

DCB-264

4 AMP MICROSTEP DRIVER WITH PROGRAMMABLE CONTROL



OVERVIEW

The **DCB-264** offers a low cost solution for operating small to midsize stepping motors. It combines programmable control, including over 30 sophisticated motion commands, with efficient, bipolar chopper drive output for high performance operation. All that is required for a complete system is a single, unregulated power supply and a motor.

The DCB-264 has a (peak) output current rating of 4.0 amps/phase and offers microstepping resolution of 1/8, 1/4, 1/2, and full step at speeds up to 40k SPS. Automatic slow and fast decay optimize motor performance. Optional encoder input is also available for shuttle control applications.

FEATURES

- 4.0 amp/phase chopper drive output
- SMC-26X2 intelligent controller
- Single 24 to 40 volt power supply input
- Full, 1/2, 1/4, 1/8 microstep to 40k SPS
- 2k bytes of non-volatile memory
- Automatic fast and slow decay
- Limit, Home, Go and Stop inputs
- Step, Direction and Jog inputs
- Step/Direction outputs to "slave" drives
- Optional "shuttle control" mode
- Serial communication (1-32 axes)
- Adjustable run current pot
- Programmable hold current setback
- Programmable accel and decel ramp
- Constant velocity commands
- Heat-sink mounted
- Mating connectors included
- Free demo software

DRIVER

For maximum performance, the DCB-264 utilizes a bipolar chopper drive circuit with a 20kHz chopping rate. The input voltage range is from 24 to 40Vdc. The run current is set via a potentiometer. To eliminate excess heat generated by the motor, the hold current can be programmed to a reduced setting at the completion of a move.

CONTROLLER

The on-board controller provides powerful step and direction output signals to the driver that produce step rates up to 40,000 steps per second. A 24 bit position register tracks steps within a $\pm 8,388,607$ step range. An instruction set of over 30 commands, including: loop on port, count delays, set/clear ports, limit and home sensor inputs, provides flexibility and programming ease.

POWER SUPPLY

The DCB-264 uses a single, unregulated +24 to 40Vdc power supply. The on-board 5 volt logic power is derived from the motor power supply.

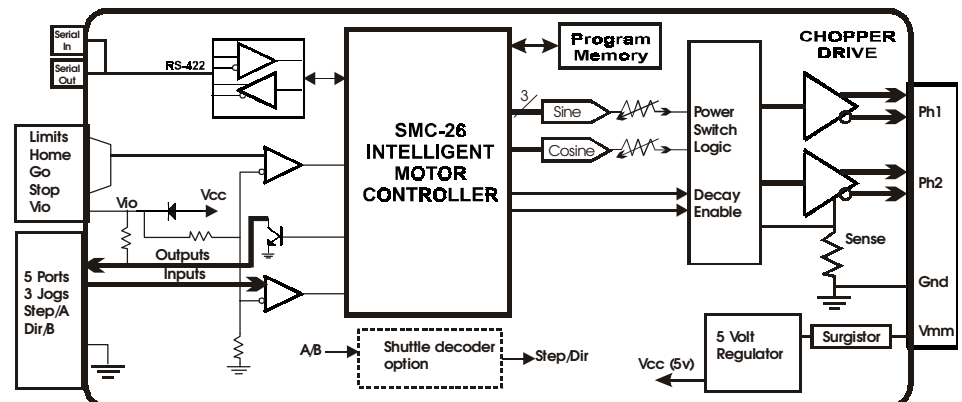
SERIAL INTERFACE

Full duplex serial communications, with an RS-422/485 "Party Line" interface, helps to ensure reliable communication in harsh industrial environments. This protocol also permits simultaneous communication (to 32 axes) with minimum command processing latency.

PROGRAMS

Using a host computer or dumb terminal, programs can be stored in non-volatile memory (2k bytes) and initiated via the serial communication port, the "GO" input or auto power-up.

BLOCK DIAGRAM



INPUT SIGNALS

Input signals include: Home, Limit A, Limit B, Go, Soft Stop, Step, Direction, Jog 1, Jog 2, Jog Speed and Ground. All signals have a 5 volt range.

USER I.O.

Three input ports are available that can test and branch to multiple motion subroutines. Two programmable outputs are also available to drive solid state relays and other devices. A separate "TRIP" function provides automatic program branching when a specified position is passed.

COMMANDS

ASCII	Description
ESC	A bort/Terminate
@	Soft Stop
^C	Reset
+	Index in Plus Direction
-	Index in Minus Direction
[Read NV Memory
]	Read Limits, Hardware
\	Write to NV Memory
I	Selective Termination
^	Read Moving Status
A	Port Read/Write
B	Set Jog Speeds
b	Slow and Fast Decay
C	Restore/Initialize
D	Divide Step Rates
E	Enable Auto Power Down
F	Find Home (SPS)
G	GO from Address
H	Resolution Mode
I	Initial Velocity (SPS)
i	Restart Special Trip
J	Jump to Address
K	Ramp Slope
k	Special Trip
L	Loop on Port
l	Invert Limits/Step - Dir. Output
M	Move at a Constant Speed
O	Set Origin
P	Program Mode
Q	Query Program
R	Index to Target Position
S	Store Parameters
T	Set Trip Point
V	Slew Velocity (SPS)
W	Wait "N" Milliseconds
w	Pre-energize Motor
Y	Set Hold Current
X	Examine Parameters
Z	Display Position

SLOW / FAST DECAY

The DCB-264 offers slow and fast decay for optimal motor performance. When there is no motion (stopped), the decay will always be slow. The threshold defines a motor speed where slow decay changes to fast decay during acceleration and switches back to slow decay during deceleration. The threshold will occur at an RPM where step resolution is taken into account.

"SHUTTLE CONTROL"

Optional encoder circuitry can be specified with the DCB-264-E. With this option the step input pins change to quadrature A and B inputs. The quadrature clocks, when applied to the A and B inputs, are converted to step and direction signals. The number of steps per encoder revolution are equal to four times the number of "slots" on the encoder. The motor will follow exactly any changes in the encoder position.

STEP AND DIRECTION OUTPUTS

This option converts port 4 to a step output and port 5 to a direction output. These signals can be directed to "slave" driver(s) to control additional motors if required. The step outputs are short negative going pulses.

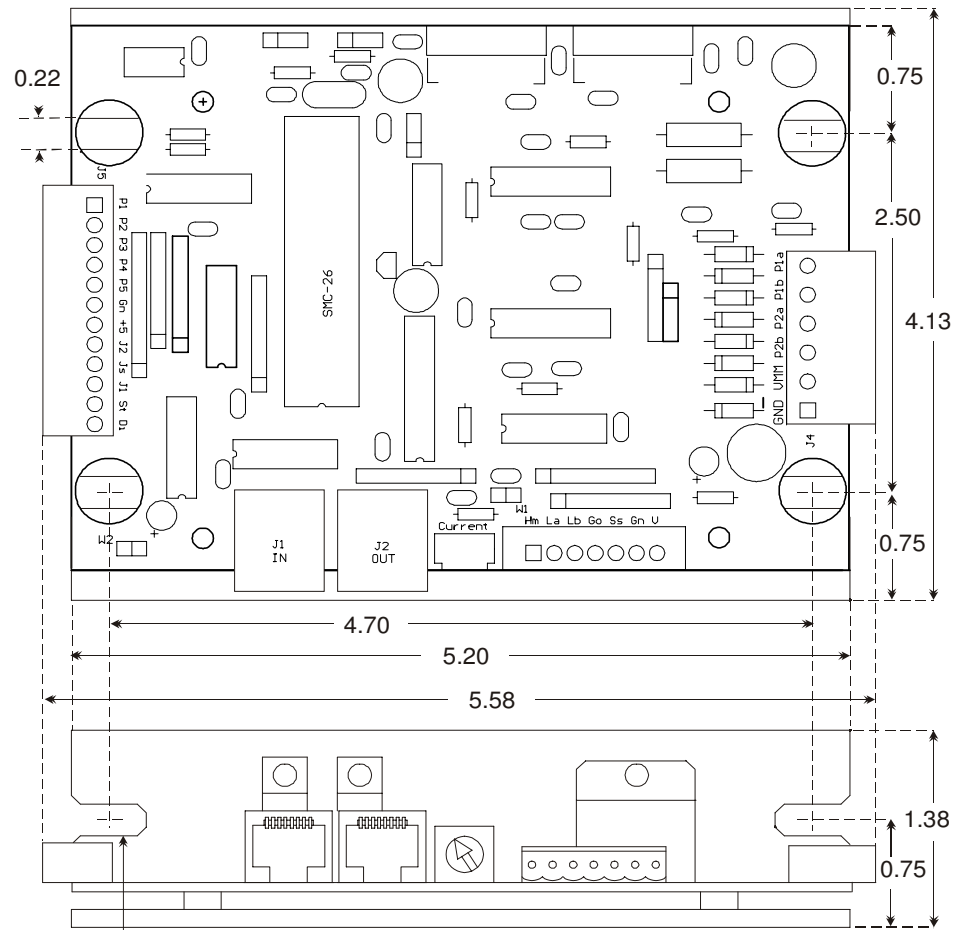
SPECIFICATIONS

Electrical

- Output Current (Peak).....4.0 Amps
- Supply Voltage (Vmm).....+24 to 40Vdc
- Step Resolution.....1, 1/2, 1/4, 1/8
- Chopping Frequency.....20kHz
- Non-Volatile Memory.....2k Bytes
- Position Counter.....±8,388,607

Physical

- Operating Temperature.....0 to +50°C
- Storage Temperature.....-40 to +125°C
- Plate Temperature (max).....+70°C
- Size.....4.13 x 5.58 x 1.38 in.
- Weight.....8.0 oz.



NOTE: ALLOW 0.5 INCH CLEARANCE ON ALL CONNECTORS FOR EXTERNAL WIRING