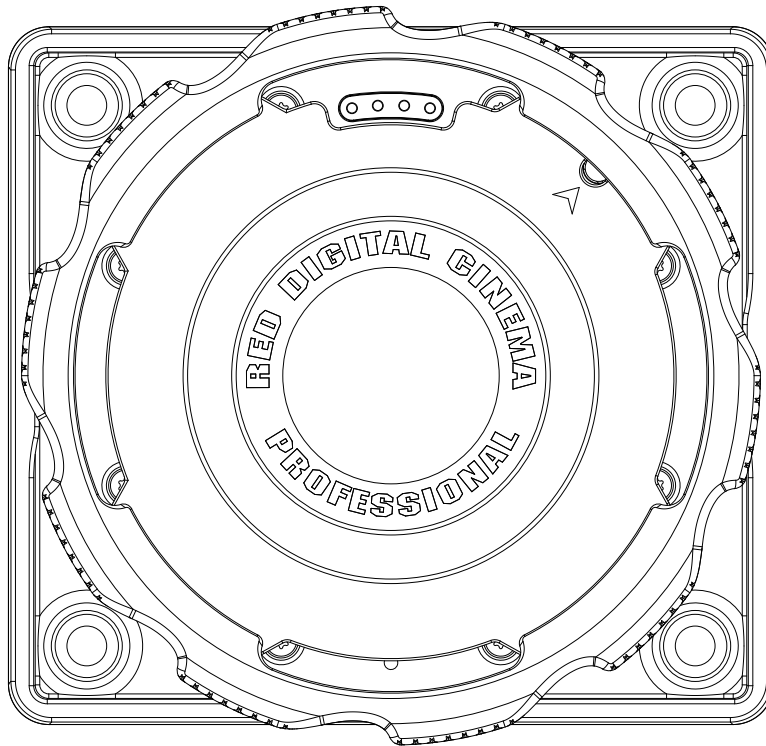




# DSMC MOTION MOUNT OPERATION GUIDE

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MOTION MOUNT TI PL | MOTION MOUNT TI CANON  
[RED.COM](http://RED.COM)

# DSMC MOTION MOUNT OPERATION GUIDE

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# DSMC MOTION MOUNT OPERATION GUIDE

## DISCLAIMER

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For comments or questions about content in this Operation Guide, please send a detailed e-mail to [OpsGuides@red.com](mailto:OpsGuides@red.com).

## COMPLIANCE STATEMENTS

### INDUSTRIAL CANADA EMISSION COMPLIANCE STATEMENTS

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

### FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENTS



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used

in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ▶ Reorient or relocate the receiving antenna.
- ▶ Increase the separation between the equipment and receiver.
- ▶ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ▶ Consult the dealer or an experienced radio/TV technician for help.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that change and modifications made to the equipment without the approval of manufacturer could void the users authority to operate this equipment.

**NOTE:** This device complies with Part 15 of the FCC Rules.

Operations subjected to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including that may cause undesirable interference.

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**CAUTION:** Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.



**CAUTION:** If the device is changed or modified without permission from RED, the user may void his or her authority to operate the equipment.

## AUSTRALIA AND NEW ZEALAND STATEMENTS

RED declares digital devices described in this document comply with the following Australian and New Zealand standards.

- ▶ AS/NZS CISPR 22 – Radio Disturbances Characteristics
- ▶ AS/NZS CISPR 24 – Immunity Characteristics
- ▶ IEC 60065 – Product Safety

## JAPAN STATEMENTS



This is a Class B product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は家庭環境で使用することを目的としていますが、ラジオやテレビジョン受信に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

# DSMC MOTION MOUNT OPERATION GUIDE

## EUROPEAN UNION COMPLIANCE STATEMENTS

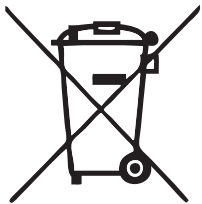


### INFORMATION

Products with the CE marking comply with the EMC Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European

Community. Compliance with these directives implies conformity to the following European Product Family Standards.

- ▶ EN 55022 (CISPR 22) – Electromagnetic Interference
- ▶ EN 55024-1 (CISPR 24) – Electromagnetic Immunity
- ▶ EN 60065 (IEC60065) – Product Safety



The Waste Electrical and Electronic Equipment (WEEE) mark applies only to countries within the European Union (EU) and Norway. This symbol on the product and accompanying documents means that used electrical and electronic products should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product to designated collection points where it will be accepted free of charge. Alternatively, in some countries you may be able to return your products to your local retailer upon purchase of an equivalent

new product.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point. Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

For business users in the European Union, if you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

## RESPONSIBLE PARTY:

RED Digital Cinema  
34 Parker  
Irvine, CA 92618  
USA

## SAFETY INSTRUCTIONS

- ▶ Heed all cautions and warnings in these instructions.
- ▶ Read these instructions before operating the lens mount.
- ▶ Follow these instructions while operating the lens mount.
- ▶ Keep these instructions with the lens mount at all times.
- ▶ DO NOT attempt to modify, dismantle or open your lens mount as doing so may expose you to electric shock and serious injury. There are no user-serviceable parts inside. Alteration or repairs made to the lens mount, except by a RED authorized service facility, will void the Limited Warranty. Users are not permitted to make design changes or otherwise modify the operation of the lens mount without the express written approval of RED.
- ▶ Install lens mount in accordance with the manufacturer's instructions.
- ▶ DO NOT use the lens mount near water. Avoid exposing your lens mount to moisture. The unit is not waterproof, so contact with water could cause permanent damage to the unit as well

as electric shock and serious injury to the user. DO NOT use the lens mount in the rain or under other conditions with high moisture without appropriate protection, and immediately remove power source if the lens mount is exposed to moisture while attached to the camera.



**WARNING:** To reduce the risk of fire or electric shock, do not expose the lens mount to rain or moisture.

- ▶ DO NOT expose your lens mount to excessive vibration or impact (shock). Be careful not to drop your lens mount. Internal mechanisms may be damaged by severe shock. Mechanical alignment of optical elements may be affected by excessive vibration.
- ▶ When cleaning your lens mount, remember that it is not waterproof and moisture can damage electronic circuitry. DO NOT rinse or immerse any element of the lens mount, keep it dry at all times. DO NOT use soaps, detergents, ammonia, alkaline cleaners, and abrasive cleaning compounds or solvents. These substances may damage the glass coating and electronic circuitry. Do NOT use compressed air.
- ▶ DO NOT operate or store near any heat sources such as radiators, heat registers, stoves, or any other apparatus that produces heat. Store in a protected, level and ventilated place. Avoid exposure to temperature extremes, damp, severe vibration, strong magnetic fields, direct sunlight or local heat sources during storage. Recommended storage and usage temperatures for your lens mount are:
  - Operating range: 0°C to +40°C (32°F to 104°F)
  - Storage range: -40°C to +80°C (-40°F to 176°F)

If there are any performance issues with your lens mount when operating within this temperature range, please file a support ticket at <https://support.red.com/home>.

- ▶ The lens mount is NOT HOT SWAPPABLE – meaning you cannot remove or install it while the camera is powered on. Before installing or removing the lens mount, you MUST power down the camera. Failure to do so may result in damage to the lens mount and/or camera brain that will not be covered under warranty.



**CAUTION:** Refer all service and repair to qualified RED service personnel. To reduce the risk of electric shock, and damage to the lens mount, DO NOT attempt to perform any servicing other than any procedures that are recommended in the operating instructions.

## 01

## MOTION MOUNT OVERVIEW

### INTRODUCTION

The DSMC® RED MOTION MOUNT™ is a revolutionary and fully-integrated system that combines a variable neutral density (ND) filter, IR cut filter, linear polarizer, global shutter, and temporal anti-aliasing soft shutter into a single lens mount for your EPIC or SCARLET Digital Still and Motion Camera (DSMC).

### VARIABLE ND FILTER

The electronic variable ND filter provides an optical density range of 0.48–1.20 (1.60–4.00 stops) when the MOTION MOUNT shutter is enabled, and an optical density range of 0.48–2.40 (1.60–8.00 stops) when in ND Only mode. You can quickly adjust the ND value through the DSMC interface or the user keys, eliminating the need to manually swap out ND filters.

### IR FILTER AND LINEAR POLARIZATION

The MOTION MOUNT incorporates an IR-cut filter and new color science, providing accurate and natural color over a wide range of color temperatures. The IR-cut filter in particular ensures rich, deep shadows. The IR-cut filter minimizes IR contamination in your shots, even at very high ND levels, which ensures that the camera does not require a separate hot mirror.

Due to the built-in linear polarizer, light that passes through the MOTION MOUNT becomes vertically polarized.

### MOTION MOUNT SHUTTERS

The MOTION MOUNT soft shutter performs temporal-anti-aliasing in your image, eliminating the wagon-wheel effect so that you capture realistic and natural motion. As its name implies, the soft shutter softens the edges of blur, resulting in sharper yet smoother motion and pans. For more information about temporal anti-aliasing, check out the [Temporal Aliasing with Cinema](http://www.red.com/learn/red-101/cinema-temporal-aliasing) article available at [www.red.com/learn/red-101/cinema-temporal-aliasing](http://www.red.com/learn/red-101/cinema-temporal-aliasing).

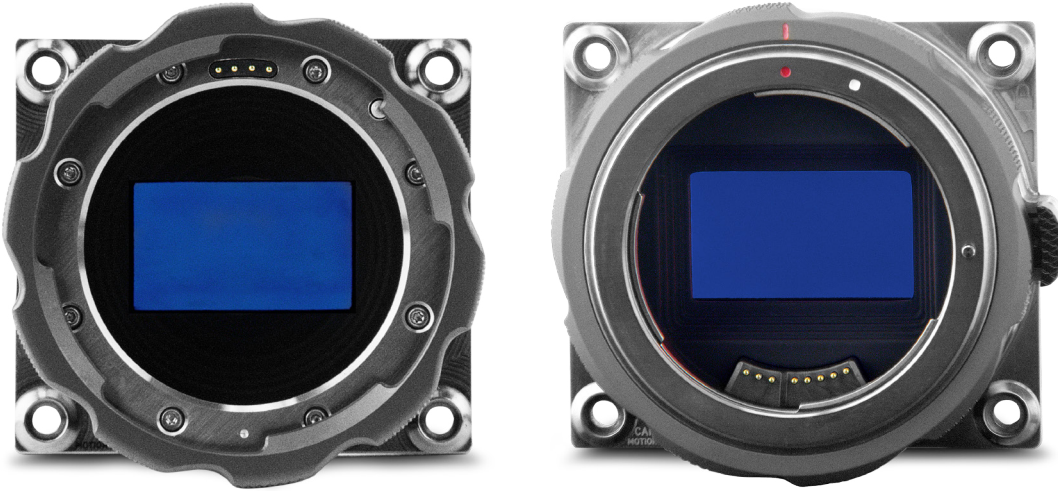
The MOTION MOUNT global shutter (referred to in the user interface and the rest of this document as the “square shutter”) eliminates rolling shutter artifacts, such as partial illumination caused by strobes. The global shutter ensures uniform exposure throughout your image, regardless of strobes or motion. For more information about global shutters, check out the [Global & Rolling Shutters](http://www.red.com/learn/red-101/global-rolling-shutter) article available at [www.red.com/learn/red-101/global-rolling-shutter](http://www.red.com/learn/red-101/global-rolling-shutter).

# DSMC MOTION MOUNT OPERATION GUIDE

## MOTION MOUNT COMPONENTS

Each MOTION MOUNT package contains one of the following:

- ▶ DSMC® RED MOTION MOUNT™ TI PL, DSMC MOUNT BODY CAP, and DSMC MOUNT BACK CAP
- ▶ DSMC® RED MOTION MOUNT™ TI CANON, DSMC MOUNT BODY CAP, and DSMC MOUNT BACK CAP



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*PL MOTION MOUNT  
(left),  
CANON MOTION  
MOUNT (right)*

---

If there is any physical damage to any of these components or if you are missing any components, please file a support ticket at <https://support.red.com>.

**NOTE:** The filter and shutter in the MOTION MOUNT TI PL and the MOTION MOUNT TI CANON are identical. The only difference between the two mounts is their lens compatibility.

**NOTE:** The MOTION MOUNT is .9 mm longer than the RED PL MOUNT and the RED CANON MOUNT.

**NOTE:** You cannot use HDRx® while the MOTION MOUNT is installed.

## HARDWARE AND SYSTEM REQUIREMENTS

- ▶ EPIC or SCARLET DSMC (the MOTION MOUNT is compatible with the MYSTERIUM-X® and RED DRAGON™ sensors)
- ▶ DSMC firmware v5.1.14 or later
- ▶ REDCINE-X PRO® Build 20 or later

**NOTE:** Perform a hardware rediscover or upgrade your DSMC firmware after you install the MOTION MOUNT so that the DSMC firmware recognizes the MOTION MOUNT.

## 02

## INSTALL MOTION MOUNT

Please understand that any damage that occurs to your camera or lens mount while removing or installing lens mounts is NOT covered under any RED warranty.

**NOTE:** DSMC lens mounts are NOT hot swappable. The DSMC must be powered down before you remove or install a lens mount.

**NOTE:** Do not allow any dirt or debris to enter the camera opening during the removal or installation of lens mounts. Take great care not to drop any screws into the camera opening, as damage may occur to the OLPF.

**NOTE:** Avoid physical contact with the MOTION MOUNT glass while installing or removing the MOTION MOUNT. For more information on maintaining and cleaning the MOTION MOUNT glass, go to [“MOTION MOUNT Maintenance” on page 23](#).

### REQUIRED TOOLS

- ▶ T20 Torx® driver

### REMOVE LENS MOUNT

#### APPLICABLE LENS MOUNTS

This section explains how to remove any of the following RED DSMC lens mounts from the DSMC brain:

- ▶ DSMC TI PL MOUNT
- ▶ DSMC TI CANON MOUNT
- ▶ DSMC AL CANON MOUNT
- ▶ DSMC AL LEICA MOUNT
- ▶ DSMC TI NIKON MOUNT
- ▶ DSMC AL NIKON MOUNT
- ▶ DSMC MOTION MOUNT TI PL
- ▶ DSMC MOTION MOUNT TI CANON

#### REMOVE MOUNT

Follow the instructions below to remove the lens mount:

1. Turn off the DSMC and remove the lens, power supplies, cables, and any DSMC accessories that may obstruct access to the lens mount.
2. Place the DSMC brain on a suitable flat work surface with the front of the DSMC facing upward.

# DSMC MOTION MOUNT OPERATION GUIDE

3. Use a T20 Torx driver to remove the four M4x0.7 x 8 mm button screws that attach the existing mount to the DSMC brain.



---

*Remove Screws*

---

4. Remove the mount from the DSMC brain.



---

*Remove DSMC PL Mount*

---

**NOTE:** When looking at the back of the MOTION MOUNT, the glass is blue. However, after removing the MOTION MOUNT within a few minutes of powering off your DSMC, the glass is yellow and slowly develops blue spots. After a few minutes, the entire glass is blue again. This transition of color from yellow to blue after turning off the DSMC is normal behavior.



# DSMC MOTION MOUNT OPERATION GUIDE

## INSTALL MOTION MOUNT

Follow the instructions below to install the MOTION MOUNT TI PL or the MOTION MOUNT TI CANON:

1. Turn off the DSMC and remove the lens, power supplies, cables, and any DSMC accessories that may obstruct access to the lens mount.
2. Place the DSMC brain on a suitable flat work surface with the front of the DSMC facing upward.
3. Place the MOTION MOUNT on the DSMC brain, so that the pins on the DSMC body align with the pins on the MOTION MOUNT.



---

*Align Pins*

---

4. Align the four M4x0.7 x 8 mm button screws in the MOTION MOUNT with the threaded holes in the DSMC brain.
5. Use a T20 Torx driver to tighten the M4x0.7 x 8 mm button screws by about two turns in a cross pattern. **DO NOT FULLY TIGHTEN.**



---

*Install Screws*

---

6. Fully tighten the M4x0.7 x 8 mm button screws in a cross pattern (do not exceed 22 in/lb, or damage may occur to the DSMC).

**NOTE:** If you need to replace any screws, please contact your Bomb Squad representative.

## 03

## HOW TO USE THE MOTION MOUNT

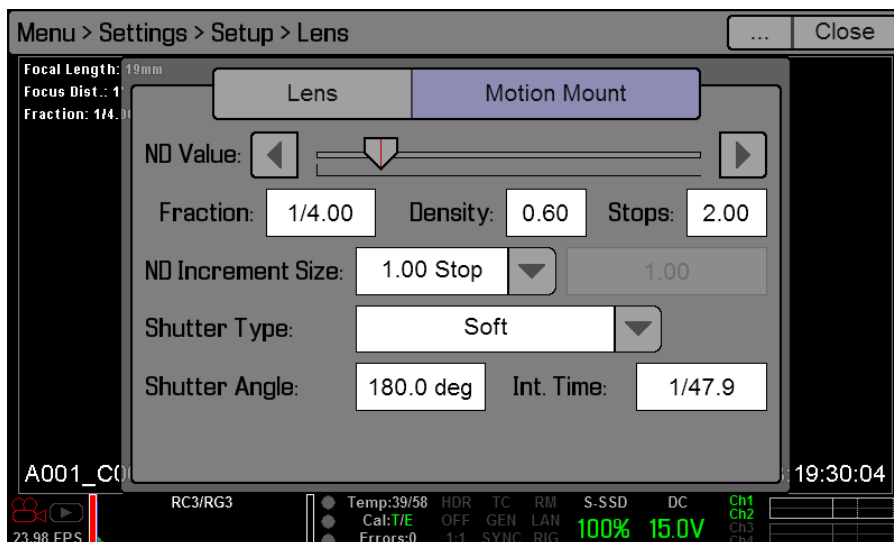
**NOTE:** The instructions in this section are specific to firmware version v5.1.14

### ACCESS MOTION MOUNT SETTINGS

1. Attach a DSMC MOTION MOUNT to the camera.
2. Turn on your DSMC.
3. In the menu, navigate to **Settings > Setup > Lens > Motion Mount**.

**NOTE:** The Motion Mount menu is only accessible when a MOTION MOUNT is installed.

4. Select one of the following MOTION MOUNT settings from the **Shutter Type** drop-down menu:
  - **ND Only:** The MOTION MOUNT functions only as an ND filter. For more information about the ND settings, go to [“Neutral Density \(ND\) Settings” on page 11](#).
  - **Soft:** The MOTION MOUNT soft shutter takes over shuttering duties, and the MOTION MOUNT continues to function as an ND filter. For more information about the soft shutter, go to [“Soft Shutter” on page 15](#).
  - **Square:** The MOTION MOUNT square shutter takes over shuttering duties, and the MOTION MOUNT continues to function as an ND filter. For more information about the square shutter, go to [“Square Shutter” on page 17](#).



*MOTION MOUNT Settings*

## NEUTRAL DENSITY (ND) SETTINGS

The MOTION MOUNT has a variable ND filter that incorporates an IR cut filter and a polarizer. You can easily adjust the ND setting in increments down to 0.01 stops directly through the DSMC on-screen display, or by programming the increment and decrement functions to the DSMC keys. For more information on programming keys, go to [“Map Keys to Adjust MOTION MOUNT Settings” on page 22.](#)

The variable ND functionality is always enabled when using the MOTION MOUNT.

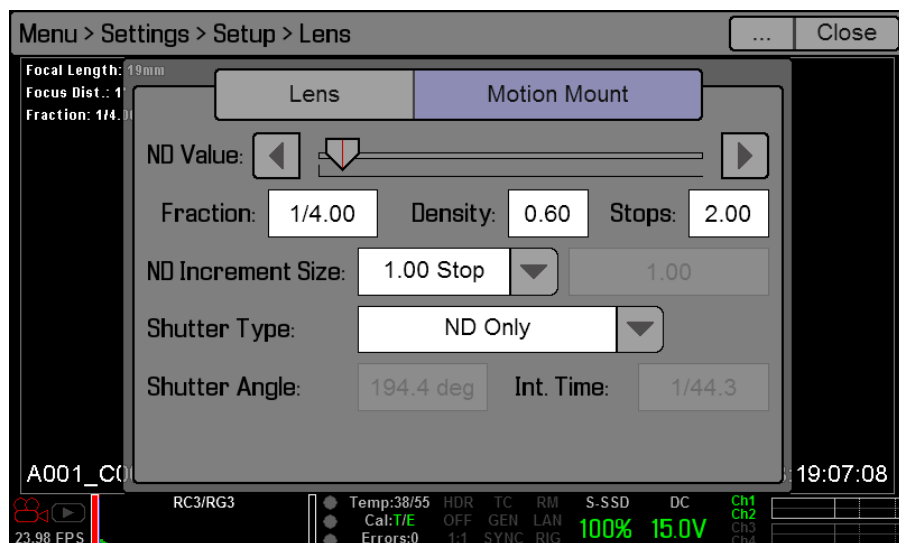
The maximum shutter angle is restricted when you’re in ND Only mode and the ND is below 0.60 (2 stops). If you are using a particular frame rate in ND Only mode and can’t select your desired shutter angle, increase your ND value to 0.60 (2 stops) or above.

**NOTE:** ND level cannot currently be changed during recording.

## SELECT ND SETTINGS

1. Navigate to **Settings > Setup > Lens > Motion Mount.**
2. Select an ND value using the **ND Value** slider, or enter a value for any of the following fields:
  - **Fraction:** Displays the neutral density value as a fraction of light transmission.
  - **Density:** Displays the neutral density value as an optical density value.
  - **Stop:** Displays the neutral density value as a stop loss.
3. Select an **ND Increment Size**, if needed. If you select **Custom**, enter the new increment size in the field next to the **ND Increment Size** drop-down menu. You can select any increment in the range 0.01–4.00 stops.

**NOTE:** If you select an ND value over 4.00 stops while in ND Only mode, the ND value on the main screen overlay turns yellow, and the following message displays on the Motion Mount screen: “High ND with wide apertures may cause bokeh asymmetry”. For more information about possible bokeh asymmetry, go to [“Out-of-Focus Field Modification” on page 13.](#)



*MOTION MOUNT Settings*

# DSMC MOTION MOUNT OPERATION GUIDE

## ND RANGE

When you're in ND Only mode, the optical density range is 0.48–2.40 (1.60–8.00 stops).

When you're in Soft or Square mode, the optical density range 0.48–1.20 (1.60–4.00 stops).

The table below shows the relationship between the fraction value, optical density value, and stop loss. The values in the table increment by 1/2 and 1/3 stops.

ND VALUES		
FRACTION	DENSITY	STOPS
1/3.03	0.48	1.60
1/3.18	0.50	1.67
1/4.00	0.60	2.00
1/5.06	0.70	2.34
1/5.66	0.75	2.50
1/6.36	0.80	2.67
1/8.00	0.90	3.00
1/10.13	1.01	3.34
1/11.31	1.05	3.50
1/12.73	1.10	3.67
1/16.00	1.20	4.00
1/20.25	1.31	4.34
1/22.63	1.35	4.50
1/25.46	1.41	4.67
1/32.00	1.51	5.00
1/40.50	1.61	5.34
1/45.25	1.66	5.50
1/50.91	1.71	5.67
1/64.00	1.81	6.00
1/81.01	1.91	6.34
1/90.51	1.96	6.50
1/101.83	2.01	6.67
1/128.00	2.11	7.00
1/162.02	2.21	7.34
1/181.02	2.26	7.50
1/203.66	2.31	7.67
1/256.00	2.40	8.00

## OUT-OF-FOCUS FIELD MODIFICATION

In ND Only mode, if the MOTION MOUNT is set near the end of its ND range and used with a very wide aperture you may notice a modified out-of-focus field (bokeh), and possibly some vignetting at the edge of the image with smaller image circle lenses. We recommend that you do not shoot past 4 stops of ND on the mount if you are shooting wide open.

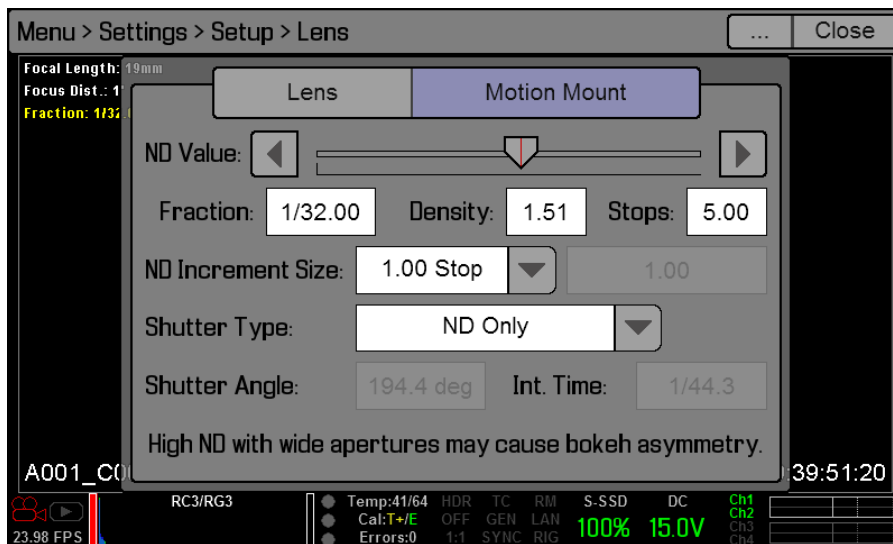
For instance, if the MOTION MOUNT is set to 8 stops of ND, and the lens is set to T1.8, instead of the normal circular bokeh pattern, the out-of-focus area may have flaring mostly in one direction.

There are several ways this flaring can be avoided. If the lens aperture is changed to a T-stop of 4.0 or greater, the bokeh distortion will be dramatically reduced. Also, the ND value of the MOTION MOUNT can be reduced to produce a more symmetric bokeh. This effect begins around a density value of 5 stops (ND 1.5, or 1/32), and becomes more apparent as the value approaches 8 stops.

If a shot requires a wide-aperture to limit depth-of-field, and 8 full stops of ND are needed due to the scene illumination and shutter settings, it is recommended that a 4 stop (ND 1.2, or 1/16) normal ND filter be used in addition to the MOTION MOUNT. This would also allow use of the global MOTION MOUNT shuttering modes during the shot as well as variable ND, and the bokeh will have no distortion.

The flaring effect may vary based on the particular lens used or setup, so RED recommends testing your setup before shooting. Again, this effect will be negligible at apertures with T-stops of 4.0 or greater, and it does not appear in the soft and square shutter modes.

If you select an ND value over 4.00 stops while in ND Only mode, the ND value on the main screen overlay turns yellow, and the following message displays on the Motion Mount screen: “High ND with wide apertures may cause bokeh asymmetry”.



*High ND Notification*

## SHUTTER MODES

When MOTION MOUNT shuttering is enabled, the MOTION MOUNT takes over shuttering duties. You can use the MOTION MOUNT shutter at frame rates up to 120 fps.

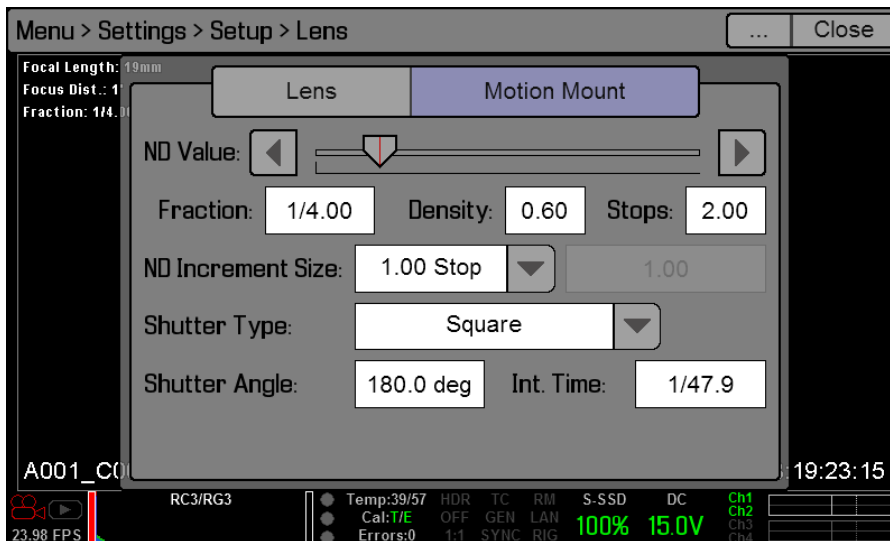
## RECOMMENDED SHUTTER MODES

Use the table below to help you determine which MOTION MOUNT shutter mode to use:

SHUTTER MODE	ARTIFACTS	
	ROLLING SHUTTER	TEMPORAL ALIASING
SQUARE SHUTTER	None	No effect
SOFT SHUTTER	None	Dramatically reduced

## SELECT MOTION MOUNT SHUTTER SETTINGS

1. Navigate to **Settings > Setup > Lens > Motion Mount**.
2. Select one of the following **Shutter Types**:
  - **Soft**: The MOTION MOUNT soft shutter takes over shuttering duties, and the MOTION MOUNT continues to function as an ND filter. For more information about the soft shutter, go to [“Soft Shutter” on page 15](#).
  - **Square**: The MOTION MOUNT square shutter takes over shuttering duties, and the MOTION MOUNT continues to function as an ND filter. For more information about the square shutter, go to [“Square Shutter” on page 17](#).
3. Select the **Shutter Angle** and **Integration Time**.



*Shutter Settings*

# DSMC MOTION MOUNT OPERATION GUIDE

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## SOFT SHUTTER

The MOTION MOUNT soft shutter is completely new to the fields of photography and cinematography. All shutters prior to the MOTION MOUNT either use a rolling shutter or start and stop recording abruptly. When the soft shutter mode is enabled, the MOTION MOUNT's liquid crystal ramps from opaque to clear in a rounded wave. This shuttering technique completely eliminates temporal aliasing artifacts and reduces rolling shutter artifacts.

Here's an overview of how the soft shutter eliminates temporal aliasing artifacts:

- ▶ Shows correct direction of rotation of cyclical motion, such as rotating propellers.
- ▶ Softens blur while preserving clarity.
- ▶ Reduces judder while panning.
- ▶ Renders human movement accurately and naturally.
- ▶ Reduces flickering without requiring continuous or synchronized lighting.

Here's an overview of how the soft shutter reduces rolling shutter artifacts:

- ▶ Reduces striping or tearing artifacts from uncontrolled strobes and flashes.
- ▶ Reduces the "jello" effect, so that fast-moving subjects are not angled or sheared.
- ▶ Ensures that images are not blurred or wobbled due to rapid camera movements.

## SOFT SHUTTER FRAME RATES

You can use the MOTION MOUNT shutter at frame rates up to 120 fps, but the soft shutter is most effective at reducing temporal aliasing artifacts and rolling shutter artifacts at lower frame rates.

## SOFT SHUTTER ANGLE

The soft shutter angle ranges from 22.5° to 194.4°. The available shutter angle range at any given time depends on the selected frame rate.

For the most natural and realistic motion, use a shutter angle of 194.4° when in soft shutter mode. Then, adjust the shutter angle if needed.

# DSMC MOTION MOUNT OPERATION GUIDE

## SOFT SHUTTER: STROBE SAFE OPERATION

The table below shows the recommended maximum shutter angles when filming strobe lights using the soft shutter mode.

		RESOLUTION					
		1K	2K	3K	4K	5K	6K
FRAME RATE	1	194	194	193	193	192	192
	2	193	193	192	191	190	190
	4	192	191	190	188	186	185
	8	190	188	185	182	179	176
	12	188	186	181	176	171	167
	16	186	183	176	169	163	157
	24	183	177	167	157	147	139
	25	182	176	166	155	145	137
	30	180	172	160	147	135	125
	40	175	165	149	131	115	102
	48	171	159	140	119	99	83
	50	170	157	137	116	95	79
	60	165	150	126	100	76	56
	72	159	141	112	81	52	28
	75	157	139	109	76	46	None
	90	150	128	92	53	None	None
	96	147	123	85	43	None	None
100	145	121	80	37	None	None	
120	135	106	57	None	None	None	



# DSMC MOTION MOUNT OPERATION GUIDE

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## **SQUARE SHUTTER**

The MOTION MOUNT square shutter is a global shutter that provides consistent, full illumination for every frame. Skewed and smeared artifacts no longer affect your image as the MOTION MOUNT fundamentally changes the way your camera exposes for motion.

Here's an overview of how the square shutter eliminates rolling shutter artifacts:

- ▶ Reduces striping or tearing artifacts from uncontrolled strobes and flashes.
- ▶ Reduces the “jello” effect, so that fast-moving subjects are not angled or sheared.
- ▶ Ensures that images are not blurred or wobbled due to rapid camera movements.

## **SQUARE SHUTTER FRAME RATES**

You can use the MOTION MOUNT shutter at frame rates up to 120 fps, but the square shutter is most effective at reducing rolling shutter artifacts at lower frame rates.

## **SQUARE SHUTTER ANGLE**

The square shutter angle ranges from 22.5° to 180°. The available shutter angle range at any given time depends on the selected frame rate.

For the most natural and realistic motion, use a shutter angle of 180° when in square shutter mode. Then, adjust the shutter angle if needed.

# DSMC MOTION MOUNT OPERATION GUIDE

## SQUARE SHUTTER: STROBE SAFE OPERATION

The table below shows the recommended maximum shutter angles when filming strobe lights using the square shutter mode.

		RESOLUTION					
		1K	2K	3K	4K	5K	6K
FRAME RATE	1	180	180	180	180	180	180
	2	180	180	180	180	180	180
	4	180	180	180	180	180	180
	8	180	180	180	180	180	180
	12	180	180	180	180	180	180
	16	180	180	180	180	180	180
	24	180	180	180	180	180	171
	25	180	180	180	180	179	169
	30	180	180	180	180	167	154
	40	180	180	180	162	142	126
	48	180	180	172	147	123	103
	50	180	180	169	143	118	97
	60	180	180	155	123	93	69
	72	180	174	138	100	64	34
	75	180	172	134	94	57	26
	90	180	158	113	65	None	None
	96	180	152	105	53	None	None
	100	179	149	99	46	None	None
120	167	131	71	None	None	None	

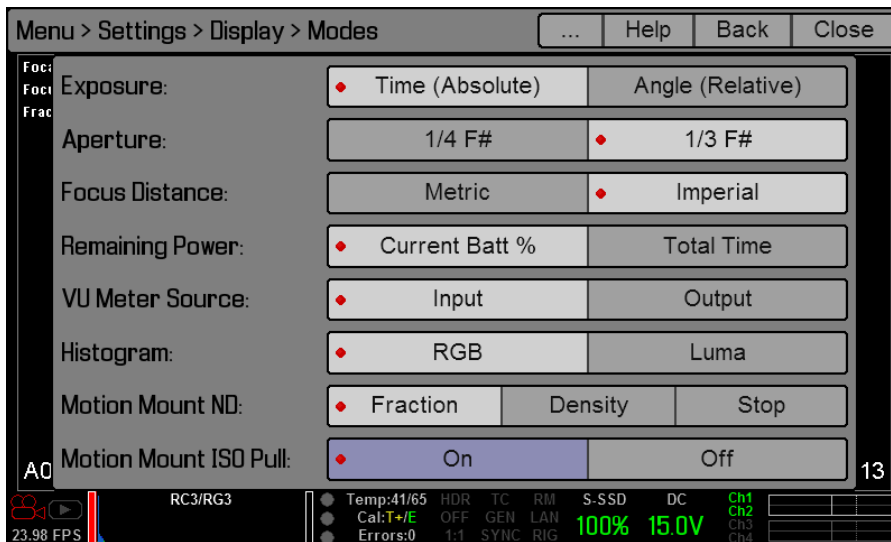
## DISPLAY EFFECTIVE ISO

When using any ND filter, including the MOTION MOUNT, the effective ISO is reduced because the ND filter reduces light transmission to the sensor. The MOTION MOUNT and DSMC give you the ability to see both the effective ISO (on the main screen) and the native camera sensor ISO (in the FLUT<sup>®</sup> screen).

While the effective ISO is displayed on the main screen, you should continue to follow standard exposure best practices and select your ISO based on the camera's native ISO.

## ENABLE EFFECTIVE ISO SETTING

1. Navigate to **Settings > Display > Modes**.



2. For the **Motion Mount ISO Pull** setting, select one of the following:
  - **On**: Display the effective ISO.
  - **Off**: Display actual ISO.
3. After you enable the setting, navigate back to the main screen.

The effective ISO is displayed in yellow.

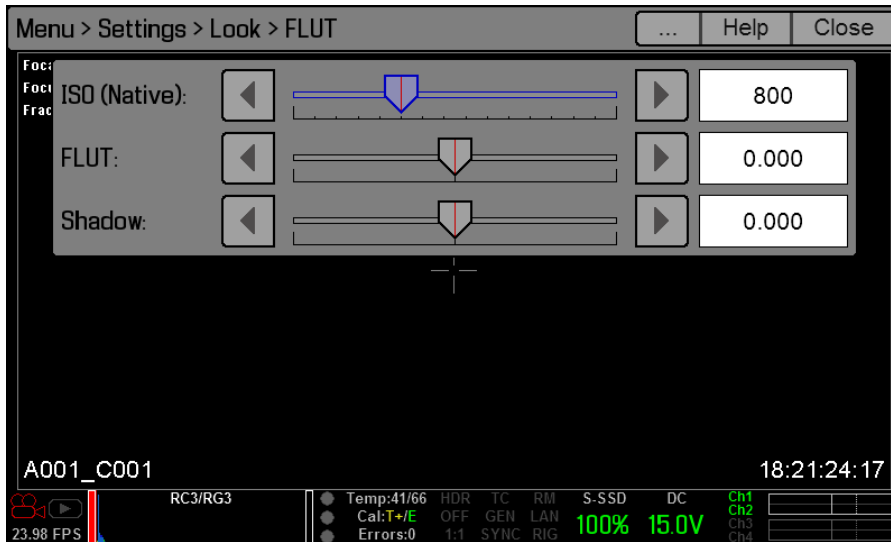


# DSMC MOTION MOUNT OPERATION GUIDE

- To change the effective ISO, tap the **ISO** value and select a different ISO on the slider. However, changing the effective ISO changes the camera's native ISO, and NOT the ND value.



To view or change the camera's native ISO, press and hold the **ISO** value, and the Advanced ISO menu displays. The native ISO is the first value.

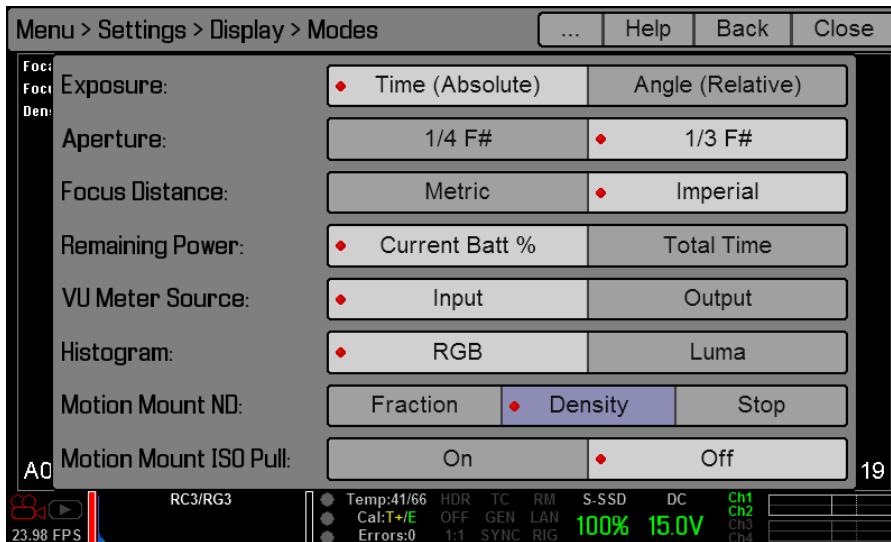


# DSMC MOTION MOUNT OPERATION GUIDE

## DISPLAY ND SETTINGS

You can configure how the ND setting appears on the on-screen display. To configure this setting, follow the instructions below:

1. Navigate to **Settings > Display > Modes**.



2. For the **Motion Mount ND** setting, select one of the following:
  - **Fraction**: Displays the neutral density value as a fraction of light transmission.
  - **Density**: Displays the neutral density value as an optical density value.
  - **Stop**: Displays the neutral density value as a stop loss.
3. After you select the display setting, navigate back to the main screen. The ND value displays in the top left corner.

**NOTE:** If you select an ND value over 4.00 stops while in ND Only mode, the ND value on the main screen overlay turns yellow, and the following message displays on the Motion Mount screen: “High ND with wide apertures may cause bokeh asymmetry”. For more information about possible bokeh asymmetry, go to [“Out-of-Focus Field Modification” on page 13](#).



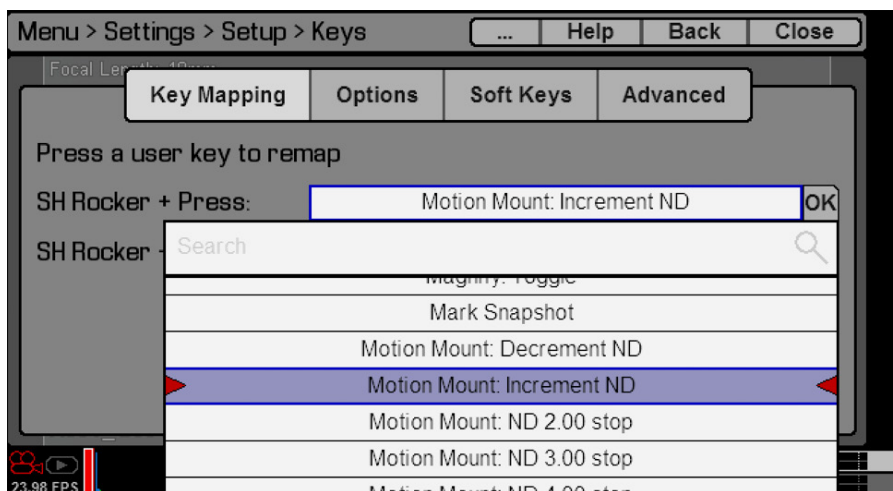
# DSMC MOTION MOUNT OPERATION GUIDE

## MAP KEYS TO ADJUST MOTION MOUNT SETTINGS

In order to quickly adjust the ND value or shutter settings without accessing the MOTION MOUNT screen, you can program user keys to different MOTION MOUNT actions.

To map keys, navigate to **Settings > Setup > Keys**. You can map the following MOTION MOUNT actions:

KEY ACTION	DESCRIPTION
Motion Mount: Decrement ND	Decrements the ND value by the ND Increment Size selected in the Settings > Setup > Lens > Motion Mount screen. RED recommends mapping this action to the Side Handle rocker + key.
Motion Mount: Increment ND	Increments the ND value by the ND Increment Size selected in the Settings > Setup > Lens > Motion Mount screen. RED recommends mapping this action to the Side Handle rocker - key.
Motion Mount: 2.00 stop	Changes the ND to 2.00 stops.
Motion Mount: 3.00 stop	Changes the ND to 3.00 stops.
Motion Mount: 4.00 stop	Changes the ND to 4.00 stops.
Motion Mount: 5.00 stop	Changes the ND to 5.00 stops.
Motion Mount: ND Max	In ND Only mode, changes the ND to 2.41. In soft or square mode, changes the ND to 1.20.
Motion Mount: ND Min	Changes the ND value to 0.48.
Motion Mount: ND Only	Changes the Shutter Type to ND ONLY.
Motion Mount: Soft Shutter	Changes the Shutter Type to Soft.
Motion Mount: Square Shutter	Changes the Shutter Type to Square.



*Map Keys for MOTION MOUNT*

## 04

## MOTION MOUNT MAINTENANCE

### CLEAN MOTION MOUNT GLASS

As with all optical glass, handle the MOTION MOUNT glass carefully. Avoid using the MOTION MOUNT in dusty or hazardous environments and avoid physical contact with the glass. Do NOT rinse or immerse the MOTION MOUNT in water.

**NOTE:** Do NOT use any of the following to clean the MOTION MOUNT:

- ▶ Compressed air
- ▶ Soaps, detergents, ammonia, alkaline cleaners, or abrasive cleaning compounds

### AIR BULBS

If you need to clean the MOTION MOUNT glass, use a rubber air bulb (such as Giotto's® Rocket Air Blaster) to remove any solid particles, such as dirt or dust. Ionized air bulbs (such as the FireFly™ Digital Sensor Cleaner) may be particularly useful, since these remove static.

Even if you plan on cleaning the MOTION MOUNT glass with swabs/wipes and a cleaning solution, first use an air bulb to remove any solid particles, since wiping solid particles across the glass may cause scratches.

**NOTE:** Do NOT use compressed air to clean the MOTION MOUNT. The high pressure may damage the glass, and some compressed air cans leave an oily residue which may be difficult to clean.

### SWABS, WIPES, AND CLEANING SOLUTIONS

As with all optical glass, any type of physical contact with the MOTION MOUNT glass may scratch or damage the glass. RED recommends that you only clean the MOTION MOUNT glass using physical contact if absolutely necessary. Even if you plan on cleaning the MOTION MOUNT glass with swabs/wipes and a cleaning solution, first use an air bulb to remove any solid particles, since wiping solid particles across the glass may cause scratches.

If you need to make contact with the MOTION MOUNT glass, use lens-grade wipes or non-rigid flexible uniform swabs (such as Delkin® swabs), and a DSLR sensor or lens cleaning solution (such as Delkin or Pancro solutions).

Pour a few drops of the sensor or lens cleaning solution on the wipe or swab itself, and NOT directly on the glass. To ensure that the cleaning solution does not seep through the sides of the mechanicals, do not use an excess of the solution.

When using a swab, ensure that the swab provides full coverage of the glass, and do NOT place the corners of the swab on the glass. Gently sweep the swab flat across the length of the glass in a uniform motion.

When using a wipe, gently sweep the wipe across the length of the glass with a flat, non-rigid flexible instrument in a uniform motion. Do NOT sweep the wipe across the glass with your finger.

Do NOT reuse swabs or wipes, since the swab may have picked up dirt or debris from the glass, or from the surface where it was stored.

### STORAGE

When not in use, place the MOTION MOUNT in the DSMC MOUNT BACK CAP that ships with the mount.

# A

## TECHNICAL SPECIFICATIONS

**NOTE:** All specifications in this appendix exclude the DSMC MOUNT BODY CAP and DSMC MOUNT BACK CAP.

### MOTION MOUNT TI PL TECHNICAL SPECIFICATIONS

Dimensions	Height: 82.0 mm Width: 82.0 mm Depth: 36.2 mm
Weight	11.2 oz (317.515 g)
Material	Machined titanium
Operating Temperature	0°C to +40°C (32°F to 104°F)
Storage Temperature	-20°C to +60°C (-4°F to 140°F)
Maximum Altitude	20,000 ft
Humidity Range	0 to 90% RH
Shock	10 g
Input Voltage	+5.0 VDC
Power Consumption	1.5W

### MOTION MOUNT TI CANON TECHNICAL SPECIFICATIONS

Dimensions	Height: 79.9 mm Width: 85.0 mm Depth: 23.3 mm
Weight	8 oz (226.796 g)
Material	Machined titanium
Operating Temperature	0°C to +40°C (32°F to 104°F)
Storage Temperature	-20°C to +60°C (-4°F to 140°F)
Maximum Altitude	20,000 ft
Humidity Range	0 to 90% RH
Shock	10 g
Input Voltage	+5.0 VDC
Power Consumption	1.5W



# DSMC MOTION MOUNT OPERATION GUIDE

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## ND AND SHUTTER SPECIFICATIONS

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Optical Density Range (when MOTION MOUNT shutter is enabled)	0.48–1.20 (1.60–4.00 stops)
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Optical Density Range (in ND Only mode)	0.48–2.40 (1.60–8.00 stops)
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Square Shutter (Global Shutter) Angle Range	22.5°–180°
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Soft Shutter Angle Range	22.5°–194.4°
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Maximum Frame Rate (when MOTION MOUNT shutter is enabled)	120 fps
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## B

## COMPATIBLE LENSES AND DEVICES

### COMPATIBLE PL LENSES AND DEVICES

The MOTION MOUNT TI PL allows you to use PL mount cinema lenses with your DSMC.

However, the MOTION MOUNT TI PL is not compatible with the following lenses and devices:

- ▶ **Angénieux Optimo DP Series of lenses, including the Optimo DP 30-80 and the Optimo DP 16-42:** The flange depth for these lenses does not meet the standard specification for PL lenses, so using these lenses with the MOTION MOUNT TI PL will break the glass in the lens mount.
- ▶ **18 mm RED PRO PRIME:** The extended PL Cover Ring of the 18 mm RED PRO PRIME comes in contact with the ridges of the inner core of the MOTION MOUNT TI PL, preventing the installation of the lens with the mount.
- ▶ **RED Focus:** The rearmost face of the RED Focus comes in contact with the glass of the MOTION MOUNT TI PL, so using the RED Focus with the MOTION MOUNT TI PL will break the glass in the lens mount.
- ▶ **PL to B4 Adaptor:** The rearmost face of the PL to B4 Adaptor comes in contact with the glass of the MOTION MOUNT TI PL, so using this adaptor with the MOTION MOUNT TI PL will break the glass in the lens mount.

**NOTE:** Any damage to the MOTION MOUNT TI PL or the DSMC system caused by using the MOTION MOUNT TI PL with any of the devices listed above or any non-standard PL lens is not covered under warranty.

### COMPATIBLE CANON LENSES

The MOTION MOUNT TI CANON is compatible with the same lenses that are compatible with the RED CANON MOUNT. For more information on lens compatibility with the RED CANON MOUNT, see the [DSMC Operation Guide](#), available at [www.red.com/downloads](http://www.red.com/downloads).



RED DIGITAL CINEMA

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