PACSystems* RX3i

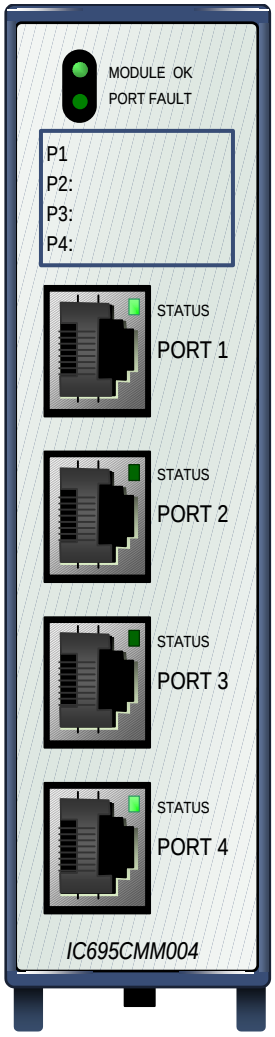
IC695CMM002 and IC695CMM004

Serial Communications Modules

GFK-2461H
July 2010

PACSystems* RX3i Serial Communications modules expand the serial communications capabilities of the RX3i system.

Serial Communications module IC695CMM002 provides two independent, isolated serial ports. Serial Communications module IC695CMM004, illustrated at right, provides four independent, isolated serial ports. Up to six Serial Communications modules can be located in the main PACSystems RX3i backplane.



Each port can be configured for MODBUS Master, MODBUS Slave, CCM Slave, DNP3 Master, DNP3 Slave, or Serial I/O protocol. If any port is configured for DNP3 Master or Slave, the other ports on the module can only be configured for DNP3 Master or Slave.

For modules with firmware version 1.32 or later, half-duplex flow control can be configured using Machine Edition *Release 5.90, SP1, SIM 6* or later. Otherwise, flow control defaults to full-duplex.

Additional module features include:

- Port-to-port isolation and port-to-backplane isolation
- RS-232, RS-485/422 communication, software-selected
- Hardware handshake: RTS/CTS, RFR/CTS for RS-232
- Selectable Baud Rates: 1200, 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K
- Module fault status reporting (Watchdog, Ram Fail, Flash Fail)
- Module identity and status reporting, including LED status indicators
- Meets CE, UL/CUL 508 and 1604, and ATEX requirements
- Flash memory for future upgrades

These modules must be located in an RX3i Universal Backplane.

RX3i Serial Communications can be hot-inserted and removed following the instructions in the *PACSystems RX3i System Manual*, GFK-2314.

Release Information

Release 1.34 of the Rx3i serial communications module adds DNP3.0 Master and Slave Unsolicited Reporting functionality. The release also adds the ability to configure the DNP3.0 Slave Analog Input Event Variation and resolves three issues with the DNP3.0 firmware.

Release History

Release	Firmware Version	Upgrade Kit	Comments
IC695CMM002-BF IC695CMM004-BF	1.34	N/A	Label change only. No change in functionality, performance or compatibility.
IC695CMM002-AF IC695CMM004-AF	1.34	44A753277-G06 44A753278-G06	Adds DNP3.0 Master and Slave Unsolicited Reporting functionality. The release also adds the ability to configure the DNP3.0 Slave Analog Input Event Variation and fixes three issues in the DNP3.0 firmware
IC695CMM002-AE IC695CMM004-AE	1.32	44A753277-G05 44A753278-G05	See GFK-2461E for new features and problems resolved.
IC695CMM002-AD IC695CMM004-AD	1.30	44A753277-G04 44A753278-G04	Supports Serial Protocol Language (SPL) scripting. Corrects DNP3 Slave Bit Write issue. Please refer to M050803 - IC695CMM002_004 Product Safety Bulletin for more information.
IC695CMM002-AC IC695CMM004-AC	1.20	44A753277-G03 44A753278-G03	Supports DNP3 Master and DNP3 Slave Protocol
IC695CMM002-AB IC695CMM004-AB	1.10	44A753277-G02 44A753278-G02	Supports CCM Slave Protocol
IC695CMM002-AA IC695CMM004-AA	1.00	N/A	Initial Release

Upgrades

The Serial Communications Modules can be upgraded to firmware version 1.34 using the following upgrade kits, which can be downloaded from http://www.ge-ip.com/support.

CMM002: 44A753277-G06
CMM004: 44A753278-G06

Compatibility

Programmer Version Requirements

Proficy* Machine Edition Logic Developer 6.00 with SIM 12 or later version is required for DNP3 Unsolicited Response functionality and Analog Input Event Variation configuration.

Proficy Machine Edition Logic Developer 5.9 SP1 with SIM 6 is required for half duplex flow control

Proficy Machine Edition Logic Developer 5.8 with SIM 2 or newer is required to use SPL

Proficy Machine Edition Logic Developer 5.6 with SIM 10 or newer is required to use DNP3

Proficy Machine Edition Logic Developer 5.6 with SIM 6 or newer is required to use the CMM

CPU Firmware Version Requirements

PACSystems RX3i CPU Version 5.50 or newer is required for SPL

PACSystems RX3i CPU Version 5.00 or newer is required for DNP3 Master to sync its timestamp value with the CPU.

PACSystems RX3i CPU Version 3.83 or newer is required to be able to use the CMM in the RX3i system.

Problems Resolved by Release 1.34

Title	***Description***
DNP3 Master – The module does not read multiple group objects for Class 0 data	When multiple group objects (i.e. %I and %AI memory) are performed in a single request the DNP3 module will ignore all but the first object. Operations of multiple group objects should be split into multiple successive exchanges (i.e. exchange 1 - %I, exchange 2 - %AI).
SPL, Serial I/O, Modbus Master, DNP3 Slave - CMM002/004 generates blink code 1	Sending large amounts of data without reading can cause the module to generate a watchdog expired error , indicated by blink code 1. The amount of data that causes this error depends on the baud rate used. For example, a port configured for SPL and sending 4k bytes of data at 19.2k baud or 62k bytes of data at 115.2k baud will produce the error. With DNP3 protocol, the creation of change events while previous change events are being read can also produce the error.
DNP3 - An incomplete or null response from a slave will result in erroneous values written	A read operation data exchange (Read Continuous, Read Continuous Bit-Controlled, Read Single Bit-Controlled) that requests Ref Length 1 or greater from an outstation that does not return all, or returns none of the data points requested, will result in erroneous values being written to the reference addresses defined in that exchange. If a slave does not map all of the data points requested, it will return no data or only part of the data requested.
DNP3 - Additional slave data exchanges of the same Object type are not ignored.	The slave module does not ignore second data exchanges of the same object type. For example, a slave is configured with two Read/Write Analog Input Deadband exchanges, the first with length 2 and the second with length 5. When the master reads the Analog Input Deadband data, two data points from the second exchange are returned. The intended operation is that only the first configured exchange of a type is executed, so in the example only two data points from the first exchange should be returned.