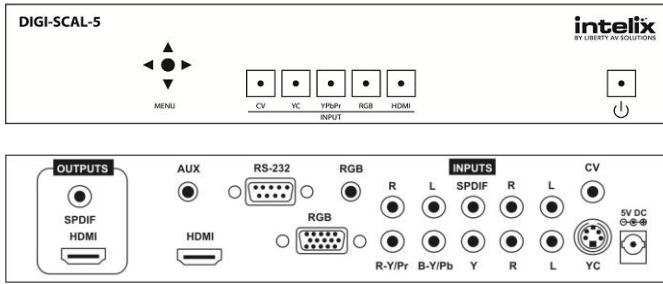


DIGI-SCAL-5 Installation Guide

Intelix
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The Intelix DIGI-SCAL-5 allows the integration of multiple analog and digital devices into a high-definition environment. With switching, scaling, and format conversion capabilities, the DIGI-SCAL-5 combines the processing of three devices into one.

Installation Instructions

1. Power off the source and destination audio/video devices.
2. Connect the input sources to the DIGI-SCAL-5 using high quality cables.
3. Connect the output destinations to the DIGI-SCAL-5 using high-quality HDMI, stereo audio, and/or digital audio cables.
4. If the DIGI-SCAL-5 will be controlled by a third-party control system, connect a DE9 cable to the RS232 port.
5. Connect the included power supply to the 5VDC port. Connect the power supply to AC power outlet.
6. Power on the DIGI-SCAL-5.
7. Power on attached audio/video devices.

Troubleshooting

Symptom	Possible Solutions
No signal	<p>Verify the source and destination devices are functioning properly by connecting the source directly to the destination device.</p> <p>Verify HDMI cables and source and destination HDMI ports are operational.</p>
Poor/intermittent signal	<p>Verify the video and audio cables are in good condition.</p> <p>Use shorter, high quality cables.</p>

Important notice:

- Do not attempt to disassemble or alter the scaler housing. There are no user-serviceable parts inside the unit. Doing so will void your warranty.
- To minimize the possibility of equipment damage from electrostatic discharge (ESD), all source and destination equipment must be powered off during installation.
- Allow proper ventilation to reduce the risk of thermal failure.

Operating Instructions

Source Selection

The five inputs each have their own push button on the front panel. Press the desired button to select the corresponding input.

Menu Navigation

Press the top of the joystick to bring up the on screen display. Use the joystick to navigate to the desired function. Once adjustments have been made to the settings, press the top of the joystick again to save the configuration.

Resolution Settings

The output submenu allows you to set the resolution you want the DIGI-SCAL-5 to send to your display. Do not select a resolution that your display is not capable of processing, as this may cause the DIGI-SCAL-5 and/or your display to malfunction. Please see page 2 for information about how the DIGI-SCAL-5 processes video and audio signals.

Remote Control & RS232

The DIGI-SCAL-5 offers two methods of controlling the scaler in addition to front panel operation. The included remote control features all of the front panel functionality, plus several output resolution hot keys. The DIGI-SCAL-5 also features RS232 control. Please see pages 3 & 4 for RS232 commands.

The DIGI-SCAL-5 accepts HDMI, DVI, analog PC, Component, Composite, and YC (S-Video) inputs. The resolutions and formats processed for these inputs are as follows:

Resolution		Refresh Rate (Hz)	Scan	Format	Connector
CV	SDTV	60 NTSC, 50 PAL	Interlaced	NTSC/PAL	RCA
YC	SDTV	60 NTSC, 50 PAL	Interlaced	NTSC/PAL	4-Pin Mini-Din
480i	720x480	60	Interlaced	YUV NTSC	RCA, HDMI
576i	720x576	50	Interlaced	YUV PAL	RCA, HDMI
480p	720x480	60	Progressive	YPbPr/RGBHV	HD15,HDMI,RCA
576p	720x576	50	Progressive	YPbPr/RGBHV	HD15,HDMI,RCA
720p	1280x720	50,60	Progressive	YPbPr/RGBHV	HD15,HDMI,RCA
1080i	1920x1080	50,60	Interlaced	YPbPr/RGBHV	HDMI, RCA
1080p	1920x1080	50,60	Progressive	YPbPr/RGBHV	HD15,HDMI,RCA
VGA	640x480	60,72,75,85	Progressive	RGBHV	HD15,HDMI
SVGA	800x600	56,60,72,75,85	Progressive	RGBHV	HD15,HDMI
XGA	1024x768	60,70,75,85	Progressive	RGBHV	HD15,HDMI
SXGA	1280x1024	60,75,85	Progressive	RGBHV	HD15,HDMI
UXGA	1600x1200	60	Progressive	RGBHV	HD15,HDMI
WXGA	1280x800	60	Progressive	RGBHV	HD15,HDMI
WSXGA	1680x1050	60	Progressive	RGBHV	HD15,HDMI
WUXGA	1920x1200	60	Progressive	RGBHV	HD15,HDMI

The DIGI-SCAL-5 supports various output resolutions, as shown below:

Resolution		Refresh Rate (Hz)	Scan	Format	Connector
480i	720x480	60	Interlaced	YUV NTSC	HDMI
576i	720x576	50	Interlaced	YUV PAL	HDMI
480p	720x480	60	Progressive	RGBHV	HDMI
576p	720x576	50	Progressive	RGBHV	HDMI
720p	1280x720	50,60	Progressive	RGBHV	HDMI
1080i	1920x1080	50,60	Interlaced	RGBHV	HDMI
1080p	1920x1080	50,60	Progressive	RGBHV	HDMI
VGA	640x480	60	Progressive	RGBHV	HDMI
SVGA	800x600	60	Progressive	RGBHV	HDMI
XGA	1024x768	60	Progressive	RGBHV	HDMI
SXGA	1280x1024	60	Progressive	RGBHV	HDMI
SXGA+	1400x1050	60	Progressive	RGBHV	HDMI
UXGA	1600x1200	60	Progressive	RGBHV	HDMI
WXGA	1280x800	60	Progressive	RGBHV	HDMI
WXGA+	1440x900	60	Progressive	RGBHV	HDMI
WSXGA	1680x1050	60	Progressive	RGBHV	HDMI
WUXGA	1920x1200	60	Progressive	RGBHV	HDMI

Menu

The DIGI-SCAL-5 menu provides several options for configuring audio, video, and on screen display characteristics. The menu contains the following main categories: Video, Color, Output, OSD, Audio, Information, and Exit. With the exception of the 'Exit' function, a secondary menu will appear where specific adjustments and selections can be made. Please see the Menu tree below for more information.

Main Menu	Secondary Menu	Adjustment
Video	Picture Mode	User/Standard/Vivid/Movie
	Contrast	0-100 Relative Contrast Adjustment
	Brightness	0-100 Relative Brightness Adjustment
	Hue	0-100 Relative Hue Adjustment
	Saturation	0-100 Relative Color Level Adjustment
	Sharpness	0-100 Relative Picture Sharpness Adjustment
	Scale	Overscan/Underscan/Letterbox/Panscan/Full
	Noise Reduction	Low / Middle/High/Off
	Exit	Return to Main Menu
Color	Color Tone	User / Normal / Warm / Cool
	Red	0-100 Relative Red Color Level
	Green	0-100 Relative Green Color Level
	Blue	0-100 Relative Blue Color Level
	Exit	Return to Main Menu
Output ¹	-	NATIVE / VGA / SVGA / XGA / SXGA / SXGA+ WXGA+ / WSXGA / UXGA / WUXGA 480i / 480p / 720p@60Hz / 1080i@60Hz / 1080p@60Hz 576i / 576p / 720p@50Hz / 1080i@50Hz / 1080p@50Hz
OSD Control ²	H Position	0-100 Relative L-R Position
	V Position	0-100 Relative U-D Position
	Timer	0-100 Relative OSD Show Time (Sec)
	Transparency	0-100 Relative OSD Text Transparency
	Exit	Return to Main Menu
Audio ³	Source	HDMI/L-R/Coaxial
	Delay	OFF/40MS/110 MS/150 MS
	Sound	On/ Mute
	Exit	Return to Main Menu
Information ⁴	-	Source (Input Interface) Input (Input Resolution) Output (Output Resolution) Version (Firmware Version)
Exit	-	Close the OSD Menu

OSD Menu Notes:

Note 1: The Output sub-menu allows you to specify the resolution you want the DIGI-SCAL-5 to produce. Keep in mind that setting the resolution can cause an apparent malfunction if you select a resolution that your display device cannot reproduce. Make certain your display device can reproduce the resolution you select BEFORE you select it.

Note 2: The OSD sub-menu allows you to customize the way the On Screen Display appears when it has been accessed. This is a personal preference matter. You can change the default if you wish or simply leave it at the factory setting.

Note 3: Since Video and Audio Lip Sync can be lost in Digital Television, the DIGI-SCAL-5 provides a secondary menu item called "Delay" under the Audio selection of the main menu where audio delay can be introduced to restore lip sync. Use this function if you hear audio before the video portion of the program appears to make the sound.

Note 4: The Info sub-menu contains technical information. If you have problems with the DIGI-SCAL-5 and require assistance, the technician may ask you to read information from this menu as part of the troubleshooting process.

RS232 Protocol

Pins definition of modem cable

Scaler Unit			Control Unit	
PIN	Definition		PIN	Definition
1	NC		1	NC
2	TxD	→	2	RxD
3	RxD	←	3	TxD
4	NC		4	NC
5	GND		5	GND
6	NC		6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

RS232 Transmission Format:

Baud Rate: 19200 bps

Data Bit: 8 bits

Parity: None

Stop Bit: 1 bit

ALL RS232 COMMANDS MUST CONCLUDE WITH A CARRIAGE RETURN AND LINE FEED.

(A) Set Command

Command Code	Response	Description
S POWER 0	> POWER OFF	POWER OFF
S POWER 1	> POWER ON	POWER ON
S SOURCE 0	> SOURCE CV	CV INPUT
S SOURCE 1	> SOURCE SV	SV INPUT
S SOURCE 2	> SOURCE COMP	COMP INPUT
S SOURCE 3	> SOURCE PC	PC INPUT
S SOURCE 4	> SOURCE HDMI	HDMI INPUT
S OUTPUT 0	> OUTPUT NATIVE	NATIVE RESOLUTION OUTPUT
S OUTPUT 1	> OUTPUT VGA	VGA RESOLUTION OUTPUT
S OUTPUT 2	> OUTPUT SVGA	SVGA RESOLUTION OUTPUT
S OUTPUT 3	> OUTPUT XGA	XGA RESOLUTION OUTPUT
S OUTPUT 4	> OUTPUT SXGA	SXGA RESOLUTION OUTPUT
S OUTPUT 5	> OUTPUT UXGA	UXGA RESOLUTION OUTPUT
S OUTPUT 6	> OUTPUT 480I	480I RESOLUTION OUTPUT
S OUTPUT 7	> OUTPUT 480P	480P RESOLUTION OUTPUT
S OUTPUT 8	> OUTPUT 720P	720P 60HZ RESOLUTION OUTPUT
S OUTPUT 9	> OUTPUT 1080I	1080I 60HZ RESOLUTION OUTPUT
S OUTPUT 10	> OUTPUT 1080P	1080P 60HZ RESOLUTION OUTPUT

S OUTPUT 11	> OUTPUT 576I	576I 60HZ RESOLUTION OUTPUT
S OUTPUT 12	> OUTPUT 576P	576P 60HZ RESOLUTION OUTPUT
S OUTPUT 13	> OUTPUT 720P	720P 50HZ RESOLUTION OUTPUT
S OUTPUT 14	> OUTPUT 1080I50	1080I 50HZ RESOLUTION OUTPUT
S OUTPUT 15	> OUTPUT 1080P50	1080P 50HZ RESOLUTION OUTPUT
S OUTPUT 16	> OUTPUT WXGA	WXGA RESOLUTION OUTPUT
S OUTPUT 17	> OUTPUT WSXGA	WSXGA RESOLUTION OUTPUT
S OUTPUT 18	> OUTPUT WUXGA	WUXGA RESOLUTION OUTPUT
S OUTPUT 19	> OUTPUT WXGA+	WXGA+ RESOLUTION OUTPUT
S SIZE 0	> SIZE FULL	SCALER FULL OUTPUT
S SIZE 1	> SIZE OVERSCAN	SCALER OVERSCAN OUTPUT
S SIZE 2	> SIZE UNDERSCAN	SCALER UNDERSCAN OUTPUT
S SIZE 3	> SIZE LETTERBOX	SCALER LETTERBOX OUTPUT
S SIZE 4	> SIZE PANSKAN	SCALER PANSKAN OUTPUT
S PICTUREMODE 0~3	> PICTUREMODE STANDARD~USER	0:STANDARD;1:MOVIE;2:VIVID;3:USER,PICTURE MODE OUTPUT
S CONTRAST 0~100	> CONTRAST 0~100	CONTRAST 0~100 ADJUST [Default:50]
S BRIGHTNESS 0~100	> BRIGHTNESS 0~100	BRIGHTNESS 0~100 ADJUST [Default:45]
S HUE 0~100	> HUE 0~100	HUE 0~100 ADJUST [Default:50]
S SATURATION 0~100	> SATURATION 0~100	SATURATION 0~100 ADJUST [Default:60]
S SHARPNESS 0~100	> SHARPNESS 0~100	SHARPNESS 0~100 ADJUST [Default:32]
S NR 0~3	> NR OFF~HIGH	0:OFF ; 1:LOW ; 2:MIDDLE ; 3:HIGH ,NR CONTROL
S PCHPOSITION 0~100	> PCHPOSITION 0~100	H POSITION 0~100 ADJUST
S PCVPOSITION 0~100	> PCVPOSITION 0~100	V POSITION 0~100 ADJUST
S PCCLOCK 0~100	> PCCLOCK 0~100	PC MODE CLOCK 0~100 ADJUST
S PCPHASE 0~63	> PCPHASE 0~63	PC MODE PHASE 0~63 ADJUST
S COLORTEMP 0~3	> COLORTEMP NORMAL~USER	0:NORMAL; 1:WARM; 2:COOL; 3:USER , COLOR TEMP SETTING
S RED 0~100	> RED 0~100	COLOR TEMP "RED" ADJUST [Default:47]
S GREEN 0~100	> GREEN 0~100	COLOR TEMP "GREEN" ADJUST [Default:47]
S BLUE 0~100	> BLUE 0~100	COLOR TEMP "BLUE" ADJUST [Default:47]
S OSDHPOSITION 0~100	> OSDHPOSITION 0~100	OSD H POSITION 0~100 ADJUST [Default:50]
S OSDVPOSITION 0~100	> OSDVPOSITION 0~100	OSD V POSITION 0~100 ADJUST [Default:50]
S OSDTIMEOUT 0~100	> OSDTIMEOUT 0~100	OSD TIMEOUT 0~100 SETTING [Default:10]
S OSDBACKGROUND 0~8	> OSDBACKGROUND 0~8	OSD OSDBACKGROUND 0~8 ADJUST [Default:5]
S AUDIOMUTE 0~1	> AUDIOMUTE OFF~ON	0:OFF ; 1:ON , AUDIO MUTE CONTROL
S AUDIODELAY 0~3	> AUDIODELAY OFF~150MS	0:OFF ; 1:40MS ; 2:110MS ; 3:150MS , AUDIO DELAY SETTING
S RESET 1	> RESET ON	RESET ACTION

(B) Status Commands

Command Code	Response	Description
R POWER	> POWER ON	SHOW POWER STATUS
R SOURCE	> SOURCE CV~HDMI	SHOW SOURCE STATUS
R OUTPUT	> OUTPUT NATIVE~WUXGA	SHOW OUTPUT STATUS
R SIZE	> SIZE FULL~PANSKAN	SHOW SIZE STATUS
R PICTUREMODE	> PICTUREMODE STANDARD~USER	SHOW PICTURE MODE STATUS
R CONTRAST	> CONTRAST 0~100	SHOW CONTRAST STATUS
R BRIGHTNESS	> BRIGHTNESS 0~100	SHOW BRIGHTNESS STATUS
R HUE	> HUE 0~100	SHOW HUE STATUS
R SATURATION	> SATURATION 0~100	SHOW SATURATION STATUS
R SHARPNESS	> SHARPNESS 0~100	SHOW SHARPNESS STATUS
R NR	> NR OFF~HIGH	SHOW NR STATUS
R PCHPOSITION	> PCHPOSITION 0~100	SHOW PC H-POSITION STATUS
R PCVPOSITION	> PCVPOSITION 0~100	SHOW PC V-POSITION STATUS
R PCCLOCK	> PCCLOCK 0~100	SHOW PC CLOCK STATUS
R PCPHASE	> PCPHASE 0~63	SHOW PC PHASE STATUS
R COLORTEMP	> COLORTEMP NORMAL~USER	SHOW COLOR TEMP STATUS
R RED	> RED 0~100	SHOW COLOR TEMP RED STATUS
R GREEN	> GREEN 0~100	SHOW COLOR TEMP GREEN STATUS
R BLUE	> BLUE 0~100	SHOW COLOR TEMP BLUE STATUS
R OSDHPOSITION	> OSDHPOSITION 0~100	SHOW OSD H-POSITION STATUS
R OSDVPOSITION	> OSDVPOSITION 0~100	SHOW OSD V-POSITION STATUS
R OSDTIMEOUT	> OSDTIMEOUT 0~100	SHOW OSD TIMEOUT STATUS
R OSDBACKGROUND	> OSDBACKGROUND 0~8	SHOW OSD BACKGROUND STATUS
R AUDIOMUTE	> AUDIOMUTE OFF~ON	SHOW AUDIO MUTE STATUS
R AUDIODELAY	> AUDIODELAY OFF~150MS	SHOW AUDIO DELAY STATUS
S OSDNOTICE 0	> OSDNOTICE INFO	SHOW INFO POPUP FOR 5 SEC. AFTER SOURCE SWITCH
S OSDNOTICE 1	> OSDNOTICE OFF	DISABLE INFO POPUP
S OSDNOTICE 2	> OSDNOTICE ON	ALWAYS SHOW INFO POPUP AFTER SOURCE SWITCH
R OSDNOTICE	> OSDNOTICE (OFF, ON, or INFO)	SHOW INFO POPUP SETTING STATUS

Technical Specifications	
I/O Connections	
Input Connectors	HDMI type A (DVI-D compatible) RGB and analog stereo audio (HD15 & 3.5mm) YPbPr, SPDIF, analog stereo audio (RCA) S-Video and analog stereo audio (4-pin and RCA) Composite Video and analog stereo audio (RCA)
Output Connectors	HDMI type A SPDIF (RCA)
Supported Resolutions	480i, 480p, 576i, 576p, 720p, 1080i, 1080p VGA, SVGA, XGA, SXGA, UXGA, WXGA, WSXGA, WUXGA
Control	Front Panel, Included IR Remote, RS232
Compliance	HDMI, HDCP
Chassis and Environmental	
Dimensions (HxWxD)	1.7x8.5x6.45" (42x218x164mm)
Shipping Weight	4.45 lbs. (2.1 kg)
Operating Temperature	0° to +48° C (+32° to +120° F)
Operating Humidity	10% to 85%, Non-condensing
Storage Temperature	-10° to +70° C (+14° to +158° F)
Storage Humidity	10% to 85%, Non-condensing
Enclosure	Painted Steel
Maximum Power Consumption	9 watts
External Power Supply	5VDC @ 2A
Regulatory	CE, RoHS
Other	
Warranty	2 years
What's in the Box	DIGI-SCAL-5 (1 ea.), IR Remote (1 ea.), AC Power Adapter (1 ea.), Operation Guide (1 ea.)