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 Ohm)
- Channel 4: temperature measurement (NTC, R = 1000 Ohm) and synchronisation (t < 400 µs)

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