Application Note: Surveillance & Security

OVERVIEW

The growing demand for increased security in a wide range of context requires more than ever advanced system to detect and identify possible weapons, as well as reducing the processing time.

The same apply to secure facilities/borders where detecting the influx of contraband or people entering is critical.

In many scenarios, one single detection method is not sufficient, and magnetics has the benefit of identifying threat objects, most weapons containing a certain amount of ferromagnetic material.

Fluxgate Magnetometers in Unattended Ground Sensors (UGS) and Surveillance Systems

Military surveillance systems have two main objective – being easily deployable around temporary military positions, and alert in advance of the presence of potentially hostile elements.

Unattended ground sensors (UGS) are battery powered sensors which are designed to be discretely deployed. Detection is best achieved by combining sensing technologies, and whilst vibration and acoustic provide good detection range, they do not provide information about the

Revised August 2020

Equipment

- Three-axis Fluxgate Magnetometer

Applications

- Detecting variations in the Earth's magnetic field associated with unwanted activities/unauthorized objects
- Classify the source of the disturbances to better assess the threat

presence of ferromagnetic material which could betray the presence of a weapon.

The addition of magnetics will provide this additional level of information. Due to the battery powered requirement, low power sensors are essential. Sensors such as the Mag648 or the Mag651 are ideally suited as they offer extremely both low power and extremely high sensitivity. The sensors draw a few mA and can resolve sub-nT field variations.

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Fluxgate Sensors in Security Systems

Civilian security requirements have gone up in recent years with increasingly, the need for protection of venues from Federal buildings to sports or music hall.

One of the main requirements here is to prevent excessive queues to enter the venues but still locating possible threat. As an added complication, everyone nowadays will carry in their pocket some ferromagnetic material (phone). The speed of processing can only be achieved if individuals do not necessarily have to empty pockets to go through a metal detector.

Using magnetometers, and more specifically fluxgate sensors (as these provide the most appropriate level of sensitivity), you will be able to detect ferromagnetic objects. In some circumstances, it becomes possible to model the source of the anomaly and determine whether it is a threat (weapon) or a day to day object.

Sensors for these applications will need to be as sensitive as possible whilst keeping unit cost down. Power is rarely an issue as mains supply is generally available.

Low cost sensors here would include the Mag612, Mag619 or Mag690.

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