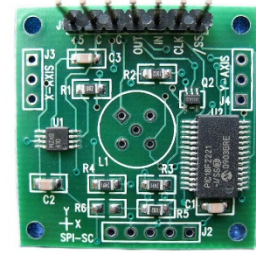




1-6200-005

SPI Mini Signal Conditioner Board



Actual size

Specifications

Power supply voltage	3 to 5 VDC (regulated)
Power supply current	6mA @ 5 V DC, 3.5 mA @ 3.3 V DC
Operating temp range (board only)	-40°C to +85°C
Storage temp range (board only)	-55°C to +100°C
Angle range	0-100% of sensor range (16 bit, 65535 counts max)
Board dimensions	1.25" x 1.25" or 32mm x 32mm square
Mounting hole and spacing	0.089" dia. and 1.05" (center to center)
Temp. sensor range	-40°C to +125°C (10 bit resolution)

Signal Description J1

Pin #	Signal name	Direction	Description
1	Vcc	Input	Supply voltage input: +3 to +5 V DC regulated
2	GND	-	Ground – The reference for the digital signals and the supply voltage
3	GND	-	Ground – The reference for the digital signals and the supply voltage
4	SDO	Output	Slave output – SPI communications to master device 8 bit data from slave with clock from master
5	SDI	Input	Slave input – SPI communications from master device 8 bit data to slave with clock from master
6	SCK	Input	Slave clock – SPI input clock from master device Clock polarity = High, Clock in data = High to Low Data rate = 500kHz to 20mHz
7	/CS	Input	Chip select signal – signal to select slave device from master device (active during 8 bit transfer)

Please refer to the following link section 15.0 for a description of SPI timing:

<http://ww1.microchip.com/downloads/en/DeviceDoc/41412F.pdf>

Command Format

Command data (SDI) and clock (SCK) from master	Response data from slave (SDO) and clock from master (SCK)
Decimal 49 (ASCII '1')	X axis high byte of 16 bit value
Decimal 50 (ASCII '2')	X axis low byte of 16 bit value
Decimal 51 (ASCII '3')	Y axis high byte of 16 bit value
Decimal 52 (ASCII '4')	Y axis low byte of 16 bit value
Decimal 53 (ASCII '5')	Board temperature high byte of 10 bit value
Decimal 54 (ASCII '6')	Board temperature low byte of 10 bit value
Decimal 57 (ASCII '9')	Updates all data (ver. 2.0.0 software)

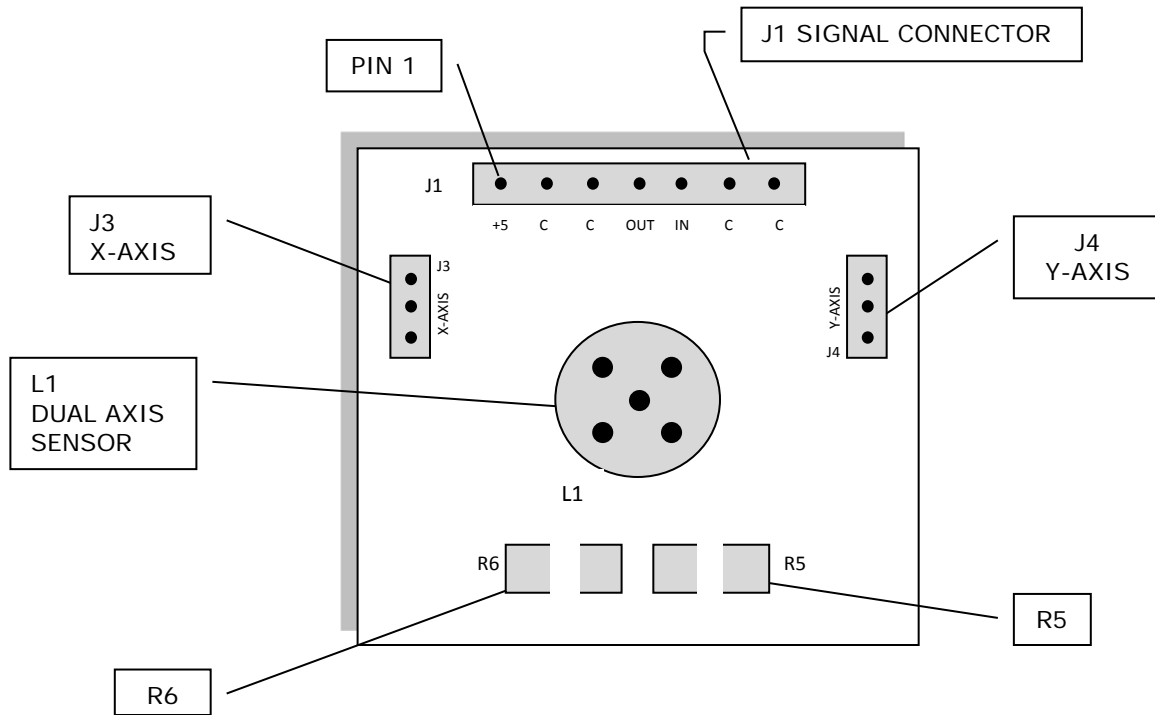
NOTE: Add 1 msec. delay between each 8 bit communications to SPI board.

NOTE: To convert the 10 bit data returned from the on board MCP9700 use the following formulas,

$$\text{MCP9700 output voltage} = (10 \text{ bit value} / 1023) * \text{supply voltage}$$

$$\text{Temperature C} = (\text{MCP9700 output voltage} - 0.5) / 0.010$$

SPI Signal Conditioner Board Assembly



Sensor Configuration

Sensor Configuration	Description
Dual axis sensor mounted on board (standard configuration)	<ul style="list-style-type: none"> - Dual axis sensor is mounted in location L1 - R5 is 10.0K ohms - R6 is not installed
Single axis sensors mounted off board	<ul style="list-style-type: none"> - Single axis sensors are connected to J3 (x-axis) and J4 (y-axis) - No sensor is installed in L1 - R5 is not installed - R6 is 1K ohms <p>Note: if R5 is not removed then R6 must be less than 100 ohms</p>

NOTE: J2 is for factory use only.