

Able is an exoskeleton haptic device, with up to 7 Active Degrees-of-Freedom
 Thanks to its **transparency** and **high efforts**, it enables a fluid interaction with digital models or remote controllers.



Virtual Reality # Teleoperation # Medical

4 TO 7 ACTIVE DEGREES-OF-FREEDOM

- ✓ Able is available in 3 configurations:
 - ✓ Able 4D: Exoskeleton for the shoulder and elbow
 - ✓ Able 5D: Able 4D with pronation & supination at the wrist level
 - ✓ Able 7D: Able 5D with 3 active Degrees-of-Freedom at the wrist
- ✓ Removable handle, equipped with programmable buttons
- ✓ Proximity sensor connected to a dead-man function
- ✓ Ethernet/UDP communication system
- ✓ Set on a mechanical stand, or with a dedicated stand adjustable in height (adjustment by hydraulic cylinder in option)
- ✓ Software interface:
 - ✓ Dedicated plug-ins for: 3DExperience™, Catia™ & Delmia™ V5, Solidworks™
 - ✓ Drivers (binary and/or source code) available for: Python™, ROS™, CHAI3D™, ODE™, Matlab Simulink™
 - ✓ By Partner: Unity3D™

CEA License



TECHNICAL

Upper Arm length	275 to 325 mm
Forearm length	220 to 245 mm
Translation force continuous	37 N (50 N maximum)
Rotation force continuous	3 N.m (5 N.m maximum)
Position resolution	0.001 mm
Rotation resolution	0.003 °

ELECTRICAL

Power supply	100-240 VAC 50/60Hz single phase
Consumption	Average consumption 200W Able 4D Max consumption: 540W Able 7D Max consumption: 1240W

SOFTWARE

Maximum translation stiffness	7000 N/m
Maximum rotation stiffness	110Nm/rad
Update Rate	1000 Hz