

DESCRIPTION

The **TSA12Gi** Thermo-electric (Peltier) based stage is specifically designed for inverted optical microscopes and is particularly ideal for applications such as Cell culture and biology. It features a large and gas-tight sample chamber, a wide adjustable viewing window, and customizable base plate. The TSA12Gi can accommodate both petri dishes and microscope slides with its optional cover lids. The featured Peltier thermal unit both heats and cools without the need for a liquid nitrogen supply, making it especially convenient to performing long duration experiments at cold temperatures and ultimately reduces operating costs. In addition, the optional cover lid is available for better thermal uniformity.



KEY FEATURES

Dual Heaters

Peltier heating/cooling module on both side of sample area for better temperature uniformity

Reach Below Ambient without LN2

-25°C with standard C100W, or -30°C with [C500W Chiller](#)

Rapid Heating Rates

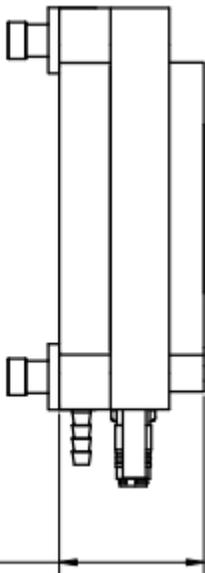
+150°C per minute max rate

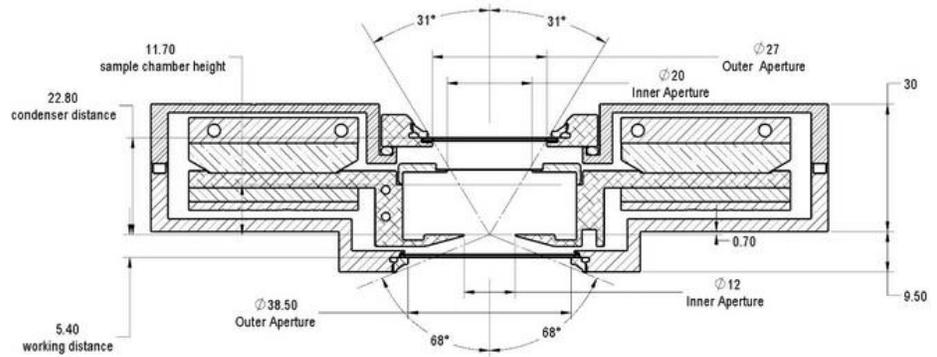
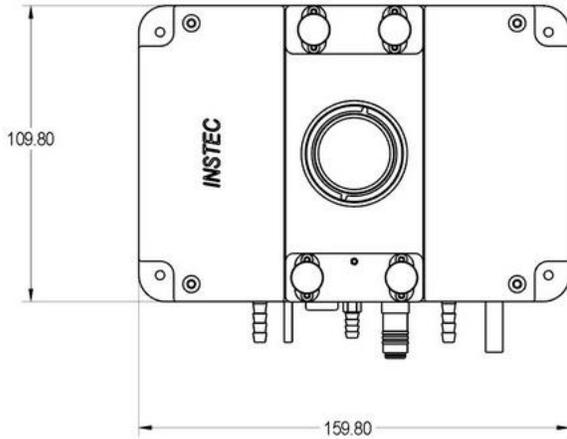
Cover Lid Options

Cover lid options to accommodate standard microscope slides, petri dishes, capillary tubes & more.

Accuracy and Stability

A pt100 platinum RTD sensor is embedded into the sample heating and cooling block to guarantee high temperature accuracy and stability. The RTD sensor is calibrated to measure the temperature of the surface of the sample heating block – giving the closest and most accurate reading of sample possible. Additional sensor option and alternative sensor, such as a thermistor, option is also available.





Additional Features

- Includes standalone [mK2000](#) temperature controller
- Includes 'InstecApp' Windows compatible software for optional operation via PC
- Comes standard with optical glass windows that can be easily replaced with IR or UV transparent glass.

THERMAL SPECIFICATIONS

Temperature Control	mK2000 with programmable precision switching PID method
Thermal Block	Clear anodized aluminum
Sample Thermal Cover	Removable Inner sample cover with additional window
Temperature Minimum	-10°C w/ C100W -30°C w/ C500W Chiller
Temperature Maximum	90°C (up to 120°C option available)
Temperature Sensor	100 Ω Platinum RTD
Maximum Heating Rate	+12°C per minute at 25°C
Maximum Cooling Rate	-10°C per minute at 25°C
Minimum Heating and Cooling Rate	±0.01°C per minute
Temperature Resolution	0.01°C
Temperature Stability	±0.05°C (>25°C), ±0.1°C (<25°C)
Power supply	Universal power input
Software	Windows software to record and export temperature-time data

OPTICAL SPECIFICATIONS

Optical access	Reflection and transmission capability
Optical Windows	Removable and exchangeable windows permit full-spectrum transparency
Minimum Objective Working Distance	5.4 mm
Minimum Condenser Working Distance	22.8 mm
Top Window	Ø27mm (OD), Ø20mm (ID)
Transmission Aperture	Ø12 mm
Top Viewing Angle	±31° from normal
Bottom Window	Ø38.5mm (OD), Ø12 mm (ID)
Bottom Viewing Angle	±68° from normal

STRUCTURAL SPECIFICATIONS

Sample Area	Ø40.5mm to accommodate Ø35mm petri dishes
Chamber Height	10.4 mm with removable inner cover 11.7mm without removable inner cover
Mounting	Horizontal and vertical mounting capability
Frame Dimensions	159.8mm x 109.8mm x 39.5 mm
Weight	1000 g

Base Cooling

All of Instec's Thermo-electric heating and cooling stages come with a water circulator for base cooling (see [C100W](#) chiller). The C100W will allow one to cool the sample to -10°C for a short period of time. For cooler sample temperatures at longer durations, the [C500W](#) chiller is recommended – as it is able to cool the circulating water to 1°C as opposed to the near room temp water in a C100W.



Spacer Set

Increase chamber height with fitted [spacer kit](#) to allow fitment of taller samples, while maintaining the gas tight capability with the top cover.

Inner Cover

The chamber height is the distance between the top surface of the thermal block and the bottom surface of the outer cover. With an optional inner cover, the distance is minimized in design to allow for just enough eight for intended samples (slides, slipcovers, wafer pieces, etc.) and to decrease the minimum objective working distance. By closing the distance, the vertical temperature gradients are also significantly reduced.



Electrical Feedthroughs

Add up to 8 electrical feedthroughs for applying electric field to sample.

Camera

Integrate digital image acquisition with sample temperature overlay. Includes software (WinDV thru InstecApp) USB 2.0 connection, 1.92-megapixel resolution, C-mount microscope connection standard. (see [MITO2](#))

Mounting Adapter

Various mounting adapters are available for most microscope models and/or instruments. Custom mounting adapter may also be made to fit each and every application.

Windows

Additionally available windows are Sapphire, BaF2, CaF2, ZnSe