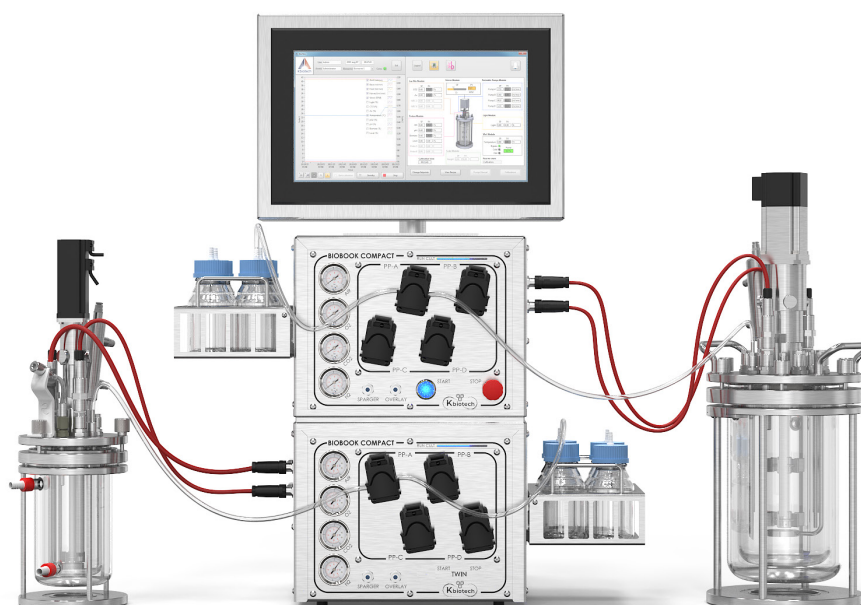


BIOBOOK TWIN

BENCHTOP BIOREACTORS & FERMENTORS
FOR RESEARCH, PROCESS DEVELOPMENT
AND GMP PRODUCTION

DATASHEET



GENERAL OVERVIEW

The Biobook Twin is a high-performance, configurable bioreactor system engineered for cell culture and microbial fermentation in research, process development, and GMP pilot-scale environments. Its modular stainless-steel design allows scalability from single to dual (twin) vessel configurations with fully independent control.

The system integrates high-precision sensors, robust process automation, and Bioflex™ SCADA software for complete traceability, reliability, and compliance with 21 CFR Part 11 and GMP standards.

CONTROL UNIT SPECIFICATIONS

Parameter	Compact	Twin
Model Type	BIO-BOOK Compact	BIO-BOOK Twin
Controlled Vessels	1	2 (independent)
Dimensions (W × D × H)	380 × 500 × 650 mm (13,4× 21,8 × 9,9 in)	550 × 500 × 650 mm (13,4× 21,8 × 25,6 in)
Weight	25,2 kg (55,6 lb)	51 kg (112,436 lb)
Housing Material	AISI 304 stainless steel chassis, powder-coated front panel	Same
Power Supply	100–240 V AC, 50/60 Hz, single phase	Same
Power Consumption	Max 2 kVA	Max 4 kVA
Cooling Water Flow Rate	2 – 4 L/min (0.5 – 1.1 US gpm) recommended	Same
Communication Ports	USB 2.0, Ethernet (10/100 Base-T), RS-485	2x USB 2.0, Ethernet (10/100 Base-T), RS-485
Digital I/O	4 inputs, 4 outputs (0–10 V / 4–20 mA)	2x 4 inputs, 4 outputs (0–10 V / 4–20 mA)
Display / HMI	15.6" touchscreen or external PC	Same
Operating Temperature	10–40 °C (50–104 °F)	Same
Humidity	≤ 80 % RH, non-condensing	Same
IP Protection	IP21 (sealed front panel)	Same

TEMPERATURE CONTROL SYSTEM

Type	Specification
Thermoregulation Device	Integrated thermo-chiller unit
Control Method	PID electronic control with feedback loop
Heating Medium	Water or 50 % glycol
Temperature Range	+15 °C to +80 °C
Control Precision	±0.1 °C
Cooling Capacity	250 W @ 25 °C
Heating Power	600 W (≤10 L) / 1.2 kW (>10 L)
Sensor Type	Pt100 Class A RTD
Alternatives	Heating blanket / cooling finger / external chillers

AGITATION SYSTEM

Drive Type	Specification
Motor	Brushless DC long life
Power Output	100 W – 400 W – 600 W (selectable in according to the vessel volume)
Speed Range	100 W – 400 W – 600 W (selectable in according to the vessel volume)
Encoder Resolution	2,500 CPR/10,000 PPR incremental
Impeller Options	Rushton 6-blade, pitched 45°, marine 3-blade, axial, low-shear (selectable in according to application)
Direction	Clockwise / Counter-clockwise
Sterility Barrier	Mechanical coupling ≤ 1.0 barg
Holding brake	1.3 Nm

GAS CONTROL & AERATION

Parameter	Compact	Twin
Gas Lines	4 standard (Air, O ₂ , N ₂ , CO ₂) + 2 optional	2x 4 standard (Air, O ₂ , N ₂ , CO ₂) + 4 optional
Flow Control	Thermal MFCs or manual rotameters	Same
Flow Range	0.002 – 20 L/min	Same
Accuracy (MFC)	±1 % FS	Same
Aeration Strategies	4-gas mixing, DO cascade, O ₂ /N ₂ enrichment, pH control via CO ₂ /base	2x 4-gas mixing, DO cascade, O ₂ /N ₂ enrichment, pH control via CO ₂ /base
Pressure Relief	0.5 barg safety valve	2x 0.5 barg safety valve

LIQUID ADDITION & FEED MODULE

Parameter	Specification	Twin
Integrated Pumps	4 peristaltic per vessel (expandable to 8)	2x 4 peristaltic per vessel (expandable to 8)
Pump Type	Variable-speed, Watson-Marlow compatible	Same
Flow Range	0.05 – 200 mL/min	Same
Flow Accuracy	±2 % of setpoint	Same
Tubing Sizes	0.5 – 4.8 mm ID	Same
Reversible Flow	Yes	Same
Control Modes	Manual, Timed, Gravimetric	Same
Balance Compatibility	1–60 kg, ±0.1 g accuracy	Same

Other capacities on request

SENSORS AND MEASUREMENT

Parameter	Sensor Type / Range	Resolution	Notes
Temperature	Pt100 RTD (0–100 °C)	0.1 °C	Autoclavable
pH	Glass (2–12) / Optical (6.5–8.5)	0.01 pH	ISM / ARC
DO	Polarographic / Optical (0–200 %)	0.1 %	Analog/Digital
Redox (ORP)	–2000 to +2000 mV	1 mV	Optional
Foam/Level	Conductive or capacitive	—	Antifoam control
Biomass	NIR / Capacitance	±2 % FS	Online viable cell density
pCO₂	Digital ISM (0–100 %)	0.1 %	Optional
Gas Analyzer	O ₂ , CO ₂ , CH ₄ , H ₂ , EtOH	0.01 %	RQ & metabolic rate

CULTURE VESSELS

Parameter	MATERIAL	TOTAL VOLUME	WORKING VOLUME	FEATURES
Glass Autoclavable	Borosilicate + 316L SS headplate	0.5–15 L	0.3–12 L	Jacketed or single-wall, Rushton / pitched impellers
Stainless Steel Autoclavable	316L SS electropolished	3–30 L	0.8–25 L	Pressure ≤ 2 barg, CIP/SIP option
Single-Use Polycarbonate	γ-sterilized rigid body	0.5–10 L	0.25–8 L	Pre-sterilized DO/pH sensors, disposable tubing

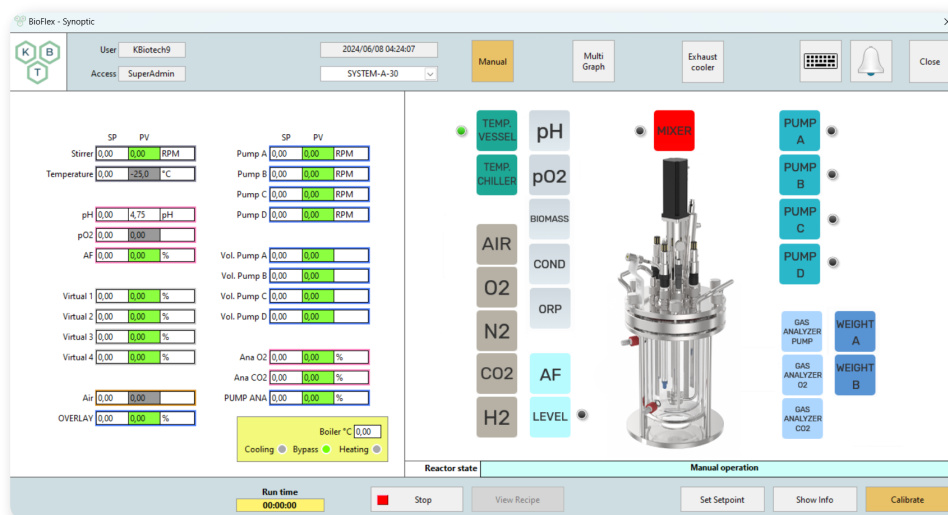
Impeller Material: 316L SS / PTFE-coated

Headplate Ports: PG 13.5, 19 mm tri-clamp, 6 mm hose barbs

Options: Baffles, safe sampler, perfusion filter, condenser, cooling finger

BIOFLEX™ SCADA SOFTWARE

Bioflex™ SCADA is an advanced supervisory and data acquisition platform developed by Vinci for comprehensive monitoring, control, and documentation of bioprocesses. It ensures full compliance with GMP and 21 CFR Part 11, enabling secure data management, automation, and integration with analytical and MES systems. Designed for scalability, it allows full control of up to 24 reactors with complete data traceability.



Feature	Description
Platform	Windows 10/11, single-unit or multi-user network license; local or remote server installation supported.
Control Modes	Batch, Fed-batch, Perfusion, Continuous, and DoE (Design of Experiments) execution.
Advanced Controllers	pH-STAT, DO-STAT, Turbido-stat, Exponential Feed, Level control, Antifoam control, Temperature cascade.
Parallel Control	Up to 24 bioreactors (independent or linked) via Ethernet or OPC network; synchronized data logging across all units.
Automation Tools	Configurable process sequences, recipe-based operation, time/event triggers, and alarm scripting.
Data Acquisition	1 Hz sampling rate; continuous data logging with timestamped trend visualization; CSV, Excel, or PDF export.
Compliance	21 CFR Part 11 compliant (electronic records, audit trail, e-signatures, user access control); GAMP 5 category software validation.
Connectivity	OPC UA, Modbus TCP, Ethernet/IP, Profibus (optional) for third-party integration (e.g., analyzers, balances, pumps).
Data Management	SQL-based encrypted database with secure access levels (Admin / Engineer / Operator); automatic audit trail for every change.
Cybersecurity	User authentication, encrypted communication (TLS), firewall configuration, password policy, and auto logout.
User Interface	Intuitive dashboard with customizable process displays, real-time charts, alarm overview, and recipe editor.
DoE Tools	Integrated statistical module for experimental design, parameter variation, and automated execution of DoE matrices.

Feature	Description
PAT Integration	Compatible with biomass, off-gas, pCO ₂ , and glucose sensors for Process Analytical Technology feedback loops.
Backup & Restore	Automated or manual backups to local or cloud storage; full system restore capability.
Reporting	Customizable batch reports including process data, alarms, and audit logs (PDF / Excel).
Remote Access	Secure browser or VPN-based remote control via PC or tablet; real-time supervision and alarm notification.
LIMS / MES Integration	Data export via OPC UA or API for connection with laboratory and manufacturing execution systems.
Languages	Multi-language interface (English, Italian, German, French, Spanish).
Service Tools	Built-in diagnostic console, remote support module, and firmware update management.

Utility	Specification
Electrical supply	230 V AC, single phase, 10 A
Cooling water	2–4 L/min @ ≤25 °C
Compressed air	3–6 barg clean, oil-free
Drain connection	Ø10 mm hose barb
Exhaust connection	6 mm hose barb
Ambient temperature	10–35 °C
Humidity	≤80 % RH
Noise emission	<55 dB(A) @ 1 m
Installation clearance	≥0.5 m on all sides

APPLICATIONS

- **Mammalian, insect, and stem cell culture;**
- **Microbial fermentation** (E. coli, yeast, fungi, algae);
- **Biopharmaceutical R&D** (vaccines, mAbs, mRNA, biosimilars);
- **Industrial biotech** (biofuels, enzymes, polymers, biogas);
- **Food & Agritech** (cellular meat, plant cell culture);
- **Education and training laboratories.**

SERVICE AND VALIDATION

- IQ/OQ/PQ documentation packages
- Preventive maintenance plans
- Remote diagnostics and online support
- Operator training and certification
- cGMP validation and traceability packages

Specifications subject to change without notice.
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