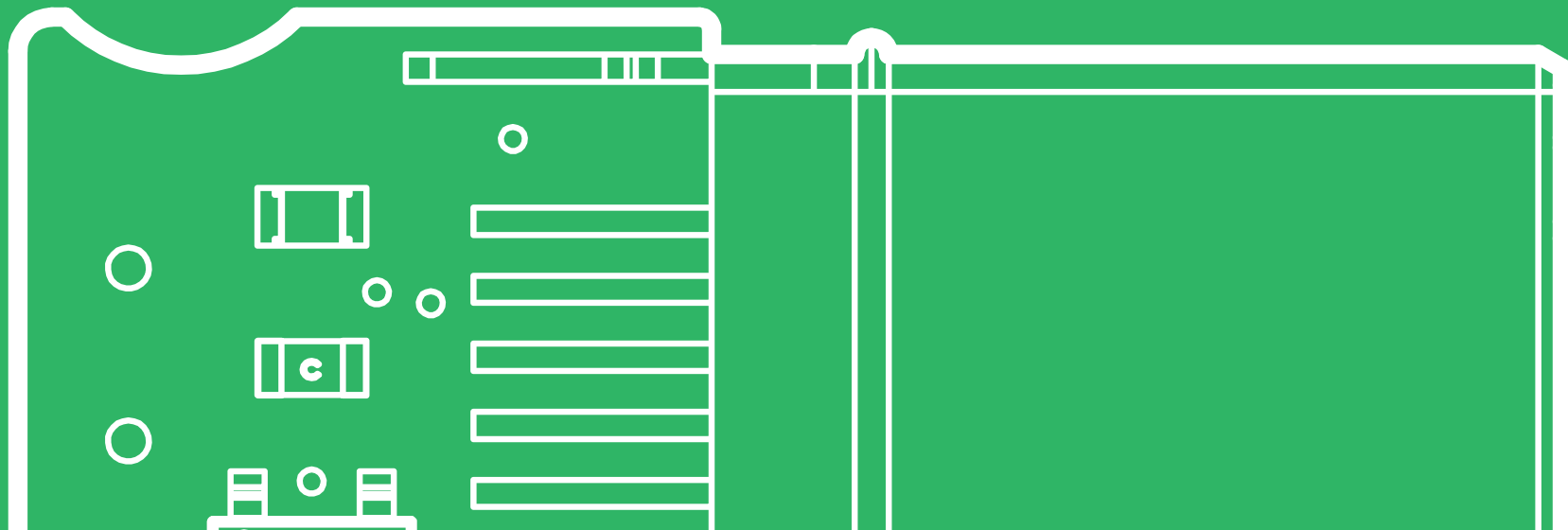




# Headless Ghost



# Headless Ghost

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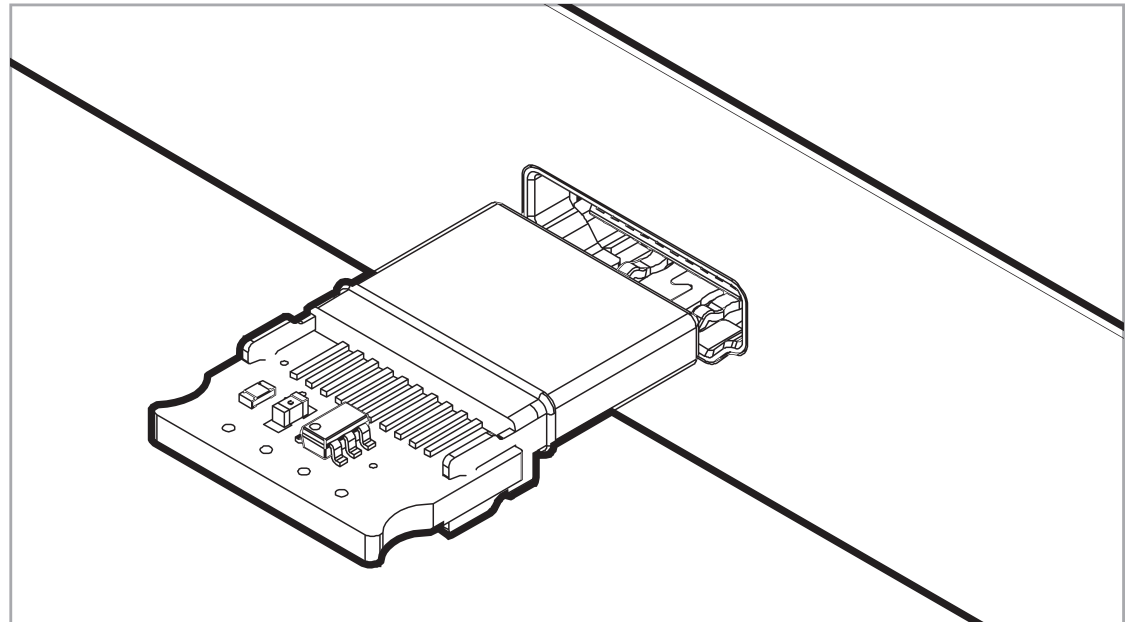
- Introduction
- Operating Instructions
- Removal & Storage Instructions
- Programming the Headless Ghost
- Producing & Fitting a Case
- Contact Information
- Acknowledgements

## User Manual INTRODUCTION

Headless Ghost is a display emulator (dummy plug) that fits discreetly in to the HDMI socket on your computer.

Once the Headless Ghost is attached, your operating system detects a connected display and enables the GPU. The GPU hardware is often disabled until a display is attached resulting in poor performance and a limited working resolution for remote users.

With the GPU enabled, it is possible to perform for various tasks including high resolution hardware accelerated remote desktop and GPGPU operations like crypto currency mining.



# Headless Ghost

## User Manual

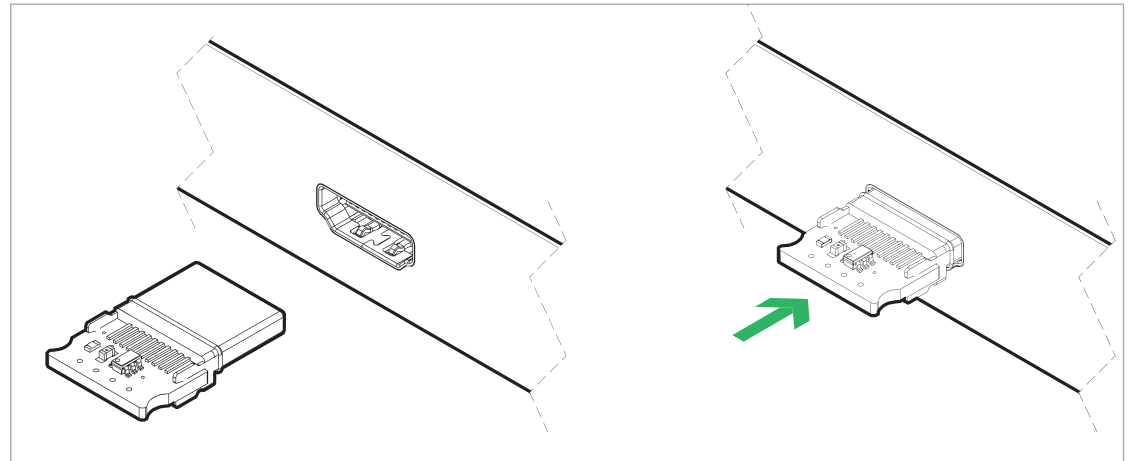
### OPERATING INSTRUCTIONS

1. Ensure the target system is powered off
2. Firmly insert the Headless Ghost module into an empty HDMI socket on the target system

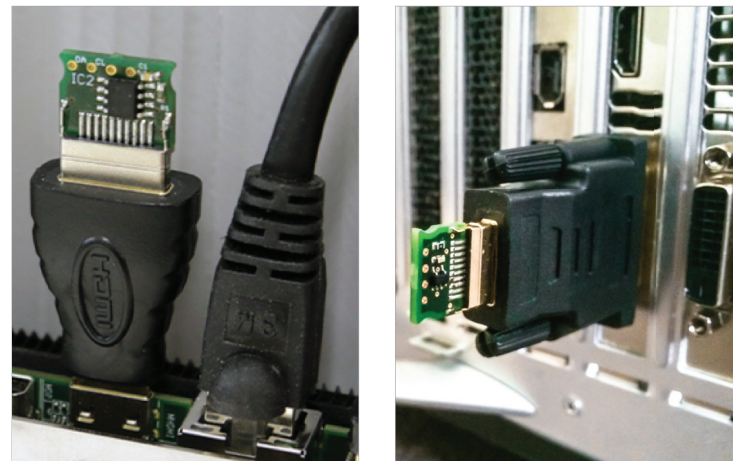
*It is possible to use the Headless Ghost with devices that don't have HDMI ports by using an adaptor. Headless Ghost works with mini-HDMI, DVI and most DisplayPort adapters.*

**If using an adapter, ensure the Headless Ghost is fully inserted before attaching the adapter to a suitable video out socket.**

3. Power up the target system, and check for the presence of the 'Headless Ghost' as a display in the operating system graphics options.



**STEP 1.**



**Mini HDMI and DVI adapters**

# Headless Ghost

## User Manual

### OPERATING INSTRUCTIONS

#### OSX

- Choose 'About This Mac' from the Apple Menu
- Click 'More Info...'
- Click 'Displays' on the menu of the new window which appears
- Headless Ghost should appear next to any other connected displays

#### Windows Vista, 7, 8

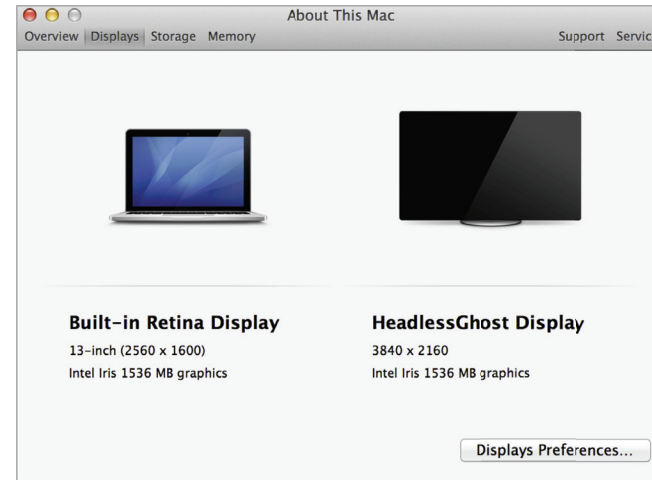
- Right click on an open area of the desktop
- Select 'Screen resolution' from the menu
- Headless Ghost should appear next to any other connected displays

#### Windows 2000, Me, XP

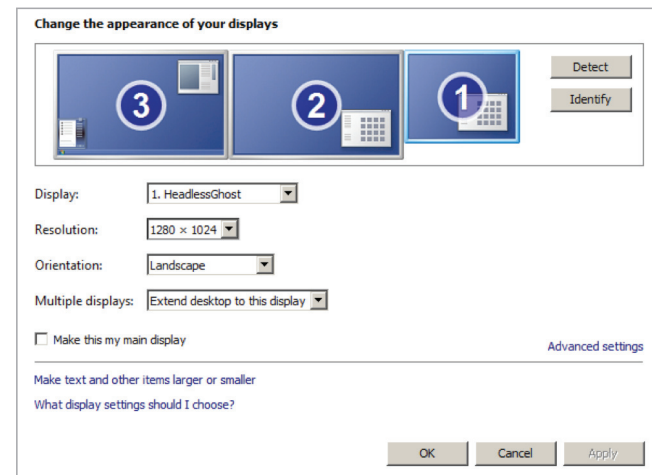
- Right click on an open area of the desktop
- Select 'Properties' from the menu
- In the Display Properties dialog box, click the Settings tab
- Headless Ghost should appear next to any other connected displays

Screenshots from Windows® 7 used with permission from Microsoft.

Screenshots from Mac OS X® are copyrighted to Apple Inc. and are used in a way that constitutes fair use in accordance with Title 17 U.S.C Section 107.



#### OSX



#### WINDOWS

# Headless Ghost

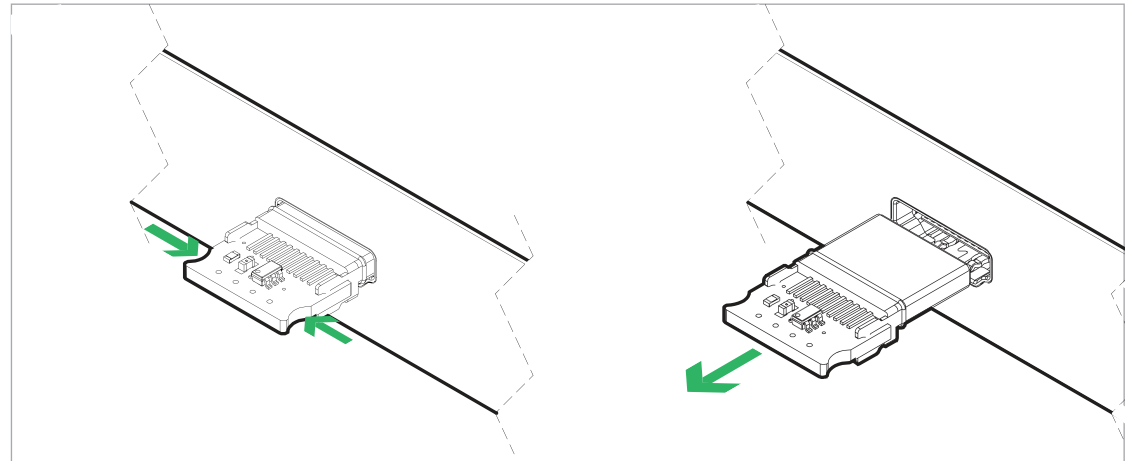
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## User Manual

### REMOVAL & STORAGE INSTRUCTIONS

1. Power down the target system
2. Pinch your thumb and forefinger into the indentations on the side of the module
3. Pull the module from the socket

Store the Headless Ghost Module in a dry place, away from sources of static electricity.



STEP 2.

STEP 3.

# Headless Ghost

## User Manual

### PROGRAMMING THE HEADLESS GHOST

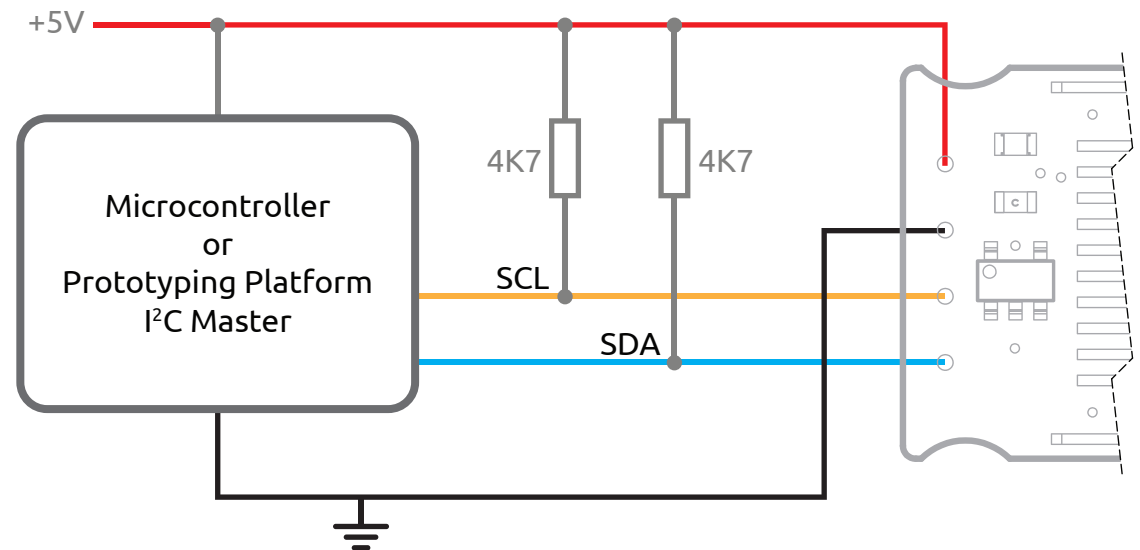
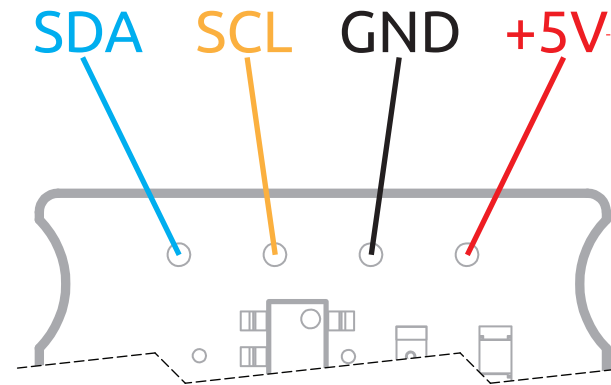
Headless Ghost modules are fitted with a Microchip [24AA02T-I/OT](#) or compatible I2C EEPROM memory chip. The EEPROM stores the EDID data which identifies the Headless Ghost as a display device to the operating system.

The clock (SCL), data (SDA), power and ground pins on the EEPROM device are connected to the HDMI connector on the module and to the four programming pads along the top of the module.

The programming pads are on a 0.1" pitch and will mate with most spring loaded [pogo pins](#). It is very easy to make a breadboard friendly programming adaptor using some [strip board and square pin headers](#).

There are no I<sup>2</sup>C pull up resistors on the Headless Ghost, so you must add them to the programming circuit to allow for proper communication between the I<sup>2</sup>C bus master and the EEPROM.

The EEPROM can be read from and written to by connecting these pins to a suitable microcontroller /development board (e.g. [Arduino](#), [STM Discover](#) or [Raspberry Pi](#)), or serial interface (e.g. [Bus pirate](#) or [mBed+RealTerm](#)).



# Headless Ghost

## User Manual

### PROGRAMMING THE HEADLESS GHOST

The EEPROM can also be read from and written to by connecting these pins to a suitable memory programmer e.g. MiniPro TL866 or SP200S.

Programming the EEPROM on a Headless Ghost using a dedicated memory programmer does not require the additional pull up resistors.

The Headless Ghost module can be connected to the programmer using flying leads or using a dedicated adapter board as per the design included in the [hardware pack](#) on the website. An 8-pin DIP socket provides a convenient body to solder flying leads to (Fig.1). Flying leads can be connected to the programming port using pogo pins or to the main connector by splicing them on to a HDMI socket (Fig.2).

The programming adapter is designed to work with programmers that have a 40 PIN ZIF socket where Pin 1 is in the top left hand corner of the device. Some programmers are 'bottom justified' and the programming adapter will require modification to work properly.

To use the programming adapter, insert it into the ZIF socket on the programmer and lock it into place. Push the Headless Ghost module into the HDMI socket (Fig.3). Program the EEPROM by selecting the 8-pin P, SN, ST or MS variants of the device from the programmer software.

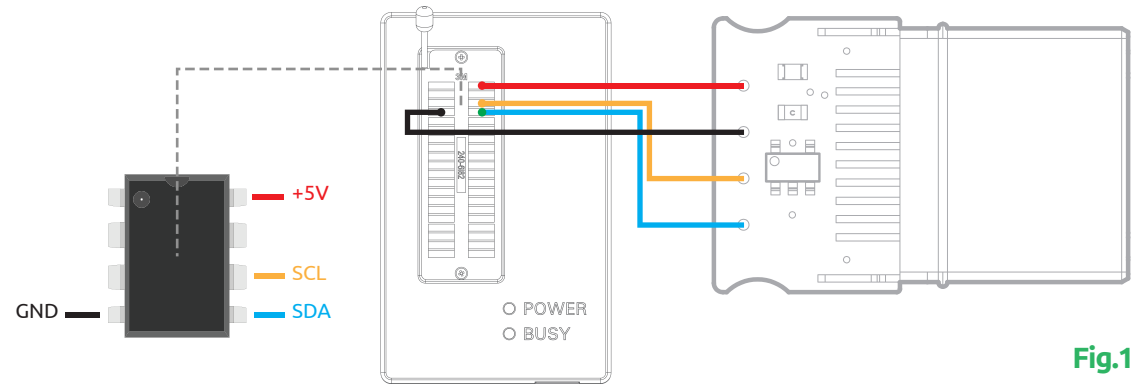


Fig.1

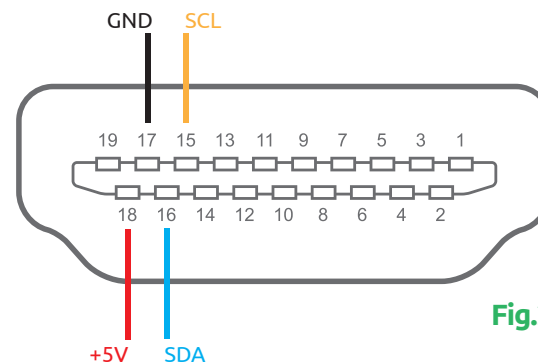


Fig.2

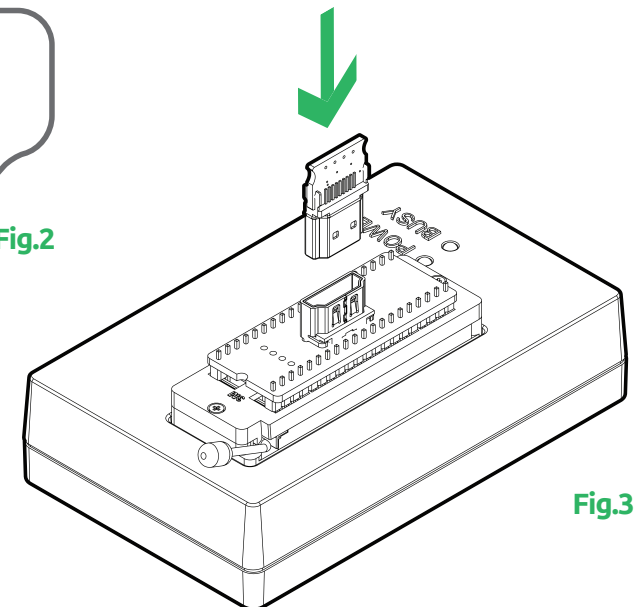


Fig.3

# Headless Ghost

## User Manual

### PRODUCING & FITTING A CASE

Headless Ghost modules can be optionally fitted into a case to help protect their circuitry and components (Fig.1).

The [case design files](#) are available from the Headless Ghost website and can be printed on most 3D printers. It is also possible to order a case from a 3D printing bureau such as [Sculpteo](#).

Different types of printer have different shrinkage factors so it may be necessary to slightly adjust the scale of the print or file some material away to ensure a close fit.

When producing the case on a printer that requires supports, ensure that they are fixed to the 'head' side of the case (Fig.2). Also ensure that no internal supports are generated as additional material inside the case cavity will cause the friction fit to fail.

The case is designed so the Headless Ghost module PCB friction fits directly into the body. The friction fit should be tight - it may be necessary to use a vice, press or clamp to squeeze the module into the case. Ensure that the jaws of the press are covered in a soft material to protect the connector and the top of the case (Fig.3).

If the fit is a little loose, a small amount of epoxy can be used to secure the module inside the case.

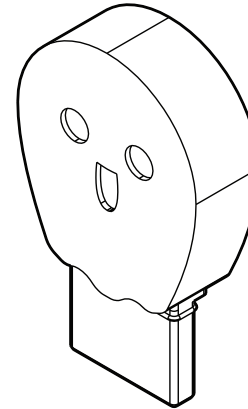


Fig.1

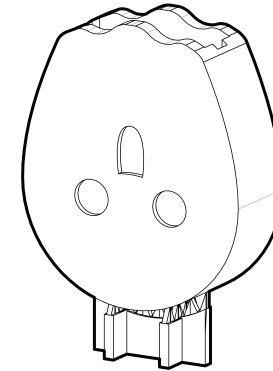


Fig.2

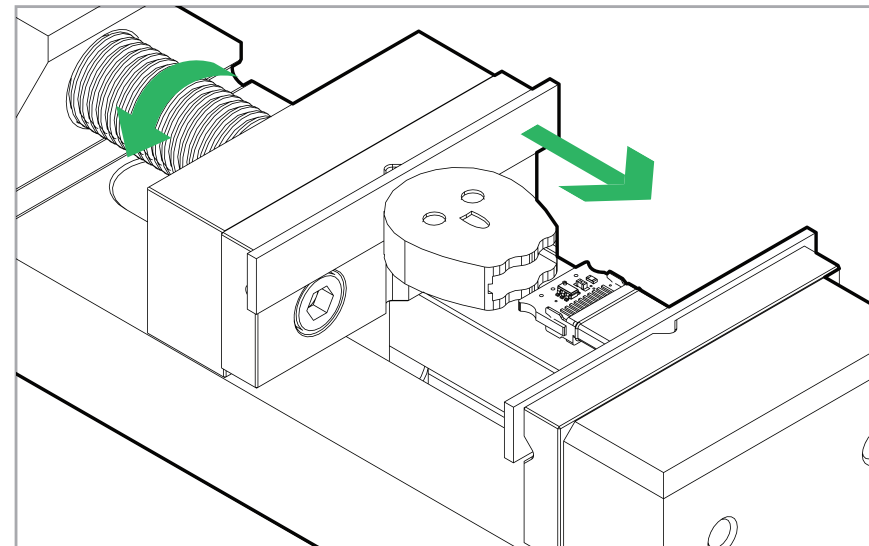


Fig.3



# Headless Ghost

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## User Manual

### PRODUCING & FITTING A CASE

When fitted correctly, the bottom of the case should line up with the top ridge on the HDMI connector. It is possible to verify the correct and complete insertion of the module within the case by checking to see if the programming pads on the module are aligned with the holes on the rear of the case (Fig. 4).

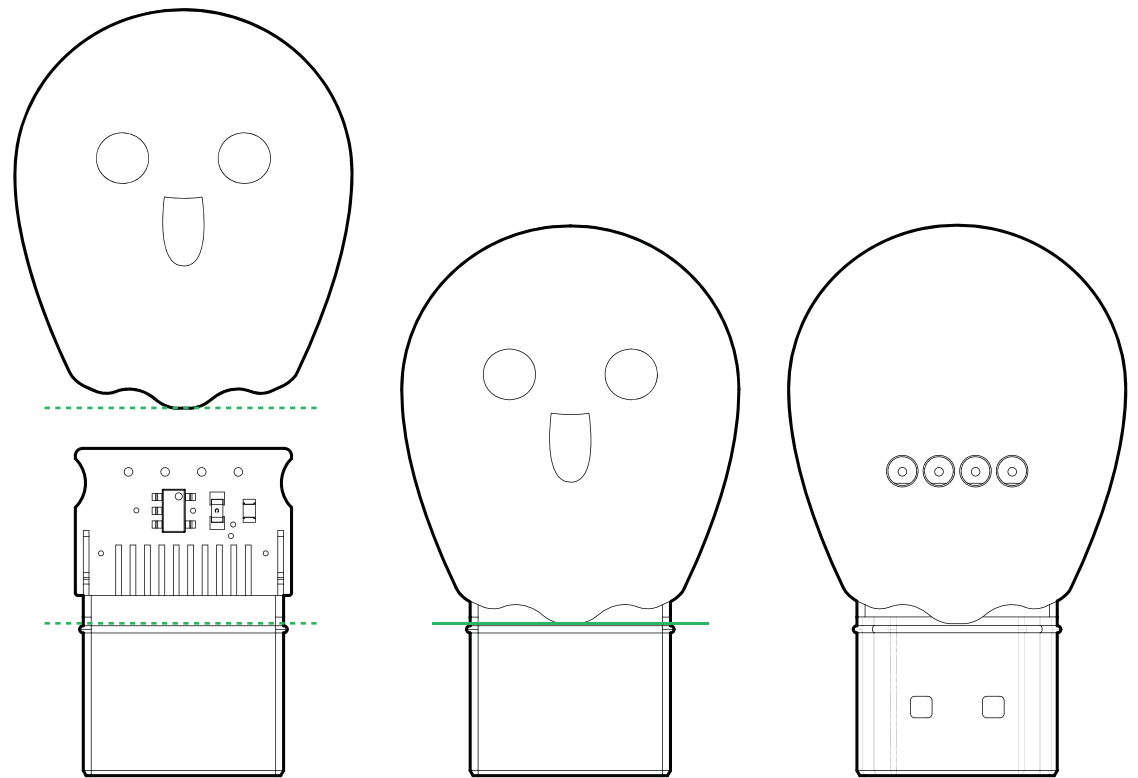


Fig.4

# Headless Ghost

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User Manual

COTNACT INFORMATION

[www.headlessghost.com](http://www.headlessghost.com)

[contact@headlessghost.com](mailto:contact@headlessghost.com)

[@headless\\_ghost](#)

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UNITED KINGDOM

# Headless Ghost

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## Special Thanks & Acknowledgements

### THANK YOU

**Headless Ghost launched as a campaign on [Kickstarter](#) in November 2014. The project would not have been possible without the hard work and support of Tom, Phil, Chris, Norah, Jen, Mike, Gareth, Ben, Aryan, Tom, Martin & Roland.**

**The campaign raised over 325% of the original funding target - many, many thanks to the project backers:**

PR Taylor, Mike Degen, Shaun Walker, lucyferror, Jari, TPKYU, Zoltan Jr, SK, Steven Kean, Yuzo YAMAMOTO, Deathson, Richard Thornton, Helios Interactive, David Popovici, Henrik Lindhe, James Read, Bruro, Mike H., Martin's Magical Beard, Kees Plattel, Lucas Vickers, Elly Jeurissen, Leo Richard Comerford, Lachlan Sleight, Dan Rimer, Deano Calver, Filip Spånberg, Wesley Grubbs, Anthony Steed, John Hande, Thomas McInnes, Lord-Simon, Andrea Wolf, Steve Brookes, Sam DeVore, Ash Morris, Neil Rowe (Coder's Guide), Collin Allen, Martin Lilja, Kenneth Jonsson, Swapper, Ravi K Patel, Ste Syker, Gavin D. M. Jeffries, \_L\_, Daniel M Karlsson, Fred Fenge, Luca S., Avi B, Lapyu Ho, Bryan Bortz, Frank Wales, Eric Wallmander, Lachlan Young, Alan Fan, Alex Rosenberg, Jesse Brown, Rusty Shackelford, James Churchill, Lindsay Marshall, Seric, David Penney, Bromley UK, Julia Mauritsson, Thierry BOYADJIAN, Brett L, Mike Dailly, Stuart Wood, Jamie Zigelbaum, Scott Havoc, Greg Albrecht, djc, Leath, Ayzak, Evan Cooney, <http://StudioWhale.com>, Roland Ellis, Nush Mattson Arblaster, Romeo Lakis, Dario Fontevivo, Simon C. J. Walker, Tangible, Sean Gilbert, Elementals IT Services OG, Michael McKelvaney, Daniel Craig, BrOOOOce, Adam Thomson, Daniel Sparrow, Jerry Goff, Jeremy Pluvillage, mr dicks dickass, Cameron Batt, DJ Orta, Adrien J. Clark, Aaron

G. Sauers, CLP, Sandy Bonin, Monk Funkster, Kurt J Klemm, Steve Proctor, The 'Chris Harris' from Myspace, Hendrik Bruinsma, Bill Rafferty, Daniel Kamzan, J Holbrook, Declan Forsyth, Harsh, Paul Nunes, James Tyler (herebejames), Patrick ROBBE, David Tyler, Josh Tatam, Harish Persad, WH Ho, PracticalWeb Ltd, ADAM WADEY!, Jan Willem Huidink, Shu Sam Chen, Bob Langley, Sam Allan, Premkumar Subramanian, Tomás TaoK González León, Bohs Hansen, R&K, Vladislav Ross, triplepizza, Chris Flint, pfh, Totalslaughter, Lokki, Colton Rappe, Graham Abrey (Australia), Christopher Tipstaff Moody, Nathan Battan, David Thirlwell, Philip Wong, Martin Porcas, Alessandro De Luca, Gary T. DuVall, Sami Poikonen, Anton Shmagin, Mik Canavan, Jim Lesko, Lestat182, Chris Kirby, Tom De Schutter, John Pallister, balticfinance, Thomas Staub, Brian J. Hogan Columbus Ohio USA, FuriousPig, Sean David Baker, Jared Michael, Jim Komola, Tristan Horn, Len Lewis, David Gerler, R Kappert, Tsuyoshi Nakajima, Ian Tabor, fmotta, Matt Hollander, Mr Gavin Robinson, Bertrand Langeac, Ray Hwang, Joel Lobo, Jordan Burch, Dennis, Luke Fletcher, Anthony Kirrane, Benoît Gilon, Simon Trigwell, Thaddeus J. Dziedzic, Pedro Hammondo, Tae Oh, Richard Sudoma, Saar Hay, Robot Loves Kitty, Dean Evans, Mahdi Hastie, BL Choo, Jonathon Mabey, David Örnberg, Efrem Martins, Philip Tong, Jeremy D. Miller, Gordon Conroy, Eduardo Patricio, Michael Todd, Adrian Wright, Luke Wilkinson, James Swailes, MoustacheMedia, Samuel W H Garner, Paul Glavin, Adrian R., Neil Munn, Neil Frazer, John Fritz, Simon Austin, Zerimar, Charlie, Axel, Elisiva Solofoni, Joris Berthelot (eexit), Alan Pennell-Smith, Mr. Willy Kiprotich Ng'etich, Gabriel Pacheco, Gannon Goo, sturmy, Vince Ryan, Torreti, Vianto.be, Gianluca Filippini, Pranil Parmar, Paul Sayang Starz, Batman, SDOS, Max B., Sanderuitkh, David Rabanus, Sámed Ibrahim Mejías, Rainer, Lilian Bosch, Torsten (Germany), Roy Scheeren, Brett Kuehner, Kurt Huwig, Sandor Zsuga (Jubatian), Phil Thomas, Adrian Onsen, Malky Winter, Morten Teinum, Level1Imp, Arthur B., Nick Balestrieri, Mark Brown, Vladimir Akopyan, BETABRAIN, Rich Kramp, David R. Foley, IT Steve, Laurian Gridinoc, jens alexander ewald – lea.io, JKay6969, GrahamR, MiniSoo, Steve LaPointe, Dee Abson, Heri Sim, Cellan Wilby, John Loon & Jessie Hu, DingDongCupcake, Olivier Schiavo, Ollie, Kevin Smith, James Adkins, Mr Brown, Will Brocklebank, Laurent Scallie, Klyph Poland, Danny Patterson, Julian S., Ben Stevens, guisKAS, Hans Carstens, XxTattooMattxX, Fabrizio D'Amico AKA vjhash, Alvin Fletcher, Ferdi, Nicki Grove, Terrence P, Grégoire Maffre, J. Centaur, Distel Timmers, John Watson Henderson, Bryce Lord, Zophar73, Michael Sokolski, Milkman Dan, Shaun Farmer, Paul Ping Christopher Kohler, Markus Schicker, Dominik Pich, The Midi Thief, MaX Falstein, Martin Steed, Steven Yau, Rafa? Zieli?ski, Terry of Wexford, Jack Henry James, MouseyJonny, Emile Crassee, Tim, Sudoxe, Jack Vaughn, Xyzy, Jacek Juskowiak, Henry Dowding, Brian A. Hartvigsen, Håvar Henriksen, Riccardo Cambiassi, Gunnar Högberg, Stephen Nevison, Eirik S. Mikkelsen, Tom Metcalfe, Adriaan Wormgoor, les hommes de l'ordinateur, Shaun Biddle, Robert Groenewald, CemB, Bryan W. Follis, Jeremy Emfinger, Matthew Blackmon, indigital, Jonathan Gillespie, Scott Doyle, Sven Herrmann, Jens Michlo, Brandon Zylstra, Stephen M Moraco, De Volder Rudy, Stephen Chiu, Dag Henrik B, Maciej Warchal, Matt Damon, Tim Olden, Spam, Alex Stewart and Fridolin Bach Fryheit.com