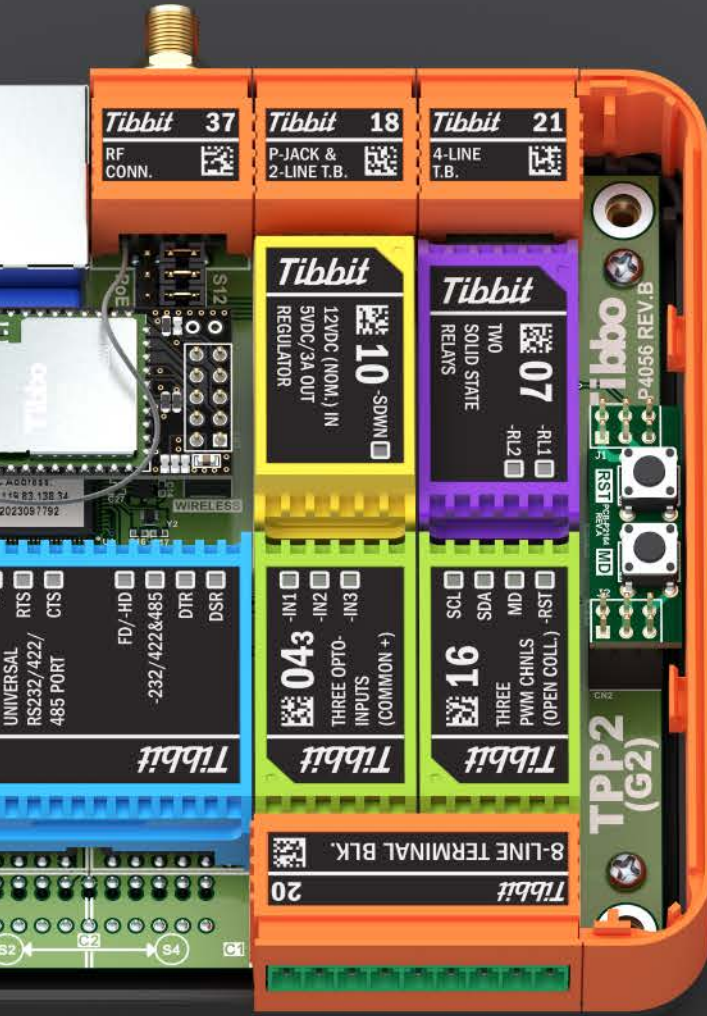


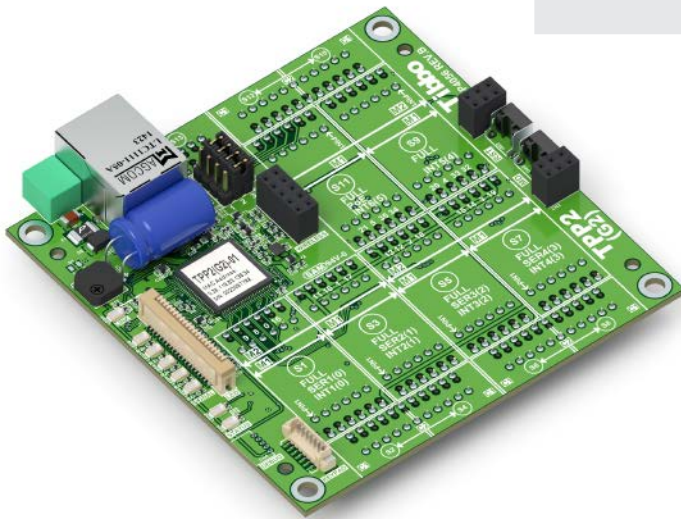
Tibbo



TIBBO PROJECT SYSTEM

Take what you need. Leave out what you don't.

Tibbo Project System



TPP

Tibbo Project PCB

A TPP is the motherboard of your Tibbo Project System. Tibbo OS (TiOS) TPPs carry the bare essentials: a CPU, memory, and an Ethernet port. Linux TPPs (LTPPs) additionally offer a second Ethernet port, 2 x USB2.0 ports, an HDMI port, and a microSD slot.

Each TPP features a number of sockets for Tibbit modules and connectors. Your system's I/O capabilities are primarily defined by what Tibbits you plug into the board.

Tibbits

Tibbit® Blocks

Tibbits® (Tibbo Bits®) are blocks of prepackaged I/O functionality housed in color-coded shells: Yellow for power Tibbits, green for input modules, purple for output ones, blue for input/output devices, etc.

Tibbo supplies a wide variety of Tibbits, including power regulators, RS232/422/485 modules, digital inputs, relays, DACs, ADCs, PWMs, sensors, indicators, LTE modems, and many others.

Not content to be yet another gray box, the TPS brings design aesthetics into the industry largely dominated by dull, predictably looking products. Excellent engineering, eye-pleasing appearance, engaging colors, as well as the use of premium materials and packaging have won us the coveted RedDot Design Award.



reddot award
winner



TPB

Tibbo Project Box

Most projects require an enclosure. Designing and making one is a tough job that can also be prohibitively expensive.

Not to worry - we supply four models of Tibbo Project Box enclosures!

Your product will look great even if produced in the grand quantity of one.

TPS

Your Custom System

By combining a Tibbo Project PCB with necessary Tibbits and wrapping the assembly in a stylish housing, you get exactly the device you require for your specific project.

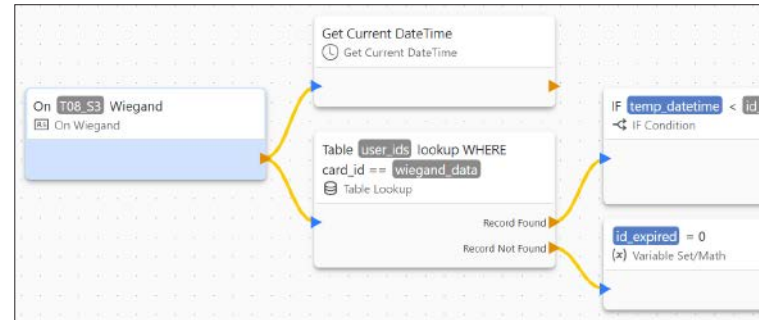
No more, no less. Just what you need. No excess.

Development Tools

AppBlocks

AppBlocks is a no-code, flowchart-based, in-browser application development platform for TPS and other Tibbo OS (TiOS) devices. Don't write your apps. Draw them. Point and click through the entire development process, from defining your TPS configuration to entering the application flow. When your app is ready for testing, upload it onto a TPS device and debug it directly from the browser.

AppBlocks generates functional Tibbo BASIC applications that are ready for deployment and can also be opened and edited in Tibbo IDE.



```
18 sub api_operateRegister(regType as string(2), regNumber as word, regValue as string
19
20   api_sendSock(chr(34) + regType + str(regNumber) + chr(34) + ":")
21
22   select case (regType)
23   case "HR", "hr":
24     if regValue = "?" then
25       ' Read the Holding Register
26       api_sendSock(str(modbus_get_holding_register(regNumber)))
27     else
28       ' Write to the Holding Register
29       if modbus_set_holding_register(regNumber, val(regValue)) = false then
30         api_sendSock(chr(34) + "ERROR" + chr(34))
31       else
32         api_sendSock(chr(34) + "OK" + chr(34))
33       end if
34     end if
35
36   case "IR", "ir":
37     if regValue = "?" then
38       Read the Input Register
39       if regNumber >= MODBUS_ADC_INPUT_REGISTER_FLOAT and regNumber < MODBUS_
40         FP value
41         regNumber = (regNumber - MODBUS_ADC_INPUT_REGISTER_FLOAT) / 2
```

Tibbo IDE (TIDE)

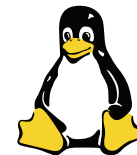
Tibbo IDE is an easy-to-use development environment for creating applications in Tibbo BASIC and Tibbo C, the two languages that power TiOS devices. TIDE is a perfect tool for rare development cases when your app is not easily expressed in a block diagram form of AppBlocks. TIDE is also great for reviewing or enhancing your AppBlocks apps.

Like AppBlocks, TIDE allows you to cross-debug your applications directly through the network without relying on any special debugging hardware, such as a JTAG board.

Linux Development

For sophisticated projects requiring more processing power and the use of third-party code, look no further than our Linux TPS devices. The Linux TPP (LTPP) board runs Ubuntu, one of the most popular Linux distros on the planet. Tibbo offers a Docker Container featuring all the scripts, drivers, and build tools necessary to get you started.

We also offer a Yocto-based Linux distribution for creating tighter, highly customized Linux versions. This is an excellent choice for higher-volume projects requiring strict code control.



yocto
PROJECT

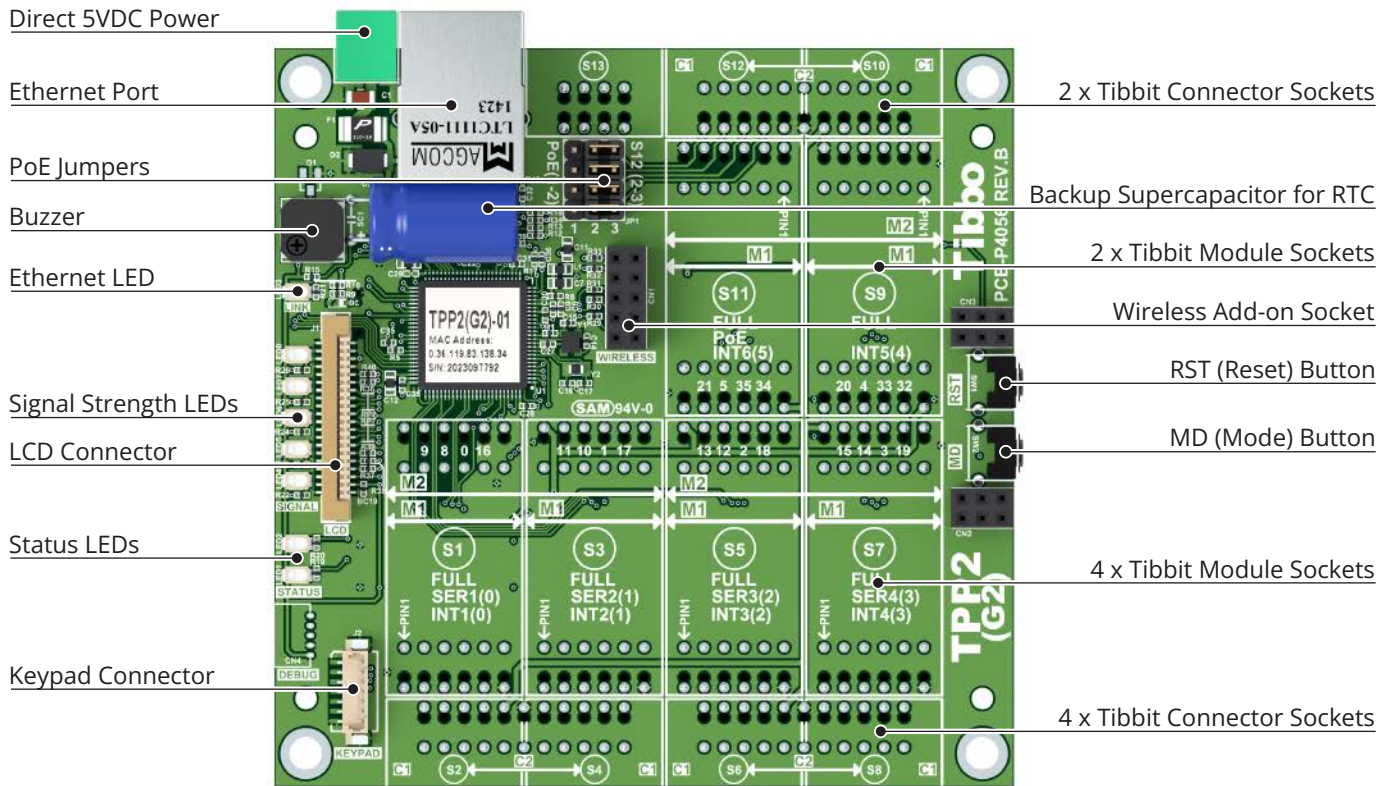


docker



ubuntu

TPP2 (G2) Board



TPP2(G2) - Size 2, Gen. 2 TiOS Tibbo Project PCB



6 x Tibbit Module sockets
6 x Tibbit Connector sockets



10/100 Base-T Ethernet port;
Wi-Fi/BLE and LTE available as modules.



ARM Cortex-M3 microcontroller with
RTC and backup supercapacitor



1MB flash for TiOS and application code +
1MB for the flash disk + 2KB EEPROM

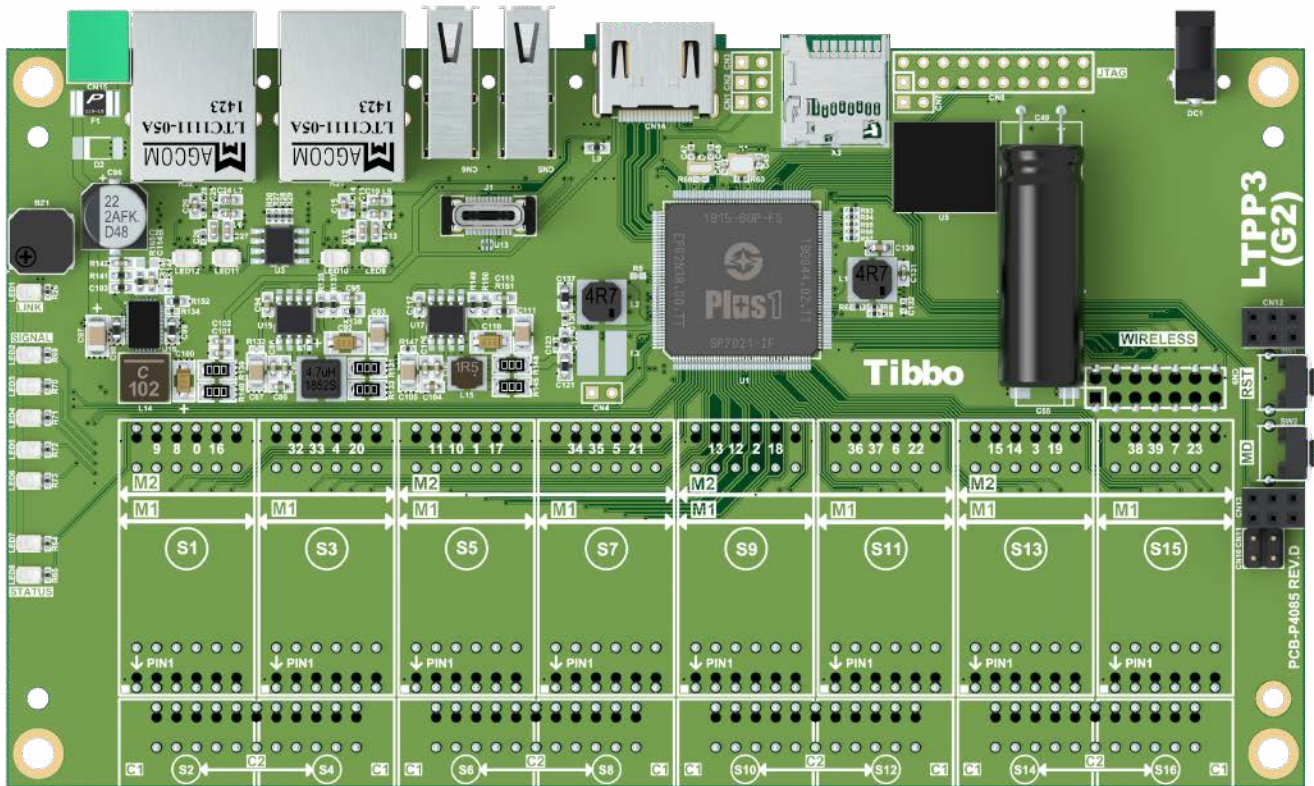


5V power onboard. All other power
options (12V, 24V, 48V, PoE, etc.) are
available as Tibbits.



4 x UARTs + 4 x SPI/I2C ports +
LCD and keypad connectors

LTPP3 (G2) Board



LTPP3(G2) - Size 3, Gen. 2 Linux Tibbo Project PCB



8 x Tibbit Module sockets
8 x Tibbit Connector sockets



2 x 10/100 Base-T Ethernet ports;
Wi-Fi/BLE and LTE available as Modules.



Quad-core, 1GHz Cortex-A7 CPU with
RTC and backup supercapacitor



512MB DDR3 SDRAM + 8GB eMMC +
2KB EEPROM + microSD slot

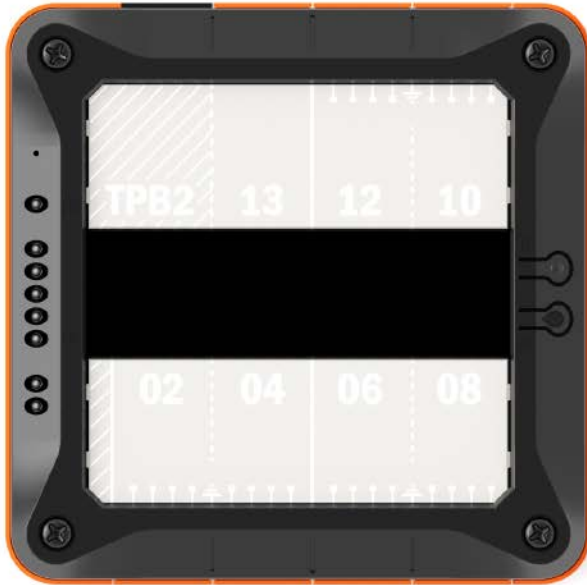


Integrated power supply with an 8-60V
input range



4 x UARTs + 4 x SPI/I2C + 2 x USB2.0 +
1 x HDMI port

TPB Enclosures



TPB2

Size 2 Project Box

This Box fits our Size 2 Project PCB (TPP2) and can accommodate up to six Tibbit Modules and six Tibbit Connectors. The translucent top cover allows you to observe the Tibbit LEDs below.

The included paper inserts can be used to mark ports and cables.

TPB2L

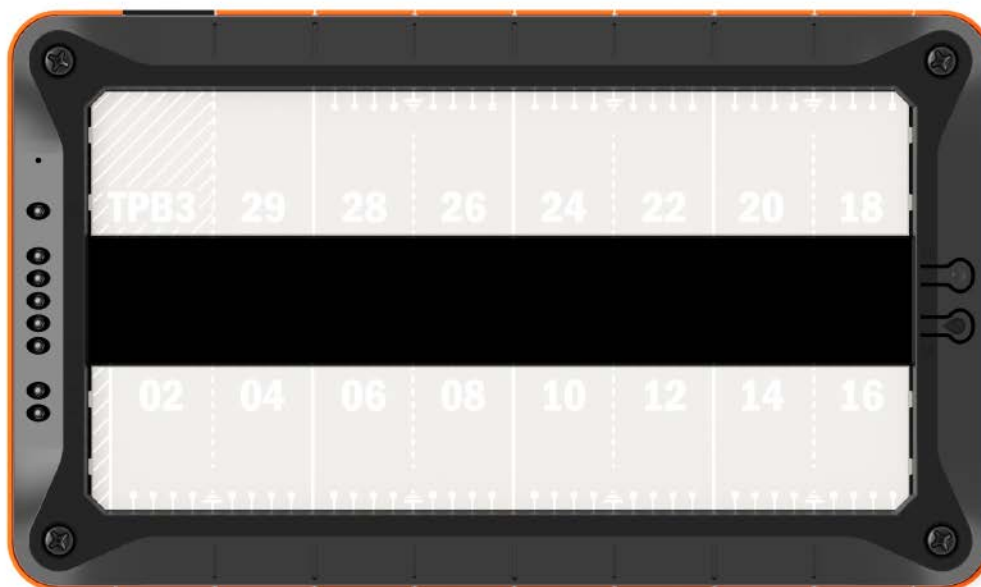
Size 2 + LCD/Keypad

Like the TPB2, this Box houses the Size 2 project PCB. In addition, its top cover incorporates a 320x240 3.5" TFT LCD and four sensor keys.

The LCD and keypad allow the TPS2L to be used in applications that require a human-machine interface (HMI).

Most projects require an enclosure. Designing and making one is challenging and can be prohibitively expensive. Not to worry—we supply four Tibbo Project Box (TPB) enclosure kits.

All enclosures have mounting holes for wall installation. Optional DIN rail mounting kits are also available.



TPB3/LTPB3

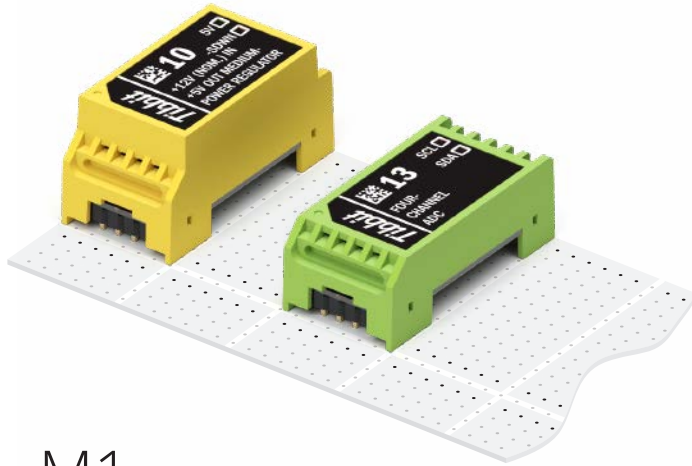
Size 3 Project Box / Size 3 Linux Project Box

These enclosures fit our Size 3 Project PCB (TPP3, 28 x Tibbit sockets) and Size 3 Linux Project PCB (LTPP3, 16 x Tibbit sockets).

TPB enclosure kits are fully independent products that can be ordered as a part of your system or purchased separately. Each element of the enclosure can also be ordered individually.

A white labeling service is also available: TPB enclosures may be customized with your logo (MOQs apply).

Tibbit[®] Modules



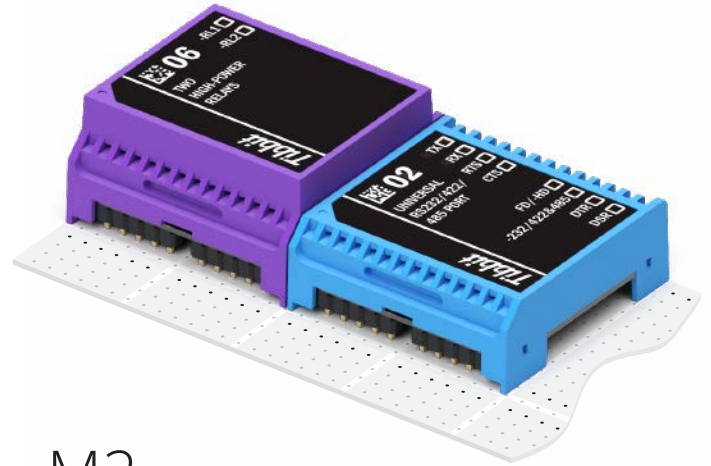
M1

Narrow Modules

M1 Tibbits are single-width devices occupying one Module socket on a Tibbo Project PCB (TPP).

M1 devices have four I/O lines for interfacing with the outside world. We found four to be the magic number. It is just right for a wide variety of I/O functions.

M1s can be short (M1S) or tall (M1T).



M2

Wide Modules

M2 Tibbits are double-width devices occupying two Module sockets on a Tibbo Project PCB.

With double the size comes the doubled internal space and I/O — M2s have eight I/O lines. They are used for “grander things” that just wouldn’t fit into the M1 form factor (high-current relays, LTE modems, etc.).

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

Input

Output

Input/Output

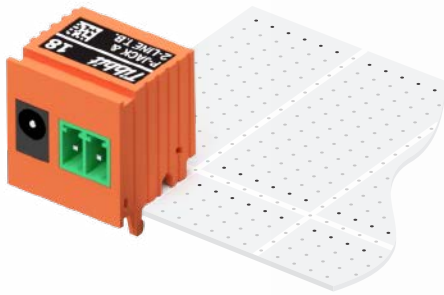
Power Supply

Blank

Connector

Tibbits are color-coded according to their function.

Tibbit[®] Connectors



C1

Narrow Connectors

C1 Tibbits are single-width devices that work in tandem with M1 Tibbits and occupy one Connector socket on a Tibbo Project PCB (TPP).

Some C1s are really just connectors of the power jack or DB9 variety. There are also C1s that sense the outside world (temperature, humidity, vibration, etc.) or perform other intelligent jobs.

C1s have an equal width and height with M1T devices.

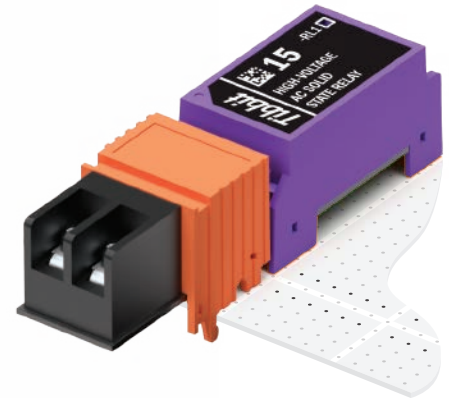


C2

Wide Connectors

At double the width of C1s, C2 Tibbits are wide enough to house DB9 connectors and 9-row terminal block banks. They occupy two Connector sockets on a Tibbo Project PCB and can interface to a single M2 or two M1 Tibbits.

C2s have an equal width and height with M2T devices.



H1/H2

Hybrid Tibbits

H1 Tibbits are merged M1 Modules and C1 Connectors. H2 Tibbits are a combination of M2 and C2 devices.

The H1/H2 form factors are used when interconnecting Module and Connector Tibbits via a Tibbo Project PCB is unsafe or undesirable.

Examples of such cases are high-voltage, high-sensitivity, and high-frequency (radio) circuits.

Available Tibbits®

Our vast Tibbit catalog makes TPS an ideal candidate for industrial automation, precision agriculture, access control, safety and security systems, climate control, smart building, and lab automation applications.

TPS is also a great prop for STEM education!



#00₁ - #00₃
Direct
I/O lines



#01
Four-line RS232 port
(RX, TX, RTS, CTS)



#02
Universal
RS232/422/485 port



#03₁ - #03₂
Two low-power
relays



#04₁ - #04₈
Opto-isolated inputs
(4-24V combined range)



#05
RS485 port



#06
Two high-power
relays



#07
Two solid-state
relays



#08
Wiegand & clock/data
reader port



#9
Low-power
5V supply, 12V input



#10
Medium-power
5V supply, 12V input



#11
Four open
collector outputs



#12
+15V/-15V supply
for Tibbits #13 & #14



#13
Four-channel
±10V ADC



#14
Four-channel
±10V DAC



#15
High-voltage AC
solid state relay



#16
Three PWMs with
open collector outputs



#17
Three PWMs with
power outputs



#18
Power input



#19
DB9M
connector



#20
Nine terminal
blocks



#21
Four terminal
blocks



#22
Temperature meter
for RTD probes



#23
Isolated PoE power
supply, 5V output



#25
High-power 5V supply,
12/24/48V input



#26
IR code
processor



#27
IR emitter/receiver



#28
Ambient light
sensor



#29
Ambient temperature
meter



#30
Ambient humidity &
temperature
meter



#31
PIC coprocessor



#33
High-power 5V supply,
12/24/48V input (60V max.)



#35
Barometric
pressure sensor



#36
3-axis accelerometer



#37
RF connector



#38
Pushbutton



#39₁ - #39₄
Large LEDs
(4 colors available)



#40₁ - #40₄
Digital potentiometers
(4 nominals available)



#41
8-bit port



#42
RTC & NVRAM with
backup battery



#43₁ - #43₂
4-Channel streaming ADCs
 $\pm 10V / \pm 100V$



#44₁ - #44₂
Isolated universal
RS232/422/485 port



#45₁ - #45₃
LTE (4G) modems



#46
Cat-M1/NB-IoT modem



#53
Isolated four-channel
4-20mA ADC



#54
Four opto-isolated
"dry contact" inputs



#57
Multi-function
FPGA Tibbit



#58-#59
Two 24V
NPN/PNP outputs



#62
One-wire Tibbit



#63₁ - #63₂
AC voltage detectors
(110V/220V)



WA2000
Wi-Fi/BLE add-on module

Follow Tibbo announcements. We
are constantly expanding the
assortment of available Tibbits.

Cable and Bus Probes

Cable Probes (CPs) are miniature sensors that connect to your TPS via a cable. Wired probes allow you to perform environmental measurements at a distance from the TPS. Temperature measurements, in particular, are much more accurate when taken with a cable probe.

In addition, cable probes are indispensable in cases where the TPS must be hidden from view or installed at an angle or position unsuitable for utilizing sensor Tibbits.

- 01 CP #01: Ambient temperature sensor
- 02 CP #02: Ambient humidity & temperature sensor
- 03 CP #03: Ambient light sensor
- 04 CP #04: IR receiver/transmitter



Bus probes utilize an RS485 interface and support the Modbus RTU protocol, making them ideal for longer cable lengths.

As many as 30 Bus Probes can be connected to a single RS485 Tibbit, and the bus cable can easily extend to 40-50 meters.

Since the Bus Probes are standard Modbus RTU devices, they can be used in any Modbus system, not just a TPS-based one.



- 01 BP #01: Ambient temperature sensor
- 02 BP #02: Ambient humidity & temperature sensor
- 03 BP #03: Ambient light sensor
- 04 BP #04: 3-axis accelerometer
- 05 BP #05: Flood/leak detector
- 06 BP #06: Opto-isolated digital input

AppBlocks Designer

The AppBlocks Platform is a no-code, flowchart-based, in-browser application development system for Tibbo devices.

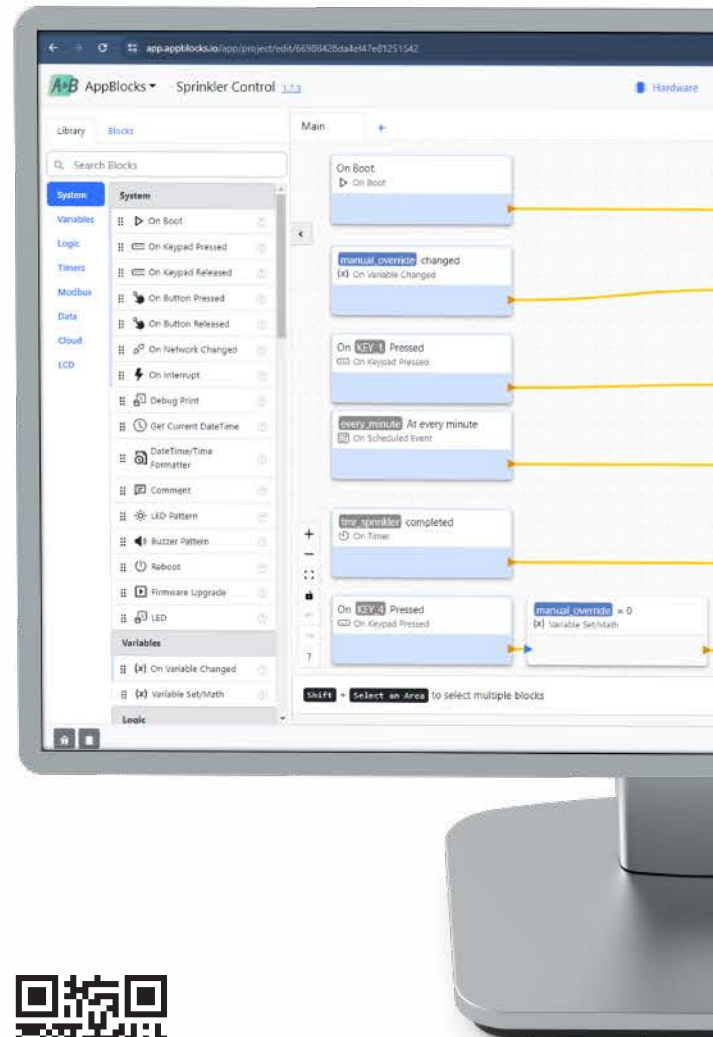
AppBlocks application development consists of three parts. First, you choose your hardware platform, such as the TPS2 device, and customize it by adding the necessary Tibbit modules.

Next, you define your system's static features. Here, you specify the variables your project will have, the required data tables, whether it will connect to the AppBlocks Cloud, and so on.

Finally, you draw a flowchart diagram describing your system's operation. AppBlocks flowcharts consist of carefully chosen building blocks. By focusing on the narrow segments of IoT, industrial control, and data collection, we could devise a set of highly useful and expressive blocks, thus making your flowcharts simple and readable.

After you complete the three parts—hardware configuration, static features, and the flowchart—you can compile and upload your application to an actual TPS device assembled according to your specifications. Once your app runs, you can debug it directly from the browser.

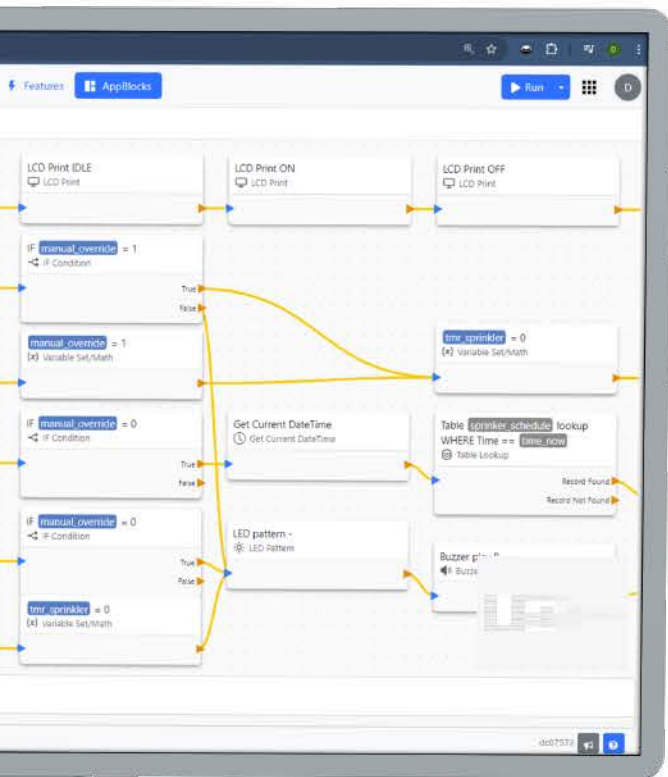
With AppBlocks, you can quickly build sophisticated IoT, control, and monitoring solutions. Greenroom controllers, access control devices, sensor data hubs, building automation systems, and much much more can be built in no time at all.



appblocks.io

To get started with the AppBlocks Platform, visit appblocks.io.
TPS configurations created as part of AppBlocks projects can be passed to tibbo.com for fulfillment.

AppBlocks Cloud



The AppBlocks Cloud takes the AppBlocks concept even further by facilitating the cloud management of devices you create.

The AppBlocks Designer and the AppBlocks Cloud are tightly integrated. As soon as your device connects to the Cloud and reports its application name and version, the Cloud knows what configurable parameters, data tables, events, and commands this device supports. This means your application's features are immediately mirrored to and accessible through the Cloud!

Once your devices connect to the AppBlock Cloud, you can monitor their health, edit their operational parameters and data tables, combine like devices into groups, and set up alerts—all with minimal configuration effort.

The AppBlocks Platform and AppBlocks Cloud shave days or even weeks off your development time. What used to require a major development effort can now be finished in hours or minutes. Moreover, you can quickly learn AppBlocks even with little or no prior coding experience. The AppBlocks Designer is free, and the AppBlocks Cloud offers a free tier. No credit card is required to register an account, so start your AppBlocks journey today!



tibbo.com/adk

To facilitate your AppBlocks onboarding, we have created a TPS-based AppBlocks Demo Kit (ADK). Order yours at <https://tibbo.com/adk>.



TIBBO PROJECT SYSTEM

[TIBBO.COM/TPS](https://tibbo.com/tps)

MODULAR PROGRAMMABLE INDUSTRIAL CONTROLLERS

