine Technik	service@arri.de	+49 89 3809 2121
	Monday – Friday: 09:00 – 17:30 (CMT)	**London, Great Britain** ARRI CT Limited	service@arri-ct.com	+44 1895 457 051
	Monday – Friday: 09:00 – 18:00 (CET)	**Rome, Italy** ARRI Italia S.r.l.	service@arri.it	+39 335 749 00 70
	Monday – Saturday 09:00 - 18:00 (MSK)	**Moscow, Russia** Bars-Pro Ltd.	arri@bars-pro.ru	+7 (495) 415-98-13 +7 (495) 415-98-14 +7 (495) 415-98-15
	Monday – Saturday: 10:00 – 18:00 (IST)	**Mumbai, India** CINEOM Broadcast India Pvt. Ltd.	service@cineom.com	+91 22 42 10 9000
2	Monday – Friday: 08:15 – 17:00 (PST)	**Burbank, USA** ARRI Inc. West Coast	service@arri.com	+1 877 565 2774
	Monday – Friday: 08:00 – 17:30 (EST)	**New York, USA** ARRI Inc. East Coast	service@arri.com	+1 877 565 2774
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