

Comparison between NextMove PCI-2 and NextMove PCI

This document gives a brief overview of the technical differences between the NextMove PCI-2 and NextMove PCI multi-axis motion controllers.

In summary, the NextMove PCI-2 is a higher performance version of the original NextMove PCI. This is achieved through the use of a faster variant of the same DSP. The ASICs have been replaced by an FPGA, providing both higher performance and increased flexibility. The 2 CAN ports have been reduced to single port - CANopen or Baldor CAN is selectable in software. The pluggable digital output module (for either PNP or PNP) is no longer supported. The digital output driver components are now fitted to the control card, thus improving reliability and reducing manufacturing cost.

The main 100 way connector and pin-out is identical allowing the same cables and breakout boards to be used on both NextMove PCI and NextMove PCI-2. The same expansion boards may be used but a different bridge board must be used.

Definitions:

- ASIC - Application Specific Integrated Circuit
- DSP - Digital Signal Processor
- CAN - Controller Area Network
- FPGA - Field Programmable Gate Array

Features Cross Reference

	NextMove PCI-2	NextMove PCI
Hardware Overview		
Processor	TMS320VC33	TMS320C31
Clock speed	120 MHz	50 MHz
Digital Input channels	20	20
Opto-isolated	PNP or NPN - Split as a bank of 12 and bank of 8 with separate commons. 4 fast inputs are included on the bank of 8.	PNP or NPN - Split as a bank of 12 and bank of 8 with separate commons. 4 fast inputs are included on the bank of 8.
S/W configurable functionality	Yes	Yes
Digital output channels	12	12
Opto-isolated	Build Variant for PNP or NPN.	Separate board fitted
S/W configurable functionality	Yes	Yes
Fused	No	Yes
Analog output channels	4	4
Resolution	16 bit (14 and 12 bit modes)	14 bit (12 bit mode)
Opto-isolated	No	No
Analog Input channels	4 true differential	4 differential
Resolution	12 bit	12 bit
Input range	±10V (±5V/0-5V/0-10V software configurable with decreased resolution)	±10V/±5V/0-5V/0-10V – software configurable
Opto-isolated	No	No
Filter	2 nd order Butterworth	2 nd order Butterworth
Relay outputs	1	1
Contact rating	150 mA @ 24V	150 mA @ 24V
Position latch inputs	4 configured from digital inputs	4 configured from digital inputs
Hardware Latch	Yes	Yes
Response time	1µs	1µs (approx.)
Position compare outputs	4 configured from digital outputs	4 configured from digital outputs
Hardware comparison	Yes	Yes
Response time	1µs	1µs (approx.)
Encoders	4 + 1 master	4 + 1 master
Channels	ABZ incremental	ABZ incremental
Differential	Yes	Yes
Maximum input frequency (practical)	10MHz (post quad)	7MHz (post quad)
1/t velocity measurement	No	No
Encoder break detection	No	No
Step/Direction inputs	Yes	Yes
Power supply requirements	Taken from PC (11W approx.)	Taken from PC (11W approx.)
LED Indicators	2 backplate leds	4 backplate leds
Card length	7 inch	7 inch
Axis Information		
Servo Axes	1-4 (+4/8 with expansion cards)	1-4 (+4/8 with expansion cards)
Drive Interface	±10V plus incremental encoder	±10V plus incremental encoder
Stepper Axes	1-4 (+4/8 with expansion cards)	1-4 (+4/8 with expansion cards)
Drive Interface	step, direction - differential outputs on breakout board	step, direction - differential outputs on breakout board
Configurable for digital outputs	Yes	Yes
Maximum output frequency	3MHz	1MHz
Open loop	Yes	Yes
Boost Outputs	No	No
Expansion Card		
<i>Existing Expansion cards may be used, however a different bridge interconnect board must be used to provide 3.3V to 5V interface.</i>		
Servo Axes	4	4
Drive Interface	±10V plus incremental encoder	±10V plus incremental encoder
Stepper Axes	4	4
Drive Interface	step, direction - differential outputs	step, direction - differential outputs
Maximum output frequency	1MHz	1MHz
Open loop	Yes	Yes
Master Encoders	1	1
Onboard Digital I/O Expansion		

Digital inputs	20	20
Digital outputs	12	12
Onboard Analog Input Expansion	4 differential	4 differential
Resolution	12 bit	12 bit
Input range	±10V/±5V/0-5V/0-10V - software configurable	±10V/±5V/0-5V/0-10V - software configurable
Opto-isolated	No	No
Pin-out for user connections	100-way	100-way
Communications		
Bus	PC PCI	PC PCI
Speed	33MHz	33MHz
Dual Port RAM Size	4K x 32 bit	4K x 32 bit
Interrupt support	Yes – INTA	Yes - INTA
Memory mapped	Yes	Yes
CAN bus channels	1 Firmware selectable for Baldor CAN or CANopen	2
Opto-isolated	Isolated on the breakout board	Isolated on the breakout board
Memory		
Standard Configuration	2M RAM – volatile 2 wait state	2M RAM – volatile 0 wait state
RAM Expansion	No	No
NVRAM	24k bytes for user data	24k bytes for user data
Software		
Servo Loop	PIDVFA	PIDVFA
Max Frequency	5kHz	5kHz
Mint® Support	Yes	Yes
Mint v4	No	Yes
MintMT (v5)	Yes	Yes
Embedded 'C'	Yes	Yes
FPGA	Yes	No
PC Development Tools	Mint WorkBench v5	Mint WorkBench (v4) Mint WorkBench v5 (MintMT)
Windows 3.1 - 16 bit	No	No
Windows 9X - 32 bit	Yes	Yes
Windows NT/2000	Yes	Yes
Windows XP	Yes	Yes
PC Application Support		
ActiveX	Yes	Yes
Visual Basic	Yes	Yes
Visual C++	Yes	Yes
Borland Delphi	Yes	Yes