

Quick Reference IM481H Plus

Ultra miniature microstepping driver



IMS
INTELLIGENT MOTION
SYSTEMS, INC.

Schneider
Electric

Notes and Warnings

Installation, configuration and maintenance must be carried out by qualified technicians only. You must have detailed information to be able to carry out this work. This information can be found in the user manual.

- Unexpected dangers may be encountered when working with this product!
- Incorrect use may destroy this product and connected components!

The user manual is not included, but may be obtained from the Internet at: <http://www.imshome.com/downloads/manuals.html>.

General Specifications

Electrical Specifications	Condition	Min	Typ	Max	Unit
Input Voltage Range (Includes Back EMF)	—	+12	—	+48	VDC
Phase Output Current	RMS	0.14	—	1.5	A
Phase Output Current	Peak	—	—	2.1	A
Quiescent Current (+V)	I/O Floating	—	1	—	mA
Quiescent Current (+5V Input)	I/O Floating	—	100	150	mA
Active Power Dissipation	I _{OUT} = 1A RMS	—	2	—	W

Logic Specifications	Condition	Min	Typ	Max	Unit
Low-Level Input Voltage	All Inputs	—	—	1.2	VDC
High-Level Input Voltage	All Inputs Except Reset	2	—	—	VDC
High-Level Input Voltage	Reset Input	—	2.3	—	VDC
Input Pull-Up Resistance	MSEL 0-3, Enable	—	20	—	kΩ
	Step Clock, Direction	—	2.0	—	kΩ
	Reset	—	1.0	—	kΩ
	Fault Input	—	4.7	—	kΩ
Low-Level Output Current	Fault, Fullstep	2	—	—	mA
High-Level Output Current		-2	—	—	mA
Low-Level Output Voltage	I _{OL} = 2 mA	—	0.5	—	VDC
High-Level Output Voltage	I _{OH} = 1.7 mA	2.3	—	—	VDC

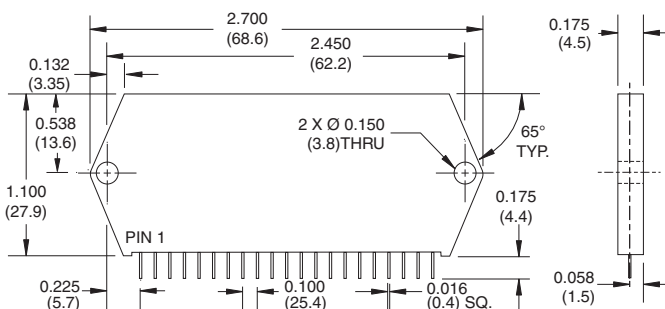
Thermal Specifications	Min	Typ	Max	Unit
Storage Temperature	-40	—	+125	°C
Operating Temperature	-40	—	+85	°C
Rear Plate Temperature (Add't Cooling may be required)	—	—	+70	°C

Motion Specifications	Min	Typ	Max	Unit
Step Clock Rate	—	—	2.5	MHz
Number of Microstep Resolutions	—	—	16	—

Available Microsteps Per Revolution						
400	800	1000	1600	2000	3200	5000
6400	10000	12800	25000	25600	50000	51200

Mechanical Specifications

Dimensions in Inches (mm)



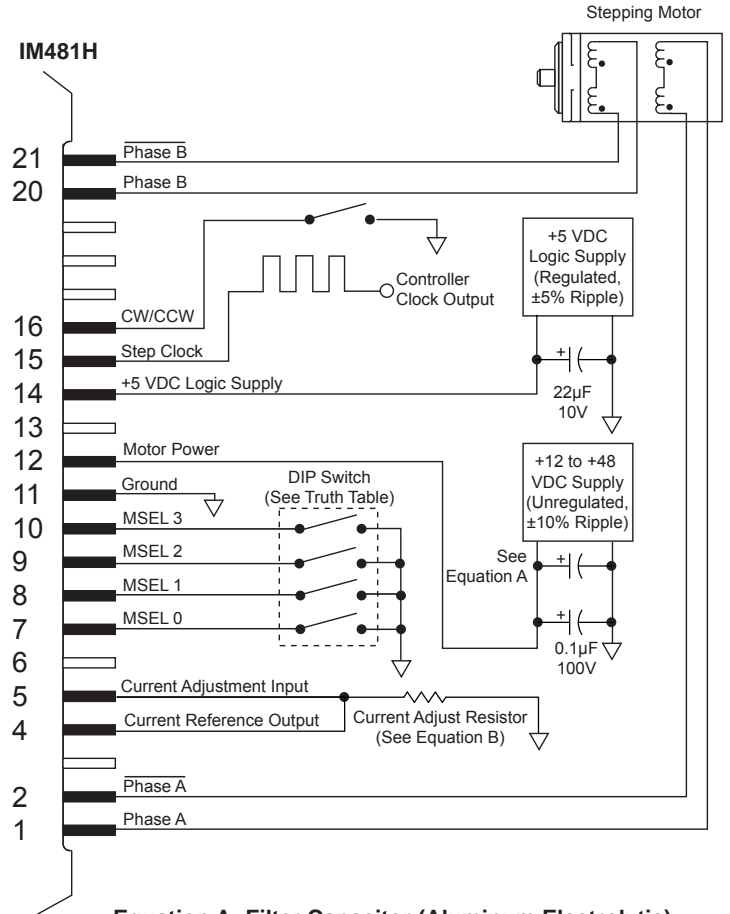
IB481H Pin Configuration

Pin #	Function
1	Phase A Motor Connection
2	Phase A Motor Connection
3	Current Reduction Adjust
4	Current Reference Output
5	Current Adjustment
6	Fault Input
7	Microstep Resolution Select 0
8	Microstep Resolution Select 1
9	Microstep Resolution Select 2
10	Microstep Resolution Select 3

Pin #	Function
11	Power Supply Return (Ground)
12	+12 to +48 VDC Power Input
13	Reset Input
14	+5 VDC Logic Supply Input
15	Step Clock Input
16	CW/CCW Direction Input
17	Enable/Disable Input
18	On-Full-Step Output
19	Fault Output
20	Phase B Motor Connection
21	Phase B Motor Connection

Minimum Required Connections

The following illustration shows the minimum connection requirements for operating the IM481H. For use and interface of the other I/O points, please refer to the full product manual.



Equation A: Filter Capacitor (Aluminum Electrolytic)

Amps Peak X 150μF Example: 1.5 Amps Peak X 150μF = 200μF
Use 200μF Electrolytic Capacitor

Equation B: Calculating the Current Adjust Resistor

Amps Peak X 1000 Example: 1.5 Amps Peak X 1000 = 1500Ω
Use 1500Ω 1% Resistor to set Peak output of 1.5A

Truth Table: Microstep Resolution Select Settings

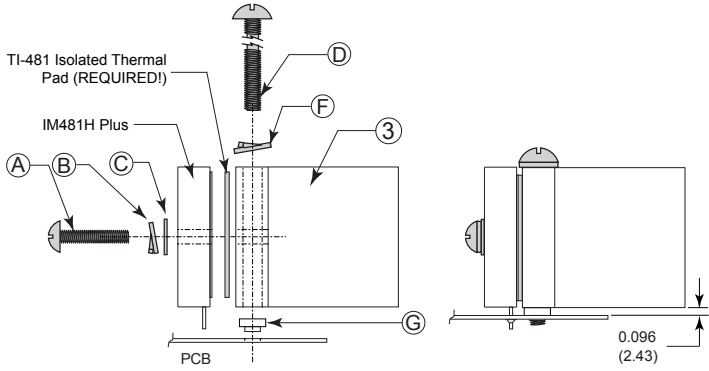
Assumes 1.8° Stepping Motor
0 = LOW (Switch Closed), 1 = HIGH (Switch Open).
MSEL Inputs Pulled to +5V Internally using a 20kΩ Resistor

Resolution Microsteps/Step	Steps/Rev	MSEL 0	MSEL 1	MSEL 2	MSEL 3
<i>Binary Resolutions</i>					
2	400	0	0	0	0
4	800	1	0	0	0
8	1600	0	1	0	0
16	3200	1	1	0	0
32	6400	0	0	1	0
64	12800	1	0	1	0
128	25600	0	1	1	0
256	51200	1	1	1	0
<i>Decimal Resolutions</i>					
5	1000	0	0	0	1
10	2000	1	0	0	1
25	5000	0	1	0	1
50	10000	1	1	0	1
125	25000	0	0	1	1
250	50000	1	0	1	1
<i>Full Step</i>					
1	200	0	1	1	1
<i>.01 Degrees</i>					
180	36000	1	1	1	1

IM481H Mounting Requirements

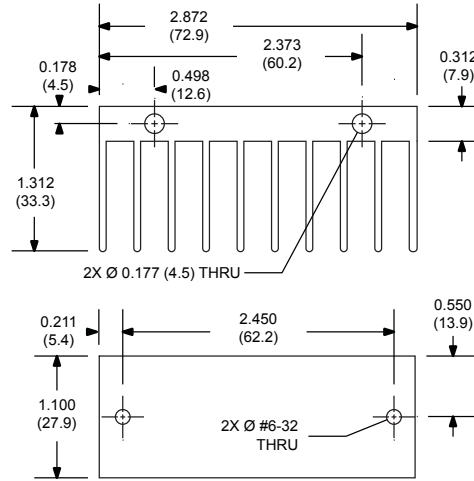
The IM481H is designed to be socketed or soldered into a PCB. For PCB layout information and circuit board hole pattern please refer to the product manual. This part of the Quick Reference only supplies mechanical mounting information.

PCB Mounting



H481 Heat Sink Kit

Heat Sink Dimensions



Heat Sink Kit Contents

- ③ 1 - H-481 Heat Sink
- ④ 2 - 8-32 x 1.375 Screw
- Ⓐ 2 - 6-32 x 5/8 Screw
- Ⓒ 2 - Spacers
- Ⓕ 2 - #8 Split Washers
- Ⓖ 2 - #6 Flat Washers
- Ⓑ 2 - #6 Split Washers

INT-481 Interface Board

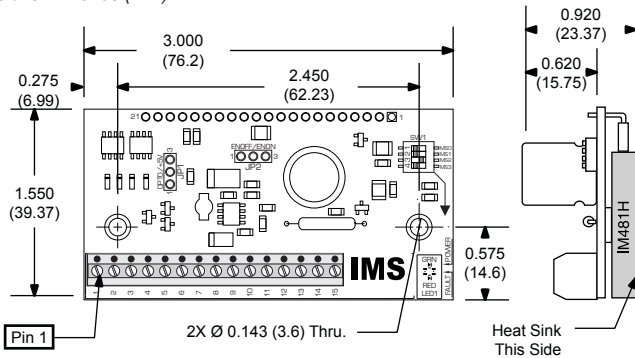
General Specifications

All test data was taken at 25° at an input voltage of +45 VDC.

Electrical Specifications	Condition	Min	Typ	Max	Unit
Input Voltage	—	+12	—	+48	VDC
Optocoupler Supply Voltage	—	+5	—	+40	VDC
Input Forward Current	Isolated Inputs	5	—	15	mA
Input Forward Voltage		—	1.5	1.7	VDC
Reverse Breakdown Voltage	—	5	—	—	VDC
Signal Output Current	Fault, Full Step	—	—	20	mA
Drain-Source Voltage		—	—	100	VDC
Drain-Source On Resistance (I _{DS} = 25mA)		6.5	—	—	Ω

INT-481 Mechanical Specifications

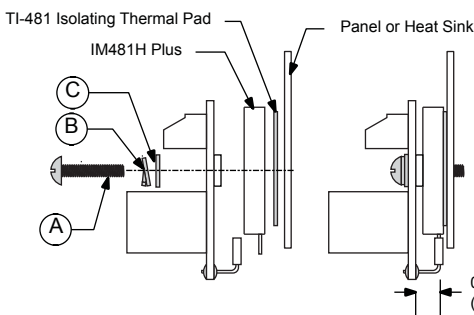
Dimensions in Inches (mm)



INT-481 Pin Configuration

Pin #	Function	Pin #	Function
1	Phase B Motor Output	8	CW/CCW Direction Input
2	Phase B Motor Output	9	Step Clock Input
3	Phase A Motor Output	10	Fault Output
4	Phase A Motor Output	11	On-Full-Step Output
5	Enable/Disable Input	12	+12 to +48 VDC Motor Power Supply
6	Reset	13	Power Supply Return (Ground)
7	Optocoupler Supply (+5 to +40 VDC)	14	Current Adjustment
		15	Current Reduction

Mounting



Hardware Required

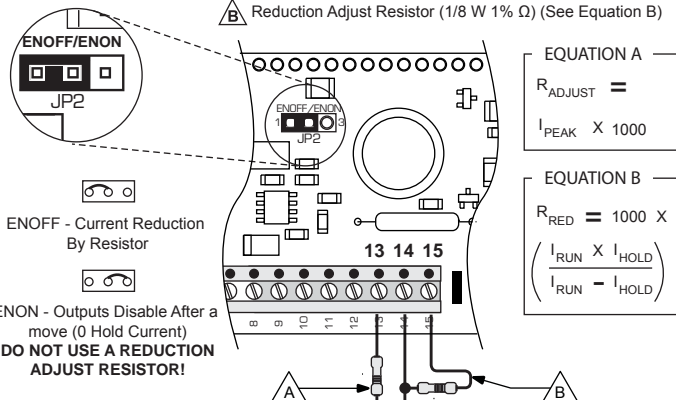
- (Included in H-481 Heat Sink Kit)
- Ⓐ 2 - 6-32 x 5/8 Screw
 - Ⓑ 2 - #6 Split Washers
 - Ⓒ 2 - #6 Flat Washers

Setting Run and Hold Output Current

A current adjustment resistor is **REQUIRED**.

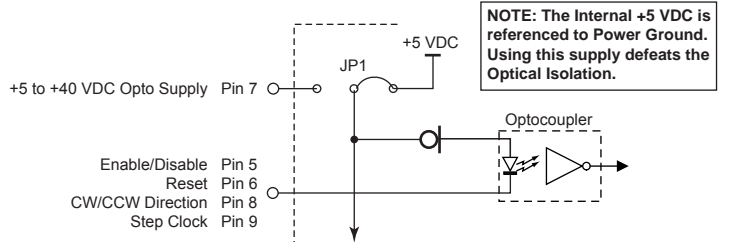
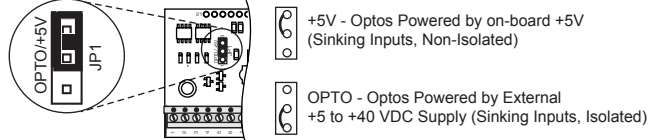
JP2 Settings

- Ⓐ Current Adjust Resistor (1/8 W 1% Ω) (See Equation A)
- Ⓑ Reduction Adjust Resistor (1/8 W 1% Ω) (See Equation B)

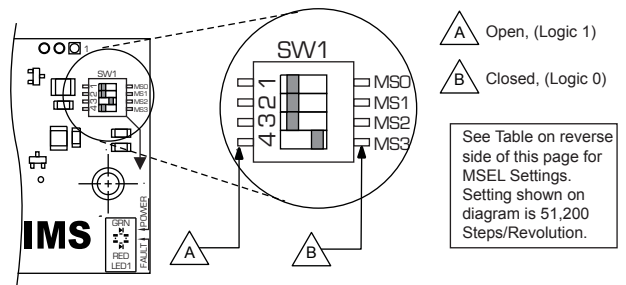


Opto-Isolated Inputs

JP1 Settings



Microstep Resolution



Minimum Required Connections

