

Serstech 100 Indicator Screen Method

1 Introduction

With the launch of Firmware 3.2.x (and associated DMT v3.2) Serstech has made significant improvements to the instrument, specifically for applications within the “Security” area (such as Police, Custom, Civil Defense etc) where “on-the-spot” detection of Narcotics and/or Explosives is of prime concern.

The new measurement method called “Screen”, which was first introduced in a basic version in Firmware 3.0.9, has been redesigned based upon customer and market feedback.

2 Substance Classification

The overall principle with the “Screen” method is that the user (typically a police, customs or first defender officer in the field) wants a simple method for checking suspected samples, where the prime concern is to look out for “regulated substances” only.

Screen Category (Screen Type) & Regulatory Type

Depending on the situation, this check may for example be for anything classified as “Narcotics” or “Explosives”. In this document we refer to this as Screen Categories (or Screen Types).

In the present firmware, the Serstech 100 indicator can check for regulated substances in the Screen Categories “*Narcotics*” and/or “*Explosives*”, meaning that you can select either or both of these categories for your measurements. The concept is prepared for adding additional categories, such as “Toxic Substances” and “Hazardous Substances” in the near future.

For each of these Screen Categories, each substance in the reference libraries has been given its “Regulatory Type” settings depending on the severity of the substance. These “Regulatory Types” are, in order of severity;

1. **Regulated Substance** - e.g. a Narcotic substance that is listed as illegal
2. **Masking Agent** - a substance that commonly is used in a mixture to “hide” or mask the presence of a regulated substance
3. **Precursor** - a substance that is classified as a precursor in the manufacturing of e.g. a Narcotic
4. **Adulterant (or Cutting Agent)** - a substance that is commonly used in a mixture with a regulated substance, e.g. in a “street drug”.
5. **Clear** - a substance that is not regulated within this category
6. **Not yet categorized** - this is the setting for substances that has not yet been given its classification

3 Performing a “Screen Measurement”

There are 2 “scan settings” that control the “Screen” method;

Screen Type: This is where the user selects what category of substances he is screening for. Presently the available options are:

- Narcotics
- Explosives
- Narcotics & Explosives

Pass Limit: This is the mathematical correlation factor for when the spectra of a measured sample shall be considered being a “match” with the spectra in the reference library. The default setting is 80%, but this may be varied if you need tighter or wider screening results.

Assuming the settings are done, the user simply select the “Screen” function, decide the database(s) to compare with and starts the measurement

4 Results from “Screen” measurement

Unlike “Identify”, where the instrument list the match with the highest mathematical correlation factor first, for “Screen” the instrument will, in the case several possible substances are found, prioritize these according to the “severity level” given by each substance’s “Regulatory Type” (for the Screen “Category” selected).

To make “on-the-spot decisions” easy for the user, only the most “severe” substance will be shown on the screen.

Example of Result screens (in order of “severity”):

1. Regulated Substance



A red screen is shown with the name of the Substance Found and the Screen category in which it has been classified as a regulated substance.

2. Masking Agent



An orange screen is shown with the name of the substance found and a warning text indicating that this substance has been classified as a masking agent, meaning that it may be used to mask/hide the presence of a regulated substance in the sample.

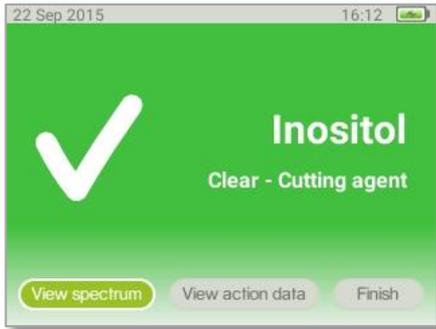
An advanced user may want to re-test the sample with the "Identify" method in order to check for "Residual Components" that may be included in the sample and/or reduce the "Pass Limit" and run another "Screen" measurement

3. Precursor



An orange screen is shown with the name of the substance found and a warning text indicating that this substance has been classified as a precursor, meaning that it may be used to manufacture a regulated substance (in the Screen category used for this measurement).

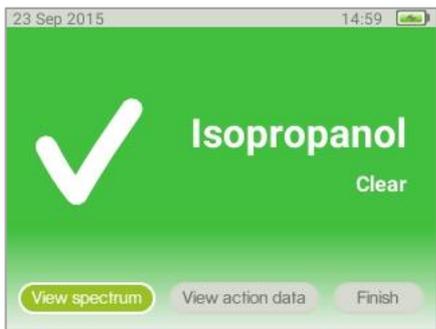
4. Adulterant / Cutting Agent



A green screen is shown with the name of the substance found and a text indicating that this substance in itself is not regulated, but it has been classified to be commonly used in mixtures with regulated substances, e.g. in “street drugs”.

An advanced user may want to re-test the sample with the “Identify” method in order to check for “Residual Components” that may be included in the sample and/or reduce the “Pass Limit” and run another “Screen” measurement

5. Clear



A green screen is shown with the name of the substance found and a text indicating that this substance is not regulated in the “Screen Category” selected for this measurement.

6. Not yet Categorized



A gray screen is shown with the name of the substance found and a warning text indicating that this substance has not yet been categorized in the “Screen Category” selected for this measurement. As such, the instrument would not know if this is a regulated substance or if it belongs to any of the less severe categories.

A typical situation when this screen occurs is if the substance found is in a “Local Database” library in which “Regulatory Type” classifications has not yet been done.

A user with the applicable user privileges should update all Local Databases with the required Regulatory Type classification of each reference substance. This is easily done with the DMT software (v3.2).

7. Inconclusive Result



A gray screen is shown with the text “Inconclusive”. This is typically the case if there is no match between sample and the selected libraries, or if the “mathematical correlation” of the library spectra and the measured sample is below the “Pass Limit” set.

You may want to re-test the sample while paying close attention to that the sample is correctly positioned at the instrument’s focal point and not exposed to strong ambient light.

An advanced user may also want to re-test the sample with the “Identify” method in order to check for “Residual Components” that may be included in the sample and/or reduce the “Pass Limit” and run another “Screen” measurement