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3. Specification

3-1. General specification

(1) Supply voltage

AC 100V～120V±10% 50/60Hz

AC 200V～240V±10% 50/60Hz

DC +12V

(2) Power consumption

AC input: 18W max

   Max 0.33A: (AC 100～120V)

   Max 0.20A: (AC 200～240V)

DC input: 16W max (at +12V)

   1.7A max

(3)Ambient operation/storage temperature/humidity

Operation：0℃～+40℃　20%～85%(non condensing)

Storage：-10℃～+ 50℃　5%～85%(non condensing)

Maximum wet-bulb temperature：29℃

(4) Outside dimensions (excluding protrusions)

222.4mm(W) x 173mm(H) x 69.5mm(D)

(5) Weight

Approx. 2.0kg (Excluding the stand and options)

(6) Standard Accessories

・AC Cable

・Parallel remote connector

・Operation Manual

 X1 each

3-2 Rated performance

(1) SDI signal (Supported as standard)

a), Input/output terminal

 Input：BNC 2 lines

 Output：BNC 1 line (Only for monitoring)

 (Active loop through for only one line selected)

b), Input single format (Auto detection)

 ・HD-SDI ：SMPTE292M

・1035i/60, 59.94	・1080p/25
・1080i/60, 59.94	・1080p/24, 23.98
・1080i/50	・720p/60, 59.94
・1080psF/30, 29.97	・720p/50
・1080psF/25	・720p/30, 29.97
・1080psF/24, 23.98	・720p/25
・1080p/30, 29.97	・720p/24, 23.98

 ・SD-SDI(4:2:2)　：SMPTE 259M

・480i/59.94	・575i/50

c), Input level

 Rating：800mVp-p±10%

d), Transmission speed

 HD-SDI：1.485Gb/s

 SD-SDI：270Mb/s

e), Quantization bit rate

 10-bit

f), Input/output impedance

 75Ω

h), Transmission distance

 Over100m (5CFB, 1.485Gb/s)

(2) Analog composite (NTSC/PAL-B) signal (Supported as standard)

a), Input terminal

  BNC 1 line (Loop Thorough)

b), Input signal format

  NTSC composite signal SMPTE 170M

  PAL Composite signal EBU

c), Input level

  VS：1.0Vp-p (Positive polarity)

  V：0.714Vp-p (NTSC)/ 0.7Vp-p (PAL)

  (Positive polarity)

d), Input impedance

  High impedance bridge connection

  or 75Ω　termination.

(3) Embedded audio (Supported as standard)

a), Input signal

・SMPTE 299M

・1035i/60, 59.94	・1080p/25
・1080i/60, 59.94	・1080p/24, 23.98
・1080i/50	・720p/60, 59.94
・1080psF/30, 29.97	・720p/50
・1080psF/25	・720p/30, 29.97
・1080psF/24, 23.98	・720p/25
・1080p/30, 29.97	・720p/24, 23.98

・SMPTE 272M

・480i/59.94 （4:2:2）　・575i/50 （4:2:2）

b), Format detection

Auto detection

c), Sampling frequency

48kHz (Synchronized with video clock)

d), Embedded audio output

The audio on each of paired channels downmix, ch1/2, ch3/4, ch5/6 and ch7/8 is output through the analog audio output, the headphone and the built-in speaker.

(4) Embedded audio level meter (supported as standard)

a), Display method

Superimposition on screen

b), Display channel

8 ch

c), Display position

3 types

d), Display mode

6 modes

e), Display segment

26 segments (including -∞)

f), Segment point

-∞, -60, -54, -48, -44, -40, -38, -36, -34, -32, -30, -28, -26, -24, 22, -20, -18, -16, -14, -12, -10, -8, -6, -4, -2, 0dB

g), Display color

-∞〜-22dB : Green

-20dB〜0dB : Amber

h), Peak hold

About 1sec (Hold ON/OFF : selectable by MENU)

i), Release time

About 0.4 sec

(5) Analog audio input (Supported as standard)

a), Input terminal

3.5mm dia. Stereo mini-jack type

b), Input level

316mV (-10dBV)

(6) Analog audio output (Supported as standard)

a), Output terminal

3.5mm dia. Stereo mini-jack type

b), Output level

316mV (-10dBV)

c), Load impedance

10kΩ

d), Output audio source

Analog audio input or embedded audio signal can be outputted. To select one of these signals, make the setting on MENU.

(7) Headphone output (Supported as standard)

a), Output terminal

3.5mm dia. Stereo mini-jack type

b), Output level

85mw/ch (RL : 32Ω, Distortion factor 1%)

c), Output audio source

Analog audio input or embedded audio signal can be outputted. To select one of these signals, make the setting on MENU.

(8) Built-in speaker output

a), Output level (monaural)

350mW or more

b), Output audio source

Analog audio input or embedded audio signal can be outputted. To select one of these signals, make the setting on MENU.

*When the headphone is connected, Speaker output is OFF

3-3. Specification for LCD module

(1) Number of pixels

800 (H) x 480 (V) dots

(2) Pixel pitch

0.24375mm(W) x 0.24375mm(H)

(3) Screen size

195.0mm x 117.0mm(Diagonal 22.74cm, 9V type)

(4) Screen brightness (performance of LCD unit)

320cd/m² （At 100% white input）

(5) Drive system

a-Si TFT active matrix,

line sequential (non-interlace)

(6) Pixel arrangement

RGB vertical stripe

(7) Response speed

・T on+Toff : 25ms typ. (Ta=25℃)

*The response speed from the 10% black to 90% white level and that from the 90% white to 10% black level are added together)

・Gray to Gray : 13ms typ. (Ta=25℃)

(8) Contrast ration

800:1 (typ.)

(9) Number of display color

16,777,216 (RGB 8-bit)

(10) Viewing angle

Vertical/Horizontal, Left/right 170°

(Contrast ratio 10:1 or more))

(11) Lifetime of Back light

About 50,000-hour

4. Functions

4-1. Front side operation

・Switches

POWER ON / OFF,

CH A (Convertible with UP SELECT)

CH B (Convertible with DOWN SELECT)

SDI (Convertible with RIGHT SELECT)

ANALOG (Convertible with LEFT SELECT)

MONO (COLOR / MONO)

SCAN (NORMAL / UNDER)

ASPECT (4:3 / 16:9 / HD4:3ZOOM)

MARKER (ON / OFF)

F1 (Can be assigned various functions)

F2 (Can be assigned various functions)

MENU/ENT

PRESET

ESC

・Volumes

CHROMA, BRIGHTNESS, CONTRAST

(BACKLIGHT), AUDIO

4-2. Marker functions

a), Center marker (ON/OFF setting by MENU)

b),Safety marker

Any of following markers in displayed according to the image aspect ratio (16:9, 4:3). The number in parentheses shows the aspect at the time of marker display.

<Types>

・[Safety area marker]+100%　　　(4:3/16:9)

The "safety area markers" are effective over the entire screen and can be present 1% by 1% in the range of 80-99%

・5 divided crosshatch　　　　(4:3/16:9)

・10 divided crosshatch　　　　(4:3/16:9)

・Cross　　　　　　　　　　(4:3/16:9)

・16:9 aspect marker　　　　(4:3)

・15:9 aspect marker　　　　(4:3/16:9)

・14:9 aspect marker　　　　(4:3/16:9)

・13:9 aspect marker　　　　(4:3/16:9)

・4:3 aspect marker　　　　　(16:9)

・1.85:1 aspect marker　　　(16:9)

・2.35:1 aspect marker　　　(16:9)

・"Each aspect marker"+"Safety marker in aspect ratio"　　　　(4:3/16:9)

The "safety marker in aspect" refers to the safety marker with respect to the aspect marker display zone, and can be present 1% by 1% in the range of 80-99%. Corresponding to each aspect marker.

<Marker level>

・Set in five steps of 20%, 40%, 60%, 80% and 100%

4-3. Shadow function

Creates a shadow outside the aspect areas with 4:3(16:9mode), 13:9, 14:9, 15:9, 16:9(4:3mode)

<Types>

・"Various aspect markers"+"Shadow"

・"Various aspect markers"+"Safety marker in aspect"+"Shadow"

・"Shadow only"

<Shadow contrast level>

・Set in for steps of 0%, 20%, 40% and 60%

4-4. User Marker function

Function for the user to draw their desired lines and boxes in the unit of pixels

      a) No. of types : 10

      b) No. of colors : 6

      c) Drawable size : 800 x 450 pixels

      d) Drawing method : Switch or USB mouse

           *Patent pending

4-5. Remote control

(1) Parallel remote control

Input connector : HD D-SUB 15-pin

  \<Function>

    ・CH A/B selection

    ・SDI ON/OFF

    ・COLOR/MONO selection

    ・4:3/16:9 aspect ratio selection

    ・MARKER ON/OFF

    ・SHADOW ON/OFF

    ・R TALLY ON/OFF

    ・G TALLY ON/OFF

    ・SHADOW0 ON/OFF(★)

    ・SHADOW20 ON/OFF(★)

    ・SHADOW40 ON/OFF(★)

    ・SHADOW60 ON/OFF(★)

*For the pin assignment, refer to [Info 1 Parallel remote pin assignment]

*In additional to default setting, user setting is possible

*The "★"marked settings are used in the USER mode.

(2) Serial remote control

(The controller SRC-301Z is option)

a), Input/output terminal

    BNC 1 line (loop through)

b), Input level

    1.9Vp-p (Negative polarity)

c), Input impedance

    High impedance bridge connection

    or 75Ω termination.

*For the control items, Please refer [Info 2 serial remote control]

(3)

(4) RS-485 remote control (customized)

a), Connector : RJ-45 (Loop through)

b), Maximum number of node : 32

5. Application standards

5-1. Safety standards

・UL1419

・EN60950-1

5-2. Electromagnetic interference

・FCC　Class-A

・EN55103-1 E4

・EN55103-2 E4

5-3. Environmental regulations

・Compliant with RoHS Directive

6. Options

(1) SRC-301Z [Serial remote controller]

Serial remote controller capable of remote controlled operation simply by connecting the BNC cable to the serial remote input mounted as standard. Just this unit can control all of the monitor functions. When plural monitors are connected in loop with BNC cables, up to 99 monitors can be controlled individually or collectively.

(2) DR-904 [Dual rack mount adaptor]

*Designed specifically for HLM-904WR. 4U-size rack mount adaptor for mounting 2 units HLM-904WR.

Weight : About 1.3Kg

(3) BP-920 [Blank panel for DR-904/920]

*Blank panel for mounting one monitor with DR-904.

Weight : About 0.54Kg

(4)DR-904T [Dual rack mount adaptor (Tilt type)]

（Make to order）

*Designed specifically for HLM-904WR. 5U-size rack mount adaptor for mounting 2 units HLM-904WR

(5)BP-904T [Blank panel for DR-904T]

（Make to order）

*Blank panel for mounting one monitor with DR-904T

(6) HR-904 [Half rack mount adaptor]

（Make to order）

*Designed specifically for HLM-904WR. 4U –size half rack size mount adaptor for mounting 1 unit HLM-904WR

(7)WR-904L [Dual rack mount adaptor]

（Make to order）

*Designed specifically for HLM-904WR.Full rack size dual rack mount adaptor for mounting HLM-904WR and WFM.

(WFM only for LV-5750 : Leader electronics)

(8) WR-920L3 [Dual rack mount adaptor]

（Make to order）

*Designed specifically for HLM-904WR.Full rack size dual rack mount adaptor for mounting HLM-904WR and WFM.

(WFM only for LV5700A/5710A/5800 : Leader).

(For other WFM models, contact us)

(9) WR-904A [Dual rack mount adaptor]

（Make to order）

*Designed specifically for HLM-904WR.Full rack size dual rack mount adaptor for mounting HLM-904WR and WFM.

(WFM only for WM-3007/A : Astro design)

(10) WR-904C [Dual rack mount adaptor]

（Make to order）

*Designed specifically for HLM-904WR.Full rack size dual rack mount adaptor for mounting HLM-904WR and WFM.

(WFM only for WFM7000 series: Textronix)

(11) MH-904 [folding Hood]

*Designed specifically for HLM-904WR

Weight : About 0.58Kg

(12) CC-904 [Hard carrying case]

*Designed specifically for HLM-904WR

~~**(13) SC-904** [Soft carrying case]~~

~~*Designed specifically for HLM-904WR~~

(14) STD-900 [Stand with tilt-up]

With til-up : +14°

(15) STD-920T [Stand with tilt]

With tilt angle : ±10°

(16) GR-904 [Handle]

Designed specifically for HLM-904WR

Weight : About 0.15Kg

(17) AT-900 [Inch screw thread attachment plate]

Attachment plate for connecting a tripod

For ¼-inch and 3/8-inch threads, and detachable

With the STD-900 stand on.

(18) BB-904V [V type battery adaptor with handle]

Designed specifically for HLM-904WR

Weight : About 0.36Kg

(19) BB-904A [Anton battery adaptor with handle]
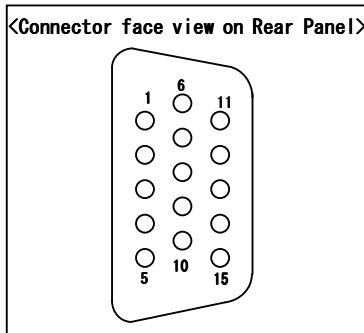
Designed specifically for HLM-904WR

Weight : About 0.39Kg
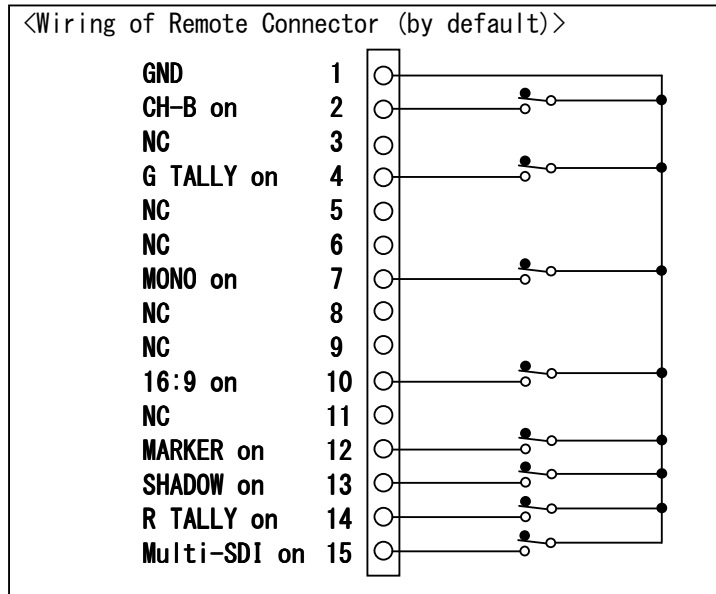
(20) PP-904 [LCD Protect panel]

Designed specifically for HLM-904WR

Weight : About 74g

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Info 1   Parallel remote connector pin assignment

<Connector face view on Rear Panel>

<Connector on system side>
D-sub 15-pin(Male) mini-type
・Connector
  CD0115PA100: CVILUX-made
・Housing
  DE-C8-J9-F2-1
  Japan Aviation Electronics Industry-made
*The above parts or equivalents are supplied as standard.

<Wiring of Remote Connector (by default)>

Pin No.	Function	External Assignment for Function
1	GND	Connecting remote terminals to this pin enable ON control
2	CH-B on	Connect to Pin1 to select B channel in the analog composite or Multi-SDI input mode. *When Pin 2 is OPEN, the A channel will be selected
3	NC	No connection
4	G TALLY on	Connect to Pin 1 to set G TALLY to ON.
5	NC	No connection
6	NC	No connection
7	MONO on	Connect to Pin 1 to switch the COLOR/MONO setting to MONO.
8	NC	No connection
9	NC	No connection
10	16:9 on	Connect to Pin 1 to change the aspect (4:3/16:9) of SDTV signals to 16:9. *If the setting is to be controlled simultaneously with channel switching, set[Change Aspect] to [Manual] in MENU 2-3
11	NC	No connection
12	MARKER on	Connect to Pin 1 to set Aspect marker to ON
13	SHADOW on	Connect to Pin 1 to set SHADOW to ON
14	R TALLY on	Connect to Pin 1 to set Red TALLY to ON
15	Multi-SDI on	Connect to Pin 1 to select the Multi-SDI input module Use together with Pin 2 to switch between channels A and B *When Pins 15 is open, the analog composite will be selected.

■ Additional user-set functions

Pin No.	Function	External Assignment for Function
User setting	SHADOW0 on	Connect to Pin 1 for running with the shadow level 0% (Black) *Priority is given to this pin function if any other shadow setting pin is pressed at once.
User setting	SHADOW20 on	Connect to Pin 1 for running with the shadow level 20%
User setting	SHADOW40 on	Connect to Pin 1 for running with the shadow level 40%
User setting	SHADOW60 on	Connect to Pin 1 for running with the shadow level 60%

*This functions of pins other than 1 are freely user-settable on MENU

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Info 2   Control method from serial remote controller

Control Item	Serial Remote SRC-301A/Z	Remarks
■Switch functions		
VIDEO (VBS)	○	
SDI A	○	
SDI B	○	
TEST	○	
APERTURE ON/OFF	○	
COLOR/MONO	○	
BLUE ONLY ON/OFF	○	
DELAY (H/V/PCR)	○	Only HDTV
4:3/16:9 SCAN SELECT	○	Only SDTV
FILE SELECT	○	
MARKER ON/OFF	○	
MENU	○	
■Preset level variable function		
HUE	○(※)	Only VBS
CHROMA	○(※)	
BRIGHTNESS	○(※)	
CONTRAST	○(※)	
APERTURE	○(※)	
R/G/B GAIN	○(※)	
R/G/B BACKGROUND	○(※)	
R/G/B GAMMA	○(※)	
BACK LIGHT	○(※)	

※　Adjustments through MENU operation