

IB462He

ULTRAMINIATURE BIPOLAR STEPPING MOTOR DRIVER



QUICK REFERENCE

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The Product Manual

The IB462He Product Manual contains full details about the product and associated Interface Boards, the INT-462 and the OSC-462H, and should be referenced prior to product use. These are available on the CD which shipped with your product and from the IMS web site at <http://www.imshome.com>.

Notes and Warnings



The IB462He, INT-462 and OSC-426H are sensitive to Electrostatic Discharge (ESD).



Do not apply power to the IB462He without proper heat sinking or cooling. The max. rear plate temperature is 70°C!



Hazardous Voltage Levels may be present if using an open frame power supply to power the IB462He, INT-462 or OSC-462H.



The rear mounting surface of the driver contains various voltages and must be kept isolated when attached to a conductive surface!



The Power Supply output voltage must not exceed the maximum input voltage of the IB462He,INT-462 or OSC-462H.



Do not "Hot Plug" Power or Motor Connection while power is applied to any of the IB462He drivers or accessories.

General Specifications

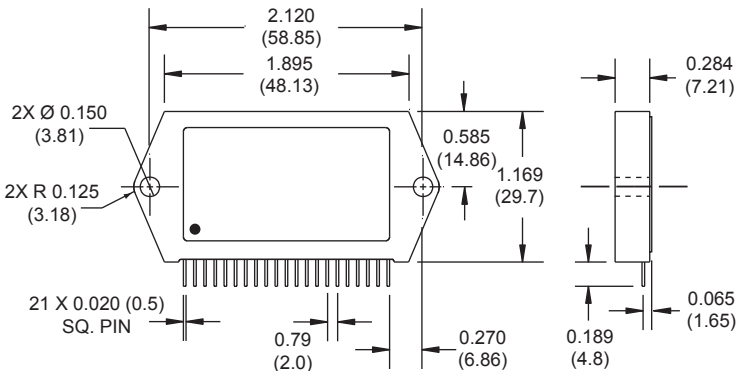
Electrical Specifications	Condition	Min	Typ	Max	Unit
Input Voltage Range	—	+12	—	+48	VDC
Phase Output Current	Per Phase	0.1	—	2	A
Quiescent Current (+V)	Outputs Floating	—	—	4	mA
Quiescent Current (+5V Input)	Outputs Floating	—	50	80	mA
Current Adjust Input Voltage	—	—	—	1.0	VDC

Logic Specifications	Condition	Min	Typ	Max	Unit
Low-Level Input Voltage	SCLK, DIR, H/F, Reset	—	—	0.6	VDC
Low-Level Input Voltage	Enable Input	—	—	1.3	VDC
High-Level Input Voltage	All Inputs	2	—	5	VDC
Low-Level Input Current	SCLK, DIR, H/F, Enable	—	—	-1.2	mA
Low-Level Input Current	Reset Input Only	—	—	-200	µA
High Level Input Current	SCLK, DIR, H/F, Enable	—	—	10	µA
Input Pull-up Resistance	SCLK, DIR, H/F, Enable	4.5	4.7	4.9	kΩ
Input Pull-up Resistance	Reset Input Only	50	51	52	kΩ

Thermal Specifications	Min	Typ	Max	Unit
Ambient Temperature	0	—	+50	°C
Storage Temperature	-40	—	+125	°C
Plate Temperature (Add'l Cooling Req'd)	—	—	+70	°C

IB462He Mechanical Specifications

Dimensions in Inches (mm)



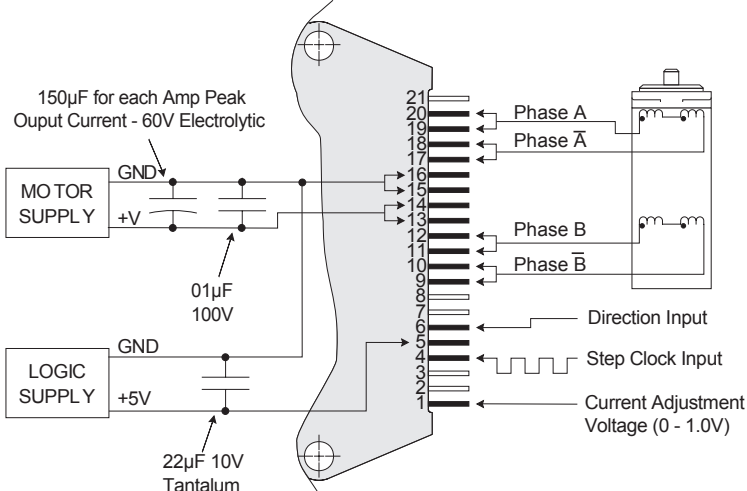
For More Information:
See the complete IB462He Product Manual
on the IMS Product CD or at www.imshome.com

IB462He Pin Configuration

Pin #	Function
1	Phase Current Adjustment
2	Reset Input
3	Half/Full Step Input
4	Step Clock Input
5	+5 VDC Logic Supply Input
6	CW/CCW Direction Input
7	Phase Enable Input
8	Phase B Current Sense Input
9	Phase B Step Motor Output
10	Phase B Step Motor Output

Pin #	Function
11	Phase B Step Motor Output
12	Phase B Step Motor Output
13	+12 to +48 VDC Motor Power Supply Input
14	+12 to +48 VDC Motor Power Supply Input
15	Power Supply Return (Ground)
16	Power Supply Return (Ground)
17	Phase A Step Motor Output
18	Phase A Step Motor Output
19	Phase A Step Motor Output
20	Phase A Step Motor Output
21	Phase A Current Sense Input

Minimum Required Connections



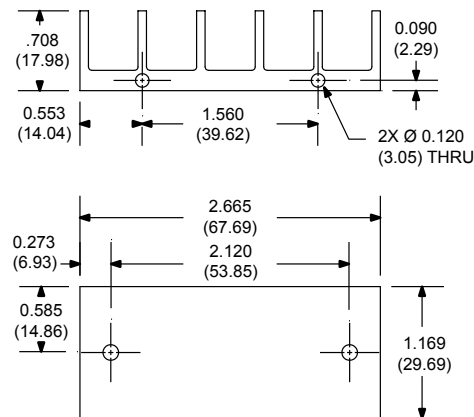
IB462He Mounting Requirements

The IB462H is designed to be socketed or soldered into a PCB. For PCB layout information and circuit board hole pattern please refer to the IB462He Manual, Section 1.7. This part of the Quick Reference only supplies Mechanical Mounting information.

Heat sinking and the use of the included insulating thermal pad are **ABSOLUTELY REQUIRED** for the IB462He driver at all power levels. Below are some examples of mounting configurations.

H-462H Heat Sink Kit Information

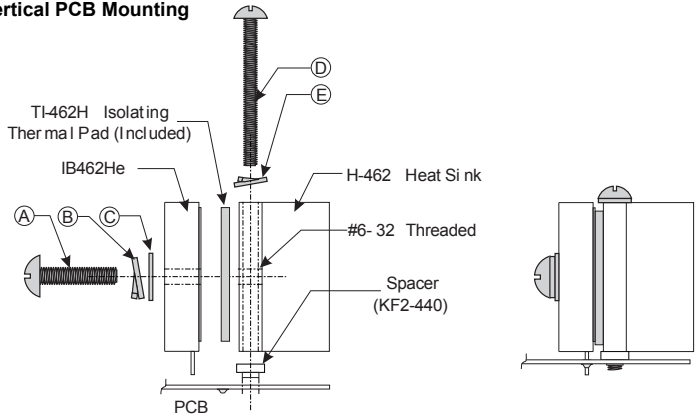
Heat Sink Dimensions



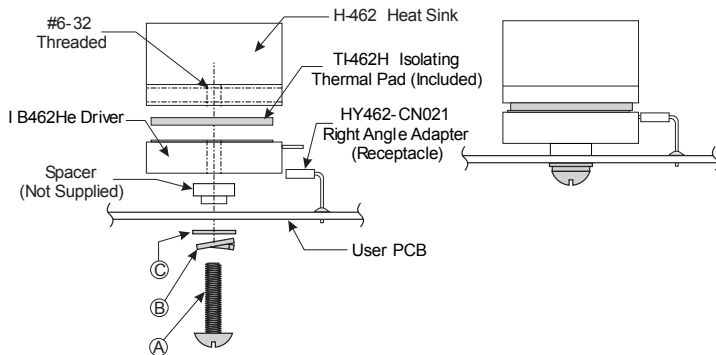
Heat Sink Kit Contents

- 1 - H-462 Heat Sink
- ① 2 - 4-40 x 1.375 ScREW
- Ⓐ 2 - 6-32 x 5/8 Screw
- 2 - Spacers
- Ⓔ 2 - #4 Split Washers
- Ⓒ 2 - #6 Flat Washers
- Ⓑ 2 - #6 Split Washers

Vertical PCB Mounting



PCB Mounting Using Right-Angle Receptacle



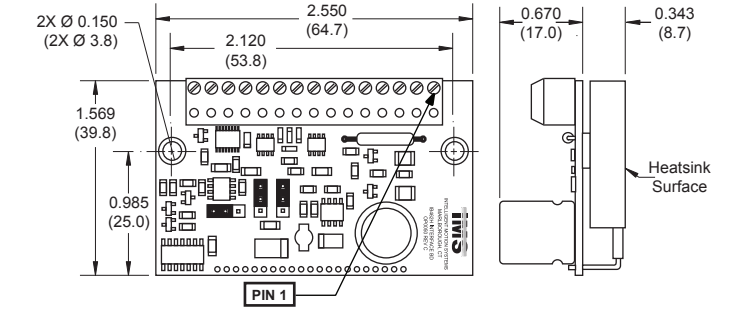
INT-462 Interface Board

General Specifications

Electrical Specifications	Condition	Min	Typ	Max	Unit
Input Voltage Range	—	+12	—	+48	VDC
Phase Output Current	Per Phase	0.1	—	2	A
Quiescent Current (Driver Connected)	Inputs/Outputs Floating	—	—	85	mA
Input Forward Current	Isolated Inputs	8	10	12	mA
Input Forward Voltage	Isolated Inputs	5	—	40	VDC
Signal Output Current	Fault Output	—	—	25	mA
Drain-Source Voltage	Fault Output	—	—	100	VDC
Drain-Source Resistance	Fault Output	—	6.5	—	Ω

INT-462 Mechanical Specifications

Dimensions in Inches (mm)



INT-462 Pin Configuration

Pin #	Function	Pin #	Function
1	Power Supply Return (Ground)	8	Step Clock Input (Isolated)
2	+V (+12 to +48 VDC)	9	+5 to +40 VDC Optocoupler Supply
3	Motor Phase A	10	Enable Input (Isolated)
4	Motor Phase $\bar{A}$	11	Reset Input (Isolated)
5	Motor Phase B	12	Fault Output (Open-Collector)
6	Motor Phase $\bar{B}$	13	Logic Ground
7	CW/CCW Direction Input (Isolated)	14	Current Adjustment
		15	Current Reduction Adjustment

Mounting

Refer to the mounting instructions on the opposite side of this sheet or in the full product manual Section 2.1.

Setting Run and Hold Output Current

A current adjustment resistor is **REQUIRED**.

JP3 Settings

ENOFF - Current Reduction By Resistor

ENON - Outputs Disable After a move (0 Hold Current)

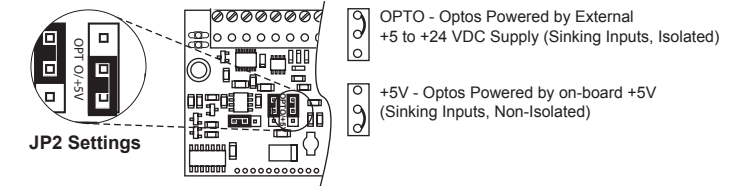
Current Adjust (See Table)

Reduction Adjust (See Equation)

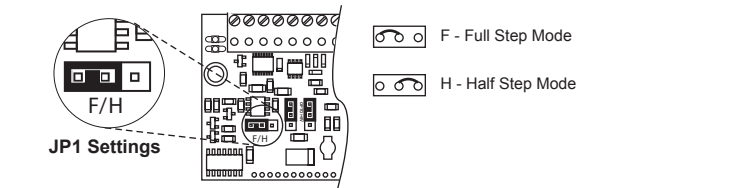
$$R_{RED} = 500 \times \left(\frac{I_{RUN} \times I_{HOLD}}{I_{RUN} - I_{HOLD}} \right)$$

I_{RUN} (A)	1% Ω	I_{RUN} (A)	1% Ω
0.1	49	1.1	549
0.2	100	1.2	604
0.3	150	1.3	649
0.4	200	1.4	698
0.5	249	1.5	750
0.6	301	1.6	806
0.7	348	1.7	845
0.8	402	1.8	909
0.9	453	1.9	953
1.0	499	2.0	1000

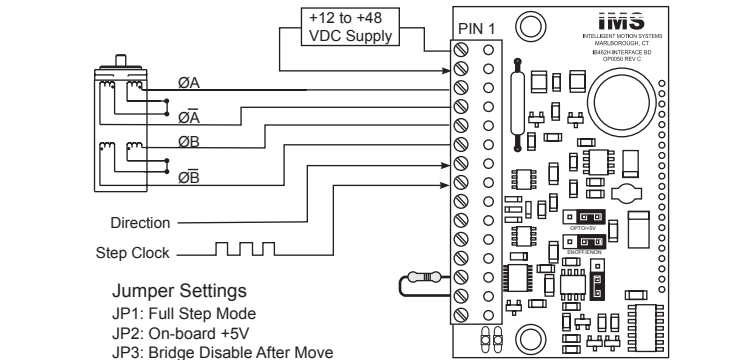
Opto-Isolated Input Power Setup



Setting Half/Full Step Modes



Minimum Required Connections



OSC-462H Variable Speed Control Board

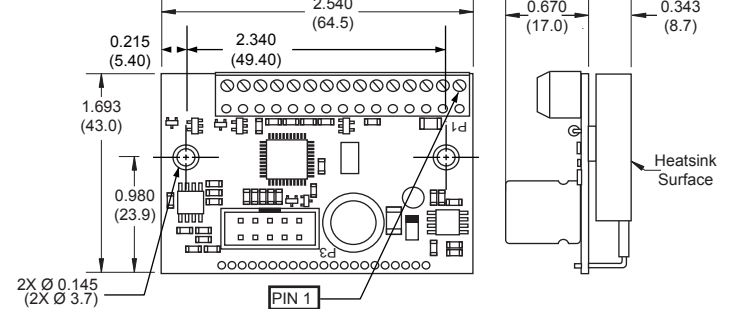
General Specifications

Electrical Specifications	Condition	Min	Typ	Max	Unit
Input Voltage Range	—	+12	—	+48	VDC
Phase Output Current	Per Phase	0.1	—	2	A
Quiescent Current (Driver Connected)	Inputs/Outputs Floating	—	—	85	mA
Low-Level Input Voltage	Stop/Start, DIR, SCLK	-0.5	—	1.5	VDC
High-Level Input Voltage	—	3.0	—	5.5	VDC
Low-Level Input Voltage	Enable Input Only	0.5	—	1.65	VDC
High-Level Input Voltage		3.85	—	5.5	mA
Output Drain-Source Voltage	Direction and Step Clock Outputs	—	—	80	V
Output Drain-Source Current		—	—	120	mA
Output Drain-Source On-Resistance		—	—	6	Ω

Speed Control Specifications	Min	Typ	Max	Unit
Speed Control Input Voltage	0	—	+5	V
A/D Resolution	—	10	—	bit
Speed Control Potentiometer Resistance	—	10	—	kΩ

OSC-462H Mechanical Specifications

Dimensions in Inches (mm)



OSC-462H Pin Configuration

Pin #	Function	Pin #	Function
1	Phase A Step Motor Output	8	Logic Ground (Potentiometer -)
2	Phase $\bar{A}$ Step Motor Output	9	Speed Control In (Potentiometer Wiper)
3	+V (+12 to +48 VDC)	10	Enable Input (HIGH, Disconnected=Enabled)
4	Power Supply Return (Ground)	11	Step Clock Input
5	Phase B Step Motor Output	12	Direction Input
6	Phase $\bar{B}$ Step Motor Output	13	Stop/Start Input
7	+5V Out (Potentiometer +)	14	Buffered Step Clock Output
		15	Buffered Direction Output

Mounting

Refer to the mounting instructions on the opposite side of this sheet or in the full product manual Section 2.2.

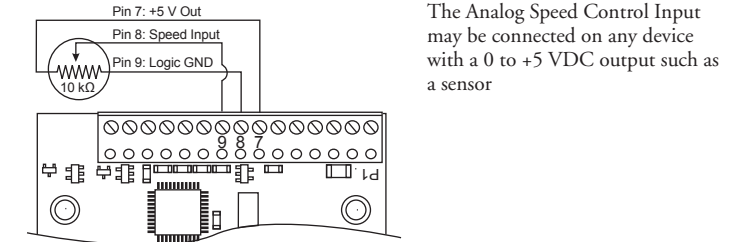
Parameter Setup

Parameter setup is accomplished in software using SPI (Serial Peripheral Interface) IMS recommends the MD-CC300-000 USB to SPI converter/cable and the IMS Motor Interface GUI to configure the parameters. This free software tool is on the IMS CD and also available from the web at <http://www.imshome.com>. While the available parameters are listed below, the device my be operated without changing the parameters from the factory default.

The SPI Cable plugs into Connector P3, a 10-Pin IDC Style connector located on the board.

Param	Function	Param	Function
ACCL	Acceleration	MRC	Motor Run Current
C	Joystick Center	RANGE	Max/Initial Velocity Range
DB	Potentiometer/Joystick Deadband	STEP	Half or Full Step Mode
FS	Potentiometer/Joystick Full Scale	VI	Initial Velocity
MHC	Motor Holding Current	VM	Max Velocity

Speed Control Connection



Minimum Required Connections

For connection of other Inputs/Outputs please refer to the IB462He product manual Section 2.2.

