

RS-232 Converter to Symmetric Current Loop

ELO E0BL



Characteristics

- Galvanic isolation of interfaces
- TxD, RxD transferring
- Maximum data rate 57.6 kbps
- Range 4 km
- Symmetric current loop +20 mA

Introduction

RS-232 is the interface with asymmetric signals. The asymmetric signals are not ideal to eliminate the influence of zero potential differences of terminal equipments (DTEs). The DTE and neutral conductor potentials have to be the same.

The load impedance is to be 3-7 kiloohm that allows disturbing pulses induction into the cable even from the soft supplies. Maximum load capacity can be 2500pF and comes up to c.50m typical twisted-pair cable therefore RS-232 interface is designed to the point-to-point connection for maximum 15m distance.

Use of the converter

The current loop has a great range (of the order of kilometres) and interference resistance. It is suitable for low-speed duplex transmission.

Current loop interface is resistant against electromagnetic interference **but not against atmospheric electricity influences!**

Operation principles

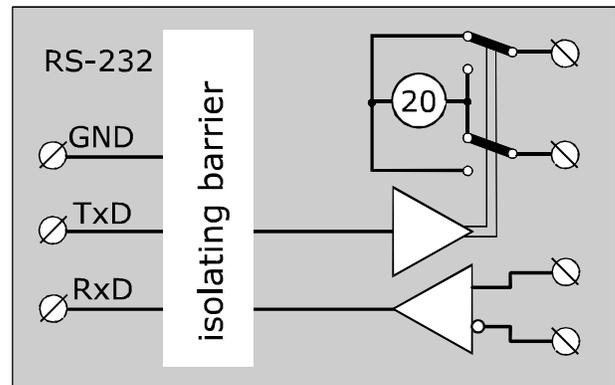
ELO E0BL converts TxD signal RS-232 interface into transmitting cable pair and the signal from the receiving pair converts into RxD RS-232 interface so the full duplex

connection is carried out. Logical levels are differentiated by 20mA current polarity. In the idle mode there is the positive polarity on the B clamp and negative on the A clamp. The active level on TxD converter input will cause polarity change on output. Control signals are not transmitted.

The current loop connection is indicated by lighting diodes TX and RX. These diodes are red in the idle mode, when transmitting active level they are green. During communication itself the colour change can be indistinct.

The maximum transmission rate is 57 600 bps, it depends on the line parameters. The line character (its impedance) influences the attainable communication speed.

Block diagram



Specifications

Parameters

Current loop interface	transmitter and receiver
Loop power	±20mA
Isolation between interfaces	2.5 kV
Transmitted signals RS-232	TxD and RxD, full duplex
Control signals	not transmitted
Maximum range in lines of parameters:	
200Ohm, 50nF/1000m	4000m
Maximum data rate	57 600 bps
Supply	12 – 24 V/150mA
Dimension: Length	104 mm
Width	55 mm
Height	28 mm

Other

Stocking temperature	- 10° to +55° C
Working temperature	+ 0° to +50° C
Humidity	0 – 85% (non-condensing)