Polhem Haptic Device Datasheet

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Workspace	> Ø150 mm x 242° doughnut shape (Fig 1) > 200 W x 120 H x 100 D mm box
Max Continuous Force	4.8 N – 9.7 N at nominal (0,0,0) position > 3.2 N throughout box 200x120x100 workspace
Max Peak Force	> 15 N at nominal (0,0,0) position, in all directions
Update Rate	> 3000 Hz (High-Speed USB)
Stiffness	> 2.5 N/mm stiff wall without vibrations, >5 N/mm possible
Main Computer Interface	High-Speed USB 2.0, on request: Sensoray PCIe DAQ
Manipulandum (stylus) Computer Interface	Through the main USB interface, on request: Bluetooth LE 60 Hz+/USB serial (1000 Hz).
Rotation Sensing	336°, 120°, 360° last axis infinite turns
Nominal Position resolution	0.05 mm (one encoder step at (0,0,0) position)
Gravity Compensation	Yes, active (optionally disabled)
Software and OS Support	Haptikfabriken API, H3D, Chai3D under Linux, Windows 10 and Mac OS
Physical Dimensions	Ca 185 W x 220 H x 340 D mm, 4.0 Kg, 4xM6 100x100 mounting holes
User Customizations	Royalty-free, open source, controller firmware and API. Stylus mechanical design open for modification.

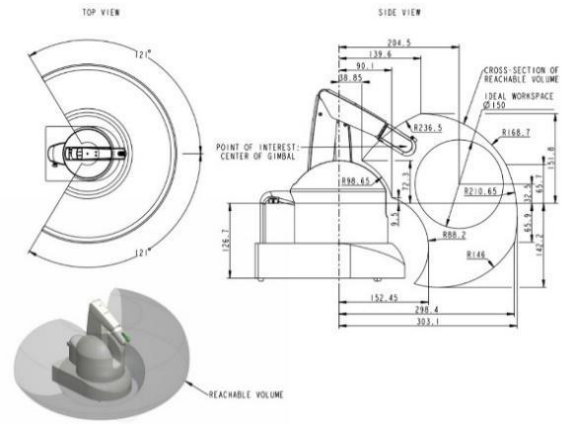

Figure . Detailed workspace. Doughnut-shape ideal workspace embedded in a larger rechable volume.

Polhem is a 6 degree of freedom (DoF) input and 3 DoF output haptic (force-reflecting) haptic device designed for modern computing environments. Standard *high-speed* USB enables high update rates for stiff and robust interaction. The internal structure is all made of metal for robustness and the device can operate with or without cover. The detachable manipulandum (stylus) can be easily customised and the Bluetooth version can be extended with e.g. buttons thanks to its independent wireless communication with the computer. Haptikfabriken also offers customisations of the whole device for particular applications and requirements, e.g. larger forces or workspaces, with low minimum order quantities thanks to modern digital fabrication methods.

HAPTIKFABRIKEN

SWEDISH HAPTICS FACTORY

www.haptikfabriken.com

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Example Applications

The Kobra Oral Surgery Simulator uses the Polhem haptic device, with a real dental hand piece as manipulandum. It is in use today at Taichung Medical University, Taiwan.

For more information about the Kobra simulator, visit www.kobrasimulator.com

Do you have a particular application in mind? Contact us to discuss possible ways to integrate or modify Polhem to fit your needs. E-mail info@haptikfabriken.com with your request today.