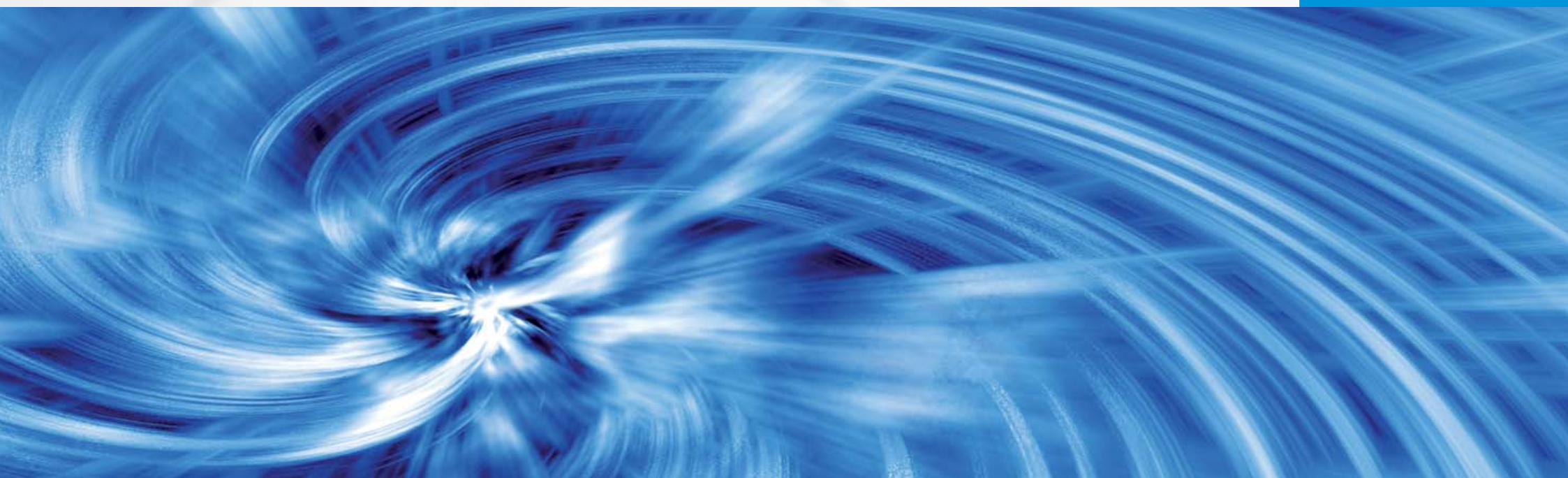




## bioREACTOR 48

*magnetic* **motion**





**2mag**  
magnetic<sup>e</sup>motion








magnetic<sup>e</sup>motion

2mag is providing you more than 30 years of competence in the conception, development, production and sales of magnetic and inductive drive concepts, as e.g. magnetic stirrers. This experience paired with a great passion and emotion for our customers – and our products – enables the fast and economic creation of solutions precisely for your needs.

„Customizing“, the manufacturing of special made products, is our business, our competence and our passion! Individual requests will result in individual – and even more important – also economically realizable solutions.

Ask us – test us – we are there for you!

## emotion for motion

-  Customer-oriented
-  Short communication ways – competent team
-  Direct access to experienced contact persons
-  Fast reactions
-  Innovative products
-  Well-proven concepts
-  Experience in the development and construction of inductive drive concepts as well as tempered systems for many years

The main importance of our passion lies upon our customers and our products!

[www.2mag.de](http://www.2mag.de)

*motion*



*magnetic*

*magnetic*

Single stirring point

Multiple stirring points

up to 3 litres stirring volume, without motor



- MIX 1 eco
- accuMIX
-  cuvetteMIXdrive 1
-  MIXdrive 1 XS
-  MIXdrive 1 eco
-  MIXdrive 1 eco HT

MIX 15 eco

up to 10 litres stirring volume, without motor

- MIX 1
-  MIXdrive 1
-  MIXdrive 1 HT
-  atexMIXdrive 1


- MIX 4 MS
- MIX 6
- MIX 15

-  MIXdrive 6
-  MIXdrive 6 HT
-  MIXdrive 15
-  MIXdrive 15 HT
-  MIXdrive 60
-  MIXdrive 60 HT

up to 1,000 litres stirring volume, strong

- MIX 1 XL
- maxMIX
-  MAXdrive
-  FABdrive
-  steriMIXdrive
-  atexMIXdrive






for cell cultures, warming-free


- bioMIX 1
-  bioMIXdrive 1

-  bioMIXdrive 2
-  bioMIXdrive 3
-  bioMIXdrive 4
-  bioMIXdrive 6

heated magnetic stirring systems

- hotMIX 1

-  STIRRING DRYBATH 15-100
-  STIRRING DRYBATH 15-250
-  STIRRING HOTPLATE 6
-  STIRRING HOTPLATE 15
-  bioREACTOR 48

 with external control unit (stirring drive submersible - not heated systems)

*e*

*motion*



## 48-FOLD PARALLELIZED MILLILITER STIRRING SYSTEM FOR EFFICIENT DEVELOPMENT OF BIOPROCESSES




By combining micro system processing, biochemical engineering know-how and high sensitive noninvasive optical sensor technique, an innovative 48-fold parallelized milliliter fermentation system could be created.

Designed for the scale-down of biotechnological production processes into the milliliter-scale, developed for efficient process development and high throughput screenings in the biotechnological, chemical and pharmaceutical research, simple handling with very high time and cost savings due to the parallelization and miniaturization.

### 2mag bioREACTOR 48

**Space-saving, user-friendly and simple manageable bioreaction block with 48 miniaturized, inductive wear-free and maintenance-free magnetic stirrers, optimized for the transformation of biotechnological production processes into the milliliter-scale, very high time, material and cost savings due to the miniaturization, efficient optimization and development of bioprocesses due to the parallelization.**

Sterilizable, space-saving bioreaction block for strictly reproducible fermentation results in the milliliter-scale by precise temperature control from 0 - 65°C, exactly controllable stirring speed up to 4,000 rpm and automatic stirrer monitoring as well as precise non-invasive realtime measurement of pH and dissolved oxygen (PreSens sensor technology).

-  Simple handling
-  High parallelization and miniaturization
-  High time, material and cost savings



*magnetic motion*

#### Technical data

Type	bioREACTOR 48
Stirring points	48
Stirring point distance	35 mm
Stirring volume / point	8 - 15 ml
Block bore holes (Ø)	22.5 mm
Reaction vessels (ØxL)	22.5 mm x 87 mm
Stirring power	25/50/75/100 W (4-steps)
Temperature range	0 - 65°C
Stirrer speed	0 - 4,000 rpm
pH range	5.5 - 8.0
Block material	Aluminium alloy, hard-coated
Measurements (WxDxH)	240 x 340 x 145 mm
Weight	approx. 16 kg
Storage conditions	-40°C up to +70°C, 10 - 95%, 500 - 1060 hPa
Protection category	IP 31
Electrical data	230 V / 150 W
Shipping weight (gross)	approx. 27 kg
Order no.	70048

#### Accessories

Incl. separate control unit

Sterile headspace aeration with variable volumetric flow rates prevents cross and external contaminations. Integrated exhaust gas cooling minimizes occurring evaporation losses. Easy realizable high throughput experiments due to parallelization allow highly reduced development time for new production processes. Miniaturization into the low milliliter-scale (8 - 15 ml) guarantees enormous material and cost savings.

Simple scaling-up of the results into production scale due to precisely defined engineering parameters and the comparable power and oxygen input to well-established stirred tank reactors. The bioREACTOR can be operated as standalone or fully automated by integration into a pipetting robot (Tecan).

*e*

*motion*

# 48-FOLD PARALLELIZED MILLILITER STIRRING SYSTEM FOR EFFICIENT DEVELOPMENT OF BIOPROCESSES

## 2mag bioREACTOR 48

### Application examples

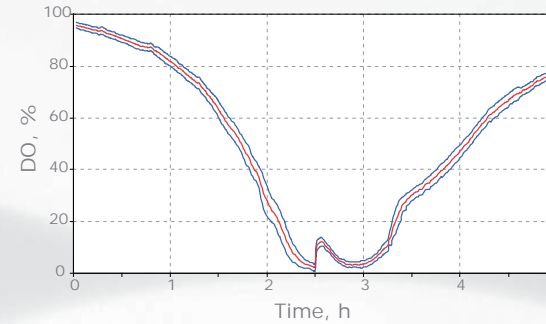
- Cultivation of bacteria, yeasts and fungi (already evaluated for *Escherichia coli*, *Saccharomyces cerevisiae*, *Bacillus subtilis*, *Streptomyces tendae*, *Cupriavidus necator*)
- Evaluation of adequate production strains (strain development)
- Cell growth experiments
- Studies of gene and protein expression
- Viability tests
- Inhibition and toxicity experiments
- Optimization of media
- Optimization of the process design (manual batch or automated batch or fed-batch process design with pipetting robots)
- Enzyme assays
- Quality control
- Also applicable for chemical and enzymatic reactions

e

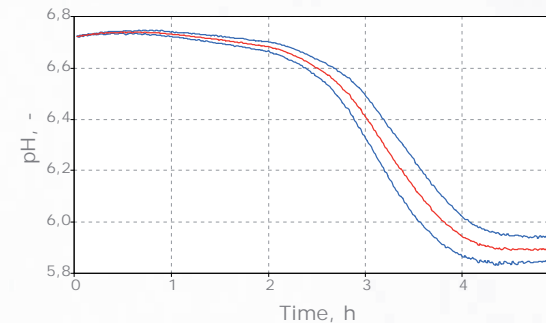


magnetic

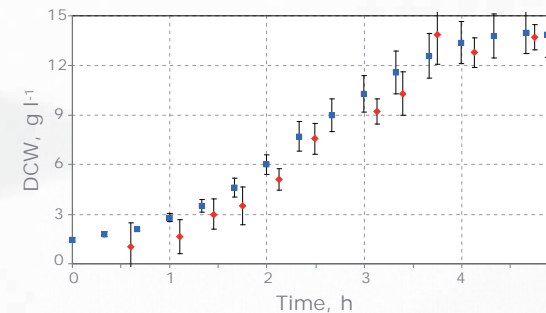
### Example: 48-fold cultivation of *Escherichia coli*



- Working volume 10 ml each
- Complex medium with glucose
- Average value of 48 reactors (blue curves: standard deviation)
- Speed: 2800 rpm (\* 2900 rpm)
- Automated speed control



- Range of pH sensor: 5.5 – 8.0
- Standard deviation increases at the measurement range limits



- Measurement of optical density (average value of 48 reactors) and estimation of concentration of biological dry mass via calibration function (blue symbols with standard deviation)
- Comparison to technical stirring tank reactor with a volume of 20 liters (red symbols)

### Results

- Concentration of dry cell mass of 13 g l<sup>-1</sup> with *Escherichia coli* in 4 hours
- Adequate oxygen feeding possible ( $k_a > 0,4 \text{ s}^{-1}$ )
- Simple prevention of oxygen limitation by adaption of stirring speed
- High parallel and sequential reproducibility
- Simple and secure scale-up (factor 2000: 10 ml - 20 l)

motion

*magnetic*

2mag AG  
 Schragenhofstrasse 35 K-J  
 80992 München  
 Germany

+49 (89) 14334252  
 +49 (89) 14334369

motion@2mag.de  
 www.2mag.de

## 2mag AGITATION - the world is moving

Individual units and dimensions on request.  
 2mag - your contact for sophisticated and also  
 fulfillable solutions for your needs and issues  
 in the range of mixing, tempering and dosing.

Ask us – test us – we are there for you!



I am interested in 2mag products.  
Please contact me.

Company / Organisation

Department

Name / First name

Street

Zip / Town

Country

Please fax to 2mag: +49 (89) 14 33 43 69



e-mail contact:

phone contact:

Stamp

