Let's communicate!

X.21, RS422 Interface Repeater - Isolator

ELO E184

OPERATION MANUAL

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1.0 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.

1.1 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 doesn't protect the devices from atmospheric disturbances. If the cable or its part was installed outside the building an additional protection is necessary.

The power supply input is galvanic isolated from one of interfaces (with DB15 male connector).

Repeater is able to transfer data up to rates 1 Mbps. Maximum recommended RS422 line length is 1200 m if the rate was 9600 bps. Repeater regenerates signals as well and this way it is possible to use a repeater for a higher data rate at the same link (19200 bps/1200m) or the range can be increased with the same data rate (9600 bps/2400m).

2.0 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.

3.0 Installing

Supply is connected by terminals with 3.81 mm span. X.21 interfaces are equipped with DB15 female and DB15 male connectors.

3.1 X.21 (RS422) interface

Table of signals:

SIGNAL	name abbrev.	connector DB15F	transfer direction	connector DB15M
Signal Ground	SG	7	--	7
Transmitted Data	TxDA	2	→	2
	TxDB	9	→	9
Received Data	RxDA	4	←	4
	RxDB	11	←	11
Received Clock	Rx CLKA	6	←	6
	Rx CLKB	13	←	13
Request to Send	RTS+	3	X	3
Clear to Send	CTS+	5	X	5
Request to Send	RTS-	10	X	10
Clear to Send	CTS-	12	X	12

Signals RTS and CTS aren't transferred. They are just connected locally - 3-5 and 10-12 contacts on a connector DB15F and similarly on a connector DB15M.

3.2 Supplying

ELO E184 needs an external DC supply with nominal Voltage 9-24V. The limit values of supply are 7 and 30V. ELO E184 is protected from reverse of polarity. The typical power take-off is 100 mA if the voltage was 12V.

4.0 Specification

4.1 Parameters

Interfaces	X.21 (RS422) / X.21 (RS422)
Transferred signals	TxD, RxD, RxCLK
Connectors	DB15F, DB15M
Nominal supply	DC 9 – 24 V,
Supply voltage min / max	DC 7 / 30 V
Isolating barrier between interfaces	2.5 kV - 1min.
Allowed voltage of disturbances	repeater doesn't protect from the atmospheric disturbances
Maximum range	2 x 1200 m,
Maximum data rate	1 Mbps
Dimensions:	
Width x Length x Height	67 x 117 x 29 mm
Weight	c. 90 g

4.2 Operating conditions

Stocking temperature	- 10 ^{o} to +55 ^{o} C
Working temperature	+ 0^{o} to +50^{o} C
Humidity	0 – 85% (non-condensing)

ATTENTION!!

Repeater isn't designed for outdoor installation where the atmospheric discharges must be taken into account.

5.0 Ordering information

Supply code is ELO E184. A power supply must be ordered separately as ELO E0Q8.

Notes

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