

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

GE PACSYSTEMS RX3i

IC695ALG704-CB

FOUR-CHANNEL ANALOG CURRENT/VOLTAGE OUTPUT MODULE

Used with the applicable PACSystems RX3i analog I/O configuration.

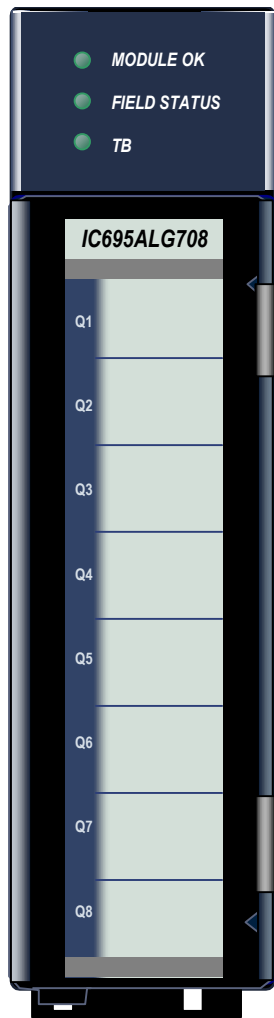
REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: GE official manufacturer documentation

Analog Output Module, 4 Channel Voltage / Current: IC695ALG704
Analog Output Module, 8 Channel Voltage / Current: IC695ALG708



Non-Isolated Analog Voltage/Current Output module

IC695ALG704 provides 4 configurable voltage or current output channels. **Non-Isolated Analog Voltage/Current Output** module IC695ALG708, shown at left, provides 8 configurable voltage or current output channels. Analog channels can be configured for these output ranges:

- Current: 0 to 20mA, 4 to 20mA
- Voltage: +/- 10V, 0 to 10V

These modules can be used with a Box-style (IC694TBB032), Extended Box-style (IC694TBB132), Spring-style (IC694TBS032), or Extended Spring-style (IC694TBS132) Terminal Block. Extended terminal blocks provide the extra shroud depth needed for shielded wiring. See chapter 15 for more information about Terminal Blocks. Terminal Blocks are ordered separately.

These modules must be located in an RX3i Universal Backplane. They require an RX3i CPU with firmware version 3.0 or later. Machine Edition Version 5.0 SP3 Logic Developer-PLC or later must be used for configuration.

Isolated +24 VDC Power

The module must receive its 24 VDC power from an external source. The external source must be connected directly to the module's terminal block. It cannot be connected via the TB1 connector on the RX3i Universal Backplane. **Module Features**

- Completely software-configurable, no module jumpers to set
- Individually enable or disable channels
- Clamping and Alarm Limits
- Latching of Alarms
- Configurable output bias
- Rapid channel acquisition times based on filter frequency
- Full autocalibration
- On-board error-checking
- Configurable scaling and offsets per channel
- High alarm, low alarm, high-high alarm, low-low alarm detection and reporting selectable per channel
- Module fault reporting
- Configurable Hold Last State or Output Defaults

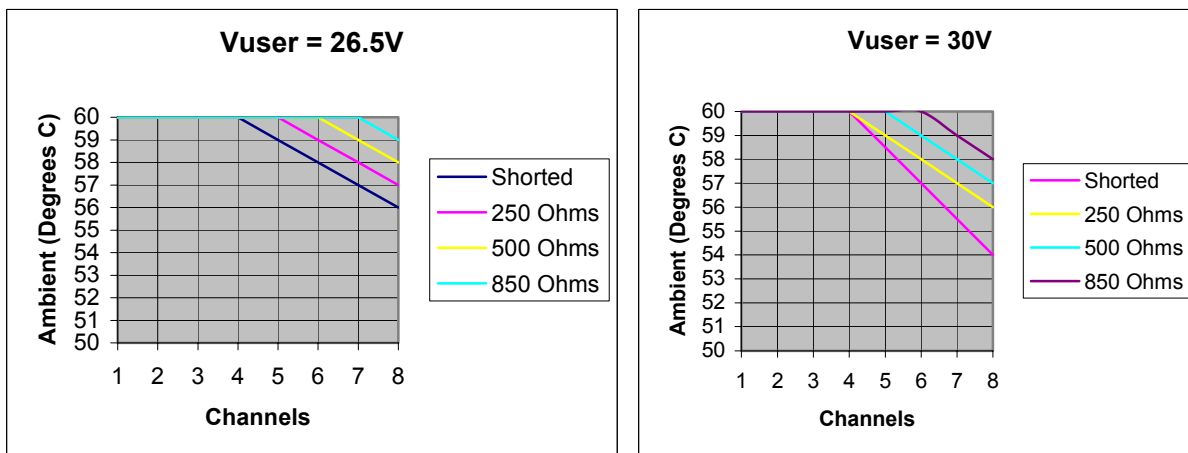
Specifications: IC695ALG704 and IC695ALG708

Output Ranges	Current: 0 to 20mA, 4 to 20mA Voltage: +/- 10V, 0 to 10V
Backplane Power Requirements	375 mA maximum at 3.3V
Power Dissipation within Module ($V_{user}=24V$)	IC695ALG704: 4.8 Watts maximum IC695ALG708: 7.25Watts maximum
Thermal Derating	IC695ALG704: None IC695ALG708: Voltage mode: none Current mode: See next page.
External Power Supply V_{user}	Voltage Range: +19.2V to +30VDC Current required for ALG704: 150mA maximum Current required for ALG708: 250mA maximum
Resolution	+/-10V: 15.9 bits, 0 to 10V: 14.9 bits, 0 to 20mA: 15.9 bits, 4 to 20mA : 15.6 bits
Output Data Format	Configurable as floating point IEEE 32 bit or 16-bit integer in a 32-bit field
Update Rate (Determined by I/O scan time, application dependent.)	8 milliseconds (approximate, all eight channels)
Output Overvoltage Protection	Current outputs only: -30V for 60 seconds, +30V for one hour
Calibrated Accuracy	Accurate to within 0.15% of full scale at 25°C Accurate to within 0.30% of full scale at 60°C In the presence of severe RF interference (IC 801-3, 10V/M), accuracy may be degraded to +/-1% FS.
Output Load Reactance	Current: 10μH maximum, Voltage: 1μF maximum
Maximum Output Load	Current: 850 Ohms maximum at $V_{user} = 20V$ Voltage: 2 Kohms minimum
Output Gain Drift	Voltage output: 20ppm per degree C typical Current output: 35ppm per degree C typical
Output Settling Time	Voltage or current output: 2ms, 0 to 95%.
Isolation, Field to Backplane	2550VDC for one second
Maximum Compliance Voltage	$V_{user} - 3V$ (minimum) to V_{user} (maximum)

Refer to Appendix A for product standards and general specifications.

Output Points vs. Temperature, Current Mode

Module IC695ALG704 has no thermal derating. Module IC695ALG708 has no thermal derating in voltage mode. Thermal deratings for module IC695ALG708 In current mode are shown below.



LEDs

The **Module OK** LED indicates module status. The **Field Status** LED indicates whether the external +24 VDC power supply is present and is above the minimum level and whether or not faults are present. All LEDs are powered from the backplane power bus.

LED	Indicates
Module OK	ON Green: Module OK and configured. Quick Flashing Green: Module performing powerup sequence. Slow Flashing Green or Amber: Module OK but not configured. OFF: Module is defective or no backplane power present
Field Status	ON Green No faults on any enabled channel, Terminal Block is present, and field power is present. ON Amber and TB Green: Terminal Block is installed, fault on at least one channel, or field power is not present. ON Amber and TB Red: Terminal Block not fully removed, field power still detected. OFF and TB Red: Terminal block not present and no field power is detected.
TB	ON Red: Terminal block not present or not fully seated. See above. ON Green: Terminal block is present. See above. OFF: No backplane power to module.

Configuration Parameters: IC695ALG704 and IC695ALG708

Module Parameters		
Parameter	Default	Description
Outputs Reference Address	%AQxxxxx	Starting address for the module's output data. This defaults to the next available %AQ block.
Outputs Reference Length	ALG704: 8	The number of words used for the module's output data. This parameter cannot be changed.
	ALG708: 16	
Output Command Feedback Reference Address	%AIxxxxx	Starting address for the module's command feedback data. This defaults to the next available %AI address after a non-zero length is configured.
Output Command Feedback Length	0	The number of words used for the module's command feedback data. Length defaults to 0. It can be set to 8 or 16, depending on the module type being configured.
Diagnostic Reference Address	%Ixxxxx	Starting address for the channel diagnostics status data. This defaults to the next available %I block.
Diagnostic Reference Length	0	Read Only. The number of bit reference bits required for the Channel Diagnostics data. Default is 0, which means mapping of Channel Diagnostics is disabled. Change this to a non-zero value to enable Channel Diagnostics mapping. Maximum length is 128 bits for module IC695ALG704 or 256 bits for module IC695ALG708.
Module Status Reference Address	%Ixxxxx	Starting address for the module's status data. This defaults to the next available %I block.
Module Status Reference Length	0	Read Only. The number of bits (0 or 32) required for the Module Status data. Default is 0, which means mapping of Module Status data is disabled. Change this to a non-zero value to enable Module Status data mapping.

Continued...

Analog Output Commanded Feedback

The module returns a copy of the analog output data received from CPU in its corresponding channel analog input shared memory. Output Feedback can be monitored to check the values being sent to the channels. The data is in the same scaled format as the output data for each channel. During normal operation this feedback data should match the actual output data after one or more PLC scans of module inputs. During faults, ramping, overrange, and clamping conditions, the analog output data may differ from the commanded output.

OverTemperature

If OverTemperature is enabled, the module generates an OverTemperature alarm if the module's internal temperature is too great for the number of outputs that are on at the same time. In addition to the configurable options for OverTemperature fault reporting and interrupts, an over temperature condition is also indicated by the OverTemperature bit in the module's Status Reference data. Detection of the OverTemperature status bit is always enabled.

Module Data: IC695ALG704 and IC695ALG708

The module receives its channel data from its configured output words, beginning at its assigned Channel Value Reference Address. Each channel occupies 2 words (whether the channel is used or not):

Channel Value Reference Address	Contains this Input
+0, 1	Channel 1
+2, 3	Channel 2
+4, 5	Channel 3
+6, 7	Channel 4
<i>For Module IC695ALG708 Only:</i>	
+8, 9	Channel 5
+10, 11	Channel 6
+12, 13	Channel 7
+14, 15	Channel 8

Depending on its configured Channel Value Format, each enabled channel output reference location is read as a 32-bit floating point or 16-bit integer value.

In the 16-bit integer mode, low word of the 32-bit channel data area contains the 16-bit integer channel value. The high word (upper 16-bits) of the 32-bits is ignored. The full range of the 16-bit integer is a signed decimal value from +32767 to –32768.

Because the channel reference location is 32 bits, it is possible for the application program to write 32-bit signed decimal values to the output reference. However, the program logic must restrict the magnitude of the value to the range +32767 to –32768. Exceeding this range will result in misinterpretation of the sign bit, and incorrect output channel operation.

Field Wiring: IC695ALG704 and IC695ALG708

The table below lists wiring connections for the Non-Isolated Analog Output Modules. There are no shield terminals. For shielding, tie cable shields to the ground bar along the bottom of the backplane. M3 tapped holes are provide in the ground bar for this purpose.

Terminal	IC695ALG704	IC695ALG708	IC695ALG704	IC695ALG708	Terminal
1	Channel 2 Voltage Out		Channel 1 Voltage Out		19
2	Channel 2 Current Out		Channel 1 Current Out		20
3	Common (COM)		Common (COM)		21
4	Channel 4 Voltage Out		Channel 3 Voltage Out		22
5	Channel 4 Current Out		Channel 3 Current Out		23
6	Common (COM)		Common (COM)		24
7	No Connection	Channel 6 Voltage Out	No Connection	Channel 5 Voltage Out	25
8	No Connection	Channel 6 Current Out	No Connection	Channel 5 Current Out	26
9	Common (COM)		Common (COM)		27
10	No Connection	Channel 8 Voltage Out	No Connection	Channel 7 Voltage Out	28
11	No Connection	Channel 8 Current Out	No Connection	Channel 7 Current Out	29
12	Common (COM)		Common (COM)		30
13	Common (COM)		Common (COM)		31
14	Common (COM)		Common (COM)		32
15	Common (COM)		Common (COM)		33
16	Common (COM)		Common (COM)		34
17	Common (COM)		Common (COM)		35
18	Common (COM)		+24V In		36

Each channel can be individually-configured to operate as a voltage output or a current output, not both simultaneously. All the common terminals are connected together internally, so any common terminal can be used for the negative lead of the external power supply.

