

Serial Interface Board

The Serial Interface Board allows quick connectivity and testing of serial data signals. It expedites the process of connecting a variety of logic level voltages to RS232 and RS485 buses. The easy to use board is a must have for any digital designer's toolbox.

Features

- Two RS232 to TTL data ports
- One RS485 to TTL data port
- TTL data levels from 2.5V-5V set by external voltage
- Full duplex or half duplex RS485
- Serial conversion to RS485 does not require drive enable or receive enable logic
- 0.1" locking header connection and terminal block for fast prototyping connections for TTL data
- Female DB9 connections for RS232
- Converts RS232 to RS485
- Converts RS232 to logic levels
- Converts RS485 to logic levels
- Indicator LEDs for logic level inputs and outputs

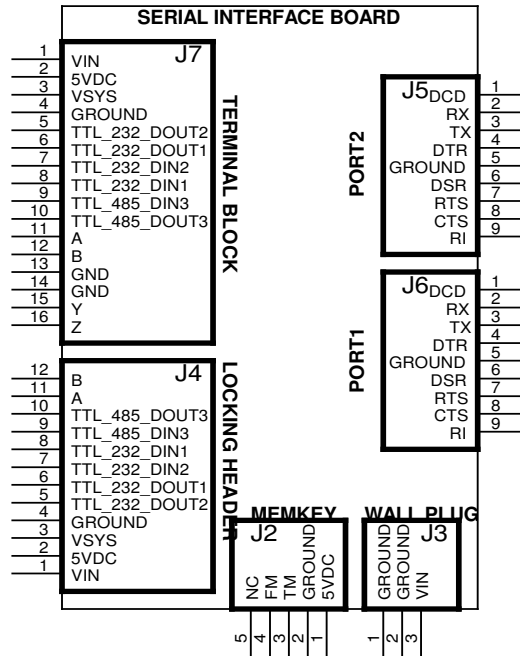
Quick Specs

- RS232 data rate tested up to 115.2kbps, design rating is 460kbps
- RS485 data rate up to 115.2kbps
- -40°C to +85°C operating temperature
- +7V to +15VDC power supply voltage
- Can run off of external 5V only supply with proper jumper settings
- Logic level signals below 5V (example: 2.5V or 3.3V) can be set with external voltage

Engineering Specifications

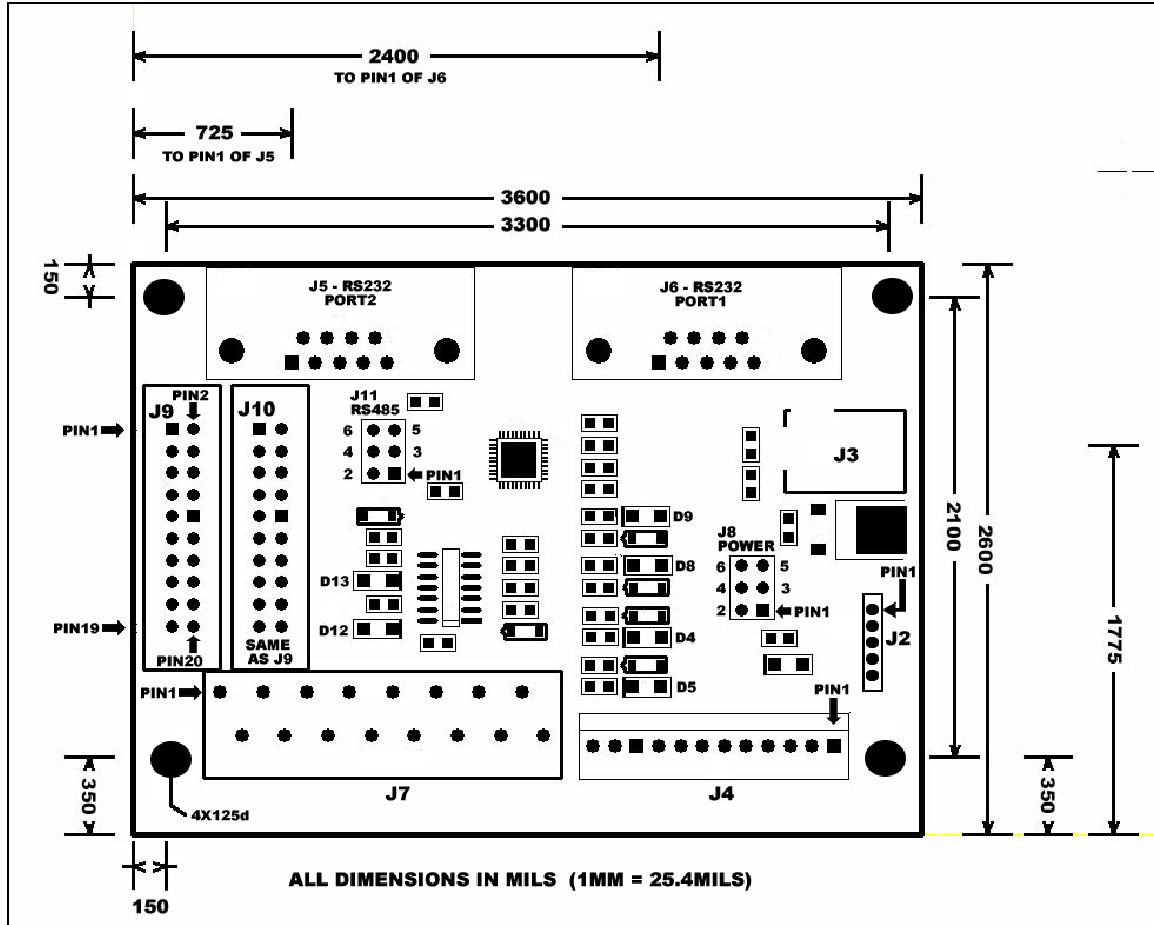
OPERATING PARAMETER	MIN	TYP	MAX	UNIT	NOTES
SUPPLY VOLTAGE ALLOWABLE AT VIN	7		15	V	
VSYS OPERATING VOLTAGE	2		7	V	VSYS determines output logic voltage levels if less than 5VDC is desired
SUPPLY CURRENT		10		mA	no load on communication ports
OPERATING TEMPERATURE	-40		85	°C	
RS232 DRIVER OUTPUT VOLTAGE	+/-5	+6/-7		V	
INPUT HIGH LOGIC PINS (DIN1,2,3) VSYS = 5V		2		V	
INPUT HIGH LOGIC PINS (DIN1,2,3) VSYS = 2.5V		1		V	
INPUT LOW LOGIC PINS (DIN1,2,3) VSYS=5V		0.9		V	
INPUT LOW LOGIC PINS (DIN1,2,3) VSYS=2.5V		0.5		V	
RS485 OUTPUT DIFFERENTIAL VOLTAGE	2	2.7	5	V	27ohm load
RS485 MAXIMUM DATA RATE		115.2		kbps	
RS232 MAXIMUM DATA RATE		115.2		kbps	Tested maximum, components specified to work up to 460kbps

Pinout and Board Dimensions



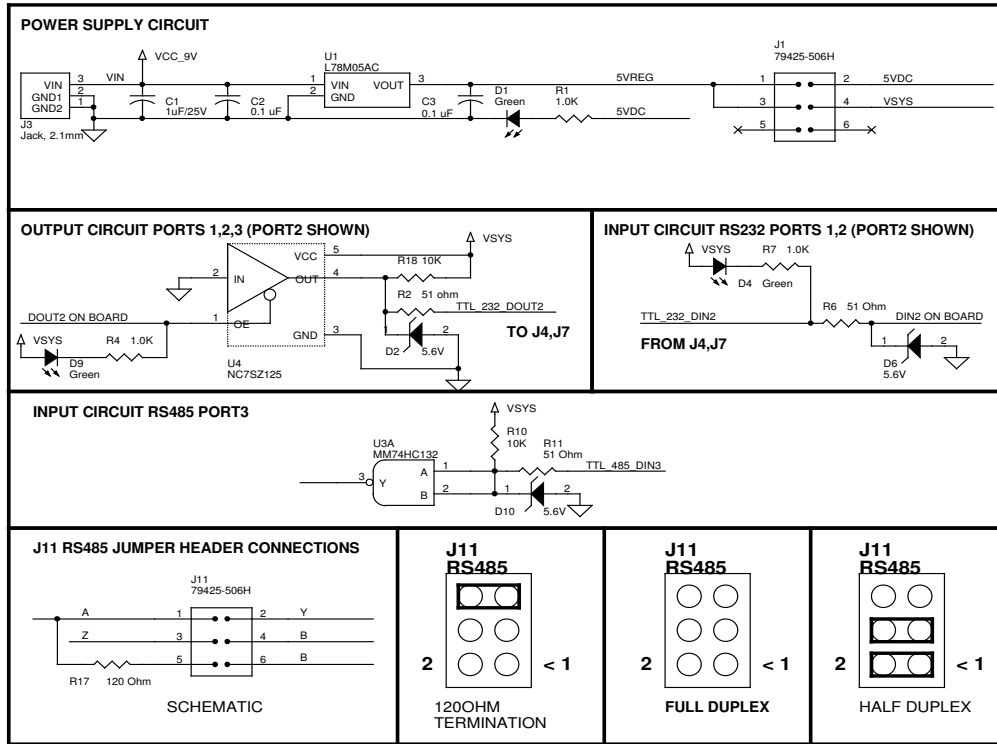
Note: Pins called out on more than one connector are common with the exception of J5 and J6.

PIN DESCRIPTIONS	DESCRIPTION
5VDC	5VDC INPUT OR OUTPUT DEPENDING ON JUMPER J8 SETTINGS
GROUND	GROUND RETURN
VIN	7V-15VDC POWER SUPPLY INPUT
VSYS	LOGIC LEVEL SUPPLY
TTL_232_DOUT2	LOGIC LEVEL SERIAL DATA OUTPUT FROM PORT2
TTL_232_DOUT1	LOGIC LEVEL SERIAL DATA OUTPUT FROM PORT1
TTL_485_DOUT3	LOGIC LEVEL SERIAL DATA OUTPUT FROM PORT3
TTL_232_DIN2	LOGIC LEVEL SERIAL DATA INPUT FROM PORT2
TTL_232_DIN1	LOGIC LEVEL SERIAL DATA INPUT FROM PORT1
TTL_485_DIN3	LOGIC LEVEL SERIAL DATA INPUT FROM PORT3
A	A CONNECTION FOR RS485 BUS
B	B CONNECTION FOR RS485 BUS
Y	Y CONNECTION FOR RS485 BUS
Z	Z CONNECTION FOR RS485 BUS
TM	"TO MASTER" CONNECTS TO TTL_232_DIN1 FOR PROGRAMMING MEMKEY
FM	"FROM MASTER" CONNECTS TO TTL_232_DOUT1 FOR PROGRAMMING MEMKEY
J5 TX	RS232 DATA FROM PC OR GENERATING DEVICE
J5 RX	RS232 DATA FROM SERIAL INTERFACE BOARD TO PC OR GENERATING DEVICE
J5 CTS/RTS	CLEAR TO SEND/READY TO SEND- SHORTED ON SERIAL INTERFACE BOARD
J6 TX	RS232 DATA FROM PC OR GENERATING DEVICE
J6 RX	RS232 DATA FROM SERIAL INTERFACE BOARD TO PC OR GENERATING DEVICE
J6 CTS/RTS	CLEAR TO SEND/READY TO SEND- SHORTED ON SERIAL INTERFACE BOARD

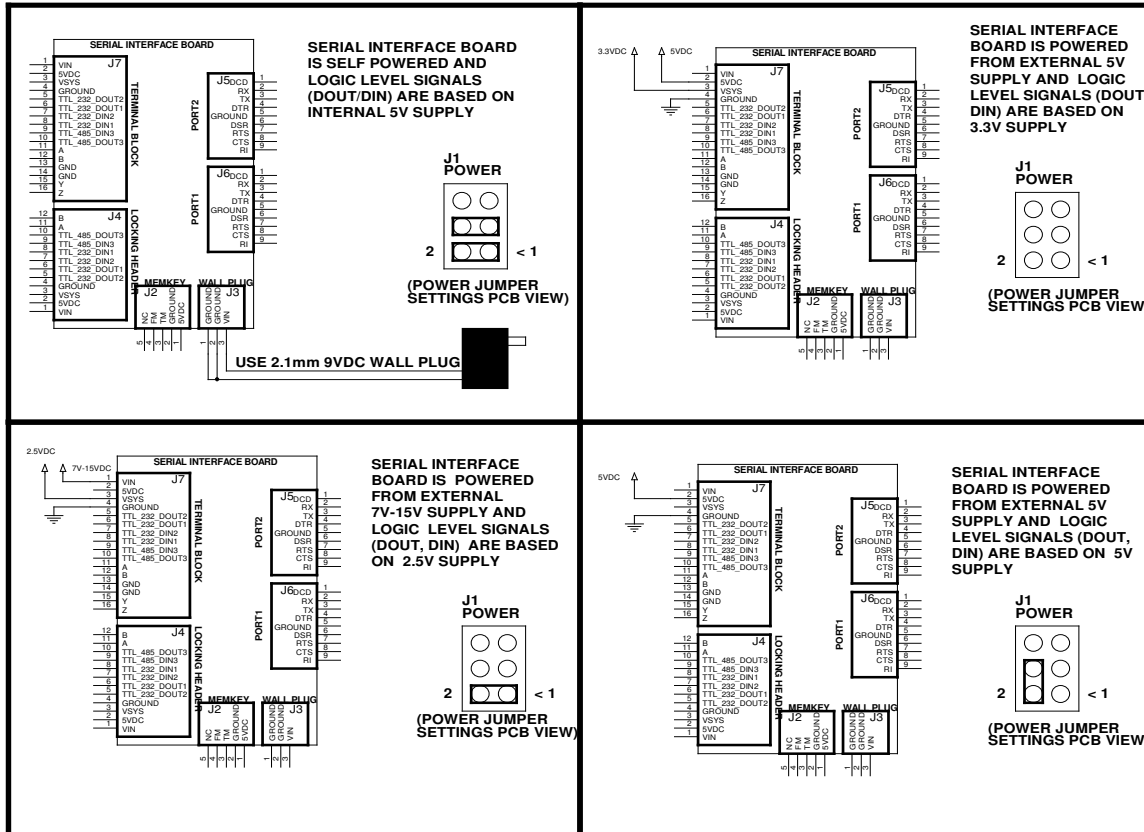


COMPONENT REFERENCE	DESCRIPTION
J1	2X3 0.1" SPACING HEADER FOR POWER SUPPLY JUMPERS: ALLOWS MULTIPLE CONFIGURATIONS OF THE POWER SUPPLIES USED BY THE BOARD. AND ADJUSTMENT OF THE VOLTAGE OUTPUT AT THE LOGIC LEVEL DATA PINS
J2	1X6 0.1" SPACING HEADER: USED TO CONNECT TO AND PROGRAM SOLUTIONS CUBED MEMKEY PRODUCE
J3	2.1MM POWER JACK: CENTER POSITIVE JACK FOR 9V WALL PLUG
J4	1X12 0.1" SPACING LOCKING RAMP HEADER: PROVIDES CONNECTIVITY TO POWER SUPPLY AND LOGIC LEVEL DATA AS WELL AS RS485 A AND B CONNECTIONS. MATES WITH MOLEX PN# 22-01-2127 AND WIRE CRIMP TERMINALS MOLEX PN# 08-50-0114 OR SIMILAR
J5	RS232 PORT2: DB9 FEMALE MATES WITH MALE DB9
J6	RS232 PORT1: DB9 FEMALE MATES WITH MALE DB9
J7	1X16 0.098" SPACING TERMINAL BLOCK: PROVIDES CONNECTIVITY TO POWER SUPPLY AND LOGIC LEVEL DATA AS WELL AS RS485 A, B, Y, AND Z CONNECTIONS. WIRE SIZES 20-24 AWG. PRESS SLOTTED BUTTON ON TOP TO RELEASE WIRES.
J9	2X10 0.1" SHROUDED HEADER: USED TO ACCESS MOTION MIND CONNECTIONS ACCESS BY J10
J10	2X10 0.1" SHROUDED HEADER: USED TO CONNECT TO MOTION MIND
J11	2X3 0.1" SPACING HEADER FOR RS485 JUMPERS: JUMPING PINS 1 AND 2 CONNECT A TO Y. JUMPING PINS 3 AND 4 CONNECT B TO Z. JUMPING PINS 5 AND 6 CONNECT 120 OHM TERMINATING RESISTOR ACROSS A AND B.
D1	5VDC INDICATOR LED
D4	DIN2 DATA INDICATOR, LIT WHEN LOGIC LOW IS PRESENT
D5	DIN1 DATA INDICATOR, LIT WHEN LOGIC LOW IS PRESENT
D8	DOUT1 DATA INDICATOR, LIT WHEN LOGIC LOW IS PRESENT
D9	DOUT2 DATA INDICATOR, LIT WHEN LOGIC LOW IS PRESENT
D12	DIN3 DATA INDICATOR, LIT WHEN LOGIC LOW IS PRESENT
D13	DOUT3 DATA INDICATOR, LIT WHEN LOGIC LOW IS PRESENT

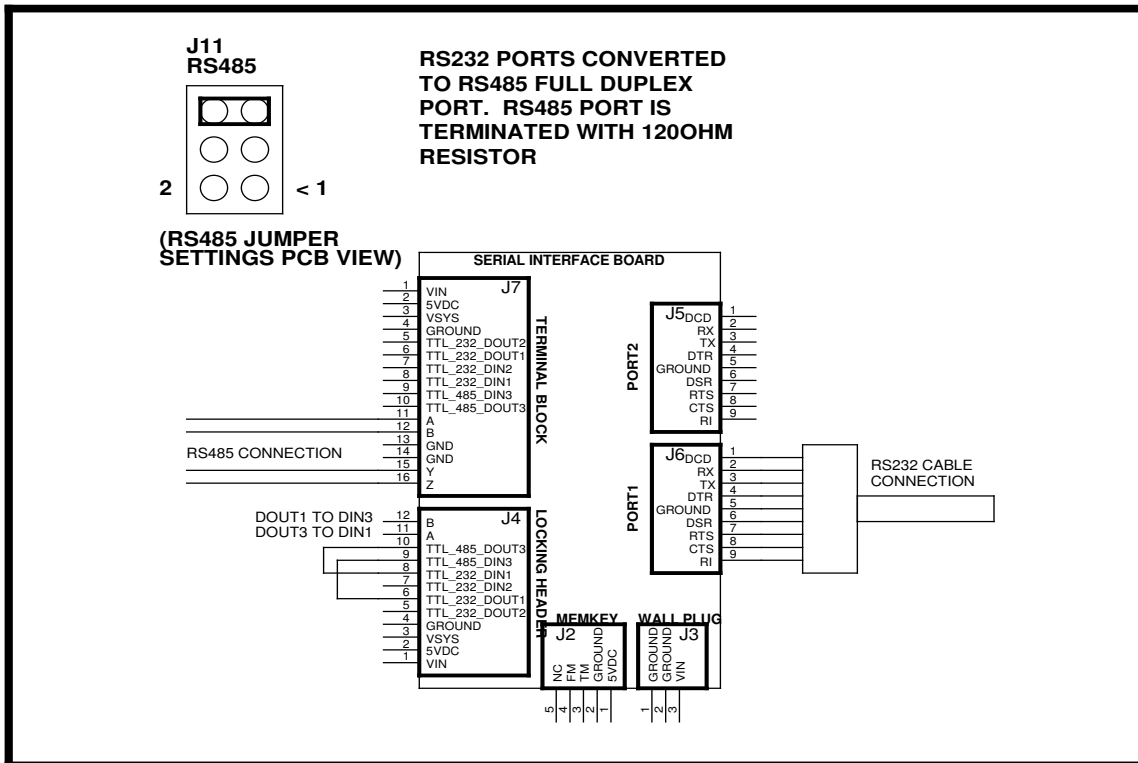
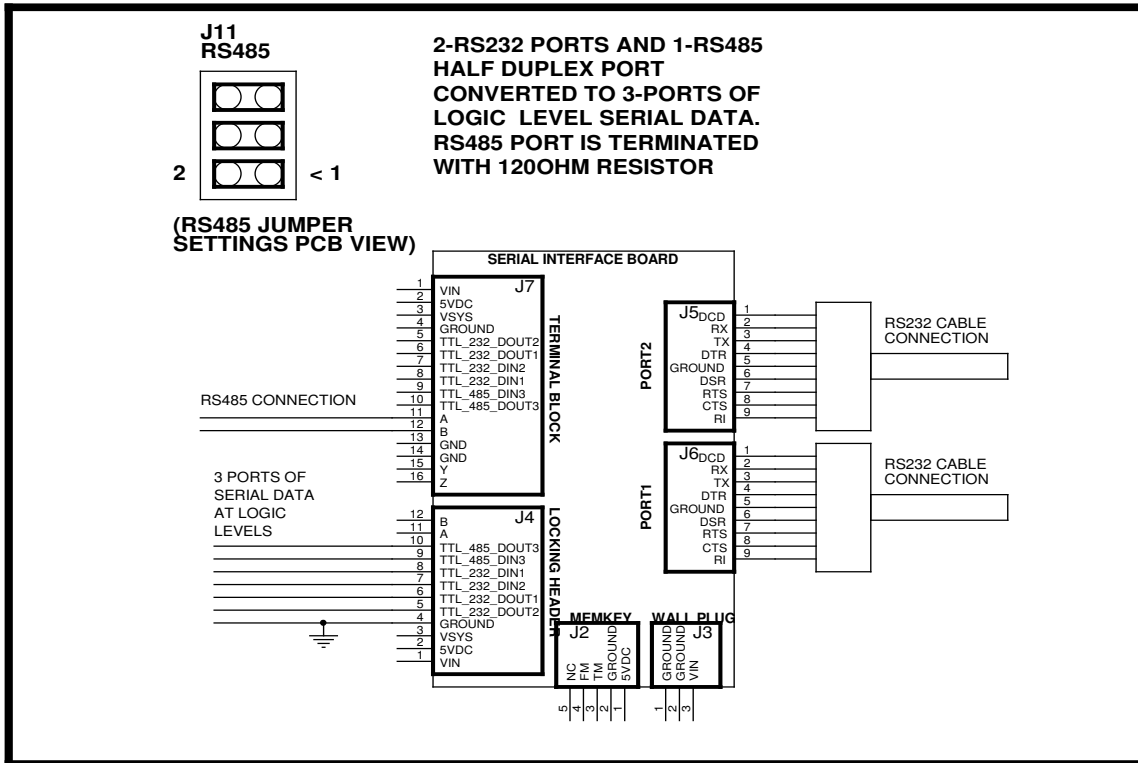
Internal Circuitry

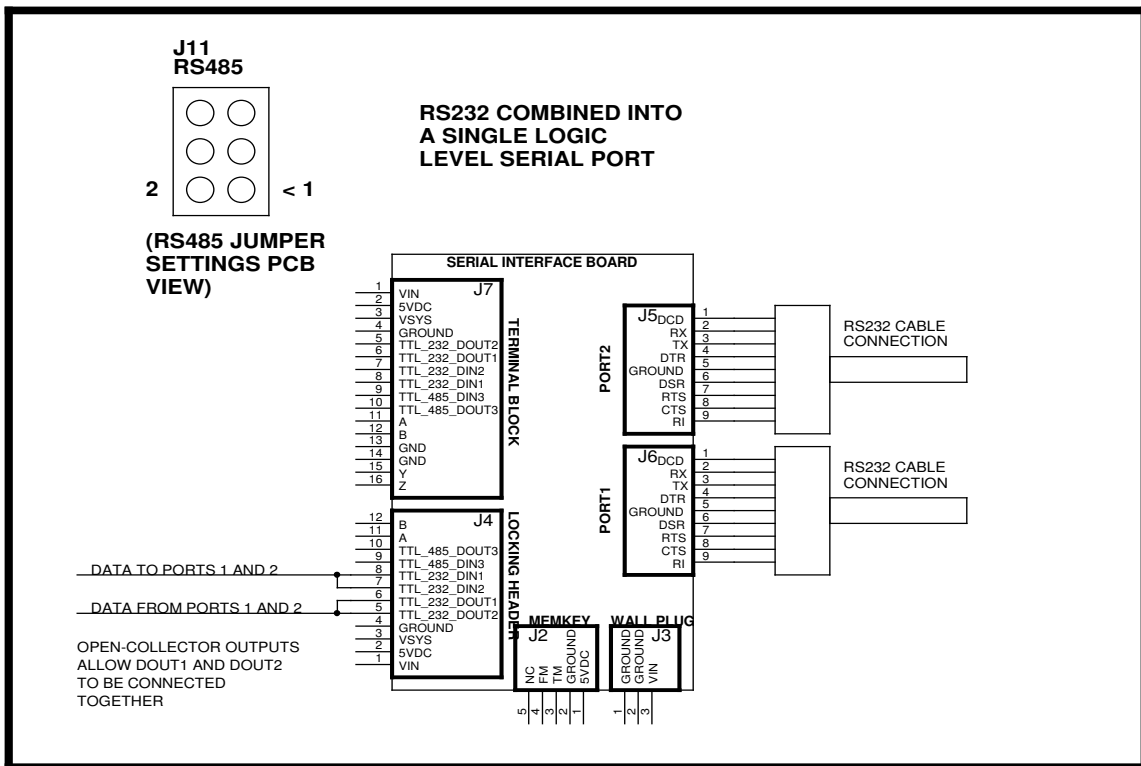
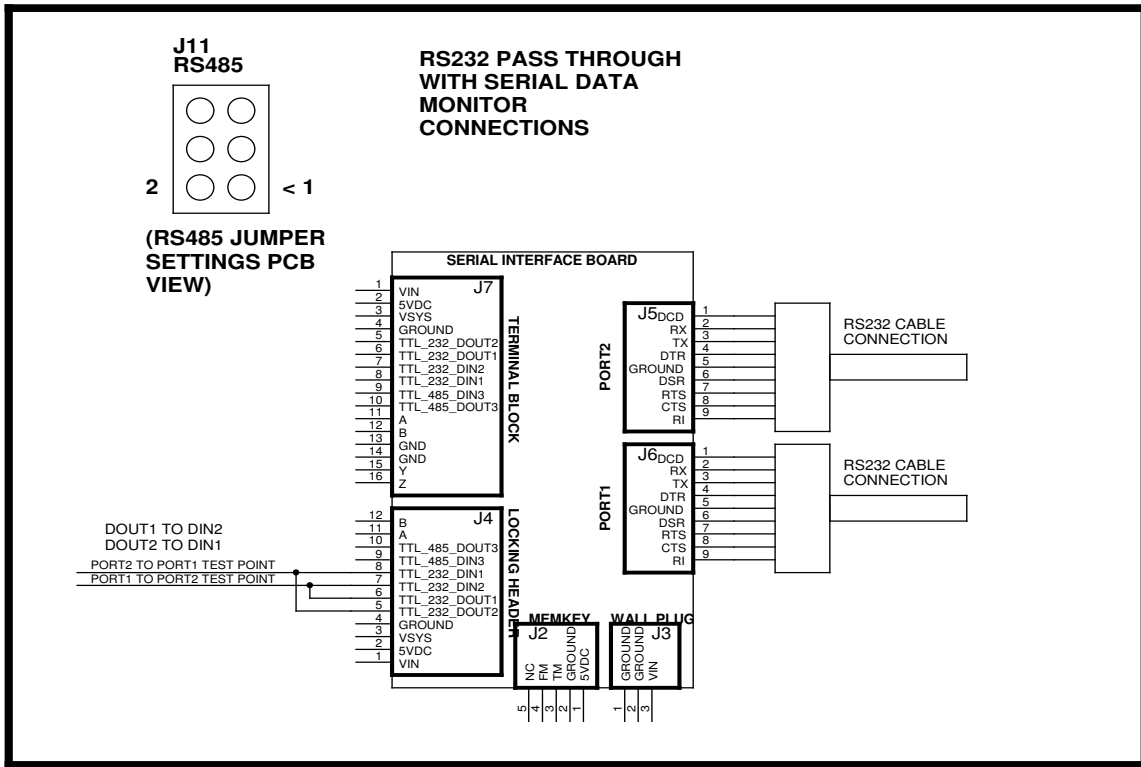


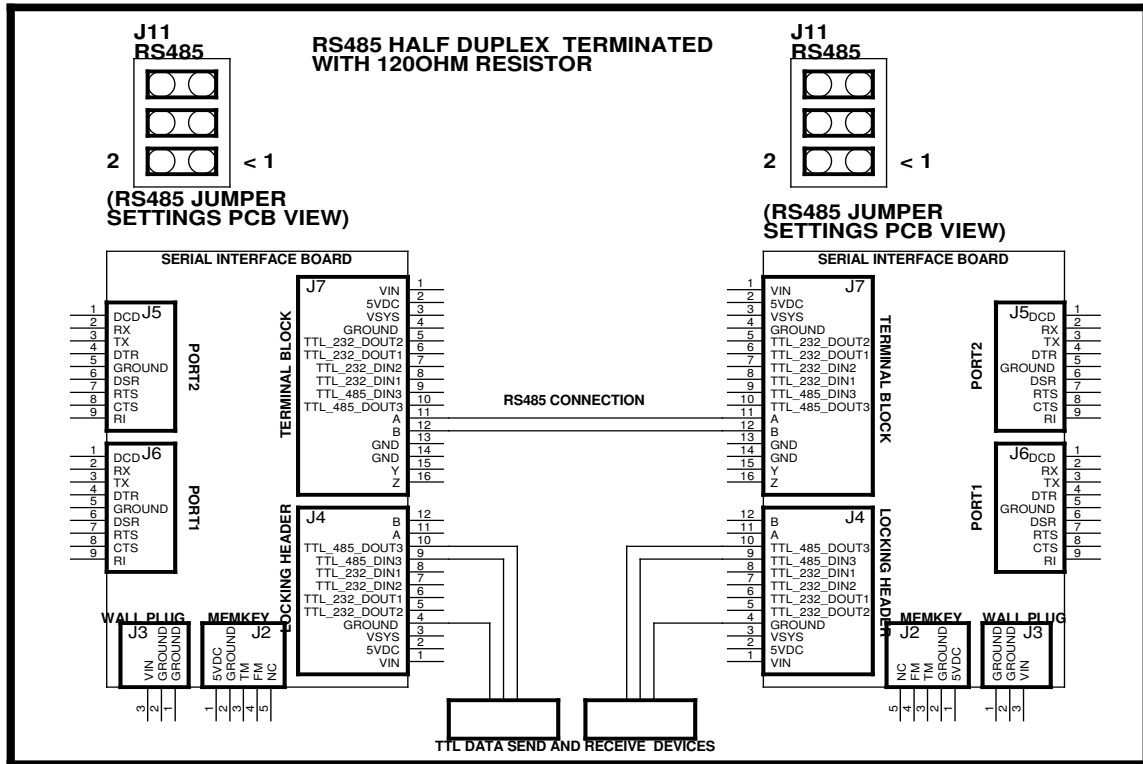
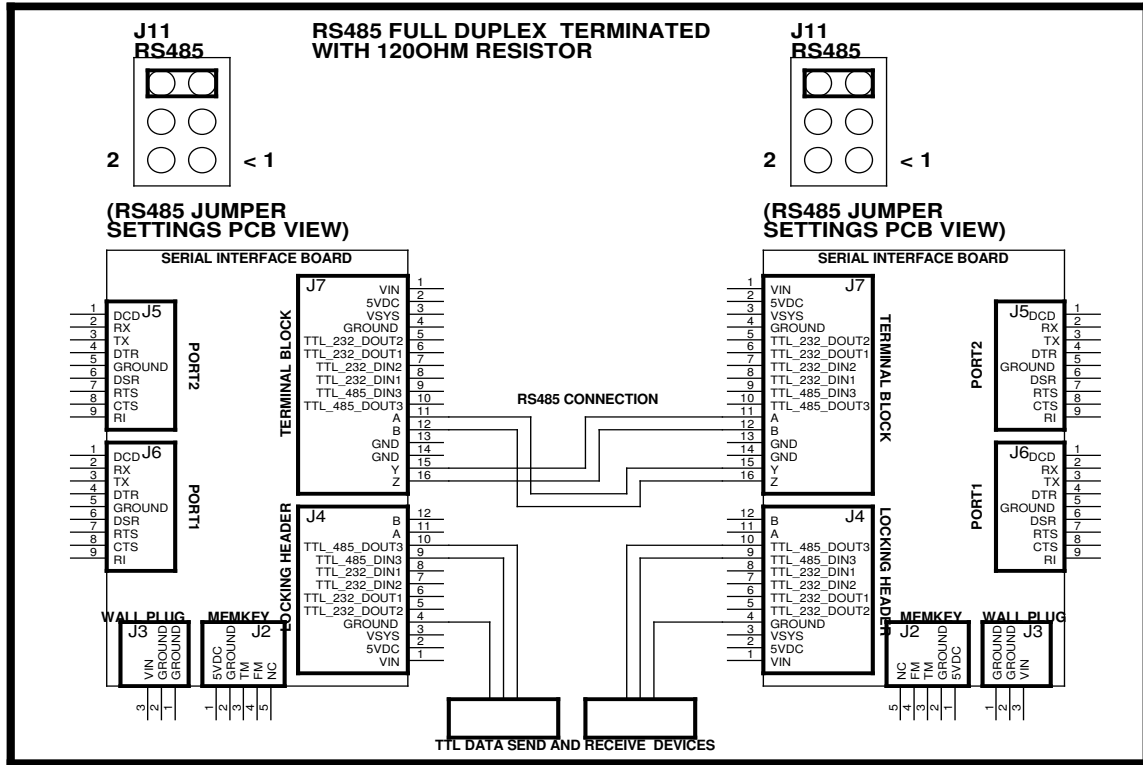
Power Supply Options



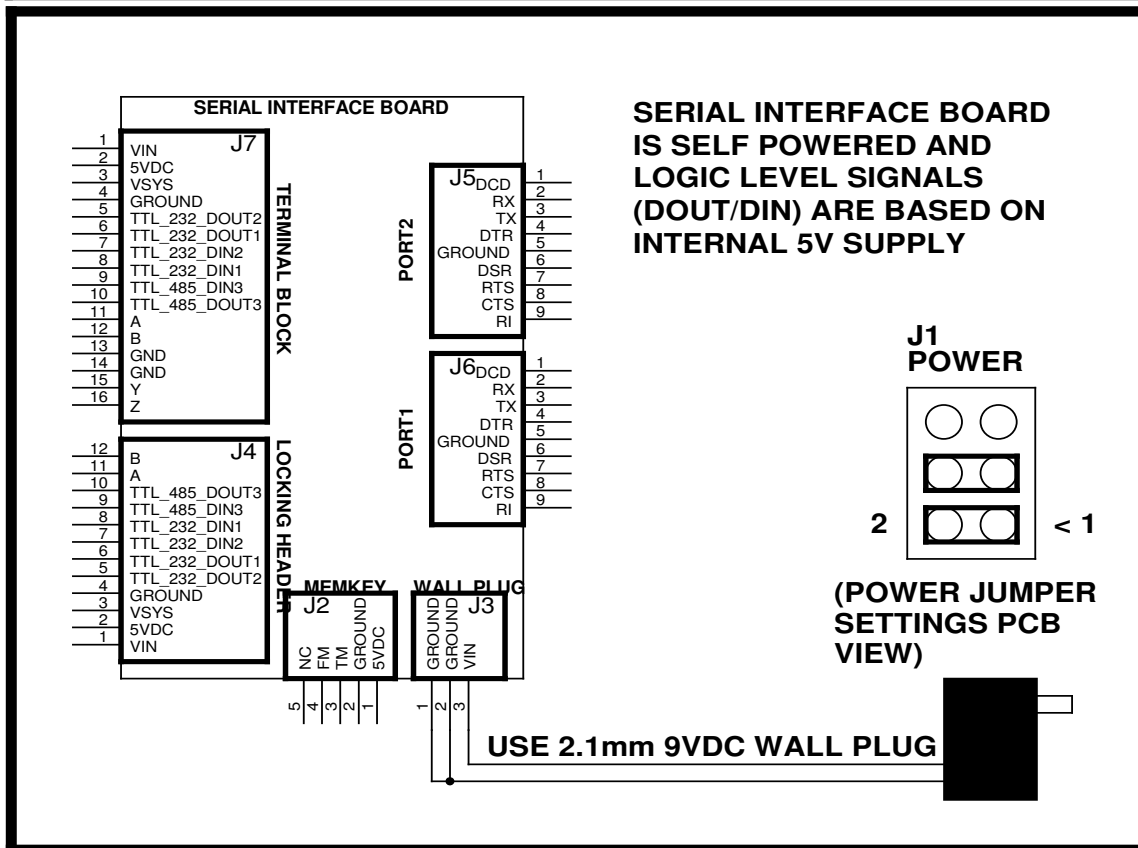
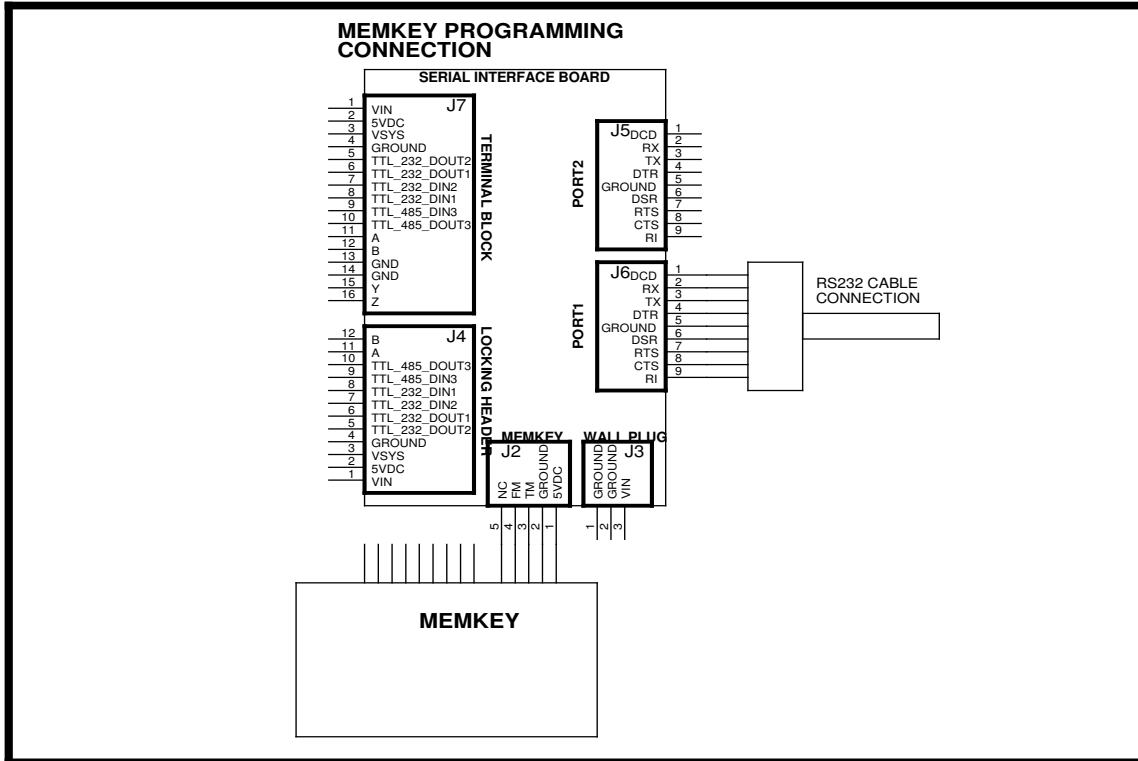
Application Connection Examples



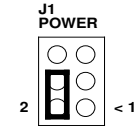




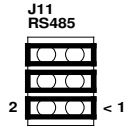
MEMKey Serial Keypad Example



Motion Mind RS485 Bus Example



(POWER JUMPER SETTINGS PCB VIEW FOR ALL SIB UNITS)

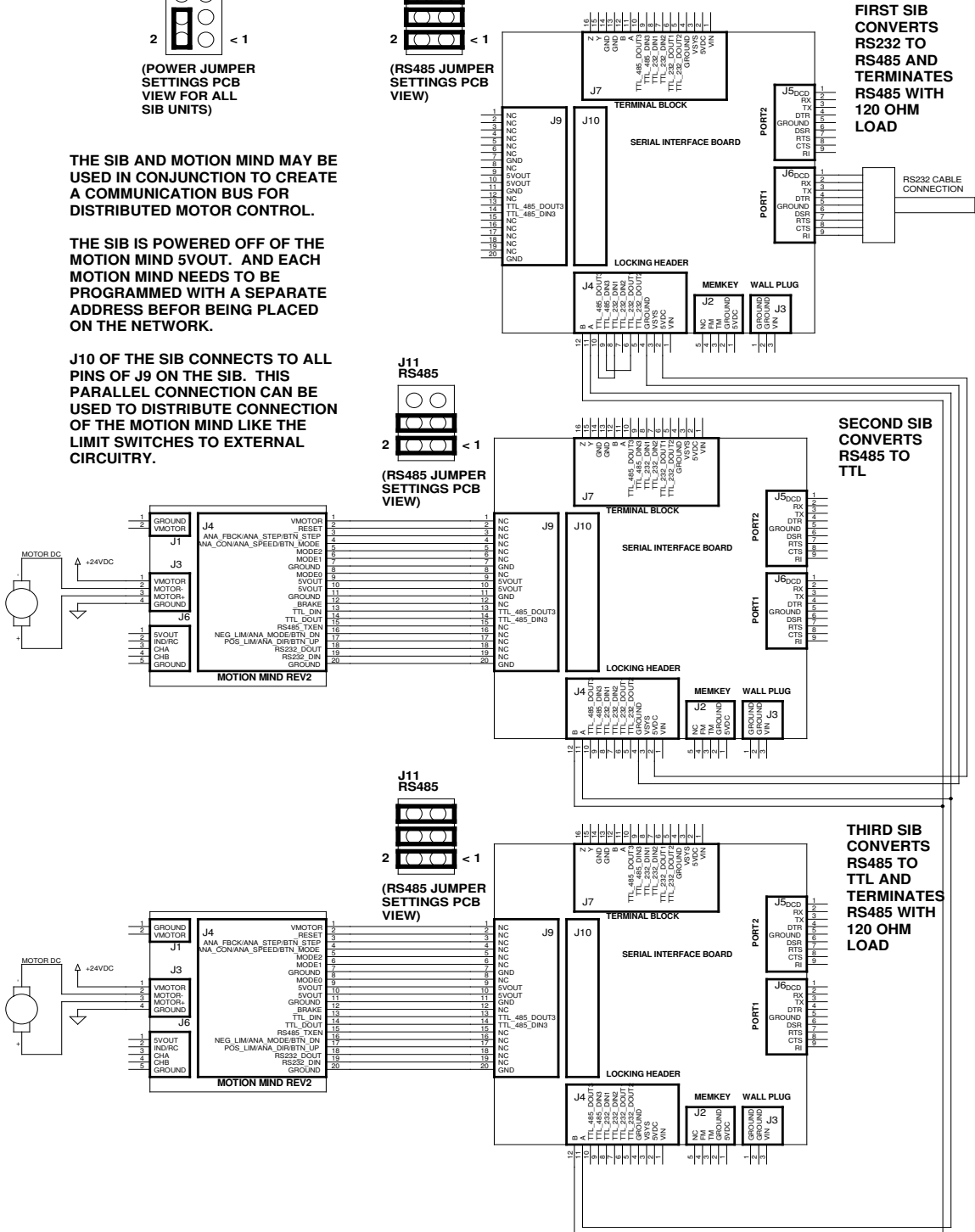


(RS485 JUMPER SETTINGS PCB VIEW)

THE SIB AND MOTION MIND MAY BE USED IN CONJUNCTION TO CREATE A COMMUNICATION BUS FOR DISTRIBUTED MOTOR CONTROL.

THE SIB IS POWERED OFF OF THE MOTION MIND 5VOUT. AND EACH MOTION MIND NEEDS TO BE PROGRAMMED WITH A SEPARATE ADDRESS BEFORE BEING PLACED ON THE NETWORK.

J10 OF THE SIB CONNECTS TO ALL PINS OF J9 ON THE SIB. THIS PARALLEL CONNECTION CAN BE USED TO DISTRIBUTE CONNECTION OF THE MOTION MIND LIKE THE LIMIT SWITCHES TO EXTERNAL CIRCUITRY.



FIRST SIB CONVERTS RS232 TO RS485 AND TERMINATES RS485 WITH 120 OHM LOAD

SECOND SIB CONVERTS RS485 TO TTL

THIRD SIB CONVERTS RS485 TO TTL AND TERMINATES RS485 WITH 120 OHM LOAD