



Preface:

pmBBE connects between power supply port and prototyping assembly having positive power line bypassing it's normal open screwable connector. It also connects to the management assembly on it's PMOD interface rail (6 pin connector) allowing to drive each pin GPIO pass-through normal-open power switching terminal. pmBBE gets powered from the same PMOD header. Its onboard step-up regulator deliver either 12V (step-up) or 3V3 (bypass) voltage level over the central screwable connector XS6.

Environment:

Following support components require:

- pmTPS board for GPIO driving as well as for interfaces mapping and bridging
- pmCLK board providing necessary external clocking for pmTPS to operate in time base domain
- Alternatively pmTPSMAX board include LED indication as well as clocking service and could be used instead of pmTPS+pmCLK assembly
- pm3V3 board for power-up assembly
- pmUSBUART2 board for computer USB port interconnect. It deliver UART or USB CDC profile

- PMOD cable for board to board optional interconnect
- RTL configuration uploading either inside pmTPS or pmTPSMAX, but each board has a different .JED file, configured for each PMOD port dedicated role

Test scenarios:

1. Basic power switch (normal-open wire terminals validation)
 - a. Assembly: pmBBE+pmUSBUART2+pmTPS+pmCLK(or just pmTPSMAX)+pm3V3+computer with serial port terminal running
 - b. Programming: pmTPS/pmTPSMAX with "UART<->GPIOOUT bridge" RTL config
 - c. Event: after power-up execute python script over serial terminal to the validation USB port with 115200 bps speed
 - d. Expected: After executing command
 "python UART_GPIO_control.py /dev/ttyUSB0 1 on"
 LED connected to the 1st pmBBE screwable port XS1 will turn on.
 After executing command
 "python UART_GPIO_control.py /dev/ttyUSB0 1 off"
 LED connected to the 1st pmBBE screwable port XS1 will turn off.
 - e. Meaning: GPIO management command being received correctly through USB-UART bridge and is responsible for turning switching terminal on/off respectively.
2. Extended functionality (power supply)
 - a. Assembly: pm3V3+pmBBE
 - b. Event: after power-up with jumper J1 shortening 12V position and the help of multimeter verify voltage level present on connector XS6
 - c. Expected: after power up 12V voltage level expected to be present on XS6
 - d. Event: after power-up with jumper J1 shortening 3V position and the help of multimeter verify voltage level present on connector XS6
 - e. Expected: after power up 12V voltage level expected to be present on XS6
 - f. Meaning: power supply (coin 3V battery or automotive remote 12V battery) emulated functionality available and step-up system is operational

