

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 to 20mA) or a 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 32 mm)
- 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: Joystick or Velocity
- 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

The USC-48-2 Universal Speed Control Interface Board 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 an output frequency of up to 100 kilohertz. Output frequency will vary with the signal applied to the speed control inputs. The speed can be adjusted by a 15–25kHz PWM, 4–20mA or 0 to 5 volts input signal.

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. By moving the center point, both speed and direction are controlled by the analog speed control input. By setting the center point to zero or the lower end of the potentiometer, only velocity is controlled by the speed control input; direction is controlled by a separate digital 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 In-

terface 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.

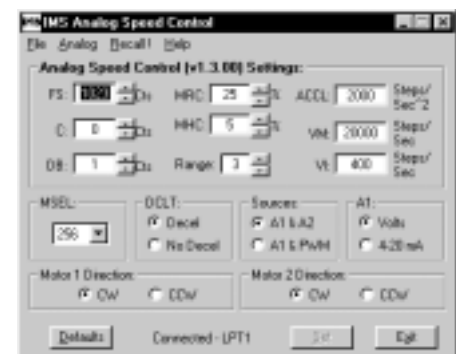
The speed control board has 12 setup parameters which are configured using the included Configuration Utility. These enable the user to configure all of the operational parameters of the USC-48-2 which are stored in nonvolatile memory.

CONFIGURATION UTILITY

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.

Configuration utility features include:

- 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.

PARAMETERS

SETUP PARAMETERS				
NAME	FUNCTION	RANGE	UNITS	DEFAULT
ACCL	Accel/Decel	2000 to 65000	steps/sec ²	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	Source	A1 and A2, or PWM	--	0
	Analog Input	Voltage/4-20mA	--	0
	Clockwise/Counter Clockwise	0 or 1	--	0
FS	Full Scale	1 to 1023	counts	1023
MHC	Hold Current	0 to 100	percent	5
MRC	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	1 to 8	--	3
VI	Initial Velocity	1 to 99999	steps/sec	400
VM	Maximum Velocity	2 to 100000	steps/sec	20000

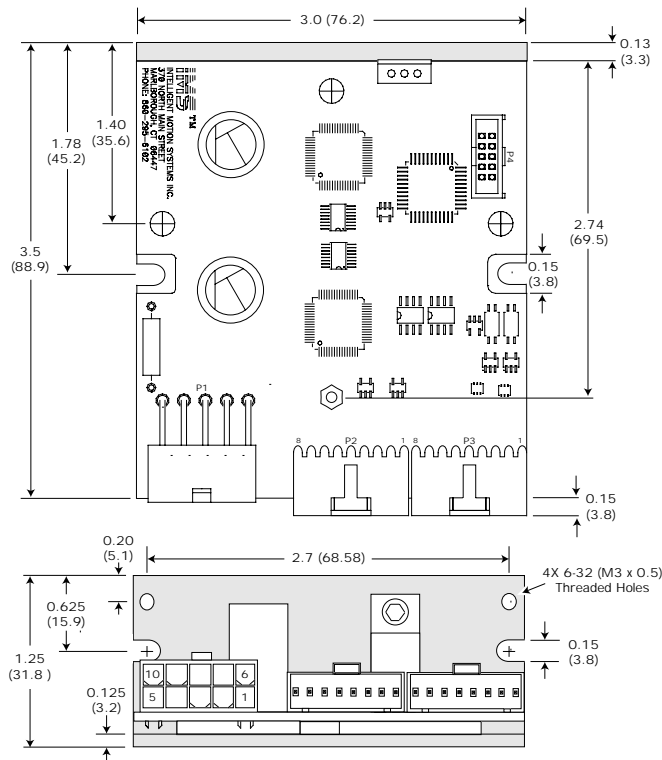
ELECTRICAL SPECIFICATIONS

Speed Control Input 1	0 to +5 VDC or 4 to 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

MECHANICAL SPECIFICATIONS

Dimension in inches (mm)



PIN ASSIGNMENTS

PIN#	P1	P2	P3
	Power and 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	GND	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+	--	--

Mating Connector Information

Connector:	P1	P2&P3
Manufacturer:	Molex	Tyco
Receptacle:	39012105	104257-7
Contact:	44476-111	104480-7

OPTIONS

- The Speed Control Board is available with dual on-board 15-turn 10k potentiometers for velocity adjustment.
- Mounting Brackets are available for ease of installation in Din Rail systems.
- A Parameter Setup Cable 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 header (P4) on the USB-48-2. Purchase recommended with the first order.
- Separate Prototyping Interface Cables are available to expedite power and signal interface to the Speed Control Board.

ORDERING INFORMATION

Name	Part Number
Dual Driver Universal Speed Control Board	
Dual Motor, 1.6Amp	USC-48-2
With On-Board Potentiometers	USC-48-2P
With Din Rail Brackets	USC-48-2D
With Potentiometers And Din Rail Brackets	USC-48-2PD
Parameter Setup Cable	MD-CC100-000
Prototyping Interface Cables	
Power	ADP-4210-FL
Signal (2 required)	ADP-2508-FL