

Customer : General User

General Specification

Model : MSV (Multi Scaler Viewer)

Revised : 15th May, 2013

OPHIT Co., Ltd.

3F, Suntechnovil, 5-27, Mangpo-Dong,
Yeongtong-Gu, Suwon-City, Kyungki-Do, Korea

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1. Revision History

Version	Revision Date	Author	Description of Changes
0.1	15/05/2013	J. H. LIM	1 st Pre Production Version Specification Define

< Table 1 > Revision History

2. Reference Documents and Standards

2.1 Industry Standards and Documents

Reference	Description	Revision/Date
EN55022	Electromagnetic Radiation Information technology equipment. Radio disturbance characteristics. Limits & methods of measurement.	1994+A1+A2 15 th December, 1998
EN55024	Electromagnetic Radiation Information technology equipment. Immunity characteristics. Limits and methods of measurement and measuring.	1998+A1+A2 15 th December, 1998
EN60950-1	Information technology equipment. Safety. General requirements.	22 th February, 2002
DVI 1.0	Digital Visual Interface 1.0	02 th April, 1999

< Table 2 > Industry Standards and Documents

3. Product Overview

3.1 Introduction

The Multi Scaler Viewer(Model : MSV) is an advanced video processor for multimedia presentations. It is an ideal solution for applications where up to four different or same video signals must be displayed on a single display. MSV allows you to manipulate output images, wherever positions and whatever size you want for display and also allows you to control brightness, overlay, etc. The embedded scaler converts signals from input source to match user-selectable output setting up to 1080p.

MSV uses modular type DVI, D-Sub, SDI and HDMI in and output cards to have flexibility on application and to reduce cost by avoiding purchase of additional equipment.

MSV control is available via front panel control and user interface program(MSV Manager) on Windows.

3.2 Main Function

- 4 Cannel Input video signals to be displayed on a single display
- Each input video signals up or down scale to be defined output video resolution
- Convert Analog to Digital video signal (In case input card is D-SUB)
- Input features
 - 4 modular card type inputs(DVI / D-SUB / HDMI(in progress) / SDI(in progress))
 - Allows various resolution inputs
 - 1 selectable audio output among 4 audio inputs
- Output features
 - User Selectable output resolutions
 - Mirror(Copy Screen) and Pan&Scan
 - Adjustable screen size and position
 - Screen labeling
 - Overlay
 - Contrast, Brightness, Border control
 - User preset screen layout saving

3.3 Applications

- Professional broadcasting and production studios
- Medical Center and laboratory
- Presentation application
- Display application

4. Specification

4.1 Power Specification

Items	Values / Description
AC/DC Adaptor	■ Input: 100VAC~240VAC, 50/60Hz ■ Output: 12V DC, 3.33A
Total Power consumption (in case 4 inputs operation)	■ Power: 12V DC, Max. 1.8A

< Table 3 > Power Specification

4.2 Video Input Specification

4.2.1 DVI

- The MSV is able to receive DVI Digital Video Signal (TMDS signal with or without DDC_I2C control signal) with VESA Standard up to WUXGA resolution

Items	Values / Description
Port Type	■ 4 Input Ports (1~4 input available by user select) ● Connector : 29pin DVI-I type Female
Resolutions	■ VESA Standard up to WUXGA
Signal Formats	■ DVI : TMDS

< Table 4 > Video Input Specification

- Supporting DVI Input Resolutions

Resolution (HD/SD)	Hz	Resolution (HD/SD)	Hz
640 x 480	60	720 x 576	50
720 x 480	60	1280 x 720	50
1280 x 720	60	1440 x 288	50
1440 x 240	60	2880 x 288	50
2880 x 240	60	1440 x 576	50
2880 x 240	60	1920 x 1080	24, 25, 30, 50, 60
1440 x 480	60		
Resolution (VESA)	Hz	Resolution (VESA)	Hz
640 x 350	85	1280 x 960	60, 85
640 x 400	85	1280 x 1024	50, 60, 75, 85
832 x 624	75	1360 x 768	60
720 x 350	70	1366 x 768	60(RB), 60
720 x 400	70	1400 x 768	60(RB), 60

720 x 400	85	1400 x 1050	75, 85
640 x 480	60, 72, 75, 85	1440 x 900	60(RB), 60, 75, 85
800 x 600	56, 60, 72, 75, 85	1600 x 1200	60, 65, 70, 75, 85
840 x 480	60	1680 x 1050	60(RB), 60
1024 x 768	50, 60, 70, 75, 85	1680 x 1050	75, 85
1152 x 864	75	1792 x 1344	60, 75
1280 x 768	60(RB), 60, 75, 85	1856 x 1392	60, 75
1280 x 800	60	1920 x 1200	60(RB)

< Table 5 > DVI Video Input Specification

4.2.2 D-SUB

- The MSV is able to receive D-SUB Analog Video Signal (VGA signal with or without DDC_I2C control signal) with VESA Standard up to WUXGA resolution

Items	Values / Description
Port Type	■ 4 Input Ports (1~4 input available by user select) ● Connector : 15pin Female (3 Row)
Resolutions	■ VESA Standard up to WUXGA
Signal Formats	■ D-SUB : Analog Video

< Table 6 > D-SUB Video Input Specification

- Supporting D-SUB Input Resolutions

Resolution (HD/SD)	Hz	Resolution (HD/SD)	Hz
640 x 480	60	720 x 576	50
720 x 480	60	1280 x 720	50
1280 x 720	60	1920 x 1080	30, 50, 60
Resolution (VESA)	Hz	Resolution (VESA)	Hz
640 x 480	60, 72, 75, 85	1366 x 768	60(RB), 60
800 x 600	56, 60, 72, 75, 85	1400 x 768	60(RB), 60
1024 x 768	60, 70, 75, 85	1400 x 1050	60(RB), 60
1152 x 864	75	1440 x 900	60, 75
1280 x 768	60(RB), 60	1600 x 1200	60
1280 x 800	60	1680 x 1050	60(RB), 60
1280 x 960	60	1680 x 1050	75, 85
1280 x 1024	60, 75, 85	1920 x 1200	60(RB)
1360 x 768	60		

< Table 7 > D-SUB Video Input Specification

4.3 Video Output Specification

- The MSV is able to transmit DVI Digital Video Signal (TMDS signal with or without DDC_I2C control signal and hot plug signal) with fixed resolution
- Fixed resolution marked as below

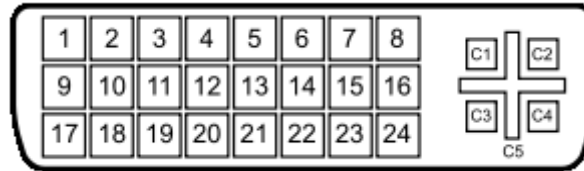
Items	Values / Description
Port Types	■ 1 Output Port ● Connector : 29pin DVI-I type Female
Resolutions	■ 1080P (1920 x 1080, 60Hz) ■ 720P (1280x720, 60Hz) ■ 480P (720x480, 60Hz) ■ WUXGA (1920x1200, 60Hz) ■ UXGA (1600x1200, 60Hz) ■ SXGA (1280x1024, 60Hz) ■ XGA (1024x768, 60Hz)
Signal Formats	■ DVI : TMDS

< Table 8 > Video Output Specification

5. Electrical Specification

5.1 Input Port Pin Assignment

5.1.1 DVI

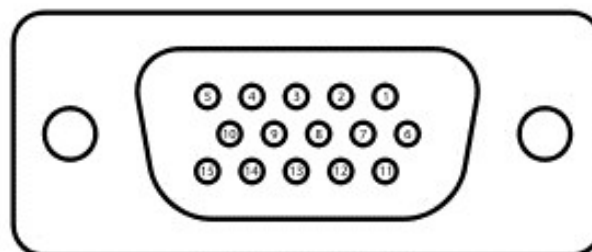


< Figure 1 > DVI-I Type Female Connector

Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	CH 2-	9	CH 1-	17	CH 0-
2	CH 2+	10	CH 1+	18	CH 0+
3	CH2 Ground	11	CH1 Ground	19	CH0 Ground
4	N/C	12	N/C	20	N/C
5	N/C	13	N/C	21	N/C
6	SCL	14	+5V	22	CLK Ground
7	SDA	15	Ground	23	CLK+
8	N/C	16	Hot plug	24	CLK-
C1	Ground	C2	Ground	C3	Ground
C4	Ground	C5	Ground		

< Table 9 > DVI Input Port Signal Assignment

5.1.2 D-SUB



< Figure 2 > D-SUB 3Row 15Pin Female Connector

Pin	Signal Assignment	Pin	Signal Assignment
1	Red	9	N/C
2	Green	10	Ground
3	Blue	11	Ground

4	Ground	12	SDA
5	Ground	13	H Sync
6	Red Ground	14	V Sync
7	Green Ground	15	SCL
8	Blue Ground		

< Table 10 > D-SUB Input Port Signal Assignment

5.2 Output Port Pin Assignment

5.2.1 DVI



< Figure 3 > DVI 29Pin I Type Female Connector

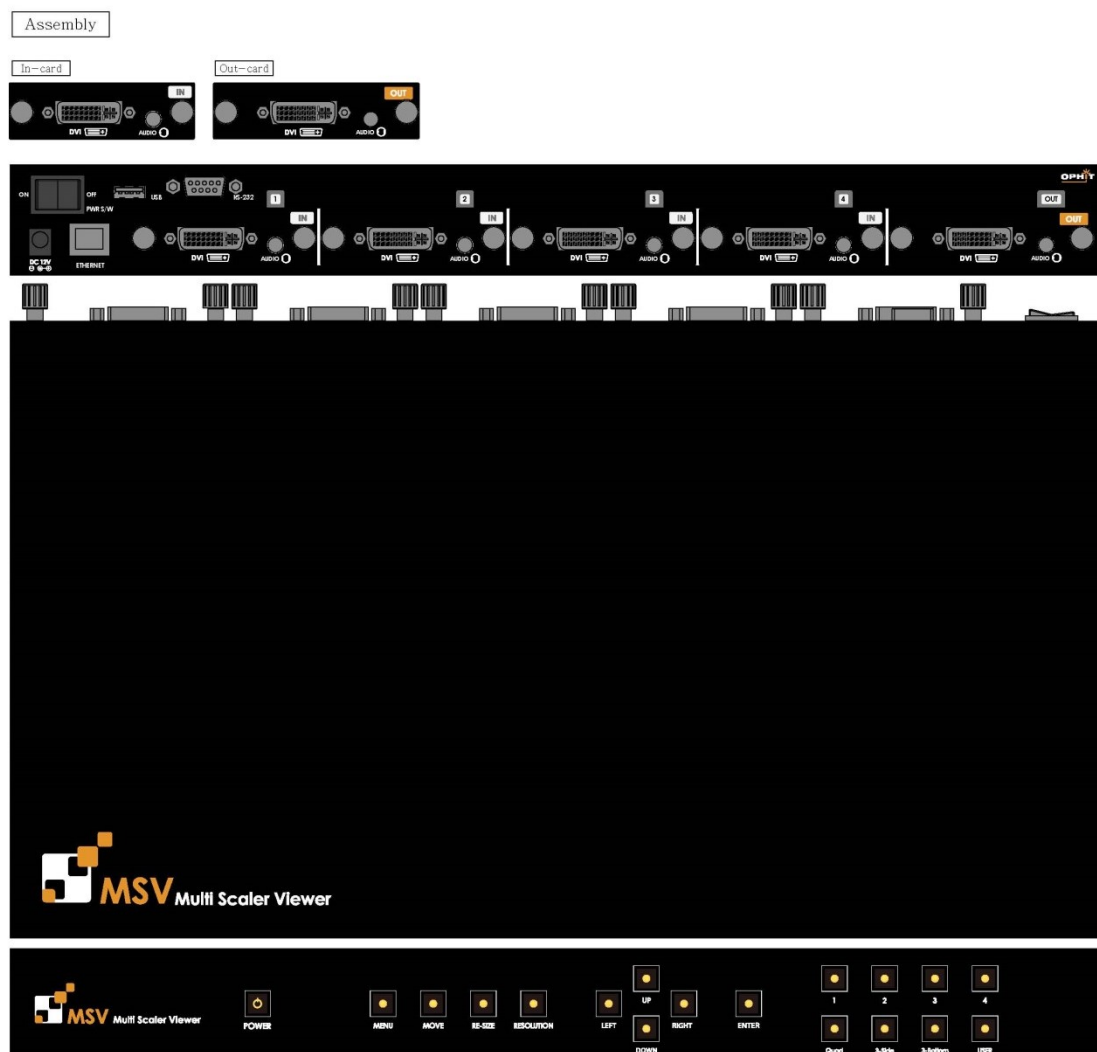
Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	CH 2-	9	CH 1-	17	CH 0-
2	CH 2+	10	CH 1+	18	CH 0+
3	CH2 Ground	11	CH1 Ground	19	CH0 Ground
4	N/C	12	N/C	20	N/C
5	N/C	13	N/C	21	N/C
6	SCL	14	+5V	22	CLK Ground
7	SDA	15	Ground	23	CLK+
8	N/C	16	Hot plug	24	CLK-
C1	Ground	C2	Ground	C3	Ground
C4	Ground	C5	Ground		

< Table 11 > DVI Output Port Signal Assignment

6. Mechanical Specification

6.1 Dimension

- MSV Case Construction Features
 - Button: Power, Menu, Re-size, Resolution, Left/Right/Up/Down, Enter, 8 Display Type Buttons
 - Input Video: 4 DVI Connectors, 4 DSUB Connectors
 - Output Video: 1 DVI Connector
 - Size: 436(W) x 44(H) x 298.5(D)mm



< Figure 4 > MSV Case Dimension

6.2 Manual

- Installation and operating manual shall be provided
 - English, Korean

7. Certifications

KC : KCC-REM-OPH-MSV

8. Environment Requirement

8.1 Operating

- Temperature : 0°C ~ +40°C
- Humidity : 10 ~ 80 %, Non-Condensing
- Altitude : Max. 4000m

8.2 Storage

- Temperature : -10°C ~ +70°C
- Humidity : 10 ~ 80 %, Non-Condensing

8.3 Transportation

- Temperature : -10°C ~ +70°C
- Humidity : 10 ~ 80 %, Non-Condensing

9. Absolute Maximum Ratings

Parameter	Rating
Storage temperature	-10°C ~ +70°C
Operating temperature	0°C ~ +40°C
Power Supply	11.5 ~ 12.5 V
Relative Humidity	10 ~ 80 %, Non-Condensing
Lead solder temperature	380°C +/-30°C, 10 seconds

< Table 12 > Absolute Maximum Ratings

NOTICE

Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

10. RoHS

Certificate of Conformance RoHS

Dear Customer,

On January 27, 2003, the European Parliament and the Administrative Council adopted Directive 2002/95/EC (RoHS) that concerns the "Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment".

The parts currently delivered by **OPHIT CO., LTD.** are already free of lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr6), poly brominated biphenyl (PBB) and poly brominated diphenyl (PBDE).

This Certification of Conformance is to certify that the products listed below comply with RoHS Directive mentioned above:

■ GE-HC Universal Video Converter

If you have any further questions regarding the RoHS compliance of parts delivered by **OPHIT CO., LTD.**, please do not hesitate to contact us at support@ophit.com.