7I27 MANUAL

Rev 1.1

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GENERAL

DESCRIPTION

The 7I27 is a dual 10A 40V Hbridge intended for motion control applications when used with the MESA 4I27, 4I34M, 4I65, 5I20, or 7I60 motion control cards. The 7I60 uses a 50 pin flat cable interface to the motion control card.

Motor power and motor connection are made with screw terminals. 5 pin encoder connectors allow TTL encoders to be connected to the motion control system through the 7I27 card

The 7I27 has overcurrent protection tp prevent damage to the Hbridge from stalled or shorted motors.

HARDWARE CONFIGURATION

DIRECTION JUMPERS

There are only two jumper selectable options on the 7I27 card, The channel 0 and 1 directions. Jumpers W1 and W2 are used to reverse the direction of motor drive relative to the DIR signal from the controller. The default setting of W1 and W2 are towards the right. These jumpers normally do not need to be moved from their default positions.

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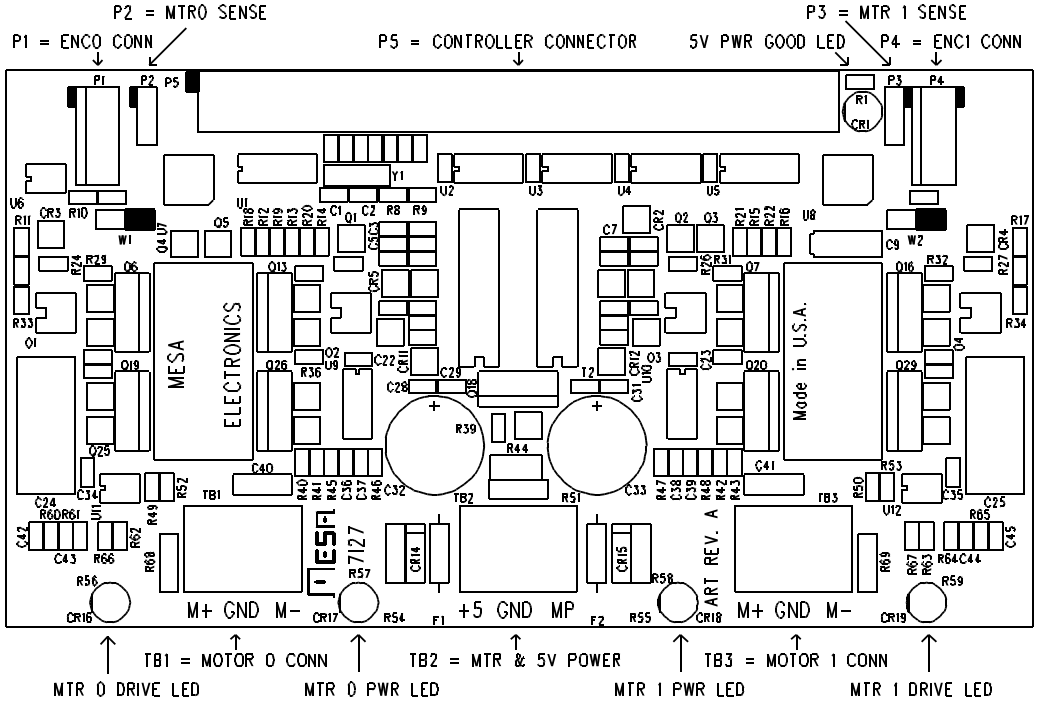
CONNECTORS

CONNECTORS, LEDS, AND DEFAULT JUMPING



CONNECTORS

POWER CONNECTOR

The power connector TB2 is the center of the three screw terminal blocks on the 7I27. TB2 pinout is as follows:

PIN	MARKING	FUNCTION
1 (LEFT)	+5	5V LOGIC POWER
2 (CENTER)	GND	POWER GND
3 (RIGHT)	MP	+12 to +40V MOTOR POWER

MOTOR CONNECTORS

Motor connections are made to screw terminals TB1 and TB3. TB1 and TB3 pinouts are as follows:

PIN	MARKING	FUNCTION
1 (LEFT)	M+	POSITIVE MOTOR LEAD (OFTEN RED)
2 (CENTER)	GND	MOTOR CASE OR SHIELD GND
3 (RIGHT)	MP	NEGATIVE MOTOR LEAD (OFTEN BLACK)

CONNECTORS

ENCODER CONNECTORS

P1 and P5 are encoder connectors P1 is for encoder 0 and P4 is for encoder 1. P1 and P5 pinouts are as follows::

PIN	FUNCTION
1 (TOP)	GND
2	INDEX
3	ENCA
4	5V
5	ENCB

MOTORSENSE CONNECTORS

P2 and P3 give access to the MOTORSENSE0 and MOTORSENSE1 lines to the controller. P2 and P3 pinouts are as follows:

PIN	FUNCTION
1 (TOP)	GND
2	MOTORSENSE 0 or 1
3	5V

CONNECTORS

CONTROLLER CONNECTOR

P5 is the motion controller connector P5 is a 50 pin latching header that mates with standard female IDC headers.

PIN	FUNCTION	PIN	FUNCTION
1	MOTOR1 ENCB	3	MOTOR1 ENCA
5	MOTOR0 ENCB	7	MOTOR0 ENCA
9	INDEX1	11	INDEX0
13	MOTOR1 PWM	15	MOTOR0 PWM
17	MOTOR1 DIR	19	MOTOR0 DIR
21	/MOTOR1ENA	23	/MOTOR0ENA
25	NC ON 7I27	27	NC ON 7I27
29	MOTOR1 SENSE	31	MOTOR0 SENSE
33	NC ON 7I27	35	NC ON 7I27
37	NC ON 7I27	39	NC ON 7I27
41	NC ON 7I27	43	NC ON 7I27
45	NC ON 7I27	47	NC ON 7I27
49	+5 POWER FROM CONTROLLER		

ALL EVEN PINS ARE CONNECTED TO GROUND

7I27 OPERATION

5V POWER

The 7I27 requires 5V power for its logic and MOSFET gate drive. This power can be supplied from the controller connector or from the screw terminal strip TB2. Voltages less than 4.5V will cause the 7I27 to be forced into a reset state.

If the controller cable is longer than 2 feet it is suggested the the 7I27 5V power be supplied from the screw terminal. This is because of the voltage drop on the controller cable.

MOTOR POWER

Motor power is supplied to the 7I27 on pin 3 of TB2. Motor power can range from 5 to 40 VDC with an absolute maximum value of 50VDC. Voltages HIGHER than 50VDC will activate the voltage clamp, short out the power supply and blow the input fuses.

INDICATORS

Five LEDS are provided on the 7I27 for status monitoring. LED location are shown on the board diagram. The LEDS function as follows:

MOTOR0 POWER LED	**RED**	**MOTOR 0 POWER (FUSE F1)**
MOTOR1 POWER LED	**RED**	**MOTOR 1 POWER (FUSE F2)**
MOTOR0 DRIVE LED	**RED/GREEN**	**MOTOR 0 DRIVE / DIRECTION**
MOTOR1 DRIVE LED	**RED/GREEN**	**MOTOR 1 DRIVE / DIRECTION**
5V POWER GOOD	**GREEN**	**MONITORS 5V POWER STATUS**

FUSES

The 7I27 has a 10A fuse provided for each channel. These fuses are adjacent to TB2. F1 is the fuse for channel0 and F2 is the fuse for channel1. Replacement part is LittleFuse PN 251010. Note that these fuses are socketed for easy replacement.

7I27 OPERATION

MOTOR/ENCODER WIRING

The Hbridge motor drive lines can radiate large amounts of noise if not shielded. This noise can easily interfere with the TTL level encoder signals and cause errors in position sensing. The following are suggestions to mitigate this potential problem:

1. Twist motor leads

2. Shield motor leads - This is the purpose of the GND pin on the motor connectors

3. Shield encoder leads

4. Route encoder leads away from the motor leads

SPECIFICATIONS

	MIN	MAX	
5V POWER SUPPLY	4.5V	5.5V	
5V CURRENT	----	350 mA	
MOTOR POWER	5V	40V	ABS MAX 50VDC
PER MOTOR CURRENT	0	10A	
CURRENT LIMIT	12A	20A	
OPERATING TEMP.	0°C	+70°C	
OPERATING TEMP. (-I version)	-40°C	+85°C	
OPERATION HUMIDITY	0	95%	NON-CONDENSING