Eobody3: a ready-to-use pre-mapped & multi-protocol sensor interface

With its compatibility with USB, MIDI, OSC, CV and DMX protocols, Eobody3 is a two-ways bridge between the analogue and digital worlds.

A modular architecture

Challenge
Create an interface that is:
- A product for the market
- Ready to use
- Compatible with all MIDI software like Ableton Live
- Compatible with all types of applications
- Compatible with different protocols
- Includes signal pre-processing
- Includes sensors pre-mapping
- Affordable
- No need to program
- No need to solder
- Anybody can use
- Powerful
- With editable parameters
- Reprogrammable
- 3 levels of use:
  1: ready-to-use
  2: internal processing tools
  3: opened max file available

Eobody3 core
- Microchip PIC-32 MX microcontroller with a frequency of 80 MHz for 1.56 DMIPS/keca
- pre-mapping per sensors
- pre-processing with integrated ESS library

Internal pre-processing of the signal

The microcontroller Microchip PIC32 allows to have different processes according to the type of data, standard sensors (continuous controller), triggers (peak detection), simple logic or more complex algorithms for certain sensors like gyroscopes.

Compatibility with other protocols
- OSC
- MIDI
- USB
- DMX
- compatible with future protocols

The compatibility with other MIDI softwares requires:
Buffering the data flow:
- a limit the flow of incoming data, data from sensors are packed in Eobody3 and updated after a complete scanning cycle has been realized.

Denoising the signal with gate and filter:
- With Eobody3, a pre-amp with analogue filters has replaced the PGA. Before the A/D conversion is done, the signal goes thru a low-pass filter and a noisy gate buffer. This eliminates high frequency noises and allows sensors with high impedance outputs. Digital noise filtering is done by a 32 bit low-pass filter and a noise gate, which smooths the signal.

Compatibility with triggers
- Integrated velocity process
- Adjustable trigger input level with a sensitivity parameter
- Wave Shaper to modify the velocity response curve
- Response with less than 2ms delay

Applications
- Music control
- Interactive installations
- Museums
- Dance and live performances
- Design of new instruments

Eobody3 PRO

Eobody3 PRO enables to combine modules to create a stand-alone interface with different input and output formats.

Eobody3 PRO is powered by Eobody Core and offers:
- Auto-save: settings are automatically saved between sessions.
- CV/DMX/USB/MIDI... outputs.
- Eobody editor: access to edit pre-mapping configuration and other pre-processing tools.
- All settings can be stored in Eobody3 non-volatile memory.