Optoizoler OPI

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1. Interface converter — Optoisolator OPI

OPI 232, OPI 422, OPI 485

Interface converters – OPI optoisolators are for galvanic separation of signal wires of the RS232 interface and/or for conversion of signals from the RS232 to RS485 or RS422 interface and vice versa. Communication speeds of up to 115200 bit/s are possible. The optoisolators are preferred for separation of the ports of the MR25 radio modem. It is however possible to use them with other types of serial devices.

1.1. Design

OPI optoisolators are produced in three versions:

- OPI 232 – for converting RS232 interface to RS232 interface

- OPI 422 – for converting RS232 interface to RS422 interface

- OPI 485 – for converting RS232 interface to RS485 interface

All three designs are offered in plastic casing with DIN rail fittings with screw terminals for connecting input wires. The supply voltage is from 10.6 to 30 V. The earth wire of the voltage source is galvanically connected to the RS232 interface earth on the same side as the converter. The presence of supply voltage and data packets on both links is indicated by LED diodes. They also indicate permanent connection of data links to the voltage. The length of time the LED diodes are lit to indicate data transmission is lengthened

by 15 ms (using monostable flip-flop circuit) so that short packets at higher transmission speeds can be shown. The converters are equipped with overvoltage protective elements.

OPI 422 and 485 do not contain any internal terminator resistors.

1.1.1. OPI 485 function

With the OPI 485 the direction of data flow is switched automatically. It is derived from the impulse from the monostable flip-flop circuit reacting to data transmitted in the direction of the RS485 interface. The length of the impulse is optimum set for transmission rates 1200, 2400, 9600, 19200 and 115200 bit/s with a JUMPER connection. For transmission rates other than those mentioned the nearest lower transmission rate should be set and it is necessary to respect the lengthening of switching time from transmit to receive mode on the RS485 link. Setting can be done after removing the upper cover. The manufacturer sets the transmit rate to 19200 bit/s. Switchover from receiving mode to transmitting mode occurs immediately at the start of the start impulse. Switching by RTS signal or other external signals is not supported.

1.1.2. Technical parameters

Supply voltage	10.6 to 30 V
Current consumption	100 mA
Transmission rate RS232, RS422	Max. 115200 bit/s
Transmission rate RS485	1200, 2400, 9600, 19200, 115200 bit/s
Switchover delay Tx–Rx for RS485	2 bits of length corresponding to the set baud rate
Dimensions: width× height × depth	$22.5 \times 75 \times 102$ mm
Weight	79 g
Range of operating temperatures	0 to 70 °C

1.1.3. Converter layout and orientation of signal wires

The source of supply voltage is connected to terminals PWR GND and +PWR. Signal terminals on the OPI are labeled like *DCE devices*, i.e. terminal RxD is output and TxD is input. The signal going through is indicated by two LED Rx and Tx. The MR25 radio modem is connected to the 232 SIDE and the LED Rx indicates the incoming signal, see the picture.
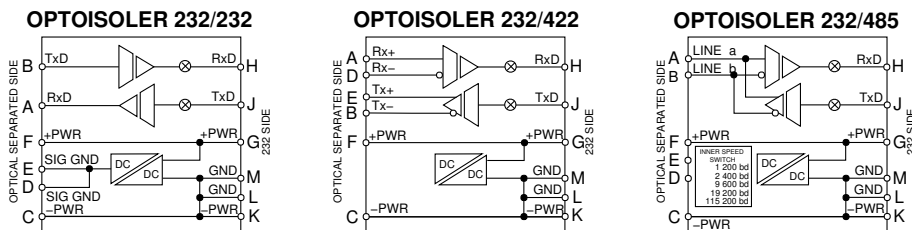
1.2. Interconnection between the OPI galvanic separated side and another devices

The clips +PWR and PWR GND is for connecting of power supply, the voltage is indicated by green LED ON. The OPTICAL SEPARATED SIDE includes in case RS232 the clips Rx, Tx and SIG GND. The clips +PWR and -PWR are not separated, they are going through to made the OPI wiring more easy.

Signal wiring:

- Direct link between OPI and MR25:

OPI pin	MR25 – pins at DSUB37F connector		
	Port SCC0	Port SCC1	Port SCC2
TxD	2	27	32
RxD	3	28	33
PWR GND	32	11	34

- Interconnection between OPI and MINT:

OPI pin	MINT DSUB25 pin	PC DSUB25 pin
TxD	3	RxD
RxD	2	TxD
PWR GND	7	GND

- Interconnection OPI and PC computer:

OPI pin	PC DSUB9 pin	PC DSUB25 pin
TxD	3	2
RxD	2	3
PWR GND	5	7

1.3. Mechanical parameters