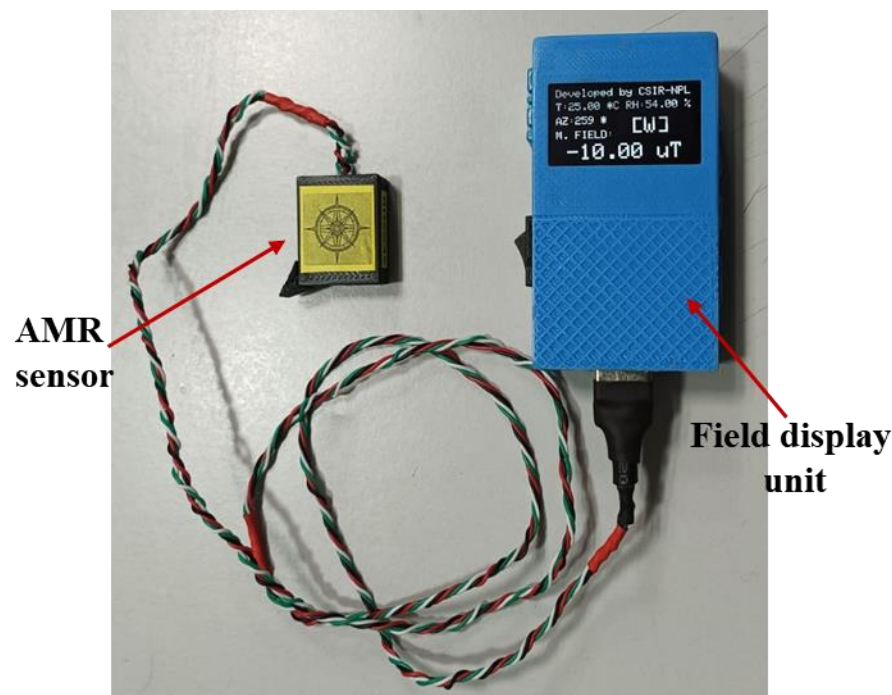


Name of the knowhow: “A highly sensitive low-cost, small-sized device for measuring weak magnetic fields”

Summary: A highly sensitive low-cost, and small-sized device has been developed for measuring weak magnetic fields. The microcontroller-based device is capable of reading magnetic fields of range $\pm 800 \mu\text{T}$ with a resolution of $0.07 \mu\text{T}$. The permissible accuracy of the device covering a full range of measurements is less than 1.5%. The device is highly compact and can display the magnitude and direction of magnetic fields.



Applications:

1. Data storage centers
2. Healthcare (Studying Geopathic stress lines)
3. Aviation sector, Satellites, Military detection (Earth's magnetic field)
4. Consumer electronics
5. Laboratory and industries (calibration)

Novelty features:

1. Microcontroller embeds unique formulation algorithm for (a) relative and linearity error minimization (b) converting AMR sensor digitized data into corresponding magnetic field values displayed on OLED screen.
2. Inclusion of relative and linearity error minimization step improves the accuracy ($< 1.5\%$) in measuring weak magnetic field of range $\pm 800 \mu\text{T}$.



Advantages:

The developed low-cost and pocket-sized device having enhanced accuracy can have numerous applications, such as detecting the earth’s magnetic field, studying geopathic stress lines, calibrating similar magnetometers, data storage centers consumer electronics, and other utilization in aviation, military detection and space.

Readiness level of the Technology:

Idea	Concept Definition	Proof of Concept	Prototype	Lab Validation	Technology Development	Technology Demonstration	Technology Integrated	Market Launch

IPR related details:

Whether patent(s) has already been granted for this technology/process (Yes/No): No

Whether patent(s) has already been filed for this technology/process (Yes/No): Yes

If Yes, please provide the following details

Patent Title: A highly sensitive low-cost, small-sized device for measuring weak magnetic fields
 Inventor(s): Alok Prakash, Prachi Tyagi, Anurag Kumar Katiyar, Satya Kesh Dubey
 Country(s): India
 CSIR-IPU NF Number: 0112NF2023
 Application Number(s) and Date(s): 202311059463, 04.09.2023
 Publication Date(s) (if applicable): NA

Year of Introduction of the knowhow: 2023

Broad Area/Category: Electronics & Instrumentation

User Industries: Low magnetic field measurement industries, data storage centers, space, aviation and health sectors.