User Manual

DV-HSW-21A
HDMI 2x1 Switcher

Based on firmware 02.00

DV-MFSW-21A
HDMI / VGA 2x1 Switcher

Based on firmware 01.09

HDMI
HIGH-DEFINITION MULTIMEDIA INTERFACE

IMPORTANT SAFETY INSTRUCTIONS

Contents are subject to change without notice

Warnings

To reduce the risk of fire, electric shock or product damage:

1. Do not expose this device to rain, moisture, dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the unit.

**6.** Clean this device only with dry cloth.

2. Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure the unit is well ventilated.

7. Unplug this device during lightning storms or when unused for long periods of time.

3. To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.
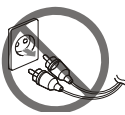
8. Protect cables and cords from being walked on or pinched particularly at plugs.

4. Do not install near any heat sources such as radiators, heat registers, stoves, or other device (including amplifiers) that produce heat.

9. Only use attachments/accessories specified by FSR.

5. Do not place sources of open flames, such as lighted candles, on the unit.

10. Refer all servicing to qualified service personnel.

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OVERVIEW

The DV-HSW-21A is a 2x1 HDMI switcher supporting up to 4K x 2K @ 30Hz. The DV-MFSW-21A is a unique switcher and a must have for installations spanning new and legacy technology. This switcher has 1 HDMI input supporting resolutions up to 4K x 2K @ 30Hz and 1 VGA (HD-15) input supporting resolutions up to 1920 x 1200 @ 60Hz. The HD-15 input is paired with a stereo audio input on a 3.5mm mini stereo connector. When selected, the analog video is converted to HDMI and the audio is embedded greatly simplifying connections and operations downstream. Both of the 2x1 switcher models feature 4-way control via simple front panel push buttons, screw terminal contact closures with LED feed-back, RS- 232 serial control, and auto sense switching technology. In auto sense mode, the switcher will switch when the current video source being displayed is turned off either via keyboard function buttons or from signal loss. These options help in making these a perfect solution for any system.

FEATURES

DV-HSW-21A:
• 2x1 HDMI Switcher Supporting up to 4K x 2K @ 30 Hz
• HDMI 1.4 and HDCP Compliant
• Embedded Audio Support

DV-MFSW-21A:
• 2x1 Switcher with 1 HDMI and 1 VGA (HD-15) Input and HDMI Output
• HDMI Supports Resolutions up to 4K x 2K @ 30Hz
• VGA (HD-15) Supports Resolutions up to 1920 x 1200 @ 60Hz
• Analog Video converted to HDMI with Audio Embedded

BOTH MODELS:
• HDMI 1.4 and HDCP Compliant
•Control Functions (Both Models)
• Auto sense Automatic Switching Technology

• Front Panel Push Button Local Control

• Contact Closure Control with +12 volt Lamp/LED output (@100 mA when active)

• Serial (RS-232) Remote Control

PACKAGE CONTENTS

- 1 x DV-MFSW-21A or DV-HSW-21A Switcher.

- 1 x 12VDC Power Supply

- 2 x Surface Mount Brackets

- 1 x 3.81mm Phoenix Connector (3 Pin)

- 1 x 3.81mm Phoenix Connector (5 Pin)

TYPICAL APPLICATION

DV-MFSW-21A model shown. DV-HSW-21A has two HDMI (no VGA) input
connectors and no audio input connector
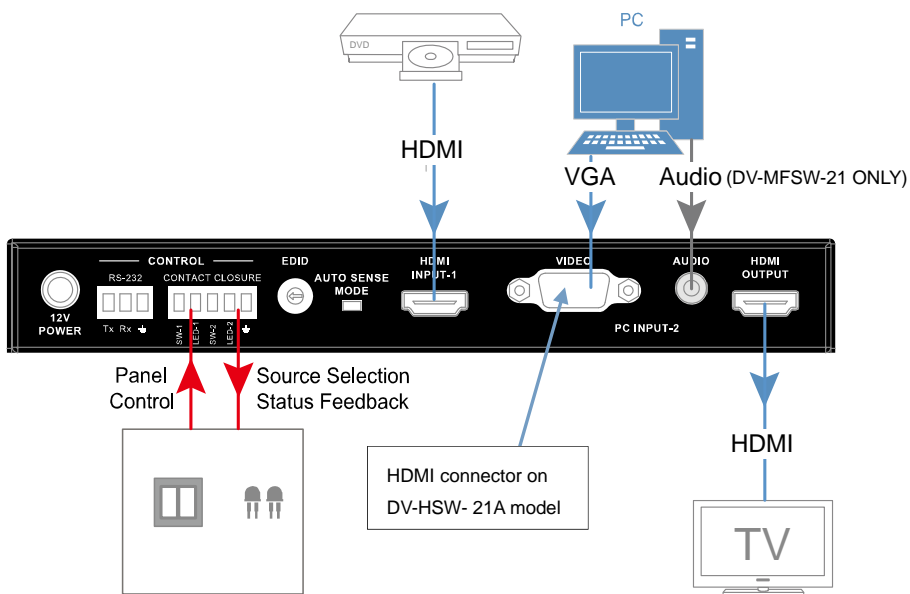
FRONT PANEL

DV-HSW4K-21A / DV-MFSW-21A
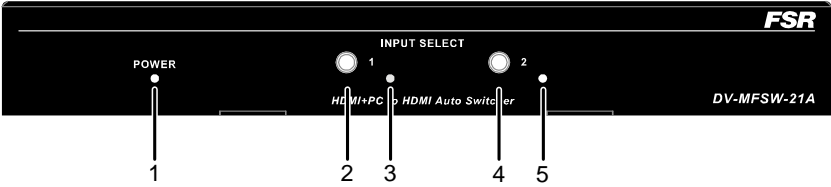
ID	Name	Description
1	Power LED	Lit when power is on
2	Select Button	Press to select HDMI IN as input source
3	Indicator	Lit when Source is selected
4	Select Button	Press to select VGA or HDMI on DV-HSW-21A as input source
5	Indicator	Lit when VGA is selected

REAR PANEL

DV-MFSW-21A model shown. DV-HSW-21A has two HDMI (no VGA) input connectors and no audio input connector

ID	Name	Description
1	Power	12VDC power input
2	RS232	RS232 control. For the API commands, please refer to DV-MFSW-21A or DV-HSW-21A RS-232 Serial Protocol
3	CONTACT CLOSURE	Connects to a control device such as keypad for switching between HDMI IN 1 and PC IN 2. Pin SW-1 and GND are used for selecting HDMI IN as the input source. If the input source is HDMI IN, the LED-1 indicator on the keypad will be on. Pin SW-2 and GND are used for selecting VGA as the input source. If the input source is VGA, the LED-2 indicator on the keypad will be on.

ID	Name	Description
4	EDID DIP Switch	Adjust EDID settings
5	Auto Sense Mode Switch	**Auto sense mode ON:** The auto switcher will select an active input or the first-come first-served if both inputs are active. The input select switch, the contact closure or the serial command can select the input type only if both inputs are active. **Auto sense mode OFF:** The input is manually selected by the input select switch, contact closure or serial command.
6	HDMI INPUT	Connects to an HDMI source (Two HDMI inputs on DV-HSW-21A model)
7	VGA + Audio INPUT (DV-MFSW-21A only)	Audio binding VGA channel, embedded in HDMI signal output
8	HDMI OUTPUT	Connects to an HDMI display

HARDWARE INSTALLATION

DV-MFSW-21A model shown. DV-HSW-21A has two HDMI (no VGA) input connectors and no audio input connector

1. Connect the HDMI or VGA input source (such as DVD Player, Apple TV, and STB) to the unit.
2. Connect the HDMI display device (such as HD-LCD) to the HDMI output port of the switcher.
3. Connect the power supply to the HDMI switcher and power on all the devices.
4. To operate the unit, use the front panel select button, remote or contact closure

Note: The contact closure can be used with control device such as a keypad.
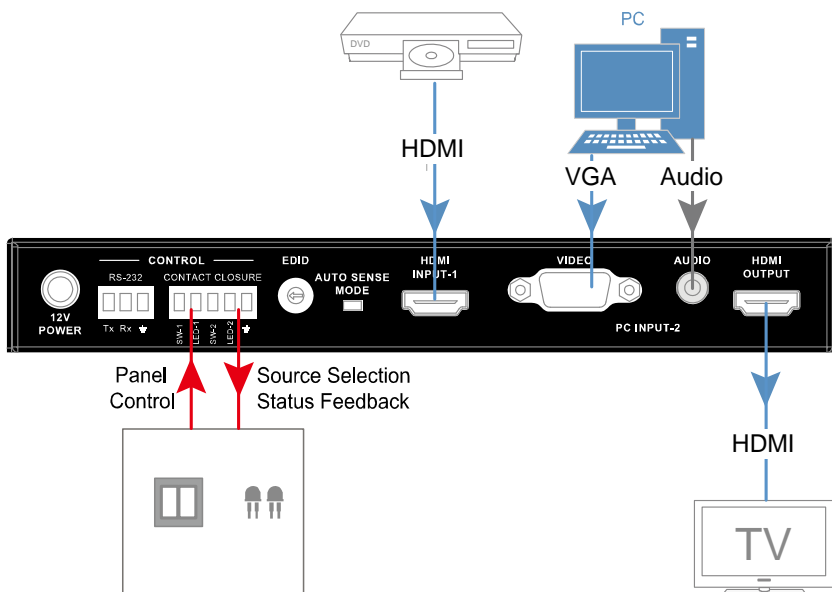
EDID MANAGEMENT

Note: The change doesn't take effect until you restart the Switcher.

DV-MFSW-21A EDID for VGA only, HDMI pass through.

Position	Functions
0	1280x800 60Hz
1	1920x1200 60Hz
2	1920x1080 60Hz (default)
3	1280x720 60Hz
4	1024x768 60Hz
5	800x600 60Hz
6	Reserved
7	Reserved

DV-HSW-21A EDID for both inputs.

Position	Functions
0	Automatically copy HDMI display's EDID to all HDMI Inputs, if failed, the EDID of all HDMI inputs won't change.
1	4K2K 30Hz 2CH (default)
2	1280 x 800 60Hz 2CH
3	1920 x 1080 60Hz 2CH
4	1920 x 1200 60Hz 2CH
5	1280 x 720 60Hz 2CH
6	1024 x768 60Hz 2CH
7	800x600 60Hz 2CH

RS-232 OPERATION

The switchers may be configured or queried via the RS232 serial connection.

Baud Rate: 38,400bps
Data bits: 8
Stop bits:1
Parity: None
Flow control: None

Computer (DTE)		DV-HSW-21A / DV-MFSW-21A
Pin 2 Rx	←	Tx
Pin 3 Tx	→	Rx
Pin 5 Ground	—	Ground

RS-232 SERIAL PROTOCOL

The DV-MFSW-21A and the DV-HSW-21A switcher may be configured or queried via the RS-232 serial connection.

Request/Response Format

All requests and responses will be entirely in ASCII. The requests can be in either upper or lower case.

All requests will have three character command field followed by the data required for that specific request. All requests are terminated with a carriage return (0Dh), which will be referred to in this document as *<cr>.* All responses are terminated with a carriage return *<cr>* and a line feed (0Ah) which will be referred as *<lf>*.

Field Separators

Fields are separated by *white* space, that is any number of spaces or tabs as long

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as the entire command is less than 80 characters. A *<cr>* terminates the command. Below is an example describing a command.

CON	*num*	*<cr>*

So the actual message would look like this:

CON 2*<cr>*

Command Request Syntax:

This document uses the following notation when describing the syntax of a command request:

BOLD – identifies the command

lower case – identifies data to be entered which is described in the text following the syntax description

" "   - entry defined within double quotes is to be entered exactly as shown

< >   - entry defined within these brackets is required

[ ]   - entry defined within these brackets is optional

{ }   - entry defined within curly brackets must be entered at least once

| - a vertical bar denotes a logical choice of entry

*   - an asterisk following either [ ] brackets or curly brackets { } above denotes that data within either brackets or curly brackets may be entered multiple times.

Acknowledging Receipt of Commands

Each request sent to the switcher will have by default two possible responses, an acknowledgement of a correct request or an error response. The acknowledge response will be:

Ok*<cr><lf>*

Error Response

It is inevitable that errors occur in the requests sent to the switcher. If an invalid *command* is sent to the switcher, the switcher will respond with the message "**ERR: unknown command**". If an invalid parameter is sent to the switcher, the switcher will respond with the message "**ERR:**" followed by the valid syntax for the errored entry.

Example:

A connect request with an incorrect input number:

CON 3*<cr>*

The error response would be:

ERR: CON 3<cr>

REQUEST LIST QUICK REFERENCE

REQUEST	DESCRIPTION
CON	Connection Request
DIS	Disconnect Request
HDCP	High Definition Contention Protection Status Request
MOD	Model Request
REC	Reconnect Request
STA	Status Request
VER	Request Version Number

Connection Request

The connection request is used to connect one of the two available inputs to the output.

A connection may be disconnected by using the **DIS** command (see later in document).

CON	*input* | "?"	*<cr>*

Syntax: CON <input | "?"><cr>

Where:

CON   Connection request header

input   Input number in the range 1-2

"?"   Request to return the currently selected input (the front panel LEDs reflect the currently selected input).

(Note: A CON *input* command will override the disconnected output, ie via the DIS command. See below for description of DIS command.)

Examples:

To connect input 2 to output, the connection request would look like this:

CON 2*<cr>*

To request the currently connected input, the connection request would look like this:

CON ?<cr>

The response from the switcher would be:

CON 2<cr><lf>

If a previously connected input were subsequently disconnected via the DIS command, then the CON ? command will return the currently selected input.

Disconnect Request

The disconnect request is used to disconnect (disable) the output of the switcher.

DIS	*<cr>*

Syntax: DIS<cr>

Where:

DIS   Disconnect request header

Example:

To disconnect (disable) the output of the switcher, the user would send the following message:

DIS*<cr>*

HDCP Request

The High-bandwidth Digital Content Protection status request allows identification of the presence of HDCP on the input(s). The format for the HDCP request is as follows:

HDCP	*<cr>*

Syntax: HDCP<cr>

Where:

HDCP   High Definition Content Protection request header

Response from DV-MFSW-21A: HDCP *x*
Response from DV-HSW-21A: HDCP *xx*

Where:

x is either 0 or 1, with 0 representing that HDCP is not present and 1 representing that HDCP is present.

Example:

To query the HDCP status of the unit the user would send the following message:

HDCP<*cr*>

The response for the DV-MFSW-21A switcher could be:

HDCP 1<cr><lf>

That is, HDCP is present on input 1.

The response for the DV-HSW-21A switcher could be:

HDCP 01<cr><lf>

That is, HDCP is not present on input 1 and HDCP is present on input 2.

Model Request

The MOD Model request allows identification of the model number of the switcher. The unit will return the current model identification, ie DV-MFSW-21A. The format for the model request is as follows:

MOD	<*cr*>

Syntax: MOD<cr>

Where:

MOD　　　　　Model request header

Example:

To query the model number of the unit the user would send the following message:

MOD<*cr*>

The response for the DV-MFSW-21A switcher would be:

MOD DV-MFSW-21A<cr><lf>

Reconnect Request

The REC request allows the user to reconnect the disconnected output to the currently selected input. Note that the input to be reconnected is as indicated by the input LED on the front panel. The command has no effect if an input is already connected to the output.

REC	<cr>

Syntax: REC<cr>

Where:

REC   Reconnect request header

Example:

To reconnect the previously connected input 2 to output, the user would send the following message:

REC<cr>

Status Request

The STA request returns the presence of signal on the respective inputs, 1 = signal present, 0 = no signal present.

STA	<cr>

Syntax: STA<cr>

Where:

STA   Status request header

Example:

To query for the presence of signal on inputs 1 and 2, the user would send the following message:

STA<cr>

If signal were present on input 1 but not on input 2, the response from the switcher

would be:

STA 10\<cr>\<lf>

If signal were not present on input 1 and present on input 2, the response from the switcher would be:

STA 01\<cr>\<lf>

Version Request

In order to be able to identify the current firmware version populated in the unit, the user may request using the VER request. The format for the request will be as follows:

VER	*\<cr>*

Syntax: VER\<cr>

Where:

VER   Version Request header

Response form DV-MFSW-21A: VER DV-MFSW-21A \<XX.xx>

Response form DV-HSW-21A: VER DV-HSW-21A \<XX.xx>

Where:

XX.xx   XX = Major version number, xx = Minor version number

Example:

VER\<cr>

To which the DV-MFSW-21A switcher will respond:

VER DV-MFSW-21A 01.09\<cr>

SPECIFICATIONS

DV-HSW-21A / DV-MFSW-21A	
Video Input	2 x HDMI Type A 19-pin, female(DV-HSW-21) 1 VGA and 1 HDMI (DV-MFSW-21 only)
Audio Input	3.5mm Stereo (DV-MFSW-21 only)
Video Output	1 x HDMI Type A 19-pin, female
RS-232	3 Pin Pluggable Screw Terminal
Contact Closure	5 Pin Pluggable Screw Terminal
AC Power	External 12VDC Power Supply with Locking Connector Operational
Power Input	110-240 VAC
Power Consumption	12VDC 0.25A
Dimensions	7 1/2" (190.2mm) W x 3 1/4" (82.7mm) D x 1" (26.2mm) H
Weight	Weight 1 lbs (0.45 kg)
Supported Formats	HDMI: 3840x2160 @30Hz (4K x 2K @30Hz) VGA: 1920 x 1200 @ 60Hz

LIMITED WARRANTY

The DV-HSW-21A / DV-MFSW-21A Switchers are warranted against failures due to defective parts or faulty workmanship for a period of three years after delivery to the original owner. During this period, FSR will make any necessary repairs or replace the Unit without charge for parts or labor. Shipping charges to the factory or repair station must be prepaid by the owner, return-shipping charges (via UPS Ground) will be paid by FSR.

This warranty applies only to the original owner and is not transferable. In addition, it does not apply to repairs done by other than the FSR factory or Authorized Repair Stations.

This warranty shall be cancelable by FSR at its sole discretion if the Unit has been subjected to physical abuse or has been modified in any way without written authorization from FSR. FSR's liability under this warranty is limited to repair or replacement of the defective unit.

FSR will not be responsible for incidental or consequential damages resulting from the use or misuse of its products. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Warranty claims should be accompanied by a copy of the original purchase invoice showing the purchase date (if a Warranty Registration Card was mailed in at the time of purchase, this is not necessary). Before returning any equipment for repair, please read the important information on service below.

SERVICE

Before returning any equipment for repair, please be sure that it is adequately packed and cushioned against damage in shipment, and that it is insured. We suggest that you save the original packaging and use it to ship the product for servicing. Also, please enclose a note giving your name, address, phone number and a description of the problem.

NOTE: all equipment being returned for repair must have a Return authorization (RMA) Number. To get a RMA Number, please call the FSR Service Department (1-800-332-FSR1).
Please display your RMA Number prominently on the front of all packages.

CONTACT INFORMATION:

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