Model MK-2000ST

NP-NIBP MONITOR FOR MICE & RATS

INTRODUCING

THE FIRST AND ONLY NON-PREHEATING, NON-INVASIVE BLOOD PRESSURE MONITOR FOR MICE AND RATS IN THE WORLD

Capable of recording from neonatal mice (1.4 g) to aged rats (1 kg)

Colored mice such as C57BL/6 can be measured!

NO MORE PREHEATING!

MUROMACHI KIKAI CO., LTD.

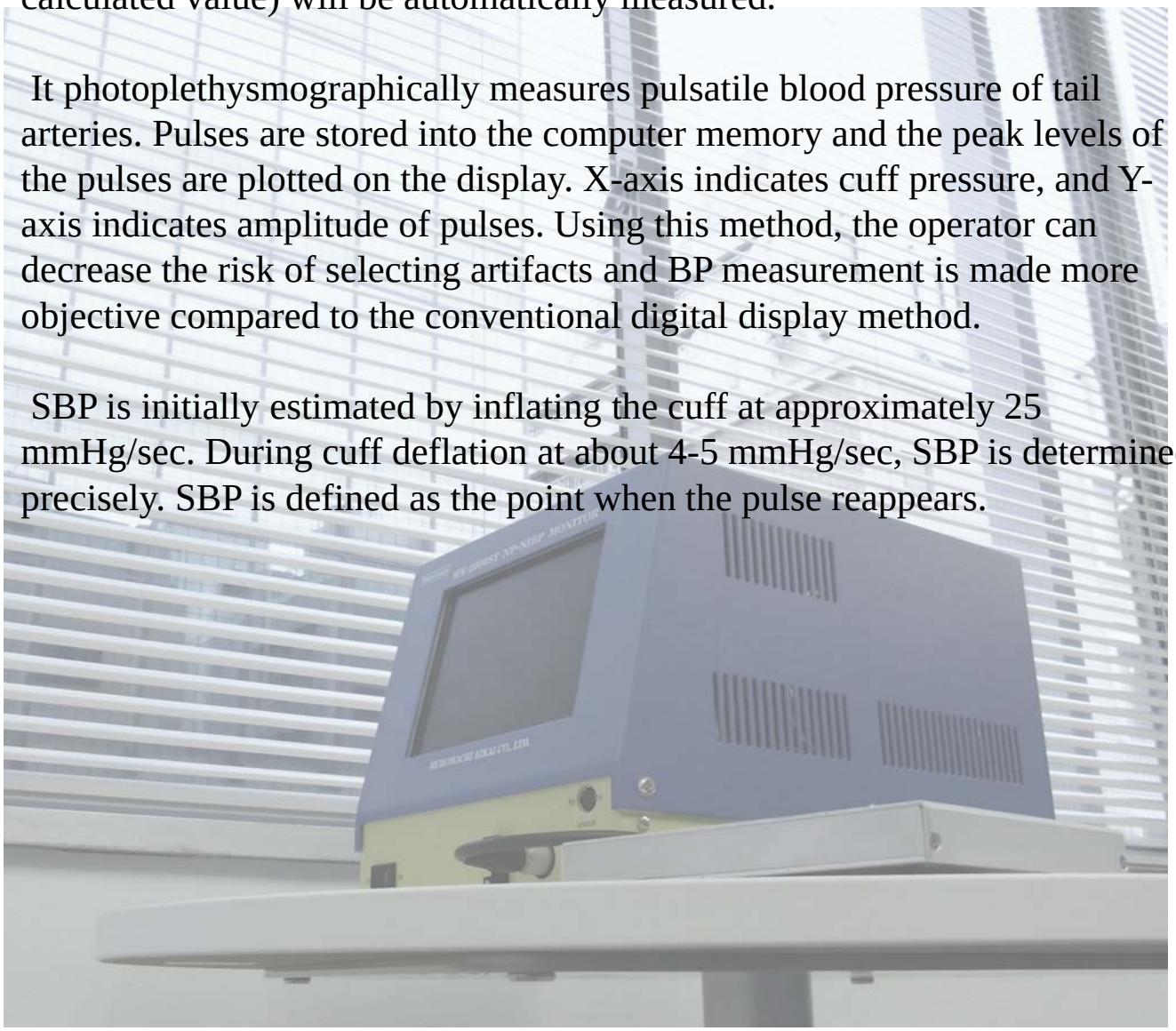
Introduction

To measure blood pressure of small animals such as rats or mice using conventional BP Monitors, animals had to be preheated by some means. However, **the advent of MK-2000 has made it possible to measure blood pressure without preheating animals provided that the room temperature is at least 23 degrees C.**
MK-2000ST is the successor to MK-2000 and has become more compact than ever before.

MK-2000ST is ideal for investigating the effects of drugs on animals. Once the animals are restrained properly, just press the START key and HR (Heart Rate), SBP (Systolic BP), MBP (Mean BP) and DBP (Diastolic BP, calculated value) will be automatically measured.

It photoplethysmographically measures pulsatile blood pressure of tail arteries. Pulses are stored into the computer memory and the peak levels of the pulses are plotted on the display. X-axis indicates cuff pressure, and Y-axis indicates amplitude of pulses. Using this method, the operator can decrease the risk of selecting artifacts and BP measurement is made more objective compared to the conventional digital display method.

SBP is initially estimated by inflating the cuff at approximately 25 mmHg/sec. During cuff deflation at about 4-5 mmHg/sec, SBP is determined precisely. SBP is defined as the point when the pulse reappears.



Main Features

1. **Two operation modes are available.**

With Mode 1 HR (Heart Rate) and SBP (Systolic Blood Pressure) are measured. With Mode 2 HR, SBP, MBP (Mean Blood Pressure) and DBP (Diastolic Blood Pressure, calculated value) can be measured.

MODE1	HR		SBP	
MODE2	HR	SBP	MBP	(DBP)

NOTE : HR (Heart Rate), SBP (Systolic BP), MBP (Mean BP), DBP (Diastolic BP, calculated value)

2. **Continuous Measurement Function**

Continuous measurement can be performed up to ten (10) times. Further, continuous & rapid measurement can also be performed in order to shorten the measuring time.

3. **Rapid Printout Function**

Onscreen data including average (AV) and standard deviation (SD), are printed out in about one (1) second by the high-performance thermal printer. Data may also be deleted at the operator's discretion.

4. **Colored mice such as C57BL/6, neonatal mice weighing 1.4 grams, hamsters (anaesthetized) and guinea pigs (non-anaesthetized), of which blood pressure was so far considered difficult to measure, can be measured.**

5. **Sick animals can be measured. (e.g. animal with cardiac infarction)**

6. **Multi-channel system is no longer needed. Just prepare multiple restrainers, and measurement can be done one after the other.**

7. **Auto-Sequence Function**

Blood pressure of a tail artery of an animal can be monitored automatically at specified time intervals, which can be 1 - 99 minutes in length. At each interval, anywhere from 1-10 measurements can be made. This function invokes a series of procedures automatically--- measurement, printout of data and transfer to a PC.

8. **Time-Stamp Function**

The MK-2000ST precisely records the time of each BP measurement.

9. **Hard Copy Function**

The screen on the display can be captured to the thermal printer using the PrtScreen key.

10. **An RS-232C interface is provided** on the rear panel of the main unit. Using the **DCS-2000ST Data Collection Software (Windows Version)** the data obtained can be exported to a personal computer and stored as a CSV file.

11. The animal holders are made of dark brown acryl, allowing BP measurement under relatively stress-free conditions.

12. Operation is very simple.

SPECIFICATIONS

Main Unit (MK-2000ST)	
SBP	Cuff pressure when pulse reappears
MBP	Cuff pressure when pulse amplitude becomes largest
DBP	Calculated value based on SBP and MBP (3MBP-SBP)/2
Detection	LED, Photo Transistor
Inflation Range	0 - 350 mmHg
Printer Outputs	Date, Time, Animal No., Weight, Operation Mode, Interval, No of Measuring Trials, Raw Data, Average and S.D.
Chart Paper	Thermo-sensitive 58 mm Wide x 25 m Long
Power	Please specify your input voltage when ordering
Dimensions	W210 x D310 x H210 mm
Weight	Approx. 8 kg

Keyboard	
Function Keys	33
Dimensions	W145 x D120 x H20 mm
Weight	Approx. 0.4 kg

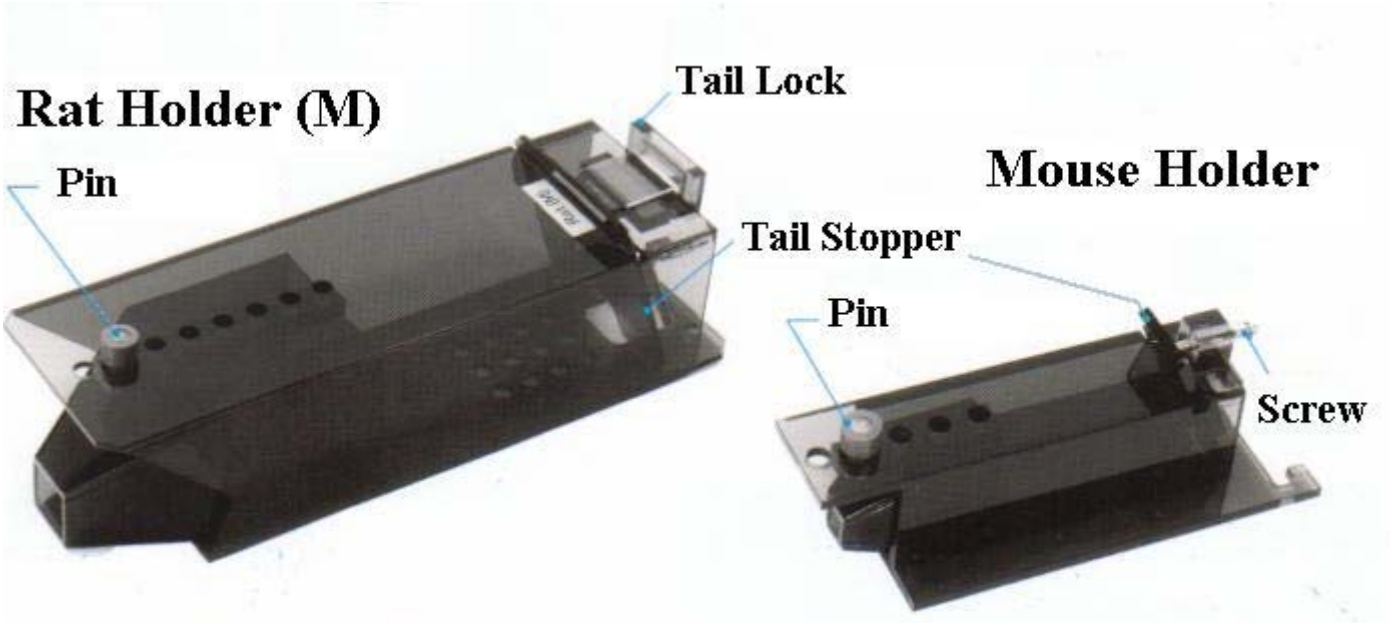
The Standard System Comes Supplied with:	
Main Unit (Printer included)	1
Keyboard	1
Animal Holder (Any one from the list)	1
Cuff-pulse Sensor (Any one from the list)	1
Measuring Stand for Rats	1
TSP-10 Chart Paper (Pack of 5 Rolls)	1
APC-2000 Accessory Case	1
Dust Cover	1
Data Collection Software DCS-2000ST	1

Animal Holders	
Mouse Holder (3S)	5 - 10 g
Mouse Holder (SS)	10 - 20 g
Mouse Holder (S)	20 - 30 g
Mouse Holder (M)	30 - 40 g
Mouse Holder (L)	40 - 50 g
Rat Holder (3S)	50 - 70 g
Rat Holder (SS)	70 - 90 g
Rat Holder (S)	90 - 150 g
Rat Holder (SM)	150 - 210 g
Rat Holder (M)	210 - 270 g
Rat Holder (ML)	270 - 350 g
Rat Holder (L)	350 - 500 g
Rat Holder (LL)	500 - 800 g

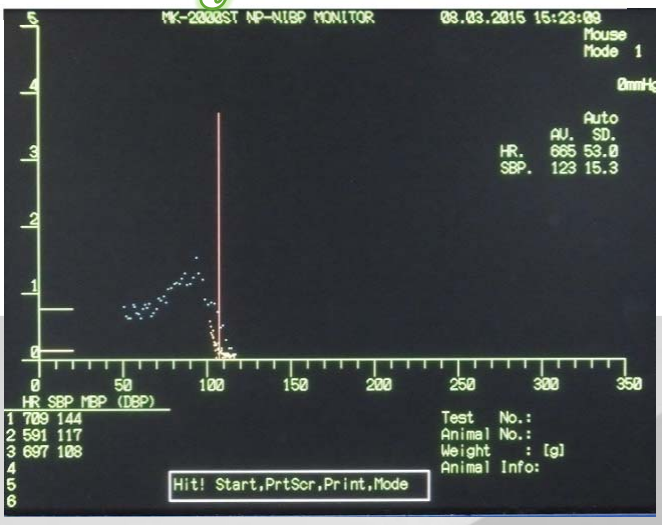
Cuff-Pulse Sensors	
Neo24NH	1.4 - 2 g
Neo32NH	2 - 5 g
Neo40NH	5 - 10 g
Mouse NH	20-50 g
OB Mouse NH	OB Mouse & Mouse 5-20 g
C57 Mouse NH	C57BL6 Mouse
Hamster (S) NH	Approx. 60 - 80 g
Hamster (M) NH	Approx. 80 - 120 g
Hamster (L) NH	Approx. 120 - 160 g
Rat (S)NH	90 - 210 g
Rat (M)NH	210 - 350 g
Rat (ML)NH	350 - 500 g
Rat (L)NH	500 - 800 g

Cuff-Pulse sensor for Rat

Cuff-Pulse sensor for Mouse



Easy to use



You can easily confirm the result of the measurement in the display

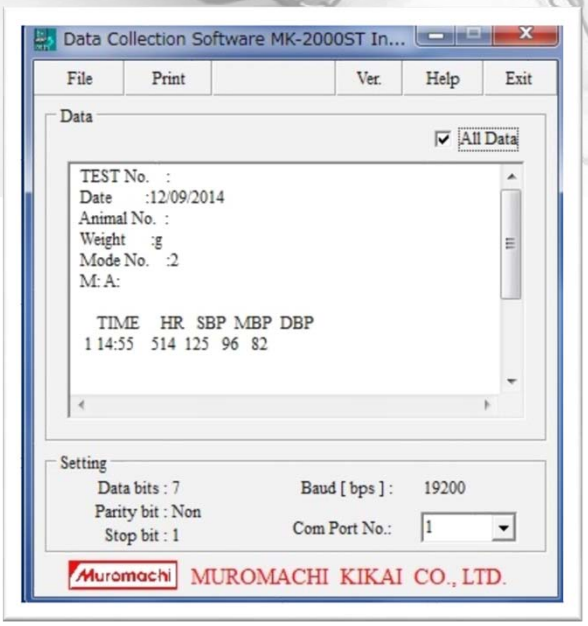
Non-preheating

Pre-heating is not required.

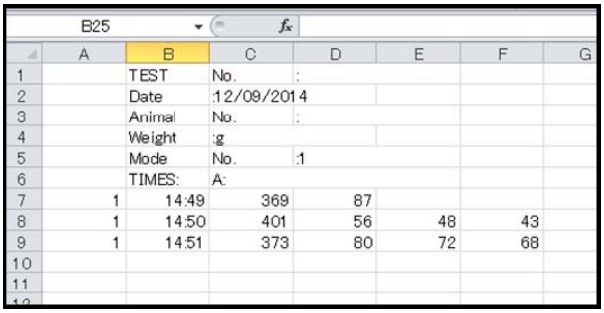
No damage to the animals.

Can be measured any small animal such as neonatal Rats and mice.

Data Transfer

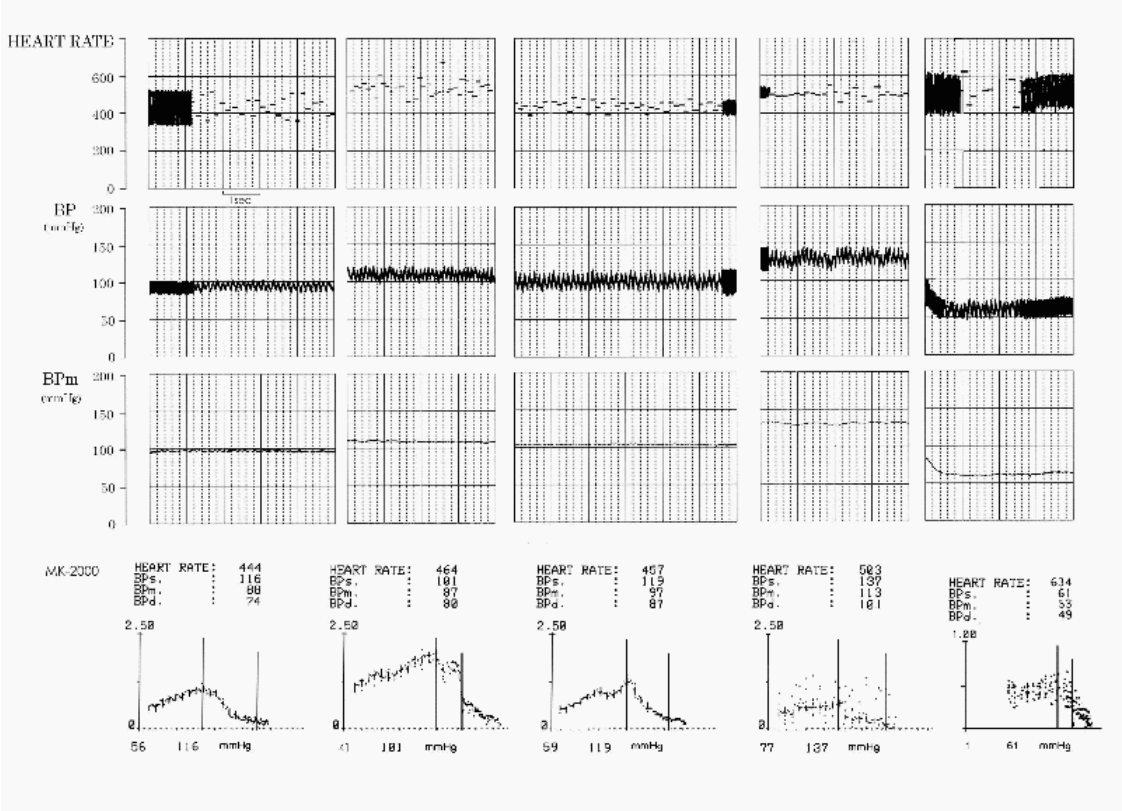


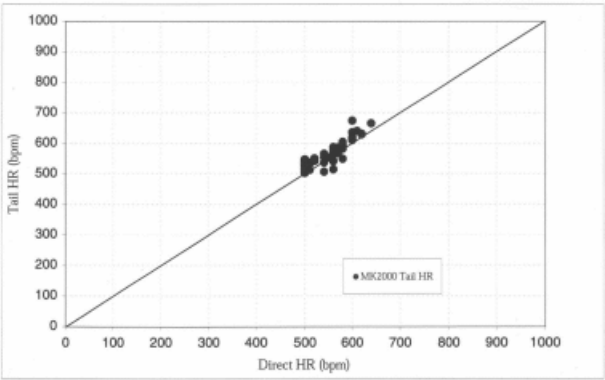
The data can be transfered to PC and saved as CSV.

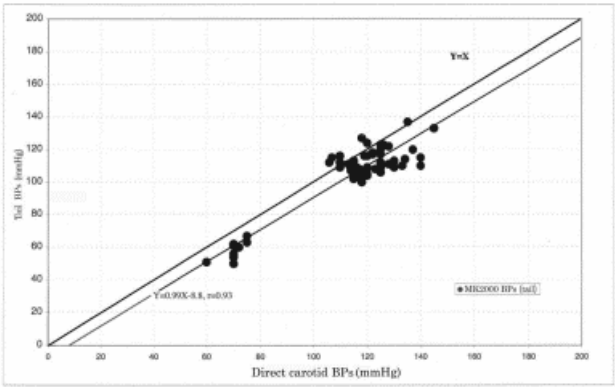


	A	B	C	D	E	F	G
1		TEST	No.	:			
2		Date	:12/09/2014				
3		Animal	No.	:			
4		Weight	:g				
5		Mode	No.	:1			
6		TIMES:	A:				
7	1	14:49	369	87			
8	1	14:50	401	56	48	43	
9	1	14:51	373	80	72	68	
10							
11							

Correlation between simultaneously recorded blood pressures (BP) from carotid catheter and BP measured with the Model MK-2000 in mice. **Good correlation was seen in a wide range of BP, which was induced by i.v. infusions of pressor or depressor agents.**







The data was offered courtesy of Prof. Tomoyuki Kuwaki, Ph.D.,
Department of Physiology, Graduate School of Medical & Dental Science,
Kagoshima University

Specifications are subject to change without notice

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