



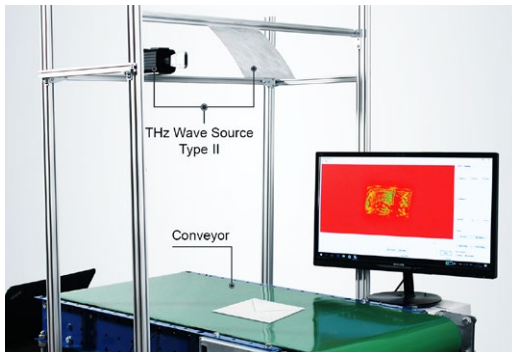
TERAHERTZ IMAGING FOR MAIL AND PARCEL SCREENING

Several industrial inspection techniques like X-ray scanning and microwave detection have been successfully used in various security applications over the last few decades. For instance, until recently X-ray scanning dominated nondestructive testing (NDT) methods in security screening applications. However, the hazards of ionization radiation combined with relatively high costs have limited widespread use of X-ray scanners in many applications where human health must not be jeopardized.

The postal industry is no exception. Unmediated on-the-spot inspections by postal inspectors remain the most common and effective way to check parcels and envelopes. Quite often such inspection is carried out manually without any modern, automated equipment or computer-aided support.

TeraSense Group, Inc has developed a brand-new solution for improving the safety at postal offices and eliminating health hazards for clients and postal workers. We offer the **Terahertz High-Speed Imaging Scanner**, which is based on our key innovative component: our Ultrafast Terahertz Imaging Camera with image acquisition rates up to 5,000 lines per second. Thanks to its highly sensitive sensor array, we can now bring health and safety measurements in the postal industry to a new level.

TeraSense THz scanners have relatively low costs and offer extremely high operating speeds compared with X-ray and microwave techniques. That makes **Terahertz waves** a suitable and effective security screening solution for use in the postal industry.



System set up

ADVANTAGES OF THE THz IMAGING SYSTEM

- Powerful tool for prevention of terrorist attacks
- Effective tool for revealing drug traffickers
- Ability to detect undeclared items in a parcel or envelope
- Extremely high throughput capacity due to high imaging speeds
- Nondestructive and hazard-free inspection
- Low-cost solution

KEY SPECIFICATIONS

THz IMAGING CAMERA

- Operating frequency: 100 GHz
- Image acquisition rate: up to 5000 lines per second
- Number of pixels (scalable): 256 x 1
- Field of view (coverage area): 384 x 3 mm²
- Pixel size: 1.5 x 3 mm
- Spatial resolution: 3 mm
- Fits conveyor belt running speed up to 15 m/s
- Original software: TeraFast®Viewer
- Interface: mini-USB
- Power supply: 24V/20W



High Speed Linear
Terahertz Scanner
with Type II THz Source

THz SOURCE:

- Operating frequency: 100 GHz
- Power per pixel: 140 μW
- Reflection beam-forming optics
- Protective isolator for enhanced stability

Some of the most suitable applications of **TeraSense THz scanners** are listed below.

MAIL SCREENING FOR DRUG DETECTION

Traffickers deliver drugs using ordinary mail services, and they often get away with it. Such “supply chains” may stay unrevealed for years because security inspection in postal facilities is performed manually and relies on the professionalism of postal inspectors. Unfortunately, manual inspection is often not enough.

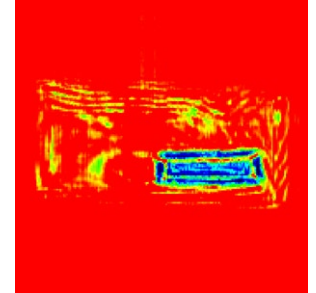
This situation can be changed entirely thanks to our **Terahertz High-Speed Imaging Scanner** — our new security screening system for postal offices. Now it is possible to check envelopes and parcels at industrial conveyor rates (up to 15m/s) and detect substances like the ones listed below:

- Marijuana and similar plants
- Cocaine
- Liquid substances

Postal inspectors can detect such items in real time and on the spot while the conveyor belt is running. It works even if the amount of drugs in a parcel is just a few grams.



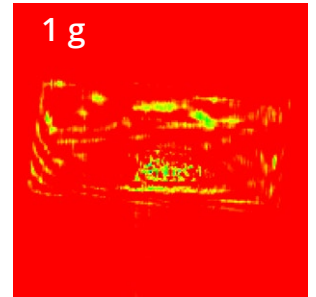
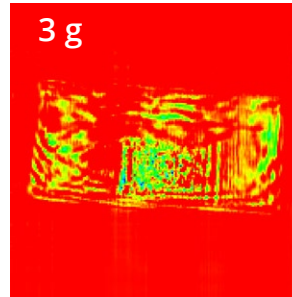
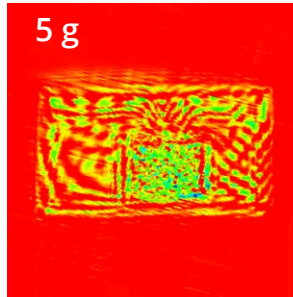
A sachet of flour



THz image of a sachet of flour in an envelope



A sachet of tobacco (3 g)



THz images of sachets of tobacco (5 g, 3 g, 1 g) in envelopes

TERRORISM PREVENTION

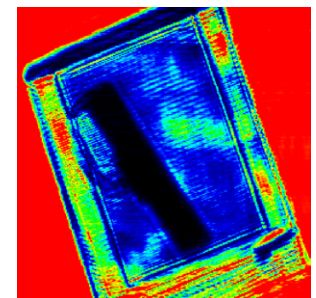
Another important application of the Terahertz Scanner is the detection of items that terrorists might send by mail, for example:

- Explosives and their components
- Poison
- Biological weapons (anthrax and others)

It is essential that our scanner can detect various types of items inside parcels and envelopes without disturbing their integrity.



A dummy bomb in a box



THz image of a dummy bomb in a box

DETECTION OF UNDECLARED ITEMS

It is important for postal inspectors to check if the content of the parcel matches the customs declaration. Our **Terahertz Scanner** is an optimal solution for this application. Terahertz waves are harmless not only to the human body but also to technology. This property will safely allow postal staff to ignore warning labels like “Caution, do not X-ray” and check such parcels like any others.

The **Terahertz High-Speed Imaging Scanner** can be deployed in minutes and does not require any special qualifications to operate. In addition, our scanner is estimated to be cheaper than existing solutions on the market.