



Sophisticated Life Science Research Instrumentation



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Benefits of PhenoMaster New Generation metabolic phenotyping platform

- **TSE is a German company complying to European safety rules and regulations**, e.g., CE certification, DEKRA quality management certificate ISO 9001:2015 and all our products conform with the European Directive on the Restriction of Hazardous Substances (RoHS).
- **TSE production and service personal all work in Germany/Berlin**, assuring **short transportation ways, faster service, and better environmental sustainability**.
- Each individual PhenoMaster has its own **“Cage Controller” which collects and stores the signals from the cage, and this prevents loss of data**, should a power shutdown happen. The cage controller is the smart brain of every cage and powers all sensors. Sensors use a modern bus architecture that allows them to be removed and added without interfering with other sensors’ data collection ability.
- The PhenoMaster can withdraw air for sampling in **both pull - and push** mode.
- **Air flow can be swiftly adjusted by the user** in the PhenoMaster software and set in the **range of 0-5 LPM**.
- The PhenoMaster system uses **automatic 3-Gas Calibration**. Other companies usually have a non-automated or only 2-Gas calibration with less accuracy. The PhenoMaster **calibration is executed in only 20min** compared to competitor systems which need up to 3 hours.
- The included **Counterbalance function and special lid design** allows the simultaneous use with **fiber optics and electrophysiology** tethered animals.
- The PhenoMaster **weight sensors** (for food and water intake, and body mass determination) have the **highest resolution of 1 mg (0,001g)** and TSEs **feeding units have validated spillage protection** unlike competitors. Furthermore, the weight sensors in the PhenoMaster are **temperature controlled** which makes them more stable and do not drift. **Up to 4 weight sensors can be attached to the PhenoMaster lid**.
- The PhenoMaster offers **access-controls that are interchangeable between the food hopper(s) and water bottle(s)**, providing higher flexibility for study designs.

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- **Highest activity monitoring resolution on the market.** TSEs ActiMot frames for mice has 5mm distance between the IR sensors (1.25mm digital resolution).
- The **PhenoMaster running wheels are available in several versions** and come with a wide range of functionalities. Our wheels can be voluntary, with **enable/disable function**, motorized, with workload control, operant conditioning wheel, motor skill wheel and all our wheels are combinable with the IR frames. The competition only has voluntary running wheels without any additional features.
- The transparent PhenoMaster cage lid allows **more light to enter the animals' home cage** than competitor lids that are constructed from metal and which do not allow any light into the cage from above. The lighter cage conditions in the PhenoMaster helps the mice to maintain their normal circadian rhythm meanwhile being housed in the PhenoMaster and hence, does not distort the metabolic data.
- The PhenoMaster has a **longer max duration of experiments** as this is unlimited, 24/7 possible (only interrupted by cleaning measures).
- **TSEs environmental chamber can be set and controlled both via the PhenoMaster software and directly on the chamber.** Our cabinets have **red tinted doors which enables checking of animals without having to open the doors** (competitor climate chambers have no see-through doors). **Higher temperature accuracy:** TSEs chambers has an accuracy of +/- 1°C while competitor chambers only have +/- 2°C.
- **Flexible system architecture** for easy integration of **additional gas analysers** or extension. Sensors for **H2, H2S, CH4, N2O, and NO** are used to monitor the activity and contribution of **the host-microbiome** while new compound-specific (e.g., acetone) Opto-acoustical sensors for aldehydes, ketones, and free fatty acids can be added for advanced monitoring of host metabolic dysregulation in the ppb range.
- TSE pioneered the introduction of an operant wall (OPW) inside the home cage. **Cognitive and learning** and memory tasks can be combined with indirect calorimetry.
- **24/7 service line** and **local system service**, provided by official and trained distributor in Australia