

# Force Platform

## Data Sheet

Force Platform 02032017

### SPECIFICATIONS

- > **Axis:** 1(Z)
- > **Sensitivity:**  $\pm 0.05\%$
- > **Gain:** 491.605
- > **Consumption:** 56  $\mu\text{A}$  (per cell)
- > **Range:** up to 800 kgf (200 kgf per cell)
- > **Construction:** Aluminum

### FEATURES

- > 4 independent steel load cells
- > 360° protractor drawn on the top face
- > Increased resistance to deformations
- > Adjustable feet for manual leveling
- > High-performance feet design
- > Equidistant load cells (diagonally placed)
- > Separate signal conditioning per load cell for better signal-to-noise ratio

### APPLICATIONS

- > Center of gravity assessment
- > Biomedical research
- > Physiotherapy
- > Biomechanics
- > Rehabilitation research
- > Sports Research

### GENERAL DESCRIPTION

Center of gravity distribution, jump analysis, weight assessment and force production capacity, are just some of the applications where force assessment is important. Our robust yet lightweight 1D force platform enables uncompromised data acquisition both in lab and field measurements.



Fig. 1. biosignalsplux Force Platform.

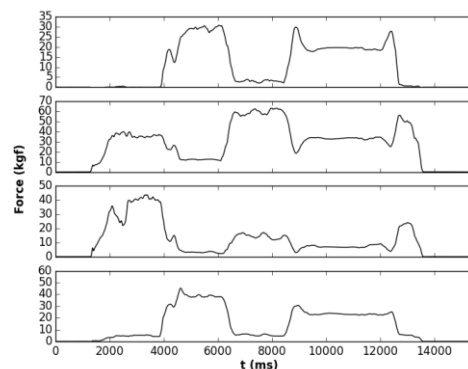


Fig. 2. Typical force platform output with one channel per load cell (acquired with OpenSignals)

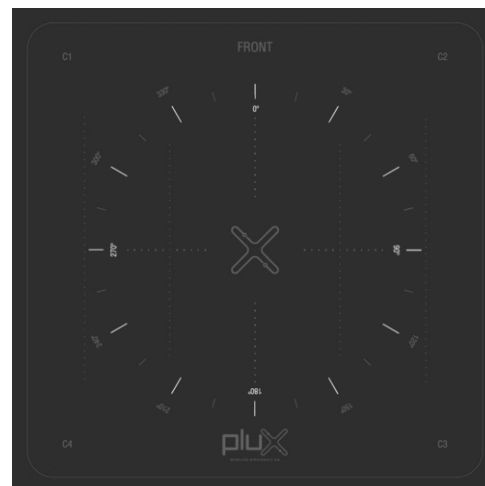


Fig. 3. Top face protractor installed on the Force Platform.

**biosignalsplux**  
wearable body sensing platForm

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### **TRANSFER FUNCTION**

[0 kgf, 200 kgf]<sup>1</sup>

$$\text{Weight (kgf)} = \frac{ADC \cdot C}{V_{FS} \cdot (2^{nbits} - 1)}$$

$$C = 406.831 \text{ kg} \cdot \text{mV/V}$$

$V_{FS}$  – Output voltage in mV/V @ 200kgf (factory calibrated value specific to each cell)

$ADC$  – Value sampled from the channel

$nbits$  – Number of bits of the channel<sup>2</sup>

### **CENTER OF PRESSURE**

[-225, 225] mm, [-225, 225] mm]

$$CoPx \text{ (mm)} = \frac{W}{2} \cdot \frac{C2 + C3 - C1 - C4}{C2 + C3 + C4 + C1}$$

$$CoPy \text{ (mm)} = \frac{L}{2} \times \frac{C2 + C1 - C3 - C4}{C2 + C3 + C4 + C1}$$

If  $C2 + C3 + C4 + C1 = 0$

then  $CoPx = 0$  and  $CoPy = 0$

$W = 450$  mm (platform width)

$L = 450$  mm (platform length)

$C1$  – Weight (in kgf) on the channel with the cable marked in blue

$C2$  – Weight (in kgf) on the channel with the cable marked in black

$C3$  – Weight (in kgf) on the channel with the cable marked in yellow

$C4$  – Weight (in kgf) on the channel with the cable marked in red

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<sup>1</sup> Per cell.

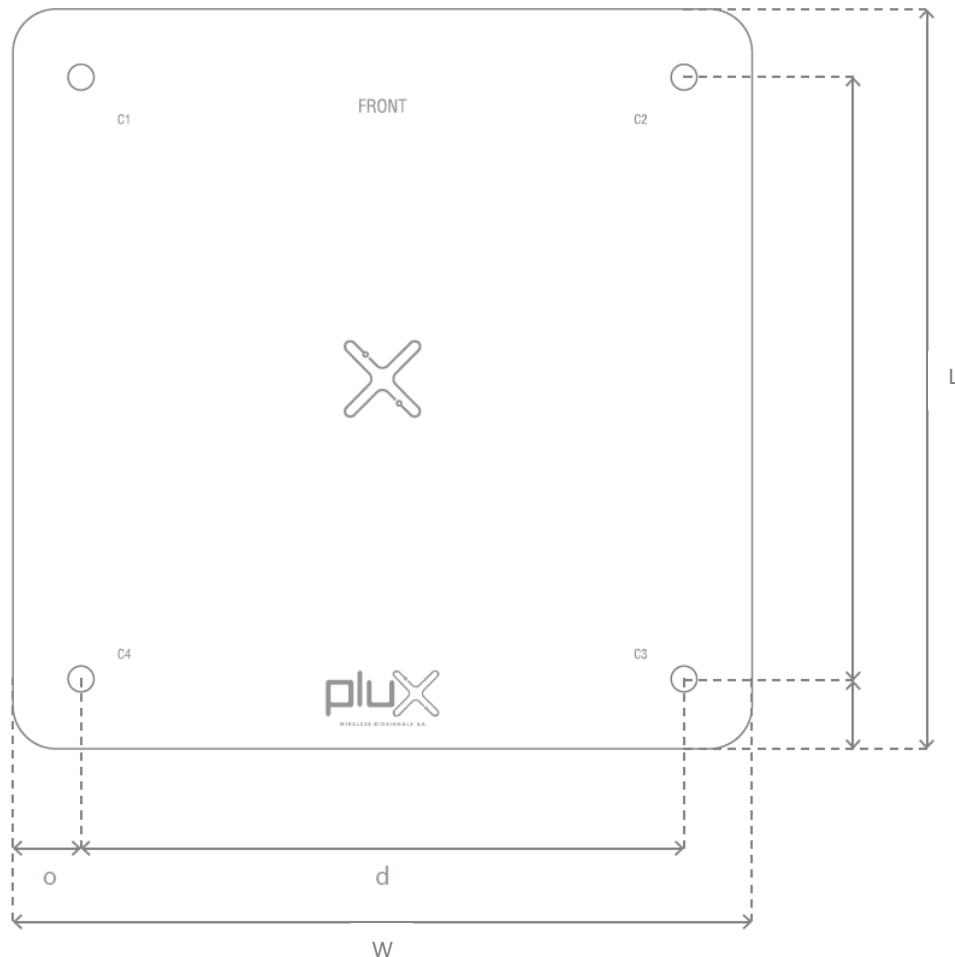
<sup>2</sup> The number of bits for each channel depends on the resolution of the Analog-to-Digital Converter (ADC); in biosignalsplux the default is 16-bit resolution ( $n = 16$ ), although 12-bit ( $n = 12$ ) and 8-bit ( $n = 8$ ) may also be found.

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### PHYSICAL CHARACTERISTICS

- > **W x L:** 45x45 cm
- > **Max Height (recommended):** 6.7 cm
- > **Min Height:** 5.8 cm
- > **Min Height (using the optional feet):** 4 cm
- > **Total Weight:** 9 kg



### ORDERING GUIDE

Reference	Package Description
SENSADV-FORPLAT1	Sturdy unidimensional platform with four independent load cells for jump, leg press, and similar setups.
BIOKITFSR1	Sturdy unidimensional platform with four independent load cells for jump, leg press, and similar setups, bundled with a wireless 4-channel hub for real-time wireless data acquisition and display or logging into an internal memory card.