

# Quest Heated Puck

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## User Manual





# Quest Heated Puck User Manual

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## Introduction

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Thank you for purchasing a Specac product.

Models covered GS10890, GS10891, GS10892, GS10893 GS10894 & GS10895

The heated puck has been designed for use with the Quest™ ATR accessory. Its primary function being, heating a test sample placed on the optical aperture from ambient to a maximum of 110°C for elevated sample temperature assessments. The puck temperature is controlled via the USB Temperature Controller and supplied PC software.

Please consult manuals for additional supplied products that the Heated Puck is intended to be used with (revision numbers 2I-523-214 - USB Temperature Controller and 2I-10800 – Quest ATR accessory).

# Safety

## List of Safety Symbols

This manual should be consulted when any of the Safety Symbols below appear, to understand the nature of the Hazards and any actions to be taken in order to avoid them.

Safety Symbol	Meaning
	<p><b>Caution</b> (Reference ISO 7000-0434B, 2004-01)</p>
	<p><b>Caution – Hot Surface</b> (Reference IEC 60417-5041, 2002-10)</p>
	<p><b>Caution – Possibility of Electric Shock</b></p>
	<p><b>Indoor Use Only</b></p>



**Warning:** Do not use this equipment with any accessory it has not been specifically designed or configured for use with. Contact your local authorized Specac dealer or sales team for further information regarding the compatibility of the controller and puck with other devices and 3rd party accessories.



**Caution!** For indoors use only. Do not subject to dripping or splashing. Not for use in wet locations.



**Warning:** No user serviceable parts within. Contact Specac and/or your local Specac authorised agent for all service and repair requirements.



**Warning:** Disconnect the device from the mains supply before cleaning. Only clean with a soft cloth, lightly dampened with water. Do not use harsh and/or abrasive cleaners on any Specac product. Consult Specac or their authorized agent if in any doubt.



**Warning:** Should potentially hazardous or hazardous materials be used or spilled onto or into the equipment the RESPONSIBLE BODY shall ensure that the appropriate decontamination is carried out and that no decontamination or cleaning agents are used which could cause a HAZARD as a result of a reaction with parts of the equipment or with material contained in it, if in any doubt about the compatibility of decontamination or cleaning agents contact Specac Technical Support for further information.



**Warning:** Check before use that the safety protection provided has not been compromised or impaired. The controller should be made inoperative and be secured against unintended operation if in any doubt.

The protection is likely to be impaired if for example the controller:

- Shows visible signs of damage.
- Fails to perform its intended use.
- Has been subjected to adverse storage conditions.
- Has been subjected to severe transport stresses.



**Warning:** Burn Hazard, when operated at high temperatures allow hot surfaces to cool down before handling, risk of burns.



**Warning:** Heating of materials could lead to the liberation of hazardous substances.



**Warning:** If the heating of materials could lead to the liberation of hazardous substances or gases, explosion or implosion, then an extraction system and/or a temperature limiting device, relating to the materials and safe temperatures for the materials used, should be installed.



**Caution:** Always follow local laboratory safety protocols and procedures when using potential toxic or flammable substances within this equipment.



**Caution:** The equipment is intended for use by suitably trained personnel only.

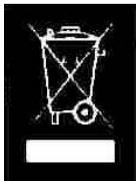


**Caution:** Always wear adequate PPE gloves when handling the housing if they are to be removed or fitted to or from the spectrometer and when cleaning.



**Caution:** If the equipment is used in a manner not specified within this manual, the protection provided by the equipment may be impaired

#### WEEE Directive for Equipment Disposal



This symbol indicates that this product complies with the Waste Electrical and Electronic Equipment Directive (WEEE). If this product is in use and was purchased within the European Union, please contact your local sales agent or Specac to arrange for disposal of this equipment when no longer required.

## Specifications & Part Numbers

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### 1.1 Specifications

**ATR Crystal:** Extended Diamond or ZnSe (uncoated)

**Sample volume:** ~700  $\mu$ L

**Sample Types:** Small Solids and Liquid

**Operating Temperature:** Ambient to 110 °C

**Max Ramp Rate:** ca. 10 °C min<sup>-1</sup>

**Detector type:** 4 Wire Pt RTD

**Detector Sensitivity:** ~1/3 DIN

**Storage conditions:** -20 to +60 °C

**Altitude:** Up to 2000m

**Pollution Degree:** 2

**DC supply rating:** 36Vdc, 4.17A, 150W

**Over Voltage Category:** II

### 1.2 Part Numbers

#### **Quest, Heated Puck and USB temperature Controller Bundle**

**GS10894** Extended Diamond

**GS10895** Uncoated ZnSe

#### **Heated Puck & USB temperature Controller (Requires Quest for use)**

**GS10890** Extended Diamond

**GS10891** Uncoated ZnSe

#### **Heated Puck (Requires Quest & USB temperature controller for use)**

**GS10892** Extended Diamond

**GS10893** Uncoated ZnSe

### 1.3 Spare Parts

**GS10503** Volatile Cover

## Unpacking and Checklist

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On receipt of your product, please check that the following have been supplied.

GS10894 or GS10895 (Quest, Heated Puck and USB Temperature Controller):

- Quest (consult packing list in Quest Manual, 2I-10800)
- 1 x Heated Puck [Diamond/ZnSe]
- 1 x Volatiles Cover
- 1 x USB Temperature Controller
- 1 x USB Temperature Controller USB lead
- 1 x USB Temperature Controller inline PSU
- 1 x USB Mains cord set for inline PSU

GS10890 or GS10891 (Heated Puck and USB Temperature Controller):

- 1 x Heated Puck [Diamond/ZnSe]
- 1 x Volatiles Cover
- 1 x USB stick containing electronic copies of all manuals
- 1 x USB Temperature Controller
- 1 x USB Temperature Controller USB lead
- 1 x USB Temperature Controller inline PSU
- 1 x USB Mains cord set for inline PSU

GS10892 or GS10893 (Spare Heated Puck):

- 1 x Heated Puck [Diamond/ZnSe]
- 1 x Volatiles Cover
- 1 x USB stick containing electronic copies of all manuals

## Recommended Sampling Procedures

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For cleaning and sample handling instructions please consult the Quest Manual.

### 1.4 Volatiles Cover

For liquid samples, a volatiles cover is provided to minimise or eliminate sample evaporation. When not using the volatiles cover, please be aware that over time your sample may evaporate and result in concentration increases.

### 1.5 Background Spectrum

For best results, a background spectrum should be recorded at the same temperature as the sample collection temperature. For the ZnSe puck if the background is recorded at a different temperature some baseline shifting maybe observed. For the diamond puck, a significant difference in temperature between background and sample will result in the appearance of peaks in the region  $2700-1600\text{ cm}^{-1}$  due to a strong temperature dependence of the diamond phonon modes.

The changes in the diamond phonon can also be dealt with by subtraction of blank spectra recorded under the same conditions. (i.e., if you record a sample spectrum at  $100\text{ }^{\circ}\text{C}$  with a background recorded at  $20\text{ }^{\circ}\text{C}$  the phonon changes can be removed by subtraction of a blank spectrum of the puck recorded at  $100\text{ }^{\circ}\text{C}$  with a  $20\text{ }^{\circ}\text{C}$  background).

Care must be taken to avoid assigning phonon changes to your sample! Depending on experimental requirements it may not always be possible to record a background immediately before your sample test. Consult your spectrometer provider for the best way to achieve this with their software.

### 1.6 Best Practice for recording an FTIR spectrum with the Heated Puck

Depending on your exact experimental requirements this procedure may need to be varied. For best results set your puck to the desired temperature

and then wait 5-15 minutes for the system to equilibrate before recording a background sample.

- For a liquid, fill sample well to the top, fit the volatiles cap (if required).
- For a solid, load your sample into the well and apply a load to ensure good contact.

Then wait a further 5 minutes for your sample to equilibrate before recording your spectrum.

## 1.7 Temperature Overshoot

The puck is optimised to heat up quickly, although this can result in a small temperature overshoot at the diamond ( $<2\text{ }^{\circ}\text{C}$ ) before it stabilises at the set temperature. For samples where this might pose a problem this overshoot can be limited by setting a ramp rate. For safety we recommend running some tests on less important samples.

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**SPECAC INC.**

Suite 129, 333 N Bedford Rd  
Mount Kisco, NY 10549  
United States  
Tel: 800-248-3847

**SPECAC LTD.**

Science and Innovation Centre,  
Halo Business Park,  
Cray Avenue,  
Orpington,  
Kent BR5 3FQ  
Tel: +44 (0) 1689 873