# eXMP-SynqNet Quick Start Guide





Helping you build a better machine, faster:





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# Safety Warnings

During installation, solid electrical contact must be ensured at connectors; otherwise, noise and power problems will develop. (Connections should be verified through inspection and testing.)

Standard safety rules prevail during installation of any hardware. Some are summarized below for the XMP. For more information, refer to local occupational safety regulations and the manufacturer of your motion drive.

## **Turn Off All Power Before Installing Equipment**

Before installing any motion control equipment, including XMP controllers, power should be switched OFF. Unplug all power plugs from their sources of power.





Switch OFF equipment.



Unplug from source of power.

## **Observe ESD Precautions**

To prevent damage to controller and drive electronics due to electrostatic discharge (ESD), service personnel are cautioned to observe proper grounding during handling of components.



Grounding straps should be worn at all times when handling XMP-SynqNetTM electrical components and connection hardware.



## Define and Clear a Safety Zone!

During installation and testing of motion control hardware-software, a safety zone should be defined around moving components and kept clear of personnel, hands, fingers and loose hardware. During a repowering of the system, motion control components may behave erratically due to misconnected lines or wrongly configured software settings. Sudden and unexpected moves by components can cause injury, property damage, or even death!

Under NO circumstances, should a motion system be tested or operated while personnel are within the safety zone.

Additionally, beware of flying debris from unsecured hardware operating at high speeds. The use of safety shielding is highly recommended.







## Introduction

This Quick Start Guide explains how to configure the eXMP-SynqNet for software start-up and configuration including connection, and changing boot-line parameters in order to load the VxWorks working image from your host computer.

Note that no MEI utilities are shipped on the eXMP at the factory. The user will need to copy the necessary files from the MPI release to the eXMP for the specific version.



Fig 1. A full version of the eXMP-SynqNet is shown above containing all the stuff options.

**NOTE**: Although a fully stuffed eXMP-SynqNet is shown, the setups should be identical for a "lite" version of the eXMP-SynqNet.

#### **IMPORTANT NOTE**

In its default shipping state, the eXMP is configured for an IP address of:

192.1.68.1.74

The user can change his network settings by using telnet to access the eXMP and change the IP address, or connect to the eXMP using a console connection and adapter (See the *Configuring for Console Mode* section).

#### **IMPORTANT NOTE**

The eXMP-SynqNet was designed to allow users to interact with its operating system using a local console and command line via COM1. Therefore, COM1 functions as either a standard COM1 connection or as the console mode connection. Do NOT connect a serial device into the eXMP-SynqNet when COM1 is being used in console mode. COM1 cannot function as a standard COM1 connection and console mode connection at the same time. The following steps will explain how to set up the eXMP-SynqNet in console mode so that it may be accessed by a network computer for development and testing.



## Hardware Setup

A fully stuffed eXMP-SynqNet is shown below. Depending on the version of eXMP-SynqNet, some connectors may not be present.



## **Configuring for Console Mode**

The following steps will explain how to set up the eXMP-SynqNet in console mode so that it may be accessed by a host computer for local development and testing. This is mandatory for configuring the Bootline parameters under the VxWorks operating system.

**1.** The local console must be attached to COM1 via a Null Modem serial cable whose RIN (pin 9) and DTR (pin 4) lines are tied together.



The short between these two pins indicates the presence of a valid console device and is detected during system initialization by the eXMP, thereby enabling the Console output to COM1. This can be done with either an inline adapter or modifications to the Null Modem cable itself.

One example of an inline adapter is the MEI C001-0034 (Cable. Serial, eXMP, DE9).



While MEI does not sell this adapter, MEI can provide its customers with cable DWG to assist in making their own adapter.



# **Host-Side Configuration**

**1.** Power down Controller.

**2.** Start the FTP server supplied by Tornado on the host computer. An FTP server is only needed if files will be loaded off the host computer.

📴 N	o log	file op	en - WFT	PD				
File	Edit	View	Logging	Messages	Security	Help		
L								
For H	łelp, p	ress F1			1 so	cket	0 users	NUM //

- **3.** Add a User Profile for the eXMP-SynqNet.
  - Default setttings:

User Name: target Password: pw

User / Rights Security	y Dialog		×
User Name:	target	•	Done
User target			
New User	Delete	Chang	je Pass
Home Directory:	\	Restricted to	o home
Help		[	Rights>>

4. Open HyperTerminal and configure a new connection. Choose a name and icon for this



#### connection.

Connection Description
New Connection
Enter a name and choose an icon for the connection:
Name:
eXMP
<u>l</u> con:
OK Cancel

**5.** If it is not already connected, connect eXMP COM1/Console to COM1 on the host computer using a NULL serial cable. Console mode is now enabled on the eXMP-SynqNet.

**6.** After pressing OK, switch "Connect using" to apporpriate COM port. All other fields should be grayed out after selections have been made.



Connect To	<u>?×</u>
exmp	
Enter details for I	the phone number that you want to dial:
<u>C</u> ountry/region:	United States of America (1)
Ar <u>e</u> a code:	805
Phone number:	
Connect using:	3Com Windows Modem PCI ADI
	TCP/IP (Winsock)

7. Configure the connection as follows:



	COM1 Properties	? ×
	Port Settings	
	<u>B</u> its per second: 9600 ▼	
• Bits per second: 9600	Data bits: 8	
<ul><li>Data bits: 8</li><li>Parity: None</li><li>Stop bits: 2</li></ul>	Parity: None	
Flow control: None	Stop bits: 2	
	Elow control: None	
	<u>R</u> estore Defaults	
	OK Cancel Apply	

Click OK. The session is now active. Upon exit, save this session for later use.

**8.** Power up the eXMP-SynqNet.



# **Changing Boot Parameters**

**1.** When you power up the eXMP-SynqNet the console terminal should display the BIOS information.

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General Software Celeron Embedded BIOS 2000 (tm) Revision 5.0 Copyright (C) 2000 General Software, Inc. Copyright (C) 2001 Gateworks	
00000640K Low Memory Passed 00031744K Ext Memory Passed Wait	
PCI Device Table. Bus Dev Func VendID DevID Class Irq 00 00 00 8086 7190 Host Bridge 00 01 00 8086 7191 PCI-to-PCI Bridge 00 07 00 8086 7110 ISA Bridge	
00       07       01       8086       7111       IDE Controller         00       07       02       8086       7112       Serial Bus       11         00       07       03       8086       7113       PCI Bridge         00       07       03       8086       713       PCI Bridge         00       00       00       8086       1209       Ethernet       10         00       00       00       COFE       BABE       PCI Bridge       9	
(C) 2000 General Software, Inc. Celeron-5.0-6E69-896E	



**2.** In order to change the boot parameters of VxWorks, you need to stop the auto-boot process. At the VxWorks boot screen, press any key to stop the auto-boot. There is only one second to do this, so you need to be quick. If you missed it and VxWorks auto-loads, reset the controller and try again.

File     Edit     View     Call     Transfer     Help	
	11
VxWorks System Boot	
Copyright 1984-2002 Wind River Systems, Inc.	
CPU: PC PENTIUM Version: VxWorks5.5.1 BSP version: 1.2/3 Creation date: Sep 17 2004, 17:30:05	
Bootline retrieved from ATA device	
Press <enter> to stop auto-boot 1 [VxWorks Boot]:</enter>	
Connected 5:17:28 ANSIW 9600 8-N-1 SCROLL CAPS NUM Capture Print echo	



**3.** At [VxWorks Boot]: line enter 'c' to change boot parameters. Type in the new values. Any changed values will be saved into the flash and used on next boot up.

<b>exmP - HyperTerminal</b> File Edit <u>Vi</u> ew <u>C</u> all <u>I</u> ransfer <u>H</u> elp		
Press <enter> to stop auto-boot</enter>		
[VxWorks Boot]: c		
'.' = clear field; '-' = go to pre	evious field; ^D	= quit
<pre>boot device : fei0 processor number : 0 host name : host file name : vxWorks inet on ethernet (e) : 192.168.1.74 inet on backplane (b): host inet (h) : 192.168.1.75 gateway inet (g) : user (u) : target ftp password (pw) (blank = use rsh) flags (f) : 0x8 target name (tn) : eXMP-SynqNer startup script (s) : other (o) : fei [VxWorks Boot]: @</pre>	5 ): pw	
Connected 5:26:17 ANSIW 9600 8-N-1 SCROLL	CAPS NUM Capture Pr	int echo
boot device	: fei0	This points to the Flash memory.
processor number	: 0	Use processor 0
host name	: host	Name of host computer.
file name	: vxWorks	Boot file in Flash memory.
inet on ethernet (e)	: 192.168.1.74	Set to eXMP IP address.
inet on backplane (b)		
host inet (h)	: 192.168.1.75	Host IP address.
gateway inet (g)	:	
user (u)	: target	Login name for ftp server.
ftp password (pw) (blank = use rsh)	: pw	Login password for ftp server.
flags (f)	: 0x8	Option flags
target name (tn)	: eXMP-SynqNet	eXMP name
startup script (s)	:	Enter path and startup script if needed.
other (o)	: fei	When booting of Flash, this enables Ethernet.



4. Once your boot parameters have been entered, type '@' to boot the eXMP-SynqNet.

Eile Edit View Call Transfer Help	×
Press <enter> to stop auto-boot 1 [VxWorks Boot]: c '.' = clear field; '-' = go to previous field; ^D = quit boot device : fei0 processor number : 0 host name : host file name : vxWorks inet on ethernet (e) : 192.168.1.74 inet on backplane (b): host inet (h) : 192.168.1.75 gateway inet (g) : user (u) : target ftp password (pw) (blank = use rsh): pw flags (f) : 0x8 target name (tn) : eXMP-SyngNet startup script (s) : other (o) : fei [VxWorks Boot]: 0</enter>	
Politieren 2/50/17   Mutatow   3000.04/1   Deckore   Ceep   Milled   Ceptone   Linit cento	11.



5. If VxWorks loads correctly, the following screen should appear:





**6.** Download the **mpixmp.o**, **apputil.o**, and **server.o** files to the target system and then spawn the **'server'** command to start the MEI server.

eXMP - HyperTerminal
ile <u>E</u> dit <u>V</u> iew <u>C</u> all <u>I</u> ransfer <u>H</u> elp
· · · · · · · · · · · · · · · · · · ·
]]]]]]]]]]]]]]]]]]]]]]] Copyright Wind River Systems, Inc., 1984-2003
CPU: PC PENTIUM. Processor #0. Memory Size: 0x1f00000. BSP version 1.2/3. WDB Comm Type: WDB_COMM_END WDB: Ready.
-> cd "d:"
value = 0 = 0x0 -> ld < \mei\xmp\lib\vxworks\x86\debug\mpixmp.o
<pre>value = 33544484 = 0x1ffd924 = _platformMessageLastLock + 0x10 -&gt; ld &lt; \mei\xmp\sqNodeLib\lib\vxworks\x86\debug\libsqnode.a value = 33545000 = 0x1ffdb28 = _platformMessageLastLock + 0x214 -&gt; ld &lt; \mei\xmp\lib\vxworks\x86\debug\apputil.o value = 33545544 = 0x1ffdd48 = tidMPI + 0x230 -&gt; ld &lt; \mei\xmp\bin\vxworks\server.o value = 17640876 = 0x10d2dac = utilDef + 0x988 -&gt; server</pre>
Press ESC to quit
onnected 5:42:44 ANSIW 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

**7.** Once the server is running, initial system tuning and checkout can be accomplished using the Motion Console and Motion Scope utilities. For more information regarding XMP utilities using server mode, please see the Utilities section on <a href="http://support.motioneng.com/">http://support.motioneng.com/</a>.

**Congratulations!** You have successfully configured the eXMP-SynqNet for console mode using VxWorks. The eXMP-SynqNet is now ready for testing and development.