

## Data Sheet

Laboratory reactors / Laboratory Reactors



### LR-2.ST

The IKA® LR-2.ST system is a modularly designed miniplant reactor system, planned and designed to simulate and optimize chemical reaction processes as well as mixing, dispersion and homogenization processes at a model scale with a maximum volume of 2000 ml. Depending on the seal (FFPM), the medium in the reactor vessel can be heated up to 230 °C. Vacuum operation is possible up to 25 mbar. The IKA® laboratory software labworldsoft® is providing convenient solutions for measuring, control, regulating tasks and documentation purposes.

The system is planned and designed to simulate and optimize chemical reactions processes as well as mixing, dispersion and homogenization processes at a model scale.

Volume max.: 2000 ml  
 Volume min. (stirring): 500 ml  
 Volume min. (dispersing): 800 ml

Some applications are:

- Manufacturing cremes, lotions, emulsions
- Liposome preparations in the pharmaceutical and cosmetic sector
- Mixing solids such as calcium carbonate, talc, titanium oxide, etc. into liquid polymers
- Mixing additives and solid polymer compounds into mineral oils
- Grinding and disintegrating solids and fibres in liquids and polymers

LR-2.ST laboratory system consisting of:

- LR-2 Stand system
- EUROSTAR power control-visc P7: Laboratory stirrer with a high torque (380 Ncm), constant speed, digital display of rated - and actual speed, infinitely adjustable speed range 8 ÷ 290 min<sup>-1</sup>, integrated torque trend display for viscosity control, RS 232 / analog interface
- LR 2000.11 Anchor stirrer with flow borings, without scraper

#### Technical Data

Usable volume min. [ml]	500
Usable volume max. [ml]	2000
Working temperature min. [°C]	room temp.
Working temperature max. [°C]	230
Attainable vacuum [mbar]	25
Viscosity max. [mPas]	150000
Speed range [rpm]	8 - 290
Telescope stand stroke [mm]	390
Material in contact with medium	borosilicate glass, FFPM, PTFE, steel 1.4571
Reactor vessel openings (units/standard)	3/NS 29/32 2/NS 14/23"
Dimensions (W x H x D) [mm]	460 x 1240 x 430
Weight [kg]	25
Permissible ambient temperature [°C]	5 - 40
Permissible relative moisture [%]	80
Protection class according to DIN EN 60529	IP 42
RS 232 interface	yes
Analog output	yes
Voltage [V]	230
Frequency [Hz]	50/60
Power input [W]	130
<b>Ident. No.</b>	<b>8016500</b>

Please order reactor vessel separately.

Accessories: LR 2000.1 Reactor vessel, LR 2000.2 Reactor vessel, LR 2.1 Reactor vessel, LR 2000.10 Anchor stirrer, LR 2000.11 Anchor stirrer, LR 2000.20 Flow breaker, VC 2 IKAVAC® Vacuum controller, T 25 digital ULTRA-TURRAX®, HBR 4 digital Heating bath, CC3-308B vpc, LVS 105 T-ef, DTM 12 IKATRON® Digital temperature measuring instrument, PT 100.25 Temperature sensor, LT 5.20 Hose, PC 1.2 Adapter, PC 2.2 Adapter, PC 1.5 Cable, labworldsoft®, PC 2.3 Cable, S 25 KV - 25 G Dispersing element, S 25 KV - 25 F Dispersing element, S 25 KV - 18 G Dispersing element, PCI 8.2 Plug-in card, LR 2000.60 Sensor receptacle, LT 5.24 Hose adapter, LR 2000.40 Shaft receptacle



### LR-2.ST Package 2

Modular design laboratory reactor for optimization and simulation of various chemical reactions as well as for mixing and homogenizing processes in a laboratory scale.

LR-2.ST laboratory system consisting of:

- Stand system
- Laboratory stirring unit EUROSTAR power control-visc P7 with high torque
- Anchor stirrer LR 2000.11 with flow borings
- Safety shutdown
- Reactor cover

In the free connections of the reactor cover a dispersing unit (ULTRA-TURRAX®), temperature sensors, flow breakers and other equipment can be installed.

Suitable for vacuum operation. Seals in contact with the product are made of solvent- resp. temperature-resistant perfluoroelastomer (FFPM). Infinitely adjustable speed.

Integrated torque trend display for the measurement of viscosity changes. Through control actuated by microprocessor the set speed is held constant, even under load.

Package 2:

LR-2.ST with double walled reactor vessel LR 2000.1

Accessories: LR 2000.1 Reactor vessel, LR 2000.2 Reactor vessel, LR

#### Technical Data

Usable volume min. [ml]	500
Usable volume max. [ml]	2000
Working temperature min. [°C]	room temp.
Working temperature max. [°C]	230
Attainable vacuum [mbar]	25
Viscosity max. [mPas]	150000
Speed range [rpm]	8 - 290
Telescope stand stroke [mm]	390
Material in contact with medium	borosilicate glass, FFPM, PTFE, steel 1.4571
Reactor vessel openings (units/standard)	3/NS 29/32 2/NS 14/23"
Dimensions (W x H x D) [mm]	460 x 1240 x 430
Weight [kg]	25
Permissible ambient temperature [°C]	5 - 40
Permissible relative moisture [%]	80
Protection class according to DIN EN 60529	IP 42
RS 232 interface	yes
Analog output	yes
Voltage [V]	230
Frequency [Hz]	50/60
Power input [W]	130
<b>Ident. No.</b>	<b>9008500</b>

2.1 Reactor vessel, LR 2000.10 Anchor stirrer, LR 2000.11 Anchor stirrer, LR 2000.20 Flow breaker, VC 2 IKAVAC® Vacuum controller, T 25 digital ULTRA-TURRAX®, HBR 4 digital Heating bath, CC3-308B vpc, LVS 105 T-ef, DTM 12 IKATRON® Digital temperature measuring instrument, PT 100.25 Temperature sensor, LT 5.20 Hose, PC 1.2 Adapter, PC 2.2 Adapter, PC 1.5 Cable, labworldsoft®, PC 2.3 Cable, S 25 KV - 25 G Dispersing element, S 25 KV - 25 F Dispersing element, S 25 KV - 18 G Dispersing element, PCI 8.2 Plug-in card, LR 2000.60 Sensor receptacle, LT 5.24 Hose adapter, LR 2000.40 Shaft receptacle



### LR-2.ST Package 1

Modular design laboratory reactor for optimization and simulation of various chemical reactions as well as for mixing and homogenizing processes in a laboratory scale.

LR-2.ST laboratory system consisting of:

- Stand system
- Laboratory stirring unit EUROSTAR power control-visc P7 with high torque
- Anchor stirrer LR 2000.11 with flow borings
- Safety shutdown
- Reactor cover

In the free connections of the reactor cover a dispersing unit (ULTRA-TURRAX®), temperature sensors, flow breakers and other equipment can be installed.

Suitable for vacuum operation. Seals in contact with the product are made of solvent- resp. temperature-resistant perfluoroelastomer (FFPM). Infinitely adjustable speed.

Integrated torque trend display for the measurement of viscosity changes. Through control actuated by microprocessor the set speed is held constant, even under load.

Package 1:

LR-2.ST with single walled reactor vessel LR 2.1

Accessories: LR 2000.1 Reactor vessel, LR 2000.2 Reactor vessel, LR

#### Technical Data

Usable volume min. [ml]	500
Usable volume max. [ml]	2000
Working temperature min. [°C]	room temp.
Working temperature max. [°C]	230
Attainable vacuum [mbar]	25
Viscosity max. [mPas]	150000
Speed range [rpm]	8 - 290
Telescope stand stroke [mm]	390
Material in contact with medium	borosilicate glass, FFPM, PTFE, steel 1.4571
Reactor vessel openings (units/standard)	3/NS 29/32 2/NS 14/23"
Dimensions (W x H x D) [mm]	460 x 1240 x 430
Weight [kg]	25
Permissible ambient temperature [°C]	5 - 40
Permissible relative moisture [%]	80
Protection class according to DIN EN 60529	IP 42
RS 232 interface	yes
Analog output	yes
Voltage [V]	230
Frequency [Hz]	50/60
Power input [W]	130
<b>Ident. No.</b>	<b>9008400</b>

2.1 Reactor vessel, LR 2000.10 Anchor stirrer, LR 2000.11 Anchor stirrer, LR 2000.20 Flow breaker, VC 2 IKAVAC® Vacuum controller, T 25 digital ULTRA-TURRAX®, HBR 4 digital Heating bath, CC3-308B vpc, LVS 105 T-ef, DTM 12 IKATRON® Digital temperature measuring instrument, PT 100.25 Temperature sensor, LT 5.20 Hose, PC 1.2 Adapter, PC 2.2 Adapter, PC 1.5 Cable, labworldsoft®, PC 2.3 Cable, S 25 KV - 25 G Dispersing element, S 25 KV - 25 F Dispersing element, S 25 KV - 18 G Dispersing element, PCI 8.2 Plug-in card, LR 2000.60 Sensor receptacle, LT 5.24 Hose adapter, LR 2000.40 Shaft receptacle



### LR-2.ST Package 3

Modular design laboratory reactor for optimization and simulation of various chemical reactions as well as for mixing and homogenizing processes in a laboratory scale.

LR-2.ST laboratory system consisting of:

- Stand system
- Laboratory stirring unit EUROSTAR power control-visc P7 with high torque
- Anchor stirrer LR 2000.11 with flow borings
- Safety shutdown
- Reactor cover

In the free connections of the reactor cover a dispersing unit (ULTRA-TURRAX®), temperature sensors, flow breakers and other equipment can be installed.

Suitable for vacuum operation. Seals in contact with the product are made of solvent- resp. temperature-resistant perfluoroelastomer (FFPM). Infinitely adjustable speed.

Integrated torque trend display for the measurement of viscosity changes. Through control actuated by microprocessor the set speed is held constant, even under load.

Package 3

LR-2.ST with double walled reactor vessel LR 2000.2, incl. bottom discharge valve

#### Technical Data

Usable volume min. [ml]	500
Usable volume max. [ml]	2000
Working temperature min. [°C]	room temp.
Working temperature max. [°C]	230
Attainable vacuum [mbar]	25
Viscosity max. [mPas]	150000
Speed range [rpm]	8 - 290
Telescope stand stroke [mm]	390
Material in contact with medium	borosilicate glass, FFPM, PTFE, steel 1.4571
Reactor vessel openings (units/standard)	3/NS 29/32 2/NS 14/23"
Dimensions (W x H x D) [mm]	460 x 1240 x 430
Weight [kg]	25
Permissible ambient temperature [°C]	5 - 40
Permissible relative moisture [%]	80
Protection class according to DIN EN 60529	IP 42
RS 232 interface	yes
Analog output	yes
Voltage [V]	230
Frequency [Hz]	50/60
Power input [W]	130
<b>Ident. No.</b>	<b>9008600</b>

Accessories: LR 2000.1 Reactor vessel, LR 2000.2 Reactor vessel, LR 2.1 Reactor vessel, LR 2000.10 Anchor stirrer, LR 2000.11 Anchor stirrer, LR 2000.20 Flow breaker, VC 2 IKAVAC® Vacuum controller, T 25 digital ULTRA-TURRAX®, HBR 4 digital Heating bath, CC3-308B vpc, LVS 105 T-ef, DTM 12 IKATRON® Digital temperature measuring instrument, PT 100.25 Temperature sensor, LT 5.20 Hose, PC 1.2 Adapter, PC 2.2 Adapter, PC 1.5 Cable, labworldsoft®, PC 2.3 Cable, S 25 KV - 25 G Dispersing element, S 25 KV - 25 F Dispersing element, S 25 KV - 18 G Dispersing element, PCI 8.2 Plug-in card, LR 2000.60 Sensor receptacle, LT 5.24 Hose adapter, LR 2000.40 Shaft receptacle