

PiDeck Release 1.10.1.post20200504175005

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PiDeck is a low cost, easy to use HDMI Video playback device. You can install the software on any Raspberry Pi from the Pi-Zero and up and control from Blackmagic ATEM software, Companion by Bitfocus, or indeed anything which uses the HyperDeck protocol.

Currently we only support official Raspberry Pi hardware. There are a number of clone devices out there, however until we have managed to get our hands on them we can not guarantee they operate correctly so we've chosen not to support them as this time.

CHAPTER ONE

GETTING STARTED

Download the PiDeck software and extract the ZIP file. Inside you will find two files.

- PiDeck.img
- wpa_supplicant.conf

1.1 Writing the image

You need to write the PiDeck.img file to a micro SD card. There are many ways to do this, however the simplest way is to use the RaspberryPI imaging software https://www.raspberrypi.com/software/. Download and install if necessary. Start the software.



Select the "Operating System" button, scroll to "Use custom" and navigate to where you downloaded and extracted the PiDeck image file.

Install the SD card you wish to use the PiDeck software on. You should then be able to select it by clicking "Choose SD Card". Finally click on the "write" start the writing process.

1.2 Setting WIFI Details

While the SD card is being written you can prepare the "wpa_supplicant.conf". This file is used to configure the PiDeck to connect to your WiFi network.

```
country=uk
update_config=1
ctrl_interface=/var/run/wpa_supplicant
```

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```
network={
   ssid="WIFI NETWORK NAME"
   psk="WIFI PASSWORD"
}
```

Edit this file with any text editor such as "notepad" on windows. Change the "ssid" to match your WIFI network name and "psk" to match the WIFI password.

Once the image has been written you will need to remove and reinstall the SD card to have it mount on the desktop. A new drive will appear called "BOOT", copy the updated "wpa_supplicant.conf" to the "BOOT" drive and then eject the drive and remove it.

Install the SD card in your Raspberry Pi. Connect an HDMI cable to your Blackmagic ATEM or other device.

Note: You must attach an HDMI device and power it on before powering up the PiDeck, otherwise the pideck will not detect the HDMI display and not send videos to it.

You are now ready to power up the PiDeck. The first time the PiDeck boots it will expand the storage to make full use of the SD card. The first boot might take up to 2 minutes to complete depending on the size and which Raspberry pi you used. Subsequent boots should complete in under 1 minute.

Once the PiDeck has completed it's boot it will display on the HDMI display a splashscreen with it's IP address.

1.3 Splashscreen



If the PiDeck has successfully joined your WiFi network you will see the IP address it has been assigned.

1.4 Web Interface

Bring up a web browser and connect to the IP address of the PiDeck.



1.4.1 Settings

Click on the Cog in the top right will bring up the settings panel



From this panel you can see the device ID at the top of the page which will be used to identify this system to the licensing system.

You can select to turn on/off the display of the splashscreen on boot.

Note: If you turn off the splashscreen nothing will be displayed until a video is selected to play. You will either need to note the IP address to connect again or look it up via the DHCP server.

Licensing

When you first turn on the PiDeck it will not be licensed and as such when playing videos you will see "DEMO" text displayed on top of the videos. Once you pay for and license the PiDeck this message will be removed.

The PiDeck needs to contact the license server at regular intervals to verify the license status and if any new version of the PiDeck software is available.

If the PiDeck can't connect it will continue to function for up to 5 hours after which time it will revert back to demo mode.

To obtain a license create an account on our website and place an order for the number of licenses required. Once purchased you can enter your deviceIDs for each license.

Once you've associated the deviceID to a license on the website, you can select "Refresh" to have the PiDeck to check for a license. The PiDeck will also do this periodically and update accordingly.

1.4.2 Naming Your PiDeck

]~ < >	0	A A	192.168.40.151	1	+ 88				
PiDec	k - HDN	1l Vide	eo Playb	ack		•				
piDeck										
Version 1.1. Clips	3 New version	available	Choose File	eth0 - I no file selected	nttp://192.16	8.20.54				
Name	Duration	Start	Stop							

You can change the name of your PiDeck by clicking on the "PiDeck" title. Changing this title changes the title for the webpage and the hostname of the system, looking on DHCP or network logs should also show the change. As this is changing a DNS name you can only use Alpha numeric characters, spaces, dashes etc are not allowed.

1.4.3 Adding Videos

There are two ways to add video clips to the PiDeck.

- You can drag and drop to upload.
- Directly copy videos to the SD card.

Uploading Videos

To upload videos for playback, drag and drop the video on to the "Choose File" on the webpage. A progress bar will be displayed during the upload. Once completed the Clip will appear in the list.

Note: The upload speed is highly determined by the model of Raspberry Pi used.

Directly Copying to SDCard

The first time PiDeck boots it will create a new partition on the SDCard filling up all the remaining free space and call it "CLIPS". This is a FAT32 partition and there should be accessible on any other computer, Mac, Windows or Linux system.

Danger: Make sure the power is removed from the PiDeck before attempting to remove or install the SDCard.

The CLIPS Partition will show up as an additional partition for this SD card, likely next to the "BOOT" one which you might already be familiar with. Copy over any videos to this partition. You should note however that the FAT32 file system has a limit of 4Gb per file.

Once you have completed copying the videos to the SDCard be sure to eject both the BOOT and CLIPS partitions before removing the SDCard.

1.4.4 Managing Clips

The clip can be renamed by clicking on the name and updating it. The clip name should be less than 20 characters so it fits nicely in the GUIs.

Click on the number button on the left side to select the clip for playback.



The selected Clip details will be displayed at the top showing the clip details, including a thumbnail.

For each clip you can define the start and stop time in HH:MM:SS or in raw seconds as well as if the clip should loop. In the list of clips clicking on the field will enable it for change.

1.4.5 Play/Pause

Pressing the "Play" button will start the playback of the clip. The button will change to blue and the trip counters will start to update. The red trip counter counts back from the end of the clip, and the black one counts up from the start.

Pressing the "Play" button while playing a clip will pause the payback, leaving the frame on the HDMI output.

1.4.6 Stop

Pressing the red "Stop" button will stop the playback if it's playing or paused and return the clip to the start and blank the HDMI output.

1.4.7 Loop

You can request the clip to loop continuously until stopped by pressing the loop button which will turn orange if set.

1.4.8 Timecode

While the clip is not playing, click on the incrementing timecode (Top Black Timecode) and enter a time to jump to. The PiDeck will jump to just before the requested time and then play forward and pause at the requested timecode.



1.4.9 Deleting videos

To delete a video clip, you can select the red delete icon on the right side.

1.5 Connecting to Blackmagic

PiDeck can be connected to a Blackmagic ATEM mixing desk. It will be seen just the same as their "HyperDeck". Under the Blackmagic application select the settings panel

Settings									
General	Audio	Multi View	Labels	HyperDeck	Remote				
HyperDeck 1	⊐	0	IP Address: Input: Auto Roll:	192.168.40.164 Input 7: 7-piDeck01 ✓ Offset: 0 ♀ fram	Connect •				
HyperDeck 2	⊐	0	IP Address: Input: Auto Roll:	192.168.40.187 Input 8: 8-piDeck02 ✓ Offset: 0 € fram	Connect •				
HyperDeck 3		0	IP Address: Input: Auto Roll:	192.168.40.151 Input 3: 3-Pi400 ↔ ✓ Offset: 0 🗘 fram	Connect •				
HyperDeck 4			IP Address: Input: Auto Roll:	0.0.0.0 (none) Offset: 0 🗘 fram	Connect •				
				Cancel	Save				

Select the "HyperDeck" tab and enter the IP address of your PiDeck device. If you want the PiDeck to auto start playback when the input is transitioned to program, make sure to select "Auto Roll".

Under "Media Players" on the right side of the Blackmagic application you should now see your HyperDecks, with the clips you've uploaded ready to be used.



You can make use of the controls here as well to select, play, pause, stop and loop your clips. Changes made here are reflected in the web GUI and vise versa.

1.6 Connecting to Bitfocus Companion

PiDeck is emulating a Blackmagic HyperDeck Studio. This means when connecting the PiDeck to Companion you can select the Blackmagic HyperDeck module. Note not all the features of HyperDeck are supported, for example the PiDeck does not support recording.



To add your PiDeck to companion, simply give it a name, enter the IP address and select "HyperDeck Studio". Selecting "Polling" for the timecode variables. Once you apply the changes you should see the current variable status and in the log confirmation of the connection succeeding.



You can now add buttons as you normally would.

SETTING STATIC IP ADDRESS

A static IP address can be set on PiDeck for a specific network. Below is a sample copy of the "dhcpcd.conf" file, this file needs to be copied to the /boot partition of the SD card.

For each network you wish to set as static, you need the following entries.

For example

The default router is 192.168.2.1, the static IP address for the piDeck will be 192.168.2.44.

```
arping 192.168.2.1
profile 192.168.2.1
static ip_address=192.168.2.44/24
static routers=192.168.2.1
static domain_name_servers=192.168.2.1
```

Below is a complete dhcpcd.conf file, It's suggested to copy this file and modify for your static networks.

Listing 2.1: dhcpcd.conf

```
# A sample configuration for dhcpcd.
# See dhcpcd.conf(5) for details.
# Allow users of this group to interact with dhcpcd via the control socket.
#controlgroup wheel
# Inform the DHCP server of our hostname for DDNS.
hostname
# Use the hardware address of the interface for the Client ID.
clientid
# or
# Use the same DUID + IAID as set in DHCPv6 for DHCPv4 ClientID as per RFC4361.
# Some non-RFC compliant DHCP servers do not reply with this set.
# In this case, comment out duid and enable clientid above.
#duid
# Persist interface configuration when dhcpcd exits.
persistent
# Rapid commit support.
# Safe to enable by default because it requires the equivalent option set
# on the server to actually work.
option rapid_commit
# A list of options to request from the DHCP server.
```

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```
option domain_name_servers, domain_name, domain_search, host_name
option classless_static_routes
# Respect the network MTU. This is applied to DHCP routes.
option interface_mtu
# Most distributions have NTP support.
#option ntp_servers
# A ServerID is required by RFC2131.
require dhcp_server_identifier
# Generate SLAAC address using the Hardware Address of the interface
#slaac hwaddr
# OR generate Stable Private IPv6 Addresses based from the DUID
slaac private
# Example static IP configuration:
arping 192.168.40.1
arping 192.168.2.1
profile 192.168.2.1
static ip_address=192.168.2.44/24
static routers=192.168.2.1
static domain_name_servers=192.168.2.1
profile 192.168.40.1
static ip_address=192.168.40.188/24
static routers=192.168.40.1
static domain_name_servers=192.168.40.254
```

FAQ (FREQUENTLY ASKED QUESTIONS)

3.1 Can I have multiple PiDecks?

Yes indeed you can have as many as you like, however each will require it's own license.

3.2 Can I ssh to the PiDeck?

No, the PiDeck is not running SSH, there is no way to bring up a terminal session on the PiDeck

3.3 What TCP/UDP ports are open on the PiDeck?

There are only two ports open for communication on the PiDeck

- port 80 (http) used for the web interface
- port 9993 used for the Blackmagic ATEM connections.

3.4 Why are you using HTTP rather than HTTPS?

This device should not be visible on the public internet, and it's not possible to generate SSL certificates in a meaningful way on the fly they would end up being "Self Signed", which your computer would still object to. This is more complex than needed at this time. It is however something that can be considered in the future.

3.5 How can I see the logs on the PiDeck to help you with debugging?

You can go to the "/logs" URL on your pideck to see the logs associated with the PiDeck service, these will be most useful if you need to report an issue with the operation of your PiDeck

3.6 I've disabled the splashscreen and lost the IP of my PiDeck how do I connect?

You can look at your Router which should be keeping a log of the IP addresses it's allocated out. If you've named your PiDeck look for it's name in the list, otherwise it will report as "PiDeck". Failing that you can reinstall the PiDeck image on the SD card, however you will lose any clips you've uploaded.

3.7 Can I move the SD card from one Raspberry Pi to another one?

Yes, however the license will not follow and will be reset. You will need to purchase a new license for the new Pi.

3.8 Help my Old PiDeck pi has died, can I transfer the license to a new Pi?

Yes please contact us to arrange revoking the old license and allocating a new one.

CHAPTER FOUR

API

PiDeck has a simple API to allow control of the system via scripts or other third party devices.

Where the API returns any data it will always in in JSON format.

4.1 Clips

Return an array of clips currently on the PiDeck

Note: The first object in the array is always the splash screen, this can't be removed and is hidden on the GUI and HyperDeck interfaces.

curl 'http://<PiDeck.local>/clips'

- StartAt Time in seconds where the clip should start.
- EndAt Time in seconds where the clip should stop.
- Duration Total Duration of the clip.
- ClipName The nice display name of the clip.
- Filename Filename of the clip in the /CLIPS/ partition.
- Loop Boolean value defining if this clip loops.

Example results.

Ε

```
{
    "ClipName": "splashscreen",
    "Duration": ♥,
    "EndAt": 30,
    "Filename": "/var/www/images/splashscreen.svg",
    "Loop": true,
    "StartAt": 🔕
},
{
    "ClipName": "Count Down",
    "Duration": 30,
    "EndAt": 15,
    "Filename": "yt5s.com-Countdown Clock 30 Seconds.mp4",
    "Loop": true,
    "StartAt": 🔇
},
{
```

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```
"ClipName": "Install Walk Through",
        "Duration": 203,
        "EndAt": 203,
        "Filename": "Install Walk Through.m4v",
        "Loop": false,
        "StartAt": 78
    },
    {
        "ClipName": "countdown.mp4",
        "Duration": 30,
        "EndAt": 30,
        "Filename": "countdown.mp4",
        "Loop": true,
        "StartAt": 🔕
    }
]
```

4.2 Status

Return the current status of the PiDeck. This also returns an array of clips.

curl 'http://<PiDeck.local>/status'

- CLIPS see above for the details of the values in this array.
- CLIP_ID currently selected clip.
- DEVICEID Unique ID of this PiDeck which is used to license it.
- IFACES List of network interfaces on this PiDeck.
- LICENSED Boolean, is this device licensed.
- LVERSION Latest Version of PiDeck.
- VERSION Version of software running on this PiDeck.
- PARTFREE Size of freespace in the /CLIPS partition in bytes.
- PARTSIZE Total size of space in the CLIPS Partition in bytes.
- PIDECKNAME Hostname of PiDeck, defaults to "PiDeck".
- PLAY Current Play status.
- SHOWINFO Should show the splashscreen on boot.
- SPEED Playback speed.
- TIMECODE Current timecode of the player.

Example results.

```
{
    "CLIPS": [
        {
          "ClipName": "splashscreen",
          "Duration": 0,
          "EndAt": 30,
          "Filename": "/var/www/images/splashscreen.svg",
          "Loop": true,
```

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```
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```

```
"StartAt": 0
    },
    {
        "ClipName": "Count Down",
        "Duration": 30,
        "EndAt": 15,
        "Filename": "yt5s.com-Countdown Clock 30 Seconds.mp4",
        "Loop": true,
        "StartAt": 🔇
    },
    {
        "ClipName": "Install Walk Through",
        "Duration": 203,
        "EndAt": 203,
        "Filename": "Install Walk Through.m4v",
        "Loop": false,
        "StartAt": 78
    },
    {
        "ClipName": "countdown.mp4",
        "Duration": 30,
        "EndAt"<mark>: 30</mark>,
        "Filename": "countdown.mp4",
        "Loop": true,
        "StartAt": 🔇
    }
],
"CLIP_ID": 0,
"DEVICEID": "E4:5F:01:3B:B5:C7",
"IFACES": {
    "wlan0": "192.168.40.187"
},
"LICENSED": true,
"LVERSION": "1.1",
"PARTFREE": 10601975808,
"PARTSIZE": 15142027264,
"PIDECKNAME": "piDeck08",
"PLAY": false,
"SHOWINFO": true,
"SPEED": 100,
"TIMECODE": 10,
"VERSION": "1.1.1"
```

}

4.3 Select Clip

Select a clip to load ready for playback. The CLIP_ID is the index of the clip in the CLIPS array.

```
curl 'http://<PiDeck.local>/select_clip?id=<CLIP_ID>'
```

4.4 Update Clip

Update a clips details.

- CLIP_ID is the index of the clip to modify from the CLIPS array
- CLIP_NAME is the nice name for the clip
- START_AT number of seconds to start the clip
- END_AT number of seconds from the start at which to stop the clip
- LOOP boolean, value to define if the clip should loop

Note: All values must be present

curl_ __'http://<PiDeck.local>/update_clip?id=<CLIP_ID>&name=<CLIP_NAME>&startat=<START_AT>&endat=<END_AT>

If successful a status "200 ok" will be returned.

4.5 Goto timecode

For the currently selected clip, move to the specified timecode (in seconds).

curl 'http://<PiDeck.local>/goto_secs?secs=<Seconds>'

returns the same json response as status.

4.6 Show Info

Toggle if the boot splashscreen should be displayed on boot.

curl 'http://<PiDeck.local>/showinfo'

returns the same json response as status.

4.7 Play

Start playing a clip. If a clip is already playing then pause the clip.

```
curl 'http://<PiDeck.local>/play'
```

returns the same json response as status.

4.8 Stop

Stop the playback and return the clip to the start.

curl 'http://<PiDeck.local>/stop'

returns the same json response as status.

4.9 Upload

Upload a clip to the PiDeck.

curl --progress-bar -F 'videoFile=@<FILENAME>' 'http://<PiDeck.local>/upload'

4.10 Delete

Delete a clip from the PiDeck

curl 'http://<PiDeck.local>/delete?id=<CLIP_ID>'

returns the same json response as status.

4.11 Update hostname

Change the hostname of this PiDeck

curl 'http://<PiDeck.local>/update_host?hostname=<PIDECK_NAME>'

returns the same json response as status.