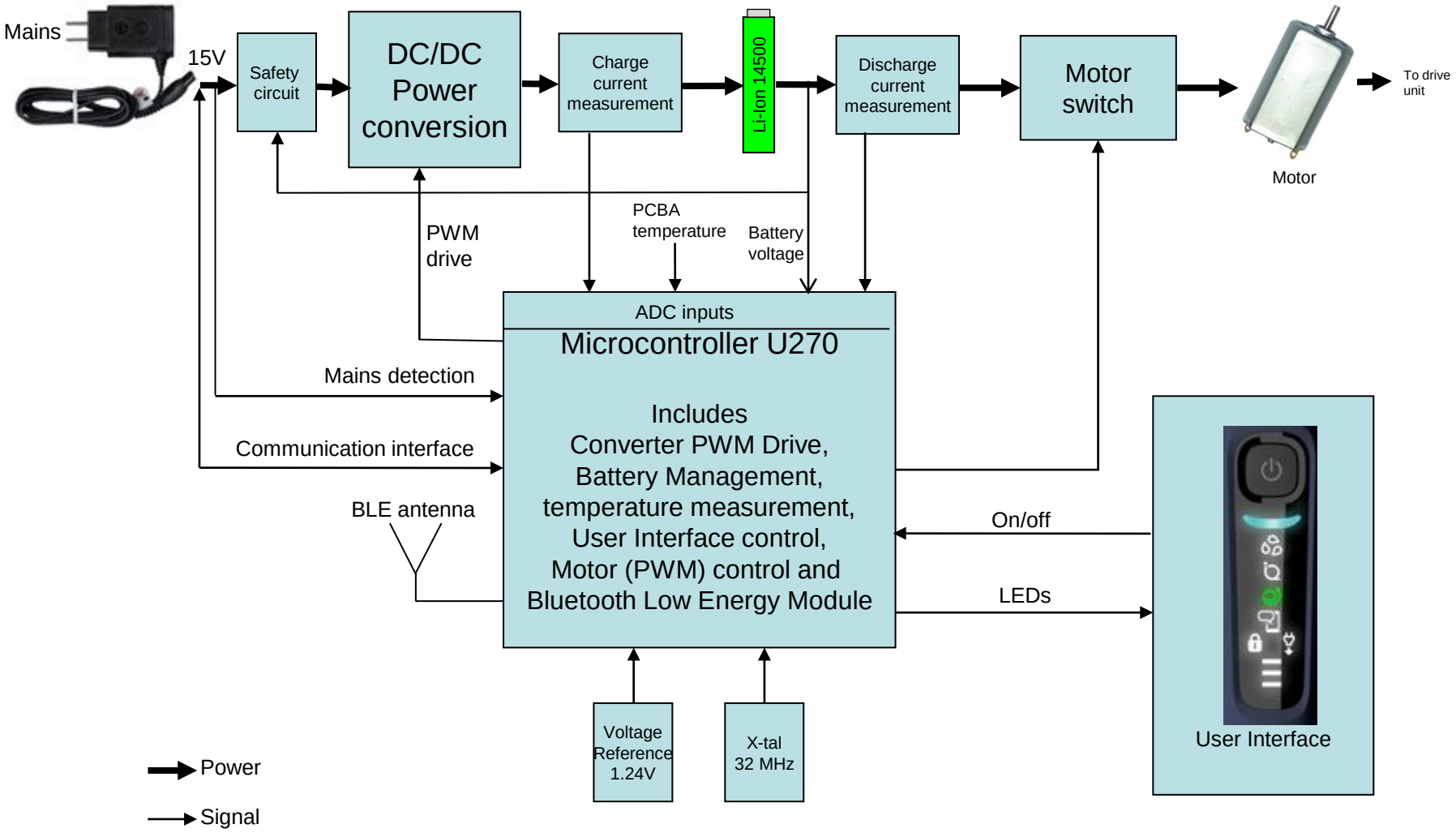
# Block diagram Poseidon Nordic electronics



# Functional description

**DC/DC converter**
Converts power from the 15V power plug and provides charge current to the battery.
The Buck converter (U130) is PWM controlled by the microcontroller by means of the SMPS control signal.

**Safety circuit**
The circuit around U920 is used to protect the battery from over charging (OVP) and low battery voltage charging (UVP) in case of hardware or software issues concerning charging.

**Charge current measurement**
Used by the Battery Management System for charge bookkeeping and DC/DC converter control. Current is measured by ADC voltage measurement across R141.

**Discharge current measurement**
Used by the Battery Management System for charge bookkeeping and overcurrent protection. Motor current is measured by ADC voltage measurement across R531, UI current is measured via R533.

**Motor switch**
MOSFET M401 is used as an electronic switch to turn motor on and off. The motor is PWM controlled and has battery voltage and motor current compensation to maintain a more stable RPM.

**BLE Microcontroller**
The microcontroller U270 (Nordic) contains the Battery Management System, Charge bookkeeping, charge control, overcharge and over-discharge protection, over-current protection, over-temperature protection, temperature measurement in general, DC/DC converter control, user interface I/O and BLE communication.

**LED User Interface**
Battery Low Indication, 3-LED Battery Charge gauge, Unplug For Use, Travel Lock, Cleaning Reminder, Washing indication, App notification, motion guidance indication: circle shaver motion (green) vs strokes (orange).

**On/off button**
The button S310 is used to switch the motor on and off, to activate/de-activate the travel lock or to cancel BLE bonding. Operation of the motor is inhibited when connected to the mains or when the battery voltage is below 3.0 V.

**Serial Communication Interface**
Q700/Q701 comprise a serial communication circuit, which allows communication to an optional charging stand with light via the power inlet. Also intended for internal factory use.

**Accelerometer**
The circuit around accelerometer U601 is used for pick-up detection, wash pod detection (Quick Cleaning Pod) and for detecting the degree of circular motions during shaving.

**Voltage reference**
The voltage reference around U541 can be disabled by the microcontroller

**BLE Antenna**
The BLE antenna ANT250 is the Sunlord SLDA31-2R400G-S2TF