RSB001
RS422 Interface Board

Product data

Features

- Single-ended to differential RS422
- Small size, easy to connect
- Compatible to ASSIST Evaluation & Programming Tool
- Suitable for development and for small series production

Key Specifications

Input format.....Single-ended 5V TTL/CMOS
Output format.....Differential RS422
Frequency.....0 – 2 MHz
Supply.....5 V, 5 mA
Temperature .....-40 to 85°C

Description

The RS422 Interface Board has the following functions:

- Conversion of single-ended 5V TTL or CMOS encoder signals to RS422 differential signals
- Configuration and/or programming of the encoder via the ASSIST Interface Board

Encoder Power
The three ways to power the encoder are explained below.

Encoder power from RS422: put the Encoder Power jumper in place. Do not connect the ASSIST Board.

Encoder power from ASSIST Board: remove the Encoder Power jumper. The RS422 power supply may be connected or not.

Configure the encoder using the ASSIST Board, then switch to RS422 power:

1) Remove the Encoder Power Jumper
2) Connect the RS422 connections, including supply pin 1 (Fig 3)
3) Connect the ASSIST Board
4) Start the ASSIST software and configure the encoder
5) In the ASSIST software go to the evaluation window and start the encoder (the encoder is now powered by the ASSIST Board)
6) Put the Encoder Power jumper in place (the encoder is now powered by two sources with the same voltage)
7) Disconnect the ASSIST Board connector (the encoder is now powered by the RS422 supply voltage)

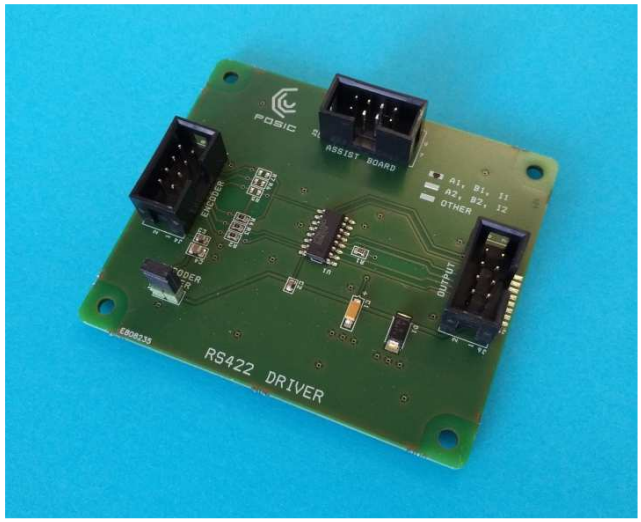


Fig 1 The RS422 Board.

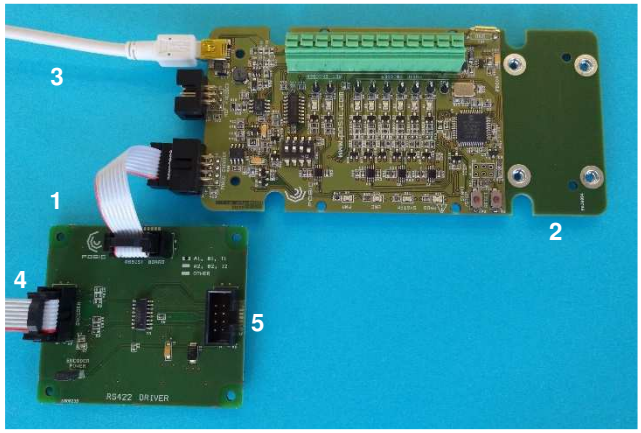


Fig 2 RS422 Board (1) connected to ASSIST Interface Board (2), which is connected via USB cable (3) to a PC with ASSIST software. The inputs (4) are single-ended and the outputs (5) are RS422 differential.

In/outputs
The input signals may be on different pins of the Encoder connector and are selected in Table 1.

Connectors
The 8-pin DIN41651 connectors on the Open Collector Board are compatible to the ASSIST Interface Board, see Fig **2**.

Specifications

Recommended Operating Conditions

Parameter	Symbol	Remark	Min	Typ	Max	Unit
Supply voltage	V_S		4.5	5.0	5.5	V
Operating Temperature	T_A		-40		85	°C

Electrical Characteristics

Electrical characteristics over recommended operating conditions, typical values at VDD = 5.0 V, T_A = 25°C.

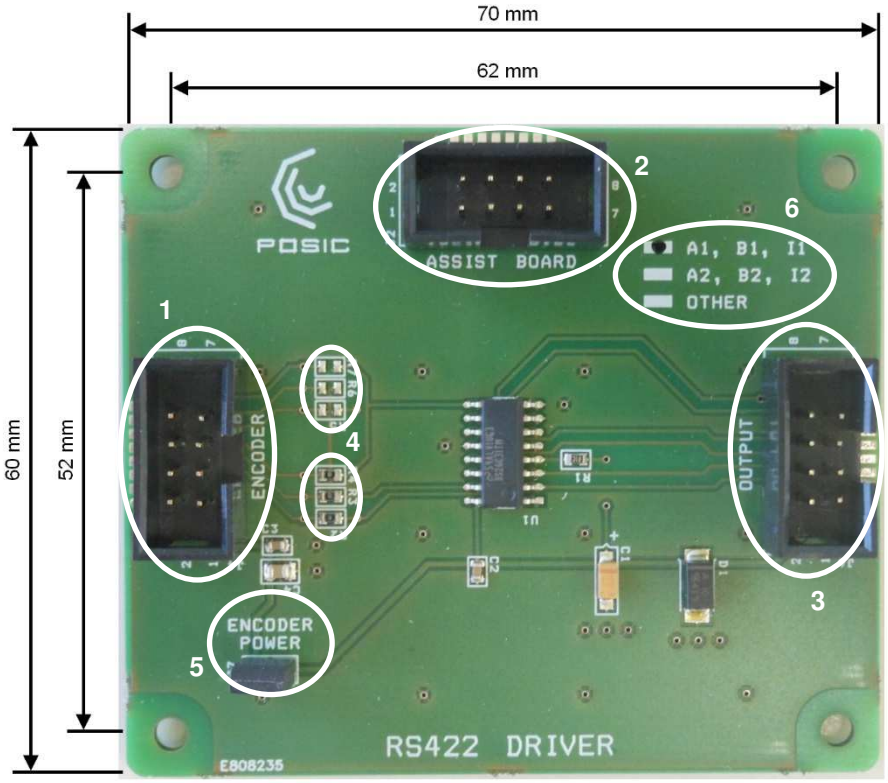
Parameter	Symbol	Remark	Min	Typ	Max	Unit
Supply current	I_S	Static input, no load			5	mA
Frequency	F	A/B signals	0		2	MHz
High level input voltage	V_{IH}		V_S – 0.5			V
Low level input voltage	V_{IL}				0.5	V
Differential output voltage	V_{out}	R_L = 100 Ω	2			V
Rise time, fall time	t_r, t_f	C_L = 47 pF			20	ns

Detailed technical information can be found in the RS422 standard and in datasheets of RS422 drivers, for example the AM26C31 from Texas Instruments™.

Technical drawings

Pin	Encoder J4	ASSIST Board J2	Output J6
1	VDD, 5V Supply	VDD, 5V Supply	VS, 5V Supply
2	GND, Ground	GND, Ground	GND, Ground
3	A1	A1	A
4	B1	B1	NA
5	I1	I1	B
6	A2	A2	NB
7	B2	B2	I
8	I2	I2	NI

Fig 3 Pinout of the connectors.



Connectors, all 8-pin DIN41651:

1) Encoder (single ended 5V TTL/CMOS)
2) ASSIST Interface Board
3) Output (RS422)

Input selection (0Ω resistors), see Table 1:

4) Select encoder 1 (A1, B, I1) or encoder 2 (A2, B2, I2)

Encoder Power selection:

5) Jumper
   - Present: encoder powered by RS422 supply
   - Removed: encoder powered by ASSIST Interface Board

Configuration:

6) Configuration, see Table 1

Fig 4 Dimensions and explanations for a board with inputs A1, B1 and I1. All connectors are 8-pin DIN41651.

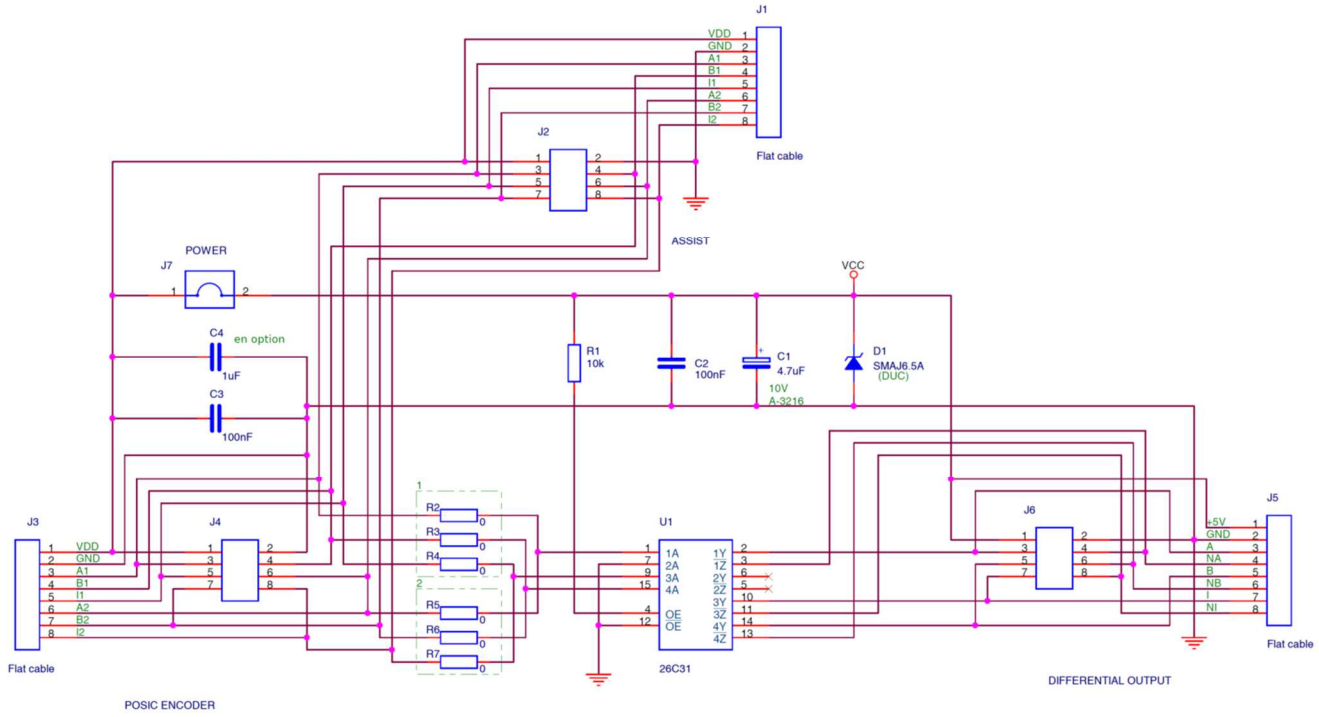


Fig 5 Schematic diagram.

Ordering information

RS422 Interface Board including flat cable for connection to ASSIST Interface Board.

Code: RSB001-ABC

A	Input selection	Table 1
B	Output selection	Table 2
C	Connectors	Table 3

Table 1: Input selection

A	Input selection	Suitable for encoders
0	Inputs not defined	-
1	Inputs A1, B1, I1	ID1102, ID4501
2	Inputs A2, B2, I2	IT3402, IT5602

Table 2: Output selection

B	Output selection
1	Outputs A, NA, B, NB, I, NI

Table 3: Connectors

C	Connectors J2, J4, J6 and jumper J7*
5	All connectors/jumper soldered on the board

* See schematic diagram in Fig **5**.