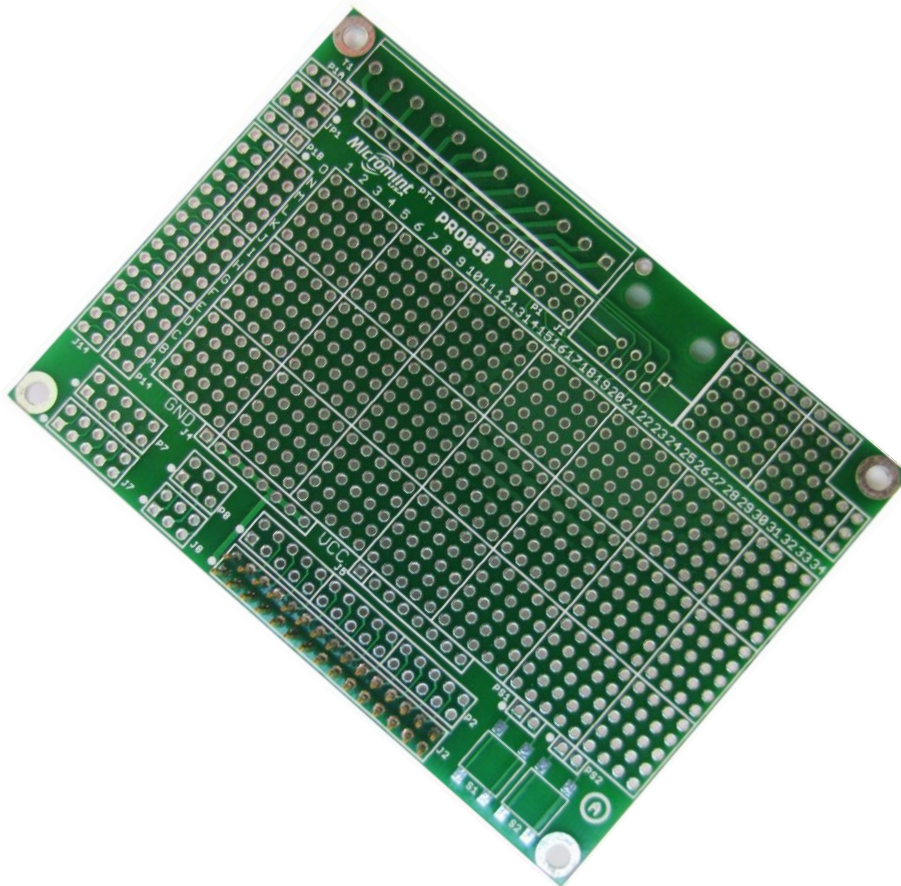




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# PRO050 Prototyping Board

## User's Manual

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# Table of Contents

1.0	Introduction.....	1
1.1	PRO050 Overview .....	1
1.2	PRO050 Features .....	1
1.3	PRO050 Parts List .....	1
2.0	Eagle 50/50E Connections .....	2
2.1	GPIO .....	2
2.2	Power .....	2
2.3	ADC.....	3
2.4	DAC.....	3
3.0	Electrum 100 Connections .....	4
4.1	GPIO .....	4
4.2	Power .....	4
4.3	ADC.....	5
4.4	DAC.....	5
4.0	PRO050 Footprint Schematics .....	6
4.1	Screw Terminal Schematic .....	6
4.2	Pushbuttons Schematic.....	6
4.3	RJ45 Schematic .....	7
4.4	2 x 3 Jumper Schematic.....	7



# 1.0 Introduction

## 1.1 PRO050 Overview

The PRO050 is an inexpensive prototyping board with a large 0.1 inch prototyping area. It makes prototyping circuits for the Eagle 50, Eagle 50E, and Electrum 100 easier. Access to GPIO, ADC, DAC, and power is done through stacking connectors. Common footprints for prototyping include pushbuttons, screw terminals, and RJ45 connector.

## 1.2 PRO050 Features

- 15 x 34 prototyping area with 0.1 inch spacing
- 12 position screw terminal footprint
- RJ45 jack footprint
- Two pushbutton footprints
- 2 x 3 jumper footprint
- Stacking configuration
- Dimensions: 3.93 inches x 2.83 inches (100mm x 72mm)

## 1.3 PRO050 Suggested Parts List

PRO050 Designation	Manufacturer	Part Description	Part Number
J1	EDAC Inc	Connector Shielded RJ45	A00-108-262-450
S1, S2	C&K Components	Pushbutton	PTS645SK43SMTRLFS
T1	Tyco	12 position screw terminal	1-284392-2
J2, J14	Samtec	2X15 stacking connector	ESQ-115-24-G-D
J7	Samtec	2X5 stacking connector	ESQ-105-24-G-D
J8	Samtec	2X3 stacking connector	ESQ-103-24-G-D
-	Keystone	Hex Standoffs	1902F
-	APM Hexseal	1/4" 4-40 screw	R4-40X1/4

## 2.0 Eagle 50/50E Connections

### 2.1 GPIO

The Eagle 50 and 50E have 20 GPIO available on connector J2 and is brought to the PRO050 boards J2 connector through a stacking header. P2 is an exact copy of the J2 connector and should be used to make prototyping connections. The Eagle 50 has an additional 22 GPIO available on connector J12 and is brought to the PRO050 boards J14 connector. P2 is an exact copy of the J2 connector and should be used to make prototyping connections. Figure 1 is the pin-out for P2 and P14 in regards to the Eagle 50 and 50E.

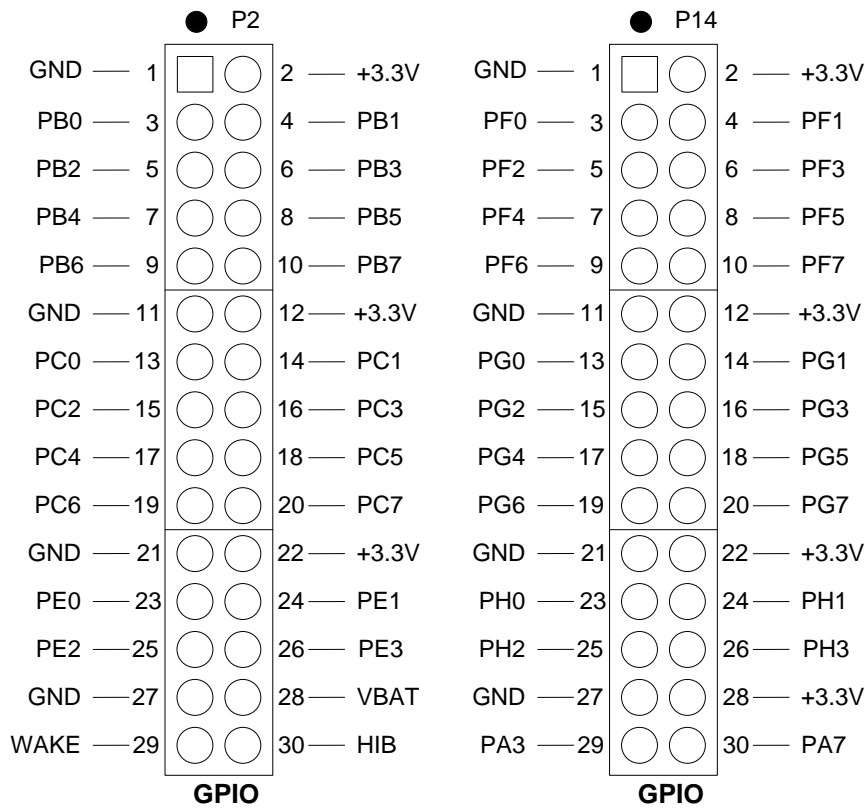


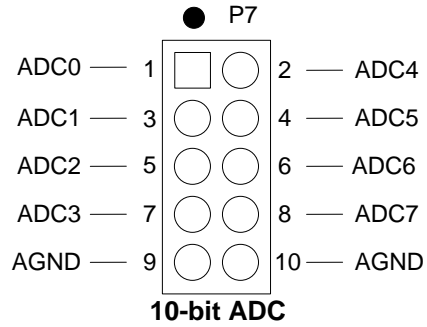
Figure 1: P2 and P14 Pin Out for the Eagle 50 and 50E

### 2.2 Power

The PRO050 board has a ground bus (J4) and a VCC bus (J5) available to easily connect to ground and 3.3VDC. The Eagle 50 and 50E regulator is capable of providing 1 Amp of current. The Eagle 50 has a typical current requirement of 125mA and the Eagle 50E has a typical current requirement of 250mA. Due to the ground bus and VCC bus being supplied by J2 the J2 connection to the Eagle 50 must be made in order to use J4 and J5 for prototyping.

### 2.3 ADC

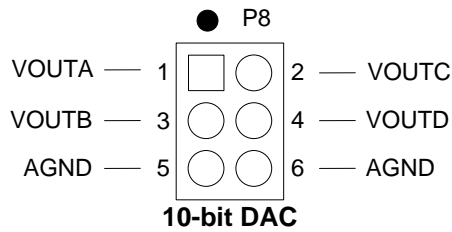
The Eagle 50 and 50E come standard with 8-channels of 10-bit ADC. To make it easier to prototype an analog front end the ADC available on the Eagle 50 and 50Es J7 connector is brought to the PRO050 boards J7 connector through a stacking header. P7 is an exact copy of the J7 connector and should be used to make prototyping connections. Figure 2 is the pin-out for P7 in regards to the Eagle 50 and 50E.



**Figure 2:** P7 Pin Out for the Eagle 50 and 50E

### 2.4 DAC

The Eagle 50 and 50E optionally has 4-channels of 10-bit DAC. To make it easier to prototype an analog backend the DAC available on the Eagle 50 and 50Es J8 connector is brought to the PRO050 boards J8 connector through a stacking header. P8 is an exact copy of the J8 connector and should be used to make prototyping connections. Figure 3 is the pin-out for P8 in regards to the Eagle 50 and 50E.



**Figure 3:** P8 Pin Out for the Eagle 50 and 50E

## 3.0 Electrum 100 Connections

### 4.1 GPIO

The Electrum 100 has 23 GPIO available on connector J2 and is brought to the PRO050 boards J2 connector through a stacking header. P2 is an exact copy of the J2 connector and should be used to make prototyping connections. The Electrum 100 has an additional 24 GPIO available on connector J14 and is brought to the PRO050 boards J14 connector. P14 is an exact copy of the J14 connector and should be used to make prototyping connections. Figure 4 is the pin-out for P2 and P14 in regards to the Electrum 100.

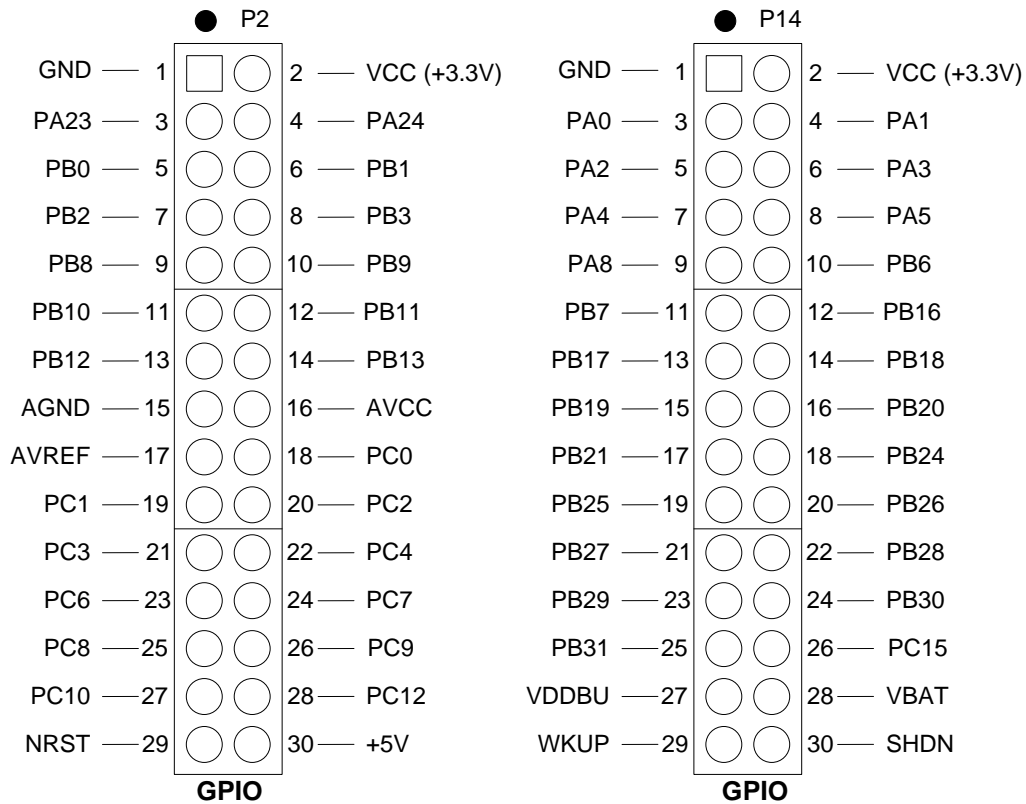


Figure 4: P2 and P14 Pin Out for the Electrum 100

### 4.2 Power

The PRO050 board has a ground bus (J4) and a VCC bus (J5) available to easily connect to ground and 3.3VDC. The Electrum 100s regulator is capable of providing ?? Amp of current. The Electrum 100 has a typical current requirement of ???mA. Due to the ground bus and VCC bus being supplied by J2 the J2 connection to the Electrum 100 must be made in order to use J4 and J5 for prototyping.



### 4.3 ADC

The Electrum 100 optionally has 8-channels of 12-bit ADC. To make it easier to prototype an analog front end the ADC available on the Electrum 100s J7 connector is brought to the PRO050 boards J7 connector through a stacking header. P7 is an exact copy of the J7 connector and should be used to make prototyping connections. Figure 5 is the pin-out for P7 in regards to the Electrum 100.

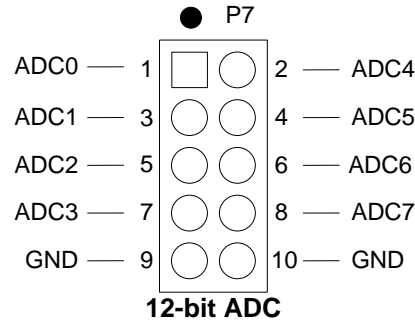


Figure 5: P7 Pin Out for the Electrum 100

### 4.4 DAC

The Electrum 100 optionally has 4-channels of 12-bit DAC. To make it easier to prototype an analog backend the DAC available on the Electrum 100s J8 connector is brought to the PRO050 boards J8 connector through a stacking header. P8 is an exact copy of the J8 connector and should be used to make prototyping connections. Figure 6 is the pin-out for P8 in regards to the Electrum 100.

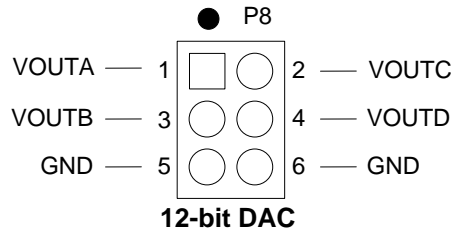


Figure 6: P8 Pin Out for the Electrum 100

## 4.0 PRO050 Footprint Schematics

### 4.1 Screw Terminal Schematic

The PRO050 board has a footprint for a 12 position screw terminal (T1). It has a pitch of 0.15 inches (3.81mm). Connections for prototyping can be made on PT1. The schematic for the screw terminals is below in Figure 7.

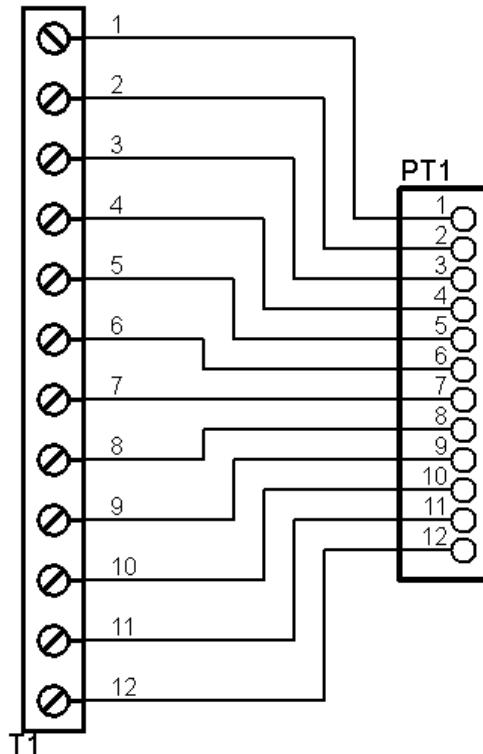


Figure 7: Screw Terminal Schematic

### 4.2 Pushbuttons Schematic

The PRO050 board has footprints for two normally open pushbuttons (S1 & S2). Connections for prototyping S1 can be made on PS1. Connections for prototyping S2 can be made on PS2. The schematic for the pushbuttons is below in Figure 8.

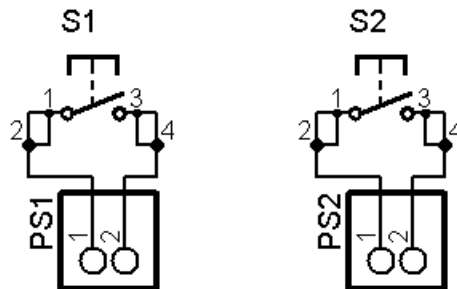


Figure 8: Pushbutton Schematic

### 4.3 RJ45 Schematic

The PRO050 board has a footprint for a RJ45 jack (J1). Connections for prototyping with the RJ45 can be made on P1. The schematic for the RJ45 and top view connector diagram is below in Figure 9.

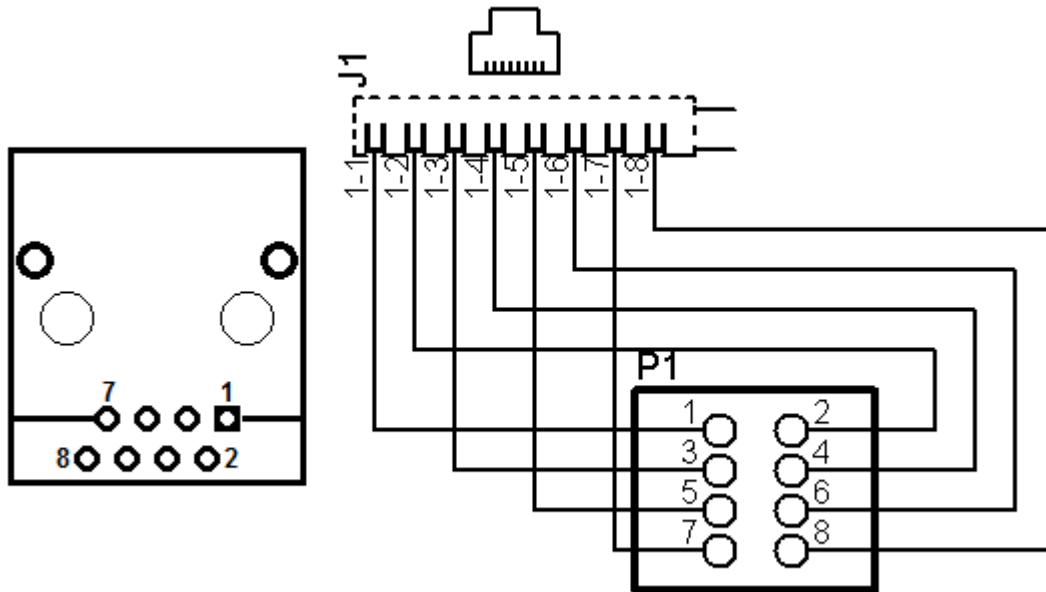


Figure 9: RJ45 Schematic

### 4.4 2 x 3 Jumper Schematic

The PRO050 board has a footprint for a 2 x 3 jumper (JP1). Connections for prototyping the 2 x 3 jumper can be made on P1A and P1B. The schematic for the 2 x 3 jumper is below in Figure 9.

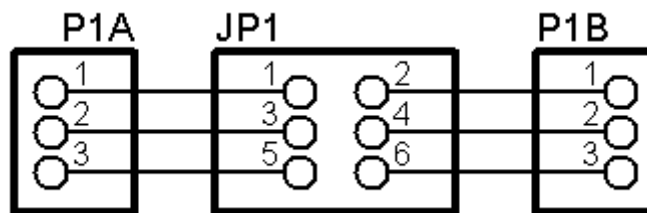


Figure 9: 2 x 3 Jumper Schematic