

# DIY KIT KC485 / KC485C - RS232 TO RS485 CONVERTER

## INTRODUCTION

This is an low cost non-isolated RS232 to RS485 converter which can be plugged into PC's serial port (DB-9) directly. Hence it extends the communication range over 1KM with speed of 115K bit/s easily. The power consumption is small and a 9V/100mA (2.1mm center positive) plug pack will do fine.

## OPERATION

Since KC485 supports only half-duplex communication, the direction of communication is controlled by the RTS (Request-to-send) signal of the PC. If the RTS is inactive, the KC485 is in receive mode. While the RTS is active, the KS485 is in transmit mode. For normal operation, always put the KC485 in receive mode unless transmission is needed. (Make sure the last bit has been transmitted before switching back to receive mode)

32 units of KC485 can be connected in parallel to form a small communication network. (Remark: the terminating resistor R6 and the biasing resistors R7, R8 should be removed from the circuit, they can only presented on both ending units)

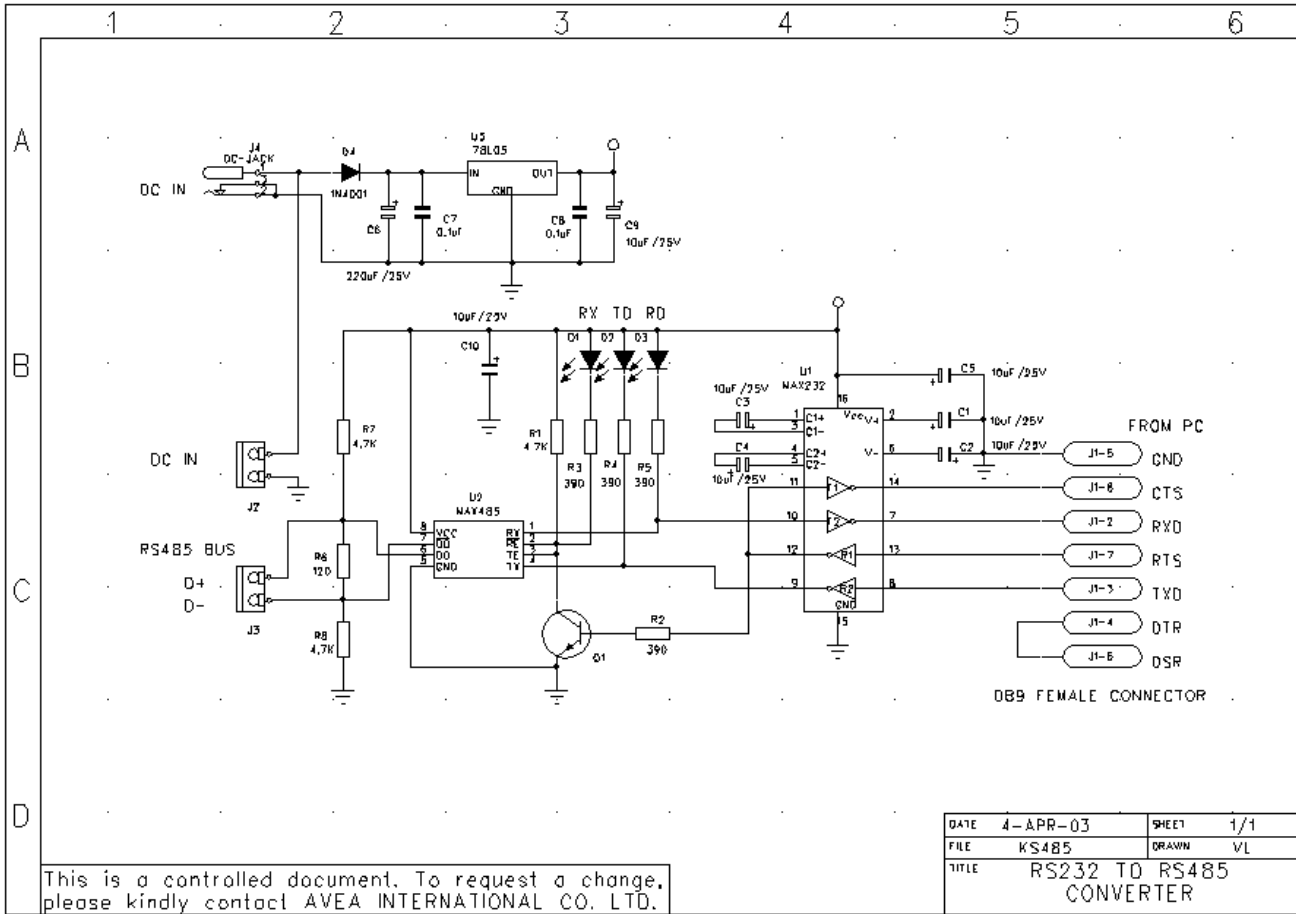
## CIRCUIT DESCRIPTION

The circuit is pretty straight forward. U1 converts the RS232 signals from PC to logic level. Then the logic level is converted to RS485 signals by U2. U3 provides stable 5V power supply. Three LEDs are added for diagnostic. D3 lites up in receive mode and goes off in transmit mode. D2 flashes when transmitting. D1 flashes when receiving.

## PART LIST (PCB Assembly)

ITEM	REFERENCE	QUANTITY	COMPONENT
1	U3	1	78L05 Regulator 5V 100mA
2	Q1	1	8050D NPN Transistor
3	J1	1	DB9 Female Connector
4	J4	1	2.1mm DC Jack
5	C7, 8	2	Mono. Capacitor 0.1uF
6	D4	1	Rectifier 1N4001
7	U2	1	RS485 Transceiver with IC Socket
8	C1-5, C9,10	7	E. Capacitor 10uF 25V
9	C6	1	E. Capacitor 220uF 25V
10	D1-3	3	Green LED
11	U1	1	RS232 Driver/Receiver with IC Socket
12	R1,7-8	3	Resistor 4.7K ohm
13	R2-5	4	Resistor 390 ohm
14	R6	1	Resistor 120 ohm
15	J2-3	2	Terminal Block - 2 Pins
16	PCB	1	Printed Circuit Board TO485E

# SCHEMATIC DIAGRAM



# PCB LAYOUT

