

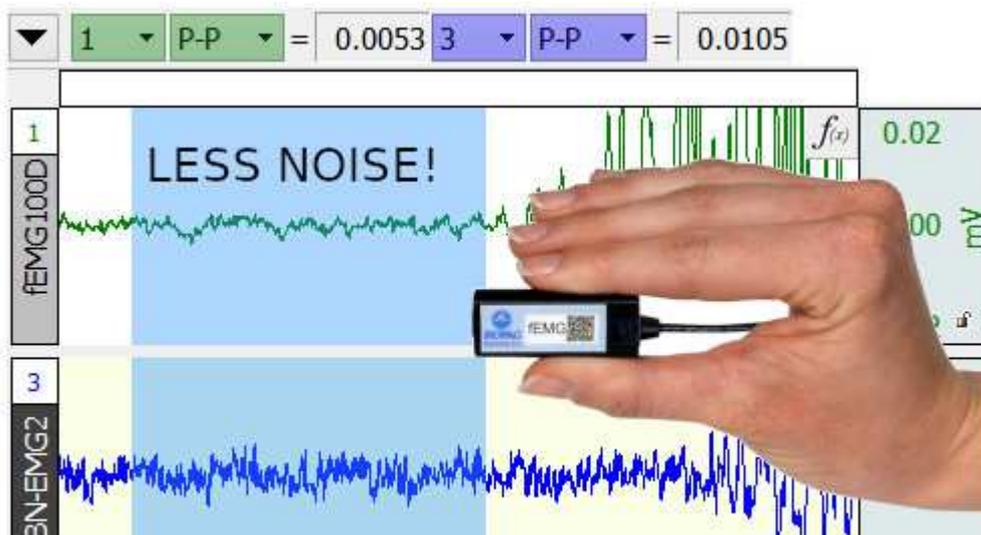


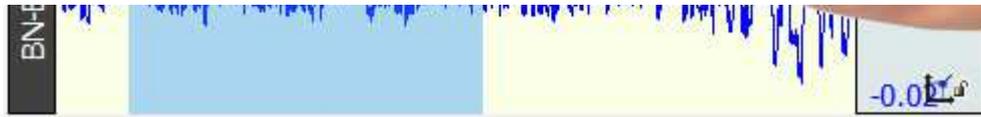
Newsletter from JoR Measurement

## Improved facial EMG with Smart Amplifiers

Biopac's new **Smart Amplifiers** moves the amplifier closer to the sensor/electrodes and are compatible with the same short cables and sensors used for the BioNomadix system. All biopotentials and most sensor signals are available in the Smart Amplifier version. We here explain the advantages and compare with the alternatives.

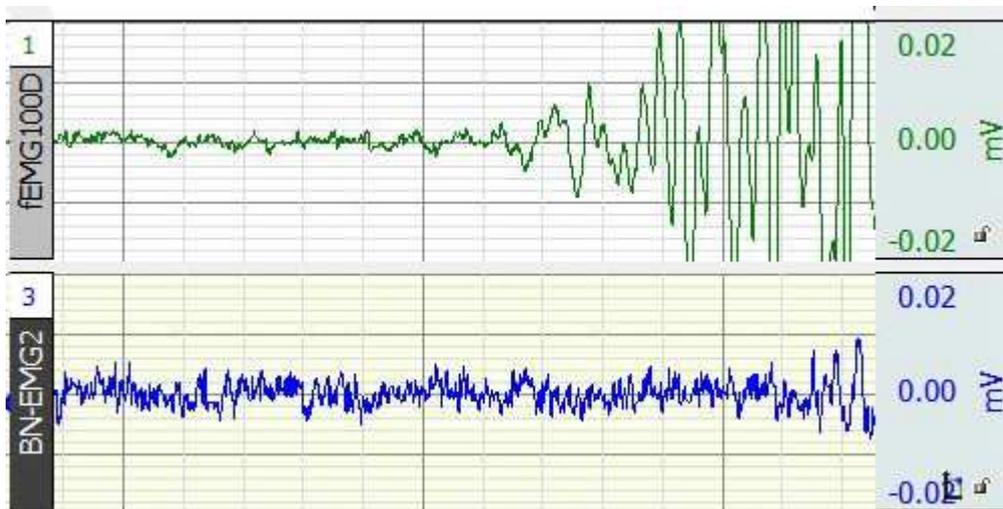
### Less noise when working with small signals





The new system has high resolution and updated amplifiers with less noise, as well as short signal cables, which gives higher signal-to-noise ratio (S/N). The small extra margins are relevant in applications where you often struggle with weak signal-to-noise ratios, such as facial EMG, but also EEG, EOG and ERS.

## JoR tests fEMG100D - about 50% less noise



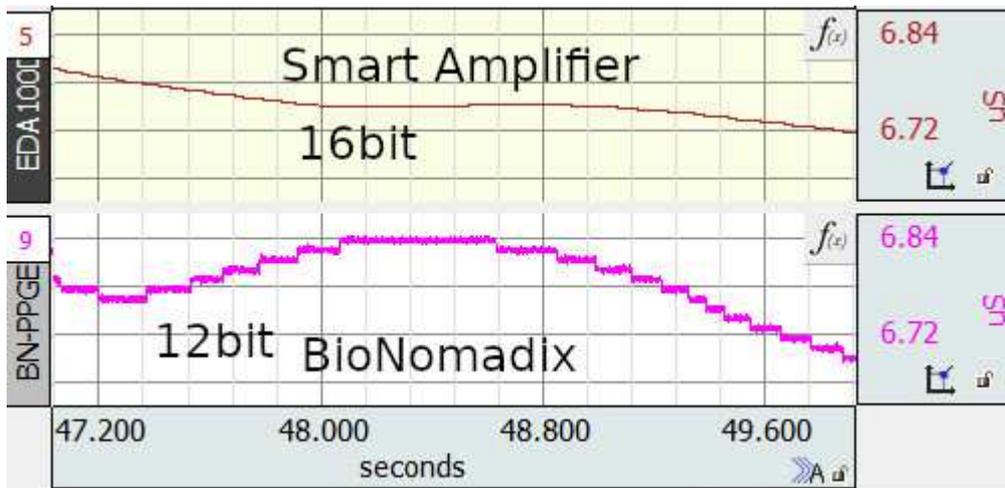
We decided to do our own single comparison test between BN-EMG2 and the new fEMG100D with regards to noise level, to get an indication of how much better it will be in practice.

The skin was first abraded ELPREP, then electrodes (EL654 / ADD204) were placed on Zygomaticus major (smile). We then did a series of voluntary smiles followed by relaxation, and then measured the noise of baseline during relaxation. The measurement with the different amplifiers were made in exactly the same way, one after the other, by moving only the signal cables to have identical conditions in electrode placement and electrode impedance. Both amplifiers had the factory setting of 10-500Hz during the comparison.

We then found that the noise level at baseline on the fEMG100D was about 50%

lower than on BN-EMG2, both when looking at Peak-to-Peak noise and the standard deviation.

## JoR tests EDA100D - high 16 bit resolution



Smart Amplifiers are sampled by the MP160 system, which has 16 bits A/D and provides higher resolution than the Bionomadix system in the applications where it is critical. We also did a simple test of this and took the EDA100D vs BN-PPGED as an example. We see that, although for most applications, this is not at all critical, it can be important in cases where for various reasons you want to analyze EDA and experiment with the lowest possible SCR threshold, for detecting the weakest sympathetic activations. However, the same increased resolution and potential benefits apply to all other signals found in Smart Amplifiers.

Automatic configuration and more portable!

**READ MORE ABOUT SMART  
AMPLIFIERS**



Welcome to contact us!

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*Don't hesitate to contact us at [biopac@jor.se](mailto:biopac@jor.se) with a short description of your situation and we are happy to give you tailored advice! We also have research systems with more features.*

*Skulle du föredra att få dessa nyhetsbrev på svenska i fortsättningen? Skicka ett mejl till [biopac@jor.se](mailto:biopac@jor.se) och meddela oss.*

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