

High-speed Counter Module

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D4-HSC <--->



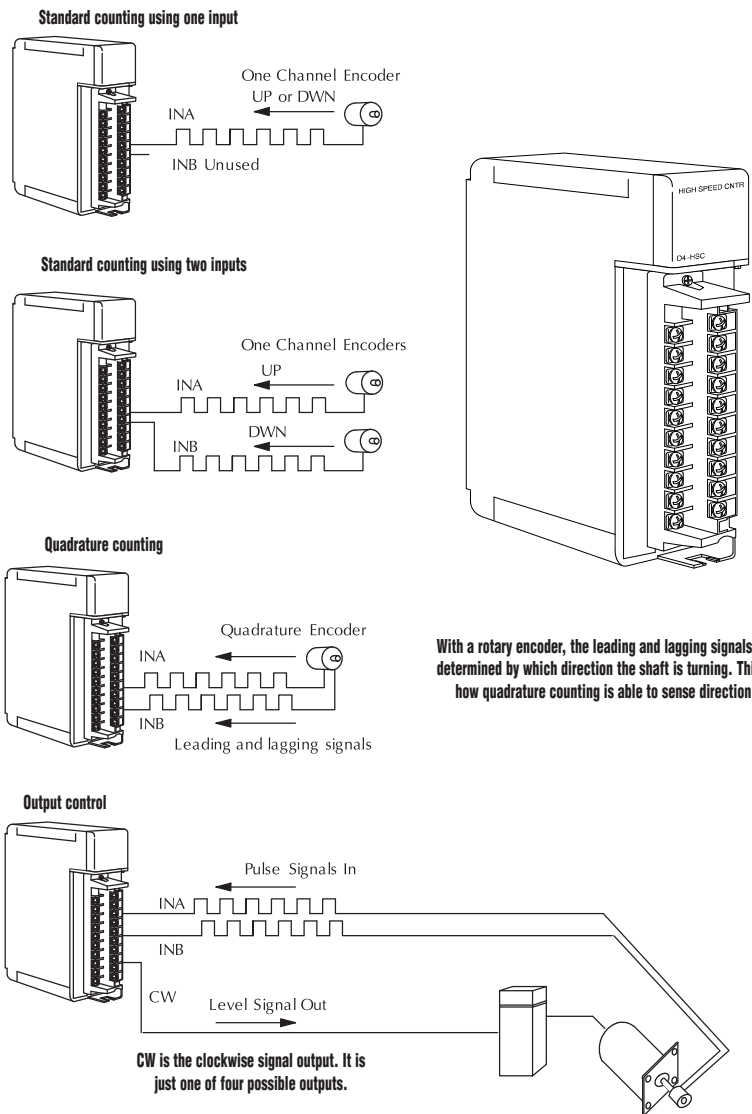
Specifications	
Module Type	Intelligent
I/O Points Assigned	16 X input, 32 Y output
Modules per CPU	Eight, in any local or expansion slot location
Field Wiring Connector	Removable terminal type
Count Signal Level	4.75VDC-30VDC less than 10mA
Maximum Count Speed	100kHz (50% duty cycle)
Minimum Input Pulse Width	5µs
Internal Power Consumption	300mA maximum at 5VDC (supplied by base power supply)
Operating Environment	0°C to 60°C (32°F to 140°F), 5% to 95% humidity (non-condensing)
Manufacturer	Koyo Electronics

Overview

The DL405 high-speed counter provides high-speed up or down counting capability. It provides the user with count data and output signals such as Clockwise, Counter-clockwise, Decelerate, and Equal. The module functions asynchronously with the DL405 CPU, allowing fast response and control.

The D4-HSC module supports the following key features:

- Quadrature or up/down encoder input
- Maximum input pulse rate of 100 kHz (50% duty cycle)
- Seven user control inputs
- Four external outputs for controlling motor modes
- Counting range from -8,388,608 to +8,388,607 with overflow
- Counter input multiplication of X1, X2, or X4
- User selectable count direction
- A or B mode selection
A mode to reset counter at preset
B mode to continue counting after preset
- Find **Home** mode to search for home position
- Sampling count to determine pulse rate



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External Module Input Descriptions	
IN A	Depending on mode chosen, this is either a standard UP/DOWN counter input, or one of the quadrature counter inputs.
IN B	Depending on mode chosen, this is either a standard UP/DOWN counter input, or one of the quadrature counter inputs.
IN Z	This input can be used to help you find home position for positioning control. It can also be used as an external means of resetting the counter.
LD (Load)	If you want to use an offset number with your counting, a rising edge signal at this terminal will copy the offset value into the current count.
RST (Reset)	A high (ON) signal at this terminal resets the counter to zero and it remains there until there is a transition to a low signal (OFF)
LATCH	You may want to store the current count. The rising edge of a signal at this terminal will store the current count in shared RAM. Counting continues with no interruption.
C.INH	You may want to temporarily ignore the count inputs coming in on INA and INB. A high (ON) signal at this terminal will inhibit the counting to accomplish this need. Current count is suspended until a transition to a low (OFF) signal is seen.
RUN	Not to be confused with Run mode of the DL405, a high (ON) signal here will activate HSC RUN. A low (OFF) signal will deactivate it.
LS1 and LS2	Either or both of these terminals can be connected to limit switches to help find home position, or they can merely be used as discrete inputs.

External Module Output Descriptions	
CW	Clockwise – Turns on when the optional HSC RUN mode is invoked and the current count is less than the preset value. It will reset when the current count equals the preset value. This output can also be controlled independently from the count values with an internal output bit allocated to the HSC.
CCW	Counter Clockwise – Turns on when the optional HSC RUN mode is invoked and the current count is greater than the preset value. It will reset when the current count equals the preset value. It can also be controlled independently from the count values with an internal output bit allocated to the HSC.
OUT1	Deceleration – If the optional HSC RUN mode is active, this output turns on when the current count equals the deceleration value. It is reset when HSC RUN mode is exited and re-entered, or when an internal output bit allocated to the HSC is enabled.
OUT2	Brake – If the optional HSC RUN mode is active, this output turns on when the current count equals the preset value. It is reset when HSC RUN mode is exited and re-entered, or when an internal output bit allocated to the HSC is enabled.

Internal Interface Signals from DL405 CPU to D4-HSC
Reset OUT 1 and OUT 2
Reset Overflow
Load Offset to Counter
Enabled HSC RUN
Enable CCW
Enable OUT2
Enable CW
Enable OUT1
Inhibit Counting
Latch Current Count
Reset Current Count
Select count Mode
Change Count Direction
Enable Home Search
Enable x2 Operation
Enable x4 Operation
Select Reset Operation
Enable Sampling
Copy Offset
Reset CW, CCW
Reset Home Search Error
Enable Reset with INZ
Enable OUT2 after Home Search

Internal Interface Signals from D4-HSC to DL405 CPU
Current Count > Preset Value
Current Count = Preset Value
Current Count < Preset Value
Count Overflow
CCW Status
OUT2 Status
CW Status
OUT1 Status
LS2 Status
LS1 Status
Home Search Executing
Sampling Executing
Missing Terminal Block
External Power Supply Failure
Internal HSC Error