Accurate.Reliable.Tracking.

ART ▶

OUR PRODUCTS

ART motion tracking systems are designed and built with a strong German quality ethic, which means that accuracy, reliability and stability are designed into our products from the start. Our customers in the primary markets of Industrial Visualisation and Academic Research demand no less.

ART has been focussing on the VR market ever since which becomes visible in the products we develop, like for example the very successful Cave camera variant, now being in the third generation (ARTTRACK5/C).

TRACKING CAMERAS

GENERAL

ART cameras have been designed specifically for installation into complex systems where space is limited. And to make system set up even easier, all cameras now connect to the ART Controller with a single cable*.

The major benefit is that systems are calibrated upon installation, and provided that the cameras are not moved, will not need to be touched for extended periods. This is particularly useful for manufacturing or research applications because it means that systems are always ready for use with minimal preparation.

Key features:
▶ single cable*
▶ driven by ART Controller*
▶ support for active and passive targets
▶ noiseless, no fan*
▶ no visual distraction due to invisible IR (850nm)
▶ BYOT (bring your own target)
▶ 6DOF tracking data
▶ combination and upgrade possibilities*
▶ external synchronisation for stereo glasses

ARTTRACK5	ARTTRACK5/C	TRACKPACK/E	SMARTTRACK

SPECIAL FEATURES

ARTTRACK5
▶ integrated image processing
▶ alphanumeric display
▶ frame rate up to 300 Hz
▶ sensor resolution 1.3 MP
▶ extreme wide angle operation
▶ large volume
▶ easily and completely scalable

ARTTRACK5/C
Based on the ARTTRACK5 it provides the same features plus:
▶ separate lens head and electronics box
▶ ideal for multi-sided projections
▶ extremely discrete visual appearance – diameter of only 36.5 mm
▶ variability thanks to 60 cm cable between head and box

TRACKPACK/E
▶ cost-efficient
▶ small size
▶ frame rate up to 120 Hz
▶ sensor resolution 1.1 MP
▶ up to 8 cameras connect directly to ART Controller
▶ can be mixed and matched with ARTTRACK5(/C)

SMARTTRACK
▶ integrated image processing and tracking data calculation
▶ frame rate up to 60 Hz
▶ plug & play tracking solution for small volumes
▶ pre-calibrated and ready to use
▶ the ideal mobile, out-of-the-box tracking system

TECHNICAL DATA

	ARTTRACK5	ARTTRACK5/C Head	ARTTRACK5/C Box ***	TRACKPACK/E	SMARTTRACK
Size (mm):	100 x 100 x 92	Ø36.5, L = 67	100 x 100 x 55	70 x 59 x 97	410 x 90 x 60
Weight:	950 g	160 g	540 g	475 g	1.25 kg
Frustum:**	100 m³	50 m³		60 m³	4.75 m³
Standard focal length:	f = 3.5 mm	f = 4.0 mm		f = 3.5 mm	

USE CASE

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DTRACK2/CONTROLLER

DTRACK2

The "heart" of any ART tracking system controlling all functions and performing the necessary calculations.

▶ DTrack2 backend software runs on ART Controller
▶ DTrack2 frontend software (GUI) controls backend remotely
▶ visualises the view of each connected camera
▶ tracks 50 6DOF targets simultaneously
▶ free SDK for integration into media control systems

ART CONTROLLER

▶ embedded Linux with DTrack2 backend
  ▶ performs all calculations
  ▶ processes the image data in TRACKPACK systems
  ▶ stores all system settings and configurations
▶ hosts up to 8 cameras
▶ compatible to ARTTRACK1/2/3 (with additional synccard)
▶ rackmount (19") possibility

Size (mm): 480 x 345 x 135 (3U)
Weight: 9,75 kg

* Except for SMARTTRACK   ** with 12mm spherical markers   *** not displayed in picture

Our unique range of tracked input devices supported by sophisticated software utilities means that we provide best possible integration with your immersive virtual environment. Our broad range of adapted targets for different brands of stereo glasses shows our special dedication to the VR market.

Or you can bring your own target (BYOT) and track it with any of our systems. We are happy to assist in defining proper geometries for your custom targets.

INTERACTION DEVICES

To navigate and interact with the Virtual Reality special devices are necessary.

To make this as easy and intuitive as possible, ART has developed several unique interaction devices for use in Virtual Reality projections, such as Flysticks and Fingertracking.

MARKERS & TARGETS

For different requirements you might need different markers. The same applies to the use of different targets.

Therefore we develop and produce our own types at ART.

For full body Motion Capture we provide a complete body segment based target set designed to be worn over normal clothes which is available as an optical or hybrid version.

ADDITIONAL SOFTWARE

Developing the necessary software components in-house provides us with a lot of flexibility with regards to introducing new features or enhancing the software itself. It also provides us with the possibility to create important additional tools that are beneficial for our customers.

Besides DTrack2 we supply ART-Human for Motion Capture applications or the ART Satellite Merger for extending tracking volumes into previously untrackable spaces.

FLYSTICK2

▶ six buttons
▶ analogue joystick
▶ protected passive target
▶ five different geometries
▶ data supported by trackd, VRPN, VR Juggler and most applications with direct interfaces
▶ available in both a wireless and a wired version

MARKERS

▶ spherical
▶ coated spherical
▶ flat (i.e. stickers)
▶ active flat:
  ▶ long range
  ▶ outdoor
▶ single LED markers:
  ▶ short range

ART-HUMAN

▶ calculates a human skeleton model with a simple calibration procedure
▶ fast automatic bone-length-calibration (< 1 min)
▶ full inverse kinematics
▶ uses DTrack2 output
▶ interfaces data via VRPN, 6dj, C3D or BVH and to Siemens Jack
▶ supports the ART Fingertracking system

FLYSTICK3

▶ four buttons
▶ analogue joystick
▶ light-weight wireless interaction device
▶ charging unit
▶ two different passive target geometries

TARGETS

▶ passive
  ▶ glasses targets
    ▶ one size fits all (generic targets)
    ▶ adapted clip-on for dedicated stereo glasses
  ▶ hand & tree targets
  ▶ customised targets
▶ active
  ▶ usually customised
  ▶ evaluation kit available

ART SATELLITE MERGER

▶ for extending your tracking volume into occluded compartments, such as the interior of a car
▶ compensates for potential movement of the compartment
▶ typical ART output data stream

FINGERTRACKING

▶ allows you to track the orientation of the hand and the position of the fingers in high accuracy
▶ tracking frequency 60 Hz
▶ fingers are tracked at 20 Hz (3 finger version) or at 12 Hz (5 finger version)
▶ more hygienic than a glove
▶ up to four hands supported per volume
▶ available as a three or five finger version

MOTION CAPTURE

▶ individual 6DOF targets – no lycra body suit needed!
▶ 6DOF targets track the body's limbs
▶ absolute position of the human is provided
▶ compatible with Fingertracking

SOFTWARE DEVELOPMENT KIT (SDK)

▶ enables you to create your own interface to DTrack2 in your application program
▶ receives and processes data packets (UDP, ASCII)
▶ exchanges command strings (TCP, ASCII)
▶ offers sample source codes for Unix and Windows

WHO IS ART?

ART is a leading manufacturer of high-end optical tracking systems for Virtual and Augmented Reality. ART systems have been optimised for the Design Visualisation market, with the biggest sector worldwide being the automotive industry. Based on our customer list, we believe that 80 % of all new car designs are digitally prototyped using ART systems.

Founded in 1999, ART became one of the most important suppliers of infrared optical tracking solutions for the automotive and aerospace industries, and for research institutes and universities. Our customers choose ART systems because we provide the following primary assets needed for trouble-free operation as part of an integrated large screen visualisation system: accuracy, reliability and stability.

ART's quality management is certified by TÜV SÜD for ISO 9001:2008, the most widely used and recognised international standard.

USE CASES

ART tracking devices are optimised for the use in VR/AR installations. The determination of position, orientation and motion of objects is the basic premise for 3D visualisations. Application examples are virtual prototyping, ergonomic research, quality management and training. Most important users are the automotive and aerospace industry as well as academic and research institutes.

VIRTUAL REALITY
Virtual Reality (VR) is a computer generated world in which the user can perform tasks using real world movements and actions. The user sees a stereo image and is able to judge distances and proportions. He can also use his hands to manipulate virtual objects. For a realistic interaction with the virtual content, accurate and reliable motion tracking technology is a necessity.

AUGMENTED REALITY
Augmented Reality (AR) combines the physical and the virtual world in a very precise way. By tracking a video camera the virtual data can be superimposed on a physical prototype.

MOTION CAPTURE FOR ERGO-NOMIC INVESTIGATIONS AND PRODUCTION PLANNING
"Motion Capture" is the technique of digitising the movement of people, animals or objects. In the case of the ART Motion Capture system, targets are attached to the subject's limbs (no need for lycra body suits!) and the data is captured by performing a range of movements in front of an array of pre-installed cameras.

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