WOODWARD

Product Change Notification 06960
(Revision C, July 2024)

MicroNet™ CPU 5200 Module Status

Product Information

The MicroNet CPU5200 was introduced in 2005 for the MicroNet Plus and in 2009 for the TMR. This CPU has had only minimal hardware changes; however, there have been several upgrades to FPGA code and firmware causing the top-level part numbers to change due to coder compatibility. These upgrades are necessary to add features, to update the RTOS, and to create new functionality.

Active CPU5200 Modules

Part Number	Usage	Coder	RTN	Current Status	Non-Preferred	Inactive
5466-1035	Plus	4.06 to 5.04	5466-1036	Non-Preferred	2015	2028
5466-1045	Plus Cyber	5.03-0 to 5.04-0, 6.00+	5466-1046	Inactive	2015	2021
5466-1047	TMR & 5009	5.04-5.08	5466-1036	Non-Preferred	2020	2028
5466-1145	Plus Cyber	6.00-4+, MicroNet 1.0x+	5466-1146	Non-Preferred	2021	2027
5466-1245	Plus	6.00-4+,Micronet 1.0x+	5466-1246	Non-Preferred	2021	2027
5466-1247	TMR	TMR 1.00+	5466-1246	Preferred	2028	2032
5466-1347	TMR & 5009	TMR 1.01+	5466-1246	Preferred	2032	2037

Note 1: Non-preferred means not intended for new system installations. Unit remains fully supported for spare units and repairs.

Note 2: Inactive means that the module can no longer be produced. Typically, this is because of component obsolescence. Repairs and exchange units are supported if feasible (typically 5+ years after inactivation).

Note 3: 5466-1045 was inactivated early due to VxWorks cybersecurity issue “Urgent 11.” Customers with -1045 CPUs may upgrade their CPU to 5466-1145 or 5466-1245 without charge.

Note 4: CPU5200s manufactured after 2011 can be updated by Woodward to the current revision. Contact Woodward for more information. You will be asked to provide the CPU serial numbers.

Note 5: The future dates shown above are approximate based on Woodward’s current information on component obsolescence and planned component usage rates. The dates cannot be guaranteed due to the potential for unexpected obsolescence issues to occur.

Note 6: MicroNet Security manual 26479 provides information for applying MicroNet systems in cybersecurity-critical environments.

MicroNet Family Statement

With thousands of installed units, Woodward's premier turbine control product for triple redundant, redundant, and simplex applications is extremely important to us.

Woodward continues to invest heavily in the product line to ensure its market success and longevity. Woodward plans to extend the production life of the current platform and introduce paths to upgrade installations to new technologies lasting beyond the timelines of specific modules.

Customer Action

Use only **preferred** versions for new installations. **Non-Preferred** versions remain active to support spare parts production for customers with existing systems. The current preferred options are 5466-1511 and -1521 for MicroNet Plus, and 5466-1247 and -1347 for MicroNet TMR.

For additional information and support:

1. Contact your local Woodward representative and/or turbine OEM.
2. Woodward contact and business partner information can be obtained at **www.woodward.com**.
3. Technical assistance can be obtained by:
   a. Searching for a local contact at **www.woodward.com/directory**
   b. Call or email the Woodward Turbine Help Desk:
      1-970-498-3095
      TurbineHelpDesk@woodward.com

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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.

Released

WOODWARD

Application Note 51530
(Revision A, 6/2024)
Original Instructions

Extended Atmospheric Environment Requirements

505, DVP (5K, 10K), EGCP-2, LINKnet HT™, MicroNet™, ProTech® GII/MSM/SX/TPS, RTCnet™

Released

Extended Atmospheric Environment Requirements:
505, DVP (5K, 10K), EGCP-2, LINKnet HT™, MicroNet™, ProTech® GII/MSM/SX/TPS, RTCnet™ *

Introduction

This application note contains information and guidelines pertinent to the installation of electronic equipment where it is exposed to atmospheric pollution in the form of particulates and corrosive gases. It covers corrosion mitigation techniques and provides information on conformal coatings that are employed on Woodward Inc. products for mitigation of corrosion and electrochemical migration. The benefits of the conformal coating types used are presented.

This information and installation environment recommendations are derived from the following environment classifications and applied test methods. See Tables 1 through 5.

Environment Classifications

- IEC 60664-1 Insulation coordination for equipment within low-voltage systems - part 1: principles, requirements and tests
- IEC 60721 / EN60721: Classification of environmental conditions –Part 3-3: Classification of groups of environmental parameters and their severities –Stationary use at weather protected locations
- ANSI/ISA-S71.04-1985. "Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants,"

Test Methods

- IEC 60068-2-60:1995 Part 2.60 Methods 1 and 4.
- IEC 364-65B Class IIIA

Conformal Coating Types

One of two types of conformal coating may be used on Woodward Inc. products. These two types are silicone and polyacrylate. Certain MicroNet Control System subassemblies and 505 products were transitioned from silicone to polyacrylate. The coating type you have may be determined by the product item number and revision. A list of products by family, item number and revision that use the polyacrylate coating can be found in Table 6 at the end of this document. The revision letter indicates the revision at which a change was made from silicone to the polyacrylate type.

Revision "NEW" or "-" indicates the initial product release was with polyacrylate coating. Once a product is produced with one conformal coating it cannot then be reverted to the other type of conformal coating. For example, a MicroNet 5466-1035 CPU produced at revision G with silicone conformal coating cannot be altered to utilize the polyacrylate conformal coating. If polyacrylate conformal coating is required for this module, a revision H or newer revision module must be purchased.

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LINKnet HT
MicroNet
ProTech
RTCnet
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MicroNet modules and the 505 chassis are labeled with “Sulfur Resistant Conformal Coating” which means printed circuit board assemblies are coated with the polyacrylate type.

Both coating types protect from particulates and water such as condensate droplets. The polyacrylate material also protects coated areas from corrosive gases whereas silicone does not.

Pollution Types

Particulates

All conformal coated products protect against pollution in the form of particulates as defined by IEC 60664-1[1] Pollution Degree 2 (Normally only nonconductive pollution occurs. Temporary conductivity caused by condensation is to be expected). These particulates may become conductive with water condensation over insulating surfaces. Although both coating types do not allow condensate to penetrate, condensation should always be prevented in electronic systems. Heavy particulate contamination with high humidity can also be detrimental even without liquid water condensate. Where coating is not possible and bare metal is exposed, conductor spacing meets the requirements of Pollution Degree 2.

Corrosive Atmospheric Gases

Besides particulates, the atmospheric environment may also contain corrosive gases such as hydrogen sulfide, sulfur dioxide, nitrous oxide and chlorine. Certain product printed circuit assemblies are conformal coated with a specialized polyacrylate that provides protection from corrosive gaseous sulfur compounds and corrosion accelerants such as NOx and chlorine. By necessity, some areas can't be coated such as connectors, jumpers, test points, and field terminations. The larger conductor spacing, thicker metallization and corrosion resistant plating of these uncoated areas will mitigate the effects of corrosion for a time but not prevent eventual damage.

The sulfur resistant coating will provide protection for coated components in moderately severe atmospheric environments as described by ISA S71.04-1985[2] level “G2”, and IEC 721-3-3 1994 TABLE 4 Class 3C2 (Urban Industrial, Heavy Traffic) See Tables 2 and 3. Although testing shows the coating provides protection from environments more severe than G2, long term use in more severe environments is not recommended because some critical reactive metal connection surfaces can’t be coated and corrosion will occur at a rate determined by the corrosive gas concentrations and mixtures, materials, temperature, and humidity.

[1] IEC 60664-1, *"Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests"*

[2] ISA S71.04 -1985, *“Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants”*

GS Series		
GS40/GS50 Valves	All	-

LINKnet-HT		
LINKNET-HT RTD (8 CH)	8200-1200	NEW
LINKNET-HT T/C (8 CH, FAIL HIGH)	8200-1201	NEW
LINKNET-HT AIO (8AI 4-20MA, 2AO)	8200-1202	NEW
LINKNET-HT AIO LOOP PWR (8AI 4-20MA, 2AO)	8200-1203	NEW
LINKNET-HT DIN (16 CH)	8200-1204	NEW
LINKNET-HT DOUT (16 CH)	8200-1205	NEW

MicroNet Communication Modules		
MICRONET REAL TIME NETWORK XCVR (REMOTE)	5466-1036	H
MICRONET PLUS RTN (CYBER-SECURITY)	5466-1046	NEW
MICRONET PLUS RTN (CYBER-SECURITY) LICENSED ENHANCED PERFORMANCE FOOTPRINT	5466-1146	NEW
MICRONET PLUS RTN ENHANCED PERFORMANCE FOOTPRINT	5466-1246	NEW
SIO MODULE, W/SCREW POSTS, SMART-PLUS	5466-5006	-
SIO MODULE, W/SLIDE LOCK, SMART-PLUS	5466-5007	-

MicroNet CPU Modules		
MICRONET CPU, POWERPC-5200, 400MHZ, 64MB FLASH, 128MB RAM (DUAL CAN)	5466-1035	H
MICRONET TMR CPU5200, 400MHZ, 64MB FLASH, 128MB RAM (NO CAN)	5466-1047	B
MICRONET TMR CPU5200, SHARED RTN	5466-1247	NEW
MICRONET TMR CPU5200, WITH CANOPEN	5466-1347	-
MICRONET PLUS CPU5200SA (SECURED APPLICATION)	5466-1141	NEW
MICRONET PLUS CPU5200 (CYBER-SECURITY) LICENSED ENHANCED PERFORMANCE FOOTPRINT	5466-1145	NEW
MICRONET PLUS CPU5200 ENHANCED PERFORMANCE FOOTPRINT	5466-1245	NEW
MICRONET PLUS P1020 CPU	5466-1510	NEW
MICRONET PLUS P1020 CPU	5466-1511	-
MICRONET PLUS P1020 CPU (SECURED APPLICATION)	5466-1520	NEW
MICRONET PLUS P1020 CPU (SECURED APPLICATION)	5466-1521	-