



DATASHEET

Electronics

We are developing circuitry for active implanted medical devices and their corresponding body-external telemetry units within the EN ISO 13485 environment, incorporating all relevant electromagnetic compliance and patient safety requirements, originating from e.g. EN ISO 14708, EN 60601 and the FCC.

CorTec electronics utilize application specific integrated circuits (ASICs), particularly designed for **CorTec** implants. **CorTec** has a strong expertise in implanted stimulators/amplifiers, demand-adaptive wireless power transmission and high-bandwidth bi-directional wireless communication.

Exemplary description of the electronic features with the CorTec Brain Interchange One System

DESIGN OPTIONS

FEATURE	VALUE
Recording channels	• 32
Sampling rate	• 1 kHz
Sampling dynamic range	• 16 bit (74 nV smallest increment)
High pass filter cut-off	• 0.1 Hz
Low pass filter cut-off	• 450 Hz
Amplifier band pass gain	• 631
Band pass roll-off	• 20 dB/dec
Amplifier input-referred voltage noise	• 0.1 - 400 Hz: $\leq 2.7\mu\text{Vrms}$
Amplifier input impedance	● AC Impedance: 15pF capacitance 0.1 Hz: 100 GOhm 1 Hz: 10 GOhm 10 Hz: 1 GOhm 100 Hz: 100 MOhm 450 Hz: 24 MOhm
Stimulation	● Is enabled by current controlled, biphasic, rectangular, asymmetric stimulus pulses (cathodic amplitude 1 with pulsewidth followed by an anodic counter pulse of 1/4x amplitude and 4x pulsewidth).
Stimulation channels	• 32
Current source	● Can be directed to any of the 32 electrodes.
Current return path	● Any of the 32 electrode or groups of electrodes or an additional counter electrode.
Implant max. power uptake	● Typical: < 400 mW
Method of impedance test	• Voltage response to current pulse
Thermal monitoring	• Protection against overheating
Electrical Isolation of patient from electronics	● DC-decoupled using blocking capacitors
Power supply	• Wireless inductive, 120-140 kHz
Wireless data transmission	• Bi-directional, radio frequency in 2400-2483.5 MHz band

