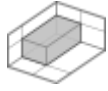


#00-2, M1S: Three direct I/O lines and ground



Function: Three directly exposed I/O lines of the microcontroller plus the ground line.

Form factor: [M1S](#)

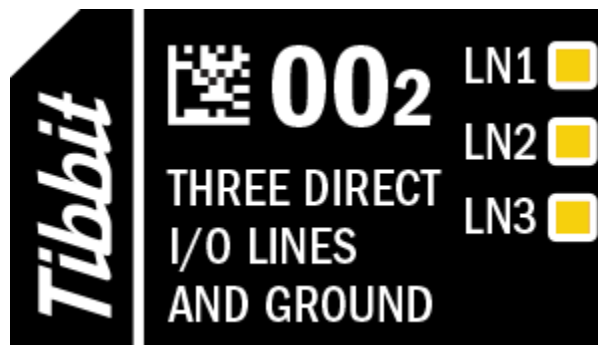
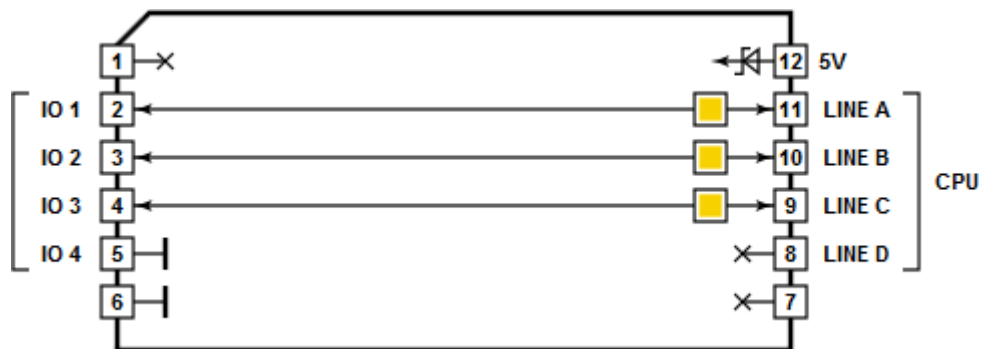
Category: Blank module

Special needs: ---

Power requirements: 5V/[TBD](#)mA

Mates with: [#19](#), [#20](#), [#21](#)

See also: [#00-1](#), [#00-3](#)



Details

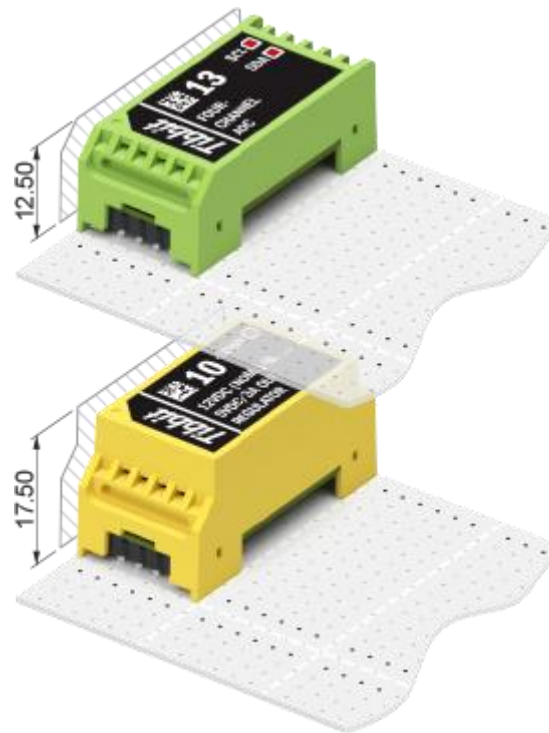
As with Tibbit [#00-1](#), this device allows you to work with CPU lines directly. The only difference is that one of the lines is replaced by the ground (GND) line.

The GND line may be necessary when using this Tibbit with "C" device [#21](#) (four terminal blocks). #21 doesn't have its own dedicated ground, so if the ground is necessary (and it usually is) then it must come from the neighboring "M" device, such as this Tibbit.

LEDs

Three yellow LEDs are connected to three control lines of the CPU (through buffering gates). LEDs light up for the LOW state of control lines.

Footprint and Color Coding








M1 Tibbits are single-width modules occupying one ["M" socket on the standard tile](#). Their footprint is roughly 7 x 14 "squares" (one "square" is 2.54 x 2.54 mm).

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".

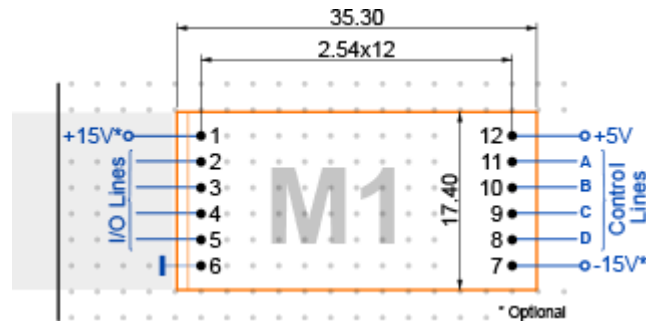
Each M1 module's color will tell you if it is an...

				
Input module	Output module	Input/ Output	Power supply	Blank module

M1 Tibbits can incorporate up to [four status LEDs](#).

I/O pins

M1 modules have 2 rows of 6 pins:



Pins 8-11 are control lines A-D. They are for interfacing to our [embedded modules](#) or other microcontrollers. On [Tibbo Project PCBs](#) these pins are connected to the main processor.

Pins 2-5 are I/O lines facing the outside world. On Tibbo Project PCBs they go to Tibbit [connector sockets](#) (i.e. connect to [C1](#) and [C2](#) devices).

Pins 6 and 12 are the GROUND and +5V power pins. Most Tibbit Modules consume (take) 5V power. There are also power supply Tibbits that generate 5V power from a variety of sources. Those *output* 5V through pin 12. As an example of power Tibbits see Tibbits [#10](#) and [#23](#).

Pins 1 and 7 are for the additional +15V and -15V voltages. These are optional and only needed by few Tibbits. A special power supply Tibbit [#12](#) generates +/-15V from the main 5V power.