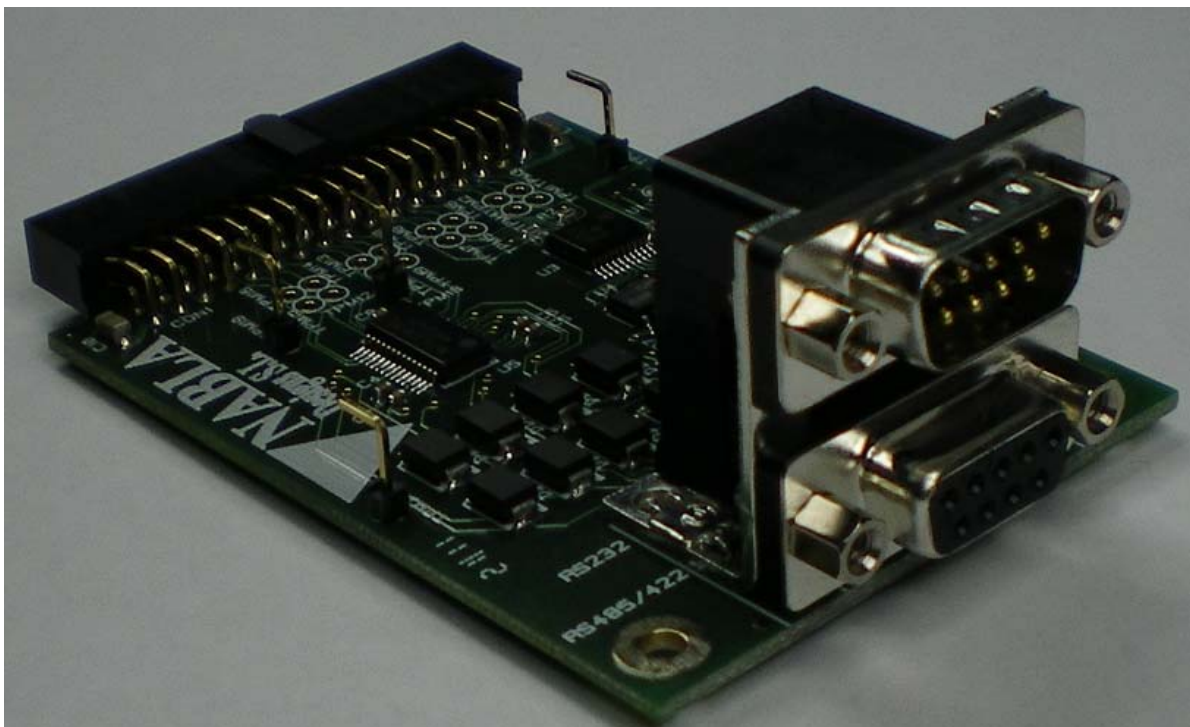
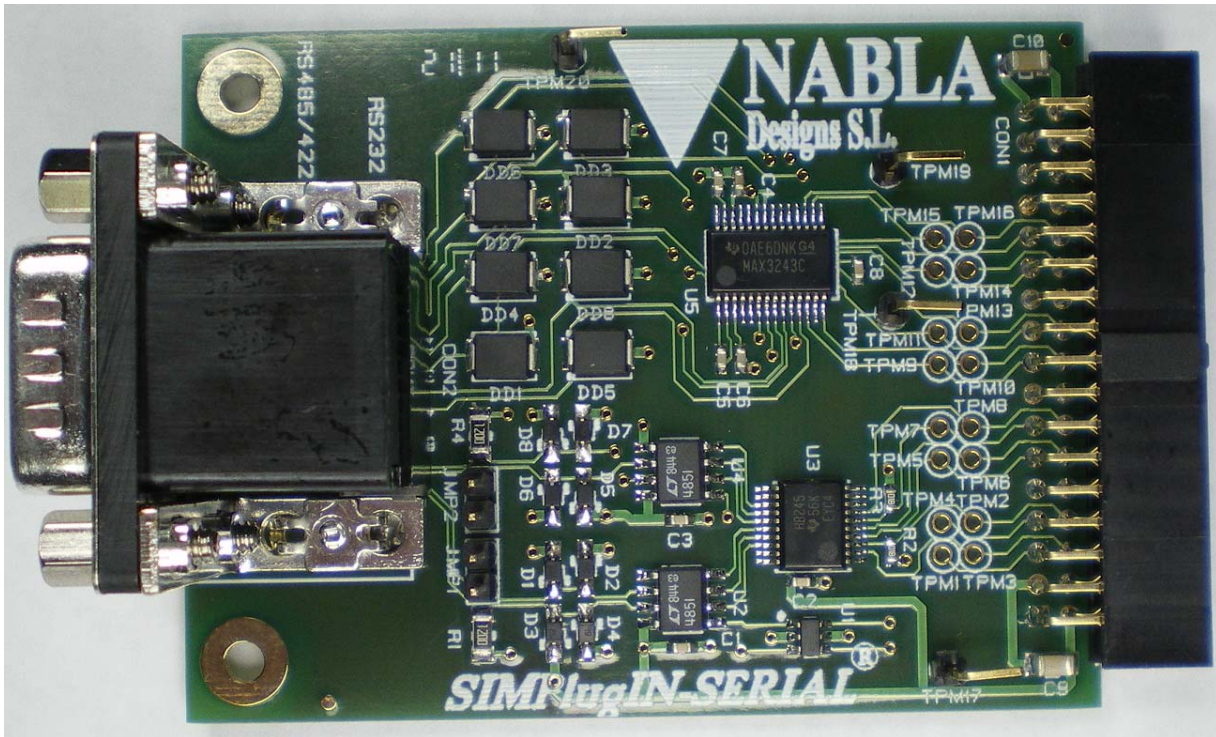


# SIMPlugIN-SERIAL User Manual

... a SIMPlugIN board® family member

Revision: see file name on page header  
Date: August 26<sup>th</sup> 2011





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# 0) Introduction and references

This manual describes how to operate SIMPlugIN-SERIAL board.

SIMPlugIN family boards are intended for engineers (engineering students too) that want to enjoy an easy to use and easy to expand FPGA development system.

SIMPlugIN-SERIAL is an add-on board that provides two RS485 connections (or one RS422 connection) and, simultaneously one RS232 connection to the main board. All three connections can work simultaneously.

## 0.1) References

**Note:** from time to time companies modify their web pages. So, some of the detailed web link may be obsolete when you read the present document.

- SIMPlugIN- 6XL45 user manual and schematics
- In [www.linear.com](http://www.linear.com) , LTC485C datasheet.
- In [www.ti.com](http://www.ti.com) , MAX3243C datasheet.

# 1) General description

The board provides a complete (that is, 8 signals: RX, TX, RTS, CTS, DTR, DCD, DSR, RI) RS232 in a standard male, 9 pin, SubD connector. All signals are protected by varistor.

Also, the board provides two RS485 interfaces. The two interfaces are available in a popular pin-out in a female, 9 pin, and SubD connector. If one RS485 is dedicate to transmit and the other to receive then we will have an RS422 port. The termination resistors can be selected or deselected by jumper. All signals are protected by clamping diodes. All interface signals of LTC485 chip are controlled by the FPGA.

## **Power voltage comment:**

The main board must be configured to supply 3.3 volt in VCCO to this add-on board. Lower supply voltages will result in not proper functioning of the board. Additionally the main board must be configured to supply +5 volt in the dedicated pin.

## 2) Connectors

### RS485/RS422 connector (Female)

1	D1-
2	D1+
3	D2+
4	D2-
5	GND
6	
7	
8	
9	

### RS232 connector (male)

1	DCD0
2	RXD0
3	TXD0
4	DTR0
5	GND
6	DSR0
7	RTS0
8	CTS0
9	RI0

**Add-on connector**

1	
2	+5V0
3	GND
4	VCCO
5	FPGA-RXD2
6	FPGA-RXD1_ENA#
7	FPGA-RXD1
8	FPGA-TXD1_ENA
9	GND
10	VCCO
11	FPGA-TXD1
12	FPGA-RXD2_ENA#
13	FPGA-TXD2_ENA
14	FPGA-TXD2
15	GND
16	VCCO
17	DTR0#
18	TXD0
19	RTS0#
20	RXD0
21	GND
22	VCCO
23	CTS0#
24	RI0#
25	DCD0#
26	DSR0#
27	GND
28	VCCO
29	
30	
31	
32	
33	GND
34	VCCO

## 3) Configuration jumpers

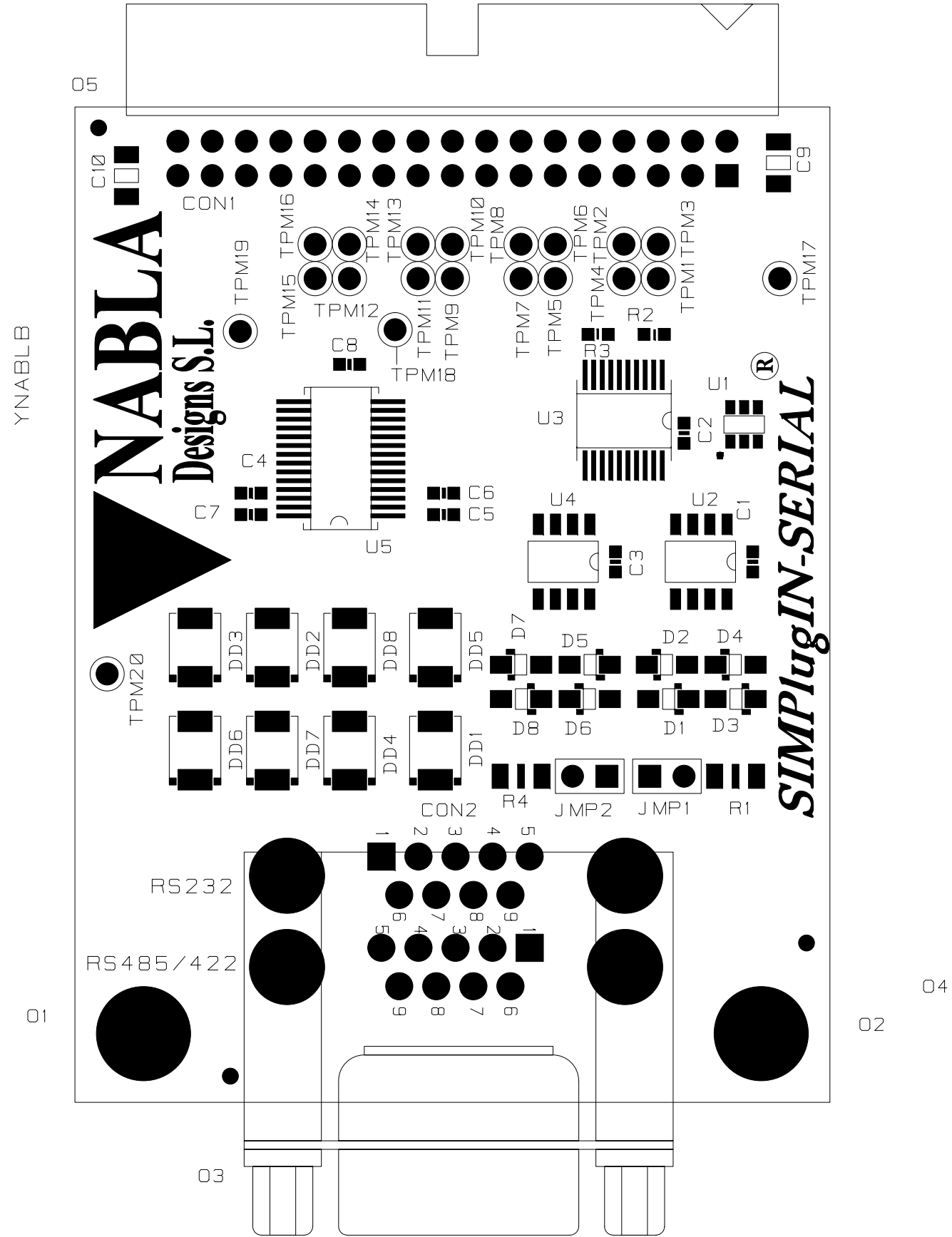
JMP1: when installed selects termination resistor for RS485 channel 1 (pins 1 and 2 of female connector)

JMP2: when installed selects termination resistor for RS485 channel 2 (pins 3 and 4 of female connector)

## 4) Test points

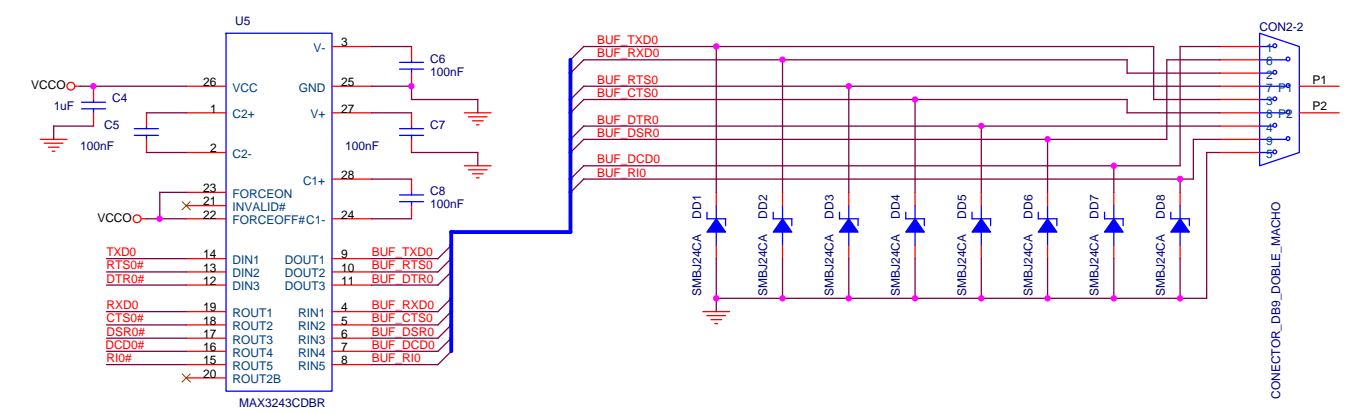
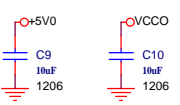
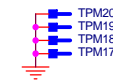
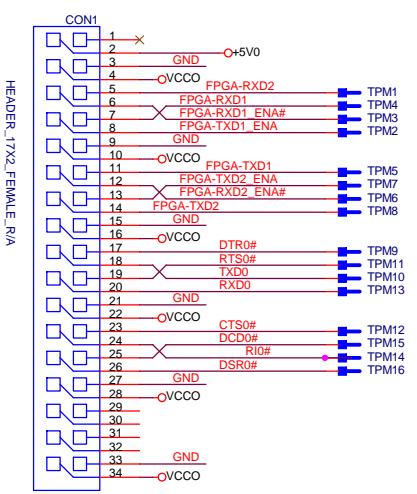
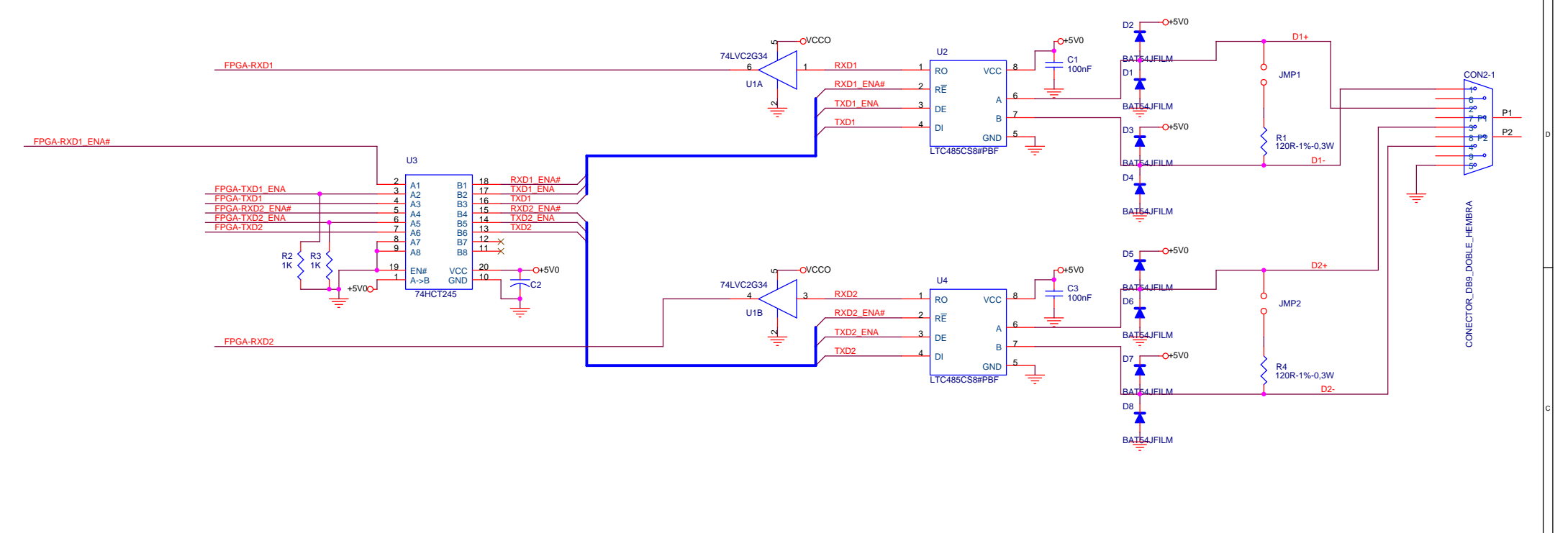
TPM1	FPGA-RXD2
TPM2	FPGA-TXD1_ENA
TPM3	FPGA-RXD1_ENA#
TPM4	FPGA-RXD1
TPM5	FPGA-TXD1
TPM6	FPGA-RXD2_ENA#
TPM7	FPGA-TXD2_ENA
TPM8	FPGA-TXD2
TPM9	DTR0#
TPM10	TXD0
TPM11	RTS0#
TPM12	CTS0#
TPM13	RXD0
TPM14	RI0#
TPM15	DCD0#
TPM16	DSR0#
TPM17	GND
TPM18	GND
TPM19	GND
TPM20	GND





## ***SIMPlugIN-SERIAL***

LAYER:	SILK		
COD:	DN560B11	DATE:	03/04/11



**NABLA**  
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Project: SIMPlugIN Board: SIMPlugIN-SERIAL  
 Board description  
 Add-on board with 1 x RS232 interface + 2 x RS485 interface  
 Size: A3 Page description: Rev 1.0p  
 Last modified date: Friday, August 26, 2011 Page 1 of 1

Revised: Friday, April 29, 2011				
Item	qty	Reference	Part	pcb footprint
1	1	CON1	HEADER_17X2_FEMALE_ R/A	
2	1	CON2	CONECTOR_DB9_DOBLE _HEMBRA	
3	1	CON2	CONECTOR_DB9_DOBLE _MACHO	
4	7	C1,C2,C3,C5,C6,C7,C8	100nF	0603
5	1	C4	1uF	0603
6	2	C10,C9	10uF	1206
7	8	DD1,DD2,DD3,DD4,DD5,DD6, DD7,DD8	SMBJ24CA	DO214AA
8	8	D1,D2,D3,D4,D5,D6,D7,D8	BAT54JFILM	SOD323
9	2	JMP2,JMP1	JUMPER_2X1	JUMPER 2 X 1
10	2	R1,R4	120R-1%-0,3W	1206
11	2	R3,R2	1K	0603
12	16	TPM1,TPM2,TPM3,TPM4,TPM5, TPM6,TPM7,TPM8,TPM9, TPM10,TPM11,TPM12,TPM13, TPM14,TPM15,TPM16,TPM17,	DNP header 1x1	header 1x1
12b	4	TPM18,TPM19,TPM20	header 1x1	header 1x1
13	1	U1	74LVC2G34	SOT23-6
14	2	U2,U4	LTC485CS8#PBF	SOIC8
15	1	U3	74HCT245	SSOP20/TSSOP20
16	1	U5	MAX3243CDBR	MAX3243IDB-SSOP28