



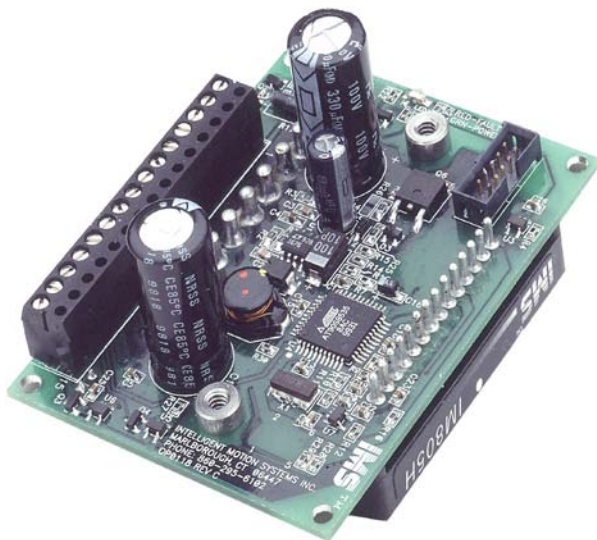
INTELLIGENT MOTION SYSTEMS, INC.

*Excellence in Motion™*

## OSC-805H

**ANALOG SPEED CONTROL BOARD  
FOR IM805H STEPPING MOTOR DRIVERS**

### OPERATING INSTRUCTIONS



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The information in this book has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies.

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*OSC-805H Operating Instructions*  
*Revision R032706*

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# SECTION 1

## The OSC-805H Analog Speed Control

### Section Overview

The purpose of this appendix is to acquaint the user with the OSC-805H Analog Speed Control an optional add-on for the IM805H driver. Covered are:

- OSC-805H Features
- OSC-805H Specifications
- Installation and Wiring
- The Analog Speed Control Configuration Utility
- Configuring the OSC-805H
- Application Example

### OSC-805H Features

The OSC-805H Analog Speed Control Interface Board offers the system designer the capability of adding low cost, intelligent velocity control to the functionality of the IM805H microstepping hybrid motor driver. The IM805H plugs easily into a receptacle on the bottom-side of the speed control.

The OSC-805H features a tunable digital oscillator for accurate velocity control. This oscillator has an output frequency range of 0 - 100 kilohertz. The output frequency of the oscillator will vary with the level of the 15-25kHz PWM, 0 to +5 volt, 0-20mA or 4-20mA speed control input.

The speed control board has 10 setup parameters which are configured using an included software utility. This utility enables the user to communicate to the OSC-805H via its Serial Peripheral Interface (SPI) to set up the operational parameters.

The OSC-805H is powered by a single +24 to +75 VDC power supply, which will also provide power to the IM805H driver.

The OSC-805H may be configured to be used with a joystick or as a linear

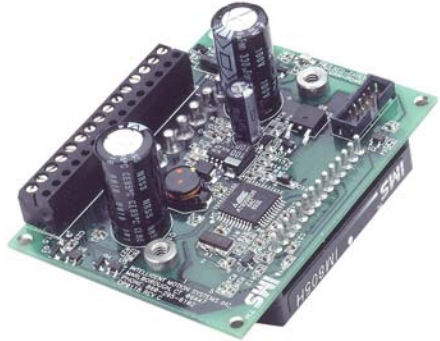


Figure 1.1: OSC-805H

velocity device. A joystick or potentiometer is connected between the on-board +5 VDC output and the speed control input. The joystick center position may then be set to the desired position using the configuration utility. This position will be seen by the OSC-805H as a zero reference position. Moving the joystick will then control the axis speed and direction.

To use velocity mode, a 10 kOhm potentiometer or 0 to +5 VDC reference voltage is used to control the axis velocity and the center position is set to 0. The velocity will vary between a user-configured initial velocity and a +5 VDC output and the speed control input. The joystick center position may then be set using the configuration utility to the desired position, which will be maximum velocity with voltage level applied to the input. Axis direction is controlled by the direction input.

In addition to this powerful array of features, the OSC-805H has buffered step clock and direction outputs to facilitate cascading of drives. These outputs will follow the primary step clock and direction outputs of the speed control board.

Interface wiring is accomplished using a convenient 15 pin removable screw terminal (P1). The parameter setup cable simply plugs into the 10 pin IDC header (P2) and your PC parallel port.

The OSC-805H allows for a simple, cost effective solution in applications requiring variable velocity or joystick control.

The OSC-805H features:

- Digital oscillator for accurate speed control.
- Low cost.
- Extremely compact (3.12 x 2.37 x 1.29 inches) (76 x 60 x 33 mm).
- May be configured for Joystick and Velocity operation.
- Selectable speed input control adjusted by 15-25 kHz PWM, 0 to +5 VDC, 0-20mA or 4-20mA.
- Step clock & direction outputs for cascading multiple drives.
- Single supply.
- Included graphical user interface (GUI) for parameter setup.
- Serial Peripheral Interface (SPI) communications interface.
- 15 pin removable screw terminal interface.
- Optional Mounting L-Bracket (MB-22).

# OSC-805H Specifications

## *Mechanical Specifications*

Dimensions in Inches (mm)

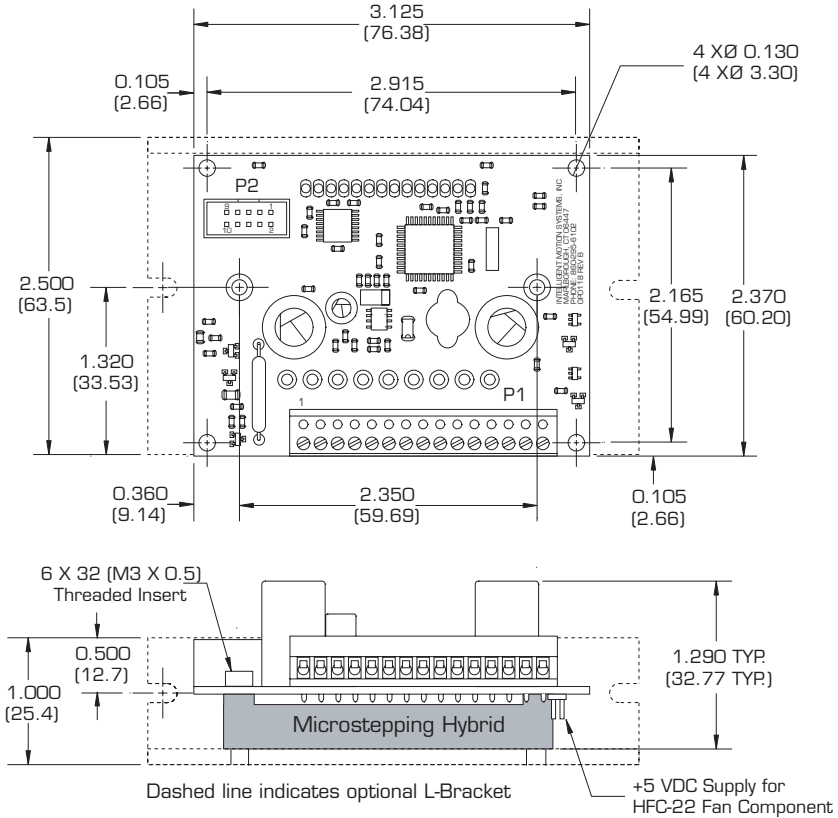


Figure 1.2: OSC-805H Dimensional Information

## ***Thermal Specifications***

---

<b>OSC-805H Thermal Specifications (°C)</b>	
<b>Specification</b>	<b>Range</b>
Ambient Temperature	0° to +50°
Storage Temperature	-40° to +125°
Maximum Plate Temperature	+70°

*Table 1.1: OSC-805H Thermal Specifications*

## ***Electrical Specifications***

---

Speed Control Input .....	15-25kHz PWM, 0 to +5 VDC, 4-20 or 0-20mA
A/D Resolution .....	10 bit
Speed Control Potentiometer Resistance .....	10 kW
Input Voltage (+V) Range .....	+24 to +75 VDC
Phase Output Current (attached Driver) .....	4 A/7 A (Peak)
Low Level Input Voltage	
Stop/Start, Dir & Step Clock .....	0 to +1.5 VDC
Enable .....	0 to +1.65 VDC
High Level Input Voltage	
Stop/Start, Dir & Step Clock .....	+3.0 to +5.0 VDC
Enable .....	+3.85 to +5.0 VDC
Input Pull-up Resistance (to +5 VDC)	
Stop/Start, Dir & Step Clock, Enable .....	4.99 kW
Output Drain-Source Voltage (Step Clock & Dir Out) .....	+80 VDC
Output Drain Current (Step Clock & Dir Out) .....	120 mA
Drain-Source On-Resistance (Step Clock & Dir Out) .....	6 W

*Table 1.3: OSC-805H Electrical Specifications*

## Pin Assignment and Descriptions

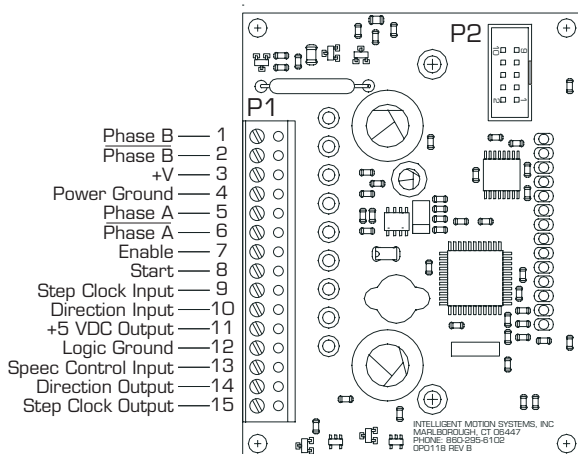


Figure 1.3: OSC-805H Connector P1 Pin Configuration

Pin #	Pin Name	Description
1	Phase B	Phase B of the stepping motor
2	Phase $\bar{B}$	Phase $\bar{B}$ of the stepping motor
3	+V (24 to 75 VDC)	+24 to 75 VDC unregulated power supply input
4	Power Ground	Power supply ground (return)
5	Phase $\bar{A}$	Phase $\bar{A}$ of the stepping motor.
6	Phase A	Phase A of the stepping motor
7	Enable	Active HIGH driver enable input. Internally pulled-up to +5 VDC
8	Start	Active LOW start input enables the internal step clock generator. Internally pulled-up to +5 VDC
9	Step Clock Input	Step clock input. Internally pulled-up to +5 VDC
10	Direction Input	CW/CCW direction input. Internally pulled-up to +5 VDC
11	+VDC Output	+5 VDC Output (10k $\Omega$ Potentiometer/Joystick signal end).
12	Logic Ground	Logic Ground (10 $\Omega$ Potentiometer/Joystick ground)
13	Speed Control Input	0 to +5 VDC (10k $\Omega$ Potentiometer/Joystick wiper), 15-25kHz PWM, 4-20mA/0-20mA
14	Direction Output	Buffered direction output
15	Step Clock Output	Buffered stop clock output

Table 1.3: OSC-805H Connector P1 Pin Assignment and Descriptions

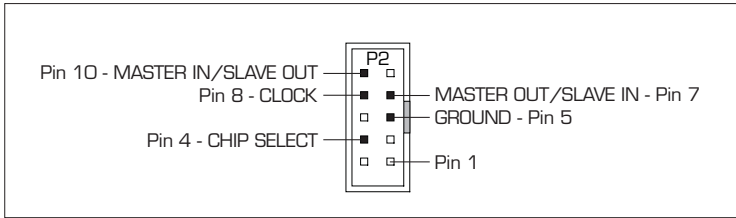


Figure 1.4: Connector P2 Pin Configuration



NOTE: Recommended Communication Cable  
 IMS Part # MX-CC100-000.

Pin #*	Pin Name	Description
4	CS	Chip Select
5	GND	Communications Ground
7	MOSI	Master Out/Slave In
8	CLK	Step Clock
10	MISO	Master In/Slave Out

\*Numbers not shown are "no connect".

Table 1.4: Connector P2 Pin Assignment and Descriptions



NOTE: See IM805H Operating Instructions for IM805H pin  
 configuration and specifications!

# SECTION 2

## Mounting the OSC-805H

The OSC-805H/IM805H assembly must be mounted to a heat sink or the optional HFC-22 heat sink/fan/clip cooling solution in order to maintain a rear plate temperature of less than 65°C on the IM805H driver.

### Installing the IM805H onto the OSC-805H

The IM805H (3) plugs into the OSC-805H Speed Control Board (4) and is secured with the included #6 hardware (A, B, & C). Torque the screws to 5 to 7 lb-in (0.60 to 0.80 N-m).

The second step is to mount the IM805H/OSC-805H assembly to the recommended HFC-22 heat sink/fan option (1), or a heat sink.

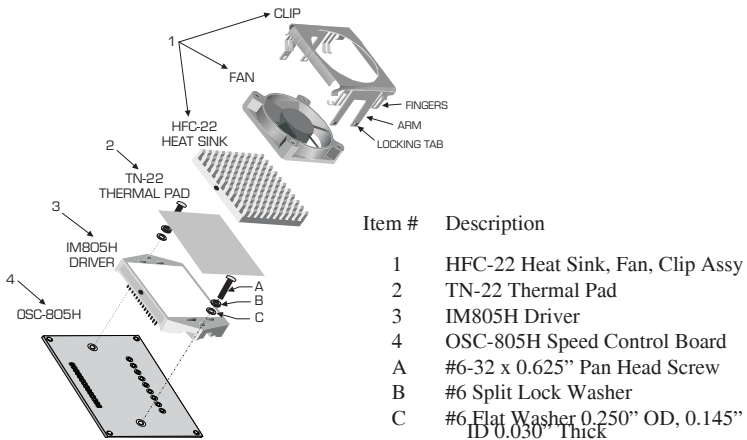


Figure 2.1.1: HFC-22 Heat Sink, Fan and Clip for IM805H/OSC805H Assembly

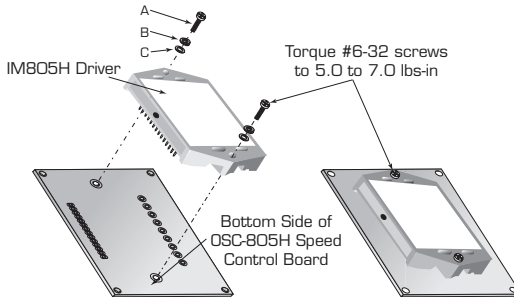


Figure 2.1.2: Inserting the IM805H into the OSC-805H



**WARNING!** When using the PR-22 receptacle pins the IM805H **MUST** be mounted using the included #6 hardware.

## ***Mounting an HFC-22 onto the OSC-805H/IM805H Assembly***

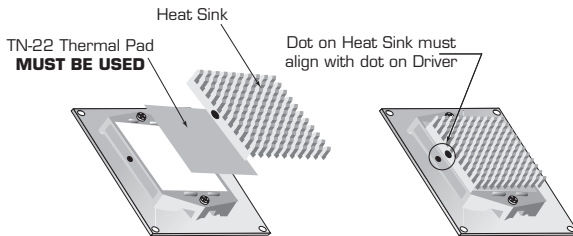
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Included with your IM805H driver is the thermal pad TN-22 (2). It is absolutely essential that this pad be positioned between the IM805H ceramic plate and the heat sink surface!

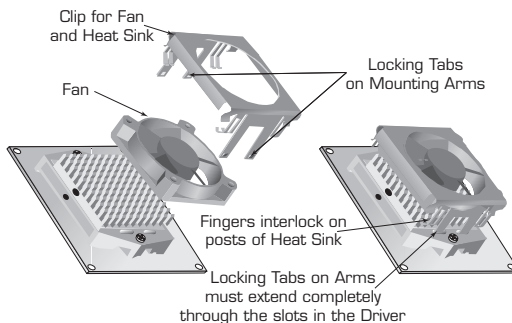
The recommended cooling solution for the OSC-805H/IM805H assembly is the HFC-22 heat sink/fan/clip assembly (See item 1 in Figure 2.1.1). The heat sink and fan components of the HFC-22 are easily mounted to the IM805H by means of an innovative clip design.

To mount the HFC-22 to the OSC-805H/IM805H assembly do the following:

- 1) Placing the heat sink on the driver, align so that the dot on the heat sink is on the same side as the dot on the driver, with the TN-22 thermal pad sandwiched between them. (The dot on the Heat Sink must align with the Dot on the Driver.)
- 2) Insert two of the arms from the fan/clip assembly into the corresponding slots in the driver, aligning the curved fingers on the clip between the posts of the heat sink. Insert the other two locking tabs into the opposite slots and snap into place. The locking tabs on all four arms should be completely through the slots on the driver.
- 3) Plug the fan power connector onto connector P3 on the bottom side of the OSC-805H. The power lead (red wire) should be oriented to the outside pin of P3.



*Figure 2.2.1: Mounting the HFC-22 to the OSC-805H/IM805H Assembly (Step 1)*



*Figure 2.2.2: Mounting the HFC-22 to the OSC-805H/IM805H Assembly (Step 2)*

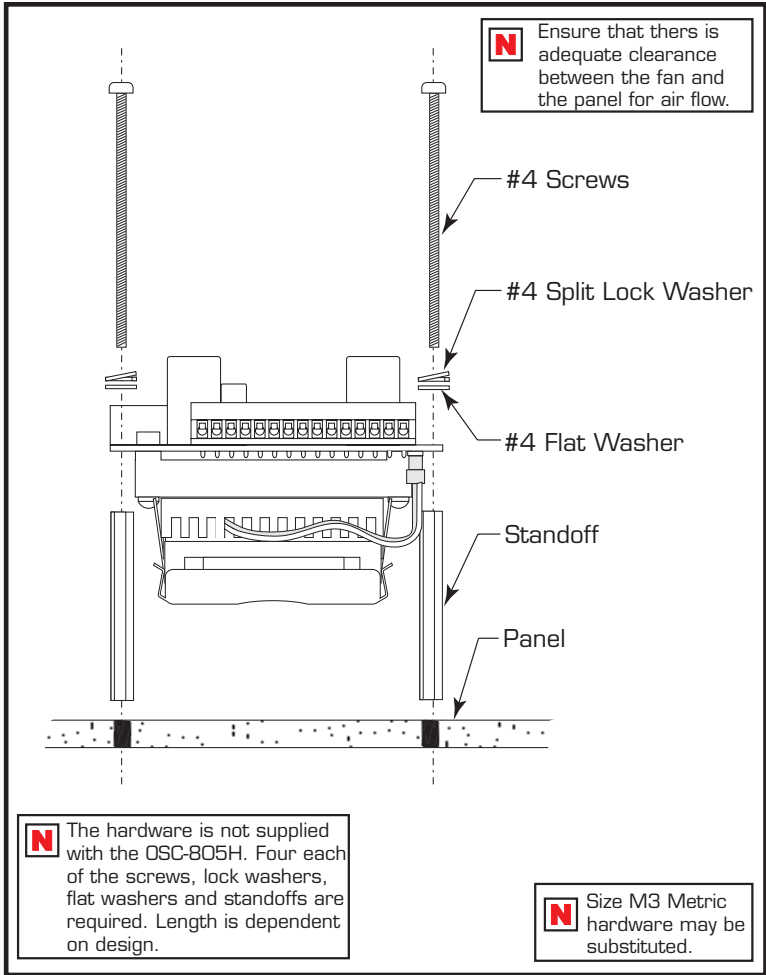


Figure 2.3: Panel Mounting the OSC-805H/IM805H/HFC-22 Assembly

**N** NOTE! The recommended mounting torque for the #4 hardware is 5 to 7 lb-in (0.60 to 0.80 N-m).

## Mounting the OSC-805H/IM805H Assembly to a Heat Sink

The OSC-805H/IM805H assembly may be mounted to a heat sink. In order to have a flush connection between the driver, thermal pad and heat sink, the driver cannot be mounted to the OSC-805H using the top-mounted threaded inserts. In this case the screw will be threaded down through the threaded inserts into drilled and tapped holes in the heat sink oriented to driver mounting holes. The 4 mounting holes on the corners of the OSC-805H will not be used.

Figure 2.3 illustrates this method of mounting the assembly.

For additional mounting configurations, an L-bracket (MB-22) is also available as an option.

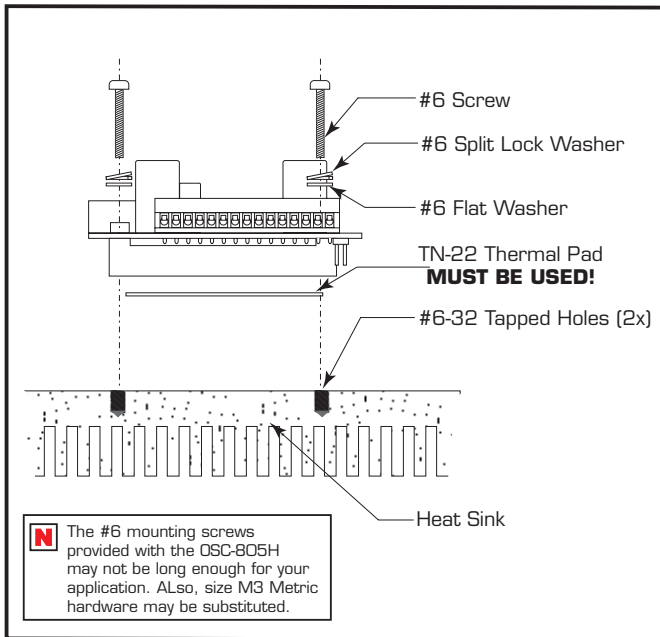


Figure 2.4: Heat Sink Mounting the OSC-805H/IM805H Assembly



**WARNING!** Use of the TN-22 thermal pad provided with the IM805H and placed between the driver's ceramic plate and the heat sink is absolutely essential to maintain plate temperature within specifications!



**NOTE!** The recommended mounting torque for the #6 hardware is 5 to 7 lb-in (0.60 to 0.80 N-m). Proper torquing of these screws will ensure good contact between the driver, the thermal pad and the heat sink.

# SECTION 3

## ***OSC-805H Wiring and Connections***

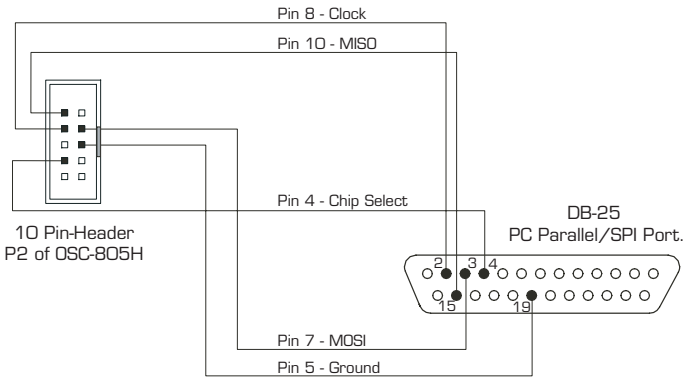
### ***Wiring Specifications***

P1: Power, Motor, Control Signals

The OSC-805H uses a removeable 15 pin screw terminal for wiring connection. The following wiring practices are recommended when connecting to the OSC-805H:

- Wire Size: 18 - 26 AWG
- Strip Length: 0.197" (5mm)
- Screw Torque: 3.0 lb-in (0.33 N-m)

P2: SPI Communications



*Figure 3.1: Connecting the SPI Interface*

The SPI communications connector uses a 10 pin pin-header. The recommended method of interfacing to this connector is the Parameter Setup Cable OSC-CC100-000.

### ***Power and Motor Connection and Specifications***

Motor Power/Ground (+V - Pin 3, GND - Pin 4)

Motor power for the OSC-805H/IM805H assembly will have the same recommended specifications as found in [Section 1.5: Power Supply Requirements](#) of this document.

The power supply ground will be connected to Pin 4 (GND) and the DC output to Pin 3 (+V). See the [Minimum Required Connections](#) figure in this section for

a connection diagram.

## Stepping Motor (ØB - Pins 1 & 2, ØA - Pins 5 & 6)

Motor selection for the OSC-805H/IM805H will have the same recommended specifications as found in [Section 1.6: Motor Requirements](#) of this document.

See the [Minimum Required Connections](#) figure in this section for a connection diagram.

## ***Input Connections***

---

### Enable Input (Pin 7)

The enable input is internally pulled-up to +5VDC through a 4.99kΩ resistor. When HIGH, or disconnected, the driver outputs are enabled. A LOW will disable the driver outputs. This input is independent of the step clock input.

This input may be connected by means of a switch between the input (Pin 10) and logic ground (Pin 8) or a sinking output.

### /Start (Pin 8)

The /Start input is internally pulled-up to +5VDC through a 4.99kΩ resistor. When in a logic HIGH, or disconnected, state the internal step clock generator will be off. Connecting this input to logic ground (pin 8) or a sinking output in a LOW state will enable the internal step clock oscillator.



NOTE: The /Start input must be in the stopped position (logic HIGH) in order to use an external step clock to index the motor.

This input may be controlled by means of a switch between the input (pin 13) and logic ground (pin 8) or a sinking output.

### Step Clock (Pin 9)

The Step Clock input is internally pulled-up to +5VDC through a 4.99kΩ resistor. This input would be used if an external 0 - 40kHz clock input is being used as a motion clock for the IM805H. This input will increment the motor only if the /Start input is in a logic HIGH (internal oscillator stopped) state. The Direc-



NOTE: The physical direction of the motor with respect to the direction input will depend upon the connection of the motor windings.

tion input will function normally.

## Direction (Pin 10)

The CW/CCW direction input is internally pulled-up to +5VDC through a 4.99k $\Omega$  resistor.

This input may be connected by means of a switch between the input (Pin 12) and logic ground (Pin 8) or a sinking output.

## Speed Control Input (Pin 13)

The Speed Control input is the input by which the internal step clock frequency, hence the velocity of the axis, is controlled.

This 0 - 5 volt analog input will typically be interfaced using a 10k $\Omega$  potentiometer as illustrated in Figure 3.2, a joystick wiper or by a 0 to +5V (4-20mA/0-20mA) analog output. If a constant velocity is desired, the speed control input can be connected directly to the +5VDC output and the desired velocity set using the VM parameter. When the input is 1 count greater than DB (value of the potentiometer deadband parameter), the step clock frequency will begin at the value specified by the initial velocity (VI) parameter. When at 5 volts, it will be at the value specified by the maximum velocity (VM) parameter. See [Setting the Initial/Maximum Velocity](#), for more details.

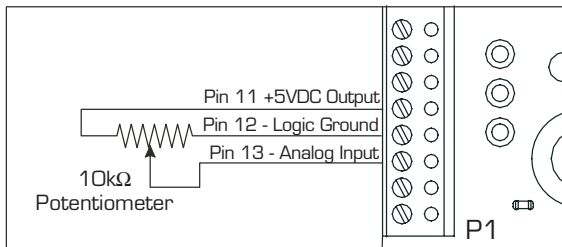


Figure 3.2: Interfacing the Speed Control Input with a Potentiometer

## ***Output Connections***

---

### +5VDC Output (Pin 11)

The +5VDC output is to be connected to the signal end of the 10k $\Omega$  potentiometer used to control velocity only. It is not the design intent of this output to supply power to external loads.

### Direction Output (Pin 14)

The Direction output is buffered through an open-drain N-channel FET. This output will follow the direction input.

### Step Clock Output (Pin 15)

The Step Clock output is buffered through an open-drain N-channel FET. This output will follow the step clock signal.

## ***Minimum Required Connections***

The following connections illustrated in Table 3.1 and Figure 3.3 are required to operate the OSC-805H/IM805H assembly.

<b>P1 15 Pin Screw Terminal</b>		
<b>Pin #</b>	<b>Pin Name</b>	<b>Description</b>
1	Phase B	Phase B of the stepping motor.
2	Phase $\overline{B}$	Phase $\overline{B}$ of the stepping motor.
3	+V (+24 to 75 VDC)	+24 to 75 VDC unregulated power supply input.
4	Power Ground	Power supply ground (return)
5	Phase A	Phase A of the stepping motor
6	Phase $\overline{A}$	Phase $\overline{A}$ of the stepping motor
8	Start Input	Active LOW Start input enables the internal step clock generator. Internally pulled-up to +5 VDC
10	Direction Input	CW/CCW direction input. Internally pulled-up to +5 VDC
11	+5 VDC Output	+5 VDC output (10k $\Omega$ potentiometer signal end)
12	Logic Ground	+5 VDC output (10k $\Omega$ potentiometer ground end)
13	Speed Control Input	0 to +5 VDC (10k $\Omega$ potentiometer/joystick wiper), 15-25kHz PWM, 4-20mA/0-20mA velocity control input
<b>P2 10 Pin Pin-Header</b>		
4	CS	Chip Select
5	GND	Ground
7	MOSI	Master Put/Slave In
8	CLK	Clock
10	MISO	Master In/Slave Out.

*Table 3.1: OSC-805H Required Connections*

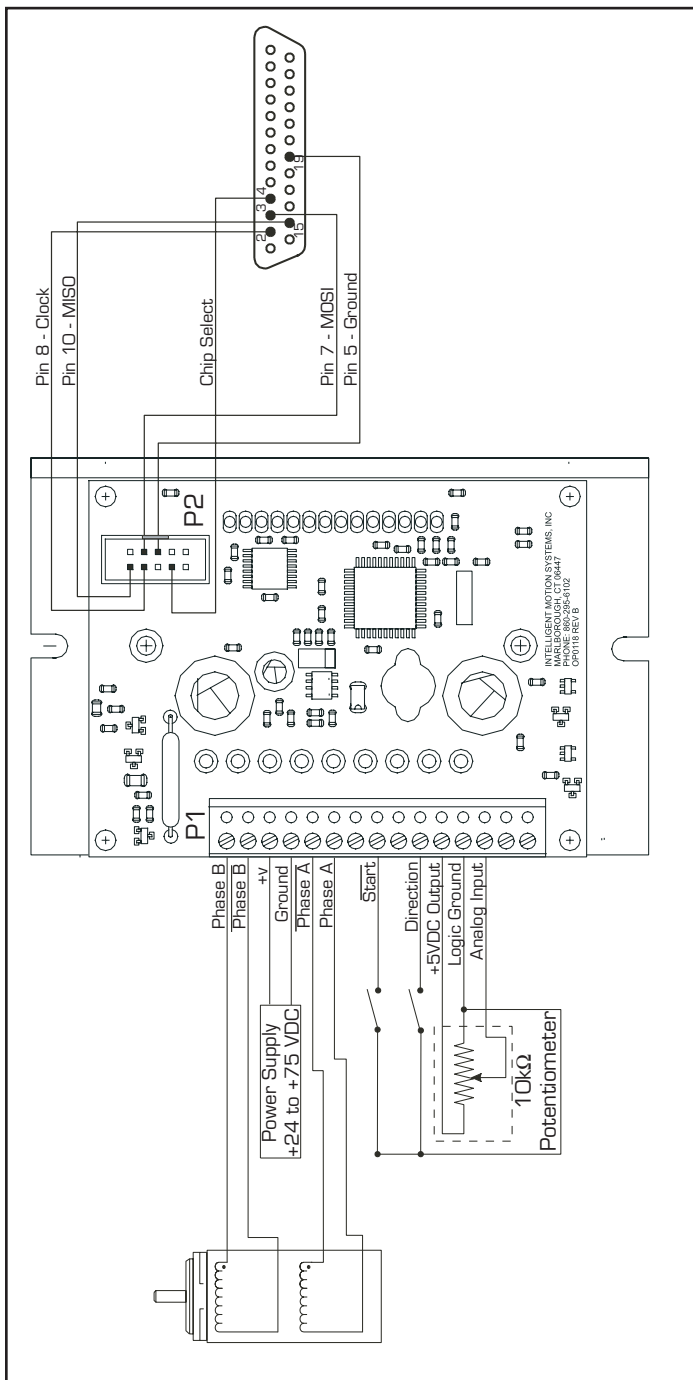


Figure 3.3: OSC-805H Minimum Required Connections

# SECTION 4

## Configuring The OSC-805H

### Using the Configuration Utility

The IMS Analog Speed Control configuration utility is easy to install and use software and is required for configuring the OSC-805H. This powerful tool is available for download at [www.imshome.com](http://www.imshome.com). This utility is the only method for configuring your speed control board. The configuration utility features the following:

- Easy installation.
- Ease of use via single screen interface.
- Automatic communication configuration.
- Will not allow out-of-range values to be set.
- Tool-tips display valid range settings for each option.

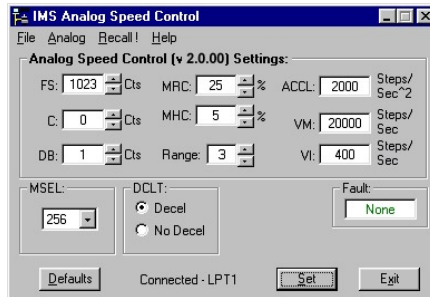


Figure 4.1: OSC-805H Configuration Utility Screen

### Installation

To install and use the configuration utility a Pentium class or higher PC running Windows 98, NT 4.0 or 2000 is required. The installation procedure is:

- 1] Download the self-extracting zip file to your system from the “Software” page of the IMS web site ([www.imshome.com](http://www.imshome.com)).
- 2] Double click the zip file. The file will extract and the installation process will begin.
- 3] Follow the on-screen prompts to complete the installation.

### Start-up

Select “Start>Programs>Analog Speed Control>Analog Speed Control”. The configuration utility will automatically scan your COM ports for the connected OSC-805H/IM805H assembly and configure communications. The connection status and port are displayed at the bottom of the configuration screen (see figure 4.1).

# Configuration Parameters Explained

There are 10 configuration parameters for the OSC-805H. Parameter settings are automatically saved to memory when the “SET” button is clicked on the Configuration Utility screen.

Table 4.1 summarizes the parameters and their function, range, units and default setting.

SETUP PARAMETERS				
NAME	FUNCTION	RANGE	UNITS	DEFAULT
ACCL	Accel/Decel	2000 to 65000	steps/sec <sup>2</sup>	2000
C	Joystick Center	0 to 1022	counts	0
DB	Deadband	0 to 255	counts	1
DCLT	Decel Type	Decel at ACCL Rate/No Decel	-	Decel
IMODE	Analog Input	15-25 kHz PWM/Voltage/ 4-20/0-20mA	-	0
FS	Full Scale	1 to 1023	counts	1023
MHC	Motor Hold Current	0 to 100	percent	5
MRC	Motor Run Current	1 to 100	percent	25
MSEL	Microstep Resolution	2, 4, 5, 8, 10, 16, 25, 32, 50 64, 125, 128, 250, 256	justeps per step	256
RANGE	VI/VM Range	1 to 8	-	3
VI	Initial Velocity	1 to 99999*	steps/sec	400
VM	Maximum Velocity	2 to 100000*	steps/sec	20000

Table 4.1: OSC-805H Parameter Summary

## Acceleration (ACCL)

The ACCL parameter sets the acceleration and deceleration in steps per second<sup>2</sup>. If the IM805H is in half step mode (STEP=H) the acceleration/ deceleration will be in half steps per second<sup>2</sup>. If in full step mode (STEP=F) then the units for ACCL will be in full steps per second<sup>2</sup>.

## Joystick Center Position (C)

The parameter sets the center position of the joystick. It can be set by either manually entering a number between 0 and 1022 in the box or by setting the pot to the desired center oint while in initialization mode . This count will represent the voltage that the OSC-805H will interpret as the zero-reference position. Any voltage seen on the speed control input will accelerate from 0 to the maximum set velocity. See the setup procedure located in “Setting the Configuration Parameters”, the next sub-section of this document.

## Potentiometer Deadband (DB)

The DB parameter sets the deadband of the potentiometer. The range for this parameter is a relative term as the actual deadband value is based upon the settings of the VI and VM parameters. The deadband is the amount of de ec-tion seen on the potentiometer until the velocity is changed. With DB=1 it is possible that the motor will oscillate between two velocities. This can be eliminated by setting the deadband to a higher value.

Note that when the voltage seen at the speed control input is  $\leq 0.005V$ , the step clock output of the oscillator will be 0. When the potentiometer or joystick deflects to the level specified by the DB parameter the axis will start to accelerate, beginning at the velocity specified by the VI, or initial velocity parameter.

## Full Scale (FS)

The full scale parameter sets the deflection of the potentiometer or joystick. While the min/max range of the speed control input is 0 to 1023 counts (0.005 to 4.995 volts) (0 counts = no motion, 1023 counts = max velocity, or VM) the user has the option of setting the full scale to a different value. For instance, setting FS=500 counts (2.411 volts) will cause the OSC-805's oscillator to output the appropriate step clock frequency set for VM when the voltage on the speed control input is 2.441V.



**USAGE NOTE:** If the motor oscillates between two velocities, increase the potentiometer deadband to a higher value. This will add coarseness to the pot and eliminate the oscillation.

## Motor Holding Current (MHC)

The MHC parameter sets the motor holding current as a percentage of the full output current of the driver. If the hold current is set to 0, the output circuitry of the driver will disable when the hold current setting becomes active.

The hold current setting becomes active 200ms following the last step clock pulse.

## Motor Run Current (MRC)

The Motor Run Current (MRC) parameter sets the motor run current to a percentage of the full output current of the driver.

## Velocity Range (RANGE)

The RANGE parameter specifies the maximum ranges available for the initial velocity (VI) and the maximum velocity (VM). When the range is set to a value, the VI and VM parameters will automatically default to the value specified by the range setting. The value of VI and VM can then be set within the range specified by RANGE. Table 4.2 illustrates the range settings.

RANGE PARAMETER SETTINGS								
RANGE	1	2	3	4	5	6	7	8
VI	200	100	50	20	10	5	2	1
VM	100000	50000	25000	10000	5000	2500	1000	500

Table 4.2: RANGE Parameter Settings

## Microstep Resolution Select (MSEL)

The MSEL parameter specifies the microstep resolution of the IM805H driver. See Table 4.3 for valid MSEL parameter settings.

OSC-805H Microstep Resolution Settings (MSEL)	
MSEL=	Steps/Rev
Binary Microstep Resolution Settings (1.8° Motor)	
2	400
4	800
8	1,600
16	3,200
32	6,400
64	12,800
128	25,600
256	51,200
Decimal Microstep Resolution Settings (1.8° Motor)	
5	1,000
10	2,000
25	5,000
50	10,000
125	25,000
250	50,000

Table 4.3: MSEL Parameter Settings

## Initial Velocity (VI)

The VI parameter establishes the initial velocity of the controlled axis in steps per second. The setting of this parameter represents the slowest speed the motor will turn. This is the velocity of the axis when the voltage on the speed control input = 0V. The valid settings for VI is dependent on the RANGE setting.

## Maximum Velocity (VM)

The VM parameter establishes the maximum velocity of the controlled axis in steps per second. The setting of this parameter represents the highest speed that the motor will turn. This is the velocity of the axis when the voltage on the speed control input = 5V. The valid setting for VM is dependent on the RANGE setting.

---

# Setting the Configuration Parameters

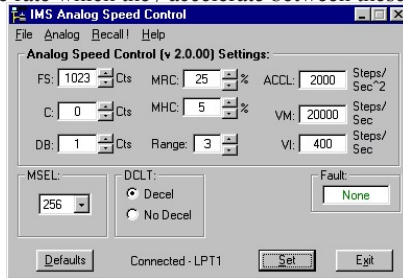
In order to follow the procedures in this section, the following is necessary:

- The Parameter Setup Cable (MX-CC300-000) or equivalent must be connected between your PC Parallel (Printer) Port and the 10 pin IDC connector (P2) on the OSC-805H.
- The Analog Speed Control configuration utility must be installed and operating on your PC. Correct connection of the device and operation of the software will be indicated by a “Connected - LPTx” message at the bottom of the configurator screen.
- The Stop/Start input must be a HIGH (Disconnected, Stopped) state.

---

# Setting Up the OSC-805H For Velocity

When operating as a velocity device, the OSC-805H will output step clock pulses to the IB805H driver. The initial and maximum frequency of these pulses, and the rate which they accelerate between these values, is established



by the following four parameters:

- 1] Initial Velocity (VI)
- 2] Maximum Velocity (VM)
- 3] Acceleration (ACCL)
- 4] Velocity Range (RANGE)

Set the Run Current (MRC) and the Holding Current (MHC) to the desired value. See the IM805H manual and the documentation from your motor manufacturer for information on determining the output current

When using the OSC-805H in this fashion the settings for FS, C and DB will remain in their default state. These parameters may be displayed as counts or

volts. The displayed value is changed from “counts” to “volts” by clicking the “Cts” to the right of the parameter text box. It may be changed from “volts” to “counts” by clicking “Volts”.

If desired these settings may be changed. For example: Setting the FS parameter to 511 would configure the OSC-805H so it will be at maximum velocity when the potentiometer is at 1/2 of its full deflection. If the motor oscillates between frequencies, increase the potentiometer deadband (DB).

Test the settings by pulling the Stop/Start input to ground by means of a switch or sinking output. Turn the potentiometer between its stops, the motor should accelerate and decelerate between the VI and VM settings. Note that there will be no motion at the zero reference point of the potentiometer. The motion will not start until the speed control input sees the voltage equivalent of 0 + DB.

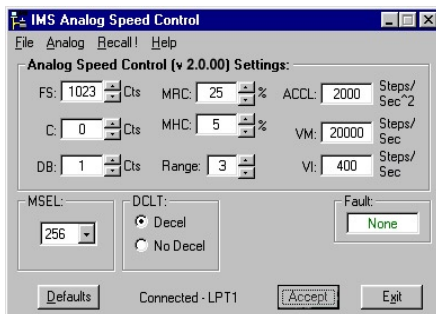
Fine-tune the ACCL, VI, VM and RANGE settings to the requirements of your application. Click the “Set” button to save the settings to NVM.

## ***Setting the OSC-805H as a Joystick Interface***

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When operating as a joystick interface it is necessary that the joystick be calibrated. First, a joystick center position must be established as well as the full scale range of the joystick in two directions. The following steps outline the joystick calibration procedures.

- 1] With the joystick in the center position, click “Analog>Initialize” on the menu bar.
- 2] Move the joystick to its full scale position, first in the max direction, then in the min direction. Re-center the joystick.
- 3] Click the “Accept” button.
- 4] Set the other parameters to the desired value.
- 5] Click the “Set” button to save the parameter settings to the OSC-805H NVM.



*Figure 4.3: Initialization Mode*

# SECTION 5

## Application Examples

### Application Example #1: Sample Connection Using an External Step/Direction

This application example shows the OSC-805H/IM805H connected to an external step clock/direction source, in this case a LYNX control module. The IM805H's motion can be controlled by the LYNX, or third party motion controller with TTL or sinking (NPN) outputs. The OSC-805H responds to step clock and direction inputs when the /Start input is left N/C.

This same configuration would apply if the OSC-805H is in joystick mode. The joystick would be connected the same as the potentiometer.

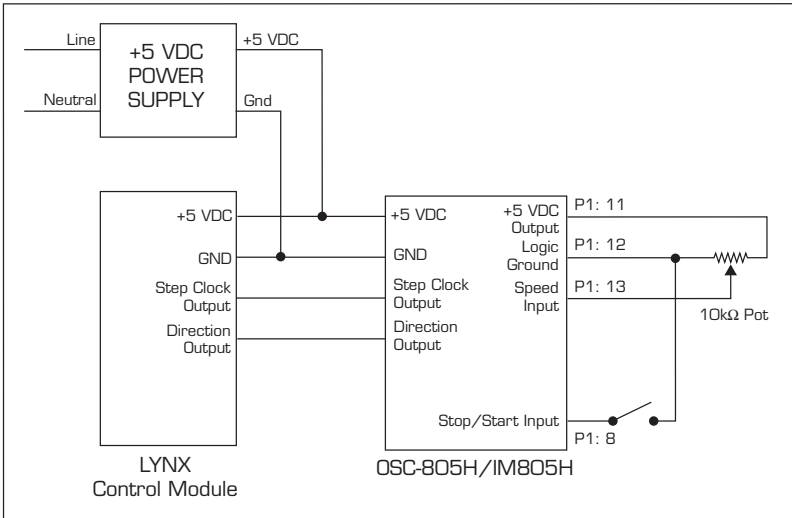


Figure 5.1: OSC-805H Application Example #1

# Application Example #2: OSC-805H Connected to an Additional Driver

This application sample shows a secondary drive, which is cascaded off of the OSC-805H step clock and direction outputs. Connected in this fashion the secondary driver will “follow” the primary drive, the IM805H.

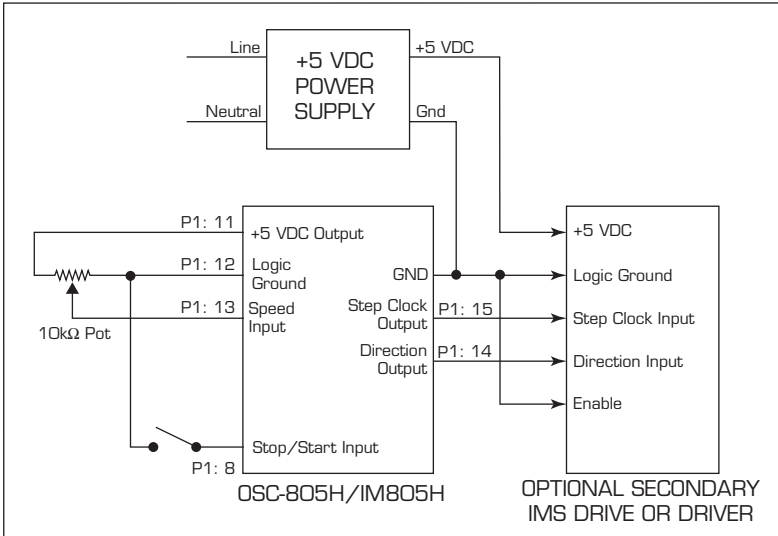


Figure 5.2: OSC-805H Application Example #2

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# WARRANTY

## TWENTY-FOUR (24) MONTH LIMITED WARRANTY

Intelligent Motion Systems, Inc. ("IMS"), warrants only to the purchaser of the Product from IMS (the "Customer") that the product purchased from IMS (the "Product") will be free from defects in materials and workmanship under the normal use and service for which the Product was designed for a period of 24 months from the date of purchase of the Product by the Customer. Customer's exclusive remedy under this Limited Warranty shall be the repair or replacement, at Company's sole option, of the Product, or any part of the Product, determined by IMS to be defective. In order to exercise its warranty rights, Customer must notify Company in accordance with the instructions described under the heading "Obtaining Warranty Service."

This Limited Warranty does not extend to any Product damaged by reason of alteration, accident, abuse, neglect or misuse or improper or inadequate handling; improper or inadequate wiring utilized or installed in connection with the Product; installation, operation or use of the Product not made in strict accordance with the specifications and written instructions provided by IMS; use of the Product for any purpose other than those for which it was designed; ordinary wear and tear; disasters or Acts of God; unauthorized attachments, alterations or modifications to the Product; the misuse or failure of any item or equipment connected to the Product not supplied by IMS; improper maintenance or repair of the Product; or any other reason or event not caused by IMS.

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Warranty service may be obtained by a distributor, if the Product was purchased from IMS by a distributor, or by the Customer directly from IMS, if the Product was purchased directly from IMS. Prior to returning the Product for service, a Returned Material Authorization (RMA) number must be obtained. Complete the form at <http://www.imshome.com/rma.html> after which an RMA Authorization Form with RMA number will then be faxed to you. Any questions, contact IMS Customer Service (860) 295-6102.

Include a copy of the RMA Authorization Form, contact name and address, and any additional notes regarding the Product failure with shipment. Return Product in its original packaging, or packaged so it is protected against electrostatic discharge or physical damage in transit. The RMA number **MUST** appear on the box or packing slip. Send Product to: Intelligent Motion Systems, Inc., 370 N. Main Street, Marlborough, CT 06447.

Customer shall prepay shipping charges for Products returned to IMS for warranty service and IMS shall pay for return of Products to Customer by ground transportation. However, Customer shall pay all shipping charges, duties and taxes for Products returned to IMS from outside the United States.



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