

## DIPFORTy1 "Soft-Propeller"

|                                                                                   |                                                                                                                                                                                                                                                                                                         |                                                                                                                            |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>2015</b></p> <p>First year an Xilinx 7 series based product or Zynq based product passed into semifinals for the</p> <p><a href="#">HackdaDay prize</a></p> <p><b>Trip To Space</b></p> <p>A small step for those on the way to</p> <p><a href="#">All Programmable ...</a></p> <p>... world?</p> |  <p><b>open source<br/>hardware</b></p> |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|

### Overview

The DIPFORTy1 "Soft Propeller" is based on the Xilinx Zynq-7010, a System on Chip which contains a FPGA and a Dual Core ARM A9+ processor with enough logic gates to become a Propeller. The board also has 16 MByte of Flash used for configuration and everything fits on a Propeller-compatible DIP 40 pinout.

DIPFORTy1 "Soft-Propeller" is the lowest cost Zynq-based module ever made and the first ZYNQ module that can use existing bases and project boards (Parallax Propeller chip compatibility). All this in a compact 1.8 x 5.1 cm form factor, at the most competitive price.

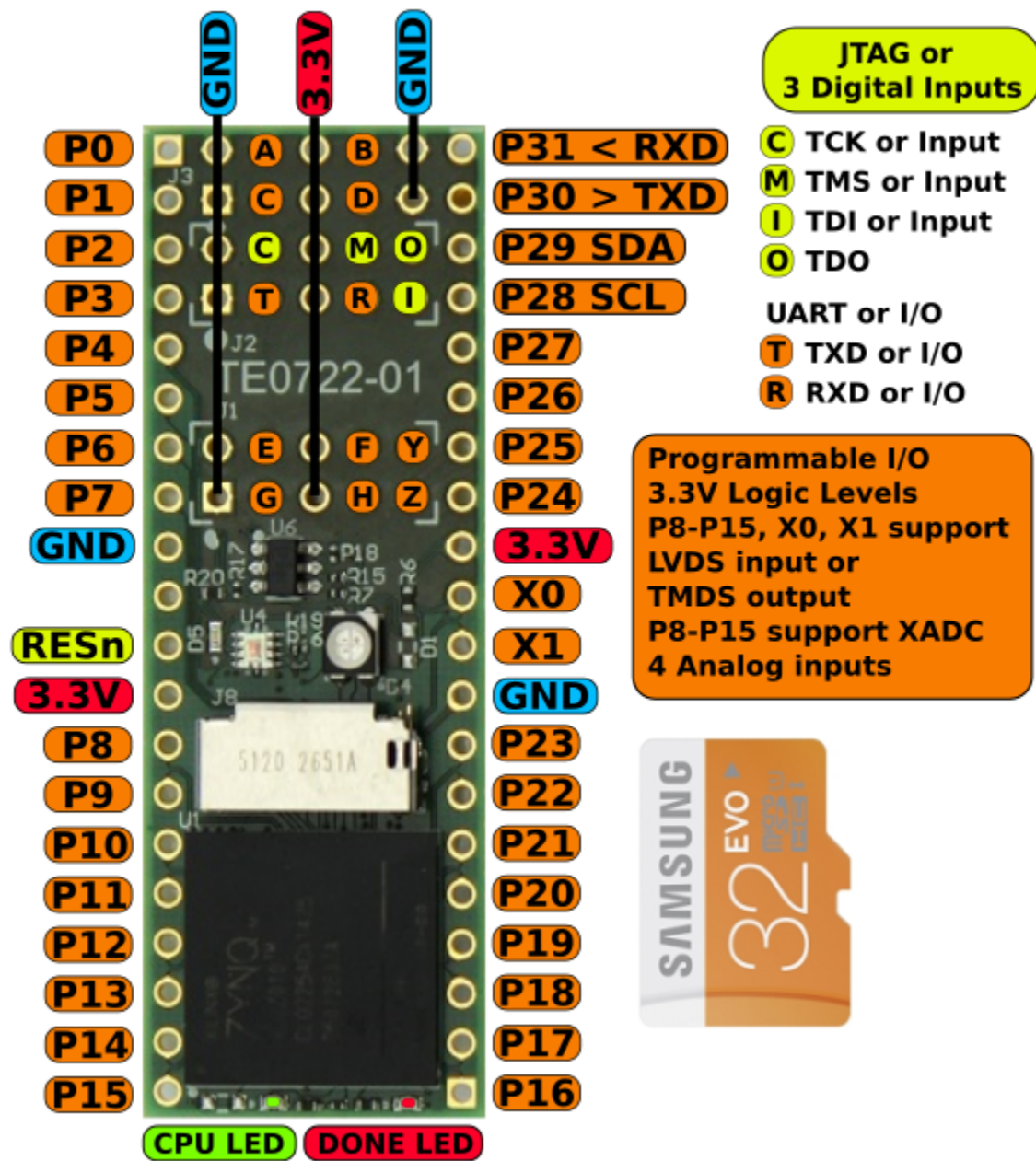


Only PCB Revision 01 is Open Source.

### Resources

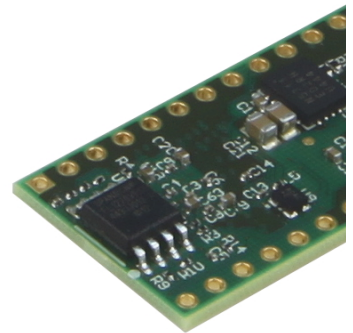
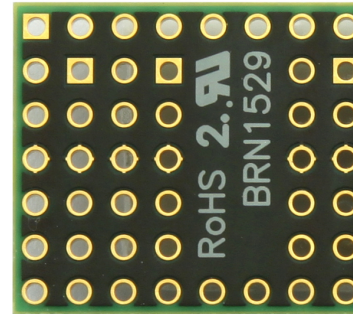
- [TE0722 Resources](#)

## DIPFORTy1 PINOUT



Pinout for Parallax Propeller compatible names

|          |             |
|----------|-------------|
| TOP Side | Bottom Side |
|----------|-------------|



## Features

- Xilinx ZYNQ-7: XC7Z010-CLG225
  - 16 MByte SPI Flash (primary boot)
  - 33.333 MHz Clock (MEMS oscillator)
- DIP40 form factor
  - 2 x 20 holes for socket pins or pin-header
  - Size: 18 x 51 mm
- Total user accessible PL I/O: 46 (+3 Input only)
  - DIP40 header pins: 34 I/O
  - XMOD J1: 6 I/O
  - XMOD J2: JTAG + 2 I/O (or 3 input + 2 I/O)
  - XMOD J3: 4 I/O
- 3.3V single supply
- RGB LED (PL I/O connected)
- "Done" LED (inverted polarity)
- User LED (ARM CPU MIO GPIO)
- MicroSD card socket (MIO, ZYNQ secondary boot media)
- Si1143 Proximity and ambient light sensor

## JTAG Header

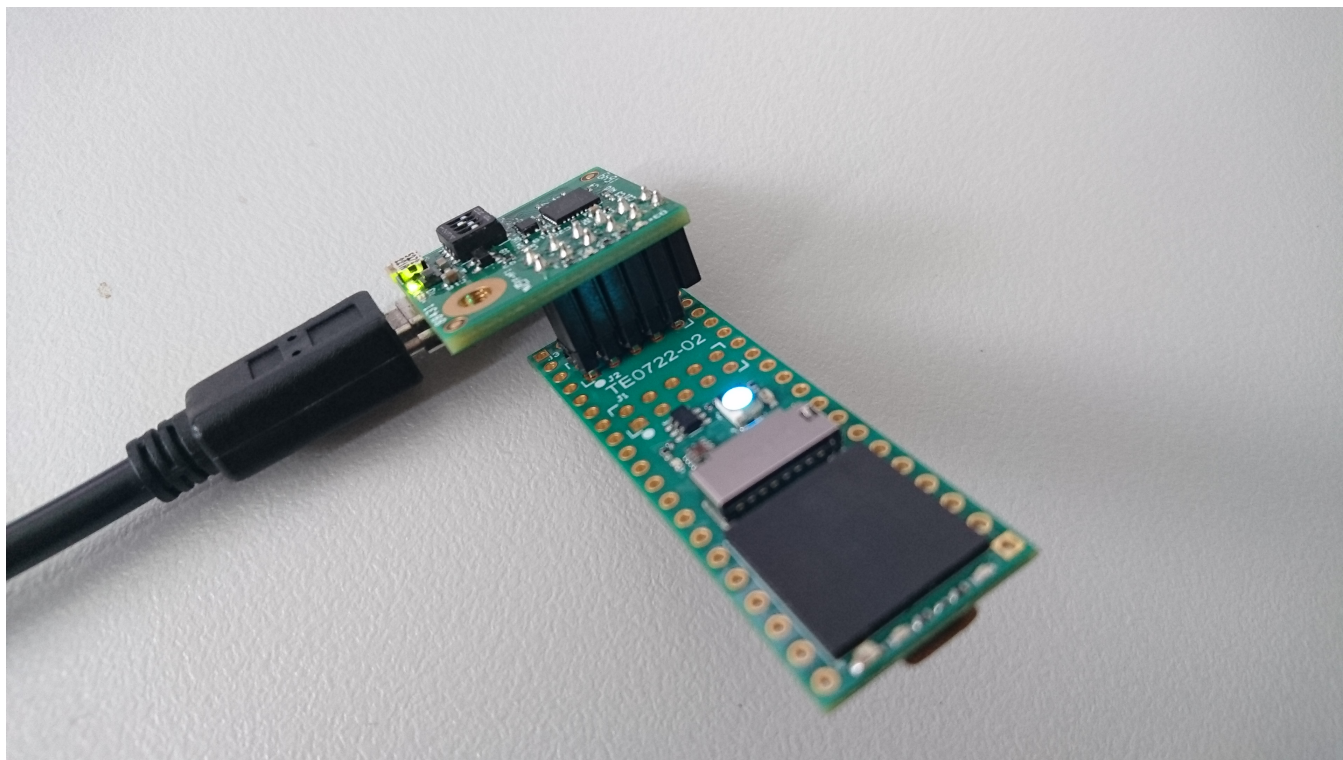


TE0722 JTAG Connector J2 -TOP view

## Use XMOD - Programmer

XMOD Programmer can be used as JTAG-Programmer and UART Interface.





JTAG header pinout using "alternate" mapping for XMOD-FT2232 JTAG adapter. This mapping, if needed can be changed by reprogramming the XMOD-CPLD. Connect XMOD on the top side of the PCB (Side with FPGA and module name). Use XMOD Pin 1 to 10.

If TE0722 is powered via XMOD (max. ~ 100mA), use XMOD DIP-Switch:

| POS | Value |
|-----|-------|
| 1   | ON    |
| 2   | OFF   |
| 3   | ON    |
| 4   | ON    |

If TE0722 is powered with external 3.3V, use XMOD DIP-Switch:

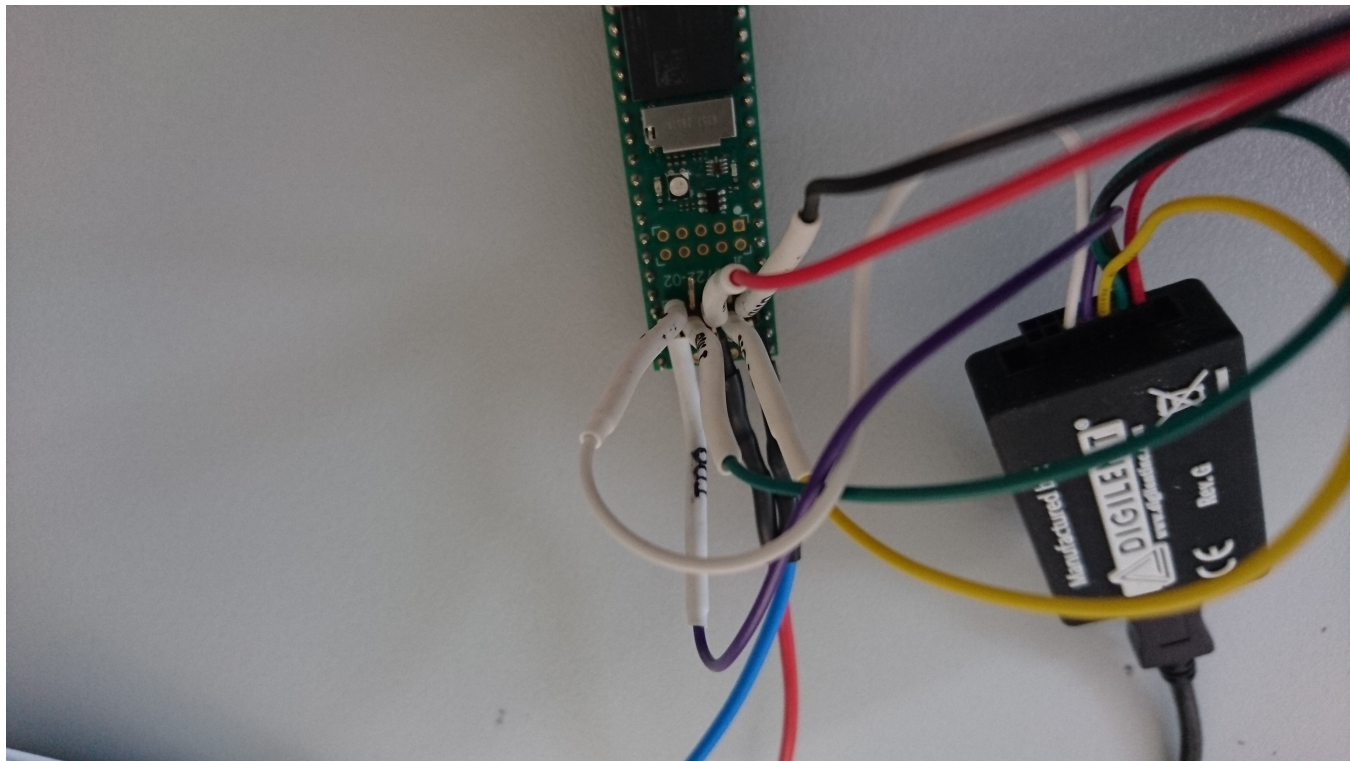
| POS | Value |
|-----|-------|
| 1   | ON    |
| 2   | OFF   |
| 3   | OFF   |
| 4   | OFF   |

For more details and downloads see:

- [Xmod-FT2232H](#)
- [XMOD-Downloads](#)

## Use other JTAG - Programmer

For example Xilinx Platform Cable USB2 or Digilent XUP USB-JTAG Programming Cable.



If you use a other programming cable than XMOD, TE0722 need a external 3.3V power supply. Use following connection:

| TE0722-J2 Pin | TE0722-Name | Platform Cable - Name | Platform Cable - Color | external power supply |
|---------------|-------------|-----------------------|------------------------|-----------------------|
| 1             | GND         | --                    | --                     | GND                   |
| 2             | GND         | GND                   | black                  | --                    |
| 3             | B34_L4_N    | --                    | --                     | --                    |
| 4             | TCK         | TCK                   | yellow                 | --                    |
| 5             | 3.3V        | VREF                  | red                    | --                    |
| 6             | 3.3V        | --                    | --                     | 3.3V                  |
| 7             | B34_L10_P   | --                    | --                     | --                    |
| 8             | TMS         | TMS                   | green                  | --                    |
| 9             | TDI         | TDI                   | white                  | --                    |
| 10            | TDO         | TDO                   | violet                 | --                    |

