



- Position and orientation measurement with high accuracy
- Short latency, fast data communication via Ethernet
- Flexible system with fast calibration
- Scalable system: up to 16 cameras
- Robust against magnetic, electric and acoustic interference
- No optical crosstalk between cameras
- Targets with 4 or more markers (rigid bodies) provide 6 degree of freedom tracking
- Up to 20 objects tracked in 6DOF with individual identification
- Easy calibration of custom-built targets
- Passive targets without batteries or cables
- Active wireless targets available, synchronization by modulated IR signals

The optical tracking system ARTtrack & DTrack consists of tracking cameras ARTtrack2 or ARTtrack3, targets and the PC software DTrack.

At its price level it presents excellent value as one of the most accurate and flexible systems on the market.

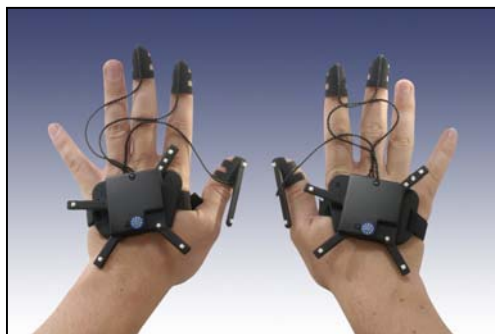
## IR optical tracking systems for

- Virtual Reality/Augmented Reality
- Industrial measurement
- Medical and ergonomic applications

## Flystick2

Interaction device for Virtual Reality applications

- wireless transmission (ISM band)
- 6 buttons
- analog joystick
- passive target with protected markers

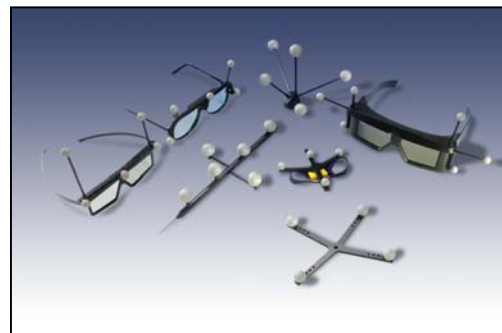


## Fingertracking

- lightweight solution for assembly and ergonomic studies
- precise measurement of finger tip positions
- wireless: active target with IR synchronization
- hygienic: no glove
- tactile feedback under development

## Tracking Targets

- lightweight passive targets for active and passive stereo glasses
- for head, feet, hands, knees, elbows...
- pointer for coordinate measurement
- customer specific targets:
  - medical instruments, HMDs, outdoor tracking, robot arms, ...
- customers can build own targets



## Tracking camera ARTtrack3:

- tracking volume up to 300m<sup>3</sup> with passive markers
- no fan

## Tracking camera ARTtrack2

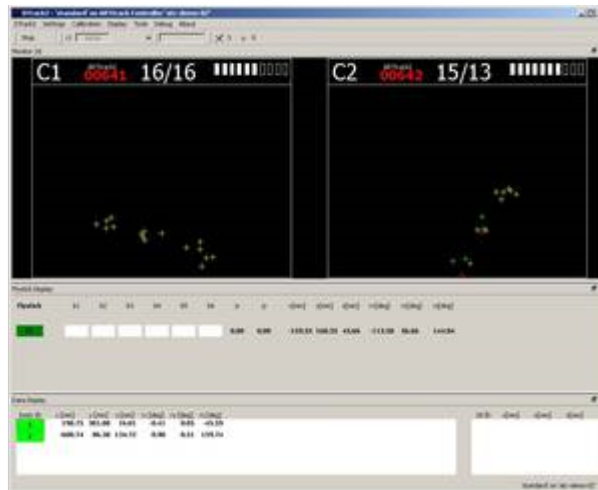
- for smaller tracking volumes
- large volumes with active targets
- special solution for CAVE® available

## DTrack2

### Overview

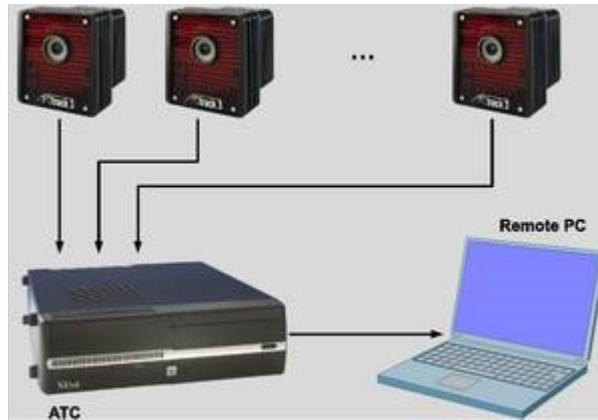
The A.R.T. software DTrack2 controls all functions of the entire tracking system:

- Calibration of room and targets
- Calculation of single marker positions (3DOF)
- Body identification and 6DOF calculations
- System administration



### Basic principle

With the introduction of DTrack2 a new principle of controlling the tracking system is implemented. The tracking system itself consists of cameras, interaction devices, targets and the new ARTtrack controller (ATC). The software DTrack2 consists of Frontend and Backend software. The Frontend software is installed on a remote PC which is connected to the ATC via ethernet. A GUI for easy handling enables the user to control the tracking system completely from the remote PC. The benefit is that the system becomes more flexible (i.e. different users sitting at different working places can control the tracking system at any one time). In the future ABCMan, DTrack Recorder and other tools can be integrated. The Backend software, which is Linux-based, runs on the ATC - all necessary calculations (3DOF, 6DOF data, . . .) are done by the ATC. The data is interchanged via a TCP/IP connection between the ATC and the remote PC.



### DTrack2 - detailed information:

The following list represents an extract of DTrack's capacity:

- **NEW!** ATC is controlled remotely by a PC on which the Frontend SW DTrack2 is installed
- **NEW!** Remote control through the exchange of short command strings (ASCII) via TCP/IP even without the DTrack2 Frontend SW. Command strings can be embedded in media control or custom software to control the tracking system, e.g. configurations can be loaded remotely.
- **NEW!** Force the ATC to go into standby mode
- **NEW!** License management
  - Within DTrack2 the three main licenses - Basic, Extended and Full-featured - which define the capability of the tracking system can be controlled.
    - Basic: Intended for the TrackPack user who doesn't want to calibrate targets on its own. This license is not available for ARTtrack2/3.
    - Extended: Intended for the TrackPack user who needs to calibrate targets on its own and who wants to use the measurement tool. This license is also available for systems with two ARTtrack2 or two ARTtrack3 cameras, respectively.
    - Full-featured: Intended for systems with more than two and up to 16 ART-track2/3 cameras. This license is not available for TrackPack systems.
      - Functionality for interaction devices like the Flystick2 or Fingertracking can be added by entering a license code in DTrack2.
- **NEW!** It is possible to create different configurations, e.g. with different targets or flash settings. These are related to the name of the user and, thus, are easily assignable.
- **NEW!** Update of the cameras via Frontend
- exact and fast room calibration and fast body calibration (see room calibration and body calibration)
- after changes of the camera positions the system is ready for use in a few minutes
- simultaneous detection and tracking of up to 20 rigid bodies (targets)
- additional single 3DOF markers can be recognized and tracked
- the Monitor Mode represents 2D camera coordinates and makes the system setup more comfortable and revisable
- a set of adjustable parameters for each attached camera supports the adaptation to different tracking volumes and requirements: i.e. flash brightness
- integration of the Flystick and direct transfer of space coordinates, rotation and simultaneous transfer of pushbutton events with the output data
- data output via ethernet

## ARTtrack2: Overview

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[Technical Data](#)   [Mounting](#)

The ARTtrack2 IR-camera is a good solution for distances up to 4 meters. With the standard 3.5 mm lens a large field of view (FOV) is covered. The maximum frame rate is 60 Hz. Intensity of the built-in IR-flash is adjustable in eight steps. These main functions are controlled via A.R.T.'s software DTrack.



## Standard Accessory

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### Camera ARTtrack2 is delivered with:

- 1 power cord, 8m,
- 1 power supply (100–240 Volt, 50/60 Hz),
- 1 ethernet cable  
*standard: 15m,*
- 1 BNC cable  
*standard: 15m,*
- 1 BNC T-junction,
- 1 BNC terminator resistor,
- 1 ceiling suspension D2,
- focal length according to customers requirements  
*standard: 3.5mm.*

## ARTtrack2: Technical Data

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[Overview](#)   [Mounting](#)

### Measurement principle

infrared optical tracking camera, to work with passiv or active markers  
integrated pattern recognition unit

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### IR source

built in IR LED flash, wavelength 880nm  
flash energy adjustable in 8 steps (controlled by software DTrack)

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### Performance

frame rate	max. 60 fps (adjustable)
working distance	up to 4 m with passive markers, depending on marker size
max. # of 6DOF targets (60fps, simultaneously)	20 (fast mode), depending on marker size 2(accurate mode), depending on marker size

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### Field of View (FoV)

#### available focal length FoV

focal length 3.5 mm	horiz: 72.8 deg, vert:58.2 deg
focal length 4.5 mm	horiz: 57.9 deg, vert: 45.3 deg
focal length 6.0 mm	horiz: 42.9 deg, vert: 33.0 deg
focal length 8.0 mm	horiz: 33.9 deg, vert:25.8 deg
focal length 12.0 mm	horiz: 22.2 deg, vert: 16.8 deg

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### Cable connections

synchronization	BNC, 75 •
data out	100 MBits

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### Power supply

voltage	12 Volt (external power supply 100-240 Volt, 50-60 Hz)
power consumption	approx. 15 W

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### Dimensions

size	109 mm x 78 mm x 120 mm
weight	0.96 kg

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### Certifications

IEC 60950-1:2001, EN 60950-1:2001, TR 60825-9:1999  
UL 60950-1:2003, CAN/CSA-C22.2 No. 60950-1:2003

## Flystick2: Overview

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[Technical Data](#)   [Multiuser Option](#)

Flystick2 replaces our old Flystick as a wireless interaction device for virtual reality (VR) applications. It is enhanced with 6 buttons and an analog joystick.

Software DTrack takes up the Flystick2 button & joystick events and correlates them with the 6DOF output data. This makes the matching of all data very comfortable and easy.



## Standard Accessory

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### Flystick2 comes with:

- 1 power supply for charging (100-240 Volt, 50-60 Hz),
- 1 battery pack,
- 1 transmitter,
- 1 power supply for transmitter (100-240 Volt, 50-60 Hz),
- 1 Ethernet cable.

## Flystick2: Technical Data

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[Overview](#)   [Multiuser Option](#)

### Radio module

type ID            IEEE 802.15.4

frequency            ISM frequency range available: 2400.00 – 2483.50 MHz  
8 channels

transmission power 1

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### Flystick2

rechargeable battery    3 standard AAA batteries  
continuous operation at least 10 hours without rechargin

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### Transmitter

connection to the PC    Ethernet

electric power supply    external power supply DC 24V, 400m