Woodward Governor Company
1000 East Drake Road
P.O. Box 1519
Fort Collins, CO 80522-1519 USA
Tel: 970-482-5811
Fax: 970-498-3058

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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 2024 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 below Appendix.

When a product or module 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. To ensure long term support, spares and repairs will continue to be available for existing customers for an extend period of time. Unless otherwise noted Woodward positons our business to follow the below general support plan:

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
Turbine Controls & Safety Market Manager
(rkamph@woodward.com)

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Appendix

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

Chassis and Power Supplies

MicroNet Simplex Chassis has not been scheduled for rationalization to date, however we plan on doing so in the next several years followed by our spares support plan as shown above.

MicroNet Simplex Power Supplies 5501-410, 5501-411, 5501-412 were inactivated in July 2005 and are no longer available for new or spare module applications. Repairs are being supported as components allows. Other newer MicroNet Simplex power supply models are still activate and available for the foreseeable future.

MicroNet Plus Chassis - The MicroNet Plus platform was introduced in 2005 to offer a choice of users the choice of simplex or dual redundant CPU modules. Since the MicroNet Plus platform offers many upgrades over the traditional MicroNet Simplex platform, most MicroNet Simplex customers have switched over to MicroNet Plus. The MicroNet Plus chassis and power supplies are the primary MicroNet offering for simplex and redundant control systems and will be offered for the foreseeable future.

MicroNet TMR Chassis and Main Power Supply modules - The MicroNet TMR platform was introduced in 1997 to offer triple module redundant fault tolerance for ultra-critical applications. As the MicroNet TMR platform continues to enjoy robust sales there are no plans to discontinue production of the current chassis or main system power supplies.

Kernel Power Supply 5466-318 Module (Used with CPU040 & CPU060 modules) – This power supply was introduced in 1997 and includes both power supply and dual-port RAM back plane communication functions. This module was replaced with a new kernel power supply module with faster dual-port RAM for faster CPU5200 communications on February 16, 2010. Refer to Woodward PCN (product change notification) # 06919 for more information on replacement and upgrade options.

CPU's and Operating Systems

CPU040 & CPU060 Modules (all part numbers) are available to purchase as a spare module for field installed systems until July 30, 2015, then repairable as component accessibility allows. Optionally customers can upgrade their MicroNetTMR or 5009 controllers to utilize Woodward's latest CPU5200 modules as desired. Note that upgrading to the CPU5200 module will require a Kernel Power Supply and software upgrade also. Refer to Woodward PCN# 06919 for more information on replacement and upgrade options.

Pentium NT CPUs 5466-409, 5466-616, 5466-619 – (with real time NT operating system) were released in 1999 for use in the MicroNet Simplex platform. Since the release of Woodward's CPU5200 CPU module in 2005, sales of this module dramatically declined to the point that it was rationalized and a last time buy was offered to customers in 2009. As of September 2012, Woodward's stock of new Pentium CPU modules was depleted and new modules are no longer available. Woodward's CPU5200 CPU module is available as an upgrade for the Pentium NT

CPU in MicroNet Simplex Control Systems. Please contact your control system supplier or Woodward directly to better understand your system's upgrade options.

Woodward will continue to repair and support Pentium NT CPU modules for the next several years as components are available.

CPU5200 CPU Modules - 5466-1035, 5466-1045, 5466-1035 - The CPU5200 and CPU5200 Cyber-secure modules were introduced with the MicroNet Plus in 2005. These CPU modules utilize the powerful Freescale (Motorola) MPC5200 CPU and robust VxWorks operating system. The above referenced CPU5200 modules are being used in the majority of production MicroNet systems currently being shipped and Woodward currently plans to continue to sell these modules in full production for the foreseeable future (10+ years likely).

Note - CPU5200 modules may be used in older-style MicroNet Simplex chassis as an upgrade to the Pentium CPU's or CPU040's. Upgrading to CPU5200 module 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.

Transceiver modules 5466-353, 5466-354, 5466-355 (Used with CPU040 & CPU060 modules) were introduced with the CPU040 CPU module in 1997 and used for main chassis to expansion chassis communications. These modules were inactivated and replaced with the Real Time Network (RTN) module that is compatible with the CPU5200 CPU module on February 16, 2010. These modules are now available to purchase as a spare module for field installed systems until July 30, 2015, then repairable as component accessibility allows. Optionally customers can upgrade either their MicroNetTMR or 5009 controllers to utilize Woodward's latest CPU5200 and RTN modules as desired. Refer to Woodward PCN# 06919 for more information on replacement and upgrade options.

Input / Output & Communication Modules

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 5464-646, 6464-647, 5466-235, and 5466-435 were inactivated in July 2001 and are no longer available for new or spare module applications. Repairs are being supported as components allows.

- 4 Channel Actuator Driver modules 5463-877, 5464-027, 5464-035, 5464-544, 5464-545, 5464-546, 5464-655, 5464-656, and 5464-657 were inactivated on March 31, 2015 and are no longer available for new or spare module applications. Repairs are being supported as availability of components allows. Refer to Woodward PCN# 06924 for more information on replacement and upgrade options.

- Integrating Actuator Driver modules 5463-788, 5463-870, 5464-034, 5464-209, 5464-210, 5464-211, 5464-212, 5464-420, 5464-421, 5464-422, 5464-423, 5464-548, 5464-549, 5464-550, 5464-551, 5464-552, 5464-553, 5464-554, 5464-555, 5464-556, 5464-644, 5464-645, 5466-019, and 5466-020 will be inactivated on July 31, 2015 and will no longer

be available for new or spare module applications. Repairs are being supported as availability of components allows. Refer to Woodward PCN# 06925 for more information on replacement and upgrade options.

- SIO Modules 5503-267 – This module was inactivated April 28, 2010 and is no longer available for new applications. It is available to purchase as a spare module for field installed systems until April 28, 2015, then repairable as component accessibility. Optionally customers can upgrade their MicroNetTMR or 5009 controllers to utilize Woodward's latest CPU5200 modules (5466-348 or 5501-471) as desired.

- Ethernet modules 5464-579, 5464-585, 5464-284, 5466-401, 5466-416, and 5466-456 were inactivated in July 2005 and are no longer available for new or spare module applications. Repairs are being supported as components allows.

- Fiber Optic Transceiver modules 5463-715 and 5466-269ic were inactivated in July 2001 and are no longer available for new or spare module applications. Repairs are being supported as components allows.

- Discrete I/O module 5464-881 was inactivated in July 2005 and is no longer available for new or spare module applications. Repairs are being supported as components allows.

- Analog I/O modules 5466-006 and 5466-423 were inactivated in July 2005 and are no longer available for new or spare module applications. Repairs are being supported as components allows.

- Analog Input modules (RTD, TC, Milliamp, Voltage) 5464-332, 5464-333, 5464-334, 5464-335, 5464-336, 5464-337, 5464-338, 5464-339, 5464-340, 5464-660, 5464-837, 5466-282, 5466-400, 5466-1005, 5466-1006, 5466-1007, 5466-1008, 5466-1009, 5466-1010, 5466-1011, 5466-1013, 5466-1014, 5466-1015, 5466-1016, 5466-1017, 5466-1018, 5466-1019, 5503-263, and 5503-264 will be inactivated on July 31, 2015 and will no longer be available for new or spare module applications. Repairs are being supported as availability of components allows. Refer to Woodward PCN# 06928 for more information on replacement and upgrade options.

- High Density Versatile Input Module (HDVIM) module 5503-279 and associated FTM module 5503-282 were inactivated on December 31, 2014 and are no longer available for new or spare module applications. Repairs are being supported as availability of components allows. Refer to Woodward PCN# 06921 for more information on replacement and upgrade options.

- 8 Channel Analog Out modules 5463-786, 5463-789, 5464-648, and 5464-652 will be inactivated on August 31, 2015 and will no longer be available for new or spare module applications. Repairs are being supported as availability of components allows. Refer to Woodward PCN# 06927 for more information on replacement and upgrade options.

- Position Controller modules 5466-030, 5466-344, 5466-345, 5501-461, and 5501-46 will be inactivated on July 31, 2015 and will no longer be available for new or spare module applications. Repairs are being supported as availability of components allows. Refer to Woodward PCN# 06926 for more information on replacement and upgrade options.