

RS-422/485 MIO-E Design Reference

Revision 1.0

Reference Documents

Document	Location
SCH3106 Datasheet	
ISL8485 Datasheet	

Introduction

- This document is the design reference for designing a MIOe module with RS-422/485 feature to work with Advantech MIO single board.

- Contents:
 - Function Selection Table
 - PCB Layout Considerations
 - Reference Schematic
 - Component List

This document is only for MIOe design reference purpose only. Although the information is intended to be accurate, Advantech makes no claims, promises, or guarantees about the quality or reliability of a MIOe board that designed by any user who is outside of Advantech Corp.

FUNCTION SELECTION TABLE

SYSOPT0, SYSOPT1 (Pin U23.68, U23.70):

Configuration	Base I/O address
1. Pull-up SYSOPT0 with a 10 KΩ resistor to 3.3V power rail. 2. Pull-up SYSOPT1 with a 10 KΩ resistor to 3.3V power rail.	0x04E

COM4 Setting:

Configuration	Function
JP13(5-6)	RS-485
JP13(7-8)	RS-422

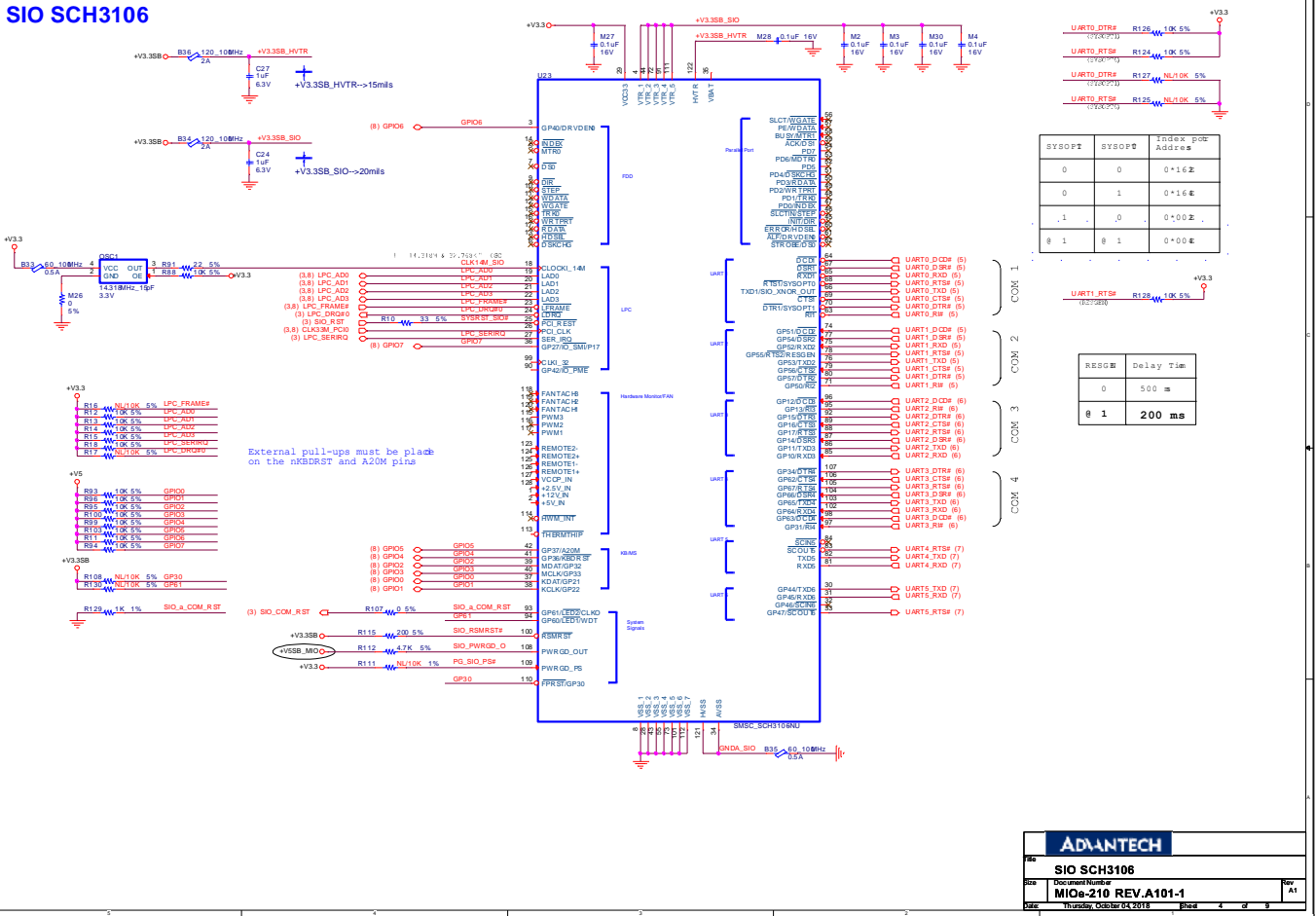
COM5 Setting:

Configuration	Function
JP13(1-2)	RS-485
JP13(3-4)	RS-422

PCB Layout Considerations

Please notice that PCB Layout will be vary depends on design. For layout considerations, please refer to SCH3106 and ISL8485 datasheet.

SIO SCH3106



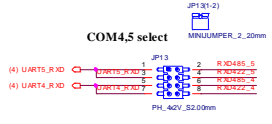
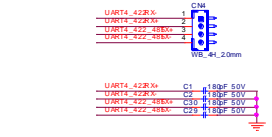
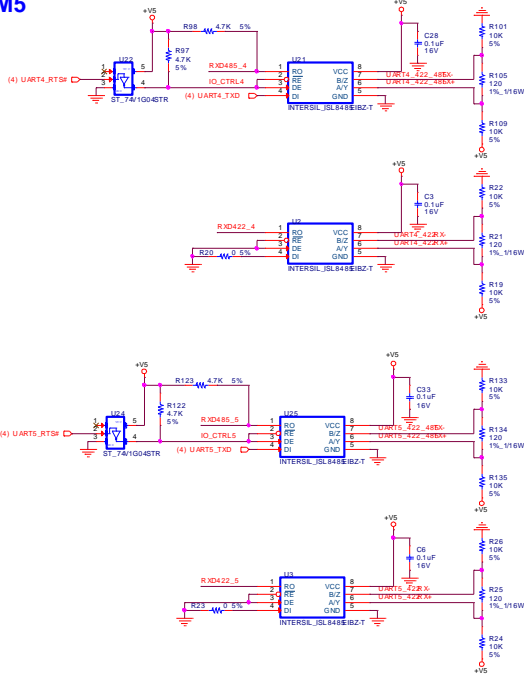
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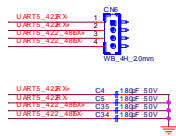
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COM4/COM5



JP13 : COM4	COM5
5-6 RS485 *	1-2 RS485
7-8 RS422	3-4 RS422

* default



Component List

QTY	Description	Reference	Manufacture Part Number	Manufacture
1	CR 20K 1% 1/16W SMD 0402	R3	0402WGF2002TCE	厚聲電子工業有限公司
1	CR 1.8K 1% 1/16W SMD 0402	R5	0402WGF1801TCE	(Uniroyal Electronics Industry Co.,Ltd.)
4	TKFR 120 1% 1/16W SMD 0402	R21	0402WGF1200TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
		R25		
		R105		
		R134		
2	MLCC X5R 22uF 10% 6.3V SMD 1206	C25	C1206B226K007T	禾伸堂企業股份有限公司 (Holy Stone Enterprise Co., Ltd.)
		C31		
13	MLCC X7R 0.1uF 10% 16V SMD 0402	C3	0402B104K160CT	國巨股份有限公司 (Yageo Co.,Ltd.)
		C6		
		C28		
		C33		
		M1		
		M2		
		M3		
		M4		
		M25		
		M27		
		M28		
		M29		
M30				
2	MLCC X5R 1uF 10% 6.3V SMD 0402	C24	0402X105K6R3CT	台灣東電化股份有限公司 (TDK Taiwan Corporation)
		C27		
8	MLCC X7R 180pF 10% 50V SMD 0402	C1	CC0402KRX7R9BB181	國巨股份有限公司 (Yageo Co.,Ltd.)
		C2		
		C4		
		C5		
		C29		
		C30		
		C34		
C35				

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1	MLCC X7R 2.2uF 10% 16V SMD 0805	C32	0805B225K160CT	台灣東電化股份有限公司
1	MLCC X7R 10uF 10% 16V SMD 1206	C26	C1206X106K016T	(TDK Taiwan Corporation)
1	MLCC Y5V 4.7uF +80%-20% 10V SMD 0805	C23	C0805Y475Z010T	台灣太陽誘電(股)公司 (Taiwan Taiyo Yuden Co., Ltd.)
2	Bead 120ohm 25% 2A SMD 0603	B34 B36	BLM18PG121SN1	台灣村田股份有限公司 (Taiwan Murata Electronics Co., Ltd.)
2	Bead 60ohm 500mA SMD 0603	B33 B35	BLM18PG600SN1D	台灣村田股份有限公司 (Taiwan Murata Electronics Co., Ltd.)
1	OSC 14.318MHZ 50ppm 3.3V 15pF SMD 4P 7x5mm	OSC1	7W14300014	台灣晶技股份有限公司 (Txc Corporation)
2	MOSFET N-CH AO4468 11.6A 30V SMD SOIC8 8P	Q2 Q4	AO4468	香港商萬國半導體股份有限公司 (Alpha & Omega Semiconductor, Ltd.)
1	MOSFET N-CH 2N7002 0.3A 60V SMD SOT-23 3P	Q5	2N7002	恩智浦半導體 (NXP Semiconductors)
1	MOSFET N-CH 2N7002DW-7-F 0.115A 60V SMT SOT-363	Q1	2N7002DW-7-F	Diodes Inc.
1	CR 10K 1% 1/16W SMD 0402	R111	0402WGF1002TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
2	CR 1K 1% 1/16W SMD 0402	R117 R129	0402WGF1001TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
2	CR 100K 1% 1/16W SMD 0402	R87 R102	0402WGF1003TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
1	CR 121 1% 1/10W SMD 0603	R90	0603WAF1210T5E	厚聲電子工業有限公司
1	CR 200 1% 1/10W SMD 0603	R89	0603WAF2000T5E	(Uniroyal Electronics Industry Co.,Ltd.)
8	CR 0 5% 1/16W SMD 0402	M26 R2 R86 R92 R104 R106 R107 R110	0402WGJ0000TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
2	CR 0 5% 1/10W SMD 0603	R20 R23	0603WAJ0000T5E	惠寶

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17	CR 10K 5% 1/16W SMD 0402	R1	0402WGJ0103TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
		R11		
		R12		
		R13		
		R14		
		R15		
		R16		
		R17		
		R18		
		R19		
		R22		
		R24		
		R26		
		R88		
		R93		
17	CR 10K 5% 1/16W SMD 0402	R96	0402WGJ0103TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
		R99		
		R100		
		R101		
		R103		
		R108		
		R109		
		R114		
		R118		
		R124		
		R125		
		R126		
		R127		
		R128		
		R130		
2	IC 74V1G04STR single inverter SMD SOT-23 5P	U22	74V1G04STR	STMicroelectronics Inc.
		U24		

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1	CR 200 5% 1/16W SMD 0402	R115	0402WGJ0201TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
1	CR 22 5% 1/16W SMD 0402	R91	0402WGJ0220TCE	
1	CR 33 5% 1/16W SMD 0402	R10	0402WGJ0330TCE	
5	CR 4.7K 5% 1/16W SMD 0402	R97	0402WGJ0472TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
		R98		
		R112		
		R122		
		R123		
5	CR 6.8K 5% 1/16W SMD 0402	R4	0402WGJ0682TCE	厚聲電子工業有限公司 (Uniroyal Electronics Industry Co.,Ltd.)
		R6		
		R7		
		R8		
		R9		
1	REG LDO AMS1117 SMD SOT-223 3P 1A ADJ AMS	Q3	AMS1117	Advanced Monolithic Systems Inc.
1	IC SN74LVC1G125DCKR SMD SC-70 5P	U20	SN74LVC1G125DCKJ	德州儀器工業股份有限公司 (Texas Instruments Incorporated)
4	IC ISL8485EIBZ-T RS-485 Transceivers SMD SOIC 8P	U2	ISL8485EIBZ-T	英特矽爾半導體股份有限公司 (Intersil Limited)
		U3		
		U21		
		U25		
1	IC SCH3106-NU SMD VTQFP 128P	U23	SCH3106-NU	美商史恩希股份有限公司 (Standard Microsystems Corporation)
1	IC CAT24C64WI-GT3 EEPROM SMD SOIC 8P	U1	CAT24C64WI-GT3	安森美半導體 (On Semiconductor)
1	PIN HEADER 4x2P 2.0mm 180D(M) SMD 21N22050	JP13	21N22050-08M00B -01G-4-C-G	致威電子公司 (Jih Vei Electronics Co., Ltd.)
2	MINI JUMPER 2P 2.0mm 180D(F) DIP MJ-2B	JP13(5-6)	27S1001-OPS35-01G	何迪企業股份有限公司 (Ho-Base Technology Co.,Ltd.)
		JP13(1-2)		
1	B/B Conn. 40Px2 0.80mm 180D(F) SMD	CN1	QTE-040-04-L-D-A	Samtec U.S.A.
2	WAFER BOX 4P 2.0mm 90D(M) DIP 2001-WR-4 RoHS	CN4	A2001WR2-4P	何迪企業股份有限公司 (Ho-Base Technology Co.,Ltd.)
		CN6		

Other Remarks

This document provides a reference on hardware design only. For other support or resource such as Firmware or other utilities, please contact your local agent.