

# PACSystems™ RX3i

## GENIUS COMMUNICATIONS GATEWAY (IC695GCG001)



## Important Product Information

General Description	<p>Product has been updated to add Fault Status Data bits. Each of the 32 serial bus addresses now has a corresponding fault bit that indicates if there is a fault condition. The GCG will need to be updated with the new GSDML file GSDML-V2.3-GE-GENIUSGateway-20190219.xml to make use of this data.</p> <p>Product updated to resolve 2 issues:</p> <p>VersaMax I/O drop failed to communicate if input and output modules were installed in a particular order.</p> <p>Genius block IC660BBD100 is now available as a selection in the Change Module List in the PME hardware configuration.</p>	
	Hardware ID:	IC695GCG001
	Primary Firmware:	Revision 2.2.4.2
Product Documentation	PACSystems RX3i System Manual	GFK-2314
	PACSystems RX3i Genius Communications Gateway Quick Start Guide	GFK-2891
	PACSystems RX3i Genius Communications Gateway User Manual	GFK-2892
	PACSystems IC695GCG001 Genius Communications Gateway IPI	GFK-2900

## Release History

Catalog No.	Firmware Version	Date	Description
IC695GCG001-EG	2.2.4.2	Aug 2022	The product's labels have been updated to show compliance with new certifications. For updated certifications, please refer to <a href="https://emerson-mas.force.com/communities/en_US/Article/Certifications-and-Agency-Approvals-Landing-Page">https://emerson-mas.force.com/communities/en_US/Article/Certifications-and-Agency-Approvals-Landing-Page</a>
IC695GCG001-GG	2.2.4.2	Sep 2019	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to material, process, form, fit or functionality.
IC695GCG001-DG	2.2.4.2	Mar 2019	Added Fault Status Data to the information that is produced by the GCG. Resolved two issues related to module placement in a VersaMax I/O drop. Resolved issue related to the selection of Genius IC660BBD100.
IC695GCG001-DF	2.2.3.2	Apr 2018	Improved output reinitialization behavior and incorrect fault reporting
IC695GCG001-DE	2.2.3.0	Jan 2018	Added support for Field Control, Outputs at Startup, and two COMMREQs. Also added RoHS compliance.
IC695GCG001-CD	2.0.1.0	Nov 2016	Product updated due to component obsolescence of internal serial flash memory device. Added WEEE symbol.

Catalog No.	Firmware Version	Date	Description
IC695GCG001-BD	2.0.1.0	Aug 2016	Removed the unused Genius B connector and the Bus B LED.
IC695GCG001-AD	2.0.1.0	Aug 2016	Adds support for the VersaMax Genius Network Interface, the IC660BBS101 isolated I/O block, and additional Genius baud rates. Fixes a problem with input data mapping for the IC660BBD120 High-Speed Counter.
IC695GCG001-AC	1.1.1.0	Feb 2016	Changed behavior of Genius Block circuit fault.
IC695GCG001-AB	1.1.0.4	Feb 2015	Fixes output glitch issues and adds enhancement to <i>Clear All Circuit Faults</i> COMMREQ.
IC695GCG001-AA	1.0.4.14	June 2014	Initial Release.

## Firmware Updates/Upgrades

Upgrade Strategy	Units in the field are not upgradable to the D hardware revision. However, the firmware in all previous versions of IC695GCG001 is field-upgradable, using the firmware upgrade kit listed in this table. It is recommended that all devices be upgraded in this manner.
Upgrade Kit	IC695GCG001 Rel 2.2.4.2 Upgrade Kit 41G2015-MS10-000-A6.zip

## New Features in this Release

Fault Status Data	<p>The GCG returns 32 bits of data that represent the fault condition of each device on the Genius Bus. Each Serial Bus Address has an associated fault status bit. The bit is ON if there is no device configured at the SBA, or if the device is offline, or if the device has any fault present (e.g., “failed switch”, “overload”, “no load”, etc.)</p> <p>The Fault Status Data address reference is configured in PAC Machine Edition.</p>
Genius Block IC660BBD100	This block is now supported in the PME Hardware Configuration of the GCG. Select “115Vac 8-point (2 Amp) Grouped Block (IC660BBD100 or IC660BBD101)”.

## Issues Resolved in this Release

I/O Enabled Light on a VersaMax drop fails to turn ON	In GCG version 2.2.3.2 No comms with VersaMax GBI. The IO Enabled LED won't go green. (This issue is related to the issue described below.)
VersaMax I/O drop fails to communicate	The GCG and IC200GBI001 are not communicating due to the order of input/output module on the VersaMax drop. If an MDL331 is placed first and then MDL240 placed second, for example, the GCG fails to establish communications.

## Functional Compatibility

<p>Firmware Versions</p>	<p>CPE305/CPE310 Primary Firmware Release 8.15 or later                  CPU315/CPU320 Primary Firmware Release 8.15 or later                  CRU320 Primary Firmware Release 8.95 or later.                  CPE330 Primary Firmware Release 8.90 or later. Release 9.21 or later is required to use the new COMMREQs with the embedded PROFINET controller.                  CPE400 Primary Firmware Release 9.00 or later. Release 9.20 or later is required to use the new COMMREQs with the embedded PROFINET controller                  (Other CPU models are not supported)</p>																																																	
<p>Programmer Version Requirements</p>	<p>PME 8.00 up to 8.50 (must import GSDML file)                  PME 8.50 SIM 3 or later (GSDML file is included in PME install)                  PME 9.50 SIM 14 or later is required to resolve issues with the upgrade of GSDML files.</p>																																																	
<p>GSDML Version Requirements</p>	<p>GSDML-V2.3-GE-GENIUSGateway-20190219.xml</p>																																																	
<p>RX3i PROFINET Controller</p>	<p>IC695PNC001 with firmware version 2.05 or later. Version 2.11 or later is required to use the new Clear All Circuit Faults feature introduced in Gateway version 1.1.0.4.                  Version 2.27 or later is required to use the Switch BSM and Enable/Disable Outputs                  COMMREQs introduced in Gateway version 2.2.3.0.                  Version 3.11 or later is required to use the GCG with PROFINET Device IDs greater than 127.</p>																																																	
<p>Genius I/O Devices</p>	<p>The following Genius I/O devices are supported by the Genius Communications Gateway. Do not connect other types of Genius devices to networks controlled by a Genius Communications Gateway.</p> <table border="1" data-bbox="409 1087 1469 1925"> <tr> <td data-bbox="409 1087 646 1119">IC200GBI001</td> <td data-bbox="652 1087 1469 1119">VersaMax Genius Network Interface Unit</td> </tr> <tr> <td data-bbox="409 1127 646 1159">IC660BBA020</td> <td data-bbox="652 1127 1469 1159">24/48 Vdc 4-Input/2-Output Analog Block</td> </tr> <tr> <td data-bbox="409 1167 646 1199">IC660BBA021</td> <td data-bbox="652 1167 1469 1199">24/48 Vdc RTD Input Block</td> </tr> <tr> <td data-bbox="409 1207 646 1239">IC660BBA023</td> <td data-bbox="652 1207 1469 1239">24/48 Vdc Thermocouple Input Block</td> </tr> <tr> <td data-bbox="409 1247 646 1278">IC660BBA024</td> <td data-bbox="652 1247 1469 1278">24/48 Vdc Current-Source Analog Block</td> </tr> <tr> <td data-bbox="409 1287 646 1318">IC660BBA025</td> <td data-bbox="652 1287 1469 1318">24/48 Vdc Current-Source Output Block</td> </tr> <tr> <td data-bbox="409 1327 646 1358">IC660BBA026</td> <td data-bbox="652 1327 1469 1358">24/48 Vdc Current-Source Input Block</td> </tr> <tr> <td data-bbox="409 1367 646 1398">IC660BBA100</td> <td data-bbox="652 1367 1469 1398">115 Vac 4-Input/2-Output Analog Block</td> </tr> <tr> <td data-bbox="409 1407 646 1438">IC660BBA101</td> <td data-bbox="652 1407 1469 1438">115 Vac RTD Input Block</td> </tr> <tr> <td data-bbox="409 1446 646 1478">IC660BBA103</td> <td data-bbox="652 1446 1469 1478">115 Vac/125 Vdc Thermocouple Input Block</td> </tr> <tr> <td data-bbox="409 1486 646 1518">IC660BBA104</td> <td data-bbox="652 1486 1469 1518">115 Vac/125 Vdc Current-Source Analog Block</td> </tr> <tr> <td data-bbox="409 1526 646 1558">IC660BBA105</td> <td data-bbox="652 1526 1469 1558">115 Vac/125 Vdc Current-Source Output Block</td> </tr> <tr> <td data-bbox="409 1566 646 1598">IC660BBA106</td> <td data-bbox="652 1566 1469 1598">115 Vac/125 Vdc Current-Source Input Block</td> </tr> <tr> <td data-bbox="409 1606 646 1638">IC660BBD020/022</td> <td data-bbox="652 1606 1469 1638">24/48 Vdc 16-Circuit Source I/O Blocks</td> </tr> <tr> <td data-bbox="409 1646 646 1677">IC660BBD021/023</td> <td data-bbox="652 1646 1469 1677">24/48 Vdc 16-Circuit Sink I/O Blocks</td> </tr> <tr> <td data-bbox="409 1686 646 1717">IC660BBD024</td> <td data-bbox="652 1686 1469 1717">12/24 Vdc 32-Circuit Source I/O Block</td> </tr> <tr> <td data-bbox="409 1726 646 1757">IC660BBD025</td> <td data-bbox="652 1726 1469 1757">5/12/24 Vdc 32-Circuit Sink I/O Block</td> </tr> <tr> <td data-bbox="409 1766 646 1797">IC660BBD100</td> <td data-bbox="652 1766 1469 1797">115 Vac 8-Circuit I/O Block</td> </tr> <tr> <td data-bbox="409 1806 646 1837">IC660BBD101</td> <td data-bbox="652 1806 1469 1837">115 Vac Low-leakage 8-Circuit I/O Block</td> </tr> <tr> <td data-bbox="409 1845 646 1877">IC660BBD110</td> <td data-bbox="652 1845 1469 1877">115 Vac 16-Circuit Input Block</td> </tr> <tr> <td data-bbox="409 1885 646 1917">IC660BBD120</td> <td data-bbox="652 1885 1469 1917">High-Speed Counter</td> </tr> <tr> <td data-bbox="409 1925 646 1957">IC660BBR100</td> <td data-bbox="652 1925 1469 1957">16-Circuit Normally-Closed Relay Block</td> </tr> <tr> <td data-bbox="409 1965 646 1997">IC660BBR101</td> <td data-bbox="652 1965 1469 1997">16-Circuit Normally-Open Relay Block</td> </tr> <tr> <td data-bbox="409 2005 646 2037">IC660BBS100/102</td> <td data-bbox="652 2005 1469 2037">115 Vac/125 Vdc Isolated I/O Blocks, with Failed Switch Diagnostics</td> </tr> </table>		IC200GBI001	VersaMax Genius Network Interface Unit	IC660BBA020	24/48 Vdc 4-Input/2-Output Analog Block	IC660BBA021	24/48 Vdc RTD Input Block	IC660BBA023	24/48 Vdc Thermocouple Input Block	IC660BBA024	24/48 Vdc Current-Source Analog Block	IC660BBA025	24/48 Vdc Current-Source Output Block	IC660BBA026	24/48 Vdc Current-Source Input Block	IC660BBA100	115 Vac 4-Input/2-Output Analog Block	IC660BBA101	115 Vac RTD Input Block	IC660BBA103	115 Vac/125 Vdc Thermocouple Input Block	IC660BBA104	115 Vac/125 Vdc Current-Source Analog Block	IC660BBA105	115 Vac/125 Vdc Current-Source Output Block	IC660BBA106	115 Vac/125 Vdc Current-Source Input Block	IC660BBD020/022	24/48 Vdc 16-Circuit Source I/O Blocks	IC660BBD021/023	24/48 Vdc 16-Circuit Sink I/O Blocks	IC660BBD024	12/24 Vdc 32-Circuit Source I/O Block	IC660BBD025	5/12/24 Vdc 32-Circuit Sink I/O Block	IC660BBD100	115 Vac 8-Circuit I/O Block	IC660BBD101	115 Vac Low-leakage 8-Circuit I/O Block	IC660BBD110	115 Vac 16-Circuit Input Block	IC660BBD120	High-Speed Counter	IC660BBR100	16-Circuit Normally-Closed Relay Block	IC660BBR101	16-Circuit Normally-Open Relay Block	IC660BBS100/102	115 Vac/125 Vdc Isolated I/O Blocks, with Failed Switch Diagnostics
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	IC660BBS101/103 IC660HHM501/502 IC670GBI002/102 IC697BEM733	115 Vac/125 Vdc Isolated I/O Block, without Failed Switch Diagnostics Hand-Held Monitor Field Control Genius Bus Interface Unit Series 90-70 Remote I/O Scanner
Hot-standby Redundancy	When using the Gateway in a Hot Standby redundancy system, with older versions of the CRU320 or CPE330 controllers, Genius I/O may not be scanned after a power cycle. This occurs if the primary controller is off and both the secondary Gateway and secondary controller are powered on at the same time. This problem is resolved in IC695CRU320 version 8.95 and later. It is also resolved in IC695CPE330 version 8.90 and later.	
VersaMax Sub-Module Configuration	For firmware version 2.0.1.0 the full IO capacity must be configured for VersaMax modules Vmax_8_Channel_AI and Vmax_4_Channel_AO modules. With the GBC, you could configure a subset of IO (for example for the Vmax_8_Channel_AI) you could configure (for example) 5 AI. For the GCG, this is not currently possible and you must configure 8 AI.	
Field Control Sub-Module Configuration	Field Control is supported by the GCG beginning with version 2.2. Be advised that the full IO capacity of its analog modules must be configured. For example, for the 8-channel Thermocouple Input module you must configure 48 points of Discrete Inputs, 8 channels of Analog Inputs, 16 points of Discrete Outputs, and 8 channels of Analog Outputs. Unused inputs can be ignored. Unused outputs should be maintained at zero.	

## Restrictions and Open Issues

Subject	Description
Discrete I/O Fault	If a discrete Genius block is configured so that all of its points are inputs or all of its points are outputs, the PROFINET Controller Module (PNC) may report a <i>Valid Module Substitution</i> fault in the I/O Fault Table. The block will operate as expected. The fault can be safely ignored.
Use of unsupported Genius devices	When an IC695GCG001 is used to control a Genius I/O network, the presence of unsupported Genius devices on the network can cause bus congestion, loss of fault messages, and other undesirable operation.
Configuration of 8- and 32-point discrete blocks	When configuring 8-point and 32-point discrete Genius blocks in Machine Edition, you must configure the block for both inputs and outputs. The Gateway does not support input-only or output-only configurations for these devices.
Recurrence of a circuit fault not shown in I/O Fault Table	If the Hand-Held Monitor is used to clear a circuit fault, and that fault reappears at a later time, no corresponding fault indication will appear in the I/O Fault Table. This situation is resolved by using the <i>Clear Circuit Fault</i> or <i>Clear All Circuit Faults</i> COMMREQs rather than using the HHM.
Hand-Held Monitor does not show the Gateway during a bus scan	When scanning the Genius bus with the Hand-Held Monitor, the scan will skip over the Gateway and not show it, even though the Gateway is operating properly.
GCG Configuration	In a scenario where the user does not configure a GCG at bus address 30 or 31, stores that configuration to the PLC, then corrects the configuration by adding a GCG at bus address 30 or 31, the GCG may not scan I/O on its Genius bus. This is resolved by power-cycling the GCG.

Subject	Description
SBA 30 Faults	If a Genius I/O device is on the bus at bus address 30, but it does not match the PME hardware configuration, no fault will be logged in the I/O Fault Table. The device will remain in Outputs Disabled state. Its status bit and point fault contacts will all be OFF. This can be corrected by using the correct Genius device or by changing the PME configuration so that it matches the actual network configuration.
Start-up Delay	Occasionally, after hardware configuration is stored to a PLC that controls a Genius Gateway, it can take up to 20 seconds for the Gateway to begin showing active status and transferring I/O data. This occurs on lightly loaded buses (2 I/O devices) when the Gateway is controlled by the embedded PROFINET controller in a CPE330 or CPE400. This problem can be worked-around by (1) using a PNC001, instead of the embedded controller or (2) spread out the assigned bus addresses of the Genius devices, instead of using consecutive or near-by bus addresses. That is, put a gap of 8 or more addresses between the devices' addresses.

## Operational Notes

Subject	Description
Add/Loss Faults	Beginning with version 2.2.3.0 of the Genius Gateway, Addition of Module and Loss of Module faults are not created in the I/O Fault Table when a Genius device comes on the Genius bus or leaves the Genius bus. To know when a device is added or lost, the user should monitor the states of the Gateway's 32 Genius Status bits.
IC660BBD120 High-Speed Counter	In PAC Machine Edition (PME), when a Gateway is upgraded from an older GSDML file (prior to 2016) to the 20160818 version or later, if there are any Genius High-Speed Counter blocks in the configuration, PME displays a Conflicts List window indicating that the input references have been given new values. When this occurs, take note of the existing reference addresses and press the <b>Proceed</b> button. Then open the hardware configuration for the High-Speed Counter module. If either of the %I or %AI reference addresses were changed, change them back to their original values. This is a one-time operation per High-Speed Counter.
Fault Contract Operation	<p>Firmware version 1.1.1.0 changes the behavior of the GCG when a Genius Block circuit fault occurs. In firmware versions 1.1.04 and earlier, a circuit fault would result in all I/O points on the Genius Block indicating a faulted condition. With firmware version 1.1.1.0 and later, when a circuit fault occurs on a Genius Block only the I/O point where the circuit fault occurred will be faulted.</p> <p><b>Fault Contact Operation with FW 1.1.1.0 and Later:</b></p> <p>When a circuit fault occurs on a discrete block or a channel fault occurs on an analog block, none of the block's <u>fault contacts</u> will energize. The only indicators of the presence of a circuit fault are an entry in the I/O Fault Table the Fault LED on the Gateway, and the Fault LED on the faulted Genius block itself.</p> <p>Prior to FW version 1.1.1.0 all of the fault contacts associated with the faulted Genius block would energize.</p>

<b>Subject</b>	<b>Description</b>
Bus Address 0	Genius bus address 0 is not available for configuration of Genius devices in PAC Machine Edition (PME). The only Genius device that can be used at bus address 0 is the Hand-Held Monitor.
Bus Addresses 30 and 31	The Gateway can be assigned to bus addresses 30 and 31 only. Do not configure the Gateway to both addresses 30 and 31 simultaneously. Doing so will cause the Genius bus to operate in an unexpected manner.
SNMP	The Genius Communications Gateway supports Simple Network Management Protocol (SNMP). However, requests directed to the device must use the community name "Emerson".

# General Contact Information

Home link: <http://www.emerson.com/industrial-automation-controls>

Knowledge Base: <https://www.emerson.com/industrial-automation-controls/support>

## Technical Support

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Any escalation request should be sent to [mas.sfdcescalation@emerson.com](mailto:mas.sfdcescalation@emerson.com)

**Note:** If the product is purchased through an Authorized Channel Partner, please contact the seller directly for any support.

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