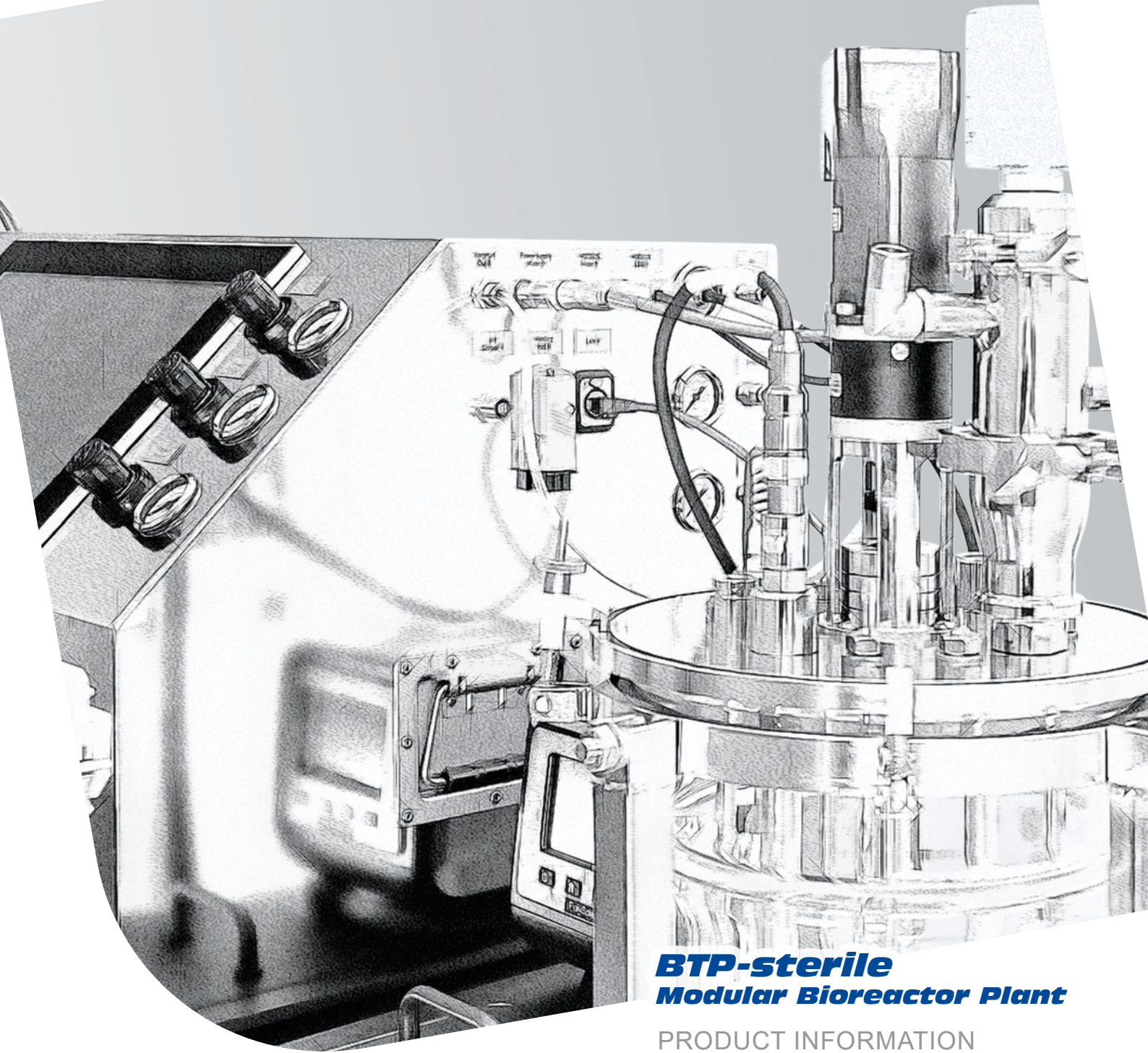


Technology pro Environment



BTP-sterile
Modular Bioreactor Plant

PRODUCT INFORMATION

BTP-sterile

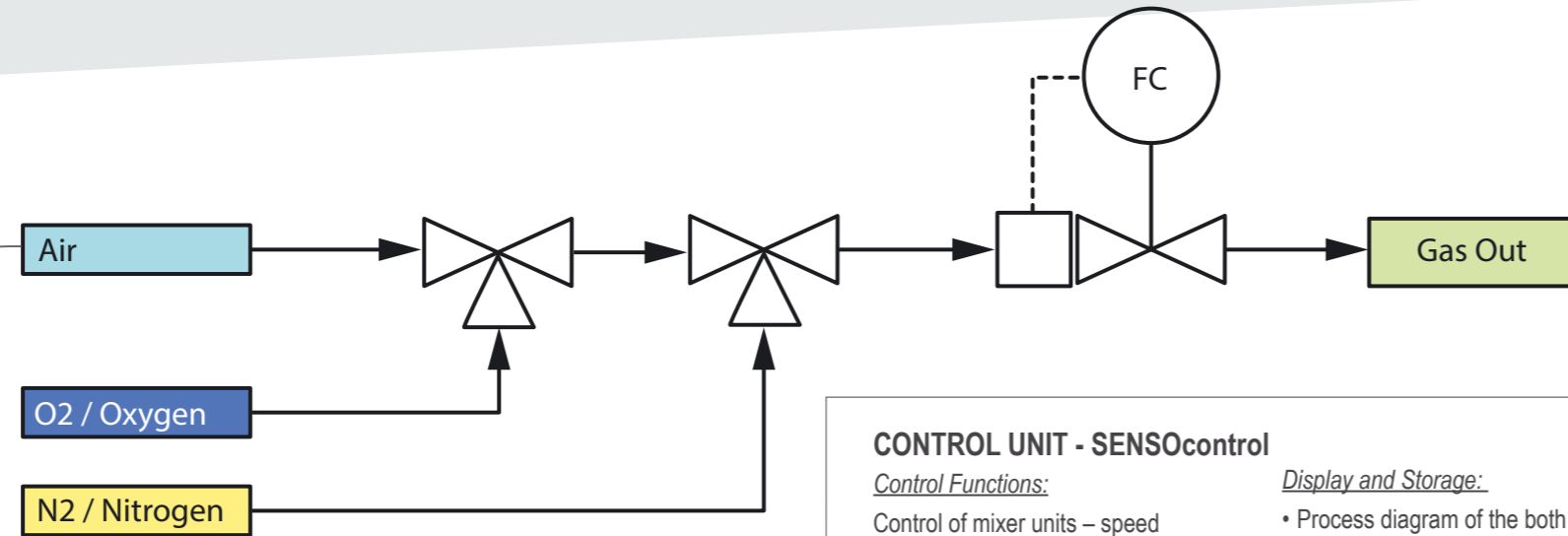
MODULAR BIOREACTOR PLANT

AERATION

- Inputs for 3 gases incl. hand pressure regulator valve with manometer
- 3 magnet switching valves for definition of gas mixing ratio
- One MFC (Mass Flow Controller)
- range 1: (0),0,04...2 Nm³/h Air | range 2: (0),0,038...1,9 Nm³/h O₂
- range 3: (0),0,04...2 Nm³/h N₂ | range 4: (0),0,032...1,6 Nm³/h CO₂
- Additional MFC on request; other ranges on request

PUMPS

- For every reactor a maximum of 5 pumps heads (SP4-S-UPPH 5061) can be installed
- 10 pieces in total - Pump head suitable for several tube sizes (0,13 x 0,9 mm; 0,25 x 0,9 mm; 0,51 x 0,9 mm; 0,76 x 0,85 mm; 1,02 x 0,85 mm; 1,52 x 0,85 mm; 1,85 x 0,85 mm; 2,06 x 0,85 mm; 2,54 x 0,85 mm; 2,79 x 0,85 mm)
- Flow rate 0,00014...41,52 ml/min with several tube sizes



CONTROL UNIT - SENSOcontrol

Control Functions:

- Control of mixer units – speed and asynchronous use
- pH-control - control of tube pumps
- Aeration control
- Feeding system – control of tube pumps
- Temperature control of reactors

Display and Storage:

- Process diagram of the both system incl. display of the current measured values
- Tabular display of the current measured values
- Graphical presentation of the main parameters
- Storage of the measured values

BIOREACTOR STERILE – BASIS UNIT

consisting of:

- Connection options for two bio reactors (UIT)
- Control unit with Panel PC – 15.6" true-flat WXGA TFT LCD with projected capacitive touch control; IP65-rated front panel
- Control software - Integrated control unit for tube pumps – pH-control is part of standard equipment
- Both reactors can be controlled individually - USB-Interface for data transfer - LAN-Interface
- Input for three gases - suitable for tube diameter 6 mm
- Dimensions: 700 x 550 x 690 mm/ Stainless steel housing
- Power supply 110-230 VAC with emergency switch off

INTERFACES/ CONTROL FUNCTIONALITY

for two mixer units incl. speed control

Aeration

- Inputs for 3 gases incl. hand pressure regulator valve with manometer
- Manometer input pressure of gases

Measuring equipment

- Mounted pH-amplifier incl. temperature measurement
- incl. socket for connection of pH-probe
- Preinstalled connection (socket) for an LDO sensor
- Other parameters on request

Heating control unit for electrical heating mat

- Two sockets for heating mat
- Possibility to define target temperature of the bioreactor medium and



BIOREACTORS - bioreactor with mixer unit

- Version 1: Double walled glass reactor – jacketed
- Version 2: Glass reactor – unjacketed
- Borosilicate Glass/ reactors usable up to 60°C - other temperature on request
- Glass reactors with stainless steel parts - autoclavable
- Lid made in stainless steel 316L
- Gas-tight shaft feedthrough with simmering's
- Mixer unit range up to 0...1000 rpm; 200 W; at maximum torque 200 Ncm
- Mixer tool – Rushton impeller
- incl. baffle assembly
- incl. air aeration tube with porous sparger
- Exhaust gas cooler
- Sterile filter
- Rack for the whole system



BTP-sterile

MODULAR BIOREACTOR PLANT

SENSORS



Common Sensor Specifications:

- Sensors autoclavable
- Diameter: 12 mm/ Process Connection PG 13,5
- Internal Temperature Sensor NTC
- Interface: MODBUS-RTU/ Electrical Connector: VP8
- Available lengths: 120/ 225/ 325/ 425 mm

pH-Sensor

- Combination electrode: pH potential measured against reference
- Range: pH 0 to 14
- Sensitivity: 57 to 59 mV/ pH at 25°C

ORP-Sensor

- Combination electrode: ORP potential measured against reference
- Range: -1500 to + 1500 mV
- ORP Element Pt ring

Dissolved Oxygen – LDO sensor

- Range: 4 ppb...25 ppm DO (0...25 mg/l O₂) 0 to 62.85 % vol or 0-300 % saturation
- Accuracy at 25°C: 1 +/- 0.05 %-vol; 21 +/- 0.2 %-vol; 50 +/- 0.5%-vol
- Measurement Principle: Oxygen depend luminicence quenching, temperature compensation
- Oxygen Consumption: None

CO₂-Sensor

- Measurement Principle: non-dispersive Infra-red (NDIR) absorption of wavelength selective for CO₂; temperature compensation
- Range: 5-1000 mbar or 0.5-100 % vol or 7.5 – 1500 mg/l in liquid phase at 101.3 kPa and 15°C
- Accuracy at 25°C: +/-5 mbar (5-100 mbar); +/-5% (>100 mbar)

Conductivity-Sensor

- Range: 1 µS/cm to 300 mS/cm
- Accuracy at 25°C: +/- 3% at 1 µs/cm to 100 mS/cm; +/- 5% at 100 to 300 mS/cm
- Measurement Principle: 4 pole contacting
- Cell Constant: 0.36 cm⁻¹

Total Cell Density-Sensor (TCD)

- Measuring Range: e.g. 0-200 g/l cell dry weight yeast/ 0-4 AU/ 0-30,000 NTU
- Accuracy at 25°C: Resolution: 0.05 g/l (0-10 g/l); 0.5 % (> 10 g/l) cell dry weight yeast
- Measurement Principle: Transmission and Reflection (including temperature compensation, daylight filter and subtraction) at NIR wavelength 860 nm
- Configurable Values
TCD: PCV, AU, arb. Unit, NTU, g/l, CFU, e6 cells/ml, OD
Temperature: K, °C, °F

REACTOR TYPES

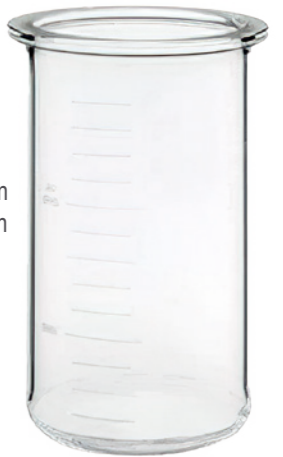


Reactor sizes – unjacked

- Size 0: Volume 2l: vessel I.D.: 120 mm/ height approx. 220 mm
- Size 1: Volume 5l: vessel I.D.: 150 mm/ height approx. 330 mm
- Size 2: Volume 8l: vessel I.D.: 200 mm/ height approx. 300 mm
- Size 3: Volume 10l: vessel I.D.: 200 mm/ height approx. 360 mm
- Size 4: Volume 15l: vessel I.D.: 200 mm/ height approx. 540 mm
- Other sizes on request

Reactor sizes – jacked

- Size 0: Volume 2l: vessel I.D.: 120 mm/ height approx. 250 mm
- Size 1: Volume 5l: vessel I.D.: 150 mm/ height approx. 365 mm
- Size 2: Volume 8l: vessel I.D.: 200 mm/ height approx. 335 mm
- Size 3: Volume 10l: vessel I.D.: 200 mm/ height approx. 400 mm
- Size 4: Volume 15l: vessel I.D.: 200 mm/ height approx. 615 mm
- Other sizes on request



TEMPERATURE CONTROL

Thermostat/ Refrigerated circulator Common Specifications:

- Volume 7 l/ Incl. circulator mounted in the basin
- Incl. one Temperature sensor for mounting in the bioreactor
- Display 3,75" Touch-Pad LCD
- Power supply 230 VAC (other on request)
- Maximum ambient temperature: 35 °C

Heating/ Cooling – temperature control (heating/cooling) via water using

- Refrigerated circulator controlled by central control unit
- Heater: 2200 W
- Cooling capacity @ 20°C 200 W
- Internal Pump 16,7 l/min at max
- Pump rate variable – controlled via thermostat
- Maximum pressure 0,25 bar

Heating - temperature control (heating) via water using a thermostat heating system with pump technology

- max. target temperature 60°C - other temperatures on request
- Thermostat controlled by central control unit
- Internal Pump 16,7 l/min at max
- Pump rate variable – controlled via thermostat
- Maximum pressure 0,25 bar
- Heater: 2200 W
- Maximum ambient temperature: 35 °C

HEATING MAT

- Heating by electric heating mat - max. target temperature 60°C - other on request
- Possibility of defining the heating mat temperature; measurement of the substrate temperature and realisation of a control system
- Size of heating mat depends on the reactor size

EQUIPPING STATUS

- The scope of equipment is defined with the offer. The data sheet contains optional equipment features
- Subject to change in the interest of technical progress!



Technology pro Environment



www.uit-gmbh.de

The company is part of the General Atomics Europe Group and is thus part of the worldwide network of General Atomics (GA)



Umwelt- und Ingenieurtechnik GmbH Dresden
Zum Windkanal 21
D-01109 Dresden
Germany

+49 351 886 4600
info@uit-gmbh.de
www.uit-gmbh.de

