

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication [SGI-1.1](#) available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature/>) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.



WARNING: Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.



ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence



SHOCK HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.



BURN HAZARD: Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

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1794-IJ2 and 1794-IJ2XT 24V DC Input Frequency Module

The 1794-IJ2 is essentially a tachometer with the capability of reporting frequency, acceleration, and direction. Outputs are activated by alarms. Input devices range from magnetic pickup to flowmeters, to incremental encoders to proximity detectors. This intelligent I/O module is designed to perform high-speed frequency algorithms. The module provides 2 frequency inputs, 2 gate inputs, and 2 outputs. The frequency inputs are capable of accepting frequencies up to 32KHz. The module accepts and returns binary data.

The 1794-IJ2 measures frequency over a user-specified time interval. A frequency calculation can start before the time interval has elapsed, if a user-specified number of frequency input pulses have occurred.

The module's primary target is high-speed, accurate frequency measurement. As such, a high-speed internal clock is synchronized with the frequency input to count over a user-selected sampling time or a user-defined number of frequency input pulses.

Power to the module is supplied from the external power supply. All power for input devices (24V DC) is supplied by the I/O module. Outputs are used to set alarms depending on the input conditions.

The 1794-IJ2 module accepts the following frequency inputs:

- 24V DC IEC1+ proximity switch as defined by standard IEC 1131-2
- 24V DC contact switch with wire off capability
- 500 mV AC magnetic pickup
- 50 mV AC magnetic pickup
- 6V AC vortex
- 3V AC vortex

The 1794-IJ2 module accepts the following gate inputs:

- 24V DC IEC1+ proximity switch as defined by standard IEC 1131-2
- 24V DC contact switch
- 500 mV AC magnetic pickup
- 50 mV AC magnetic pickup

Customer supplied power, ranging from 10...31.2V DC, is connected internally to the power output transistor. When an output is turned on, current flows into the source out of the drain, through the load connected to the ground of the customer supply (customer return). Diode D6 protects the power output transistors from damage due to inductive loads. Output Q1 is a thermally protected FET and will turn off at 3 A (approximately). After an output goes into thermal shutdown, you must fix the cause of the shutdown and toggle the outputs ON and OFF to reenergize the output. RT1 protects D6 and Q1 if power supply polarity is reversed.

24V DC Input Frequency Module

Specification	1794-IJ2, 1794-IJ2XT
Dimensions (HxWxD), approx	46 x 94 x 53 mm (1.8 x 3.7 x 3.1 in.) 94 x 94 x 69 mm (3.7 x 3.7 x 2.7 in.) installed
Temperature, operating	1794-IJ2: 0...55 °C (32...131 °F) 1794-IJ2XT: -20...70 °C (-4...185 °F)

(1) Current Limited: All outputs can be on simultaneously without derating.

1794-VHSC 2 Channel Very High Speed Counter Module

A counter module has two incremental quadrature encoder interfaces each with three inputs (A, B, and Z). Each input module has \pm inputs for connection to pulse transmitters with complementary or non-complementary signals.

The counter can count pulses of one or two pulse trains for up/down counting and detection of a selectable number of edges (X1, X2, X4). Each of the two counters has an upper limit of 1MHz, a 24-bit counter register, a preset register, and a latch register.

Power to the module is supplied from an external 24V power supply. The 1794-VHSC has two outputs that can be configured for overlapping, multiple windows, and/or pulse width modulation.

2 Channel Very High Speed Counter Module

Specification	1794-VHSC
Input groups	2 groups of A/A, B/B, and Z/Z pairs with 5V DC or 15...24V DC terminations
Input frequency, max	1.0 MHz counter and encoder X1 (no filters) 500 kHz encoder X2 (no filters) 250 kHz encoder X4 (no filters)
Voltage, on-state input, min	5V DC terminations: >2.6V DC 15...24V DC terminations: >12.5V DC
Voltage, on-state input, max	5V DC terminations: $\pm 6V$ 15...24V DC terminations: Refer to derating curve
Voltage, off-state input, min	5V DC terminations: $\leq 1.25V$ DC 15...24V DC terminations: $\leq 1.8V$ DC
Current, on-state input, min	>5 mA
Current, on-state input, max	≤ 0.250 mA
Input filter selections	5: Off, 10 μ s, 100 μ s, 1.0 ms, 10.0 ms per A/B/Z group
Output control	Outputs can be tied to 8 compare windows
Output supply voltage range	5...7V DC or 10...31V DC
Leakage current, off-state output, max	≤ 0.3 mA
Voltage drop, on-state output, max	5V operation – 0.5 A 12...24V operation – 1.0 A