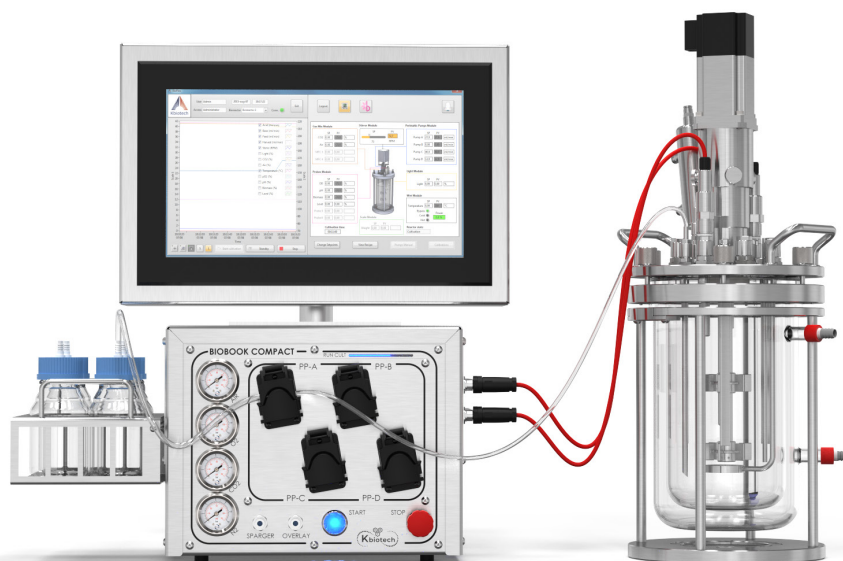




BIOBOOK COMPACT

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

DATASHEET



GENERAL OVERVIEW

The Biobook Compact is a versatile, high-performance single-vessel benchtop bioreactor system designed for cell culture and microbial fermentation in research, process development, and small-scale GMP environments. Its compact stainless-steel construction integrates advanced process control, gas management, and data acquisition within a minimal footprint.

Engineered for precision, scalability, and reproducibility, the Biobook Compact provides reliable performance for a wide range of academic, industrial, and biopharmaceutical applications.

CONTROL UNIT SPECIFICATIONS

PARAMETER	SPECIFICATION
Model Type	BIO-BOOK Compact Single
Dimensions (W × D × H)	341 × 554 × 253 mm (13,4× 21,8 × 9,9 in)
Weight	25,2 kg (55,6 lb)
Housing Material	AISI 304 stainless steel chassis, powder-coated front panel
Power Supply	100–240 V AC, 50/60 Hz, single phase, 10 A
Power Consumption	Max 10 kVA
Water Supply	Quick-connect, 10 psig (0.69 barg), 3/8 in ID (9.5 mm) hose
Cooling Water Flow Rate	2–4 L/min (0.5 – 1.1 US gpm) recommended
Communication Ports	USB 2.0, Ethernet (10/100 Base-T), Service port
Digital I/O	4 inputs, 4 outputs (0–10 V / 4–20 mA)
Display / HMI	15,6 & industrial touchscreen or external PC (15–22")
Operating Temperature	10–40 °C (50–104 °F)
Humidity	≤ 80 % RH, non-condensing
IP Protection	IP21 (sealed front panel)
Noise Level	< 55 dB(A) @ 1 m

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	SPECIFICATION
Number of Gas Lines	4 standard (Air, O ₂ , N ₂ , CO ₂) + Overlay + 2 optional
Flow Control Type	Thermal MFCs
Flow Range	0.02 – 10 L/min other flow ranges available on request
Accuracy (MFC)	± 1 % full scale
Gas mixing	Automatic overlay/sparger via Bioflex software
Aeration Strategies	4-gas mixing, DO-cascade, O ₂ /N ₂ enrichment, CO ₂ /pH control
Pressure Relief	Safety valve @ 0.5 barg (7.25 psig)

LIQUID ADDITION & FEED MODULE

FEATURES	SPECIFICATION
Integrated Pumps	4 peristaltic (standard), expandable to 8
Pump Type	Variable-speed, stepper compatible
Flow Range	0.05–200 mL/min
Flow Accuracy	±2 % of setpoint
Tubing Sizes	0.5 – 3.0 mm ID
Reversible Flow	Yes
Control Modes	Manual, Timed, Gravimetric
Balance Compatibility	1 – 30 kg stainless steel platform scale , ± 0.1 g accuracy

Other capacities on request

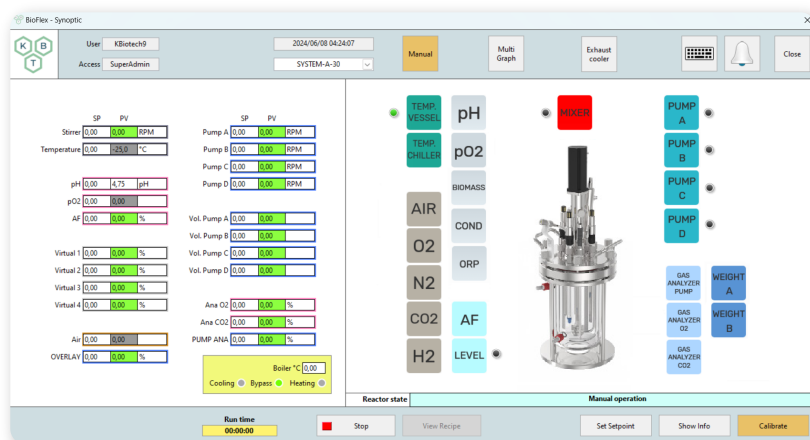
SENSORS AND MEASUREMENT

PARAMETER	SENSOR TYPE / RANGE	RESOLUTION	NOTES
Temperature	Pt100 RTD (0–150 °C)	0.1 °C	Autoclavable
pH	Glass (0–14)	0.01 pH	4–20 ma / Modbus – ARC
DO	Optical (0–200 %)	0.1 %	4–20 ma / Modbus – ARC
Redox (ORP)	–2000 to +2000 mV	1 mV	Combined option– Modbus – ARC
Foam/Level	Conductive or capacitive	—	Antifoam control
Biomass	NIR / Capacitance	±2 % FS	Online viable cell density – Modbus – ARC
pCO	Digital ISM (0–100 %)	0.1 %	Optional – Modbus – ARC
Gas Analyzer	O , CO , CH , H , EtOH	0.01 %	RQ & metabolic rate calc.

CULTURE VESSELS

	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

BIOFLEX™ SCADA SOFTWARE



FEATURES	SPECIFICATION
Platform	Windows 10/11, single-unit license
Control Modes	Batch, Fed-batch, Perfusion, Continuous
Advanced Controllers	pH-STAT, DO-STAT, Turbido-stat, Exponential feed
Parallel Control	Up to 12 bioreactors via network connection
Data Acquisition	1 Hz sampling, trend logging, CSV/Excel export
Compliance	21 CFR Part 11 (audit trail, e-signatures)
Connectivity	OPC UA, Modbus TCP, Ethernet/IP
PAT Integration	Biomass, off-gas, glucose, HPLC feedback
DoE Tools	Built-in recipe and design management
Remote Access	Secure browser / VPN control via PC or tablet

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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