THORLABS

GCH25-75
Glass Cell Heater

Operating Manual

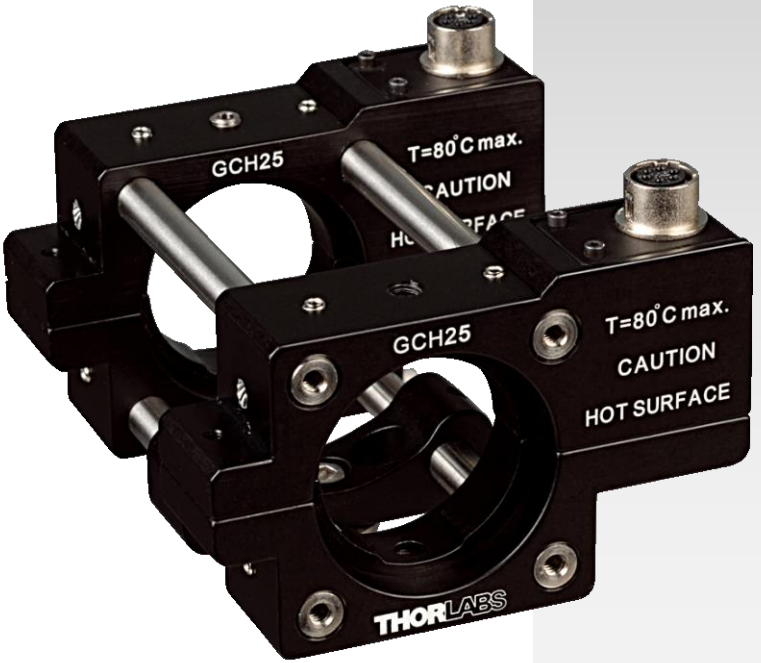


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Chapter 1 Warning Symbol Definitions

Below is a list of warning symbols you may encounter in this manual or on your device.

Symbol	Description
	Direct Current
	Alternating Current
	Both Direct and Alternating Current
	Earth Ground Terminal
	Protective Conductor Terminal
	Frame or Chassis Terminal
	Equipotentiality
	On (Supply)
	Off (Supply)
	In Position of a Bi-Stable Push Control
	Out Position of a Bi-Stable Push Control
	Caution: Risk of Electric Shock
	Caution: Hot Surface
	Caution: Risk of Danger
	Warning: Laser Radiation
	Caution: ESD Sensitive Components

Chapter 2 Description

The GCH25-75 Glass Cell Heater is an actively heated reference cell mount that is compatible with our selection of gas reference cells and Thorlabs' TC300 Heater Controller. This device is compatible with Ø25 mm glass cells as well as Ø9 mm or Ø19 mm glass cells using the including adapters. The GCH25-75 also provides a heating capability that will prevent condensation from forming on the end facets.

This heater consists of two separate heaters, which are separated by our Ø6 mm cage rods at a set distance of 75 mm, making the GCH25-75 compatible with our 30 mm cage systems. Included with the heater are two Hirose cables.

Caution!

The temperature of the heater and reference cell surfaces may be very hot! Handle with care.

Chapter 3 Installation and Operation

3.1. Installing the Reference Cell into the Heater

Note: The GCH25-75 heater should be installed onto a Thorlabs post with a post holder and base prior to installing the reference cell into the mount. The hole for the mount is only accessed from the top of the crossbar and would not be accessible once the cell is installed. These are not shown in the pictures below to provide a clearer presentation.



1. Remove the four button head cap screws on the bottom of the heater assembly, two per heater.



Figure 1 Remove Cap Screws

2. Separate the top and bottom of the heater assembly.

3. Place the reference cell into the top section of the disassembled heater so that it rests in the semi-circle. The radius of the reference cell must match the radius of the heater mount, if it does not fit properly make sure you have the appropriate heater for the reference cell you have.

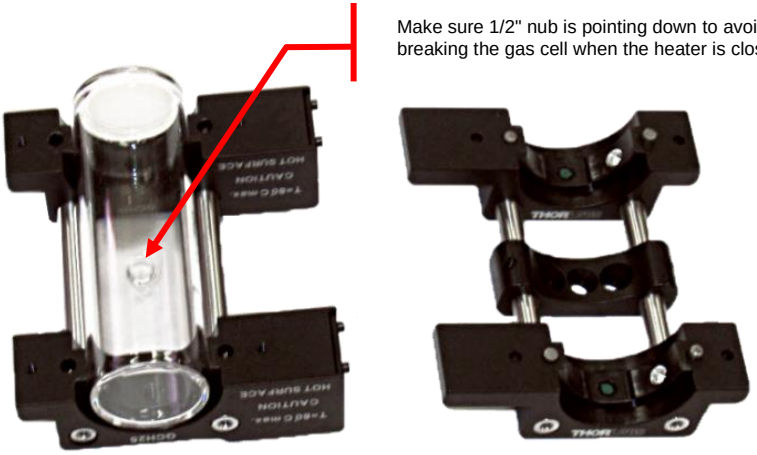


Figure 2 Install Reference Cell

4. Place the bottom half of the heater back onto the top half, aligning the guide pins.

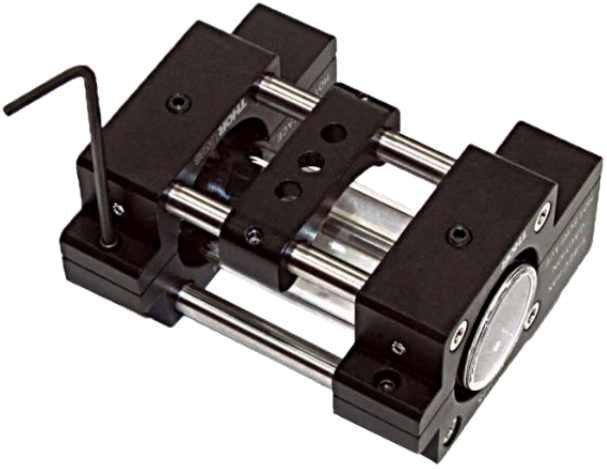


Figure 3 Reassemble Two Halves of Heater

5. Replace the four cap head screws removed in Step 1 and tighten each screw until hand tight.
6. Carefully turn the assembly so that the input connectors are now facing up.
7. Tighten the two setscrews (one on each heater) to secure the reference cell in the mount. **Warning**: Do not overtighten the screws, as this could damage the reference cell.

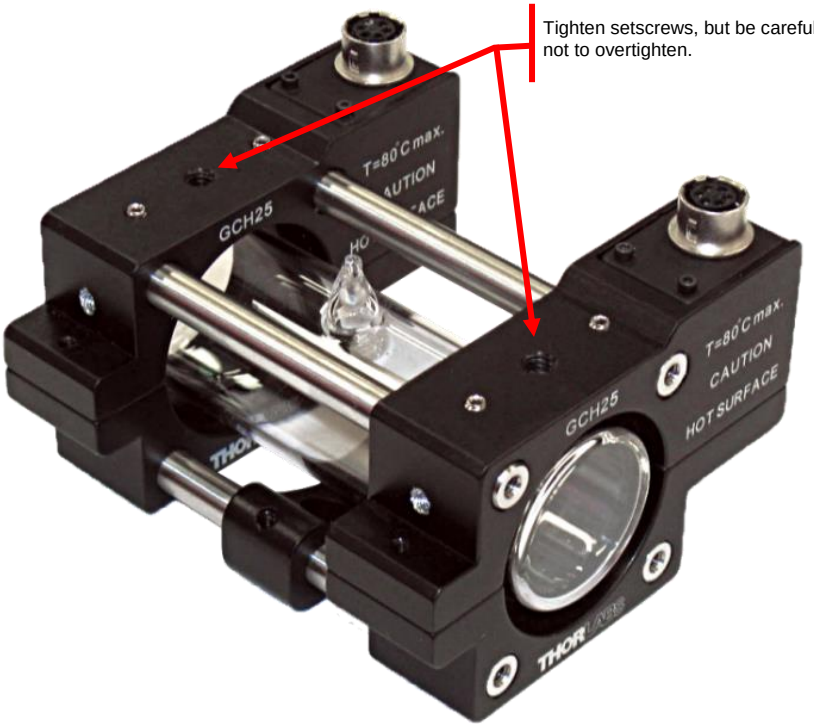


Figure 4 Carefully secure cell with set screws

3.2. Installing Adapters

The GCH25-75 comes with two adapter pairs for use with Ø9 mm and Ø19 mm gas cells. The following instructions are for both. The adapter ring can be assembled either facing in or out depending on the length of the gas cell.

1. Unscrew small hex screws to open adapter. Insert gas cell into holder, close and secure with small hex screws. Then tighten setscrew being sure not to over torque the screw.



Figure 5 9 mm Adapter Mounting onto Gas Cell

2. Attach second adapter ring to other side, but do not tighten setscrew. Place gas cell onto the bottom half of the heater. Adjust the position of the adapter rings to fit securely onto the heater then tighten the setscrews. Again, be careful not to over torque screw.

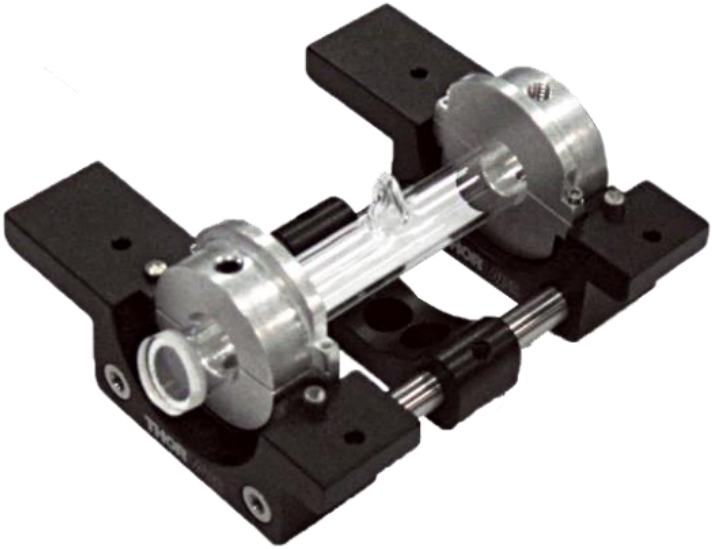


Figure 6 Small Adapter Positioned in the Heater

3. Then place the top half of the heater onto the gas cell, turn it over, and replace the cap screws securing the heater closed.

3.3. Variations for the 19 mm Adapter

1. When placing the 19 mm gas cell into the adapter ring, one set of nylon-tipped setscrews should face out, be aligned to the top of the heater (up), and aligned with the gas cell nub (which is also facing up).

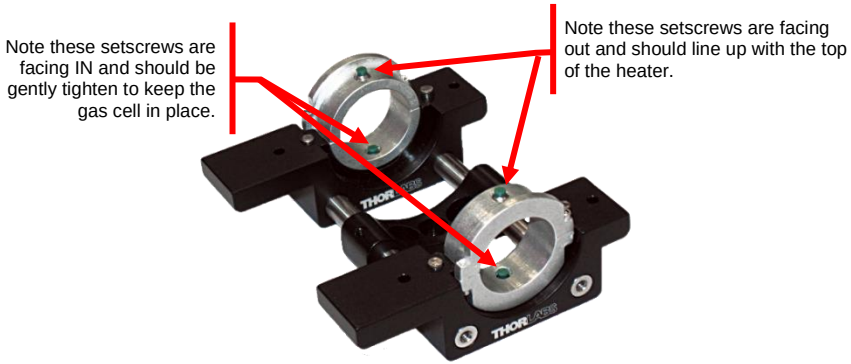


Figure 7 19 mm Adapter Rings Positioned onto the Heater (Gas Cell not Shown)

2. The setscrews on the bottom can be tightened down to the retaining ring to hold the adapters and gas cell in place.

3.4. Operation

1. Locate the assembly on a solid, dry working surface. Unit should be secured to a standard optical breadboard using a Thorlabs' post and base (not included).
2. Connect the heater to an appropriate heater controller. The Hirose connectors are pin compatible with Thorlabs' TC300 Heater Controller. The TC300 provides two output channels to allow control of both heaters in the GCH25-75 heater. Please refer to Section 4.2 for pin designations if you are using a third party controller.
3. Operate the heater in accordance with the controller that is powering it. If using the TC300, please refer to the TC300 user manual for specific information on operating the GCH25-75 heater.



Caution!



DO NOT exceed a temperature setting of 80 °C!

3.5. General Maintenance

There are no user serviceable parts in the GCH25-75 heater. If you suspect something has failed on the unit, please contact Thorlabs for advice on returning the unit for evaluation.

3.6. Cleaning

The unit can be cleaned using a soft, slightly damp cloth. Avoid using any solvents on or near the unit.

Chapter 4 Specifications

General Specifications	
Temperature Range[1]	Ambient (Min) 50 °C (Max)
DC Input	
Input Voltage	24 V (Max)
Input Current	0.7 A (Max)
Heater Resistance ±10%	38.4 Ω (Typ.)
Thermistor Resistance at 0 °C[2]	100 Ω (Typ.)
Heating Capacity[3]	15 W (Max)
Connector	Hirose (HR10A-7R-6S) Mating Connector Part #: HR10A-7P-6PC

4.1. Thermistor Data

For the temperature range of 0 to 850 °C:

$$R_T = R_0((1 + AT + BT^2),$$

in accordance with IEC 751, 2:1995-07 [DIN EN 60751; 1996-07], where

A = 3.9083 x 10^{-3} $\frac{1}{°C}$
B = - 5.775 x 10^{-7} $\frac{1}{°C^2}$
R_T = The resistance in Ω at temperature T.
T = The temperature in °C.
R_0 = 100 Ω for the PT100

[1] Heater only operates in heating mode.
[2] The thermistor is a positive-temperature-coefficient (PTC) type, resistive temperature device. See section 4.1.
[3] 15 W @ 24 V ± 20%, 3.8 W @ 12 V, and 0.90 W @ 6 V

4.2. Pin Assignments

Pin #	Assignment
1	Heater Input
2	Heater Input Return
3	Reserved (Do Not Connect to This Pin)
4	Sensor Input (+)
5	Sensor Input Ground
6	Reserved (Do Not Connect to This Pin)

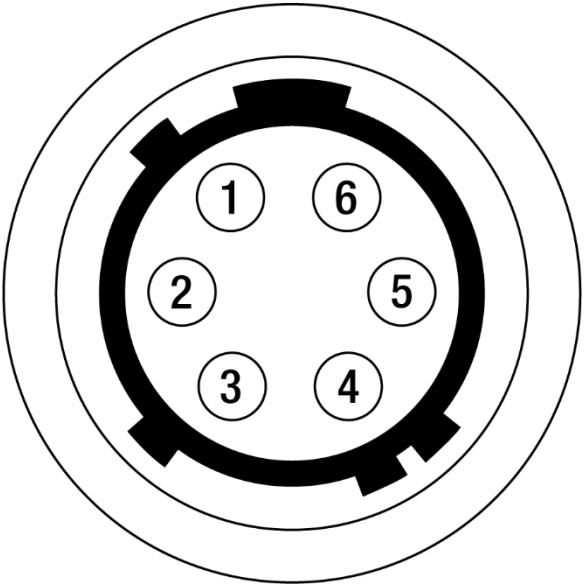
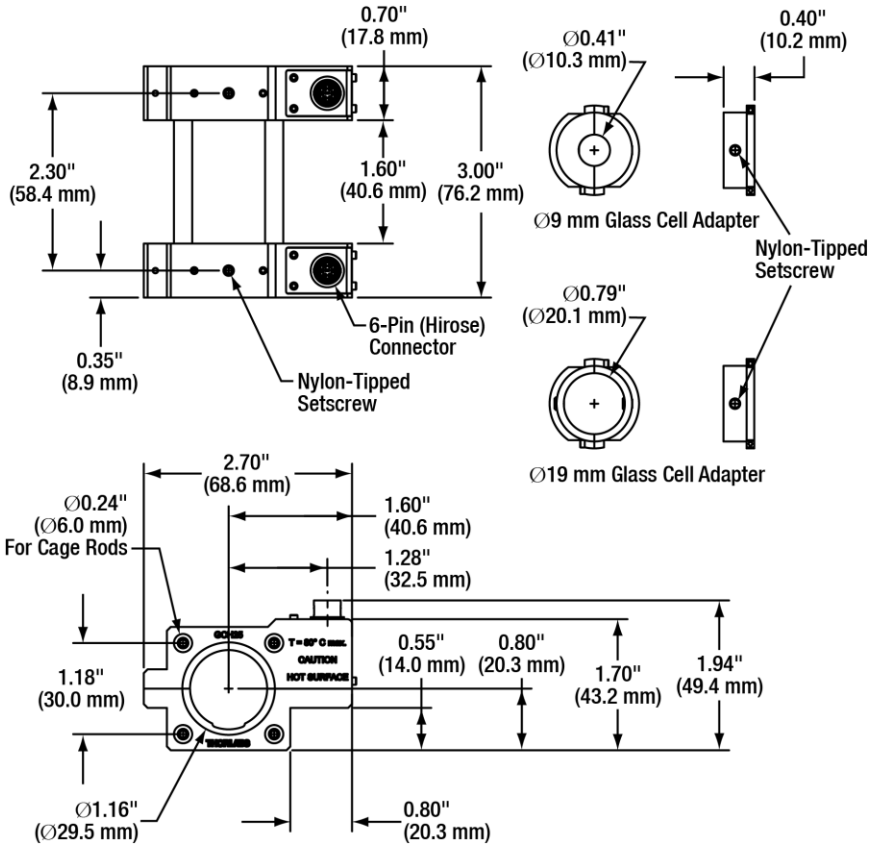


Figure 8 6-Pin Hirose Temperature Controller Connector

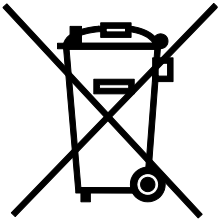
Chapter 5 Mechanical Drawings



Chapter 6 Regulatory

As required by the WEEE (Waste Electrical and Electronic Equipment Directive) of the European Community and the corresponding national laws, Thorlabs offers all end users in the EC the possibility to return “end of life” units without incurring disposal charges.

- This offer is valid for Thorlabs electrical and electronic equipment:
- Sold after August 13, 2005
- Marked correspondingly with the crossed out “wheelie bin” logo (see right)
- Sold to a company or institute within the EC
- Currently owned by a company or institute within the EC
- Still complete, not disassembled and not contaminated



Wheelie Bin Logo

As the WEEE directive applies to self-contained operational electrical and electronic products, this end of life take back service does not refer to other Thorlabs products, such as:

- Pure OEM products, that means assemblies to be built into a unit by the user (e.g. OEM laser driver cards)
- Components
- Mechanics and optics
- Left over parts of units disassembled by the user (PCB’s, housings etc.).

If you wish to return a Thorlabs unit for waste recovery, please contact Thorlabs or your nearest dealer for further information.

Waste Treatment is Your Own Responsibility

If you do not return an “end of life” unit to Thorlabs, you must hand it to a company specialized in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site.

Ecological Background

It is well known that WEEE pollutes the environment by releasing toxic products during decomposition. The aim of the European RoHS directive is to reduce the content of toxic substances in electronic products in the future.

The intent of the WEEE directive is to enforce the recycling of WEEE. A controlled recycling of end of life products will thereby avoid negative impacts on the environment.

Chapter 7 Thorlabs Worldwide Contacts

For technical support or sales inquiries, please visit us at www.thorlabs.com/contact for our most up-to-date contact information.



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