V535 8-axis Stepper Motor Indexer

Provides control for up to 8 stepper motor axes

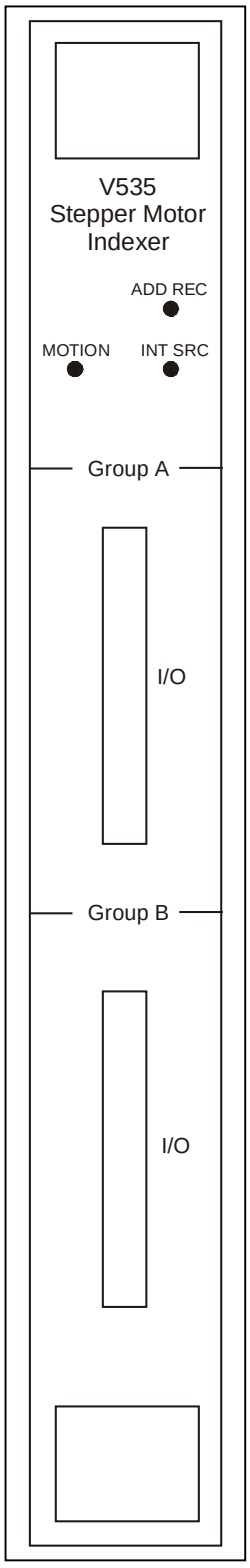
V535

Features

- Single-width, C size, VXI module
- Indexer function provided for 4 or 8 stepper motor axes
- Crystal-controlled programmable pulse rates to 1,550,000 pulses per second
- Programmable linear acceleration and deceleration rates
- All timing internally controlled and not dependent on host computer
- Hard abort activated by limit switches
- Hard and soft abort activated from software
- Auxiliary digital input and output channel provided for each motor axis
- All axes capable of independent setup parameters (velocity, acceleration, etc.) and execution of the motion profiles
- Multi-axes operation supported

Typical Applications

- Control of industrial processes
- Test cell stepper motor control
- Nuclear accelerator control
- General-purpose control of stepper motors



General Description

The V535 is a single-width, C-size, register-based VXIbus module that provides all of the necessary circuitry for the control of 4 or 8 stepper motor axes. The module provides linear or s-curve acceleration and deceleration profiles along with the precise crystal control of the stepping rates. This indexer is designed to be used with one or more external translators that provide the driving current for the stepper motors. The V535 communicates with the translator(s) by logic-level signals. Stepping rates to 1,550,000 pulses/s are supported. All axes can be independently controlled or clustered as "combination motors."

The register-based VXI interface was chosen because an ASCII message-based interface can reduce system throughput dramatically. Ease of use will be attained by the associated VXIplug&play instrument driver. This software driver will provide an ASCII-command-based interface as well as a set of register-based commands to the user application.

A set of 4 or 8 auxiliary digital inputs that can be read by software are provided. A set of 4 or 8 auxiliary digital outputs are also provided. An output can be asserted under one of the following software-selected conditions: Motion has started, motor has received a pre-selected number of pulses, or motion has stopped (by reaching terminal count or by abort).

A VXI interrupt can be generated by limit switch activation, motion complete, or auxiliary digital input activation. These interrupt sources can be individually masked by software.

Specifications contained within this data sheet are subject to change without notice.

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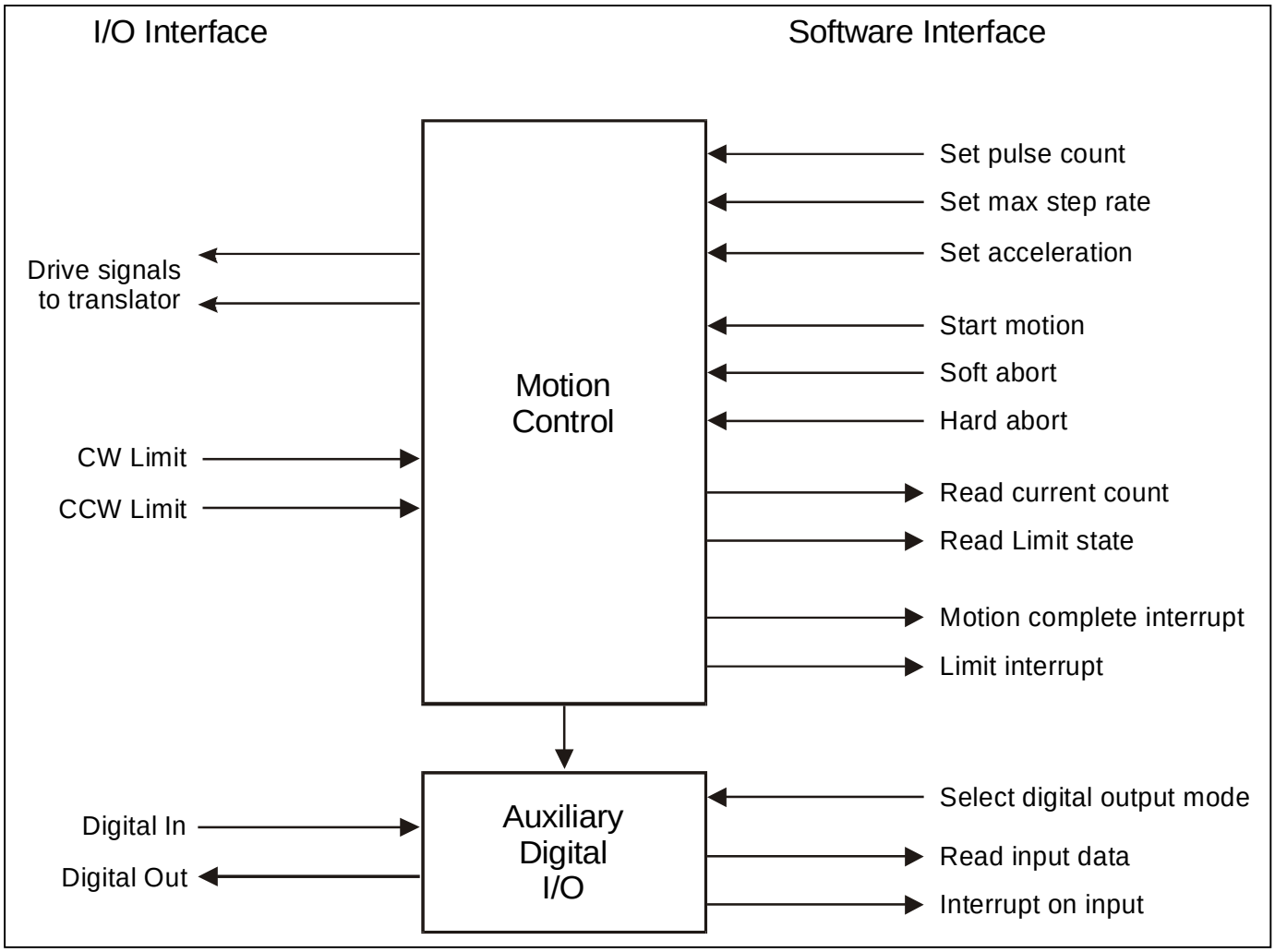
Specifications

Item	Specification
Number of Axes	4 or 8
Type of Control	Stepper motor control via external power translators.
Output Profile Selection	Independent velocity and acceleration profiles per axis
Output Pulse Characteristics	
Signal Level	Open-collector, TTL/CMOS compatible, active low, or RS-422, field selectable
Pulse Width	45% to 55% of any pulse period
Maximum Current Drive	32 mA
Signal Convention	Programmable options (2 output signals per axis): Pulse Output/Direction, *or* CW Pulse Output/CCW Pulse Output
Velocity	
Range	0 to 1,550,000 steps/s, programmable
Resolution	0.0466 steps/s over the entire range, programmable
Starting Velocity Range (linear ramp)	0 to 1,550,000 steps/s, programmable (terminal velocity same as starting velocity)
Starting Velocity Resolution	0.0466 steps/s over the entire range, programmable
Acceleration/deceleration	
Range	0 to 50,000,000 steps/s^2, programmable
Resolution	0.0466 steps/s^2 over the entire range, programmable
Limit Inputs	
Number	Two per axis (CW limit *and* CCW limit)
Signal Level	10 mA isolated current loop
Signal Convention	LOW or HIGH = limit, programmable
Input Delay	2 to 32 ms digital delay, programmable
Abort Characteristics	Hard abort (immediate stop) on *Limit* indication. An interrupt will be generated, if enabled, and the pulse count at abort can be read. The state of the limit inputs also can be read.
Multi-axis Operation	All axes must be able to move at the same time. Multiple axes can be assigned to "combination motors." All axes in a combination motor will be aborted when a limit is activated on one axis.
Software Abort	A "soft abort," executed from software, will start the deceleration phase of an axis or of a combination motor. A “hard abort” from software produces an immediate stop. The ending axis pulse count(s) can then be read the program.
Motion Complete	This action will cause an interrupt, if enabled.
Dynamic Position Polling	The position of any axis can be read by the control program while motion is in progress.
Auxiliary Digital Inputs	
Number	1 per axis (4 or 8 per module)
Signal Level	10 mA isolated current loop
Signal Convention	Current flowing = External stimulus active
Isolation	Each input is opto-isolated with a common isolated return
Action	An interrupt can be generated, and the auxiliary digital input pattern can be read.

Auxiliary Digital Outputs	
Number	1 per axis (4 or 8 per module)
Signal Type	Isolated MOSFET relay
Open-circuit voltage	200 V, line-to-line; 500 V, line-to-ground (maximum)
Current	100 mA (maximum)
Signal Convention	Closed = Internal stimulus active
Isolation	Each output is independently opto-isolated
Action	An output line can be asserted under one of the following software-selected conditions: Motion has started, motor has received a pre-selected number of pulses, *or* motion has stopped (by reaching terminal count or by abort).
I/O Connector Types	One 50-contact high-density connector per 4 axes

Block Diagram



Ordering Information

Model V535-LA11	4-Axis Stepper Motor Indexer
Model V535-LA21	8-Axis Stepper Motor Indexer

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