VIRTUAL BOY
HYPERFLASH32

Thank you for selecting a HyperFlash32 Flash Cartridge for your Ninntenndo® Virtual Boy™ system. Please read this instruction booklet thoroughly to ensure maximum enjoyment of your new flash cartridge.

⚠ H I G H L Y   R E C O M M E N D E D

Virtual Boy™ SHOULD PROBABLY NOT be used by children under the age of seven (7) years old for any extended period of time. Artificial stereo vision displays may not be safe for such children and may cause temporary or permanent damage to their vision. It's your child so you make the call.

Before using the Virtual Boy™, carefully read the Virtual Boy™ Instruction Booklet and the Consumer Information and Precautions Booklet. Before playing, make sure that you correctly adjust the hardware, including the IPD and focus. Do not play if you are feeling tired. Discontinue use immediately if you feel dizzy, nauseated or tired or if your eyes hurt or become strained. Do use unlicensed or counterfeit games, if so desired. Failure to follow all instructions could injure you and cause serious damage to your vision, or do nothing at all. No one really knows for sure. For copies of the Virtual Boy™ Instruction Booklet and Consumer Information and Precautions Booklet, search eBay. Virtual Boy™ is a 25 year old system.

On a more serious note, this product contains a 2.7" e-Ink 4-grayscale display. Care should be taken not to damage the exposed front display surface. Excessive downward pressure can crack the display. This display should also not be exposed to temperatures below 0 °C or above 50 °C. To extend the lifetime of the e-Ink display, update times between digital labels should be at least 180 seconds.

HYPERFLASH32 ™
VB
CONTENT CREATED BY
KMMN

Official
Mellott
Seal of Quality

THIS OFFICIAL SEAL IS YOUR ASSURANCE THAT MELLOTT HAS APPROVED THE QUALITY OF THIS PRODUCT.

A T T E N T I O N !

HyperFlash32 is for use at your own risk. While we take great care to make sure every precaution is taken in the design, we cannot be held responsible for any damage that may occur to your Virtual Boy™.

CONTENTS

HyperFlash32 by: KEVIN MELLOTT
Manual & Box design by: MUMPHY

INTRODUCTION

HyperFlash32 (HF32) is a flash cartridge designed for the Nintendo Virtual Boy™ (VB). It contains an e-Ink digital label, on-screen programming, capacitive touch buttons, 32Mbit of flash memory, 8k x 8 of nvSRAM, an SD card slot, a developer USB 2.0 micro-B port, and haptic feedback.

First and foremost, HF32 is a flash cart. It contains 32Mbit of flash memory to hold the largest VB games available. It also contains an 8k x 8 nvSRAM that doesn't require a battery to save game data, which means no more worrying about battery life in older cartridges.

Flash memory can be programmed using the cart directly or using USB. Each time a ROM file is changed, a backup of the current SRAM content will be saved to the SD card.

The e-Ink label is the defining feature of HF32 and what sets it apart from other flash carts to date. HF32 allows users to load their own unique label for each ROM file that is programmed. All that is needed is to name the label file the same name as the ROM file. The same is true for programming icons that will update in a status bar during programming. If ROM labels and icons are not provided then HF32 will use a
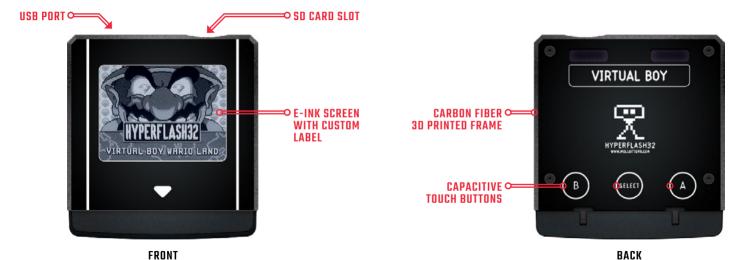
default set. Your ROM digital label will remain on the e-Ink display even after power is removed.

With an on board e-Ink display, HF32 adds rear panel capacitive touch buttons to provide on-screen controls. This allows HF32 to be programmed completely stand-alone without the need for a computer. All you need to do is provide power to the USB port. Files from the SD card will be displayed on the e-Ink display. They can be navigated and selected, and then programmed. When using the on-screen controls you will get haptic feedback of button touches.

HF32 is constructed of a chopped carbon fiber 3D printed frame, printed circuit boards, and a VB connector. The carbon fiber frame holds the HF32 printed circuit boards, which also act as the front and rear panels of the cartridge. This unique dense construction allows for increased space for the defining features of HF32.
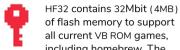
HyperFlash32 has been a joy to design and develop for the VB community. The goal of the project was to provide a flash cartridge that is functional, unique, and pushes the boundaries of what defines a flash cartridge.

USB PORT

SD CARD SLOT

E-INK SCREEN WITH CUSTOM LABEL

CARBON FIBER 3D PRINTED FRAME

CAPACITIVE TOUCH BUTTONS

VIRTUAL BOY

HYPERFLASH32
WWW.HELLOFISVR.COM

FRONT

BACK

MEMORY & SRAM

HF32 contains 32Mbit (4MB) of flash memory to support all current VB ROM games, including homebrew. The 32Mbit size was specifically chosen to support the full Hyper Fighting ROM and to be the first VB flash cartridge to do so. The 8k x 8 SRAM is an nvSRAM that will save game progress without the need for a battery. nvSRAM has an internal backup flash that is pro- grammed each time power is removed from the cartridge.

A copy of the current SRAM contents are downloaded to the SD card prior to a new ROM file being programmed. If an SRAM file exists previously, then it is loaded with the new ROM file.

SD CARD

The SD card contains all of the user provided digital content that HF32 needs. This includes digital labels, pro- gramming icons, and ROM files. The SD card will also contain SRAM data that is saved as new ROMs are loaded. Even the ROM file in flash can be downloaded to the SD card, if desired. Users should take care to make sure there is enough space for HF32 to save SRAM or ROM files. Any modern sized SD card can be used and is dependent on the amount of content you would like available. FAT32 formatting is required.

ICON

LABEL

RAM_READ

ROM

ROM_READ

LABELS & ICONS

HF32 will load a digital label based on a user defined file name. If the digital label filename matches the ROM filename, then that label will be loaded. A programming icon is also present when HF32 is programming the flash memory. Labels should have a **.label** extension, icons a **.icon** extension, ROM files a **.vb** extension, and SRAM files a **.sr** extension. Each file should be stored in the appropriate LABELS, ICONS, ROM and RAM folders, respectively.
An example file set is:

- o Hyper Fighting.**label** (Label file)
- o Hyper Fighting.**icon** (Icon file)
- o Hyper Fighting.**vb** (ROM file)
- o Hyper Fighting.**sr** (RAM file)

There are three capacitive touch buttons on the rear of the HyperFlash32 cartridge. These are the main inputs for the on-screen control. These buttons can detect short presses (<0.5 sec) and long presses (>1.5 sec). Long pressing both A & B will allow the cart to enter programming mode and will display the ROM file list on the SD card. In this mode, B allows the on-screen cursor to move down the list. A allows the on-screen cursor to move up the list. Long pressing A or B separately will cause it to page down or up to the next ten files on the card. Once the cursor is in place on the chosen ROM file, touching SELECT will select that file for programming. A programming screen will then be displayed with the associated ROM file icon graphic, and when programming is completed the digital label will be loaded. The cart is now ready to be unplugged from USB and inserted into your Virtual Boy™ to play the programmed game.

When a ROM label is displayed after completing the on-screen programming, a long press on the SELECT button will display a Special Thanks label. This screen display gives credit to those who went above and beyond to make HF32 a reality. To replace the Special Thanks label, the on-screen programming sequence has to be repeated.

NOTE: The capacitive touch buttons are constantly calibrating to ensure the best possible operation. They work best if you give them a short tap and physically touch the back of the cart. A haptic buzz will give you positive feedback that the input was detected. The e-Ink screen is a slow interface so rapidly touching the capacitive touch buttons will cause HF32 to appear to be non responsive. Slow your tapping rate and things will start to work properly. It requires some user training but it will become intuitive with some practice. This behavior is strictly tied to the update rates of the e-Ink display and currently unavoidable.

1


```
▶Teleroboxer
 Virtual Bowling
 Virtual Fishing
 Virtual League Baseball
 Virtual Lab
 V-Tetris
 VVE Snake
 Waterworld
 Hyper Fighting
 Virtual Boy Wario Land
```
(B)   (SELECT)   (A)

2


```
 Teleroboxer
 Virtual Bowling
 Virtual Fishing
 Virtual League Baseball
 Virtual Lab
 V-Tetris
 VVE Snake
 Waterworld
 Hyper Fighting
▶Virtual Boy Wario Land
```
(B)   (SELECT)   (A)

3

Programming ROM File
HYPERFLASH32

4

HYPERFLASH32
VIRTUAL BOY WARIO LAND

(B)   (SELECT)   (A)

1 Long pressing both A & B to enter programming mode.

2 Move up the list by pressing A. Down the list by pressing B.

3 Press SELECT to program the chosen ROM file. An icon based on the ROM file will update based on progress. When there is no associated ROM file icon, a default icon will be used.

4 After programming, a label will be displayed. A default label will be displayed when there is no associated ROM file label.

USB PORT

The USB port is used to power your HF32 cartridge, as well as allow a developer interface. A 5V power supply over a USB cable will need to be supplied to this port for the on-screen interface to be active. When the USB cable is disconnected, the last thing updated to the e-Ink screen will be retained. During normal use, the USB port is also outputting debug information on HF32 as it operates. In addition, USB also allows more advanced developer features of HF32 to be accessed. Developer features are not discussed here.

ACKNOWLEDGMENTS

This product would not have been possible without the dedication and support of many people. Many of these people are also displayed on the "Special Thanks" label built into the cartridge. First and foremost I'd like to acknowledge my family: Sarah, Esther, and Kyle, who often get the short end of the stick when Dad is busy in his office working on projects like HF32. Thank you and sorry.

There were also several PlanetVB members that really went above and beyond. Those members were:

Thunderstruck, Mumphy, and Christian "KR155E" Radke. You guys rock. The PlanetVB community would not be the same without you.

I'd also like to thank those who entered the HF32 e-Ink contest. There were so many amazing labels made. I'll specifically thank the contest winners: RMZK, The Red Menace, ghosto95, Morintari, VirtuousRage, VSNES, and tydyedsyko. I put the top three labels in this manual as a tribute to that work.

Last but not least, I'd like to thank everyone who signed up on the PlanetVB Discord and participated in the "mellotts-garage" sub channel. Your suggestions and inputs helped shape the product. I truly enjoyed interacting with you there.

Kevin L. Mellott
September 1, 2020