

STUDENT TECHNOLOGY FEE REQUEST FORM

Procedure for Submission:

Form Updated: 8/20/13

1. Submitter must obtain all required information from the desired vendor(s). An official quote from the vendor must be attached.
2. Only one request per Request Form. This request must be reviewed, approved, and submitted by the requesting program's Department Chair.
3. The Dept. Chair may email this request to the Tech Fee Director. *Since some departments will have multiple requests, please rename request in the following format: Dept # (rank, 1 being the highest priority) and a brief title*

Dept. making request:	Intervention and Wellness	Requesting Faculty:	Caroline Menezes	Date Submitted:	10/05/16
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IMPORTANT: Attach an official quote from the vendor.

List one item OR group (for use as a "package") per page.

Item Name	Vendor info. (name, address, Web site URL, phone #, email, etc.)	Part or Model #	Cost (each)	Qty	Total
ElectromagnetoArticulograph	Carstens Medizinelektronik GmbH	AG501	Approx. 47,000 – 48,000 (cannot exactly account for currency change at the time of purchase and customs taxes if added)	1	47,000
Course(s) where item(s) will be used	SLP3010, SLP6500, Honor's thesis, and student research projects	Expected life of product (years)	indefinite	# Students Impacted per Year	70
Location equipment or software will be used/stored	HH1220	Will Tech Fee funds be needed for annual renewals or maintenance?		No	

Provide a brief description of the technology requested*:

The AG501 allows us to precisely track the movement of the speech articulators during the process of speaking. Since most of the speech articulators move inside a narrow tube called the vocal tract it is difficult to study the exact movement of the tongue. This is done by creating an electromagnetic field around the speaker's head, which records the movement of copper coils placed on the articulator that is being examined. The closer the coil gets to the magnet the larger the signal it sends back. These amplitude signals are then converted to position and in this way we can precisely track where the articulator is at a given time. The newer system is more convenient for collecting data from patients with movement disorders or other neurological disorders primarily because of the placement of the magnets. In the older AG 500 system the magnets are mounted on a square plexiglass helmet of approximately 1 cubic foot. The subject has to be maneuvered into the helmet after the coils are attached to the target articulators. The newer AG501 has dispensed off with the plastic helmet while at the same time increasing the functional area of electromagnetic field. The newer system is also is more accurate and more user friendly which makes it easier for students to handle.

Briefly describe how the technology will be used (function)*:

The instrument is used both in instruction and research that involve undergraduate and graduate students enrolled in Speech Motor Disorders, Clinical Phonetics and Honors courses and thesis. This request is to upgrade the old system AG500 which has been in use for the last 9 years. The newer system is more convenient for looking at speech kinematics of patients with movement disorders or other neurological disorders. In the older AG 500 system the patient has to be maneuvered into the helmet in order to be studied. The newer AG501 has dispensed off with the plastic helmet while at the same time increasing the functional area of electromagnetic field. (Please see attached picture demonstrating the differences).

In research, graduate and undergraduate students are directly involved in research using the AG501. They will be trained to operate the AG501

system. Past students have had the distinction of presenting their research at several state, national and conferences. Every year 2-4 undergraduate students have been awarded the Summer Research Scholarship to work on the old AG500 and they have been producing top quality research, thereby increasing their learning experience beyond the classroom.

Provide a rationale that Tech Fee funds are appropriate for this request*:

The request is for an instrument that students learn and use and therefore appropriate for tech fee funds. The quotation given is for the only floor model which the company is willing to sell for a low cost. If we have to get a brand new system it will cost us an additional 15,000 to 20,000\$.

***Keep in mind that the committee members come from a variety of educational backgrounds and may not be familiar with department specific language. Please use concise, common terminology so that committee members reviewing this form will be able to fully understand the request.**

- If you are submitting a request for computers, printers, scanners or software, you must consult with College Computing and the technology staff, to acquire a quote and to make sure that this equipment/software is supported by UT and compatible with existing technology.

Carstens Medizintechnik - Nelkenweg 8 - D37120 Lenglem

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<http://www.articulograph.de>
Member of www.measurement-valley.de

September 20th, 2016

Quotation 1609-2001- Articulograph AG501 + 16 channel system - used system

3-dimensional Articulograph AG501 with 16 channels, consisting of 38000 €

- Transmitter-holder
- Electronic (Transmitter, Receiver, Power Supply, Control-Unit)
- One Computer (Notebook Linux) to control the system
- Calibration unit
- Stand with the mechanic to hang up the Transmitter Holder.
- Program to correct head movement
- The results of the positions will be transported in ASCII-Format.
(X, Y, Z as well as two angles)
- Real time display while recording
- 16 sensors HQ220-L120-B

Additional and recommended

Optional:

8 additional packages of 5 sensors HQ220-L120-B	each 120 €	750 €
Installation and Introduction for 2 days all expensive included		2800 €
Microphone and USB sound card (Tascam US2X2)		250 €
Freight, packages and insurance		800 €

- **The buyer is responsible for the customs duty and all other taxes**
- Payment 30 days after delivery.
- Delivery up to 2 months
- Guaranty 36 months, except the sensors
- Legal Domizile Göttingen

Carstens Medizintechnik GmbH

Brigitta Carstens

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September 20th, 2016

Quotation 1609-2001- Articulograph AG501 † 16 channel system - used system

3-dimensional Articulograph AG501 with 16 channels, consisting of **38000 €**

- Transmitter-holder
- Electronic (Transmitter, Receiver, Power Supply, Control-Unit)
- One Computer (Notebook Linux) to control the system
- Calibration unit
- Stand with the mechanic to hang up the Transmitter Holder.
- Program to correct head movement
- The results of the positions will be transported in ASCII-Format.
(X, Y, Z as well as two angles)
- Real time display while recording
- 16 sensors HQ220-L120-B

Additional and recommended

Optional:

6 additional packages of 5 sensors HQ220-L120-B	each 126 €	756 €
Installation and Introduction for 2 days all expensive included		2800 €
Microphone and USB sound card (Tascam US2X2)		250 €
Freight, packages and insurance		800 €



• The buyer is responsible for the customs duty and all other taxes

- Payment 30 days after delivery.
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- Guaranty 36 months, except the sensors
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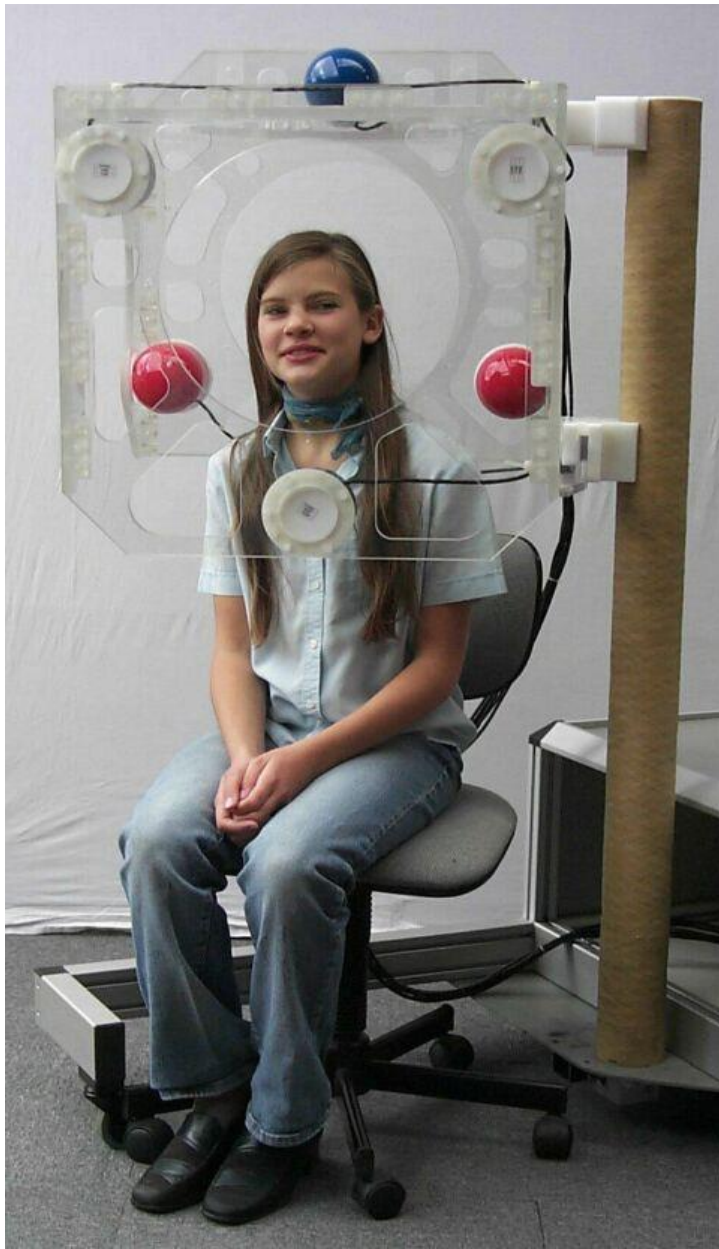
Comparison of the Articulograph AG500 and the Articulograph AG501

<p>Cube/ Transmitter holder</p>		
	<p>Cube with six transmitter coils surrounding the subject</p>	<p>Replaced with the transmitter holder containing nine transmitter coils, placed right above the subject's head</p>
	<p>Cubical structure surrounding the head</p>	<p>Three-armed structure hanging above the head</p>

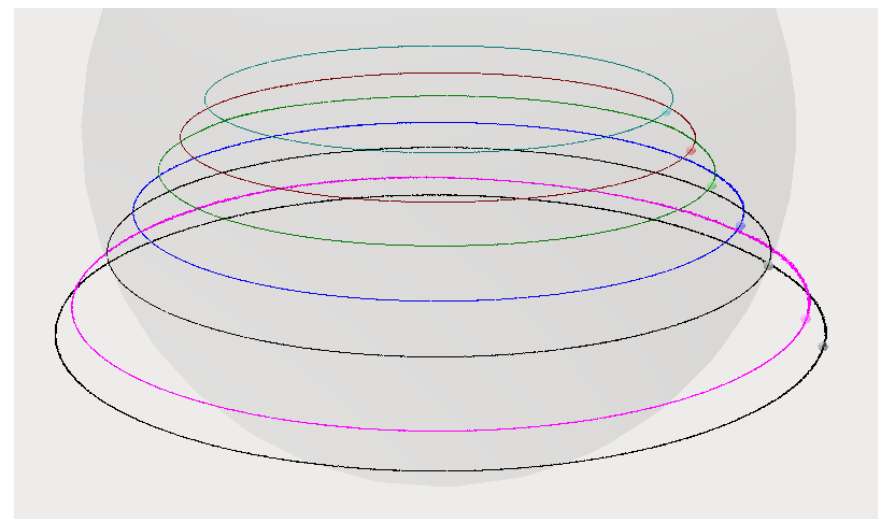
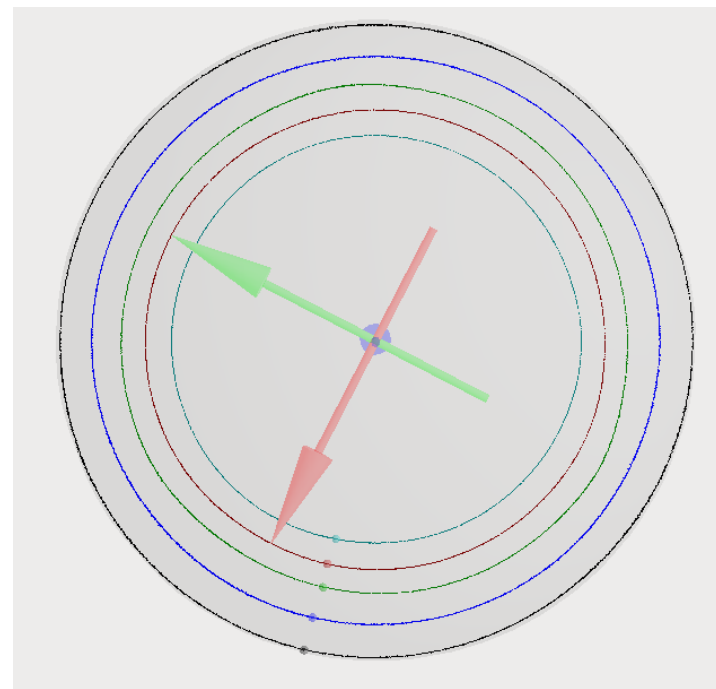
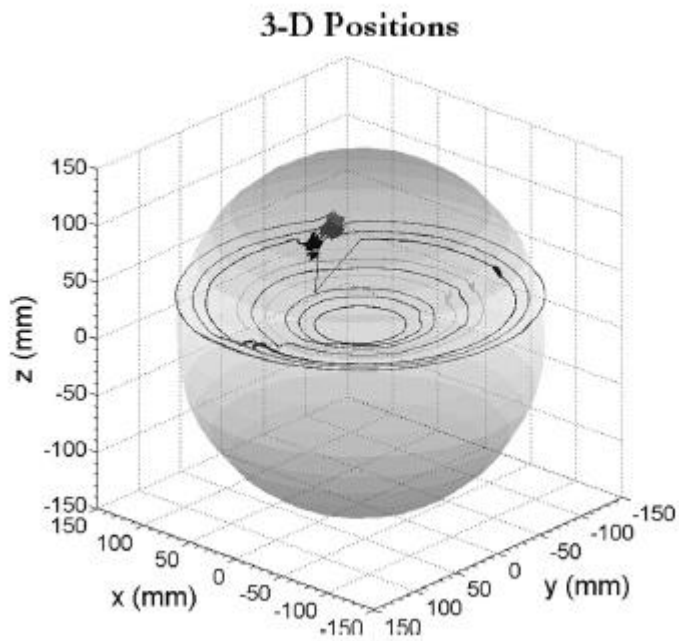
System



**System with
subject**



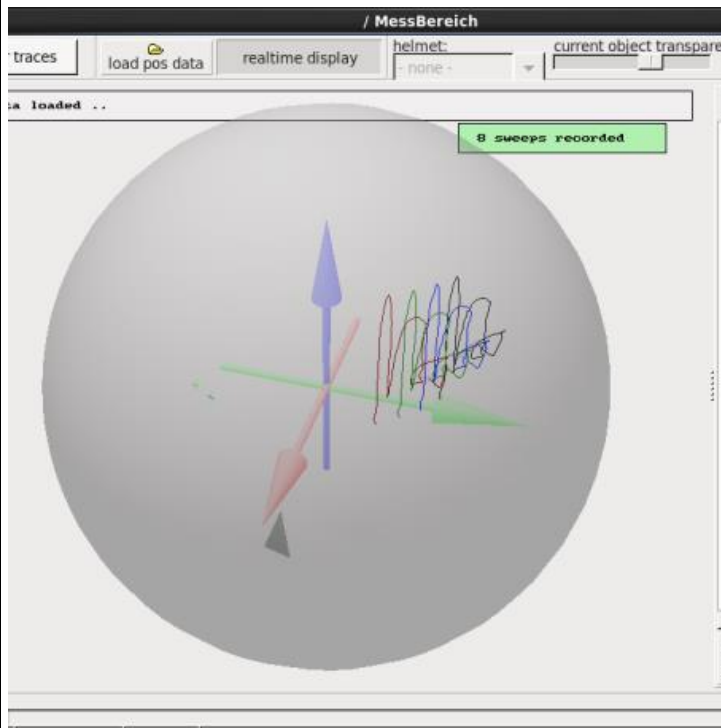
Accuracy:



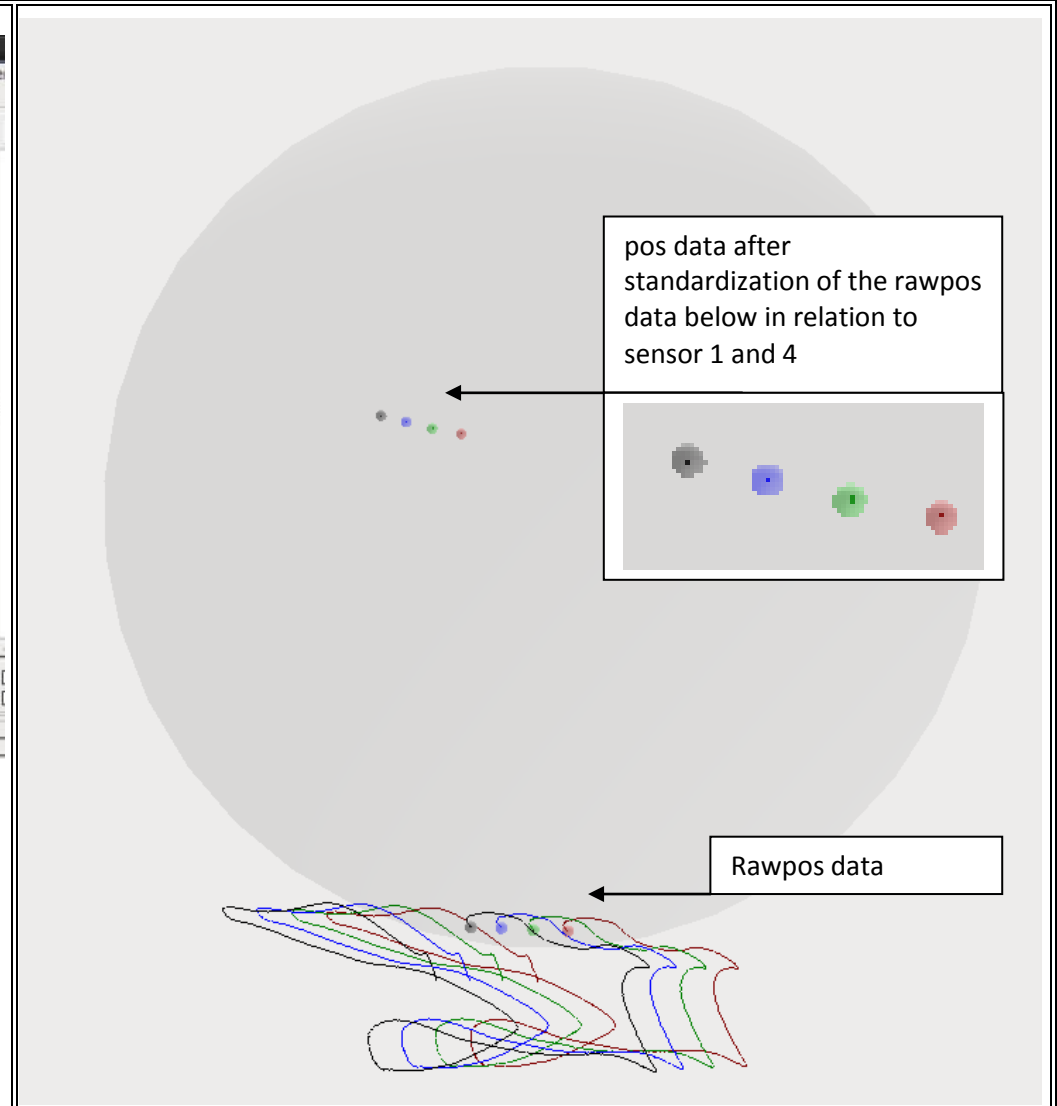
Precise with some weak points in the measurement area

Very high precision in the whole measurement area; RMS of 0.3mm

Measurement area:

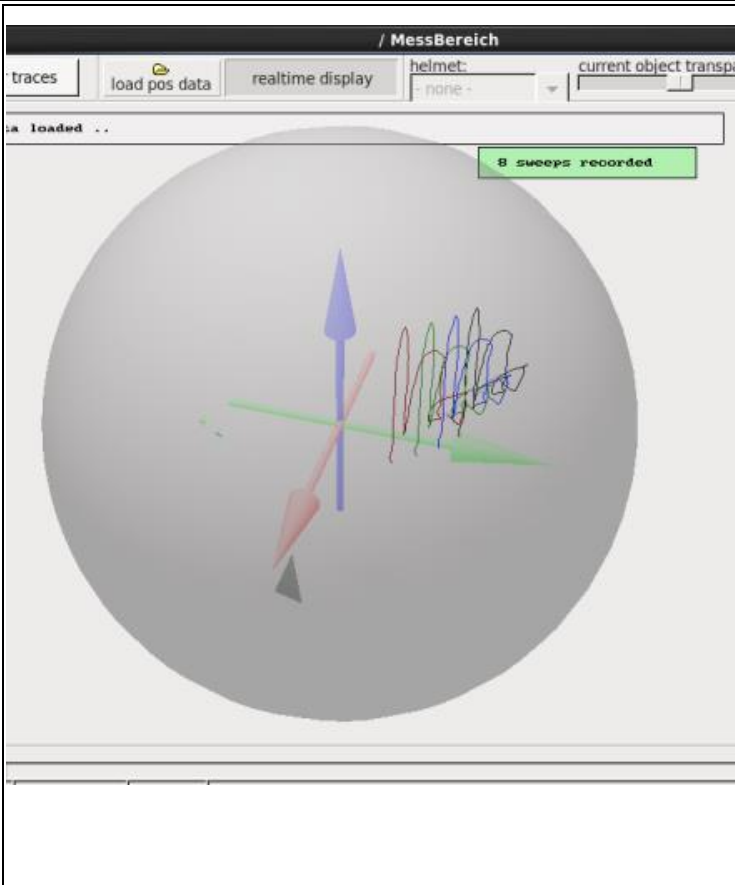
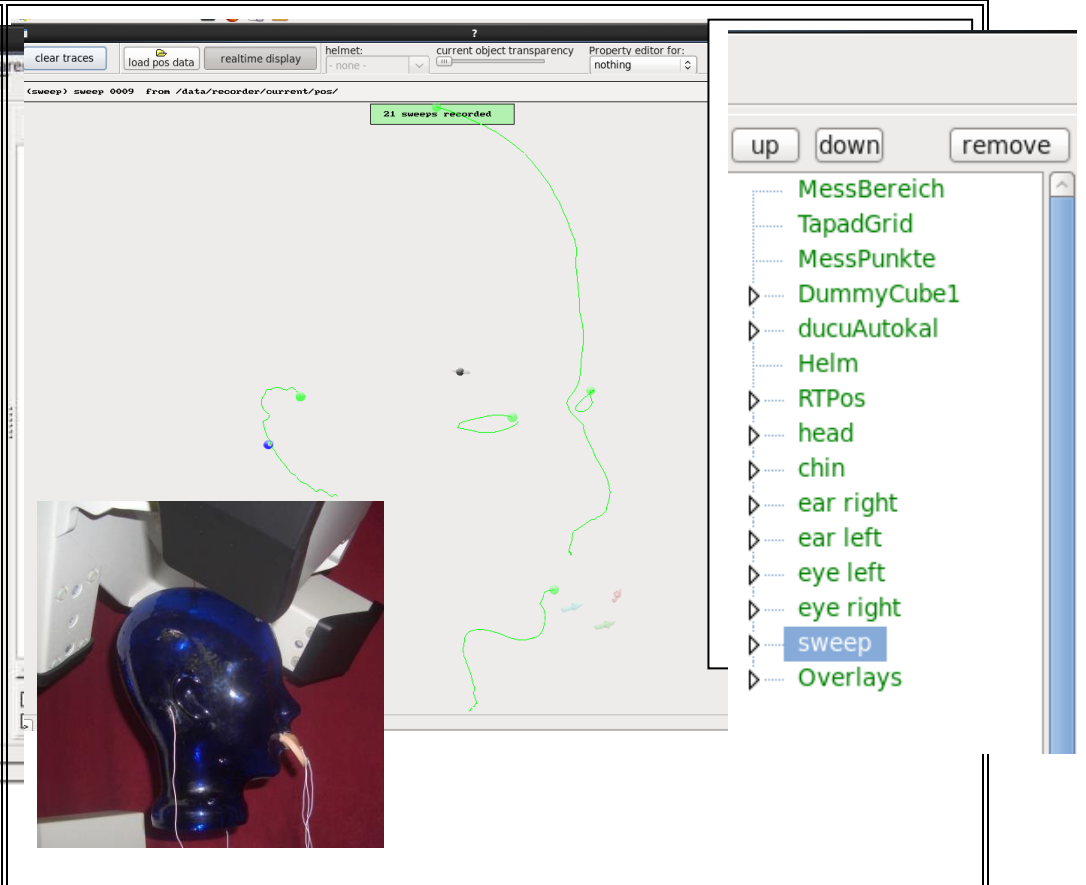


300mm spherical measurement space


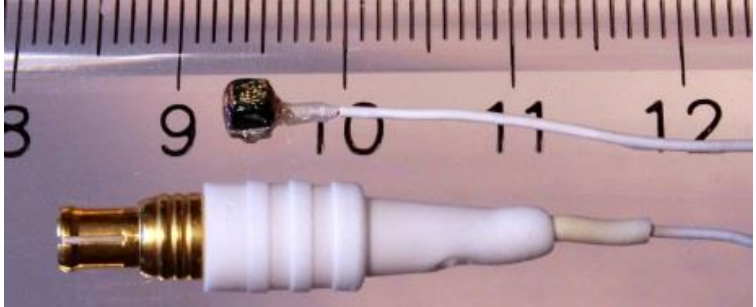


Guaranteed 300mm spherical measurement space, measuring beyond that area is possible

Visualization of the data:

	
<p>Real time display and display of the head movement corrected data from the calculated positions</p>	<p>Real time display or the alternative head movement corrected real time display Display of reference traces like palate or face are now possible during the recording</p>

Channels:	8/12 channels	8/16/24 channels
Sampling rate:	200Hz	1250Hz and alternatively 250Hz
Weight:	130kg	65kg
Housing/body:	Carrier, stand with cube holder	No more carrier with Lida computer. The electronics are now within the small red box (39cm * 22,5cm * 9cm) All integrated system
Calibration unit:	External circal	Small integrated circal
Computer:	Internal LIDA-computer Dell Notebook	No more internal computer , the signal runs directly via network to the Dell notebook, which is included with the systems
Mobility:	Mobile	Increased mobility due to the reduced weight and the possibility to retract the arm and lower the height: Minimum size: 75cm x 111cm x 136cm
Accoustics:	Quality 16 KHz 12 bit Powered with batteries.	The amplifier is now inserted within the USB sound card Quality 48 KHz 16 bit No batteries needed. Acoustics powered via the control server.
Application:	Calibration requires the user's attention (turning around the sensors) Datatransfer: Getsessionfrom Lida All the procedures need to be performed by the user step-by-step	Calibration runs without any interruption No upside and downside anymore The data are automatically stored within the control Notebook, which is included with the system All procedures run automatically but can also be performed by the user step-by-step
Available data:	Original amplitudes, position data and the head movement corrected position data	Original amplitudes, position data and the head movement corrected position data Furthermore, automatically head movement corrected data - Binary and ASCII
Service:	Free service support by email or skype Log file available for maintenance	Service friendly: All electronics within one small box No more Lida computer Small and handy receiver unit, independent modules for 8 channels each Free service support by email or skype Log file available for maintenance
Application:	Calibration requires the user's attention (turning around the sensors) Datatransfer: Getsessionfrom Lida All the procedures need to be performed by the user step-by-step	Calibration runs without any interruption No upside and downside anymore The data are automatically stored within the control Notebook, which is included with the system All procedures run automatically but can also be performed by the user step-by-step

<p>Sensors:</p>		
	<p>Twisted cable</p>	<p>Reduced price by about 40% Well shielded mini coax cable – nosofree coated Easy to use connectors Improved durability, usable about fifteen times</p>

Please note also the study of the Università del Salento, Lecce, Italy, published at the Interspeech 2013 in Lyon

*M. Stella (1), A. Stella (2,3) , F. Sigona (2), P. Bernardini (1), M. Grimaldi (2), B. Gili Fivela (2).

Electromagnetic Articulation graphy with AG500 and AG501,
Interspeech , Lyon, France **(In press)**.

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