VersaMax Nano PLC and Micro PLC CPUs

August 29, 2003 GFK-2068C

Important Product Information

This document contains important information about the following VersaMax Nano PLC and Micro PLC models:

IC200NAL110-BB	IC200UAR014-BD	IC200UDR010-BD
IC200NAL211-BB	IC200UAR028-BD	IC200UEX209-B
IC200NDD010-BD	IC200UDD104-BD	IC200UEX210- B
IC200NDD101-CD	IC200UDD110-BD	IC200UEX211- B
IC200NDR001-CD	IC200UDD112-BD	IC200UEX212- B
IC200NDR010-BD	IC200UDD120-BD	IC200UEX213- B
IC200UAA003-BD	IC200UDD212-BD	IC200UEX214- B
IC200UAA007-BD	IC200UDR001-BD	IC200UEX215- B
IC200UAL004-BD	IC200UDR002-BD	IC200UEX222- B
IC200UAL005-BD	IC200UDR003-BD	IC200UEX616- B
IC200UAL006-CE	IC200UDR005-BD	IC200UEX626- B
	IC200UDR006-BD	IC200UEX636- B

The suffix letters following CPU part numbers indicate the hardware version followed by the firmware version. Expansion units do not have firmware, so only the hardware version is indicated.

Firmware Information

Firmware version:	2.01
Firmware upgrades:	Downloadable Field Upgrade Kit

Compatibility

- Given the potential safety hazards associated with the watchdog timer problem described in "Fixed for this Version," all Nano/Micro PLCs should be upgraded to this version of firmware. The new firmware can be downloaded at no charge from GEFanuc.com. Choose the appropriate upgrade file:

44A752236-G01	R2.01 for all 14pt Micro CPUs
44A752237-G01	R2.01 for all 23/28pt Micro CPUs except IC200UDD120
44A752238-G01	R2.01 for 28pt Micro CPU with ESCP, IC200UDD120
44A752239-G01	R2.01 for all Nano CPUs except IC200NAL110/211
44A752240-G01	R2.01 for Analog Nano CPUs IC200NAL110/211

- Watchdog timeout behavior: Applications using releases 1.07, 1.10 and 2.00 may experience a watchdog timeout after the upgrade to release 2.01 due to the corrected operation of the system. In these previous releases, it was possible to exceed the configured timeout period, without generating a fault.
- This version of Nano/Micro CPU firmware is backward compatible.
- Use of all modules and functionality introduced in firmware version 2.0 or later requires either VersaPro version 2.03 or later, or Machine Edition 2.6 or later.
- Auto-configuration by the CPU can be used for the expansion units introduced in firmware version 2.0 (IC200UEX616, IC200UEX626, and IC200UEX636), without the use of either VersaPro or Machine Edition.

Electronic Documentation Available

All VersaMax Nano/Micro PLC user documentation, specifications and CAD drawings are included on the VersaMax Nano/Micro VersaPro 2.03 CD. They are also available for download from the GE Fanuc website, http://www.gefanuc.com/support/plc/f-versamaxnm.htm. Printed user manuals are available as part number GFK-1645C.

Fixed for this Version

Watchdog timer:

In versions 1.07, 1.10, and 2.00, the watchdog timer does not trigger if the user application exceeds the watchdog time. If an application runs longer than the watchdog time, the CPU is never reset and a watchdog timeout fault is not logged. In the case of a user application that has a very long sweep time, the CPU continues to run normally, although slower. It may also drop serial communications. In the case of a user application that has an infinite loop, the CPU stops responding in the user logic -- communication is dropped and the outputs remain at their current state. (The outputs are not placed in a safe mode.) The OK and RUN LEDs remain on.

Operating Notes/Restrictions

Password Protection:

In prior versions of VersaPro software, password protection for Micro and Nano CPUs was *Disabled* by default. With VersaPro 2.03, the default has been changed to *Enabled*. Attempting to download a new hardware configuration with password enabled (the new default) to a PLC whose current configuration is set for password disabled (the previous default) will result in a password configuration mismatch error.

To avoid this situation, either change the new configuration to passwords disabled, or short the PLC's super-capacitor to clear the PLC's memory, and then download the new configuration.

PID Function Operation

Filtering is not applied to the PID derivative term, which can cause it to behave improperly.

The PID Integral Contribution is not calculated correctly with an integral rate of zero or one. Please refer to Internal Problem ID Code CR72385 for more information.

Addition of Modules versus Extra Modules:

If an Expansion Unit that is part of the system configuration is powered up after the CPU, an "addition of module" fault is logged in the I/O Fault Table. Unless a fault exists, the fault table shows the module's reference address. The module is included in the I/O scan.

If an Expansion Unit that is NOT part of the system configuration is powered up after the CPU, an "extra module" fault is logged in the I/O Fault Table. The module has no reference address and its I/O is not scanned.

Expansion Units must be properly configured and properly connected. Make sure no Analog Expansion Unit error exists.

Analog Expansion Unit Failures:

When an Analog Expansion Unit (IC200UEX616, IC200UEX626, IC200UEX636) fails, it drives a signal low which in turn causes the loss of all other Analog Expansion Units in the system. Discrete expansion units cabled after the first analog expansion unit will also be lost. Such a failure can also subsequently affect the operation of any discrete expansion units, should any of them later be powered down. Consult the user's manual, GFK-1645C, for detailed troubleshooting instructions to be used in isolating expansion unit failures.

Analog Expansion Unit PWR LEDs:

For an Discrete Expansion Unit, the PWR LED is on ONLY when that expansion unit is powered up.

For an Analog Expansion Unit. the PWR LED is also on if any other expansion unit or the CPU, to which it is connected is powered up. In addition, the PWR LED on an Analog Expansion Unit remains on (lit dimly) when the unit is powered down separately from the CPU. This is due to current leakage in the expansion cable.

Hardware configuration settings to default:

When VersaPro 2.03 is used to open a hardware configuration for a Nano/Micro PLC system which was constructed with an earlier VersaPro version, it prompts to convert the files into a new format. During this process, any high speed counter parameters may be replaced with the original default settings.

Verify all the CPU configuration settings following the folder upgrade.

VersaPro monitoring errors:

When opening multiple monitoring windows in VersaPro while connected to a Micro or Nano CPU, one of the following error messages may be infrequently observed::"0x010D : Lost communication with COM server", or: "To many windows open." If this happens, close the error window; exit the VersaPro application, and then reopen VersaPro to resume monitoring.

Serial Communications:

- RTU Queries exceeding 265 bytes: The Nano/Micro CPU may not respond properly to RTU queries or may experience erratic operation after receiving a RTU query that is more than 265 bytes in length.
- RTU communications: RTU communications on port 2 are not reliable with scan times above 140 milliseconds.
- Description: For a Micro PLC Serial Port 2 SNP master using modems for communications, using an Attach requesting piggyback status returns zeros instead of the status information.

  Recommendation: the same piggyback status can be obtained by using the PLC Short Status command.
- For a Micro PLC Serial Port 2 SNP master, a communications request occasionally returns error code 0E05 when it should return 0E06.
- For a Micro PLC Serial Port 2 SNP Master, a communications request occasionally returns error code 070C when it should return 0C08.

High-speed Counter:

- When the HSC is configured for A quad B in continuous mode, it does not - while counting down - wrap to the high limit when reaching the low limit after a COMMREQ loading the accumulator.
- Changing the count direction on a High Speed Counter:
  When the high limit is anything but 32767, the input is a continuous pulse train, and a COMMREQ is sent to change the count direction, the count goes directly to the max or min value without counting.
- For certain high and low limit values, depending on the actual count and frequency, a type B counter configured for single-shot operation may change its outputs after hitting a high or low limit.
- Description: Input references %I489 - %I493 are overwritten by the HSC function, and are not available to the application program.

  Recommendation: Avoid using references %I489 - %I493 (which are located immediately before the rest of the HSC input references) in the application program.
- Description: When sending data commands to the High-speed Counter using the COMMREQ function, the CPU ignores the data type and start location parameters. These parameters specify where the command and data words are located in CPU memory. The CPU expects these three parameters to be located immediately after the command block.

  Recommendation: Be sure the command word and data words are located contiguously in memory, with the rest of the COMMREQ command block. They should immediately follow the "Start Location of Command Word" in the COMMREQ command block.
- Description: If HSC Enable is On while in Stop mode and the High-speed Counter is configured for its output to be Off when placed in Run mode, the output will momentarily turn on when the PLC state changes from Stop to Run.

  Recommendations:

  1. Avoid setting the HSC/PWM/PT Output Enable bits to 1 (outputs enabled) during a Stop to Run transition. Be sure no programmer, HMI, or other device enables these bits while the PLC is in either Stop/No I/O mode or Stop/ I/O Scan mode.
  2. Never set the HSC/PWM/PT Output Enable bits to 1 using stored reference table values. These bits should always be enabled from the application program. programmer, HMI, or other source.
  3. The application program should always set the HSC/PWN/PT Output Enable bits to 0 (disable outputs) on the last scan of the PLC. The last scan can be detected using the LST_SCN system status reference, %S0002. See the User Manual for additional information about system status references.