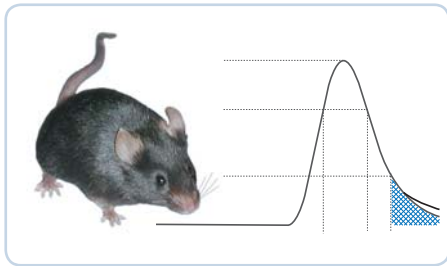


# Cardiac Output Studies

## Measurement of Cardiac Output using Thermodilution



ADInstruments provides complete solutions for the recording of cardiac output in small animals such as mice and rats, using the thermodilution technique.

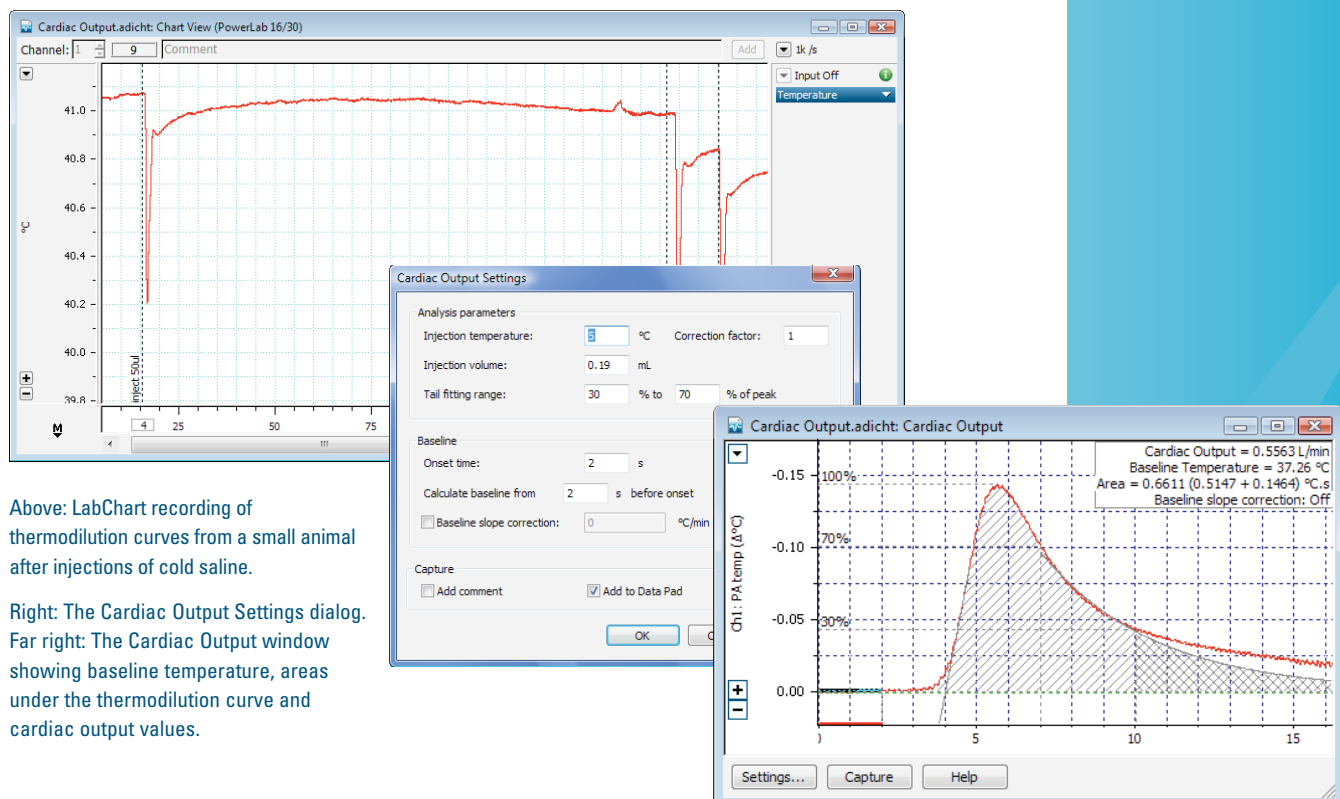
The equipment measures, records and analyzes a temperature change within the arterial circulation following the injection of a cooled solution into the right side of the heart.

Key products include the Cardiac Output Pod (temperature signal conditioner) and the T-type Ultra Fast Thermocouple Probe (5 ms response time). These are used with a PowerLab® data acquisition unit, LabChart® software and the Cardiac Output Module for Windows®.

The LabChart Cardiac Output Module displays and calculates cardiac output from recorded thermodilution curves. The module allows you to set parameters such as injectate temperature, volume, baseline slope correction and temperature tail-fitting limits. You can then export the calculated cardiac output values from each thermodilution curve to other programs for further analysis.

### Features & Benefits

- Complete range of compatible products including data acquisition systems, signal conditioners, thermocouple probes, software and accessories
- Software controlled signal conditioners
- Ultra fast response T-type Thermocouple Probe for accurate measurements
- Quick and easy calculation of cardiac output using the Cardiac Output Module for LabChart
- Accessory kit for accurate delivery of injectate



Above: LabChart recording of thermodilution curves from a small animal after injections of cold saline.

Right: The Cardiac Output Settings dialog. Far right: The Cardiac Output window showing baseline temperature, areas under the thermodilution curve and cardiac output values.

# Cardiac Output Components

## Product Features

The Cardiac Output Pod and Ultra Fast Thermocouple Probe measure temperature changes in the circulation. The injectate temperature can be measured using the T-type Pod and the General Purpose T-type Thermocouple Probe. The Accessory Kit includes catheters, taps and an injectate syringe with repeating dispenser. All components are compatible with PowerLab data acquisition systems, making it easy to measure and analyze cardiac output in small animals.

## Cardiac Output Products



- PL3504 PowerLab 4/35
- MLS260/7 LabChart Pro (LabChart analysis modules including the Cardiac Output Module)
- ML312 T-type Pod
- MLT1400 General Purpose Thermocouple Probe
- ML313 Cardiac Output Pod (no thermocouple)
- ML313C Cardiac Output Pod including:
  - MLT1402 T-type Ultra Fast Thermocouple Probe
  - MLS340/7 Cardiac Output Module
- MLA313 Cardiac Output Accessory Kit including:
  - Hamilton LR Glass Syringe (250  $\mu$ L)
  - Repeating Dispenser
  - Polyethylene Tubing
  - Three-way Taps (x4)
  - Touhy Borst Adaptors (x2)
  - Luer Needle Hubs (x6)



Share your data with colleagues. Free LabChart Reader – download to view and analyze LabChart data.

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PowerLab systems and signal conditioners meet the European EMC directive. ADInstruments signal conditioners for human use are approved to the IEC60601-1 patient safety standard and meet the CSA C22.2 No. 601.1-M90 and UL Std No. 2601-1 safety of medical electrical equipment standards.



## ADINSTRUMENTS.com

ISO 9001:2008 Certified Quality Management System



### North America

Tel: +1 888 965 6040  
 Fax: +1 866 965 9293  
 info.ad@adstruments.com

### United Kingdom

Tel: +44 1865 332 050  
 Fax: +44 1865 332 051  
 info.uk@adstruments.com

### Germany

Tel: +49 6226 970105  
 Fax: +49 6226 970106  
 info.de@adstruments.com

### North Asia

Tel: +86 21 5830 5639  
 Fax: +86 21 5830 5640  
 info.cn@adstruments.com

### South East Asia

Tel: +60 3 8024 5296  
 Fax: +60 3 8023 6307  
 info.sea@adstruments.com

### Japan

Tel: +81 52 932 6462  
 Fax: +81 52 932 6755  
 info.jp@adstruments.com

### South America

Tel: +56 2 356 6749  
 Fax: +56 2 356 6786  
 info.cl@adstruments.com

### Brazil

Tel: +55 11 3266 2393  
 Fax: +55 11 3266 2392  
 info.br@adstruments.com

### South Asia

Tel: +91 11 4306 5615  
 Fax: +91 11 4306 5614  
 info.in@adstruments.com

### Australia

Tel: +61 2 8818 3400  
 Fax: +61 2 8818 3499  
 info.au@adstruments.com

### New Zealand

Tel: +64 3 477 4646  
 Fax: +64 3 477 4346  
 info.nz@adstruments.com

### Head Office

Tel: +61 2 8818 3400  
 Fax: +61 2 8818 3499  
 info.au@adstruments.com