

Application Note 51472 (Revision NEW, 3/2013) Original Instructions RESTRICTED—LIMITED DISTRIBUTION

MicroNet[™] Plus Field Upgrade to Cyber Secure

Upgrade operating system/footprint from 5466-1036/6 to 5466-1045/6 in the field



Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment.

Practice all plant and safety instructions and precautions.

ns Failure to follow instructions can cause personal injury and/or property damage.



Revisions

This publication may have been revised or updated since this copy was produced. To verify that you have the latest revision, check manual 26311, *Revision Status & Distribution Restrictions of Woodward Technical Publications*, on the *publications page* of the Woodward website:

www.woodward.com/publications

The latest version of most publications is available on the *publications page*. If your publication is not there, please contact your customer service representative to get the latest copy.



Any unauthorized modifications to or use of this equipment outside its specified mechanical, electrical, or other operating limits may cause personal injury and/or property damage, including damage to the equipment. Any such unauthorized modifications: (i) constitute "misuse" and/or "negligence" within the meaning of the product warranty thereby excluding warranty coverage for any resulting damage, and (ii) invalidate product certifications or listings.



If the cover of this publication states "Translation of the Original Instructions" please note:

Translated Publications

The original source of this publication may have been updated since this translation was made. Be sure to check manual 26311, Revision Status & Distribution Restrictions of Woodward Technical Publications, to verify whether this translation is up to date. Out-of-date translations are marked with A. Always compare with the original for technical specifications and for proper and safe installation and operation procedures.

Revisions—Changes in this publication since the last revision are indicated by a black line alongside the text.

Woodward reserves the right to update any portion of this publication at any time. Information provided by Woodward is believed to be correct and reliable. However, no responsibility is assumed by Woodward unless otherwise expressly undertaken.

Application Note 51472 Copyright © Woodward 2013 All Rights Reserved



Contents

WARNINGS AND NOTICES	. IV
ELECTROSTATIC DISCHARGE AWARENESS	v
CHAPTER 1. GENERAL INFORMATION Introduction Prerequisites Reference	1 1 1
CHAPTER 2. REQUIRED TOOLS	2
General	2 2
VxWorks BDM Operating System Upgrade Image Upgrade	2
CHAPTER 3. PC SOFTWARE INSTALLATION	3
Introduction	3 .3
Wind River On-Chip Debugging API and Utility	.12
CHAPTER 4. MICRONET PLUS UPGRADE	22
Introduction	.22
VxWorks BDM Operating System Upgrade Image Upgrade	.23
CHAPTER 5. ADMINISTRATIVE TASKS	46
CHAPTER 6. SERVICE OPTIONS	47
Product Service Options	.47
Woodward Factory Servicing Options	.48
Returning Equipment for Repair	.48
Replacement Parts	.49
Engineering Services	.49
Technical Assistance	.50
	.50

The following are trademarks of Woodward, Inc.: MicroNet Woodward

The following are trademarks of their respective companies: VxWorks (Wind River Systems, Inc.)

Illustrations and Tables

Figure 3-1. XILINX Software Installation	3
Figure 3-2. XILINX Software Installation	4
Figure 3-3. XILINX Software Installation	4
Figure 3-4. XILINX Software Installation	5
Figure 3-5. XILINX Software Installation	5
Figure 3-6. XILINX Software Installation	6
Figure 3-7. XILINX Software Installation	6
Figure 3-8. XILINX Software Installation	7
Figure 3-9. XILINX Software Installation	7
Figure 3-10. XILINX Software Installation	8
Figure 3-11. XILINX Software Installation	8
Figure 3-12. XILINX Software Installation	8
Figure 3-13. XILINX Software Installation	9
Figure 3-14. XILINX Software Licensing	9
Figure 3-15. XILINX Software Licensing	10
Figure 3-16. XILINX Software Licensing	10
Figure 3-17. XILINX Software Licensing	11
Figure 3-18. XILINX Software Licensing	11
Figure 3-19. Wind River Software Installation	12
Figure 3-20. Wind River Software Installation	12
Figure 3-21. Wind River Software Installation	13
Figure 3-22. Wind River Software Installation	13
Figure 3-23. Wind River Software Installation	13
Figure 3-24. Wind River Software Installation	14
Figure 3-25. Wind River Software Installation	14
Figure 3-26. Wind River Software Installation	15
Figure 3-27. Wind River Software Installation	15
Figure 3-28. Wind River Software Installation	16
Figure 3-29. Wind River Software Installation	16
Figure 3-30. Wind River Software Installation	17
Figure 3-31. Wind River Software Installation	17
Figure 3-32. Wind River Floating License Setup	18
Figure 3-33. Wind River Floating License Setup	18
Figure 3-34. Wind River Floating License Setup	19
Figure 3-35. Wind River Registry Configuration	19
Figure 3-36. Wind River Registry Configuration	20
Figure 3-37. Wind River Registry Configuration	20
Figure 3-38. Wind River Registry Configuration	21
Figure 4-1. MicroNet Plus Upgrade, Control Information	22
Figure 4-2. MicroNet Plus Upgrade, Board Layout J8	23
Figure 4-3. MicroNet Plus Upgrade, XILINX	23
Figure 4-4. MicroNet Plus Upgrade, FPGA with XILINX	24
Figure 4-5. MicroNet Plus Upgrade, FPGA with XILINX	24
Figure 4-6. MicroNet Plus Upgrade, FPGA with XILINX	25
Figure 4-7. MicroNet Plus Upgrade, FPGA with XILINX	25
Figure 4-8. MicroNet Plus Upgrade, FPGA with XILINX	26
Figure 4-9. MicroNet Plus Upgrade, FPGA with XILINX	26
Figure 4-10. MicroNet Plus Upgrade, FPGA with XILINX	26
Figure 4-11. MicroNet Plus Upgrade, FPGA with XILINX	27
Figure 4-12. MicroNet Plus Upgrade, FPGA with XILINX	27
Figure 4-13. MicroNet Plus Upgrade, FPGA with XILINX	28
Figure 4-14. MicroNet Plus Upgrade, FPGA with XILINX	28
Figure 4-15. MicroNet Plus Upgrade, FPGA with XILINX	29
Figure 4-16. MicroNet Plus Upgrade, FPGA with XILINX	29

Illustrations and Tables

Figure 4.47 MisseNet Dive Lagrade, EDCA with VILINY	20
Figure 4-17. MicroNet Plus Upgrade, FPGA with XILINX	
Figure 4-18. MicroNet Plus Upgrade, FPGA with XILINX	
Figure 4-19. MicroNet Plus Upgrade, FPGA with XILINX	31
Figure 4-20. MicroNet Plus Upgrade, FPGA with XILINX	31
Figure 4-21. MicroNet Plus Upgrade, FPGA with XILINX	32
Figure 4-22. MicroNet Plus Upgrade, Board Layout J4	33
Figure 4-23. MicroNet Plus Upgrade, OS Upgrade Wind River	34
Figure 4-24. MicroNet Plus Upgrade, OS Upgrade Wind River	34
Figure 4-25. MicroNet Plus Upgrade, OS Upgrade Wind River	35
Figure 4-26. MicroNet Plus Upgrade, OS Upgrade Wind River	
Figure 4-27. MicroNet Plus Upgrade, OS Upgrade Wind River	
Figure 4-28. MicroNet Plus Upgrade. OS Upgrade Wind River	
Figure 4-29. MicroNet Plus Upgrade, OS Upgrade Wind River	
Figure 4-30. MicroNet Plus Upgrade, OS Upgrade Wind River	
Figure 4-31. MicroNet Plus Upgrade, OS Upgrade Wind River	
Figure 4-32. MicroNet Plus Upgrade, OS Upgrade Wind River	
Figure 4-33. MicroNet Plus Upgrade, OS Upgrade Wind River	
Figure 4-34. MicroNet Plus Upgrade, OS Upgrade Wind River	40
Figure 4-35. MicroNet Plus Upgrade, DEBUG Connection	40
Figure 4-36. MicroNet Plus Upgrade, DEBUG Connection	41
Figure 4-37. MicroNet Plus Upgrade, DEBUG Actions	41
Figure 4-38 MicroNet Plus Upgrade DEBUG Actions	42
Figure 4-39 MicroNet Plus Upgrade, DEBUG Actions	43
Figure 4-40 MicroNet Plus Ungrade Verification with AppManager	44
Figure 4-41 MicroNet Plus Upgrade, Verification with AppManager	۲۸
Figure 4-42 MicroNet Plus Upgrade, Verification with AppManager	
rigure 4-42. Micronet Flus opgrade, vernication with AppManager	40

Warnings and Notices

Important Definitions



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

- DANGER-Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- WARNING-Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- CAUTION-Indicates a hazardous situation which, if not avoided, could • result in minor or moderate injury.
- **NOTICE**—Indicates a hazard that could result in property damage only • (including damage to the control).
- **IMPORTANT**—Designates an operating tip or maintenance suggestion.

WARNING Overspeed /	The engine, turbine, or other type of prime mover should be equipped with an overspeed shutdown device to protect against runaway or damage to the prime mover with possible personal injury, loss of life, or property damage.
Overpressure	prime mover control system. An overtemperature or overpressure shutdown device may also be needed for safety, as appropriate.
	The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job

Personal Protective Equipment

at hand. Equipment that should be considered includes but is not limited to:

- **Eve Protection**
- **Hearing Protection**
- Hard Hat
- Gloves
- Safety Boots
- Respirator

Always read the proper Material Safety Data Sheet (MSDS) for any working fluid(s) and comply with recommended safety equipment.

WARNING Start-up

Be prepared to make an emergency shutdown when starting the engine, turbine, or other type of prime mover, to protect against runaway or overspeed with possible personal injury, loss of life, or property damage.



On- and off-highway Mobile Applications: Unless Woodward's control functions as the supervisory control, customer should install a system totally independent of the prime mover control system that monitors for supervisory control of engine (and takes appropriate action if supervisory control is lost) to protect against loss of engine control with possible personal injury. loss of life, or property damage.

NOTICE

To prevent damage to a control system that uses an alternator or battery-charging device, make sure the charging device is turned off before disconnecting the battery from the system.

Battery Charging Device

Electrostatic Discharge Awareness

NOTICE	Electronic controls contain static-sensitive parts. Observe the following precautions to prevent damage to these parts:
Electrostatic Precautions	 Discharge body static before handling the control (with power to the control turned off, contact a grounded surface and maintain contact while handling the control). Avoid all plastic, vinyl, and Styrofoam (except antistatic versions) around printed circuit boards. Do not touch the components or conductors on a printed circuit board with your hands or with conductive devices. To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules.

Follow these precautions when working with or near the control.

- 1. Avoid the build-up of static electricity on your body by not wearing clothing made of synthetic materials. Wear cotton or cotton-blend materials as much as possible because these do not store static electric charges as much as synthetics.
- 2. Do not remove the printed circuit board (PCB) from the control cabinet unless absolutely necessary. If you must remove the PCB from the control cabinet, follow these precautions:
 - Do not touch any part of the PCB except the edges.
 - Do not touch the electrical conductors, the connectors, or the components with conductive devices or with your hands.
 - When replacing a PCB, keep the new PCB in the plastic antistatic protective bag it comes in until you are ready to install it. Immediately after removing the old PCB from the control cabinet, place it in the antistatic protective bag.

Woodward



Chapter 1. General Information

Introduction

This procedure describes the steps necessary to upgrade the operating system and footprint on a MicroNet Plus 5466-1035 or MicroNet Plus RTN 5466-1036 to that of a Cyber Secure MicroNet Plus 5466-1045 or Cyber Secure MicroNet Plus RTN 5466-1046. This is intended for Woodward personnel only and should not be distributed to customers.

Prerequisites

The MicroNet Plus being upgraded to Cyber Secure must have the part number 5466-1035 revision F or greater for non-RTCNet use. For use RTCNet use the revision must be J or greater. The same revision restrictions hold true for an RTN.

Reference

- MicroNet Plus CPU PCBA DWG 801-1200
- MicroNet Plus CPU PCBA Schematic 901-1200
- Cyber-Enabled and Cyber-Secure MicroNet Plus CPU/RTN PLD, FPGA, and OS Programming TSP-14696
- Cyber-Enabled and Cyber-Secure MicroNet Plus CPU TSP-14697
- Guide for Handling & Protection of Electronic Controls Manual 82715

Chapter 2. Required Tools

General

The following are required to perform the upgrade of a MicroNet Plus CPU to Cyber Secure.

- PC with USB 2.0 and Windows XP or Windows 7 operating system
 Wind River driver is currently only 32 bit compatible
- MicroNet Plus Chassis for power supply
- AppManager
- HyperTerminal
- This is not native to Windows 7 but can be copied from an XP machine.
- ESD Wrist Strap

FPGA Upgrade

- XILINX Platform Cable USB II
 Model: DLC10
- Xilinx_LabTools_14.4_P.49d.3.0
- Customized XILINX adapter cable.
 - Able to connect to J8 JTAG Programming Connector on board. Terminations per 901-1200 Sheet 11.
- 5418-2632
 - PwrFan_Monitor26.jed
 - Check BOM and EFMS for correct version.
- 5418-6171
 - FPGA 5418-6171.OBJ_NEW.mcs
 - Check BOM and EFMS for correct version.

VxWorks BDM Operating System Upgrade Image Upgrade

- Wind River Probe
- Wind River On-Chip Debugging API 3.5 and Wind River On-Chip Debugging Utility 2.3 CD or .iso
- Files
 - Install.txt
 - Eagle_Micronet_OCD_Win7.reg
 - For a Windows XP computer: Eagle_Micronet_OCD.reg
- Active network or VPN connection to the Woodward internal network. This connection must remain active whenever using the Wind River Probe.
 - If using a virtual machine you must change the settings for the network adapter to "NAT: Used to share the host's IP address".
- 5418-4082
 - Image of Micronet+ PPC 5200 Cyber 5418-4082IMG_C.bin
 - Check BOM and EFMS for correct version.

IMPORTANT

Ensure proper revision in WISE and EFMS.



Chapter 3. PC Software Installation

Introduction

The PC software installation is divided into 2 parts. The installation of the XILINX program for updating the FPGA and the installation of the Wind River program for updating the operating system on the MicroNet Plus CPU.

XILINX

- 1. Run "xsetup.exe" from the Xilinx_LabTools_14.4_P.49d.3.0 folder.
- 2. Accept user agreements and install in the default locations.

lame	Date modified	Туре	Size
J.xinstall	1/30/2013 2:10 PM	File folder	
📙 bin	1/30/2013 2:10 PM	File folder	
📔 common	1/30/2013 2:10 PM	File folder	
📕 data	1/30/2013 2:10 PM	File folder	
📔 idata	1/30/2013 2:10 PM	File folder	
labtools	1/30/2013 2:10 PM	File folder	
📔 lib	1/30/2013 2:10 PM	File folder	
Microsoft.VC90.CRT	1/30/2013 2:10 PM	File folder	
Microsoft.VC90.MFC	1/30/2013 2:10 PM	File folder	
📔 msg	1/30/2013 2:10 PM	File folder	
🔋 autorun.inf	12/5/2012 12:52 AM	Setup Information	1 KE
xinfo	12/5/2012 12:52 AM	File	1 KE
xinfo.exe	12/5/2012 12:54 AM	Application	741 KE
hociup	12/5/2012 12:52 AM	File	1 KE
ssetup.exe	12/5/2012 12:54 AM	Application	748 KB

Figure 3-1. XILINX Software Installation







Figure 3-3. XILINX Software Installation



Figure 3-4. XILINX Software Installation



Figure 3-5. XILINX Software Installation

😳 ISE 14.4 and Vivado 2012.4 Installer		- • •
XILINX.	Select Installation Options	
	Select the desired installation options below. Selection of these options may re- programs being run at the conclusion of the installation process.	sult in additional
	Use multiple CPU cores for faster installation	
DESIGN SUITE	Enabling this option will speed up installation but may slow down other active applications	
	Acquire or Manage a License Key	
	Enable WebTalk to send software, IP and device usage statistics to Xilinx (Install Cable Drivers	Always enabled for
ISE 14.4 and Vivado 2012.4 Installer		
Welcome Accent License Agreements		
Select Products to Install		•
-> Select Installation Options		Select/Deselect All
Select Destination Directory Installation	Description of Acquire or Manage a License Key	
	Most Xilinx applications now require a license key file in order to run. If this enabled, the Xilinx License Configuration Manager will be opened in order to either in acquiring a new license file or in managing an existing license file. I first time using Xilinx ISE Design Suite 14.4, it is highly recommended that ye application to acquire or install your license file.	selection is assist you If this is your ou use this
Copyright (c) 1995-2012 Xilinu, Inc. All rights reserved. XILINX, the Xilinx logo and other designated brands included herein are trademarks of Xilinu, Inc. All other trademarks are the property of their respective owners.		
	< Back Next	> Cancel

Figure 3-6. XILINX Software Installation

🔅 ISE 14.4 and Vivado 2012.4 Installer			- • •		
XILINX.	Select Destination Directory				
	Select the directory where	you want the software installed.			
	C:\Xilinx		Browse		
DESIGN SUITE	Install location(s) : C:\Xilinx\14.4\LabTools				
	Disk Space Required :	4843 MB			
	Disk Space Available :	22463 MB			
Welcome Accept License Agreements Select Products to Install Select Installation Options -> Select Destination Directory Installation	Select a Program Folder This name will appear in th Xilinx Design Tools	e Start Menu > Programs list.			
	Import tool preferences from pre Installation 14.4	evious version and change project file as	sociation to Lab Tools - Standalone		
Copyright (c) 1995-2012 Xilins, Inc. All righ reserved. XILINX, the Xilinx logo and other designats brands include herein are trademarks of Xilin Inc. All other trademarks are the property their respective owners.	ਸ਼ ਰ ਸੰ				
			< Back Next > Cancel		

Figure 3-7. XILINX Software Installation

Application Note 51472



Figure 3-8. XILINX Software Installation



Figure 3-9. XILINX Software Installation



Figure 3-10. XILINX Software Installation



Figure 3-11. XILINX Software Installation



Figure 3-12. XILINX Software Installation



Application Note 51472

ISE 14.4 and Vivado 2012.4 Installer [1	0%] 💿 🛛 🕰
XILINX. ISE DESIGN SUITE	Install Completed Congretulations! You have successfully installed Xilinx Lab Tools - Standalone Installation. The environment variables are written to the settings[32]64] bat file for each application and an encompassing settings[32]64] bat at "C.V.Binxi 14.4LabTools", in order to set the variables in your environment, you must source the settings[32]64] bat file from "C.V.Binxi 14.4LabTools". The shortcuts created by the ISE Design Suite Installer source the appropriate settings script prior to launching each tool. Command line and script users should source the settings script prior to launching the tools.
ISE 14.4 and Vivado 2012.4 Installer Welcome Accept License Agreements Select Products to Install Select Installation Options Select Destination Directory -> Installation	
Copyright (c) 1995-2012 Xilinu, Inc. All rights reserved. XILIND, the Xilinu logo and other designand brands include here: are trademarks of Xinu. Inc. All other trademarks are the property of their respective owners.	
	Fnish

Figure 3-13. XILINX Software Installation

3. Select The Free License option and follow the instructions to register on the website. A license file will be emailed with instructions on how to install.

	Iguration Manager	
Acquire a License	Manage Xiinx Licenses	
Select one of the	following options	
Start Now! -	30 Day Trial (No Bitstream)	
· Get Free ISE	WebPack License	
Start 30 Day	Evaluation	
C Get My Purch	ased License(s)	
🗇 Locate Existin	g License(s)	
Description of the	above selected option	
Get free ISE We license file conta configure your s www.xilinx.com.	Pack license and start using your Xilinx software. You will be taken ring keys to use ISE WebPack. Once your license file is generated, stem to use the license. For more information on ISE WebPack, and abuvus enabled for WebPACK users. WebTak innoves user and inst	to the Xilrux website where you can generate and download a the "Manage Xilrux Licenses" tab will open to enable you to using supported devices and applications, please visit all preference when a bitcheam is generated using the WebPACK
ticense. If a des this, please see	n is using a device contained in WebPACK and a WebPACK license Inswer Record 34746.	s available, the WebPACK license will always be used. To change

Figure 3-14. XILINX Software Licensing



Figure 3-15. XILINX Software Licensing

					enter keyw	Advanced Search
	Pr	oducts /	Applications	Supp	ort Bay	About Xilinx
Home : Support : Product Licensing						
Product Licensing						
						C Help
Create New Licenses Manage Licenses Legacy Licensin	1					
Have a Voucher to Redeem?	Evaluation and No.	Charge Con	¹⁶ (2			
atter souther code	Search the Evaluation cores catalog and	diee and No (add specific	cores to Sea	rch New.		
	table below					
Create a New License File						
Create a new license file by making your product selections from	the table below.					
Product		Type	License	Available Seats	Status	Subscription End Date
Product Petalinux SDK Evaluation License (No Support)		Type Evaluation	License Node	Available Seats 1/1	Status	Subscription End Date 365-days
Product Petalinus SDK Evaluation License (No Support) Vivade and SE Design Suite: WebPACK License		Type Evaluation No Charge	License Node Node	Available Seats 1/1 1/1	Status Current Current	Subscription End Date 365-days None
Product Product Product Products SDK Evaluation License (No Support) Vivado and SE Design Sulte: WelPACK License Vivado and SE Design Sulte: 30-Day Evaluation, Node-Locked Lice	••	Type Evaluation No Charge Evaluation	License Node Node	Available Seats 1/1 1/1 1/1	Status Current Current Current	Subscription End Date 385 days None 30 days
Pedact Imathinus SDK Evaluation Learner (Ito Support) Verale and SEE Design Subt WebPLCK Learner Investor and SEE Design Subt 20 Degraduation. Node Locked Learner Verale NLS Evaluation Learner	14	Type Evaluation No Charge Evaluation Evaluation	License Node Node Node	Available Seats 1/1 1/1 1/1 1/1	Status Current Current Current Current	Subscription End Date 385-days None 30 days 30 days
Pedate Pedates SDF Evaluates Literate (ito Support) Vindo and SD Design Sule: YouMADO Literate Vindo and SD Design Sule: 30 Day Evaluate, Note-Literat Lite Vindo ArL3 Evaluation Literate	•	Type Evaluation No Charge Evaluation Evaluation	License Node Node Node	Available Seats 1/1 1/1 1/1 1/1	Status Current Current Current	Subscription End Date 305 days None 30 days 30 days
Pediati P Addres SDC Evisation Learner (In Eugenti) Wheth and SDC Every's Safet Wath/ACL Learner Wheth and SDC Every's Safet 3D Gray Evaluation, Rode Learner (Learner Weath and SL Evaluation Learner		Type Evaluation No Charge Evaluation Evaluation	License Node Node Node	Available Seats 1/1 1/1 1/1 1/1	Stetus Current Current Current	Subscription End Date 305 days Nane 30 days 30 days
Pediat Product Visits and SC Despits Visits	1	Type Evaluation No Charge Evaluation Evaluation	License Node Node Node	Available Seats 1/1 1/1 1/1 1/1	Stetus Current Current Current	Subscription End Date 305 days None 30 days 30 days
Pediat In Antices SDR Evaluation Learners (in Surgers) Impact (in Surgers) IV Instance and ED Design Subs 2 Society (in Surgers) Impact (in Surgers) Vinstance (in Surgers) Subs 2 Society (in Surgers) Impact (in Surgers) Vinstance (in Surgers) Subs 2 Society (in Surgers) Vinstance (in Surgers) Vinstance (in Surgers) Subs 2 Society (in Surgers) Vinstance (in Surgers)		Type Evaluation No Charge Evaluation Evaluation	License Node Node Node	Available Seats 1/1 1/1 1/1 1/1	Status Current Current Current Current	Subscription Enter Date 2015 days None 30 days 30 days
Pedict Image: State State (Contents (In Support)) Image: State Stat	**	Type Evaluation No Charge Evaluation Evaluation	License Node Node Node	Available Seats 1/1 1/1 1/1 1/1	Status Current Current Current	Subscription Entel Date 205 days None 30 days 30 days

Figure 3-16. XILINX Software Licensing

Application Note 51472

Thank you for licensing	g your Xilinx® design tool or IP core product. This email confirms your product registration and includes the license file to enable your
product.	
The license file can als	o be obtained by returning to the Xilinx Product Licensing Site:
http://www.xile	tx.com/getilicense
For complete instruction	ons on installing this license file, see the Xilinx Design Tools: Installation, Licensing, and Release Notes document on the Xilinx web at:
English: Japanese:	http://www.xiinx.com/se/hotes_e http://www.xiinx.com/se/hotes_i
Quick-Start License In	stallation Instructions
Node-locked Licenses These steps will copy	your license file to the appropriate default directory (the .Xilinx directory under your home drive - typically C: for Windows).
1. Save the attac	hed license file to your desktop or some other folder on your computer
2. Nun the Allinx Windows:	Run Manage Xilinx Licenses' from Xilinx Design Tools program group
3. Select the Ma	se xicm in a command-line window nage Xilinx Licenses' tab and click on the 'Copy License' button
Browse to the	downloaded license file and click 'Open'
Note: IP licenses and later versions license file should	generated from the Xilian Product Licensing Site are designed to be used with IP released against Vivado Design Suite (all versions) and 11. of ISE Design Suite 13, 12 and 11. If this is an IP license to be used with a 10.1 or earlier ISE Design Suite design tool installation, the be copied to Xilian/Conegen/ConeLicenses instead of C/Xilian.
Floating Licenses:	
 If you have an already using 	existing FLEXnet floating license server, it may be easiest to simply copy the license keys in the attached file into the license file you are with your license server.
 Note: Please rest If you are sets more detailed 	it your floating locense server to allow the changes to take effect. og up a FLEXnet floating license server for the first time, please see the Xilinx Design Tools: Installation, Licensing, and Release Notes for directions.
Support Information	
For questions regardir Customer Service Rep	g products within your Product Entitlement Account or if you feel you have received this notification in error, send an email to your regional resentative:
Canada, USA Europe, Midd Asia Pacific in	and South America – <u>issca, cases Quinx, com</u> e East, and Ahrica – <u>casecas Quinx, com</u> Culong Japan – <u>agaccas Quinx, com</u>
For technical support i this site you will also f	ncluding the installation and use of your product license file you may contact Xilinx Online Technical Support at <u>www.support.xilinx.com</u> . On ind the following resources for assistance:
Design tool, If	and Documentation Updates
Searchable Ar User Forums -	mean auguster web foots even Catabase with Over 4,000 Solutions -Chat Rooms and Discussion
Regards,	
Xilinx Customer Servic	a
This email was sent by	t i i i i i i i i i i i i i i i i i i i
2100 Logic Dr.	
San Jose, CA 95134-3 United States of Amer	M00 Ca
Xilinx does not rent, s	Il or lease customer information. We respect your right to privacy. View our policy at www.xiinx.com/legal.htm.

Figure 3-17. XILINX Software Licensing

II Xilinx	License Configuration Man
1	License installation was successful.
	ОК

Figure 3-18. XILINX Software Licensing

Wind River On-Chip Debugging API and Utility

Currently this utility in NOT 64 bit compatible.

- 1. Run the CD or .iso "Wind River On-Chip Debugging API 3.5 and Utility 2.3"
- 2. Install to default locations and accept agreements.
- 3. Select "Permanent activation" and point the file "install.txt" included.

Installer-Choose Activation Type	
WIND RIVER	_
Choose your Activation Type: • Temporary activation (requires an Internet connection) • Can only connect to the Internet through a proxy server. • Perment activation Enter the full path to your product activation file. C:Users/motiolDec/top/instal.bt How do Lobbain a product activation file? Advanced >>	Browse
< Back Next >	Cancel

Figure 3-19. Wind River Software Installation

- 4. Select Standard installation.
- 5. Wind River On-Chip Debugging API 3.5 and Wind River On-Chip Debugging Utility 2.3 will be installed.
 - o Install LabVIEW components to the default locations.

installer-Welcome	
	WIND RIVER
TN	Wekome This program installs Wind River On-Chip Debugging API 3.5 Wind River On-Chip Debugging API 3.5 and On-Chip Debugging Utility 2.3 Media ID: CDR-R133477.1-1-01 Manufactured on Thu Feb 14 18:03:29 PST 2008
	< Back Net > Cancel

Figure 3-20. Wind River Software Installation



Figure 3-21. Wind River Software Installation

Installer-Installation Directory		
	WIND RIVER	
	If this product includes more than one installation disk, make sure to specify the same base installation directory for each disk.	
	Installation Directory:	
	C:\WindRiver	Browse
N		
	< Back Next >	Cancel

Figure 3-22. Wind River Software Installation



Figure 3-23. Wind River Software Installation



Figure 3-24. Wind River Software Installation

Installer-Choose Installation Filter	· · · · · · · · · · · · · · · · · · ·
	WIND RIVER
W	Select one or more target architectures, corresponding to processors you plan to use on your target. If you are uncertain, you may select all of them. Image: Ima
	< Back Next > Cancel

Figure 3-25. Wind River Software Installation



Figure 3-26. Wind River Software Installation

Installer-Standard Installation		
	WIND RIVER	_
R	Products and Features Products and Features	
U	Disk Space Information Total Disk Space Required 297.49 (MB) Disk Space Available 8727.25 (MB) Installation Progress of Current Product CriWindRiver\ocdapi-3.5(SupportFiles\WPICE_Firmware(S5v)h3.3a.bin Overall Installation Progress (Installed 0 of 2 selected products)	
	< Back Install	Cancel

Figure 3-27. Wind River Software Installation



Figure 3-28. Wind River Software Installation



Figure 3-29. Wind River Software Installation



Figure 3-30. Wind River Software Installation



Figure 3-31. Wind River Software Installation

- 6. Edit Environmental Variables to point to the license server on the Woodward network.
 - Create a new System variable with the following properties.
 - Variable name: LM_License_File
 - Variable value: 27000@FTC-18WYDN1
 - The current location of the license server on the Woodward network is on the computer FTC-18WYDN1.





Figure 3-32. Wind River Floating License Setup

Variable	Value
NO_XILINX_DAT	HIDDEN
TEMP TMP	%USERPROFILE%\AppData\Local\Temp %USERPROFILE%\AppData\Local\Temp
	New Edit Delete
ystem variables	
vstem variables Variable	Value
vstem variables Variable ComSpec	Value C:\Windows\system32\cmd.exe
vstem variables Variable ComSpec FP_NO_HOST_C	Value C:\Windows\system32\cmd.exe NO
vstem variables Variable ComSpec FP_NO_HOST_C J2D_D3D	Value C:\Windows\system32\cmd.exe NO false
vstem variables Variable ComSpec FP_NO_HOST_C J2D_D3D KMP_DUPLICAT	Value C:\Windows\system32\cmd.exe NO false TRUE

Figure 3-33. Wind River Floating License Setup





Figure 3-34. Wind River Floating License Setup

- 7. Load the registry file **Eagle_Micronet_OCD_Win7.reg** from the PC to the probe.
 - Connect the Wind River Probe to the PC.
 - Start the program Wind River OCD Utility.
 - Select the CF icon to configure a new connection. This can be saved and accessed again using the Connect/Attach icon nest to the CF icon.
 - Family Architecture: PPC5XXX
 - CPU: MPC5200
 - Emulator: WindRiverProbe
 - Board Descriptor: C:\WindRiver\ocdapi-3.5\SupportFiles\BoardFiles\PowerPC\5xxx\Generic\Generic_MPC 5200.brd

Wind River OCD Utility 2.3		
		^
REV:2.3a1 /2.3/3.5 STATUS:Not connected to any en	nulator.	•

Figure 3-35. Wind River Registry Configuration



ef. File Name:	MNplus		
Family-A	Architecture	CPU MPC5200	Exit/Abort
WindRiv	verPROBE	Wind River Probe S/N PR062799	
Board Descripto	or File Dath and Name		Brd, File
SC:\Win	dRiver\ocdapi-3.5\SupportFile	\BoardFiles\PowerPC\5xxx\Generic\Generic_MPC	5200.brd Cancel



- If there is no valid connection to the Woodward license server then the S/N for the probe will not populate and you will receive an error when you select connect.
- 8. Select the Record/Playback icon.

Wind River OCD Utility 2.3	
Target = MPC5200 :PPC5XXX :Firm Rev = pr2.4a :NOEVENT :Wind River Probe :TF Library = D5.9j :Slave = NO >ERR>	NE :FLEXIM
REV:2.3a1 /2.3/3.5 STATUS: Connected via: WindRiverPROBE#MPC5200:U1:C:\WindRiver\ocdapi-3.5\SupportFiles\BoardFiles\PowerPC\5xxx\Generic\	

Figure 3-37. Wind River Registry Configuration



Application Note 51472 MicroNet Plus Field Upgrade to Cyber Secure

- Select Browse on the Playback option and navigate to the file Eagle_Micronet_OCD_Win7.reg if using Windows 7. For Windows XP use Eagle_Micronet_OCD.reg
 - Select Play for the Playback option.
 - Select Exit/Return.
 - The main screen should show data streaming to the probe.
 - At completion the main screen will return to the ERR or BKM prompt.

PLAYE	ACK rile path & name (*.reg, *.cmd, *.txt.)		-
Browse C:\User	s\mtoll\Desktop\Eagle_Micronet_OCD_Win7.reg	EDIT TOP	PL.
RECOR	D/LOG File (path & name)		
Browse <enter< td=""><td>path and file name></td><td>EDIT</td><td></td></enter<>	path and file name>	EDIT	
Text ED	ITOR of choice: Path and program name (*.exe)		

Figure 3-38. Wind River Registry Configuration

10. The probe is now installed and ready to use.

Chapter 4. MicroNet Plus Upgrade

Introduction

Prior to upgrading the CPU record the current information about the CPU from AppManager. This can be done with a screen capture of the Control Information.

If connecting to an RTN CPU, use "Manage Real Time Network CPUs for the current control" feature in AppManager to access information on the RTN CPU.

Control Information	×	
Computer Name :	VXM00017362	
Computer IP Address :	10.14.142.204	
Footprint Part Number :	5418-2566	
Footprint Revision :	F	
AMService Version :	10	
Footprint Description :		
VxWorks for MPC5200 V Creation Date Jul 14 2009, RAMDrive Capacity - 6265 RAMDrive FreeSpace - 33 FLASHDrive FreeSpace - 33 FLASHDrive FreeSpace - 1 Memory Free - 24228K MAC Address - 00128c004 Adapters - Ethernet 1 10.14.142.204 Ethernet 2 192.168.128.20 Ethernet 2 192.168.128.20 Ethernet 3 172.20.22.10 2 Ethernet 4 172.20.23.10 2 Gateway - Not Set Board - FPGA - 20 CPU Type - CPU5200 Identity Object Information PN - 5466-1035 Rev - H SN - 17816029	Vind River BSP. , 09:57:47 33K 1540K 18989K 43d2 255.255.240.0 0 255.255.255.0 55.255.255.0 55.255.255.0	F.
	Close	

Figure 4-1. MicroNet Plus Upgrade, Control Information





Application Note 51472

FPGA Upgrade

- 1. Remove input power to the MicroNet chassis.
- 2. Remove dust cover from MicroNet Plus CPU.
- Follow ESD procedures and use an ESD Wrist Strap.
- 3. Remove enough modules to the left of the CPU slot as necessary to access the CPU board and use cables connected to the JTAG ports.
- 4. Connect the customized XILINX adapter cable to JTAG port J8



Figure 4-2. MicroNet Plus Upgrade, Board Layout J8

- 5. Insert MicroNet Plus CPU into chassis. Energize power to the chassis.
- 6. Run the XILINX program "iMPACT" from the Start menu.



Figure 4-3. MicroNet Plus Upgrade, XILINX

MicroNet Plus Field Upgrade to Cyber Secure7.Select "NO" and "Cancel "when prompted.

STRANDACT DADE		📕 (क) स) मि
Boundary Scan SystemACX Const PROM File Format		
	Automatically create and save a project Do you wont the system to automatically create and save a project file for you ¹ Don't show this message again, you therefore, in preference. The Mac	
PPACT Processes ···· D # ×		
Console		+08×
Meloome to IMPACT IMPACT Version: 14.4		-
Console O Broans 1. Warnings		
		nonn.

Figure 4-4. MicroNet Plus Upgrade, FPGA with XILINX

Characterization of the second				
B ISE IMPACT (P.A9d)				
File Edit View Operations Output I	Jebug Window Help			
🗋 🤣 🐲 🐁 🗆 🥕 😵				
PPACT Flows ++ C # X				
Boundary Scan SystemACE				
Create PROM File (PROM File Format WebTalk Data	Project	9		
	I want to			
	load most recent project	Load most recent project file when MPACT a	Browse	
	C create a new project (.pf) default of		Drawae	
MPACT Processes ++ C # >			_	
			_	
	ox	Cancel		
Console				** 0 # ×
Welcome to iMPACT				
iMPACT Version: 14.4				
N Anna A Manine				,
🖉 cares 🦰 puna T unada				

Figure 4-5. MicroNet Plus Upgrade, FPGA with XILINX

Application Note 51472 MicroNet Plus Field Upgrade to Cyber Secure

8. Select "Boundary Scan" from the left window.

😪 ISE iMPACT (P.49d) - [Boundary Scan]				in 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 199	
B File Edit View Operations Output De	wg Window	Help			_ @ ×
🗋 🏓 🖬 🛍 🕽 🗶 🗇 🦂 🖉 🖉	?				
MPACT Flows					
Boundary Scan					
Create PROM File (PROM File Format					
🐵 🛅 WebTalk Data					
			Right click to Add Devic	ce or Initialize JTAG chain	
MPACT Processes			-		
Available Operations are:					
9		Boundary Scan			
Console					* D 6 X
// *** BATCH CMD : setMode -bs	_				
// *** BATCH CMD : setMode -bs					
// *** BAICH CMD : setNode -bs					
e					•
Console 😳 Errors 🔔 Warnings					
				No Cable Connection No F	File Open



ISE IMPACT (P.49d) - [Boundary Scan] Ele Edit View Operations Output	Debug Window Help	
	₩ x?	(2.12)
MPACT Flows + D & X		
Boundary Scan SystemACE Greater ROM File (PROM File Format WebTalk Data	Add Xilinx Device	
	Cable Auto Connect Cable Setup	
	Output File Type +	
	Boundary Scan	
Console		
// *** BATCH CHD : setMode -b. // *** BATCH CHD : setMode -b. // *** BATCH CHD : setMode -b.		
🔝 Console 🥝 Errors 🧘 Warnings	No Cable Conne	ction No File Open

9. Right click in the main window and select "initialize Chain"



10. An Auto Assign window may appear. You can select "NO".



Figure 4-8. MicroNet Plus Upgrade, FPGA with XILINX

11. The main screen should be populated with the 3 recognized devices, xcF02s, xc3s400, and xc9572xl. You can select "Cancel" to close the Programming properties window.

Undary-Scan Device 1 (PROM xcf02s)	Property Name	Value	_
Device 2 (FPGA xc3s400)	Verify		
Device 3 (CPLD xc9572xl)	General CPLD And PROM Properties		
	Design-Specific Erase Before Programming	1	
	Read Protect	17	
	PROM/CoolRunner-II Usercode (8 Hex Digits)		
	PROM Specific Properties		
	Load FPGA	10	

Figure 4-9. MicroNet Plus Upgrade, FPGA with XILINX

🐼 ISE iMPACT (P.49d) - [Boundary Scan]	🗿	
So File Edit View Operations Output	Debug Window Help	- @ ×
	X i 🛷 🚴 🗇 🖉 🖉	
MPACT Flows ++ D & ×		
Beundary Seat SystemACE Cearse BROM File (PROM File Format WebTalk Data	TDI Example Example Example xct02s xct0400 xct072bi Rypess Rypess Rypess	
#PACT Processes		
	Identify Succeeded	
Console		++ □ # ×
PROGRESS_END - End Operation. Elapsed time = 1 sec. // *** BATCH CMD : identifyMP	¢	
Console O Errors A Warnings		,
	Configuration Platform Cable USB II 61	AHz usb-hs

Figure 4-10. MicroNet Plus Upgrade, FPGA with XILINX



Application Note 51472

12. Select each component one at a time and select "Get Device ID". Ensure that "ReadIDcode Succeeded" for each component.

THE APACT IF ARE - (Rearring Scient		🧶 Collec 😆
File Edit View Operations Output	Debug Window Help	1.00
OPH XOOXIIID	110 N = 20	
MATTER HERE		
The Brownier's Sum The Brownier's Sum Symmetry Sum The Sum PROM The PROM The Formet, The Sum Date	19 Example Const Find Const Find Const Find Const Find Const Generation Constructio	
HACT Instants + D # X Available Operations ann 19 Dans 19 Dans Charle 19 Tacabard	Se Ena Properties. Example Tes Assignment Warel	
 Ger Device Devices Ger Device Devices Ger Device Experient Unercole 		
	10 burder Son	
Carrante		-0.43
PRODUCTS END - find Operation. Elapset Line + 1 end. // +++ SaDOR D40 + indextifyed.		
Count O true L manufa		Configuration (Parliane Calle USER 1444 144-44

Figure 4-11. MicroNet Plus Upgrade, FPGA with XILINX

2 TE RIFICT (FAM) - (Boundary Total)	WHERE AND	 Institution
p tes sat two Operations Comput	and some test	100
10 H 20 M 2 20		
HEACT Parts HE & R		
 Benefacy Sam System 24, Conf. (1997) Control (1997) Control (1997) Man Sak Data 	TO - COMPANY C	
MACT Processon O S & S Auctivite Operations are Strate Auctivities Reve Auctivity Reve Auctivity Reve Auctivity Reve Auctivity Sea Denson Oncome Sea Denson Sequence Materiality Sea Denson Sequence Materiality		
	Readldcode Suce	reeded
Constant of the second se		-04-
"h": IDCOM LA "ALCANDAD" ILS	0010300030010011.	
'1'l i Melufaiturer's 15 - X13	as actors, Version : 15	
A Course of Street of Streetweet		

Figure 4-12. MicroNet Plus Upgrade, FPGA with XILINX



- 13. Right click on xc9572xl and select "Assign New Configuration file". Navigate to **PwrFan_Monitor26.jed** file.
 - Right click on xc9572xl and select "Program"
 - In the programming properties, select the "Verify" and "Design-Specific Erase Before Programming" boxes.
 - Select "OK"

a to advant prote (Soundary Sound		Sector 6
The same view operations couple	and the second second	(117)
TAR VOLVER		
The chain of the chain th	TO Example from the former former for the former former former for the former f	D
PACT Populary III D & X Since Constants and Since Billion Const Billion Const Billion Const Billion Const Billion Const Since Const D Device Signature Volumede	Sel Sees Properties. Launch Rite brogeneek Witard	
	i Burder Kar	
1+ 150500 is "150101000000 *1*+ 150500 is "85045000" (is *1*+ + Manufactures's 15 = 841	bodischeboldessell 1980 - Jame medfile, Verminn / LS	*8
Cross O from L haven	Gebaute) Refere Calor (NET 1996) Sector

Figure 4-13. MicroNet Plus Upgrade, FPGA with XILINX

🛞 Assign New Configura	tion File		
C • 1045	▶ 5418-2632.OBJ_NEW 4 ₇	Search 5418-2632.OBJ_NEV	م ۷
Organize - New	folder	ii • 🛙	. 0
E Desktop	* Name	Date modified Ty	/pe
Downloads	PwrFan_Monitor26.jed	4/26/2006 7:10 PM JE	D File
Computer Co	E • • • •		,
F	le name: PwrFan_Monitor26.jed • 🔺	Il Design Files (*.jed *.isc *. Open 💌 Can	bsd 💌

Figure 4-14. MicroNet Plus Upgrade, FPGA with XILINX



Application Note 51472

2 22 REACT (F.R.) - (Soundary Scart)		🍺 Sast 10 📾
ge File Salt View Operations Output	letug Bindee Hep	(1)11
Court HE X O D X II II II	The second secon	
IPACT Processo	One hap 301 Care lang 3101 Analys films Carely Sat Programming Land Song Programming Carethy Tak Analysis	entra Fie
est de Deuxe B de Deuxe Deuxenn de Deuxe Deuxenn de Deuxe Deuxenn de Deuxe Deuxenn de Deuxe Bay Mit de Deux Bay Mit		
	Bonder; Kan	
Carada		-0#>
Control		ĺ.
-		
Course O from E Warman		
		concrute repairs experiences and a state

Figure 4-15. MicroNet Plus Upgrade, FPGA with XILINX

Ö	
0	
amneg V	
E	
10	
123	

Figure 4-16. MicroNet Plus Upgrade, FPGA with XILINX



MicroNet Plus Field Upgrade to Cyber Secure 14. "Program Succeeded" will be displayed.

🛞 ISE iMPACT (P.49d) - [Boundary Scan]		
🛞 File Edit View Operations Output D	ebug Window Help	- @ ×
🗋 🆻 🖬 🐰 🗅 🖸 🗙 🗉 📰 💥	L 🗱 🗱 🛷 " 🗟 🗊 🥬 K?	
MPACT Flows ++ C & X		
Boundary Scan		
SystemACE Create PROM File (PROM File Format		
🛞 🛅 WebTalk Data	TDI EXNAM	
	xcf02s xc0s400 xc9572xl bypass bypass pwrfan monitor2	
	TDO	
MPACT Processes ↔ □ & ×		
Available Operations are:		
→ Verify		
Erase		
Readback		
Get Device ID		
Get Device Checksum Get Device Signature/Usercode		
One Step SVF		
One Step XSVF	Program Succeeded	
L	🖉 Boundary Scan	
Console		+08×
'3': Programming completed succ PROGRESS END - End Operation.	essfully.	^
Elapsed time = 18 sec.		-
		-
Console O Errors A Warnings		
	Configuration Distores Cable USB 1	MHr uth-hr
	Consignation Praction Cable 030 a [0	more in Heperine [1]

Figure 4-17. MicroNet Plus Upgrade, FPGA with XILINX

- 15. Right click xcf02s and select "Assign New Configuration file". Navigate to **5418-6171.OBJ_NEW.mcs** file.
 - Right click on xcf02sl and select "Program"
 - In the programming properties, select the "Verify" and "Design-Specific Erase Before Programming" boxes if prompted.
 - Select "OK"

Not Wein Opposition Output Debug Witten Not Wein Image: Solution Opposition Opposition Image: Solution Opposition Image: Solution Opposition Opposition Image: Solution Opposition Image: Solution Opposition Image: Solution Opposition Opposition Image: Solution Image: Solution Image: Solution	PACT (PAR) - (Boundary Scan)			
Kolon X III III III III III IIII IIII IIIIIII	Edit Vew Operations Output	Debug Winds	er Help	(alete
en + 2 ≤ 4 × memory head private memory head (16, 250,000 for former) et 20,000 for 20,000 for former) et 20,000 for 20,000 for the former for block to the former former former for the former form	H XOOXHIN	H 1 87 42	a 1 2 2 2	
ender John tade PEOM File (PEOM File (PEOM File (PEOM File tade PEOM File (PEOM File (PEOM File tade PEOM File (PEOM File tade PEOM File (PEOM File tade PEOM File (PEOM File TO PEOM FILE TO P		¢.		
Image:	eendary Sam yeenski nade RICM far SRCM far Format, wy fak Sata	10 - C	Notice Providence Prov	
Annual Control of Cont			Die Map X3V#	
er Check And Mark State Mark State Ma	Constant or	a	Carlos and the Configuration Lines	
Orach bern bern tern	910		Set Freighting Propulses	
Chevel hard weak Bu weak Destation weak Spectrum weak Spectrum Static Chevitian weak Spectrum Destation Static Static Destation S			Set Linear Properties	
hard men Selection men Selection men Selection men Selection Market Selection	Check		Leurch File Assignment Waard	
Bunday San Sanday Sanday San Sa	Back Nexte ED Nexte Chacksum Nexte Signaturs/Steccole Sing SV4 Sing SSH			
Leening file "C//Deco/moni/Second/100/06/06/06/00/200/000 ***			Brundary Scan	
Leanung Elle "C/Terry/Wessi/Constan/104/1418-417.000_WES.Mos" ** SAIDS OD setAttribus-position 1 -attr packapellans -value **				+0#×
* BAIDS OE setAttribute -position 1 -attr packapalane -value **	Toward arts .c://pess/	stoll/deastog	1/1045/3418-4171.083_889.808*	
- O true (<u>1</u> , mmm)	** MATCH CHE setAttrib	the -position	5 -atty parkapellane -value **	
· O for (), weep		1 - MARIA		-
en 🖸 gent 😨 generali	Provide Statements			
	en O Gans T manufa			

Figure 4-18. MicroNet Plus Upgrade, FPGA with XILINX



Application Note 51472

Search Assign New Configuration File			
G C - 🗼 > 1045 >	• 4 ₂	Search 1045	٩
Organize 🔻 New folder		80 -	
🔆 Favorites	Name	Date modified	Туре
Nesktop	3418-2632.OBJ_NEW	2/1/2013 4:17 PM	File folder
🐌 Downloads	3418-4082.IMG_C	2/1/2013 4:05 PM	File folder
🔛 Recent Places	5418-6171.OBJ_NEW.mcs	2/1/2013 3:59 PM	MCS File
Elbraries Documents Music Pictures Videos Homegroup Computer Computer Cocal Disk (C:)			
· · · · ·			
File name	⊧ 5418-6171.0BJ_NEW.mcs •	All Design Files (*.mcs *	isc *.bs • Cancel

Figure 4-19. MicroNet Plus Upgrade, FPGA with XILINX



Figure 4-20. MicroNet Plus Upgrade, FPGA with XILINX



MicroNet Plus Field Upgrade to Cyber Secure 16. "Program Succeeded" will be displayed.

😪 ISE iMPACT (P.49d) - [Boundary Scan]	👘	
👺 File Edit View Operations Output	Debug Window Help	- 0 ×
□ ≥ E × 0 0 × 1 1 1	× II 教 辞 🛷 🖲 🔟 🔑 😢	
MPACT Flows ++ C & X		
Boundary Scan		
- B SystemALE - Create PROM File (PROM File Format		
WebTalk Data WebTalk Data		
	xcf02s xc3s400 xc9572xl 5418-6171.obj.n., bypass pwrfan.monitor2	
	TD0	
MPACT Processes ••		
Available Operations are:		
➡ Verify		
Erase Black Cherk		
Readback		
Get Device ID		
Get Device Signature/Usercode		
One Step SVF One Step XSVE		
- Contact Astro	Program Succeeded	
	Ch. Bundaro from	
a contraction of the second se	Car Docursary Scan	
111 Programming completed and	cessfully.	+08×
PROGRESS_END - End Operation.	inereneration in the second seco	<u>^</u>
Elapsed time = 10 sec.		
×		
🔳 Console 🙆 Errors 🧘 Warnings		
	Configuration Platform Cable USB II 6	MHz usb-hs

Figure 4-21. MicroNet Plus Upgrade, FPGA with XILINX

- 17. Remove power from the chassis and remove the cable connected to the JTAG port and close the iMPACT program.
- 18. The FPGA has now been updated.

VxWorks BDM Operating System Upgrade Image Upgrade

- 1. Remove input power to the MicroNet chassis.
- 2. Remove dust cover from MicroNet Plus CPU.
- 3. Remove enough modules to the left of the CPU slot as necessary to access the CPU board and use cables connected to the JTAG ports.
- 4. Connect the Wind River Probe cable to JTAG port J4 on the CPU module.



Ensure Pin 1 of the cable is connected to Pin 1 on the board.



Figure 4-22. MicroNet Plus Upgrade, Board Layout J4

- 5. Connect a network cable to Ethernet port 1 and to the PC.
- 6. Connect an adapter cable 5450-1065 and a 9-pin cable to J6 Debug port on the CPU and the PC.
- 7. Fully insert the CPU into the chassis and energize power to the chassis.
- 8. Connect the Wind River Probe to the PC.
- 9. Start the program Wind River OCD Utility.
- 10. Select the Connect/Attach icon.
 - Navigate to the saved profile.
 - If a connection profile was not saved, refer to the software installation steps.



Figure 4-23. MicroNet Plus Upgrade, OS Upgrade Wind River

11. Ensure ">BKM>" is shown in the prompt. If ">ERR>" is shown then check the connection to the CPU and try again.

Wind River OCD Utility 2.3	
	0
MPC5200 : FPC5XXX : Firm Rev = pr2.4a : NOEVENT : Wind River Probe : TF Library = D5.9j : Slave = NONE : FL	JEXIM
REV:2.3a1 /2.3/3.5 STATUS: Connected via: WindRiverPROBE#MPC5200:U1:C:\WindRiver\ocdapi-3.5\SupportFiles\BoardFiles\PowerPC\5xxx\Generic\	

Figure 4-24. MicroNet Plus Upgrade, OS Upgrade Wind River

Application Note 51472	MicroNet Plus Field Upgrade to Cyber Secure

- 12. Set the JTAG clock rate to 14 or Auto.
 o In the command window type "cf clk auto" or "cf clk 14"
 - Type "cf" and confirm the change took.

Wind River OCD Utility 2.3		D - D 3
CPU/Core		
Target HPCSTON PPCSXXX :Firm Rev = >RANACE CLR auto >RANACE CLR auto >RANACE CLR auto >RANACE CLR auto Set BreakPoint Vector Table Location Monitor Target reset Target CPU JTAG clock rate (MHz) Real time Preservation Little Endian Mode Processor Mode Download Mode Eaulator HRESET Control Set Work Space Target Console Redirection Drive TReset line Invalidate Instruction Cache on GO Reset Pulse Length N*Ims Sense Power via HRESET Power On Reset Length N*Ims CPU Reset Type RESET(HRESET.SR Trap exception Issue an IN on coldstart Display L2 Data Cache Warning Memory Management Unit Load Boot Table On IN Trigger In Report Mode Enable CheckStop Interrupt Delay after Reset Nmas >BKM>	pr2.4a :NOEVENT :Wind River Probe :TF Library = D5.9j :S SB[SB.IHBC] = SB VECTOR[HIGH.LOW.IGNORE] = LOW RST[VES.NO.HALT.RUN] = VES TARESLOV = 5269 CLK[0.025.100] = AUTO DIBLYES.NO] = AUTO DIBLYES.NO] = NO MODE[32.64] = 64 DIDLNORMAL.8] = NORMAL HRESET[ENABLE.DISABLE] = ENABLE WSPACE[BASE and SIZE] = 80008000 3e50 TGTCONS[BDM.COM1.COM2] = BDM TRESET[OPENC.ACTIVE] = ACTIVE INVCI[VES.NO] = VES PONR[0.500] = 500 SPOVER[VES.NO] = VES PONR[0.500] = 500 ESET.HRESET_UNFILTER = HRESET TRPEXP[VES.NO = VES L2VARNING[VES.NO] = VES L2VARNING[VES.NO] = VES BESET.HRESET_UNFILTER = DISABLE BIL[ENABLE.DISABLE] = DISABLE BIL[ENABLE.DISABLE] = DISABLE BIRKREP[REPONLY.BRKREP] = DISABLE BRKREP[VES.NO] = VES DRST[0.10000] = 25	Slave - NONE ;FLEXIM

Figure 4-25. MicroNet Plus Upgrade, OS Upgrade Wind River

- 13. Select the Flash icon.
 - Configure the fields as shown below.
 - Browse: The location of 5418-4082IMG_xxx
 - Starting Address: 80008000
 - Size #Bytes: 16164
 - Base Address: FF000000
 - File Bias/Offset: 00000000
 - Timeout: 120
 - All (next to Erase): Checked
 - Selected device: *INTEL 28F128Jx (8192 x 16) 1 Device
 - On a Window 7 computer the Dev # is 209
 - On an XP computer the Dev# is **171**





Figure 4-26. MicroNet Plus Upgrade, OS Upgrade Wind River

Wind River Flash Panel & Utility COLVERT Browse C:0 sers\mtoll\Desktop\1045\5418-4082.JN 6_C\5418-4082IMG_C.bin	File Bias/Offset
Starting Address Size #Bytes Base Address First Sector Addr Last Sector Address 0x 80008000 16164 0x FF000000 0x < Enter >	Exit/Return
209 of 0	IN Erase All IN Program
Flash Library & Add-in Versions EST driver(s) : D5.9j	Verify

Figure 4-27. MicroNet Plus Upgrade, OS Upgrade Wind River



Application Note 51472 MicroNet Plus Field Upgrade to Cyber Secure

- Select "Erase"
 - The status window will show that the flash is being erased.
 - If a timeout occurs while erasing then increase the timeout time and try again.
 - The status window will display "Done" after a successful erase.

Path & Filename of source fl CONVERT Browse C:\Users\mtoll\Desktop\104	ash-file for programming (*.bin) 5\5418-4082.IMG_C\5418-4082IMG_C.bin	File Bias/Offset
Starting Address Size #Bytes 0x 80008000 16164 RAM Workspace	Base Address 0x FF000000 0x FF000000 (Last Sector Address Dx < Enter >
*INTEL 28F128Jx (3	8192 x 16) 1 Device	Dev# Total
ERASE		Erase A
120 0		IN
Timeout Countdo		Program
EST driver(c) + D5.0i	_	Verifi



ONVERT Browse C:\Users\mtoll\Desktop\10	ilash-file for programming (*.bin) 45\5418-4082.IMG_C\5418-4082IMG_C.bin	File Bias/Off
Starting Address Size #Bytes 0x 80008000 16164 RAM Workspace	Base Address 0x FF000000 0x FF000000	Last Sector Address Dx < Enter >
INTEL 28F128Jx (8192 x 16) 1 Device	Dev# Total 209 of 330 IN
ERASE 120 63 Timeout Countdo Iash Library & Add-in Versions	Erase process started: TF ERASE INTEL 28F128Jx (8192 x 16) 1 Device Erasing Flash(s)	IN Pro

Figure 4-29. MicroNet Plus Upgrade, OS Upgrade Wind River



find River Flash Panel & Utility	
Path & Filename of source flash-file for programming (*.bin) CONVERT Browse C:\Users\mtoll\Desktop\1045\5418-4082.IMG_C\5418-4082IMG_C.bin	File Bias/Offset 0000000
Starting Address Size #Bytes Base Address First Sector Addr Last Sector Addr 0x 80008000 16164 0x FF000000 0x FF000000 0x Center >	Exit/Return
INTEL 28F128Jx (8192 x 16) 1 Device	Total 330 IN All
ERASE 120 30 Timeout Countdo Flash Library & Add-in Versions	IN Program
EST driver(s) : D5.9j	Verify

Figure 4-30. MicroNet Plus Upgrade, OS Upgrade Wind River

• Select "Program"

.

- A progress bar will show the programming occurring.
 - This will take 5-10 minutes.
 - After completion the Flash utility will return to pre-erasing view.

*.bin) 382IMG_C.bin 5 First Sector Addr Last Sector Ad	File Bias/Offset
S First Sector Addr Last Sector Ad	dress
0 x FF000000 0 x < Enter >	Exit/Return
\[\] \[\]	
TF ERASE 2 x 16) 1 Device ne	Erase V
	Verify
	nie.

Figure 4-31. MicroNet Plus Upgrade, OS Upgrade Wind River



Application Note 51472 MicroNet Plus Field Upgrade to Cyber Secure

CONVERT Browse C	sh-file for programming (*.bin) 24% (~1958 packets out of ~8192)	File Bias/Ottset
Starting Address Size #Bytes 0x 80008000 16164 RAM Workspace	Base Address First Sector Addr Last Sector Address 0x FF000000 0x FF000000 0x < Enter >	Exit/Return
*INTEL 28F128Jx (81	92 x 16) 1 Device ∇	
ERASE 120 30		Erase
Timeout Countdo Flash Library & Add-in Versions	_	Programming

Figure 4-32. MicroNet Plus Upgrade, OS Upgrade Wind River

• Select "Exit/Return"

Find River Flash Panel & Utility Path & Filename of source flas CONVERT Browse C:\Users\mtoll\Desktop\1045\	h-file for programming (*.bin) 5418-4082.IMG_C\5418-4082IMG_C.bin	File Bias/Offset
Starting Address Size #Bytes 0x 80008000 16164 RAM Workspace *INTEL 28F128Jx (810) 1810	Base Address First Sector Addr 0x FF000000 0x FF000000 0x 92 x 16) 1 Device 7 7 7	Last Sector Address c < Enter > Exit/Return Dev# Total 209 of 0
ERASE 120 30 Timeout Countdo Flash Library & Add-in Versions		IN Erase IN Program
EST driver(s) : D5.9j		Verify

Figure 4-33. MicroNet Plus Upgrade, OS Upgrade Wind River



14. Select the Disconnect icon. And QUIT to exit the utility.



Figure 4-34. MicroNet Plus Upgrade, OS Upgrade Wind River

- 15. Start HyperTerminal and connect with the following settings.
 - Name: You can name the setting whatever you like.
 - Bits per second: 38400
 - o Data bits: 8
 - o Parity: None
 - Stop bits: 1
 - Flow control: **None**

Connection Description	? <mark>×</mark>
New Connection	
Enter a name and choose an icon for the conne	ction:
Name:	
MicroNet Plus	
lcon:	
<	•
ОК	Cancel

Figure 4-35. MicroNet Plus Upgrade, DEBUG Connection



Port Settings	
Bits per second:	38400
Data bits:	8 💌
Parity:	None
Stop bits:	1
Flow control:	None
	Restore Defaults
	K Cancel Annhy

Figure 4-36. MicroNet Plus Upgrade, DEBUG Connection

16. Cycle power to the chassis.

• As the CPU boots up you should see activity in the status window of Hyper Terminal.



Figure 4-37. MicroNet Plus Upgrade, DEBUG Actions

Application Note 51472

MicroNet Plus Field Upgrade to Cyber Secure17. Enter WGSetupTarget in the command window.

- When prompted for a Login and Password enter:
 - VxWorks Login: ServiceUser
 - Password: ServiceUser@1
 - The password will not be echoed as you type.
 - If the command window returns to a blank prompt after the password is entered, re-enter **WGSetupTarget**.

MicroNet Plus - HyperTerminal	
File Edit View Call Transfer Help	
Disk with 95129 sectors of 512 bytes will be formatted with: Volume Parameters: FAT type: FAT16, sectors per cluster 2 2 FAT copies, 47362 clusters, 186 sectors per FAT Sectors reserved 1, hidden 0, FAT sectors 372 Root dir entries 512, sysId VXD0S16, serial number 4e3ffff Label: OK. HD1Flash D0S format complete HD1Flash files copied Creating ServiceUser Account Creating Datalog Account The Name and M02 id must new be confirmed	•
Enter the command - WGSetupTarget	
When this is complete, the control will restart WGSetupTarget Password: Log VxWorks login: ServiceUser Password:	-
	-
Connected 0:03:44 Auto detect 38400 8-N-1 SCROLL CAPS NUM Capture Print echo	æ

Figure 4-38. MicroNet Plus Upgrade, DEBUG Actions

• Enter the MAC ID:

•

- This is entered as a Decimal number from the last 4 digits of the Hexadecimal MAC ID recorded previous to the upgrade. This Decimal number is also the computer name after VXM000.
 - Example: VXM00017362 and MAC ID: 00128c0043d2
 - The entered value would be 17362.
 - The control will reboot on its own.
- Enter the Serial Number recorded prior to the upgraded.
- Example: 17816029

0

- Enter the Part Number recorded prior to the upgrade with an additional "CYBER".
 - Example: 5466-**1035CYBER**
 - An RTN will have the Part Number 5466-1036CYBER
 - Enter the revision Number recorded prior to the upgrade.
 - Example: H
- The control will reboot on its own.

0

0

Application Note 51472

Micro com 3 - HyperTerminal File Edit View Call Transfer Help 🗅 🚔 📨 🌋 💷 🊰 🖆 Enter MAC ID from WISE Enter to quit 17362 Value entered - 17362 Target Name set to - VXM00017362 The first 3 bytes are fixed at Woodward's default address block. The last 3 bytes (board unique portion) of Ethernet Address. New Ethernet Address is: 00128c0043d2 Enter Şerial Number - ie - 14379234 Enter '' to quit 17816029 Enter Part Number : ie - 5503-335 to quit Entor 15466-1035CYBER Enter Revision Number : ie - NEW, A, etc Enter '.' to quit H The control will now restart SCROLL CAPS NUM Capture Print echo Connected 0:02:57 Auto detect 38400 8-N-1



18. After the control reboots

0

- Power down the chassis.
- Remove the Wind River Probe.
- Reinstall the dust cover on the CPU.
- Affix and fill in the "Field Upgrade to Cyber Secure" to the outside of the CPU dust cover below the part number sticker.
- If the revision of the hardware is less than revision J, affix a "**NOT FOR RTCNET USE**" sticker below the upgrade sticker.
- Energize power to the chassis.
- 19. After the CPU reboots, use the hyper terminal prompt to enter

WGNetworkShow to see the IP address of the control.

- When prompted for a Login and Password enter:
 - VxWorks Login: ServiceUser
 - Password: ServiceUser@1
- If the command window returns to a blank prompt after the password is entered, re-enter WGCNetworkShow.

- 20. Use AppManager to log into the control and view the Control Information.
 - If connecting to an RTN, use "Manage Real Time Network CPUs for the current control" feature in AppManager to access information on the RTN CPU.
 - Contact As: ServiceUser
 - Password: ServiceUser@1
 - $\circ \quad \ \ \, \text{Verify the following}$
 - Computer Name: matches the name recorded prior to the upgrade.
 - MAC Address: matches the name recorded prior to the upgrade.
 - Footprint Part Number: 5418-4082
 - Footprint Revision: C (or matches later revision if installed)
 - FPGA: 48
 - CPU Type: Micronet+
 - PN: 5466-1035CYBER
 - RTN PN: 5466-1036CYBER
 - Rev: Enter the revision Number recorded prior to the upgrade.
 Example: H
 - SN: matches the SN recorded prior to the upgrade.

F	Connect As: ServiceUser
	Password:
pprop	iate Use
This sy system authori	stem is for the use of authorized users only. Individuals using the are subject to having their activities monitored and recorded b zed company personnel.
Draceir	ig 'OK' signifies acceptance of this policy.
1 10330	

Figure 4-40. MicroNet Plus Upgrade, Verification with AppManager

Computer Name : 💦 📢	VXM00017362
Computer IP Address :	10.14.141.14
ootprint Part Number : (5418-4082
ootprint Revision :	C
MService Version :	В

Figure 4-41. MicroNet Plus Upgrade, Verification with AppManager





Figure 4-42. MicroNet Plus Upgrade, Verification with AppManager

Chapter 5. Administrative Tasks

The following tasks should be completed to keep a record of all field updates.

- 1. Notify the proper CSR to make a note for the Serial Number in WISE (OESN) that the CPU has been upgraded to Cyber Secure.
- Record and update the spreadsheet "Field Upgraded MicroNet Plus -Cyber.xlsx" located at \\servf10\sharedir\espjlog\Engineering Services\Field Service\MN+ Field upgrade procedure
 - Serial Number
 - o Original Revision
 - New Footprint Part Number
 - New Footprint Revision
 - Date Upgraded
 - Location Upgraded
 - End User and Site Name if known
 - Upgraded by

The MicroNet Plus CPU has now been successfully upgraded.



Chapter 6. Service Options

Product Service Options

If you are experiencing problems with the installation, or unsatisfactory performance of a Woodward product, the following options are available:

- Consult the troubleshooting guide in the manual.
- Contact the manufacturer or packager of your system.
- Contact the Woodward Full Service Distributor serving your area.
- Contact Woodward technical assistance (see "How to Contact Woodward" later in this chapter) and discuss your problem. In many cases, your problem can be resolved over the phone. If not, you can select which course of action to pursue based on the available services listed in this chapter.

OEM and Packager Support: Many Woodward controls and control devices are installed into the equipment system and programmed by an Original Equipment Manufacturer (OEM) or Equipment Packager at their factory. In some cases, the programming is password-protected by the OEM or packager, and they are the best source for product service and support. Warranty service for Woodward products shipped with an equipment system should also be handled through the OEM or Packager. Please review your equipment system documentation for details.

Woodward Business Partner Support: Woodward works with and supports a global network of independent business partners whose mission is to serve the users of Woodward controls, as described here:

- A **Full Service Distributor** has the primary responsibility for sales, service, system integration solutions, technical desk support, and aftermarket marketing of standard Woodward products within a specific geographic area and market segment.
- An Authorized Independent Service Facility (AISF) provides authorized service that includes repairs, repair parts, and warranty service on Woodward's behalf. Service (not new unit sales) is an AISF's primary mission.
- A **Recognized Engine Retrofitter (RER)** is an independent company that does retrofits and upgrades on reciprocating gas engines and dual-fuel conversions, and can provide the full line of Woodward systems and components for the retrofits and overhauls, emission compliance upgrades, long term service contracts, emergency repairs, etc.
- A **Recognized Turbine Retrofitter (RTR)** is an independent company that does both steam and gas turbine control retrofits and upgrades globally, and can provide the full line of Woodward systems and components for the retrofits and overhauls, long term service contracts, emergency repairs, etc.

You can locate your nearest Woodward distributor, AISF, RER, or RTR on our website at:

www.woodward.com/directory

Woodward Factory Servicing Options

The following factory options for servicing Woodward products are available through your local Full-Service Distributor or the OEM or Packager of the equipment system, based on the standard Woodward Product and Service Warranty (5-01-1205) that is in effect at the time the product is originally shipped from Woodward or a service is performed:

- Replacement/Exchange (24-hour service)
- Flat Rate Repair
- Flat Rate Remanufacture

Replacement/Exchange: Replacement/Exchange is a premium program designed for the user who is in need of immediate service. It allows you to request and receive a like-new replacement unit in minimum time (usually within 24 hours of the request), providing a suitable unit is available at the time of the request, thereby minimizing costly downtime. This is a flat-rate program and includes the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205).

This option allows you to call your Full-Service Distributor in the event of an unexpected outage, or in advance of a scheduled outage, to request a replacement control unit. If the unit is available at the time of the call, it can usually be shipped out within 24 hours. You replace your field control unit with the like-new replacement and return the field unit to the Full-Service Distributor.

Charges for the Replacement/Exchange service are based on a flat rate plus shipping expenses. You are invoiced the flat rate replacement/exchange charge plus a core charge at the time the replacement unit is shipped. If the core (field unit) is returned within 60 days, a credit for the core charge will be issued.

Flat Rate Repair: Flat Rate Repair is available for the majority of standard products in the field. This program offers you repair service for your products with the advantage of knowing in advance what the cost will be. All repair work carries the standard Woodward service warranty (Woodward Product and Service Warranty 5-01-1205) on replaced parts and labor.

Flat Rate Remanufacture: Flat Rate Remanufacture is very similar to the Flat Rate Repair option with the exception that the unit will be returned to you in "like-new" condition and carry with it the full standard Woodward product warranty (Woodward Product and Service Warranty 5-01-1205). This option is applicable to mechanical products only.

Returning Equipment for Repair

If a control (or any part of an electronic control) is to be returned for repair, please contact your Full-Service Distributor in advance to obtain Return Authorization and shipping instructions.

When shipping the item(s), attach a tag with the following information:

- return authorization number;
- name and location where the control is installed;
- name and phone number of contact person;
- complete Woodward part number(s) and serial number(s);
- description of the problem;
- instructions describing the desired type of repair.



Application Note 51472

NOTICE

Packing a Control

Use the following materials when returning a complete control:

- protective caps on any connectors;
- antistatic protective bags on all electronic modules;
- packing materials that will not damage the surface of the unit;
- at least 100 mm (4 inches) of tightly packed, industry-approved packing material;
- a packing carton with double walls;
- a strong tape around the outside of the carton for increased strength.

To prevent damage to electronic components caused by improper handling, read and observe the precautions in Woodward manual 82715, Guide for Handling and Protection of Electronic Controls, Printed Circuit Boards, and Modules.

Replacement Parts

When ordering replacement parts for controls, include the following information:

- the part number(s) (XXXX-XXXX) that is on the enclosure nameplate;
- the unit serial number, which is also on the nameplate.

Engineering Services

Woodward offers various Engineering Services for our products. For these services, you can contact us by telephone, by email, or through the Woodward website.

- Technical Support
- Product Training
- Field Service

Technical Support is available from your equipment system supplier, your local Full-Service Distributor, or from many of Woodward's worldwide locations, depending upon the product and application. This service can assist you with technical questions or problem solving during the normal business hours of the Woodward location you contact. Emergency assistance is also available during non-business hours by phoning Woodward and stating the urgency of your problem.

Product Training is available as standard classes at many of our worldwide locations. We also offer customized classes, which can be tailored to your needs and can be held at one of our locations or at your site. This training, conducted by experienced personnel, will assure that you will be able to maintain system reliability and availability.

Field Service engineering on-site support is available, depending on the product and location, from many of our worldwide locations or from one of our Full-Service Distributors. The field engineers are experienced both on Woodward products as well as on much of the non-Woodward equipment with which our products interface.

For information on these services, please contact us via telephone, email us, or use our website: <u>www.woodward.com</u>.



How to Contact Woodward

For assistance, call one of the following Woodward facilities to obtain the address and phone number of the facility nearest your location where you will be able to get information and service.

Electrical Power Systems	Engine Systems	Turbine Systems
FacilityPhone Number	FacilityPhone Number	FacilityPhone Number
Brazil+55 (19) 3708 4800	Brazil+55 (19) 3708 4800	Brazil+55 (19) 3708 4800
China +86 (512) 6762 6727	China +86 (512) 6762 6727	China +86 (512) 6762 6727
Germany+49 (0) 21 52 14 51	Germany+49 (711) 78954-510	India+91 (129) 4097100
India+91 (129) 4097100	India+91 (129) 4097100	Japan +81 (43) 213-2191
Japan +81 (43) 213-2191	Japan +81 (43) 213-2191	Korea +82 (51) 636-7080
Korea +82 (51) 636-7080	Korea +82 (51) 636-7080	The Netherlands- +31 (23) 5661111
Poland+48 12 295 13 00	The Netherlands- +31 (23) 5661111	Poland+48 12 295 13 00
United States +1 (970) 482-5811	United States +1 (970) 482-5811	United States +1 (970) 482-5811

You can also locate your nearest Woodward distributor or service facility on our website at:

www.woodward.com/directory

Technical Assistance

If you need to telephone for technical assistance, you will need to provide the following information. Please write it down here before phoning:

Your Name	
Site Location	
Phone Number	
Fax Number	
Engine/Turbine Model Number	
Manufacturer	
Number of Cylinders (if applicable)	
Type of Fuel (gas, gaseous, steam, etc)	
Rating	
Application	
Control/Governor #1	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Control/Governor #2	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	
Serial Number	
Control/Governor #3	
Woodward Part Number & Rev. Letter	
Control Description or Governor Type	

If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call.

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication 51472.



PO Box 1519, Fort Collins CO 80522-1519, USA 1000 East Drake Road, Fort Collins CO 80525, USA Phone +1 (970) 482-5811 • Fax +1 (970) 498-3058

Email and Website—<u>www.woodward.com</u>

Woodward has company-owned plants, subsidiaries, and branches, as well as authorized distributors and other authorized service and sales facilities throughout the world.

Complete address / phone / fax / email information for all locations is available on our website.