

PROJECT FINAL

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PART ONE PRE-LAB

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OBJECTIVES:

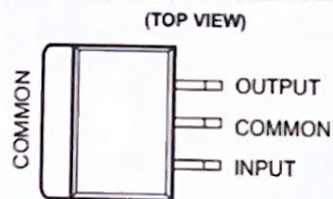
1. DIAGNOSE, TROUBLESHOOT EXISTING ISSUES.
2. UPGRADE THE UNIT TO 12VOLTS WITH A 5VOLT REGULATOR FOR TTL LOGIC.
3. INSTALL AN ONBOARD POWER DEVICE.

EQUIPMENT AND MATERIALS: A DMM AND AN OSCILLOSCOPE WILL BE USED TO DIAGNOSE PROBLEMS. A BILL OF MATERIALS WILL BE PROVIDED IN THE CONCLUSION.

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NEW IC INFORMATION:

FIGURE 15-1-1 LM7805 PINOUT



MAXIMUM APPLIED VOLTAGE - 40V

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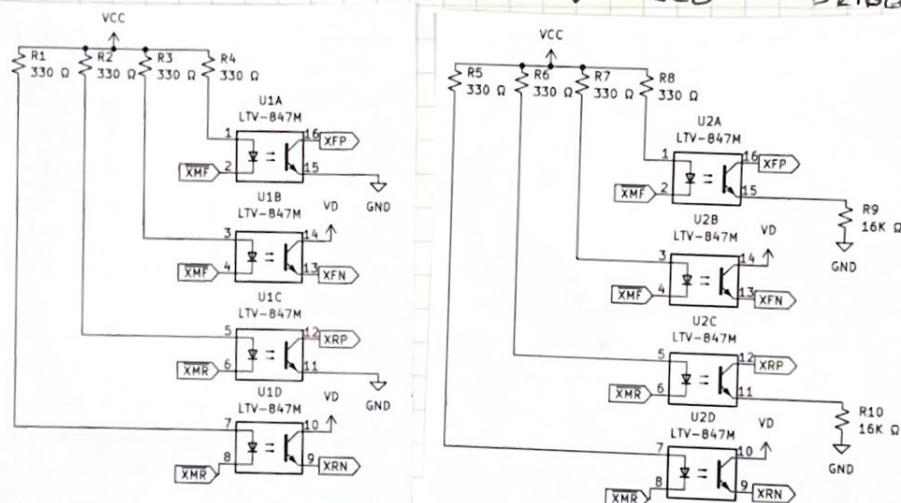
PART TWO DIAGNOSING AND UPGRADING

DIAGNOSING PRE-EXISTING PROBLEMS- WHILE I WAS POKING AROUND TRYING TO FIND A DIRTY GROUND OR SOMETHING, I FOUND A COLD SOLDER JOINT ON A DRIVER RESISTOR. AFTER FIXING IT THE UNIT STILL DID NOT WORK. THE PROBLEM ENDED UP BEING A LOOSE CONNECTION. THAT CONNECTION ENDED UP BEING SOLDERED.

~~FIVE VOLT~~

TWELVE VOLT UPGRADE:

FIGURE 15-2-1 NEW VS OLD H BRIDGES



THE "X" MEANS THIS APPLIES TO BOTH. THE OLD AND NEW, LEFT AND RIGHT H BRIDGES. WITH 0-12 VOLTS THE N CHANNEL VOLTAGE RATINGS ARE EXCEEDED SO A VOLTAGE DIVIDER IS INSTALLED. THE VOLTAGE DIVIDER WILL WORK UP TO 20 VOLTS IF DESIRED.

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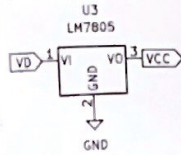
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PART TWO DIAGNOSING AND UPGRADING

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THE FIVE VOLT REGULATOR ALLOWS FOR THE USE OF A SINGULAR 12 VOLT SUPPLY BUT STILL BE ABLE TO SUPPLY THE TTL LOGIC WITH THE NEEDED FIVE VOLTS. THREE POWER DECOUPLING CAPACITORS WERE ADDED TO THE CIRCUIT ONE ON THE TTL BOARD, TWO ON THE DRIVER BOARD ONE ON THE 5V AND ONE ON THE 12V SIDE.

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PART THREE PROJECT OVERVIEW

BILL OF MATERIALS:

LM7805	X 1
470 μ F 35V	X 2
16K Ω	X 4
5 AMP FUSE	X 2
12 VOLT BATTERY	X 1

CONCLUSION: THIS PROJECT WHEN I STARTED WAS CLOSE TO WORKING BUT HAD A FEW SMALL ISSUES. ONCE THOSE ISSUES WERE RESOLVED THE 12VOLT UPGRADE WAS APPLIED. IDEAS TO FURTHER THE PROJECT FOR THE NEXT PERSON COULD BE CLEANING UP THE CHASSY (THE TRAX), MAKE THE BOARDS CLOSER TOGETHER, ADD A TURRET (POSSIBLY THE LIGHT TURRET?), AND PERSONALLY I'D LIKE TO SEE A PISTON THAT CAN LIFT THE UNIT OFF THE GROUND

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