

Technical Information

Raman Calibration Tool

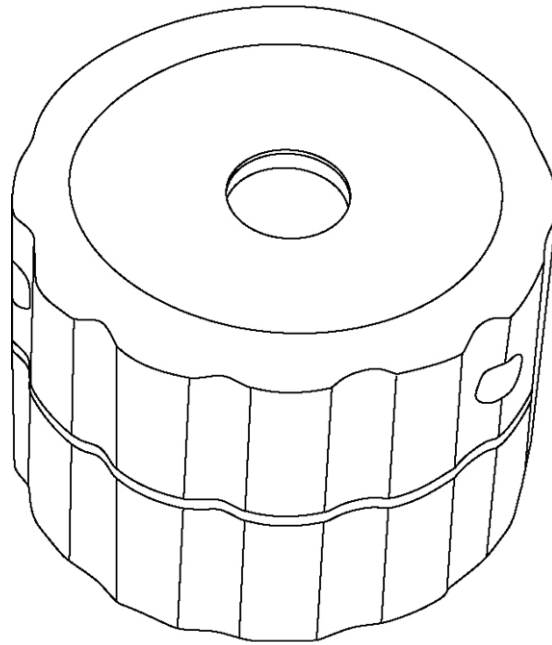


Table of Contents

Function and system design 3
Introduction.....3
Modes.....3
Storage protocols3

Specifications.....4
Dimensions 4
General 5

Function and system design

Introduction

The Raman Calibration Tool (RCT) is used for standardizing Raman instruments and analyzers to give precise spectra in terms of intensity. When used in conjunction with the calibration protocol recommended in this manual, it allows different instruments to be standardized such that they generate similar spectra when measuring a given sample. The RCT was created specifically for use with Raman instruments and analyzers manufactured by Endress+Hauser.

The RCT contains an intensity reference glass housed in a robust enclosure. The calibration head contains discrete positions for storing, loading, calibration and capturing probe background.

For intensity standardization, a [National Institute of Standards and Technology](#) (NIST) Standard Reference Material (SRM) fluorescent glass provides a factory-characterized spectral output. The primary source used in the certification process is a NIST traceable source. A wavelength specific SRM is required for each Raman excitation wavelength.

Modes

The rear view of the unit contains a window to view the indicating desiccant. If the desiccant is blue the RCT can be safely used, but if the desiccant is tan the RCT needs to be sent back to the manufacturer for service and should not be used for calibration purposes.

The mode selection is accomplished by slightly pulling the two parts of the unit apart and rotating the two relative to each other until the mode selection arrow is pointing to the desired mode.

- **Store.** This mode is used for storage as the dust cover will slide into place to protect the unit. The STORE mode moves the dust cover into place. Use this mode to protect the unit from damage when working with probes and/or the calibration accessory.
- **Load.** This mode is used for loading the unit onto a probe. A slight force may be necessary to gently load the unit until it bottoms out on the probe. The probe should only be loaded and unloaded in the LOAD position.
- **BG.** The BG mode presents a low Raman signature beam dump for collecting the probe background.
- **CAL.** The CAL mode is used to present the fluorescent glass to the probe.

Storage protocols

A humidity indicator port is incorporated into the RCT to ensure that proper storage conditions are met. The internal desiccant will turn from blue to tan if the internal humidity level is exceeded. Moisture degrades the SRM glass over time which can affect the spectral output of the glass. Short intervals of con-condensing, high humidity are acceptable, such as for the duration of a calibration. However, the tool should be kept at a relative humidity level of 10% or less for long-term storage. In the event that the desiccant is tan, the RCT should be returned to the manufacturer for service and should not be used.

The RCT ships in a sealed moisture bag with desiccant which is rated for up to 5 years of storage. The RCT should not be removed from this sealed bag until its first use. Once the RCT has been removed from the sealed bag, it should be kept in the sealed storage case with the desiccant provided, which should be removed from its separate sealed bag. An indicating desiccant is provided with the storage case, which will change color from blue to tan once it has been depleted. New desiccant can be purchased as part of the Spare Parts Kit (2017737) for the calibrator. The storage case should always remain closed and sealed except for loading or unloading the RCT. If proper handling and storage protocols are followed, the RCT can remain in the case for up to a year after it has been removed from its sealed bag.

Specifications

Dimensions

The height, width, and length of the Calibration Tool are shown below:

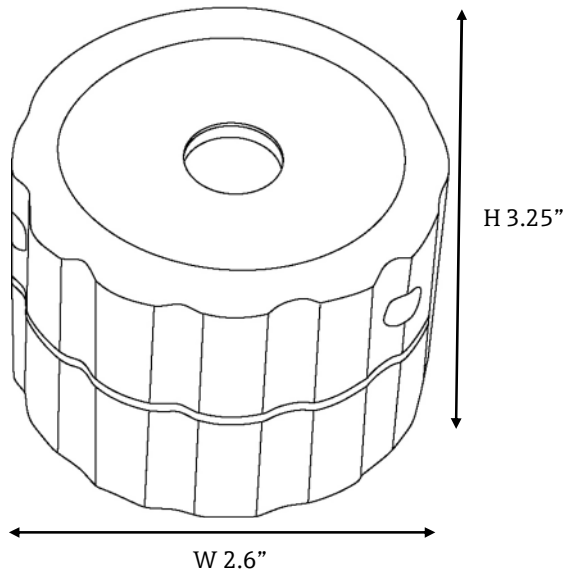


Figure 1. Calibration Tool dimensions

Name	Description
Height	3.25"
Width	2.6"

Table 1. Calibration Tool dimensions

General

The Calibration Tool specifications are listed below:

Item	Description
Spectral intensity	SRM Fluorescent Glass
Data file spectral range for given RCA models	SRM-532: 534.5 to 694.0 nm SRM-785: 790.7 to 1074.5 nm SRM-1000: 1012.6 to 1304.6 nm
Spectral intensity	< ± 2 %
Total long term spectral uncertainty (at any wavelength)	SRM-532: ± 2.85 % SRM-785: ± 6.05 % SRM-1000: ± 10 %
NIST traceable	Available upon request
Power source	N/A
Power consumption	None
Unit dimensions	83 x 66 mm (3.25 x 2.6 inches)
Unit mass (weight)	0.54 kg (1.2 lb.)
CE certified	N/A
IP Rating	IP10
Operating Conditions	-20 to 50 °C, < 95% Humidity Non-Condensing
Recommended Storage Conditions	15 to 25 °C < 10% Humidity Non-Condensing
Absolute Maximum Storage Conditions	-20 to 60 °C < 10% Humidity Non-Condensing

Table 2. Specifications

www.addresses.endress.com
