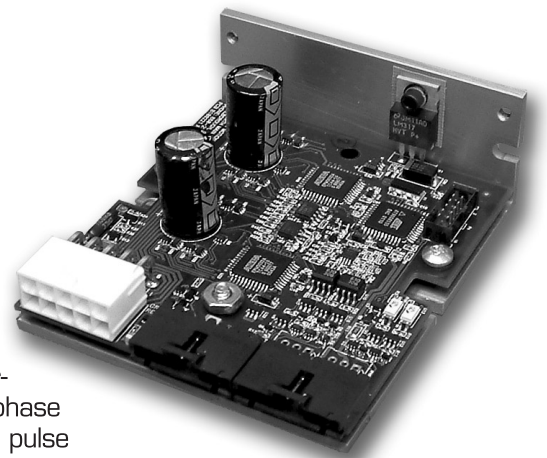


# USC-48-2

## DUAL DRIVER UNIVERSAL SPEED CONTROL BOARD



### FEATURES

- Two On-Board 1.6A/Phase Microstepping Drives
- Digital Oscillator for Accurate Speed Control
- Optically Isolated Inputs will Accept +5 to +24 VDC Signals, Sourcing or Sinking
- Selectable Speed Control from One of Two 0 to +5 VDC Inputs (One Configurable as 4-20 or 0-20mA) or 15 to 25kHz Isolated PWM Input, all with Programmable Center Point
- Low Cost
- Extremely Compact (3.5 x 3 x 1.25 inches) (89 x 76 x 32mm)
- Configurable:
  - Motor Run/Hold Current
  - Speed Control Input Source
  - Motor Rotation vs. Direction Input
  - Acceleration/Deceleration
  - Initial and Max Velocity
  - Microstep Resolution to 256 Microsteps/Full Step
- Operation Modes: Bidirectional and Unidirectional Velocity Control
- Step Clock and Direction Out for Cascading Multiple Drives
- Single Supply +12 to +48 VDC
- Keyed and Locking Pin and Receptacle Connectors
- Graphical User Interface (GUI) for Quick and Easy Parameter Setup
- Optional On-Board Potentiometers
- Optional Din Rail Mounting Brackets

### DESCRIPTION

Patented technology of the USC-48-2 offers the system designer a low cost, intelligent velocity control with dual on-board Microstepping Drives. The USC-48-2 is powered by a single +12 to +48 VDC power supply.

The USC-48-2 features a digital oscillator for accurate velocity control with output frequency of up to 100 kHz. Output frequency will vary with the signal applied to the speed control inputs. Speed can be adjusted by 15–25kHz PWM, or analog input of 0 to +5 volts, 4 to 20 or 0 to 20mA.

The Speed Control Board incorporates two 1.6Amp RMS per phase drives. This gives users a single pulse source synchronized to the internal clock or external step and direction input. With this feature, wiring and controlling machines with large tables or wide conveyors requiring the use of dual motors can be simplified, and there is no drift between motor speeds.

One of the two speed inputs available with the USC-48-2 can be selected using the SPEED1/SPEED2 input. This allows the user two preset, external speed inputs selectable through an optically isolated input. The USC-48-2 will then accelerate/decelerate to the new value.

Optional on-board dual 10k potentiometers are available for the USC-48-2. These 15-turn potentiometers help to reduce wiring where remote access is not required.

There are two basic modes of operation: bidirectional and unidirectional. In bidirectional mode, both speed and direction are controlled by the speed control input. In unidirectional mode, only velocity is controlled by the speed control input; direction is controlled by a separate input.

In addition, the USC-48-2 has buffered step clock and direction outputs to facilitate cascading of drives. These outputs will follow the primary step clock and direction signals of the speed control board.

Wiring is accomplished with convenient keyed and locking pin and receptacle connectors (P1, P2 & P3) and an optional Parameter Setup Cable which plugs into the board's 10 pin IDC header (P4). Prototyping Interface Cables for power and signal are also available. Mounting the USC-48-2 is accomplished easily with

an L-Bracket which also functions as a heat sink. Optional din rail mounting brackets may be ordered.

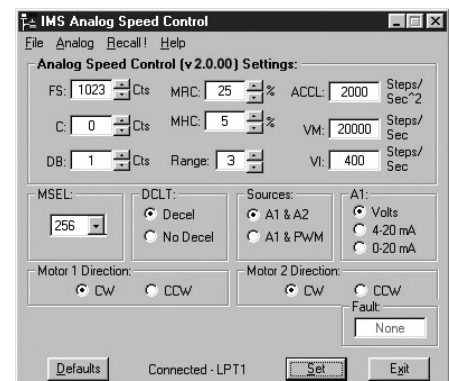
The speed control board has 12 setup parameters which are configured using the included Configuration Utility. These enable the user to configure all of the operational parameters of the USC-48-2 which are stored in nonvolatile memory.

### CONFIGURING

The IMS Analog Speed Control software is a required, easy to install and use graphical user interface (GUI) for configuring the USC-48-2 from the parallel port on your computer. Access the GUI via the IMS SPI Interface included on the CD shipped with the product, or download at [www.imshome.com](http://www.imshome.com).

IMS Analog Speed Control features:

- Easy installation.
- Automatic communications configuration.
- Will not set out-of-range values.
- Tool-tips display valid range setting for each option.
- Easy single screen interface.



The IMS Analog Speed Control GUI is an easy to install and use single screen interface.

## ELECTRICAL SPECIFICATIONS

Speed Control Input 1 .....	0 to +5 VDC, 4-20 or 0-20 mA
Speed Control Input 2 .....	0 to +5 VDC
A/D Resolution .....	10 bit
Speed Control Potentiometer Resistance .....	10 kΩ
Input Voltage (+V) Range .....	+12 to +48 VDC
Step Clock, Direction Out (Drain Source Voltage Max) .....	100 VDC
Step Clock, Direction Out (Continuous Drain Current) .....	100 mA
Isolated Input .....	Speed1/Speed2/PWM, Start/Stop, Direction
Isolated Input Voltage Range* .....	+5 to +24 Volts
PWM Input Frequency .....	15 to 25 kHz
Output Frequency .....	100 kHz

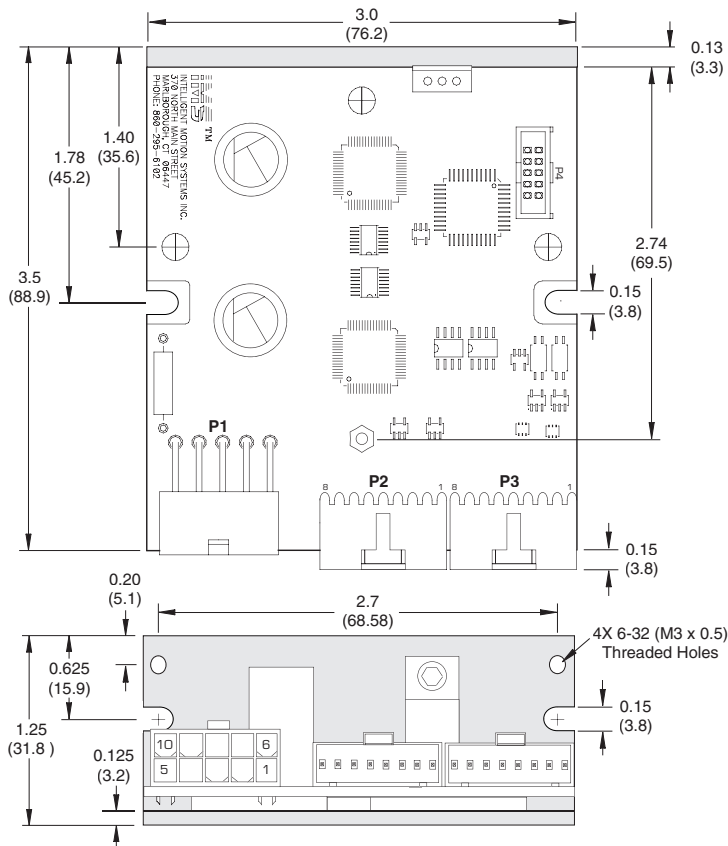
\*Sourcing or Sinking

## PARAMETERS

SETUP PARAMETERS				
NAME	FUNCTION	RANGE	UNITS	DEFAULT
ACCL	Acceleration/Deceleration	2000 to 65000	steps/sec <sup>2</sup>	2000
C	Center Position	0 to 1022	counts	0
DB	Deadband	0 to 255	counts	1
DCLT	Decel Type	Decel at ACCL Rate/No Decel	-	Decel
IMODE	Source	A1 and A2, or PWM	-	0
	Analog Input	Voltage/4-20mA/0-20mA	-	0
	Clockwise/Counter Clockwise	0 or 1	-	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	μsteps per step	256
RANGE	VI/VM Range Setting	1 to 8	-	3
VI	Initial Velocity	1 to 99999	steps/sec	400
VM	Maximum Velocity	2 to 100000	steps/sec	20000

## MECHANICAL SPECIFICATIONS

Dimension in inches (mm)



## PIN ASSIGNMENTS

PIN	P1	P2	P3
	Power&Motor Interface Connector	Digital I/O Connector	Analog Speed Control I/O Connector
1	Phase /BA	SCLK IN	START/STOP
2	Phase BA	DIR	ENABLE
3	Phase /AA	SPEED 1/2	GND REF ANLG IN 1
4	Phase AA	PWM IN	+5 REF ANLG IN 1
5	Ground	OPTO REF	ANALOG IN 1
6	Phase /BB	+5V OUT	GND REF ANLG IN 2
7	Phase BB	DIR OUT	+5 REF ANLG IN 2
8	Phase AB	SCLK OUT	ANALOG IN 2
9	Phase /AB	-	-
10	+V	-	-

## OPTIONS

- Dual on-board 15-turn 10k potentiometers are available on the Speed Control Board for velocity adjustment.
- Mounting Brackets USC-48-2PD are available for ease of installation in Din Rail systems.
- A Parameter Setup Cable MD-CC100-000 is an inexpensive accessory which eliminates the need for the user to wire communications. This 6 foot long cable plugs in easily to connect a standard DB-25 PC parallel port to the 10 pin pin-header (P4) on the USC-48-2. Purchase recommended with first order.
- Interfacing the USC-48-2 is expedited with optional Prototyping Interface Cables for Power (ADP-4210-FL) and Signal (ADP-2508-FL).

## ORDER INFORMATION

Name	Part Number
Speed Control Board .....	USC-48-2
With Potentiometers .....	USC-48-2P
With Din Rail Brackets ....	USC-48-2D
With Both Above .....	USC-48-2PD
Parameter Setup Cable .....	MD-CC100-000
Prototyping Interface Cables	
Power .....	ADP-4210-FL
Signal (2 required) .....	ADP-2508-FL