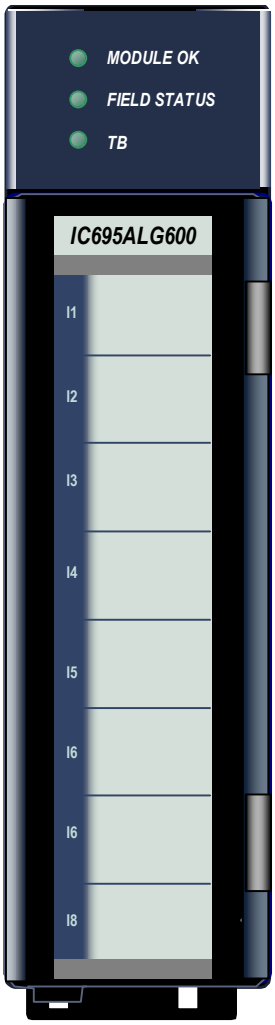
Universal Analog Input Module, 8 Inputs, RTD, Thermocouple, Resistance, Current/Voltage: IC695ALG600



Universal Analog Input module IC695ALG600 provides eight general purpose input channels and two Cold Junction Compensation (CJC) channels. Inputs are divided into two equal groups of four. Channels can be individually-configured using the Machine Edition software for:

- Any combination of up to 8 channels of voltage, current, thermocouple, RTD, and resistance inputs.
- Thermocouple Inputs: B, C, E, J, K, N, R, S, T
- RTD Inputs: PT 385 / 3916, N 618 / 672, NiFe 518, CU 426
- Resistance Inputs: 0 to 250 / 500 / 1000 / 2000 / 3000 / 4000 Ohms
- Current: 0–20 mA, 4–20 mA, ±20 mA
- Voltage: ±50mV, ±150 mV, 0–5 V, 1–5 V, 0–10 V, ±10V

Module Features

- Completely software-configurable, no module jumpers to set
- Six hardware analog-to-digital filter frequencies, individually-selectable by channel
- Rapid channel acquisition times based on filter frequency
- Full autocalibration
- On-board error-checking
- Open-circuit detection for most input types
- Short-circuit detection for RTDs.
- User-defined scaling
- High alarm, low alarm, high-high alarm, low-low alarm detection and reporting
- Module fault reporting
- Supports diagnostic point fault contacts in the logic program.
- Flash memory for future upgrades
- Module Status, Field Status, and TB LEDs
- CJC compensation on terminal block
- Temperature in Celsius or Fahrenheit
- Positive and negative Rate of Change Alarms
- Configurable software filters for each input channel
- Configurable interrupts for channel alarms and faults
- Terminal Block insertion or removal detection

This module must be located in an RX3i Universal Backplane. It cannot be located in an expansion or remote backplane.

CIMPLICITY® Machine Edition 5.0 SP1A LD-PLC Hotfix 1 or later must be used to configure and program a PACSystems RX3i system that includes this module. The CPU must be RX3i model IC695CPU310 Firmware Revision 2.80 (Build ID 43A1) or later.

Specifications: ALG600

Backplane Power Requirements	400 mA maximum @ 5V 350 mA maximum @ 3.3V	
CPU Memory Usage	40 bytes (20 words) of input references for channel input data. 40 bytes for enhanced diagnostics 4 bytes for module status reporting.	
Power Dissipation within Module	5.4 watts maximum	
LEDs	One green LED to indicate the module status One bi-color green/yellow LED to indicate the field status One bi-color red/green LED to indicate the terminal block status	
Channel Acquisition Time	10 msec @ 1000 Hz, 13 msec @ 200 Hz, 27 msec @ 40 Hz, 67 msec @ 16 Hz, 87 msec @ 12 Hz, 127 msec @ 8 Hz	
Channel Update Time	The sum of the channel acquisition times for a bank of 4 channels plus one of the following if applicable: 1. RTD Lead resistance measurement time (equals channel acquisition time) 2. CJC acquisition time 7 msec.	
Input resolution	11 to 16 bits, depending on configured range and A/D filter frequency. See page 12-17 for details.	
Inputs in Ohms	Resistance	0-250, 0-500, 0-1000, 0-2000, 0-3000, 0-4000
	Platinum 385	100, 200, 500,1000
	Platinum 3916	100, 200, 500,1000
	Nickel 672	120
	Nickel 618	100,200, 500,1000
	Nickel-Iron 518	604
	Copper 426	10
RTD Inputs	Copper 426	-100 to 260 degrees C
	Nickel 618	-100 to 260 degrees C
	Nickel 672	-80 to 260 degrees C
	Nickel-Iron 518	-100 to 200 degrees C
	Platinum 385	-200 to 850 degrees C
	Platinum 3916	-200 to 630 degrees C
Thermocouple Inputs	Type B	300 to 1820 degrees C
	Type C	0 to 2315 degrees C
	Type E	-270 to 1000 degrees C
	Type J	-210 to 1200 degrees C
	Type K	-270 to 1372 degrees C
	Type N	-210 to 1300 degrees C
	Type R	0 to 1768 degrees C
	Type S	0 to 1768 degrees C
	Type T	-270 to 400 degrees C

Specifications, continued

Voltage / Current Inputs	-10V to +10V, 0V to +10V, 0 V to +5V, 1V to +5V, -50mV to +50mV, -150mV to +150mV, -20mA to +20mA, 4 to 20 mA, 0 to 20 mA
Configurable Input Filter	8Hz, 12Hz, 16Hz, 40Hz, 200Hz, 1000Hz
Scaling	Floating point user scaling.
Max RTD Cable Impedance	25 ohms
RTD Wire Length	1000 ft max w/settling time of 1mSec
Input Impedance	>1M ohm for Tc/V/RTD
Current Input Resistance	249 ohms +/- 1%
Open circuit detection time	5 seconds max. Open circuit detection is available for all configurations except +/-20mA current, 0-20mA current, and +/-10V voltage.
Max Overvoltage	+/-14.5VDC continuous
Max Overcurrent	28mA continuous
Normal Mode Noise Rejection	95 dB minimum @ 50/60 Hz with 8 Hz filter 85 dB minimum @ 50/60 Hz with 12 Hz filter
Common Mode Noise Rejection	120dB minimum @ 50/60 Hz with 8 Hz filter 110dB minimum @ 50/60 Hz with 12 Hz filter
Settling time to 5% of Full Scale (notch filter dependent)	<80mS
Calibrated Accuracy at 25°C	Better than 0.1% of range (except 10 ohm CU RTD) Accuracy depends on A/D filter, data format, input noise, and ambient temperature.
Calibration interval	12 months typical to meet accuracy specifications over time. Module will allow for user offset to be applied as a periodic calibration adjustment.
Input Offset Drift with Temperature	3.0 milliohm/°C maximum 2.0 uV/°C maximum
Gain Drift with Temperature	50 ppm/°C typical (90 ppm/°C maximum)
Module error over Full Temp range	0.5% of range typical (depends on range) 1.0% of range maximum
Module Scan Time (notch filter dependent)	(Assumes 2 ADC's running in parallel, no CJC or lead resistance) 10ms per Channel * 4 Channels = 40ms (1KHz filter) 127ms per Channel * 4 Channels = 508ms (8Hz filter) Channels that are disabled are not scanned, shortening scan time.
Module conversion method	Sigma-delta
Isolation Voltage channel to channel group to group terminal block to backplane/chassis	Opto-isolated, transformer isolated +-12.5Vdc channel to channel Tc/V/I/RTD 250 VAC continuous/1500 VAC for 60 seconds 250 VAC continuous/1500 VAC for 60 seconds