ProHD

7" Portable On-camera LCD Monitor
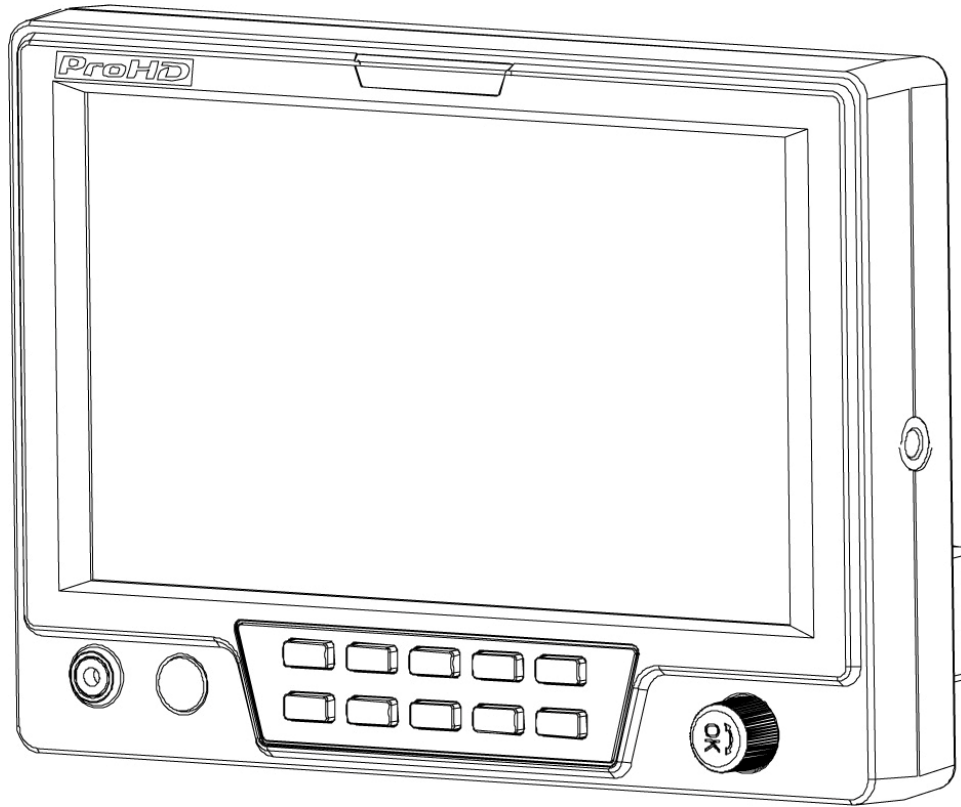
User Manual

Model:

DT-X71F	HDSDI&HDMI, Waveform, Audio meter, Focus assist
DT-X71H	3GSDI&HDMI
DT-X71C	HDMI

Please read this User Manual
throughout before using.

Preface

Congratulations on your purchase of this product. Please read this user manual carefully.

1．All internal technologies of this product are protected, including device, software and trademark. Reproduction in whole or in part without written permission is prohibited.

2．All brands and trademarks are protected and other relative trademarks in this user manual are the properties of their respective owners.

3．Due to constant effort of product development, SWIT Electronics reserves the right to make changes and improvements to the product described in this manual without prior notice.

4．The warranty period of this product is 2 years, and does not cover the following:

(1) Physical damage to the surface of the products, including scratches, cracks or other damage to the LCD screen or other externally exposed parts;

(2) Misuse, abuse or negligent operation to the product;

(3) The product is disassembled by anyone other than an authorized service center.

It is considered normal that the LCD bright dot defects are not to exceed three.

5．For any suggestions and requirements on this product, please contact us through phone, fax, Email, etc.

ProHD

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Maintenance

- **Monitor**
  1. Please keep the signal terminals and the cooling vent away from knife-edge, metal or liquid in order to avoid short-circuit and damage.
  2. Please don't try to disassemble any parts of the monitor by yourself, which would probably damage the monitor and do harm to human body, and it will cause the invalidation of product warranty.
  3. Please don't touch the screen with your fingers, which would probably deface the screen.
  4. Please don't press the screen; the LCD is extremely exquisite and flimsy.
- **The power**

  Please use the provided power adapter or the battery recommended by the manufacturer in order to avoid damage. For a third party power adapter, please make sure the voltage range, supplied power, and polarity of power lead are fit.

  Please disconnect the power cable or take off the battery under the following situations:
  1. If you do not operate this monitor for a period of time;
  2. If the power cable or power adaptor is damaged;
  3. If the monitor housing is broken.
- **Working Environment**
  1. Please don't lay this product on the unstable place.
  2. Please don't lay this product in hot, cold or wet location.
- **Cleaning**
  1. Please clean the screen with dry and downy cloth or special LCD cleanser.
  2. Please do not press hard when cleaning the screen.
  3. Please do not use water or other chemical cleanser to clean the screen. The chemical may damage the LCD.
  4. For first time use, please tear off the factory LCD film. To protect the LCD screen, please post the LCD protection film offered in the package.

1. Features

DT-X71F

◆ **New high resolution 7" LCD Panel**
16:9, 1024×600, 16.77 million colors, 900:1 contrast, and H160° / V160° viewing angle.

◆ **Multiple inputs**
2 HD/SD-SDI, 1 HDMI and 1 Composite input.

◆ **Loop through outputs**
Each of the 2 input HD/SD-SDI has loop through output.

◆ **HDMI converted to SDI output**
Supported HDMI formats: 480i / 576i / 720p (50, 59.94, 60) / 1080i (50, 59.94, 60) / 1080P (23.98 24, 25, 29.97, 30), and the output SDI will embed the audio (48KHz) from HDMI.

◆ **Waveform (Y, Cb, Cr, R, G, B) and full scale**
There are totally 6 kinds of waveform display, available under both SDI and HDMI, to check the Luminance (Y), Blue-difference (Cb), Red-difference (Cr), Red (R), Green (G), Blue (B), and the Y, Cb, Cr can be simultaneously displayed, R, G, B can be simultaneously displayed, and each of the waveforms can be set to full scale display.

◆ **Vector scope**
The displayed vector scope pattern is available under both SDI and HDMI, represents saturation as distance from the center of the circle, and hue as the angle, in standard position, around it.

◆ **Histogram (R, G, B)**
The histogram is a bar graph that shows the distribution of luminance values in the picture. There're R, G, B histograms that individually displayed simultaneously, available under both SDI and HDMI.

◆ **16-ch audio meter**
Under HDSDI, it displays 16 channels audio bars, with mark, and under SDSDI or HDMI, it displays 2 channels audio bars with mark. The audio bar is green, and will turn yellow when audio exceeds -20dB, and turn red when exceeds -10dB.

◆ **SDI timecode**
Under SDI input, it can display the SMPTE timecode, which is used extensively for synchronization, and for logging and identifying material in recorded media.

◆ **Peaking focus assist (red/blue switch)**
The Peaking focus assist function is to mark the sharpest edges of the image with red or blue color, for users to check if the subjects are focused.

◆ **Zebra stripes**
Zebra Stripes are used to check if the image is over exposed or not by showing black and white lines on the monitor. It is considered over exposed when luminance value exceeds 90%.

◆ **False color**
The false color is used to aid in the setting of camera exposure. Under false color mode, there's a false color key on the bottom of screen for reference. The over exposed subjects (above 101 IRE) on the monitor will display as RED, and the underexposed subjects will display as BLUE. For correct exposed subjects, it will display as green and pink.

◆ **Blue Only**
Under the Blue Only Mode, only the blue pixels are used to generate the image, because hue and saturation can be adjusted quicker and more accurately.

◆ **DSLR scale zoom in**
The Canon DSLR outputs the CMOS sensor ratio HDMI and this zoom in mode can make the effective image scale full screen on the monitor.

◆ **User definable function keys**
There are 3 function keys on the monitor front panel, that permit users to define shortcuts for the various functions.

◆ **User editable video title**
User can edit a video title for the current camera, and the title will display on the top of screen.

◆ **Front and Rear 3-color TALLY light**
2 TALLY lights design, to give "live" signals to people in front of the camera, as well as the camera operator behind.

◆ **Image Flip**
Set image to rotate by 180°.

DT-X71H

◆ **High resolution 7" LCD Panel**
16:9, 1024×600, 16.77 million colors, 900:1 contrast, and H160° / V160° viewing angle.

◆ **3Gbps SDI support**
Accepts 3G/HD/SD-SDI input.

◆ **Multiple inputs**
1 3G/HD/SD-SDI, 1 HDMI, 1 Composite input and L/R stereo audio.

◆ **Loop through outputs**
1 3G/HD/SD-SDI, 1 HDMI and 1 Composite video loop through output.

◆ **SDI embedded audio output**
The SDI embedded audio can be output through 3.5mm earphone on the front panel.

◆ **Image Flip**.
Set image to rotate by 180°

◆ **DSLR scale zoom in**
The Canon DSLR outputs the CMOS sensor ratio HDMI and this zoom in mode can make the effective image scale full screen on the monitor.

◆ **User definable function keys**
There are 2 function keys on the monitor front panel, that permit users to define shortcuts for the various functions.

◆ **User editable video title**
User can edit a video title for the current camera, and the title will display on the top of screen.

◆ **Front and Rear 3-color TALLY light**
2 TALLY lights design, to give "live" signals to people in front of the camera, as well as the camera operator behind.

DT-X71C

◆ **New high resolution 7" LCD Panel**
16:9, 1024×600, 16.77 million colors, 900:1 contrast, and H160° / V160° viewing angle.

◆ **Multiple inputs**
1 HDMI, 1 Composite input and L/R stereo audio input.

◆ **Loop through outputs**
1 HDMI and 1 Composite loop through output.

◆ **DSLR scale zoom in**
The Canon DSLR outputs the CMOS sensor ratio HDMI and this zoom in mode can make the effective image scale full screen on the monitor.

◆ **Image Flip**
Set image to rotate by 180°.

◆ **User definable function keys**
There are 2 function keys on the monitor front panel, that permit users to define shortcuts for the various functions.

◆ **User editable video title**
User can edit a video title for the current camera, and the title will display on the top of screen.
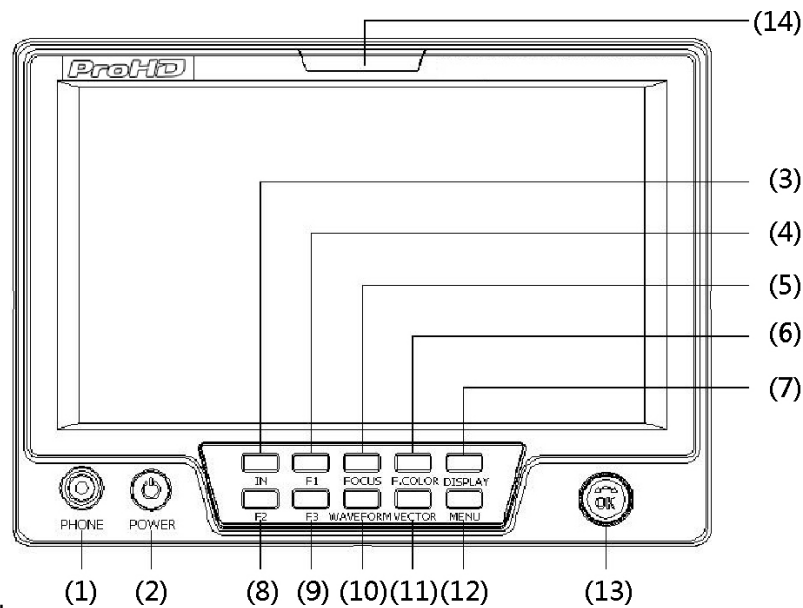
◆ **Front and Rear 3-color TALLY light**
2 TALLY lights design, to give "live" signals to people in front of the camera, as well as the camera operator behind.

2. Panel Instruction

DT-X71F

Front view

⑴ **PHONE:** Earphone jack

⑵ **POWER:** Power on/off

Connect with power cable or mount battery, press the "**POWER**" and the power indicator is turned on and after 10 seconds, the monitor will be switched on and get into normal working status. Press the "**POWER**" again, the indicator is turned off and monitor is switched off.

Disconnect with power cable or take off the battery if the monitor will not be used for a period of time.

⑶ **IN:** Input signal selection

Press "IN" and revolve the "OK" to select the input video signal.

⑷ **F1:** User definable function key 1

⑸ **FOCUS:** Peaking Focus Assist

Press "FOCUS" once, it will display the current peaking on/off status. Press "FOCUS" again to switch on RED line focus assist, switch on BLUE line focus assist, and switch off in turn.

⑹ **F.COLOR:** False color

Press "F.COLOR" once, it will display the current false color on/off status. Press "F.COLOR" again to switch on/off the false color mode.

⑺ **DISPLAY:** Display current settings

Press "Display" to display safety mark, title and the current input signal information

⑻ **F2:** User definable function key 2

⑼ **F3:** User definable function key 3

⑽ **WAVEFORM:** Display waveform

Press "WAVEFORM" once, it will display the waveform menu as:
Revolve "OK" to select a waveform display mode and turn it on.
The selected waveform will display on the screen.
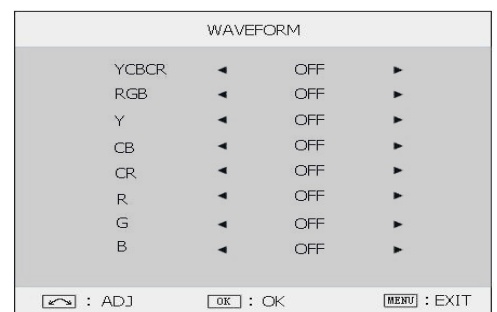
⑾ **VECTOR:** Display vector scope

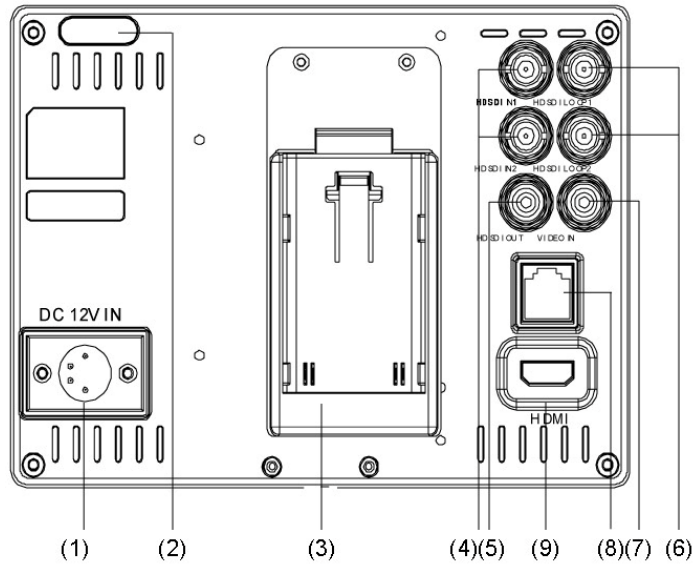Press "VECTOR" to switched on/off the Vector scope

⑿ **MENU:** Press to enter Menu

⒀ **OK:** Select and Apply

Under menu system, revolve "OK" to adjust settings and press to apply; and out of menu system, directly revolve "OK" to adjust volume.

⒁ **TALLY Light:** Red, Green and Yellow 3-color TALLY indicator

Rear view

① **DC 12V IN:** Connect with DC12V 4-pin XLR power adapter.

② **TALLY Light:** Red, Green and Yellow 3-color TALLY indicator

③ **Battery mount:**
  Connect with JVC battery BN-VF823 or SWIT battery BN-S8823 to power the monitor.

④ **HDSDI IN1/2:** HD/SD-SDI input (BNC connector)

⑤ **HDSDI OUT:** HDMI converted to SDI output (BNC connector)

⑥ **HDSDI LOOP1/2:** HD/SD-SDI loop through output (BNC connector)

⑦ **VIDEO IN:** Composite video input (BNC connector)

⑧ **TALLY controlling port** (RJ45)**:** terminal description is as follows:
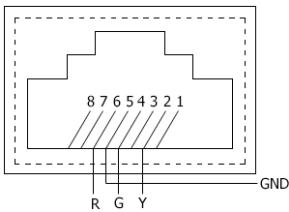
Terminal	1	2	3	4	5	6	7	8
Description		Y		G	GND	R		

The RED light is on when connecting the terminal "R" with "GND", and goes out when disconnecting.
The GREEN light is on when connecting the terminal "G" with "GND", and goes out when disconnecting.
The YELLOW light is on when connecting the terminal "Y" with "GND", and goes out when disconnecting
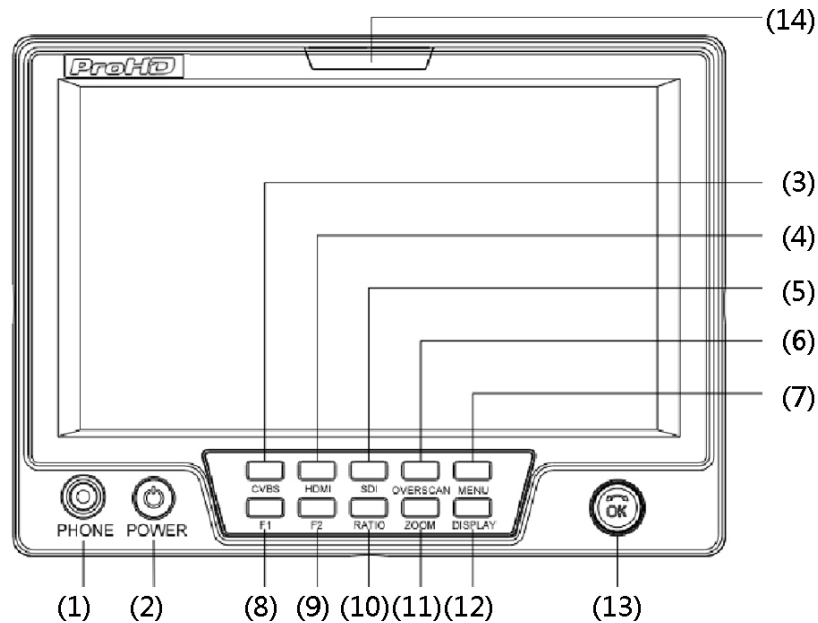
⑨ **HDMI:** HDMI input

Input formats

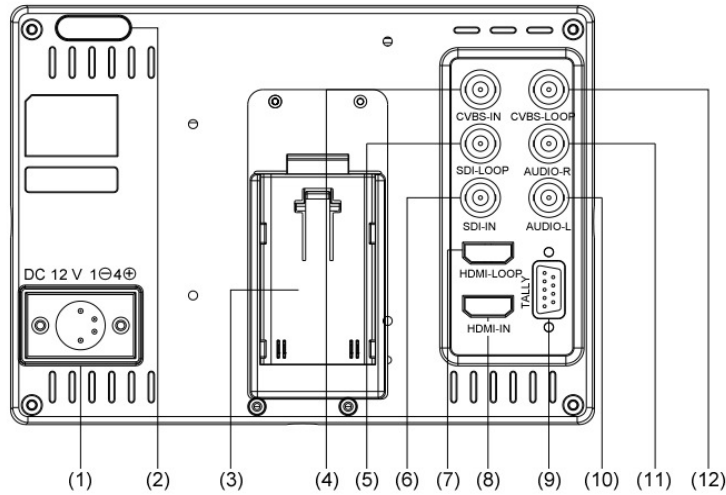| Input		Supported formats
CVBS		PAL / NTSC
HDMI		480I / 576I / 480P / 576P
		1080i (60 / 59.94 / 50)
		720p (60 / 59.94 / 50)
		1080p (60 / 59.94 / 50 / 30 / 29.97 / 25 / 24 / 23.98)
SDI	SMPTE-274M	1080i (60 / 59.94 / 50)
		1080p (30 / 29.97 / 25 / 24 / 23.98)
	SMPTE-296M	720p (60 / 59.94 / 50)
	SMPTE-125M	480i (59.94)
	ITU-R BT.656	576i (50)

DT-X71H

Front view
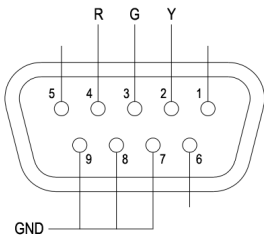

⑴ **PHONE:** Earphone jack, for SDI embedded audio, HDMI audio and analog audio

⑵ **POWER:** Power on/off

   Connect with power cable or mount battery, press the "**POWER**" and the power indicator is turned on and after 10 seconds, the monitor will be switched on and get into normal working status. Press the "**POWER**" again, the indicator is turned off and monitor is switched off.

   Remark: Disconnect with power cable or take off the battery if the monitor will not be used for a period of time.

⑶ **CVBS:** Press to switch the input signal to Composite video

⑷ **HDMI:** Press to switch the input signal to HDMI

⑸ **SDI:** Press to switch the input signal to SDI

⑹ **OVERSCAN:** Overscan / Underscan switch

⑺ **MENU:** Press to enter Menu

⑻ **F1:** User definable function key 1

⑼ **F2:** User definable function key 2

⑽ **RATIO:** 16:9 and 4:3 switch

⑾ **ZOOM:** Picture Zoom-in

   Press "ZOOM" to switch ZOOM1: Canon DSLR scale zoom-in, and ZOOM2: pixel to pixel zoom-in.

⑿ **DISPLAY:** Display current settings

   Press "Display" to display safety mark, title and the current input signal information

⒀ **OK:** Select and Apply

   Under menu system, revolve "OK" to adjust settings and press to apply; and out of menu system, directly revolve "OK" to adjust volume.

⒁ **TALLY Light:** Red, Green and Yellow 3-color TALLY indicator

Rear view

(1) (2) (3)   (4) (5) (6) (7) (8)   (9) (10) (11) (12)

⑴ **DC 12V IN:** Connect with DC12V 4-pin XLR power adapter.

⑵ **TALLY Light:** Red, Green and Yellow 3-color TALLY indicator

⑶ **Battery mount:**

　　Connect with JVC battery BN-VF823 or SWIT battery BN-S8823 to power the monitor.

⑷ **CVBS IN:** Composite video input (BNC connector)

⑸ **SDI-LOOP:** 3G/HD/SD-SDI loop through output (BNC connector)

⑹ **SDI-IN:** 3G/HD/SD-SDI input (BNC connector)

⑺ **HDMI-LOOP:** HDMI loop through output

⑻ **HDMI-IN:** HDMI input

⑼ **TALLY controlling port** (RS-232)**:** terminal description is as follows:

Terminal	1	2	3	4	5	6	7	8	9
Description		Y	G	R			GND	GND	GND

The RED light is on when connecting the terminal "R" with "GND", and goes out when disconnecting.

The GREEN light is on when connecting the terminal "G" with "GND", and goes out when disconnecting.

The YELLOW light is on when connecting the terminal "Y" with "GND", and goes out when disconnecting.

⑽ **AUDIO L:** Stereo audio left channel input (RCA connector)

⑾ **AUDIO R:** Stereo audio right channel input (RCA connector)

⑿ **CVBS-LOOP:** Composite video loop through output (BNC connector)

Input formats

Input		Supported formats
CVBS		PAL / NTSC
HDMI		480I / 576I / 480P / 576P
		1080i (60 / 59.94 / 50)
		720p (60 / 59.94 / 50)
		1080p (60 / 59.94 / 50 / 30 / 29.97 / 25 / 24 / 23.98)
SDI	SMPTE-425M	1080p (60 / 59.94 / 50)
	SMPTE-274M	1080i (60 / 59.94 / 50)
		1080p (30 / 29.97 / 25 / 24 / 23.98)
	SMPTE-296M	720p (60 / 59.94 / 50)
	SMPTE-125M	480i (59.94)
	ITU-R BT.656	576i (50)

DT-X71C

Front view
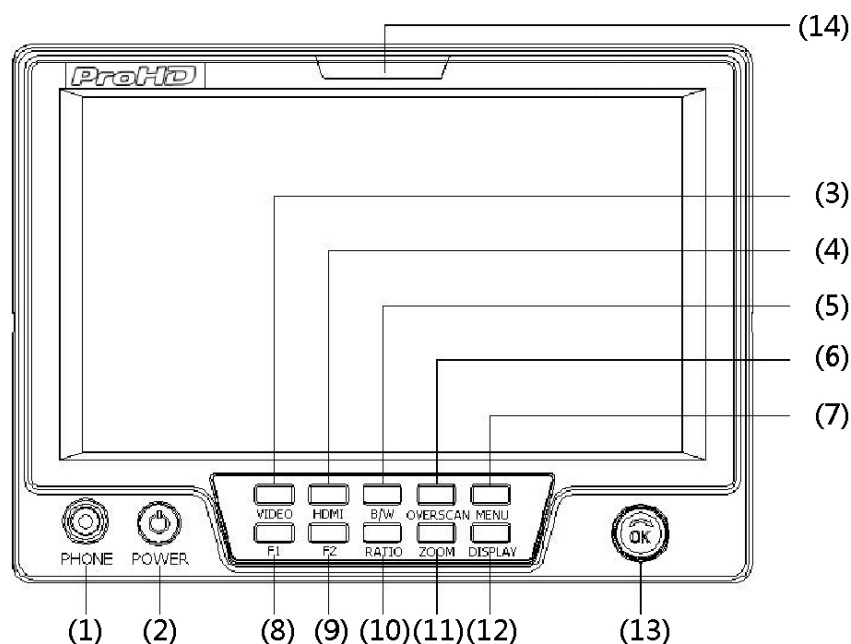
⑴ **PHONE:** Earphone jack
⑵ **POWER:** Power on/off

Connect with power cable or mount battery, press the "**POWER**" and the power indicator is turned on and after 10 seconds, the monitor will be switched on and get into normal working status. Press the "**POWER**" again, the indicator is turned off and monitor is switched off.

Remark: Disconnect with power cable or take off the battery if the monitor will not be used for a period of time.

⑶ **VIDEO:** Press to switch the input signal to Composite video
⑷ **HDMI:** Press to switch the input signal to HDMI
⑸ **B/W:** Black and White mode
⑹ **OVERSCAN:** Overscan / Underscan switch
⑺ **MENU:** Press to enter Menu
⑻ **F1:** User definable function key 1
⑼ **F2:** User definable function key 2
⑽ **RATIO:** 16:9 and 4:3 switch
⑾ **ZOOM:** Picture Zoom-in

Press "ZOOM" to switch ZOOM1: Canon DSLR scale zoom-in, and ZOOM2: pixel to pixel zoom-in.

⑿ **DISPLAY:** Display current settings

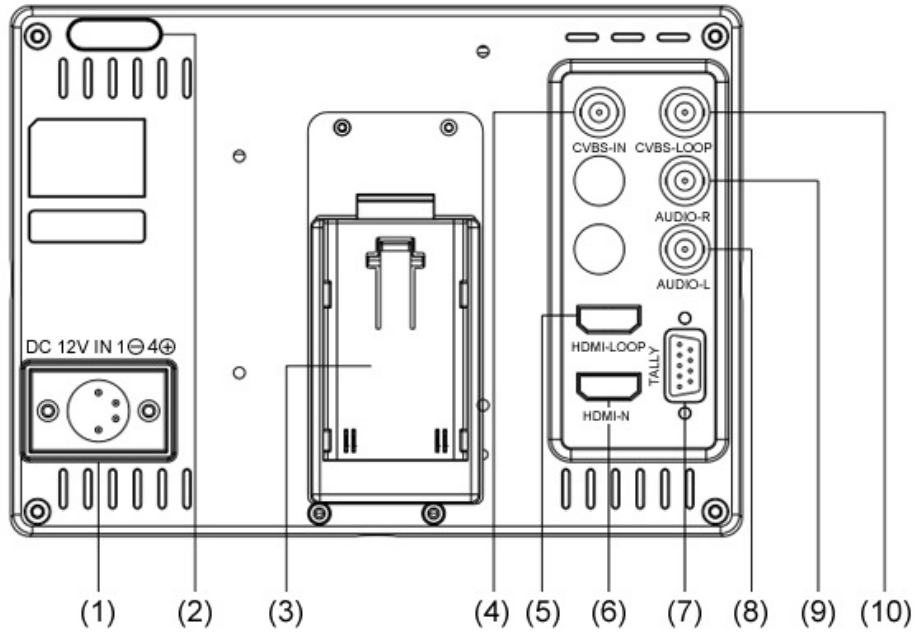Press "Display" to display safety mark, title and the current input signal information
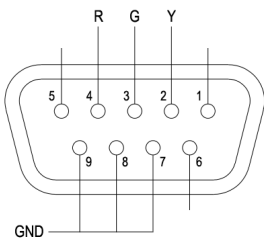
⒀ **OK:** Select and Apply

Under menu system, revolve "OK" to adjust settings and press to apply; and out of menu system, directly revolve "OK" to adjust volume.

⒁ **TALLY Light:** Red, Green and Yellow 3-color TALLY indicator

Rear view

⑴ **DC 12V IN:** Connect with DC12V 4-pin XLR power adapter.

⑵ **TALLY Light:** Red, Green and Yellow 3-color TALLY indicator

⑶ **Battery mount:**

   Connect with JVC battery BN-VF823 or SWIT battery BN-S8823 to power the monitor.

⑷ **CVBS IN:** Composite video input (BNC connector)

⑸ **HDMI-LOOP:** HDMI loop through output

⑹ **HDMI:** HDMI input

⑺ **TALLY controlling port** (RS-232)**:** terminal description is as follows:

Terminal	1	2	3	4	5	6	7	8	9
Description		Y	G	R			GND	GND	GND

The RED light is on when connecting the terminal "R" with "GND", and goes out when disconnecting.

The GREEN light is on when connecting the terminal "G" with "GND", and goes out when disconnecting.

The YELLOW light is on when connecting the terminal "Y" with "GND", and goes out when disconnecting

⑻ **AUDIO L:** Stereo audio L input (RCA connector)

⑼ **AUDIO R:** Stereo audio R input (RCA connector)

⑽ **CVBS-LOOP:** Composite video loop through output (BNC connector)

Input formats

| Input	Supported formats
CVBS	PAL / NTSC
HDMI	480I / 576I / 480P / 576P
	1080i (60 / 59.94 / 50)
	720p (60 / 59.94 / 50)
	1080p (60 / 59.94 / 50 / 30 / 29.97 / 25 / 24 / 23.98)

3. Menu Operation

Press "MENU" and it will display menu system
- ➢ Revolve "OK" to select an item. The selected item will be highlighted display.
- ➢ Press "OK" to enter the selected item.
- ➢ Under menu system, press "MENU" to back to previous menu.
- ➢ The menu will automatically save and quit if it remains idle.

4. Picture Settings Submenu
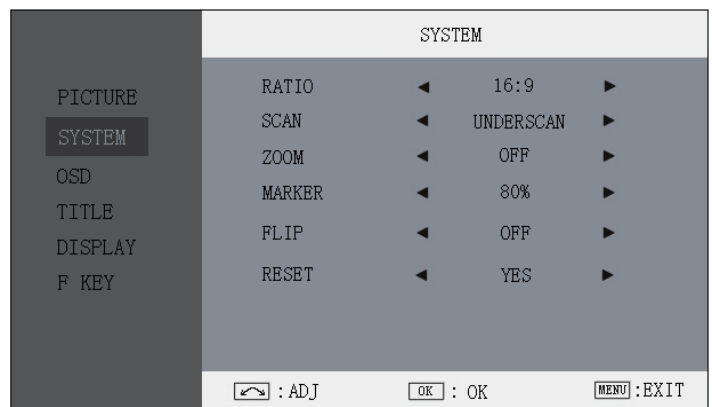
The Picture Settings Submenu includes:
⑴ **CONTRAST:** 0-100 value adjustment
⑵ **BRIGHTNESS:** 0-100 value adjustment
⑶ **HUE:** 0-100 value adjustment
   (Only available under Composite input)
⑷ **SATURATION:** 0-100 value adjustment
⑸ **SHARPNESS:** 0-100 value adjustment
⑹ **PIC.MODE:** User defined and preset picture
   modes: standard, soft and vivid selection
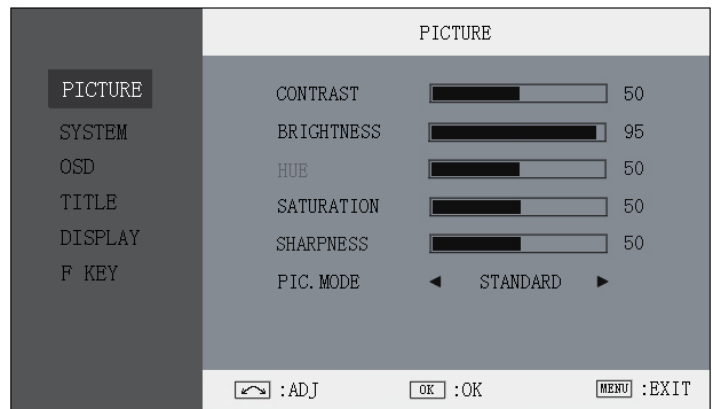
5. System Configuration Submenu

The System Configuration Submenu includes:
⑴ **RATIO:** Select "16:9" or "4:3" to adjust the aspect ratio.
⑵ **SCAN:** "UNDERSCAN" / "OVERSCAN" selection
⑶ **ZOOM:** "OFF", "ZOOM1" and "ZOOM2" selection
   ZOOM1: Canon DSLR scale zoom-in
   ZOOM2: Pixel to Pixel zoom-in
⑷ **MARKER:** Select and set the safety mark scale from 80%, 85%, 90% and 95%.
⑸ **FLIP:** Select "YES" to flip the image by 180°.
⑹ **RESET:** Revolve "OK" to RESET and press to recover all to factory setting.
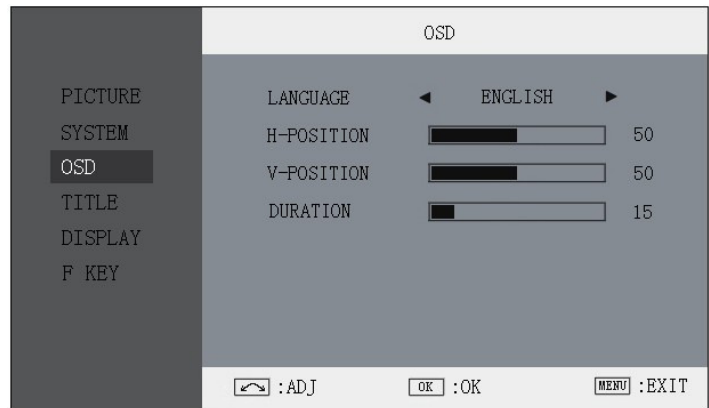
6. OSD Settings Submenu

The OSD Settings Submenu includes:

⑴ **LANGUAGE:** Menu language English / Chinese selection

⑵ **H-POSITION:** Menu horizontal position (0-100) adjustment, real-time preview, default value: 50, center.

⑶ **V-POSITION:** Menu vertical position (0-100) adjustment, real-time preview, default value: 50, center.

⑷ **DURATION:** Menu timeout setting

Set a time (in seconds) in which the menu will automatically quit if remains idle. Default: 10 seconds; Range: 5 seconds to 60 seconds.

```
                        OSD

PICTURE          LANGUAGE     ◄     ENGLISH    ►
SYSTEM           H-POSITION  ████████▌         50
OSD              V-POSITION  ████████▌         50
TITLE            DURATION    ██▌               15
DISPLAY
F KEY



         ⌁ :ADJ        OK :OK        MENU :EXIT
```

7. Title Settings Submenu

Revolve "OK" button to select the letters, and press "OK" to input. Select SPACE to input space and DEL to delete the left letter. Max 10 letters are supported.
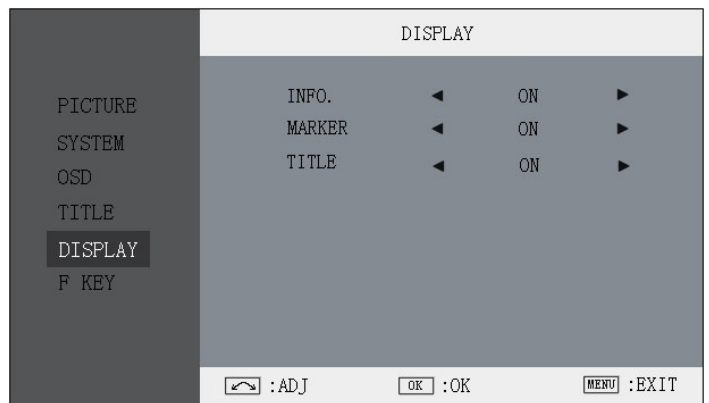
After setting, press "MENU", the system will save data to current user and quit menu. The menu will automatically save and quit if it remains idle.

```
                        TITIE

PICTURE          0  1  2  3  4  5  6  7  8  9
SYSTEM           A  B  C  D  E  F  G  H  I  J
OSD              K  L  M  N  O  P  Q  R  S  T
TITLE            U  V  W  X  Y  Z  SPACE DEL
DISPLAY
F KEY            TITLE:  CAM■1



         ⌁ :ADJ        OK :OK        MENU :EXIT
```

8. Display Settings Submenu

The DISPLAY settings submenu is to select the items to be displayed on screen when 'DISPLAY" button is pressed. Revolve "OK" to turn on/off the items:

(1) **INFO:** Including Input format, aspect ratio, underscan/overscan, zoom status

(2) **MARKER:** Safety mark

(3) **TITLE**: User edited title

```
                        DISPLAY

PICTURE          INFO.      ◄       ON        ►
SYSTEM           MARKER     ◄       ON        ►
OSD              TITLE      ◄       ON        ►
TITLE
DISPLAY
F KEY



         ⌁ :ADJ        OK :OK        MENU :EXIT
```
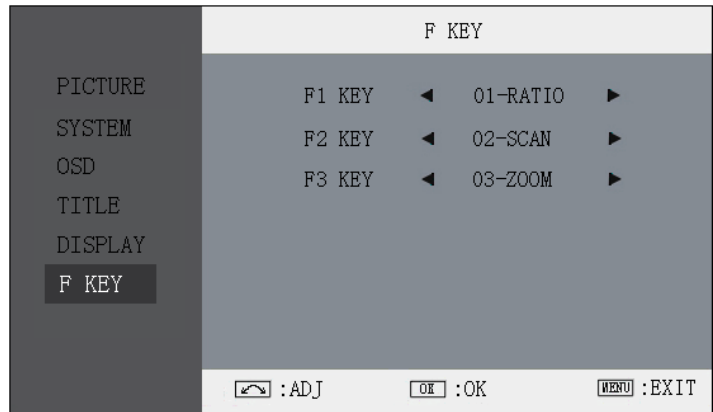
9. FUNCTION KEY Settings Submenu

The F KEY Settings Submenu is to define Function Keys on the front keyboard.
The DT-X71F has 3 function keys:
  F1, F2 and F3;
The DT-X71H and DT-X71C has 2 function keys:
  F1 and F2.

```
                        F KEY

PICTURE
             F1 KEY    ◄    01-RATIO    ►
SYSTEM
             F2 KEY    ◄    02-SCAN     ►
OSD
             F3 KEY    ◄    03-ZOOM     ►
TITLE

DISPLAY

F KEY


      ⟳ :ADJ        OK :OK        MENU :EXIT
```

The available function items of each model are:

--------------------DT-X71F--------------------
01-RATIO: Aspect ratio switch
02-SCAN: Underscan / Overscan switch
03-ZOOM: Picture Zoom-in
04-PIC. MODE: Preset picture mode switch
05-B/W: Color / Black & white switch
06-BLUE ONLY: Blue only mode switch on/off
07-ZEBRA: Zebra over exposure switch on/off
08-VECTOR: Vector scope switch on/off
09-PATTERN: Internal colorbar switch on/off
10-RGB HIST: R, G, B Histogram switch on/off
11-TIMECODE: SDI timecode display switch on/off
12-F.COLOR: False color mode switch on/off
13-AUDIO BAR: Audio meter display switch on/off
14-FOCUS: Peaking focus assist switch on/off, and
            red/blue selection
15-FLIP: Image flip

--------------------DT-X71H--------------------
01-RATIO: Aspect ratio switch
02-SCAN: Underscan / Overscan switch
03-ZOOM: Picture Zoom-in
04-B/W: Color / Black & white switch
05-FLIP: Image flip

--------------------DT-X71C--------------------
01-RATIO: Aspect ratio switch
02-SCAN: Underscan / Overscan switch
03-ZOOM: Picture Zoom-in
04-B/W: Color / Black & white switch
05-FLIP: Image flip

10. Specifications

LCD Performance	
Size	7.0 inches
Resolution	1024×RGB×600
Aspect ratio	16:9/4:3
Color system	NTSC/PAL
Brightness	400cd/m^2
Contrast	900:1
Color	16.77 million colors
Viewing angle	H/V:160/160

Video Format			
SDI *	SMPTE-425M **	1080p (60 / 59.94 / 50)	
	SMPTE-274M	1080i (60 / 59.94 / 50)	
		1080p (30 / 29.97 / 25 / 24 / 23.98)	
	SMPTE-296M	720p (60 / 59.94 / 50)	
	SMPTE-125M	480i (59.94)	
	ITU-R BT.656	576i (50)	
HDMI		480I / 576I / 480P / 576P	
		1080i (60 / 59.94 / 50)	
		720p (60 / 59.94 / 50)	
		1080p (60 / 59.94 / 50 / 30 / 29.97 / 25 / 24 / 23.98)	

General		
Working voltage	DC12V, or Battery 6.5V-17V	
Power consumption	DT-X71F	≤15W
	DT-X71H	≤8W
	DT-X71C	≤7W
Working temperature	0℃～+40℃	
Working humidity	10%～90%	
Storage temperature	-15℃～+60℃	
Storage humidity	10%～90%	
Dimensions	192×139×47mm	
Net weight	550g	

* DT-X71C doesn't support SDI input;

** Only DT-X71H support SMPTE-425M format.

11. Packing List

1. Monitor	×1
2. User Manual	×1
3. Power adaptor	×1
4. Power cable	×1
5. Sun hood	×1
6. Screw ball head	×1
7. LCD protection film	×1

ProHD