Introduction

Texas Instruments supplies the popular MSP430 family of microcontrollers, along with several low-cost programming and debugging tools. The most popular of these is currently the MSP-FET430UIF, a small programming and debugging unit with a USB interface.

This application note contains hints for using the MSP-FET430UIF interface together with a Merifix test fixture, to make a self-contained programming fixture suitable for use in the engineering lab or in low-volume production.

Mechanics

Mounting

The most convenient location to mount the MSP-FET430UIF is underneath the probe plate, with its USB receptacle against the rear panel insert.

Mounted like this it encroaches about 1" into the centre of the probable area. The photo shows one mounted below the probe plate of an MF500 fixture. On the MF300 fixture there is a little less room, but there is enough space for probes at the front if the DUT is small.

The MSP-FET430UIF enclosure is held together with four screws, accessible from the bottom. A straightforward way to mount the unit is to drill four holes in the probe plate, remove the enclosure screws, then replace them with four longer screws that first pass through the probe plate.
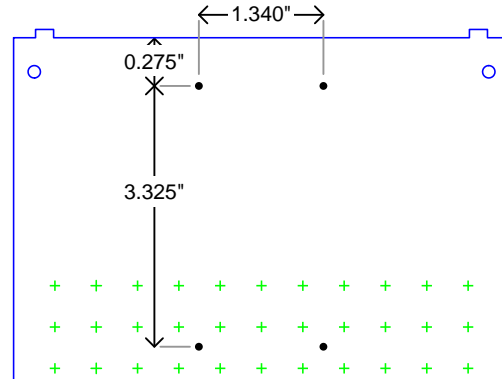

The original screws are about 0.7" (18mm) long. Suggested longer screws are #4 x 1" self-tapping Philips pan head. The holes in the probe plate can be 1/8" (3.2mm) for clearance.

Mounted like this, just the screw heads will be visible on the top of the plate.

Rear Panel

A single hole in the rear insert is sufficient to provide access to the USB connector. If you are drilling a circular hole, a diameter of 3/8" (9.5mm) is just about sufficient - a little bit of filing may be needed.
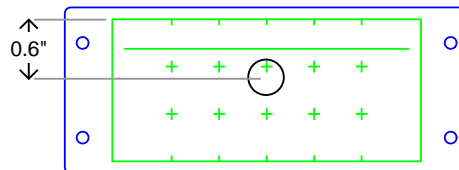
You only need the hole to be big enough for the metal part of the USB plug. The rear insert is thin enough that the moulded plastic part of the plug does not need to pass through it.
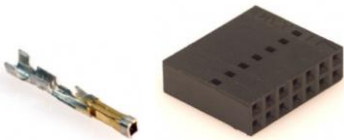
Wiring

Connection to the Target header of the MSP-FET430UIF may be made with a 2x7 IDC type receptacle and ribbon cable, with the individual wires separated for connection to the test probes.

Description	Manuf.	Part No
Receptacle	3M	3385-6600

A nicer arrangement is to use a 2x7 housing and crimp terminals for individual wires.

Description	Manuf.	Part No
Housing	Molex	22-55-2141
Terminals	Molex	16-02-0097

The discrete wire connector does protrude from the programmer a little more than the IDC type connector, so make sure you have room for it.

The connections needed between the tool and the target are shown in the Texas Instruments "MSP430 Hardware Tools User Guide", which can be found on the TI web site on the MSP-FET430UIF page or by searching for document number SLAU278.

In this scenario you are probably going to want the programming tool to supply power to the target, which means connecting your V_{DD} test probe to pin 2 of the header, rather than pin 4.

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