REV ROBOTICS

PROTO BOARD

USER'S MANUAL

REV-11-1103-UM-00

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1 PROTO BOARD OVERVIEW

The REV Robotics Proto Board is a passive expansion board designed for the roboRIO MXP (myRIO Expansion Port). Custom circuits can be prototyped and added to the roboRIO with this breadboard-style board. Every MXP signal is broken out close to the prototype area allowing for short and neat wiring. Plated-through holes make the Proto Board much more durable than standard copper clad perforated boards.

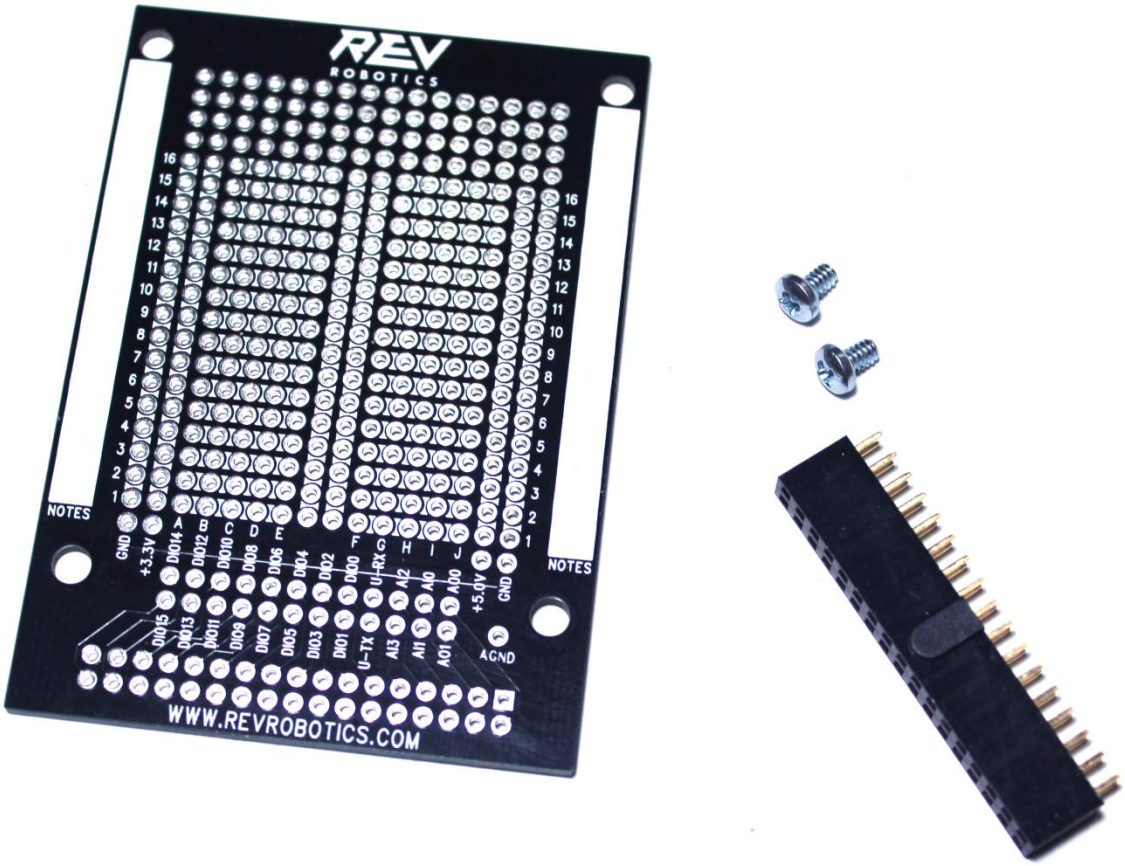


Figure 1-1 Proto Board Kit

1.1 FEATURES

The REV Robotics Proto Board includes the following features:

- Durable Design
  - Double-sided PCB
  - All plated-through holes
  - Solder mask
- Prototyping area
  - Access to all MXP signals
  - 0.1" grid hole pattern
    - 16 x 16 breadboard-style area with bus strips
    - 4 x 16 area with isolated holes
  - Coordinate labels
  - Notes area for easy labeling
- Mounting holes
  - 2 holes for roboRIO mounting, 4-40 x 3/16" screws
  - 2 holes for additional mounting options, #6 sized screws

1.2 KIT CONTENTS

The REV Robotics Proto Board comes with the following:

- Proto Board
- 34-pin MXP connector
- Two 4-40 x 3/16" roboRIO mounting screws

2FEATURE DESCRIPTION

The REV Robotics Proto Board includes a range of features designed to make prototyping custom circuits easy and reliable. This section describes each of these features in detail.

2.1 DURABLE DESIGN

Traditional prototyping boards are notoriously susceptible to lifted pads and solder bridges. The REV Robotics Proto Board is designed as a double sided PCB with all holes plated-through. This significantly reduces the chance of lifting a pad due to overheating during the soldering process. The solder mask prevents the flow of solder between the pads, making solder bridges less likely.

2.2 PROTOTYPING AREA

With convenient access to MXP signals, an easy-to-use hole pattern, and clear and concise labeling, the REV Robotics Proto Board simplifies the circuit prototyping process.

2.2.1 MXP BREAKOUT

Each MXP signal pin is broken out to pads on a 0.1" grid. Figure 2-1 shows the arrangement of the MXP signals.

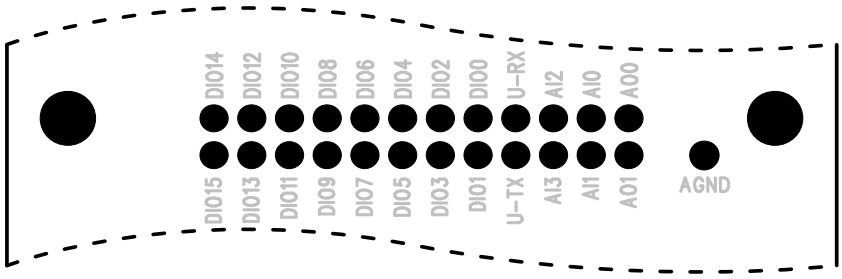


Figure 2-1 MXP Signal Breakout

2.2.2 HOLE PATTERN

At the center of the Proto Board is a 16 x 20 0.1" grid hole pattern. The upper 4 rows of plated-through holes are kept isolated from each other while the lower 16 rows are arranged like a standard breadboard with bus strips and terminal strips. Six bus strips run vertically with two on the left, two in the center, and two on the right. These bus strips are electrically connected through the entire column (1 - 16). There are 16 5-pin terminal strips on each side of the center bus strips (A-E and F-J). The 5 pins are electrically connected in each terminal strip. Figure 2-2 shows the prototyping area hole pattern.

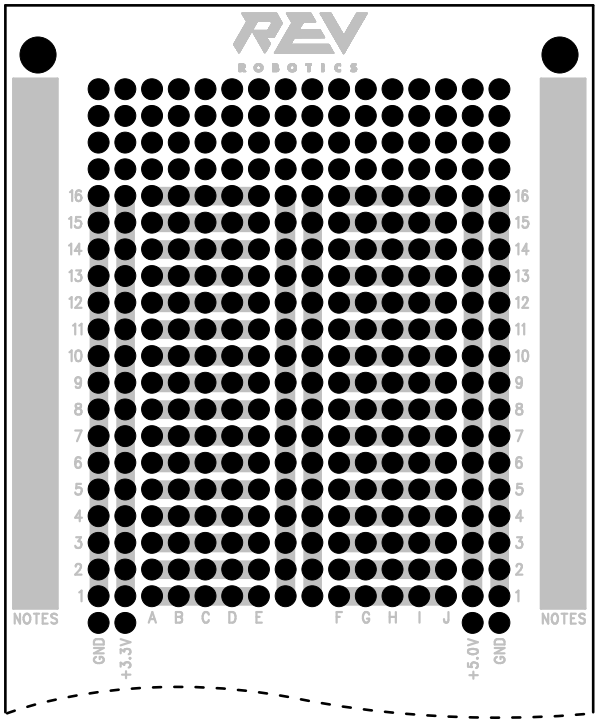


Figure 2-2 Prototype Area Hole Pattern

By default, the bus strips are not connected to power or ground. 5.0V, 3.3V, and ground must be connected by soldering a connection between the power pads and the bus strips.

2.2.3 LABELING

The lower portion of the prototyping area is labeled with a coordinate system similar to traditional breadboards. Numbers 1 through 16 for the rows and letters A through E and F through G for the terminal strip columns. These labels are also on the back of the board.

On both the left and right sides of the prototyping area are two note taking areas. Labeling custom connections can be done easily with a fine tipped permanent marker. A paper-towel or cotton swab soaked in isopropyl alcohol will remove marks made from a permanent marker.

2.3 INSTALLING MXP CONNECTOR

The Proto Board comes with a 34-pin male connector that must be soldered to the Proto Board before connecting it to the roboRIO. The connector is installed on the back side of the board in the white outline labeled J1. The connector leads are soldered on the top side of the board. Figure 2-3 shows the Proto Board with the MXP connector installed.

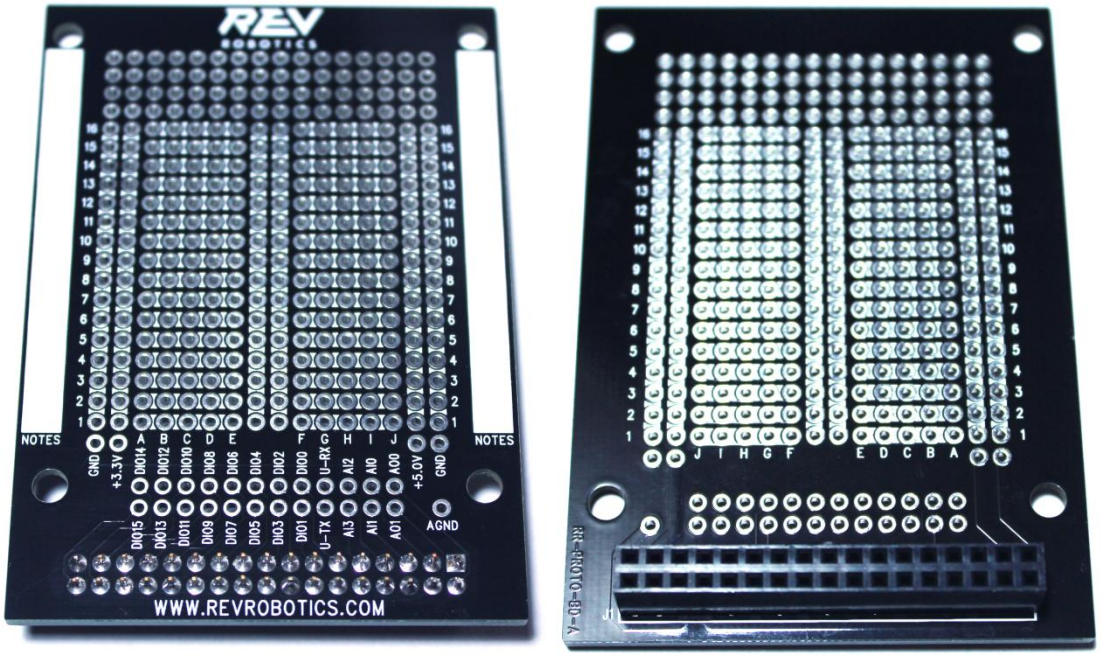


Figure 2-3 Installed MXP Connector

2.4 MOUNTING HOLES

The Proto Board has 4 mounting hole locations throughout the board: 2 roboRIO mounting holes and 2 general mounting holes. These mounting holes give flexibility in mounting the board, either mounted directly on the roboRIO or externally using the REV Robotics MXP Extension Cable (REV-11-1118). Please see APPENDIX B DIMENSIONS for the mounting hole placements. Table 2-3 shows the recommended mounting screw sizes.

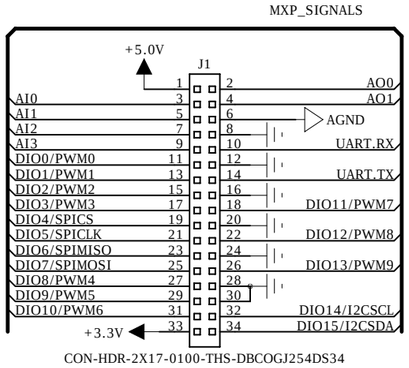
Table 2-1 Recommended Mounting Screw Sizes

Mounting Hole	Quantity	Recommended Screw Size
roboRIO	2	4-40 x 3/16" Machine Screw
General Mounting	2	#6 Machine Screw

APPENDIX A SCHEMATIC

Appendix A shows the schematic for the REV Robotics Proto Board.

MXP Connector



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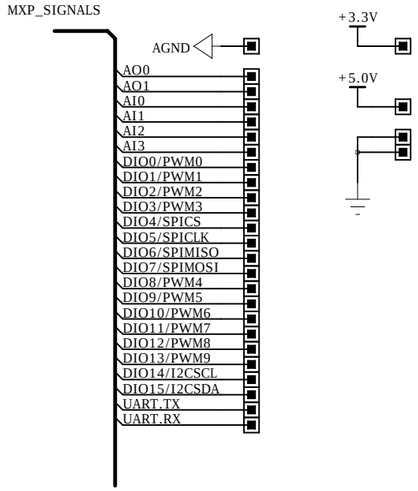

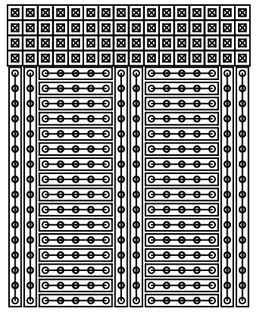

DESIGNER: DAY	REVISION: A	DATE: 11/14/2014
PROJECT: Proto Board		
DESCRIPTION: MXP Prototype Board		
FILENAME: ProtoBoard.sch		

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APPENDIX B DIMENSIONS

Appendix B shows a dimensional drawing of the REV Robotics Proto Board. All dimensions are in inches.