

Electronic Drives for Stepper Motors

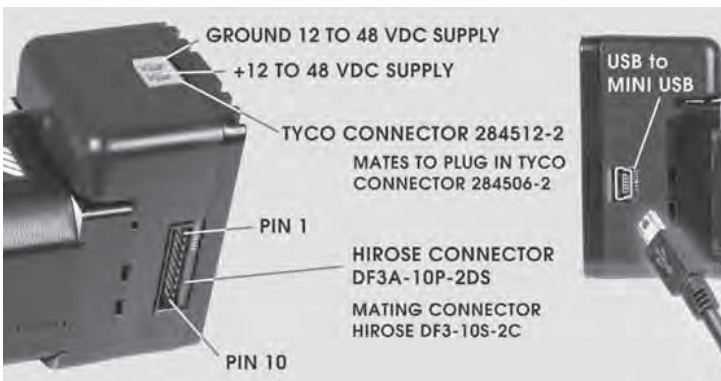
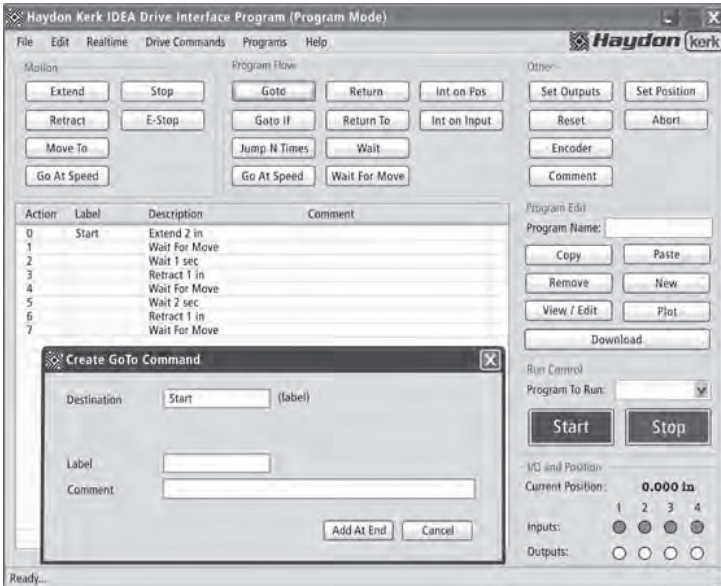
The IDEA™ Drive is a state-of-the-art electronic drive and fully programmable control unit that uses an intuitive Graphic User Interface (GUI). The IDEA Drive can be easily integrated with a stepper motor linear actuator combining the motor, linear translation, and programming in a single compact package.



IDEA
PROGRAMMABLE DRIVE

IDEA Drive Features

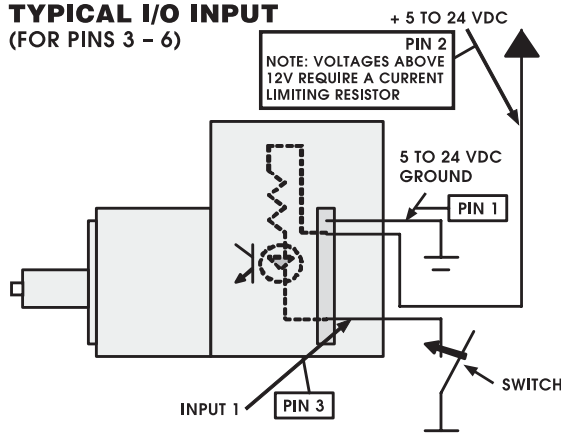
RoHS Compliance	Yes
Programming Language	On-screen GUI (Graphic User Interface)
Input Voltage	+12 to +48 VDC
Communication Type	USB to Mini USB
Microstepping	Full, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64
Electronically Configurable	Using easy-to-use, on-screen graphics
Auto-population of Drive Parameters	Uses software prompt for part number
Programmable Acceleration and Deceleration	Yes
Programmable Current Control	Run and hold, boost to accelerate/decelerate
Movement Profile Plotter	Included
Interactive Program Debug	Yes. Line by line or multiple line application
Program Storage	Flash. 85 KBytes
Multiple Program Files	Yes. Organized by program name
Units of Measure	Metric or English, software configurable
User Label and and Comment Fields	Unlimited
Branching Functions	Yes
Interrupt Functions	Yes
Counter	64 bit
General Purpose I/O Inputs, Opto-Isolated	4 (5-24 VDC, 4 mA max. per input)
General Purpose I/O Outputs, Opto-Isolated, Open Collector	4 (5-24 VDC, 200 mA max. per output, pull-up resistor required)



Computer Connection

- ❑ Communications: USB to mini USB (drive side)
- ❑ Power Supply Connector: Drive Side: Tyco 284512-2
Mating: Tyco 284506-2
- ❑ Digital I/O Connector:
Drive Side: HIROSE DF3A-10P-2DS
Mating: HIROSE DF3-10S-2C

TYPICAL I/O INPUT (FOR PINS 3 - 6)



IDEA™ Drive software is simple to use with on-screen buttons and easy-to-understand programming guides.

The software program generates motion profiles directly into the system and also contains a “debug” utility allowing line-by-line execution of a motion program for easy troubleshooting.

IDEA Drive		
Input	Output	Part Number
48 VDC Max.	2.6 A rms Max.	PCM4826
48 VDC Max.	0.6 A rms Max.	PCM4806

Conventional wire connectors are also available from Haydon Kerk Motion Solutions:

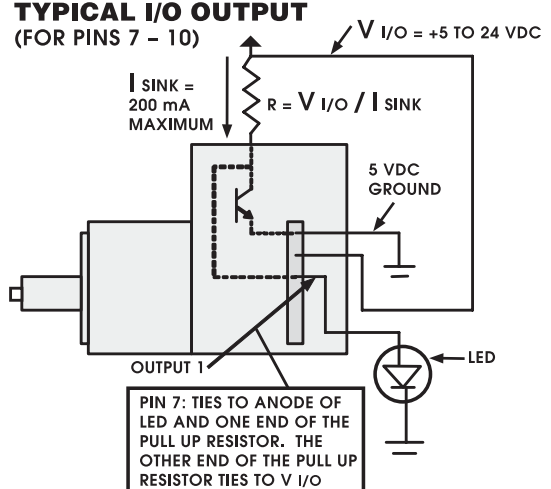
Power Cable	Part Number 56-1348
USB to Mini USB	Part Number 56-1346
10 Wire I/O Cable*	Part Number 56-1352
Motor Connector Cable	Part Number 56-1453

*Cable required only if the actuator is linked to an external switch

TABLE COMMON FOR EACH PRODUCT CONFIGURATION

PIN POSITION	DESCRIPTION	NOTES
PIN 1	GROUND I/O SUPPLY	5 TO 24 VDC
PIN 2	+ I/O SUPPLY	5 TO 24 VDC
PIN 3	INPUT 1	
PIN 4	INPUT 2	
PIN 5	INPUT 3	
PIN 6	INPUT 4	
PIN 7	OUTPUT 1	
PIN 8	OUTPUT 2	
PIN 9	OUTPUT 3	
PIN 10	OUTPUT 4	

TYPICAL I/O OUTPUT (FOR PINS 7 - 10)



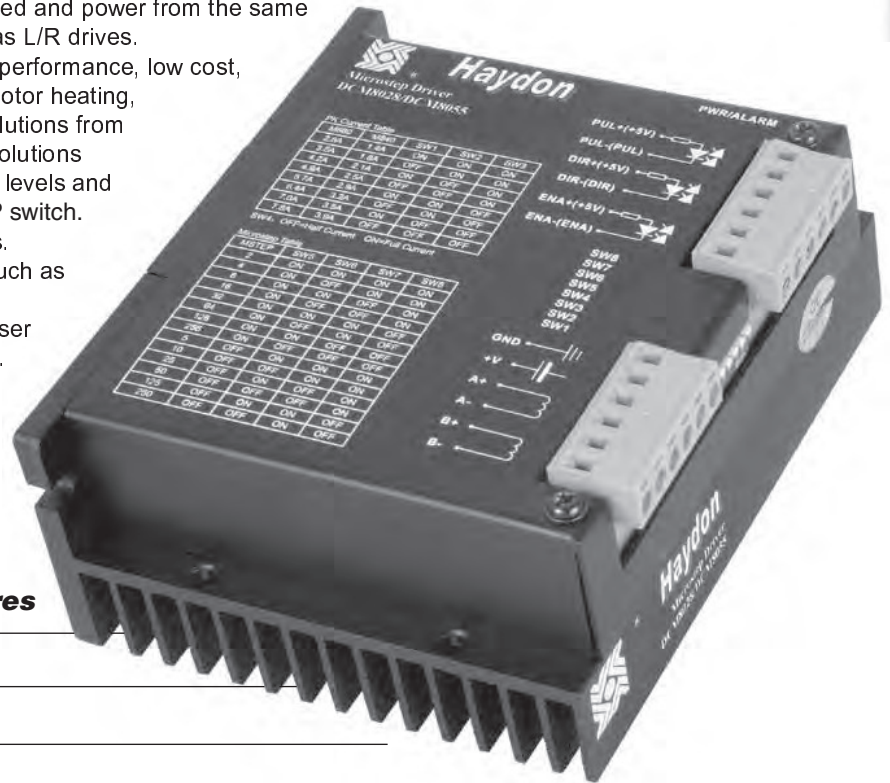
Haydon Kerk Motion Solutions, Inc. has designed an advanced series of drivers to efficiently operate motors to their peak performance. With several options to select from, we can help you set up a system that will power-up any application.

Micro Stepping Drives #DCM8028 & DCM8055

Haydon Kerk Motion Solutions High Performance Micro Stepping Chopper Drives based on some of the most advanced technology in the world today. Providing a cost effective solution for production volume requirements, the small size allows designers to use these Drives in limited space and they are also easily integrated with other electronic systems. Design time is reduced because incorporating these Drives is far simpler than developing a custom drive circuit. They are suitable for driving 2-phase step motors (maximum current ratings of 2.8 A and 5.5 A rms per phase). These specially designed Drives deliver optimum performance throughout a greater speed range. By using an advanced bipolar constant-current chopping technique, and a maximum input voltage of 80 VDC, they can produce more speed and power from the same motor, compared with traditional technologies such as L/R drives.

The DCM8028 and DCM8055 feature high performance, low cost, compact size, mixed decay current control for less motor heating, automatic idle-current reduction and micro step resolutions from 1/2 step to 1/256. There are fourteen micro step resolutions selectable in decimal and binary. The output current levels and micro step resolutions are easily set via the 8 bit DIP switch. These Drives are suitable for 4, 6, and 8 lead motors.

Ideal for a wide range of stepping motors such as low voltage linear motors, used in various kinds of machines, such as X-Y tables, labeling machines, laser cutters, engraving machines, and pick-place devices. These Drives are particularly useful in motor applications requiring low noise, low vibration, high speed and high precision requirements.



DRIVES
FOR STEPPER MOTORS

Drive DCM8028/DCM8055 Drive Features

- User friendly Chopper Drive
- Ideal for a wide range of stepping motors
- Suitable for 4, 6, 8 lead motors
- Inaudible 20 khz chopping frequency
- TTL compatible and optically isolated input signals
- 14 selectable microstep resolutions in decimal and binary
- Current up to 5.5 A rms/phase
- Automatic idle current reduction
- 4 5/16" x 4" x 1 1/8" (11.0 cm x 10.2 cm x 2.9 cm)
- Up to 80 VDC input voltage. For Europe the maximum input voltage must be limited to 70 VDC (CE Regulations)

Bipolar Chopper Drive #DCS4020

The Haydon™ DCS4020 Chopper Drive by Haydon Kerk Motion Solutions, Inc. delivers optimum performance through-out a greater speed range. This new technology drive has been designed for easy set up and use. The Haydon DCS4020 is ideal for development projects where a single power supply is all that is necessary to easily run the motor. The motor current is set using an on-board potentiometer and no external current setting resistors are required.

The DCS4020 is also feature-packed. The Driver provides all the basic motor controls including full or half-stepping of bipolar steppers, directional control, and output enable control. An oscillator circuit is standard on the drive with an on-board speed control potentiometer. In addition, external input/output signals allow complete remote control of all drive functions. All electrical connectors have removable plugs incorporating screw type terminals.



Bipolar Chopper Drive #DCS4020 Features

- On-board or external step pulse clock
- On-board or external single step switch
- On-board or external step rate control potentiometer
- On-board or external direction control
- On-board or external full step / half step control
- On-board or external outputs enable control
- On-board current control potentiometer

Bipolar Chopper Drive #DCS4020 Technical Data

Size:	4.47-in x 3.38-in x 1.31-in (113.54 mm x 85.85 mm x 33.27 mm)
Power Requirement:	Single unregulated, providing +20 VDC to +40 VDC
Output Current:	Fully adjustable from 66 mA rms/Ø to 2 A rms/Ø continuous duty
Continuous rating:	2 A rms/Ø
Peak, non-repetitive rating:	3 A/Ø
Chopper Frequency:	~20 KHz
Onboard Oscillating Range:	<10 pulses/sec. to >2,000 pulses/sec.
Stepping:	Full step/Half step capability
I.C.s:	S.T. Micro: L297 (control I.C.) and L298 (4A dual full wave bridge)

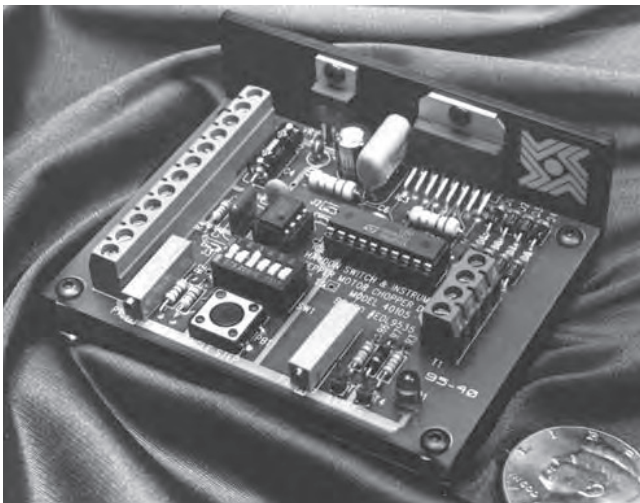


Bipolar Chopper Drive #40105

A chopper drive is a power-efficient method of current driving a stepping motor to obtain higher stepping rates. Torque, likewise, is maintained which otherwise would have diminished due to the effects of counter E.M.F. and increased coil impedance.

Haydon Kerk Motion Solutions, Inc. bipolar chopper drive (Part No. 40105) has been designed for easy set-up and use. Just connect a single power supply and a motor and its ready to run! Motor current is set using an on-board potentiometer. No external current setting resistors are required. This feature-packed drive provides all basic motor controls, including full or half stepping of bipolar steppers and direction control. An oscillator circuit is standard on the drive with an on-board speed control potentiometer. In addition, external input/output signals allow complete remote control of all drive functions.

The average input power rating of the motor must be adhered to, otherwise overheating will result. It is permissible to operate at 2X rated current (4X power) utilizing a 25% duty cycle.

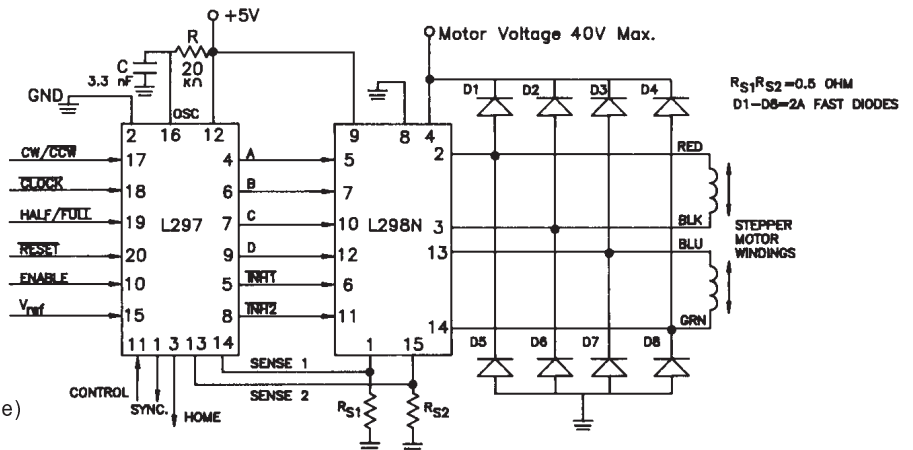


Chopper Drive #40105 Features

- On board or external step pulse clock
- On board or external single step switch
- On board or external step rate control potentiometer
- On board or external direction control
- On board or external full step/half step control
- On board or external outputs enable control
- On board output current control potentiometer
- External reset control
- External chopper synchronous output

Chopper Drive #40105 Technical Data

Size:	3.75-in x 2.95-in x 1.5-in (95.3 mm x 74.9 mm x 38.1 mm)
Power Requirement:	Single unregulated, providing +20 VDC to +40 VDC
Output Current:	Fully adjustable from 66 mA rms/Ø to 3 A rms/Ø
Continuous rating:	2 A rms/Ø
Peak, non-repetitive rating:	3 A/Ø
Chopper Frequency:	~20 KHz
Onboard Oscillating Range:	<10 pulses/sec. to >2,000 pulses/sec.
Stepping:	Full step/Half step capability

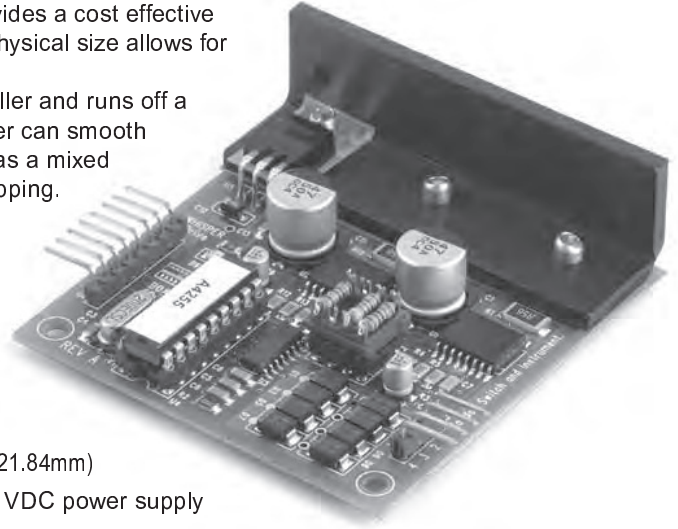


I.C.s:
S.T. Micro: L297 (control I.C.)
and L298 (4A dual full wave bridge)

Whisper™ Drive #44103

A compact, microstepping drive for bipolar stepper motors that provides a cost effective solution for production volumes. Its ease of integration and small physical size allows for quick integration into your design.

The Whisper incorporates micro-stepping technology, a controller and runs off a single power supply. With eight microsteps per full step, the Whisper can smooth out cogging often associated with Can-stack steppers. The drive has a mixed current decay mode for reduced resonance and improved microstepping. Microstepping also reduces audible noise in the motor.



DRIVES
FOR STEPPER MOTORS

Whisper Drive #44103 Technical Data

Size (approx.):	2.65-in x 2.55-in x .86-in (67.31mm x 64.77mm x 21.84mm)
Power Requirement:	Regulated, 24 VDC to 28 VDC power supply
Output Current:	Up to 1 A rms/Ø
Recommended Motor Coil Voltage:	Bipolar, 5 VDC
Required External Step Pulse Range:	Up to 8000 PPS for 1000 full steps/sec.
Stepping:	Up to 8 microsteps per full step

Whisper Drive #44103 Features

- Bipolar chopper/constant current technology
- Automatic mixed current decay
- Selectable step; Full, 1/2, 1/4, 1/8 step
- Use single power supply for motor and drive
- Output enable/disable control
- Physically compact