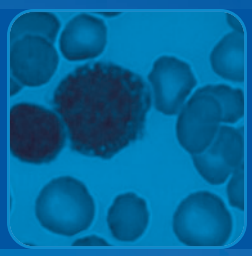
BIOFLO®/CELLIGEN® 115
BENCHTOP FERMENTOR & BIOREACTOR

VERSATILE 1.3 – 14.0L AUTOCLAVABLE SYSTEMS WITH EASY-TO-USE TOUCHSCREEN CONTROLS



New Brunswick
an eppendorf company

Versatile BioFlo®/CelliGen® 115 Fermentors and

Easy-to-use, exceptionally capable autoclavable fermentors & bioreactors in 1.3 - 14 Liters, from the market leaders.

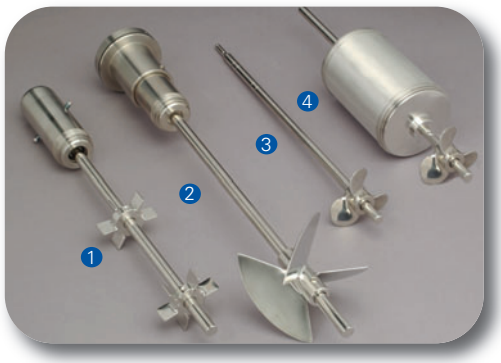
New Brunswick Scientific is proud to introduce our most capable and versatile entry-level fermentor/ bioreactor, ideally suited for a wide range of fermentation and cell culture labs.

The BioFlo/CelliGen 115 takes the complexity out of equipment selection, set-up and operation. It features a totally integrated control station with a color touchscreen interface, built-in pumps, gas flow controllers, pH/DO, foam/level controllers and more — no external PC needed. In fact, we've made it so simple, your new unit can be unpacked and ready for the autoclave in under a half hour.

Exceptionally simple and intuitive controls make it the perfect system for a wide variety of applications:

- Universities & teaching facilities
- Biotechnology companies
- Biofuels companies
- R&D facilities
- Testing labs
- Food and beverage manufacturers
- Pharmaceutical research, and more.

A wide range of accessories allow easy customization.



Four impeller options provide flexibility to grow a wide variety of cell lines. Choose: **1. Rushton impeller** *for standard fermentation applications.* **2. Low-shear Pitched blade** *or* **3. Marine blade impellers** *for gentle mixing of shear-sensitive cell lines such as insect, plant and animal cultures.* **4. Spin filter — a cell-retention device used with a marine blade impeller** *— for perfusion processes using anchorage-dependent or suspension cultures.*

Choose glass-walled vessels as shown on page 2 or heat-blanketed vessels as shown above. Systems can be customized with up to four Rotameters (two shown above) or a Thermal Mass Flow Controller for gas overlay or sparge.

READILY ADAPTS AS YOUR NEEDS CHANGE

- **Grow virtually any cell type:** aerobic and anaerobic microbes, yeast, insect, plant and mammalian cells.
- **Water-jacketed and heat-blanketed autoclavable glass vessels are offered in four sizes, 1.3, 3.0, 7.5 and 14.0 Liters** (total volume).
- **All 115 systems are pre-programmed with both fermentation and cell culture operating modes for total flexibility.** Switching between modes automatically adjusts gas flow and speed ranges.
- **A wide variety of options and accessories** provide the versatility for customization to your exact needs. Choose from eight vessels, three motor drives, specialized impellers, up to four Rotameters with multiple gas flow ranges, a Thermal Mass Flow Controller (TMFC), and more.

SIMPLE OPERATION

- **Control and view up to three independent fermentors/bioreactors from a single touchscreen.** Additional utility station(s) are required for simultaneous operation of a second or third vessel.
- **Control screens are easy to understand and use —** making the BioFlo/CelliGen 115 one of the most user-friendly systems on the market today.
- **The same control software is featured on all New Brunswick benchtop fermentors and bioreactors,** for easy transition to our larger-scale systems.

INTELLIGENT CONTROLS

- **Four-gas mix option in cell culture mode** automatically mixes two, three or four gasses for optimized cell growth.
- **Two-gas mixing option in fermentation mode** enables mixing air and oxygen for high cell yields.
- **Highly-customizable gas flow options allow you to design a system specific to your needs.** Choose one, two, three or four manual Rotameters of various flow rates. Or select a digital TMFC.
- **Built-in "cascade" feature** automatically maintains DO setpoints. Control DO with agitation, gas and/or additions.
- **Adjustable P-I-D values for pH and DO** are automatically defined by vessel size or can be fine tuned for the ultimate in control flexibility.
- **We make firmware updates quick and easy** by offering free downloads from our website. No service technician or down-time.
- **Compatible with NBS BioCommand® software** for advanced control strategies and data logging.

Easy to Get Going and Start Growing

Compact system sets up in under half an hour. Adding extra vessels with second/third utility station is plug-and-play simple. No configuration needed.

Double-Wall Water-Jacketed Vessels available in four sizes. Shown with **Magnetic Drive**

Connections for pH/DO, Sparge, Motor, Heater, Temperature Probe and Foam/Level are easily accessed from the side

8.4-inch / 21.3 cm Color Touchscreen Interface is standard on Control Stations *(Not provided on supplemental utility stations)*

Heat-Blanketed Vessels available in four sizes. Shown with **Direct Drive**

Sample Assembly

Optional Additonal Bottle Holder saves valuable lab space

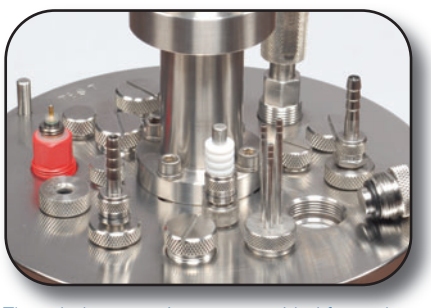
Quick Connects for Water In/Out allow utilities to be attached and detached in seconds

Control Station (and optional utility stations for second and third vessel) include an integrated water manifold to save space. Footprint measures just 15.6" W x 16" D (39.6 x 40.6 cm)

Each Control or Utility Station can accommodate **up to four Rotameters** – available in a variety of flow rates – or a **Thermal Mass Flow Controller** (two Rotameters shown)

Three Fixed Speed (12 RPM) Peristaltic Pumps can be linked directly to acid, base, foam, level

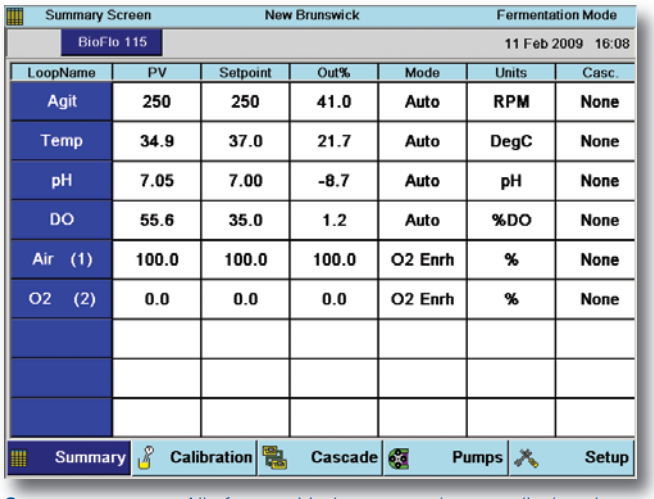
On-Off is easily accessed from the side



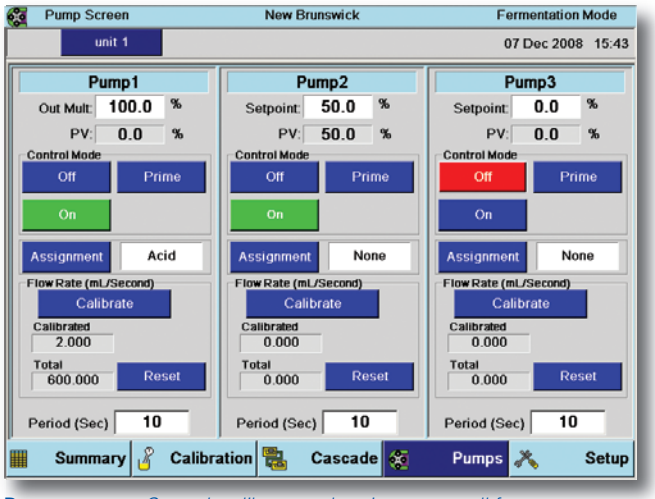
Threaded penetrations are provided for probes, sampling tube and exhaust gas condenser.

Vessel Headplate Ports				
Vessel Size	**6mm**	**12mm**	**19mm**	**Total Ports**
1.3L	1	9	0	**10**
3.0L	6	7	0	**13**
7.5L	7	8	1	**16**
14.0L	7	8	1	**16**

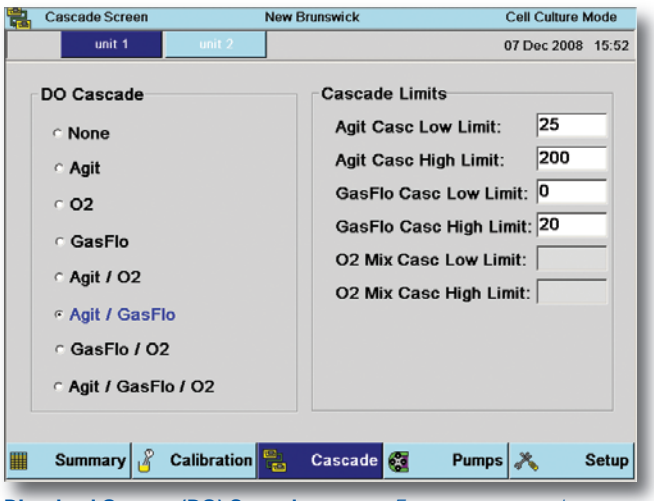
Sample Control Screens*



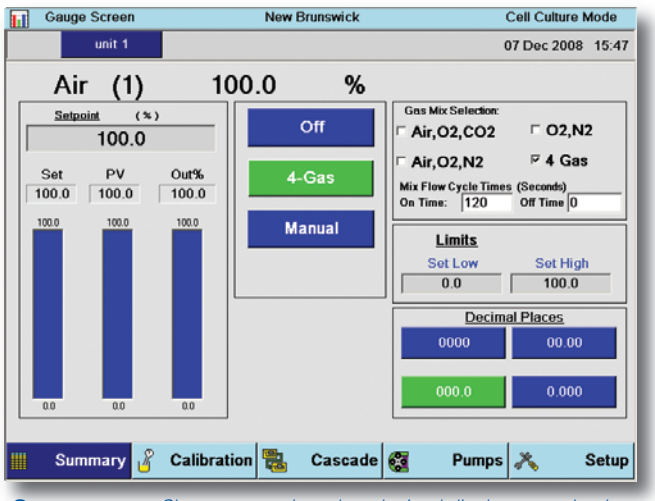
Summary screen: *All of your critical process values are displayed on one screen. Setpoint, present value, control mode, units, output and cascade are all displayed.*



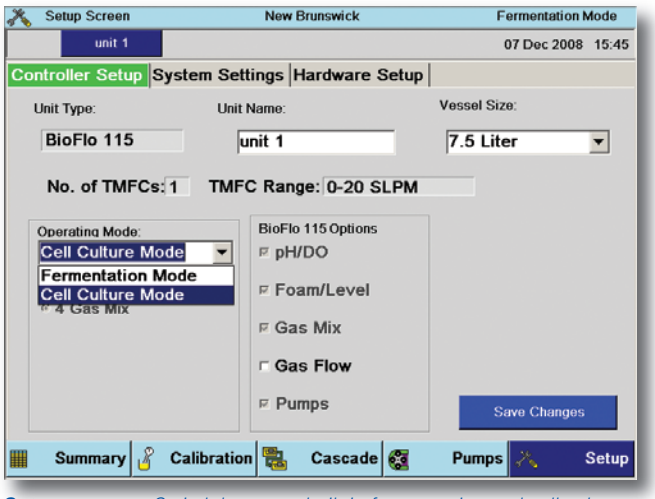
Pump screen: *Control, calibrate and assign pumps all from one screen.*



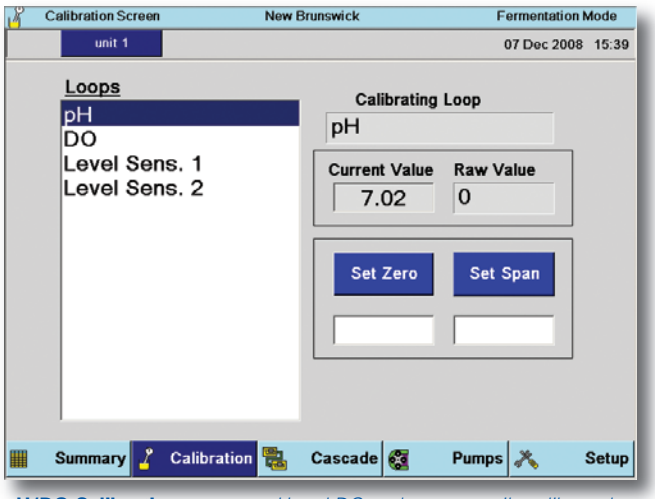
Dissolved Oxygen (DO) Cascade screen: *Easy to use cascade screen lets you quickly set up DO cascades for your system.*



Gauge screen: *Change control modes, decimal displays, set dead-bands or change PI settings all from loop gauge screens.*



Set-up screen: *Switch between built-in fermentation and cell culture operating modes simply by choosing the appropriate drop-down box. Gas flow and speed ranges are automatically adjusted.*



pH/DO Calibration screen: *pH and DO probes are easily calibrated by selecting the probe and entering the zero and span.*

** Screens may differ depending upon your system's configuration.*

Pre-Packaged Kits Provide Turn-Key Solutions

PRE-CONFIGURED KITS CONTAIN EVERYTHING NEEDED TO GET YOU STARTED

Basic and Advanced Fermentation Kits, as well as Advanced Cell Culture Kits simplify ordering. If a pre-configured system doesn't meet your process requirements, a fully configurable system can be designed by selecting from our available options:

- pH/DO
- Automatic gas mixing
- Thermal Mass Flow Control (TMFC)
- Gas flow
- Pumps, and
- Foam/Level.

Need A Second or Third System? Budget-saving utility stations and "Add-A-Vessel Kits" take the cost and work out of ordering added units.

Do you already own an NBS BioFlo 110 vessel? Save thousands of dollars by re-using your existing vessel. Retro Kits are also offered to convert your existing cable connections to fit the new system.

We've thought of everything, including offering "start-up kits" containing essential tubing, cable ties, tape, connectors and more — catalog number M1369-0300.

Contents of BioFlo/CelliGen 115 Fermentor & Cell Culture Kits

Kit Contents	Advanced Fermentation Kit	Advanced Cell Culture Kit	Basic Fermentation Kit
Vessel Kit – Basic*			●
Vessel Kit – Advanced *	●	●	
Master Control Station (Touch Screen)	●	●	●
Temperature Control	●	●	●
Agitation Control	●	●	●
pH/DO Control	●	●	
Foam/Level Control	●	●	
3 Fixed-Speed Pumps	●	●	
Manual Gas Mix	●		●
Automatic Gas Mix (via 4 Solenoids)		●	
Manual Gas Flow (via Rotameters)	●	●	●
Automatic Gas Flow (0-20 SLPM TMFC optional)			

(*) For details of vessel kit components, see the Add-A-Vessel table below.

Add-A-Vessel Kits for Fermentation and Cell Culture

Vessel Kits contain most ancillary components required for independent operation as a second or third vessel. Additional control components may be required.

Component	Vessel Kit – Adv. Fermentation		Vessel Kit – Adv. Cell Culture		Vessel Kit – Basic Fermentation	
	Heat Blanket	Water Jacket	Heat Blanket	Water Jacket	Heat Blanket	Water Jacket
Dish-Bottom Vessel with stainless steel headplate	●	●	●	●	●	●
Vessel Stand	●		●		●	
Agitation Motor, 50–1200 rpm	●	●			●	●
Agitation Motor, 30–300 rpm			●	●		
Direct Drive Assembly	●	●	●	●	●	●
Magnetic Drive Assembly Option			●	●		
Heater Blanket	●		●		●	
Jacket Water Heater		●		●		●
Immersion Cooling Coil	●		●		●	
Thermowell	●	●	●	●	●	●
RTD Probe	●	●	●	●	●	●
Baffle Assembly	●	●			●	●
Two Rushton Impellers	●	●			●	●
One Pitched Blade Impeller			●	●		
Exhaust Condenser	●	●	●	●		
Tube/Assembly Sampler	●	●	●	●		
Tri-Port Adapter	●	●	●	●		
Septum Kit	●	●	●	●		
Liquid Addition Tube and Headplate Adapter	●	●	●	●		
Two Addition Bottles and Tubing	●	●	●	●		

Advanced Fermentation Kits — Ordering Information

Advanced Fermentation Kits are available with choice of heat-blanketed vessel (**HB**) or water-jacketed vessel (**WJ**).

Total Volume	Working Volume	Electrical Service	HB Kit Catalog No.	WJ Kit Catalog No.
1.3L	0.4 - 1.0L	100 - 120V	M1369-1121	M1369-1111
		200 - 240V	M1369-1151	M1369-1161
3.0L	0.8 - 2.2L	100 - 120V	M1369-1122	M1369-1112
		200 - 240V	M1369-1152	M1369-1162
7.5L	2.0 - 5.6L	100 - 120V	M1369-1125	M1369-1115
		200 - 240V	M1369-1155	M1369-1165
14.0L	4.0 - 10.5L	100 - 120V	M1369-1130	M1369-1120
		200 - 240V	M1369-1150	M1369-1160

Basic Fermentation Kits — Ordering Information

Basic Fermentation Kits are available with choice of heat-blanketed vessel (**HB**) or water-jacketed vessel (**WJ**).

Total Volume	Working Volume	Electrical Service	HB Kit Catalog No.	WJ Kit Catalog No.
1.3L	0.4 - 1.0L	100 - 120V	M1369-1101	M1369-1621
		200 - 240V	M1369-1141	M1369-1631
3.0L	0.8 - 2.2L	100 - 120V	M1369-1102	M1369-1622
		200 - 240V	M1369-1142	M1369-1632
7.5L	2.0 - 5.6L	100 - 120V	M1369-1105	M1369-1625
		200 - 240V	M1369-1145	M1369-1635
14.0L	4.0 - 10.5L	100 - 120V	M1369-1110	M1369-1630
		200 - 240V	M1369-1140	M1369-1640

Advanced Cell Culture Kits — Ordering Information

Advanced Cell Culture Kits are available with choice of heat-blanketed vessel (**HB**) or water-jacketed vessel (**WJ**) and choice of magnetic (**M**) or direct-drive (**D**) agitation systems.

Total Volume	Working Volume	Electrical Service	Agitation System	HB Kit Catalog No.	WJ Kit Catalog No.
1.3L	0.4 - 1.0L	100 - 120V	M	M1369-1201	M1369-1211
			D	M1369-1301	M1369-1311
		200 - 240V	M	M1369-1401	M1369-1171
			D	M1369-1501	M1369-1371
3.0L	0.8 - 2.2L	100 - 120V	M	M1369-1202	M1369-1212
			D	M1369-1302	M1369-1312
		200 - 240V	M	M1369-1402	M1369-1172
			D	M1369-1502	M1369-1372
7.5L	2.0 - 5.6L	100 - 120V	M	M1369-1205	M1369-1215
			D	M1369-1305	M1369-1315
		200 - 240V	M	M1369-1405	M1369-1175
			D	M1369-1505	M1369-1375
14.0L	4.0 - 10.5L	100 - 120V	M	M1369-1210	M1369-1220
			D	M1369-1310	M1369-1320
		200 - 240V	M	M1369-1410	M1369-1170
			D	M1369-1510	M1369-1370

TOTAL SUPPORT

Hands-on training is available at our U.S. research & pilot-plant labs. Or, ask your sales representative about on-site training at your facility.

Our application specialists are available to support you.

A comprehensive one-year warranty on parts and labor covers the entire system except glassware. Probes have a one-year manufacturer's warranty. Our factory-trained service technicians are located worldwide.

BioFlo®/CelliGen® 115 System Specifications*

Vessel	**Total Volume**	**1.3 Liters**	**3.0 Liters**	**7.5 Liters**	**14.0 Liters**
	Working Volume	0.4 – 1.0 Liters	0.8 – 2.2 Liters	2.0 – 5.6 Liters	4.0 – 10.5 Liters
	Design	Heat-blanketed and water-jacketed All vessels are borosilicate glass, autoclavable, with dished-bottom			
	Weight	15 lb. (6.8 kg.)	20.5 lb. (9.3 kg.)	39.5 lb. (18 kg.)	43 lb. (19.5 kg.)
Control Station & Utility Station	**Design**	Compact control station with advanced integrated controller is capable of supporting up to two additional (optional) independent utility stations and vessels			
	Display	8.4" (21.3 cm) industrial color touchscreen display is standard on the control station. Not included on optional utility station(s).			
	Function	Fermentation and cell culture monitoring and control			
Temperature	**Range**	70°C maximum temperature (65°C maximum temperature for 14.0L)			
	Control	PID for heating and cooling Heat-blanketed Vessels: External heating blanket and immersed stainless steel cooling coil. Water-jacketed Vessels: Water jacket heater and circulation loop			
	Sensor	Platinum RTD probe (Pt 100)			
Agitation	**Drive**	Magnetic Drive or Direct Drive			
	Range	Direct Drive: Ferm 50 - 1200 RPM; Cell Cult 25 - 400 RPM • Mag Drive: 25 - 200 RPM			
	Control	PID control; manual, automatic, or cascade settings			
	Impellers	Rushton-style standard with fermentation system. Pitched blade standard with cell culture. Optional: Marine blade and/or Spin filter			
	Baffles	Removable 316L stainless steel; fermentation only			
Aeration	**Gas Flow Options**	0 - 4 Rotameters: 0 -150 mLpm • 250 - 2500 mLpm • 1 - 5 Lpm • 1 - 20 Lpm (and more) 1 Thermal Mass flow Controller (TMFC): 0.04 - 20 SLPM			
	Gas Mixing	Options: Automatic 4-Gas Mixing & Manual Gas Mixing. Both via 4 gas manifold.			
	Sparger	Standard: Ring Sparger • Optional: Microsparger			
	Inlet Filter	0.2 µm Absolute filter			
	N_2 Gas	For calibration of DO probe			
pH	**Range**	2-14 pH			
	Control	PID, link to pumps or gasses, adjustable deadband			
	Sensor	pH probe			
DO	**Range**	0 - 200%			
	Control	PID, cascade to agitation, gasses, gas flow if equipped with TMFC			
	Sensor	Polaragraphic DO probe			
Exhaust	**Filter**	0.2µm Absolute filter			
	Condenser	Stainless steel counterflow, water-cooled in headplate			
3 Pumps	**Control**	60 Hz / 14.4 RPM • 50 Hz / 12 RPM			
Utilities	**Water**	10 PSIG maximum, 50 µm filtration			
	Gasses	10 PSIG maximum			
Electric Req.	**100 - 230V**	50/60 Hz • Single Phase • 100 - 120V: 10 Amps; 200 - 240V: 6 Amps			
Control Station/Utility Station Dimensions		Height 26.6" (67.6 cm) x Width 15.6" (39.6 cm) x Depth 16.0" (40.6 cm)			

(*) Specifications subject to change without notice. Not all options are included with all kits. Refer to pages 6 – 7 for details.

USA HEADQUARTERS
P: 1.800.631.5417
P: 1.732.287.1200
F: 1.732.287.4222
bioinfo@nbsc.com
www.nbsc.com
PO Box 4005
44 Talmadge Rd
Edison, NJ USA

UNITED KINGDOM
P: 0800 581331
P: +44 (0) 1727 853855
F: +44 (0) 1727 835666
bioinfo@nbsuk.co.uk
17 Alban Park, Hatfield Rd
St. Albans, AL4 0JJ

THE NETHERLANDS
P: +31 (0)24 3717 600
F: +31 (0)24 3717 640
sales@nbsbv.nl
Kerkenbos 1101,
6546 BC Nijmegen
P.O. Box 6826,
6503 GH Nijmegen

BELGIUM
P: +32 (0) 16 562 831
F: +32 (0) 16 572 753
sales@nbsnv-sa.be
Stationsstraat 180/4
B-3110 Rotselaar
België/Belgique

CHINA
P: +86-21-648 45955
F: +86-21-648 45933
nbschc@online.sh.cn
A903, 904 Yin Hai
Bldg., No. 250, Cao Xi Rd.
Shanghai 200235

New Brunswick
an eppendorf company