Multi Format IO Module

User Manual

020-000699-01

CHRISTIE®

Multi Format IO Module

User Manual

020-000699-01

NOTICES

COPYRIGHT AND TRADEMARKS

REGULATORY

The product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment. The product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.
CAN ICES-3 (A) / NMB-3 (A)
이 기기는 업무용 (A 급) 으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며 , 가정 외의 지역에서 사용하는 것을 목적으로 합니다 .

GENERAL

Every effort has been made to ensure accuracy, however in some cases changes in the products or availability could occur which may not be reflected in this document. Christie reserves the right to make changes to specifications at any time without notice. Performance specifications are typical, but may vary depending on conditions beyond Christie's control such as maintenance of the product in proper working conditions. Performance specifications are based on information available at the time of printing. Christie makes no warranty of any kind with regard to this material, including, but not limited to, implied warranties of fitness for a particular purpose. Christie will not be liable for errors contained herein or for incidental or consequential damages in connection with the performance or use of this material.
The product is designed and manufactured with high-quality materials and components that can be recycled and reused. This symbol

 means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from regular waste. Please dispose of the product appropriately and according to local regulations. In the European Union, there are separate collection systems for used electrical and electronic products. Please help us to conserve the environment we live in.
Canadian manufacturing facility is ISO 9001 and 14001 certified.

GENERAL WARRANTY STATEMENTS

For complete information about Christie's limited warranty, see the Christie website (*www.christiedigital.com*) or contact your Christie dealer. In addition to the limitations that may be specified in Christie's limited warranty, the warranty does not cover:

a. Problems or damage occurring during shipment, in either direction.
b. Projector lamps (See Christie's separate lamp program policy).
c. Problems or damage caused by use of a projector lamp beyond the recommended lamp life, or use of a lamp supplied by a supplier other than Christie or an authorized distributor of Christie lamps.
d. Problems or damage caused by combination of a Product with non-Christie equipment, such as distribution systems, cameras, DVD players, etc., or use of a Product with any non-Christie interface device.
e. Problems or damage caused by the use of any lamp, replacement part or component purchased or obtained from an unauthorized distributor of Christie lamps, replacement parts or components including, without limitation, any distributor offering Christie lamps, replacement parts or components through the internet (confirmation of authorized distributors may be obtained from Christie).
f. Problems or damage caused by misuse, improper power source, accident, fire, flood, lightening, earthquake or other natural disaster.
g. Problems or damage caused by improper installation/alignment, or by equipment modification, if by other than Christie service personnel or a Christie authorized repair service provider.
h. Problems or damage caused by use of a Product on a motion platform or other movable device where such Product has not been designed, modified or approved by Christie for such use.
i. Problems or damage caused by use of a projector in the presence of an oil-based fog machine or laser-based lighting that is unrelated to the projector.
j. For LCD projectors, the warranty period applies only where the LCD projector is in "normal use." "Normal use" means the LCD projector is not used more than 8 hours a day, 5 days a week.
k. Except where the Product is designed for outdoor use, problems or damage caused by use of the Product outdoors unless (i) such Product is protected from precipitation or other adverse weather or environmental conditions and the ambient temperature is within the recommended ambient temperature set forth in the specifications for such Product and (ii) if the Product is an LCD flat panel, such LCD flat panel is not exposed to direct sunlight.
l. Image retention on LCD flat panels.
m. Defects caused by normal wear and tear or otherwise due to normal aging of a Product.
n. Products where the serial number has been removed or obliterated.
o. Products sold by a Reseller to an End User outside of the country where the Reseller is located unless (i) Christie has an office in the country where the End User is located or (ii) the required international warranty fee has been paid.
p. Products when there is failure to perform maintenance as required and in accordance with the maintenance schedule.
q. This warranty does not obligate Christie to provide any on site warranty service at the Product site location.

PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Please see the Maintenance section for specific maintenance items as they relate to your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty.

Addendum

Translated copies of this document are provided on the CD in the back of this document. The CD may also contain additional product documentation. Read all instructions before using or servicing this product.

本文档的翻译副本在本文档背面的 CD 上提供。该 CD 中还可能包含其他产品文档。使用或维修本产品之前请务必阅读所有说明。

文件背面的光碟提供了本文件的翻譯副本。這張光碟可能另外包含其他產品文件。請先閱讀所有指示再使用或送修本產品。

Le CD au dos de ce document contient des traductions de celui-ci dans différentes langues. Ce CD peut également contenir de la documentation supplémentaire sur le produit. Lisez toutes les instructions avant d'utiliser ou d'entretenir ce produit.

Übersetzte Versionen dieses Dokuments werden auf der CD auf dem Vorsatzblatt dieses Dokuments bereitgestellt. Die CD kann auch zusätzliche Produktdokumentation enthalten. Bitte lesen Sie diese Anweisungen vor der Verwendung dieses Produkts oder vor der Ausführung von Wartungsarbeiten am Produkt.

Le copie tradotte di questo documento sono fornite sul CD, sul retro di questo documento. Il CD potrebbe anche contenere altra documentazione sul prodotto. Si prega di leggere tutte le istruzioni prima di utilizzare questo prodotto o sottoporlo a manutenzione.

このドキュメントの翻訳版がこのドキュメントの裏面の CD で提供されています。CD には追加の製品マニュアルも収められています。この製品を使用したり、機能させたりする前に、すべての指示をお読みください。

이 문서의 번역된 사본이 이 문서 후면의 CD 에서 제공됩니다 . 이 CD 에는 추가 제품 설명서가 포함되어 있을 수 있습니다 . 이 제품을 사용하거나 수리하기 전에 모든 지침을 확인하십시오 .

Copias traduzidas deste documento são fornecida no CD contido na parte de trás deste documento. O CD pode conter documentação adicional do produto. Leia todas as instruções antes de usar ou prestar serviço com este produto.

Перевод данного документа представлен на компакт-диске на оборотной стороне документа. Компакт-диск может также содержать дополнительную документацию по продукту. Перед использованием или обслуживанием продукта ознакомьтесь со всеми инструкциями.

Las copias traducidas de este documento se proporcionan en el CD que se encuentra en la parte trasera. En el CD también puede encontrar documentación adicional del producto. Lea todas las instrucciones antes de utilizar o realizar el mantenimiento de este producto.

Перекладені екземпляри цього документа містяться на компакт-диску, який додано до цього документа. На компакт-диску може також бути додаткова документація до виробу. Перш ніж користуватися виробом або його обслуговувати, прочитайте всі інструкції.

Table of Contents

CHRISTIE

Overview

Introduction

The ASC-MIO1 is a video graphics scaler that accepts seven types of signals: analog video, S-Video, component video, VGA, DVI, HDMI, and DisplayPort signals. It scales the input signals into either VGA or HDMI signals, supporting higher full HD resolutions of 480i/p, 720p, and 1080i/p. The scaler is designed to solve problems of compatibility between source devices and monitors. Use it to deliver one single image on a video wall. In addition to the front panel buttons and the IR remote control, users may control the scaler using a PC through the RS232 serial port or Ethernet port.

Features

- Compliant with HDMI 1.4, DVI 2.0, and HDCP 2.0.
- Input support: Analog: analog video, S-Video, composite video, VGA;
  Digital: DVI, HDMI, and DisplayPort
- Output support: VGA and HDMI 1080p with deep color 36-bit
- Output audio support: S/PDIF, stereo audio
- Supports a wide range of HD resolutions ranging from XGA to WUXGA 1920 x 1200 to HDTV/DTV resolutions 480i/480p, 576i/576p, 720p, 1080i, and 1080p.
- Compatible with all HDMI source devices, PC monitors, plasma HD displays, HDTVs, and audio receivers/amplifiers.
- Supports intelligent color adjustment (discrete RGB color adjustment, hue, saturation, sharpness, contrast, brightness, and preset color modes).
- Rackmountable: 19-inch rear rackmount.
- Various user interface control, including front-panel push buttons, IR wireless remote control, third-party RS232 controller (via simple ASCII), and Ethernet with built-in Web browser.
- Supports IR extender with maximum extend distance reaching 300 meters.
- Supports TV wall function, allowing the image to be divided on multiple displays/monitors.
- Includes 12-VDC power supply, universal-type switch, 100–240 VAC, 50/60 Hz.

What is Included

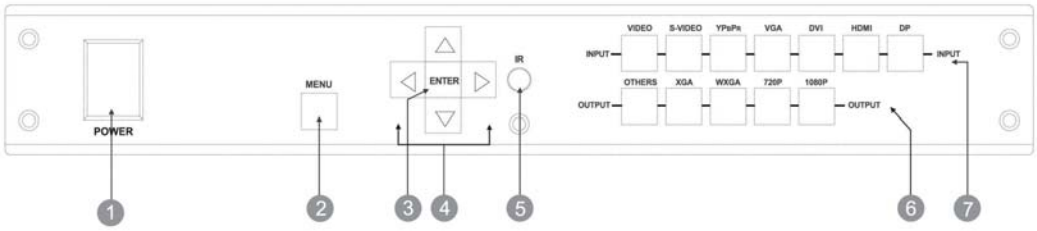
Your package should contain the following items.

- Main console unit
- IR remote controller
- 19" ear mount bracket

- IR extender receiver
- CD-ROM containing this user manual in PDF format and IP changing software
- RS232 cable (1.8 meters)
- 12-VDC, 2-A power supply, universal-type switch, 50/60 Hz, 100–240 VAC
- HDMI to DVI cable (15 cm)

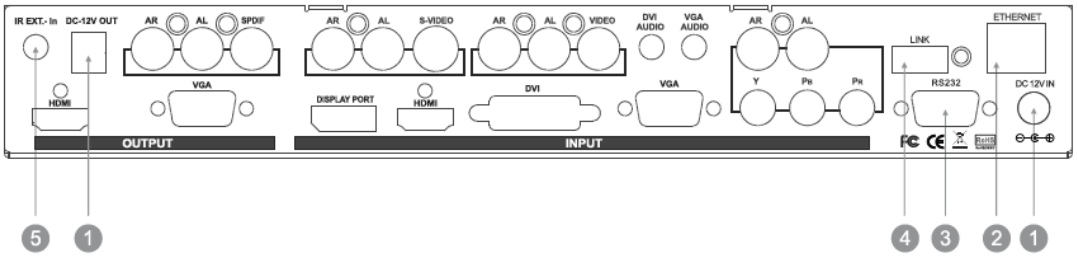
Hardware

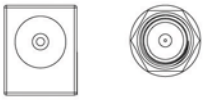
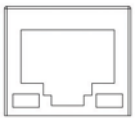
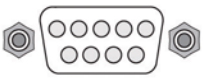
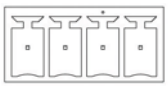
Front Panel

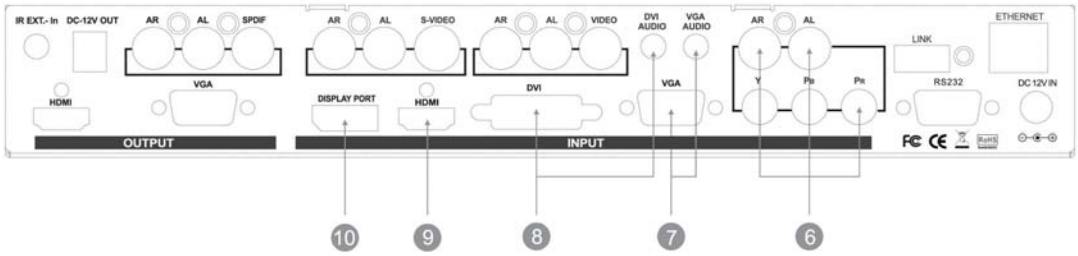


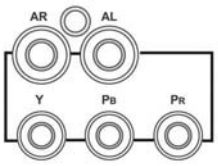
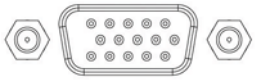
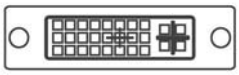
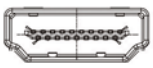
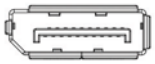
1	Power Switch	The power switch turns the unit on and off. The LED lights blue to indicate that the switch is ON and receiving power. The scaler will remember the last setting during a power cycle. When turned ON again, it will automatically apply the setting last used.
2	Menu	Press Menu to open the on-screen display (OSD) interface. Press again to exit the menu. For guidance on the OSD options, see *On-Screen Display* on page 13.
3	Enter	Press Enter to confirm your entries.
4	Arrow keys	Use the arrow keys to move between the OSD options. Press the up key to enter the upper layer and the down key to enter the next layer. Press the left and right keys to select options in the same layer or change the value of a parameter.
5	IR sensor	The IR sensor receives IR commands from the supplied remote controller or a third-party IR emitter.
6	Output select buttons	Select the desired resolution supported by your display devices. Press "OTHERS" for resolutions other than XGA, WXGA, 720p, and 1080p. The button will light blue to indicate it is selected. Advanced resolution adjustment is an OSD option.
7	Input select buttons	Select from one of the seven buttons the video signal to scale. The button will light blue to indicate it is selected.

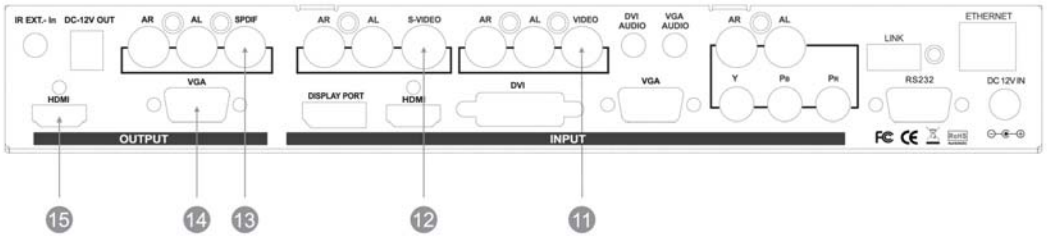
Back Panel

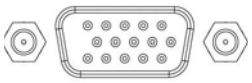
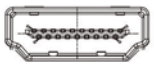


	Component	Description	Picture	Specifications
1	DC power inlet/ outlet	The scaler has a DC power plug-pack input connector. Make sure the plug-pack used is of an approved type and is the correct current, voltage output, and connector polarity: 12-VDC, 2-A power supply.		Power jack: DC jack: Inner OD = 2.1 mm Outside OD = 5.5 mm Power input: 12 VDC, 2 A
2	Ethernet connection	Connect a CAT5 cable to the Ethernet port to control the scaler from a computer.		8P8C/RJ-45 connector
3	RS232 connection	Connect a serial cable to the RS232 port to control the scaler from a computer.		DB9 female connector
4	Link	Connect the link port for firmware updates.		Terminal block connector
5	IR extender control	Supports remote control via IR extender. Maximum extend distance reaches about 1000 feet (300 meters).		IR extender jack: Female jack: Inner OD = 3.5 mm

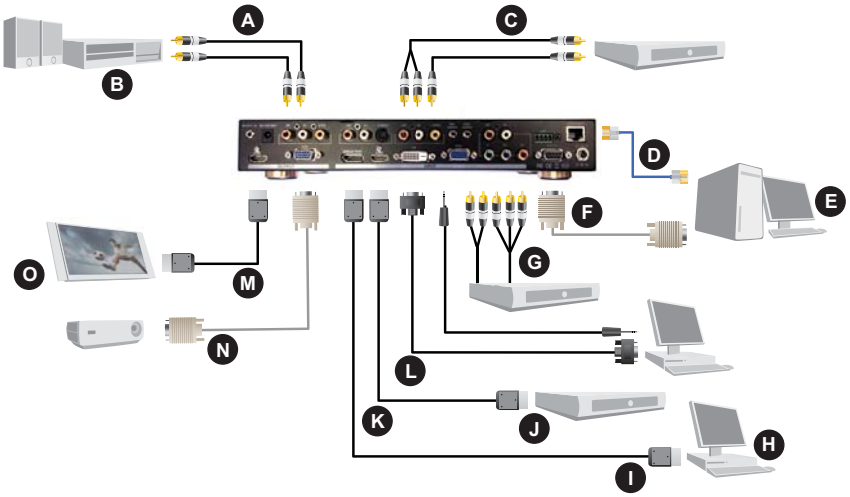


	Component	Description	Picture	Specifications
6	YPbPr + AR/AL audio input	Connect a component video signal directly to the female RCA connector, which supports component video (YPbPr) to HDTV display devices. Connect the output port of your source audio device to the AR/AL inputs.		Component video via (3) RCA female connectors Stereo audio via (2) RCA female connectors
7	VGA + VGA audio output	Connect a VGA (RGBHV) signal to the HD15 female connector. Connect the output port of your source device to the audio input.		VGA video jack: Female HD15 connector
8	DVI + DVI audio input	Connect a DVI signal to the digital video connector. Connect the output port of your source audio device to the audio input.		Female DVI connector
9	HDMI input	Connect an HDMI direct digital video/audio signal link to the HDMI connector, which supports HDMI digital video/audio and DVI digital video sources.		HDMI female jack
10	DisplayPort input	Connect a DisplayPort signal to the DP port, which supports digital video and audio.		Display port digital video and audio connector.



	Component	Description	Picture	Specifications
11	Video + AR/AL audio input	Connect a composite video signal to the RCA connector. Connect the output port of your source audio device to the AR/AL inputs.		Female RCA connector Stereo audio (AR/AL) via one 3.5-mm earphone jack connector, with one female phone jack for each channel.
12	S-Video + AR/AL audio input	Connect an S-Video signal to the connector. Connect the output port of your source audio device to the AR/AL inputs.		Mini-DIN connector Stereo audio (AR/AL) via one 3.5-mm earphone jack connector, with one female phone jack for each channel.
13	SPDIF	Connect the digital audio output.		Female RCA connector.
14	VGA output	Connect a VGA (RGBHV) to the VGA connector.		VGA video jack: Female HD15 connector
15	HDMI output	Connect an HDMI direct digital video/audio signal link to this female HDMI connector, which supports HDMI digital video/audio and DVI digital video sources.		HDMI digital video/audio connector HDMI female connector With proper adapters, the scaler can be used with DVI digital video signals and is HDCP compliant.

Typical Application of Multi Format IO Module



A	Audio out	**I**	DisplayPort in
B	Audio amplifier	**J**	Blue-ray DVD
C	Composite plus audio in	**K**	HDMI in
D	Ethernet	**L**	DVI plus audio in
E	PC/Ethernet RS232 control	**M**	HDMI out
F	RS232	**N**	VGA out
G	Component in	**O**	HDMI HDTV
H	Mac		

Control Ports

1. Front panel—function key press buttons.
2. IR remote—IR remote controller.
3. RS232 interface—RS232 interface system.
4. Ethernet—Ethernet interface system.

The Multi Format IO Module with DisplayPort supports seven inputs and two outputs, control IR, and RS-232 interface system ports.

Inputs 1–7 Port Source Signals: Component video, AV, DVI, HDMI, DisplayPort (5 input ports connected)

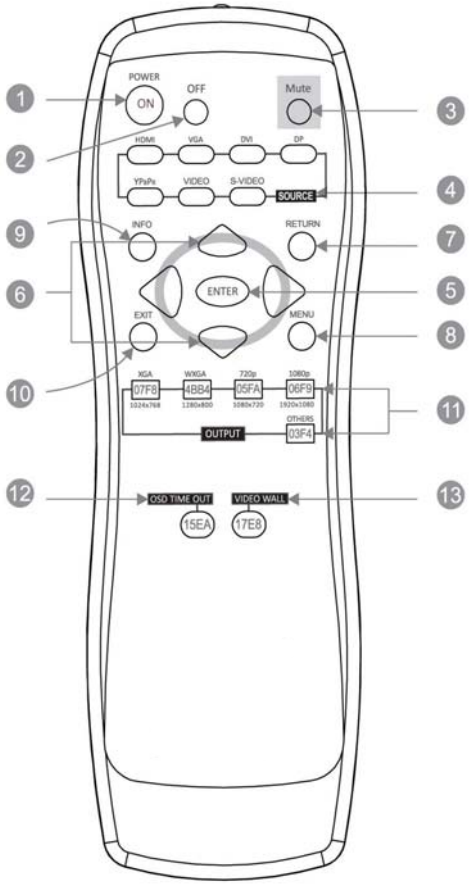
Outputs 1–2 Port Display Signals: VGA, HDMI

Remote Controller

Before connecting anything to the scaler, observe the following:

- Make sure the voltage supply matches the label on the supplied plug-pack (±10%).
- Make sure the power switch is off.
- Make sure that all system grounds are connected to a common point.
- Avoid powering the device within a system of multiple power sources that are separated by a large distance.
- Connect all audio/video source and display devices.
- Power on all source and display audio-visual devices.
- To yield video/audio to an output, select the input source by using the front panel input buttons, the supplied IR remote control, or through the RS232 serial communication port.
- When powering on, the scaler will automatically apply the setting last used.

For information on the on-screen display (OSD) options, see *On-Screen Display* on page 13.



1, 2	Power ON and OFF: Turn the scaler on or off.	**8**	Menu: Open the OSD menu.
3	Mute: Stop playing sounds.	**9**	Info: Check the connection status of input/ output/RS-232/Ethernet ports.
4	Source (HDMI, VGA, DVI, DP, YPbPr, Video, S-Video): Select your input signal type.	**10**	Exit: Leave the OSD menu.
5	Enter: Confirm your selection/enter the next layer of OSD options.	**11**	Output (XGA, WXGA, 720p, 1080p, and others): Select the desired output resolution supported by your display device.
6	Arrow keys: Move up, down, left, or right between the OSD options. Use the left and right arrow keys to adjust the value of a parameter. Use the down key to enter the next layer of options and the up key to move back.	**12**	OSD timeout: Adjust the OSD menu display time.
7	Return: Return to the upper layer of OSD options.	**13**	Video wall: Open the video wall options.

IR Remote Custom and Data Codes (NEC Standard)

How to set up IR codes:

Custom Code: 20 DF

Power on: 20DF 5DA2
Power off: 20DF 5EA1
Mute: 20DF 02FD

HDMI: 20DF 1FE0
VGA: 20DF 0AF5
DVI: 20DF 50AF
DP: 20DF 59A6
YPbPr: 20DF 58A7
Video: 20DF 5AA5
S-Video: 20DF 5BA4

Return: 20DF 11EE
Menu: 20DF 19EA
Info: 20DF 1BE4
Exit: 20DF 5CA3

Enter: 20DF 51AE
Up: 20DF 44BB
Right: 20DF 48B7
Left: 20DF 1CE3
Down: 20DF 1DE2

XGA: 20DF 08F8
WXGA: 20DF 4BB4
720p: 20DF 05FA
1080p: 20DF 06F9
Others: 20DF 03FC

OSD timeout: 20DF 15EA
Video wall: 20DF 15EB

Example 1: Select input VGA and output HDMI.

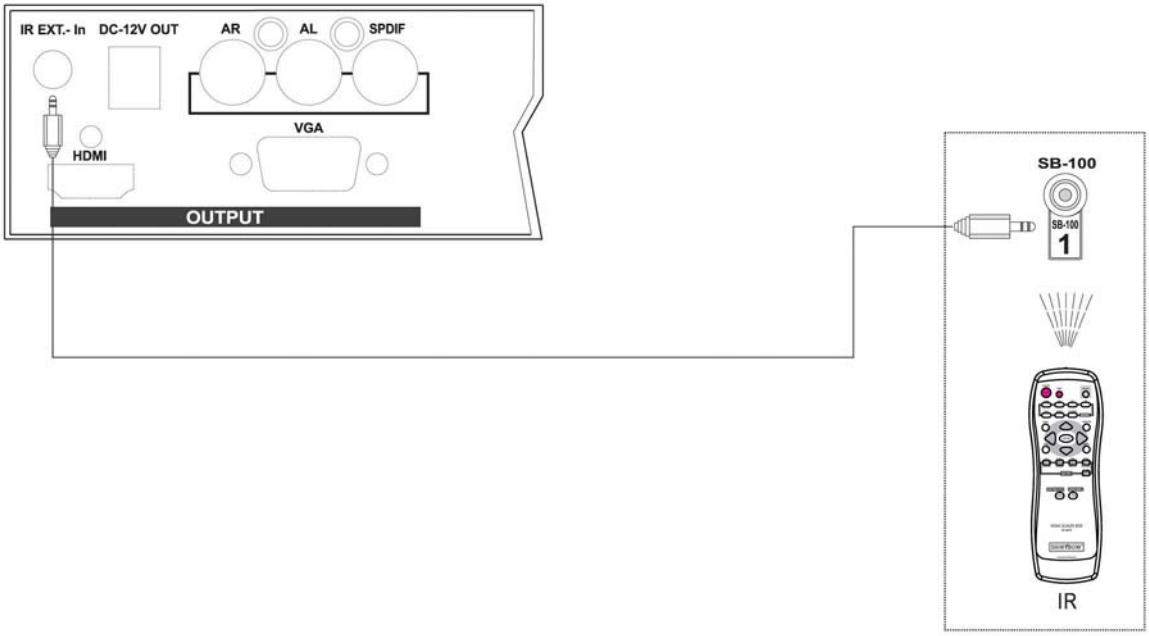
The IR data code: 20DF 0AF5 20DF 07F8

Example 2: Open OSD > move right > move down to next layer > enter to confirm selection.

The IR data code: 20DF 15EA 20DF 48B7 20DF 1DE2 20DF 51AE

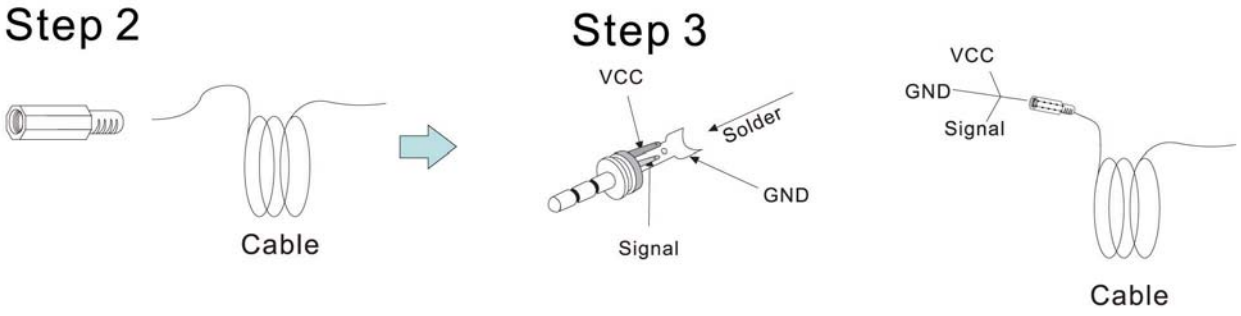
IR Extender

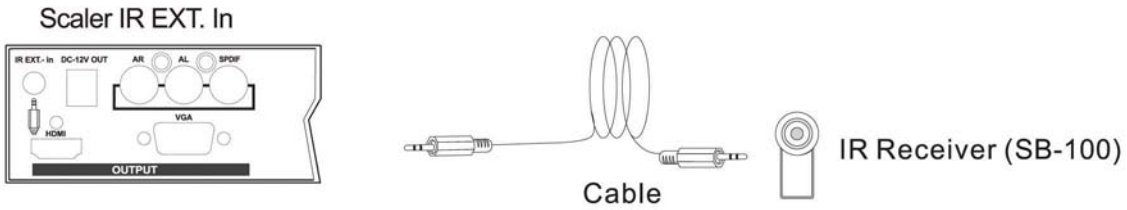
IR Extender Connection



When you plug the external IR extender into the scaler, the front panel IR receiver remains active.

How to Set Up the IR Extender Components





CHRISTIE

On-Screen Display

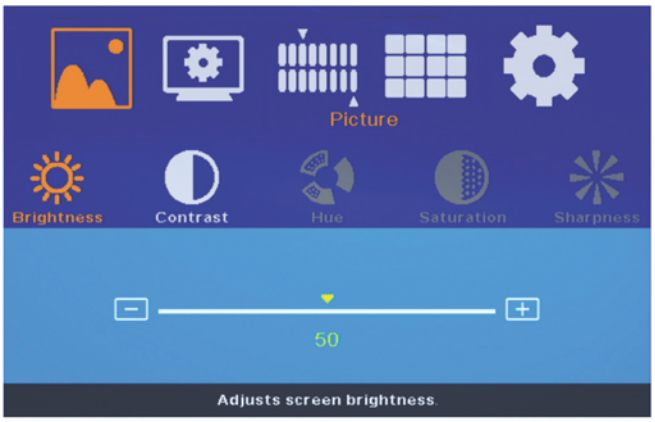
On Screen Display overview

Layer 1	Layer 2	Layer 3
Picture	Brightness	
	Contrast	
	Hue	
	Saturation	
	Sharpness	
Image Setup	Automatic	
	Manual	Clock/Phase/Save
	Horizontal Position	
	Vertical Position	
Image Properties	Color	Preset Mode/Custom
	Input Signal	DVI/HDMI/VGA/DisplayPort/Component/Composite/S-Video
	Scaling	Original AR/Full Screen
	Output Mode	720 x 480, 800 x 600, 1280 x 800, 1280 x 1024, 1360 x 768, 1400 x 1050, 1600 x 1200, 1024 x 768, 1280 x 768, 1280 x 720, 1920 x 1080, 1920 x 1200
Video Wall	Zoom	Horizontal Zoom/Vertical Zoom
	Pan	Horizontal Pan/Vertical Pan
	Overlap	Left/Right/Top/Bottom (Edges)/Reset
Options	Information	
	Language	English
	Reset	Reset All/Reset Video Wall
	Accessibility	Button Repeat Rate (off, default, slow)/Menu Timeout/Logo Timeout
	Setting	Mute
		Box ID
		Profile
		Network (serial port, Ethernet)

Picture

Picture allows you to digitally adjust the brightness, contrast, hue, saturation, and sharpness of the images. An unlit icon suggests the function is not available. To enable it, the unit color must be set in custom mode.

To change the setting in color, select Image properties > Color > Custom > Save. Be sure to save your setting. Otherwise, the value will not be set.



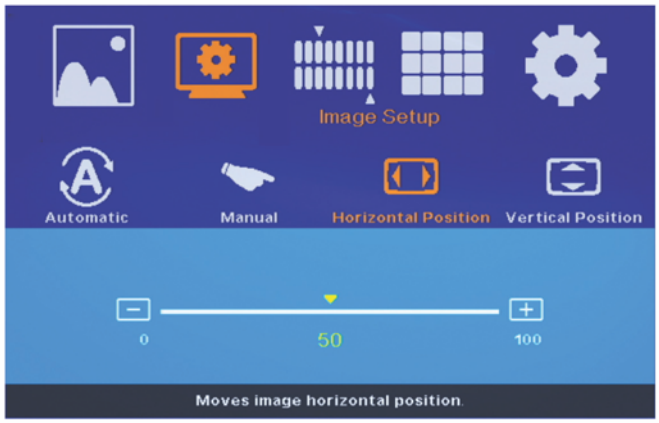
- Layer one, the first icon from left.
- Choose the icon and use the down arrow key to open the next layer, which has five options: brightness, contrast, hue, saturation, and sharpness.
- The hue, saturation, and broadcast icons light only when AV, S-Video, or component video signals are present on the scaler.

Icon	Description
	Brightness: Use arrow key right and left to adjust the value.
	Contrast: Use arrow key right and left to adjust the value.
	Hue: Use arrow key right and left to adjust the value. Adjustable only when the unit receives valid AV, S-Video, or component video signals.

Icon	Description
	Saturation: Use arrow key right and left to adjust the value. Adjustable only when the unit receives valid AV, S-Video, or component video signals.
	Sharpness: Use arrow key right and left to adjust the value. Adjustable only when the unit receives valid AV, S-Video, or component video signals.

Image Setup

To enable the image setup, a valid VGA signal must be present on the scaler. An illuminated icon indicates the presence of a VGA signal.



- First layer, the second icon from the left.
- Choose the icon and use the down arrow key to open the second layer, which has four options: automatic, manual, horizontal position, and vertical position.

Icon	Description
	Automatic: ASC-MIO1 reads the input signal and automatically sets the optimal value for the output.

Icon	Description
	Manual: Clock/Phase /Save
	Horizontal Position: Move the image to the right or left.
	Vertical Position: Move the image up or down.

Image Properties

Image properties allow you to change color, select input signal, adjust scaling, and change output resolution. Under the output mode, you can select resolutions not listed on the front panel button.

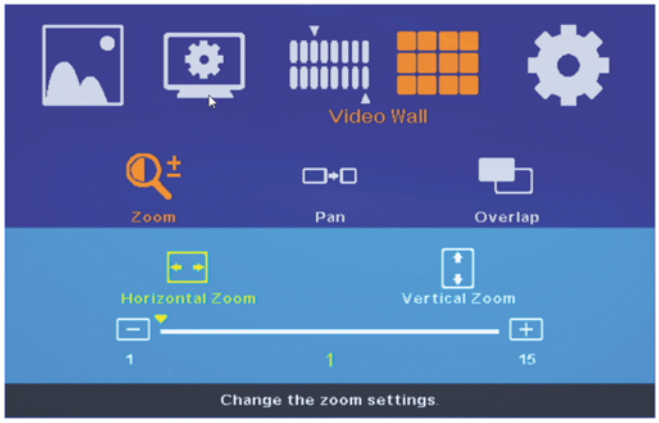
- Layer one, the third icon from left.
- Choose the icon and use the down arrow key to open up the second layer, which has four options: color, input signal, scaling, and output mode.
- Setting the color in custom mode can enable the Picture function (layer one, the first icon from left).

Icon	Description
	Color Preset Mode: Standard, RGB, warm, cold Custom: Red, Green, Blue, Save
	Input Signal DVI, HDMI, VGA, DisplayPort, Component, Composite Video, S-Video
	Scaling Original AR, full screen
	Output Mode Select one desired output resolution from the following 11 choices: • Others, 720 x 480, 800 x 600, 1280 x 800, 1280 x 1024, 1360 x 768, 1400 x 1050, 1600 x 1200, 1920 x 1200 • XGA: 1024 x 768 • WXGA: 1280 x s • 720p: 1280 x 720 • 1080p: 1920 x 1080 When you press the front panel button "Others," the scaler will automatically apply the resolution 1360 x 768. Users may continue pressing "Others" to cycle through the following four resolutions: 1360 x 768 —> 1280 x 1024 —> 1600 x 1200 —> 1920 x 1200

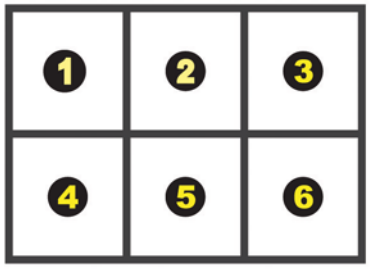
Video Wall

The ASC-MIO1 scaler can send divided images on multiple display devices and build a video wall of, for example, 1x2, 2x2, or 10x10. A video wall of 15x15 is the maximum size the scaler can generate.

NOTICE An ASC-MIO1 is required for each output. Users may arrange the position and adjust the size of each image block under the Video Wall function.

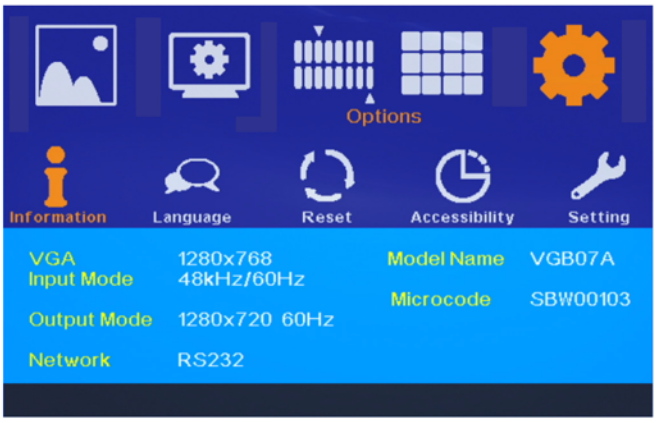


- Layer one, the third icon from the left.
- Choose the Video Wall icon, use the down arrow key to open the next layer, which has three options: zoom, pan, and overlap.

Parameter	Description
Zoom	Use right/left key to adjust the value of the parameter. Horizontal zoom: enlarge the image on the left and right ends. Vertical zoom: enlarge the image upwardly and downwardly.
Pan	Arrange the relative position of the image in the TV wall: assign the number of displays horizontally and vertically connected. Then, assign numbers to indicate relative position. Two examples of TV walls are shown below.
	3x2 video wall (Horiztonal: 3; Vertical: 2) Display No. 4 should be assigned: • Horizontal Zoom = 1 • Vertical Zoom = 2 • Display No. 5 should be assigned: • Horizontal Zoom = 2 • Vertical Zoom = 2
Overlap	Align the overlapping images for visual continuum. Move the image up, down, or to left, right by adjusting the parameters of the top edge, bottom edge, left edge, and right edge. To return to the original setting, press “Reset.”

Options

Options allows you to check the connection status, change menu language, return to factory defaults, save settings, and make adjustments to the OSD menu settings.

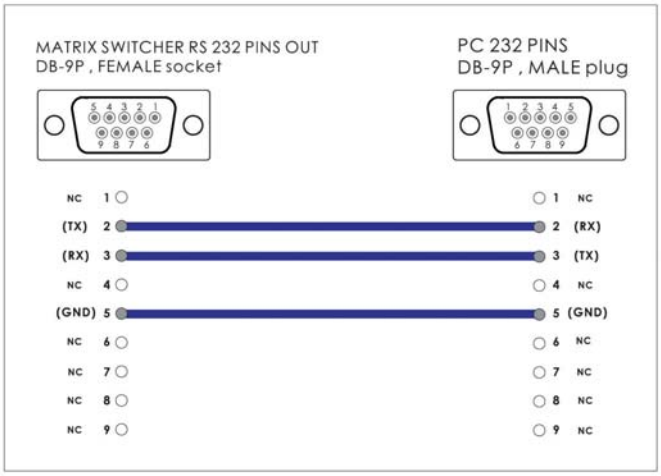


- Layer one: the fifth icon from the left.
- Press the down arrow key to open up the second layer, which has five options: information, language, reset, accessibility, and setting.

Parameter	Description
Information	Check the connection status of the input/output ports, the model name, the connection status of RS-232/Ethernet ports, and the firmware version.
Language	Change the OSD language to English, Simplified Chinese, or Traditional Chinese.
Reset	Return to the factory default setting. Reset all: Reset all options. Reset video wall: Reset all the options relating to video wall function only.
Accessibility	Button repeat rate: Adjust the unit response time when the Menu button is pressed. • Off: Press the "Menu" button, and the menu shows up/disappears once. • Default: Return to the factory default setting. • Slow: Press the "Menu" button and hold it on for longer than a few seconds, and the unit will take more time than the default to respond. Menu timeout: Adjust the length of time the OSD menu stays on screen. • On: The OSD menu will disappear after a period of time. You can lengthen or shorten the display time. • Off: Stop the OSD menu from disappearing automatically. When the function is turned off, the OSD menu will not disappear until you press the "Menu" button again. Logo timeout: Adjust the length of time the logo stays on screen when the unit is turned on.
Setting	Mute: Stop playing sounds. Box ID: Check the ID of the unit. Profile: Save and reload the settings. The unit can memorize a total of five different settings. Network: Serial port, Ethernet.

Serial Commands

RS232 Protocol and Commands



- Transmission rate: 9600 bps
- Data format: 8 data bits, no parity, 1 start bit, and 1 stop bit
- Flow control: None

  Also known as 9600, n, 8, 1.

Ethernet TCP Setup Guide

The Ethernet (TCP) port allows control of the unit through a computer by redirecting serial commands (COM port) to the unit's IP address.

To connect to the unit:

1. Set your PC within the same subnet of the unit (default IP address 192.168.0.3), and the netmask 255.255.255.0.
2. Open up a telnet connection to the unit's IP address with port 5000.
3. Send commands as you would with serial.

To change the network settings of the unit:

1. Set your PC within the same Class C subnet of the unit.

   For example, if the unit's default IP address is 192.168.0.3, the PC's IP address could be 192.168.0.5.

2. Set your PC's netmask to 255.255.255.0.
3. Run the software included on the software CD that came with the unit.
4. Click the search button and select your unit when it is found.
5. Change the unit's network setting as desired and submit.

To change your computer's network settings:

1. Set up your computer in the same network of the unit.
2. Go to **Start** and click **Control Panel**.
3. Double-click **Network Connections**.
4. Click **Properties**.
5. Select **Internet protocol (TCP/IP)** and click **Properties**.

Data String Format

The data string contains four elements.

`[Command] [ ] [Data] [;]`

The format is:

1. Command
2. Space
3. Data
4. ;

There is a single space after the command and before the data string. The data string must conclude with a semicolon ";" (without the quotation marks). All text is full ASCII code and is not case-sensitive. LINK is the same as Link. You can use either capital letters or lower-case letters and get the same result.

The Link command must be sent first. This establishes a communications link between an external controller (or computer) and the device you wish to control. When you have an established link, communication via the IR port is disabled. The front panel remains operational.

The format is:

`LINK 01; This will establish the link.`

Your commands:

`LINK 00; This will terminate the link.`

Devices that are firmware version x.x or higher will return a status.

Status is command dependent.

For example: `Response: [SKU] [ ] [Status] [;]|`

The status is a two-digit numerical code.

Specific details are discussed later in this document.

If at any time the ASC-MIO1 receives an invalid command, a response of "ASC-MIO1 01" is returned.

Commands

NOTICE Not all commands are supported on all devices.

Item	Command	Description
1	Key	Set the OSD key.
2	Power	Set/check the power status.
3	Mute	Set/check the mute status.
4	Source	Set/check the source status.
5	Resolution	Set/check the resolution status.
6	Brightness	Set/check the brightness status from the OSD.
7	Contrast	Set/check the contrast status from the OSD.
8	Hue	Set/check the hue from the OSD.
9	Saturation	Set/check the saturation status from the OSD.
10	Sharpness	Set/check the sharpness status from the OSD.
11	Auto	Set/check the auto adjustment status from the OSD.
12	H-Zoom	Set/check the H-zoom status from the OSD.
13	V-Zoom	Set/check the V-zoom status from the OSD.
14	H-Pan	Set/check the H-pan status.
15	V-Pan	Set/check the V-pan status.
16	Overlap–L	Set/check the overlap-L status from the OSD.
17	Overlap-R	Set/check the overlap-R status from the OSD.
18	Overlap-T	Set/check the overlap-T status from the OSD.
19	Overlap-B	Set/check the overlap-B status from the OSD.
20	Language	Set/check the language status from the OSD.
21	Reset	Set/check the reset status from the OSD.
22	Button	Set/check the button status from the OSD.
23	Timeout	Set/check the timeout status from the OSD.

Key

Function	Command	Response	Description
Set Key	Key +000;	ASC-MIO1 00;	Set Menu Key
	Key +001;	ASC-MIO1 00;	Set Up Key
	Key +002;	ASC-MIO1 00;	Set Down Key
	Key +003;	ASC-MIO1 00;	Set Left Key
	Key +004;	ASC-MIO1 00;	Set Right Key
	Key +005;	ASC-MIO1 00;	Set Enter Key

Power

Function	Command	Response	Description
Power OFF	Power +000;	ASC-MIO1 00;	Power OFF
Power ON	Power +001;	ASC-MIO1 00;	Power ON
Check the status of condition	Power ?;	Power +000;	Power OFF
		Power +001;	Power ON

Mute

Function	Command	Response	Description
Mute OFF	Mute +000;	ASC-MIO1 00;	Mute OFF
Mute ON	Mute +001;	ASC-MIO1 00;	Mute ON
Check the Mute status	Mute ?;	Mute +000;	Mute OFF
		Mute +001;	Mute ON

Source

Function	Command	Response	Description
Set Source	Source +000;	ASC-MIO1 00;	Source set to VGA
	Source +001;	ASC-MIO1 00;	Source set to DVI
	Source +002;	ASC-MIO1 00;	Source set to HDMI
	Source +003;	ASC-MIO1 00;	Source set to DP
	Source +004;	ASC-MIO1 00;	Source set to YPbPr
	Source +005;	ASC-MIO1 00;	Source set to video
	Source +006;	ASC-MIO1 00;	Source set to S-Video
Check Source	Source ?;	Source +000;	Source set to VGA
		Source +001;	Source set to DVI
		Source +002;	Source set to HDMI
		Source +003;	Source set to DP
		Source +004;	Source set to YPbPr
		Source +005;	Source set to video
		Source +006;	Source set to S-Video

Resolution

Function	Command	Response	Description
Set Resolution	Resolution +000;	ASC-MIO1 00;	Set resolution to 720 x 480, 60 Hz
	Resolution +001;	ASC-MIO1 00;	Set resolution to 1280 x 720, 60 Hz
	Resolution +002;	ASC-MIO1 00;	Set resolution to 1920 x 1080, 60 Hz
	Resolution +003;	ASC-MIO1 00;	Set resolution to 800 x 600, 60 Hz
	Resolution +004;	ASC-MIO1 00;	Set resolution to 1024 x 768, 60 Hz
	Resolution +005;	ASC-MIO1 00;	Set resolution to 1280 x 800, 60 Hz
	Resolution +006;	ASC-MIO1 00;	Set resolution to 1280 x 1024, 60 Hz
	Resolution +007;	ASC-MIO1 00;	Set resolution to 1360 x 768, 60 Hz
	Resolution +008;	ASC-MIO1 00;	Set resolution to 1400 x 1050, 60 Hz
	Resolution +009;	ASC-MIO1 00;	Set resolution to 1600 x 1200, 60 Hz
	Resolution +010;	ASC-MIO1 00;	Set resolution to 1920 x 1200, 60 Hz

Function	Command	Response	Description
Check Resolution	Resolution ?;	Resolution +000;	Resolution is 720 x 480, 60 Hz
		Resolution +001;	Resolution is 1280 x 720, 60 Hz
		Resolution +002;	Resolution is 1920 x 1080, 60 Hz
		Resolution +003;	Resolution is 800 x 600, 60 Hz
		Resolution +004;	Resolution is 1024 x 768, 60 Hz
		Resolution +005;	Resolution is 1280 x 800, 60 Hz
		Resolution +006;	Resolution is 1280 x 1024, 60 Hz
		Resolution +007;	Resolution is 1360 x 768, 60 Hz
		Resolution +008;	Resolution is 1400 x 1050, 60 Hz
		Resolution +009;	Resolution is 1600 x 1200, 60 Hz
		Resolution +010;	Resolution is 1920 x 1200, 60 Hz

Brightness

Command Example	Response	Description
BRIGHTNESS +015;	ASC-MIO1 00;	Set Brightness to 15.

Function	Command	Response	Description
Check Brightness	BRIGHTNESS ?;	BRIGHTNESS +001;	Brightness setting is 1.
		BRIGHTNESS +015;	Brightness setting is 15.

Contrast

Command Example	Response	Description
CONTRAST +015;	ASC-MIO1 00;	Set Contrast to 15.

Function	Command	Response	Description
Check Contrast	CONTRAST ?;	CONTRAST +001;	Contrast setting is 1.
		CONTRAST +015;	Contrast setting is 15.

Hue

Command Example	Response	Description
HUE +015;	ASC-MIO1 00;	Set Hue to 15.

Function	Command	Response	Description
Check Hue	HUE ?;	HUE +001;	Hue setting is 1.
		HUE +015;	Hue setting is 15.

Saturation

Command Example	Response	Description
SATURATION +015;	ASC-MIO1 00;	Set Saturation to 15.

Function	Command	Response	Description
Check Saturation	SATURATION ?;	SATURATION +001;	Saturation setting is 1.
		SATURATION +015;	Saturation setting is 15.

Sharpness

Command Example	Response	Description
SHARPNESS +015;	ASC-MIO1 00;	Set Sharpness to 15.

Function	Command	Response	Description
Check Sharpness	SHARPNESS ?;	SHARPNESS +001;	Sharpness setting is 1.
		SHARPNESS +015;	Sharpness setting is 15.

Auto

Function	Command	Response	Description
Set Auto	Auto +001;	ASC-MIO1 00;	Set VGA auto adjustment.

H-Zoom

Function	Command	Variables
Set H-zoom	H-ZOOM XXXX;	xxxx = H zoom number +000 – +009

Command Example	Response	Description
H-ZOOM +001;	ASC-MIO1 00;	Set H-Zoom to 1.

Function	Command	Response	Description
Check H-zoom	H-ZOOM?;	H-ZOOM +001;	H-zoom setting is 1.

V-Zoom

Function	Command	Variables
Set V-zoom	V-ZOOM XXXX;	xxxx = V zoom number +000 – +009

Command Example	Response	Description
V-ZOOM +001;	ASC-MIO1 00;	Set V-Zoom to 1.

Function	Command	Response	Description
Check V-zoom	V-ZOOM?;	V-ZOOM +001;	V-zoom setting is 1.

H-Pan

Function	Command	Variables
Set H-Pan	H-PAN XXXX;	xxxx = H-Pan number +000 – +009

Command Example	Response	Description
H-PAN +001;	ASC-MIO1 00;	Set H-Pan to 1.

Function	Command	Response	Description
Check H-Pan	H-PAN?;	H-PAN +001;	H-Pan setting is 1.

V-Pan

Function	Command	Variables
Set V-Pan	V-PAN XXXX;	xxxx = V-Pan number +000 – +009

Command Example	Response	Description
V-PAN +001;	ASC-MIO1 00;	Set V-Pan to 1.

Function	Command	Response	Description
Check V-Pan	V-PAN?;	V-PAN +001;	V-Pan setting is 1.

Overlap-L

Function	Command	Variables
Set Overlap Left Edge	OVERLAP-L XXXX;	xxxx = Overlap-L number +-600– +600

Command Example	Response	Description
OVERLAP-L+050;	ASC-MIO1 00;	Set Overlap-L to +50.

Function	Command	Response	Description
Check Overlap-L	OVERLAP-L?;	OVERLAP-L +050;	Overlap-L setting is +50.

Overlap-R

Function	Command	Variables
Set Overlap Right Edge	OVERLAP-R XXXX;	xxxx = Overlap-R number +-600– +600

Command Example	Response	Description
OVERLAP-R +050;	ASC-MIO1 00;	Set Overlap-R to +50.

Function	Command	Response	Description
Check Overlap-R	OVERLAP-R?;	OVERLAP-R +050;	Overlap-R setting is +50.

Overlap-T

Function	Command	Variables
Set Overlap Top Edge	OVERLAP-T XXXX;	xxxx = Overlap-T number +-600– +600

Command Example	Response	Description
OVERLAP-T +050;	ASC-MIO1 00;	Set Overlap-R to +50.

Function	Command	Response	Description
Check Overlap-T	OVERLAP-T?;	OVERLAP-T +050;	Overlap-T setting is +50.

Overlap-B

Function	Command	Variables
Set Overlap Bottom Edge	OVERLAP-B XXXX;	xxxx = Overlap-B number +-600– +600

Command Example	Response	Description
OVERLAP-B +050;	ASC-MIO1 00;	Set Overlap-B to +50.

Function	Command	Response	Description
Check Overlap-B	OVERLAP-B?;	OVERLAP-B +050;	Overlap-B setting is +50.

Language

Function	Command	Response	Description
Set Language	LANGUAGE +000;	ASC-MIO1 00;	Set language to English.
	LANGUAGE +001;	ASC-MIO1 00;	Set language to simplified Chinese.
	LANGUAGE +002;	ASC-MIO1 00;	Set language to traditional Chinese.
Check Language	Language ?;	LANGUAGE +000;	Language is English.
		LANGUAGE +001;	Language is simplified Chinese.
		LANGUAGE +002;	Language is traditional Chinese.

Reset

Function	Command	Response	Description
Set Reset	RESET +001;	ASC-MIO1 00;	Reset all settings.
	RESET +002;	ASC-MIO1 00;	Reset video wall settings.

Button

Function	Command	Response	Description
Set button	BUTTON +000;	ASC-MIO1 00;	Set button to repeat rate off.
	BUTTON +001;	ASC-MIO1 00;	Set button to repeat rate default.
	BUTTON +002;	ASC-MIO1 00;	Set button to repeat rate slow.
Check button	Button?;	BUTTON +000;	Button is repeat rate off.
		BUTTON +001;	Button is repeat rate default.
		BUTTON +002;	Button is repeat rate slow.

Timeout

Function	Command	Variables
Set TimeOut	TIMEOUT XXXX;	xxxx = Timeout number +000 – +060
Command Example	Response	Description
TIMEOUT +015;	ASC-MIO1 00;	Set timeout to 15 seconds.

Function	Command	Response	Description
Check Timeout	TIMEOUT?;	TIMEOUT +001;	Timeout setting is 1 second.
		TIMEOUT +015;	Timeout setting is 15 seconds.

Video Timing List

HDMI Video Timing List

Resolution	H. Freq. (kHz)	V. Freq. (Hz)	Pixel Clock (MHz)	H. Total Pixel	H. Display Pixel	H. Front Porch	H. Sync. Width	H. Sync. Pol.	V. Total Lines	V. Display Lines	V. Front Porch	V. Sync. Width	V. Sync. Pol.
640 x 480 @60 Hz	31.484	59.97	25.1875	800	640	16	96	N	525	480	10	2	N
640 x 480 @72 Hz	37.861	72.809	31.5	832	640	24	40	N	520	480	9	3	N
640 x 480 @75 Hz	37.5	75	31.5	840	640	16	64	N	500	480	1	3	N
720 x 400 @70 Hz	31.458	70.063	28.3125	900	720	16	108	N	449	400	13	2	P
800 x 600 @56 Hz	35.156	56.25	36	1024	800	24	72	P	625	600	1	2	P
800 x 600 @60 Hz	37.879	60.317	40	1056	800	40	128	P	628	600	1	4	P
800 x 600 @72 Hz	48.077	72.188	50	1040	800	56	120	P	666	600	37	6	P
800 x 600 @75 Hz	46.875	75	49.5	1056	800	16	80	P	625	600	1	3	P
848 x 480 @59 Hz	29.83	59.659	31.5	1056	848	23	80	N	500	480	3	5	P
848 x 480 @60 Hz	31.02	60	33,75	1088	848	16	112	P	517	480	6	8	P
1024 x 768 @60 Hz	48.363	60.004	65	1344	1024	24	135	N	806	768	3	6	N
1024 x 768 @70 Hz	56.476	70.069	75	1328	1024	24	136	N	806	768	3	6	N
1024 x 768 @75 Hz	60.023	75.029	78.75	1312	1024	16	96	P	800	768	1	3	P
1152 x 864 @75 Hz	67.5	75	108	1600	1152	64	128	P	900	864	1	3	P
1280 x 720 @48 Hz	35.539	47.961	58	1632	1280	48	128	N	741	720	1	3	P
1280 x 720 @50 Hz	39.618	49.822	60.25	1632	1280	48	128	N	741	720	1	3	P
1280 x 720 @60 Hz	44.621	59.814	74.25	1664	1280	56	136	N	746	720	1	3	P
1280 x 768 @60 Hz	47.396	59.995	68.25	1440	1280	48	32	P	790	768	3	7	N
1280 x 768 @60 Hz	47.776	59.87	79.5	1664	1280	64	128	N	798	768	3	7	P
1280 x 768 @75 Hz	60.289	74.893	102.25	1696	1280	80	128	N	805	768	3	7	P

Resolution	H. Freq. (kHz)	V. Freq. (Hz)	Pixel Clock (MHz)	H. Total Pixel	H. Display Pixel	H. Front Porch	H. Sync. Width	H. Sync. Pol.	V. Total Lines	V. Display Lines	V. Front Porch	V. Sync. Width	V. Sync. Pol.
1280 x 800 @60 Hz	49.702	59.81	83.5	1680	1280	72	128	N	831	800	3	6	P
1280 x 700 @75 Hz	62.795	74.934	106.5	1696	1280	80	128	n	838	800	3	6	P
1280 x 960 @60 Hz	60	60	108	1800	1280	96	112	P	1000	960	1	3	P
1280 x 1024 @60 Hz	63.981	60.02	108	1688	1280	48	112	P	1066	1024	1	3	P
1280 x 1024 @75 Hz	79.976	72.025	135	1688	1280	16	144	P	1066	1024	1	3	P
1360 x 768 @60 Hz	47.712	60.015	85.5	1792	1360	64	112	P	795	768	3	6	P
1360 x 768 @60 Hz	48	60	72	1500	1366	13	56	P	800	768	1	3	P
1400 x 1050 @60 Hz	64.744	59.948	101	1560	1400	48	32	P	1080	1050	3	4	N
1400 x 1050 @60 Hz	65.317	59.978	121.75	1864	1400	88	144	N	1089	1050	3	4	P
1400 x 1050 @75 Hz	82.278	74.867	156	1896	1400	104	144	N	1099	1050	3	4	P
1440 x 900 @60 Hz	55.935	59.887	106.5	1904	1440	80	152	N	934	900	3	6	P
1440 x 900 @75 Hz	70.506	74.847	136.5	1936	1440	96	152	N	942	900	3	6	P
1440 x 1050 @60 Hz	65.234	59.903	125.25	1829	1440	88	152	N	1089	1050	3	10	N
1600 x 1200 @60 Hz	75	60	162	2160	1600	64	192	P	1250	1200	1	3	P
1680 X 1050 @60 Hz	65.402	60.057	146.5	2240	1680	104	176	N	1089	1020	2	6	P
1920 x 1200 @60 Hz	74.038	59.95	154	2080	1920	48	32	P	1235	1200	3	6	N
720 x 480p @59 Hz	31.469	59.94	27	858	720	16	62	N	525	480	9	6	N
720 x 480p @59 Hz	31.469	59.94	27	858	720	16	62	N	525	480	9	6	N
720 x 576p @50 Hz	31.25	50	27	864	720	12	64	N	625	576	5	5	N
720 x 576p @50 Hz	31.25	50	27	864	720	12	64	N	625	576	5	5	N
1280 x 720p @50 Hz	37.5	50	74.25	1980	1280	440	40	P	750	720	5	5	P
1280 x 720p @60 Hz	60	74.25	1650	1280	110	40	P	750	720	5	5	P	
1280 x 720p @100 Hz	100	148.5	1980	1280	440	40	P	750	720	5	5	P	
1280 x 720p @120 Hz	120	148.5	1650	1280	110	40	P	750	720	5	5	P	
1920 x 108p @24 Hz	24	74.25	2750	1920	638	44	P	1125	1080	4	5	P	

Resolution	H. Freq. (kHz)	V. Freq. (Hz)	Pixel Clock (MHz)	H. Total Pixel	H. Display Pixel	H. Front Porch	H. Sync. Width	H. Sync. Pol.	V. Total Lines	V. Display Lines	V. Front Porch	V. Sync. Width	V. Sync. Pol.
1920 x 108p @30 Hz	30	74.25	2200	1920	88	44	P	1125	1080	4	5	P	
1920 x 108p @50 Hz	50	148.5	2640	1920	528	44	P	1125	1080	4	5	P	
1920 x 108p @60 Hz	60	148.5	2200	1920	88	44	P	1125	1080	4	5	P	

VGA Video Timing List

Resolution	H. Freq. (kHz)	V. Freq. (Hz)	Pixel Clock (MHz)	H. Total Pixel	H. Display Pixel	H. Front Porch	H. Sync. Width	H. Sync . Pol	V. Total Lines	V. Display Lines	V. Front Porch	V. Sync. Width	V. Sync. Pol
640 x 480 @60 Hz	31.563	60.119	25.1875	800	640	16	96	N	525	480	10	2	N
640 x 480 @72 Hz	37.861	72.809	31,5	832	640	24	40	N	520	480	9	3	N
640 x 480 @75 Hz	37.5	75	31.5	840	640	16	64	N	500	480	1	3	N
720 x 400 @70 Hz	31.528	70.218	28.3125	900	720	16	108	N	449	400	12	2	P
800 x 600 @56 Hz	35.156	56.25	36	1024	800	24	72	N	625	600	1	2	P
800 x 600 @60 Hz	37.879	60.317	40	1056	800	40	128	N	628	600	1	4	P
800 x 600 @72 Hz	48.077	72.188	50	1040	800	56	120	N	666	600	37	6	P
800 x 600 @75 Hz	46.875	75	49.5	1056	800	16	80	P	625	600	1	3	P
848 x 480 @59 Hz	29.83	59.659	31.5	1056	848	24	80	N	500	480	3	5	P
848 x 480 @60 Hz	31.02	60	33.75	1088	848	16	112	P	517	480	6	8	P
1024 x 768 @60 Hz	48.363	60.004	65	1344	1024	24	136	N	806	768	3	6	N
1024 x 768 @70 Hz	56.476	70.069	75	1328	1024	24	136	N	806	768	3	6	N
1024 x 768 @75 Hz	60.023	75.029	78.75	1312	1024	16	96	N	800	768	1	3	P
1152 x 864 @75 Hz	67.5	75	108	1600	1152	64	128	P	900	864	1	3	P
1280 x 720 @48 Hz	35.539	47.961	58	1632	1280	48	128	N	741	720	1	3	P
1280 x 768 @60 Hz	47.396	59.995	68.25	1440	1280	48	32	P	790	768	3	7	N

Resolution	H. Freq. (kHz)	V. Freq. (Hz)	Pixel Clock (MHz)	H. Total Pixel	H. Display Pixel	H. Front Porch	H. Sync. Width	H. Sync. Pol	V. Total Lines	V. Display Lines	V. Front Porch	V. Sync. Width	V. Sync. Pol
1280 x 768 @60 Hz	47.776	59.87	79,5	1664	1280	64	128	N	798	768	3	7	P
1280 x 768 @75 Hz	60.289	74.893	102.25	1696	1280	80	128	N	805	768	3	7	P
1280 x 800 @60 Hz	49.792	59,81	83,5	1680	1280	72	128	N	831	800	3	6	P
1280 x 800 @75 Hz	62.795	74.934	106.5	1696	1280	80	128	N	838	800	3	6	P
1280 x 960 @60 Hz	60	69	108	1800	1280	96	112	P	1000	960	1	3	P
1280 x 1024 @60 Hz	63.981	60.02	108	1688	1280	48	112	P	1966	1024	1	3	P
1280 x 1024 @75 Hz	79.976	75.025	135	1688	1280	16	144	P	1066	1024	1	3	P
1360 x 768 @60 Hz	47.712	60.015	85.5	1792	1360	64	112	P	795	768	3	6	P
1400 x 1050 @60 Hz	64.744	59.948	101	1560	1400	48	32	P	1080	1050	3	3	N
1400 x 1050 @60 Hz	65.317	59..978	121.75	1864	1400	88	144	N	1089	1050	3	4	P
1400 x 1050 @75 Hz	82.278	74.867	156	1896	1400	104	144	N	1099	1050	3	4	P
1440 x 900 @60 Hz	55.935	59.887	106.5	1904	1440	80	152	N	934	900	3	6	P
1440 x 1050 @60 Hz	65.234	59.903	125.25	1920	1440	88	152	N	1989	1050	3	10	N
1600 x 1200 @60 Hz	75	60	162	2160	1600	64	192	P	1250	1200	1	3	P
1680 x 1050 @60 Hz	65.179	59.852	146	2240	1680	104	176	N	1089	1050	3	6	P
1920 x 1200 @60 Hz	74.038	59.95	154	2080	1920	48	32	P	1235	1200	3	6	N

DisplayPort Video Timing List

Resolution	H. Freq. (kHz)	V. Freq. (Hz)	Pixel Clock (MHz)	H. Total Pixel	H. Display Pixel	H. Front Porch	H. Sync. Width	H. Sync. Pol.	V. Total Lines	V. Display Lines	V. Front Porch	V. Sync. Width	V. Sync. Pol.
640 x 480 @60 Hz	31.56	60.12	25.1875	800	640	16	96	N	525	480	10	2	N
640 x 480 @72 Hz	37.86	72.81	31.5	832	640	24	40	N	529	480	9	3	N
640 x 480 @75 Hz	37.5	75	31.5	840	640	16	64	N	500	480	1	3	N
720 x 400 @70 Hz	31.46	70.06	28.3125	900	729	16	108	N	449	400	13	2	P
800 x 600 @56 Hz	35.16	56.25	36	1024	800	24	72	P	625	600	1	2	P
800 x 600 @60 Hz	37.88	60.32	40	1056	800	40	128	P	628	600	1	4	P
800 x 600 @72 Hz	48.08	72.19	50	1040	800	56	120	P	666	600	37	6	P
800 x 600 @75 Hz	46.88	75	49.5	1056	800	16	80	P	625	600	1	3	P
848 x 480 @59 Hz	29.83	59.66	31.5	1056	848	24	80	P	500	480	3	5	P
848 x 480 @60 Hz	31.02	60	33.75	1088	848	16	112	P	517	480	6	8	P
1024 x 768 @60 Hz	48.36	60	65	1344	1024	24	136	N	806	768	3	6	N
1024 x 768 @70 Hz	56.48	70.07	75	1328	1024	24	136	N	806	768	3	6	N
1024 x 768 @75 Hz	60.02	75.03	78.75	1312	1024	16	96	P	800	768	1	3	P
1152 x 864 @75 Hz	67.5	75	108	1600	1152	64	128	P	900	864	1	3	P
1280 x 720 @48 Hz	35.54	47.96	58	1632	1280	48	128	N	741	720	1	3	P
1280 x 720 @50 Hz	36.92	49.82	60.25	1632	1280	48	128	N	741	720	1	3	P
1280 x 720 @60 Hz	44.62	59.81	74.25	1664	1280	56	136	N	746	720	1	3	P
1280 x 768 @60 Hz	47.4	59.99	68.25	1440	1280	48	32	P	790	768	3	7	N
1280 x 768 @60 Hz	47.78	59.87	79.5	1664	1280	64	128	N	798	768	3	7	P
1280 x 768 @75 Hz	60.29	74.89	102.25	1696	1280	80	128	N	805	768	3	7	P
1280 x 800 @60 Hz	49.7	59.81	83.5	1680	1280	72	128	N	831	800	3	6	P
1280 x 960 @60 Hz	60	60	108	1800	1280	96	112	P	1000	960	1	3	P
1280 x 1024 @60 Hz	63.98	60.02	108	1688	1280	48	112	P	1066	1024	1	3	P

Resolution	H. Freq. (kHz)	V. Freq. (Hz)	Pixel Clock (MHz)	H. Total Pixel	H. Display Pixel	H. Front Porch	H. Sync. Width	H. Sync. Pol.	V. Total Lines	V. Display Lines	V. Front Porch	V. Sync. Width	V. Sync. Pol.
1280 x 1024 @75 Hz	79.98	75.02	135	1688	1280	16	144	P	1066	1024	1	3	P
1360 x 768 @60 Hz	47.71	60.02	85.5	1792	1360	64	112	P	795	768	3	6	P
1366 x 768 @60 Hz	48	60	72	1500	1366	14	56	P	800	768	1	3	P
1400 x 1050 @60 Hz	64.74	59.95	101	1560	1400	48	32	P	1080	1050	1	4	N
1400 x 1050 @60 Hz	65.32	59.98	121.75	1864	1400	88	144	N	1089	1050	3	4	P
1400 x 1050 @75 Hz	82.28	74.87	156	1896	1400	104	144	N	1099	1050	3	4	P
1440 x 900 @60 Hz	55.93	59.89	106.5	1904	1440	80	152	N	934	900	3	6	P
1440 x 900 @75 Hz	70.51	74.85	136.5	1936	1440	85	152	N	942	900	3	6	P
1440 x 1050 @60 Hz	65.23	59.9	125.25	1920	1440	88	152	N	1089	1050	3	10	N
1600 x 1200 @60 Hz	75	60	162	2160	1600	64	192	P	1250	1200	1	3	P
1600 x 1200 @65 Hz	81.25	65	175.5	2160	1600	64	192	P	1250	1200	1	3	P
1600 x 1200 @70 Hz	87.5	70	189	2160	1600	64	192	P	1250	1200	1	3	P
1600 x 1200 @75 Hz	93.52	74.81	292	2160	1600	64	192	P	1250	1200	1	3	P
1680 x 1050 @60 Hz	65.18	59.85	146	2240	1680	104	176	N	1089	1050	3	6	P
1920 x 1200 @60 Hz	74.04	59.95	154	2080	1920	48	32	P	1235	1200	3	6	N
1920 x 1200 @60 Hz	74.46	59.81	193	2592	1920	136	200	N	1245	1200	3	6	P
2560 x 1600 @60 Hz	98.53	59.86	268	2720	2560	48	32	P	1646	1600	3	6	N
720 x 480p @59 Hz	31.47	59.94	27	858	720	16	62	N	525	480	9	6	N
720 x 480p @59 Hz	31.47	59.94	27	858	720	16	62	N	525	480	9	6	N
720 x 576p @50 Hz	31.25	50	27	864	720	12	64	N	625	576	5	5	N
720 x 576p @50 Hz	31.25	50	27	864	720	12	64	N	625	576	5	5	N
1280 x 720p @50 Hz	37.5	50	74.25	1980	1280	440	40	P	750	720	5	5	P
1280 x 720p @60 Hz	45	60	74.25	1650	1280	110	40	P	750	720	5	5	P
1280 x 720p @100 Hz	75	100	148.5	1980	1280	440	40	P	750	720	5	5	P
1280 x 720p @120 Hz	90	120	148.5	1650	1280	110	40	P	750	720	5	5	P

Resolution	H. Freq. (kHz)	V. Freq. (Hz)	Pixel Clock (MHz)	H. Total Pixel	H. Display Pixel	H. Front Porch	H. Sync. Width	H. Sync. Pol.	V. Total Lines	V. Display Lines	V. Front Porch	V. Sync. Width	V. Sync. Pol.
1920 x 108i @50 Hz	28.13	5	74.25	2640	1920	528	44	P	1125	1080	2	5	P
1920 x 108p @24 Hz	27	24	74.25	2750	1920	638	44	P	1125	1080	4	5	P
1920 x 108p @30 Hz	33.75	30	74.25	2200	1920	88	44	P	1125	1080	4	5	P
1920 x 108p @50 Hz	56.25	50	148.5	2640	1920	528	44	P	1125	1080	4	5	P
1920 x 108p @60 Hz	67.5	60	148.5	2200	1920	88	44	P	1125	1080	4	5	N

Specifications

Technical Specifications	
Advanced Video Processing	High-quality video and graphics scaling up and down Frame rate conversion
Approvals	CE, FCC, RoHS (2002/95/EC)
Audio Input Signal	Digital Audio (PCM), Stereo Audio
Audio Output Signal	1x S/PDIF Digital Audio, 1x Analog Audio RH/LH, 1x HDMI Audio
Chassis Material	Metal
Control	IR remote control, RS232, front panel push buttons
Dimensions	11.96"H x 5.90"W x 1.73"D (30.4 x 15 cm x 1.1 cm)
HDCP Support	Automatic scanning of input/output status
HDMI Cable Distance	Max. 15 meters (49 feet), depending on cable quality
HDMI Compliance	HDMI 1.4a receiver and transmitter
Infrared Frequency	38 KHz
Input Resolution	DVI/ HDMI/ Display Port, compliant with HDCP 2.0
Intelligent Color Adjustment	Discrete RGB, color adjustment, hue, saturation sharpness, contrast, brightness, four preset color modes
IR Extend Distance	300 meters (984 feet) line cable via IR extender
Output Resolution	Up to 1080p-60, 1920x1200
Power Supply	Input: 100–240 VAC, 50/60 Hz Output: 12 VDC, 2 A
Rackmount	19-inch panel type (1U-44L)
Scaler Type	7 in/2 out HDMI Video Scaler
Source Status	Automatic scanning of input/output status
System Control	Box ID for easy independent control through IR, RS232, and five selectable profiles settings for difference display. Ethernet control module with RJ45 connector. ASCII control protocol over RS232 and Ethernet.
Temperature	32–100° F (0–32° C)
Video Input Signal	one Composite/one S-Video/one Component one VGA/one DVI/one HDMI/one DP
Video Output Signal	one VGA, one HDMI

Technical Specifications	
Video Wall	Magnify, scroll, pan through all inputs Video wall function: Image split, cropping, and assign display location Pixel based overlap adjustment in all edges, up to 15x15 matrix displays Up to 2560 x 1600 input resolution via display port
Weight	Shipping weight: 3.42 lb. (2.05 kg)

Input Resolution Support

For a detailed list of timing by resolution, see *Video Timing List* on page 33.

Resolution		Component	VGA	DVI	HDMI	DisplayPort
640 x 350 @ 85 Hz	480p/480i	√		√	√	√
640 x 400 @ 85 Hz	576p/576i			√	√	√
640 x 480 @ 60 Hz	720p	√	√	√	√	√
640 x 480 @ 72 Hz	VGA			√	√	√
640 x 480 @ 75 Hz	VGA		√	√	√	√
720 x 400 @ 70 Hz	DOS		√	√	√	√
720 x 400 @ 85 Hz	1080p/1080i	√	√	√	√	√
800 x 600 @ 56 Hz	SVGA			√	√	√
800 x 600 @ 60 Hz	SVGA		√	√	√	√
800 x 600 @ 72 Hz	SVGA		√	√	√	√
800 x 600 @ 75 Hz	SVGA		√	√	√	√
832 x 624 @ 75 Hz	SVGA		√	√	√	√
848 x 480 @ 59 Hz	WVGA		√	√	√	√
848 x 480 @ 60 Hz	WVGA		√	√	√	√
852 x 480 @ 60 Hz	480p		√			
1024 x 768 @ 60 Hz	XGA		√	√	√	√
1024 x 768 @ 70 Hz	XGA			√	√	√
1024 x 768 @ 75 Hz	XGA		√	√	√	√
1152 x 864 @ 75 Hz	XGA+		√	√	√	√
1280 x 720 @ 48 Hz	HD 720		√			
1280 x 720 @ 50 Hz	HD 720		√	√	√	√
1280 x 720 @ 60 Hz	WXGA		√	√	√	√
1280 x 768 @ 75 Hz	WXGA		√	√	√	√

Resolution		Component	VGA	DVI	HDMI	DisplayPort
1280 x 768 @ 60 Hz	WXGA		√		√	√
1280 x 800 @ 60 Hz	WXGA		√		√	√
1280 x 800 @ 75 Hz	WXGA		√		√	√
1280 x 960 @ 60 Hz	SXGA		√		√	√
1280 x 1024 @ 60 Hz	SXGA		√	√	√	√
1280 x 1024 @ 75 Hz	SXGA		√	√	√	√
1360 x 768 @ 60 Hz	SXGA		√	√	√	√
1360 x 768 @ 75 Hz	SXGA		√			
1366 x 768 @ 60 Hz	WXGA		√			
1400 x 788 @ 60 Hz	WXGA+		√			
1400 x 1050 @ 60 Hz	SXGA+		√	√	√	√
1400 x 1050 @ 75 Hz	SXGA+		√	√	√	√
1400 x 1050 @ 60 Hz	SXGA+		√		√	√
1440 x 900 @ 60 Hz	WXGA+		√		√	√
1440 x 900 @ 75 Hz	WXGA+				√	√
1440 x 1050 @ 60 Hz	SXGA+		√	√	√	√
1600 x 1200 @ 60 Hz	UXGA		√	√	√	√
1600 x 1200 @ 65 Hz	UXGA					√
1600 x 1200 @ 70 Hz	UXGA		√			
1600 x 1200 @ 75 Hz	UXGA					√
1680 x 1050 @ 60 Hz	WSXGA+		√	√	√	√
1792 x 1344 @ 60 Hz			√			
1856 x 1392 @ 60 Hz			√			
1920 x 1200 @ 60 Hz	WUXGA			√	√	√
1920 x 1200 @ 60 Hz	WUXGA		√			
1920 x 1440 @ 60 Hz	WUXGA		√			
1920 x 1440 @ 75 Hz	WUXGA		√			
720 x 480p @ 59 Hz	DVD "NTSC"			√	√	
720 x 480p @ 59 Hz	DVD "NTSC"			√	√	√
720 x 576p @ 50 Hz	DVD "PAL"			√	√	√
720 x 576p @ 50 Hz	DVD "PAL"			√	√	√
1280 x 720p @ 50 Hz	HDTV 720p		√	√	√	√
1280 x 720p @ 60 Hz	HDTV 720p			√	√	√
1280 x 720p @ 100 Hz	HDTV 720p			√	√	√

Resolution		Component	VGA	DVI	HDMI	DisplayPort
1280 x 720p @ 120 Hz	HDTV 720p			√	√	√
1920 x 1080p @ 24 Hz	1080p HD				√	√
1920 x 1080p @ 30 Hz	1080i HD				√	√
1920 x 1080p @ 50 Hz	1080p HD				√	√
1920 x 1080p @ 60 Hz	1080p HD		√	√	√	√
1920 x 1080p @ 24 Hz	Full HD 1080p					√
2048 x 1280 @ 60 Hz			√			
2560 x 1600	WQXGA					√

Output Resolution Support

- When you press the front panel button "OTHERS," the scaler automatically applies the resolution 1360 x 768. Continue pressing "OTHERS" to cycle through the following four resolutions: 1360 x 768 > 1280 x 1024 > 1600 x 1200 > 1920 x 1200
- To adjust the settings in output mode, select 720 x 480, 800 x 600, 1280 x 800, or 1400 x 1050, open the OSD menu and go to **Image Properties**.

Front Panel Buttons	Resolution	VGA	HDMI
XGA	1920 x 1200	√	√
WXGA	1024 x 768	√	√
720p	1280 x 720	√	√
1080p	1920 x 1080	√	√
OTHERS	720 x 480	√	√
	800 x 600	√	√
	1280 x 800	√	√
	1280 x 1024	√	√
	1360 x 768	√	√
	1400 x 1050	√	√
	1600 x 1200	√	√

000-104309-01
ASSY TECH DOCS Multi Format IO Module

Corporate offices

USA – Cypress
ph: 714-236-8610

Canada – Kitchener
ph: 519-744-8005

Consultant offices

Italy
ph: +39 (0) 2 9902 1161

Worldwide offices

Australia
ph: +61 (0) 7 3624 4888

Brazil
ph: +55 (11) 2548 4753

China (Beijing)
ph: +86 10 6561 0240

China (Shanghai)
ph: +86 21 6278 7708

Eastern Europe and
Russian Federation
ph: +36 (0) 1 47 48 100

France
ph: +33 (0) 1 41 21 44 04

Germany
ph: +49 2161 664540

India
ph: +91 (080) 6708 9999

Japan (Tokyo)
ph: 81 3 3599 7481

Korea (Seoul)
ph: +82 2 702 1601

Republic of South Africa
ph: +27 (0)11 510 0094

Singapore
ph: +65 6877-8737

Spain
ph: + 34 91 633 9990

United Arab Emirates
ph: +971 4 3206688

United Kingdom
ph: +44 (0) 118 977 8000