

XMP-SynqNet Series Motion Controllers

Hardware Specification



DANAHER
MOTION

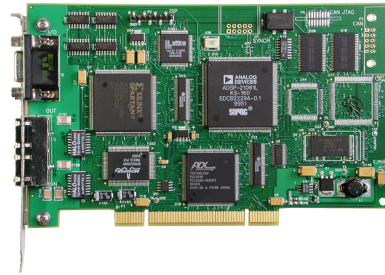
Helping you build a better machine, faster.

XMP-SynqNet Series

Hardware Specification



SynqNet



Key Benefits

- Fastest Move Times**
 Shared memory map architecture results in minimized controller latency for the fastest possible motion response and maximized machine throughput. On-the-fly motion and gain set modifications improve machine throughput by minimizing cycle and settling times.
- Increased Reliability**
 Optional Micro-D connectors for high-vibration environments enhances machine quality, reliability, and up-time.
- Optimized Machine Design**
 Real-time operating system support reduces overall system cost by enabling deterministic usage of host processor for optimized machine design.
- Cost Effective SynqNet Controller**
 Tight coordination between motion and I/O via the SynqNet network reduces machine development costs by providing real-time system visibility and motion optimization.

High-Performance SynqNet Motion Controller

The XMP-SynqNet Series controllers provide machine builders with a high-performance motion control solution for next generation machines. The 32-bit XMP-SynqNet Series controllers offer servo update rates up to 20kHz for 4 axes, allowing optimum control of machines requiring high levels of coordination and synchronization between axes. With its software-defined capabilities, each controller can be readily customized to fit the requirements of the most demanding OEM applications. Available in PCI, CPCI-3U, and CPCI-6U form factors with support for Windows® XP/2000, RTX, Linux, VxWorks® and other real-time operating systems.

Develop motion applications for the XMP family of controllers with either the MPI programming library for C/C++ or the MPX programming library for Visual Basic .NET.

The XMP-SynqNet Series controllers also support an optional CAN Network interface, offering virtually unlimited user-defined I/O accessible under one controller and one API.

XMP-Series controllers are the highest volume SynqNet controller for proven motion performance.

SynqNet Platform Overview

Launched in 2001, SynqNet is a digital machine control network specifically designed to meet the flexibility, performance, and safety requirements of today's demanding machine control applications. Built on the 100BT physical layer, SynqNet provides a synchronous real-time connection between motion controllers, servo drives, stepper drives, I/O modules, and custom devices.

FAST

- Network bandwidth for servo updates up to 48 kHz
- Supports up to 32 nodes with 32 axes*
- Over 16,000 bits of digital I/O and 1,000 points of analog I/O
- Real-time diagnostics over SynqNet

SAFE

- "Self-Healing" fault tolerant operation using ring topology
- "HotReplace" allowing replacement of node without network shutdown

PROVEN

- Over 350,000 motion axes installed worldwide
- Multi-vendor interoperable network

SynqNet®
www.synqnet.org



Motion
Controllers



Drives and
Motors

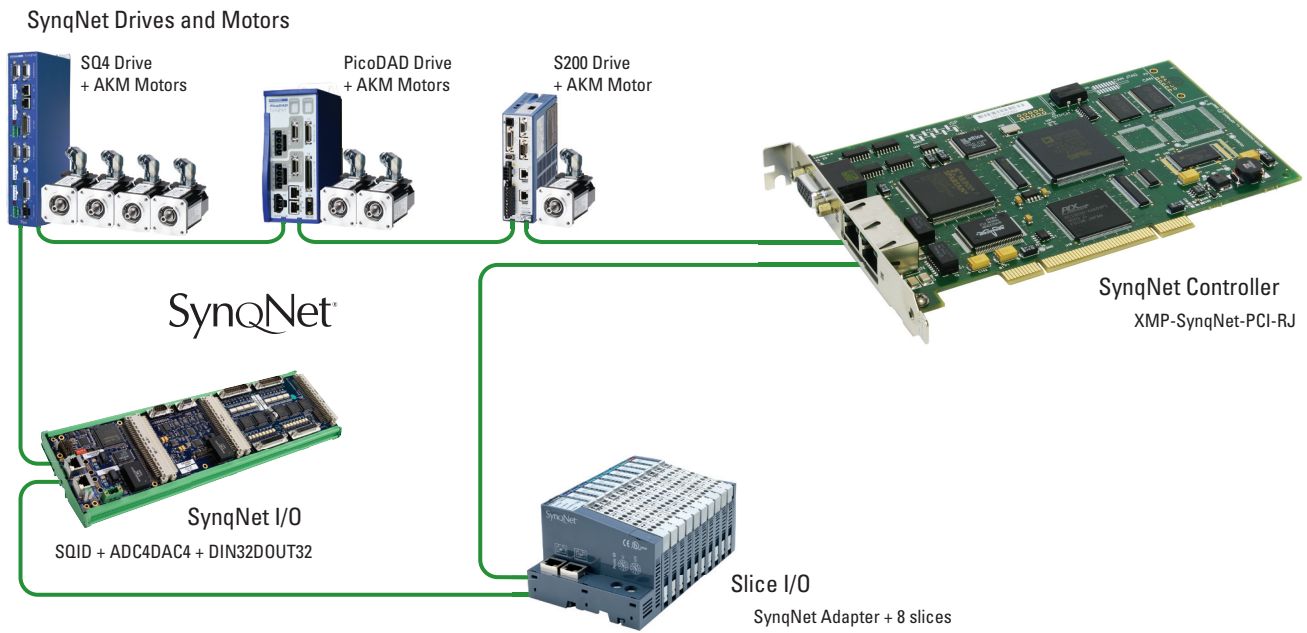


I/O



Custom
Nodes

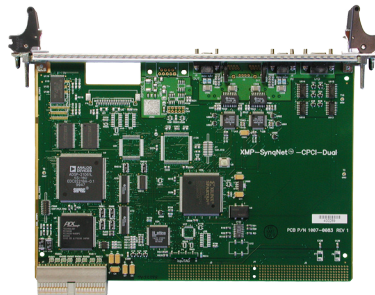
SynqNet Connectivity Diagram



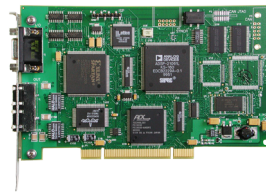
Configuration Options

XMP-SynqNet Controller

Use a single controller to handle applications with up to 32 axes.



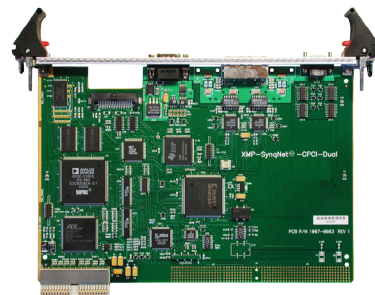
CPCI-6U



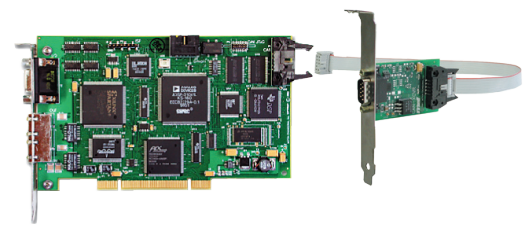
PCI

XMP-SynqNet Controller with CANopen

Control up to 32 axes of servo or stepper across the SynqNet network and with virtually unlimited user I/O via CANopen.

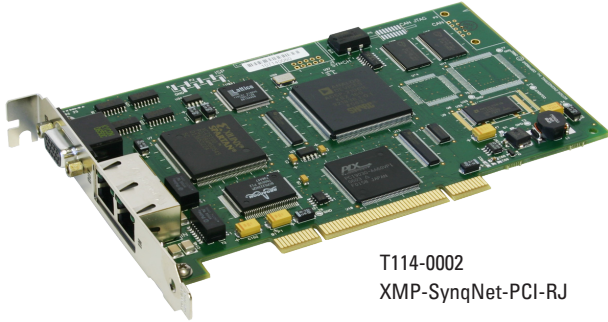


CPCI-6U controller with CANopen



PCI controller with CANopen option

XMP-SynqNet-PCI



T114-0002
XMP-SynqNet-PCI-RJ

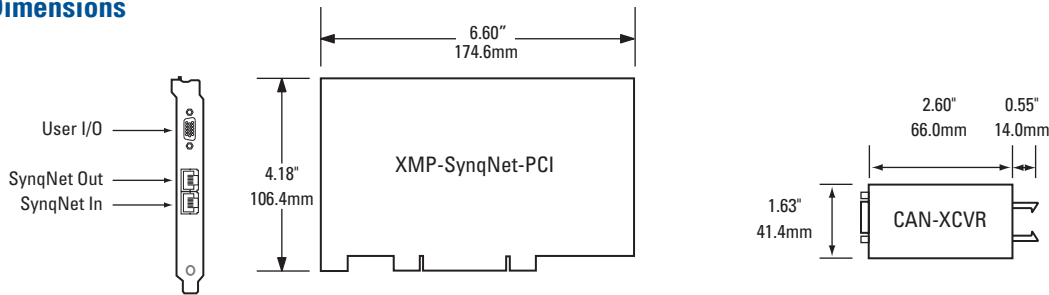
Specifications

Function	Parameter	Specification
Processor	DSP	Analog Devices SHARC 64-bit floating point 40 MHz / 150 MFLOPS
	Servo Loop	Update Rate User programmable 4 Axes Update Rate Max: 20 kHz 8 Axes Update Rate Max: 10 kHz
Board Interface	Connectors	SynqNet Interface: RJ45 User I/O: Standard DE (15-pin)
	Form Factor	Half-Size PCI Slot
	Host Bus	32-bit Universal PCI
	PCI Bus Speed	33 MHz
	Memory Interface	32-bit direct memory map
User I/O	Power	5V @ 2.0A
	Lines	6 bi-directional I/O, 1 ESTOP Input
CAN Network User I/O (optional)	Protocol	CANopen - DS401
Kinematic Ranges	Position, Velocity, Acceleration, Jerk	32-bit floating point
Environment	Operating Temperature	0 - 50° C
	Storage Temperature	0 - 50° C
	Humidity	20 - 90% RH, non-condensing

Part Number	Description
T114-0001*	XMP-SynqNet-PCI-RJ-CAN
T114-0002	XMP-SynqNet-PCI-RJ
T114-0003**	XMP-SynqNet-PCI-RJ-CAN, Non Opto-Isolated
A088-0001	CAN-XCVR, D9, Opto-Isolated
A088-0002	CAN-XCVR-D9, Non Opto-Isolated

* includes the A088-0001
** includes the A088-0002

Dimensions



Pinouts and Connector Information

User I/O Connector

Female High Density D-15

User I/O Mating Connector

Male High Density D-15

User I/O Connector	Pin	Signal	Type
	1	OPTO_A	(OUT)
	2	OPTO_B_RTN	(OUT)
	3	OPTO_D	(IN)
	4	OPTO_E_RTN	(IN)
	5	XESTOP	
	6	A_RTN	(OUT)
	7	OPTO_C	(OUT)
	8	OPTO_D_RTN	(IN)
	9	OPTO_F	(IN)
	10	XESTOP_RTN	
	11	OPTO_B	(OUT)
	12	OPTO_C_RTN	(OUT)
	13	OPTO_E	(IN)
	14	OPTO_F_RTN	(IN)
	15	GND	

RJ45 SynqNet Connector

AMP Connectors
Mfg P/N 1116353-1

SynqNet IN	Pin	Signal
	1	Transmit +
	2	Transmit -
	3	Receive +
	4	Unused 1+
	5	Unused 1-
	6	Receive -
	7	Unused 2+
	8	Unused 2-

RJ45 Mating Connector

AMP Connectors
Mfg P/N 5-557315
Shielded RJ45 recommended

SynqNet OUT	Pin	Signal
	1	Receive +
	2	Receive -
	3	Transmit +
	4	Unused 1+
	5	Unused 1-
	6	Transmit -
	7	Unused 2+
	8	Unused 2-

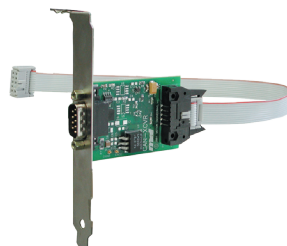
For more information:
www.amp.com

CANopen Option

Breakout CAN Transceiver

A088-0001 opto-isolated
(for use with T114-0001)

A088-0002 non opto-isolated
(for use with T114-0003)

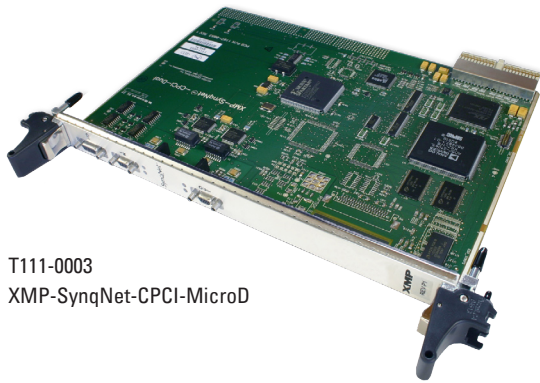


CANopen Connector (Optional)

CAN Connector	Pin	Signal
	1	Reserved
	2	CAN_L CAN_L bus line dominant low
	3	CAN_GND CAN Ground
	4	Reserved
	5	(CAN_SHLD) Optional CAN Shield
	6	CAN_GND Can Ground
	7	CAN_H CAN_H bus line dominant high
	8	Reserved
	9	CAN_V+ CAN external supply *

* Used with opto-isolation mode

XMP-SynqNet-CPCI



T111-0003
XMP-SynqNet-CPCI-MicroD

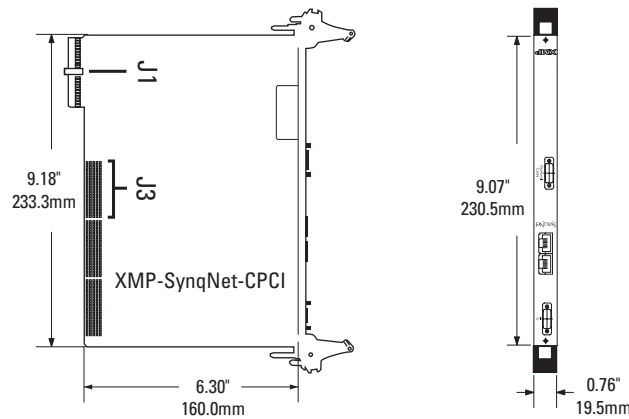
Part Number	Description
T111-0003	XMP-SynqNet-CPCI-MicroD
T111-0004	XMP-SynqNet-CPCI-RJ-CAN

Specifications

Function	Parameter	Specification
Processor	CPU	Analog Devices SHARC 32-bit floating point 40 MHz / 150 MFLOPS
	Servo Loop	Update Rate User programmable 4 Axes Update Rate Max: 20 kHz 8 Axes Update Rate Max: 10 kHz
Board Interface	Connectors	T111-0003 SynqNet Interface: Micro-D (9-pin) User I/O: Micro-D (15-pin) T111-0004 SynqNet Interface: RJ45 User I/O: Micro-D (15-pin)
	Form Factor	Compact PCI 6U (T111-0003, T111-0004)
	Host Bus	32-bit Universal CPCI
	Memory Interface	32-bit direct memory map
	Power	3.3V @ 2.5A; 5V @ 0.9A +12V @ 0.03A; -12V @ 0.01A
User I/O	Lines	6 bi-directional I/O, 1 ESTOP Input
CAN Network User I/O (optional)	Protocol	CANopen - DS401 (T111-0004)
Kinematic Ranges	Position, Velocity, Acceleration, Jerk	32-bit floating point
Environment	Operating Temperature	0 - 50° C
	Storage Temperature	0 - 50° C
	Humidity	20 - 90% RH, non-condensing

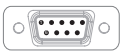
* must be configured at time of order.

Dimensions



Pinouts and Connector Information

CANopen Connector (Optional)

CAN Connector	Pin	Signal	Description
	1	-	Reserved
	2	CAN_L	CAN_L bus line dominant low
	3	CAN_GND	CAN Ground
	4	-	Reserved
	5	(CAN_SHLD)	Optional CAN Shield
	6	CAN_GND	Can Ground
	7	CAN_H	CAN_H bus line dominant high
	8	-	Reserved
	9	CAN_V+	CAN external supply *

* Used with opto-isolation mode

For additional rear panel I/O options, please contact Danaher Motion.

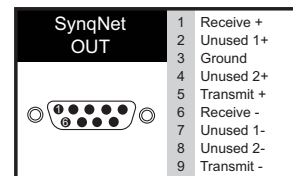
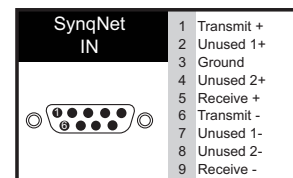
Micro-D SynqNet Connector

Molex Inc.
Mfg P/N 83611-9006

Micro-D SynqNet Mating Connector

Molex Inc.
Mfg P/N 83421-9014

For more information:
www.molex.com

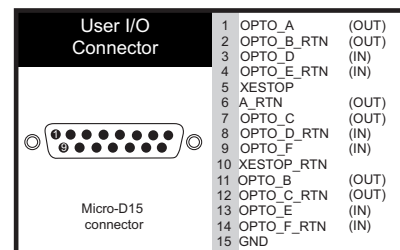


User I/O Connector

Female Micro-D (15 pin)

User I/O Mating Connector

Male Micro-D (15 pin)



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