

# Metabolic Module

## Metabolic Module for LabChart® Software & PowerLab®

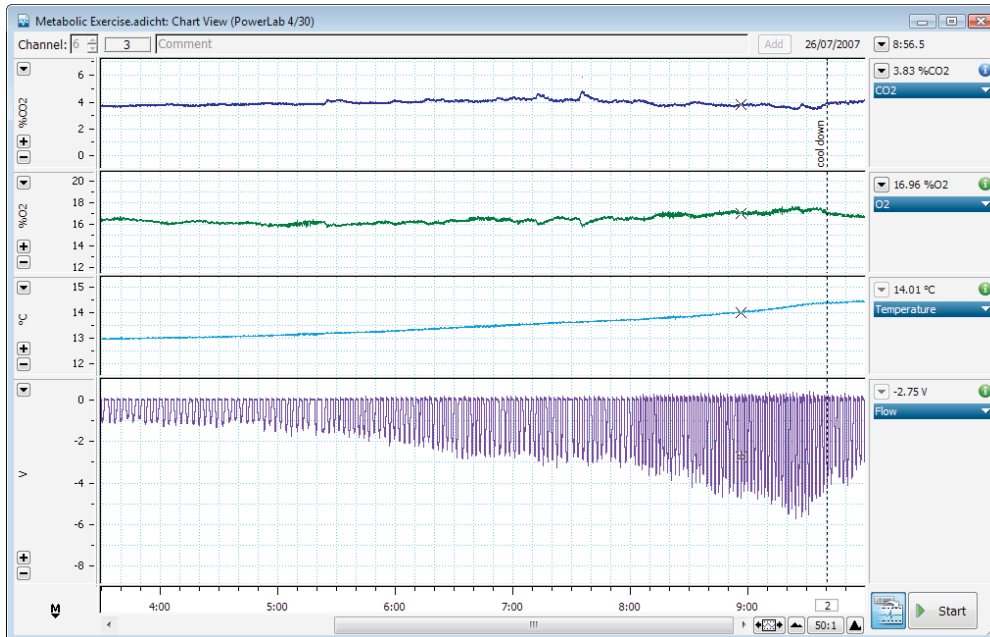


Chart View of Metabolic module showing measurements of %CO<sub>2</sub>, %O<sub>2</sub> and airflow.

The Metabolic Module for Windows is ideal for determining cardiorespiratory function and exercise physiology measurements.

The Metabolic Module is intended primarily for use with the Exercise Physiology System. This system includes the PowerLab data acquisition system, Bio Amp, Spirometer and Flow Head, Gas Analyzer, Gas Mixing Chamber and Thermistor Pod and accessories.

The Exercise Physiology System records inspired or expired air flow from a pneumotach, and CO<sub>2</sub> and O<sub>2</sub> concentrations from expired air in a gas mixing chamber. The simultaneous measurement of respiratory gas concentrations and air flow allows for metabolic variables to be calculated and displayed.

The Metabolic Module is suitable for applications involving measurement of cardiorespiratory function and exercise physiology, such as metabolic studies, respiratory gas analysis, student exercise testing, pulmonary function analysis, indirect calorimetry, anaerobic threshold, biopotential measurements and spirometry.

Time (s)	VE(BTPS) (L/min)	VO2 (L/min)	VCO2 (L/min)	RER
1	10.0	13.175	0.575	0.369
2	20.0	13.154	0.579	0.371
3	30.0	12.262	0.552	0.339
4	40.0	12.579	0.586	0.346
5	50.0	10.440	0.511	0.291
6	60.0	15.387	0.837	0.460
7	70.0	17.361	0.984	0.533
8	80.0	16.093	0.925	0.497
9	90.0	16.836	0.930	0.511
10	100.0	16.243	0.895	0.497
11	110.0	15.010	0.867	0.488
12	120.0	14.874	0.782	0.438

The Log Window extracts real-time averaged ventilation and gas calculations.

### Features & Benefits

- Specialized analysis of metabolic function
- Use online and offline
- Ideal for use with Exercise Physiology system
- Variety of graphing options to view experimental results
- Export graphs and calculations for further analysis or printing

# Metabolic Module

The Metabolic Module features allow specialized analysis of metabolic function either online or offline. It automatically calculates  $\dot{V}_E$  expired minute volume (L/min),  $\dot{V}_{O_2}$  oxygen consumption (L/min),  $\dot{V}_{CO_2}$  carbon dioxide production (L/min) and RER respiratory gas ratio. Metabolic graphs and calculations are compiled into a report that can be printed or exported to other programs for further analysis.

## Settings

The Metabolic Module allows you to:

- Set averaging time (data logging) and recording time (duration of experiment)
- Enter subject details (such as name, age, weight, height, gender)
- Specify environment settings (such as atmosphere or air conditions)
- Calibrate your data: settings for automated first and second gas calibrations
- Customize reports generated by the module

## Analysis plots

There are eight options for viewing results of the metabolic calculations:

- Log Window
- $\dot{V}_E$  (BTPS) vs  $\dot{V}_{O_2}$
- $\dot{V}_E$  (BTPS) vs  $\dot{V}_{CO_2}$
- $\dot{V}_{CO_2}$  vs  $\dot{V}_{O_2}$
- RER vs Time
- $\dot{V}_{O_2}$  vs Time
- $\dot{V}_E$  (BTPS) or  $\dot{V}_I$  (ATPS) vs Time
- RER vs Time

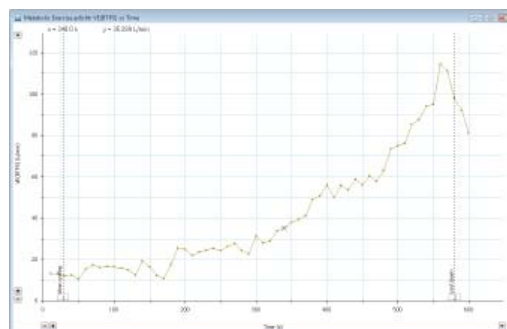
## LabChart Pro

LabChart Pro provides you with more acquisition and analysis power at a great price. It comprises LabChart software, LabChart Modules (including the Metabolic Module for Windows) and 5 years of free upgrades. You can obtain any new LabChart Modules released during the 5 year period at no extra cost. All software is conveniently available for download.

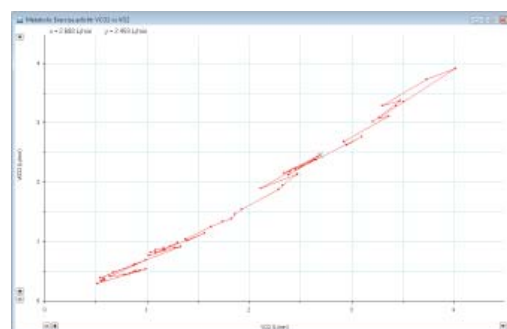
## Ordering Information

Metabolic Module	LabChart Pro* (sold separately)
MLS240/7 Metabolic Module (Win)	MLS260/7 LabChart Pro (Win & Mac)

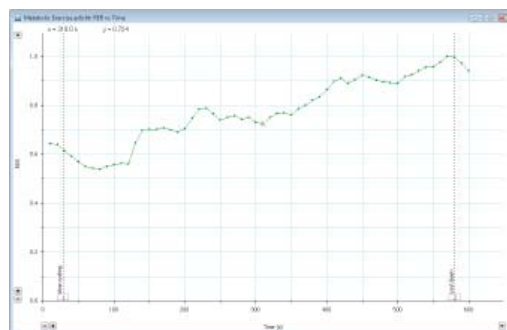
\* LabChart Pro includes LabChart software and all LabChart Modules, providing powerful data acquisition and analysis capabilities.



Metabolic Window showing a plot of  $\dot{V}_E$  versus Time.



Metabolic Window showing a plot of  $\dot{V}_{CO_2}$  versus  $\dot{V}_{O_2}$ .



Metabolic Window showing a plot of RER versus Time.

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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.



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