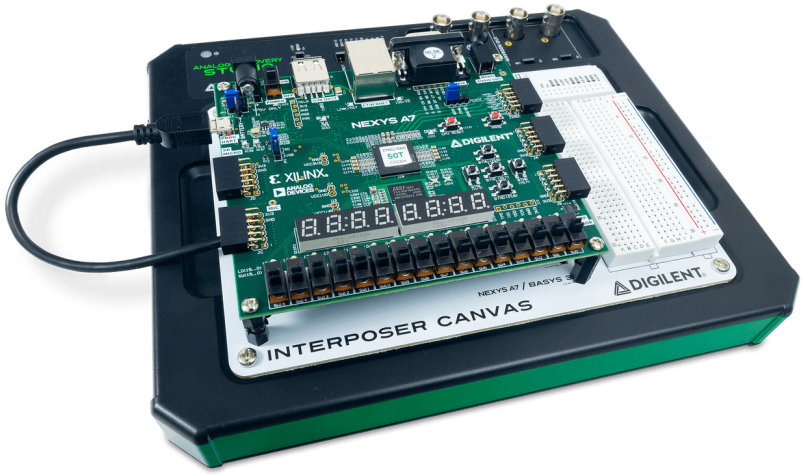
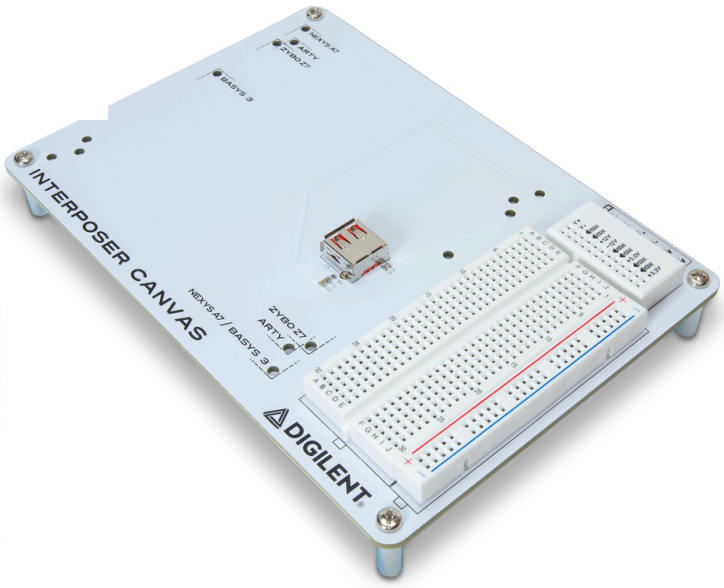
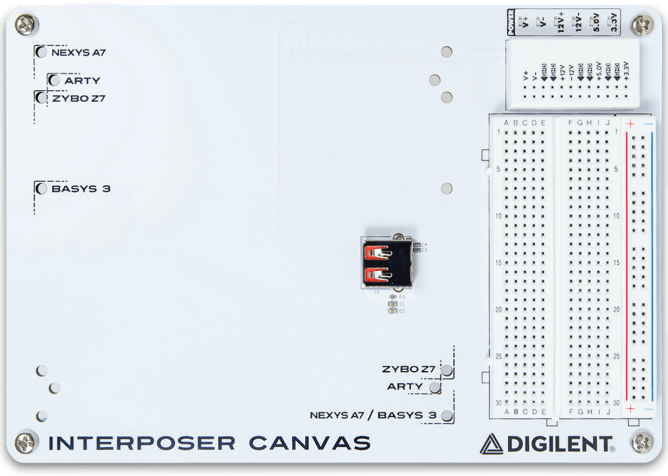
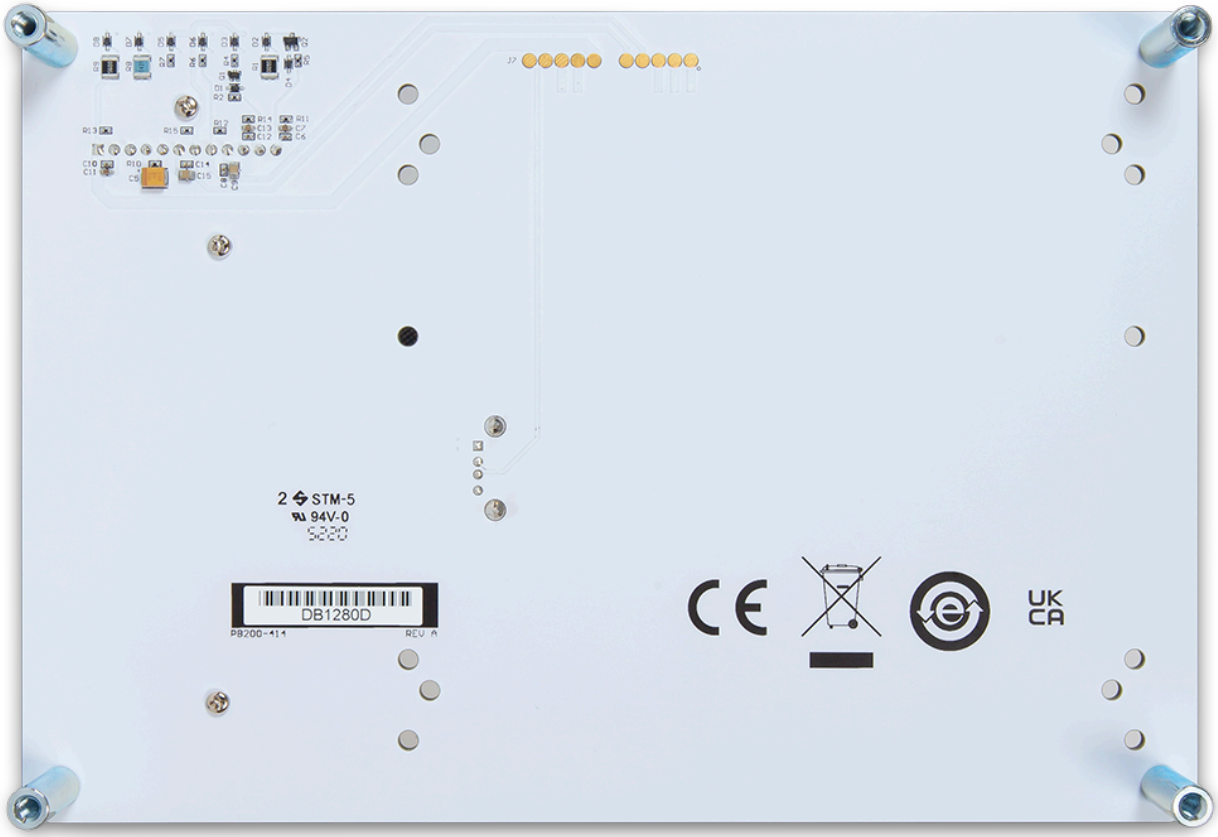
FPGA Board Adapter Canvas Reference Manual

The FPGA Board Adapter Canvas (formerly the Interposer Canvas) is a replaceable and removable prototyping surface intended for using the Analog Discovery Studio with FPGA development boards. The FPGA Board Adapter Canvas provides a 150-position solderless breadboard and a power rail for prototyping additional circuits. There is also a small breakout board for V+, V-, +12V, -12V, +5V, +3.3V, and Ground. There are 6 green LED indicators to show the status of power supplies.









Mechanical Design

The FPGA Board Adapter Canvas is designed to connect to the Analog Discovery Studio via standoffs. Magnets are located within each of the holes that the standoffs slot into in order to hold the Canvas in place. The FPGA Board Adapter Canvas can be removed from the Analog Discovery Studio and swapped out with other canvases.

Warning! *Do not swap out Canvases while the Analog Discovery Studio is turned on.*

Serial Connectivity

When using the FPGA Board Adapter Canvas, the Analog Discovery Studio acts as a passthrough for any serial connection established between the FPGA board and the host computer connected to the Analog Discovery Studio. You can use the board's built-in JTAG programming and USB-UART bridge circuitry just as you would if the board was connected directly to your computer. For more information on these features, check out the documentation for your FPGA board through its resource center.

Breadboards

The FPGA Board Adapter Canvas has a small breadboard with power rail for prototyping circuits along with your FPGA board.

Power Supplies

The Analog Discovery Studio can supply up to 1 Amp of current to the FPGA board through the FPGA Board Adapter Canvas's USB connector. The power budget is shared with the fixed +5V rail on the FPGA Board Adapter Canvas, so the current draw from that rail into custom circuitry may further limit the power available to the FPGA (and vice-versa). If the FPGA board and custom circuitry attempt to

draw more current than can be provided by the Analog Discovery Studio, a brown-out event may occur, temporarily turning off the board and returning it to a known good state. The Analog Discovery Studio will continue to operate as normal in this event.

Alternatively, the FPGA board can be powered externally through the barrel jack of whichever board is used. Important: When using an external power supply, to ensure that no damage to either device occurs, make sure to connect the Analog Discovery Studio's power supply before connecting the power supply to the FPGA board.

Power Supplies Breadboard

Each of the Analog Discovery Studio's power supplies, both variable and fixed, are connected to the canvas, accessible via the power supplies breadboard.

The power access pins for the variable supplies, labeled V+ and V-, are connected to the Analog Discovery Studio's programmable power supplies. They can be programmed to voltage levels from 1 to 5V (V+) and -1 to -5V (V-) through the use of WaveForms' *Power Supplies* instrument.

Four fixed supplies are available: +12V, -12V, 5.0V, and 3.3V.

Green status LEDs, associated with each supply, turn on when power is available on that pin (when the supply is enabled, and the Analog Discovery Studio is turned on).

Since each power supply is sourced directly from the Analog Discovery Studio, the minimum and maximum current and power available for each supply depends on the Analog Discovery Studio's specifications. See the Analog Discovery Studio Specifications for more information.