
DirectSOFT
Direct205
LOGIC
Koyo
CPU
PWR
BATT
85-264V~
50/60Hz
24V OUT
0.2A
D2-06B 110/220V~
NEW
Product

High Speed Counter

H2-CTRIO

The H2-CTRIO is a high speed counter interface module with the following features:

- 8 DC sink/source inputs, 9-30VDC
- 4 isolated sink/source DC outputs, 5-30VDC, 1A per point

Inputs supported:

- 2 quadrature encoder counters up to 100KHz, or 4 single channel counters up to 100KHz, and 4 high speed discrete inputs for Reset, Inhibit, or Capture.

Outputs supported:

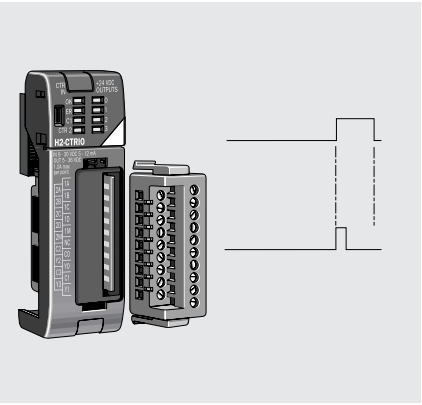
- 4 independently configurable high speed discrete outputs or 2 channels pulse output control, 20Hz-25KHz per channel, or 50KHz if only using one channel, pulse and direction or cw/ccw pulses.

Programming is made easy with a single configuration tool embedded in the controlling PLCs programming software. The examples on the facing page show how simple the configuration is and some of the powerful features that the H2-CTRIO supports.

Up to 6 H2-CTRIO modules can be installed into a single base for multi-axis inputs in D2-240, D2-250, H2-EBC, or H2-WPLC based systems.

Each module can be independently configured with the configuration tool, or the modules can be coordinated through the ladder program or Think & Do flowcharts if used with a H2-EBC or WinPLC system.

General Information about



the CTRIO Module

The Counter I/O (CTRIO) module is designed to accept high-speed pulse-type input signals and provide discrete outputs for monitoring, alarm, or control functions. The CTRIO module offers great flexibility for applications which call for counting or timing, based on an input pulse.

The CTRIO module has its own microprocessor and operates asynchronously with respect to the CPU. This means that onboard outputs respond in real-time to incoming signals. There is no delay waiting for the CPU to scan I/O.

CTRIO Workbench

All scaling and configuration is done via a software utility, eliminating the need for ladder programming to set up the module. The software utility is called CTRIO Workbench.

Supported CPUs

You can use the CTRIO module with conventional CPUs (D2-240 or D2-250), our state-of-the-art Windows-based CPU module, or PC-based control strategies.

The CTRIO module plugs into any I/O slot of any DirectLogic 205 base except slot 0 (slot 0 is available for the CTRIO module when using the WinPLC CPU). Slot 0 is the I/O slot adjacent to the CPU. Multiple CTRIO modules can reside in the same base provided that the power supply is adequate. CTRIO modules may be placed in remote bases if communication is via ERM-to-EBC, ECOM-to-ECOM, or DCM-t0-DCM.

The CTRIO module is designed to work with incremental encoders or other field devices that send pulse outputs.

Applications:

- cut to length
- piece counting
- positioning a flying punch
- PLS - programmable limit switch (glueing application)
- flow control (later)

High-Speed Counter

Specifications

General	
Module Type	Intelligent
Modules Per Base	Limited only by power consumption
I/O Points Used	None, I/O map directly in PLC V-memory or PC control access
Field Wiring Connector	Standard removable terminal block
Internal Power Consumption	400mA Max at +5V from 205 Base Power Supply Maximum of 6 Watts (All I/O in ON State at Max Voltage/Current)
Operating Environment	32°F to 140°F (0°C to 60°C), Humidity (non-condensing) 5% to 95%
Manufacturer	Host Automation Products, LLC
Isolation	2500V I/O to Logic, 1000V among Input Channels and All Outputs

Inputs	
Primary Inputs	4 pts sink/source 100K Hz Max
Secondary Inputs	4 pts, high speed, for Reset, Inhibit, or Capture
Minimum Pulse Width	5 µsec
Input Voltage Range	9-30VDC
Maximum Voltage	30VDC
Input Voltage Protection	Zener Clamped at 33VDC
Rated Input Current	8mA typical 12mA maximum
Minimum ON Voltage	9.0VDC
Maximum OFF Voltage	3.0VDC
Minimum ON Current	5.0mA (9VDC required to guarantee ON state)
Maximum OFF Current	3.0mA
OFF to ON Response	Less than 3 µsec
ON to OFF Response	Less than 3 µsec

CTRIO Output Specifications	
Outputs	4 pts, independently isolated, current sourcing or sinking (open collector)
Pulse output control	2 channels, 20Hz - 25kHz, pulse and direction or cw/ccw pulses
Voltage range	5VDC - 36VDC
Maximum voltage	36VDC
Output clamp voltage	60VDC
Maximum load current	1.0A
Maximum load voltage	36VDC
Maximum leakage current	100µA
Inrush current	5A for 20ms
OFF to ON response	less than 3µsec
ON to OFF response	less than 3µsec
External power supply	for loop power only, not required for internal module function*
Overcurrent protection	15A max
Thermal shutdown	Tjunction = 150°C
Overtemperature reset	Tjunction = 130°C
Target position range	+/- 2.1 billion (31 bits + sign bit)
Duty cycle range	0.1% to 99.9% in 0.1% increments

*** User supplied 5VDC power source required for most stepper drive configurations**

Resources	
Counter/Timer	Four (2 per 4 input channel group)
Resource Options	1X, 2X, or 4X Quadrature, Up or Down Counter
Timer Resolution	1 µsec
Counter Range	2.1 billion

Specifications

LED Descriptions			
OK	Module OK	***0***	Out 0
ER	User Program Error	***1***	Out 1
C1	Ch 1 A Status / Pulses	***2***	Out 2
CTR2	Ch 2 A Status / Pulses	***3***	Out 3

LED Definitions		
OK		***Description***
ON	ON	205 Base Power is Out of +5 Range
ON	OFF	All is well - RUN Mode
Blinking	Blinking	Boot Mode - Used for Field OS Upgrades
Blinking	OFF	Program Mode
OFF	Blinking	Module Self-diagnostic Failure
OFF	ON	Module Error Due to Watchdog Timeout
OFF	OFF	No Power to Module
C1 or CTR2		***Based on Configuration of Input A***
Blinking 7 times per second		A is Configured as Counter and is Changing
Following State of Input		A is not Configured as Counter
Output LEDs 0 - 3 Follow Actual Output State		

Installation and Wiring

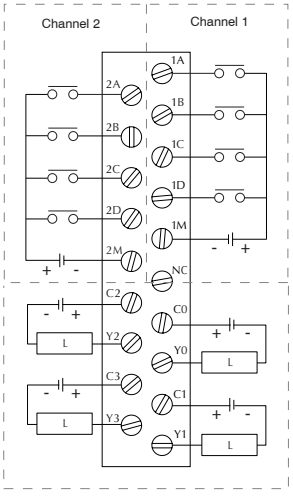
The CTRIO module is a two channel device. Each channel accepts four optically isolated input signals which share the same common. Input circuits can be wired with either polarity without changing the module configuration. Channel 1 inputs can have the opposite polarity from channel 2 inputs.

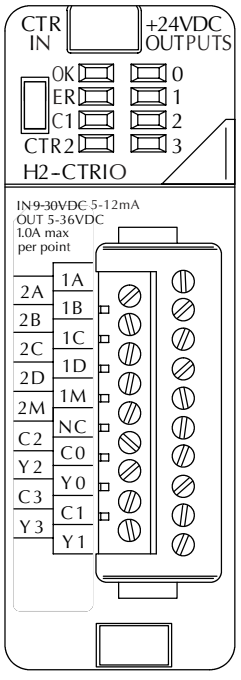
The module is configured, using CTRIO Workbench, to accommodate the user's application. The function of each input is defined in the configuration of the module (counting, timing, reset, etc.).

Field device wiring must be compatible with the module configuration.

Each output circuit is optically isolated from the other outputs. Output commons are independent but can be tied together using internal jumpers. All four discrete outputs are available to be energized in response to any of the inputs.

See the notes below for further details about power source considerations, circuit polarities, and field devices.



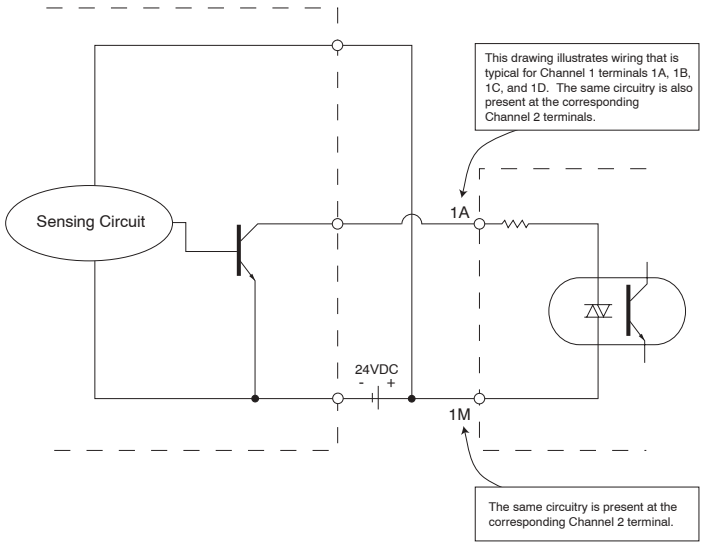


Notes:

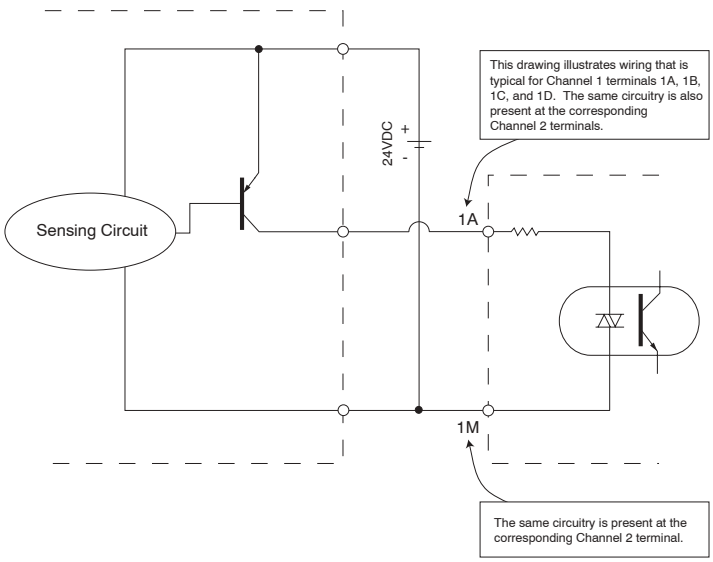
1. ***Inputs (1A, 1B, 1C, 1D and 2A, 2B, 2C, 2D) require user-provided 9-30VDC power sources. Terminals 1M and 2M are the commons for Channel 1 and Channel 2 inputs. Maximum current consumption is 12mA per input point.***
2. ***Polarity of the input power sources (shown above) can be reversed. Consideration must be given, however, to the polarity of the field device. Many field devices are designed for only one polarity and can be damaged if power wiring is reversed.***
3. ***Outputs have one polarity only (as shown above) and are powered by user-provided 5-36VDC power sources. The maximum allowable current per output circuit is 1A.***

Solid State Input Wiring Device

NPN Field Device



PNP Field Device

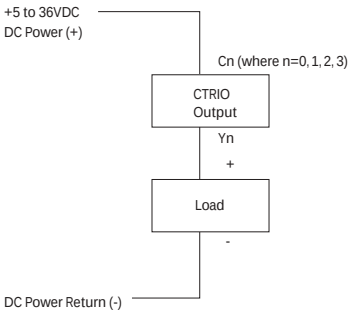


Pulse Output Schematic

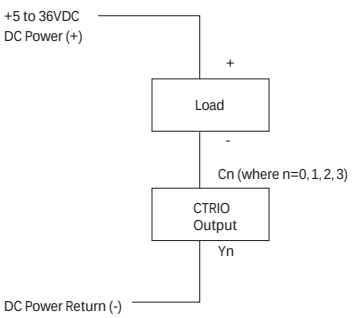
CTRIO Outputs

The outputs are individually isolated DC switches that can be used to break the high or the low side of a DC load.

High Side



Low Side



Stepper Drive Wiring Example