



# Spartan™-3A / Spartan™-3AN DDR2-400 Demo

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# Agenda

- Demo requirements
- How to install the demo
- How to set up the demo
- How to operate the demo

# Demo Requirements

- This demo may be run on any standard Spartan-3A Starter Kit:
  - Spartan-3A
  - Spartan-3AN
  - Spartan-3A DDR2
- Performance is only verified and guaranteed with an XC3S700A-FGG484-5C (faster speed grade)
  - Not an orderable Starter Kit option (Starter Kits have -4C)
  - However, the demo may run on a standard Starter Kit at room temperature... Try it and see!
- This demo also requires a VGA display device which supports 1600x1200 at 75 Hz refresh
- Contact your local Xilinx FAE for any assistance needed

# Additional Notes

- The demo file archive contains pre-implemented programming files for immediate evaluation
- The PicoBlaze source files (RTL source and SW tools) are not provided in the demo file archive and must be downloaded from the Xilinx website <http://www.xilinx.com/picoblaze>

# Demo Installation (1)

- The demo installation requires programming two of the on-board flash devices
  - 32-Mbit ST parallel flash, m29dw323 holds bitmap
  - 4-Mbit Xilinx platform flash, xcf04s holds design
- The following steps describe how to install the demo on an “out-of-the-box” starter kit...
  - Default flash device contents
  - Default jumper settings

# Demo Installation (2)

- Connect the USB and RS232 DCE ports on the board to a PC using standard cables
- Open the HyperTerminal session for the parallel flash programmer (supplied with out-of-the-box demo file set)
- Connect the power supply, turn on the power
- In HyperTerminal, press the "4" key to initiate a MultiBoot to the parallel flash programmer

# Demo Installation (3)

- In HyperTerminal, press "E" to erase the device. Press "Y" to confirm the erase. Press "P" to program the device...
- Use "Send Text File" from the HyperTerminal Transfer menu, enable the file filter to show "All files (\*.\*)" and select the bitmap.mcs file
- The programming may take up to 30 minutes
- Close HyperTerminal session

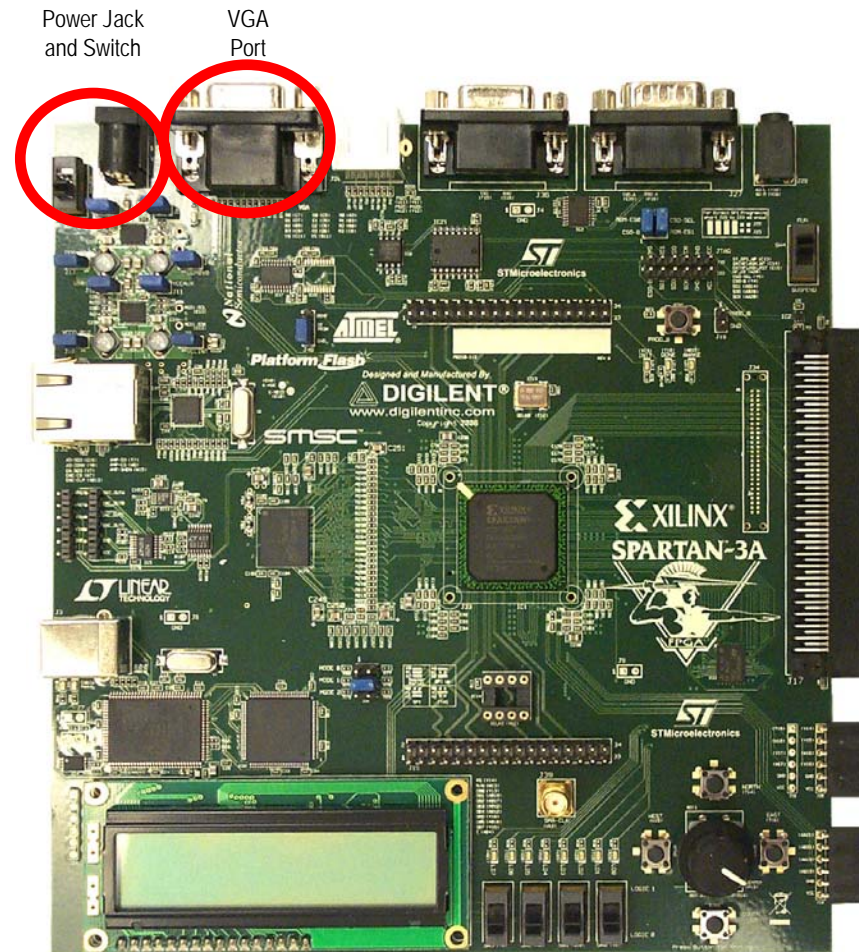
# Demo Installation (4)

- Install all jumpers on J26 to select master serial
- Install one jumper on J46, connecting CE\_PROM to DONE to enable the Platform Flash device
- Use iMPACT in JTAG mode to program xcf04s with framebuf\_routed.mcs, then close iMPACT
- Turn off power, remove programming cables



# Demo Setup

- Verify the power supply is connected to the board
- Connect suitable VGA display device to board
- Set switches SW3 thru SW0 to OFF (down)
- Turn on the power
  - Watch LCD for status
  - Watch VGA for bitmap



# Demo Operation

- Parallel flash data is shadowed into DDR2 device; four reference CRC32 values are computed during the data transfer (one for each nibble in the data)
- After shadowing completes, display data is fetched
  - Every frame, four check CRC32 values are computed and compared to the four reference CRC32 values
  - Upon a compare error, LD13 (yellow) is permanently set and user LEDs provide further diagnostic information (see design source for more information...)

# Demo Operation

- Additional options:
  - SW0, disable display fetch
  - SW1, disable memory refresh
- To intentionally corrupt the memory contents
  - Use SW1 to disable memory refresh, however the display fetch serves as pseudo-refresh cycles, so...
  - Use SW0 to disable display fetch for a few seconds
    - You will see a pattern (stale line buffer data)
    - Enable fetch, display reappears, check error LEDs
    - If no errors, disable display fetch for longer periods of time...

# Demo In Action

