

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

GE

IC695ALG708-EC

EIGHT-CHANNEL CURRENT AND VOLTAGE ANALOG OUTPUT MODULE

Used with the applicable GE PACSystems RX3i configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Emerson PACSystems RX3i System Manual, GFK-2314Z

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

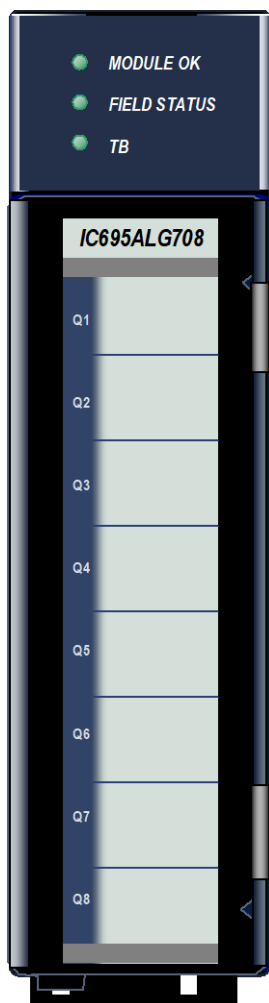


Figure 305: IC695ALG708

The **Analog Current/Voltage Output** module, IC695ALG704, provides four non-isolated configurable voltage or current output channels. The **Analog Current/Voltage Output** module, IC695ALG708 (Figure 305), provides eight non-isolated configurable voltage or current output channels.

Analog channels can be configured for these output ranges:

- Current: 0 to 20mA, 4 to 20mA
- Voltage: ± 10 Vdc, 0 to 10 Vdc

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. Refer to Chapter 17 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.

10.4.1 Isolated +24Vdc Power

Module must receive its 24Vdc power from an external source. The external source must be connected directly to the terminal block of this module. It cannot be connected via the TB1 connector on the RX3i Universal Backplane.

10.4.2 Features: ALG704 & ALG708

- 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 auto-calibration
- 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
- Module supports insertion into and removal from an RX3i Universal Backplane which is under power. Refer to *Hot Insertion and Removal*, Section 2.6.4.1.

Module supports firmware upgrades using the WinLoader software utility (if the host CPU has a serial port) or using a Web-based tool (if the host CPU has no serial port). Instructions are included with the firmware upgrade kit.²³

10.4.3 LEDs: ALG704 and ALG708

Module **OK** LED indicates module status. The **Field Status** LED indicates whether the external +24Vdc 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 power-up 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. Refer to above. ON Green: Terminal block is present. Refer to above. OFF: No backplane power to module.

10.4.4 Specifications: ALG704 and ALG708

Output Ranges	Current: 0 to 20mA, 4 to 20mA Voltage: ± 10 Vdc, 0 to 10 Vdc
Backplane Power Requirements	ALG704/708-CB or earlier: 375 mA maximum at 3.3V
	ALG704/708-DC or later: 250 mA maximum at 3.3V
Power Dissipation within Module ($V_{user}=24V$)	IC695ALG704: 4.8 Watts maximum IC695ALG708: 7.25Watts maximum
Thermal De-rating	IC695ALG704: None IC695ALG708: Voltage mode: none Current mode: Refer to Figure 306.
External Power Supply V_{user}	Voltage Range: +19.2V to +30 Vdc Current required for ALG704: 150mA maximum Current required for ALG708: 250mA maximum
Resolution	± 10 Vdc: 15.9 bits, 0 to 10 Vdc: 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	8 ms (approximate, all eight channels) (Determined by I/O scan time, application dependent.)
Output Over-voltage Protection	Current outputs only: -30V for 60 seconds, +30V for one hour
Calibrated Accuracy ⁶⁴	Accurate to within 0.15% of full scale at 25°C Accurate to within 0.30% of full scale at 60°C
Output Load Reactance	Current: 10 μ H maximum, Voltage: 1 μ F maximum
Maximum Output Load	Current: 850 Ω maximum at $V_{user} = 20V$ Voltage: 2k Ω 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	2550 Vdc for one second
Maximum Compliance Voltage	$V_{user} - 3V$ (minimum) to V_{user} (maximum)

For product standards and general specifications, refer to Appendix A.

⁶⁴ In the presence of severe RF interference (IC 801-3, 10V/m), accuracy may be degraded to $\pm 1\%$ FS.

10.4.4.1 Thermal Derating, Current Mode: ALG708

Module IC695ALG704 has no thermal derating.

Module IC695ALG708 has no thermal derating in voltage mode.

Thermal derating for module IC695ALG708 in current mode is displayed in Figure 306.

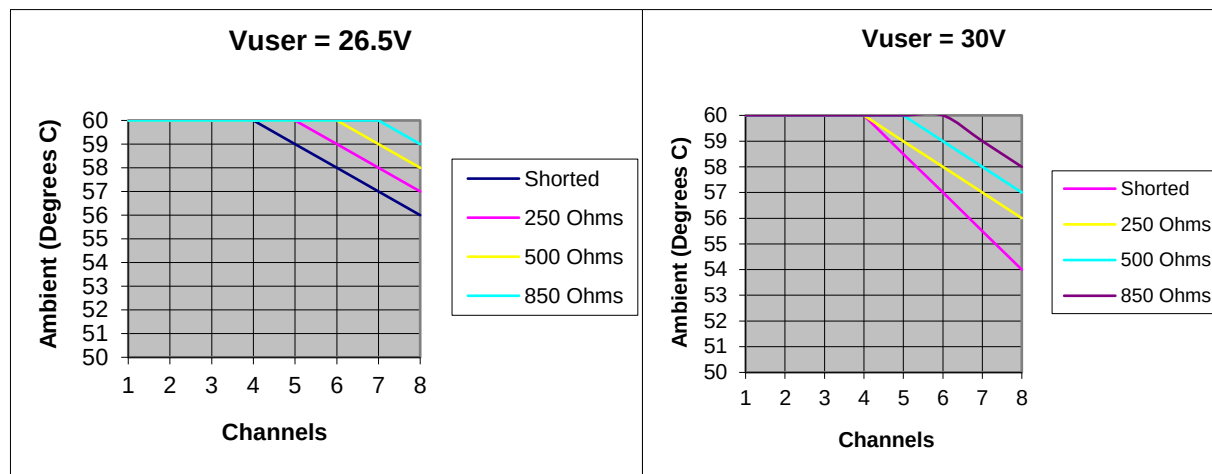


Figure 306: Thermal Derating Curves for ALG708 at selected Voltage Levels (Current Mode only)

10.4.5 Configuration: ALG704 and ALG708

10.4.5.1 Module Parameters

Parameter	Default	Description
Outputs Reference Address	%AQxxxx	Starting address for the output data of this module. This defaults to the next available %AQ block.
Outputs Reference Length	ALG704: 8	The number of words used for the output data of this module. This parameter cannot be changed.
	ALG708: 16	
Output Command Feedback Reference Address	%AIxxxx	Starting address for the command feedback data of this module. 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 command feedback data of this module. Length defaults to 0. It can be set to 8 or 16, depending on Module type being configured.
Diagnostic Reference Address	%Ixxxx	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 status data of this module. This defaults to the next available %I block.
Module Status Reference Length	0	Read Only. The number of bits (0 or 32) required for 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.

Analog Output Commanded Feedback

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, over-range, and clamping conditions, the analog output data may differ from the commanded output.

Over-Temperature

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