

RS232 1Channel / Point to Point Link DTE

1 General

This device is a compact and robust modem for asynchronous data transmission in full-duplex mode. According to the used multimode fiber optic cable, data link length's up to 3000m are possible. Used in conjunction with RS232 Party-Line 1Channel modems it is possible to build a fiber optic RS232 bus system which is less interference prone.

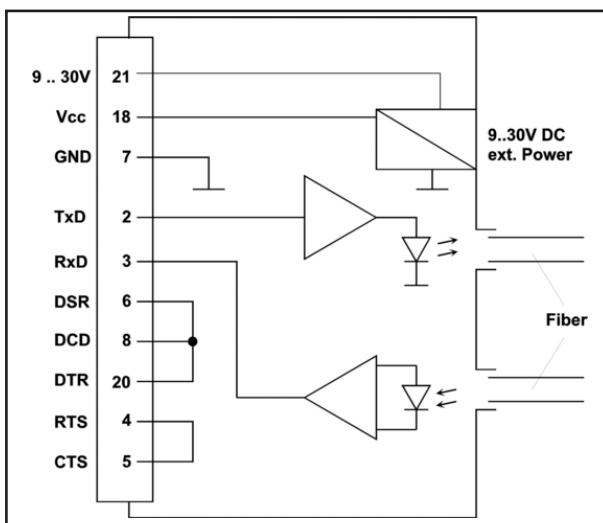
2 Features

- 1Channel RS232 - FO Transceiver
- Full-Duplex Data Transmission
- 120 kBit Data rate
- Protocol-transparent
- 'Power-Good' LED
- 'Receive-Data' LED
- 25-way Sub-D Connector **female**
- F-SMA, F-ST or standardized optical connectors
- Aluminium case (optional with rail mounting latching element)
- +5V or 9 .. 30V DC Power Supply



Pic. 1 F-ST / MMF / RS232 850nm Media Converter

3 Block Diagram



Pic. 2 Schematic

4 Ordering Information

Model	Part Number
660nm / F-SMA / POF	901RS2321K519
with latching element	901RS2321KR19
660nm / F-ST / POF	901RS2321K520
with latching element	901RS2321KR20
850nm / F-SMA / MMF	901RS2321K517
with latching element	901RS2321KR17
850nm / F-ST / MMF	901RS2321K518
with latching element	901RS2321KR18

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5 CE-Conformation _____

The RS232 660 / 850nm 1Channel full-duplex modem meets the requirements according to Article 4 and Appendix III of Directive 89/336/EWG: Electromagnetic Interference (EMI). The modem complies to the following standards:

- EN 55022 or EN 50081-1
- EN 55024 or EN 50082-1
- EN 50082-2 (Industrial use)

6 Operation _____

The RS232 1Channel Modem is a code transparent electro-optical transceiver. Incoming data at the electrical interface is converted into optical signals and transmitted by optical fiber. The optical receiver at the other side recovers the optical signal to the corresponding RS232 format. The RS232-FO conversion takes place acc. to following scheme:

$$U_{IN} \geq +3V = '0' \Rightarrow \text{opt. Out=On}$$

$$U_{IN} \leq -3V = '1' \Rightarrow \text{opt. Out=Off}$$

For applications requiring an inverted optical signal, appropriate modems can be ordered (optional).

7 Power Supply _____

The modem can be powered by three ways:

A) +5V DC $\pm 5\%$ at Pin 18 Sub-D

Pin 21 Sub-D and screw terminal must leave unconnected.

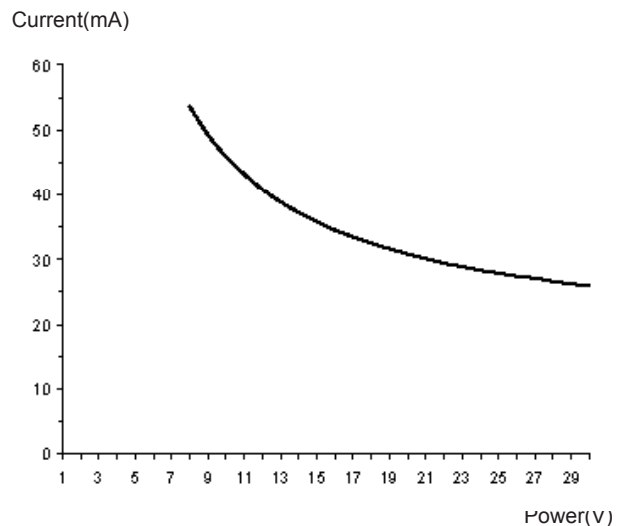
B) +9V...+30V DC (unregulated) at Pin 21 Sub-D

A switching regulator generates the +5V power for the modem. The current sources can be activated with the supplied power. The screw terminal must leave unconnected. Pin 18 is a +5V output with max. 50mA current load.

C) +9V...+30V DC (unregulated) at screw-terminal

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Pic. 3 shows the current consumption versus input power for case B) and C) without output current.



Pic. 3 Current consumption



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8 Installation

- Place the modem at a suitable location
- Though the modem is hot pluggable, make sure that all equipment is off power to avoid electrical damage during installation
- Connect the modem to the TTY interface of your application
- Connect the FO cable with the Fiber-Optic Interface (see Pic.4)
- Check all connections for correct configuration
- Power up your system



Pic. 4 FO-Link

Example 2: Pinout 25-way Sub-D

Pin	Name	DCE	DTE
1	CG	Earth	Earth
2	TxD	Input	Output
3	RxD	Output	Input
4	RTS	Input	Output
5	CTS	Output	Input
6	DSR	Output	Input
7	GND	Ground	Ground
8	DCD	Output	Input
12	DCD2	Output	Input
13	CTS2	Output	Input
14	TXD2	Input	Output
15	TxC	Output	Input
16	RxD2	Output	Input
17	RxC	Output	Input
19	RTS2	Input	Output
20	DTR	Input	Output
22	RI	Output	Input
23	DRS	I/O	I/O
24	TxC	Input	Output
25	BUSY	Output	Input

9 EIA-RS232 Standard

The full declaration of the RS232 Interface and the meaning of the signal names and symbols can be derived from the EIA RS232-C standard.

An agreed case is that RS232 devices are separated into two classes: DTE (Data Terminal Equipment exp. Computers) and DCE (Data Communication Equipment exp. Modems).

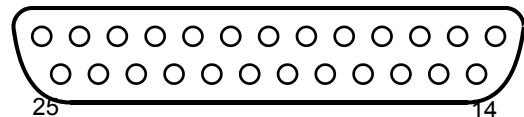
The standard describes the 25-way Sub-D, however the 9-way Sub-D is now more used.

DCE = Sub-D female
 DTE = Sub-D male

Example 1: Pinout 9-way Sub-D

Pin	Name	DCE	DTE
1	DCD	Output	Input
2	RxD	Output	Input
3	TxD	Input	Output
4	DTR	Input	Output
5	GND	Ground	Ground
6	DSR	Output	Input
7	RTS	Input	Output
8	CTS	Output	Input
9	RI	Output	Input

10 Sub-D Pin Out



PIN Nr.	Name	Funktion
2	TxD	Data IN
3	RxD	Data OUT
4	RTS	shorted to CTS
5	CTS	shorted to RTS
6	DSR	shorted to DCD, DTR
7	GND	Ground
8	DCD	shorted to DSR, DTR
8	Vcc	+5V DC Input/Output
20	DTR	shorted to DSR, DCD
21	V+	9 .. 30V DC IN

! Non declared pin are without function and should be left open. !

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11 Maximum Ratings

Power supply +V _____ +35V DC
 Power supply 5V DC _____ +5,5V DC
 Storage temperature _____ -55..+125°C
 Operating temperature _____ -40..+85°C

Stresses beyond those listed under 'Maximum Ratings' may cause permanent damage to the modem. These are stress ratings only, and functional operation of the modem at these conditions is not implied. Exposure to maximum rating conditions for extended periods may affect the modem reliability.

12 Technical Data

data rate: 0 .. 120 kBit/s
 bit distortion: ± 200ns

Wavelength:850nm

max. opt. P_{OUT}: 30µW / 50/125µm MM-Fiber
 approx. -15dBm
 min. opt. P_{IN}: 1µW / 50/125µm MM-Fiber
 approx. -30dBm
 min. Power Budget: 15dB

Wavelength:660nm

max. opt. P_{OUT}: 700µW / 980/1000µm POF
 ca. -1,5dBm
 min. opt. P_{IN}: 3µW / 980/1000µm POF
 ca. -25dBm
 min. Power Budget: 23dB

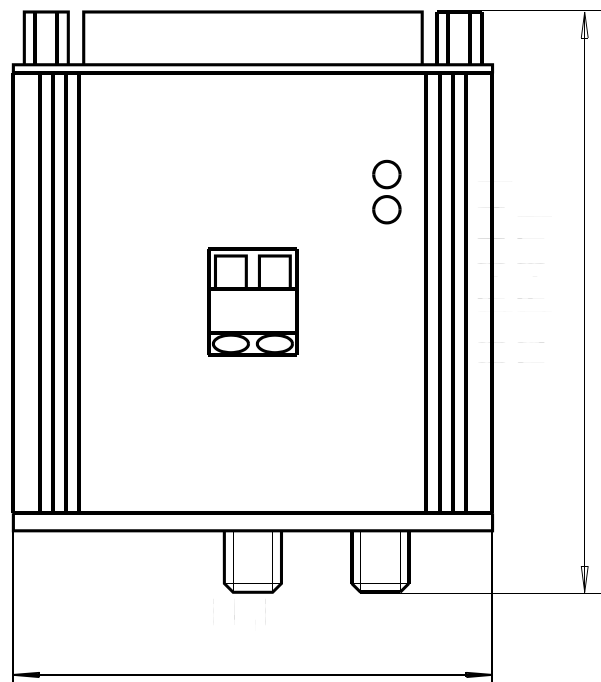
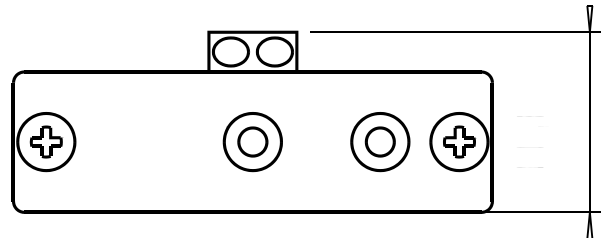
opt. port: F-SMA , F-ST
 max. Link length: 3000m GI-fiber
 2000m HCS-fiber
 70m PO-fiber

Data format el.: RS232-C / V24
 el. Interface: 25-way Sub-D female
 power supply: +5V DC ±5% via Sub-D
 or 9 .. 30V DC via Sub-D
 or 9 .. 30V DC via PCB-Terminal

current consumption: 35mA (±10%) / 24V
 LED's: green = Vcc
 yellow = RxD (receive data)

case: aluminium extruded
 dimensions: approx. 72x55x20mm
 protection class: IP40
 weighth: approx. 100g
 temperature range: -40 .. +80°C

13 Drawing



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