Ratioplast
Electronics | OptoElectronics

Data Sheet **FO-Interface RS422 HPL 1Channel**

RS422 1Channel / Full Duplex / Point to Point Link

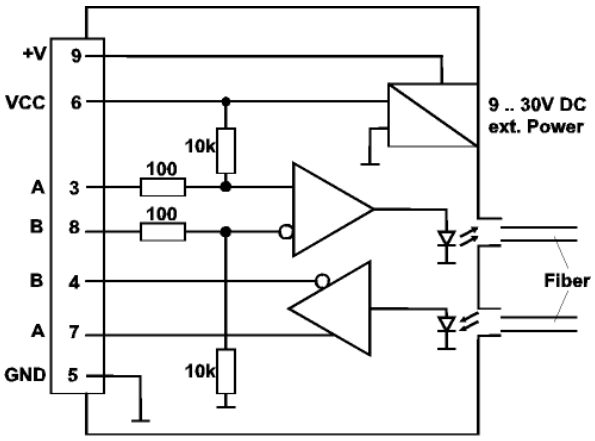
1 General

This device is a compact and robust modem for asynchronous data transmission in full-duplex mode, suitable for harsh environments in industrial applications. According to the used multimode fiber optic cable, data link length's up to 3000m are possible.
Used in conjunction with RS422 Party-Line 1Channel modems it is possible to build a fiber optic RS422 bus system which is less interference prone.

2 Features

- 1Channel RS422 - FO Transceiver
- Full-Duplex Data Transmission
- 5MBit Data rate, NRZ coding
- Protocol-transparent
- ´Power-Good´ LED
- ´Receive-Data´ LED
- 9-way Sub-D Connector Female
- F-SMA, F-ST, RP_{opto}-Clamp or other standardized optical connectors
- Aluminium case
  (optional with rail mounting latching element)
- PCB with protective coating
- +5V or 9 .. 30V DC Power Supply

3 Block Diagram



Pic. 2 *Block diagram*

Pic. 1 *RS422*

4 Ordering Information

Model	Part Number
660nm / F-SMA / POF	901RS4221K053
with latching element	901RS4221KR53
660nm / F-ST / POF	901RS4221K051
with latching element	901RS4221KR51
660 nm / RP_{OPTO}-Clamp	901RS4221K055
with latching element	901RS4221KR55
850nm / F-SMA / MMF	901RS4221K049
with latching element	901RS4221KR49
850nm / F-ST / MMF	901RS4221K045
with latching element	901RS4221KR45

RS422 1Channel / Full Duplex / Point to Point Link

5 CE-Conformation

The RS422 1Channel 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 RS422 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 RS422 format.
The RS422-FO conversion takes place acc. to following scheme:

$U_{DIFF3/8} \geq$ +200mV=´High´ $\Rightarrow$ opt. Out=On
$U_{DIFF3/8} \leq$ -200mV=´Low´ $\Rightarrow$ opt. Out=Off

The modem internal resistor termination (see block diagram) pulls the electrical bus wire into a defined state if the connected RS422 application driver changes to high impedance (HIGH-Z) condition.

! Please check your application to avoid any mismatch on the electrical bus wire caused by the modem internal termination !

7 Power Supply

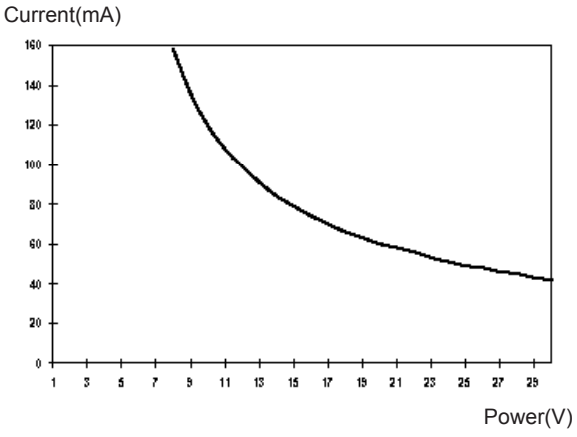
The modem can be powerd by three different ways:

A) +5V DC ±5% at Pin 6 Sub-D
The screw terminal and Pin 9 must be unconnected.

B) 9V..+30V DC (unregulated) at screw terminal
A switching regulator generates the +5V power for the modem.
Pin 6 is a +5V output with max. 50mA current load.
Pin 9 must be unconnected.

C) 9V..+30V DC (unregulated) at Pin 9 Sub-D
A switching regulator generates the +5V power for the modem.
Pin 6 is a +5V output with max. 50mA current load.
The screw terminal must be unconnected.

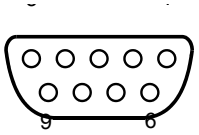
Pic. 3 shows the current consumption versus input power for case B) and C).



Pic. 3 Current consumption

RS422 1Channel / Full Duplex / Point to Point Link

8 Sub-D Pin Out



Pic. 4 Sub-D female

PIN No.	name	function
1	NC	not connected
2	NC	not connected
3	TxD A	Data In positiv
4	RxD B	Data Out inverted
5	GND	System Ground
6	VCC	+5V DC input/output
7	RxD A	Data Out positiv
8	TxD B	Data In inverted
9	V+	9..30V DC input

! ´NC´ labeled pins are without function and should be left open. !

9 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 RS422 interface of your application
- Connect the FO cable with the Fiber-Optic Interface (see Pic. 5)
- Check all connections for correct configuration
- Power up your system

Pic. 5 FO-link

10 Maximum Ratings

Power supply +V	+35V DC
Power supply 5V	DC+5,5V DC
RS422 driver current	70mA
Common mode input	voltage±12V
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.

11 Technical Data

data rate:	**0 .. 5 MBit/s**
bit distortion:	**max. ± 200ns**
max. P_{OUT} @850nm:	**100µW / 200/230µm**
	27µW / 50/125µm
	60µW / 62,5/125µm
max. P_{OUT} @660nm:	**700µW /980/1000µm**
min. P_{IN} @850nm:	**approx. 1µW**
min. P_{IN} @660nm:	**approx. 3µW**
Wavelength:	**660nm, 850nm**
opt. interface:	**F-ST, F-SMA, PR_{opto}-Clamp**
max. link length:	**3000m 50µ GI-Fiber**
	2000m 200µ HCS-Fiber
	70m 1000µ PO-Fiber
data format el.:	**RS422**
el. interface:	**9-way Sub-D female**
power supply:	**+5V DC ±5% via Sub-D**
	9..30V DC via PCB terminal)
	or via Pin 9 Sub-D
current consumption:	**170mA (±10%) / 5V**
IED indicators:	**green = Vcc**
	yellow = RxD (rec. Data)
case:	**Aluminium extruded**
dimension:	**approx. 72x55x20mm (LxBxH)**
protection class:	**IP40**
weight:	**approx. 100g**
temperature range:	**-40 .. +80°C**

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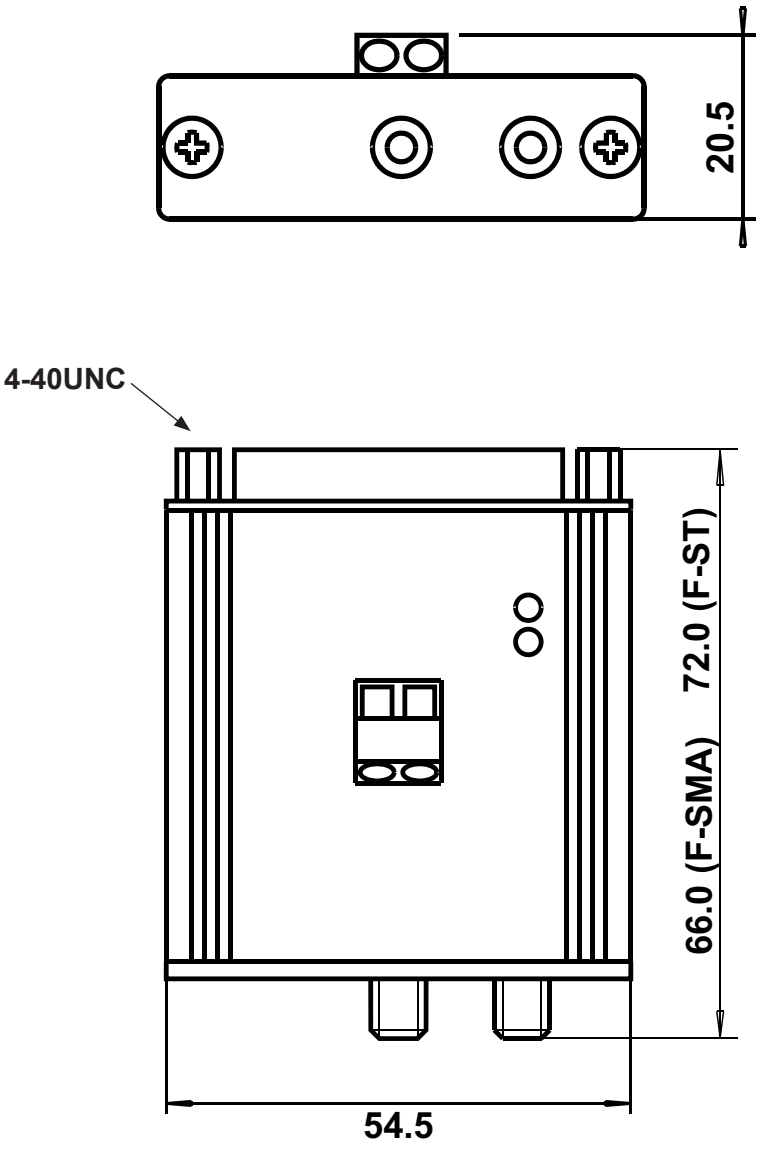
12 Case Drawing



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