

**Product Name :**  
Astra Scientific Computerized Thermal Conductivity of Liquid

**Product Code :**  
HeatMassLab0008



**Description :**

Astra Scientific Computerized Thermal Conductivity of Liquid

**Technical Specification :**

The heat transfer trainer offers basic experiments for targeted teaching on the topic of heat conduction in fluids. Such teaching should discuss the fundamental differences between gases and liquids.

Two cylinders form the main component of the experimental unit: an electrically heated inner cylinder situated in a water-cooled outer cylinder. There is a concentric annular gap between the two cylinders. This annular gap is filled with the fluid being studied. The heat conduction occurs from the inner cylinder, through the fluid to the outer cylinder. The narrow annular gap prevents the formation of a convective heat flux and allows a relatively large pass-through area while at the same time providing a homogeneous temperature distribution.

The experimental unit is equipped with temperature sensors inside and outside of the annular gap. Thermal conductivities for different fluids, e.g. water, oil, air or carbon dioxide can be determined in experiments.

The microprocessor-based instrumentation is well protected in the housing. The software consists of a software for system operation and

for data acquisition and an educational software.

#### FEATURES:

- Steady heat conduction in gases and liquids:
  - o Determine the thermal resistance of fluids
  - o Determination of thermal conductivities  $k$  for different fluids at different temperatures
- Transient heat conduction in fluids:
  - o Interpret transient states during heating and cooling
  - o Introduction to transient heat conduction with the block capacity model
  - o Functions of the software: educational software, data acquisition, system operation

#### SPECIFICATION:

- Concentric annular gap between 2 cylinders containing the fluid being studied
- Inner cylinder, continuously electrically heated
- Water-cooled outer cylinder
- Heater

Heating power: 350W

Temperature limitation: 95°C

- Heat transfer area: 0,007439m<sup>2</sup>
- Annular gap

Height: 0,4mm

Average diameter: 29,6mm

- Inner cylinder

Mass: 0,11kg

- Specific heat capacity: 890J/kg\*K
- Measuring ranges

temperature: 2x 0...325°C

Heating power: 0...450W

- Required for Operation

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase



## Astra Scientific

www.astrascientific.com, **Email:** info@astrascientific.com

**Address:** K-88, 20th Street, Annanagar, Chennai, India – 600040 **Phone:** +91-8860605265