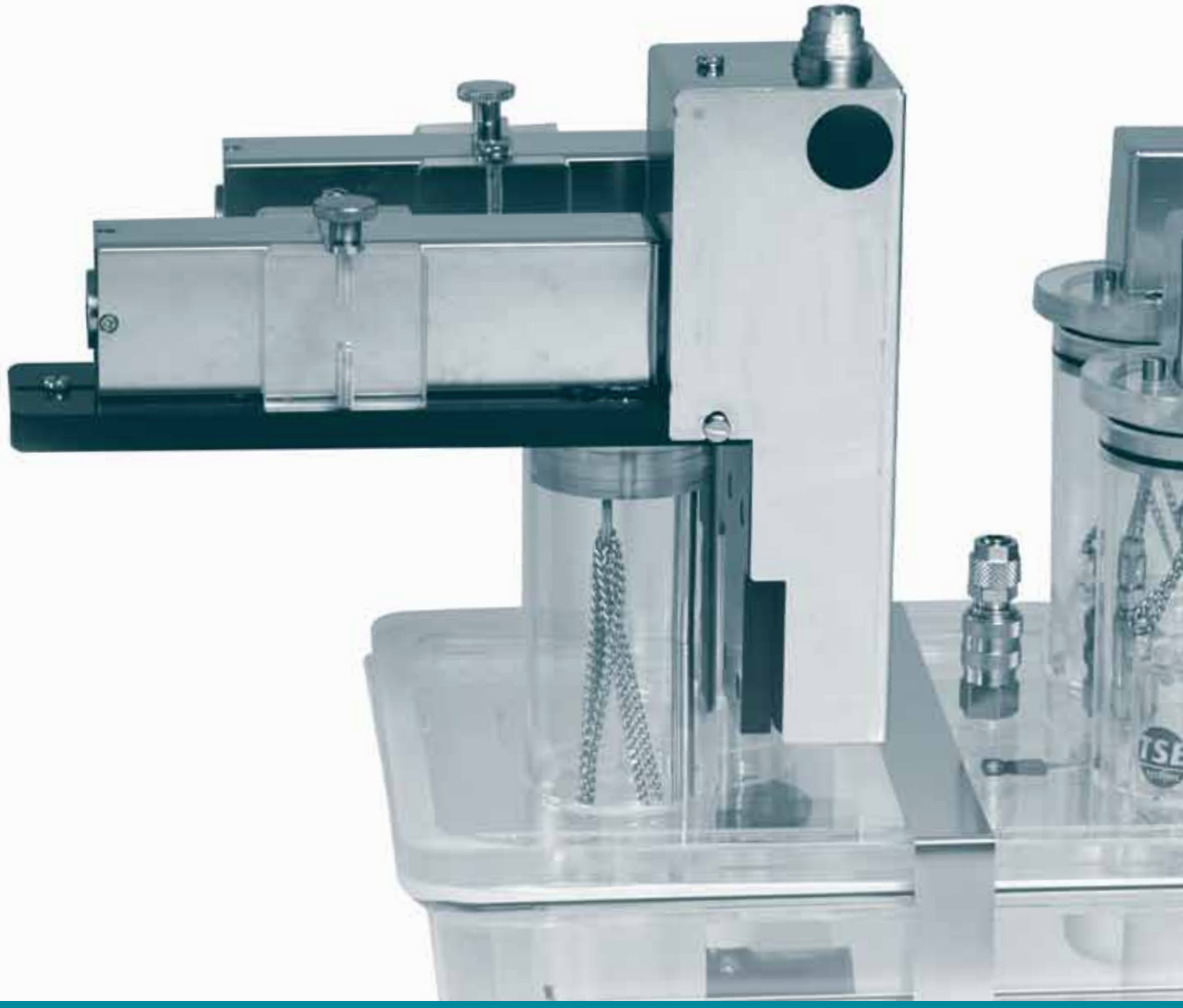
Sophisticated Life Science Research Instrumentation

PhenoMaster

Drinking/Feeding/Body Weight Module



PhenoMaster: Flexibility Secured

www.TSE-Systems.com

Drinking & Feeding

The Drinking/Feeding modules of the PhenoMaster form the basis of long-term home cage measurements

YOUR BENEFITS

- **Precision: trusted sensor technology & spillage-protected containers**
- **Flexibility: sensors easily interchangeable, multiple set-ups possible**
- **Ease of use: minimum experimenter interference necessary**
- **Security: unbiased data**
- **Comprehensive software control**

Home Cage Measurement

- Based on standard cage sizes
- Short animal habituation
- Easy maintenance and cleaning
- Non-invasive long-term monitoring without experimenter interference
- Highest flexibility: module combinable with activity measurement, operant conditioning or indirect calorimetry modules (see dedicated brochures)

Sensor/Container Technology

- Lid-mounted sensors as in standard home cages, providing maximum space and optimized access even for obese or large animals
- High precision technology
- Specific nipple design ensures no loss of liquid
- Validated spillage protection containers
- Interchangeable modular set-up: drinking/feeding/body weight measurement uses same PermaSensors
- Food and drink containers of various sizes available
- Technical resolution:10 mg or 10 µl – orders of magnitude over biological dispersion
- Variable number of sensors depending on cage size (see table on reverse)
- Modular container structure simplifies cleaning, refilling, replacement and repair

Assay types

- Choice preference: multiple feeding or drinking sensors
- Yoked/paired feeding via access control
- Time-control or amount-control via access control system
- Drug self-administration by food/drink
- Feeding/drinking rhythm, meal analysis
- Alternate food presentation through specific containers for powdered/pasty food

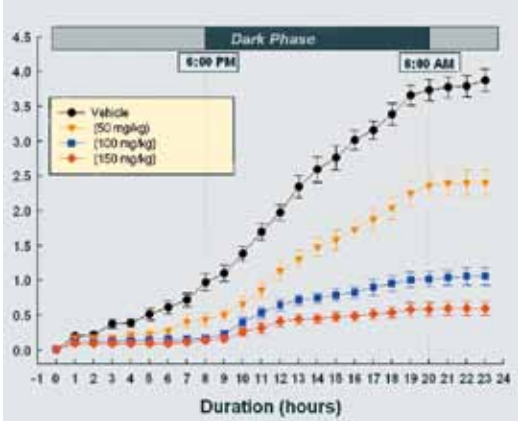
Access Control

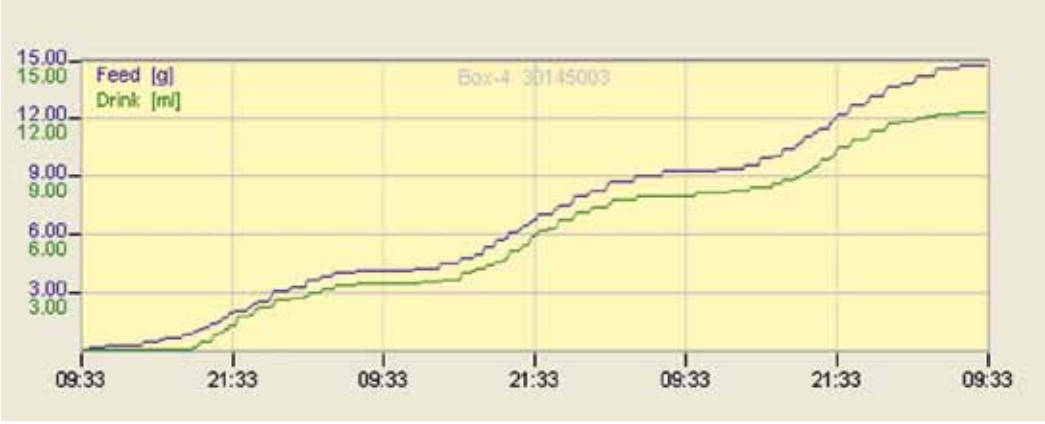
- Access to food or drink is granted/denied by a sliding cylinder sheath
- Full computer control

LITERATURE EXAMPLE

Neuropeptides & Obesity

Nogueiras et al., J Neurosci 2009
The study showed that GLP-1 perfusion of the mouse CNS directly decreased lipid storage independently of dietary intake. The effect was reduced in obese mice, suggesting a developing adipocyte resistance. Energy expenditure, food intake and activity were recorded over 4 days in a PhenoMaster system.





& Body Weight Software

General Features

- Same PermaSensor technology as drinking/feeding – interchangeable basis
- Lid-mounted sensor constitutes enriched environment

Body Weight Monitoring

- For mice or rats
- Minimal experimenter interference
- High precision technology: 0.01 g resolution
- Balance housing constitutes enriched environment
- Adjustable height of housing for easy access

Software Concept

- Modular concept
- All paradigms controlled by PhenoMaster software
- Full experimental design, in-process, and analysis control
- Multiple PhenoMaster systems can be controlled by single software
- More than 100 parameters available for measurement
- User-defined feeding/drinking protocols and upper limits of consumption
- Test data and exercise profiles stored for re-use
- Status overview: monitor running experiments at a glance by status bars
- Raw or sorted data analysis
- Easy data export for further statistical analysis
- Versatile graphic display options available
- Graphic display of data from different modules can be combined

LITERATURE EXAMPLE

Obesity Treatment

Day et al. Nature Chem Biol 2009
The study describes the characteristics of a glucagon agonist peptide that can reduce body fat through decreased food intake and increased energy expenditure. Long-term food intake and calorimetry were studied with the PhenoMaster system.

YOUR BENEFITS

- **Flexibility: experimental design and analysis/data export**
- **Easy to use: one modular software platform for all paradigms**
- **Versatile: combinatorial paradigms**
- **State-of-the-art: continuous further development of open software platform**
- **Security: 2-year ALL-IN warranty**
- **Minimum user maintenance: remote service option**

CALORIMETRIC CAGE STANDARD OPTIONS*

CAGE TYPE	I	II GREENLINE	II	II US	III	IV
SPECIES	M	M	M	M	M/R	R
VOLUME (L)	2.5	6.5	4.9	7.1	12.0 – 14.4	28.5
LENGTH (MM)	195	379	267	186	425	435
WIDTH (MM)	92	199	207	298	265	315
HEIGHT (MM)	140	130	140	128	150 (M) 180 (R)	208
WEIGHT WITH LID & SENSORS (KG)	2.0	4.0	4.0	3.0	5.0	6.0
MAX. # OF SENSORS 50/100 G OR ML	3	5	5	5	6	9

* Based on Tecniplast standard cages. Other cage types available on request.
M = mouse, R = rat

TECHNICAL DATA DRINKING/FEEDING/BODY WEIGHT

CAGE TYPE	ALL CAGE TYPES
BOTTLE SIZE RANGE (ML)	50 – 600
BASKET SIZE RANGE (G)	50 – 600
MEASURABLE BODY WEIGHT RANGE (G)	5 – 2000
ADJUSTABLE CONTAINER DISTANCE TO FLOOR (MM)	10 – 200

Please enquire for custom-made variants

Specifications subject to change without notice

International Projects

PhenoScale

RATstream™