MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

GE PACSYSTEMS RX3I

IC694ALG220A

FOUR-CHANNEL DIFFERENTIAL VOLTAGE INPUT 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

9.3 Analog Input Module 4-Channel Differential Voltage: IC694ALG220

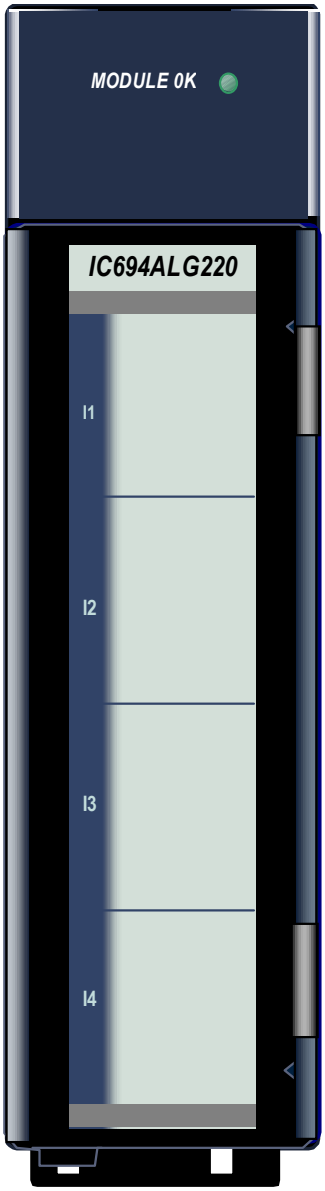


Figure 262: IC694ALG220

The ***4–Channel Analog Voltage Input*** module, IC694ALG220, provides four analog input channels. This module accepts inputs in the range of -10 to +10 volts. Individual channels can be used with 4 to 20 mA inputs by jumpering the input terminals.

Conversion speed for each of the four channels is one millisecond. This provides an update rate of four milliseconds for any channel.

This module can be installed in any I/O slot of an RX3i PLC system.

Module does not support insertion into or removal from an RX3i Universal Backplane which is under power (see *Hot Insertion and Removal Not Supported*, Section 2.6.4.2).

9.3.1 Isolated +24Vdc Power

If the module is located in an RX3i Universal Backplane, an external source of Isolated +24Vdc is required to provide power for the module. The external source must be connected via the TB1 connector on the left side of the backplane.

If this module is located in an Expansion or Remote backplane, the backplane power supply provides the Isolated +24Vdc output for the module.

9.3.2 LEDs: ALG220

The **Module OK** LED is ON when the module power supply is operating.

9.3.3 Specifications: ALG220

Voltage Range[45]	-10 to +10 Vdc

[45] Both inputs must be within ±11 volts of COM, including any noise present on the inputs.

Calibration	Factory calibrated
Update Rate	4 ms (all four channels)
Resolution	5 mV/20 μA, (1 LSB = 5 mV)
Absolute Accuracy[46]	±10 mV/40 μA (typical) over operating temperature ±30 mV/160 μA (maximum) over operating temperature
Linearity	<1 Least Significant Bit
Isolation, Field to Backplane (optical) and to frame ground	250 Vac continuous; 1500 Vac for 1 minute
Cross–Channel Rejection	> 80dB
Input Impedance	> 9 MΩ (voltage mode) 250 Ω (current mode)
Input Filter Response	17 Hz
Internal Power Consumption	27 mA from +5Vdc bus on the backplane 98 mA from the isolated +24Vdc backplane bus

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

9.3.4 Data Format: ALG220

Module data is stored in the PLC CPU in 16–bit 2's complement format as displayed in the following figure.

MSB LSB

+/-	10	9	8	7	6	5	4	3	2	1	0	X	X	X	X

9.3.4.1 Scaling and Resolution: ALG220

The module scales input data so that –10 Vdc corresponds to –32000 and +10 Vdc corresponds to +32000. Resolution per bit is 5 mV or 20 mA per bit.

[46] In the presence of severe RF interference (IEC 801–3, 10V/m), accuracy may be degraded to ±100 mV/400 μA.

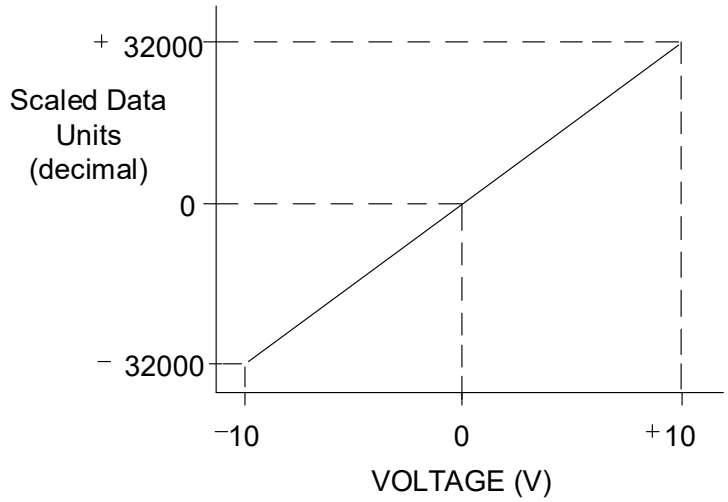
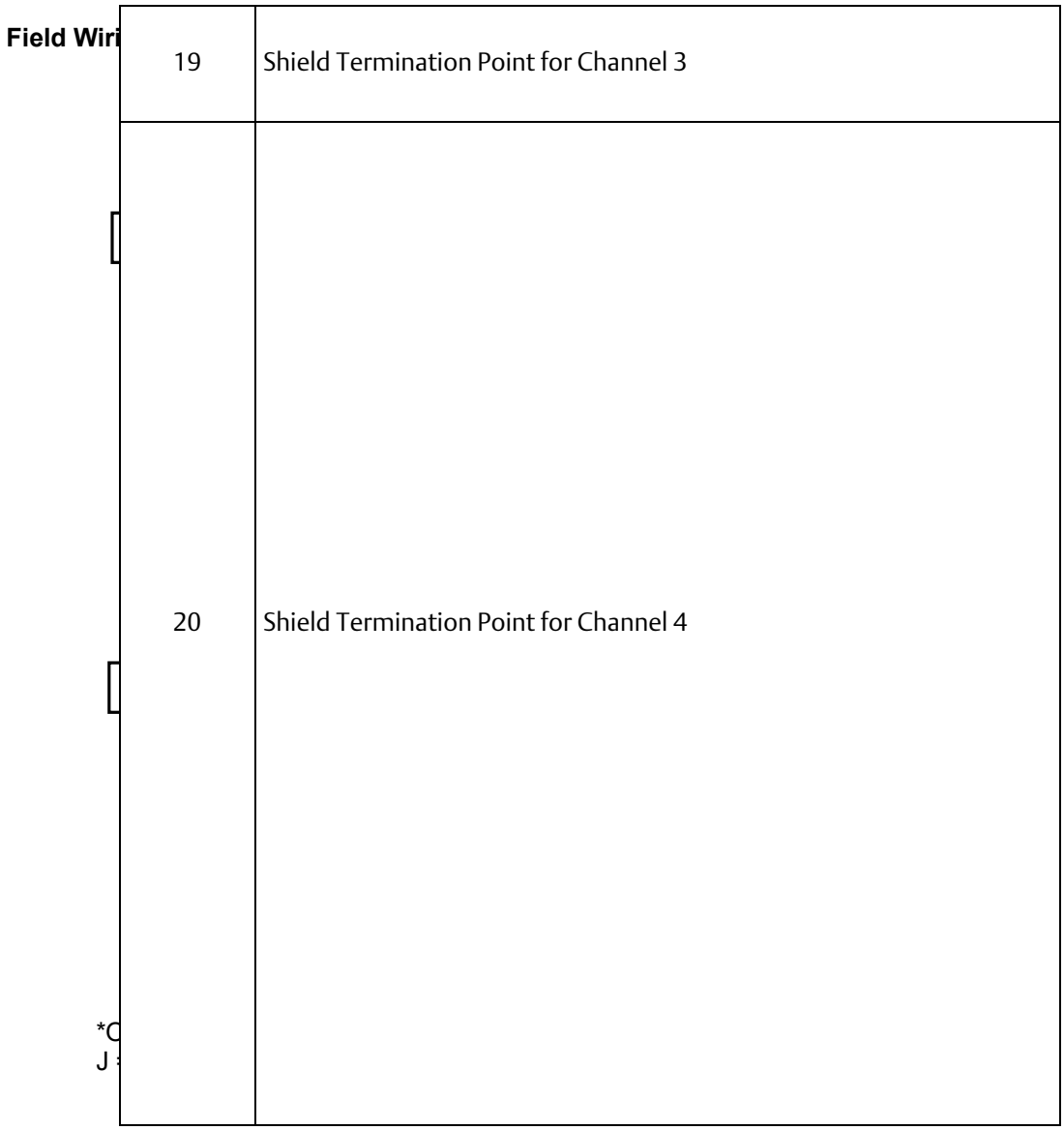


Figure 263: Input Voltage Scaling: ALG220

A 4 to 20 mA input corresponds to a 1 to 5 Volt input to the module; therefore, the resolution of the 4 to 20 mA input signal is approximately 10 bits binary (1 part in 1024). The resolution can be increased to approximately 11 bits (1 part in 2048) by using a precision 250Ω resistor instead of the jumper. The resistor causes the voltage input module to see a 4 to 20 mA input as 2 to 10 volts.

9.3.5 Field Wiring: ALG220

Terminal	Connection
1-3	Current mode input jumper for Channel 1
2-4	Current mode input jumper for Channel 2
3	Channel 1 +
4	Channel 2+
5	Channel 1-
6	Channel 2 -
7	Common
8	Common
9	Shield Termination Point for Channel 1
10	Shield Termination Point for Channel 2
11 - 13	Current mode input jumper for Channel 3
12 - 14	Current mode input jumper for Channel 4
13	Channel 3 +
14	Channel 4+
15	Channel 3-
16	Channel 4 -
17	Common
18	Common



To minimize the capacitive loading and noise, all field connections to the module should be wired using a good grade of twisted, shielded instrumentation cable. The shields can be connected to either COM or GND. The COM connection provides access to the common of the analog circuitry in the module. The GND connection provides access to the backplane (frame ground). The (-) side of the voltage source can also be tied to the COM terminal if the source is floating to limit common-mode voltages.

The optional jumpers shown can be used to configure a channel for use with 4 to 20 mA inputs. The resolution of 4 to 20 mA inputs can be increased from 10 bits to approximately 11 bits by installing a 250Ω resistor instead of the jumper

Connect the **+** and **-** terminals together for all unused inputs to minimize any fluctuations in the analog input table for the unused points.

9.4 Analog Input Module 4-Channel Differential Current: IC694ALG221

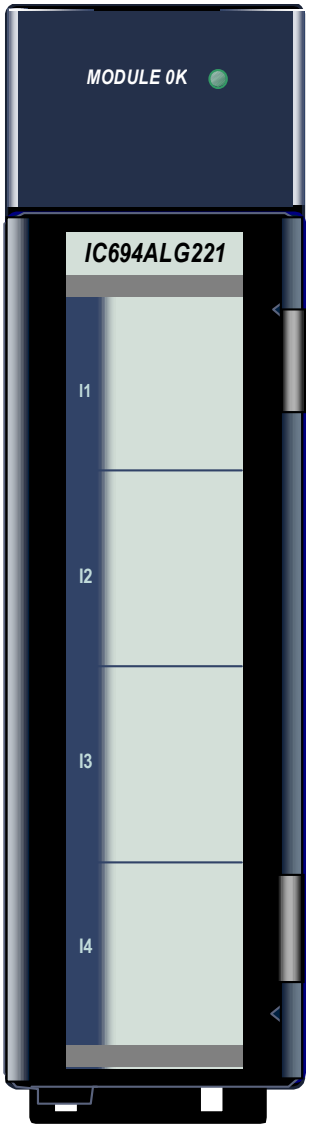


Figure 264: IC694ALG221

The ***4–Channel Analog Current Input*** module, IC694ALG221, provides four analog input channels. This module has two possible input ranges:

- 4 to 20 mA
- 0 to 20 mA

Two range jumpers are provided with the module; one for channels one and two, and the other for channels three and four.

Conversion speed for each of the four channels is one–half millisecond. This provides an update rate of two milliseconds for any channel. Resolution of the converted signal is 12-bit binary (1 part in 4096) over either range.

Input protection for the module is sufficient for operation with reduced performance with up to 200 V common–mode. The module provides electrical isolation of externally generated noise between field wiring and the backplane through the use of optical isolation.

This module can be installed in any I/O slot of an RX3i system.

Module does not support insertion into or removal from an RX3i Universal Backplane which is under power (see *Hot Insertion and Removal Not Supported*, Section 2.6.4.2).

9.4.1 LEDs: ALG221

The **Module OK** LED is ON when the module power supply is operating.