

X.21 (RS422) repeater with galvanic isolated interfaces

ELO E184



Characteristics

- transmitted signals Rx_D, CLK and Tx_D
- maximum data rate 1 Mbps
- isolating barrier 2.5 kV/1 min
- DC 9 - 24 V supply

Introduction

Galvanic isolation of the interfaces prevents from ground loops generation and protects the end devices from overvoltage incoming from the communication lines. If the signal repeater was inserted in the middle of communication line a maximum reach or maximum data rate can be increased.

Use of the repeater

The X.21 interface signals have the same features as RS422 ones. So the signals are symmetric (differential) and the transfer medium is a twisted pair. Signal is resistant to disturbances and to potential differences of communication devices if the difference is lower than c. 6-7V. Repeater ELO E184 inserts a galvanic isolation between the transmitters and receivers and protects them up to 2.5 kV difference. The maximum difference must exist less than 1 minute.

The repeater is mainly suitable:

- 1) if the line is necessary to be prolonged – each repeater allows the extension by 1200m,
- 2) if a part of the line is necessary to be isolated.

The repeater doesn't protect the devices from atmospheric disturbances.

Operation principles

X.21 is a synchronous interface. It is designed for a communication between two devices. The data signals have been synchronized by a clock signal. ELO E184 transfers two data and one clock signals. Control (RTS) and status (CTS) signals aren't transferred and they are just connected locally (see the schema).

Specification

Parameters

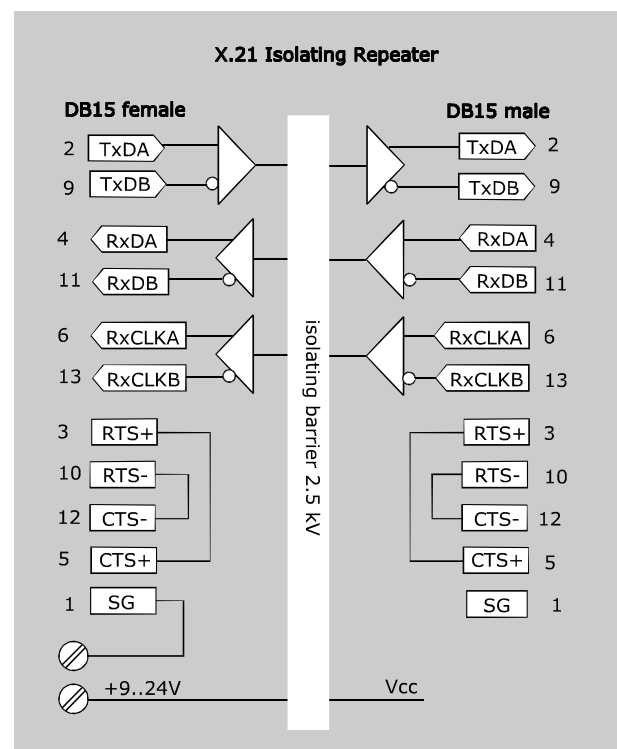
Interfaces	X.21 (RS422) / X.21 (RS422)
Nominal supply	DC 9 – 24 V
Supply voltage min / max	DC 7 / 30 V
Supply connector	terminators
Isolating barrier	max.2.5kV – 1 min
Requested line impedance	100 Ω
Terminators	external terminators 100-120 Ω
Atmospheric surge level	repeater doesn't protect from the atmospheric disturbances

Supplying

ELO E184 needs an external DC supply with a nominal voltage from 9 to 24V. The limit values are 7V and 30V.

ELO E184 disposes of a polarity reversal protection. The typical power take-off is 100 mA if the voltage was 12V.

Function diagram of repeater E184



Other

Transferred signals	TxD, Rx _D , RxCLK
Data rates range	0 – 1 000 000 bps
Dimensions:	
Width x Length x Height	67 x 117 x 29 mm
Weight	c. 100 g
Stocking temperature	- 10° to +55° C
Working temperature	+ 0° to +50° C
Humidity	0 – 85% (non-condensing)