



SMC-1

Single Motor Controller

USER MANUAL

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Imprint

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For further assistance:

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

Pottendorferstraße 25-27/3/1

A-1120 Vienna

Austria

E-mail: service@arri.com

www.arri.com

Scope

This instruction manual applies to the following product: Single Motor Controller SMC-1 with Software Update Package (SUP) 1.0

Document Information

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Disclaimer

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

The ARRI Single Motor Controller SMC-1 is only available to commercial customers. The customer grants by utilization that the SMC-1 or other components of the system are 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 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 have to heed the stated canonic use.

ARRI or its subsidiaries do not assume any responsibility for incurred losses due to improper handling or configuration of the SMC-1 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 since this manual was published, refer to the latest publications of ARRI data sheets or data books, 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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In the case one or all of the foregoing clauses are not allowed by applicable law, the fullest extent permissible clauses by applicable law are validated.

For Your Safety

Always keep this document on hand. It should be read, understood and observed by all persons using the Single Motor Controller SMC-1. All other products must be handled as prescribed by their manufacturers.

Risk Levels and Alert Symbols

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



This symbol alerts you to personal injury hazards or damage to the equipment. Obey all warnings that follow this symbol to avoid possible injury or death or damage to the equipment.



This symbol alerts you to electrical hazards. Obey all warnings that follow this symbol to avoid possible injury or death.



DANGER!

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

NOTICE: Explains practices not related to physical injury. The safety alert symbol is not used with this signal word.

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

Vital Precautions

NOTICE: Read and follow all instructions before using the product. Use the product only as described therein. Never open it. Never insert objects.

Never attempt to repair the product: Always have it repaired and serviced by authorized ARRI Service Centers.

Never remove or deactivate any product safety equipment (incl. guarantee stickers).

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

General Precautions

Use only the tools, materials and procedures recommended in this document. Unplug all cables during transport.

Do not store the SMC-1 in places where it may be subject to temperature extremes, direct sunlight, high humidity, severe vibration, or strong magnetic fields.

Audience and Intended Use

NOTICE: The product is solely and exclusively available for commercial customers and shall be used by skilled personnel only. Always contact ARRI preceding other uses. Every user should be trained according to ARRI guidelines.

The SMC-1 is a motor controller solely and exclusively for iris, focus or zoom control:

- Wireless via ARRI white radio modem
- Wired via ARRI LCS connection

Never use the product for any other purpose. Always follow the valid instructions and system requirements for all equipment involved.

Introduction

The Single Motor Controller SMC-1 is a compact 1-axis motor controller designed for weight and size-critical setups such as Steadicam or camera drones. It drives a single CLM motor and is the perfect counterpart for the SXU-1 single-axis hand unit.

Visit www.arri.com/ecs/SMC-1 for up-to-date product information and software updates.

How to Use This Manual

Connectors are written in all capital letters, for example, CLM.

Buttons are written in all capital letters, for example, MENU soft button.

Menus and screens are written in italic letters, for example *Home* screen.

The appendix at the back of the manual contains useful reference material including radio frequencies, spare parts and additional accessories, connector pin-out diagrams and dimensional drawings.

Scope of Delivery

On delivery, please check if the package and its contents are intact. Never accept a damaged/incomplete delivery. A complete delivery includes:

- Single Motor Controller SMC-1, including antenna
- Instruction manual
- Original packaging

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

System Requirements

To tap the full potential of the device, have all connected units updated to a firmware equal or higher to those listed below.

Product	Firmware
Wireless Compact Unit WCU-4	SUP 1.2
Single Axis Unit SXU-1	SUP 1.0
Zoom Main Unit ZMU-3A	SUP 02G

QUICK START GUIDE

This quick start guide walks you through setting up the SMC-1 with one hand unit and one motor for wireless lens control.

Mounting on Camera

Mount the SMC-1 on the camera, preferably in a vertical position by using the L-Bracket, with the antenna pointing upwards and the motor connector pointing towards the lens. Such a position makes the SMC-1 user interface easily accessible.

Powering up

Connect the SMC-1 to a power source with one of the power cables listed on page 21. The SMC-1 will power-up automatically when connected to the power source.

Setting up Motors

Attach one CLM motor for focus, iris or zoom to the lens. Make sure the motor is properly mounted to the respective lens axis and will not loosen up when operated.

Connect the motor cable to the CLM connector on the SMC-1.

Set the SMC-1 to the lens axis it is connected to: Go to *Menu>Axis* and select *Focus, Iris* or *Zoom*.

Go to the *Focus, Iris* or *Zoom* sub-page of the *Home* screen and press CAL to calibrate the motor. You can also trigger calibration from the hand unit.

Set up the motor mounting side and torque (if applicable) in the *Focus, Iris* or *Zoom* sub-page (depending on the axis selection) of the *Home* screen.

Side refers to the side of the lens the motor is mounted to (on standard support rods underneath the lens).

Torque refers to the motor torque; a higher value means higher torque.

Connecting to Hand Unit

Set the radio channel on the SMC-1. Press the RADIO soft button on the *Home* screen and select a channel. Press SET to activate the selected channel. Make sure that the selected radio channel is not already in use by another motor controller.

Set the hand unit to the same radio channel (see the hand unit's user manual for further instructions). Once connected, the number of connected hand units will change from 0 to 1 on the SMC-1 *Home* screen.

You are now ready to shoot.

Note: After connecting a lens motor to the SMC-1 and the lens, it must be calibrated. The lens motor must be recalibrated under the following conditions:

- When the lens motor is detached from the lens
- After changing lenses
- After a change in motor position while powered down



Omitting motor calibration might lead to damage of the lens due to the high level of motor torque!

Interface	Description
Antenna	Swivel antenna
LCS Connector	Connects to hand units via ARRI LCS cable, for wired operation
CAM Connector	Multi-pin connector, offering a variety of protocols, providing REC and tally control for most film and digital cameras
CLM Motor Connector	Connects to an ARRI Controlled Lens Motor
Micro SD Card Slot	Mounts a Micro SD card
3/8" UNC Mounting Point	Mounting point for accessories like L-Bracket or V-Plate

Control Panel

The SMC-1 features a user interface enabling the user to quickly configure the system. The 1.2” transfective LCD display shows vital status information and is easily readable in any ambient light conditions.



Fig. 1: Control Panel

Soft Buttons

Four soft buttons are located above and below the display. They change their behavior depending on the screen content. Two rows at the top and the bottom of the screen show the function related to each button. Buttons without a label have no function in that screen.

Menu Navigation

Use the UP and DOWN soft buttons to navigate through the menu.

To access a new menu level, press the ENTER soft button. To go back, press the BACK or the HOME soft button.

Press SET to activate a setting.

HOME

The *Home* screen is the default screen. It shows the current radio and motor status.

The *Home* screen provides four soft buttons:

- **LOCK:** Press to lock or unlock the other three soft buttons. A padlock symbol indicates that buttons are locked.
- **MENU:** Press to enter the main menu.
- **RADIO:** Press to select the radio channel.
- **FOCUS/IRIS/ZOOM:** Press to enter the motor setup menu.

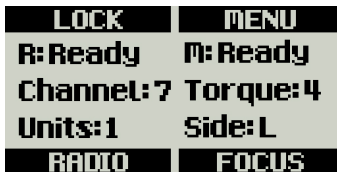


Fig. 2: Home Screen

Info Area

The info area shows the current radio status on the left side of the screen and the current motor status on the right side of the screen.

Radio Status

R:	<i>Off</i>	Indicates that the radio modem is switched off.
	<i>Init</i>	Indicates that the radio modem is initializing.
	<i>Ready</i>	Indicates that the radio modem is initialized and ready to connect.
	<i>Blocked</i>	Indicates that another motor controller is already using the currently selected radio channel. Select another radio channel!
Channel:	0 – 7	Indicates the radio channel.
Units:	0 – 3	Indicates the number of connected hand units.

Motor Status

M:	<i>CAL!</i>	Please calibrate the motor!
	<i>CAL</i>	Motor is calibrating.
	<i>Idle</i>	The motor is not assigned to a control device.
	<i>Ready</i>	The motor is ready to use.
	<i>None</i>	There is no motor connected.
Torque:	<i>1 – 4</i>	Indicates the motor torque setting.
Side:	<i>L/R</i>	Indicates to which side of the lens the motor is set (Left/Right).

RADIO

Press the RADIO soft button on the *Home* screen to enter the *Radio* menu page. Use the UP and DOWN soft buttons to select the radio channel or to switch the radio on and off. Select the same channel both on the hand unit and the SMC-1.



Fig. 3: Radio Menu

FOCUS/IRIS/ZOOM

Press the FOCUS, IRIS or ZOOM (depending on the lens axis) soft button on the *Home* screen to enter the motor menu page. The motor menu lets you calibrate the motor and set up the motor torque and mounting side.

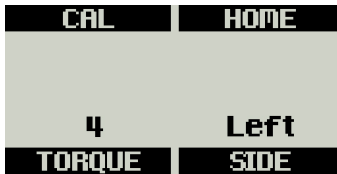


Fig. 4: Motor Menu

Press CAL to calibrate the current lens motor.

Press SIDE to select the side on which the motor is mounted to the lens.

Press TORQUE to set the torque level for CLM-3 and CLM-4 motors. Torque setting is not available for the CLM-2 motor.



Ensure that the motor torque level matches the lens to avoid lens damage. Stiff, hard-to-move lenses require a higher torque level.

MENU

The *Menu* contains parameters for the basic SMC-1 setup.



Fig. 5: Main Menu

Axis

Select *Focus*, *Iris* or *Zoom* – depending on which axis you want to control on the lens.

Backlight

Select the backlight brightness of the LCD screen. The brightness can be set from 0 (backlight is off) to 10 (maximum brightness).

Firmware

To keep your SMC-1 up-to-date, you may need to update its firmware. Please check ARRI's website for the latest firmware packages. To update the device, proceed as follows:

1. Go to the download area at www.arri.de/ecs/smc-1.
2. Download the zip file containing the update file.
3. Unzip the file.
4. Copy SMC-1_V#####.upd to ARRI/SMC1/Firmware/ on Micro SD card (with ##### being the update version number).
5. Insert the Micro SD card in the Micro SD card slot of the SMC-1.
6. Select *Menu>Firmware*. Update information appears.
7. Press both UPDATE keys simultaneously to start the update.
8. The SMC-1 will reboot after the update is completed.



Do not switch power off and do not remove the Micro SD card during the update as this may damage the SMC-1!

System Info

Select the *System Info* menu page to identify the currently installed firmware version.

Appendix

Antenna Connector



The radio connection is established via the antenna connected to the antenna connector. Do not leave the connector open during operation or transport. The radio module inside could be damaged by electrostatic discharge via the open connector. We recommend using the originally supplied antenna only.

Cables and Accessories

The following accessories are compatible with the SMC-1:

K2.0001996	Swivel antenna for SMC-1 and EMC-1 Motor Controllers
K2.0001606	Cable SMC/EMC to RS
K2.0002682	Cable SMC/EMC to D-Tap
K2.0001999	Cable SMC/EMC to LANC/D-Tap
K2.0001997	Cable SMC/EMC to Sony F5/55
K2.0001998	Cable SMC/EMC to RED EPIC/D-Tap
K2.0002727	Cable SMC/EMC to PSC
K2.0002725	Cable SMC/EMC to open end
K2.0001967	L-Bracket
K2.0001758	V-Plate

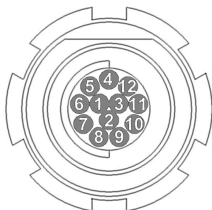
Compatible Products

The SMC-1 supports the following products:

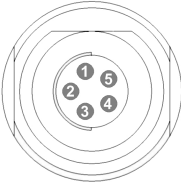
- Wireless Compact Unit WCU-4
- Single Axis Unit SXU-1
- Zoom Main Unit ZMU-3A
- Wireless Zoom Extension WZE-3
- Wireless Compact Unit WCU-3
- Wireless Main Unit WMU-3
- Wireless Focus Unit WFU-3
- Wireless Zoom Unit WZU-3
- Controlled Lens Motor CLM-2
- Controlled Lens Motor CLM-3
- Controlled Lens Motor CLM-4

Connector Pin-Outs

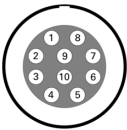
CLM



1	GND	Ground
2	MTYPE-A	Motor type sense
3	MTYPE-B	Motor type sense
4	MTYPE-C	Motor type sense
5	+5V	Encoder supply
6	Encoder-A	Encoder input A
7	Encoder-B	Encoder input B
8	n.c.	
9	n.c.	
10	n.c.	
11	Motor +	Motor drive output
12	Motor –	Motor drive output

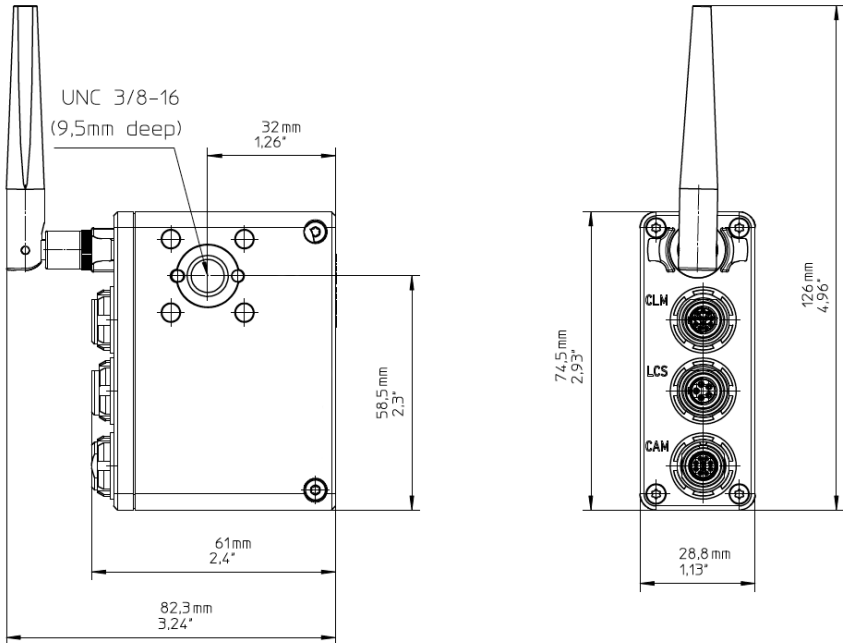
LCS

1	GND	Ground
2	n.c.	
3	CAN-L	CAN bus
4	CAN-H	CAN bus
5	+V-BAT	Battery supply output

CAM

1	GND	Ground
2	+V-BAT	9.5 V to 34 V DC IN
3	RxD	RS232
4	TxD	RS232
5	R/S	ARRI R/S
6	RUN-SW2	Opto switch, connects to pin 8 @REC (max. 100 mA/50 V)
7	ACAM	Tally, analog input, active high (default value: 1.25 V transition level)
8	RUN-SW1	Opto switch, connects to pin 6 @REC (max. 100 mA/50 V)
9	DAC-CAM	REC, analog output, active high (default value @REC: 3.3 V)
10	D-CAM	TALLY, digital input, active low, 3.3 V logic signal level

Dimensions and Weight



Weight (including antenna): 173 g

Electrical Data

Supply Voltage:	9.5 V to 34 V DC (full motor speed)
Current Consumption:	100 mA@12 V (radio on/ready) 50 mA@24 V (radio on/ready)
Operating Temperature:	-20 to +50 °C (-4 to +122 °F)

Radio System

The SMC-1 contains a radio unit that enables wireless lens control and lens data communication with a white coded radio module. A white ring at the base of the antenna mount point identifies it. It offers 8 channels to choose from:

Channel	Frequency
0	2.410 GHZ
1	2.415 GHZ
2	2.430 GHZ
3	2.435 GHZ
4	2.450 GHZ
5	2.455 GHZ
6	2.470 GHZ
7	2.475 GHZ

White radio and legacy yellow radio cannot be mixed in the same radio network of camera and hand units. It is possible to use both systems in parallel within different radio networks.

ARRI Service ContactsMunich, Germany

Arnold & Richter Cine Technik
+49 89 3809 2121
service@arri.de
Business hours:
Mo. - Fr. 9:00 - 17:00 (CET)

Milan, Italy

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

New York, USA

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

Hong Kong, China

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

London, Great Britain

ARRI CT Limited
+44 1895 457 051
service@arri-ct.com
Business hours:
Mo. - Thu. 9:00 - 17:30 (GMT)
Fr. 9:00 - 17:00 (GMT)

Burbank, USA

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

Mississauga, Canada

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

Beijing, China

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

Sydney, Australia

ARRI Australia Pty Ltd

+61 2 9855 4305

service@arri.com.au

Business hours:

Mo. - Fr. 8:00 - 18:00 (AEST)

International Declarations and Certifications

EC Declaration of Conformity

The product **Single Motor Controller SMC-1** conforms with the specifications of the following European directives:

- Directive 2014/30/EU of the European Parliament and the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility
- Directive 1999/5/EC of the European Parliament and the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity
- Directive 2011/65/EU of the European Parliament and the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

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

- EN 55022; EN 55103-1; EN 55103-2; EN 301 489-1; EN 301 489-17; EN 62479; EN 60950-1; DIN EN 50581



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.

Contains Transceiver module FCC-ID: Y7N-EMIP100

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. 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.

Contains Transceiver Module IC-ID: 9482A-EMIP100

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Arnold & Richter Cine Technik GmbH & Co. Betriebs KG · Türkenstr. 89 · D-80799 Munich · Phone +49 (0)89 3809 0