zymbit

SECURE COMPUTE DEVICE

Tamper Resistant Enclosure,
Hardware Security Module, Power Supply for
Raspberry Pi Computers

Key Features

- Tamper resistent enclosure
- Physical tamper detection sensors
- Integrated power supply, 12-32V DC input
- Supports Zymbit Security Module types 4, 5, 6
- Easily customized end plates & tamper circuits

Applications

- Secure gateway for remote unattended sites
- Monitoring of industrial & commercial equipment
- Encrypted data acquisition
- Digital signage
- Mobile and vehicle based data acquisition

Hard To Penetrate

The Secure Compute Device SDC4 integrates
multiple levels of physical and digital security to
protect files, data and credentials on Raspberry Pi
and other Pi compatible single board computers.
The onboard Zymbit security module (4,5,6)
delivers professional grade security to unattended
IoT devices in the wild, on and off the grid.

Easy To Integrate

Designed with convenience in mind, the secure
enclave is quick and easy to integrate late in the
design cycle and ready to scale for production.

Software APIs are available in Python, C and C++.
Example code and online documentation provide a
simple low-risk way to integrate Zymkey security
into your application running on standard Raspbian
distributions. Support for other Linux distributions
is optionally available.

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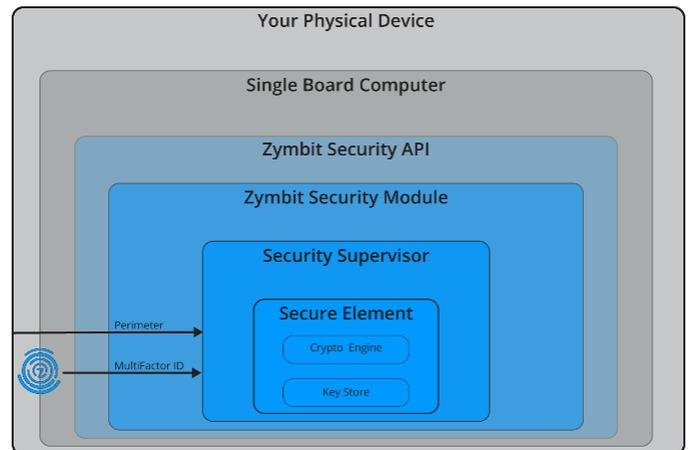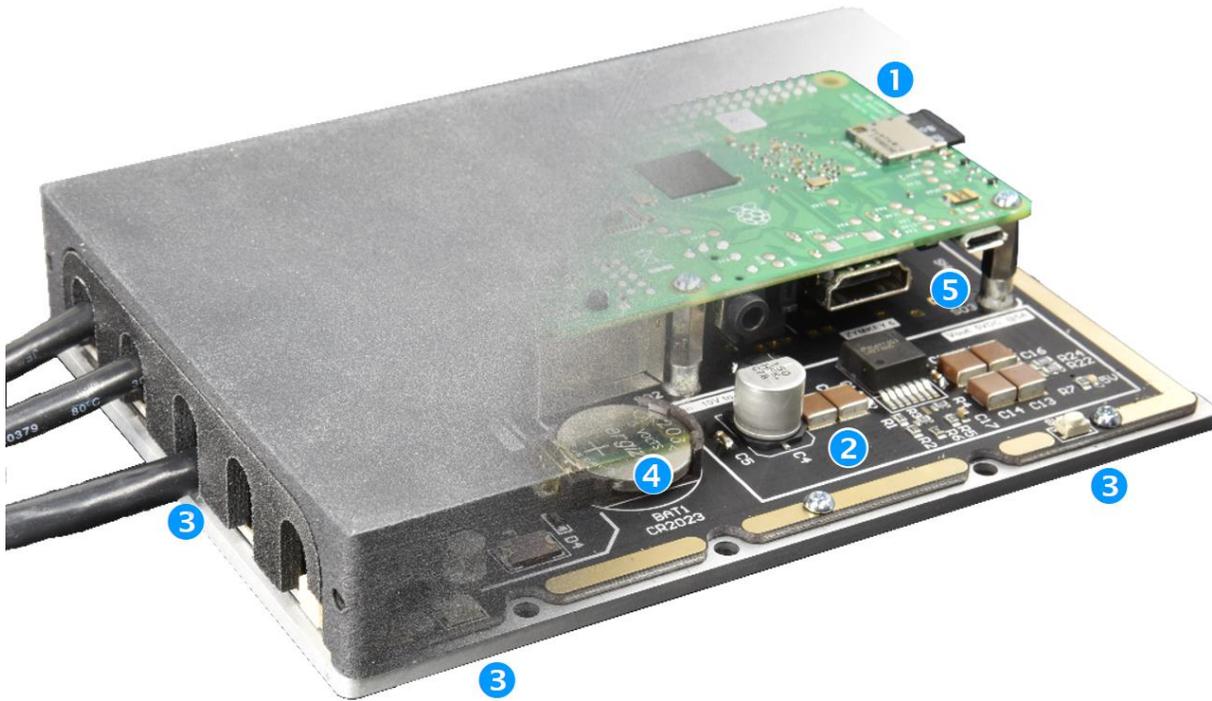
❶ Security for Pi

SECURE COMPUTE DEVICE is designed to integrate with Raspberry Pi, and other single board computers that are Pi-footprint compatible:

- Attaches to 40 Pin GPIO header – pins 1-10, 17,19,21,23,24
- Powered from onboard power supply – 5.1 VDC
- Prewired for Zymkey 4,5,6
- Expansion header break out, pins 1-10

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❷ Integrated Power Supply

Reliable power source for use in commercial and industrial environments:

- Input: +12VDC to +32VDC
- Output: +5.1VDC, 4.5A @25°C (77°F)
- Output available on GPIO header and expansion header
- Efficiency of >86% @ V_{in} 24VDC, I_{out} 4A
- Protection from reverse and overvoltage, 38V absolute max

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❸ Physical Tamper Detection

When used with a Zymbit security module, the Secure Compute Device protects against physical tampering:

- Four perimeter tamper switches mounted on motherboard detect enclosure removal
- Additional perimeter integrity circuit available for user defined wire loop, cable removal, mesh
- Accelerometer detects shock and orientation change events
- Power quality monitor detects anomolies like brown-out events
- Event reporting and response according to pre-defined policies

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❹ Zymkey Battery Source

Enables long term autonomous security functions when host power is removed:

- Delivers battery back-up power to zymbt security modules, types Zymkey 4,5,6
- Powers tamper detect sensors, key-management response events, host power monitor
- CR2024 coincell – lifetime > 5 Years, with continuous power loss
- CR2 single cell (optional) – lifetime > 10 Years, with continuous power loss
- Aux battery connector – for extended life/low temp operating conditions. Connector type JST PH, 2mm
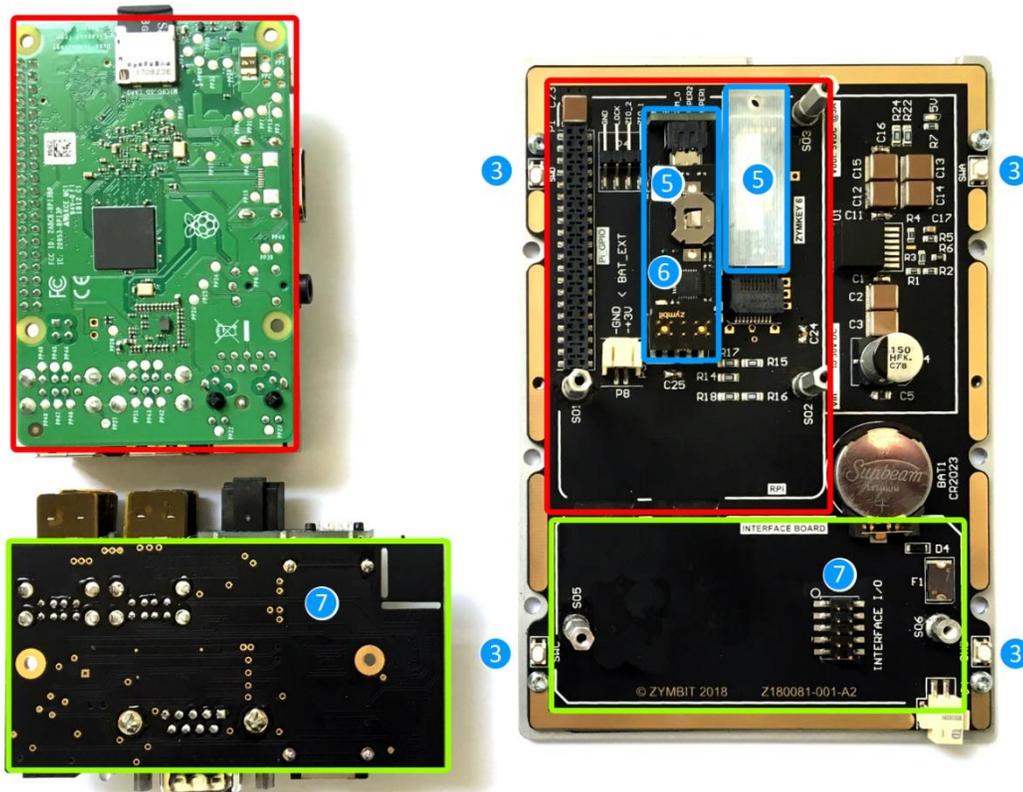
5 **Secured by Zymbit**
Zymkey 4,5,6

SECURE COMPUTE DEVICE works with ZYMKEYs 4,5,6 security modules to provide multiple layers of cyberphysical security:

- Hardware based cryptoengine, keystore and security supervisor
- Supports file encryption, key generation and storage
- Strong cipher suite includes ECDSA, ECDH, AES-256, SHA256
- Physical tamper sensors
- Autotonomous battery-powered operaton

6 **Real Time Clock**
Zymkey 4,5,6

ALL ZYMKEY security modules include a battery-backed real time clock to support off grid applications:

- 18-36 month operation, application dependent
- RTC clock service, available to client applications
- RTC/UTC anamoly alerts available with Zymbit security services
- 20ppm accuracy (standard). Optional 5ppm accuracy (OEM feature, MOQ apply)

7 **Expansion Board Interface**

SECURE COMPUTE DEVICE includes an area for custom expansion boards that need protecting:

- Expansion header break out for pins 1-10 (power, I2C, GPIO4, UART TX, RX)
- Ideal for custom serial and I/O interfaces
- 1.8 x 3.4 inch area, two mechanical standoffs
- +5VDC powered from main supply
- +3V3DC powered from Pi

8 **Other Features**

- Two part power connector – Molex MicroFit 3.0
- Breakout header for Zymkey 6 signals, ZIO 1,2,3,4, lock
- Breakout header for Zymkey 4,5,6 perimeter 2
- GPIO 40 pin header sealed from back, not pass through. Pass through option available.

9 Mounting Options

SECURE COMPUTE DEVICE is designed to be installed in a variety of configurations:

- Baseplate – standard mounting
- VESA – optional tandem mounting bracket
- DIN rail – optional clip for bookcase, landscape, portrait mouting


DIN Bookcase   DIN Landscape   DIN Portrait

10 End Plate Options

SECURE COMPUTE DEVICE includes two endplates that are easy to customize yet form an integral part of the Secure Compute Device:

- Standard aluminum endplates supplied – two blank, one finger
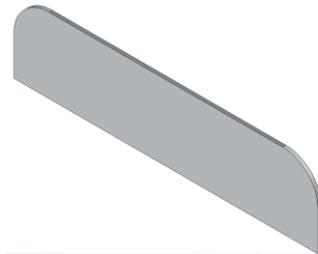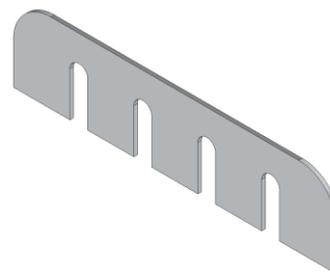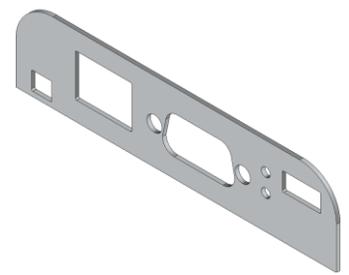
Blank   Finger   Custom

- Custom endplates are easy to design – CAD STEP model and drawing files available

11 Materials

SECURE COMPUTE DEVICE is manufactured from durable and cost effective materials:

- Baseplate – aluminum
- Endplate – aluminum
- Cover – ABS or Nylson 12 plastics
- OEM custom options – stainless materials, monocover (cover + endplates manufactured in 1 piece)

12 OEM Services
Custom design, turnkey manufactured solutions

SECURE COMPUTE DEVICE is designed to be modular, making it easy to build prototypes then quickly transition to pilot and large scale production and deployment. When you need something custom, Zymbit's engineered solutions team is here to help.

- Full electrical, mechanical and software design services
- Custom end plates, integrated endplates
- Customer specific expansion board
- Turnkey manufactured solutions
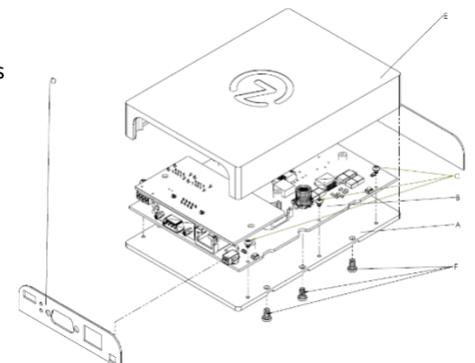
APPLICATIONS

Secure Manufacturing Gateway

When critical parts are manufactured for aircraft, medical and other high impact applications, its essential to provide secure and independent connectivity and data management. Learn how >

Remote Process Monitoring

Equipment living in the wild is often physically unprotected and subject to intermittent power and connectivity. Providing an autonomous secure enclave ensures data and credentials are protected. Learn how >

Industrial Vending Machine

Typically found in secure data center and manufacturiung environments to dispense high value replacement parts and tools to technicians inside a secured facility. Learn how >

Mobile Compute

When the host platform is on the move, physical security takes on a whole new meaning. Dirty power and intermittent connection makes for a challenging enviroment. Learn how >

MECHANICAL / ELECTRICAL

Dimensions: 5.00 x 4.00 x 1.11 inches

Weight: 10.0 oz, 300 grams
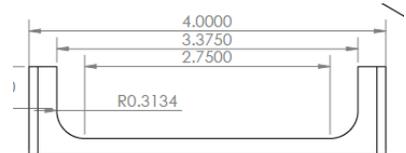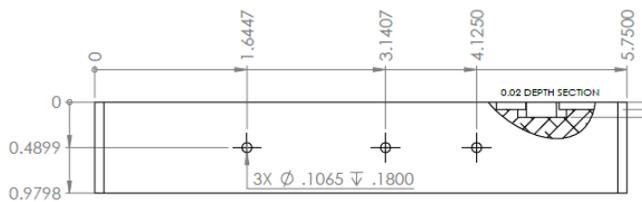
DOCUMENTATION

SECURE COMPUTE DEVICE is easy to integrate. For full and detailed information on how to use in your application, visit **https://community.zymbit.com/secure-compute-device**

- Getting Started
- Software APIs
- Applications
- Compliance Documentation
- CAD Footprint and mechanical Files

For more information, visit   **www.zymbit.com**

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