midihub

Midihub is a compact and versatile **6-way MIDI splitter** and **MIDI beat clock generator**. It was designed to be "hands on" and was developed with MIDI jam sessions in mind, but is a versatile tool in any MIDI setup.

Power: The hub is powered via the mini USB connector. You can connect it to a computer, a powered USB hub, or to a standard 5 volt USB charger/power supply. *USB is for power only, no drivers are required and the device will not show up to your operating system.*

MIDI Outputs: The hub features a single MIDI input (opposite the USB connector) and six identical MIDI outputs (three on each side of the input). Connect the MIDI outputs to the inputs of up to six slave MIDI devices using standard MIDI cables.

MIDI Input: If desired, connect a MIDI controller/sequencer to the input socket (the middle MIDI socket, opposite the USB connector). Notes, etc., received at the input will be sent to all slave devices.

LEDs: The function assigned to each of the six LEDs depends on the selected mode and is described below.

Buttons: The top button (PLAY) is used to start and stop the MIDI clock function. The lower buttons (MINUS and PLUS) are used to change the BPM. Each button has additional functions which are described below.

Programming Port: The row of holes below the USB connector allow reprogramming of the firmware loaded on the hub's PIC16F1825 microcontroller. A suitable PIC programmer is needed (e.g. PICKit2)

BPM Mode: The hub powers up in this mode, starting in the paused state. When paused, four of the LEDs blink at the selected BPM. The initial BPM is 120.

Press PLAY to start the hub running. When running, all six LEDs illuminate in cycling pattern at the current BPM. Press PLAY again to pause the hub.

When running, midihub sends MIDI clock messages to all six outputs. It sends a MIDI START message when it starts running and a MIDI STOP message when paused.

At any time when in this mode, the MINUS and PLUS buttons can be used to change the BPM in +/-1 BPM steps. The buttons auto-repeat when held for about 1 second. Press both buttons together to reset the BPM to 120.

BPM can be adjusted from 30-300bpm and is accurate to about 1% (The accuracy of the micro-controller's internal oscillator)

Tap Tempo Mode: To enter Tap Tempo mode, hold down MINUS and immediately press and release the PLAY button. Now tap the MINUS button at the desired tempo, tapping between 2 and 6 times (more taps will increase the accuracy of the input). The LEDs will count up each tap and the tempo will be adjusted as you tap.

Tap tempo mode is effective until you press the PLUS button. You can make multiple tap tempo inputs without having to repeat the MINUS>PLAY combination.

Split Only Mode: In this mode, the hub does not generate a midi clock, but continues to split the MIDI input to the outputs. The LEDs glow to "visualise" the MIDI data. To enter Split Only mode, hold down PLUS and immediately press and release the PLAY button. To exit Split-only mode and re-enable the clock, press the MINUS button.

MIDI Thru: MIDI thru (from input to outputs) is active at all times, except when specifically disabled via the options menu.

Options Menu: To enter the Options Menu, press the START/MINUS/PLUS buttons together. Settings are mapped to each of the six LEDs according to their position as follows:

Allow MIDI realtime messages (e.g. clock) to pass from input to output (default: OFF)	Select LED brightness level from one of six options. (default: Maximum)
Allow non-realtime MIDI messages (e.g. Notes, cc) to pass from input to output (default: ON)	Enable "quiet mode", which uses only the top two LEDs as indicators in clock mode. (default: OFF)
Send MIDI START and STOP messages in clock modes (default: ON)	Enable the "visualisation" of MIDI thru traffic in split-only mode (default: ON)

Press PLUS to select a setting (indicated by the flashing of the corresponding LED) and Press MINUS to select between values (ON, OFF or brightness level). Press PLAY again to exit from the menu.

midihub++ is an open source project. For more information please visit **six4pix.com/midihub.** For assistance or questions please email **sixtyfourpixels@gmail.com**

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