

# DIGITAL CINEMATOGRAPHY

# KEY NOTES

- understanding of reflected light
- operate spot meter and measure stop contrast
- concept of gama log and dynamic range
- set up and operate Canon C·100
- proper operation 100mm tripod fluid head
- slate etiquette

# EXPOSURE

**ISO:** International Organization of Standards

- exposure **SENSITIVITY** (*how* responsive sensor is to light)
- image structure (quality/video noise)

**aperture:** lens iris opening measured in stops (**F,T**) regulates light

- exposure **AMOUNT** (*how* much light lands on sensor)
- image focus (foreground/background)

**shutter:** mechanism in camera that regulates light to fall on sensor

- exposure **TIME** (*how* long light falls on sensor)
- image motion (direction, blur)

# NORMAL EXPOSURE

tonal gradations

## Zone System

0	I	II	III	IV	V	VI	VII	VIII	IX	X
---	---	----	-----	----	---	----	-----	------	----	---

# INCIDENT LIGHT

## incident metering:

- light falling **ON** an object
- Normal exposure maintains **NATURAL** tonal perception (highlights, shadow, detail, brightness, contrast, color, shades)



## reflected metering:

- light reflected **OFF** an object
- Normal exposure reproduces tonal perception of **MIDDLE GRAY** (highlights, shadow, detail, brightness, contrast, color, shades)



\* images from Sekonic <http://www.sekonic.com/classroom/meteringtechniques/incidentvsreflected.aspx>

# LIGHT METER SETUP

## TechSheet\_LGHTMTR

### SEKONIC L-758c

Incident Meter: measure light falling on lumi-sphere globe

Reflective Meter: measure light reflected off subject

Shutter: **180°**

Frame Rate (f/s): **24**

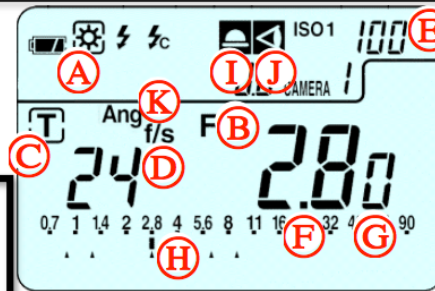
#### OPERATION

#### CONFIGURE

1. POWER on ① ▶ press/hold POWER off
2. CLEAR all memory
  - ▶ press/hold MODE ② + M.CLEAR ⑧
3. SET Cine Mode
  - ▶ press/hold MODE ② ▶ rotate Jog Wheel ⑤
  - ▶ boxed ambient icon ① · "F" **NOT** boxed ②
4. SET Shutter Angle **180°**
  - ▶ press/hold MODE ② + ISO 2 ▶ rotate Jog Wheel
5. SET frame rate f/s **24**
  - ▶ rotate Jog Wheel ④
  - if* boxed "T" ③ visible, rotate Jog Wheel ④ Counter-Clockwise
6. SET desired ISO
  - ▶ press/hold ISO 1 ③ ▶ rotate Jog Wheel ④

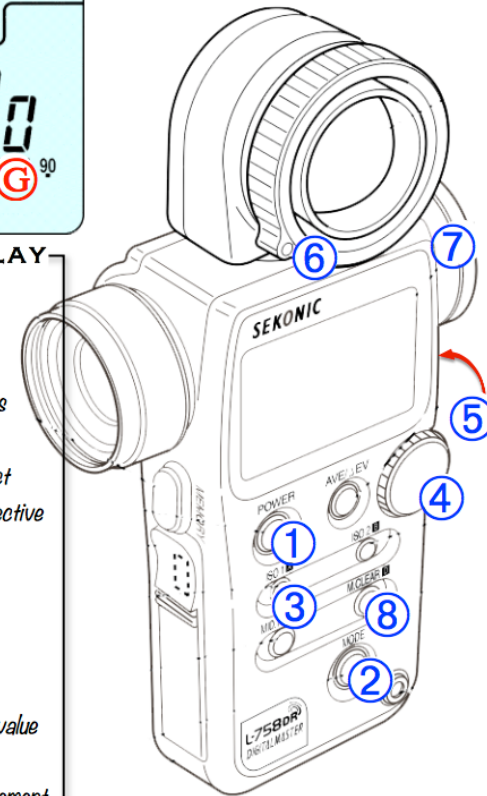
#### MEASURE LIGHT

1. SELECT meter ⑦ Incident or Reflective (Spot)
  - if* Incident, EXTEND lumi-sphere globe ⑥
2. PRESS ⑤
3. aperture F-stop for NORMAL\* exposure
  - ▶ F-stop ⑥ measured in 1/10 increments ⑦



#### —BUTTON / DISPLAY—

- |                         |                                 |
|-------------------------|---------------------------------|
| ① POWER                 |                                 |
| ② MODE                  | set to Cine                     |
| ③ ISO 1                 | default ISO                     |
| ④ Jog Wheel             | toggle settings                 |
| ⑤ MEASURE               | measure light                   |
| ⑥ Lumni-Sphere          | extend/retract                  |
| ⑦ METER                 | incident/reflective             |
| ⑧ M.CLEAR               | clear memory                    |
| ① AMBIENT light         |                                 |
| ② F-stop (priority)     | NOT boxed                       |
| ③ Shutter (priority)    | NOT visible                     |
| ④ Frame Rate            | 24 f/s                          |
| ⑤ ISO                   | user set ISO value              |
| ⑥ F-stop (measured)     | measured                        |
| ⑦ 10 <sup>th</sup> stop | 10 <sup>th</sup> stop increment |
| ⑧ F-stop (scale)        | measured                        |
| ⑨ INCIDENT              | user selected meter             |
| ⑩ REFLECTIVE            | user selected meter             |
| ⑪ SHUTTER               | WARN not 180°                   |



# CANON C-100

**sensor:** super 35mm equivalent

- 24.6mm x 13.8mm

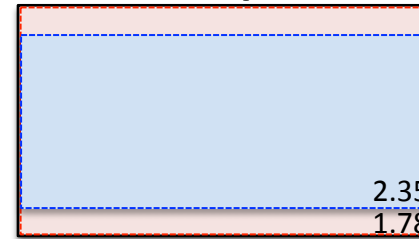
**latitude:** ~12 stops exposure range

- ISO 850 for C-Log dynamic range

**C-Log:** high dynamic range

- greater latitude tonal reproduction (reduces contrast)

C100 super35

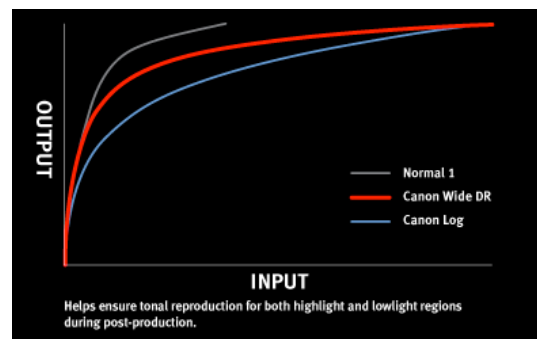
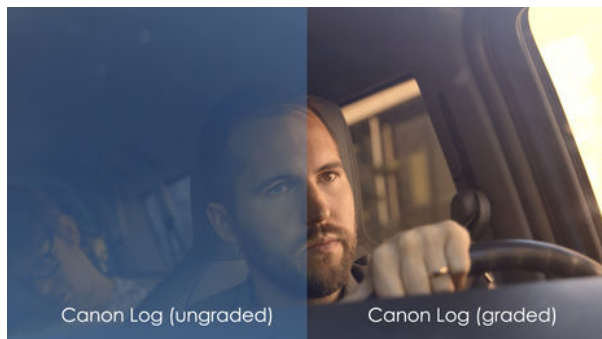


T2i · 7D APS-C



S/N Ratio	GAIN	18% GRAY	ISO
41dB	6.7 Stops 30dB	5.3 Stops	ISO 20000
45dB	6.7 Stops 26dB	5.3 Stops	ISO 12800
50dB	6.7 Stops 20dB	5.3 Stops	ISO 6400
53dB	6.7 Stops 14dB	5.3 Stops	ISO 3200
54dB	6.7 Stops 8dB	5.3 Stops	ISO 1600
54dB	6.7 Stops 2.5dB	5.3 Stops	ISO 850
54dB	6.8 Stops 2dB	5.2 Stops	ISO 800
54dB	7.1 Stops 0dB	4.9 Stops	ISO 640
54dB	7.8 Stops -4dB	4.2 Stops	ISO 400
54dB	8.1 Stops -6dB	3.9 Stops	ISO 320

Canon Log Base Sensitivity



\* Canon <http://www.learn.usa.canon.com/>

# CAMERA SETUP

## TechSheet\_C100

- ① POWER (switch) CAMERA | OFF | MEDIA
- ② SEL/SET (toggle) select | set *navigate menu*
- ③ ND FILTER (toggle) clean | ND1 | ND2 | ND3 *ND1 = 2 stops (ND 0.6)*  
*ND2 = 4 stops (ND 1.2)*  
*ND3 = 6 stops (ND 1.8)*

### RECORD SETTINGS

frequency: 59.94 Hz (default)	TC: NDF (59.94Hz/24P specific)
bit rate: 24 Mbps LPCM (default)	file: AVCHD
shutter: 180°	color sample: 4:2:0 8bit (internal SD)
frame rate: 24P (23.978)	compression: MPEG-4 AVC/H.264
4G SDHC ≈ 20min. record time	

### QUICK SET-UP

#### 1. RESET Default Settings

default: MENU **A** ▶ Other Functions ▶ Reset ▶ All Settings

date/time: set

#### 2. SETUP Camera

black level: MENU **A** ▶ Camera Setup ▶ ABB ▶ OK (w/body cap on)

shutter: MENU **A** ▶ Camera Setup ▶ Shutter ▶ Mode ▶ Angle

frame rate: MENU **A** ▶ Other Functions ▶ Frame Rate ▶ 24P

#### 3. SELECT ISO

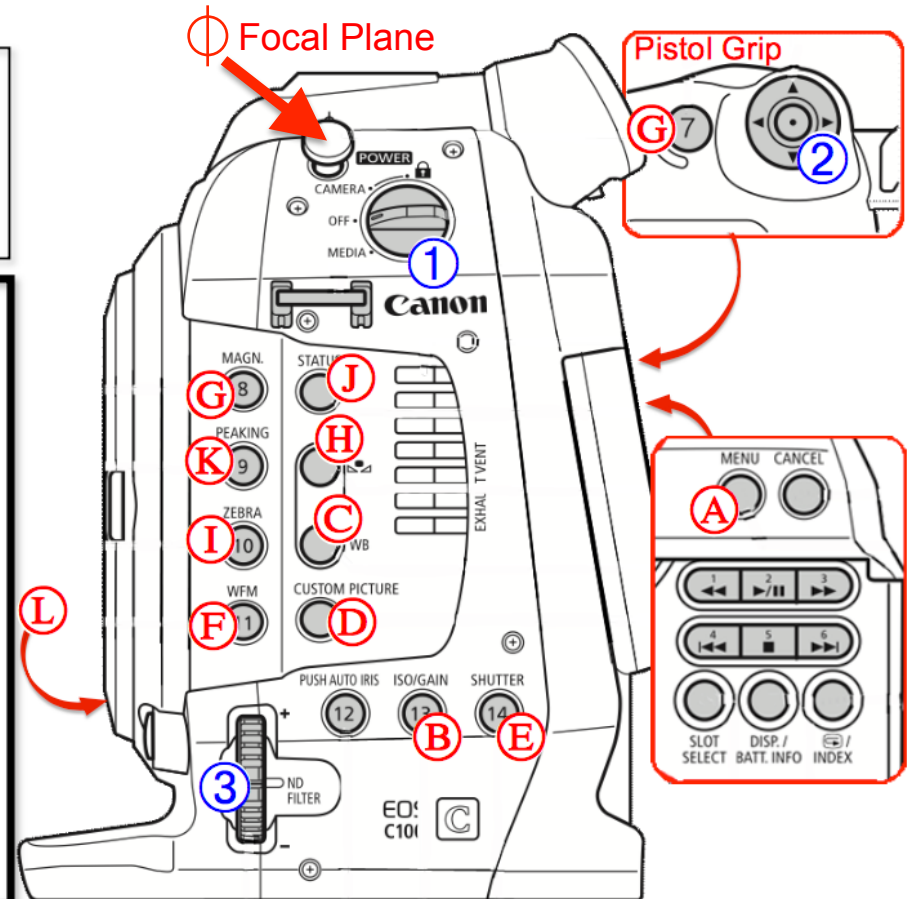
ISO/GAIN **B** (ISO values displayed with Function Reset)

#### 4. SELECT Color Temperature

WB **C** Tungsten(3200K) · Daylight(5400K) · Kelvin° · Custom A · Custom B

#### 5. FORMAT media

MENU **A** ▶ Other Functions ▶ Initialize Media





# CINE(EF) LENSES

## KIT (Bower)

24mm T1.5 MF .85'



35mm T1.5 MF 1'



85mm T1.5 MF ~3.5'



## ADDITIONAL (Bower) ADDITIONAL (Rokinon)

### FISH-EYE

8mm T3.8 MF ~.5'



14mm T3.1 MF ~.5'



### NORMAL

50mm T1.5 MF ~1.5'



# STILL(EF) LENSES

14mm F2.8



24mm F2.8



35mm F2

(breaths)



85mm F1.8



200mm F2.8



1.4 x

ONLY 200/300/70-200



300mm F4



70-200mm F4



lens support

300/28-300



28-300mm F3.5-5.6

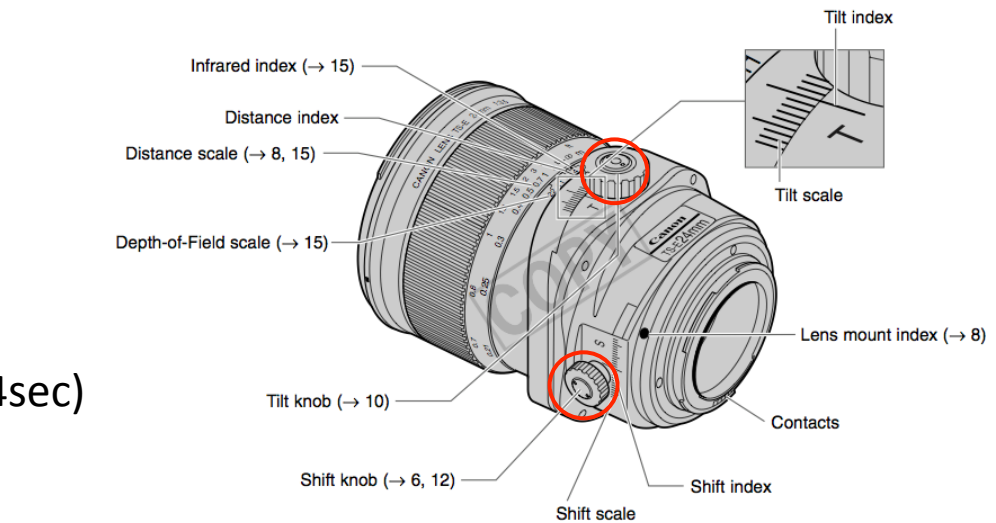
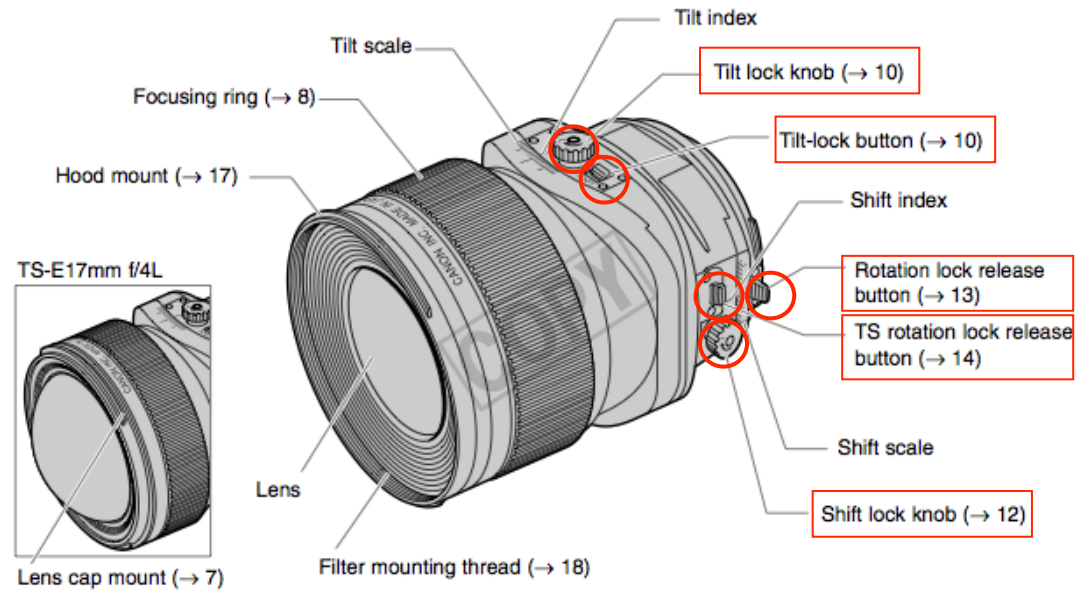


# SHIFT · TILT LENSES

Canon 24mm, F3.5, MF 0.7ft



Canon 45mm, F2.8, MF 1.4ft

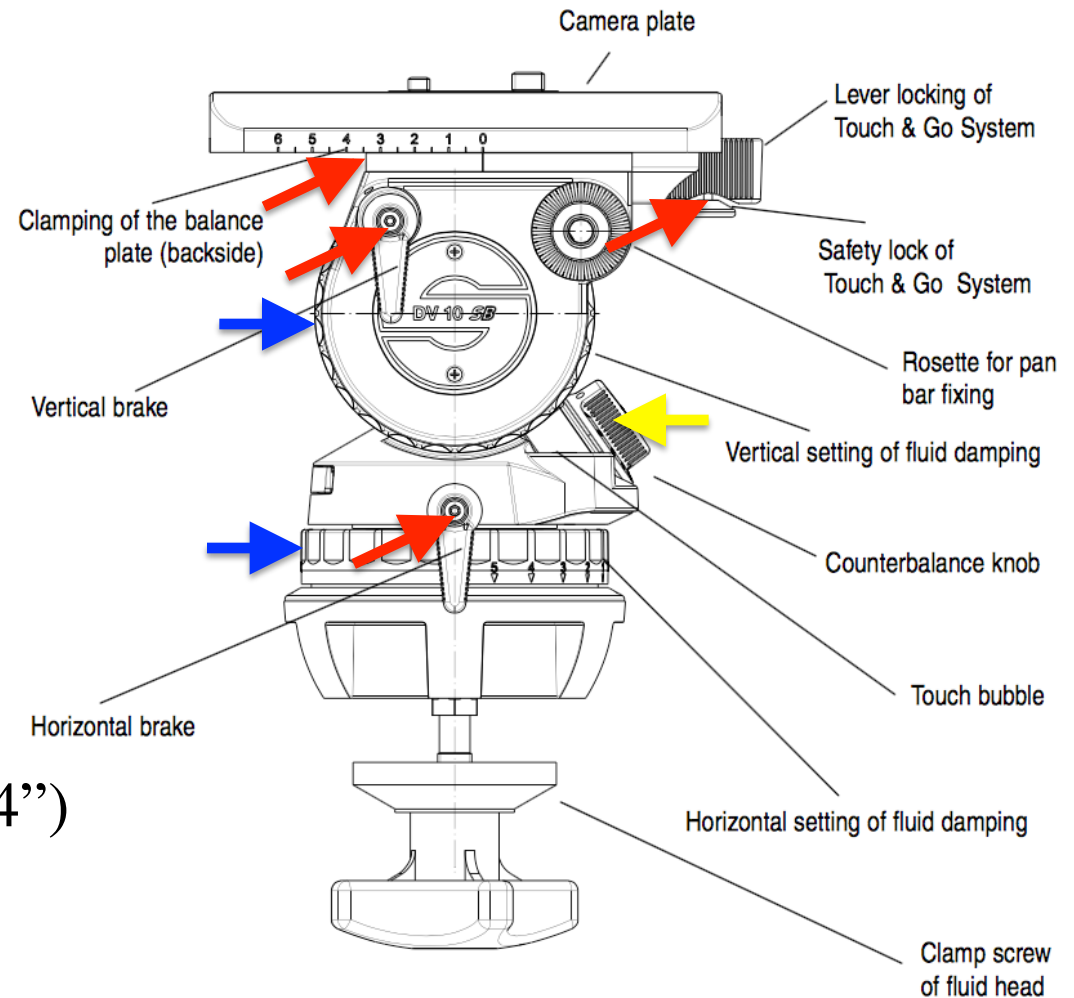


Canon Caravan (Stillmotion 5min 24sec)  
<http://vimeo.com/13533155>

# TRIPOD HEAD

## head\*: 100mm ball base

- pan handle
- pan lock
- pan resistance
- tilt lock
- tilt resistance
- tilt counter balance
- balance plate lock
- quick release plate
- quick release plate lock
- screw(s) (3/4" and/or 1/4")
- bubble level
- head tie down



\* models will vary

# SLATE ETIQUETTE

**ROLL:** order of CF card used

- 1<sup>st</sup> card from primary camera \_\_\_\_\_ “A1”
- 2<sup>nd</sup> (or reformatted) card from primary camera \_\_\_\_\_ “A2”
- 1<sup>st</sup> card from second camera \_\_\_\_\_ “B1”
- 2<sup>nd</sup> (or reformatted) card from second camera \_\_\_\_\_ “B2”

**SCENE:** from script NOT shot list

- 1<sup>st</sup> camera set up (angle/shot) for scripted scene \_\_\_\_\_ “1”
- 2<sup>nd</sup> camera set up for same scripted scene \_\_\_\_\_ “1A”
- 3<sup>rd</sup> camera set up for same scripted scene \_\_\_\_\_ “1B”

**TAKE:** complete from rehearsed dialogue/action “1,2,3...”

**Pick Up:** portion of previously complete take “3 “

**Legible:** frame(÷10 to fill frame), focus(not moving), no “I” or “O”

**Audible id:** “roll X, scene X, take X, MARK” *sticks CLAP*