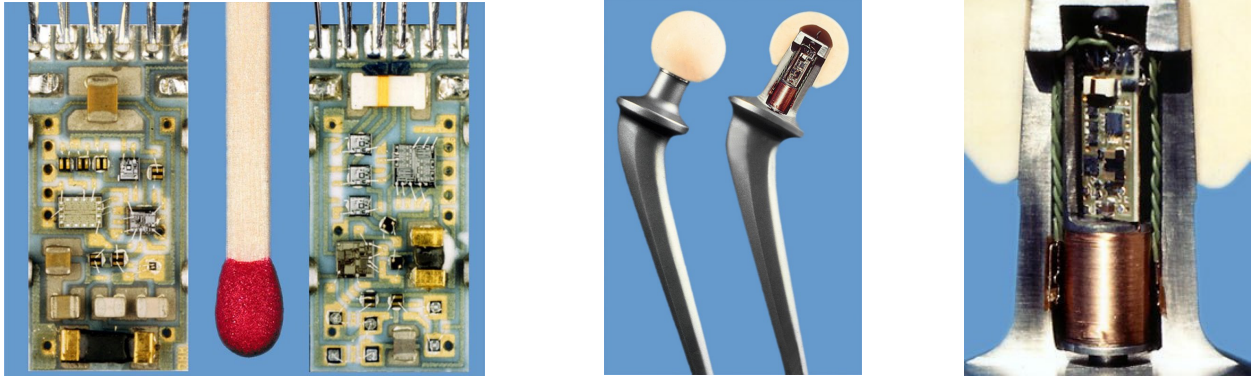


4-Channel Telemetry Transmitter



The 4-channel telemetry transmitter was developed and designed for in-vivo hip joint force measurements.

Technical data

Channel 1 - 3: three semiconductor strain gauges (SG, $R = 330 \text{ Ohm}$)

Channel 4: temperature measurement (NTC, $R = 1000 \text{ Ohm}$) and synchronisation ($t < 400 \mu\text{s}$)

Power supply: AC inductive

Magnetic field frequency: 4 kHz

Modulation: puls-interval-modulation (PIM)

Pulse duration: 50 μs

Mean pulse interval: 1000 μs

Transfer behaviour: non-linear

Radio frequency transmitter: 150 MHz (ASK)

Power consumption: 7 mW

Technology: thick-film hybrid technology, chip and wire, double-sided

Active components: 14 off-the-shelf integrated circuits

Passive components: 21 SMD, thin film resistors

Connections (solder points): 3 x strain gauges, 1 x ground, 2 x energy coil, 2 x RF-antenna

Hybrid size: 15 mm x 7 mm

Case: metal cylinder (incl. energy coil) 26 mm x 8 mm in diameter

Built-in neck of instrumented hip endoprotheses 1984 - 1990.