atracsys
MEASUREMENT SOLUTIONS

fusionTrack 250

Real-time high-speed 120 Hz and low latency 4 ms
High-precision 90 µm RMS up to 1.4 m
Ethernet connection for both data and power (PoE+)
Open system complete access to images and data
Active and passive markers tracked simultaneously

The fusionTrack 250 is a passive and active, real-time optical pose-tracking system specially designed to detect and track reflective spheres, disks and IR-LEDs in real-time video streams. The fusionTrack is composed of two cameras that observe reflective and/or active fiducials (IR LEDs) simultaneously, and it uses triangulation to calculate their locations with unrivalled precision and with an unparalleled non-interpolated measurement rate of 120 Hz. When several fiducials are affixed to a marker, the system can determine its pose (position and orientation) with 6 degrees of freedom (x,y,z,α,β,γ).

The fusionTrack SDK enables access to data in real-time at different stages of processing, including raw images, individual 3D positions of fiducials (reflective spheres and disks / IR-LEDs) and up to the pose of markers. The SDK also provides multi-level fault checking. It allows access to error information in real-time at any processing stage: fiducial occlusion level, stereo de-calibration, marker registration error and more.

The fusionTrack can be customized to fit your requirements (e.g. precision level, acquisition speed, working volume, extensions). Moreover, the system is compatible with existing passive image-guided surgical tools that are widely used in the medical field.

Active markers

Navex - Passive markers

About us

Optical Measurement Solutions since 2004.

Atracsys designs, develops, certifies and industrializes real-time image processing systems for embedded applications and optical metrological systems according to the ISO 13485 medical quality system. Since 2004, our high-speed optical measurement systems have been helping surgeons all around the world to guide their instruments with sub-millimetric precision for better patient outcomes. Atracsys solutions are used whenever measurement accuracy, speed and reliability are required.

Atracsys
Route du Verney 20
CH-1070 Puidoux

Web www.atracsys-measurement.com
Email info@atracsys.com
Tel +41 21 533 09 00

SWISS MADE

Benefits

Real time, high-speed (120 Hz), low latency (4 ms) - High performances unlock applications never imagined before.

High-precision (90 µm RMS at distances up to 1.4 m) - The fusionTrack provides maximal precision after warm-up.

Multi-level fault checking - This feature gives real-time access to several levels of error information, ranging from the fiducial occlusion, stereo left-right match, stereo de-calibration, marker registration error and more.

Hardware

Swiss-made quality guarantee - The fusionTrack is entirely designed, engineered, manufactured and verified by Atracsys in Switzerland according to the ISO 13485. Atracsys tracking systems have already been integrated into demanding surgical and industrial applications for over 10 years.

Highly customizable - Our technology can be customized to fit your requirements (i.e., precision level, acquisition speed, working volume, extensions). The fusionTrack is compatible with existing image-guided surgical tools that are widely used in the medical field.

Passive and active markers

Atracsys proposes a vast choice of passive and active markers designed and manufactured using the best available materials. Superior manufacturing ensures higher tip precision for the instrument, probe or tool. Multiple fixing points, clamps and other accessories make it easy to fix the markers to specific tools or instruments.

Passive and active markers are available both disposable and reusable. Passive markers are available in carbon and titanium. Selected models can be sterilized in an autoclave, are medically certified and bio-compatible. Active markers are either available in a wireless version (polymer, stainless steel) or wired version (medically compatible polymer).

Passive markers with reflective spheres - Atracsys proposes 5 different high-quality markers with unique geometries, a calibration marker, and several accessories (clamps, probe, sterilization basket). The geometry of our markers is pre-integrated into the provided SDK, so no configuration is required to use them.

Passive markers with reflective disks - Thanks to Atracsys Navex patented technology, build your own passive markers with disposable reflectives disks. It takes just minutes to integrate them into your application using the SDK marker calibration application.

Active wireless/wired markers with IR-LEDs - With no additional hardware, the device can track wireless or wired active markers. The wireless marker development kits enable custom built wireless active markers that perfectly fit your requirements.

Technical specifications

Hybrid tracking	Reflective spheres / disks, Active wired and wireless
Acquisition	Parallel (all fiducials at the same time)
Resolution	2.2 Mp
Max. simultaneous markers (1)	Almost unlimlited
Max. fiducials per marker	5
Interface	Gigabit Ethernet 1000BASE-T (IEEE 802.3ab)
Generic extension port	Trigger in/out, timestamp retrieval
SDK	C (DLL)
Operating systems	Windows / Linux
Mounting	4 x M4 screws
Power requirements	Power over Ethernet (PoE+ IEEE 802.3at-2009 type 2): 48V 0.6A 25.5W
Operating temperature	15-25°C
Shock sensor	Shock sensor and RTC monitoring device even when not connected
Approvals	Electrical safety IEC 60601-1 ed3.1 (2012-08-20) Electromagnetic compatibility IEC 60601-1-2 ed 4.0 (2014) CB-Report available

Models specifications

	fusionTrack 250
Size	294 mm x 86 mm x 99 mm
Weight	1.28 kg
Accuracy (2)	0.09 mm RMS up to 1.4 m 0.20 mm RMS up to 2.0 m 0.27 mm RMS up to 2.4 m 0.18 mm 95% CI up to 1.4 m 0.40 mm 95% CI up to 2.0 m 0.54 mm 95% CI up to 2.4 m
Tracking volume	Starts at 400 mm
Measurement rate	120 Hz (3)
Latency	~4 ms (4)

(1) 16 max recommended to preserve full speed.
(2) Based on a single fiducial stepped uniformly throughout the measurement volume at 20°C.
(3) non-interpolated
(4) 3ms image acquisition + ~1ms processing time & data transmission.

Atracsys reserves the right to change or modify any information or specifications without notice.

Working Volume