iModCon RS Combi

Documentation version 1.0

This document applies to iModCon RS Combi V1R2.

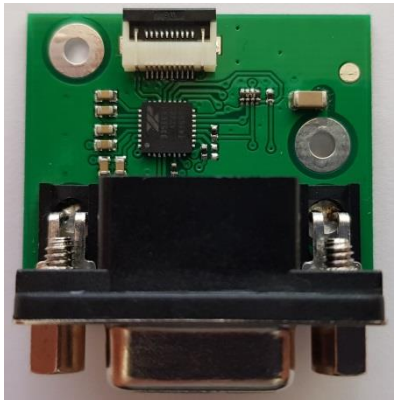
Introduction

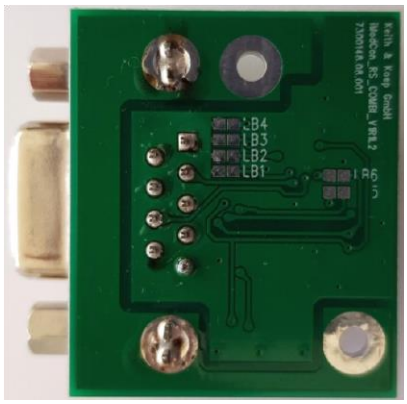
The iModCon RS Combi is a peripheral board, which can be connected to the iMod UART connector of Keith & Koep baseboards (i.e. i-PAN T7, i-PAN T10, i-PAN M7).

It converts the 3V3 UART signals of the iMod UART interface to either

- RS232
- RS485
- RS422

Which interface to use is selected by setting solder bridges on the backside of the board (LB1..6).





LB4
LB3
LB2 LB7
LB1 LB6
LB5

Figure: Top and back of iModCon RS Combi. Position of solder bridges (right).

Default setting:

Function	LB1	LB2	LB3	LB4	LB5	LB6	LB7
RS232		x					
RS485 (half-duplex, receive when not transmitting, no termination)			x				x
RS485 (half-duplex, receive when not transmitting, 120R termination)							x
RS422 (full-duplex, 120R termination)	x			x			

x: bridge is set.

Detail description of LB1..6:

<table>
<tr><th>solder bridge</th><th>RS232</th><th>RS422
RS485 (full-duplex)</th><th>RS485
(half-duplex)</th></tr>
<tr><td>LB1 (half/full)</td><td></td><td>Set to select RS422/
RS485 full-duplex</td><td></td></tr>
<tr><td>LB2 (485/232)</td><td>Set to select RS232</td><td></td><td></td></tr>
<tr><td>LB3 (termination)</td><td></td><td colspan="2">Disable 120Ω termination if set.</td></tr>
<tr><td>LB5 (reset)</td><td colspan="3">Use pin 1 (DTR) of iMod connector to reset iModCon RS Combi.</td></tr>
<tr><td>LB4 (receive enable)</td><td></td><td colspan="2" rowspan="3">Only set LB4 or LB6!
LB4: (Always) enable receive output (RXD, pin 2 of iMod)
LB6: Control receive output (RXD, pin 2 of iMod-connector) by CTS (pin 4 of iMod). This allows the software-driver to disable receive, while data is transmitted. Otherwise data will get echoed back on RXD, if the board is configured for RS485 half-duplex.
LB7: Control receive output (RXD, pin 2 of iMod-connector) by RTS (pin 5 of iMod). In the software-drivers RTS is used to enable transmitter when data is send. This will disable the receiver during send to disable echoed back data on RXD.</td></tr>
<tr><td>LB6
(receive on transmit)</td><td></td></tr>
<tr><td>LB7
(receive when not transmitting)</td><td></td></tr>
</table>

2 Electrical Pin-Information

PI: Power Input
PO: Power Output

DI: Digital Input
DO: Digital Output
DIO: Digital Input/Output

J2: DSUB9 Connector; Board configured as RS232

PIN	Name	Type	Description
1			n.c.
2	TXD	DO	transmit output
3	RXD	DI	receive input
4			n.c.
5	GND	P	
6			n.c.
7	CTS	DI	clear to send
8	RTS	DO	request to send
9			n.c.

J2: DSUB9 Connector; Board configured as RS485 (half duplex)

PIN	Name	Type	Description
1			n.c.
2	Data-	DIO	negative data input/output
3			
4			n.c.
5	GND	P	
6			n.c.
7			
8	Data+	DIO	positive data input/output
9			n.c.

J2: DSUB9 Connector; Board configured as RS422/485 (full duplex)

PIN	Name	Type	Description
1			n.c.
2	TX-	DO	negative transmit output
3	RX+	DI	positive receive input
4			n.c.
5	GND	P	
6			n.c.
7	RX-	DI	negative receive input
8	TX+	DO	positive transmit output
9			n.c.

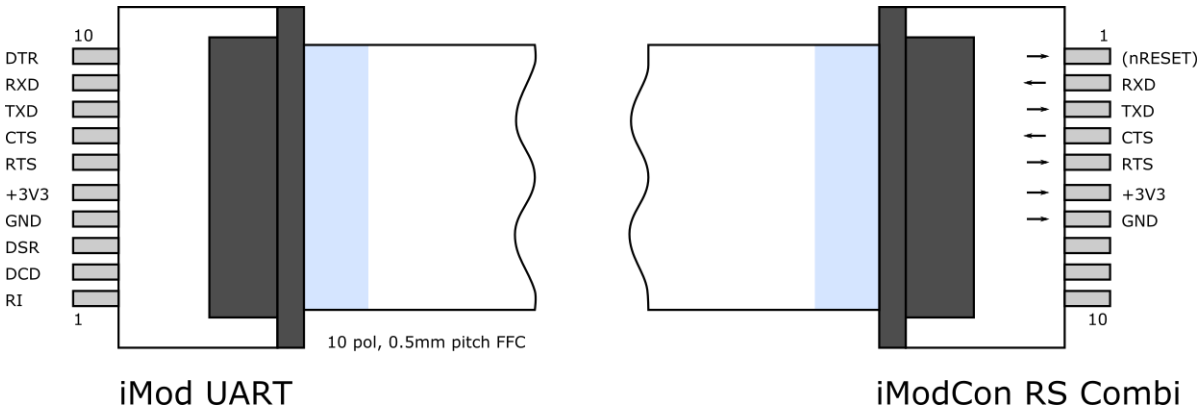


Figure 2-1: iMod UART Standard (left); Connector pinning of iModCon RS Combi (right)

J11: iMod Connector

PIN	Name	Type	I/O-Voltage	Description
1	nRESET	DI	+3.3V	low active reset input if LB5 is set
2	RXD	DO	+3V3	receive output
3	TXD	DI	+3V3	transmit input
4	CTS	DO	+3V3	clear to send output
5	RTS	DI	+3V3	request to send input
6	+3V3	PI		power-supply
7	GND	PI		power-supply
8				n.c.
9				n.c.
10				n.c.

Connector: 687110149022 by Wuerth

3 Specifications

3.1 Absolute Maximum Ratings & Operating Conditions

Please view EXAR SP335E datasheet for electrical specification.

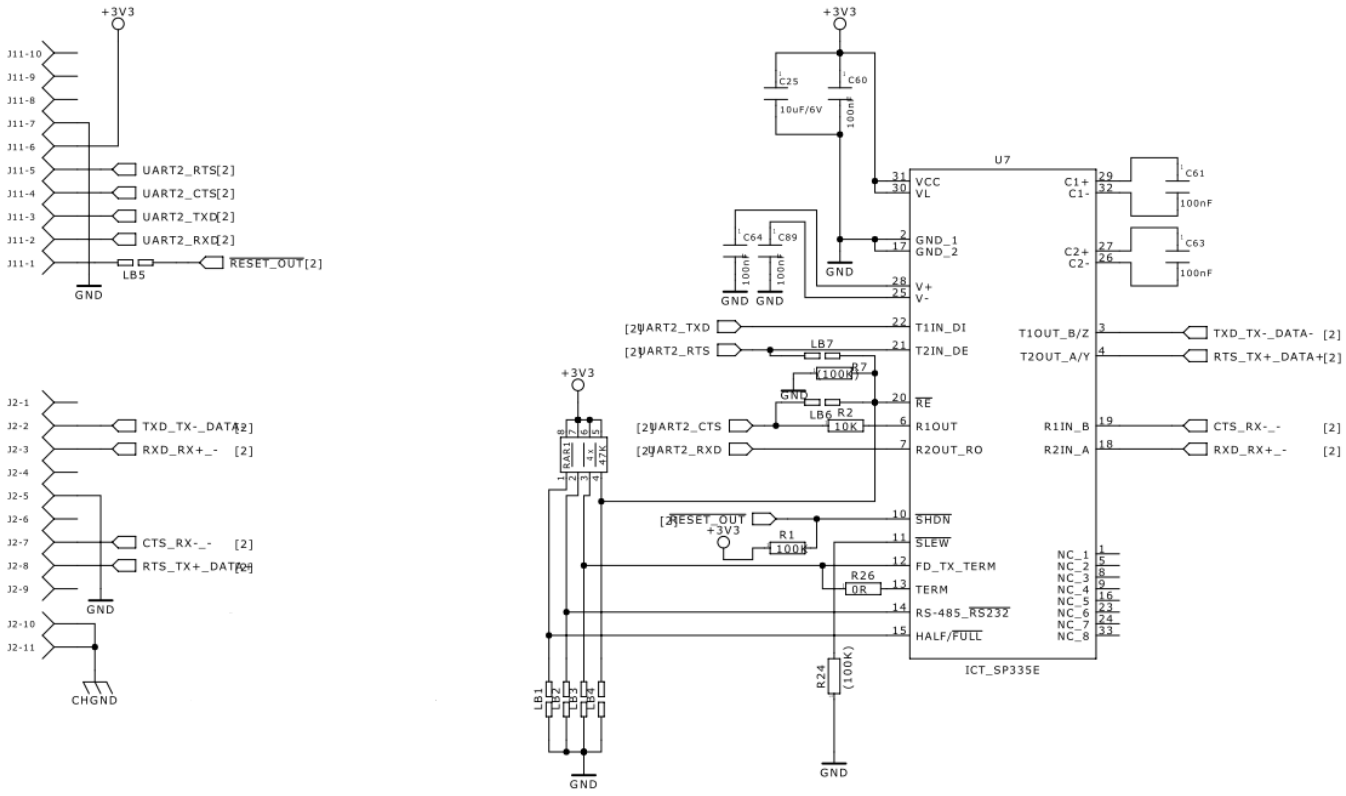


Figure 3-1: Schematic of iModCon RS Combi.

3.2 Mechanical Specification

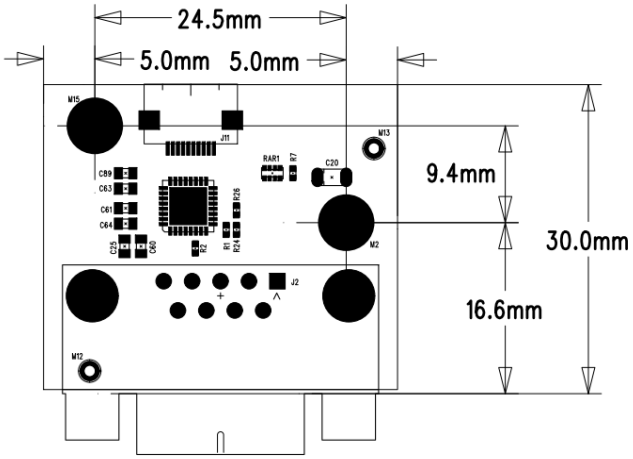


Figure 3-2: Top-View on iModCon RS Combi.

4 Ordercodes for iModCon RS Combi

41 900.COMBI.485: iModCon RS Combi incl. 125mm FFC cable. Solder bridges set for RS485.

6 Document History

Rev.	Date	Author	Changes
0.9	16.04.2018	SH	Initial Version.
1.0	28.01.2019	SH	Updated for V1R2 of board.