

# IM1007I & IM1007IE

## HIGH PERFORMANCE MICROSTEPPING DRIVERS

### FEATURES

- Integral Indexer, Driver and Encoder Feedback
- Extremely Compact (3 x 5.9 x 1.1 inches) (76 x 149 x 29 mm)
- Low Cost
- Short Circuit, Over/Under Voltage and Over Temperature Protection
- High Input Voltage (80V)
- High Output Current (7 Amps RMS, 10 Amps Peak)
- Advanced Surface Mount and ASIC Technology
- Single Supply
- Fixed or Variable Step Resolution
- 1/100 Step Command Resolution
- 1/256 Step Motor Resolution
- Programmable Accel and Decel Ramps
- Dual Speed Jog Inputs
- Go and Soft Stop Inputs
- Programmable Trip Points
- Programmable Motor Run and Hold Currents
- RS422 Party Line Operation (Optional RS232)
- 2k Bytes of Nonvolatile Memory for Program Storage
- 6 Buffered User I/O Ports
- Optically Isolated Home and Limit Switch Inputs
- Motor Speeds to 6,000 RPM

### DESCRIPTION

Incorporated into the IM1007I & IE drivers are proprietary circuits that minimize ripple current while maintaining a 20 kHz chopping rate. This prevents additional motor heating that is common with drivers requiring higher chopping rates. Low inductance stepper motors can now be used to improve high speed performance and peak system efficiency.

The built-in indexer on the IM1007I & IE allows the user, via

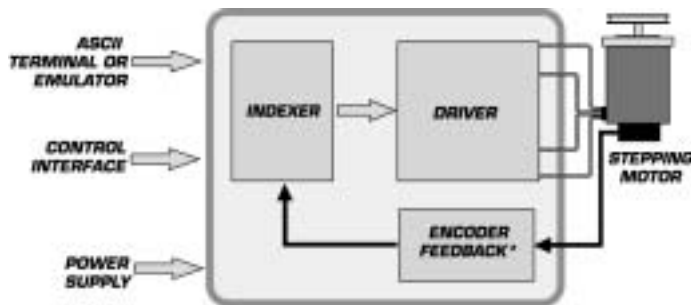
a serial link, to program parameters such as acceleration/ deceleration ramps, velocity, position, resolution, drive current, etc., to form simple or complex motions.

Programs can be executed by sending single commands, or can be stored in the on-board nonvolatile memory which can then be executed on power-up or by discrete user inputs.

The indexer has a variety of built-in functions, including limit switch inputs, a homing algorithm, and

general purpose inputs and outputs that can be used to detect switch closures and to activate solenoids and/or other external devices.

The IM1007IE with its built-in encoder option, can be used to enhance system performance by adding complex functions such as position verification, position maintenance and stall detection. These functions can be of particular importance in systems requiring closed loop control to track movement and final position.



\* Available on IE Versions Only

BLOCK DIAGRAM





# PIN FUNCTIONS

## IM1007I & IM1007IE PIN DESCRIPTION

### CONNECTOR P1 \*

Pin No.		Pin Name	Function
(34)	(38)		
—	1	NC	No Connection.
1	2	TX –	RS422 Transmit – (data out from indexer).
2	3	RX –	RS422 Receive – (data into indexer).
3	4	Jog Speed	Jog Speed input, low = hi speed, hi (floating) = low speed. Internally pulled up to +5VDC through a 10k resistor.
4	5	SCLK Out/ Receive	Step Clock Output from Indexer/RS232 data into Indexer (with RS232 option installed).
5	6	Jog +	Active low Jog input for “+” direction. Internally pulled up to +5VDC through a 10k resistor.
6	7	Moving	Moving output, low when indexing is in progress. High when not moving.
7	8	Jog –	Active low Jog input “–” direction. Internally pulled up to +5VDC through a 10k resistor.
8	9	Opto Supply	DC bias for input opto couplers. Internal current limiting resistors for +5VDC are supplied. Series resistors must be connected to optically isolated input signals for voltages greater than +5VDC.
9	10	Soft Stop	Active low input to stop indexing using deceleration ramp. Internally pulled up to +5VDC through a 10k resistor.
10	11	Party	Optically isolated party mode select pin: 0 = Party, 1 (Floating) = Single.
11	12	GO	Active low level input to execute a program stored in NVM. Program execution begins at location 0 in memory. Internally pulled up to +5VDC through a 10k resistor. Once executing, the GO input is ignored until the program completes or an Abort/Stop is executed.
12	13	Limit B	Optically isolated, active low limit switch input for “–” direction.
13	14	Fullstep	Non-isolated output, active for one clock pulse at each on-pole fullstep position. (Open drain output.)
14	15	Home	Optically isolated, active low Home switch input.
15	16	Index	Encoder index marker input. Internally pulled to +5VDC through a 10k resistor.
16	17	Limit A	Optically isolated, active low limit switch input for “+” direction.
17	18	Channel B	Encoder channel B input. Internally pulled up to +5VDC through a 10k resistor.
–	19	Channel B +	Differential Encoder Channel B + Input (with Differential Encoder Option installed).
–	20	Index +	Differential Encoder Index Marker + Input (with Differential Encoder Option installed).
18	21	TX +	RS422 Transmit + (data out from indexer).
19	22	RX +	RS422 Receive + (data into indexer).
20	23	Output 3	User controlled output #3. This is an open collector output with an internal 10k pullup resistor to +5VDC.
21	24	Output 1	User controlled output #1. This is an open collector output with an internal 10k pullup resistor +5VDC.
22	25	Output 2	User controlled output #2. This is an open collector output with an internal 10k pullup resistor +5VDC.
23	26	Input 1	User controlled input #1. Internally pulled up to +5VDC through a 10k resistor.
24	27	Input 3	User controlled input #3. Internally pulled up to +5VDC through a 10k resistor.
25	28	Input 2	User controlled input #2. Internally pulled up to +5VDC through a 10k resistor.
26	29	DIR Out/ Transmit	Direction Output from Indexer/RS232 data out from indexer (with RS232 option installed).
27	30	Ground	Logic Ground (internally connected to the Supply Ground).
28	31	NC/Channel B –	No Connection/Differential Encoder Channel B – input (with Differential Encoder Option installed).
29	32	+5VDC	Logic supply output for Encoder power.
30	33	NC/Channel A –	No Connection/Differential Encoder Channel B – input (with Differential Encoder Option installed).
31	34	MSEL3	Resolution Selection 3 input. Internally pulled down via a 1.5k resistor.
32	35	NC/Index –	No Connection/Differential Encoder Index Marker – input (with Differential Encoder Option installed).
33	36	Fault	Non-buffed output indicating driver fault condition. This output will be active High when the driver detects an internal fault such as overcurrent or phase short. A reset or power down is required to clear the fault condition.
34	37	Channel A	Encoder Channel A input. Internally pulled up to +5VDC through a 10K resistor.
–	38	Channel A +	Encoder Channel A + input (with Differential Encoder Option installed).

\*34 Pin Standard Connector. 38 Pin Connector for Optional Differential Encoder Feedback.

### CONNECTOR P2

Pin No.	Pin Name	Function
1	NC	No Connection
2	Fault	High voltage open collector output indicating driver fault condition. High when driver detects internal fault. Reset or power down to clear the fault condition.
3, 4	NC	No Connection
5	Ground	Supply Voltage Ground

Pin No.	Pin Name	Function
6	+ V	Supply Voltage
7	Phase $\bar{B}$	Phase B motor connection
8	Phase B	Phase B motor connection
9	Phase $\bar{A}$	Phase A motor connection
10	Phase A	Phase A motor connection