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1 Introduction

The BUS2S-485 board is a RS485 Frontend expansion board. When plugged into the Frontend expansion port of a MicroX Main board (SBC), it will add a RS485 interface to it.

The following documentation is for the BUS2S-485 Revision 1, which is marked on the PCB as BUS2S REV1! The “485” indicates the variant of the board, which is a RS485 interface. It has the RS485 interface chip (IC1) assembled. It can also be used as a CAN BUS expansion board by removing IC1 and inserting a MCP2551 CAN BUS driver chip in socket IC2. For this to work it must of course be used in conjunction with a PIC chip with an on board CAN peripheral.

The RS485 signals and optional power input pins are made available on a 5 pin 3.81mm Phoenix style terminal block connector. The board also has a reset button, a LED and some configuration options to select what pin is used for RS485 transmit/receive selection.

2 Features

- Has a MicroX Frontend connector, meaning it can be connected to the Frontend port of a MicroX Main board (Single Board Computer) For details see www.modtronix.com/microx.
- Size and mounting holes conforms to Modtronix's Compact Frontend Board dimensions.
- 15kV ESD protected RS485 interface.
- RS485 transmit/receive selection pin can be configured to be Frontend connector signal A2, B7 or C2.
- Supply voltage can be sourced from the Frontend connector (comes from the SBC) or from pin 1 and 5 of the 5 pin terminal block connector.
 - When sourced from the Frontend connector (Via the SBC board), no power must be applied to pin 5 of the terminal block connector.
 - When sourced from the terminal block connector, any MicroX Main Board (SBC) connected to it will also obtain power from it, and must not be powered.
- LED for user specific implementations.
- Reset button.

3 Configuration

3.1 RS485 Receive/Transmit control signal

The Frontend signal that is used to select if the RS485 driver is transmitting or receiving is selectable via

solder jumpers SJ2 – SJ4 or jumpers C2 or B7 on header J1. A logical 1 will set the driver for transmission, and a 0 for reception. At delivery signal B7 is selected via a jumper on header J1 as shown in Figure 2, the black rectangle represent the jumper. When this board is connected to a MicroX Main (SBC) board via it's Frontend connector, the frontend signals A0, B7 and C2 will be connected to PIC port pins. Refer to the MicroX Main board's datasheet to see to what PIC port pins they are routed - it will usually be to RA0, RB7 and RC2.

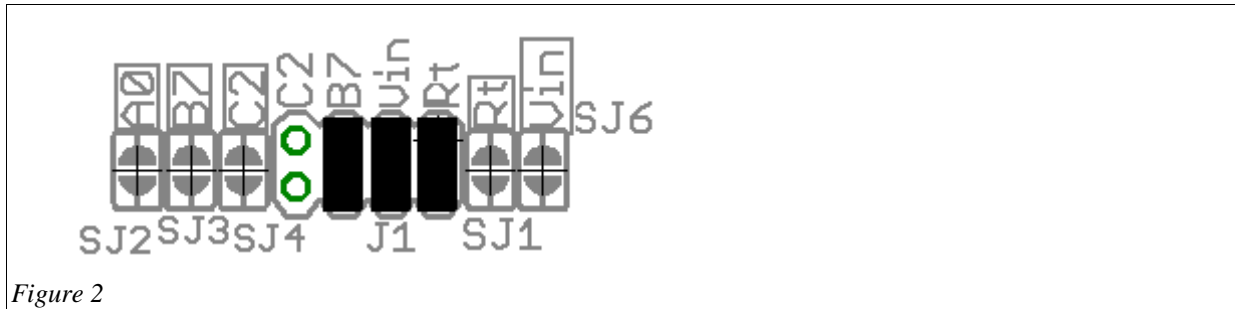


Figure 2

3.2 Supply signal on 5 pin terminal block connector

Solder jumper SJ1 or jumper Vin on header J1 selects if pin 5 of the terminal block connector is connected to the input supply signal VIN. If this is done, the board can be powered by applying 7 – 30V to pins 1 and 5 of the 5 pin terminal block connector. Pin 1 is ground, and pin 5 is 7 – 30V. This signal is then routed to the MicroX Main board via the Frontend connector. The regulator on the MicroX Main board will convert it to 5V which is then available on the Vcc signal and powers this board.

At delivery jumper Vin on header J1 is made as shown in Figure 2, the black rectangle represent the jumper.

Note, that when this jumper is made, power should only be applied to either the MicroX Main board **or** to pins 1 and 5 of the 5 pin terminal block. **Never to both!**

3.3 Termination resistor

Solder jumper SJ6 or jumper Rt on header J1 selects if the 680 ohm termination resistor is connected between the 2 signal of the RS485 bus. At delivery jumper Rt on header J1 is made as shown in Figure 2, the black rectangle represent the jumper.

4 Frontend Connector

All control signals are made available via two 2x8 pin 2mm headers situated on the edge of the board. These connectors comply with Modtronix's MicroX Frontend connector standard, and can be connected to the Frontend expansion port of a MicroX Main Board (Single Board Computer).

When looking towards the frontend connectors, the BRD1 connector is situated on the left and the BRD2 connector on the right. Pin 1 of the BRD1 connector is the left most pin on top of the board (component side). Pin 1 of the BRD2 connector is the right most pin on top of the board (component side).

For the location of the Frontend connectors, see the *Dimensions* section of this document. The Frontend connectors port pins are mapped to the following signals:

<i>BRD2 Frontend Connector</i>		<i>BRD1 Frontend Connector</i>	
<i>Frontend Port Pin</i>	<i>Signal</i>	<i>Frontend Port Pin</i>	<i>Signal</i>
TOP0	N.C.	TOP4	N.C.
TOP1	N.C.	TOP5	N.C.
TOP2	N.C.	TOP6	N.C.
TOP3	N.C.	TOP7	N.C.
SIG0	Connected to the RS485 driver's receive pin.	GND	Ground
SIG1	Connected to the RS485 driver's transmit pin.	+5V	N.C.
B0	N.C.	VIN	If solder jumper SJ1 or jumper Vin on header J1 is made, this signal is connected to pin 5 of the 5 pin terminal block connector. This jumper is made at delivery!
B1	N.C.	CLR#	Connected to reset switch.
B2	Connected to TXD pin of CAN BUS driver chip. The CAN BUS driver chip is not assembled for this variant!	A0	Can be selected via jumpers to be connected to the RS485 driver's transmit/receive selection pin.N.C.
B3	Connected to RXD pin of CAN BUS driver chip. The CAN BUS driver chip is not assembled for this variant!	A1	N.C.
B4	N.C.	A2	N.C.
B5	N.C.	A3	N.C.
B6	LED control signal, positive logic.	C2	Can be selected via jumpers to be connected to the RS485 driver's transmit/receive selection pin.N.C.
B7	Can be selected via jumpers to be connected to the RS485 driver's transmit/receive selection pin. This jumper is made at delivery!	C3	N.C.
A4	N.C.	C4	N.C.
A5	N.C.	C5	N.C.

5 Terminal Block Connector

The RS485 data signals, Vin supply and ground are connected pins on the 5 pin terminal block. Pin 1 is the leftmost pin of the connector, next to the LED. See dimensions diagram for details. The pins are mapped to the following signals:

<i>Terminal Connector Pin</i>	<i>Description</i>
1	Ground
2	RS485 signal A
3	No connection
4	RS485 signal B
5	Vin supply signal.

A 5 pin screw type female 3.81mm connector can be purchased from Modtronix Engineering that fits into this boards 5 pin terminal block connector. See www.modtronix.com/product_info.php?products_id=106.

6 Dimensions

The BUS2S conforms to the Modtronix MicroX Compact Frontend board dimensions, as shown in Figure 3.

