



Analog I/O Modules (Input)

GE offers easy-to-use analog modules and HART analog modules for control processes such as flow, temperature and pressure.

	IC695ALG608	IC695ALG616	IC695ALG628
Product Name	PACSystems RX3i Analog Input. Configurable per channel for Current or Voltage. High Density (8 Channel) Requires High Density Terminal Block (IC694TBB032 or IC694TBS032).	PACSystems RX3i Analog Input. Configurable per channel for Current or Voltage. High Density (16 Channel) Requires High Density Terminal Block (IC694TBB032 or IC694TBS032).	PACSystems RX3i Analog Input with HART Communications. Configurable per channel for Current or Voltage. High Density (8 Channel) Requires High Density Terminal Block (IC694TBB032 or IC694TBS032).
Lifecycle Status	Active	Active	Active
Module Type	Analog Input	Analog Input	Analog Input with HART Communications
Backplane Support	Universal Backplane Only. Uses PCI Bus.	Universal Backplane Only. Uses PCI Bus.	Universal Backplane Only. Uses PCI Bus.
Number of Slots Module Occupies on Backplane	1	1	1
Range	Current: 0 to 20 mA, 4 to 20 mA, ± 20 mA; Voltage: ± 10 V, 0 to 10 V, ± 5 V, 0 to 5 V, 1 to 5 V	Current: 0 to 20 mA, 4 to 20 mA, ± 20 mA; Voltage: ± 10 V, 0 to 10 V, ± 5 V, 0 to 5 V, 1 to 5 V	Current: 0 to 20 mA, 4 to 20 mA, ± 20 mA; Voltage: ± 10 V, 0 to 10 V, ± 5 V, 0 to 5 V, 1 to 5 V
HART Support	N/A	N/A	Get HART Device Information (Function 1) Simplified HART Pass-Thru Command (Function 2) Enterprise HART Pass-Thru Command (Function 3)
Channel-to-Channel Isolation	One Group of Eight	One Group of Sixteen	One Group of Eight
Number of Channels	8	16	8
Update Rate	All 8 Channels at 5 msec @ 500Hz. Performance is dependent on filtering.	All 16 Channels at 9 msec @ 500Hz. Performance is dependent on filtering.	All 8 Channels at 5 msec @ 500Hz. Performance is dependent on filtering and HART enabled channels could add 6 to 8 seconds.
Resolution	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format	Selectable per channel
Accuracy	Calibrated Accuracy @ 13°C – 33°C with 8 Hz, 12 Hz and 16 Hz filter; 0 to 10 V, ± 10 V input types: 10 mV0 to 5 V, 1 to 5 V, ± 5 V input types: 5 mV0 to 20 mA, 4 to 20 mA, ± 20 mA input types: 20 μ A	Calibrated Accuracy @ 13°C – 33°C with 8 Hz, 12 Hz and 16 Hz filter; 0 to 10 V, ± 10 V input types: 10 mV0 to 5 V, 1 to 5 V, ± 5 V input types: 5 mV0 to 20 mA, 4 to 20 mA, ± 20 mA input types: 20 μ A	Calibrated Accuracy @ 13°C – 33°C with 8 Hz, 12 Hz and 16 Hz filter; 0 to 10 V, ± 10 V input types: 10 mV0 to 5 V, 1 to 5 V, ± 5 V input types: 5 mV0 to 20 mA, 4 to 20 mA, ± 20 mA input types: 20 μ A
Input Impedance	Current 249 ohms $\pm 1\%$	Current 249 ohms $\pm 1\%$	Current 249 ohms $\pm 1\%$
Input Filter Response	Configurable: 8Hz, 12Hz, 16Hz, 40Hz, 200Hz, 500Hz	Configurable: 8Hz, 12Hz, 16Hz, 40Hz, 200Hz, 500Hz	Configurable: 8Hz, 12Hz, 16Hz, 40Hz, 200Hz, 500Hz
Notch Filter	Yes	Yes	Yes
Diagnostics	Open wire, short circuit, positive/negative rate of change, High, High-High, Low, Low-Low	Open wire, short circuit, positive/negative rate of change, High, High-High, Low, Low-Low	Open wire, short circuit, positive/negative rate of change, High, High-High, Low, Low-Low
Internal Power Used	450 mA @ 5 V; 600 mA @ 3.3 V	450 mA @ 5 V; 600 mA @ 3.3 V	450 mA @ 5 V; 600 mA @ 3.3 V
External Power Requirement	N/A	N/A	N/A
Connector Type	IC694TBBx32, IC694TBSx32 or IC694TBC032 Sold Separately.	IC694TBBx32, IC694TBSx32 or IC694TBC032 Sold Separately.	IC694TBBx32 or IC694TBSx32. Sold Separately.



Analog I/O Modules (Input)

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	IC695ALG626	IC695ALG106	IC695ALG112
Product Name	PACSystems RX3i Analog Input with HART Communications. Configurable per channel for Current or Voltage. High Density (16 Channel) Requires High Density Terminal Block (IC694TBB032 or IC694TBS032).	PACSystems RX3i Isolated Analog Input Configurable per channel for Current or Voltage. High Density (6 Isolated Channels) Requires High Density Terminal Block (IC694TBB032 or IC694TBS032).	PACSystems RX3i Isolated Analog Input. Configurable per channel for Current or Voltage. High Density (12 Isolated Channels) Requires High Density Terminal Block (IC694TBB032 or IC694TBS032).
Lifecycle Status	Active	Active	Active
Module Type	Analog Input with HART Communications	Analog Input with Channel to Channel Isolation	Analog Input with Channel to Channel Isolation
Backplane Support	Universal Backplane Only. Uses PCI Bus.	Universal Backplane Only. Uses PCI Bus.	Universal Backplane Only. Uses PCI Bus.
Number of Slots Module Occupies on Backplane	1	1	1
Range	Current: 0 to 20 mA, 4 to 20 mA, ± 20 mA; Voltage: ± 10 V, 0 to 10 V, ± 5 V, 0 to 5 V, 1 to 5 V	Current: 0 to 20 mA, 4 to 20 mA, ± 20 mA; Voltage: ± 10 V, 0 to 10 V, ± 5 V, 0 to 5 V, 1 to 5 V	Current: 0 to 20 mA, 4 to 20 mA, ± 20 mA; Voltage: ± 10 V, 0 to 10 V, ± 5 V, 0 to 5 V, 1 to 5 V
HART Support	Get HART Device Information (Function 1) Simplified HART Pass-Thru Command (Function 2) Enterprise HART Pass-Thru Command (Function 3)	N/A	N/A
Channel-to-Channel Isolation	One Group of Sixteen	Yes (250 VAC continuous, 1500 VAC for 1 minute per channel)	Yes (250 VAC continuous, 1500 VAC for 1 minute per channel)
Number of Channels	16	6	12
Update Rate	All 16 Channels at 9 msec @ 500Hz. Performance is dependent on filtering and HART enabled channels could add 6 to 8 seconds.	1 ms for all channels.	1 ms for all channels
Resolution	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format
Accuracy	Calibrated Accuracy @ 13°C – 33°C with 8 Hz, 12 Hz and 16 Hz filter; 0 to 10 V, ± 10 V input : types 10 mV0 to 5 V, 1 to 5 V, ± 5 V input types: 5 mV0 to 20 mA, 4 to 20 mA, ± 20 mA input types: 20 μ A	$\pm 0.1\%$ of span at 25°C, $\pm 0.25\%$ of span over operating temperature range	$\pm 0.1\%$ of span at 25°C, $\pm 0.25\%$ of span over operating temperature range
Input Impedance	Current 249 ohms $\pm 1\%$	Current = 250 ohms $\pm 1\%$, Voltage $\geq 500k$ Ohms	Current = 250 ohms $\pm 1\%$, Voltage $\geq 500k$ Ohms
Input Filter Response	Configurable: 8Hz, 12Hz, 16Hz, 40Hz, 200Hz, 500Hz	Configurable low-pass: 8Hz, 12Hz, 16Hz, 40Hz, 250Hz, and 1000Hz	Configurable: 8Hz, 12Hz, 16Hz, 40Hz, 250Hz, and 1000Hz
Notch Filter	Yes	N/A	N/A
Diagnostics	Open wire, short circuit, positive/negative rate of change, High, High-High, Low, Low-Low	Open wire, under range, over range, positive/negative rate of change, High, High-High, Low, Low-Low	Open wire, under range, over range, positive/negative rate of change, High, High-High, Low, Low-Low
Internal Power Used	450 mA @ 5 V; 600 mA @ 3.3 V	400 mA @ 5 V; 600 mA @ 3.3 V	800 mA @ 5 V; 600 mA @ 3.3 V
External Power Requirement	N/A	19.2 V to 30 VDC, Current required: 500 mA	19.2 V to 30 VDC, Current required: 500 mA
Connector Type	IC694TBBx32 or IC694TBSx32. Sold Separately.	IC694TBBx32 or IC694TBSx32. Sold Separately.	IC694TBBx32 or IC694TBSx32. Sold Separately.



Analog I/O Modules (Input)

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	IC694ALG220	IC694ALG221	IC694ALG222	IC694ALG223
Product Name	PACSystems RX3i Analog Input, Voltage, 4 Channel	PACSystems RX3i Analog Input, Current, 4 Channel	PACSystems RX3i Analog Input, Voltage, High Density (16 Channel)	PACSystems RX3i Analog Input, Current, High Density (16 Channel)
Lifecycle Status	Active	Active	Active	Active
Module Type	Analog Input	Analog Input	Analog Input	Analog Input
Backplane Support	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1	1	1
Range	-10 V to +10 V	4-20 mA, 0-20 mA	-10 V to ± 10 V, 0 to 10 V	0-20 mA, 4-20 mA
HART Support	N/A	N/A	N/A	N/A
Channel-to-Channel Isolation	N/A	N/A	N/A	N/A
Number of Channels	4	4	1	16
Update Rate	4 ms all channels	2 ms all channels	13 ms all channels	13 ms all Channels
Resolution	12 bit; 5 mV/20 μ A/bit	12 bit; 0-20 mA, 5 μ A/bit; 4-20 mA, 4 μ A/bit	12 bit; ± 10 V, 5 mV/20 μ A/bit; 0-10 V, 5 mV/20 μ A/bit	12 bit; 0-20 mA, 5 μ A/bit; 4-20 mA, 4 μ A/bit; 4-20 mA Enhanced, 5 μ A/bit
Accuracy	± 10 mV/40 μ A at 25°C (77°F)	0.1 % full scale	0.25% at 25°C (77°F)	0.25% at 25°C (77°F)
Input Impedance	>9 Megohms	250 ohms	250 ohms	250 ohms
Input Filter Response	17 Hz	325 Hz	200 Hz	200 Hz
Notch Filter	N/A	N/A	N/A	N/A
Diagnostics	N/A	N/A	N/A	N/A
Internal Power Used	27 mA @ 5 VDC; 98 mA @ 24 VDC Isolated	25 mA @ 5 VDC; 100 mA @ 24 VDC Isolated	112 mA @ 5 VDC; 4150 mA- User Supplied 24 VDC	120 mA @ 5 VDC; 65 mA-User Supplied 24 VDC
External Power Requirement	N/A	N/A	N/A	N/A
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.



Analog I/O Modules (Input)

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	HE693ADC410	HE693ADC420
Product Name	Isolated Analog Input Module, Voltage, 1500 VAC, Isolation	Isolated Analog Input Module, Current, 1500 VAC, Isolation
Lifecycle Status	Active	Active
Module Type	Analog Input	Analog Input
Backplane Support	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1
Range	± 10 V	4-20 mA, ± 20 mA
Number of Channels	4	4
Channel-to-Channel Isolation	1500 VAC (RMS), ± 2000 VDC	1500 VAC (RMS), ± 2000 VDC
Input Impedance	1 Megohm	100 ohms
A/D Type, Resolution	Integrating, 18 bits	Integrating, 18 bits
Useable Resolution	13 bits plus sign	13 bits plus sign
I/O Required	4 %AI, 4 %AQ, 16 %I	8 %AI, 8 %AQ, 16 %I
Sample Rate	45 channels/second	45 channels/second
Analog Filtering	1 KHz, 3 pole Bessel	1 KHz, 3 pole Bessel
Digital Filtering	1-128 samples/update	1-128 samples/update
Maximum Error	.05% full scale	.05% full scale
Common Mode Range	1500 VAC (RMS), ± 2000 VDC	1500 VAC (RMS), ± 2000 VDC
Common Mode Rejection	>100 dB	>100 dB
Power Consumption at Steady State, Maximum	.7 W @ 5 V, 1.2 W @ 24 V	.7 W @ 5 V, 1.2 W @ 24 V
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
External Power Requirement	N/A	N/A
Internal Power Used	140 mA @ 5 VDC; 50 mA @ 24 VDC Relay	140 mA @ 5 VDC; 50 mA @ 24 VDC Relay



Discrete I/O Modules (Output)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC694MDL310	IC694MDL330	IC694MDL340	IC694MDL390
Product Name	PACSystems RX3i AC Voltage Output Module, 120 VAC, 0.5A, 12 Point Output	PACSystems RX3i AC Voltage Output Module, 120/240 VAC, 1A, 8 Point Output	PACSystems RX3i AC Voltage Output Module, 120 VAC, 0.5A, 16 Point Output	PACSystems RX3i AC Voltage Output Module, 120/240 VAC Isolated, 2A, 5 Point Output
Lifecycle Status	Active	Active	Active	Active
Module Type	Discrete Output	Discrete Output	Discrete Output	Discrete Output
Backplane Support	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1	1	1
Output Voltage Range	85-132 VAC	85-264 VAC	85-132 VAC	85-264 VAC
Number of Points	12	8	16	5
Isolation	N/A	N/A	N/A	Yes
	N/A	N/A	N/A	N/A
Diagnostics				
Load Current per Point	0.5 A	1 A	0.5 A	2:00 AM
Response Time (ms)	1 on 1/2 cy off	1 on 1/2 cy off	1 on 1/2 cy off	1 on 1/2 cy off
Output Type	Triac	Triac	Triac	Triac
Polarity	N/A	N/A	N/A	N/A
Points per Common	6	4	4	1
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	210 mA @ 5 VDC	160 mA @ 5 VDC	315 mA @ 5 VDC	110 mA @ 5 VDC



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	IC694MDL350	IC694MDL732	IC694MDL734	IC694MDL740
Product Name	PACSystems RX3i AC Voltage Output Module, 120/240 VAC Isolated, 2A, 16 Point Output	PACSystems RX3i DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5A, 8 Point Output	PACSystems RX3i DC Voltage Output Module, 125 VDC Pos/Neg Logic, 6 Point Output	PACSystems RX3i DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5A, 16 Point Output
Lifecycle Status	Active	Active	Active	Active
Module Type	Discrete Output	Discrete Output	Discrete Output	Discrete Output
Backplane Support	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1	1	1
Output Voltage Range	74-264 VAC	12-24 VDC	11-150 VDC	12-24 VDC
Number of Points	16	8	6	16
Isolation	Yes	N/A	N/A	N/A
	N/A	N/A	N/A	N/A
Diagnostics				
Load Current per Point	Per Point 2A max. @ 30°C & 1A max. @ 60°C (Linear derating)	0.5 A	1 A	0.5 A
Response Time (ms)	1 on 1/2 cy off	2 on/2 off	7 on/5 off	2 on/2 off
Output Type	Triac	Transistor	Transistor	Transistor
Polarity	N/A	Positive	Positive/Negative	Positive
Points per Common	1	8	1	8
Connector Type	IC694TBBx32 or IC694TBSx32. Sold Separately.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	110 mA @ 5 VDC	50 mA @ 5 VDC	90 mA @ 5 VDC	110 mA @ 5 VDC



Discrete I/O Modules (Output)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC694MDL741	IC694MDL742	IC694MDL752	IC694MDL753
Product Name	PACSystems RX3i DC Voltage Output Module, 12/24 VDC Negative Logic, 0.5A, 16 Point Output	PACSystems RX3i DC Voltage Output Module, 12/24 VDC Positive Logic ESCP, 1A, 16 Point Output	PACSystems RX3i DC Voltage Output Module, 5/24 VDC (TTL) Negative Logic, 0.5A, 32 Point Output	PACSystems RX3i DC Voltage Output Module, 12/24 VDC Positive Logic, 0.5A, 32 Point Output
Lifecycle Status	Active	Active	Active	Active
Module Type	Discrete Output	Discrete Output	Discrete Output	Discrete Output
Backplane Support	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1	1	1
Output Voltage Range	12-24 VDC	12-24 VDC	5, 12-24 VDC	12-24 VDC
Number of Points	16	16	32	32
Isolation	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A
Diagnostics				
Load Current per Point	0.5 A	1 A	0.5 A	0.5 A
Response Time (ms)	2 on/2 off	2 on/2 off	0.5 on/0.5 off	0.5 on/0.5 off
Output Type	Transistor	Transistor	Transistor	Transistor
Polarity	Negative	Positive	Negative	Positive
Points per Common	8	8	8	8
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Fujitsu Connector	Fujitsu Connector
Internal Power Used	110 mA @ 5 VDC	130 mA @ 5 VDC	260 mA @ 5 VDC	260 mA @ 5 VDC



Discrete I/O Modules (Output)

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	IC694MDL754	IC695MDL765	IC694MDL930	IC694MDL916	IC694MDL931
Product Name	PACSystems RX3i DC Voltage Output Module, 12/24 VDC Positive Logic with ESCP (Self Healing), 0.75A, 32 Point Output	RX3i DC Voltage Output Module, 24/125 volt DC 2A Smart Digital Output module, 16 Point Output	PACSystems RX3i AC/DC Voltage Output Module, Relay, N.O., 4A Isolated, 8 Point Output	PACSystems RX3i AC/DC Voltage Output Module, Relay, N.O., 4A Isolated, 16 Point Output	PACSystems RX3i AC/DC Voltage Output Module, Relay, N.C. and Form C, 8A Isolated, 8 Point Output
Lifecycle Status	Active	Active	Active	Active	Active
Module Type	Discrete Output	Discrete Output	Discrete Output	Discrete Output	Discrete Output
Backplane Support	No Backplane Restrictions	Universal Backplane Only. Uses PCI Bus.	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1	1	1	1
Output Voltage Range	12-24 VDC	18 to 30VDC 105 to 132 VDC	0 to 125 VDC, 5/24/125 VDC nominal 0 to 265 VAC (47 to 63 Hz), 120/240 VAC nominal	5 to 125 VDC 5/24/125 VDC nominal 5 to 250 VAC (47 to 63 Hz), 120/240 VAC nominal	0 to 125 VDC, 5/24/125 VDC nominal 0 to 265 VAC (47 to 63 Hz), 120/240 VAC nominal
Number of Points	32	16	8	16	8
Isolation	N/A	N/A	Yes	Yes	Yes
Diagnostics	Short Circuit Detection	• Output Pulse Test • Over temperature • Failed Switch Detection • Overload Detection and Shutdown • No-load Detection	N/A	N/A	N/A
Load Current per Point	0.75 A	2 A	2 A	4 A	8 A
Response Time (ms)	0.5 on/0.5 off	1 msec maximum	15 on/15 off	10ms maximum (At nominal voltage excluding contact bounce)	15 on/15 off
Output Type	Transistor	Transistor	Relay	Relay	Relay
Polarity	Positive	Positive	N/A	N/A	N/A
Points per Common	16	16	1	1	1
Connector Type	IC694TBBx32 or IC694TBSx32. Sold Separately.	IC694TBBx32 or IC694TBSx32. Sold Separately.	Terminal Block (20 screws), included with module.	IC694TBBx32 or IC694TBSx32. Sold Separately.	Terminal Block (20 screws), included with module.
Internal Power Used	300 mA @ 5 VDC	540 mA @ 5.1 VDC; 152 mA @ 3.3 VDC	6 mA @ 5 VDC; 70 mA @ 24 VDC Relay	300 mA @ 5 VDC from backplane maximum (all outputs ON)	6 mA @ 5 VDC; 110 mA @ 24 VDC Relay



Discrete I/O Modules (Output)

Input modules provide the interface between the PLC and external input devices such as proximity sensors, push buttons, switches, and BCD thumbwheels. Output modules provide the interface between the PLC and external output devices such as contactors, interposing relays, BCD displays and indicator lamps. GE offers a variety of modules that support different voltage ranges and types, current capacity, isolation and response time to meet your application needs.

	IC694MDL940	HE693RLY100	HE693RLY110
Product Name	PACSystems RX3i AC/DC Voltage Output Module, Relay, N.O., 2A, 16 Point Output	DC/AC Voltage Relay Output Module High Current	DC/AC Voltage Relay Output Module High Current (fused)
Lifecycle Status	Active	Active	Active
Module Type	Discrete Output	Discrete Output	Discrete Output
Backplane Support	No Backplane Restrictions	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1	1
Output Voltage Range	0 to 125 VDC, 5/24/125 VDC nominal 0 to 265 VAC (47 to 63 Hz), 120/240 VAC nominal	12-120 VAC, 12-30 VDC	12-120 VAC, 12-30 VDC
Number of Points	16	8	8
Isolation	N/A	N/A	Yes
	N/A	N/A	N/A
Diagnostics			
Load Current per Point	2 A	8 A	8 A
Response Time (ms)	15 on/15 off	11 on/11 off	11 on/11 off
Output Type	Relay	Relay	Relay
Polarity	N/A	N/A	N/A
Points per Common	4	N/A	1
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	7 mA @ 5 VDC; 135 mA @ 24 VDC Relay	180 mA @ 5 VDC; 200 mA @ 24 VDC Relay	180 mA @ 5 VDC; 200 mA @ 24 VDC Relay



Analog I/O Modules (Output)

GE offers easy-to-use analog modules for control processes such as flow, temperature and pressure.

	IC694ALG392	IC695ALG704
Product Name	PACSystems RX3i Analog Output, Current/Voltage, 8 Channel	PACSystems RX3i Analog Output, Current/Voltage, 4 Channel
Lifecycle Status	Active	Active
Module Type	Analog Output	Analog Output
Backplane Support	No Backplane Restrictions	Universal Backplane Only. Uses PCI Bus.
Number of Slots Module Occupies on Backplane	1	1
Diagnostics	N/A	High and Low Alarm, Ramp Rate Control Clamping, Overrange and Underrange
Protection	Reverse polarity and undervoltage on external power supply	N/A
Range	0 V to +10 V, -10 V to +10 V, 0-20 mA, 4-20 mA	Current: 0 to 20 mA, 4 to 20 mA; Voltage: ± 10 V, 0 to 10 V
HART Support	N/A	N/A
Number of Channels	8	4
Channel-to-Channel Isolation	N/A	N/A
Update Rate	8 ms all channels	8 ms all channels
Resolution	16 bit; 0.312 mV/bit	± 10 V: 15.9 bits; 0 to 10 V: 14.9 bits; 0 to 20 mA: 15.9 bits; 4 to 20 mA: 15.6 bits
Accuracy	0-20 mA, 4-20 mA $\pm 0.1\%$ at 25°C (77°F); 0-10 V, -10F + 10 V ± 0.25 at 25°C (77°F)	Accurate to within 0.15% of full scale at 25°C. Accurate to within 0.30% of full scale at 60°C
Maximum Output Load	5 mA (2 K ohms)	Current -850ohm max @ Vuser = 20 V; Voltage -2k ohm max load (minimum resistance)
Output Load Capacitance	2000 pF, Inductance 1H	Current: 10uH max.; Voltage: 1uF max.
External Power Requirement	N/A	Voltage Range: 19.2 V to 30 V Current required: 160 mA
Connector Type	Terminal Block (20 screws), included with module.	IC694TBB032 or IC694TBS032. Sold Separately.
Internal Power Used	110 mA @ 5 VDC; 315 mA -User Supplied 24 VDC	375 mA @3.3 V (internal) 160 mA @24 V (external)



Analog I/O Modules (Output)

GE offers easy-to-use analog modules for control processes such as flow, temperature and pressure.

	IC695ALG708	IC695ALG728
Product Name	PACSystems RX3i Analog Output, Current/Voltage, 8 Channel	PACSystems RX3i Analog Output with HART Communications, Current/Voltage, 8 Channel
Lifecycle Status	Active	Active
Module Type	Analog Output	Analog Output with HART Communications
Backplane Support	Universal Backplane Only. Uses PCI Bus.	Universal Backplane Only. Uses PCI Bus.
Number of Slots Module Occupies on Backplane	1	1
Diagnostics	High and Low Alarm, Ramp Rate Control Clamping, Overrange and Underrange	High and Low Alarm, Ramp Rate Control, Clamping, Overrange and Underrange
Protection	N/A	N/A
Range	Current: 0 to 20 mA, 4 to 20 mA; Voltage: ± 10 V, 0 to 10 V	Current: 0 to 20 mA, 4 to 20 mA; Voltage: ± 10 V, 0 to 10 V
HART Support	N/A	-Get HART Device Information (Function 1) Simplified HART Pass-Thru Command (Function 2) -Enterprise HART Pass-Thru Command (Function 3)
Number of Channels	8	8
Channel-to-Channel Isolation	N/A	N/A
Update Rate	8 ms all channels	8 ms all channels and HART enabled channels could add 6 to 8 seconds.
Resolution	10 V: 15.9 bits; 0 to 10 V: 14.9 bits; 0 to 20 mA: 15.9 bits; 4 to 20 mA: 15.6 bits	± 10 V: 15.9 bits; 0 to 10 V: 14.9 bits; 0 to 20 mA: 15.9 bits; 4 to 20 mA: 15.6 bits
Accuracy	Accurate to within 0.15% of full scale at 25°C. Accurate to within 0.30% of full scale at 60°C	Accurate to within 0.15% of full scale at 25°C. Accurate to within 0.30% of full scale at 60°C
Maximum Output Load	Current -850ohm max @ Vuser = 20 V; Voltage -2k ohm max load (minimum resistance)	Current -850ohm max @ Vuser = 20 V; Voltage -2k ohm max load (minimum resistance)
Output Load Capacitance	Current: 10uH max.; Voltage: 1uF max.	Current: 10uH max.; Voltage: 1uF max.
External Power Requirement	Voltage Range: 19.2 V to 30 V Current required: 315 mA	Voltage Range: 19.2 V to 30 V Current required: 315 mA
Connector Type	IC694TB8032 or IC694TBS032. Sold Separately	IC694TB8032 or IC694TBS032. Sold Separately.
Internal Power Used	375 mA @3.3 V (internal) 315 mA @24 V (external)	375 mA @3.3 V (internal) 315 mA @24 V (external)



Analog I/O Modules (Output)

GE offers easy-to-use analog modules for control processes such as flow, temperature and pressure.

	IC695ALG808	IC694ALG390	IC694ALG391
Product Name	PACSystems RX3i Isolated Analog Output, Current/Voltage, 8 Isolated Channels	PACSystems RX3i Analog Output, Voltage, 2 Channel	PACSystems RX3i Analog Output, Current, 2 Channel
Lifecycle Status	Active	Active	Active
Module Type	Analog Output with Channel to Channel Isolation	Analog Output	Analog Output
Backplane Support	Universal Backplane Only. Uses PCI Bus.	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1	1
Diagnostics	High and Low Alarm, Ramp Rate Control, Clamping, Overrange and Underrange	N/A	N/A
Protection	N/A	N/A	N/A
Range	Current: 0 to 20 mA, 4 to 20 mA; Voltage: ± 10 V, 0 to 10 V	-10 V to +10 V, 4-20 mA	1-5 V and 0-5 V, 0-20 mA, 4-20 mA
HART Support	N/A	N/A	N/A
Number of Channels	8	2	2
Channel-to-Channel Isolation	Yes (250 VAC continuous, 1500 VAC for 1 minute per channel)	N/A	N/A
Update Rate	8 ms all channels (1 msec per channel)	5 ms all channels	5 ms all channels
Resolution	± 10 V @ 15.9 bits minimum 0 to 10 V @ 14.9 bits minimum 0 to 20 mA @ 15.9 bits minimum 4 to 20 mA @ 15.6 bits minimum	12 bit; 2.5 mV/bit	12 bit; 0-20 mA, 5 μ A/bit
Accuracy	Accurate to within $\pm 0.1\%$ of span at 25C, $\pm 0.25\%$ of span over operating temperature range	± 5 mV at 25°C (77°F)	0-20 mA, ± 8 μ A at 25°C (77°F); 0-20 mA, 4-20 mA $\pm 0.1\%$ at 25°C (77°F)
Maximum Output Load	Current: 1350 ohm maximum resistance, 10uH max inductance Voltage: 2k Ohm minimum resistance, 1uF max capacitance	5 mA (2 K ohms)	5 mA (2 K ohms)
Output Load Capacitance	Current: 10uH max.; Voltage: 1uF max.	2000 pF	2000 pF, Inductance 1H
External Power Requirement	500 mA @ 24 VDC	N/A	N/A
Connector Type	IC694TBBx32 or IC694TBSx32 Sold Separately.	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	450 mA @ 3.3 V Maximum, all channels on	32 mA @ 5 VDC; 120 mA @ 24 VDC Isolated	30 mA @ 5 VDC; 215 mA 24 VDC Isolated



Analog I/O Modules (Output)

GE offers easy-to-use analog modules for control processes such as flow, temperature and pressure.

	HE693DAC410	HE693DAC420
Product Name	Isolated Analog Output Module, Voltage	Isolated Analog Output Module, Current
Lifecycle Status	Active	Active
Module Type	Analog Output	Analog Output
Backplane Support	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1
Diagnostics	N/A	N/A
Protection	N/A	N/A
Range	±10 V	4-20 mA or 0-20 mA
HART Support	N/A	N/A
Number of Channels	4	4
Channel-to-Channel Isolation	1500 VAC (RMS), ±2000 VDC	1500 VAC (RMS), ±2000 VDC
Update Rate	N/A	N/A
Resolution	1.2 5 mV	2.0 µA (4-20 mA); 2.5 µA (±20 mA)
Accuracy	N/A	N/A
Maximum Output Load	N/A	N/A
Output Load Capacitance	N/A	N/A
External Power Requirement	N/A	2-32 VDC
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.
Internal Power Used	500 mA @ 5 VDC; 150 mA @ 24 VDC Relay	150 mA @ 5 VDC; 110 mA @ 24 VDC Relay



Analog Mixed I/O Modules (Input and Output)

The analog mixed modules (four in and two out) are available with or without advanced diagnostics. The advanced diagnostics includes alarms, open wire, rate of change, over range and under range. Additional features include 16 bit resolution, analog output clamp limits and output ramp mode option.

	IC694ALG542	IC694ALG442
Lifecycle Status	Active	Active
Module Type	Analog Combination 4 In and 2 Out with Advanced Diagnostics, Output Clamp and Ramp Control	Analog Combination 4 In and 2 Out
Backplane Support	No Backplane Restrictions	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1
Range	0 V to +10 V, -10 V to +10 V, 0-20 mA, 4-20 mA per Channel	0 V to +10 V, -10 V to +10 V, 0-20 mA, 4-20 mA per Channel
Channel-to-Channel Isolation	N/A	N/A
Number of Channels	4 in/2 out	4 in/2 out
Update Rate	2ms all channels	2ms all channels
Resolution	(Input)16 bit; 0 V to 10 V, 0.3125 mV/bit; -10 V to +10 V, 0.3125 mV/bit; 0-20 mA, 0.625 μ A 4-20 mA 0.5 μ A/bit (Output) 16 bit; 0 to 20 mA: 0.625 μ A; 4 to 20 mA: 0.5 μ A; -10 V to +10 V: 0.3125 mV; 0 to +10 V: 0.3125 mV	(Input)12 bit; 0 V to 10 V, 2.5 mV/bit; -10 V to +10 V, 5 mV/bit; 0-20 mA, 4-20 mA 5 $\times$ 0181A/bit (Output) 16 bit; 0.312 mV/bit; 4-20 mA 0.5 $\times$ 0181A/bit; 0-20 mA 0.625 $\times$ 0181A/bit
Accuracy	Current Input 0 to 20mA $\pm$ 0.25% of full scale @25°C (77°F); $\pm$ 0.5% of full scale over specified operating temperature range Current Input 4 to 20mA $\pm$ 0.25% of full scale @25°C (77°F); $\pm$ 0.5% of full scale over specified operating temperature range 4 to 20ma Enhanced Mode $\pm$ 0.25% of full scale @25°C (77°F); $\pm$ 0.5% of full scale over specified operating temperature range Current Output $\pm$ 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) Voltage Output $\pm$ 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)	(Input) 0.25 $\times$ 37; at 25 $\times$ 0176C (77 $\times$ 0176F) (Output) 0-20 mA, 4-20 mA $\pm$ 0.1 $\times$ 37; at 25 $\times$ 0176C (77 $\times$ 0176F)
Input Impedence	Current mode - 250 ohms Voltage mode - 800 K ohms	Current mode - 250 ohms Voltage mode - 800 K ohms"
Input Filter Response	Current mode - 55 Hz Voltage mode - 55 Hz	Current mode - 38 Hz Voltage mode - 38 Hz
Maximum Output Load	Voltage: 5 mA (2 K ohms) Current Inductance:1 H (maximum)	Voltage: 5 mA (2 K ohms) Current Inductance:1 H (maximum) "
Output Load Capacitance	Voltage:1 μ F (maximum) Current: 2000 pF (maximum)	Voltage:1 μ F (maximum) Current: 2000 pF (maximum)"
Diagnostics	Under Range/Over Range, Open Wire, Short Circuit, Positive/Negative Rate of Change, High, High-High, Low, Low-Low	N/A
Internal Power Used	95 mA $\times$ 64; 5 VDC; 150 mA external 24 VDC Isolated	95 mA $\times$ 64; 5 VDC; 150 mA external 24 VDC Isolated
External Power Requirement	24VDC: Current: 5 μ A/V (typical), 10 μ A/V (maximum) Voltage: 25 mV/V (typical), 50 mV/V (maximum)	24VDC: Current: 5 μ A/V (typical), 10 μ A/V (maximum) Voltage: 25 mV/V (typical), 50 mV/V (maximum)
Connector Type	Terminal Block (20 screws), included with module.	Terminal Block (20 screws), included with module.



Millivolt I/O Modules

The Millivolt Input Modules allow Millivolt level signals, such as bridged strain gages (load cells) to be directly connected to the PLC without external signal processing (transducers, transmitters, etc.) All analog and digital processing of the signal is performed on the module.

	IC695ALG600 Millivolt	IC695ALG306 Millivolt
Product Name	Universal Analog and configurable for Current, Voltage, RTD, Thermocouple and Resistive. High Density (8 Channel) Requires Cold Junction Compensation; are available for Thermocouple configurations (IC695ACC600 contains 2 CJs)	Isolated Thermocouple Input module provides six isolated differential thermocouple input channels. Each channel can be individually configured for inputs from: Thermocouple types: J, K, T, E, R, S, B, N, or C and Voltage: $\pm 150\text{mV}$ or $\pm 50\text{mV}$.
Lifecycle Status	Active	Active
Module Type	Millivolt Input	Strain Gage Input
Backplane Support	Universal Backplane Only. Uses PCI Bus.	Universal Backplane Only. Uses PCI Bus.
Number of Slots Module Occupies on Backplane	1	1
Range	$\pm 150\text{mV}$ or $\pm 50\text{mV}$	$\pm 150\text{mV}$ or $\pm 50\text{mV}$
Diagnostics	Open wire, Short Circuit, Positive/Negative Rate of Change, High, High-High, Low, Low-Low	Open wire, Short Circuit, Positive/Negative Rate of Change, High, High-High, Low, Low-Low
Channel-to-Channel Isolation	Two Groups of Four	250 VAC Continuous 1500 VAC 1 minute 2550 VDC 1 second
Number of Channels	8	6
Notch Filter	Yes	From 2.3 Hz to 28 Hz per channel
Resolution	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format)	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format)
Accuracy	Calibrated Accuracy at 25°C. Better than 0.1% of range. Accuracy depends on A/D filter, data format, input noise, and ambient temperature.	$\pm 0.1\%$ of voltage span at 25°C. $\pm 0.25\%$ of span over temperature range.
Input Impedance	$> 1\text{M ohm}$	Voltage: $\geq 500\text{k ohm}$
I/O Required	N/A	N/A
A/D Conversion Type	Sigma Delta	Sigma Delta
A/D Conversion Time	(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.	15 msec @ 28 Hz to 120 msec @ 2.3 Hz
Strain Gages Supported	Yes	Yes
Maximum Normal Voltage Input	N/A	N/A
Maximum Voltage Input	$\pm 14.5\text{ VDC continuous}$	N/A
Connector Type	IC694TBBx32, IC694TBSx32 or IC694TBC032. Sold Separately.	IC694TBBx32, IC694TBSx32 or IC694TBC032. Sold Separately.
Internal Power Used	400 mA @ 5 V; 350 mA @ 3.3 V	150 mA @ 5V; 400 mA @ 3.3V



Millivolt I/O Modules

The Millivolt Input Modules allow Millivolt level signals, such as bridged strain gages (load cells) to be directly connected to the PLC without external signal processing (transducers, transmitters, etc.) All analog and digital processing of the signal is performed on the module.

	IC695ALG312 Millivolt	HE693ADC409
Product Name	Isolated Thermocouple Input module provides twelve isolated differential thermocouple input channels. Each channel can be individually configured for inputs from: Thermocouple types: J, K, T, E, R, S, B, N, or C and Voltage: $\pm 150\text{mV}$ or $\pm 50\text{mV}$.	Analog I/O Module, Millivolt Input
Lifecycle Status	Active	Active
Module Type	Strain Gage Input	Millivolt Input
Backplane Support	Universal Backplane Only. Uses PCI Bus.	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1
Range	$\pm 150\text{mV}$ or $\pm 50\text{mV}$	$\pm 25\text{ mV}$, $\pm 50\text{ mV}$ and $\pm 100\text{ mV}$
Diagnostics	Open wire, Short Circuit, Positive/Negative Rate of Change, High, High-High, Low, Low-Low	N/A
Channel-to-Channel Isolation	250 VAC Continuous 1500 VAC 1 minute 2550 VDC 1 second	N/A
Number of Channels	12	4
Notch Filter	From 2.3 Hz to 28 Hz per channel	N/A
Resolution	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format	3 μV , 6 μV , 9 μV (respectively)
Accuracy	$\pm 0.1\%$ of voltage span at 25°C $\pm 0.25\%$ of span over temperature range.	$\pm 0.5\%$
Input Impedance	Voltage: $\geq 500\text{k ohm}$	$> 20\text{ Mohms}$
I/O Required	N/A	4% AI
A/D Conversion Type	Sigma Delta	Integrating
A/D Conversion Time	15 msec @ 28 Hz to 120 msec @ 2.3 Hz	35 Channels/second
Strain Gages Supported	Yes	Bridged (load cells)
Maximum Normal Voltage Input	N/A	100 mV
Maximum Voltage Input	N/A	$\pm 35\text{ V}$
Connector Type	IC694TBBx32, IC694TBSx32 or IC694TBC032. Sold Separately.	Terminal Block (20 screws), included with module.
Internal Power Used	300 mA @ 5V; 400 mA @ 3.3V	100 mA @ 5 VDC



RTD I/O Modules

The RTD Input Modules provide RTD inputs that allow the direct connection of 2 and 3-wire RTD temperature sensors without using external signal processing (transducers, transmitters, etc.). All analog and digital processing of the RTD signal is performed on the module.

	IC695ALG600 RTD	IC695ALG508 RTD	HE693RTD600
Product Name	Universal Analog and configurable for Current, Voltage, RTD, Thermocouple and Resistive. High Density (8 Channel) Requires Cold Junction Compensation; are available for Thermocouple configurations (IC695ACC600 contains 2 CJs)	Isolated RTD Input module (also supports Resistive) provides eight isolated differential Resistive or RTD input channels. Each channel can be individually configured for 2, 3, 4 wire RTD or Resistance.	RTD Input Module, Low Resolution
Lifecycle Status	Active	Active	Active
Module Type	RTD Input	RTD (and Resistive) Input Channel to Channel Isolation	RTD Input
Backplane Support	Universal Backplane Only. Uses PCI Bus.	Universal Backplane Only. Uses PCI Bus.	No Backplane Restrictions
Number of Slots Module Occupies on Backplane	1	1	1
Number of Channels	8	8	6
RTD Types Supported	2 and 3 wire PT 385 / 3916, N 618 / 672, NiFe 518, CU 426	2, 3 and 4 wire 50, 100, 200, 500, and 1000 ohm Pt 385; 50, 100, 200, 500, and 1000 ohm Pt 391.6; 100, 200, 500, and 1000 ohm Ni 618; 120 ohm Ni 672; 604 ohm NiFe 518; 10, 50 and 100 ohm Cu 426	3-wire, Pt-100E, Pt-100C, Pt-100Z, Pt-1000, Cu-10, Cu-50, PT-100, Cu-53, Cu-100, Ni-120, TD5R, TD5R, Pt-90 (MIL-7990)
Diagnostics	Open wire, short circuit, positive/negative rate of change, High, High-High, Low, Low-Low	Open wire, short circuit, positive/negative rate of change, High, High-High, Low, Low-Low	N/A
Channel-to-Channel Isolation	Two Groups of Four	250 VAC Continuous 1500 VAC 1 minute 2550 VDC 1 second	N/A
Notch Filter	Yes	N/A	N/A
Resolution	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format	32-bit IEEE floating point or 16-bit integer (in 32-bit field) input data format	0.5°C or 0.5°F
Accuracy	Calibrated Accuracy at 25°C. Better than 0.1% of range. Accuracy depends on A/D filter, data format, input noise, and ambient temperature.	Calibrated Accuracy at 25°C. Typical is ±0.5%	±0.5°C, typical
Input Impedance	>1M ohm	N/A	>1000 Megohms
I/O Required	N/A	N/A	6 %AI
Fault Protection	N/A	N/A	Zener Diode Clamp
Update Time	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.	15 msec @ 28 Hz to 120 msec @ 2.3 Hz	50 Channels/second
A/D Conversion Type	Sigma Delta	Sigma Delta	18 bit, integrating
Connector Type	IC694TBBx32, IC694TBSx32 or IC694TBC032. Sold Separately.	IC694TBBx32, IC694TBSx32 or IC694TBC032. Sold Separately.	Terminal Block (20 screws), included with module.
Internal Power Used	400 mA @ 5 V; 350 mA @ 3.3 V	150 mA @ 5V; 300 mA @ 3.3V	70 mA @ 5 VDC