

# Articulograph AG501

Most precise EMA device for reliable 3D-recording of speech movement inside the mouth

## Description and technical specifications:

- A prominent method to record articulation, captures movements in three dimensions with a high temporal resolution by tracking tiny sensors attached to speech articulators such as the tongue, teeth, and lips
- **1250 Hz sampling rate and up to 24 channels**
- Dynamic positional accuracy as precise as 0.3 mm (RMS)
- Certified noise and interference immunity (IEC DIN EN 61326-1), usable within non-shielded rooms
- **1 MHz** high speed data acquisition for slow motion data analysis
- All-in-one-system with a stand, calibration system, computer, various software, and the necessary acoustic equipment for synchronous sound recording



## Application:

- Assessment of speech motor behaviour in individuals with Parkinson's disease, apraxia, dysarthria, or functional speech motor problems as found in stuttering.
- Linguistic and forensic research of speech phenomena.

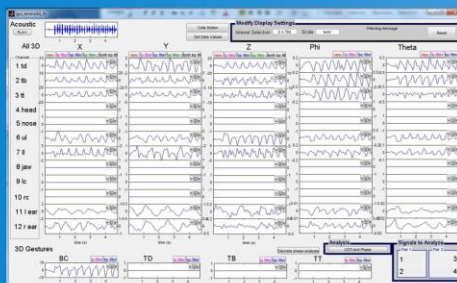


## Multi-usable small sensors:

- Very flexible Noso-Free® coated cable
- Shielded against interferences
- Easy to use connectors

## Service & community:

- Free hard- and software-support via Skype and e-mail
- Dedicated user platform (AGWiki) provided by Carstens:
  - Exchange experiences, discuss issues, find information
  - Active community – free evaluation software
  - Articulograph International Steering Committee (AISC)



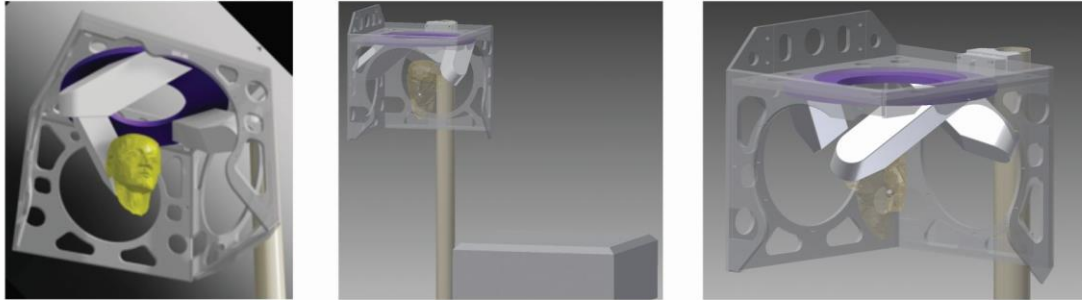
Data analysis with EGUANA  
(by P. van Lieshout, <http://oraldynamicslab.ca>)

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# Articulograph AG500 Upgrade

## turn the AG500 into the new AG501



Carstens offers the opportunity of an upgrade which will turn the Articulograph AG500 into a device with a similar usability and exactly the same accuracy as the AG501. After the upgrade, the modified AG500 uses the same electronics and software as the original AG501. The costs for this upgrade are lower than the costs for a new AG501. Therefore, it is also a cost-effective solution for those with a small budget.

### **Necessary modifications:**

- Replacement of all the electronics inside the carrier including the LIDA-computer
  - Removal of the transmitter coils and trimming of the EMA-cube
  - Equipping the helmet with a new transmitter holder
- The AG500 housing and the circular calibration unit remain.

### **The new specifications after the upgrade:**

Each of the new receiver units comes with 8 channels. Up to three units can be inserted which makes it 8 to 24 channels in total. A further upgrade of the number of channels is possible at any time. The user can choose between sample rates of 250Hz and 1250Hz. The original data acquisition rate is 1 MHz. The upgraded transmitter unit controls the 9 transmitter frequencies.

### **Result:**

The upgraded device may not look like the AG501 but has exactly the same technical standard! It contains all of the AG501's electronics just with a different housing and helmet.

# Articulograph dual arrangement for the simultaneous recording of two subjects



## Dual arrangements

Dual arrangements, i.e. a set up with two Articulographs, are becoming increasingly popular. They allow to record two subjects at the same time. This is useful if spontaneous speech is to be examined. For the Articulograph, there are two options to get a dual arrangement:

### AG500 / AG501 setup

It is possible to combine an AG500 with the new AG501. This gives owners of the AG500 the opportunity to supplement their setup with the AG501. The devices use different frequencies so that interference is no issue.

### AG501 / AG501 twin setup

The new AG501 can be combined with the AG501 **twin**. The **twin** comes with a different set of frequencies.

## Requirements

The minimal distance needed is just 1.6m. If that distance is kept, the devices will work properly.

# The Articulograph - Carstens Medizinelektronik products

AG100



1988

AG500



2002

AG501

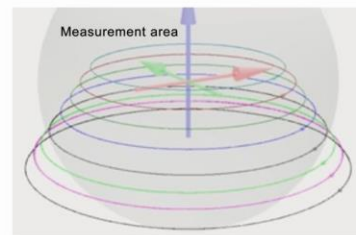
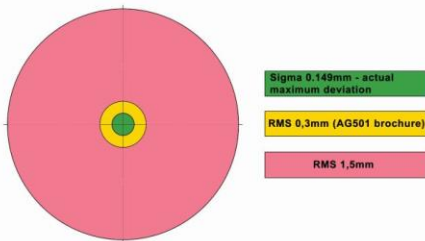


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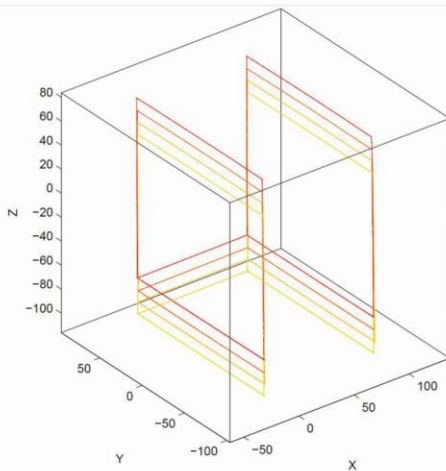
## The new high-precision Articulograph AG501 with 1250Hz and 24 channels

- Completely redesigned device with user friendly hard- and software
- The ergonomic housing with all the new precise electronics and the calibration unit guarantees reproducible and accurate results

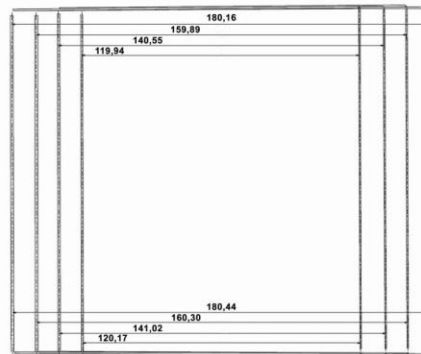
## Examples of the accuracy of the device



Circular circles with different radii in different heights



Four sensors were moved by 150/100mm using a robot



Deviation of the parallelism of the measurement to the left



Display of a line within a cuboid of 2,5 x 200 x 2,5mm

