GE Fanuc IC694APU300

Rx3i PacSystem

High speed counter module 200KHZ A B and C type. IC694A IC694AP IC694APU

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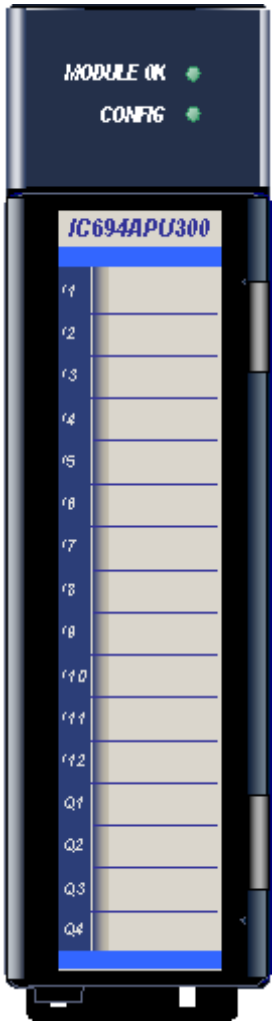
High-speed Counter Module: IC694APU300



The High-speed Counter module, IC694APU300, provides direct processing of rapid pulse signals up to 80 kHz. The module senses inputs, processes the input count information, and controls the outputs without needing to communicate with a CPU.

The High Speed Counter uses 16 bits of discrete input memory (%I), 15 words of analog input memory (%AI), and 16 bits of discrete output memory (%Q) in the CPU. The High-speed Counter can be configured to have:

- 4 identical, independent simple counters
- 2 identical, independent more complex counters
- 1 complex counter

Two green LEDs indicate the operating status of the module and the status of configuration parameters. Additional module features include:

- 12 positive logic (source) inputs with input voltage range selection of either 5 VDC or 10 to 30 VDC
- 4 positive logic (source) outputs
- Counts per timebase register for each counter
- Internal module diagnostics
- A removable terminal board for field wiring

Inputs can be used as count signals, direction, disable, edge-sensitive strobe, and preload inputs depending on the counter type selected by the user. Outputs can be used to drive indicating lights, solenoids, relays, and other devices.

Power for the module is drawn from the backplane's 5VDC bus. Power sources for input and output devices must be supplied by the user or by the +24 VDC Isolated output of the power supply. The module also provides a selectable threshold voltage to allow the inputs to respond to either 5VDC signal levels or 10 to 30VDC signal levels.

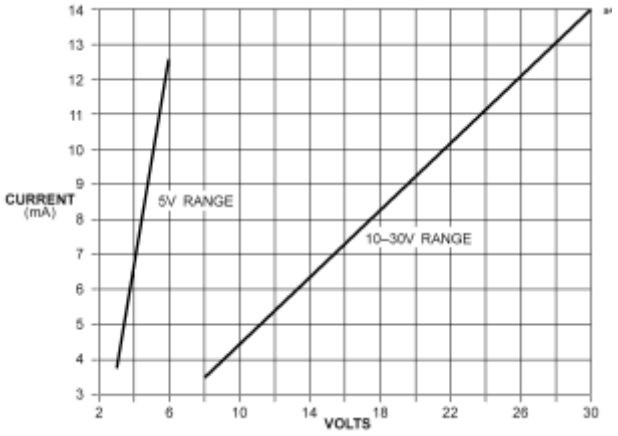
The blue bands on the label show that APU300 is a low-voltage module. This module can be installed in any I/O slot in an RX3i system.

Specifications: APU300

Inputs		
Voltage Range	5VDC (TSEL jumpered to INCOM) 10 to 30 VDC (TSEL open)	
Positive Logic Inputs	12	
Input Thresholds (I1 to I12)	5VDC Range	10 to 30VDC Range
Von	3.25V Range	8.0V minimum
Ion	3.2mA minimum	3.2mA minimum
Voff	1.5V maximum	2.4V maximum
Ioff	0.8mA maximum	0.8mA maximum
Survivable Peak Voltage	± 500V for 1mSec	
Transient Common Mode Noise Rejection	1000 volts per mSec minimum	
Input Impedance	See below	
Outputs		
Voltage Range	10 to 30VDC @ 500mA maximum	
Voltage Range	4.75 to 6VDC @ 20mA maximum	
Off State Leakage Current	10mA maximum per point	
Output Voltage Drop at 500 mA	0.5V maximum	
CMOS Load Drive Capability	Yes	
Positive Logic Outputs	4	
Output protection	Outputs are short circuit protected by a 3A pico fuse common to all 4 outputs	
Module		
Power Consumption	250mA from 5V bus on the backplane	
Isolation:		
Field to Backplane (optical) and to frame ground	250 VAC continuous, 1500 VAC for one minute	
Group to Group	250 VAC continuous, 1500 VAC for one minute	

Refer to Appendix A for product standards and general specifications.

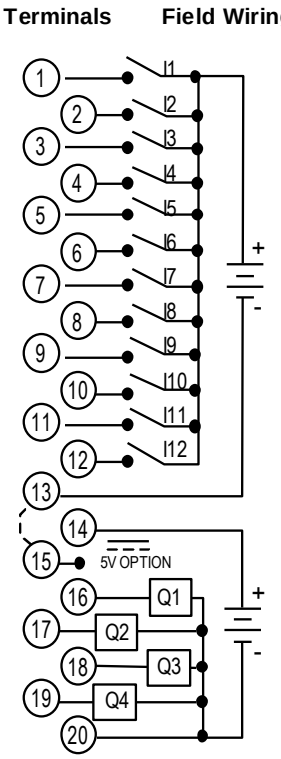
Input Impedance



Field Wiring: APU300

Wiring information for APU300 is shown below.

Shielded cable must be used for connecting to the High Speed Counter module. The shield for the cable must have a high frequency ground within 6 inches (15.24 cm) of the module to meet the IEC 1000-4-4 levels specified in Appendix A. The cable's length is limited to 30 meters.



All 12 High Speed Counter inputs are single-ended positive logic (source) type inputs. Transducers with CMOS buffer outputs (74HC04 equivalent) can directly drive the High-speed Counter inputs using the 5V input range. Transducers using TTL totem pole or open-collector outputs must include a 470 ohm pull-up resistor (to 5V) to guarantee compatibility with the High-speed Counter inputs. Transducers using high voltage open collector (sink) type outputs must have a 1K pull-up resistor to + 12V for compatibility with the High-speed Counter 10 to 30 volt input range.

The 5VDC threshold is selected by connecting a jumper between two terminals on the detachable terminal board connector. Leaving the threshold selection terminals unconnected places the inputs in the default 10 to 30 VDC voltage range.

Caution

Do not connect 10 to 30 VDC to the module inputs when the 5 VDC input range (pins 13 to 15 jumpered) is selected. Doing so will damage the module.

Terminal Assignments for Each Counter Type

The following table shows which terminals to use for the type of counter selected during module configuration.

Terminal	Signal Name	Pin Definition	Use in Counter Type		
			Type A	Type B (1)	Type C (2)
1	I1	Positive Logic Input	A1	A1	A1
2	I2	Positive Logic Input	A2	B1	B1
3	I3	Positive Logic Input	A3	A2	A2
4	I4	Positive Logic Input	A4	B2	B2
5	I5	Positive Logic Input	PRELD1	PRELD1	PRELD1.1 *
6	I6	Positive Logic Input	PRELD2	PRELD2	PRELD1.2
7	I7	Positive Logic Input	PRELD3	DISAB1	DISAB1
8	I8	Positive Logic Input	PRELD4	DISAB2	HOME
9	I9	Positive Logic Input	STRB1	STRB1.1 *	STRB1.1 *
10	I10	Positive Logic Input	STRB2	STRB1.2	STRB1.2
11	I11	Positive Logic Input	STRB3	STRB2.1	STRB1.3
12	I12	Positive Logic Input	STRB4	STRB2.2	MARKER
13	INCOM	Common for positive logic inputs	INCOM	INCOM	INCOM
14	OUTPWR(3) DC+	Power for positive logic outputs	OUTPWR	OUTPWR	OUTPWR
15	TSEL	Threshold select, 5V or 10 to 30V	TSEL	TSEL	TSEL
16	O1	Positive Logic Output	OUT1	OUT1.1 *	OUT1.1 *
17	O2	Positive Logic Output	OUT2	OUT1.2	OUT1.2
18	O3	Positive Logic Output	OUT3	OUT2.1	OUT1.3
19	O4	Positive Logic Output	OUT4	OUT2.2	OUT1.4
20	OUTCOM DC-	Common for positive logic outputs	OUTCOM	OUTCOM	OUTCOM

(1). Type B counter:

A1, B1 are the A and B inputs for counter 1.
A2, B2 are the A and B inputs for counter 2.

(2) Type C Counter:

A1, B1 are the A and B count inputs for (+) loop
A2, B2 are the A and B count inputs for (–) loop

(3) OUTPWR ***does not*** source power for user loads. Output power ***must be supplied*** from an external supply.

* Inputs and outputs identified by two numbers separated by a decimal point indicate the counter number to the left of the decimal point and the element number on the right. For example, STRB1.2 indicates Counter 1, Strobe 2 input.