Description

This evaluation board is designed to help customers evaluate the ProXO® XP Evaluation Board. This user manual explains the board layout and settings while walking through the IDT Timing Commander™ Software. When the board is connected to the software via USB, the ProXO device can be configured and programmed to generate different combinations of frequencies.

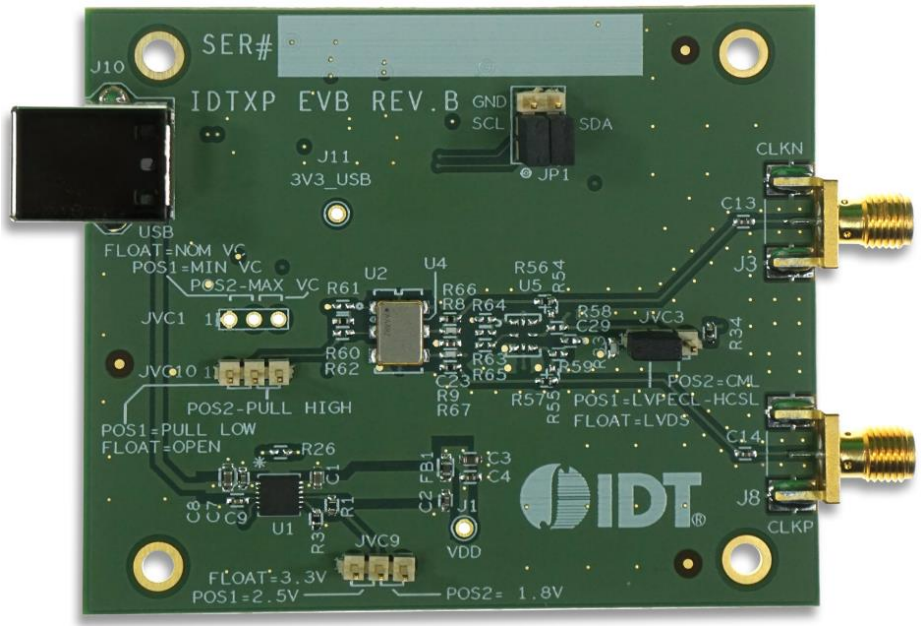
Kit Contents

- Evaluation board
- USB cable for connecting the board to a personal computer

Features

- The evaluation board has an XP series ProXO assembled that can be programmed to operate as any part number in the XP series
- The evaluation board connects to a personal computer through USB and is both programmed and powered from USB
- Use IDT's Timing Commander software to develop configurations and program the configurations to the ProXO
- The evaluation board has several jumpers for the following features:
  - Chose a power supply voltage between 3.3V, 2.5V, and 1.8V
  - Chose output termination configurations for LVDS, LVPECL, HCSL, or CML logic
  - Control the Output Enable (OE) pin
  - Use JP1 jumpers to connect the ProXO to the on-board USB-to-I2C bridge or connect the ProXO to an alternative external I2C host (e.g., Aardvark adapter)
- SMA edge connectors allow for direct connection of the AC coupled clock to test equipment like oscilloscopes or phase noise equipment
- Timing Commander software can be downloaded here: www.idt.com/products/clocks-timing/timing-commander-software-download-resource-guide
- The ProXO personality for Timing Commander can be downloaded on the ProXO product page

ProXO XP Family Evaluation Board



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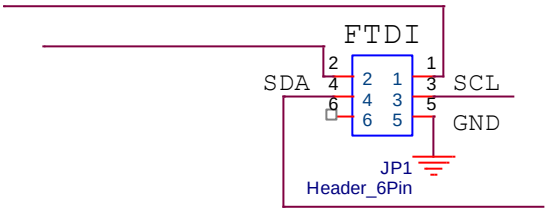
1. Interfacing

Table 1. Evaluation Kit Connection Descriptions

S.No	Name	On-Board Connector Label	Function
0	USB connector	J10	Connect USB to a Personal Computer to control the ProXO device with IDT Timing Commander. The USB port will also supply power to the board.
1	Differential output	J3, J8	Available logic types: LVDS, LVPECL, HCSL, and CML.
2	Power supply voltage selector	JVC9	Place jumper to the right for 1.8V. Place jumper to the left for 2.5V. No jumper (floating) for 3.3V.
3	Output termination selector	JVC3	Place jumper to the right for CML. Place jumper to the left for LVPECL and HCSL. No jumper (floating) for LVDS.
5	Output Enable selector	JVC10	Place jumper to pull low or high. No jumper (floating) will always enable the output.

Figure 1. Interfacing with a Computer to Run Timing Commander

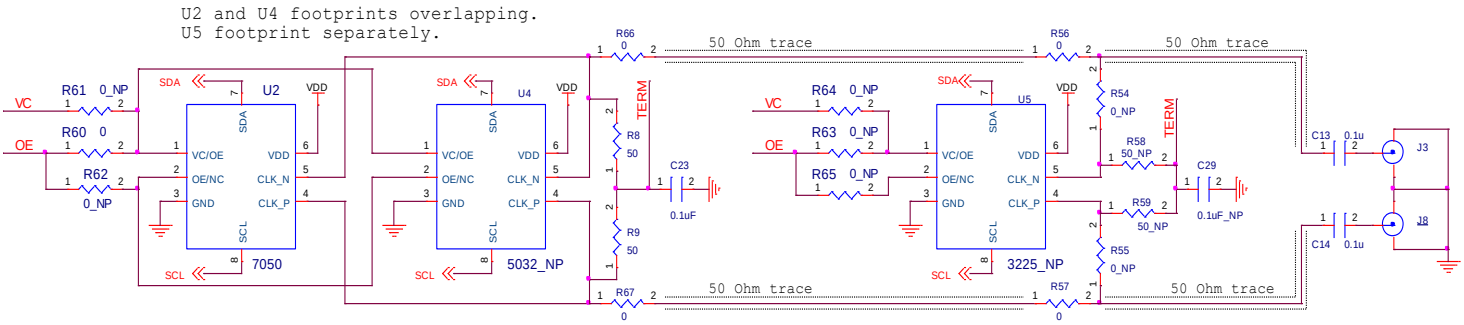


JP1 controls the routing of I2C signals. Pins 1 and 2 connect to the on-board FTDI USB to I2C bridge, and pins 3 and 4 connect to I2C pins of the ProXO device.

Place jumpers on 1-3 and 2-4 to allow the FTDI chip to control the ProXO device.

Remove jumpers and connect to pins 3-4-5 to control the ProXO device from an external I2C controller. An Aardvark adapter will connect directly onto pins 3-4-5.

Figure 2. Output Terminations



The differential output has a pair of SMA connectors to connect to 50Ω coax. It is recommended to combine the two signals using a balun or splitter/combiner device when measuring jitter or phase noise. The circuit at the SMA connectors is shown in Figure 2

2. Usage Guide

2.1 Operating Instructions

1. Set all jumpers for power supply choices.
2. Connect the USB.
3. Start Timing Commander.
   - Start new configuration or load TCS file for existing configuration.
   - Chose ProXO Personality.
   - In case of a new configuration, prepare all settings.
   - Click the button with the IC symbol to connect to the ProXO device.
   - Click the button with the arrow pointing at the IC symbol to write all settings to the ProXO device.
   - It should now be possible to measure clocks on outputs.
   - While connected, each change to settings will be written to the ProXO immediately and can be observed at the clock outputs.

3. Schematics

Figure 3. Evaluation Board Schematic 1

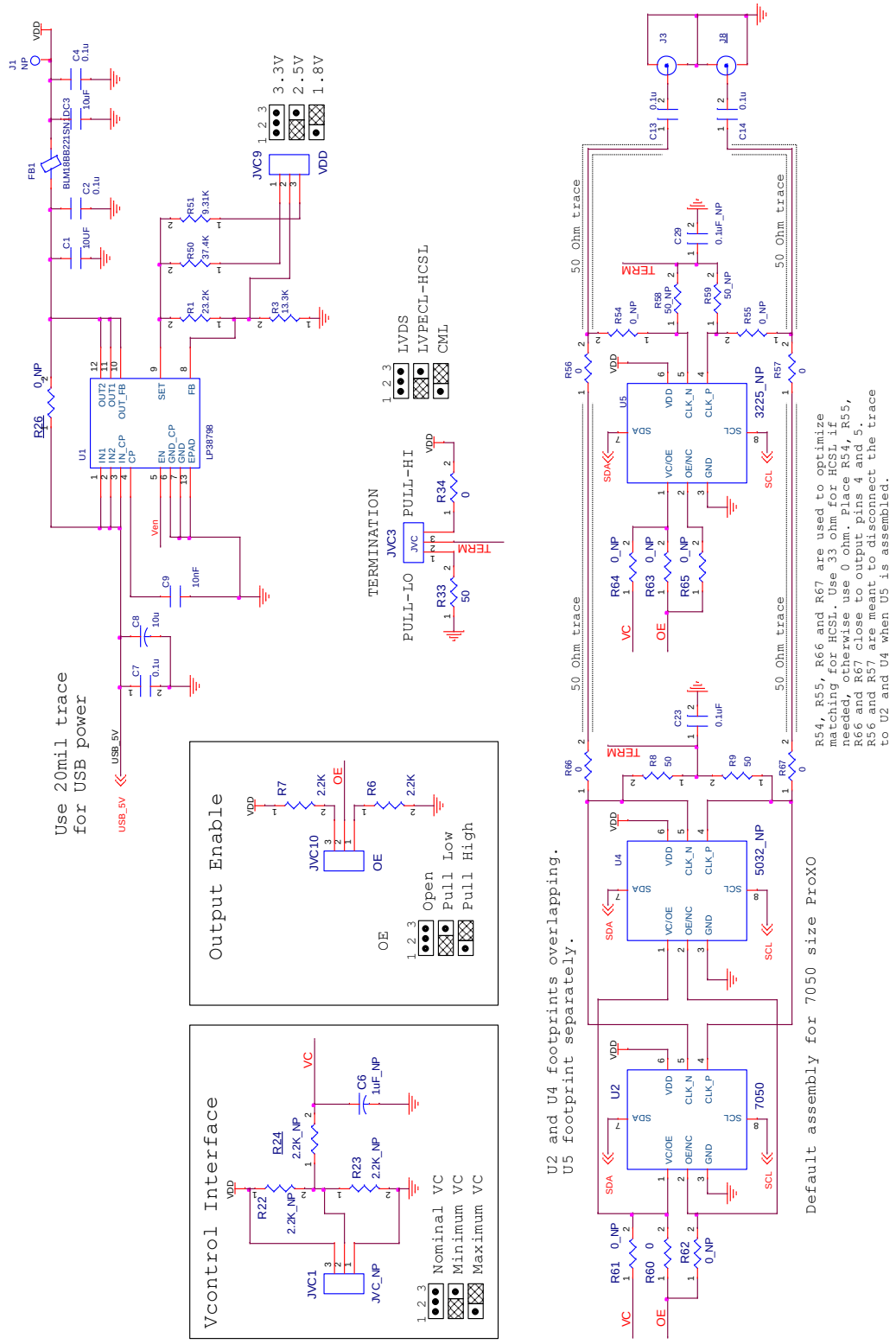
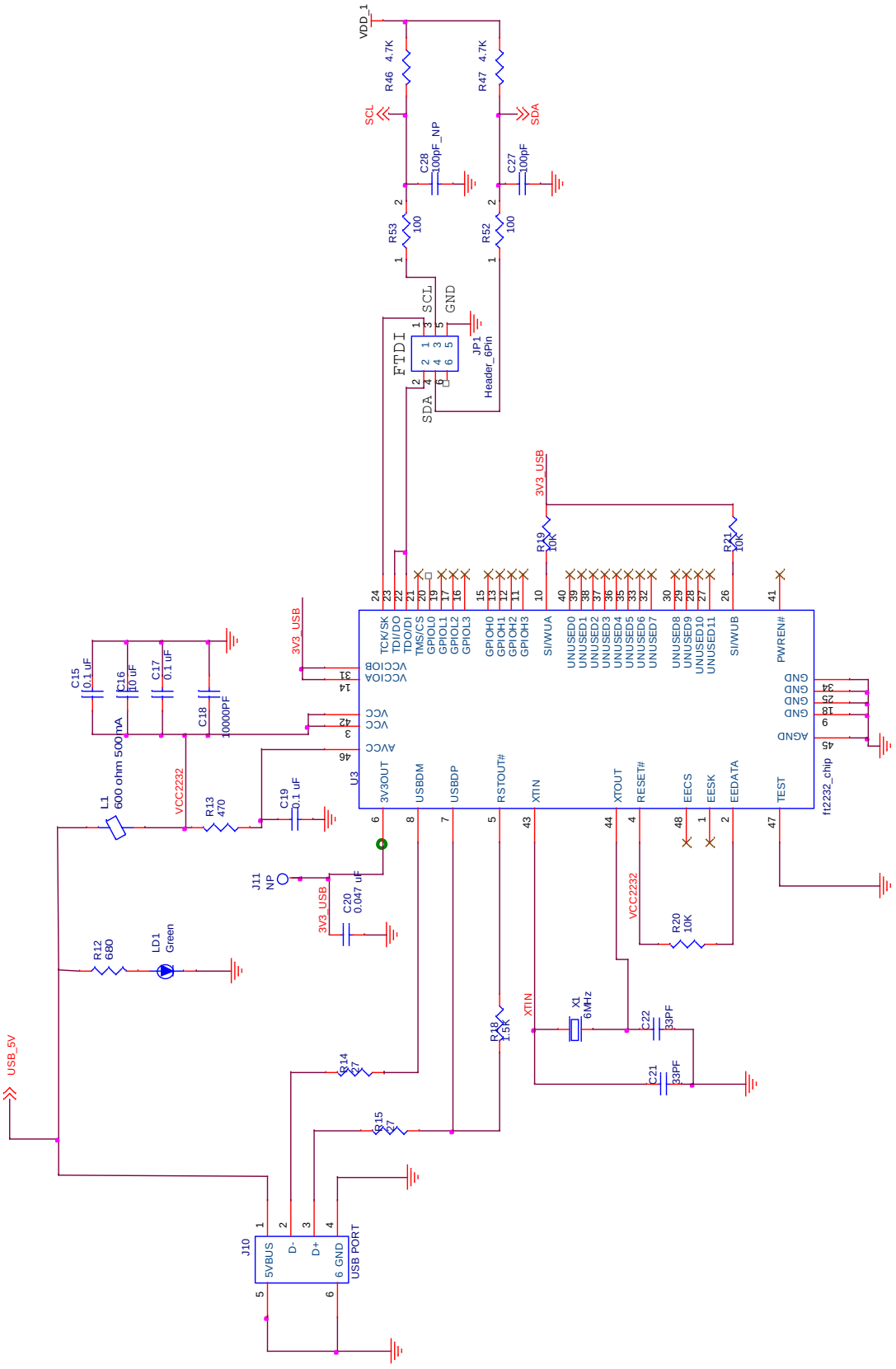


Figure 4. Evaluation Board Schematic 2



4. Glossary

Table 2. Glossary

Term	Definition
Bit Set	A single variable stored within the registers of the device. A bit set can use only part of a register or many span multiple registers but is thought of as a single field. For example, a 20-bit output divider ratio can be defined as a single bit set of length 20 bits but can be stored in Register 0x4A, bits [3:0], Register 0x4B, bits [7:0] and Register 0x4c, bits [7:0].
Default Value	When referring to any field that the user can edit, Default Value means the value recommended by the personality for that field, considering the settings in other fields in the device. Changes of other fields can result in a change to the Default Value. Whenever a field is unlocked, Default Value = Value. Only by locking a field can a user set a field to a Value other than the Default Value or prevent a field's Value from changing if Default Value changes.
Display Value	A field can be controlled by a personality to display its Value or Default Value in a more meaningful way. For example, if the Value is defined in MHz but the actual value is 0.008MHz, the personality can choose to display this to the user as 8KHz. In another example, if a bit set represents a divider ratio that can only be an even number and so does not implement the Least Significant bit, the personality can choose to show a divider ratio of 2 when the bit set value is 1 (i.e., 1 increment of divide-by-2).
IDT Timing Commander Software	Executable file that will execute a personality, connect to a timing chip on an evaluation board, and read or write Settings files.
Metadata	Variable used within the personality but not stored directly in device registers. For example, an output frequency is generally not stored anywhere in a device's registers but must be known to calculate register settings for the device with which we achieve those frequencies.
Personality	Encrypted file with an extension .tcp. Used by IDT Timing Commander Software to determine the characteristics for a specific family of timing devices. A personality file can refer to a single device or an entire family of similar devices. Please contact IDT to obtain the most current version of a personality file for the devices of interest.
Settings File	Text file with extension .tcs. Written or read by IDT Timing Commander Software to save or restore a setup for a specific version of a device personality and version of IDT Timing Commander Software. Settings files created with newer versions of IDT Timing Commander Software or a device personality cannot be compatible when read into an older version of IDT Timing Commander Software, or, if an older version of the personality is installed. Forward compatibility (older settings files read by newer software and/or personality) will be maintained.
Tooltip	Context-sensitive pop-up that appears briefly as the mouse pointer hovers over an icon or element on the screen. These are intended to provide useful information about the specific item being pointed to.
Value	When referring to any field that the user can edit, Value means the current internally-represented value of that field.

5. Ordering Information

Orderable Part Number	Description
EVK-ProXO XP	Evaluation Board for ProXO XP series.

6. Revision History

Revision Date	Description of Change
March 15, 2019	Initial release.

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