

CMS20S Measuring System

Measuring System for 3D Real Time Motion Analysis



The CMS20S universal measuring system from the CMS20 family consists of a measuring sensor, a basic unit with power pack together with a table-mounted or floor stand. Optional a second measuring unit can be used.

The measuring method is based on the travel time measurement of ultrasonic pulses transmitted by up to 15 miniature transmitters (markers) to the three microphones built into the measuring sensor.

The system is connected via an USB interface to a PC. Here the results are available in real time and can be used for feedback tasks in the field of medical treatment.

Time markers can be superimposed during data recording via two digital input channels.

The measuring sensor moves freely on a ball joint and can thus be easily brought into the best measuring position. Absolutely no calibration is needed in this case.

Various application aids such as a surface pointer are available for medical analyses.

The system can be optionally extended with the zebris 8 channel bluetooth system.

The system is universally applicable, e.g. for hand arm movement, measurement of movement response, cervical spine mandible joint analyses and gait analysis.

- Measuring sensor dimensions:
360 x 340 x 25 mm
- Real-time display of the measuring results on a PC
- 5 motion analysis channels
2 digital input channels
- Miniature ultrasonic marker with wide radiation angle
- Optional
4 analog channels
Input for start/stop synchronization
- Measuring programs are available for:
data acquisition
hand-arm movement disorders
spinal column analysis
equilibrium analysis
mandible joint analysis

For further information please contact

zebris Medical GmbH

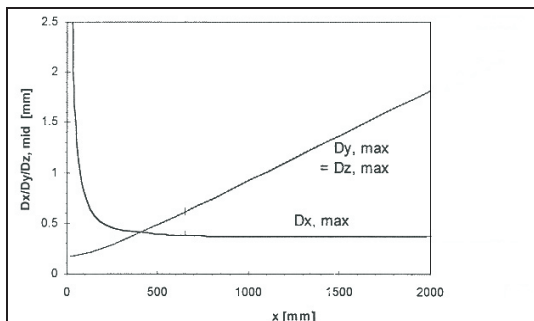
Max-Eyth-Weg 43
D-88316 Isny i. Allgäu
Germany

Tel.: +49 7562 / 9726-0
Fax: +49 7562 / 9726-50
E-mail: zebris@zebris.de
Internet: www.zebris.de

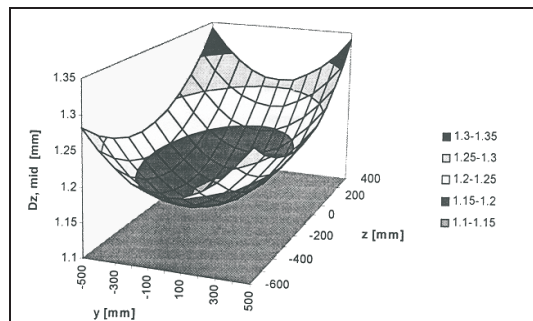
Technical Data

System CMS20S

| | |
|---------------------------------|---|
| Dimensions basic system: | 95 x 160 x 235 mm (W x H x D) |
| Weight: | approx. 1,1 kg |
| Dimensions measuring sensor: | 360 x 320 x 30 (W x H x D) |
| Weight: | 0,7 kg |
| Max. number of marker channels: | 15 |
| Buffer memory: | 60 KB |
| Digital entrances: | 2 |
| Synchronisation: | start/stop |
| Interface to PC: | USB |
| Measurement rate: | max.300 Hz / number of selected markers |
| Measurement distance: | until 160 Hz - 2,0 m (max.) 200 Hz - 1,6 m new 300 Hz - 1,0 m |
| Resolution (program dependent): | 1/10 mm 1/100 mm (30 cm) |



Error of relative coordinates after triangulation in direction x, y and z to L_0



Distribution of error in a distance of $x = 1250$ mm for z-coordinate

Optional: Analog to Digital Converter

| | |
|----------------------|------------------------------|
| Number of channels: | 4 singles or 2 differentials |
| Measuring rate: | 4000 Hz (for all channels) |
| Resolution: | 8 / 12 bit (reversible) |
| Input voltage range: | ± 5 V |

Ultrasound Markers

| | |
|------------------------|------------------|
| US Marker: | 13 x 11 mm, 1g |
| Standard cable length: | 1,25 m |
| Emission angle: | min. 120 degrees |
| Frequency: | 40 kHz |

A series of application devices (e.g. position pointer) are available.