

# Multi Parallel High Pressure Reactions in a 384 Microplate



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Laboratories in Life Science require today particularly multivariate laboratory systems. The devices used in these systems are characterized by an increase of the reactions per time unit and the reduction of the reaction volumes with consideration of compact dimensions. They have to be variable integrable into usual laboratory robot systems in hard and software. The **Center for Life Science Automation** offers the solution, the

## Multi-Parallel High Pressure Reactor HPMR 50-384.

The developed reactor enables the simultaneous execution of **384 reactions** in a reaction module under reaction pressures and temperatures of **50 bar** and **100°C**. The mixing of the reagents used is realized with magnetically propelled stir discs with a velocity up to **500 rpm**.



Fig. 1: HPMR 50-384 in laboratory

- tempering based on thermo electric coolers
- outline dimension: 30 x 22.5 x 26.4 in (w x d x h)
- full automated reaction process possible
- enables an improved cleaning of the pressure tank and thus an effective handling of highly sensitive substances
- no external devices needed for heating and cooling processes
- graphical interface is used for data input and visualization
- integration into a laboratory robot control system or the involvement in a LIMS is likewise possible

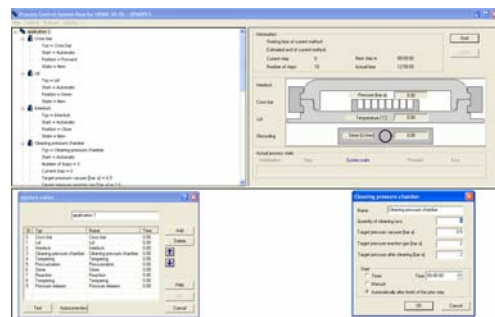


Fig. 2: Graphical User Interface

## Reaction module

The reaction module consists of a rack, the microplate, the perforated plate and a separate sealing mat. The locked 384 „reactors“ are supplied to the HPMR 50-384 with the reagents and agitating stir discs under inert conditions.



Fig. 3: completed reaction module

- based on a 384 microplate, a burl mat, a support frame and a perforated plate
- reaction module are already mentioned standardized and robot tradable
- microplates can be made from different materials, in this case from Borosilicate glass and MultiChem™

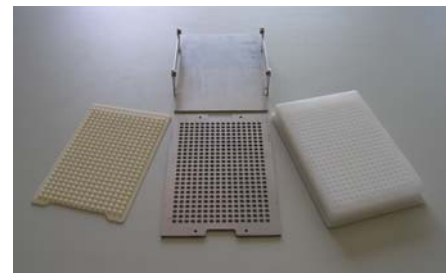


Fig. 4: parts of the reaction module

## Summary

Based on the following features the HPMR 50-384 and its reaction modules represent a significant development in the field of reaction technology. In combination with the several reaction modules the reactor increases the possibilities and productivity of the laboratories.

- **384 reaction at the same time**
- **small reaction volumes (20 - 30 µl)**
- **integrability in several robot systems**
- **flexibility and extensibility of the control software**
- **use of microplates as standardized reaction vessels**
- **parameter range (50bar, 100°C, 500 rpm)**
- **compliance of inert conditions**
- **working in several operation modes**

