Canon

EOS C700
EOS C700 PL
EOS C700 GS PL
EOS C700 FF
EOS C700 FF PL

Digital Cinema Camera

Firmware ver. 1.0.7.1.00 (C700 C700 PL)
ver. 1.0.5.1.00 (C700 GS PL)
ver. 1.0.1.1.00 (C700 FF C700 FF PL)

Instruction Manual

Specifications

C700 / C700 PL / C700 GS PL / C700 FF / C700 FF PL

System

- **Recording System**
  - Movies: Video compression: MPEG-4 AVC/H.264, Intra-frame or Long GOP
    - Apple ProRes
  - Audio compression: Linear PCM, 24 bit, 48 kHz, 4 channels
  - File format: MXF, Apple QuickTime File Format
  - Photos: DCF (Design rule for Camera File system), compatible with Exif Ver. 2.3, JPEG compression

- **Video Configuration (recording/playback)**
  - Recordings on the CFast card:
    - Format: XF-AVC (main recording/sub recording), ProRes (main recording)
    - Bit rate (XF-AVC): 810 Mbps, 440 Mbps, 410 Mbps, 360 Mbps, 310 Mbps, 225 Mbps, 210 Mbps, 170 Mbps, 160 Mbps, 90 Mbps (Intra-frame); 50 Mbps (Long GOP)
    - Codec (ProRes): Apple ProRes 4444, ProRes 422 HQ, ProRes 422
    - Resolution: 4096x2160, 3840x2160, 2048x1080, 1920x1080
    - Color sampling: YCbCr 4:2:2, 10 bit; RGB 4:4:4, 12 bit / 10 bit
    - Frame rate: 59.94P, 59.94i, 50.00P, 50.00i, 29.97P, 23.98P, 25.00P, 24.00P
  - Recordings on the SD card:
    - Format: XF-AVC Proxy (sub recording)
    - Bit rate: 35 Mbps, 24 Mbps (Long GOP)
    - Resolution: 2048x1080, 1920x1080
    - Color sampling: YCbCr 4:2:0, 8 bit
    - Frame rate: 59.94P, 59.94i, 50.00P, 50.00i, 29.97P, 23.98P, 25.00P, 24.00P

- **Recording Media (not included)**
  - For approximate recording times, refer to *Approximate Recording Times* (□ 247)
  - Main recording/sub recording: CFast 2.0 card (2 slots)
  - Sub recording and photos[1]: SD, SDHC (SD High Capacity) or SDXC (SD eXtended Capacity) memory card
  - [1] Custom picture files, camera settings and user memo files can be saved on and read from the SD card as well.

- **Image Sensor**
  - **C700 C700 PL** Super 35mm-equivalent CMOS sensor
  - **C700 GS PL** Super 35mm-equivalent CMOS sensor with global electronic shutter
  - **C700 FF C700 FF PL** Full-frame CMOS sensor
  - Effective pixels:
    - When the resolution is 4096x2160 or 2048x1080:
      - **C700 C700 PL C700 GS PL** approx. 8,850,000 pixels (4096x2160)
      - **C700 FF C700 FF PL** approx. 18,690,000 pixels (5952x3140)*
    - When the resolution is 3840x2160 or 1920x1080:
      - **C700 C700 PL C700 GS PL** approx. 8,290,000 pixels (3840x2160)
      - **C700 FF C700 FF PL** approx. 17,520,000 pixels (5580x3140)*
    - When the main recoding format is [RAW (⊂DX Capture Drive)]:
      - **C700 C700 PL** approx. 10,720,000 pixels (4512x2376)
      - **C700 GS PL** approx. 10,150,000 pixels (4272x2376)
      - **C700 FF C700 FF PL** approx. 18,690,000 pixels (5952x3140)
    - * When the sensor mode is set to [Full Frame].

- **Control Display**
  - 7.66 cm (3.0 in.) color LCD, approx. 1,036,000 dots, aspect ratio 3:2

- Lens Mount

  C700 **C700FF** Canon EF mount with Cinema Lock compatible with Canon EF lenses (including EF-S lenses and EF Cinema lenses)

  C700PL **C700GSPL** **C700FFPL** PL mount compatible with Canon EF Cinema lenses with PL mount and Cooke's /i Technology

  Lens multiplication factor for 35mm equivalent focal length (approximate):

  C700FF **C700FFPL** Sensor mode set to [Full Frame]

  When the horizontal resolution is 3840/1920: 1.056

  When the resolution is 5952x2532: 1.045

  For all other cases: 1.000

  Sensor mode set to [Super 35mm] or [Super 35mm (Cropped)]

  When the resolution is 4096x2160, 2048x1080: 1.460

  When the resolution is 3840x2160, 1920x1080: 1.534

- Lens Correction

  Peripheral illumination/chromatic aberration correction is available for Canon EF lenses, EF Cinema lenses and broadcast lenses[2]

  [2] Some lenses are not compatible with in-camera correction.

- Shutter Speed

  Speed (1/3-stop increments or 1/4-stop increments), angle, clear scan, slow, off

- Iris

  Manual (1/2-stop increments or 1/3-stop increments, fine adjustment available), push auto iris, automatic aperture

- ISO Speed

  C700 **C700PL** **C700FF** **C700FFPL** ISO 100 to ISO 102400

  C700GSPL ISO 400 to ISO 102400 (1-stop or 1/3-stop increments)

- Gain

  C700 **C700PL** **C700FF** **C700FFPL** –6 dB to 54 dB, **C700GSPL** –6 dB to 42 dB (3-dB increments),
  C700 **C700PL** **C700FF** **C700FFPL** –2 dB to 54 dB, **C700GSPL** –2 dB to 42 dB (fine adjustment in 0.5-dB increments)

- ND Filter: Built-in (Off, 2, 4, 6, 8 or 10 stops), motor operated

- Exposure: AE shift, light metering modes (standard, spotlight, backlight)

- White Balance

  Auto white balance (AWB); custom white balance (2 sets, A and B); user-set white balance (5 settings, 2,000 K to 15,000 K); two preset settings (daylight, 5,600 K[3] and tungsten lamp, 3,200 K[3])

  Color temperature and color compensation (CC) adjustment available for all settings except AWB.

  [3] Color temperatures are approximate and given for reference purposes only.

- Focus

  Manual focus

  C700 **C700FF** only: Also autofocus (one-shot AF, AF-boosted MF, continuous AF); face AF and subject tracking available

  C700 **C700FF** AF type: Dual Pixel CMOS AF, contrast-detection AF

- Sensor Sensitivity (2000 lux, 89.9% reflection)

  C700 **C700PL** **C700FF** **C700FFPL**

  59.94 Hz: F10 (2048x1080 at 59.94P, ISO 800)

  50.00 Hz: F11 (2048x1080 at 50.00P, ISO 800)

  C700GSPL

  59.94 Hz: F20 (2048x1080 at 59.94P, ISO 1600)

  50.00 Hz: F22 (2048x1080 at 50.00P, ISO 1600)

- S/N Ratio (Typical, using Canon Log 2, 1600% dynamic range)

  C700 **C700 PL** **C700 FF** **C700 FF PL**

  68 dB (1920x1080 at 29.97P (59.94 Hz) or 25.00P (50.00 Hz), ISO 800)

  C700 GS PL

  67 dB (1920x1080 at 29.97P (59.94 Hz) or 25.00P (50.00 Hz), ISO 3200)

- Subject Illumination (ISO 25600, with a f/1.2 lens, 100% output)
  59.94 Hz: 0.45 lux (shutter speed 1/30)
  50.00 Hz: 0.38 lux (shutter speed 1/25)

- Built-In Microphone: Monaural electric condenser microphone
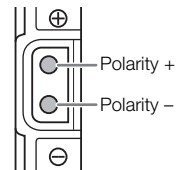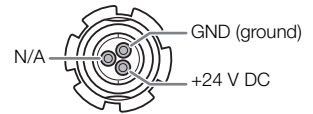
- Size of Photos: 2048x1080, 2048x872, 1920x1080

Terminals

- SDI OUT Terminals (SDI OUT 1 to SDI OUT 4) / MON. Terminals (MON. 1 and MON. 2)
  BNC jack, output only, 0.8 Vp-p / 75 Ω, unbalanced
  3G-SDI: SMPTE 424, SMPTE 425, SMPTE ST 299-2
  HD-SDI: SMPTE 292, SMPTE ST 299-1
                        Embedded audio, time code (VITC/LTC)
  LUT (BT.709, BT.2020, DCI, ACESproxy, HDR-PQ, HDR-HLG, User LUT 1 to 4) and supplemental displays*
  (superimposed onscreen displays, peaking, zebra pattern, magnification, B&W image, waveform monitor, false
  color display, anamorphic desqueeze) can also be output.
  * MON. terminals only.

- HDMI OUT Terminal
  HDMI connector, output only
  LUT (BT.709, BT.2020, DCI, ACESproxy, HDR-PQ, HDR-HLG, User LUT 1 to 4) and supplemental displays
  (superimposed onscreen displays, peaking, zebra pattern, magnification, B&W image, waveform monitor, false
  color display, anamorphic desqueeze) can also be output.

- VIDEO Terminal
  Proprietary connector for the optional EVF-V70 OLED Electronic Viewfinder, output only
  LUT (BT.709, HDR (1600% or 400%), User LUT 1 to 4) and supplemental displays (superimposed onscreen
  displays, peaking, zebra pattern, magnification, B&W image, waveform monitor, false color display,
  anamorphic desqueeze) can also be output.

- INPUT Terminals (INPUT 1 and INPUT 2)
  XLR 3-pin jack (pin1: shield, pin2: hot, pin3: cold), 2 sets, balanced
  Analog Inputs
      Sensitivity:
      MIC setting: –60 dBu (volume center, full scale –18 dB) / 600 Ω
      LINE setting: 4 dBu (volume center, full scale –18 dB) / 10 kΩ
      Microphone attenuator: 20 dB
  Digital Inputs (AES/EBU)
      AES3 standard (48 kHz, 24 bit, 2ch) / 110 Ω

- MIC Terminal
  $\varnothing$ 3.5 mm stereo mini-jack, –72 dBV (volume center, full scale –18 dB) / 1.2 kΩ
  Microphone attenuator: 20 dB

- Ω (Headphone) Terminal
  $\varnothing$ 3.5 mm stereo mini-jack, $-\infty$ to –8 dBV (16 Ω load, volume range Min to Max) / 50 Ω or less

- GENLOCK/SYNC OUT Terminal
  BNC jack, 1.0 Vp-p / 75 Ω
  GENLOCK setting: input only; SYNC OUT setting: output only, tri-level HD signal

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- TIME CODE IN/OUT Terminal
  BNC jack, input/output
  Input setting: 0.5 Vp-p to 18 Vp-p / 100 kΩ; Output setting: 1.3 Vp-p / 50 Ω or less

- REMOTE A Terminal, REMOTE B Terminal
  REMOTE A: ∅ 2.5 mm stereo sub-mini jack
  REMOTE B: Circular 8-pin jack (for the optional RC-V100 Remote Controller, RS-422 interface)

- CTRL Terminal
  LEMO circular 7-pin jack (for the optional OU-700 Remote Operation Unit)

- 品 (Ethernet) Terminal
  Ethernet, 1000BASE-T compatible

- LENS Terminal
  Circular 12-pin jack (12-pin serial interface)

- System Extension Terminal
  Proprietary connector for optional accessories

Power/Others

- Compatible Batteries
  V-mount batteries, 12 V to 20 V DC

- DC IN 12V Terminal
  XLR 4-pin jack (male connector), 11.5 V to 20 V DC,
  10 A (acceptable maximum load current)

  GND (ground) — 11.5 V to 20 V DC
  N/A — N/A

- DC OUT 24V 2A Terminal
  Fischer 3-pin connector, rated output: 24 V DC,
  maximum current: 2.0 A

  GND (ground)
  N/A — +24 V DC

- DC OUT 12V 2A Terminal
  LEMO 2-pin connector, rated output: 12 V DC,
  maximum current: 2.0 A

  GND (ground)
  +12 V DC

- D-TAP Terminal
  D-Tap connector, maximum output: 50 W (nominal)

  Polarity +
  Polarity −

- Power Consumption
  (using the EF24-70mm f/2.8L II USM lens, with the optional viewfinder connected and activated, video output from the SDI OUT terminals and MON. terminals activated, and without supplying power to other accessories*)
  XF-AVC, 4K recording at 59.94P or 50.00P:
       C700 C700 PL C700 GS PL approx. 49.3 W, C700 FF C700 FF PL approx. 50.5 W
  ProRes422 HQ, 4K recording at 29.97P or 25.00P:
       C700 C700 PL C700 GS PL approx. 59.1 W, C700 FF C700 FF PL approx. 61.0 W
  * When the camera is powering external accessories, power consumption will increase by the amount consumed by the connected accessories.

- Operating Temperature: 0 – 40 °C (32 – 104 °F)

• Dimensions (W x H x D)*
  Camera body only: **C700** **C700 FF** 167 x 154 x 327 mm (6.6 x 6.1 x 1.1 in.),
                      C700 PL **C700 GS PL** **C700 FF PL** 167 x 154 x 336 mm (6.6 x 6.1 x 1.1 in.)
  For detailed technical drawings see the appendix *Camera Dimensions* (□ 242).
  * All dimensions are approximate.

• Weight **
  Camera body only: **C700** 3,440 g (7.6 lb.), **C700 PL** **C700 GS PL** 3,600 g (7.9 lb.)
                     C700 FF 3,450 g (7.6 lb.), **C700 FF PL** 3,610 g (8.0 lb.)
  Camera with handle, clamp base and microphone holder: **C700** 3,900 g (8.6 lb.),
                      C700 PL **C700 GS PL** 4,060 g (9.0 lb.)
                      C700 FF 3,910 g (8.6 lb.)
                      C700 FF PL 4,070 g (9.0 lb.)

  **All weights are approximate.

CDX-36150 Recorder (commercially available)

• Recording System
  Video: Cinema RAW, Apple ProRes
  Audio compression: Linear PCM, 24 bit, 48 kHz, 4 channels

• Recording/Playback Signal
  Cinema RAW:
      Resolution: **C700 FF** **C700 FF PL** 5952x3140, **C700 FF** **C700 FF PL** 5952x2532,
                          C700 **C700 PL** 4512x2376, **C700 GS PL** 4272x2376,
                          C700 **C700 PL** 4512x1920, 4096x2160, 2048x1080
      Maximum frame rate: **C700** **C700 PL** **C700 GS PL** 240P, **C700 FF** **C700 FF PL** 168P
  Apple ProRes:
      Resolution: 4096x2160, 3840x2160, 2048x1080, 1920x1080
      Codec: Apple ProRes 4444 XQ, ProRes 4444, ProRes 422 HQ,
                          C700 FF **C700 FF PL** ProRes422
      Maximum frame rate: **C700** **C700 PL** **C700 GS PL** 240P, **C700 FF** **C700 FF PL** 168P

• Recording Media (not included)
  Codex Capture Drive 2.0

Weight and dimensions are approximate. Errors and omissions excepted.

Appendix: Compatible Lenses and Functions

Following is a list of lenses compatible with this camera and the various functions that can be used depending on the lens. Depending on the lens's purchase date, you may need to update the lens's firmware to use these functions. For details, consult a Canon Service Center.

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Lens	12-pin interface cable	B4 mount adapter[1]	Iris control from the camera			Zoom control from the camera
			Manual	Push auto iris	Automatic	
EF lenses			●	●	–	–
EF lenses compatible with auto iris			●	●	●	–
EF Cinema lenses						
CN7x17 KAS S/E1	Required[2]		●	●	●	●
CN7x17 KAS S/P1	Required		●	●	●	●
CN20x50 IAS H/E1	Required[2]		●	●	●	●
CN20x50 IAS H/P1	Required		●	●	●	●
CN-E18-80mm T4.4 L IS KAS S, CN-E70-200mm T4.4 L IS KAS S			●	●	●	●
Prime lenses compatible with Dual Pixel Focus Guide			–	–	–	–
Broadcast lenses	Required	Required	●	●	●	●

Lens	Focus control from the camera					Focus guide[3]
	Manual	One-shot AF[3]	Continuous AF[3]	Face AF[3]	Tracking[3]	
EF lenses	●	●	●	●	●	●
EF lenses compatible with auto iris	●	●	●	●	●	●
EF Cinema lenses						
CN7x17 KAS S/E1	●	●	●	●	●	●
CN7x17 KAS S/P1	●	–	–	–	–	–
CN20x50 IAS H/E1	●	–	–	–	–	–
CN20x50 IAS H/P1	●	–	–	–	–	–
CN-E18-80mm T4.4 L IS KAS S, CN-E70-200mm T4.4 L IS KAS S	●	●	●	●	●	●
Prime lenses compatible with Dual Pixel Focus Guide	–	–	–	–	–	●
Broadcast lenses	●	–	–	–	–	–

[1] Optional MO-4E or MO-4P B4 Mount Adapter.
[2] If the lens's drive unit is powered from an independent power source, the connection to the camera is not required.
[3] **C700** **C700 FF** only.

- Broadcast lenses:

CJ14ex4.3B IRSE S / IASE S	HJ14ex4.3B IASE S
CJ18ex7.6B IRSE S / IASE S	HJ17ex7.6B IASE S
CJ24ex7.5B IRSE S / IASE S	HJ18ex7.6B IASE S
CJ45ex9.7B IASE-V H	HJ22ex7.6B IASE S
CJ45ex13.6B IASE-V H	HJ24ex7.5B IASE S

- EF lenses compatible with auto iris:

  EF24-105mm f/3.5-5.6 IS STM   EF-S18-55mm f/4-5.6 IS STM
  EF70-200mm f/4L IS II USM   EF-S18-135mm f/3.5-5.6 IS STM
  EF70-300mm f/4-5.6 IS II USM   EF-S18-135mm f/3.5-5.6 IS USM
  EF85mm f/1.4L IS USM   EF-S35mm f/2.8 MACRO IS STM
  EF-S10-18mm f/4.5-5.6 IS STM   EF-S55-250mm f/4-5.6 IS STM
  EF-S18-55mm f/3.5-5.6 IS STM

- Prime lenses compatible with the Dual Pixel Focus Guide function:

  CN-E14mm T3.1 L F   CN-E50mm T1.3 L F
  CN-E20mm T1.5 L F   CN-E85mm T1.3 L F
  CN-E24mm T1.5 L F   CN-E135mm T2.2 L F
  CN-E35mm T1.5 L F