INTUITIVE HUMAN INTERFACE SOLUTIONS

Series 3D70 Development Kit Quick Start Guide

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Revision History

Revision	Date	Description
A	11/11/2016	Original Release
B	08/25/17	Minor corrections; Added Appendix A with development board schematic information

Introduction

These instructions describe how to connect the 3D70 Display to its development board and how to connect the power, Ethernet, CAN bus, and RS-232 serial bus.

Equipment from Grayhill Included with 3D70Dev-100 Kit

- 3D70VT-100 Display
- 3D70 Mounting Frame
- Four M5-0.8 screws and washers
- 3D70 Development Stand with 3D70 Breakout Board
- Two 18-pin DT cables to connect 3D70 Display to Breakout Board
- USB to CAN adapter to provide CAN port for PC
- DB9 cable to connect CAN adapter port to 3D70 Breakout Board
- 12VDC Universal Power Supply
- DB9 cable to connect PC serial port to 3D70 Breakout Board
- Ethernet cable to connect 3D70 Ethernet port to PC network
- Insert Card

The Insert Card directs users to the following links for downloading software development tools and product literature:

http://www.grayhill.com/vui-builder/
http://www.grayhill.com/qt43d/
http://www.grayhill.com/codesys/

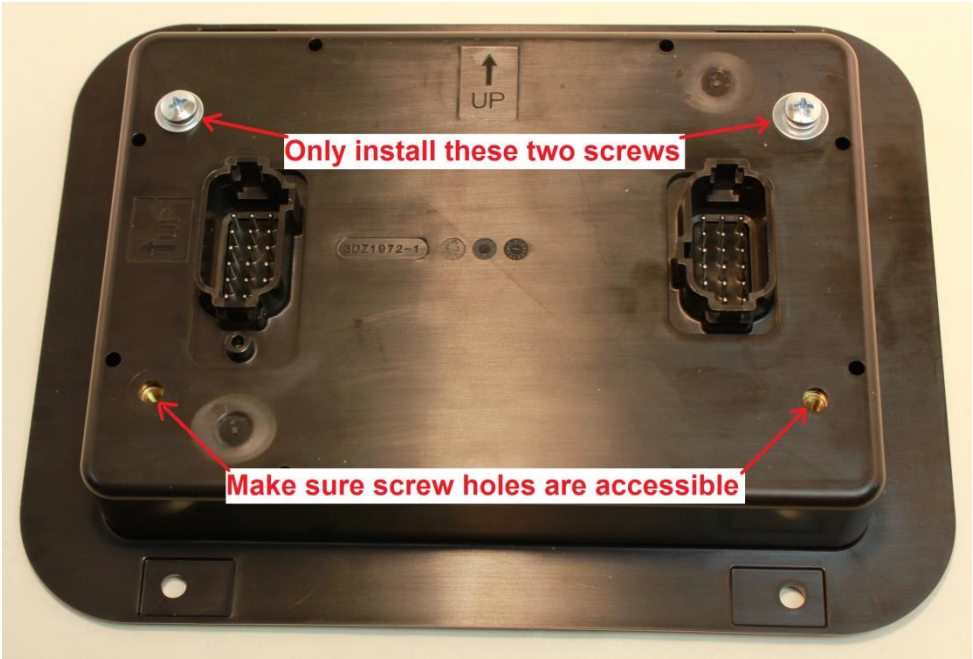
Hardware Setup Instructions

The following steps describe how to set up the 3D70 hardware. Take care to avoid damaging the development board. Note that the color of the cables shown in the pictures below may be different than the color of the cables provided.

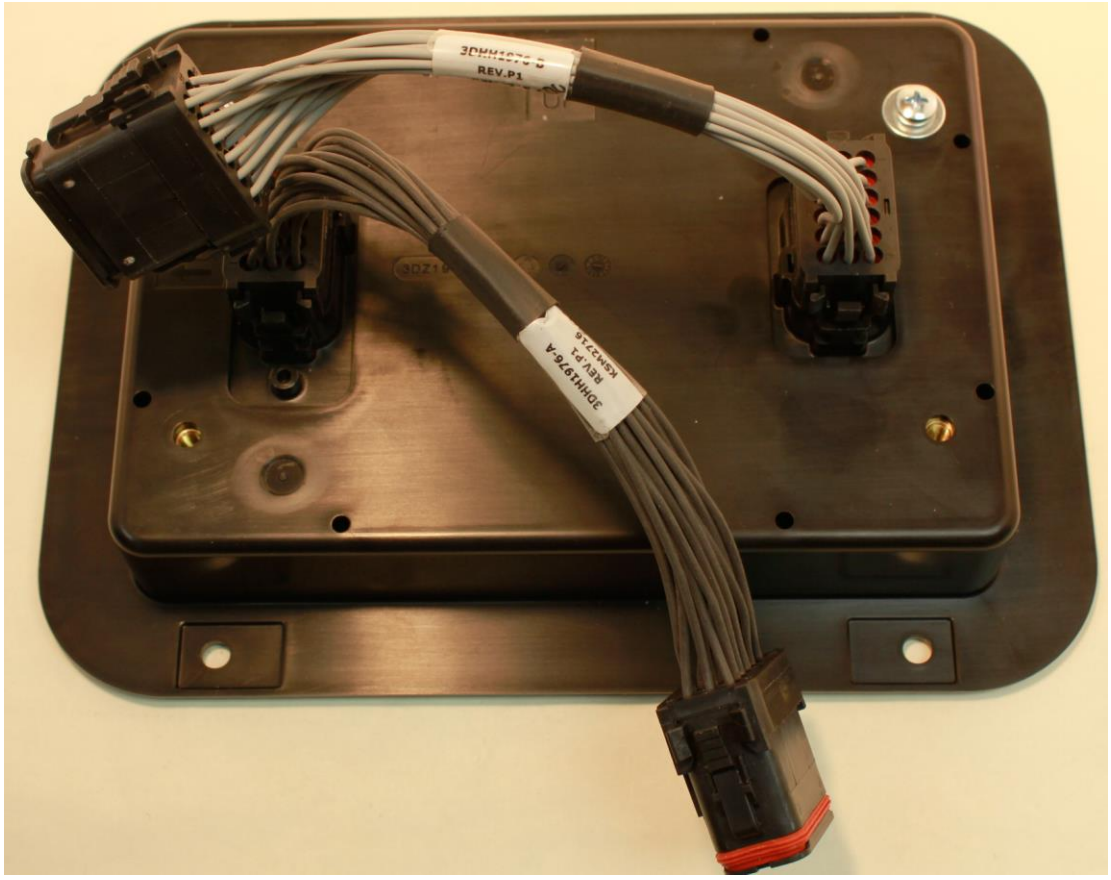
1. Put the 3D70 Display face down on a clean, flat surface with the connector marked “A” on the left.

2. Notice that the 3D70 Mounting Frame has two openings on the back and that one is larger than the other. Place this mounting frame on top of the 3D70 Display with the larger opening to the left (over the connector marked “A”).

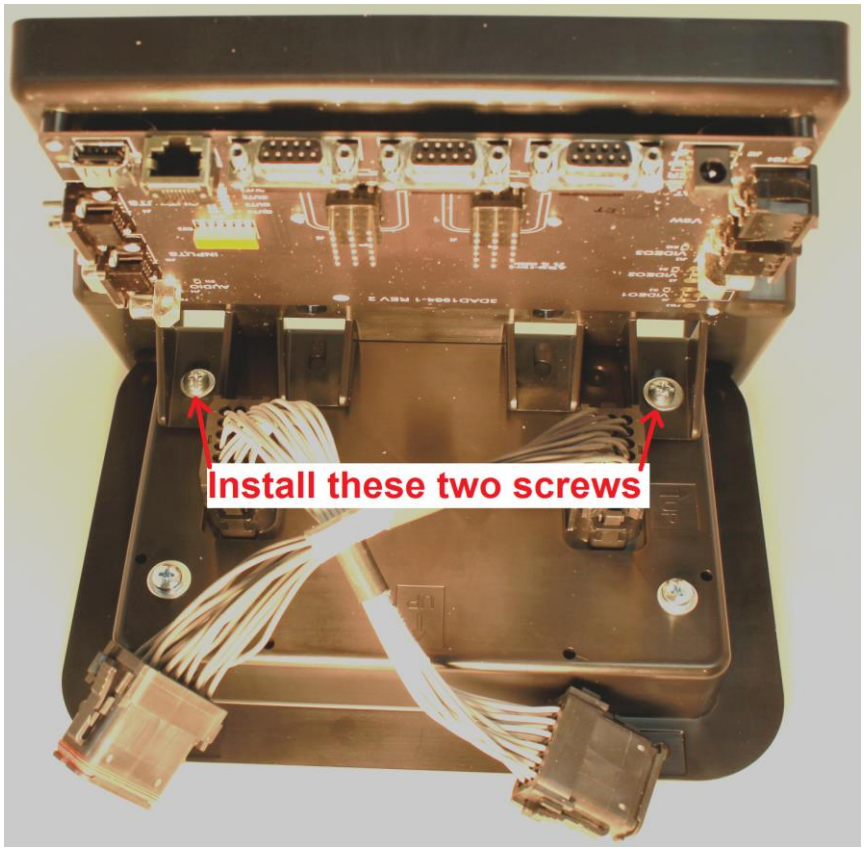
3. Only install the top two screws and washers to secure the mounting frame to the display. Make sure that the bottom two screw holes are lined up with the holes in the mounting frame, but do not install these screws yet.



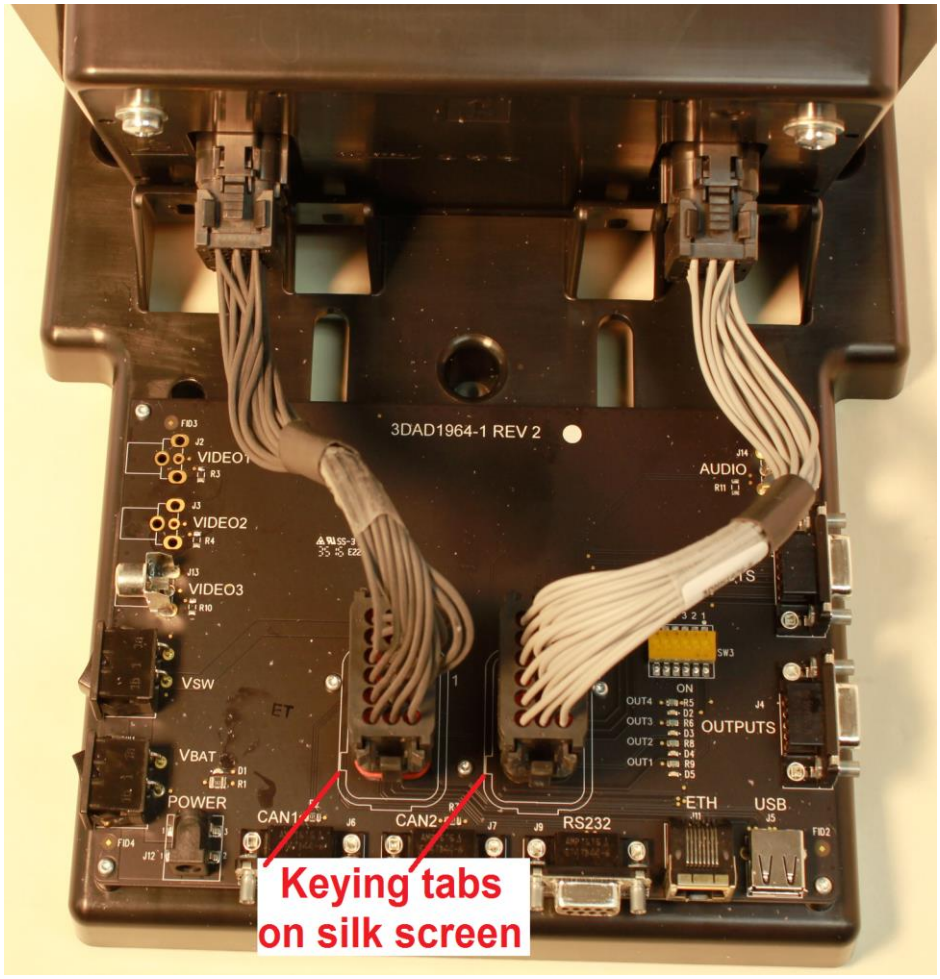
4. Connect the two 18-pin DT cables to the back of the display. Note that the cables are different! Match up the keying tabs to insure that the correct cable is installed in the correct connector on the back of the 3D70 Display. The cable marked 3DHH1976-A (typically made with black wires) connects to connector “A” and the cable marked 3DHH1976-B (typically made with gray wires) connects to connector “B”.



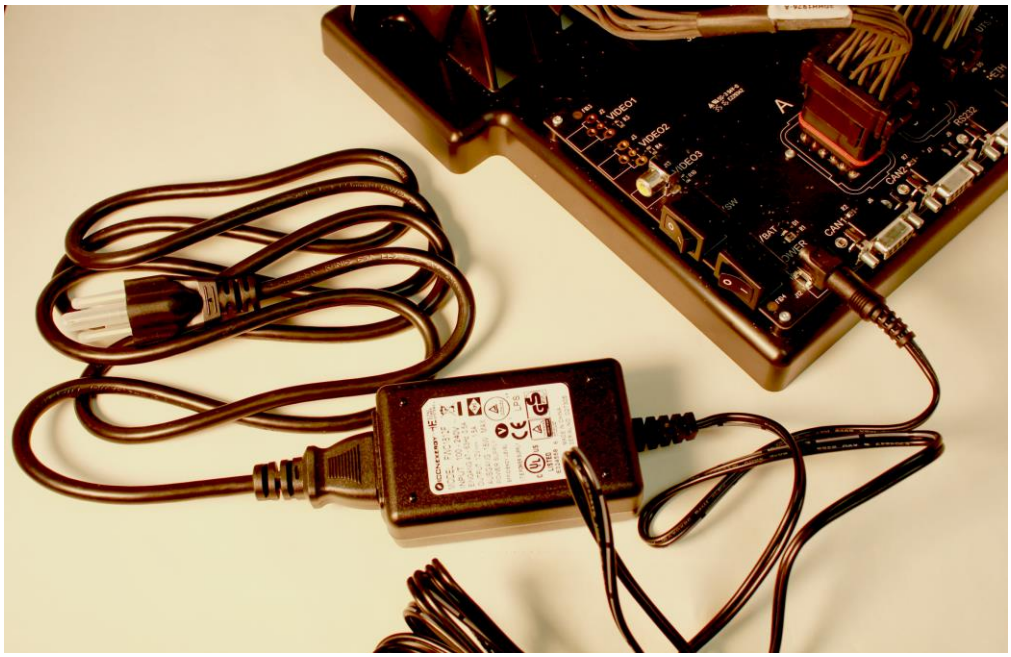
5. Attach the mounting frame with the 3D50 Display to the development stand and secure by installing the lower two screws and washers through the tabs on the development stand, through the back of the mounting frame, and into the back of the 3D70 Display.



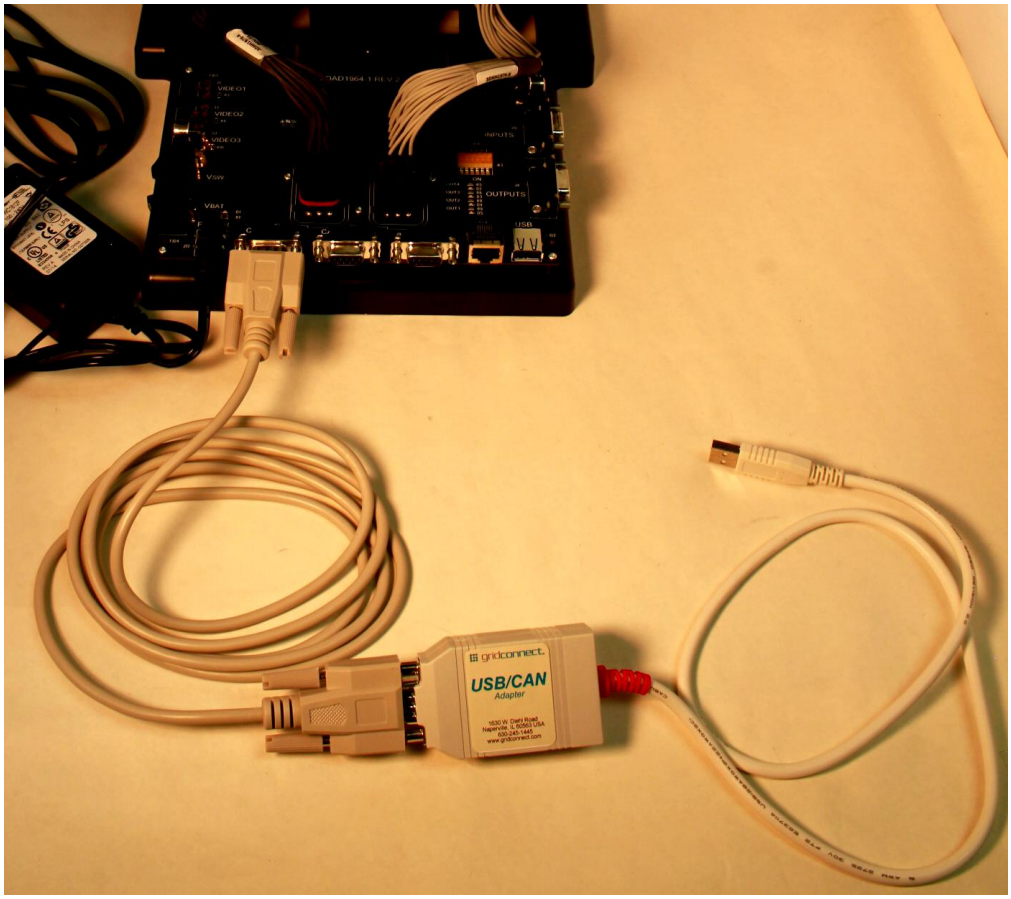
6. Connect the two 18-pin DT cables to the 3D70 breakout board. Be sure to connect cable “A” to the connector marked “A” on the breakout board and cable “B” to the “B” connector. Also be sure to match up the keying tabs with the keying tab silk-screened on the breakout board.



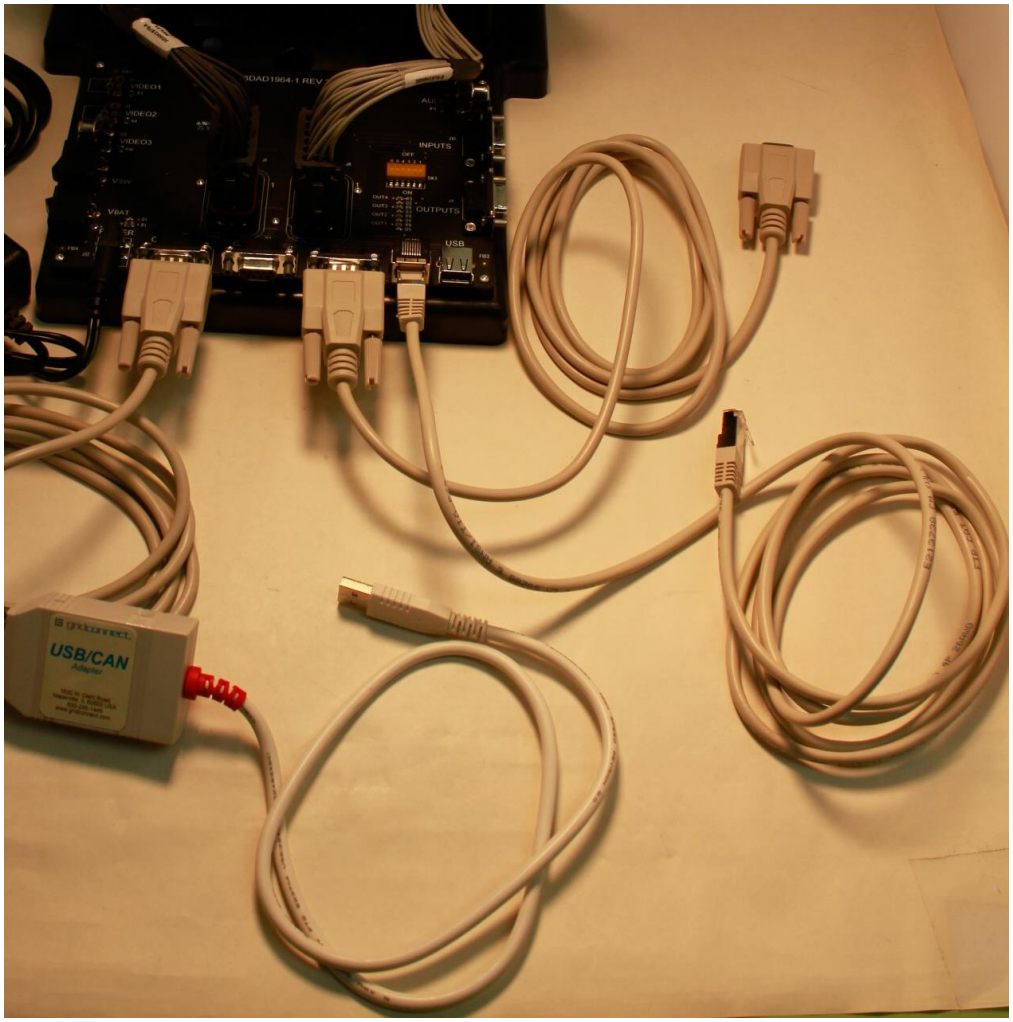
7. Connect the power cable to the Breakout Board.
8. Connect the power supply’s power cord.



9. Attach a DB9 cable to the CAN 1 port on the Breakout Board.
10. Attach the other end of this cable to the matching connector on the USB to CAN adapter.
11. Plug the USB plug on the CAN adapter into a USB port on the development PC.



12. Connect DB9 serial cable to Breakout Board COM 1 port. Attach other end of this cable to a serial port on the development PC.
13. Connect Ethernet cable to the Ethernet port on the development board. The other end of the Ethernet cable should be connected to the same network that the development PC is connected to.



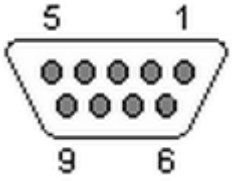
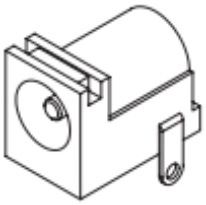
PC to CAN-bus Interface

The Series 3D70 Display device has two CAN bus interfaces that can be used for various purposes. The GridConnect USB-to-CAN adapter and software is a PC to CAN-bus interface that can be used for monitoring and sending messages on the CAN bus. The GridConnect software can be installed on the development PC as shown below:

1. Insert the disc or download the software from www.gridconnect.com and install the PCAN USB software.
2. A copy of the Dynamic Link Library (PCANBasic.DLL) provided with the USB PCAN adapter needs to be copied to the Windows PC. It is recommended that the DLL be copied to the same folder as the application (e.g., VUI Builder) that will be using it. Make sure that the 32-bit version is used as opposed to the 64-bit version of the DLL. (Note: The PCANBasic.dll file can be found in the folder "\PreRelease\PCAN-Basic v3.4 (CAN-FD Support)\Win32" on the disc. It is also available on the GridConnect web site under "Support -> Product Packages -> PCAN-USB package". Then look in the download file "usb.zip" under the folder "PCAN-Basic API\Win32\".)

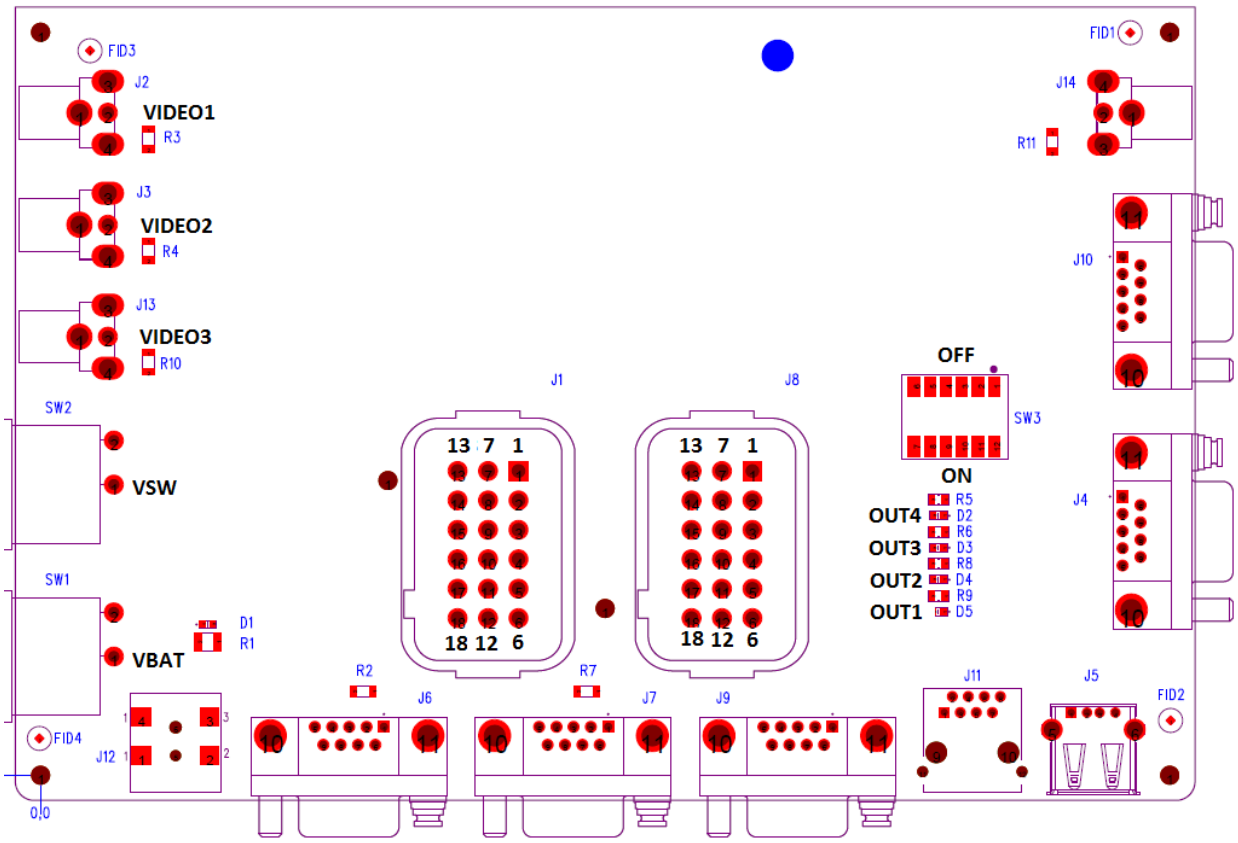
Appendix A

POWER REQUIREMENT
Voltage: 12V
Current: 1.5A

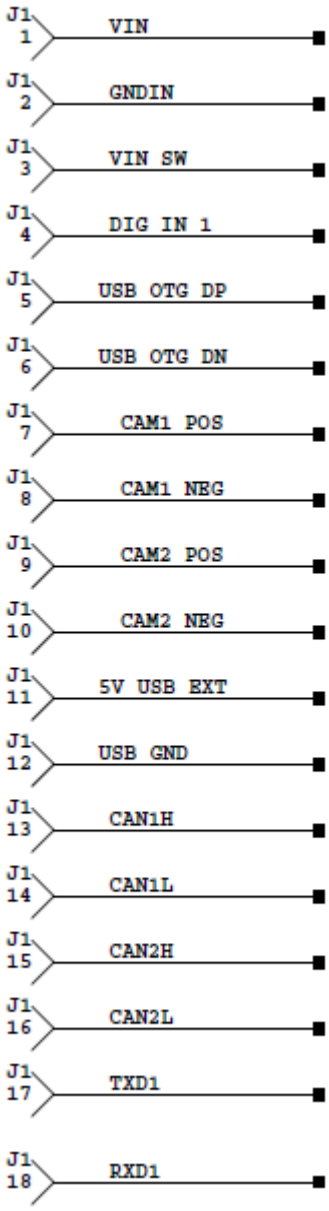
J4, J6, J7, J9, J10	J2, J3	J12	J11	J5
 TYCO 747844-6	CUI RCJ-014	 CUI PJ-002AH	TE CONN 555153-1	TE CONN 292303-1

J1, J8 MATING CONNECTORS
HOUSING: J1=DEUTSCH DT16-18-SA-K004, J2= DEUTSCH DT16-18-SB-K004
TERMINAL: DEUTSCH 0462-201-16141

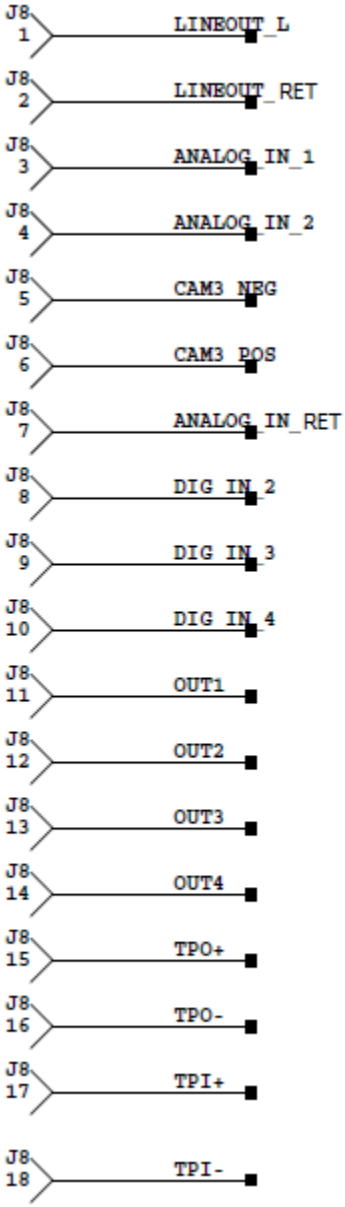
BOARD LAYOUT



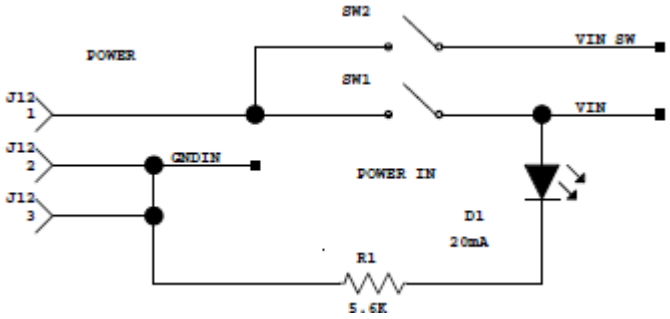
MAIN CONNECTOR "A" (J1)



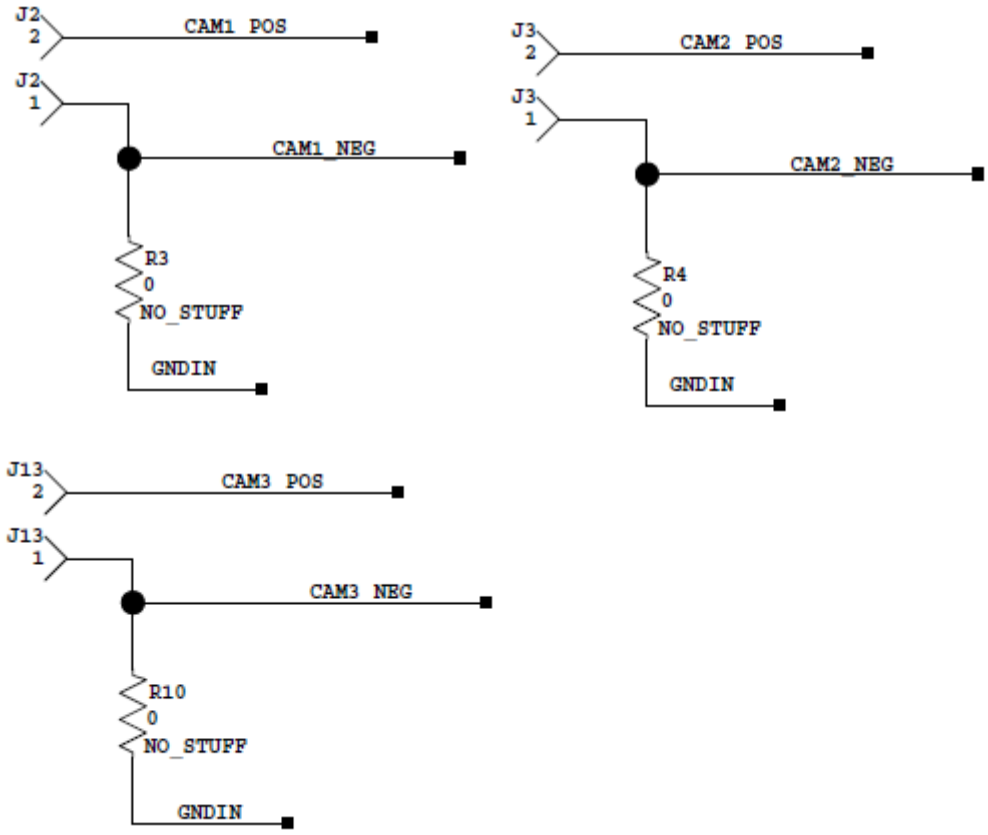
MAIN CONNECTOR "B" (J8)



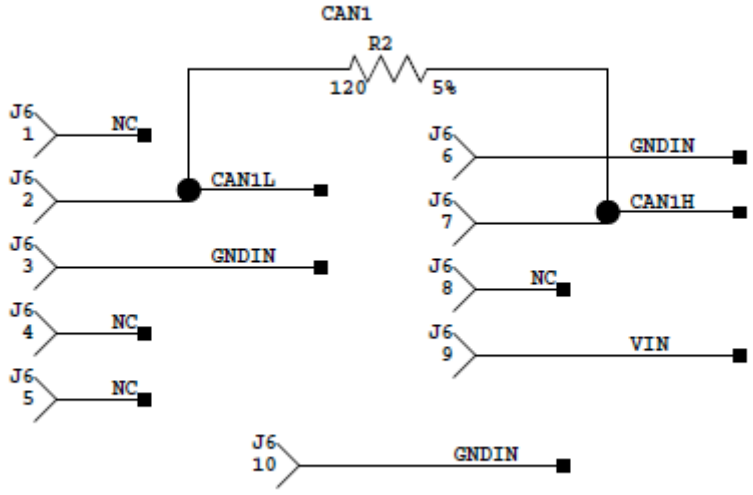
POWER SWITCHES VBAT (SW1) and VSW (SW2)

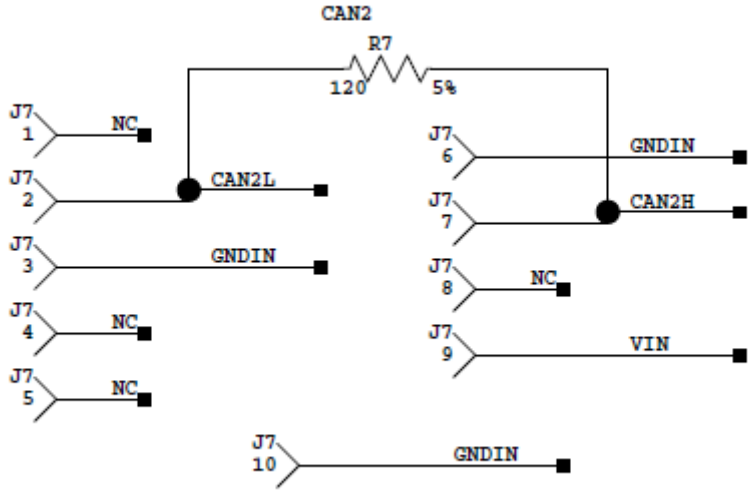


VIDEO INPUTS CAM1 (J2), CAM2 (J3), and CAM3 (J13)

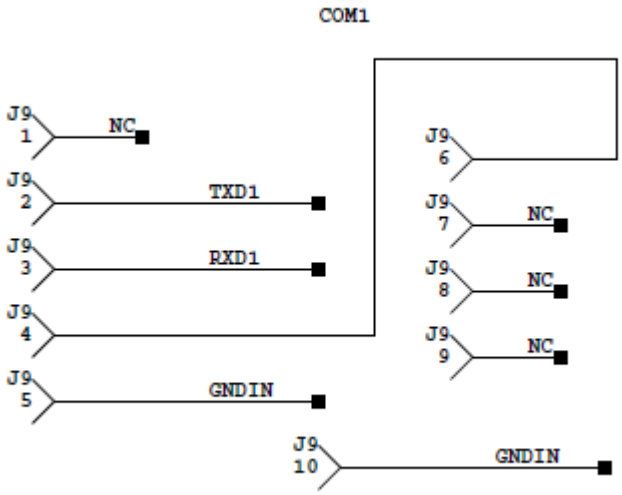


CAN CONNECTORS CAN1 (J6) and CAN2 (J7)

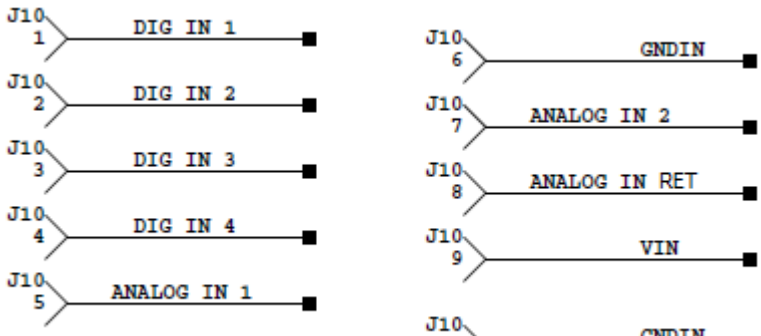


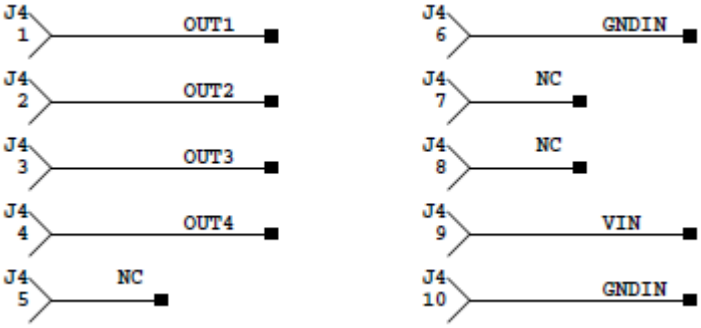


RS232 CONNECTOR COM1 (J9)

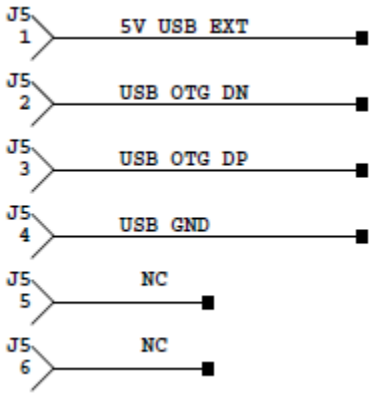


IO CONNECTORS (J4, J10)

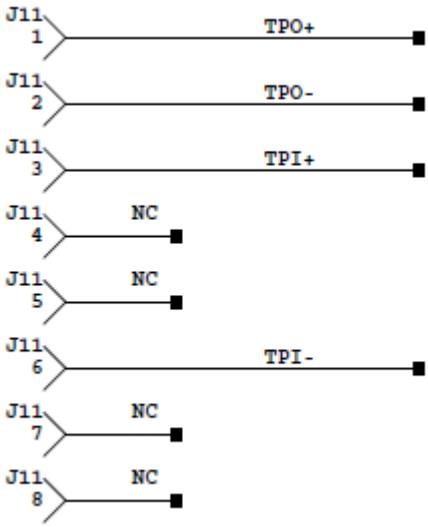




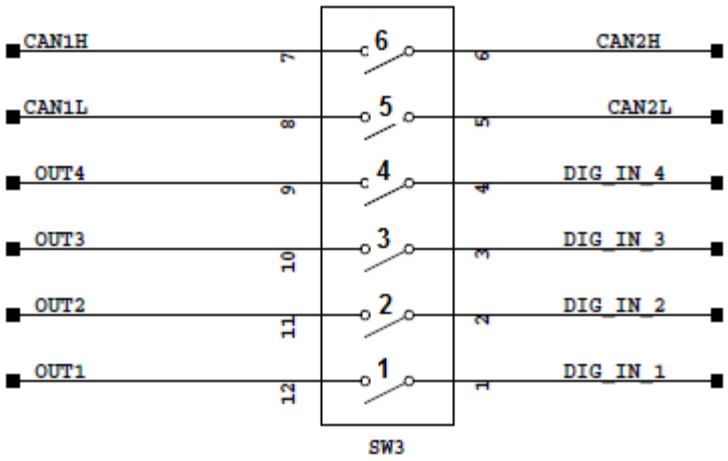
USB CONNECTOR (J5)



ETHERNET CONNECTOR (J11)



DIP Switch SW3



Leave all switches open (OFF) for normal operation.

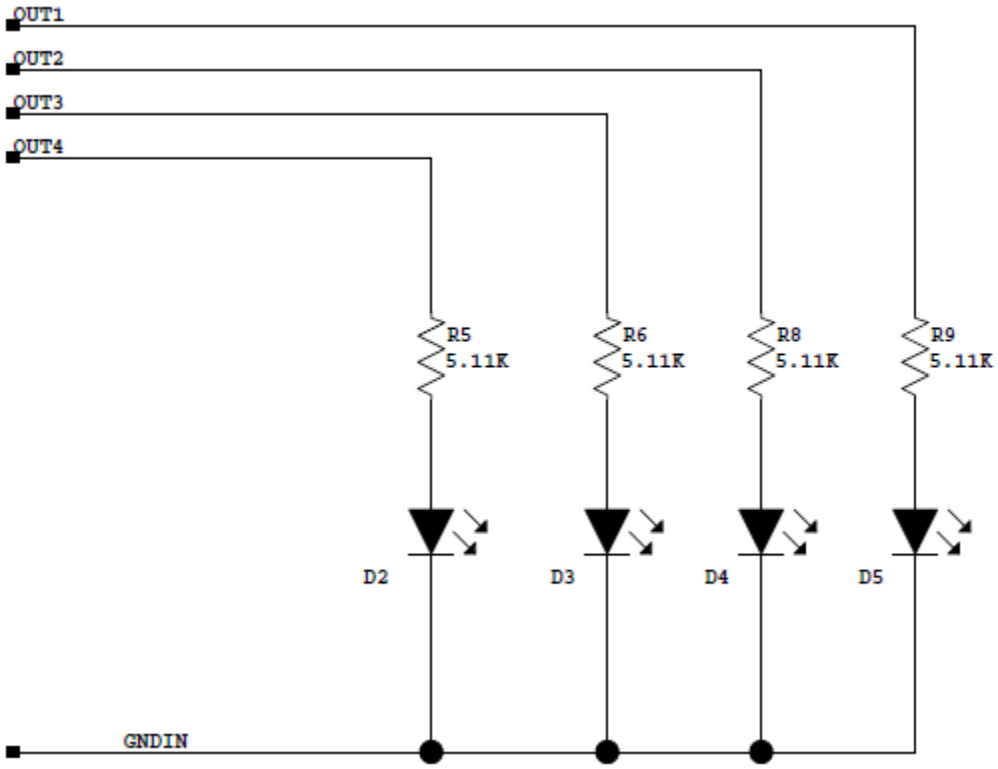
Closing switches 5,6 (ON) connects CAN port 1 to CAN port 2.

Closing switch 4 (ON) connects OUT4 to DIG_IN4

Closing switch 3 (ON) connects OUT3 to DIG_IN3

Closing switch 2 (ON) connects OUT2 to DIG_IN2

Closing switch 1 (ON) connects OUT1 to DIG_IN1

LEDs D2,D3,D4, D5, and D6

LEDs are illuminated if their corresponding signal is high.