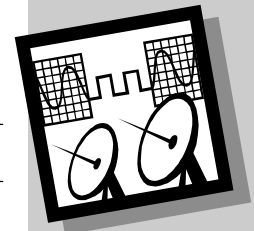
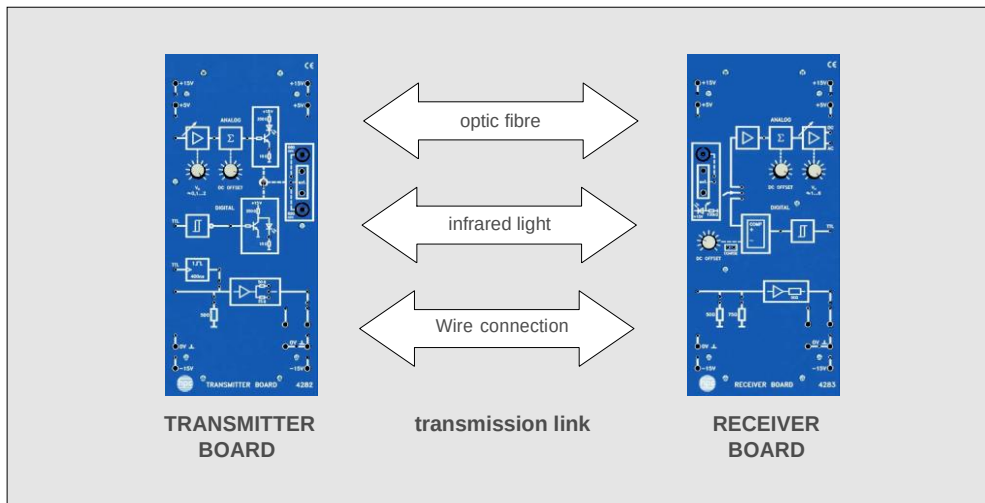


Communications – Transmission Technology



TRANSMITTER / RECEIVER BOARD

Type 4282 / 4283



- Universal training system for the transmission of signals with optical fibres, infrared link or connection line
- Can be used with the MODULATION BOARD and the DEMODULATION BOARD, as well as with other hps training systems
- Also very suitable to perform experiments with usual commercial generators and measuring instruments
- With analog and digital channel suitable for all fundamental experiments of the fibre optics technology
- With two built-in transmit diodes of different wavelengths
- Two amplifiers and different terminating resistors allow experiments with coaxial lines
- Can be extended with an Optical Bench and with the COAXIAL BOARD

The two Demonstration Boards

- **TRANSMITTER BOARD** and
- **RECEIVER BOARD**

have been developed by hps SystemTechnik for experiments in transmission technology.

They allow to verify the differences between a signal transmission with optical

fibres, with an infrared link and with normal lines.

In detail the following experiments can be made:

- Setting of the operating point of transmit diodes
- Characteristics of transmit diodes
- Attenuation measuring of optical fibres of different length

- Sensibility to interference of different transmission links
- Transmission of TTL signals through optical fibres

Additional experiments

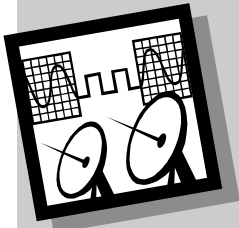
- With the Optical Bench
- Infrared transmission
- Transmission with lines, e. g. with the COAXIAL BOARD

Function groups of the TRANSMITTER BOARD

- Analog amplifier for fibre optic transmission, with adjustable gain and setting of the operating point
- TTL channel with Schmitt trigger and matching circuit for the transmit diode
- 1 transmit diode, red
- 1 transmit diode, infrared
- Transmission field for additional transmit diode
- Line driver with different, additionally connectable output resistors

Function groups of the RECEIVER BOARD

- Fibre optic receive diode, fixed
- Reception field for additional receive diode
- Analog amplifier, DC offset and gain adjustable
- TTL channel, composed of a comparator with adjustable operating threshold and subsequent Schmitt trigger
- Amplifier with additionally connectable input resistors



TRANSMITTER / RECEIVER BOARD

Type 4282 / 4283

Mechanical Data

The front panel of the Boards is made of 5 mm thick laminate, matt blue in colour with white engraving representing the built-in function groups. The rear of the Boards is protected with a grey plastic cover. Its shape allows the Boards to be placed at an ergonomically favourable angle for example on a table.

To conduct the experiments, the TRANSMITTER BOARD and the RECEIVER BOARD are placed on a table or suspended in an hps rack for demonstration purposes.

Accessories Recommended

- MODULATION BOARD (Type 4280)
- DEMODULATION BOARD (Type 4281)
- COAXIAL BOARD (Type 4284)

- Plastic Fibres of different lengths without plug:
0.5 m (Type 4282.20)
5 m (Type 4282.21)
20 m (Type 4282.23)
- Optical Bench (Type 4185) with two Plastic Fibres (Type 4282.18) without plug
- Connecting plugs and leads



- IR Transmit Module (Type 4282.4)



- IR Receive Module (Type 4283.4)

Subject to technical modifications.

Communications – Transmission Technology

Technical Data

TRANSMITTER BOARD (Type 4282)

Fibre optic transmission

- 1 LED: 660 nm, red
- 1 LED: 820 nm, infrared
- External LED: pluggable
(e. g. infrared plug-in module for wireless transmission)

Analog transmission

- Amplifier: V_u = approx. 0.1...2
- DC offset: adjustable with potentiometer
- Frequency range: approx. 0 ... 80 kHz

Digital transmission

- TTL input: Schmitt trigger; matching circuit for transmit diode
- Transmission rate: max. 200 kHz

Amplifier

- Input resistor: 50 Ω ; connectable with 2 mm plug
- Output resistors: 50 Ω ; 75 Ω ; connectable with 2 mm plug
- Frequency range: approx. 0 ... 5 MHz

Other

- Operating voltage and current:
+15 V; -15 V (150 mA); +5 V (50 mA)
- Dimensions/weight: 133 x 297 x 110 mm (w x d x h)/0.7 kg

RECEIVER BOARD (Type 4283)

Fibre optic transmission

- Receive diode: SFH 202, fixed
- External receive diode: pluggable
(e. g. for wireless transmission)

Analog transmission

- DC offset: adjustable with potentiometer
- Amplifier: V_u = approx. 1 ... 6
- Frequency range: approx. 0 ... 80 kHz

Digital transmission

- Comparator and Schmitt trigger with TTL output
- Transmission rate: max. 200 kHz

Amplifier

- Input resistor: 37.5 Ω ; 50 Ω ; 75 Ω ; 150 Ω , connectable with 2 mm plug
- Output resistor: 50 Ω
- Frequency range: approx. 0 ... 5 MHz

Other

- Operating voltage and current:
+15 V; -15 V (50 mA); +5 V (50 mA)
- Dimensions/weight: 133 x 297 x 110 mm (w x d x h)/0.7 kg