# Datasheet: SENCAM – MAGNETIC FIELD CAMERA SEN-3D-CAM
TRUE high-resolution and high-speed 3D magnetic camera

## DESCRIPTION:

**SENCAM** is the World's First True 3D Magnetic Field Camera with the smallest head ever.

The 3D Magnetic Camera features a compact chip positioned within its small head, making it the perfect tool for magnetic systems development, quality assurance, inline inspection applications and on in production lines, where the mounting space is essential. Its space-efficient design ensures seamless integration into tight work environments, enhancing its utility for critical tasks in various industries.

It simultaneously measures all three magnetic field components (Bx, By, Bz) using Senis proprietary 3D Hall technology. The camera provides comprehensive and accurate pictures of magnetic fields in three dimensions.

With a spatial resolution of 100 µm and a tiny measurement volume of 27µm x 9µm x 4µm in each pixel, SENCAM offers unprecedented precision in magnetic field measurement. This is particularly important if you need to measure complex fields with high field gradients. With 16,000 pixels, SENCAM can acquire a full magnetic image within a fraction of a 1 second, making it ideal for both inline and offline inspection of magnetic systems.

The direct output of SENCAM is in 2D images, with all three field components accurately calibrated. These calibrated images are streamed through a USB-C connection, providing real-time data for analysis and visualization. In addition, the optional Senis 2D Vision Commander Software is available for more sophisticated magnetic image analysis, allowing for advanced magnetic data processing and interpretation.

Experience the future of magnetic field measurement with SENCAM, the world's first true 3D magnetic field camera. With its unmatched precision, high acquisition rate, and advanced software options, SENCAM is the ultimate tool for magnetic field analysis in research, industry, and beyond. Stay ahead of the curve and unlock new possibilities with SENCAM today.



**Figure 1:** SENIS magnetic field camera SENCAM with USB cable output

## KEY FEATURES:

- Fast, true, and precise 3D magnetic field camera
- Compact head for easy installation into various application
- Measures all three 3 field components of a magnetic field (Bx, By, Bz)
- Very high magnetic and spatial resolution (16k pixels)
- World's smallest sensitive volume of 27µm x 9µm x 4µm in each pixel
- High image acquisition rate of up to **7 image/s**
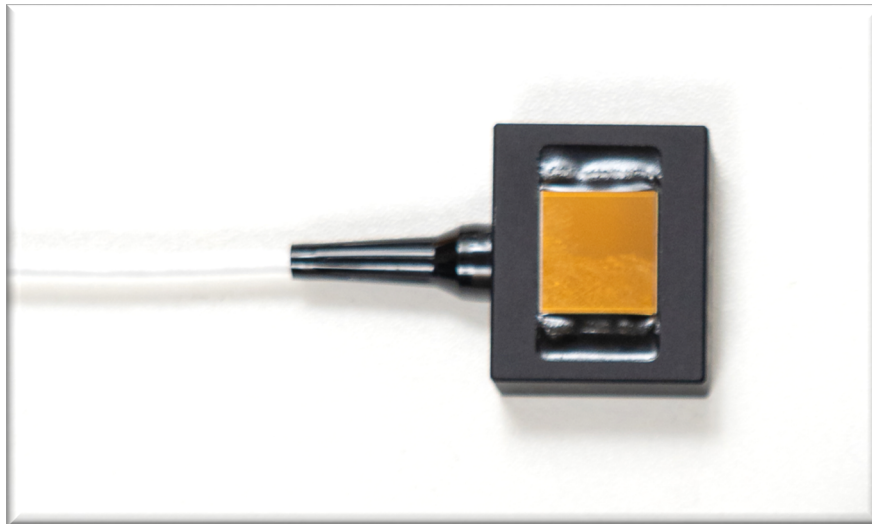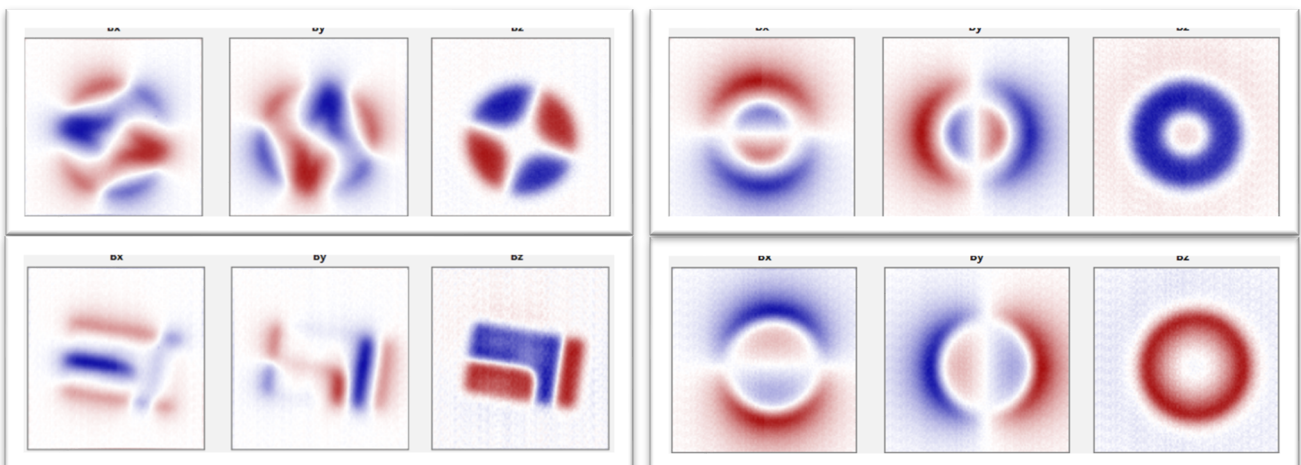


**Figure 2:** SENCAM head



**Figure 3:** True 3-axis magnetic field measurements with SENCAM

## TYPICAL APPLICATIONS:

- Fast, true, and precise 3D magnetic field mapping
- Fast, true, and precise Inline Inspection
- Fast characterization and quality control of permanent magnets
- Development of magnet systems
- Application in laboratories and in production lines

## SPECIFICATION:

| Sensor | |
|---|---|
| Sensor Type | Senis 3D Hall |
| Data Output | Calibrated true Bx/By/Bz for each individual pixel |
| Image acquisition time | 150ms |
| Pixels | 128x128, Field Sensitive Volume: 27µm x 9µm x 4µm in each pixel |
| Total Active Area | 12.8x12.8mm |
| **Software and Communication** | |
| Supply Voltage | 5V, through USB connector |
| Interface | USB 3.0 / RNDIS |
| Software (optional) | Senis 2D Vision Commander V1.3 |
| Operating System (optional) | MS Windows 7 and later |
| **Magnetic Field** | |
| Calibration ranges | 500mT, 100mT optional |
| Absolute accuracy | < 1% of full scale |
| Repeatability | < 0.3% of full scale |
| Digital resolution | 12 bit |
| Resolution (within 1s) | 50µT RMS |
| Non-orthogonality of magnetic axes | < 0.5° |
| Calibrated temperature range | 20 - 30°C |
| Minimal measuring distance | < 300µm |
| **Mechanical** | |
| Housing | Rugged lightweight housing with easy mounting option |
| Cable length | 80cm |
| Total weight | ~100g |
| Operation temperature range | 10°C - 40°C, fanless operation |

## DIMENSIONS:
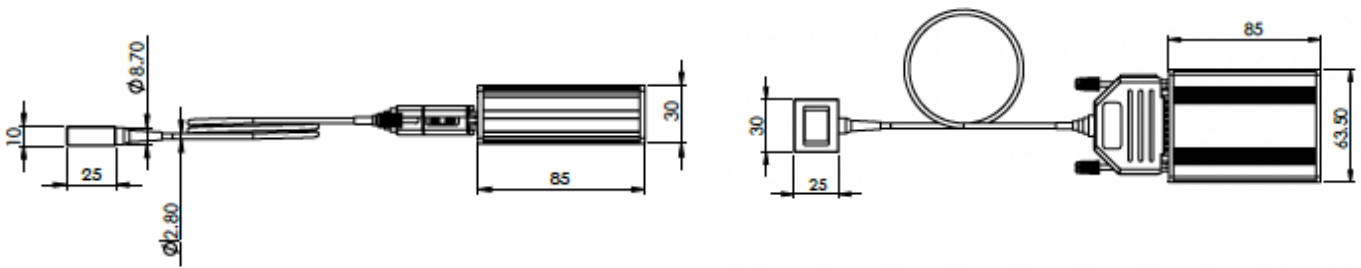


**Figure 4:** Structure and dimensions of the SENCAM
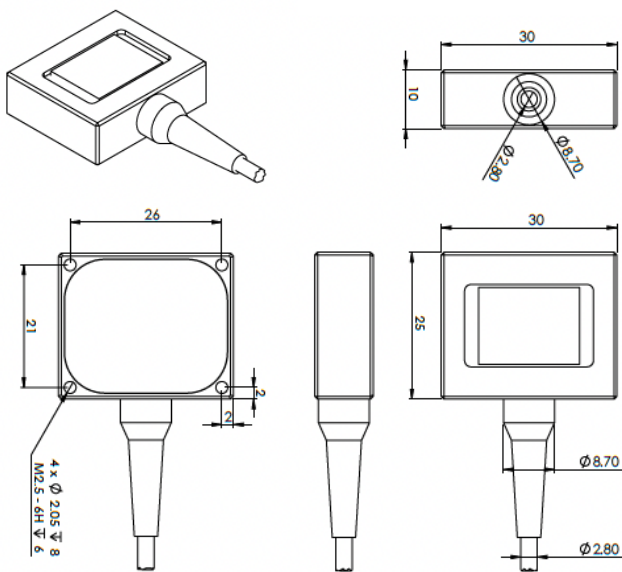


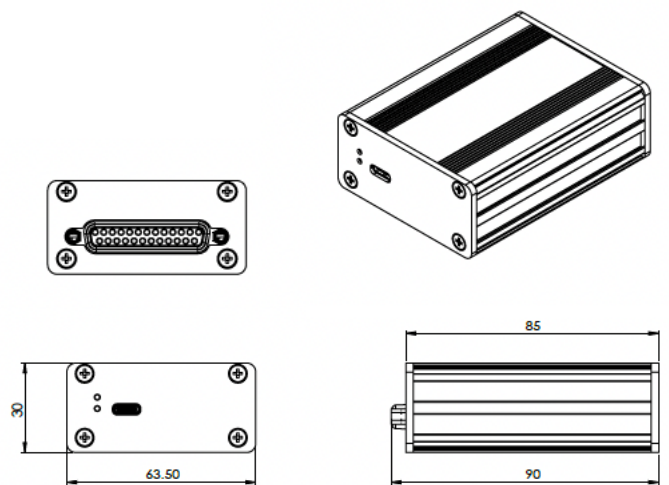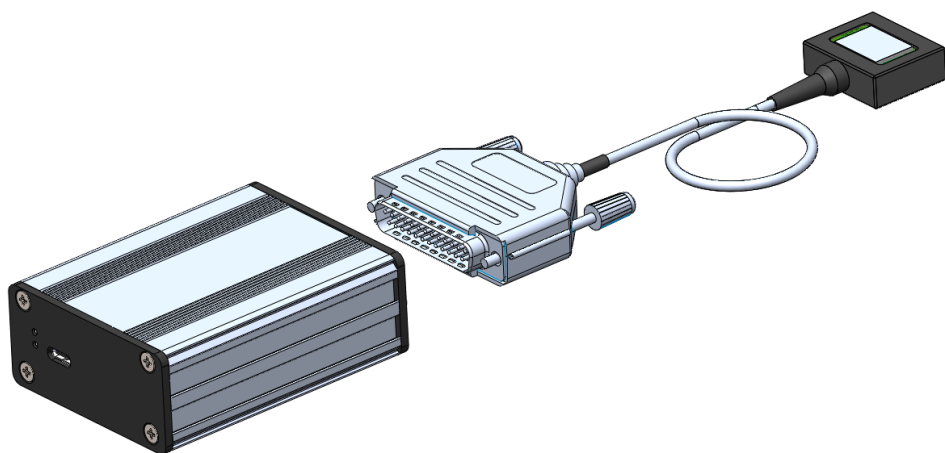**Figure 5:** Dimensions of the SENCAM head



**Figure 6:** Dimensions of the SENCAM electronics box



**Figure 7:** Structure of the SENCAM