

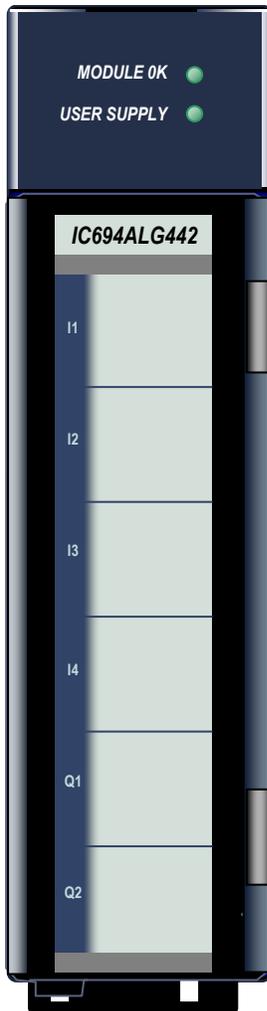
# PACSystems\* RX3i and Series 90\*-30

## IC694ALG442 and IC693ALG442

### Analog Module, 4 Inputs/2 Outputs, Current/Voltage

GFK-2687A

May 2012



Analog Current/Voltage Input/Output module, ALG442, provides four differential input channels and two single-ended output channels. Each channel can be configured with the Machine Edition software for one of the following ranges:

- 0 to +10 volts (unipolar), default.
- -10 to +10 volts (bipolar)
- 0 to 20 mA
- 4 to 20 mA

Input channels can also be configured for 4 - 20 mA Enhanced mode.

This module may be installed in any I/O slot that has a serial connector in an RX3i or Series 90-30 system.

#### **Module Features**

Outputs can be configured to either Hold Last State or to reset to the low end of their range if system power is interrupted. Outputs can also be configured to operate in ramp mode on command from the application program. In ramp mode, the output channel transitions to a new value over a period of time, rather than taking the new value immediately.

High and low alarm limits can be set for all input channels and an open-wire fault (current output modes) can be reported to the CPU for each output channel.

ALG442 modules in RX3i racks support firmware upgrades in the field.

#### **Isolated +24 VDC Power**

This module requires 150 mA plus loop current(s) from a user-supplied +24 VDC supply.

#### **LEDs**

The **MODULE OK** LED provides module status information as follows:

*ON*: status is OK, module configured;

*OFF*: no backplane power or software not running (watchdog timer timed out);

*Continuous rapid blinking*: configuration data not received from CPU;

*Slow blinking, then OFF*: failed power-up diagnostics or encountered code execution error.

The **USER SUPPLY** LED indicates that the external 24 VDC supply is within specifications.

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**Specifications: ALG442**

<b>Power Requirements</b>	
External Supply Voltage Range	20 to 30 VDC (24 VDC typical)
Power Supply Rejection Ratio	Current: 5 $\mu$ A/V (typical), 10 $\mu$ A/V (maximum) Voltage: 25 mV/V (typical), 50 mV/V (maximum) (Measured by varying $V_{USER}$ from 24 VDC to 30 VDC)
Voltage Ripple	10%
<b>Power Consumption</b>	
	95 mA from internal +5 VDC Supply, 150 mA from external +24 VDC supply
<b>Update Rate</b>	
	Update Rate: 3 ms
<b>Isolation, Field to Backplane (optical) and to Frame Ground</b>	
	250 VAC continuous; 1500 VAC for 1 minute
<b>Analog Outputs</b>	
	Two, Single-Ended
<i>Analog Current Output</i>	
Output Ranges	0 to 20 mA, 4 to 20 mA
Resolution	0 to 20 mA: 0.6 $\mu$ A (1 LSB = 0.6 $\mu$ A) 4 to 20 mA: 0.5 $\mu$ A (1 LSB = 0.5 $\mu$ A)
Absolute Accuracy <sup>1,5</sup>	$\pm$ 0.1% of full scale @ 25°C (77°F), typical $\pm$ 0.25% of full scale @ 25°C (77°F), maximum $\pm$ 0.5% of full scale over operating temperature range (maximum)
Maximum Compliance Voltage	$V_{USER} - 3$ V (minimum) to $V_{USER}$ (maximum)
User Load	0 to 850 $\Omega$ (minimum at $V_{USER} = 20$ V, maximum 1350 $\Omega$ at $V_{USER} = 30$ V)
Output Load Capacitance	2000 pF (maximum)
Output Load Inductance	1 H (maximum)
<i>Analog Voltage Output</i>	
Output Ranges	-10 to +10 V (bipolar), 0 to +10 V (unipolar)
Resolution	-10 V to +10 V: 0.3125 mV (1 LSB = 0.3125 mV) 0 to +10 V: 0.3125 mV (1 LSB = 0.3125 mV)
Absolute Accuracy <sup>2,5</sup>	$\pm$ 0.25% of full scale @ 25°C (77°F), typical $\pm$ 0.5% of full scale @ 25°C (77°F), maximum $\pm$ 1.0% of full scale over operating temperature range (maximum)
Output Loading	5 mA (2 K Ohms minimum resistance)
Output Load Capacitance	1 $\mu$ F (maximum capacitance)
<b>Analog Inputs</b>	
	Four, differential
<i>Analog Current Input</i>	
Input Ranges	0 to 20 mA, 4 to 20 mA, 4 to 20 mA Enhanced
Resolution	5 $\mu$ A (1 LSB = 5 $\mu$ A)
Absolute Accuracy <sup>3</sup>	$\pm$ 0.25% of full scale @ 25°C (77°F) $\pm$ 0.5% of full scale over specified operating temperature range
Linearity	<1 LSB
Common Mode Voltage	200 VDC (maximum)
Common Mode Rejection	>70 dB at DC; >70 dB at 60 Hz
Cross Channel Rejection	>70 dB from DC to 1 kHz
Input Impedance	250 $\Omega$
Input Filter Response	38 Hz

1 Analog Current output: In the presence of severe Radiated RF interference (IEC 61000-4-3, 10V/m), accuracy may be degraded to  $\pm$ 1% of full scale.

2 Analog Voltage output: In the presence of severe Radiated RF interference (IEC 61000-4-3, 10V/m), accuracy may be degraded to  $\pm$ 4% of full scale.

**Specifications, continued**

<i>Analog Voltage Input</i>	
Input Ranges	0 to +10 V (unipolar), -10 to +10 V (bipolar)
Resolution	0 to +10 V: 2.5 mV (1 LSB = 2.5 mV) -10 to +10 V: 5 mV (1 LSB = 5 mV)
Absolute Accuracy <sup>4,5</sup>	±0.25% of full scale @25°C (77°F); ±0.5% of full scale over specified operating temperature range
Linearity	<1 LSB
Common Mode Voltage	200 VDC (maximum)
Common Mode Rejection	>70 dB at DC; >70 dB at 60 Hz
Cross Channel Rejection	>70 dB from DC to 1 kHz
Input Impedance	800 K Ohms typical)
Input Filter Response	38 Hz

- 3 Analog Current Input: In the presence of severe Radiated RF interference (IEC 61000-4-3, 10V/m), accuracy may be degraded to ±2% of full scale.
- 4 Analog Voltage Input: In the presence of severe Radiated RF interference (IEC 61000-4-3, 10V/m), accuracy may be degraded to ±1% of full scale.
- 5 Applicable for all outputs and inputs: In the presence of severe Conducted RF interference (IEC 61000-4-6, 10Vrms), accuracy may be degraded to ±2% of full scale.

Refer to the applicable Installation or System manual for product standards, general operating specifications, and installation requirements:

*Series 90-30 Installation Manual, GFK-0356*

*Series 90-30 systems: Installation Requirements for Conformance to Standards, GFK-1179*

*PACSystems RX3i System Manual, GFK-2314*