1-6200-005

SPI Mini Signal Conditioner Board
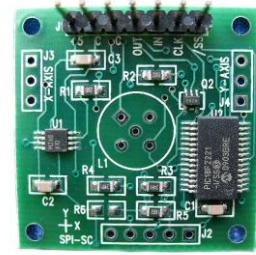
Actual size

Specifications

Power supply voltage	3 to 5 VDC (regulated)
Power supply current	6mA @ 5VDC 3.5mA @3.3VDC
Operating temp range (board only)	-40°C to +85°C
Storage temp range (board only)	-55°C to0 +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 vdc 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 18.0 to 18.3 for a description of the SPI timing.
http://ww1.microchip.com/downloads/en/DeviceDoc/39689f.pdf

Command Format

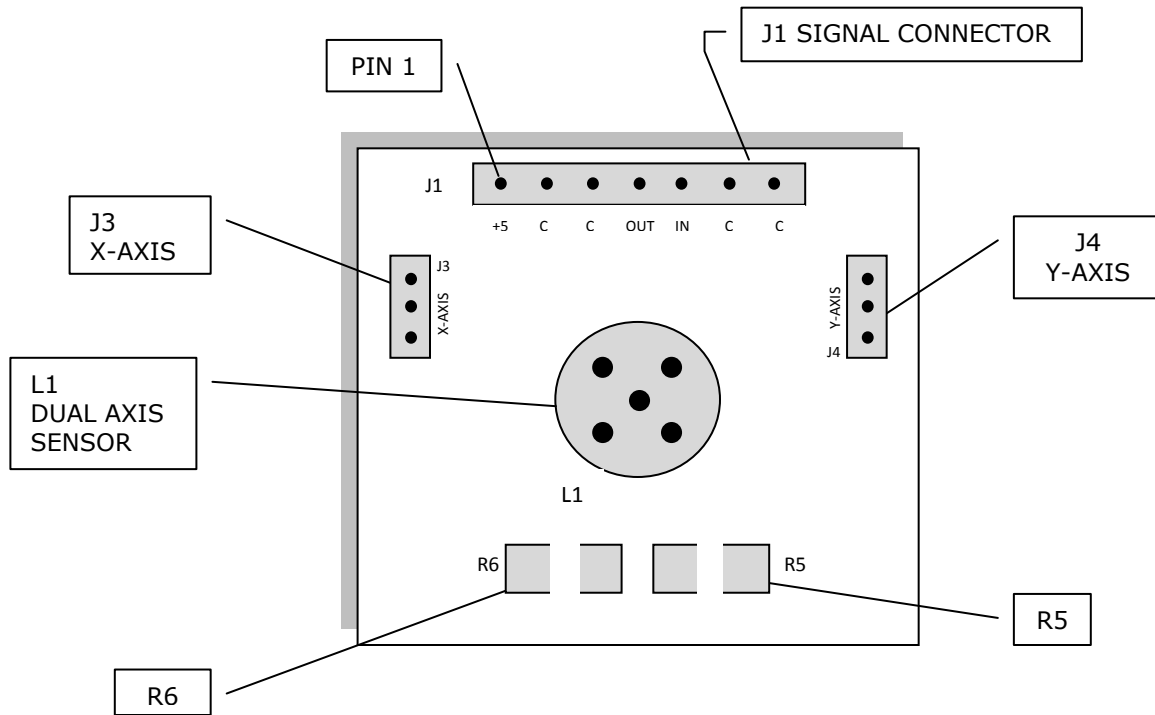| Command data (SDI) and clock (SCK) from master	Response data from slave (SDO) and clock from master (SCK)
Decimal 49 (ascii`1')	X axis high byte of 16 bit value
Decimal 50 (ascii`2')	X axis low byte of 16 bit value
Decimal 51 (ascii`3')	Y axis high byte of 16 bit value
Decimal 52 (ascii`4')	Y axis 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

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,
MCP9700 output voltage = 10 bit value / 1023 * supply voltage
Temperature C = (MCP9700 output voltage – 0.5) / 0.010

SPI signal conditioner board assembly

PIN 1

J1 SIGNAL CONNECTOR

J3
X-AXIS

J1

J3 X-AXIS

+5   C   C   OUT   IN   C   C

J4
Y-AXIS

Y-AXIS

J4

L1
DUAL AXIS
SENSOR

L1

R6   R5

R5

R6

Sensor Configuration

Sensor Configuration	Description
Dual Axis Sensor mounted on board (standar d configuration)	- Dual Axis is mounted in location L1 - R5 is 10.0K ohms - R6 is not installed
Single Axis sensors mounted off board	- 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 Note: if R5 is not removed then R6 must be less than 100 ohms SENSOR — ORN or YEL WIRE, GREEN ONLY WIRE, YEL or ORN WIRE — J3 and/or J4

NOTE: J2 is for factory use only.