FROSTBOX
Labs

Macro Stream SD User guide

Software version 1.1

Introduction

The Frostbox Labs Macro Stream SD unleashes the power of the DiGiCo (TM) SD console macro system by providing a plethora of LCD screen buttons tightly integrated to your mixing console. The system consists of off-the-shelf hardware from the Raspberry Foundation and Elgato together with software that you can buy from the Frostbox Labs website labs.frostbox.net/products/macro-stream-sd/ . It is small, portable and configurable without the need of other devices. The macros are program in the DiGiCo macro editor the way you are used to. Thanks to a great initial adoption by the DiGiCo community here comes an improved version 1.1.

This user guide describes the installation and use of the product with software version 1.1

Changelog for Macro Stream SD version history

Version 1.1 released September 2019

The second release provides faster performances for even quicker GUI response-times and booting procedures. Furthermore it adds another page of macros. And if 2 times 14 macros ain't cutting it this version now supports the Elgato Stream Deck XL giving you 2 times 31 tactile macro keys. To bump up the speed even further the new Raspberry Pi 4b is also supported along the Raspberry Pi 3b+. The same software package auto detects if you have a normal or XL Stream Deck connected and is independent of whether you run the system of a Raspberry Pi 3b+ or Pi 4b.

Version 1.0 released July 2019

The first release of Macro Stream SD supporting all DiGiCo SD consoles. A complete system consists of a Raspberry Pi 3b+ and an Elgato Stream Deck (the original 15 key version). Provides direct tactile access to 14 macros.

What hardware you'll need

- Raspberry Pi 4 Model B single board computer. 1GB ram version is plentiful for our application. Raspberry Pi 3 Model B+ is also supported but is a tiny bit behind in performance for our application.
- Elgato Stream Deck (15 buttons = 28 macros) or Elgato Stream Deck XL (32 buttons = 62 macros)
- Power supply. The original Raspberry types are the most reliable power sources. The Pi 4B needs a USB C connection. The Pi 3b+ needs a micro USB connection.
- Normal Cat5 network cable.
- Micro SD card min. 8GB (Type A1 and UHS1/UHS3 for best performance)
- Micro SD card reader to your laptop for flashing the software onto the SD card
- A Raspberry Pi case. For the Raspberry Pi 4B I suggest the high end FLIRC case that have a built in thermal solution and good looks.

Installation of the software onto the SD card

1. Download the file MacroStreamSDv1_1.img.zip from the link in the email you received when buying the software.

2. Unzip it.

3. Download and open the free software Etcher https://www.balena.io/etcher/

4. Click on "Select Image" and choose the image file MacroStreamSDv1_1.img

5. Insert your micro SD card (this will be wiped out ie. all data on it will be destroyed!) in your card reader on your computer.

6. Then click on "Flash" and the installation process onto the micro SD card will begin. Wait for it to flash and validates the card (approx. 5 min). On windows there might be a security pop up you need to accept.

7. Eject the micro SD card from your computer (Etcher might already have ejected it from the system) and put it in the Raspberry Pi in the orientation that lets you read part of the SD card label text when inserted.

Connections and power up

Connect in any order you like:

- Connect network cable from Raspberry Pi to DiGiCo "Network" (Not the Waves RJ45 port) directly using a normal network cable (crossed network cable not needed). Or through a switch or router etc. Normal tcp/ip networking rules apply. Yes it should be fine on the same network as all you Waves control, Wireless Workbench, etc.
- Connect Stream Deck to Raspberry Pi using any one of the four available USB connectors.

- Connect the power supply to the Raspberry Pi and then to your power outlet.

The Raspberry Pi will autoboot and an icon on the lower right corner of the Stream Deck will appear. This is the Status/Page key. It shows the status of the connection and which page you are on.

NO ETH shows that there is no ethernet link ie. the ethernet cable is not plugged in at both ends to running ethernet devices.

NO CON shows that there is no communication between the Macro Stream SD and the console most likely because they are not configured correctly.

The green text will show the type of console the Macro Stream SD is communicating with if the configuration and network connection is good. But here the correct license pin isn't entered yet.

Normal operation showing the configuration page

Normal operation showing the macro page A

Normal operation showing the macro page B

If the Macro Stream SD is configured together with the console it will auto connect and be ready to use. If you haven't configured it yet, continue reading below.

The first two times you boot it up the boot up procedure will be slow at around 2 minutes before it's ready to use. This has to do with some housekeeping on the new SD card. Normally it will boot up and be ready within 30 seconds.
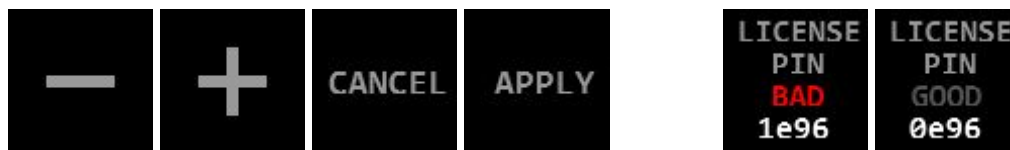
Basic use

The Macro Stream SD using the normal Stream Deck has 15 keys and using the Stream Deck XL 32. The Status/Page key in the lower right corner is used for switching between the two pages macro pages A & B and if you keep it pressed for 2 second you get to the CONFIG page. Each macro page has 14 macros for the normal Stream Deck and 31 macros for the Stream Deck XL. When the system is configured you simply go to the macro page A or B. Here the macros will automatically show up after they have been programmed in the DiGiCo macro editor. Tap any macros to change its state and if you have programmed both the on and off states in the macro editor the LCD button will change to reflect its state. Just like the normal macros on your DiGiCo console.

Configure license pin

Shortly after you bought this software you should have received an email with links to download the software, this document and a License pin specific for your stream deck. This is an encrypted key based on the serial number of your specific stream deck. To activate your Macro Stream SD hold down the Macro/Config-page key in the lower right corner to go to the Config page.

Then tap the LICENSE PIN key. Now use the plus and minus key to match the 4 hex numbers from your email pushing the LICENSE PIN key to get to the next hex character and press the APPLY key when finished. After a few seconds the red BAD sign in the LICENSE KEY should be changed to a gray GOOD sign. The GOOD sign will show only after you hit APPLY. You will only need to do this once for each Macro Stream you own. If you do not tap in a good license the Macro Stream won't let you go to the macro page after 60 seconds.

Establishing connection directly (no router used)

The DiGiCo and the Macro Stream SD needs to have a cable ethernet connection. This can be direct or via a switch or router. Normal IP network strategies apply. If you are not familiar with IP stuff I would suggest using the simplest setup which will be detailed below.

Configure network settings on the DiGiCo

The Status/Page key on the Macro Stream SD should show NO CON meaning no console communication is happening because we haven't configured the Macro Stream SD and the console yet. The picture below shows the settings for this example.

On your DiGiCo SD console and select Setup > External control.

Choose "add device" > "DiGiCo Pad"

Fill in the following fields:

Name: Any name for example "Macro Stream SD" - not important for communication.
IP Address: IP address of your Macro Stream SD which is not configured yet. Chose an IP address close to the one in the lower middle of the External Control window named "Local:" on your console but make sure the last number is different. Ie. if your consoles IP is 192.168.1.101 you could enter in 192.168.1.157.
Send Port: Can be set to many different ports but start by using 9000.
Receive Port: Can be set to many different ports but start by using 8000.

Now click the Enabled check mark.

The first time you add a device you will also need to load a command set. In the bottom of the screen after "commands allowed:" select load and then select either of the command sets which have your console type in the command set name.

Finally click the top button "Enable External Control" to turn it to "YES".

Be aware that you cannot change the settings in the external control window on your DiGiCO when the external control devices is enabled. You need to disable its check mark or the master external control enable in the top part of the window. Now you will be able to change the external control device settings.

Configure network settings on the Macro Stream SD

Now we need to configure the Macro Stream SD.

Hold down the Status/Page key to get to the Config page.

The "Get IP using DHCP" should be set to NO. If this isn't the case tap it and when it lights green use the plus or minus key to adjust it to NO.

GET IP USING DHCP NO

Tap on the "Local IP" to set the IP address of the Macro Stream SD to the number we used earlier ei. 192.168.1.7. Each number separated by a dot of the IP address will light green and then use the plus and minus keys to set that value and tap on the "Local IP" again to enter in the next value and so on.

LOCAL IP 192.168. 001.157

The "Local Subnet" should be 255.255.255.0. Set it using the same method as above.

LOCAL SUBNET 255.255. 255.000

The "Local Send Port" should be the same number as the console receive port. Set it using the same method as above.

LOCAL SEND PORT 8000

The "Local Receive Port" should be the same number as the console send port. Set it using the same method as above.

LOCAL RECEIVE PORT 9000

The "Console IP" should be the console IP address which you can find in the lower middle of the External Control window on your console. Set it using the same method as above.

CONSOLE IP 192.168. 001.101

Finally hit Apply. The Macro Stream SD will reboot and be ready to use with the console in 35 seconds (time depends a bit on your speed of SD card).

A/B MACRO 2s>CONF SD8

Using a router

If you want and are a bit experienced in IP network configuration you can use a router to have multiple network devices connected like mirrored laptops, iPads, waves computers for control etc.

DiGiCo consoles comes with a factory set static IP and either a 255.255.0.0 or 255.255.255.0 subnet. I suggest you do not change this but rather change your other network devices like routers to be in the same subnet and a close by IP. If you would like to change this you need to:
1. Boot to windows
2. Disable ReadyOn
3. Change the IP in windows
4. Enable ReadyOn
5. Reboot the console

For details on doing this refer to DiGiCo Technical Note ref 199:
http://www.dv2-audio.com/digico/download/privateDL/TN/ReadyOne%20systeme/TN199_SDxx_DisableEnable%20Ready%20On.pdf

Below is an example of a setup with a router keeping the original IP of the console:

If your console ip is for example 192.168.7.5

Router: Own IP to 192.168.7.1 and subnet 255.255.255.0. Enabled its dhcp server to push out ip in range 192.168.7.100 to 192.168.7. 200. Make a wifi SSID and password and make sure the wifi devices can connect to your ethernet device and that there is no firewall in between which for both would normally be the default setting.

Macro Stream SD: Enabled dhcp with "Yes" and tap apply and it will reboot which is necessary every time you need it to renew its dhcp lease. Then it will get IP from the router in the 192.168.7.100-200 range. Now follow the guide in the early section for configuring to make the Macro Stream SD and console connect.

IPad: Connect to the routers wifi and set "Configuring IP" to auto which it already should be by default. Then it will get IP from the router in the 192.168.7.100-200 range. See section later on switching between using the Macro Stream SD and iPad.

Switching between iPad and Macro Stream SD
The DiGiCo SD range can only have one "DiGiCo PAD" protocol device enabled at any time.

For easy switching between the original DiGiCo SC/SC2 iPad app and the Macro Stream SD simply add another device in the external control window on your console and give it a new set of ports for example 8001 and 9001 and the iPads IP address. Then configure your DiGiCo iPad app vice verse. Then in the external control window on your console just tap the check mark to switch between which type of remote is active. Be aware that the DiGiCo iPad app is very slow (up to 40 seconds) to warn you that it is no more in control of the console. And if you then hit the OK sign on your iPad it feels like you are in control again but in reality you're not.

The DiGiCo macro editor

On your DiGiCo go to the macro editor by tapping Setup > Macros. Tap new macro. Name it and select the command type and then the specific command. Then tap OSC and select between 1 to 28 for the normal Stream Deck or 1 to 62 for the Stream Deck XL and the ON or OFF selector to assign your macros to the keys of the Macro Stream SD.

In the macro name box name your macro as you like. Each line on the Macro Stream SD keys can contain 6 characters. Separate with a "," comma for a new line. To assign a background colour use a "/" slash followed by a letter corresponding to the colour table below. The maximum length including the slash and commas is 31 characters. The Macro Stream SD keys will only be able to display 3 lines of 6 characters.

The background colours is set using the following designators:

Name	Designator	Name	Designator
Black	/	Light blue	/l
Gray steel	/s	Purple	/p
Cayenne brown	/c	Red	/r
Green	/g	Magenta	/m
Green dark	/d	Orange	/o
Turquoise	/t	White w/ black text	/w
Dark Blue	/b		

Refer to the DiGiCo manual on how to use the DiGiCo macro editor and its commands in detail.

Shutting down

To shut down the Macro Stream SD hold the SHUTDOWN button on the CONFIG page for 2 seconds. It will shut down in approx. 15 seconds. To turn it on again disconnect and reconnect the power supply.

Since the Macro Stream runs on a LINUX RTOS (Real Time Operating System) there is a risc of corrupting the SD card if you simply disconnect the power to the device without using the SHUTDOWN key. If your SD card gets corrupted simply reflash the SD card and tap in your license pin again and IP configuration again. It will only happen very rarely since this software doesn't write that often to the SD card. A redundancy solution to this issue is to keep another SD card handy already loaded with the Macro Stream SD software on it. If you need to change to this SD card you just swap it out and after boot make your settings again in the config page and hit apply. Then wait for it to reboot and you should be all set again.

If you double tap the shut down key the device will reboot.

The device will not send out any macro changes to your connected console during boot or reboot to make sure it doesn't interfere with your show.

It always remembers all settings that have been made prior to tapping the apply key.

FAQ & troubleshooting

Can I test the Macro Stream SD with the DiGiCo offline editors? Yes. Be aware that the windows firewall can conflict so make sure the ethernet connection you are using to your computer is marked as a Home/private and not public network.

Can I use Macro Stream SD and DiGiCo iPad app at the same time? No. The DiGiCo SD range can only have one DiGiCo Pad protocol device enabled at any time. But please see section "Switching between iPad and Macro Stream SD" earlier in this manual.

Can I buy the Macro Stream SD as a one box turn key solution instead of doing the SD card software flashing myself? Yes please contact sales@frostbox.net

Can I use other computers than the Raspberry Pi 4b or Raspberry Pi 3b+? No. These are the only two supported computers.

When disconnecting the ethernet cable the Status/Page button says NO ETH. When I connect it again it says NO CON when it connected just fine before? There is a delay of about 15 seconds from you connect the cable again until it gets the new network ports ready to go in the software. After the 15 seconds the Status/Page button should show the green text with console type again.

I can't connect to my console?!
Check if the Status/Page key says:

NO ETH: You do not have a good ethernet cable connection to the switch/router or the console you are connected to or the device isn't properly booted up.
NO CON: Make sure all settings are correct both in the DiGICo External Control window and on your Macro Stream SD.

If it still does not work try rebooting all devices in the ethernet link ie. the Macro Stream SD by double tapping the shutdown key, the DIGiCO and any switch or router connected in your network.

If it still does not work connect the Macro Stream SD directly to the DiGiCo and test this configuration.

My Macro Stream only shows the elgato "G" logo and doesn't show the Macro Stream SD software even after waiting for a few minutes? Make sure the SD card is seated all the way in and flipped the correct way around and try to reboot again. Try to disconnect and reconnect the Stream Deck and reconnect power to check if it boots correctly now. If it still doesn't boot then try to flash the software onto the SD card again and put it in the Macro Stream and connect to power to check if it boots now.

If you still have any issues please do not hesitate to contact us on support@frostbox.net We will normally answer within a day.

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We have tested this product to the best of our abilities and designed it to keep latency in network messages and user interfaces at a minimum. We have no knowledge of bugs but we cannot guarantee that crashes or delays in network traffic or user interface will not occur.

Be aware that this product talks to DiGiCo consoles and Elgato Stream Deck with the most current firmware/software installed to this date. Future updates to either may break compatibility totally.

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npm	The Artistic License 2.0
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Node-HID	MIT License
network-config	MIT License
sharp	Apache License 2.0
pureimage	MIT License
stream-buffers	Unlicense
forever-monitor	MIT License

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Thanks for reading all the way to the end of this document!

Please send feedback, pictures and/or questions to support@frostbox.net

Have a great show all!

Regards,

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