



Features

- Wall mounted industrially rugged computer with a 4 compatible PC/104 slots backplane
- AMD LX800 500MHz industrial graded CPU module
- Accommodate front panel I/O expansion

Introduction

NODE-400 series is a wall mounted, industrially rugged computer. It is composed of a standard industrial, AMD LX800 500MHz CPU module, a 4 slots passive backplane, an industrial grade, 60W AC power supply and a 2.5" hard drive/DOM as storage. Four compatible PC/104 slots are available for I/O expansion boards. It provides an integrated and cost saving solution for industrial control.

Applications

- Perfect for "Blended" Programmable Controls applications.
- Automatic Coil Winding Machine Controls Applications

Specifications

Standard System Functions

- **CPU Support** AMD LX800 500 MHz processor
- **System Memory** 1 x 256MB 200-pin DDR SDRAM
Option: 512MB DDR SDRAM
- **Storage Device** 1 x 128MB DOM
Option: 512MB/ 1GB/ 2GB/ 4GB DOM
Option: 2.5" 40GB HDD
- **Series Ports** 1 x RS-232/422/485 (COM 1) port
3 x RS-232 (COM2/ COM3/ COM4) ports
- **Parallel Port** 1 x parallel port, supports SPP/EPP/ECP mode
- **Ethernet** 1 x RJ-45, 10/100Mbps supports
- **Keyboard/Mouse** 1 x PS/2 for keyboard/ mouse port
- **USD Interface** 2 x USB 2.0 ports

Power Supply

- **AC input 80W (standard offer)**
- **Input voltage** 85VAC to 264VAC
- **Input frequency** 47Hz to 63Hz
- **Output voltage** +5V@8A

Environmental Specifications

- **Operating Temperature** 0 ~ 50°C
- **Storage Temperature** -20 ~ 60°C
- **Operating Humidity** 5% ~ 85%RH, Non-condensing
- **Vibration** 5 ~ 500HZ 1G RMS Random Vibration

Expansion Slot

- Supports up to four compatible PC/104 I/O boards



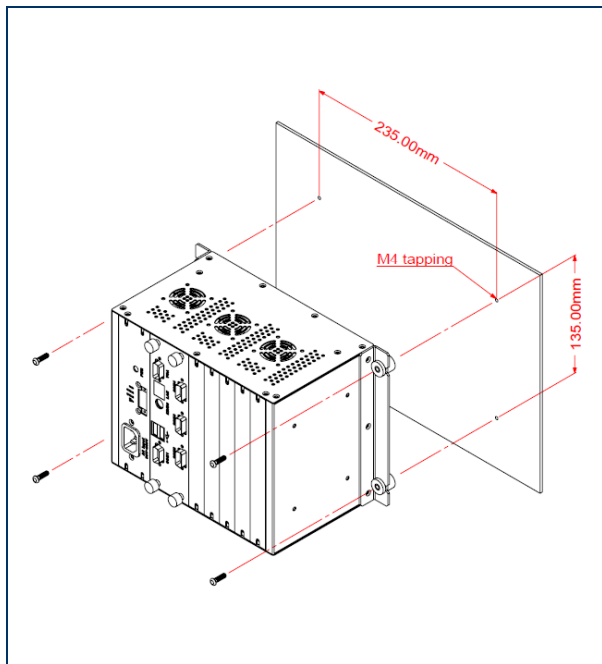
Dimension (W x H x D)

- 255 x 175 x 143.65mm (10.04" x 6.89" x 5.66")

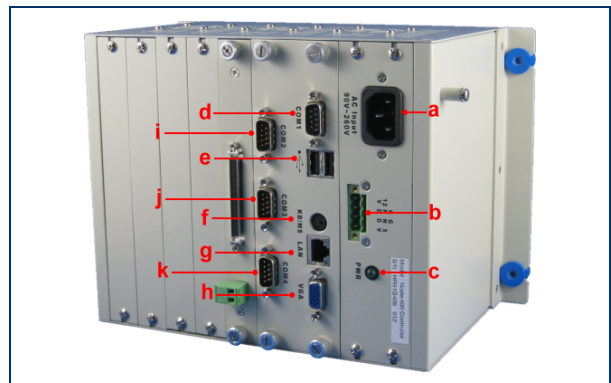
Gross Weight

- 4.15 kg

Wall Mounting

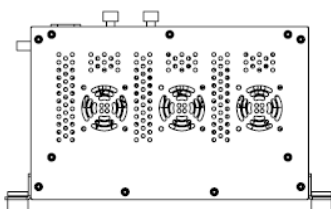
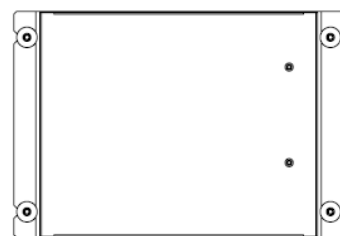
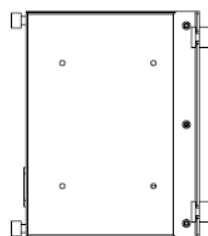
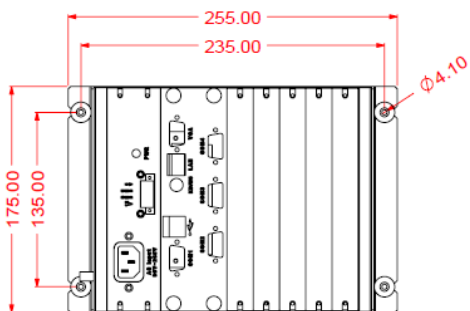
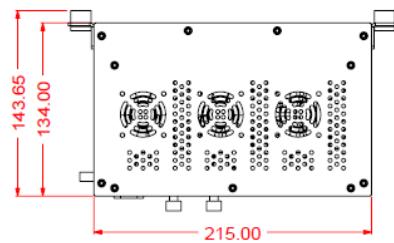


I/O Arrangement



- | | |
|------------------------|----------|
| a. AC Input | g. LAN |
| b. DC 5V/12V Outlet | h. VGA |
| c. Power On | i. COM 2 |
| d. COM 1 | j. COM 3 |
| e. USB | k. COM 4 |
| f. PS/2 Keyboard/mouse | |

Dimensions



Selection Guide

Display:

Model	FPD-080T	FPD-104T	FPD-121T	FPD-150T	FPD-170T
LCD Display Size	8"	10.4"	12.1"	15"	17"
Max. Resolution	640 x 480	800 x 600	800 x 600	1024 x 768	1280 X 1024
Luminance	400 cd/m ²	300 cd/m ²	400 cd/m ²	300 cd/m ²	300 cd/m ²
LCD Colors	262K	16.7M	262K	16.7M	16.2M
Touch Screen Type	Resistive	Resistive	Resistive	Resistive	Resistive

System I/O Board:

Model	PCM-8064+
Digital I/O Channels	32 DI/ 32 DO
Digital Input Type	Source type
Digital Output Type	Sink type (open collector)
Isolation	2500Vrms
I/O Configuration	Front-end

Analog I/O Board:

Model	PCM-8182+
Analog I/O Channels	8 A/D with 16-bit resolution and 2 D/A with 16-bit resolution
A/D Type	Differential input
D/A Type	Single-ended output
Resolution	2500Vrms
I/O Configuration	Front-end

Process Controls Board:

Model	PCM-8308+
Control Channels	8 CH. temperature controls
A/D Resolution	16 bits
Thermocouple Type	E, J, K, T, R, S
Control Output	PWM output with 10-bit resolution
TC Isolation	500VDC
Control Isolation	2500Vrms
I/O Configuration	Front-end

Motion Control Board:

Model	PCM-8504+	PCM-8506+
Control Channels	4-axis servo or stepping motor motion control with DDA	6-axis servo or stepping motor motion control with DDA
Encoder Input Channels	4-axis	6-axis
Local Digital I/O	18 digital input & output	26 digital input & output
Watchdog Timer	16-bit	16-bit

Display Specifications



Model	FPD-080T	FPD-104T	FPD-121T	FPD-150T	FPD-170T
LCD Display Size	8"	10.4"	12.1"	15"	17"
LCD Type	VGA TFT LCD	SVGA TFT LCD	SVGA TFT LCD	XGA TFT LCD	SXGA TFT LCD
Max. Resolution	640 x 480	800 x 600	800 x 600	1024 x 768	1280 x 1024
LCD Colors	262K	16.7M	262K	16.7M	16.2M
Pixel Pitch (mm)	0.2535 x 0.2535	0.2535 x 0.2535	0.3075 x 0.3075	0.297 x 0.297	0.264 x 0.264
Luminance (cd/m ²)	400 (Typ.)	300 (Typ.)	400 (Typ.)	300 (Typ.)	300 (Typ.)
Contrast Ratio	250:1 (Typ.)	250:1 (Typ.)	1000:1 (Typ.)	400:1 (Typ.)	500:1 (Typ.)
Response Time	50ms (Max.)	50ms (Typ.)	13ms (Typ.)	12ms (Typ.)	12ms (Typ.)
View Angle (H, V)	130°(H), 120°(V)	130°(H), 120°(V)	188°(H), 188°(V)	120°(H), 100°(V)	140°(H), 130°(V)
Lamp Life Time	50,000/hrs (Typ.)	20,000/hrs (Typ.)	50,000/hrs (Typ.)	50,000/hrs (Typ.)	50,000/hrs (Typ.)
VGA Signal	Analog				
Touch Screen Type	Resistive				
Power Requirement	20W	30W	30W	30W	40W
Front Panel Compliance	IP65				
Operating Temperature	0 ~ 50°C				
Storage Temperature	-20 ~ 70°C				
Dimensions (WxHxD)	230.21 x 176.85 x 56.2MM (9" x 6.9" x 2.2")	336 x 261.9 x 52.25MM (13.2" x 10.3" x 2")	336 x 261.9 x 52.25MM (13.2" x 10.3" x 2")	420 x 320 x 46mm (16.5" x 12.6" x 1.8")	471 x 380 x 48mm (18.5" x 15" x 1.9")
Gross Weight	3 kg	4 kg	4 kg	6.1 kg	8.8 kg
Mounting	Panel mount				

I/O Board Specifications

System I/O Board



PCM-8064+

High Density, Isolated 32 D/I and 32 D/O Board

Specifications

Isolated Digital Inputs

Input channels: 32
 Interrupt input channels: 32
 Interrupt input source type: I/O interrupt & timer interrupt
 Input type: source
 Optical isolated: 2500V_{DC}
 Opto-isolator response time: 20μs
 Over-voltage protect: 50V_{DC}
 Input voltage:

V _{IH} (max.)	36V _{DC}
V _{IH} (min.)	4V _{DC}
V _{IL} (max.)	3V _{DC}

Input current:

10 V _{DC}	2.9mA (typical)
12 V _{DC}	3.6mA (typical)
24 V _{DC}	7.5mA (typical)
36 V _{DC}	11.5mA (typical)

Isolated Digital Outputs

Output channels: 32
 Output type: sink (open collector)
 Optical Isolation: 2500V_{DC}
 Output voltage: 10 ~ 40 V_{DC}
 Opto-isolator response time: 20μs
 Sink current: 100 mA max. (channel)

Battery Backup RAM

Range of base address: Configurable
 Memory Mapped
 Size: 2K bytes

Programmable Interval Timer

Channel: 1
 Resolution: 32-bit
 Time base: 2MHz
 Timer range: 0.5μs ~ 2147ms

Analog I/O Board



PCM-8182+

Isolated Auto-Running 8 A/D and 2 D/A Board

Specifications

Analog Input (A/D)

Channels: 8
 Resolution: 16-bit
 Input type: differential input
 Cycle time: 2ms (auto-running) for 8 channels
 Optical isolated: 2500V_{DC}
 Input impedance: 10MΩ
 Maximum input over voltage: +/- 10V
 Accuracy of FSR: +/- 3 LSB
 Input range:

Voltage	±10V
Current	0-20mA

Zero calibration: EEPROM on board

Analog Output (D/A)

Channels: 2
 Resolution: 16-bit
 Output type: differential output
 Optical isolated: 2500V_{DC}
 Cycle time: 128μs
 Voltage output: ±10V
 Current drive: ±5mA
 Zero calibration: EEPROM on board
 Accuracy: ±3 LSB max.
 Offset error: ±2 LSB
 Driving capability: 15 mA

Process I/O Board



PCM-8308+

8-Channel Temperature Control Board

Specifications

Temperature Measurement (T/C)

Thermocouple: E, J, K, T, R, S
 Channels: 8 (auto-run and update)
 A/D resolution: 16 bits
 Measurement span: -10°C ~ 1150°C
 Measurement accuracy: ±1% or ±1°C
 Measurement resolution: ±0.3°C
 Cycle time: 25 ms per channel
 Storage for calibration: on-board EEPROM
 Cable connector: 5.08mm 10-pin terminal block
 T/C open-circuit detection: on-board
 T/C channel-to-channel isolation:
 Photo-MOS contactor
 Photo-MOS isolation voltage: 500Vdc

PWM Output Controller

Channels: 8
 Output cycle time: above 100ms
 Output duty-cycle resolution: 10 bits
 Isolation Voltage: 2500Vrms
 Output type: open-collector
 External supply voltage: +20~+28V
 Single-channel output power: 100mA max.
 Total output power: 350mA max.
 Cable connector: 44-pin D-Sub
 Opening circuit detection
 Detection channels: 8

Digital Output Controller

Channels: 8
 Isolation Voltage: 2500Vrms
 Output type: open-collector
 External supply voltage: +20~+28V
 Single-channel output power: 100mA max.
 Total output power: 350mA max.
 Cable connector: 44-pin D-Sub

Current Transformer Open Detection

Channels: 8
 Input voltage levels: 0.5V~4.0V with 0.5V stepping adjustable

Motion Control Board



PCM-8504+

4-Axis Motion Control Board

Specifications

Data bus: 16 bits
Control axes: 4
DDA cycle: 25 μ s-3.35 ms
D/A resolution: 16 bits
Pulse command output: Pulse/Direction, CW/CCW, A/B phase
Encoder Feedback Signal: Pulse/Direction, CW/CCW, A/B phase
DAC: 4 D/A, 16 bits, position loop output
Error Counter: 16 bits
Absolute position recorder: 24 bits
Compensator: P, PI mode
Local I/O channels: 13D/I, 5D/O
Local I/O type: general purpose, interrupt I/O
Interval timer channel: 1
Timer interrupt: 0.5 μ s-33ms
Watchdog timer: 16 bits
General Environment
Connector type: 100-pin SCSI-II pin type female
Power consumption: +5V @0.9A max.
Operation temperature: 0 ~ 60°C
Storage temperature: -20 ~ 70°C
Humidity: 0 ~ 90% non-condensing
Dimensions: 146mm x 113.5mm



PCM-8506+

6-Axis Motion Control Board

Specifications

Data bus: 16 bits
Control axes: 6
DDA cycle: 25 μ s-3.35 ms
D/A resolution: 16 bits
Pulse command output: Pulse/Direction, CW/CCW, A/B phase
Encoder Feedback Signal: Pulse/Direction, CW/CCW, A/B phase
DAC: 6 D/A, 16 bits, position loop output
Error Counter: 16 bits
Absolute position recorder: 24 bits
Compensator: P, PI mode
Local I/O channels: 26 DI/O
Local I/O type: general purpose, interrupt I/O
Interval timer channel: 1
Timer interrupt: 0.5 μ s-33ms
Watchdog timer: 16 bits
General Environment
Connector type: 100-pin SCSI-II pin type female
Power consumption: +5V @0.9A max.
Operation temperature: 0 ~ 60°C
Storage temperature: -20 ~ 70°C
Humidity: 0 ~ 90% non-condensing
Dimensions: 146mm x 113.5mm

Ordering Information

Industrial Rugged Computer:

- **NODE-400**
Industrial Rugged Computer with a Four Compatible PC/104 Expansion Slots

Display:

- **FPD-080T**
8" VGA TFT LCD Flat Panel Display with Touch Screen
- **FPD-104T**
10.4" SVGA TFT LCD Flat Panel Display with Touch Screen
- **FPD-121T**
12.1" SVGA TFT LCD Flat Panel Display with Touch Screen
- **FPD-150T**
15" XGA TFT LCD Flat Panel Display with Touch Screen
- **FPD-170T**
17" SXGA TFT LCD Flat Panel Display with Touch Screen

Peripheral Boards:

System I/O Board:

- **PCM-8064+**
High Density, Isolated 32 D/I & 32 D/O Board

Analog I/O Board:

- **PCM-8182+**
Isolated Auto-Running 8 A/D & 2 D/A Board

Process Control Board:

- **PCM-8308+**
8-Channel Temperature Control Board

Motion Control Board:

- **PCM-8504+**
4-Axis Motion Control Board
- **PCM-8506+**
6-Axis Motion Control Board