

# DCB-26

## MICROSTEP DRIVER WITH INTELLIGENT CONTROLLER

### OVERVIEW

The DCB-26 is a low cost driver and smart controller board suitable for operating small stepper motors. It utilizes bipolar power drivers with adjustable currents of up to 0.85 amps (1.25 amps with cooling) per phase. This all-in-one package is designed for OEM applications using high volume production linear actuators and rotary steppers. Built in phase step sequences include 1/8, 1/4, 1/2, Full, and Wave drives.

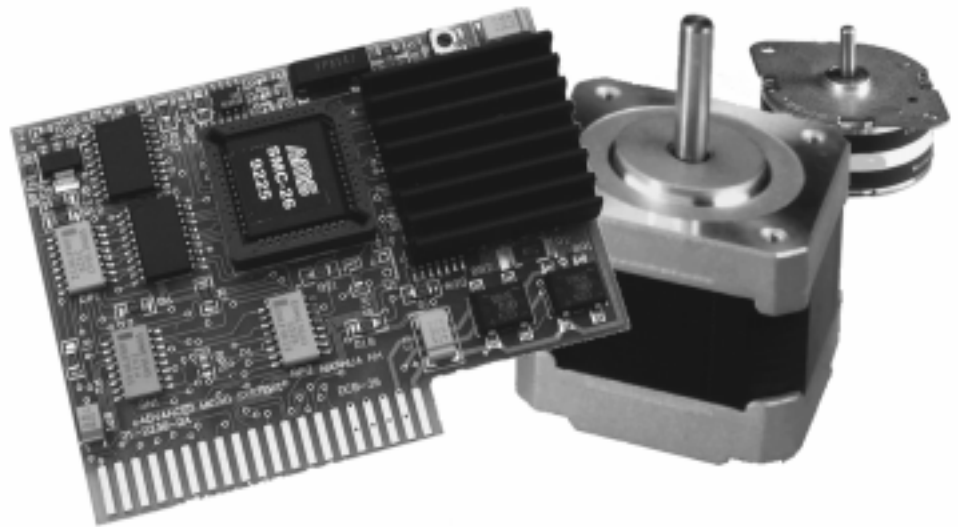
The DCB-26 has an instruction set of over 30 commands that include loop on port, count delays, and set/clear ports. In addition to 6 general-purpose ports, jog, limit and home sensor inputs are also available.

Other features include auxiliary step pulse and direction inputs to allow motion generation via external pulse sources, with limit switch protection and position counter tracking.

Application development is facilitated with AMS' free software; featuring:

- Program Editor
- Syntax Checker Loader
- Microsoft "C" Source Code
- Pull-Down Menus
- Dumb Terminal Emulation
- Quick Basic Information Program
- Speed, Distance, Accel/Decel Plots

For evaluation and medium volume production, a companion "mini-mother" board simplifies product interface. The dual axis board has an RS-232 interface, expandable for multiple axes. The communication, power and I.O. signal connectors provide for real-world interface.



### FEATURES

- *Small in size*
- *0.85 amp bipolar chopper drive*
- *Microstep to 1/8, 1/4, 1/2, Full step*
- *High torque full step mode*
- *Bi-directional ramping between speeds*
- *User I.O. ports*
- *Speeds to 25,000 steps per second*
- *Speed alterable "on the fly"*
- *Soft decelerate stop command & input*
- *Motion output signal*
- *Receive/send commands while moving*
- *Step register of over 16M steps*
- *Enable signal polarity (programmable)*
- *Special "Home" function at any step rate*
- *Read position counter while moving*
- *Limit and home switch inputs*
- *2k non-volatile memory*
- *9.6k / 470k Baud*
- *Programmable trip point*
- *Selectable "Party Line" serial mode*
- *Limit switch polarity (programmable)*
- *16 way branch (on ports 1-4)*

### TERMINAL INTERFACE

By using a simple RS-232 buffer, motion sequences can be programmed from a standard terminal or host PC. Command lines consist of an ASCII character followed by a number. The input line editor provides a user-friendly interface.

### PARTY LINE MODE

"Party Line" communication protocol can be used in applications using a host computer. This protocol greatly reduces communication time and supports between 1 and 60 axes of motion connected in parallel from a single serial port.

### NON-VOLATILE MEMORY

2k bytes of non-volatile memory is available to store user programs for future execution. Any number of programs may coexist, limited only by the available memory space. Utilizing this feature allows all parameters, such as initial velocity, ramp and step mode to be set as defaults then modified "on the fly" during program execution.

### TRIP POINT

The trip point is a programmable position that allows predefined operations to be triggered when the motor position matches the established trip point position. During motion the position counter is continuously updated and compared to the programmed trip position.

### RESET

Upon hardware reset all parameters (set by commands B,D,E,H,I,K,T,V) most recently saved are downloaded into the working registers of the controller. Both Jog and Go inputs are then active. During reset all outputs are off.

## SUMMARY OF COMMANDS

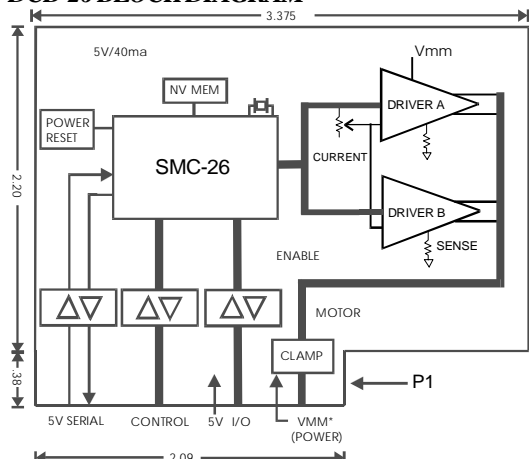
### ASCII Description

ESC	Abort/Terminate
A	Port Set/Increment/Read
B	Jog Speed/30: Slow, Fast
C	Restore, Clear Page
D	Divide Factor
E	Enable, Limit Sense
F	Find Home: Sense Speed
G	Go (Address/Branch), Trace
H	Select phase table
I	Initial Velocity-SPS
J	Jump To Address, Repetition
K	Ramp Slope
k	Trip Output Values
L	Loop On Port Condition
M	Constant Velocity-SPS
O	Set Origin
P	Program Mode
Q	Query Program
R	Relative Move
S	Store Parameters
T	Set Trip Point
V	Slew Velocity-SPS
W	Wait n Milliseconds
X	Examine Settings
Z	Read Position Once/Repeat
+	+ Step Command
-	- Step Command
\	Write To NV Memory
[	Read NV Memory
]	Query Hardware Status
^	Query Motion Status
@	Soft Stop

## PROGRAMMABLE PHASE SEQUENCE

Sequence	Steps/Rev	Remark
1/8 Micro	1600	High resolution
1/4 Micro	800	Reduced resonance
1/2 Micro	400	Good speed
Full - Wave	200	One phase on
Half	400	High torque
Full	200	Highest torque

## DCB-26 BLOCK DIAGRAM



## ELECTRICAL SPECIFICATIONS

Logic D.C. Characteristics: (Vcc= 5V ±10%)

Description	Condition	Typ	Max	Unit
Icc: Supply current	Enabled	104	120	Ma
Icc: Supply current	Disabled	45	60.0	Ma
Vil: Input low voltage		-.05	0.85	Volts
Iil: Input low current	Vil=0.45V		-500.0	µa
Vih: Input high voltage		2.0	Vcc+0.55	Volts
Vol: Output low voltage	IoI=1.6ma		0.45	Volts
Voh: Output high voltage	Ioh= -80µa		2.4	Volts

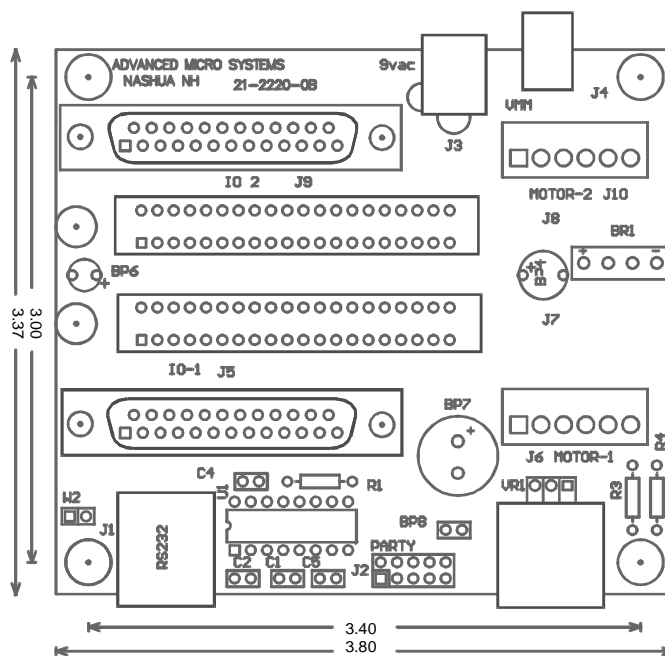
## Drive Outputs @ 25 degrees C (Ambient)

Description	Min	Max	Unit
Current per phase	0	0.85	Amps
Current per phase with cooling		1.25	Amps
Motor power supply (Vmm):	5	50	Volts

## 2 AXIS MOTHER BOARD (MODEL DCMB)

The DCMB is an accessory to the DCB-26. It contains the interface for one or two axis of motion control. The expansion connector provides the ability to add more axis in a microprocessor based system.

- Two axis interface
- Expansion connector for multi-axis
- 1 amp, 5 volt regulator for additional load
- DB25 connector for input/output signals
- DC or 9-18 VAC input for low cost power
- Separate motor and power supply inputs
- RJ45 connector for RS-232 input



An RS-232 input converts standard serial voltages to TTL levels to drive up to 10 axis using Advanced Micro System's "Party Line" protocol. The open drain TXD outputs from each axis are wire-or'd, providing a party line communication method. Prior to operation each axis must be assigned a one character name that is stored in the DCB-26 NV memory. Removing the "Party Line" jumper and inserting one axis at a time facilitates name assignment.