

**February 20, 2012**

**SUBJECT: MicroNet Family Product Support**

The MicroNet family is Woodward's premier turbine control product for TMR, redundant, and simplex applications. With thousands of installed units, the MicroNet family is extremely important to Woodward and will be supported for the foreseeable future. Woodward continues to invest heavily in the MicroNet product line to ensure its market success and longevity. With this continued investment Woodward plans to extend the production life of this product line to year 2022 as a minimum and possibly beyond.

Woodward has a long and successful track record of keeping modules available for 10-15 years and longer, even though many of the original electronic components have gone obsolete in that same time period. In many cases we introduce new modules with additional functionality to extend the life of this product line. In other cases we invest in inventory of obsolete parts or minor module redesigns to use alternate components.

There are times when Woodward will eliminate certain MicroNet component part numbers. This may be due to the availability of higher performance alternatives, or simple unavailability of electronic components. In these situations, Woodward supports its customers with either direct replacements or functional replacements. Direct replacements drop into older systems with no modifications. Functional replacements offer similar functionality but may require additional modifications such as software updates or replacement of additional modules.

The current status of the MicroNet family is summarized in the Appendix.

When a product is "Rationalized" (end of life for new applications) with no direct replacement, Woodward provides an extended support plan for its customers. Typically Woodward announces the Rationalization a year in advance to give time to design the new component into new applications. Spares and repairs will continue to be available for existing customers for another period of time. The following support plan is normally followed:

Years 0-5 = Availability of Spares and Repairs  
Years 5-10 = Repairs (based on available parts)  
Years 10-20 = Replacement/Exchange with Service Stock if available (no repairs)

Due to the nature of electronic components, Woodward is often notified of last time buys for various components. Woodward strives to hold inventory or find alternative parts when electronic components are discontinued. However, there are times when components can simply not be obtained and where sufficient last-time buys cannot be made. In these cases, Woodward cannot always guarantee the rationalization support plan.

**Regards,**



**Rich Kamphaus**  
**Steam Turbine, Compressor & Safety Market Manager**  
[rkamph@woodward.com](mailto:rkamph@woodward.com)

## **Appendix**

MicroNet is available in many configurations and I/O options. The status of the product family is shown below.

### **Chassis and Power Supplies**

MicroNet Simplex - This was the simplex offering from 1997 until the introduction of the MicroNet Plus in 2005. The MicroNet Simplex chassis and power supply are still available for new applications, though MicroNet Plus is preferred.

Although the MicroNet Simplex chassis and power supplies have not been scheduled for rationalization yet, we know that this announcement will likely come in the next several years, followed by the spare plan shown elsewhere.

MicroNet Plus (simplex or redundant) - The MicroNet Plus configuration was introduced in 2005 to offer a choice of redundant or simplex CPU's and update the power supplies (freeing more space for I/O). Since MicroNet Plus offers many upgrades over the traditional MicroNet Simplex, most MicroNet Simplex customers have switched over to MicroNet Plus.

The MicroNet Plus chassis and power supply are the primary MicroNet offering for simplex or redundant systems and will be offered for the foreseeable future.

MicroNet TMR (Triple Modular Redundant) - The MicroNet TMR configuration was introduced in 1997 to offer full TMR fault tolerance for ultra-critical applications. The MicroNet TMR enjoys very robust sales and continues to be offered for new systems. Woodward is investing in an upgrade of the TMR system at this time but the current TMR chassis and power supplies will continue to be offered for new applications for an extended period.

### **CPU's and Operating Systems**

CPU040 - The MicroNet Simplex and TMR were both introduced with the CPU040 (utilizing the Motorola 68040 microprocessor) in 1997. The CPU040, together with its proprietary Woodward operating system, remains the CPU for MicroNet TMR systems. While the current project to upgrade TMR will provide a replacement CPU (based on the CPU5200 for MicroNet Plus), the CPU040 will continue to be supported for some additional years prior to beginning the standard support plan for spares and repairs.

The same CPU040 modules used in TMR are also used in the older simplex applications. Since the CPU040 is identical for TMR as simplex, the CPU040's for these simplex applications will be available for the same time as for TMR.

The CPU060 (utilizing a Motorola 68060 processor) had limited usage in TMR and simplex systems. It was rationalized in 2005 together with the NetCon product. Spares are available until 2010 – see NetCon product support statement for more details.

Pentium CPU - The Pentium CPU (with real time NT operating system) was introduced for the MicroNet Simplex in 1999 to provide more horsepower and features in simplex applications. It was the primary simplex CPU until MicroNet Plus and CPU5200 were introduced in 2005. The Pentium is still offered though the CPU5200 is the preferred option for new applications. It is anticipated that the Pentium will remain available for the next few years before going into the standard support plan for spares and repairs.

Note – Pentium CPU's may be used to upgrade NetCon (predecessor to MicroNet) systems. Contact Woodward for more details.

CPU5200 - The CPU5200 was introduced with the MicroNet Plus in 2005 for simplex and redundant applications. The CPU5200 utilizes the Freescale (Motorola) MPC5200 CPU and VxWorks operating system. The CPU5200 and MicroNet Plus are being used on the majority of new simplex and redundant applications and will be supported for the foreseeable future.

The CPU5200 will become the basis for the TMR upgrades previously mentioned.

Note - CPU5200's may be used in older-style MicroNet Simplex chassis as an upgrade to the Pentium CPU's or CPU040's. Upgrading to CPU5200 on these older systems will require a software upgrade. Other module changes may be necessary as well, depending on the modules being used. Contact Woodward for details.

### **I/O Modules and other**

MicroNet systems utilize the same I/O modules as its predecessor, the NetCon, as well as developing some newer, higher density modules. In general, all I/O modules are still supported unless they are listed below.

#### Displaced I/O Modules

- Actuator driver modules – older Actuator Driver modules are no longer available for new applications. Spares and Repairs are being supported according to the NetCon support plan.
  - Replacement: Newer Actuator Controller modules are available
- SIO – some older SIO modules are no longer available for new applications. Spares and Repairs are being supported according to the NetCon support plan.
  - Replacement: Newer SIO modules
- Ethernet (stand-alone) module – the original stand alone Ethernet module is no longer available
  - Replacement: Alternative module is available with different connectors.
- Fiber Optic Transceiver - Fiber Optic Transceivers are no longer available due component obsolescence.
  - Replacement: No direct replacements possible. Contact Woodward for alternatives.