PIL-Box kit notes
Update for firmware 2.x

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Kit content:
- 1 programmed PIC16F1826 uC
- 1 18-pin DIL socket
- 1 FTDI UB232R USB module
- 1 PCB “PIL-Box 1”
- 1 housing G403
- 1 passive part set (resistors, capacitors, diodes, LED)
PCB layout:

![PCB Layout Image]

Bill of Material:

- **R1, R2:** 220 Ohms
- **R3:** 10 kOhms
- **R4, R5:** 22 kOhms
- **R6, R7, R8:** 150 Ohms
- **R9:** 470 Ohms – vertical mounting, used only if LED1 is mounted
- **C1, C2, C4, C5:** 22 nF
- **C3, C7:** 100 nF
- **C6:** 100 pF
- **D1, D2:** 1N4148
- **Z1, Z2, Z3, Z4:** BZX55-5.1V
- **LED1:** 3mm LED (optional) – cathode (shortest lead) towards IC1
- **IC1:** Microchip 16F1826 (on socket)
- **USB module:** FTDI UB232R

Note that the capacitors C8, C9 and the crystal Q1 are not used.

Notes:

A jumper must be installed on JP2 position for operation at 115 kbs speed.
The HP-IL cables can be soldered directly to the PCB.
Housing making:

Left: HP-IL cable back panel. Right: USB port front panel.
Note that the font and back panels have a top and bottom side. The top side is indicated by the small mark on the middle of the top (visible here on the HPIL cable panel).

For the USB panel, the two slides have to be reduced to let the USB module fit in nicely.
Don’t remove the slides completely otherwise the board will no more stay in place:

For installation of the PCB into the housing, and wiring of the HP-IL cables, please refer to the “PIL-Box set-up” document.
PIL-Box Board Test:

Make sure that the jumper JP2 is installed on the PIL-Box board and that the ILPer software is set to 115 kbps speed.
The 9600 bps speed is no more supported with the PIL-Box firmware 2.x.

Plug a USB cable to the PIL-Box. The LED should blink 3 times. If yes, the uC is working correctly.
Start ILPer. If the PIL-Box is found, the USB module and connection to the uC are correct.
Connect a HP-41C or HP-71B to the PIL-Box.
Enable the scope mode of ILPer:
   - HP-41C: Power-up the HP-41C. The LED should stay on (actually blinking at high rate).
   - HP-71B: Power up the HP-71B. Do “RESTORE IO” on the HP-71B. The LED should blink briefly.
The first HP-IL frames in the scope window should be: “IFC AAD 01 “