

# PicoDigitizer125-64

## 2<sup>nd</sup> Generation

## Quick Start Guide

Version 1.0 – January 2017 – Up to date for PicoDigitizer125-64 – 2<sup>nd</sup> Generation release

Congratulations on the purchase of your new PicoDigitizer125-64!

### Box Contents

- **The PicoDigitizer125-64 enclosure**
- **A universal power supply with a power cord.**
  - Maximum output power: 150 Watts
  - Output voltage: 12 VDC
  - Input voltage: 100 to 240 VAC
  - Frequency: 50 to 60 Hz
  - Operation temperature: 0 to 40°C
- **The PicoDigitizer125-64 software tools USB dongle**
  - Windows 7 Installer (Host and FPGA development).
  - Linux Installer (Host development).
- **The PicoDigitizer125-64 Quick Start Guide**
- **Cables**
  - 1 Ethernet cable
  - 1 mini-USB cable
  - 1 USB type C to USB 3.0 type A 4-port hub (-64-E only)
  - 1 mini Display Port to HDMI/VGA adapter (-64-E only)
- **Other documents** (Terms of use and product policies)

### Enclosure Contents

#### PicoDigitizer125-64

- A **Perseus6113** carrier board equipped with an SX475 Virtex6 FPGA.
- Two **MI125** FMC stacks.
- A **backplane** board ensuring the Perseus and MI125 operation.

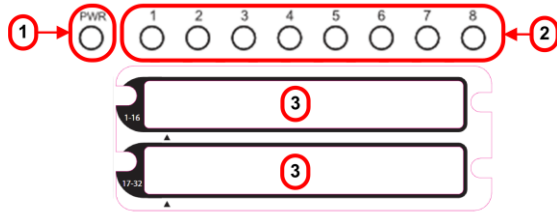
#### PicoDigitizer125-64-E

- A **Perseus6113** carrier board equipped with an SX475 Virtex6 FPGA.
- Two **MI125** FMC stacks.
- A **backplane** board ensuring the Perseus and MI125 operation.
- An **AMC726** embedded computer in slot A of the backplane board.

| AMC726 Linux passwords |       |                |
|------------------------|-------|----------------|
| User                   | nutaq | superuser (su) |
| Password               | nutaq | nutaqrd        |

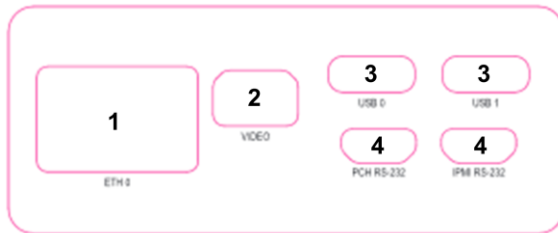
## PicoDigitizer125-64 Front Panel

On all PicoDigitizer125-64 models, the front panel gives access to the MI125 on both FMC sites. The following diagram lists the important connectors and indicators.



1. Perseus Power-On LED
2. Perseus User LEDs
3. MI125 custom connectors (see User's Guide for a detailed description)

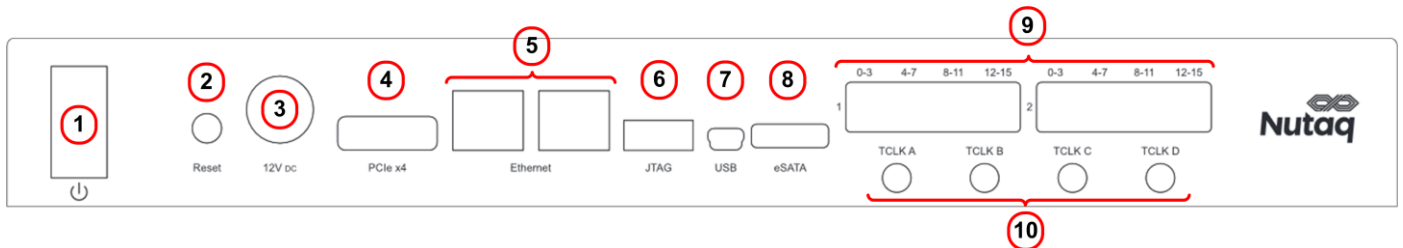
On the PicoDigitizer125-64-E model, the front panel gives access to the embedded computer. The following diagram lists the important connectors and indicators.



1. Gigabit Ethernet connector
2. Mini Display Port connector for video monitor
3. USB type C connectors (for peripherals)
4. Mini-USB connectors for IPMI and PCH debug

## PicoDigitizer125-64 Back Panel

On all PicoDigitizer125-64 models, the back panel gives access to the Perseus debug, control and data streaming ports.



1. Power switch.
2. Reset button.
3. 12V DC power supply connector.
4. External PCI Express 4x connector.
5. Gigabit Ethernet connectors.
6. FPGA JTAG.
7. Mini-USB connector for debug console.
8. eSATA connector (used for PicoDigitizer125-64-E only).
9. Mini-SAS/RTM connectors.
10. TCLK connectors (see User's Guide for mapping information).

## PicoDigitizer125-64 Software Installation

The first step is to install the PicoDigitizer125-64 software suite on the Windows or Linux PC. To do this, please follow the procedure found in the root directory of the provided USB dongle.

## Powering Up the PicoDigitizer125-64

To power up the PicoDigitizer125-64, connect the power supply cable to the back panel 12V DC power connector, and then place the power switch in the ON position. In the default configuration, the fans of the device start to turn. The PicoDigitizer125-64 comes with a reference design FPGA bitstream in flash. As the Perseus FPGA loads its configuration and boots, the front panel power LED will turn solid green.

## Operating the PicoDigitizer125-64 Back Panel Serial Connection

The PicoDigitizer125-64 RS-232 menu and Perseus console are available through the USB connector of the back panel. On a Linux computer, four RS-232 ports appear upon the USB connection. For a Windows computer, four virtual com ports are created.

### Linux Console Menu

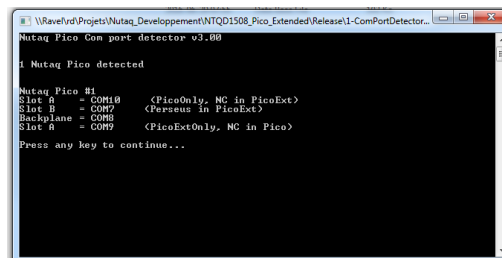
To view the port list on a Linux system, execute the following command: `#ls /dev/ | grep ttyUSB`

### Windows Console Menu

On a Windows computer, 4 COM ports will be added upon the PicoDigitizer125-64 USB connection.

A tool called ComPortsDetector is available in the PicoDigitizer125-64 software installation package to detect and it lists the currently used Virtual COM ports. It can be found in the `%BASROOT%/tools/support/script` directory.

The capture below shows the result of executing the ComPortsDetector tool on a PicoDigitizer125-64. The *Slot B* entry indicates the Perseus COM port for the PicoDigitizer125-64 and the *Backplane* entry indicates the PicoDigitizer125-64 backplane COM port.



```
\\Rave\rd\Projets\Nutaq_Developpement\NTQ01508_Pico_Extended\Release1-ComPortDetector...
Nutaq Pico Com port detector v3.00

1 Nutaq Pico detected

Nutaq Pico #1
Slot A = COM10 <PicoOnly, NC in PicoExt>
Slot B = COM7 <Perseus in PicoExt>
Backplane = COM8
Slot 0 = COM9 <PicoExtOnly, NC in Pico>

Press any key to continue...
```

## Serial Configuration

The configuration of all RS-232 ports is the same:

- Baud rate: 115200 bps
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none

## Backplane Menu Description

To access the PicoDigitizer125-64 backplane menu, connect to its COM port using the serial configuration presented above. The following is a representation of the menu of the PicoDigitizer125-64-E:

```
PicoDigitizer125-64-E
Serial Number : NTQ0127xxx
Hardware Revision : RevA
Firmware Version : 1.05
```

```
A - Power cycle CPU
B - Power cycle Perseus
```

C - Power cycle System  
D - Shutdown (menu will still be available)  
S - Toggle Autostart mode (Status : ON)

+ - Increase the fan velocity  
-- Decrease the fan velocity  
Fan velocity set to 70%  
Minimum fan velocity is 70%

## Perseus Console Description

To access the Perseus console, connect to its COM port using the serial configuration presented above. As the Perseus boots, it will print its U-Boot and Linux bootup sequence. Once the boot is completed, you have access to the embedded Linux distribution. To login, enter

- username: root
- password: root

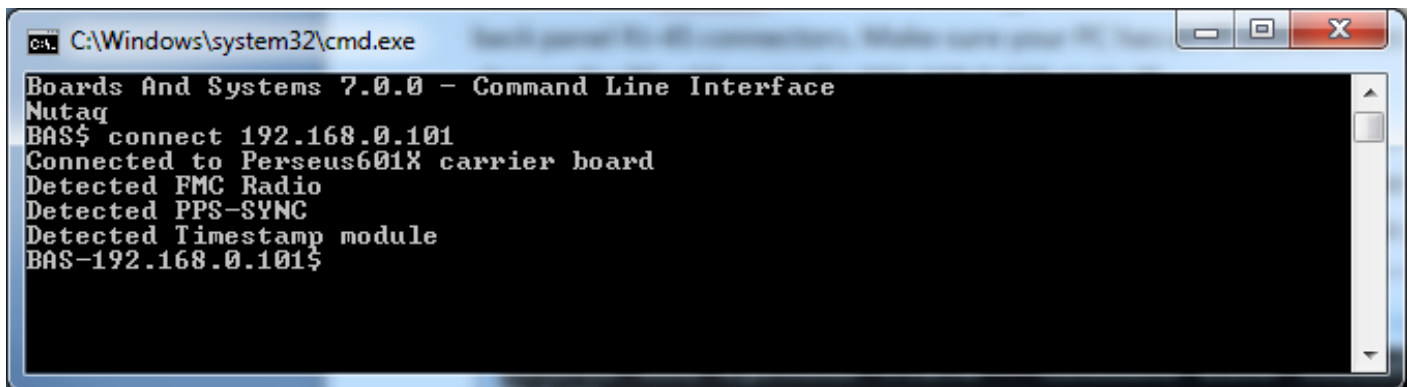
## Validating the PicoDigitizer125-64 Ethernet

The PicoDigitizer125-64 is shipped with the default static IP address *192.168.0.101*.

To validate the IP address, log to the Perseus console and enter the *ifconfig* command.

To access the PicoDigitizer125-64 from the host PC through Ethernet, first connect an Ethernet cable between the PC and one of the PicoDigitizer125-64 back panel RJ-45 connectors. Make sure your PC has an IP address that allows it to communicate with the Perseus. For example, change the PC address to the static IP address *192.168.0.100*.

To validate the connection, you can ping the Perseus from the host PC, or the PC from the Perseus. You can also connect to the PicoDigitizer125-64 using the Command Line Interface (CLI). To load the CLI, in the Windows Start menu, browse to All Programs->Nutaq-> *BAS CLI*. On the command line, enter connect and the IP of the Perseus you wish to connect to. The result should be:



```
C:\Windows\system32\cmd.exe
Boards And Systems 7.0.0 - Command Line Interface
Nutaq
BAS$ connect 192.168.0.101
Connected to Perseus601K carrier board
Detected FMC Radio
Detected PPS-SYNC
Detected Timestamp module
BAS-192.168.0.101$
```

## Next Steps

You are now ready to operate your PicoDigitizer125-64. The next step in validating the hardware and the Nutaq tools is to execute the default reference design demonstration. Please refer to the PicoDigitizer125-64 examples section of the PicoDigitizer125 – 2<sup>nd</sup> Generation User's Guide document to continue.