Quick Reference

IM483 & IM805

Miniature high performance microstepping drivers

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 are not included, but may be obtained from the Internet at: http://www.imshome.com/downloads/manuals.html.

Required for Setup

- +12 to +48 VDC, 2A (IM483) or +24 to +75 VDC, 3.5A (IM805) unregulated linear or switching power supply.
- Stepping motor appropriately sized for your drive.
- 22 AWG wire for logic and I/O, 18 AWG wire (IM483) or 16 AWG wire (IM805) for power supply. Shielded twisted pairs recommended.
- Basic hand tools: wire cutter/stripper, screw driver.

General Specifications

Electrical Specifications		Condition	Min	Typ	Max	Unit
Input Voltage Range	IM483	—	+12	—	+48	VDC
	IM805	**—**	***+24***	**—**	***+75***	***VDC***
Phase Output Current	IM483	RMS	—	—	3.0	A
		Peak	0.4	—	4	A
	IM805	***RMS***	***1***	**—**	***5.0***	***A***
		Peak	**—**	**—**	***7.0***	***A***
Quiescent Current	IM483	I/O Floating	—	70	—	mA
	IM805	***I/O Floating***	**—**	***13***	**—**	***mA***
Active Power Dissipation	IM483	I_{OUT}= 3A RMS	—	12	—	W
	IM805	***I_{OUT}= 3A RMS***	**—**	***9***	**—**	***W***

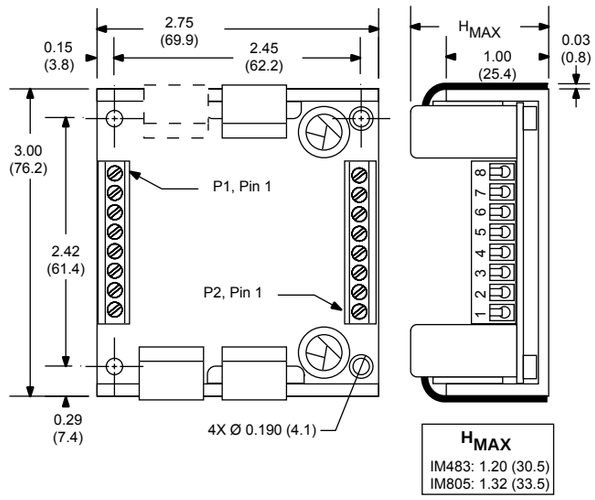
I/O Specifications	Condition	Min	Typ	Max	Unit
Input Forward Current	Isolated Inputs	—	7.0	15	mA
Input Forward Voltage		—	1.5	1.7	VDC
Input Reverse Breakdown Voltage		5	—	—	VDC
Output Current	Fault, Fullstep Outputs	—	—	25	mA
Collector-Emitter Voltage	Fault Output	—	—	140	VDC
Collector-Emitter Saturation Voltage	Fault (I_{CS}=25 mA)	—	—	0.2	VDC
Drain-Source Voltage	Fullstep Output	—	—	100	VDC
Drain-Source On Resistance	Fullstep (I_{CS}=25 mA)	—	6.5	—	Ω

Thermal Specifications	Min	Typ	Max	Unit
Storage Temperature	-40	—	+125	°C
Ambient Temperature	0	—	+50	°C
Plate Temperature (Add't Cooling may be required)	—	—	+70	°C

Motion Specifications	Min	Typ	Max	Unit
Step Clock Rate	—	—	10	MHz
Number of Microstep Resolutions (See Resolution Table)	—	—	14	—

Mechanical Specifications

Dimensions in Inches (mm)



Pin Configuration

See Opposite Side for alternative connector options.

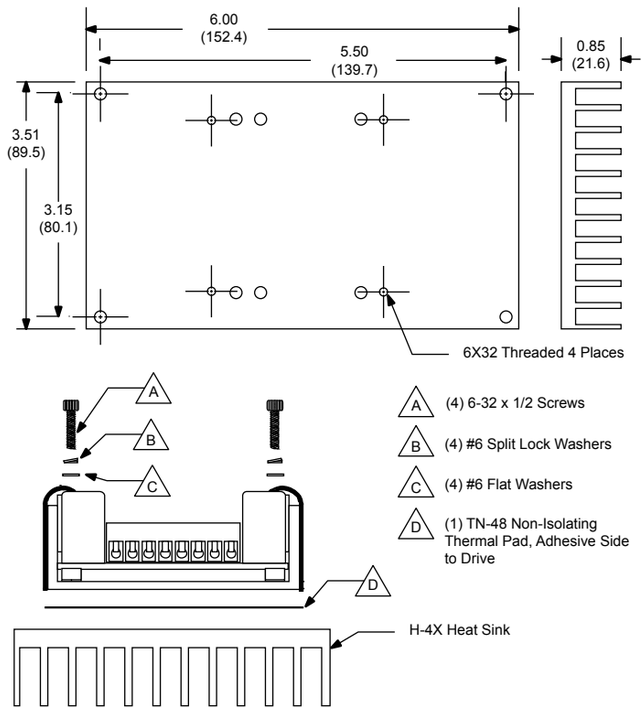
Connector P1 (Signals)	
Pin #	**Function**
1	No Connect
2	Step Clock Input
3	Direction Input
4	Optocoupler Supply
5	Enable/$\overline{\text{Disable}}$ Input
6	$\overline{\text{Reset}}$ Input
7	Fault Output
8	Fullstep Output

Connector P2 (Motor and Power)	
Pin 1	**Function**
1	Current Reduction Adjust
2	Current Adjustment
3	Power Supply Return (Ground)
4	Motor Power (+V)
5	Motor Phase $\overline{\text{B}}$
6	Motor Phase B
7	Motor Phase $\overline{\text{A}}$
8	Motor Phase A

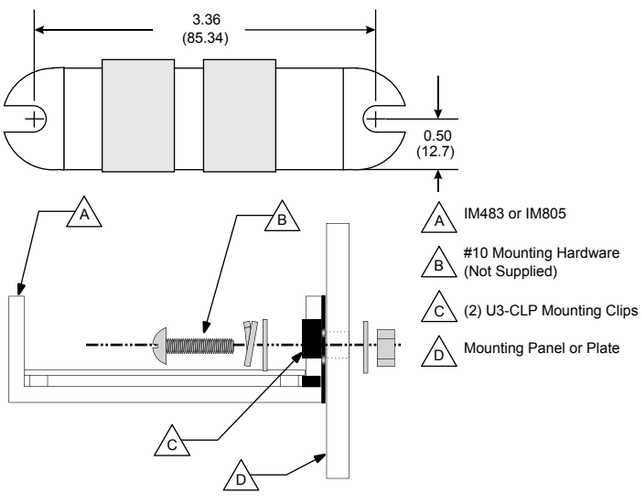
Mounting Requirements

The IMx is designed to be mounted to a heat sink or inside a panel. IMS offers both a Heat Sink Kit (H-4X) and Side Mounting Clips (U3-CLP)

H-4X Heat Sink Kit



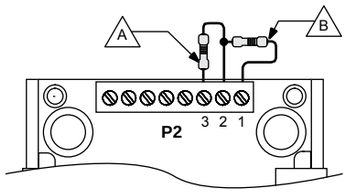
U3-CLP Side Mounting Clips



All documentation, software, program examples and resources are available online at: http://www.imshome.com/products/discrete_drivers.html.

Controlling the Output Current

A Current Adjustment Resistor is REQUIRED to operate the IMx driver. Optionally, the output current may be automatically reduced to a holding current level after a motion completes.



A Current Adjust Resistor (1/8W 1%Ω) See EQ. A.

B Reduction Adjust Resistor (1/8W 1%Ω) See EQ. B.

EQ. A

$$R_{ADJ} = I_{PEAK} \times 500$$

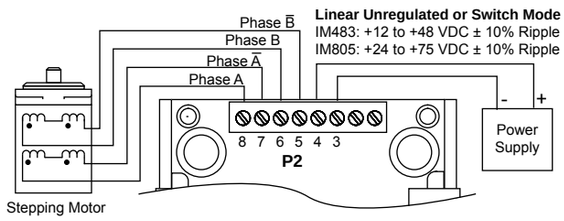
EQ. B

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

Connecting Motor and Motor Power

This document shows connection of a 4-lead stepping motor. For 6 and 8-lead motor connection see the product manual. Use the table on the right to determine the acceptable per-phase inductance.

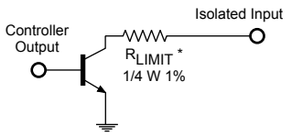
+V	Max Inductance Per Phase (mH)	
	IM483	IM805
+12	2.5	—
+24	5	5
+40	8	8
+48	10	10
+75	—	15



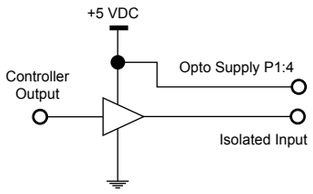
Linear Unregulated or Switch Mode
IM483: +12 to +48 VDC ± 10% Ripple
IM805: +24 to +75 VDC ± 10% Ripple

Opto-Isolated Inputs

Current Limiting Resistor Values					
+VDC	5	10	12	15	24
R_{LIMIT}	–	681	1000	1300	2670

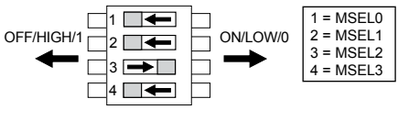


Open Collector Interface



TTL Interface

Setting the Microstep Resolution

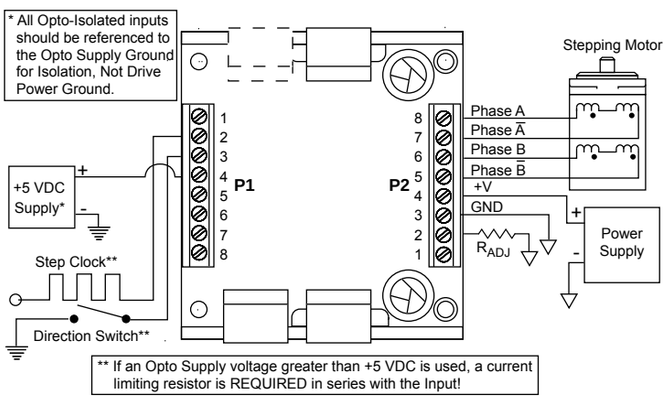


MSEL Switch

Resolution Microsteps/Step	Steps/Rev	MSEL 0 SW1:1	MSEL 1 SW1:2	MSEL 2 SW1:3	MSEL 3 SW1:4
Binary Resolutions					
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
Decimal Resolutions					
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

Minimum Required Connections

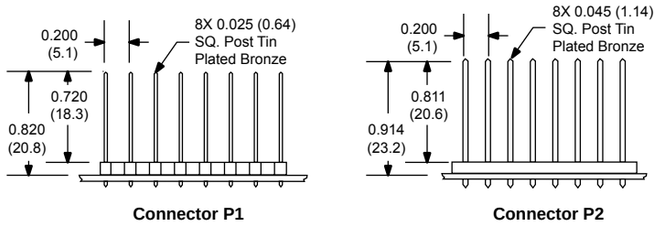
The following illustration shows the minimum connection requirements for operating the IMx. For use and interface of the other I/O Points please refer to the full product manual.



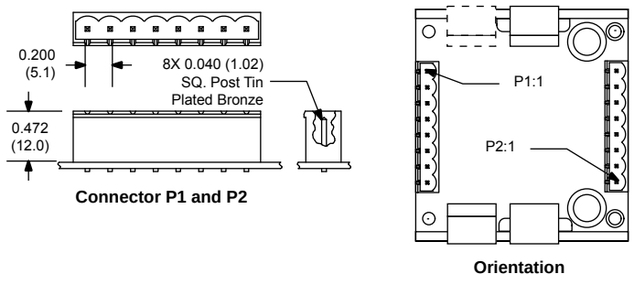
Alternate Connector Options - 8-Pins at P1

The pin-out is identical to standard IMx products.

IMx-8P2 - 8-Pin Posts at Connectors at P1 and P2



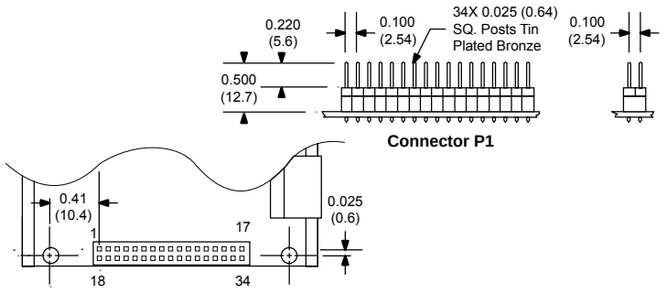
IMx-PLG - 8-Pin Locking Pluggable Connectors at P1 and P2



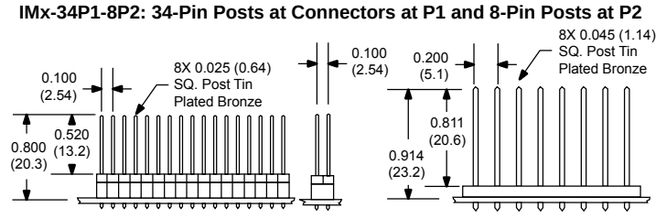
Alternate Connector Options - 34-Pins at P1

The pin-out allows for additional signals. See table below.

IMx-34P1: 34-Pin Header at P1, Standard Screw Terminal at P2



IMx-34P1-8P2: 34-Pin Posts at Connectors at P1 and 8-Pin Posts at P2

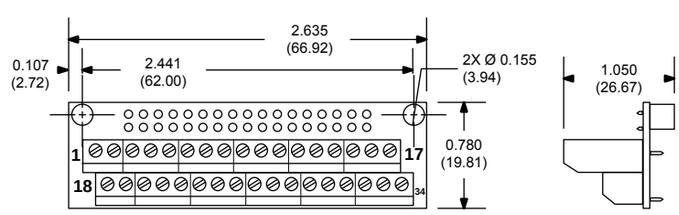


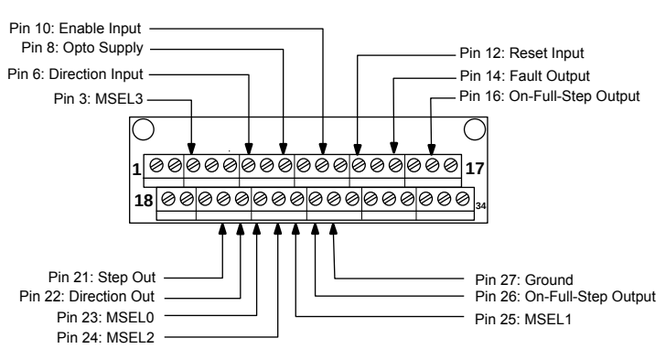
Pin #	Function
3	Resolution Select 3
4	Step Clock Input
6	Direction Input
8	Optocoupler Supply
10	Enable/Disable Input
12	Reset Input
14	Fault Output

Pin #	Function
16, 26	On-Full-Step Output
21	Step Clock Output (Non-Isolated)*
22	Direction Output (Non-Isolated)*
23	Resolution Select 0
24	Resolution Select 1
25	Resolution Select 2
27	Logic Ground (Non-Isolated)

*Step/Direction outputs follow the inputs at a 1:1 Ratio.

BB-34 Breakout Board





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