

AVATAR TROCAR

4DOF tracking device for laparoscopic VR simulation

DATA SHEET



FEATURES

- Tracks laparoscopic instruments (Avatar Instruments) in **4 degrees of freedom** (yaw, pitch, insertion and twist).
- Can also track **Ø3–5 mm real laparoscopic instruments**.
- Insert in any **silicone manikin** or use with an **Avatar Trocar Gimbal**.
- Simple and intuitive **portal setup and calibration**.
- Can be used with Avatar family components **Port, IBox, Scope, Instruments**.
- **Detects and identifies Avatar Instruments** (like the Avatar Port).
- High **positional accuracy** and **low noise**.
- **USB-connected** (cable).

For more information on the instruments, see the Avatar Instruments data sheet.

4DOF

Yaw, pitch, insertion and twist

0.0055°

Yaw and pitch resolution

3.6 μ m

Insertion resolution

1000 Hz

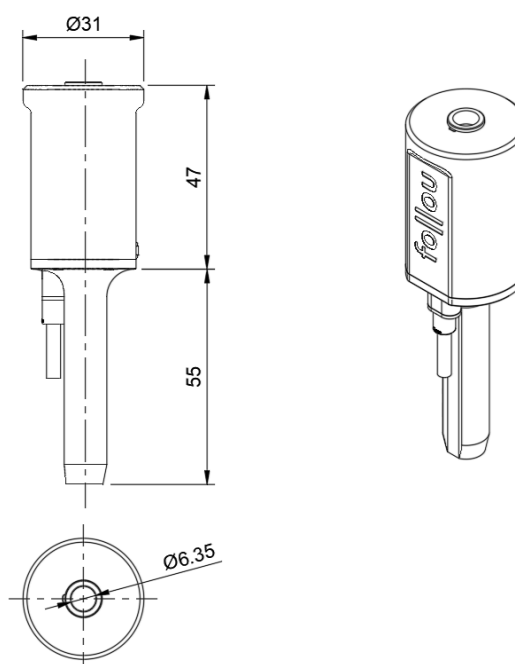
Max update frequency

SPECIFICATIONS

PROPERTY	SPECIFICATION	CONDITIONS
Instrument passage diameter	Ø6.4 mm	Tracks Avatar Instrument shafts. Can also track Ø3–5 mm real laparoscopic instruments in yaw, pitch, insertion, twist (but not handle opening).
Applications	Laparoscopy, arthroscopy, thoracoscopy (VATS)	Virtual reality simulation training
Minimum distance	~35 mm	Smallest physical distance between two trocars. Can be used for pediatric surgery simulations.
Yaw and pitch resolution	0.0055°	
Insertion resolution	3.6 µm	
Twist resolution	0.065°	
Yaw and pitch range	Unlimited	Limitations are instead determined by the manikin / gimbal.
Insertion range	Unlimited	The instrument shaft length is the limitation.
Twist (roll) range	Unlimited	The instrument can be twisted/rotated infinitely.
Communication	USB 2.0 high speed	The trocar communicates over USB 2.0 high speed. The default cable length is 0.9 m.
Max update frequency	1000 Hz	For use in frame rate or haptics rate.
Update latency	35 µs	Total update time needed in the physics thread.
Weight	100 g	
Functional features		Instrument detection and identification (if the shaft has an identification tip) One button press portal selection and calibration LED-light (in the instrument passage) for status indication
Connectors	USB-Micro B	For communication.

DIMENSIONS

Dimensions in mm.



100_g

Weight