

# Cluster HAT / Cluster CTRL

## What are the differences in Cluster HAT versions?

### Cluster HAT v1.0



USB connector: On left (SMT)

Serial connector: TH

GPIO connector: Bottom entry + header

Power control: GPIO

Power connector: 2 pin header (0.1")

Solder jumpers top: W\_EN (Write protect EEPROM) / PWR (Power source USB or GPIO)

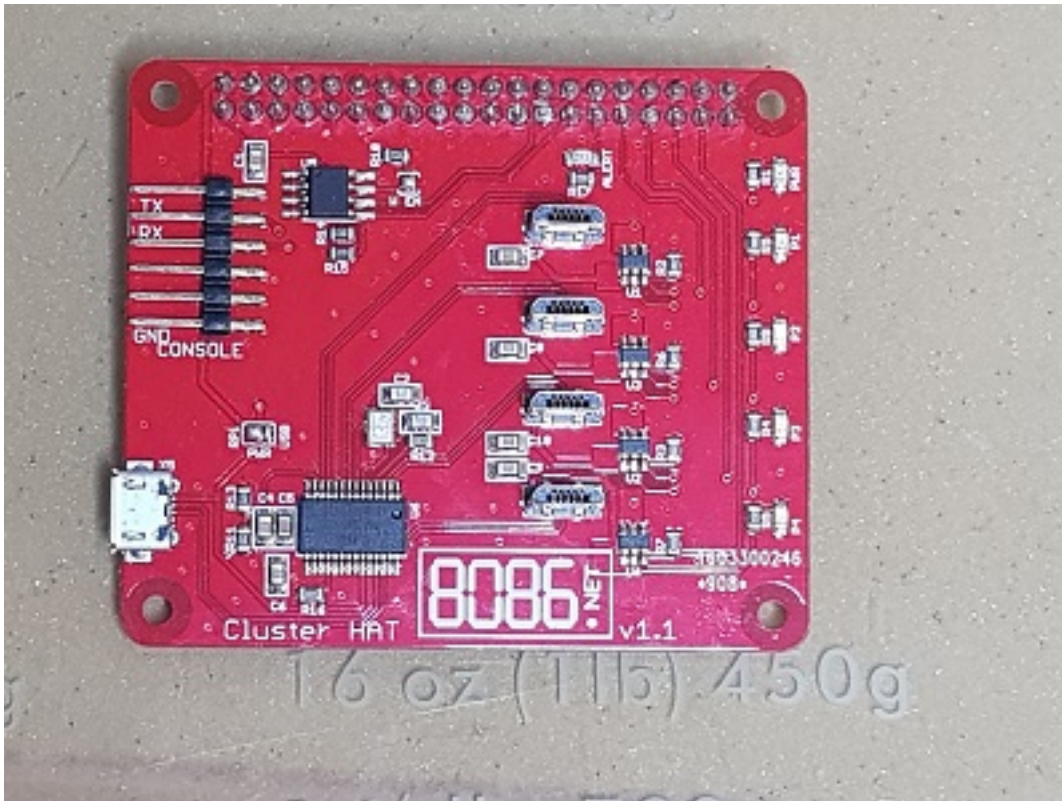
Solder jumpers bottom: None

USB Hub control: None

USB Hub: GL850G Single Transaction Translator (STT)

### Cluster HAT v1.1

# Cluster HAT / Cluster CTRL



USB connector: On left (SMT+TH)

Serial connector: SMT

GPIO connector: Header

Power control: GPIO

Power connector: None

Solder jumpers top: W\_EN (Write protect EEPROM) / PWR (Power source USB or GPIO)

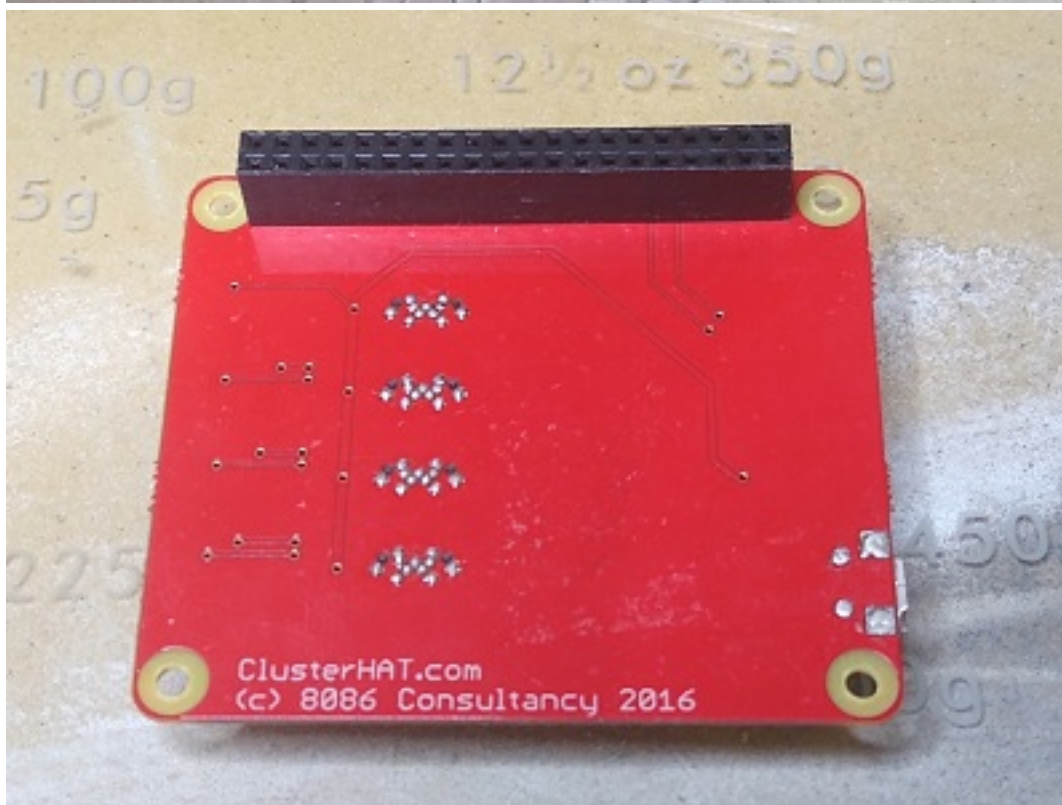
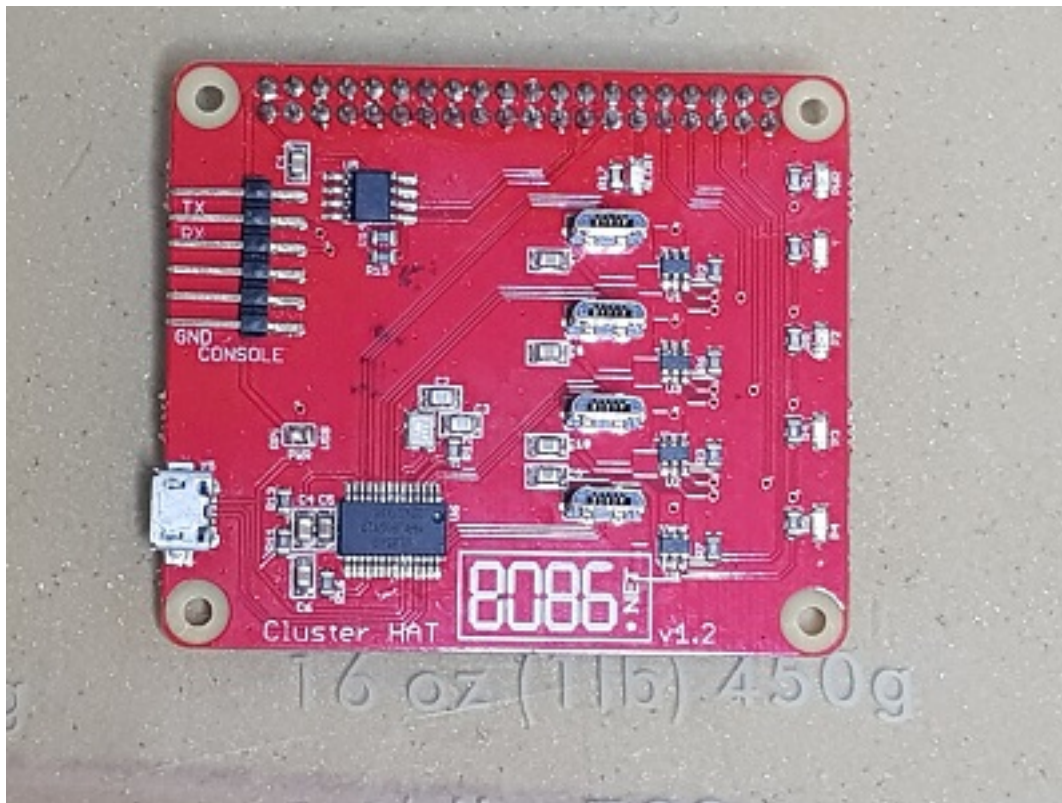
Solder jumpers bottom: None

USB Hub control: None

USB Hub: GL5501 Single Transaction Translator (STT)

## Cluster HAT v1.2

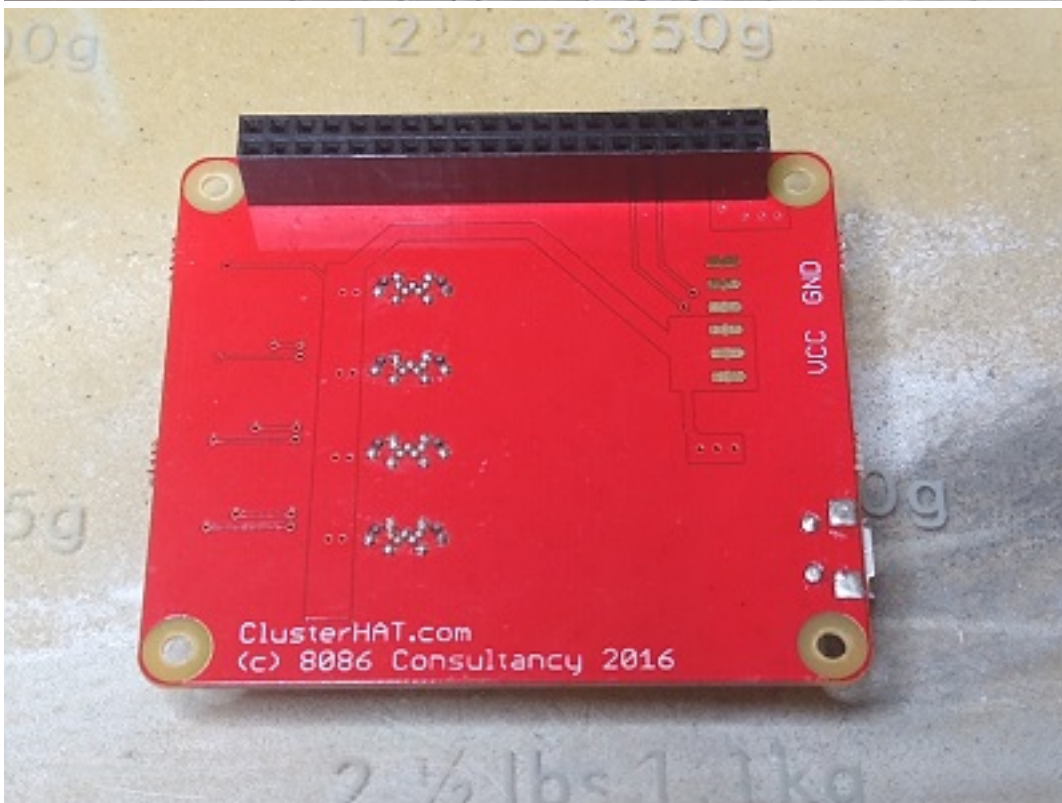
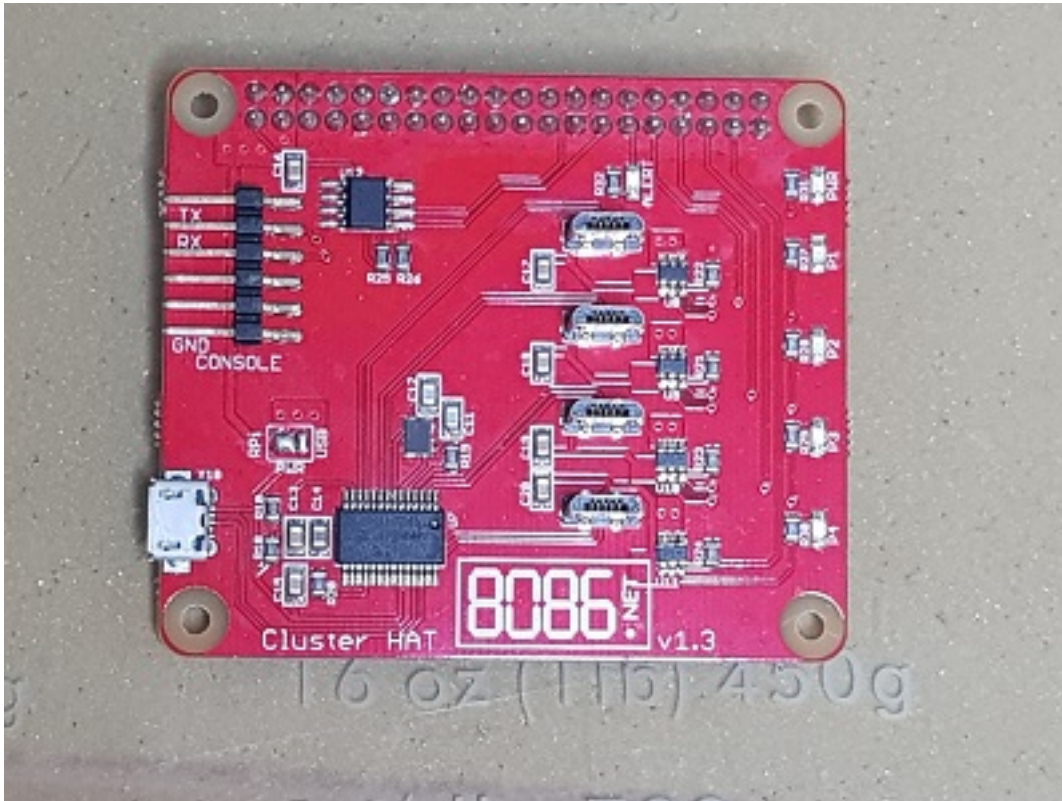
## Cluster HAT / Cluster CTRL



- USB connector: On left (SMT+TH)
- Serial connector: SMT
- GPIO connector: Header
- Power control: GPIO
- Power connector: None
- Solder jumpers top: PWR (Power source USB or GPIO)
- Solder jumpers bottom: None
- USB Hub control: None
- USB Hub: GL5501 Single Transaction Translator (STT)

# Cluster HAT / Cluster CTRL

## Cluster HAT v1.3



- USB connector: On left (SMT+TH)
- Serial connector: SMT
- GPIO connector: Header
- Power control: GPIO
- Power connector: SMT (underside)
- Solder jumpers top: Bigger PWR (Power source USB or GPIO)

# Cluster HAT / Cluster CTRL

Solder jumpers bottom: None

USB Hub control: None

USB Hub: GL850G Single Transaction Translator (STT)

## Cluster HAT v2.0



USB connector: Front (SMT+TH)

Serial connector: SMT

# Cluster HAT / Cluster CTRL

GPIO connector: Header

Power control: XRA1200P

Power connector: SMT (underside)

Solder jumpers top: Bigger PWR (Power source USB or GPIO)

Solder jumpers bottom: WP (EEPROM Write protect - bridge to prevent writes) / POS (Power on state - cut to auto power on)

USB Hub control: Power

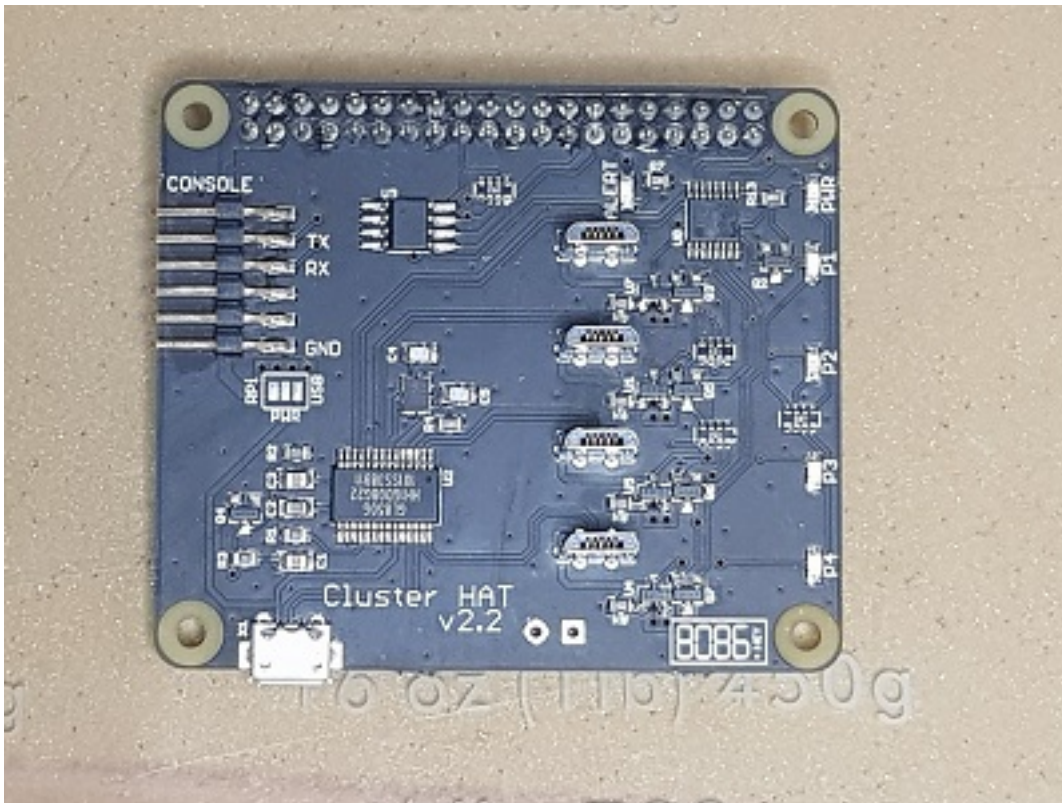
USB Hub: GL850G Single Transaction Translator (STT)

Pi4 Controller Reboot: Rebooting Pi4 controller will reset I2C expander powering off Pi Zeros (use [3v3 Sustain](#) to fix)

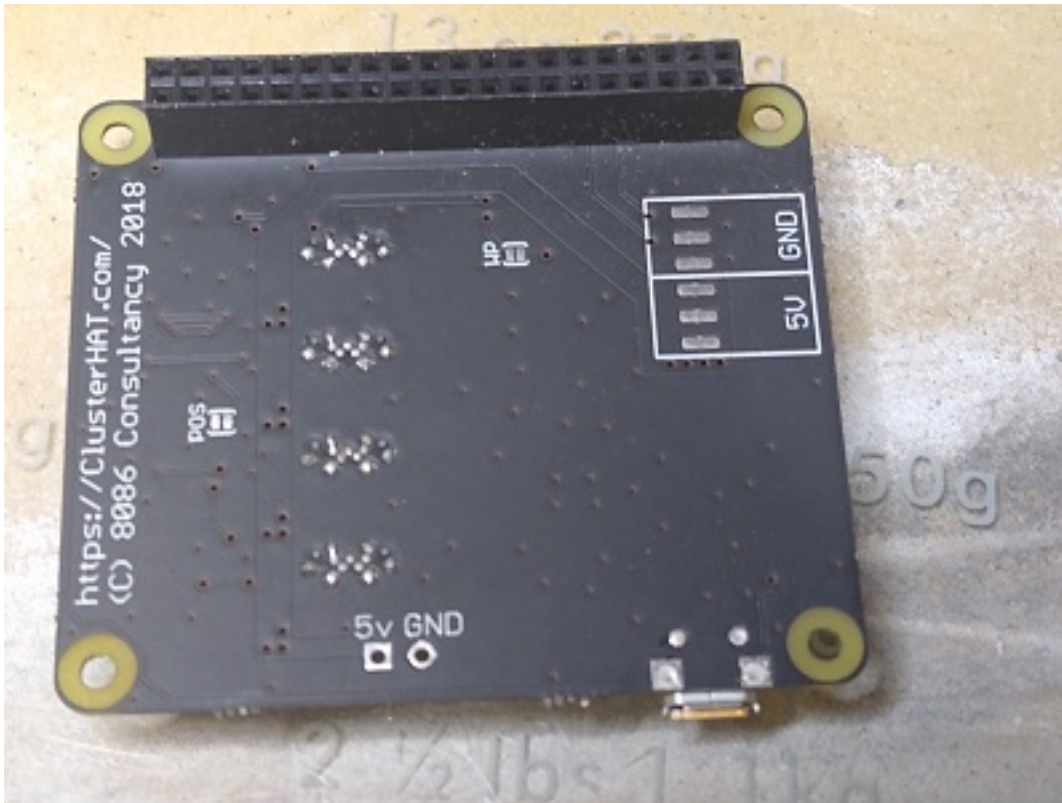
## Cluster HAT v2.1

Inrush current issue, not released.

## Cluster HAT v2.2



## Cluster HAT / Cluster CTRL



USB connector: Front (SMT+TH)

Serial connector: SMT

GPIO connector: Header

Power control: XRA1200P

Power connector: SMT (underside) / Front header for 3.5mm screw terminal

Solder jumpers top: Bigger PWR (GPIO or GPIO)

Solder jumpers bottom: WP (EEPROM Write protect - bridge to prevent writes) / POS (Power on state - cut to auto power on)

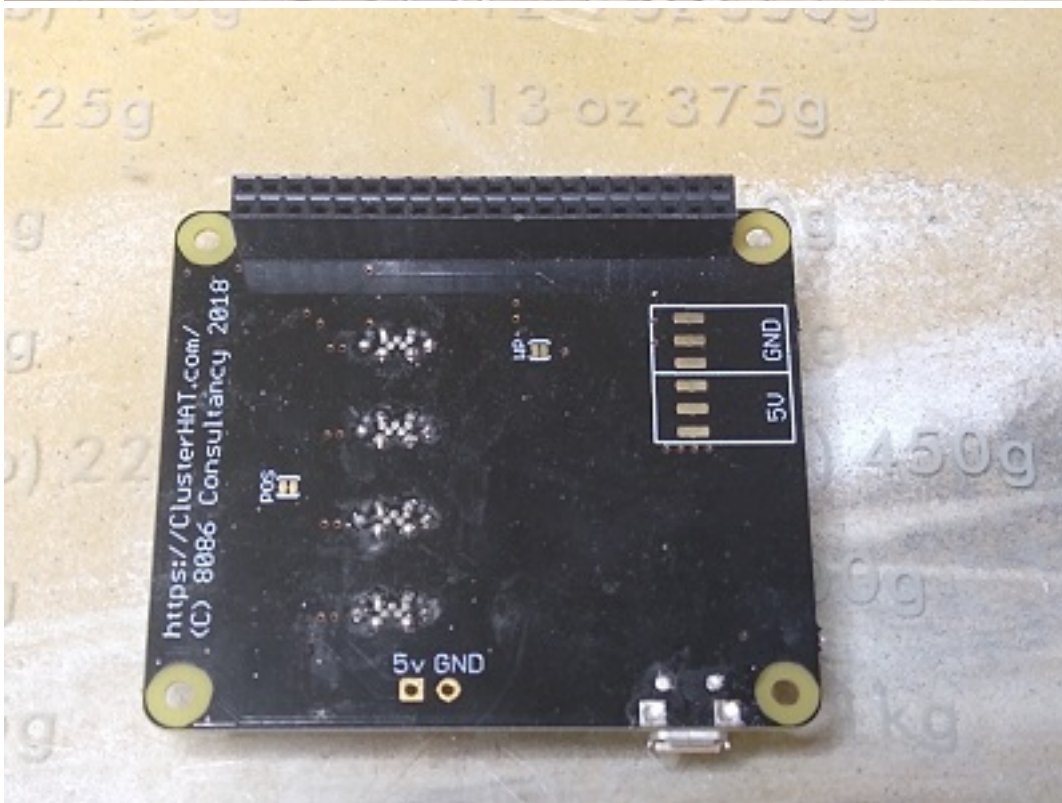
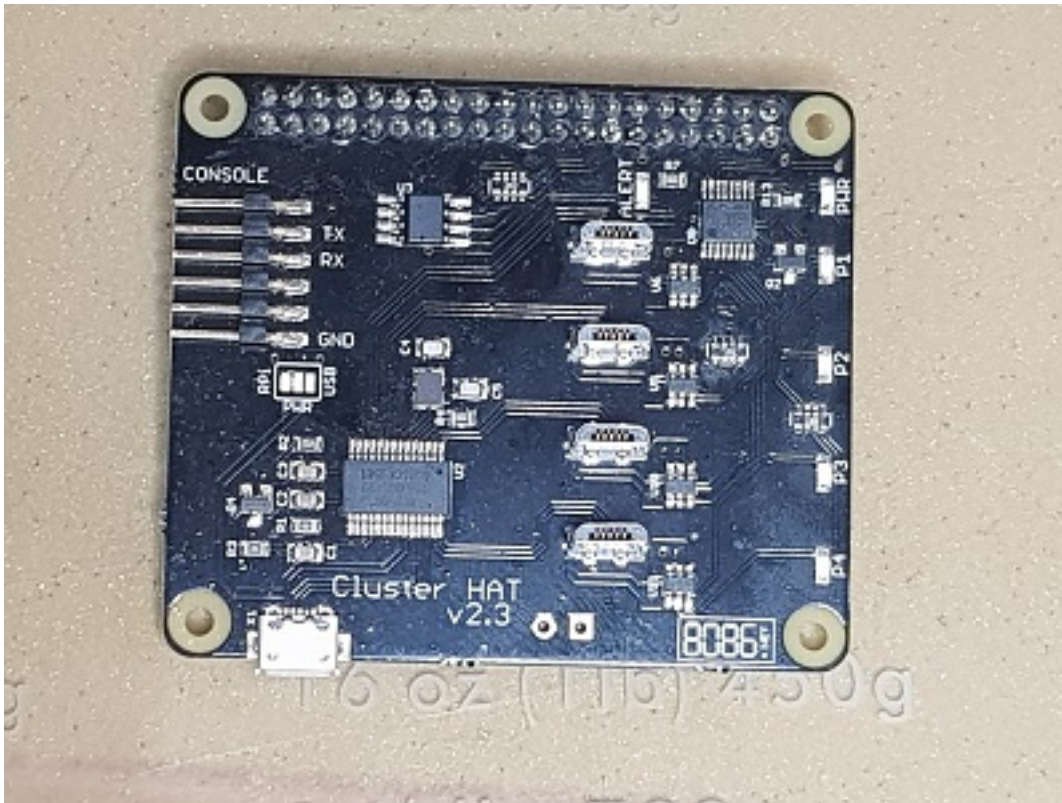
USB Hub control: Reset

USB Hub: GL850G Single Transaction Translator (STT)

Pi4 Controller Reboot: Rebooting Pi4 controller will reset I2C expander powering off Pi Zeros (use [3v3 Sustain](#) to fix)

### Cluster HAT v2.3

## Cluster HAT / Cluster CTRL



USB connector: Front (SMT+TH)

Serial connector: SMT

GPIO connector: Header

Power control: XRA1200P

Power connector: SMT (underside) / Front header for 3.5mm screw terminal

Solder jumpers top: Bigger PWR (GPIO or GPIO)

Solder jumpers bottom: WP (EEPROM Write protect - bridge to prevent writes) / POS (Power on state - cut to auto power on)

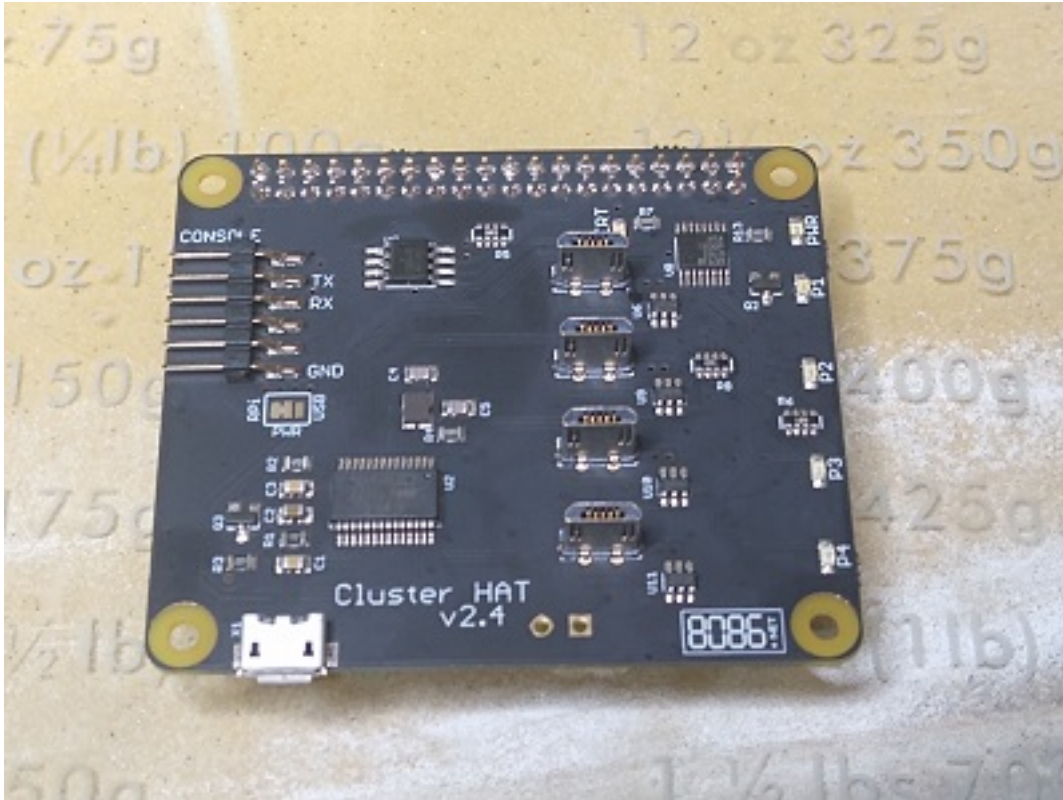
USB Hub control: Reset

# Cluster HAT / Cluster CTRL

USB Hub: GL850G Single Transaction Translator (STT)

Pi4 Controller Reboot: Rebooting Pi4 controller will reset I2C expander powering off Pi Zeros (use [3v3 Sustain](#) to fix)

## Cluster HAT v2.4



USB connector: Front (SMT+TH)

Serial connector: SMT

GPIO connector: Header

# Cluster HAT / Cluster CTRL

Power control: XRA1200P

Power connector: SMT (underside) / Front header for 3.5mm screw terminal

Solder jumpers top: Bigger PWR (GPIO or GPIO)

Solder jumpers bottom: WP (EEPROM Write protect - bridge to prevent writes) / POS (Power on state - cut to auto power on) / XA0 & XA1 I/O Expander I2C Address / EA0 & EA1 HAT EEPROM I2C Address

USB Hub control: Reset

USB Hub: GL850G Single Transaction Translator (STT)

Pi4 Controller Reboot: No issue.

## Cluster HAT v2.5



USB connector: Front (SMT+TH)

Serial connector: SMT

GPIO connector: Header

Power control: XRA1200P

Power connector: SMT (underside) / Front header for 3.5mm screw terminal

Fan connector: 5V 2-pin 2.54mm pitch unpopulated header (+5V closest to side of board) 200mA max.

Solder jumpers top: Bigger PWR (GPIO or GPIO)

Solder jumpers bottom: WP (EEPROM Write protect - bridge to prevent writes) / POS (Power on state - cut to auto power on) / XA0 & XA1 - I/O Expander I2C Address / EA0 & EA1 - HAT EEPROM I2C

Address / ID\_SDA & ID\_SCL - HAT EEPROM cut both to disconnect

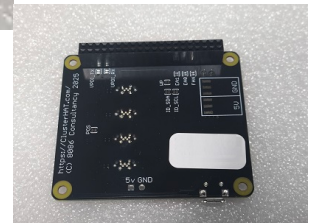
USB Hub control: Reset

USB Hub: GL850G Single Transaction Translator (STT)

Pi4 Controller Reboot: No issue.

## Cluster HAT v2.6

## Cluster HAT / Cluster CTRL



USB connector: Front (SMT+TH)

Serial connector: SMT

GPIO connector: Header

Power control: ATtiny1616 ([firmware](#))

Power connector: SMT (underside) / Front header for 3.5mm screw terminal

Fan connector: 5V 2-pin 2.54mm pitch populated header (+5V closest to side of board) 1A max.

Solder jumpers top: Bigger PWR (GPIO or GPIO)

Solder jumpers bottom: WP (EEPROM Write protect - bridge to prevent writes) / POS (Power on state - cut to auto power on) / EA0 & EA1 - HAT EEPROM I2C Address / ID\_SDA & ID\_SCL - HAT EEPROM cut both to disconnect / UPDI\_RX & UPDI\_TX cut to disconnect built-in programmer

USB Hub control: Reset

USB Hub: CH334F Multiple Transaction Translator (MTT)

Pi4 Controller Reboot: No issue.

Key: TH = Through Hole / SMT = Surface Mount

Unique solution ID: #1115

Author: n/a

Last update: 2026-01-29