

B&W Tek TacticID® Series Frequently Asked Questions

Q: What is TacticID?

A: TacticID is a state-of-the-art Raman handheld system specifically designed for rapid, nondestructive identification of unknown substances and their threat levels for field use by safety and security personnel.

Q: What is the purpose of TacticID?

A: The TacticID provides fast and accurate screening results for the identity of a wide variety of unknown substances including illicit substances such as narcotics, precursors for drugs, explosives and their precursors, hazardous materials, chemicals and cutting agents, alone or as part of a mixture.



Q: What can TacticID identify?

A: TacticID can identify thousands of substances including narcotics, cutting agents, narcotic precursors, controlled substances, pharmaceutical pills, toxic and non-toxic chemicals, solvents, certain food materials and more in the form of solids (powders, tablets, capsules) or liquids.

Q: Can TacticID replace my laboratory identification equipment?

A: TacticID is designed to identify samples either in the lab or in the field. The instrument's small size, weight and simple interface makes it ideal for first responders, customs and border patrol, safety personnel and others looking for a first-level identification of substances at the time of need no matter where. It provides rapid screening capabilities that can supplement laboratory analysis and thus reduce the need to utilize lab-based equipment to analyze harmless materials such as cutting agents. Raman technology is recognized by the Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG), which recommends it in their minimum standards for the forensic identification of commonly seized drugs.

Q: What information does the TacticID display for users?

A: The sample identity is clearly displayed with a color-coded background indicating the threat level. Additional information can be viewed on the device including the match index (HQI), detailed chemical name and sample classification, and the GHS and NFPA-704 safety information. Users can view the Raman spectrum of the measured sample and the substance it matches. All of this information including date and time of the test are also in a pdf report.

Q: How many versions of TacticID are there?

A: There are several TacticID models to choose from depending on your needs. The TacticID-GP Plus and TacticID-N Plus models use a 785-nm laser excitation which is effective for a large proportion of materials commonly encountered. The TacticID-1064 employs a 1064-nm laser that can identify what the 785-nm laser Raman systems can and additionally is effective for the screening of colored and darker samples.

- The TacticID-GP Plus has a library of more than 10,000 signatures of narcotics, pharmaceutical drugs, precursors, cutting agents, binding agents, toxic industrial chemicals, and common chemicals. It supports custom library building capabilities, uploading of third-party libraries, and transfer libraries from one device to another.
- TacticID-N Plus comes with a closed library which contains signatures of more than 1,200 narcotics, pharmaceutical drugs, precursors and cutting agents.
- TacticID-1064 is ideal for screening colored materials such as street samples which can be a challenge for many other Raman instruments operating with shorter wavelength laser. The TacticID-1064 contains a library of over 10,000 Raman spectra which include explosives, explosive precursors, hazmat elements, narcotics, pharmaceutical drugs, cutting agents, binding agents, toxic industrial chemicals, and common chemicals. With the TacticID-1064, customers can upload and add to the already extensive library of signatures, upload third-party libraries, and transfer libraries from one device to another.

Q: What kind of narcotics can TacticID identify?

A: The TacticID can identify a wide variety of illicit narcotics and pharmaceutical drugs including, but not limited to:

- Fentanyl
- Cocaine Base
- Cocaine HCl
- Crack Cocaine
- Amphetamines
- Methamphetamine
- Ketamine
- Steroids/testosterone
- Painkillers
- Methylphenidate
- Phencylidine
- Synthetic cannabinoids
- MDMA
- Heroin

The TacticID-1064 is recommended for identification of a broader range of samples including colored substances such as colored pills, and street samples which can be challenging to identify with Raman systems which use a 785 nm laser. The TacticID-1064 system mitigates fluorescence, meaning there is less likelihood the Raman signal being overwhelmed by it and not giving a distinct Raman spectrum. As such, the TacticID-1064 can more easily be used to scan real-world street samples.

Q: Can TacticID identify marijuana?

A: The Raman technology of the TacticID is best suited for chemicals and synthetics and can identify THC, the main active ingredient in cannabis. Plant materials such as marijuana can be challenging to identify with Raman. The TacticID-1064 does improve capabilities for measurement of colored substances such as plant materials.

Q: Can TacticID identify heroin?

A: Heroin identification is possible using the TacticID. Generally, TacticID can positively identify heroin that is over 80% pure. However, many street samples are often dark in color due to impurities, which gives rise to fluorescence that can interfere with Raman measurements. Surface Enhanced Raman Spectroscopy (SERS) enhances the Raman signal and suppresses the fluorescence of a sample, allowing for heroin identification. The TacPac™ SERS can be used for heroin and other dark samples and for detection of drugs at low concentrations. The use of the TacPac™ SERS sample takes only a few minutes to prepare and can be scanned directly with the TacticID.

Q: Is a SERS kit included with the TacticID Plus models?

A. The TacPac™ SERS (Surface Enhanced Raman Spectroscopy) kit is a standard accessory included with the TacticID-N Plus, and an optional accessory for the TacticID-GP Plus.

Q: Can TacticID identify fentanyl and heroin/fentanyl mixtures?

A: Similar to heroin, the TacticID can also positively identify fentanyl that is over 80% pure. The TacticID library currently contains over 35 fentanyl derivatives. However, because fentanyl is typically present at low concentrations in mixed street samples, the TacPac™ with the TacticID-N Plus or –GP Plus is a recommended means of identification for such cases. The TacticID library continues to be enhanced to keep up with the rapidly expanding fentanyl narcotic problem and the growing number of variations of this and other illicit substances. For low concentrations of drugs, the TacPac™ and associated SERS library is the best means of identification. User-customizable SERS libraries can be created on the TacticID-GP Plus.

Q: What about ‘spice’, ‘smile’, synthetic marijuana and other emerging narcotics?

A: TacticID has the ability to identify synthetic cannabinoids either directly on the device or through the use of the TacPac™. Generally, if the drug is powder, crystalline or liquid, the instrument can identify the sample directly. If a liquid solution is sprayed onto a grass-like substance, it may be at a level that is difficult to detect with Raman spectroscopy. The TacticID-1064 is recommended for identifying colored samples.

Q: Can the TacticID be used for identification of explosives?

A: An extensive explosive library is available for first responders and other users of the TacticID-GP Plus and TacticID-1064.

Typical examples of explosives are:

- PETN
- HMTD
- TATP
- TATB
- TNT
- RDX
- EGDN
- C4
- Nitroglycerin
- Ammonium Nitrate
- Potassium Chlorate
- Picric Acid
- Lead Syphnate

Q: Is the power adjustable to minimize any sample heating?

A: Yes, the power can be decreased to as low as 10% of the maximum laser power on all TacticID units. This can be done by a tap on the scan screen, or the power can be defined in the operation power setting. The use of B&W Tek’s patented STRaman® technology is a good way to measure a larger sampling area with less focused power on the sample surface. The ST adaptor, an option with the TacticID-1064 has a large sampling area, and thus a lower power density on the sample, so there is less risk of overheating when measuring dark and energetic samples.

Q: TacticID-GP Plus and TacticID-1064 allow users to add custom library items. What are the legal ramifications of this?

A: The custom library feature of TacticID-GP Plus and TacticID-1064 is designed to allow users to quickly add new, emerging or region-specific substances into their library if they are not already present. This allows for rapid identification of new threats using custom-made non-validated libraries. Customers are responsible for the integrity of the library content they create or import onto the device.

Q: Can spectra and libraries from the 785nm versions of TacticID be transferred to use directly on a 1064nm version of TacticID (or vice versa)?

A: While it is technically feasible that libraries transferred between different wavelengths could work on the different TacticID platforms after a transfer between wavelengths, we do not encourage this type of transfer as it introduces a level of complexity and possibility for failure that can be avoided by scanning

the sample and adding the library directly onto the new device. The limitations that may cause issues for proper ID when using libraries created on TacticID devices of different laser excitation wavelength are:

1. Different spectral regions: If the customer is using the full range to 2900 cm^{-1} on TacticID now, they may not get proper ID on TacticID-1064 which has a more limited spectra range of $176 - 2500\text{ cm}^{-1}$.
2. Different fluorescence characteristics of sample measured at 785 vs 1064 nm Raman.

Q: Can a user add a sample picture and input notes to include with the results?

A: Yes, the TacticID Plus and TacticID-1064 models have an embedded camera so a photo can be taken and included in the results report. For each analysis the user can also enter notes easily with the touch screen.

Q: Are software and library updates available for the TacticID?

A: Yes, B&W Tek publishes software updates, and customers are notified of the availability of library and software updates. These are available at no charge within the system warranty period.

Q: How are software and library updates sent and downloaded?

A: Update notices are sent to customers via email. Users are then provided with a secure download link for the update file which is installed on their TacticID Plus and TacticID-1064 from the computer-based TID software via Wi-Fi, Bluetooth or USB connection (Wi-Fi or Ethernet for TacticID). The software and libraries can also be upgraded directly on the device via an external OTG-USB.

Q: Is TacticID IP rated for field conditions?

A: Yes, the TacticID-GP Plus and TacticID-N Plus are IP65 rated for water resistance and are dust tight. With an IP68 rating, the TacticID-1064 is a more ruggedized system for use by first responders. Additionally the hard button navigation option in addition to the touch screen makes the TacticID more easily operable in Level A protective gear.

Q: Is TacticID drop test certified?

A: Yes, all TacticID models have passed the transit drop test according to MIL-STD-810H, METHOD 516.6.

Q: Is the laser contained in TacticID dangerous?

A: TacticID models contain a Class 3B laser and comply with the US FDA 21 CFR 1040.10 and IEC 60825-1 standards for safety of laser products. When used properly, this laser is completely safe. Users should be aware of the following precautions:

- Do not look directly into the laser aperture.
- Hold the instrument a minimum of 18 inches from your eye line.
- Use caution when scanning colored substances, lowering laser power to minimize sample heating. Use the ST option with TacticID-1064 for measuring sensitive samples.

Q: Is the scan time adjustable?

A: The scan time on all TacticID models is typically optimized for the sample being tested. There is an option for manual integration time setting.

Q: While analyzing samples in glass or plastic bags, can the TacticID identify the active ingredients inside? Will the presence of water impact the results?

A: Raman spectroscopy can measure through water and thin transparent or semi-transparent glass and plastic. Therefore, samples inside such packaging can be identified when there is sufficient concentration of the active ingredients. The identification of an active ingredient will depend on its concentration in the mix of chemicals and its Raman signal strength relative to the other chemicals present. Depending on which sampling accessory is used, the ability to measure accurately through translucent materials will vary. Case by case tests are recommended to provide complete and accurate data.

Q: The TacticID contains Wi-Fi connectivity. Can this function be turned off?

A: We understand that certain users may not or cannot utilize this function. Wi-Fi can be turned off in the system settings. The Wi-Fi function can also be disabled at factory if required.

Q: How is the TacticID powered?

A: The TacticID with 785 nm lasers has a rechargeable lithium ion battery with power capacity for around 10 hours. Standard operation allows for the instrument to be used for longer periods due to the system standby mode feature which, after a few minutes, makes the instrument idle without losing data or the operation point within the software. The power capacity for the TacticID-1064 battery is about 4 hours.

Q: What is the battery lifetime and how easily can a battery be replaced?

A: The battery usually can last about 300 cycles of 100% charge and discharge. Generally the battery can last about 2-3 years. The lithium ion battery is an industrial standard battery. A replacement battery as well as a charging cradle can be purchased for the TacticID. The battery can be easily replaced at the customer site without additional tools.

Q: Can the TacticID use disposable batteries?

A: The TacticID is supplied with a rechargeable lithium ion battery. Additional batteries and a charging cradle are available as is an optional disposable battery cartridge that can be used with six disposable CR123A batteries for TacticID devices. SureFire brand disposable batteries are recommended for use with TacticID products.

Q: How many scans can the TacticID store on the internal flash memory?

A: The TacticID can store more than 20,000 scans on the internal flash memory depending on other data and configurations stored on the system before the next synchronization to PC is performed. Additionally there is an option for an administrative user to delete scan data from the unit for users who do not require long-term data storage achieved by synchronizing to the secure TID database.

Q: Are the scans permanently stored on TacticID?

A: Scans are stored on the instrument until synchronization is performed through the TID software into the secure database via the PC. Once synchronization is complete, all result data on the instrument is removed, maximizing instrument internal memory. Note that the data delete function is available through the administrative access level.

Q: Can I get a copy of the results for reporting purposes?

A: Reports can be written directly to a USB drive from the TacticID-1064 and the TacticID-Plus models. The spectral data in csv format can also be exported directly from the device to a USB drive. For retention of data and reports, it is recommended that they be synchronized to the PC-based TID software where they are stored in a secure database. Individual and summary reports can be generated from the TID software.

Q: In the TacticID reporting software (TID), can I customize the outputs?

A: Yes, users can add custom entry fields and custom logos in the TID results reports that can appear on the print outs.

Q: Are there multiple operator level logins on the system?

A: There is an operator-level and an administrative-level login. An unlimited number of operator-level user accounts can be created on the system on the TacticID-1064, TacticID-GP Plus and TacticID-N Plus models. The results report includes the identity of the user who collected the data.

Q: What is the standard warranty period?

A: There is a 2 year warranty standard for the TacticID handheld Raman units. Extended warranty packages and service protection plans are available. Extended warranty and service plans can ensure that your TacticID will perform at an optimum level for many years to come and offer the benefit of factory monitoring and maintenance of the instrument. These types of warranty and service plans can extend the life of the instrument for maximum return on investment.

Q: What support can B&W Tek provide in case of hardware failure?

A: There are a series of built-in-diagnostic tools for the user to verify performance of the instrument at any time. In special cases, where service cannot be provided remotely, B&W Tek can arrange for a loaner or replacement unit. In addition, B&W Tek has a global network of trained service centers, and as a Metrohm Group company users will benefit from the Metrohm support network.

Q: Can the TacticID “see” through black or dark colored polybags?

A: Raman spectroscopy can be used to measure samples through transparent and translucent packaging such as plastic and glass. It is typically difficult to measure samples in dark containers with Raman spectroscopy as light needs to pass through the container and back. Sample identification has been possible depending on the opacity of the packaging, but it is always best to test the containers for the ability to consistently produce positive results. With B&W Tek’s patented see through technology (STRaman®), a specialized ST sampling adaptor is available that extends Raman capabilities to make measurements through opaque packaging, due to its deeper penetration depth.

Q: Are the narcotics identification results considered confirmatory in court?

A: Currently all handheld Raman narcotics identification is purely PRESUMPTIVE evidence. Raman Spectroscopy is a Category A method for identification of drugs in the recommendations of Scientific Working Group for the Analysis of Seized Drugs (SWGDRUG), requiring an additional test in a forensic lab to confirm identity. Raman is a proven, widely used analytical technique in many industries including the pharmaceutical market. Recently specific sample measurement results using handheld Raman devices are being admitted as confirmative evidence in the court in some countries.

Q: *In the future, will Raman results become confirmatory?*

A: It is a commonly accepted notion that in the relatively near future, enough court precedents will emerge to push Raman from presumptive to confirmatory. There are several recent cases that are paving the way to this precedent. B&W Tek is working with several U.S. law enforcement agencies in an effort to move TacticID and handheld Raman toward admissibility in the court system. Currently, Raman spectroscopy is valid as 1 of 2 complementary identification techniques as designated by SWGDRUG.