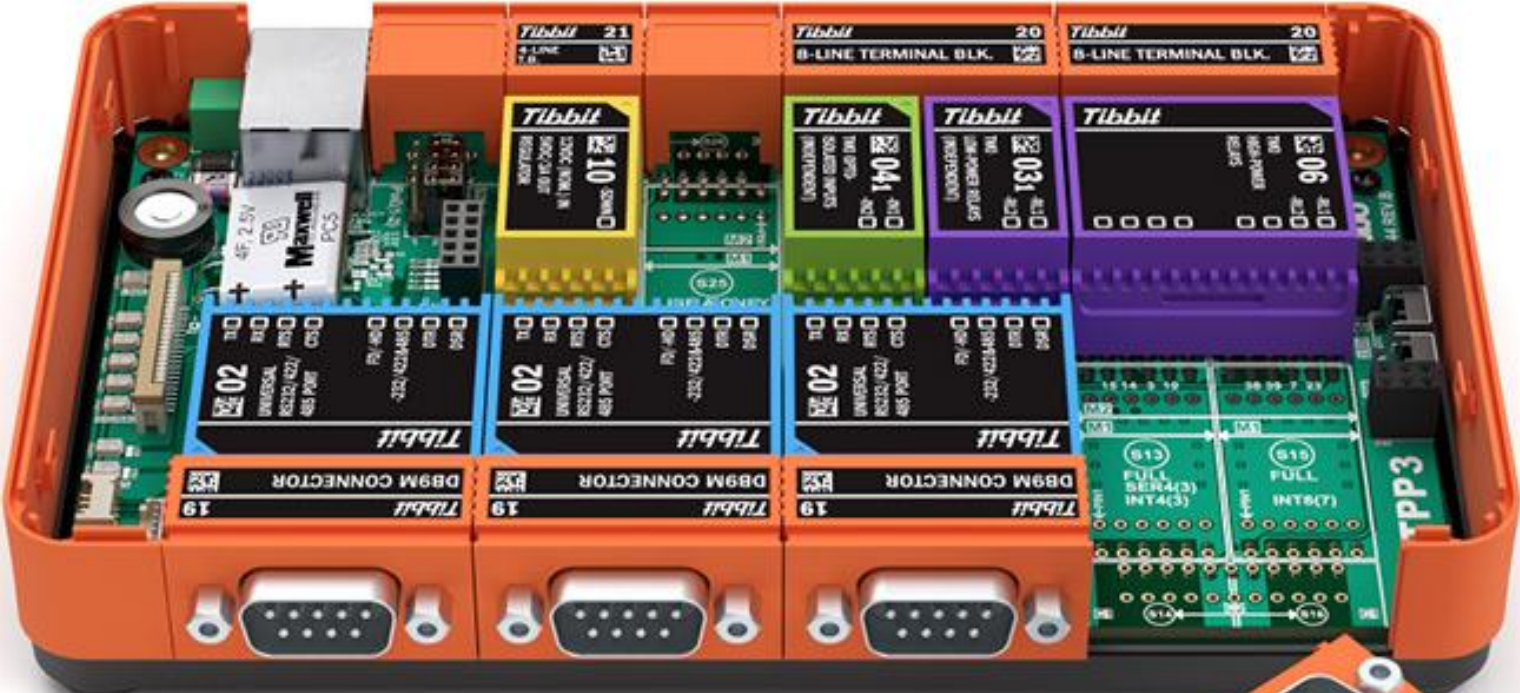


TIBBO PROJECT SYSTEM IoT Platform



Tibbo
TECHNOLOGY



reddot design award
product design 2014

Tibbo Company Profile

- Founded in 2001
- Wide range of hardware and software products
- R&D offices in Taiwan and Russia
- Distributors in 50+ countries
- Ownership structure: limited partnership
- Parent companies: Giga-TMS, Inc., GIGATEK, Inc.
- Website: www.tibbo.com

Tibbo Product Portfolio

- Serial-over-IP converters
- Embedded Ethernet modules
- Programmable controllers
- Modular Tibbo Project System
- Retail products based on TPS
- AggreGate Device Management Platform
- Vertical market products based on AggreGate

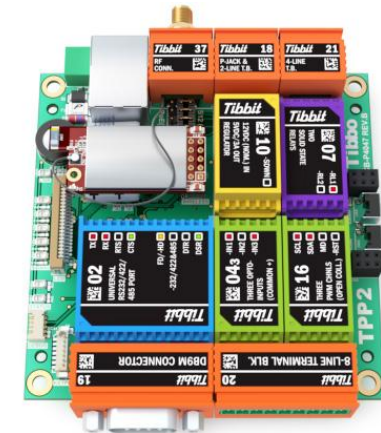
Tibbo hardware products



EM1206 Programmable Ethernet Module



DS1004 Programmable Controller



DS1100 Programmable Serial Controller



EM500 Programmable Module

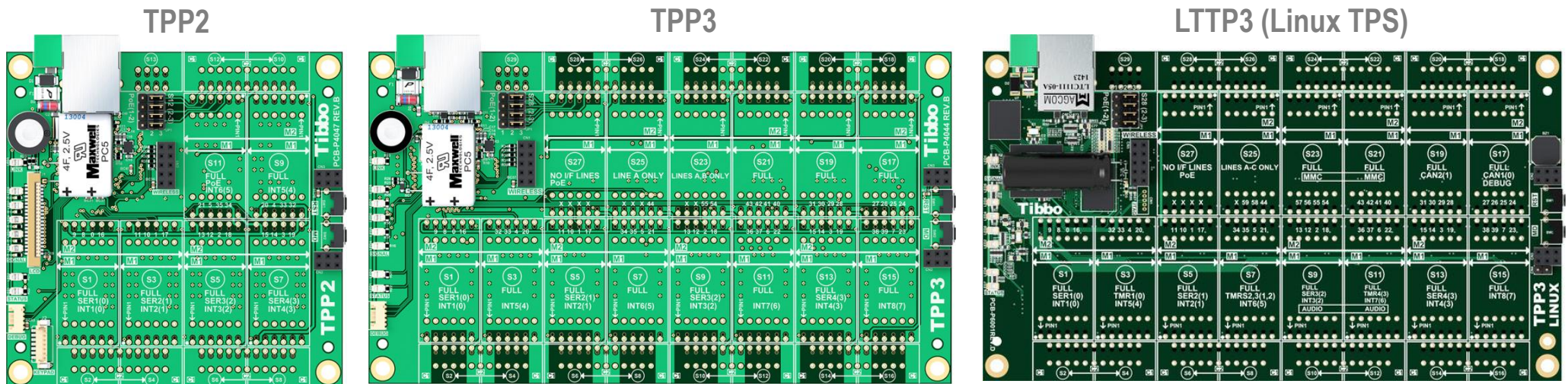
Tibbo Project System

What is Tibbo Project System?

- Tibbo Project System (TPS) is a highly configurable and affordable automation platform. Its flexibility is based on Tibbits[®] – miniature blocks that implement specific I/O features.
- Need a certain I/O function? Install the right Tibbit. Have no use for something? There is no need to have it in your device.
- This module-based approach saves you money by allowing you to precisely define the features you want in your automation controller.

Start with a Tibbo Project PCB (TPP)

- A Tibbo Project PCB is the foundation of your TPS device.
- Available in Tibbo OS (TiOS) and Linux versions, as well as two sizes, each board carries a CPU, memory, an Ethernet port, power input for +5V regulated power, and a number of sockets for Tibbit Modules and Connectors.

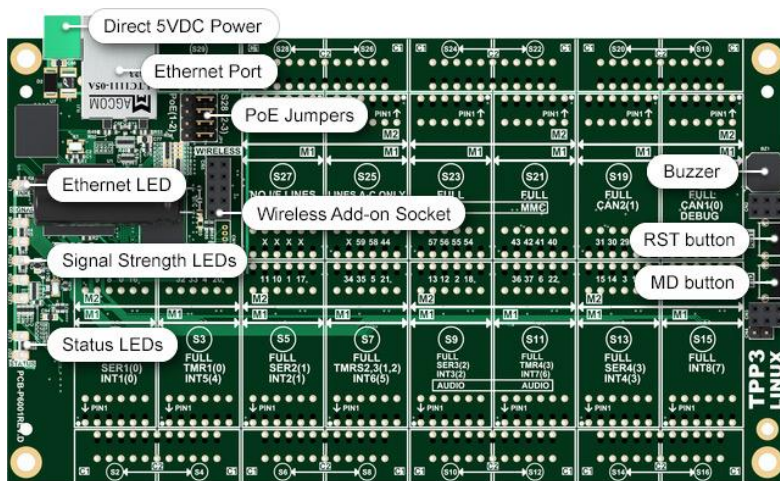


Linux TPS – LTPS mainboard

LTPS is a Linux-based Tibbo Project System (TPS) board with Ethernet, as well as optional Wi-Fi* and GPRS** connectivity. The board is based on a powerful 1GHz Cortex-A8 Sitara CPU and has four UARTs, as well as two CAN controllers.

The LTPS is ideal for applications that require no human-machine interface (HMI) while calling for a significant number of I/O lines and/or functions. Offering 7 tiles for a total of [14 Tibbit module and 14 Tibbit connector](#) sockets, the LTPP3 can be used to construct devices with up to 25 relays, or up to 47 opto-inputs, PWM outputs, open-collector outputs, or other I/O.

Linux TPS – LTPS mainboard



Tibbo envisions a variety of use scenarios for the LTPS. In one scenario, the board is purchased with an Embedded AggreGate license. Embedded AggreGate turns the board into a compact AggreGate server, thus allowing for rapid development and deployment of IOT applications. It is also possible to develop the board's software in node.js and, in the near future, in Tibbo BASIC/C (TiOS porting to Linux is currently under way).



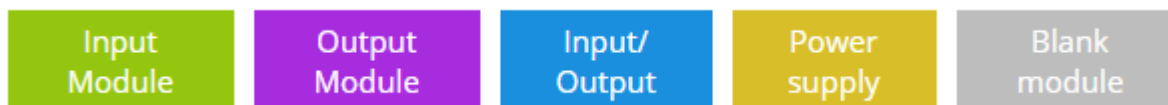
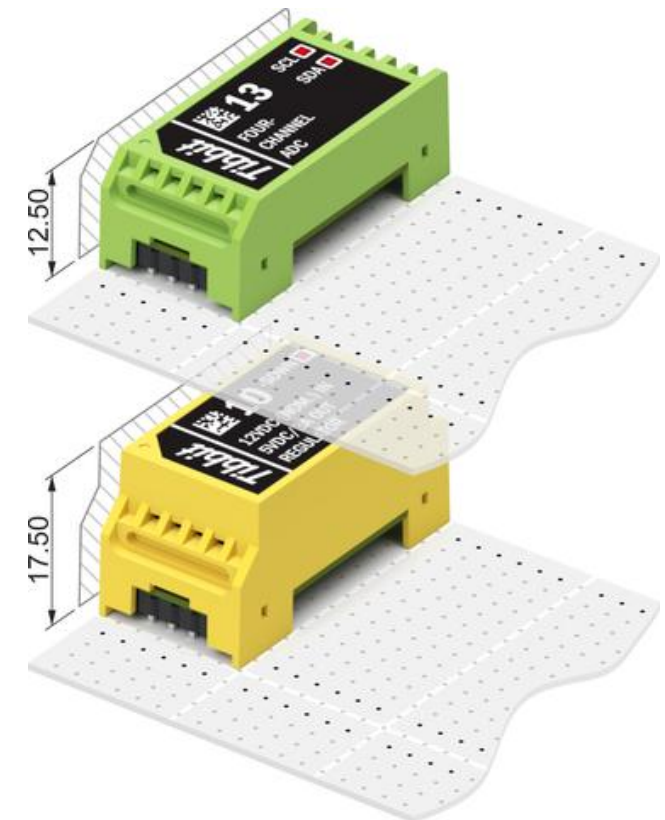
Add Tibbit® Blocks

- Tibbits (as in "Tibbo Bits") are blocks of prepackaged I/O functionality housed in brightly colored rectangular shells. Tibbits are subdivided into Modules and Connectors.
- Want an ADC? There is a Tibbit Module for this. 24V power supply? Got that! RS232/422/485 port? We have this, and many other Modules, too.
- Same goes for Tibbit Connectors. DB9 Tibbit? Check. Terminal block? Check. Infrared receiver/transmitter? Got it. Temperature, humidity, and pressure sensors? On the list of available Tibbits, too!



M1 "Narrow" Tibbits

- M1 Tibbits are single-width modules occupying one Tibbo Module socket on a Tibbo Project PCB (TPP). Their footprint is roughly 7 x 14 "squares" (one "square" is 2.54 x 2.54 mm or 100 x 100 mil).
- M1 devices have four I/O lines for interfacing with the outside world. We found four to be the *magic number*. It's just right for a wide variety of I/O functions.
- M1s can be short (M1S) or tall (M1T). Most M1 devices fit into "short" 12.5mm shells, selected few are 17.5mm "tall".
- Each M1 Module's color tells you if it is an...

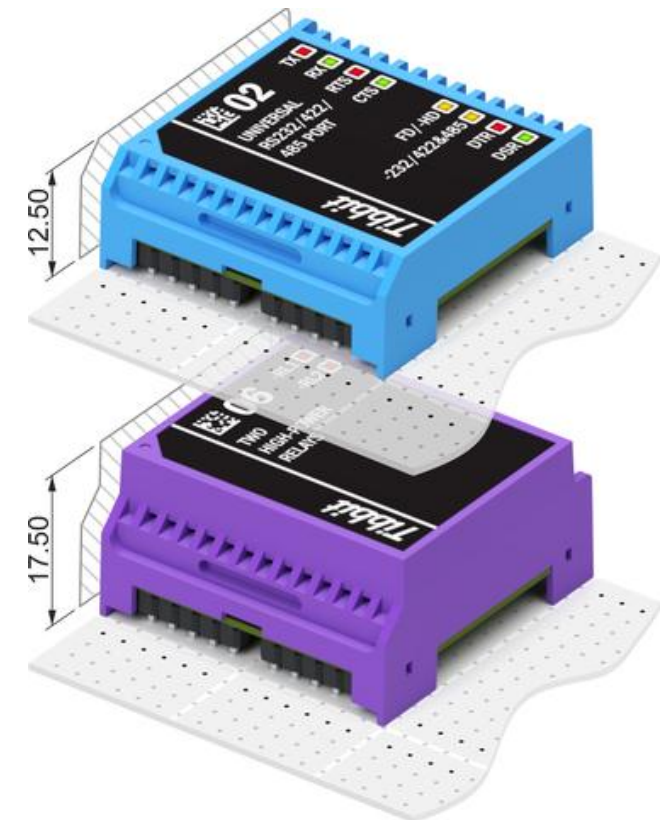
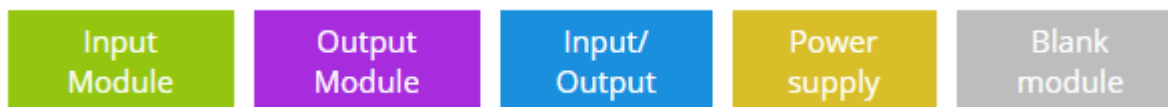


M2 "Wide" Tibbits

- M2 Tibbits are double-width modules occupying two standard Tibbit Module sockets on a Tibbo Project PCB. They are roughly 14 x 14 "squares".
- With double the size comes the doubled internal space and I/O capacity. M2s have eight I/O lines. They are used for "grandier things" that just wouldn't fit into the M1 form factor.

Like M1s, M2 devices can be short (M2S) or tall (M2T).

The color coding scheme is the same:



C1 "Narrow" Tibbits

- C1 devices are single-width Tibbit Connectors. On a Tibbo Project PCB they occupy one standard Tibbo Connector socket and install in front of Tibbit Modules. C1s have the equal width and height with M1T devices.
- Some C1s are really just connectors of the power jack, terminal block, etc. variety. Others "sense" the outside world: temperature, humidity, vibration, and so on.

C1 Tibbits are always orange.



C2 "Wide" Tibbits

- With double the width of C1s, C2 Tibbits are wide enough to house DB9 connectors and 9-row terminal block banks.
- On a Tibbo Project PCB they occupy two standard Tibbo Connector sockets and install in front of Tibbit Modules. C2s have the equal width and height with M2T devices.

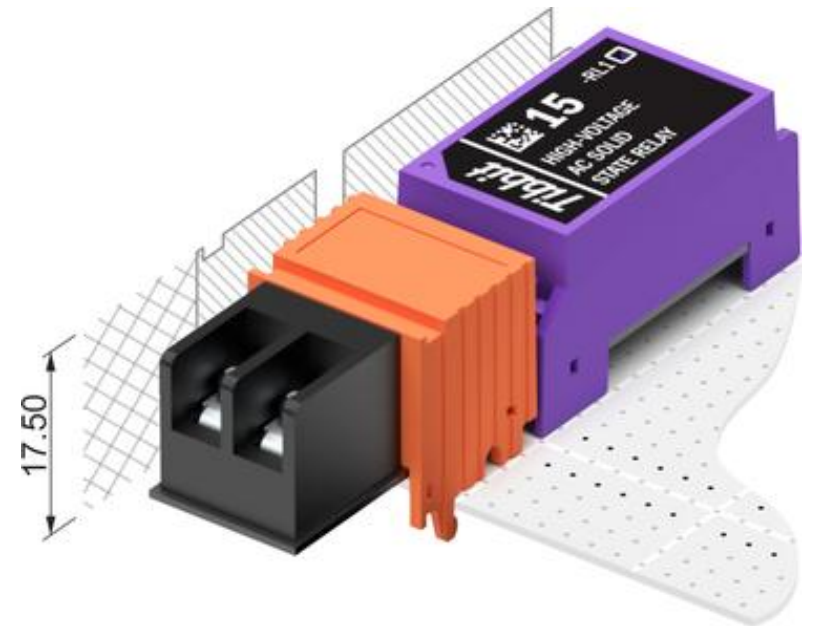
C2 Tibbits are always orange.



C2 "Wide" Tibbits

- H1 Tibbits are merged M1T and C1 devices. They occupy the combined space of one M1 and one C1 Tibbit.
- The H1 form factor is used when it is unsafe or undesirable to interconnect M1 and C1 Tibbits via a Tibbo Project PCB (or any other host board).
- Examples of such cases are high-voltage and high-frequency (radio) circuits.

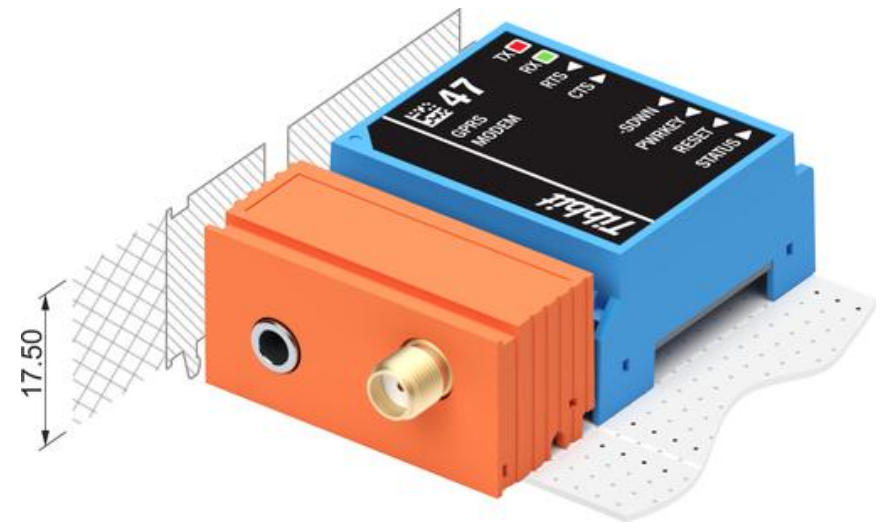
H1 Tibbits are always orange.



H2 "Hybrid" Tibbits

- H2 Tibbits are merged M2T and C2 devices. They occupy the combined space of one M2 and one C2 module.
- The H2 form factor is used when it is unsafe or undesirable to interconnect M2 and C2 Tibbits via a Tibbo Project PCB.
- Examples of such cases are high-voltage and high-frequency (radio) circuits.

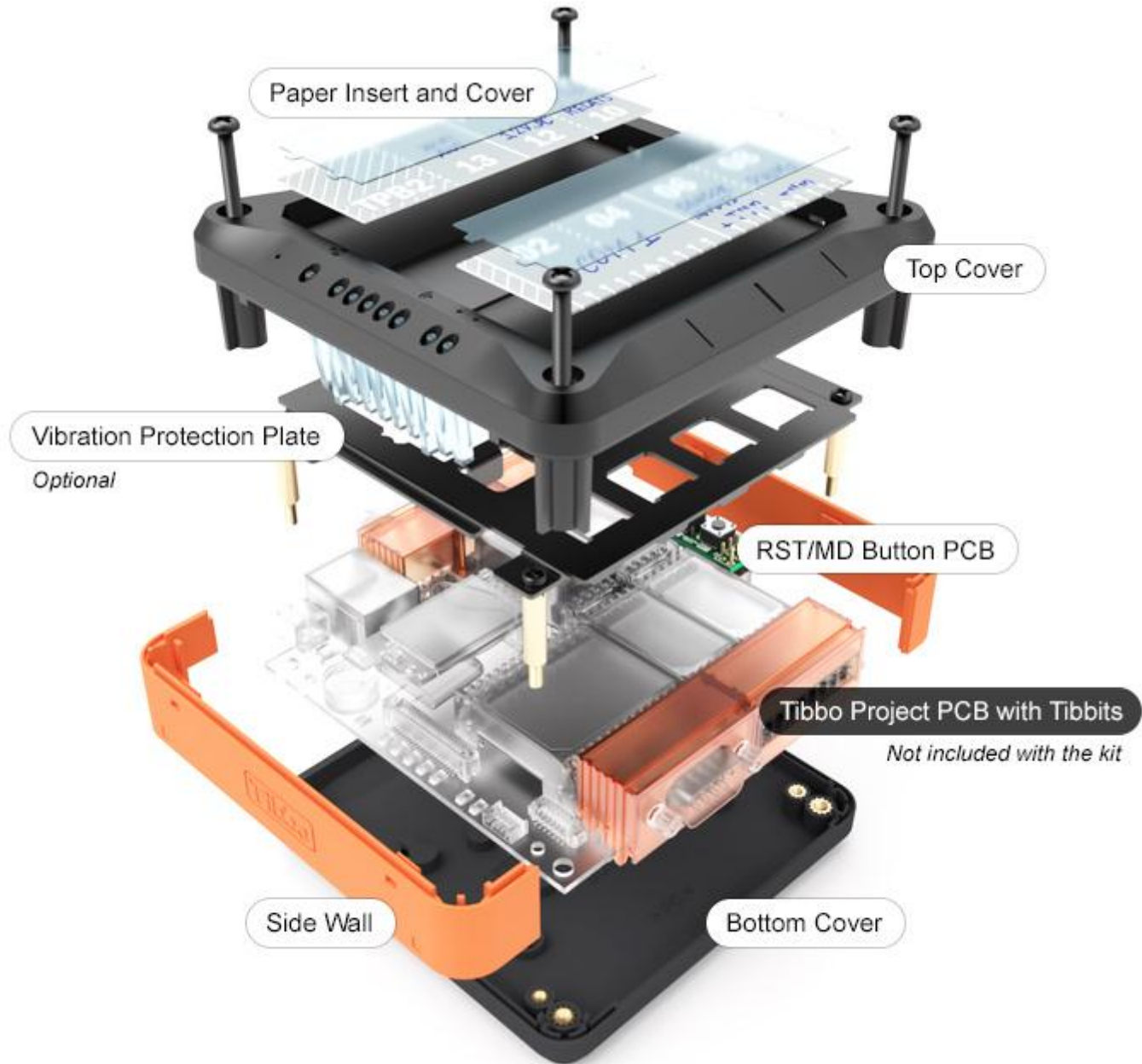
H1 Tibbits are always orange.



Tibbo Project Box (TPB) Enclosures

- Most projects require an enclosure. Designing one is a tough job. Making it beautiful is even tougher, and may also be prohibitively expensive.
- Not to worry – your Tibbo Project System can optionally be ordered in a Tibbo Project Box (TPB).
- The ingenious feature of the TPB is that its top and bottom walls are formed by C1 and C2 Connector Tibbits. The result is a neat, professionally looking housing every time, even for projects with the production quantity of one. This eliminates a huge problem of any low-volume production operation – the necessity to fit into and customize (drill, cut, etc.) off-the-shelf enclosures.



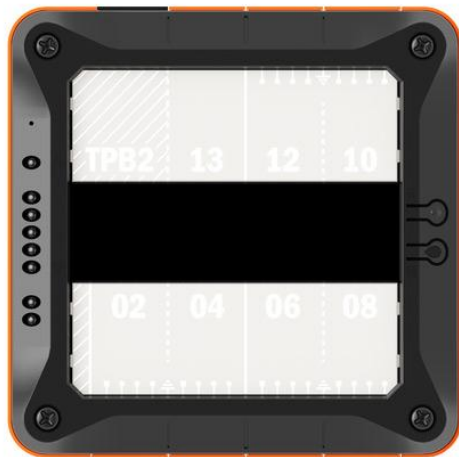


Three Boxes to Choose From

Available in three versions, our TPS kits include easy-to-assemble shells and all necessary small parts (screws, etc.). Each Box can be ordered with the available DIN rail mounting as well as the vibration protection kit (VPK) that will secure Tibbits in their sockets.

For a small fee we can assemble your Tibbo Project Box/System, or you can choose to assemble everything yourself.

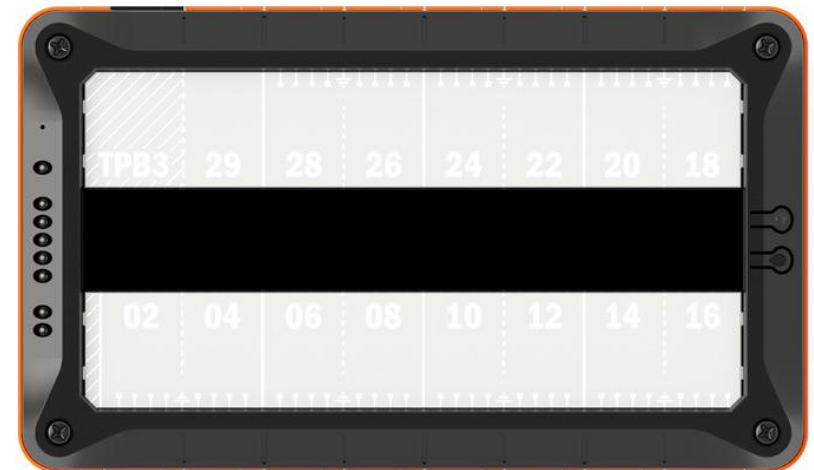
TPB2



TPB2L

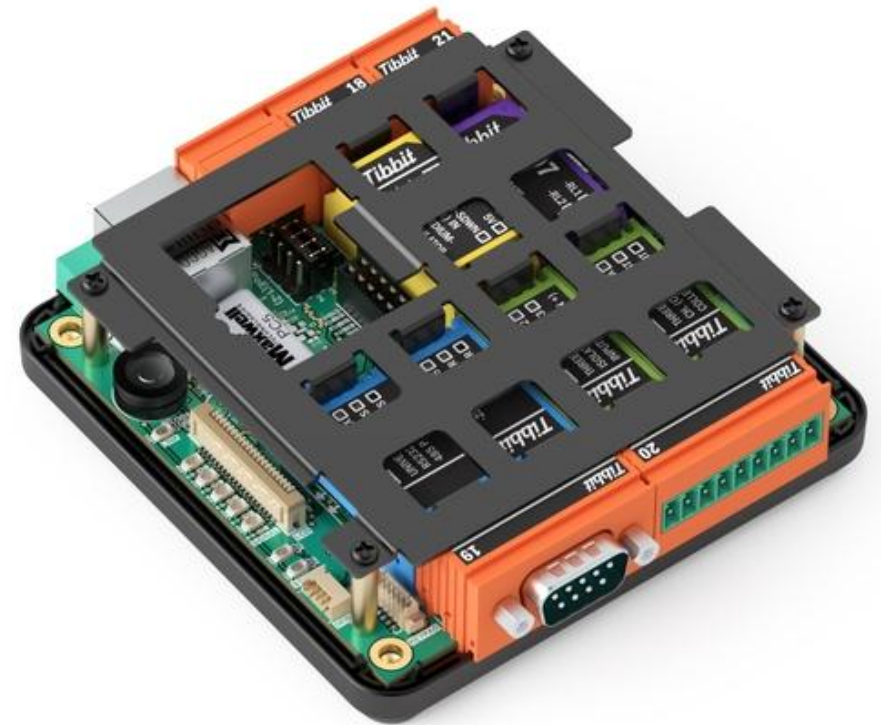


TPB3



Vibration Protection Kit (VPK)

- This kit includes a stamped metal plate and four special screws.
- The plate installs over Tibbits (and the GA1000 Wi-Fi module) thus securing them in their sockets.
- The use of the VPK is recommended for industrial, on-vehicle, and any other applications where vibration is a concern.



DIN Rail Mounting Kit

- The DIN rail mounting kit includes a spring-loaded plastic bracket and a set of screws.
- Size 2 Tibbo Project Boxes require a single kit per box, while the size 3 boxes need two kits each.



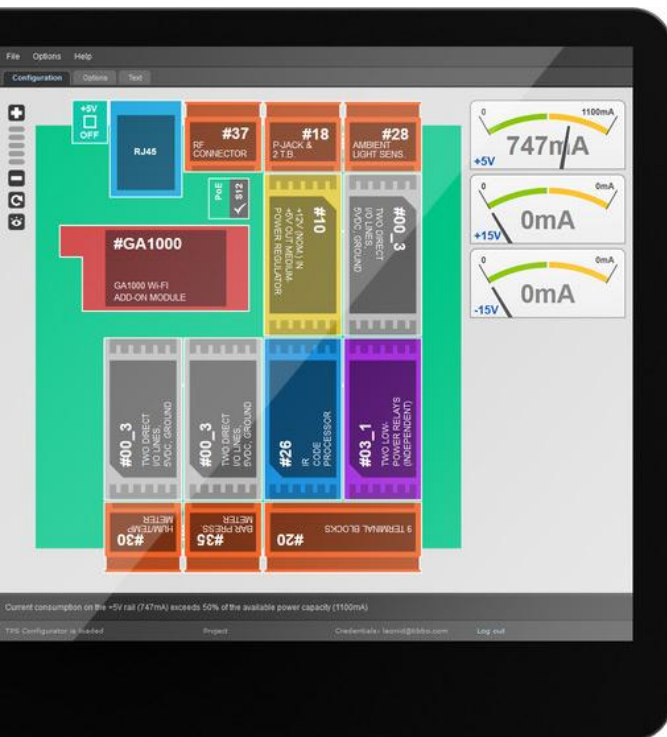
Unique Online Configurator for TPS Devices

Simple as one, two, three!

One. Select the **Tibbo Project PCB (TPP)** you will be using and name your project.

Two. Place **Tibbit blocks** on the board.

Three. Define options, such as whether to include a **Tibbo Project Box (TPB)**, assemble the system or deliver it as a parts kit, etc.



TIDE – Tibbo Development Environment for TPS

- Code in time-tested BASIC and C languages, reincarnated as **Tibbo BASIC** and **Tibbo C**. Familiar to millions and easy to learn, BASIC and C are perfect for developing cool IoT and automation applications.
- In our world, **Tibbo BASIC and C** are equals. BASIC is not simpler. C isn't faster. Choosing one over another is largely a matter of personal preference and habit. In fact, you can even mix BASIC and C code within a single project!

The screenshot shows the Tibbo IDE interface with several callout boxes highlighting key features:

- Advanced Project Browser:** Slice, dice and analyze your project structure and memory utilization.
- Streamlined Toolbar:** No excess. Only important stuff. Logically presented from left to right.
- Smart Editor:** Remembers where you have been. Helps with where are you going.
- Universal Search Toolbar:** Instant project-wide search. Neatly classified results. Try this -- it is phenomenal!
- Advanced Output Pane:** Colorized and organized output of search and compile results.
- F-key bar:** Function key reminders for ease of use and that nice retro feel.
- Sophisticated Watch:** Differentiates between BASIC and C. Calculates expressions.
- And more...** Other notable TIDE improvements.

The IDE interface includes a menu bar (File, Edit, View, Build, Debug, Tools, Window, Help), a toolbar with icons for Build, Run, and other actions, a file explorer on the left showing project files like 'lcd.tbh', 'boot.tbs', and 'device.tbs', a central code editor with BASIC/C code, an output pane at the bottom left showing search results for 'overrun_es', a watch pane at the bottom right showing variable values, and a status bar at the very bottom.

Our Very Own Tibbo Operating System (TiOS)

- What's the point in taking a superfast CPU, combining it with gigabytes of memory, and then burdening this powerful hardware with layers upon layers of OS complexity? Very often, the weight of the OS negates the CPU's agility, leading to sluggish performance. Ironically, target applications running atop these bloated systems are often very simple!
- At Tibbo, we have created our own OS that is lightweight and streamlined. The Tibbo OS (TiOS) runs fast enough on a mid-range microprocessor, and in a tiny memory space. With TiOS, the complexity and board space needed by electronics is minimized, costs go down, reliability goes up, and you still get an excellent automation platform that is extremely comfortable to program for.

Our Very Own Tibbo Operating System (TiOS)

Two processes



TiOS is a dual-process system. Yes, not multi-process, but dual-process. The first process is in charge of real-time stuff like TCP communications, while the second process – a virtual machine – executes your compiled Tibbo BASIC/C application.

Virtual machine (VM)



This is the sandbox in which your application runs. Tibbo IDE (TIDE) software compiles your Tibbo BASIC/C program into the byte code (a.k.a. p-code), which is then executed by the VM. Your applications can play freely but cannot crash or stall the OS.

Full Debugging Control at All Times



In the debug mode TiOS retains full debugging control over your application, regardless of what it attempts to do. No special debugging hardware is needed – TIDE controls TiOS and your application with commands that are sent over your Ethernet LAN.

TPS has unlimited application possibilities

Just some examples of successful TPS-based projects:

TR-TPS



TR-TPS – is a Time and Attendance controller, based on open-source code, that allows to modify the firmware on the fly and adjust the terminal under the business requirements of the customer.

Built-in Ethernet, optional connection via Wi-Fi, variable hardware, a built-in Web interface management - all this allows to use these terminals in systems of any scale, from a single office installation to large industrial facilities comprehensive automation.

TPS has unlimited application possibilities

Just some examples of successful TPS-based projects:

AC-TPS



AC-TPS – is an Access Control System controller, based on open-source code, that allows to modify the firmware on the fly and adjust the terminal under the business requirements of the customer.

AC-TPS can be easily integrated with existing access control systems, synchronized with the **AggreGate platform**. Direct working with MySQL database allows to create projects with distributed access via the website or SaaS concept.

More TPS typical applications

- Robotics and Automation
- UPS and HVAC control
- Access Control
- Building Automation
- Remote Monitoring
- Telecom Tower Monitoring
- Fleet Management
- Vending Machines
- Sensor Networks
- Automatic Meter Reading
- People/Vehicle Counting
- Old machines retrofit

Customers and Partners

- End Customers (online product sales, integrators)
- Hardware Distributors/Resellers
- System Integrators

Professional Services

- Solution design
- Configuration consulting
- Firmware Development
- Training and Education
- Advanced technical support for partners and distributors
- Remote configuration of evaluation/pilot installations
- Remote troubleshooting of customer's installations
(Skype + TeamViewer)

Partnership program for integrators

What we offer:

- Discount program for hardware orders and Professional services
- Free consulting by email
- Free basic assist for solution design
- Access to all marketing materials and documentation
- Becoming our partner, your company contact info will be added to the distributors list at our website
- We don't sign any distributor agreement at the first year, but just assist you to build a strong business based on Tibbo's IoT products.

Partnership program for integrators

What we expect from our partner:

- Test TPS platform and learn our programmable IoT technology
- Learn how to use our online configurator
- Publish information about TPS in the website with link to tibbo.com
- Assign FAE or engineering sales manager with software background for distributing Tibbo's products.