

# 05 NI Hardware

*All of National Instruments embedded system hardware products have an architecture consisting of three components: an embedded controller for communication and processing, an FPGA for sophisticated control, regulation, signal processing, filtering and custom protocols, and industrial I/O. Modules for connection to any sensors or devices. All components can be reconfigured with a single collection of software tools.*

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## Real-Time

### PXI

*Industry-leading PC-based platform for test, measurement and control applications*

“NI has pioneered the PXI modular instrumentation standard and is a leading provider of PXI modules, with over 1500 PXI products from more than 70 vendors available.”

- <http://www.ni.com/pxi/d/>
- Biggest/strongest category
- Depending on the configuration from ~4.000,- Euro

## CompactRIO

*Compact and reconfigurable control and monitoring system*

“NI CompactRIO combines an open embedded architecture with compact, ruggedized, and hot-swappable industrial I/O modules based on reconfigurable I/O technology (RIO) and NI LabVIEW.”

- <http://www.ni.com/compactrio/d/>
- Depending on the configuration from ~ 2.000,- to 8.000,- Euro

## Industrial Controller

*Powerful Industrial Controller*

“Powerful, fanless industrial controller for developers who need maximum processing power and connectivity for automation, control, and control applications in extreme environments Robust fixed-form factor with no moving parts, Kintex-7 FPGA, optimized hardware design with NI Linux Real-Time, maximum System reliability: Optimal connectivity for communication and synchronization with EtherCAT and Ethernet CompactRIO chassis, EtherCAT motor drives, ... Integrated isolated, TTL and differential digital I/O. ”

- <http://sine.ni.com/nips/cds/view/p/lang/en/nid/213465>
- ~5,000,- Euro

## SingleboardRIO

*Reconfigurable single-board computers for control, regulation and monitoring*

- <http://www.ni.com/singleboard/d/>
- Smallest/weakest architecture
- intended for OEM market
- without housing
- low priced (from ~600, - Euro)

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## FPGA

- [Compatibility between Xilinx Compilation Tools and NI FPGA Hardware](#)

### Notes:

1. RIO devices using the Virtex-II chip require Xilinx compilation tools 10.1 regardless of LabVIEW version.
2. RIO devices using the Spartan 6 chip require LabVIEW 2010 SP1 or later.
3. RIO devices using Virtex 6, Kintex 7, or Virtex 7 FPGAs require compilation on a 64-bit OS. Starting in LabVIEW 2014, Xilinx Compilation Tools Vivado is required for Virtex 7, Zynq, and Kintex-7. All other chips supported in Xilinx Compilation Tools 14.4 require Xilinx Compilation

Tools 14.7.

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## Devices

### IC-3173

- Industrial Controller IC-3173 from National Instruments
- <http://sine.ni.com/nips/cds/view/p/lang/en/nid/213465>
- Intel I218-LM GbE LAN Controller with AMT 10 support

### sbRIO-9637

- S/N 030C1A85
- NI Linux Real-Time ARMv7-A 3.14.40-rt37-ni-3.0.0f2

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