BC Biomedical™

A UNIT OF BC GROUP INTERNATIONAL, INC.

MADE IN THE USA

NEW

2016 - 2017 CATALOG

Patent Pending

IPA-3400
IPA-3400
Flow Test · PCA Test · Occlusion Test · Prime · Drain · Multi-Test · Load Test · Load Data · Clean
IPA-3400 INFUSION PUMP ANALYZER

IPA-3400
Infusion Pump Analyzer
See Page 45 - 48

80.8

NIBP-1040Kit-E
Patient Simulator
See Page 21 - 22

COVIDIEN®

Validated to Covidien Requirements

The Only Multi-Pulse Analyzer

Patent Pending DFA^2 Technology^{TM}

ESU-2400H
ESU Analyzer
See Page 25 - 26

PHILIPS®
Ultrasound

Validated by Philips Ultrasound

ULT-2020
Ultrasound Leakage Tester
See Page 51 - 56

BC Group™
YOUR ONE-STOP BIOMED SHOP

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St. Charles, MO 63301 USA
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www.bcgroupintl.com

History

BC Group was founded in 1988. In 2000, we began manufacturing our own product line under the now familiar Green and Gold "BC Biomedical" label.

In January of 2005, Lloyd Industries, the company that engineered and manufactured most of the BC Biomedical brand products, purchased BC Group. This acquisition has allowed our products and services to expand at an even faster pace. BC Group, under the "BC Biomedical" brand, is now the second largest manufacturer of Biomedical Test and Measurement Equipment in the world.

Philips Ultrasound has validated our ULT-2020 and ULT-PA-19 after months of extensive testing. We are introducing our new BC Biomedical IPA-3400 Infusion Pump Analyzer this year. We introduced our new ESU-2400H Electrosurgery Analyzer last year, with enhanced ability to detect waveforms with a higher sampling rate. (Upgrade path for previous models available) Our philosophy with BC Biomedical products runs counter to the current trend of "one-size-fits-all". We offer families of products that provide the users with a choice of models so they can pick the features they need at a price they can afford.

BC Group has a major commitment to Quality at all levels of our operation. The company is certified to ISO 9001:2008 and ISO 13485:2003. Our Service Center is accredited to both ANSI Z540-1 and ISO/IEC 17025:2005 with full traceability to NIST. We are Registered with and Inspected by the FDA and follow the Good Manufacturing Practices (GMP) as well as comply with the QSR (Quality Systems Regulation) 21CFR820.

Keep checking our website for the latest additions to the BC Biomedical Line.

BC Biomedical
A UNIT OF BC GROUP INTERNATIONAL, INC.

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Features - SA-2000 Series

◇ **Small, Lightweight Portable Analyzer**

◇ **Line Voltage Measurement**

◇ **Device Under Test Current Measurement**

◇ **Earth/Ground Lead Resistance/ Leakage Current**

◇ **Point-to-Point Testing (Except SA-2000)**

◇ **Enclosure/Chassis Leakage Current**

◇ **External Resistance**

◇ **External Leakage Current**

◇ **Source Receptacle Wiring Integrity Monitor**

◇ **MAP (Isolation) Function**

◇ **Internal ECG Simulator (SA-2010S Only)**

◇ **True RMS Readings**

◇ **AAMI ES1-1993 or IEC 601 Selectable Test Loads (SA-2000 AAMI Only)**

◇ **90 to 264 VAC Operation**

◇ **Touch Control Keys - No Knobs**

◇ **LED Status Indicators**

◇ **Audible Feedback**

◇ **Self-Test Points**

◇ **Externally Replaceable Ground Fuse**

◇ **Automatic Delay on Power Polarity Reversal to DUT**

◇ **Soft-Sided Carrying Case**

◇ **International Versions Available**

Optional

◇ **External Point-to-Point (Red) Cable**

◇ **Kelvin Cable (For four wire resistance testing)**

◇ **RS-232 add "-R" to part number**

SA-2010S

The SA-2000 Series is a Microprocessor-based Electrical Safety Analyzer Family. There are 5 models that provide everything from the most basic testing functions to the most complete set of features of any handheld unit on the market.

The compact size makes the SA-2000 Family easy to hold and operate. All models operate from 90 to 264 Volts @ 50/60 Hz, with Load Currents up to 20 Amps, so there is no need to purchase 2 different analyzers to cover your testing needs. The SA-2010S is the smallest safety analyzer available with a built-in ECG Patient simulator.

The SA-2000 Family of Safety Analyzers allows the user to choose the model that best fits the application. The combination of the best features at the best price makes this Family of products a perfect choice.

All models come with a soft-sided case and a Chassis (Black) cable. An optional External Point-to-Point (Red) cable or a Kelvin cable is also available.

Models:	SA-2000	SA-2001	SA-2005	SA-2010	SA-2010S
Voltage (Rating)	90 to 264 VAC	90 to 264 VAC	90 to 264 VAC	90 to 264 VAC	90 to 264 VAC
Current (Rating)	20 A	20 A	20 A	20 A	20 A
RS-232	On "-R"				
Measures:					
Voltage (VAC)	No	90 to 264 (± 3% R)	90 to 264 (± 3% R)	90 to 264 (± 3% R)	90 to 264 (± 3% R)
Current (A)	No	0 to 19.99 (± 5% R)	0 to 19.99 (± 5% R)	0 to 19.99 (± 5% R)	0 to 19.99 (± 5% R)
Leakage Current (µA)	0 to 1999 DC & 25 to 1 kHz (± 1% R) 1 kHz to 100kHz (± 2.5% R) 100 kHz to 1 MHz (± 5% R)	0 to 1999 DC & 25 to 1 kHz (± 1% R) 1 kHz to 100kHz (± 2.5% R) 100 kHz to 1 MHz (± 5% R)	0 to 1999 DC & 25 to 1 kHz (± 1% R) 1 kHz to 100kHz (± 2.5% R) 100 kHz to 1 MHz (± 5% R)	0 to 1999 DC & 25 to 1 kHz (± 1% R) 1 kHz to 100kHz (± 2.5% R) 100 kHz to 1 MHz (± 5% R)	0 to 1999 DC & 25 to 1 kHz (± 1% R) 1 kHz to 100kHz (± 2.5% R) 100 kHz to 1 MHz (± 5% R)
Resistance (Ω)	0 to 1.99 (± 1% R) 2 to 19.99 (± 1% R) 10 mA	0 to 1.99 (± 1% R) 2 to 19.99 (± 1% R) 10 mA	0 to 1.99 (± 1% R) 2 to 19.99 (± 1% R) 10 mA	0 to 1.99 (± 1% R) 2 to 19.99 (± 1% R) 10 mA	0 to 1.99 (± 1% R) 2 to 19.99 (± 1% R) 10 mA
Patient Leads	0	0	5	10	10
MAP (Isolation)	No	No	Yes	Yes	Yes
Built-in ECG Simulator	No	No	No	No	Yes
AAMI & IEC Loads	AAMI Only	Yes	Yes	Yes	Yes
Point-to-Point	No	Yes	Yes	Yes	Yes
Test Points	No	Yes	Yes	Yes	Yes
Test Capability:					
Open Ground	Yes	Yes	Yes	Yes	Yes
Reverse Polarity	Yes	Yes	Yes	Yes	Yes
Open Neutral	Yes	Yes	Yes	Yes	Yes
Open Line	Yes	Yes	Yes	Yes	Yes
Size	8.65 x 5.73 x 1.92 Inches	8.65 x 5.73 x 1.92 Inches	8.65 x 5.73 x 2.40 Inches	8.65 x 5.73 x 2.40 Inches	8.65 x 5.73 x 2.40 Inches
Weight	≤ 2.5 Lbs (1.14kg)	≤ 3.0 Lbs (1.36kg)	≤ 3.0 Lbs (1.36kg)	≤ 3.0 Lbs (1.36kg)	≤ 3.5 Lbs (1.59kg)

Safety Analyzer Series

Safety Analyzer Series

Features - SA-2000-INTL Series

◇ **Five Models Available: SA-2000-INTL, SA-2001-INTL, SA-2005-INTL, SA-2010-INTL & SA-2010S-INTL**

◇ **All of the Same Features Available as the Domestic Counterpart**

◇ **Universal Power Receptacle Accepts Almost Any International Power Plug Configuration**

◇ **Detachable Power Cord allows for use in Any Country**

◇ **Multiple International Configuration Power Cords Available**

◇ **AAMI ES1-1993 or IEC 601 Selectable Test Loads**

◇ **90 to 264 VAC Operation**

◇ **Soft-sided Carrying Case & Chassis Cable Included**

Features - CS-2000 Series

◇ **Two Models Available: CS-2000-U (US Version with US Plug & Socket) and CS-2000-E (European Version with European "Schuko" Plug & Socket)**

◇ **Facilitates Testing to IEC 601 Requirements**

◇ **Interfaces Directly to BC Biomedical SA-2000 & SA-2000-INTL Series of Safety Analyzers**

◇ **Interfaces with Dale Technology® LT544D, LT544D Lite, 601 & 601E Safety Analyzers**

◇ **Universal Power Supply (90 to 264 VAC, 50/60 Hz)**

◇ **1 Amp Current Source for Resistance Measurements**

◇ **No Protruding Push Buttons**

◇ **Light Touch Key Used to Operate**

◇ **Small Size**

Universal Power Receptacle with BC20-20221 Installed for Schuko use

SA-2001-INTL

The SA-2000-INTL Series is ideal for international customers or for those that simply need a power cord configuration that is different from the standard NEMA 5-15P configuration that is standard on our SA-2000 Series. Interchangeable power cords make power input switching extremely easy and the universal configuration power receptacle is compatible with almost all countries around the world.

CS-2000

The CS-2000 Series is an 1 Amp current source for testing the ground continuity in equipment. This device facilitates testing to IEC 601 requirements, where an 1 Amp source current is required. This device interfaces directly with the BC Biomedical SA-2000 Series of Safety Analyzers as well as the Dale Technology® LT544D, LT544D Lite & 601/601E. This Series comes in 2 models, US and European plug & socket configurations.

SA-2000-INTL Series Information

Typical Power Cord Options Available for the SA-2000-INTL Series

BC20-20400
North America
Hospital Grade

BC20-20401
Japan

BC20-20402
United Kingdom

BC20-20403
Schuko-Continental
Europe

BC20-20409
India/South Africa

BC20-20410
Switzerland

BC20-20412
Italy

BC20-20416
Australia

Pick Your Country's Connector from Above to Connect to the SA-2000-INTL series

Standard Power Cord

BC20-20200
Use with SA-2010S INTL

Standard Product Plug

BC20-20221 Schuko Plug
Ground Adapter
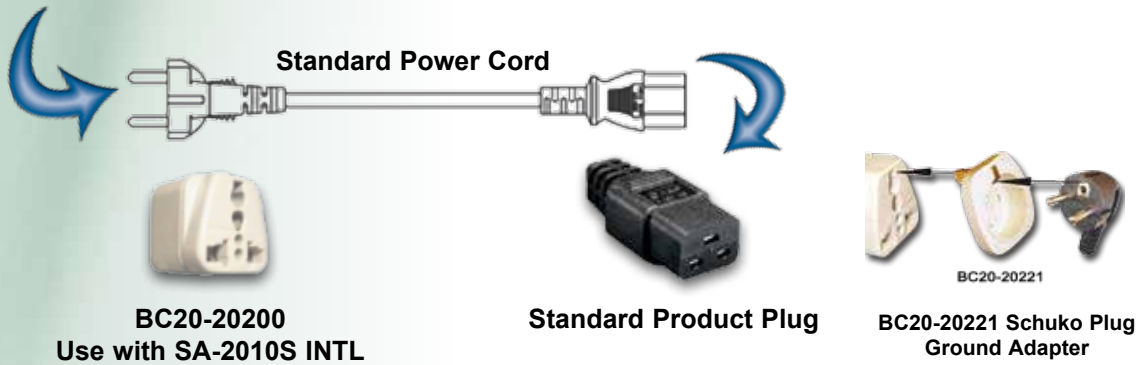
CS-2000 Specifications

Electrical		
CURRENT SOURCE	1.00 to 1.02 A DC	
OPERATING LINE VOLTAGE	90-264 VAC, 50/60 Hz	
POWER CONSUMPTION	12 VA (12 W)	
LOAD CURRENT	This device is an accessory to a Safety Analyzer, refer to applicable Safety Analyzer User Manual for this Rating	
LINE PLUG	CS-2000-U	NEMA 5-15P
	CS-2000-E	European CEE 7/7 "Schuko"
DUT RECEPTACLE	CS-2000-U	Hospital Grade NEMA 5-15R
	CS-2000-E	European CEE 7/7 "Schuko"
CONNECTIONS	LINE PLUG 3 Pin Locking Plug for Safety Analyzer Chassis Cable Connection (See Description section for Compatible Safety Analyzers) Detachable Kelvin Cable (BC20-20114) for DUT Ground Connection	
Physical		
SIZE	7.09 x 3.94 x 1.56 Inches (180 x 100 x 40 mm)	
ENCLOSURE	ABS Plastic Back-printed Lexan Overlay	
WEIGHT	< 1 Lbs (0.45 kg)	
OPERATING RANGE	0 to 50 °C (32 to 122 °F) 10 to 90% RH, Non-Condensing	
STORAGE RANGE	-40 to 60 °C (-40 to 140 °F)	

Safety Analyzer Series

Safety Analyzer Series

Features - SA-2500

- ◇ **Full PC Automation with Procedures and Reports**
- ◇ **Small & Lightweight Portable Analyzer**
- ◇ **Line Voltage Measurement**
- ◇ **Device Under Test Current Measurement**
- ◇ **Earth/Ground Lead Resistance/Leakage Current**
- ◇ **Point-to-Point Testing**
- ◇ **Enclosure/Chassis Leakage Current**
- ◇ **External Resistance**
- ◇ **External Leakage Current**
- ◇ **Source Receptacle Wiring Integrity Monitor**
- ◇ **MAP (Isolation) Function**
- ◇ **True RMS Readings**
- ◇ **90 to 240 VAC Operation**
- ◇ **Touch Control Keys - No Knobs**
- ◇ **Audible Feedback**
- ◇ **Automatic Delay on Power Polarity Reversal to DUT**
- ◇ **Soft-Sided Carrying Case**
- ◇ **International Versions Available**

Optional

- ◇ **BC20-20150 – Chassis Cable (Kelvin), one comes with the unit (SA-2500 Only)**

SA-2500

The SA-2500 is an Electrical Safety Analyzer with Full PC Automation.

There are 2 Modes of operation, Manual and Remote. The Manual mode allows most of the basic testing functions to be stepped through one at a time. With the Remote mode, measurements are controlled via a PC. The user has the possibility to integrate all measurements into the individual operator interface at the PC and to define test sequences.

PC Interface (Included)

Sample Report (Included)

Electrical	
Voltage (Rating)	90-240 VAC
Current (Rating)	16A
Remote Control	USB
Measurements	
Voltage (VAC)	90 - 240 (+/-5%)
Current (A)	0 to 16.00 (+/- 5%)
Leakage Current	10 to 300 uA(+/- 5%)300 uA to 30 mA (+/- 5%)
Resistance (Ohms)	0.01 to 30.00 (+/- 10%)
Patient Leads	10
MAP (Isolation)	Yes
Built-In ECG Simulator	No
Test Load	IEC
Point to Point	Yes
Test Points	No
Test Capability	
Open Ground	Yes
Reverse Polarity	Yes
Open Neutral	Yes
Open Line	Yes
Size	12.8 x 9.8 x 3.5 Inches
Weight	< 4.4 Lbs (2 kg)

Measuring Leakage Current

Frequency response is taken into consideration in accordance with the diagram to the right when leakage current is measured.

Safety Analyzer Series
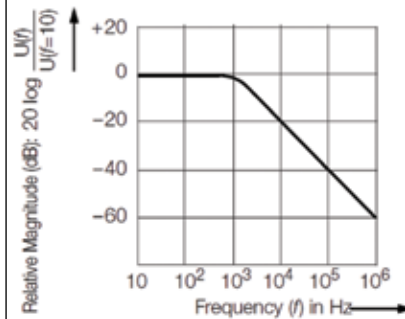
Patient Simulator Series

Features - PS-2200 Series

◆ **Simple to Operate**

◆ **Independent Lead Outputs produce a true 12 Lead ECG Signal**

◆ **1, 2 or 4 Invasive BP Channels**

◆ **All BP Waveforms Available on all BP Channels**

◆ **49 Arrhythmia Selections**

◆ **Respiration & Temperature Simulation**

◆ **ECG Performance Waveforms**

◆ **Dual Graphical Displays with Backlighting**

◆ **Drop Down Choice Screens List all Options for Parameters**

◆ **Special Power Up Feature allows user to choose to use default, last or custom settings**

◆ **Auto Sequences for BPM, Static-Pressure Levels & Performance**

◆ **10 AHA & European Color Coded Universal Patient Lead Connectors (with enough space between posts for the large diameter connectors)**

◆ **Mini DIN Connectors Compatible with Standard BP Cables (Optional Mini DIN-M to DIN-F Cable Adapter)**

◆ **% Battery Life & Low Battery Indicator**

◆ **Powered by Two 9V Batteries or Included Universal Battery Eliminator**

◆ **Full Remote Operation via RS-232**

◆ **Flash Programmable, Field Upgradeable**

◆ **Battery Eliminator**

Optional

◆ **SpO$_2$ Simulation**

◆ **Cardiac Output**

◆ **Fetal/Maternal Output**

◆ **Remote PSR-2200**

PS-2240

The PS-2200 Multi-Parameter Patient Simulator Series are the most comprehensive, easy-to-use simulators on the market. These new portable simulators are intuitive to use since there are NO MORE CODES to enter.

Each model provides ECG, Blood Pressure, Respiration and Temperature Simulation. Models are available with one, two or four independent blood pressure outputs. All models will support the Fetal/Maternal, SpO$_2$, Cardiac Output and PSR-2200 Remote options.

The PS-2200 Series makes viewing and selecting the desired waveforms and parameters quick and intuitive. All operational information is available at the same time on two cursor-based graphic displays, allowing for easy maneuvering through parameters and scrolling through available options.

SPECIFICATIONS

ECG NSR	
Rate	30, 40, 45, 60, 80, 90, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300 BPM
Accuracy	± 1%
Amplitude	.05, .10, .15, .20, .25, .30, .35, .40, .45, .50, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 mV
Accuracy	± 2% @ Lead II
High Level	200 times Amplitude
Accuracy	± 5%
QRS Interval	Adult (80ms), Pediatric (40ms)
ST Segment (Elevation)	± 0, .05, .1, .2, .3, .4, .5, .6, .7, .8 mV
ECG Performance	
Sine Wave	0.1, 0.5, 5, 10, 40, 50, 60, 100 Hz
Square Wave	0.125, 2.000 Hz
Triangle Wave	2.000, 2.500 Hz
Pulse Wave	30, 60, 120 BPM; 60 ms
Amplitude	.05, .10, .15, .20, .25, .30, .35, .40, .45, .50, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 mV
R-Wave (Havertriangle)	
Rate	30, 60, 80, 120, 200, 250 BPM
Width	8, 10, 12, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 130, 140, 150, 160, 170, 180, 190, 200 ms
Amplitude	.05, .10, .15, .20, .25, .30, .35, .40, .45, .50, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 mV
Rate Accuracy	± 1%
Amplitude Accuracy	± 2% @ Lead II
R-Wave </= 20 ms	± 5% @ Lead II
Blood Pressure	
Channels	1 – PS-2210 2 – PS-2220 4 – PS-2240
Static Pressure	-10, -5, 0, 20, 40, 50, 60, 80, 100, 150, 160, 200, 240, 250, 300, 320 400 mmHg
Accuracy	± (2% of Reading + 2 mmHg)
Impedance	300 Ohms
Accuracy	± 10%
Excitation Range	2 to 16 V RMS
Excitation Frequency	DC to 5 KHz
Sensitivity	5 or 40 µV/V/mmHg
Respiration Artifact	0 to 16 mmHg
Remote(Option)	
Fully compatible with PSR-2200	

Pacemaker Waveforms	
Amplitude	1, 2, 3, 4, 5, 6, 7, 8, 9, 10 mV
Accuracy	± 10%
Width	0.1, 0.5, 1.0, 1.5, 2.0 ms
Accuracy	± 5%
Rate	75 BPM
Accuracy	±1%
Respiration	
Rate	Apnea, 15, 20, 30, 40, 60, 80, 100, 120 BrPM
Accuracy	± 1%
Impedance delta	0.1, 0.2, 0.5, 1.0, 2.0, 3.0 Ω
Accuracy	± 10%
Baseline	500, 1000, 1500, 2000 Ω
Accuracy	± 5%
Lead	LA or LL
Temperature	
Temperature	0, 24, 30, 37, 40 °C (32.0, 75.2, 86.0, 98.6, 104.0 °F)
Accuracy	± 0.1 °C
Type	YSI Series 400 and 700
Fetal / Maternal	
Fetal Heart Rate	60, 90, 120, 140, 150, 210, 240 BPM
Inter Uterine Pressure Response Types	Uniform Deceleration Early Deceleration Late Deceleration Uniform Acceleration
IUP Wave	Bell Curve with 90 mmHg Peak and 90 Sec Width
IUP Trigger	Manual Auto: 2,3,5 Minute
Cardiac Output	
Injectate Volume	10 cc
Injectate Temperature	0 °C or 24 °C , ± 2%
Calibration Coefficient	0.542 (0 °C Inj), 0.595 (24 °C Inj)
Blood Temperature	37 °C (98.6 °F), ± 2%
Cardiac Output	2.5, 5.0, 10.0 l/min, ± 5%
Simulations	Normal Flow Faulty Injectate Left-to-Right Shunt Temperature Calibration Pulse
Temperature Calibration Pulse	1.5 °C Down for 1 sec, ± 1%
Catheter Type	Baxter Edwards, 93a-131-7f
SpO$_2$ Simulation (MSP-2100 & Finger SIM™ Req'd.)	
Rate	30 to 300 BPM
SpO$_2$ Output	80, 90 & 97%

PS-2220

COMPARE

PS-2210 with Cardiac Output Option

To Compare Patient Simulators, see chart on Page 14.

Patient Simulator Series

Patient Simulator Series
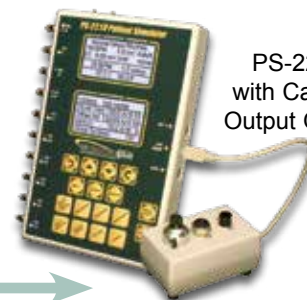
Features - PSR-2200 Remote

◈ **Large easy-to-read 128 x 64 pixel Graphical LCD Display**

◈ **Small & Lightweight**

◈ **10 Default Output Keys (adjustable)**

◈ **18 Programmable Keys**

◈ **25-foot Coiled Cord**

◈ **Easily Access Each and Every Output Waveform, Rate and Level of Your Patient Simulator**

◈ **Over 20 hours of Operation from a Single 9V Battery**

◈ **Up to 30 hours of Trended Data Output**

◈ **Endless Looping Capability on Trended Data**

◈ **180 User-Programmable Steps for Waveform Output**

◈ **Virtually Unlimited User-Configured Waveform One-Touch Key Output Configurations through Use of the PSR-2200 PC Software Utility**

◈ **"Clone" a Specific Remote Control Setup to Other Remotes**

◈ **Flash Programmable, Field Upgradeable**

◈ **Powerful yet Remarkably Easy to Use Companion PC Software Setup Utility**

◈ **Can be Configured to Work With Competitive (Non BC Biomedical Brand) Patient Simulators**

Optional

◈ **USB to Serial Port Adapter**

PSR-2200

The PSR-2200 Programmable Patient Simulator Remote Control with Trending Capability brings an unprecedented level of functionality and ease-of-use to patient simulator remote control. How would you like to have all of your patient simulators' outputs available to you on a handheld, easy to use remote control, up to 25-feet away from your simulator? There's nothing else on the market that even comes close to the PSR-2200.

You can easily access every output waveform of your patient simulator without ever touching it! Control outputs from NSR, Arrhythmias, Resp, Temp, CO, ECG and Resp artifact, ST Elevation Levels, to Performance Waves, etc. Use the included PC Software utility to assign any outputs you like to any of the 18 programmable keys. Configure sequences (trends) to any of these keys that will run from 1 to 600 seconds per step. "Daisy-chain" the 18 programmable keys to provide up to 30 hours worth of unique trended patient data. Save a virtually unlimited number of configurations. Set up one remote and then "clone" the setup to as many remotes as you want. You can also e-mail PSR-2200 configuration files. The PSR-2200 is Flash upgradeable in the field, ensuring that your device will never become outdated.

SCREEN VIEWS

Easy to read display shows current simulator outputs. Run programmed sequences & know where you are in the sequence.

Key Number	Sequence Step	Time until next step

Even BP outputs can be displayed with a push of one key.

Assign names to each of the 18 programmable keys.

Select outputs from any simulator waveform or output group.


Compatibility
Requires a PC running Microsoft® Windows 8, Windows 7, Windows Vista, Windows XP Home Version, Windows XP Professional, Windows 2000 (Service Pack 2 or higher), Windows NT, Windows 98, with a USB Port (required optional USB to Serial Adapter).

100% compatible with the BC Biomedical PS-2200 Family of Patient Simulators (older simulators may require a Flash firmware upgrade, which can be accomplished in the field with a special software update utility). The PSR-2200 can be configured by special request to work with competitive brand patient simulators from leading manufacturers.

Specifications

Display	LCD Graphical 128 x 64 Pixels
Enclosure	5.98 x 3.27 x 1.28 Inches, ABS Plastic
Weight	< 1 Lbs
Faceplate	Lexan, Back printed
Operating Range	15 to 40 °C
Storage Range	-20 to 65 °C
Interface Cable	25' Coiled Cord
Power	One alkaline battery, 9V (NEDA 1604 - battery life > 20 hours)

PROGRAMMING SOFTWARE
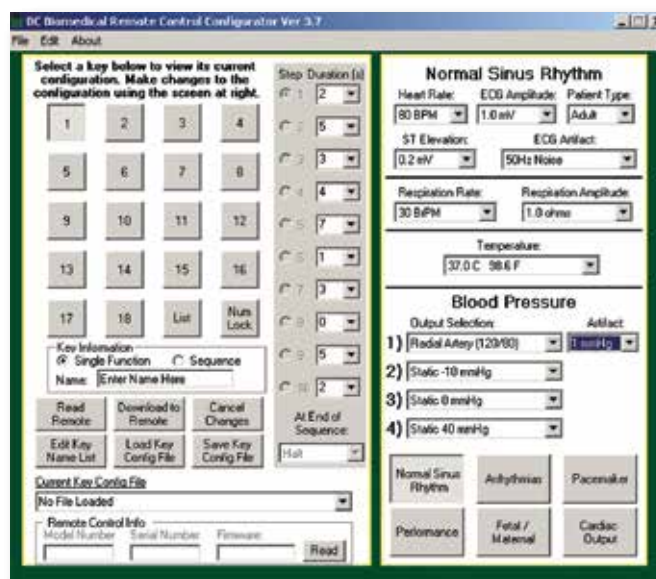
The PSR-2200 comes with a Microsoft® Windows-Based Application Program that allows the user to quickly and easily develop and upload almost any configuration. Complex testing and trending routines can easily be generated and saved.

The software is self-installing and designed to mimic the simulator screens, so there is almost no learning curve, just point and click. The software works with both RS-232 and USB ports and will automatically find the PSR-2200 and identify it. Single click uploading (writing to) and downloading (reading from) the PSR-2200 allow for full cloning and file transfers.

Patient Simulator Series

Patient Simulator Series

CE

Features - PS-2100 Series

◇ **Simple to Operate**

◇ **Independent Lead Outputs Produce a True 12 Lead ECG Signal**

◇ **One Invasive BP Channel (PS-2110)**

◇ **Arrhythmia Selections**

◇ **Resp & Temp Simulation (PS-2110)**

◇ **ECG Performance Waveforms**

◇ **Graphical Display with Backlighting**

◇ **Drop Down Choice Screen List All Options for Parameters**

◇ **Special Power Up Feature Allows the User to Choose to use Default, Last or Custom Settings**

◇ **Auto Sequences for BPM, Static-Pressure Levels & Performance**

◇ **10 AHA & European Color Coded Universal Patient Lead Connectors (with Enough Space Between Posts for the Large Diameter Connectors)**

◇ **Mini DIN Connectors Compatible with Standard BP Cables (Optional Mini DIN-M to DIN-F Cable Adapter)**

◇ **% Battery Life Display & Low Battery Indicator**

◇ **Powered by Two 9V Batteries or Included Universal Battery Eliminator**

◇ **Full Remote Operation via RS-232**

◇ **Flash Programmable, Field Upgradeable**

◇ **Battery Eliminator**

Optional

◇ **SpO$_2$ Simulation**

PS-2110

The PS-2100 Patient Simulator Series offers cost effective simulation with many features. If you only need ECG simulation, the PS-2105 offers all of the features you need. If you want basic Multi-Parameter simulation, the PS-2110 is the right choice. It provides ECG, Blood Pressure, Respiration and Temperature Simulation, plus limited Fetal/Maternal Simulation.

The PS-2100 Series makes viewing and selecting the desired waveforms and parameters quick and intuitive, with all operational information being available at the same time on the cursor-based graphic display, allowing for easy maneuvering through parameters and scrolling through available options.

PS-2105 SPECIFICATIONS

ECG Functions	
Rate	30 to 300 BPM
Amplitude	0.05 to 5mV
S-T Segment Elevation	± 0.05 to 0.8 mV
Artifacts	50 Hz, 60 Hz, Muscle, Baseline Wander, Respiration
QRS Interval	Adult (80 ms) or Pediatric (40 ms)
Arrhythmia Functions	
Arrhythmias	49 different
General Groups	Supraventricular, Premature, Ventricular, Conduction
Triggering	Manual & Automatic
Pacemaker Functions	
Waveforms	Atrial, Pacer, Asynchronous, Non-Capture, Non-Function, Demand - Occasional, Demand - Frequent, AV - Sequential
Pulse Height	1 to 10 mV
Pulse Width	0.1 to 2 ms
ECG-Performance Functions	
Sine Waves	0.1 to 100 Hz
Square Waves	0.125, 2 Hz
Triangle Waves	5, 2.5 Hz
Pulse Waves	30, 60, 120 BPM; 60 ms Width
Amplitude	0.05 to 5 mV (Lead II)
Automatic Mode	Yes
R Wave Rate	30, 60, 80, 120, 200, 250 BPM
R Wave Width	8 to 200 ms
R Wave Amplitude	0.05 to 5 mV (Lead II)
Training	
Timer	Manual, 10, 15, 20, 25, 30 s
Randomizer	Off, On
Arrhythmias	All, Subset
SpO$_2$ Simulation (MSP-2100 & FingerSim™ Req'd.)	
Rate	30 to 300 BPM
SpO$_2$ Output	80, 90 & 97%

PS-2110 SPECIFICATIONS

ECG Functions	
Rate	30,60,80,120,180,240,300 BPM
Accuracy	± 1%
Amplitude	0.5, 1.0, 1.5, 2.0 mV
Accuracy	± 2% @ Lead II
High Level	200 times Amplitude
ECG Performance	
Sine Wave	0.1,0.5,5,10,40,50,60,100 Hz
Square Wave	0.125, 2.000 Hz
Triangle Wave	2.000 Hz
Rate Accuracy	± 1%
Amplitude Accuracy	± 2% @ Lead II
Blood Pressure	
Static Pressure	0,20,40,80,100,200,250,300 mmHg
Accuracy	± (2% of Reading + 2 mmHg)
Impedance	300 Ω
Accuracy	± 10%
Excitation Range	2 to 16 V RMS
Excitation Frequency	DC to 5 kHz
Sensitivity	5 or 40 µV/V/mmHg
Respiration	
Rate	Apnea,15,20,30,40,60,80,100,120 BrPM
Accuracy	± 1%
Impedance delta	0.1,0.2,0.5,1.0,2.0,3.0 Ω
Accuracy	± 10%
Baseline	500,1000 Ω
Accuracy	± 5%
Lead	LA or LL
Temperature	
Temperature	30,37,40 °C (86.0,98.6,104.0 °F)
Accuracy	± 0.1 °C (± 0.1 °F)
Type	YSI Series 400 and 700
SpO$_2$ Simulation (MSP-2100 & FingerSim™ Req'd.)	
Rate	30 to 300 BPM
SpO$_2$ Output	80, 90 & 97%

Patient Simulator Series

PS-2110 with (optional) MSP-2100 & FingerSim™

COMPARE

PS-2105

ECG Simulators

CE

Overview - PS-2010

The PS-2010 is the perfect tool for providing a 10 lead wire hook up for those diagnostic 12 lead ECG machines. This small, lightweight, feature packed simulator is a must for your test equipment tool box.

◇ **10 AHA & European Color Coded Leads**

◇ **Normal Sinus Rhythm & Performance Waveforms**

◇ **Universal Connectors**

◇ **Lead Test**

PS-2010

Overview - PS-2006

The PS-2006 is unique in the market place. Many of the new monitors now being released have a six lead configuration. By popular demand, the PS-2006, six lead ECG/PVC simulator was developed. Press a button and insert PVCs into the ECG trace.

◇ **6 AHA & European Color Coded Leads**

◇ **Normal Sinus Rhythm & Performance Waveforms**

◇ **Snap Connectors**

◇ **PVC Insertion**
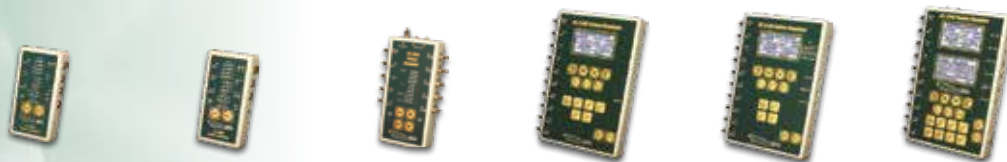
PS-2006

Overview - PS-2005

The PS-2005 is a small unit for those who need five lead ECG simulation only and are looking for a cost effective simulator. Need to check your lead wires? There is a built-in lead wire tester for your convenience.

◇ **5 AHA & European Color Coded Leads**

◇ **Normal Sinus Rhythm & Performance Waveforms**

◇ **Snap Connectors**

◇ **Lead Test**

PS-2005

Comparison Chart

Models	PS-2005	PS-2006	PS-2010	PS-2105	PS-2110	PS-2200
General						
Display	11 LED	11 LED	11 LED	1 LCD Graphical 128x64 pixels	1 LCD Graphical 128x64 pixels	2 LCD Graphical 128x64 pixels
Backlight	No	No	No	Yes	Yes	Yes
Lead Test Terminals	Yes	No	Yes	No	Yes	Yes
RS-232	No	No	No	Yes	Yes	Yes
Power	1-9 Volt Battery	1-9 Volt Battery	1-9 Volt Battery	2-9 Volt Batteries	2-9 Volt Batteries	2-9 Volt Batteries
Battery Eliminator	No	No	Yes	Yes	Yes	Yes
ECG-NSR	Yes	Yes	Yes	Yes	Yes	Yes
Leads	5	6	10	10	10	10
Rates	4	4	4	17	7	17
Amplitudes	1	1	1	4	4	19
QRS Interval	Adult	Adult	Adult	Adult & Pediatric	Adult	Adult & Pediatric
ST Segment Elevation	No	No	No	19	No	19
ECG-Performance	Yes	Yes	Yes	Yes	Yes	Yes
Sine Waves	3	3	3	8	8	8
Square Waves	2	2	2	2	2	2
Triangle Waves	1	1	1	2	1	2
Pulse Waves	--	--	--	3	--	3
Respiration	No	No	No	No	Yes	Yes
Rate	--	--	--	--	8	8
Baseline	--	--	--	--	2	4
Delta Impedance	--	--	--	--	6	6
Pacemaker	No	No	No	Yes	No	No
Arrhythmias	No	PVC on Demand	No	49	12	49
Blood Pressure	No	No	No	No	1 Channel	1, 2, or 4 Channel
Temperature	No	No	No	No	YSI 400/700	YSI 400/700
Special Modes						
SpO₂ Simulation	No	No	No	w/MSP-2100	w/MSP-2100	w/MSP-2100
Fetal/Maternal	No	No	No	No	Yes	Optional
Cardiac Output	No	No	No	No	No	Optional
Training Mode	No	No	No	Yes	No	Yes
Lead Test	Yes	No	Yes	No	Yes	Yes
Physical	ABS Plastic Case	ABS Plastic Case	ABS Plastic Case	ABS Plastic Case	ABS Plastic Case	ABS Plastic Case
Size	5.12" x 2.56" x .97"	5.15" x 2.89" x 1.06"	7.26" x 4.46" x 1.51"	8.63" x 5.5" x 1.63"	8.63" x 5.5" x 1.63"	8.63" x 5.5" x 1.63"
Weight	< 1 Lbs	≤ 0.5 Lbs (0.23 kg)	< 1 Lbs	< 2 Lbs	< 2 Lbs	< 2 Lbs

Patient Simulator Series

Defibrillator Analyzer *(vertical side text)*

Features - DA-2006 Series

◈ **Pulsed Biphasic, Biphasic and Monophasic Compatible**

◈ **Fully AED Compatible**

◈ **Graphical Display with Backlighting & Simultaneous Details of Parameters with Scrolling Option Control**

◈ **On-Screen Viewing of Defib & Pace Waveforms**

◈ **5000 V, 1000 Joule Capacity**

◈ **High & Low Ranges**

◈ **Cardioversion Delay Measurement**

◈ **Charge Time Measurement**

◈ **Waveform Storage & Playback**

◈ **10 AHA & European Color Coded Universal Patient Lead Connectors**

◈ **25 Pin Connector for Centronics Printer**

◈ **Power: Two 9V Batteries or Included Universal Battery Eliminator**

◈ **Low Battery Indicator**

◈ **Flash Programmable, Field Upgradeable**

◈ **Auto Sequence Testing**

◈ **PC Utility Software for Auto Sequence Development & Maintenance**

◈ **Storage for 50 Custom Sequences**

Features - DA-2006P

◈ **26 Selectable Internal Loads**

◈ **Full Pulse Analysis**

◈ **On-Screen Viewing of Pace Waveform**

◈ **Demand Sensitivity Test**

◈ **Refractory Period Tests**

◈ **50/60 Hz Interference Test Signals**

◈ **Pacer Input Defib Protection**

DA-2006P

The DA-2006 and DA-2006P Defibrillator Analyzer Series take advantage of the latest electronic technology and deliver accurate, consistent test results on all defibrillators, regardless of manufacturer or model.

Whether you need to test output energy, cardioversion delay time, maximum energy charge time, or your AED, the DA-2006 and DA-2006P will deliver. You can even capture and view the actual output energy and pacer waveforms to check for any abnormalities.

With 26 internal test loads, the DA-2006P delivers a full range of capabilities for testing the Transcutaneous Pacemaker function of your advanced level defibrillators, including tests like demand sensitivity, refractory period, rate, pacer pulse width, pacer pulse amplitude, etc. Test pacer functionality with the peace of mind that the Pacer Input terminals on the DA-2006P are internally protected against accidental defibrillator discharge.

The DA-2006 & DA-2006P offers automated testing. Create and store up to 50 unique testing "auto sequences", including both defibrillator and pacer tests. You can easily edit existing sequences and create new ones with our unique PC-based utility software. You can also "clone" a specific set of auto sequences to multiple analyzers.

SPECIFICATIONS

ENERGY OUTPUT MEASUREMENT	
METHOD	Monophasic, Biphasic or Pulsed Biphasic
LOAD RESISTANCE	50 Ω ± 1%, Non-Inductive (< 1 μH)
DISPLAY RESOLUTION	0.1 J
MEASUREMENT TIME WINDOW	100 ms
ABSOLUTE MAX PEAK VOLTAGE	6000 V
PULSE WIDTH	100 ms
CHARGE TIME MEASUREMENT	0.1 to 99.9 s

	HIGH RANGE	LOW RANGE
VOLTAGE	≤ 5000 V	≤ 1000 V
CURRENT	≤ 100 A	≤ 20 A
ENERGY	≤ 1000 J	≤ 50 J
ACCURACY	≤ 100 J ± 2 J	≤ 20 J ± 0.4 J
	> 100 J ± 2% of reading	> 20 J ± 2% of reading
TRIGGER LEVEL	100 V	20 V
PLAYBACK AMPLITUDE	1 mV / 1000 V Lead 1	1 mV / 1000 V Lead 1
TEST PULSE	125 J ± 20%	5 J ± 20%
OSCILLOSCOPE OUTPUT ATTENUATION	1000:1	200:1
CARDIOVERSION	DELAY	0 to 6000 ms
	RESOLUTION	0.1 ms
	ACCURACY	± 2 ms
WAVEFORM PLAYBACK	OUTPUT	LEAD I & PLATES
	SCREEN	200:1 Time Base Expansion
SYNC TIME MEASUREMENTS	TIMING WINDOW	Starts at peak of each R-wave
	TEST WAVEFORMS	All waveform simulations available
	DELAY TIME ACCURACY	± 1 ms

PATIENT SIMULATOR		
ECG WAVEFORM RATES	ECG NSR	30, 40, 45, 60, 80, 90, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300 BPM
	SINE	0.1, 0.2, 0.5, 5, 10, 40, 50, 60, 100 Hz
	SQUARE	0.125, 2.000 Hz
	TRIANGLE	2.000, 2.500 Hz
	PULSE WAVE	30, 60, 120 BPM; 60 ms width
AMPLITUDE		0.5, 1.0, 1.5, 2.0 mV (Lead II)
ACCURACY	RATE	± 1%
	AMPLITUDE	± 2% @ Lead II
HIGH LEVEL	OUTPUT	200 times Amplitude
	ACCURACY	± 5%
QRS DURATION		80 ms
LEAD TO LEAD IMPEDANCE		1000 Ω
ECG ARRHYTHMIA SELECTIONS		Ventricular Fibrillation
		Atrial Fibrillation
		Second Degree A-V Block
		Right Bundle Branch Block
		Premature Atrial Contraction
		PVC Early
		PVC Standard
		PVC R on T
		Multifocal PVC
		Bigeminy
		Run of 5 PVCs
		Ventricular Tachycardia
ECG SHOCK ADVISORY ALGORITHM TEST SELECTIONS		Asystole
		Coarse Ventricular Fibrillation
		Fine Ventricular Fibrillation
		Multifocal Ventricular Tachycardia @ 140 BPM
		Multifocal Ventricular Tachycardia @ 160 BPM
		Polyfocal Ventricular Tachycardia @ 140 BPM
		Polyfocal Ventricular Tachycardia @ 160 BPM
		SupraVentricular Tachycardia @ 90 BPM

DA-2006-VL

TRANSCUTANEOUS PACEMAKER ANALYZER		
PULSE RATE	RANGE	30 to 800 ppm
	ACCURACY	± 1% or 2 ppm (whichever is greater)
PULSE WIDTH	RANGE	0.6 to 80 ms
	ACCURACY	± 1% or ± 0.3 ms (whichever is greater)
VOLTAGE	VARIABLE LOAD INPUT	200 V
	FIXED LOAD INPUT	15 V
OSCILLOSCOPE OUTPUT	AMPLITUDE ATTEN-UATION	0 – 15 V · 10.24:1
		15 – 60 V · 41:1
		> 60 V · 164:1
	MAX OUTPUT	200 V
DEMAND SENSITIVITY	WAVEFORMS	Square, Triangle, Haversine
	WIDTH	10, 25, 40, 100, 200 ms
	OUTPUT AMPLITUDE	ECG OUTPUT · 0 to 4 mV
		PACER INPUT (50 TO 400 OHMS) · 0 to 10 mV / 50 Ω
		PACER INPUT (500 TO 2300 OHMS & OPEN) · 0 to 100 mV
		DEFIBRILLATOR PLATES · 0 to 10 mV
	OUTPUT RESOLUTION	ECG OUTPUT · 40 μV
		PACER INPUT (50 TO 400 OHMS) · 40 μV
		PACER INPUT (500 TO 2300 OHMS & OPEN) · 1 mV
		DEFIBRILLATOR PLATES · 0.1 mV
	OUTPUT ACCURACY	± 2%
	INPUT RATE	ECG OUTPUT · N/A
		PACER INPUT · 30 to 100 ppm
		DEFIBRILLATOR PLATES · 30 to 100 ppm
REFRACTORY PERIOD	PACING	20 to 500 ms
	SENSING	20 to 500 ms
	ACCURACY	± 2 ms
50/60 HZ INTERFERENCE TEST SIGNAL	ECG OUTPUT	0, 0.4, 0.8, 1.2, 1.6, 2.0, 2.4, 2.8, 3.2, 3.6, 4.0 mV
	PACER INPUT	50 Ω · 0,1,2,3,4,5,6,7,8,9,10mV
		50 Ω · 0,2,4,6,8,10,12,14,16,18,20mV
		150 Ω · 0,3,6,9,12,15,18,21,24,27,30mV
		200 Ω · 0,4,8,12,16,20,24,28,32,36,40mV
		300 Ω · 0,6,12,18,24,30,36,42,48,54,60mV
		400 Ω · 0,8,16,24,32,40,48,56,64,72,80mV
		≥ 500 Ω · 0,10,20,30,40,50,60,70,80,90,100mV
	DEFIB PLATES	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 mV
TEST LOAD	LOAD VALUES	50, 100, 150, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300 Ω
	ACCURACY	50 to 1300 Ω · ± 1%
		1400 to 2300 Ω · ± 1.5%
PULSE CURRENT	RANGE	4 to 300 mA (100 Ω load)
	ACCURACY	± 5% or ± 0.5 mA (whichever is greater)
	LIMIT	50 – 600 Ω · 300 mA
		700 Ω · 286 mA
		800 Ω · 250 mA
		900 Ω · 222 mA
		1000 Ω · 200 mA
		1100 Ω · 182 mA
		1200 Ω · 167 mA
		1300 Ω · 154 mA
		1400 Ω · 143 mA
		1500 Ω · 133 mA
		1600 Ω · 125 mA
		1700 Ω · 118 mA
		1800 Ω · 111 mA
		1900 Ω · 105 mA
		2000 Ω · 100 mA
		2100 Ω · 95 mA
		2200 Ω · 91 mA
		2300 Ω · 87 mA

Our DA-2006-VL, works in conjunction with our DA-2006 Series Defibrillator Analyzers, providing Variable Loads used when testing Defibrillators to assure the proper electrical current is delivered to the heart, per IEC 60601-2-4 and AAMI DF80 standards. **See page 19**.

Defibrillator Analyzer

Defibrillator Analyzer

CE

FDA

Programmable Autosequence

◇ **PC Based Software**

◇ **Create up to 50 Autosequences**

◇ **Up to 20 Steps Per Autosequence**

◇ **Autosequences can be cloned to Multiple Units**

◇ **Easily Share Autosequence Files via Email**

DA-2006

The BC Biomedical DA-2006 and DA-2006P defibrillator analyzers take autosequence test development to new levels. Never before has it been so easy to create new automated testing sequences, or edit existing ones. Our unique PC-based autosequence development software allows you to build and edit these automated testing sequences on your PC under the power and utility of the Windows operating system, rather than having to work on a cryptic small instrument display like other analyzers. You can create up to 50 autosequences to download to your DA-2006 or DA-2006P.

A starter set of 19 autosequences is provided. Autosequences can be defibrillator-only, transcutaneous pacer-only, or a combination of both. Each autosequence can support up to 20 output energy test steps, a maximum energy test (including charging time), a cardioversion test (at up to three different power levels), and transcutaneous pacer tests. You can take an existing autosequence and copy it to a new one, rename it, and make any minor changes necessary to have a brand new sequence for a different make and model defibrillator.

You can "clone" multiple DA-2006 or DA-2006P analyzers by downloading the same autosequence file to multiple analyzers. You can e-mail autosequence file sets for use in field or district offices away from the main office when changes are made. You can even save your DA-2006 or DA-2006P autosequence setup and easily put it back exactly the same way it was, prior to repair and calibration of your instrument.

File Control
This section is utilized to load/save configuration files on the PC as well as read/write the auto configuration in the DA-2006/P

ECG Sequence Programming
Use this section to easily configure each step of the ECG Auto Sequence

Program Menu Bar

Sequence Selection
Use this list to select which sequence to view /edit.

Status Message

Com Port being used

Sequence Configuration
Use this section to configure each Auto Sequence test.

Task Progress Indicator

Today's Date

Current Time

Screenshot: DA-2006 AutoSequence Programmer - Ver 1.15

Defibrillator Analyzer

BC Group makes defibrillator autosequence development and editing easier than competitive analyzers that offer such capability. Why struggle with limited on-instrument displays and cryptic development tools? Our DA-2006 and DA-2006P autosequence capability is in a class of its own.

Compatibility
Requires a PC running Microsoft® Windows 8, Windows 7, Windows Vista, Windows XP Home Version, Windows XP Professional, Windows 2000 (Service Pack 2 or higher), Windows NT, Windows 98, with a USB Port (required optional USB to Serial Adapter).

Defibrillator Analyzer

Features - DA-2006-VL

◈ **Pulsed Biphasic, Biphasic and Monophasic Compatible**

◈ **Fully AED Compatible**

◈ **5000 V, 1000 Joule Capacity**

◈ **Smart Loads, no Settings to Change in DA-2006 or DA-2006P**

◈ **25-200 Ω Loads, 25 Ω Steps**

DA-2006-VL

Our DA-2006-VL, works in conjunction with our DA-2006 Series Defibrillator Analyzers, providing Variable Loads used when testing Defibrillators to assure the proper electrical current is delivered to the heart, per IEC 60601-2-4 and AAMI DF80 standards.

The DA-2006-VL Load Selection is automatically detected by the DA-2006/P. There are no settings to change or configure on the DA-2006/P.

Typical DA-2006-VL Setup with DA-2006P

DA-2006-VL Side View
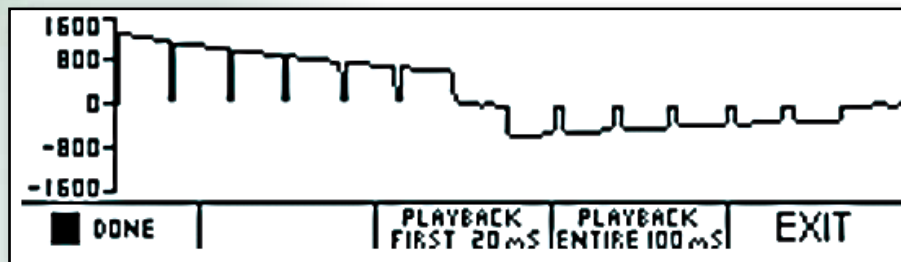
Q & A ON DEFIBRILLATORS

Are you testing your defibrillator with the right loads?

The DA-2006 series and DA-2006-VL are the right answer for you. Human resistance can vary from patient to patient. Use the DA-2006-VL to test your defibrillator with test loads from 25 to 200 Ω, as required by IEC 60601-2-24 and AAMI DF80 standards.

```
┌─ CONFIGURATION ─────────┬──── TEST RESULTS ────┐
│ High Range 1000J Max    │ Energy:    0.0 Joules │
│ Status:Ready for Defib  │ Peak V:    0.0 Volts  │
│ ECG : Disabled          │ Peak I :   0.0 Amps   │
│ Variable Load:    100Ω  │                       │
├─────────┬──────────┬────┴──────┬─────────┬──────┤
│  ECG    │ PLAYBACK │  START    │ PRINT   │ MORE │──▶
│WAVEFORMS│LAST PULSE│CHARGE TIMER│ HEADER │ KEYS │
└─────────┴──────────┴───────────┴─────────┴──────┘
```

Do you need to measure Pulsed Biphasic waveforms?

If you already have a DA-2006, there is no need to purchase a new analyzer in order to measure pulsed biphasic waveforms. Simply update the software in your DA-2006/P and you will be ready for testing.

```
1600┐
 800┤
   0┤
-800┤
-1600┘
┌───────┬───────────┬───────────┬──────┐
│■ DONE │  PLAYBACK │  PLAYBACK │ EXIT │
│       │FIRST 20 mS│ENTIRE 100 mS│    │
└───────┴───────────┴───────────┴──────┘
```

Do you need to calibrate any Defibrillator Analyzers?

**Typical DA-CS-06 Setup of a
Defibrillator Analyzer Calibration System**

Defibrillator Analyzer

NIBP Simulators

CE

NIBP Simulator Series

Features - NIBP-1040Kit-E

◇ **NIBP, IBP, ECG, Temp, Arrhythmias, Respiration, Leak Detect & Much More**

◇ **Small, Handheld, Lightweight**

◇ **Cardiac Output**

◇ **Fetal Maternal**

◇ **Simple One Key Operation**

◇ **± 500 mmHg Manometer**

◇ **Digital Pressure Envelope Offset**

◇ **Total Pressure & BP Waveform Displays**

◇ **Adult, Neonatal, Hypertensive & Hypotensive Modes**

◇ **SpO$_2$ Ready–Compatible with MSP-2100 Module & FingerSims™**

◇ **Multiple Display Screens & Digit Sizes**

◇ **Flash Programmable, Field Upgradeable**

◇ **Peak Pressure Detection with Easy Reset**

◇ **ECG Output with Full NSR Waveform**

◇ **Sinusoidal Respiration Simulation**

◇ **ECG Performance Test Waveforms**

◇ **Pace Waveform**

◇ **ECG Alarm Test**

◇ **Synchronized Invasive Blood Pressure Output**

◇ **Selectable IBP Sensitivity - 5 or 40 µV/V/ mmHg**

◇ **Leak Rate Test**

◇ **ECG Arrhythmia Waveforms**

◇ **ECG Arrhythmia Sequence**

◇ **YSI 400 & 700 Simulation Temperature**

◇ **Rechargeable Battery**

NIBP-1040-BE with Included Cardiac Output Interface
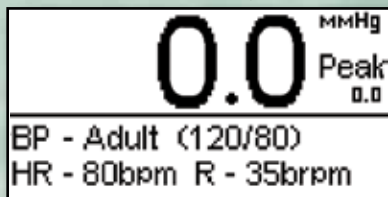
NIBP-1040-BE

The NIBP-1040-BE is the newest member of the NIBP-1000 family of high quality, low cost, high function microprocessor-based NIBP simulators. The NIBP-1040-BE comes with the Cardiac Output and Fetal Maternal feature built-in. It is designed to meet the demand for a small, easy-to-use unit with multiple features to fit your exact needs. Though small, this complete Multiparameter Simulator makes no compromise on providing true outputs.There is no other NIBP Simulator on the market that offers all the features of the NIBP-1040-BE in this price range. The ability to provide offsets for various manufacturers NIBP'S can only be found in units costing twice as much.

The graphic display not only allows you to see what is going on digitally, it also allows you to view a plot of the overall pressure or a close-up of the BP waveform.
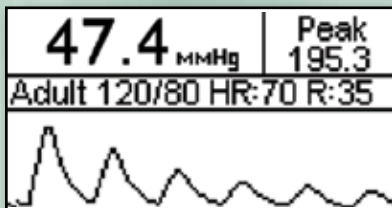
The Flash Memory allows for field upgrades with downloads from our website.
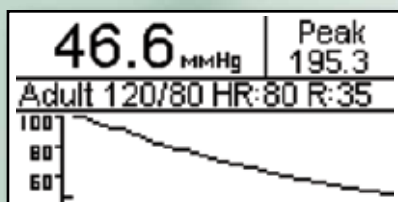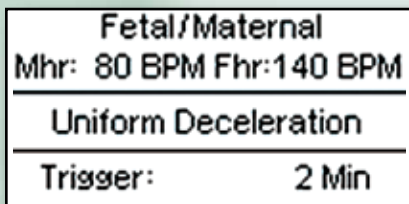
Screen Views

Main Display

Output Waveform Screen
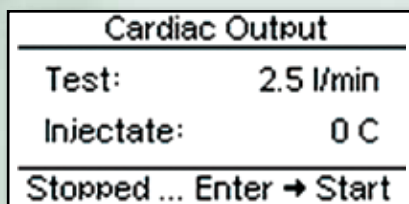(*NOTE: The output Waveform is NOT Physiologically Correct*)

Pressure Graph Screen

FETAL/MATERNAL

CARDIAC OUTPUT

MODEL SUMMARY

NIBP-1040Kit-E Includes NIBP-1040-BE, MCO-2100, built-in rechargeable battery and Universal Patient Lead Connectors.

Main Test Modes:	Other Modes/Features:
Adult 120/80	Peak Detect
Adult 120/80 w/Pace	ECG Performance Waves
Adult High 190/120	Individual Arrhythmias
Adult Low 80/40	Synchronized Dynamic IBP
Neonatal 70/40	Static IBP
Alarm Test	RS-232
Arrhythmia Sequence	
Leak Test	
Manometer	
Cardiac Output	
Fetal Maternal	

SPECIFICATIONS

Blood Pressure
Pressure Range:	± 500 mmHg @ 20 °C (68 °F)
Accuracy:	± (1% of Reading + 0.5 mmHg)
Simulation Rate:	80, 94 BPM (synchronized to ECG)
Accuracy:	±1%

Invasive Blood Pressure
Static Pressure:	-10, -5, 0, 20, 40, 50, 60, 80, 100, 120, 150, 160, 200, 240, 250, 300, 320, 400 mmHg
Accuracy:	± (1% Full Range + 1 mmHg) or ± (2% Setting + 2 mmHg)
Impedance:	300 Ω *(± 10% Accuracy)*
Excitation Range:	2 to 16 Vrms
Excitation Frequency:	DC to 5 kHz
Sensitivity:	5 or 40 µV/V/mmHg

ECG NSR
Rate:	30, 60, 120, 240 BPM *(± 1% Accuracy)*
Amplitude:	2.75 mV *(± 2% @ Lead II Accuracy)*

ECG Performance
Sine Wave:	10, 60, 100 Hz
Square Wave:	0.125, 2.000 Hz
Triangle Wave:	2.000 Hz
Rate Accuracy:	± 1%
Amplitude:	2.75 mV *(± 2% @ Lead II Accuracy)*

Pacemaker Waveforms
Amplitude:	3 mV *(± 10% Accuracy)*
Width:	6 ms *(± 5% Accuracy)*

Respiration
Rate Accuracy:	± 1%
Impedance:	Delta 3.0 Ω *(± 10% Accuracy)*
Baseline:	1000 Ω *(± 5% Accuracy)*

Temperature
Settings:	0, 24, 30, 37, 40 °C *(± 0.1 ° C Accuracy)* (32.0, 75.2, 86.0, 98.6, 104.0 °F)
Type:	YSI Series 400 and 700

Fetal/Maternal
Fetal heart rate:	60, 90, 120, 140, 150, 210, 240 BPM
IUP Period:	Single Contraction (Manual) 2, 3, 5, Min (AUTO)
FHR (During Contraction):	Uniform Deceleration Early Deceleration Late Deceleration Uniform Acceleration

Cardiac Output
Injectate Temperature:	0, 24 °C (32, 75.2 °F)
Injectate Flow:	2.5, 5.0, 10.0 L/MIN
Other Outputs:	Faulty – Injectate Left-to-Right Shunt Calibrated Temperature Pulse

NIBP Simulator Series

NIBP Simulator Series

NIBP-1030-BE

NIBP-1020

NIBP-1010

CE

Overview - NIBP-1000 Series

The NIBP-1000 Series is a Family of high quality, low-cost, high-function Microprocessor-based NIBP Simulators. They are designed to meet the demand for a small, easy-to-use unit with multiple features to fit your exact needs.

You have the option of operating by power cord or you can add the optional internal rechargeable NiMH Battery. You can perform hundreds of test on a fully charged battery.

Though small, this Family makes no compromise on providing true outputs. The optional ECG waveforms are full QRS and the respiration waveforms look real.

The graphic display not only allows you to see what is going on digitally, it also allows you to view a plot of the overall pressure or a close-up of the BP waveform.

All models have the ability to adjust the output depending on the manufactures algorithm (operators choice).

The Flash Memory allows for field upgrades with downloads from our website.

NIBP-1030 NIBP, Peak Detect, Full Range Manometer, IBP, ECG, Pace, Temperature, Arrhythmias, Respiration, Leak Detect and Performance waveforms (Extended ECG post optional). (Rechargeable Battery - optional).

NIBP-1020 NIBP, Peak Detect, Full Range Manometer, ECG, Pace Respiration and Performance waveforms. (Rechargeable Battery - optional).

NIBP-1010 NIBP, Peak Detect and Full Range Manometer. (Rechargeable Battery - optional).

Screen Views

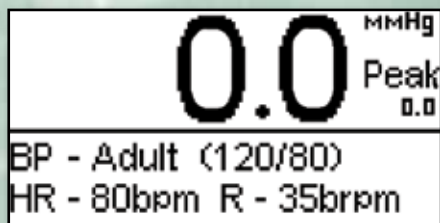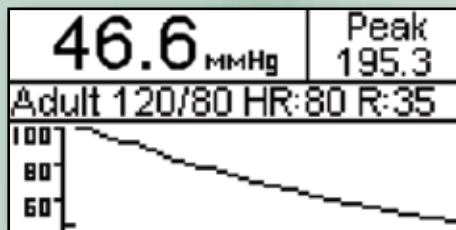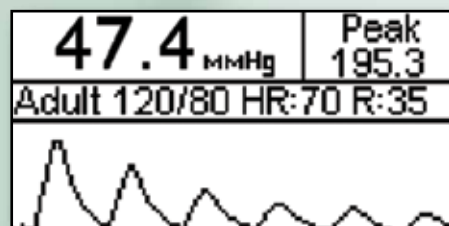**Main Display**

Composite Pressure Display

Output Pressure Display
(NOTE: The output Waveform is NOT
Physiologically Correct.)

NIBP-1010 with (optional)
MSP-2100 & FingerSim™

SPECIFICATIONS

Blood Pressure
Pressure Range: ± 500 mmHg @ 20 °C
Accuracy: ± (1% of Reading + 0.5 mmHg)
Simulation Rate: 80, 94 BPM (synchronized to ECG)
Accuracy: ±1%

ECG NSR
Rate: 30, 60, 120, 240 BPM; ± 1%
Amplitude: 2.75 mV; ± 2% @ Lead II

ECG Performance
Sine Wave: 10, 60, 100 Hz; ± 1%
Square Wave: 0.125, 2.000 Hz; ± 1%
Triangle Wave: 2.000 Hz; ± 1%

Pacemaker Waveforms
Amplitude: 3 mV; (± 10% Accuracy)
Width: 6 ms; (± 5% Accuracy)

Respiration
Impedance: Delta 3.0 Ω (± 10% Accuracy)
Baseline: 1000 Ω (± 5% Accuracy)

MODEL SUMMARY

BC Biomedical NIBP Series Features				
Features	1010	1020	1030	1040
NIBP Sim	Included	Included	Included	Included
Manometer	Included	Included	Included	Included
SpO2	Optional	Optional	Optional	Optional
ECG Sim	N/A	Included	Included	Included
Patient Sim	N/A	N/A	Included	Included
Pace	N/A	Included	Included	Included
Respiration	N/A	Included	Included	Included
IBP	N/A	N/A	Included	Included
Temp	N/A	N/A	Included	Included
Arrhythmia	N/A	N/A	Included	Included
Leak Detect	N/A	N/A	Included	Included
Extended Lead	N/A	N/A	Optional	Included
Cardiact Output	N/A	N/A	N/A	Included
Fetal/Maternal	N/A	N/A	N/A	Included
Internal Battery	Optional	Optional	Optional	Included
Peak Detect	Optional	Optional	Optional	Included
Alarm	N/A	Optional	Optional	Included

Optional Accessories

Soft Carrying Case   Luer Adapter

Bulb Adapter   Marquette Adapter

DINAMAP/Critikon Adapter   Pulse Oximetry Module

Quick Disconnect Adapter   FingerSim™ Replacement Set

NIBP Simulator Series

Features - ESU-2400H

$C \in$

◈ **The Industry's Most Comprehensive and Most Accurate Full-Featured Analyzer**

◈ **Measures Advanced Generator Outputs with Pulsed RF at Up to 3 Different Amplitudes**

◈ **Patent Pending DFA² Technology™, Ultra High Speed Digitization of Multi-Pulsed Complex RF Waveforms**

◈ **100% Compatible with Covidien/Valleylab ForceTriad™, Force FX™, FT10™ and Ligasure™ Generators, Conmed System 5000™ Generators, and Legacy Generators by Other Manufacturers**

◈ **Based Upon Years of Collaborative Work with Leading Electrosurgery Industry Manufacturers**

◈ **Captures and Analyzes up to 16 million samples per test**

◈ **1% Measurement Accuracy**

◈ **Free Auto-Sequences Save Time and help to Ensure Compliance**

◈ **Industry Standard RF Current Measurement**

◈ **Continuous & Pulsed Output Waveform Compatible**

◈ **Embedded Real-Time Operating System with 5.7" Color Touch Screen Display**

◈ **Displays Up to 28 Different Measurement Parameters with User Selectable and Definable Screens**

◈ **Internal Precision Test Loads From 0 Ω to 6400 Ω in 1 Ω Increments**

◈ **External Test Load Compatibility**

◈ **Automated Power Load Curves with Multiple Power Settings Per Load Setting**

◈ **Automated User-Definable Testing Sequences**

◈ **Print test Reports to PDF format or USB Printer**

◈ **USB (3), RS-232, and Ethernet Comm. Ports**

◈ **External Keyboard and Mouse Compatible Via Dedicated Ports**

◈ **Automatic or Manual Activation of ESU Generator During Power Load Curve Tests**

◈ **Remote Communications Capability with ESU Generators**

◈ **REM/ARM/CQM Testing Via 500 Ω Adjustable Load in 1 Ω Increments**

◈ **Capture, Store, Print RF Waveforms**

ESU-2400H

The ESU-2400H offers an unprecedented buffer depth of over 16 million samples. This allows for ultra-stable measurements of ESU Generator output waveforms and provides future-proofing for new generator output modes such as multiple pulsed waveforms.

The ESU-2400H uses the same base platform as the ESU-2400. This means that you can upgrade your existing analyzer without having to purchase a whole new unit. You have the freedom to get started with the ESU-2400 and then upgrade as the need arises.

The low impedance internal load bank has a range of 0 to 6400 Ω in 1 Ω increments. It is microprocessor-based and utilizes a combination of unique hardware and software to provide accurate and reliable test results, even from "noisy" Electrosurgical Generator waveforms such as "Spray". The Patent Pending DFA² Technology™ utilized in the ESU-2400H allows the system to aggressively digitize the complex RF waveforms produced by Electrosurgical Generators. Each data point is analyzed to provide highly accurate measurement results.

The ESU-2400H, unlike most conventional ESU Analyzers, has internal high voltage setup relays to control the measurement path. This allows the user to switch between Power measurements, Leakage measurements, REM/ARM/CQM testing, or even run an autosequence that could include any or all of these tests – without even moving wires around.

The current transformer internal to the ESU-2400H senses the RF current flowing through the internal test load and produces a ratiometric voltage, which is digitized and analyzed by the microprocessor. Combining the standard and low ranges of the ESU-2400H with the use of the current transformer, the user has full control over the ability to get high accuracy and high resolution readings from all types of Electrosurgical Generators.

ESU-2400H

SPECIFICATIONS

Advanced Pulsed Mode Measurements

Pulse Mode Config
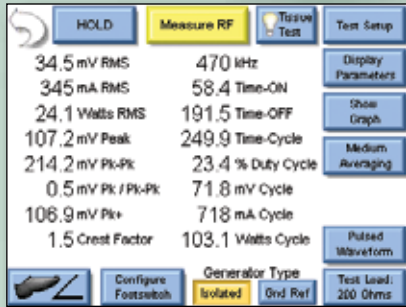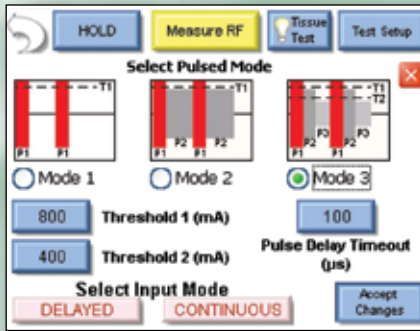
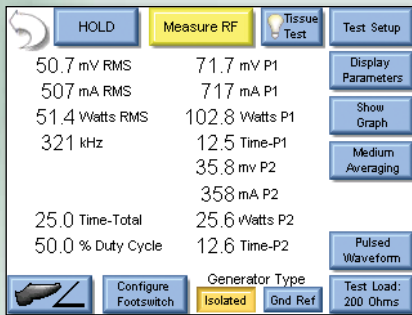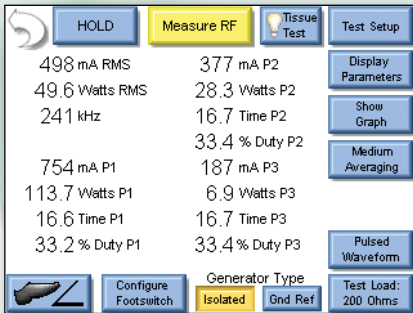**Pulse Mode**

Pulse Mode 2

Pulse Mode 3

Advanced Pulsed Waveform Detection

MEASUREMENTS	
A/D Resolution	14 Bits
A/D Speed	64 MSPS
Bandwidth	50 kHz – 10 MHz
Measurement Accuracy	± 1% Reading
Current Range	2.0 to 700.0 mA RMS (Low Range) 20 to 7000 mA RMS (High Range)
Current Resolution	0.1 mA RMS (Low Range) 1 mA RMS (High Range)
Power Range (Watts)	500 Watts
Power Resolution (Watts)	0.1 Watts
Crest Factor Range	1.4 to 500
Crest Factor Resolution	0.1
Input Voltage Range	0.20 to 70.00 mV RMS (Low Range) 2.0 to 700.0 mV RMS (High Range)
Voltage Resolution	0.01 mV (Low Range) 0.1 mV (High Range)
mV Peak/Peak-to-Peak Range	0.0 to 1.0
mV Peak/Peak-to-Peak Resolution	0.1

Load Bank Specifications	
Internal Setup/Load Selection Relays	10kV, 5A rated Reed Relays
Internal Load Selection	
Internal Load Range	0 to 6400 Ω
Internal Load Accuracy	± 1% Non-inductive
Internal Load Power Ratings	1 Ω: 25 W 2 Ω: 50 W 4 Ω: 100 W Remaining Loads: 225 W
Load Bank Duty Cycle	10 seconds on, 30 seconds off
Load Cooling	Dual 120mm Variable Speed DC Fans
External Load Selection	
External Load Range	0 to 6400 Ω
External Load Resolution	1 Ω

SCREEN SIZE	5.7" QVGA 18 bit color touch screen
SETUP MEMORY	EEPROM, All Parameters
MEMORY RETENTION	10 Years w/o Power
OPERATING RANGE	15 to 30 °C (59 to 86 °F)
STORAGE RANGE	-20 to 60 °C (-4 to 140 °F)
CONSTRUCTION	Enclosure – Aluminum Face – Lexan, Back Printed
SIZE	7.8 x 15.0 x 22.5 inches 198.1 x 381 x 571.5 mm
WEIGHT	31 lbs. (14 kg)
CONNECTIONS	Input: I/O 4mm Safety Jacks 3xUSB, 1xSerial, 1xEthernet 1xPS/2 Keyboard/Mouse Output: 1xBNC Scope Hypertronics 25-pin Footswitch connector
POWER SUPPLY ADAPTER	Input: Universal 100-240 VAC, 50-60 Hz Output: 12 VDC (Specify power cord see page Z)

ESU Analyzer Series

ESU Analyzer Series

CE

ESU Analyzer Series

Features - ESU-2400

◈ **Automated One Button Force Triad Autosequence included**

◈ **Industry Standard RF Current Measurement**

◈ **DFA™ Technology Ultra High Speed Digitization of Complex RF Waveforms**

◈ **1% Measurement Accuracy**

◈ **Continuous & Pulsed Output Waveform Compatible**

◈ **Embedded Real-Time Operating System with ¼ VGA Color Touch Screen Display**

◈ **Displays Up to 15 Different Measurement Parameters with User Selectable and Definable Screens**

◈ **Internal Precision Test Loads From 0 Ω to 6400 Ω in 1 Ω Increments**

◈ **External Test Load Compatibility**

◈ **Automated Power Load Curves with Multiple Power Settings Per Load Setting**

◈ **Automated User-Definable Testing Sequences**

◈ **Print test Reports to PDF format or USB Printer**

◈ **USB (3), RS-232, and Ethernet Communications Ports**

◈ **External Keyboard and Mouse Compatible Via Dedicated Ports**

◈ **Automatic or Manual Activation of ESU Generator During Power Load Curve Tests**

◈ **Remote Communications Capability with ESU Generators**

◈ **100% Compatible with Covidien/Valleylab ForceTriad™, FT10™ and Ligasure™ Generators, Conmed System 5000™ Generators, and All Legacy Generators by Other Manufacturers**

◈ **REM/ARM/CQM Testing Via 500 Ω Adjustable Load in 1 Ω Increments**

◈ **RF Leakage Current Measurement**

◈ **Capture, Store, Print RF Waveform**
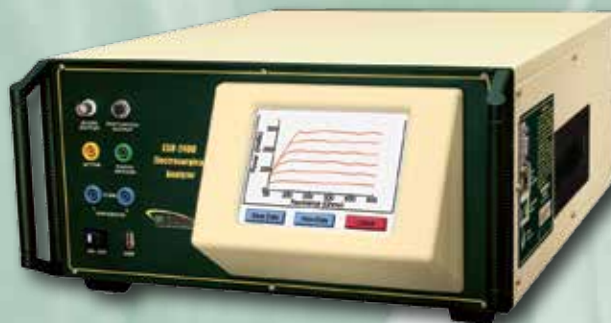
ESU-2400

The ESU-2400 Electrosurgical Unit Analyzer is a high-accuracy, true RMS RF measurement system designed to be used in the calibration and routine performance verification of Electrosurgical Generators. It offers a higher degree of accuracy than previously attainable with conventional Electrosurgical Unit Analyzer designs. The ESU-2400 provides an advanced low inductance internal load bank with a range of 0 to 6400 Ω in 1 Ω increments. It is microprocessor-based and utilizes a combination of unique hardware and software to provide accurate and reliable test results, even from "noisy" Electrosurgical Generator waveforms such as "Spray". The DFA™ Technology utilized in the ESU-2400 allows the system to aggressively digitize the complex RF waveforms produced by Electrosurgical Generators, analyze each individual digital data point, and provide highly accurate measurement results.

The ESU-2400, unlike most conventional ESU Analyzers, has internal high voltage setup relays to control the measurement path, allowing the user to switch between Power measurements, Leakage measurements, REM/ARM/CQM testing, or even run an autosequence that could include any or all of these tests – without even moving wires around.

The current transformer internal to the ESU-2400 senses the RF current flowing through the internal test load and produces a ratiometric voltage, which is digitized and analyzed by the microprocessor. Combining the standard and low ranges of the ESU-2400 with the use of the current transformer, the user has full control over the ability to get high accuracy and high resolution readings from all types of Electrosurgical Generators.

SCREEN VIEWS

(NOTE: User can select measurement values & locations to be displayed on each screen choosing from RMS Current, RMS Voltage, RMS Power, Peak Voltage & Crest Factor)

Main Screen
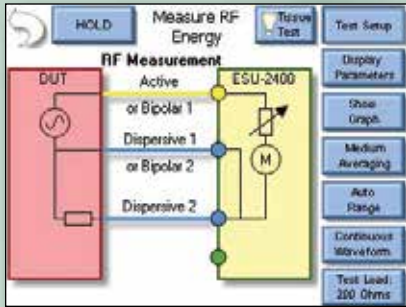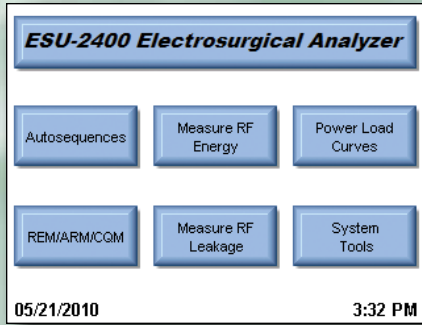
RF Measurement Mode

CQM Screen
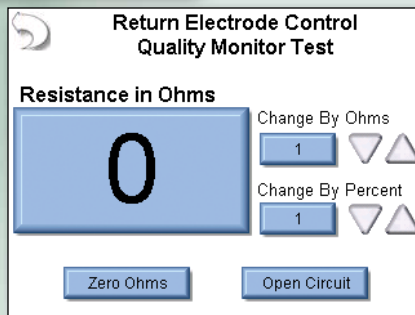
ESU-2400 Graph Mode Example

Load Curve
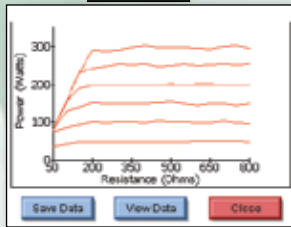
RF Leakage Mode

On - Screen Graphing
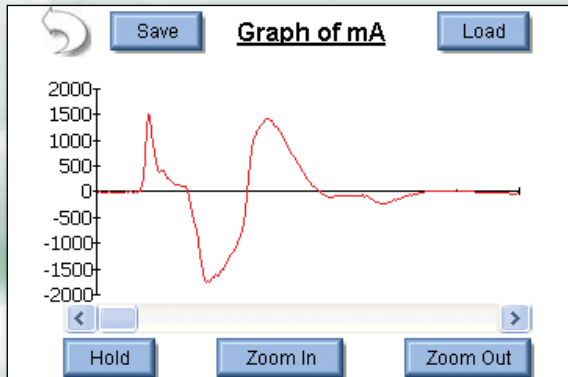
SPECIFICATIONS

MEASUREMENTS	
A/D Resolution	14 Bits
A/D Speed	64 MSPS
Bandwidth	50 kHz – 10 MHz
Measurement Accuracy	± 1% Reading
Current Range	2.0 to 700.0 mA RMS (Low Range) 20 to 7000 mA RMS (High Range)
Current Resolution	0.1 mA RMS (Low Range) 1 mA RMS (High Range)
Power Range (Watts)	500 Watts
Power Resolution (Watts)	0.1 Watts
Crest Factor Range	1.4 to 500
Crest Factor Resolution	0.1
Input Voltage Range	0.20 to 70.00 mV RMS (Low Range) 2.0 to 700.0 mV RMS (High Range)
Voltage Resolution	0.01 mV (Low Range) 0.1 mV (High Range)
mV Peak/Peak-to-Peak Range	0.0 to 1.0
mV Peak/Peak-to-Peak Resolution	0.1

Load Bank Specifications	
Internal Setup/Load Selection Relays	10kV, 5A rated Reed Relays
Internal Load Selection	
Internal Load Range	0 to 6400 Ω
Internal Load Accuracy	± 1% Non-inductive
Internal Load Power Ratings	1 Ω: 25 W 2 Ω: 50 W 4 Ω: 100 W Remaining Loads: 225 W
Load Bank Duty Cycle	10 seconds on, 30 seconds off
Load Cooling	Dual 120mm Variable Speed DC Fans
External Load Selection	
External Load Range	0 to 6400 Ω
External Load Resolution	1 Ω

SCREEN SIZE	5.7" QVGA 18 bit color touch screen
SETUP MEMORY	EEPROM, All Parameters
MEMORY RETENTION	10 Years w/o Power
OPERATING RANGE	15 to 30 °C (59 to 86 °F)
STORAGE RANGE	-20 to 60 °C (-4 to 140 °F)
CONSTRUCTION	Enclosure – Aluminum Face – Lexan, Back Printed
SIZE	7.8 x 15.0 x 22.5 inches 198.1 x 381 x 571.5 mm
WEIGHT	31 lbs. (14 kg)
CONNECTIONS	Input: I/O 4mm Safety Jacks 3xUSB, 1xSerial, 1xEthernet 1xPS/2 Keyboard/Mouse Output: 1xBNC Scope Hypertronics 25-pin Footswitch connector
POWER SUPPLY ADAPTER	Input: Universal 100-240 VAC, 50-60 Hz Output: 12 VDC (Specify power cord see page Z)

ESU Analyzer Series

Features - ESU-2300

◆ **Measurements via Industry Standard Current Sensing Method**

◆ **Built-In RF Current Transformer (Pearson® Coil)**

◆ **True RMS Readings Using DFA™ Technology**

◆ **Performs Output, RF Leakage & CQM Tests**

◆ **Main Test Loads from 50 to 750 Ω In 50 Ω Steps**

◆ **External Test Loads Supported**

◆ **Auxiliary Test Load – 200 Ω**

◆ **Independent Variable CQM Test Load 1 to 500 Ω In 1 Ω Steps**

◆ **Non-Inductive Internal Load Resistors**

◆ **Graphical Display With Simultaneous Details of Parameters & Scrolling Option Control**

◆ **Bright-White Display Backlight**

◆ **Rechargeable Battery or Line-Powered Operation**

◆ **Isolated Oscilloscope Output**

◆ **Full Remote Operation**

◆ **USB Port**

◆ **Digital Battery Monitor**

◆ **Flash Programmable, Field Upgradeable**

◆ **Soft Touch Keys With Audible Feedback**

ESU-2300

The ESU-2300 Analyzer is for users who prefer a conventional instrument with internal, selectable test loads. Utilizing the same Patent-Pending DFA™ Technology as our ESU-2050, the ESU-2300 uses industry standard current sensing technology rather than relying on less accurate voltage measurement techniques employed by some competitive products.

The ESU-2300 uses advanced high-speed waveform sampling techniques to accurately analyze even the most complex electrosurgery generator waveforms. You can easily analyze Coag waveforms like Desiccate, Fulgurate or even Spray with the same accuracy as pure sinusoidal Cut waveforms. RMS current (mA) and power (watts) can be easily read from the large LCD graphical display, as well as other parameters such as mV, mV peak, and CF. A whisper quiet fan keeps the internal non-inductive load resistors running cool.

Added features like CQM Testing, RF Leakage Current measurement, a Rechargeable Battery, USB and RS-232 com ports, oscilloscope output, universal power supply and the ability to easily update the instrument's firmware in the field via our unique Flash Update Utility Software put the ESU-2300 in a class of its own.

ESU Analyzer Series

Measurement	
Method	Industry Standard Current Sensing, using RF Current Transformer (Pearson Coil)
Power	
Range	1.0 to 400.0 Watts RMS
Resolution	0.1 Watts
Accuracy	± 5% Reading or ± 3 Watts (whichever is greater)
Current	
Range	20 to 2500 mA RMS
Resolution	± 1 mA
Accuracy	± 2.5% Reading or ± 15 mA
Limits	
Bandwidth	10 kHz to 10 MHz
Crest Factor	1.4 to 500
Voltage	10,000 V Peak
Main Test Load	
Range	50 to 750 Ω
Resolution	50 Ω
Accuracy	± 1% (DC)
Duty Cycle	(10 SEC ON, 30 SEC OFF)
Auxiliary Test Load	
Fixed	200 Ω
Accuracy	± 1% (DC)
CQM Test Load	
Range	1 to 500 Ω
Resolution	1 Ω
Accuracy	± 2% or ± 2 Ω

Physical	
Enclosure	High Impact Plastic, UL 94 V-0 Face-Lexan, Back Printed
Size	6.30 x 13.50 x 13.40 inches 160.0 x 342.9 x 340.4 mm
Weight	≤ 17.5 Lbs (7.95 kg)
Electrical	
Power Supply	Input: Universal 100-240 VAC, 50-60 Hz Output: 9 VDC
Battery	Sealed Lead Acid 6 VDC, 7.2 AH
General	
Display	LCD Graphical 240 x 64 Pixels, Backlight
Ventilation	Variable speed internal fan
Oscilloscope Output	Isolated (uncalibrated), BNC Connector
Setup Memory	EEPROM, All Parameters
Memory Retention	10 years w/o Power
Operating Range	15 to 30 °C (59 to 86 °F)
Storage Range	-20 to 60 °C (-4 to 140 °F)
Humidity Limit	20 to 80% RH, Non-Condensing
Connections	Communications USB, DB9 Loads: 4mm safety jacks
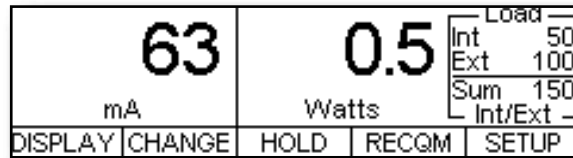
INTERNAL LOAD VALUES NOT EXACTLY WHAT YOU NEED?

The ESU-2300 allows for the use of External or a combination of Internal & External Load Resistors to cover ranges outside the provided Internal Load Range. Setup Parameters allow the user to tell the unit about External Loads. This ensures the continued accurate measurement & display of power.

Optional: External Load Precision Power Resistor
(See Page 88 for a listing of available values)

ESU Analyzer Series

CE

Features - ESU-2050 & ESU-2050P

◈ **True RMS Readings Using DFA™ Technology**

◈ **mV, mV Peak, mA, Crest Factor and Wattage Displays**

◈ **Large Graphical Display with Backlighting & Cursor Selection of Options and Setup of Parameters**

◈ **1% Measurement Accuracy**

◈ **Digital Data Output Via USB and RS-232**

◈ **Digital Calibration - No Pots to Turn**

◈ **Display Contrast is Software Adjustable**

◈ **On-Screen Graphical Representation of Generator Waveform with Scroll & Zoom Capabilities**

◈ **Standard Range Uses 0.1:1 RF Current Transformer**

◈ **Special Low Range Uses 1:1 RF Current Transformer**

◈ **Internally Protected Input Circuitry**

◈ **Capture, Store & Print ESU Generator Output Waveforms with up to 32,768 Discrete Data Points through the Specialized PC Software**

◈ **Internal Data Storage for Three Full ESU Waveform Data Sets**

◈ **Create Customized Load Resistor Table within the Instrument Based Upon the Load Resistors Commonly Used**

◈ **User Selectable Data Display Screens**

◈ **Smallest & Lightest Weight ESU**

◈ **Pulsed Output Waveform Compatible (ESU-2050P Only)**

ESU-2050

The ESU-2050 ESU Analyzer is the first instrument of its kind on the market. Designed through extensive collaboration with several of the world's leading electrosurgery generator manufacturers (including the worldwide market leader), the ESU-2050 is a highly accurate calibration-quality instrument intended for use by OEM factory technicians and fieldservice engineers, as well as customers who desire to test their ESU generators in the exact same way the medical device manufacturers do. It is the only ESU Analyzer on today's market with a 1% of reading level of accuracy.

DFA™ Technology achieves the high level of accuracy and functionality demanded by ESU manufacturers worldwide, and replaces the Fluke® Model 8920A instrument previously utilized in such applications. The ESU-2050 uses external precision load resistors and an external wide band toroidal current transformer to take industry standard RF current measurements. It can function as a stand-alone meter or in conjunction with our optional PC Utility Software.

Measurement data, including RMS current, RMS voltage, Peak voltage, Power (watts), and Crest Factor are displayed on a series of user configurable screens. You can even display all of these values on a single screen, including the load resistance. Digitized ESU waveforms with up to 32,768 data points can be stored, displayed on screen, or exported to a PC for analysis. Our companion PC Utility Software will create an Excel® graph of even the most complex output waveforms for viewing.

SCREEN VIEWS

(NOTE: User can select measurement values & locations to be displayed on each screen choosing from RMS Current, RMS Voltage, RMS Power, Peak Voltage & Crest Factor)
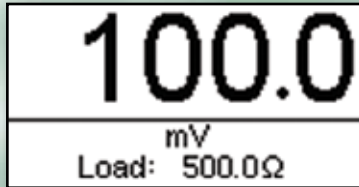
One Display Zone Screen with mV Parameter Selected

100.0
mV
Load: 500.0Ω
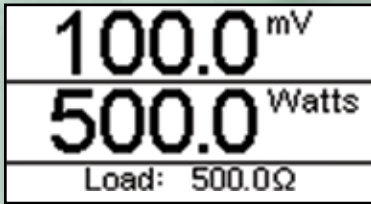
Two Display Zone Screen with mV & Watts Parameters Selected

100.0 mV
500.0 Watts
Load: 500.0Ω
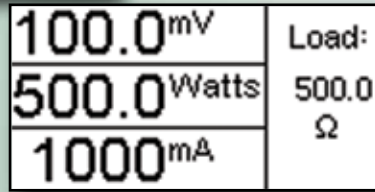
Three Display Zone Screen with mV, Watts & mA Parameters Selected

100.0 mV
500.0 Watts
1000 mA
Load: 500.0 Ω
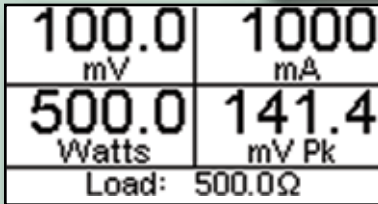
Four Display Zone Screen with mV, Watts, mA & mV Peak Parameters Selected

100.0 mV   1000 mA
500.0 Watts   141.4 mV Pk
Load: 500.0Ω
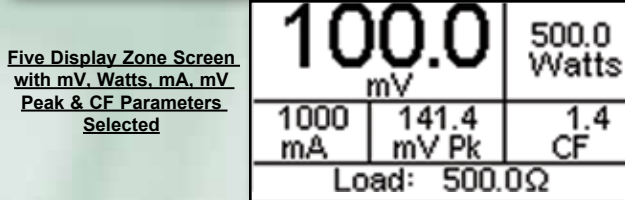
Five Display Zone Screen with mV, Watts, mA, mV Peak & CF Parameters Selected

100.0 mV   500.0 Watts
1000 mA   141.4 mV Pk   1.4 CF
Load: 500.0Ω

ESU-2050 Graph Mode Example

Fully Zoomed Out   **Fully Zoomed In**
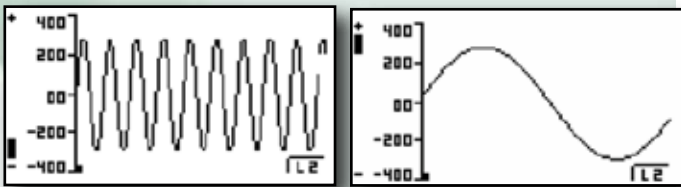
PC Software Waveform Example created from the Excel® graphing function using the over 32,000 discrete datapoints exported from the ESU-2050

Valleylab Force FX Blend Cut Waveform
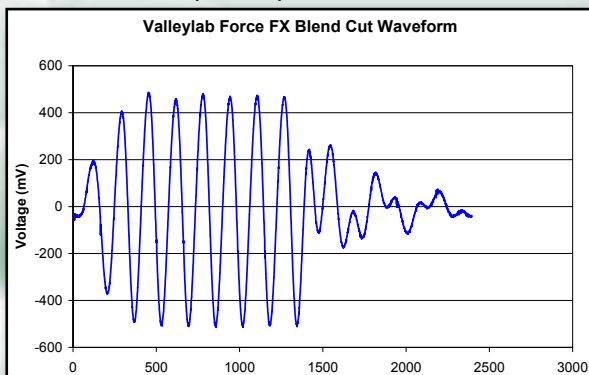
SPECIFICATIONS

INPUT RANGE	
Voltage (RMS)	2.0 – 700.0 mV RMS
Input Resolution	0.1 mV RMS
Voltage (Peak)	1000.0 mV
Resolution	0.1 mV
Frequency	10 KHz – 10 MHz
Accuracy	1% reading
Maximum Input Voltage	3.3 V p-p Internally Protected

CALCULATED RANGES	
Current (with 0.1:1 CT)	7000 mA RMS
Resolution	1 mA
Current (with 1:1 CT)	700.0 mA RMS
Resolution	0.1 mA
Wattage	10 KHz – 10 MHz
Resolution	0.1 Watt
Crest Factor	1.4 to 500
Resolution	0.1

INPUT IMPEDANCE
50 Ω

INPUT COMPATIBILITY	
RF Current Transformer (50 Ω)	Pearson Electronics 411 OR 4100 (Typical)
RF Current Transformer Attenuation	0.1: 1 1: 1 User Selectable

DISPLAY	LCD Graphical 128 X 64 Pixels
SETUP MEMORY	EEPROM, All Parameters
MEMORY RETENTION	10 Years w/o Power
OPERATING RANGE	15 to 30 °C (59 to 86 °F)
STORAGE RANGE	-20 to 60 °C (-4 to 140 °F)
CONSTRUCTION	Enclosure – ABS Plastic Face – Lexan, Back Printed
SIZE	3.4" x 9.1" x 8.0" inches 86.4 x 231.1 x 203.2 mm
WEIGHT	≤ 3 lbs. (1.36 kg)
CONNECTIONS	Input: BNC Output: Serial DB-9 or USB
POWER SUPPLY ADAPTER	Input: Universal 100-240 VAC, 50-60 Hz Output: 6 VDC
POWER CONSUMPTION	ON: less than 150 mA OFF: less than 40 µA
DATA STORAGE (Internal)	3 Sets of 32768 Data Points

The ESU-2050 & ESU-2400 are used and recommended by the world's leading electrosurgery generator manufacturer!

ESU Analyzer series

ESU Analyzer Series

ESU Analyzer Series

CE

Features - ESU-2000A

◈ **Small & Simple-to-Use**

◈ **Lightweight**

◈ **6 Selectable Loads from 50 to 500 Ω**

◈ **No Load Switching Relays**

◈ **Return Contact Monitor Test with 1 Ω Steps**

◈ **RF Power, Current & Leakage Measurement**

◈ **No Batteries or Power Cords**

◈ **Easy-to-Read Color-Coded Meter**

◈ **High Speed Fuse Protects Meter**

Accessories Included

◈ **Active Lead (Yellow)(w/Retractable Bananas)**

◈ **Earth/Ground Lead (Green)(w/ Retractable Bananas)**

◈ **Dispersive Lead (Blue)(w/ Retractable Bananas)**

◈ **Alligator Adapter(Green, Yellow, Blue)**

◈ **Ground Pin**

◈ **Valleylab Dispersive w/o Pin to Two Blue Retractable Bananas**

◈ **Valleylab Dispersive w/o Pin to One Blue Retractable Banana**

◈ **Spare Fuse**

◈ **Operator Manual**

ESU-2000A

The ESU-2000A ESU Tester is full-featured & versatile. Test modes include RF output power and leakage, measured with a large analog meter. There are different color codes for each range at the input connector and on the meter, making measurements quick & easy. For Return Contact Monitor (CQM, REM, ARM, PSS) testing, we've built in a 0 to 1000 Ω variable resistance with 1 Ω digital resolution. Even more expensive ESU testers generally don't offer this much range or resolution.

To improve reliability and accuracy, the ESU-2000A has no front-panel switches. Instead, the user simply changes the position of our unique ESM-1 Switching Module to select either RF Power or RF Leakage mode. For safety, the module also blocks access to unused input connectors, virtually eliminating worry about improper connections & resultant equipment damage. Plus you won't lose the switching module because it is conveniently stored on the front panel at all times.

SPECIFICATIONS

RF MEASUREMENT		
RANGE	CURRENT	0 to 1000 mA RMS
	POWER	0 to 500 W
ACCURACY	CURRENT	± 2% FS
	POWER	± 5% FS
FREQUENCY	0 to 10 MHz	
FUSE	500 mA Fast-Blow FWH-1/2	
OSCILLOSCOPE OUTPUT	OUTPUT	Isolated, Uncalibrated
	CONNECTION	BNC (50 Ω)
VARIABLE LOAD	VALUES	50 Ω, 100 Ω, 200 Ω, 300 Ω, 400 Ω 500 Ω
	TYPE	Non-Inductive
	ACCURACY	± 2% ± 1 Ω
	POWER RATING (MAX)	50 Ω / 50 W
		100 Ω / 100 W
		200 Ω / 200 W
		300 Ω / 300 W
		400 Ω / 400 W
		500 Ω / 500 W
	DUTY CYCLE	10 seconds on, 20 seconds off
LEAKAGE LOAD	VALUE	200 Ω
	TYPE	Non-Inductive
	ACCURACY	± 2% ± 1 Ω
	POWER RATING	50 W
CONNECTIONS	4mm Banana	

RETURN ELECTRODE MONITOR TEST LOAD	
RANGE	0 to 999 Ω
RESOLUTION	1 Ω
ACCURACY	± 3% + 3 Ω
CONNECTIONS	4mm Banana

PHYSICAL & ENVIRONMENTAL		
DISPLAY	4-1/2" Analog Meter, Color-coded display (W and mA)	
CONSTRUCTION	ENCLOSURE	ABS Plastic
	FACE PLATE	Back-printed Lexan
SIZE	5.36 x 8.68 x 9.10 Inches(136.1 x 220.5 x 231.1 mm)	
WEIGHT	≤4 Lbs (1.82 kg)	
OPERATING RANGE	15 to 30 °C (59 to 86 °F) 20 to 80% RH, Non-Condensing	
STORAGE RANGE	-40 to 60 °C (-40 to 140 °F)	

ESU Analyzer Series

Comparison Chart

Models:	ESU-2400/H	ESU-2300	ESU-2050	ESU-2050P	ESU-2000A
Industry-standard RF current measurement	Yes	Yes	Yes	Yes	Yes
Test Loads	1 to 6400 Ohms, 1 ohm increments, internal load bank	50 to 750 Ohms, 50 ohm increments, internal load bank	Requires external precision non-inductive test loads, 1-9999 Ohms compatible	Requires external precision non-inductive test loads, 1-9999 Ohms compatible	50, 100, 200, 300, 400, 500 Ohms
RF Current Range	<2 ma to 7,000 mA	20 ma to 2,500 mA	<2 ma to 7,000 mA	<2 ma to 7000 mA	0 - 1000 mA
RF Power (Watts RMS) Range	To 999.9 Watts	To 400 Watts	To 999.9 Watts	To 999.9 Watts	To 500 Watts
Bandwidth	50 kHz to 10 MHz	10 kHz to 10 MHz	10 kHz to 10 MHz	10 kHz to 10 MHz	0 - 10 MHz
Display	QVGA Color Touch Screen	260 x 64 pixel LCD Graphical Display with Backlight	128 X 64 Pixels LCD Graphical with Backlight	128 X 64 Pixels LCD Graphical with Backlight	4.5 inch Analog Meter
External Test Load Compatible	Yes, can use internal + external or external only, or internal only	Yes, can use internal + external or external only, or internal only	Yes, requires external test loads	Yes, requires external test loads	Yes
External Current Transformer Required	No	No	Yes	Yes	No
Continuous Output Waveform Compatibility	Yes	Yes	Yes	Yes	Yes
Pulse Output Waveforms Compatibility	Yes	No	No	Yes	No
Multiple Pulsed Waveforms Compatibility	2400H Only	No	No	No	No
Measurement accuracy	± 1% of reading on RMS Current	± 2.5% of reading on RMS Currentt	± 1% of reading on RMS Current	± 1% of reading on RMS Current	± 5% of Full Scale
Calibration level accuracy	Yes	No	Yes	Yes	No
Crest Factor Range	1.4 to 500	1.4 to 500	1.4 to 500	1.4 to 500	N/A
Covidien/Valleylab Force Triad Calibration Procedure Compatibility	Yes	No	Yes	Yes	No
Covidien/Valleylab Ligasure Generator Calibration Compatibility	Yes	No	Yes	Yes	No
Number of parameters measured/displayed	ESU-2400: 15 ESU-2400H: 28	5	15	15	2
Internal REM/ARM/CQM Testing	Yes, 500 ohm load adjustable in 1 ohm increments	Yes, 500 ohm load adjustable in 1 ohm increments	No, requires external CQM Test Box (CQM-2000)	No, requires external CQM Test Box (CQM-2000)	Yes
Automated power-load curves	Yes, "x" to "y" Ohms in "z" ohm increments OR by user-defined load table values, multiple power levels @ each load possible	No	No	No	No

Comparison Chart

Models:	ESU-2400/H	ESU-2300	ESU-2050	ESU-2050P	ESU-2000A
Auto-activation of ESU generator for power load curve testing	Yes	No	No	No	No
User definable testing autosequences	Yes, unlimited steps with unlimited ascii text description per step, embedded measurement capability within sequence	No	No	No	No
Communication ports	USB, RS232, Ethernet, PS/2	USB, RS232	USB, RS232	USB, RS232	No
Capture & Store RF Waveform	Yes	No	Yes	Yes	No
RF Leakage Current Measurement	Yes	Yes	Yes, with external 200 ohm test load and CT	Yes, with external 200 ohm test load and CT	Yes
Remote control compatibility of ESU generator	Yes	No	No	No	No
User definable data screens	Yes	Yes	Yes	Yes	No
FLASH field upgrade of firmware	Yes	Yes	Yes	Yes	No
Test load temperature monitor	Yes	Yes	No	No	No
Oscilloscope Output Jack	Yes	Yes	No	No	Yes
User-adjustable signal averaging	Yes	Yes	Yes	Yes	No
Test form printout	Yes	No	No	No	No
Browse Internet	Yes	No	No	No	No
Battery Operation	No	Yes	No	No	N/A
External keyboard & mouse compatible	Yes	No	No	No	No
Fan Cooling of Internal Load Resistor Bank	Yes	Yes	No	No	No
Size	7.8 x 15.0 x 22.5 inches 198.1 x 381 x 571.5 mm	6.30 x 13.50 x 13.40 inches 160.0 x 342.9 x 340.4 mm	3.4 x 9.1 x 8.0 inches 86.4 x 231.1 x 203.2 mm	3.4 x 9.1 x 8.0 inches 86.4 x 231.1 x 203.2 mm	5.36 x 8.68 x 9.10 inches 136.1 x 220.5 x 231.1 mm
Weight	≤ 31 lbs. (14 kg)	≤ 17.5 lbs. (7.95 kg)	≤ 3 lbs. (1.36 kg)	≤ 3 lbs. (1.36 kg)	≤ 4 lbs. (1.82 kg)

ESU Analyzer Series

CE

Features - DPM 2300 Series

◈ **Large Graphics Display With Cursor Selection Of Options And Setup**

◈ **High Resolution 24 Bit Measurement**

◈ **± 0.05% FS Pressure Accuracy**

◈ **Standard Pressure Scales Include 13 Different Engineering Unit Ranges**

   (PSI, mmHg@0 °C, mmHg@20 °C, inHg@0 °C, inHg@20 °C, cmH$_2$O@20 °C, inH$_2$O@4 °C, inH$_2$O@20 °C, inH$_2$O@60 °F, kg/cm^2, kPa, mBar, Bar)

◈ **MAX And MIN Pressure Value Capture And Storage**

◈ **Digital Calibration**

◈ **Selectable Display Options & Digit Sizes**

◈ **Battery Life Display (0 To 100%)**

◈ **Programmable Digital Averaging Filter**

◈ **Display Contrast Is Software Adjustable**

◈ **Digital Zero Adjustment**

DPM-2302 Adds:

◈ **RS-232 Serial Communications**

Second Pressure Sensor Adds:

◈ **Independent Pressure Channel**

◈ **Separate And Combined Display Option**

Temperature Option Adds:

◈ **YSI 700 or 100 Ω RTD Temperature Probe Interface**

◈ **-20.0 to 100.0 °C (-4.0 to 212.0 °F) Range**

◈ **± 0.5% FS Accuracy**

Analog Output Option Adds:

◈ **DC Output Proportional to the Displayed Pressure or Temperature**

◈ **± 0.1% FS Output Accuracy**

Digital Pressure Meter Series

DPM-2300

The DPM-2300 Series is a microprocessor-based, High Precision, High Resolution Digital Pressure Meter Family. These meters measure both gas and liquid pressures and provide multiple engineering unit displays for the results. The unit may have one or two pressure sensors and an optional temperature sensor input to measure pressure and temperature all in one meter.

There are five standard pressure ranges. Models are available with any combination of ranges. The DPM-2350 Subset provides a differential pressure option using a single sensor in any of the five ranges. Optional features allow the addition of RS-232 communication, Temperature measurement and DC Analog Outputs.

SPECIFICATIONS

PRESSURE MEASUREMENT (GAUGE)		
RANGE	100 PSI SENSOR	-13.5 to 100.0 PSI
	75 PSI SENSOR	-13.5 to 75.0 PSI
	10 PSI SENSOR	-10.0 to 10.0 PSI
	5 PSI SENSOR	-5.0 to 5.0 PSI
	0.3 PSI SENSOR	-0.3 to 0.3 PSI
RESOLUTION	100 PSI SENSOR	0.001 PSI
	75 PSI SENSOR	0.001 PSI
	10 PSI SENSOR	0.0001 PSI
	5 PSI SENSOR	0.0001 PSI
	0.3 PSI SENSOR	0.00001 PSI
MAXIMUM OVERPRESSURE	100 PSI SENSOR	200 PSI
	75 PSI SENSOR	200 PSI
	10 PSI SENSOR	45 PSI
	5 PSI SENSOR	15 PSI
	0.3 PSI SENSOR	5 PSI
ACCURACY	± 0.05% FS	
DIGITAL FILTER	0 to 10 seconds, Selectable	
COMPATIBLE MEDIA	Only non-corrosive, non-ionic, or otherwise pure fluids and/or gases that are compatible with sensor materials including glass, silicon, ceramic, epoxy, RTV, gold, aluminum and nickel.	
CONNECTIONS	See Model Number Breakdown	

PHYSICAL & ENVIRONMENTAL		
DISPLAY	128 X 64 Pixels Non-Backlit Graphical LCD	
CONSTRUCTION	ENCLOSURE	ABS Plastic
	OVERLAY	Back-printed Lexan
SIZE	7.69 x 3.97 x 1.80 Inches (195.3 x 100.8 x 45.7 mm)	
WEIGHT	< 1 Lbs (0.45 kg)	
OPERATING RANGE	15 to 30 °C (59 to 86 °F)	
STORAGE RANGE	-40 to 60 °C (-40 to 140 °F)	

ELECTRICAL & MISC.		
BATTERY	9V Alkaline Battery (ANSI/NEDA 1604A or equivalent)	
BATTERY ELIMINATOR	9 VDC, 200 mA ⊕—€—⊖ BC20-21110 BATTERY ELIMINATOR (UNIVERSAL)	
POWER CONSUMPTION	ON	< 35 mA
	OFF	< 40 µA
BATTERY LIFE	CONTINUOUS	80 hours
	OFF	1 year
RS-232 COMMUNICATIONS	BAUD	115200
	DATA BITS	8
	START BITS	1
	STOP BITS	1
	PARITY	None
	HANDSHAKING	None
	CONNECTIONS	Seven (7) pin Mini-DIN Receptacle Pinout: NOTE: As Viewed from Unit Exterior

MODEL SUMMARY

Note: The FC or MC options are not applicable when the "–Sxx" option is specified.
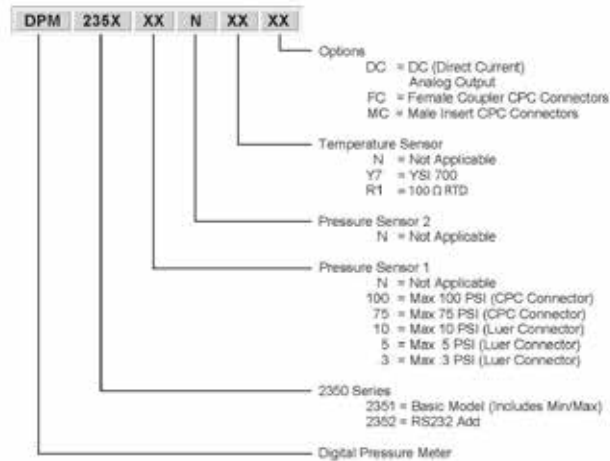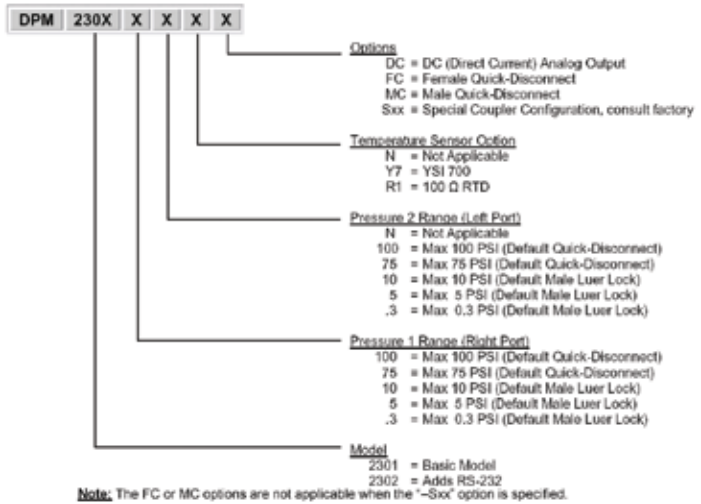
SPECIAL MODEL:
Recommended model for use with TSI Certifier-FA Respiratory Vent Test System:
DPM-235175NNFC
or **DPM-23017510NFC**

DPM-2350 w/Female CPC

Digital Pressure Meter Series

Pressure Meters

Digital Pressure Meter Series

CE

Features - DPM-2200 Series

◇ **Single or Dual Pressure Sensors**

◇ **Large Graphics Display with Cursor Selection of Options & Parameters Setup**

◇ **± 0.05% FS Pressure Accuracy**

◇ **16 Bit Measurement**

◇ **Standard Pressure Scales Include 13**

Different Engineering Unit Ranges
(PSI, mmHg@0 °C, mmHg@20 °C, inHg@0 °C, inHg@20 °C, cmH$_2$O@20 °C, inH2O@4 °C, inH$_2$O@20 °C, inH$_2$O@60 °F, kg/cm^2, kPa, mBar, Bar)

◇ **Digital Calibration & Zero Adjust**

◇ **Selectable Display Options & Digit Sizes**

◇ **Battery Life Display (0 to 100%)**

◇ **Programmable Digital Filter**

◇ **Display Contrast is Software Adjustable**

◇ **Flash Programmable, Field Upgradeable**

◇ **Optional DC or High Frequency (up to 100 Hz Cycle Rate) Outputs**

◇ **Pressure & Vacuum**

◇ **Liquids & Gases**

DPM-2202 Adds:

◇ **Min/Max Pressure Value Capture and Storage**

◇ **RS-232 Serial Communications**

Second Pressure Sensor Adds:

◇ **Independent Pressure Channel**

◇ **Separate & Combined Display Option**

Temperature Option Adds:

◇ **YSI 700 or 100 Ω RTD Temperature Probe Interface**

◇ **-20.0 to 100.0 °C (-4.0 to 212.0 °F) Range**

◇ **± 0.5% FS Accuracy**

Analog Output Option Adds:

◇ **Standard or High Frequency Output**

◇ **DC Output Proportional to the Displayed Pressure or Temperature**

◇ **± 0.1% FS Output Accuracy**

DPM-2200

The DPM-2200 Series is a Microprocessor-based, High Precision, Digital Pressure Meter Family. They measure both gas and liquid pressures and provide multiple engineering unit displays for the results. The unit may have one or two pressure sensors and an optional temperature sensor input to measure pressure and temperature all in one meter. Also standard & high frequency analog outputs options are available.

There are five standard pressure ranges. Models are available with any combination of ranges. The DPM-2250 Subset provides a differential pressure option using a single sensor in any of the five ranges. Optional features allow the addition of RS-232 communication, Temperature measurement and a standard or high frequency analog output.

1-888-223-6763 - bcgroupintl.com

SPECIFICATIONS

PRESSURE MEASUREMENT (GAUGE)		
RANGE	100 PSI SENSOR	-13.5 to 100.0 PSI
	75 PSI SENSOR	-13.5 to 75.0 PSI
	10 PSI SENSOR	-10.0 to 10.0 PSI
	5 PSI SENSOR	-5.0 to 5.0 PSI
	0.3 PSI SENSOR	-0.3 to 0.3 PSI
RESOLUTION	100 PSI SENSOR	0.01 PSI
	75 PSI SENSOR	0.01 PSI
	10 PSI SENSOR	0.001 PSI
	5 PSI SENSOR	0.001 PSI
	0.3 PSI SENSOR	0.0001 PSI
ACCURACY	± 0.05% FS	
DIGITAL FILTER	0 to 10 seconds, Selectable	
COMPATIBLE MEDIA	Only non-corrosive, non-ionic, or otherwise pure fluids and/or gases that are compatible with sensor materials including glass, silicon, ceramic, epoxy, RTV, gold, aluminum and nickel.	
CONNECTIONS	Male Luer Coupler	

PHYSICAL & ENVIRONMENTAL		
DISPLAY	128 X 64 Pixels Non-Backlit Graphical LCD	
CONSTRUCTION	ENCLOSURE	ABS Plastic
	OVERLAY	Back-printed Lexan
SIZE	7.69 x 3.97 x 1.80 Inches (195.3 x 100.8 x 45.7 mm)	
WEIGHT	< 1 lbs (0.45 kg)	
OPERATING RANGE	15 to 30 °C (59 to 86 °F)	
STORAGE RANGE	-40 to 60 °C (-40 to 140 °F)	

ELECTRICAL & MISC.		
BATTERY	9V Alkaline Battery (ANSI/NEDA 1604A or equivalent)	
BATTERY ELIMINATOR	9 VDC, 200 mA ⊕–ⓒ–⊖ BC20-21110 BATTERY ELIMINATOR (UNIVERSAL)	
POWER CONSUMPTION	ON	< 35 mA
	OFF	< 40 µA
BATTERY LIFE	CONTINUOUS	80 hours
	OFF	1 year
RS-232 COMMUNICATIONS	BAUD	115200
	DATA BITS	8
	START BITS	1
	STOP BITS	1
	PARITY	None
	HANDSHAKING	None
	CONNECTIONS	Seven (7) pin Mini-DIN Receptacle Pinout: RS-232 RxD 4 · 3 TxD Com 2 NOTE: As Viewed from Unit Exterior

EYE SURGERY EQUIPMENT USERS PLEASE NOTE:

Recommended part number for DPM Pressure Meter when servicing Eye Surgery Equipment.
DPM-220210010NHF

DPM-2250

MODEL SUMMARY

DPM	220X	XX	XX	XX	XX

Options
  Blank = Not Applicable
  DC   = DC (Direct Current) Analog Output
  HF   = High Frequency DC Analog Output

Temperature Sensor Option
  N   = Not Applicable
  Y7 = YSI 700
  R1 = 100 Ω RTD

Pressure Range (Sensor 2)
  N   = Not Applicable
  100 = Max 100 PSI
  75   = Max 75 PSI
  10   = Max 10 PSI
  5   = Max 5 PSI
  .3   = Max 0.3 PSI

Pressure Range (Sensor 1)
  100 = Max 100 PSI
  75   = Max 75 PSI
  10   = Max 10 PSI
  5   = Max 5 PSI
  .3   = Max 0.3 PSI

Model
  2201 = Basic Model
  2202 = Adds Min/Max and RS-232

DPM	225X	XX	N	XX	XX

Options
  Blank = Not Applicable
  DC   = DC (Direct Current) Analog Output
  HF   = High Frequency DC Analog Output

Temperature Sensor
  N   = Not Applicable
  Y7 = YSI 700
  R1 = 100 Ω RTD

Pressure Sensor 2
  N = Not Applicable

Pressure Sensor 1
  N   = Not Applicable
  100 = Max 100 PSI (CPC Connector)
  75   = Max 75 PSI (CPC Connector)
  10   = Max 10 PSI (Luer Connector)
  5   = Max 5 PSI (Luer Connector)
  .3   = Max .3 PSI (Luer Connector)

2250 Series
  2251 = Basic Model (Includes Min/Max)
  2252 = RS232 Add

Digital Pressure Meter

OPTIONAL ACCESSORIES FOR DPM SERIES

BC20 - 21110	BATTERY ELIMINATOR (UNIVERSAL)
BC20 - 41361	RS-232 COMMUNICATION CABLE, USB(A)M TO MINI DIN MALE
BC20 - 30106	BC BIOMEDICAL SMALL SOFT SIDED CARRYING CASE
BC20 - 01005	UNIVERSAL PRESSURE ADAPTER KIT
BC20 - 01006	YSI TEMPERATURE PROBE
BC20 - 01008	RTD (100 Ω) TEMPERATURE PROBE

Digital Pressure Meter Series

CE

Features - DPM-2000 Series

◈ **Pressure Ranges:**

- *- 13.50 to 100.00 PSI*

- *- 701 to 5190 mmHg @ 20 °C*

- *- 951 to 7043 cmH$_2$O @ 20 °C*

- *- 374 to 2773 inH$_2$O @ 20 °C*

◈ **± 0.1% FS Pressure Accuracy**

◈ **5 Digit LCD Display**

◈ **Programmable Digital Filter**

◈ **Digital Calibration & Zero Adjust**

◈ **Male Luer Connector**

◈ **Battery Life Display (0 to 100%)**

◈ **Liquids & Gases**

DPM-2001PLUS Adds:

◈ **Min/Max Value Capture**

◈ **RS-232 Serial Communications**

DPM-2100 Adds:

◈ **YSI 700 Temperature Probe Interface**

◈ **0.0 to 100.0 °C (32.0 to 212.0 °F) Range**

◈ **± 0.5% FS Accuracy**

DPM-2001PLUS

The DPM-2000 Series is a Microprocessor-based Family of Meters that offers not only positive and negative pressure sensing of compatible liquids and gases, but also has models with Temperature and RS-232.

The DPM-2001 is the base model. The DPM-2001PLUS adds a "Min/Max" feature plus a RS-232 port. The top-of-the-line DPM-2100 is a pressure/temperature meter. It has all the features of the PLUS model and also includes a YSI 700 temperature probe interface.

Each model has a battery life display (0 to 100%), Software adjustable LCD contrast, digital calibration (no pots to turn), 0.1% of full scale accuracy, -13.50 to 100.00 PSI range, digital zero adjust and four pressure scales: PSI, inH$_2$O, cmH$_2$O and mmHg.

SPECIFICATIONS

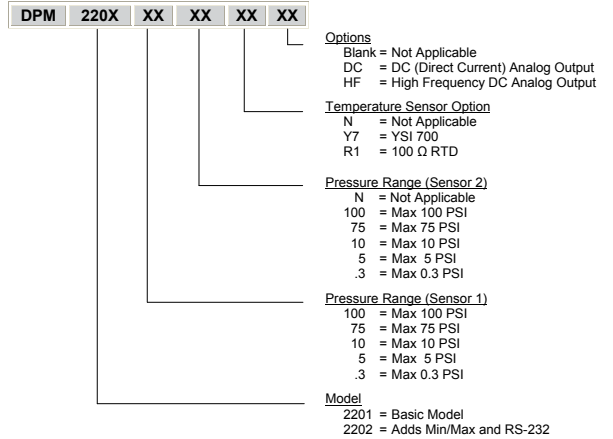| PRESSURE	
RANGE	-13.50 to 100.00 PSI -701 to 5190 mmHg @ 20 °C -374 to 2773 inH2O @ 20 °C -951 to 7043 cmH2O @ 20 °C
RESOLUTION	0.01 PSI 1 mmHg @ 20 °C 1 inH2O @ 20 °C 1 cmH2O @ 20 °C
MAXIMUM OVERPRESSURE	200 PSI
ACCURACY	± 0.1% FS
DIGITAL FILTER	1 – 255 samples
COMPATIBLE MEDIA	Only non-corrosive, non-ionic, or otherwise pure fluids and/or gases that are compatible with sensor materials including glass, silicon, ceramic, epoxy, RTV, gold, aluminum and nickel.
CONNECTIONS	Male Luer Coupler

PHYSICAL & ENVIRONMENTAL		
DISPLAY	5 Digit, 7-Segment Non-Backlit LCD	
CONSTRUCTION	ENCLOSURE	ABS Plastic
	OVERLAY	Lexan, Back Printed
MEMORY	SETUP	EEPROM, All Parameters
	RETENTION	10 Years w/o Power
SIZE	7.69 x 3.97 x 1.82 Inches (195.3 x 100.8 x 46.2 mm)	
WEIGHT	≤ 1 Lbs (0.45 kg)	
OPERATING RANGE	0 to 50 °C (32 to 122 °F)	
STORAGE RANGE	-40 to 60 °C (-40 to 140 °F)	

ELECTRICAL & MISC.		
BATTERY	9V Alkaline Battery (ANSI/NEDA 1604A or equivalent)	
BATTERY ELIMINATOR	9 VDC, 200 mA ⊙─€─⊙ BC20-21110 BATTERY ELIMINATOR (UNIVERSAL)	
POWER CONSUMPTION	ON	< 15 mA
	OFF	< 40 µA
BATTERY LIFE	CONTINUOUS	80 hours
	OFF	1 year
RS-232 COMMUNICATIONS	BAUD	115200
	DATA BITS	8
	START BITS	1
	STOP BITS	1
	PARITY	None
	HANDSHAKING	None
	CONNECTIONS	1/8 Stereo Receptacle for use with BC20-21102 RS-232 Cable

MODEL SUMMARY

BC Model   **Description**
DPM-2001   Basic Unit
DPM-2001PLUS   Basic Unit + Capture and RS-232
DPM-2100   Basic Unit + Capture, RS-232 and Temp

Optional Accessories
BC20 - 21110   Battery Eliminator (Universal)
BC20 - 21102   RS-232 Communication Cable
BC20 - 30106   Soft Carrying Case
BC20 - 01005   Universal Adapter Kit

DPM-2001

DPM-2100

Digital Pressure Meter Series

Pulse Oximetry Testing

**FingerSims™
Replacement Set
FS-1000RS**

The FingerSims™ test your SpO_2 monitor and finger sensor as a system and works very similar to a human finger, providing for variable absorption and reflectance of visible red and infrared light. The dye-based technology of the FingerSims™ is a proven simulation technique for generating accurate SpO_2 saturation levels. Plus FingerSims™ work with any style Pulse Oximetry Finger Sensor. The FingerSims™ provide SpO_2 outputs of 80, 90 & 97%. Simply push on the FingerSims™ to generate a "pulse" or include a calibrated pulse rate by adding the SPO-2000 or the MSP-2100 Pulse Oximetry Module.

Features - FingerSims™

◈ **Easy to Use SpO_2 Simulator**

◈ **Quick Testing of Pulse Oximetry Systems including Sensors**

◈ **80, 90 & 97% Saturation Levels**

◈ **Inexpensive & Accurate**

Features - MSP-2100

◈ **Accepts the FingerSims™ to Provide SpO_2 Outputs**

◈ **Pulse Synchronized with PS-2100, PS-2200 & NIBP-1000 Series Products via Aux Port**

◈ **Powered via Aux Port**

**MSP-2100
with FingerSims™**

The MSP-2100 can plug into the Auxiliary port of BC Biomedical's PS-2100, PS-2200 & the NIBP-1000 Series providing a calibrated pulse rate.
(FingerSims™ Required, but Not Included.)

Features - SPO-2000

◈ **Accepts the FingerSims™ to Provide SpO_2 Outputs**

◈ **30, 60, 90, 120, 150 & 180 BPM Pulse Rates**

◈ **External AC Adapter**

◈ **Compact & Cost-Effective**

◈ **Maintenance Free**

**SPO-2000
with FingerSims™**

The SPO-2000 is a stand-alone device that provides a calibrated pulse rate for the FingerSims™. This allows the FingerSims™ to be used as a hands-free test system. *(FingerSims™ Required, but Not Included.)*

**FingerSims™ Starter Kit
FS-1000-SK**

NIBP-1010 with MSP-2100 & FingerSims™

PS-2110 with MSP-2100 & FingerSims™

FingerSims™ Specifications

Saturation Nominal Values 80, 90 & 97%. *These are the nominal Red-to-Infrared Ratios (AC) @ 72.5 F & 660 nM/910 nM*

Light Absorption	Infrared: 10 to 40 dB Red: 15 to 40 dB
Typical Infrared Percent Modulation when Squeezed	0 to 5%
Long Term Storage Temp Range	32 to 104 °F (0 to 40 °C)
Operating Temp.	65 to 90 °F (18 to 32 °C)

MSP-2100 Specifications

Accuracy	±1 BPM
Power	Aux Port
Weight	≤ 1 Lbs (0.45 kg)
Size	2.3 x 3.6 x 1.5 Inches (58.4 x 91.4 x 38.1 mm)

SPO-2000 Specifications

Accuracy(Rate)	± 1%
Power	AC Adapter
Weight	≤ 1 Lbs (0.45 kg)
Size	5.2 x 5.2 x 2.5 Inches (132.1 x 132.1 x 63.5 mm)

Would it be nice to have calibrated fingers?

?%

?%

97%

90%

80%

**BC Biomedical
FingerSims™**

Infusion Pump Analyzer

Infusion Pump Analyzer

The Next Generation in Infusion Pump Analyzers is here

NEW

CE

Features - IPA-3400 Series

◈ **Smaller in Size - Larger in Features**

◈ **Faster in Operation**

◈ **Easier To Use**

◈ **High Accuracy**

◈ **Large 7" Color Touch Screen**

◈ **1,2,3 and 4 Channel Models Available (Field Upgradeable)**

◈ **User Swappable Fully Self Contained Flow Modules**

◈ **Calibration in Flow Modules**

   No Need To be Down For Calibration or Service

◈ **Smooth Dual Syringe System**

   Eliminates Drain Cycle Inconsistencies

◈ **Whisper Quiet Operation**

◈ **Auto Start**

◈ **Built in Auto Test Sequences**

◈ **Built in Data Collection**

◈ **Built in Reports**

◈ **Industrial Grade SS Pressure Sensor**

◈ **Performs All IEC 60601-2-24 Required Tests**

◈ **10 uL to 1600 mL/Hr**

◈ **4 USB Ports, 4 AUX Ports, Plus Bluetooth**

◈ **Flash Drives, Barcode Scanners, Printers, Keyboard and Mouse Directly Supported**

◈ **PC Compatible**

◈ **Configurable Pressure (mmHg, PSI, Bar, kPa)**

◈ **Large 32GB Internal Memory**

Functions-

◈ **PCA/Bolus**

◈ **Back Pressure Simulation**

◈ **Occlusion Alarm**

◈ **Trumpet Curve Analysis (Built-In)**

◈ **Data Download to PC or Flash Drive**

◈ **Customizable Test Templates (Built-In)**

◈ **Self-Cleaning Cycle**

IPA-3400　　　　　**Patent Pending**

The IPA-3400 is the most compact, full featured four channel analyzer on the market.

It is a high accuracy, easy to use system that incorporates full touch screen control of all processes without the use of old fashioned buttons and knobs. This new cutting edge Patent Pending design uses a dual syringe stepper motor driven system that provides continuous monitoring of the fluid flow without the need to stop and perform intermittent drains like older technologies do. This provides a more realistic flow path for the Infusion Device under test and therefore more accurate readings. Also, independent stepper motor control of the custom designed ceramic valving allows the system to run not only more quietly and more smoothly, but it also allows for a bidirectional powered fluid flow for use in the built-in cleaning cycle.

The IPA-3400 has built-in auto-sequence capabilities that allows the user to perform automatic test procedures. This allows specific test routines specified by various manufacturers to be run, which provides a significant time savings as well as reduces the risk of human error. Advanced features in our auto-sequences even allows the inclusion of pictures to aid with the setup and configuration of each step.

All test results are stored internally in the large 32 GB memory. They can also be downloaded to a USB flash drive or directly to a PC.

There are specific requirements in IEC 60601-2-24 for not only flow readings but back pressure simulation, bolus (PCA) measurements and occlusion alarm monitoring. All of these features are specifically built into the IPA-3400 with simple to use on screen selections.

The IPA-3400 is designed to hold up to 4 IPA-3900-FM flow modules. These modules are individually serialized and calibrated so that they may be moved from channel to channel and even unit to unit. Once installed they are recognized by the IPA-3400 and their Serial Number and NIST Traceable Calibration information are presented on the display and utilized in all data reporting.

The interchangeable modules provide the user with unprecedented flexibility in their IPA Testing System. There is no need to be down when the unit is due for calibration. Only the modules need to be calibrated. This also allows the rotating of modules or the use of a spare module, thus providing flexibility not available in other systems. The same is true for service. If there is a problem on one channel, only the module needs to be serviced, eliminating downtime.

The IPA-3400 display may be raised to gain full access to the four user swappable flow modules. No wiring or plumbing is required for module installation. Simply lift the display, remove the cover plate, loosen the retainer screw and slide the module out. All plumbing and electronics are self-contained and all electrical connections are made via a slide-in mating connector on the end of the module. Then just reverse the process for installation.

The IPA-3400 allows for easy field expansion. You can buy a 1 channel unit and later purchase additional modules that can be added in the field. Just plug them in and the system will automatically recognize the additional module(s), reconfigure itself and you are ready to go.

Easy access to modules for expansion and calibration.

SOFTWARE
BC Flow™ software is provided with the IPA-3400 to allow PC Control, Display, Storage and Recall of system data.

A BCeTEST™ software module is available to allow full integration of the IPA-3400 into the BCeTEST™ system.

Infusion Pump Analyzer

Infusion Pump Analyzer

SCREEN VIEWS

Main Screen

IPA-3400

Flow Test	Multi-Test
PCA Test	Load Test
Occlusion Test	Load Data
Prime Drain	Clean

Channel 1 | Channel 2 | Channel 3 | Channel 4 | View All | Settings
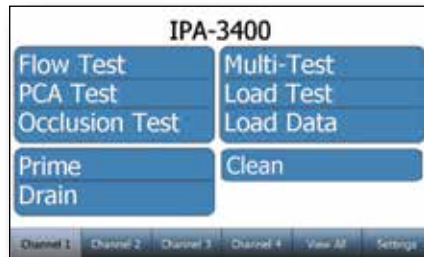
Flow Test Settings

Flow Test

Test Limit Parameter:	Average Flow
Test Limit Type:	Value
Expected Measurement:	400 mL/hr
Upper Limit:	420 mL/hr
Lower Limit:	380 mL/hr
Back Pressure:	0.12 PSI
Duration:	00:10:00

Channel 1 | Channel 2 | Channel 3 | Channel 4 | View All | Settings

Flow Test Data

Flow Test

Time:	58 s		
Pressure:	0.003 PSI	Max Pressure:	0.598 PSI
Volume:	6.377 mL	Min Pressure:	-0.361 PSI
Average Flow	395.81 mL/hr	Max Inst Flow	640.80 mL/hr
Instant Flow	414.00 mL/hr	Min Inst Flow	0 mL/hr

Channel 1 Flow Test | Channel 2 | Channel 3 | Channel 4 | View All | Settings

Flow Graph

Flow Test

Channel 1 Flow Test | Channel 2 | Channel 3 | Channel 4 | View All | Settings
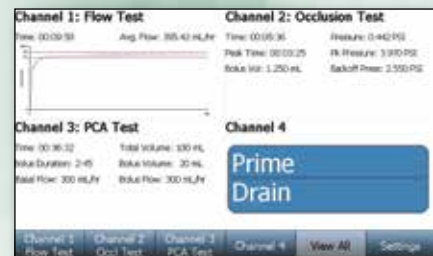
MODEL SUMMARY

BC Model	Description
IPA-3400-1	Infusion Pump Analyzer Bench Top - Multi Channel w/ 1 Flow Module (IPA-3900-FM)
IPA-3400-2	Infusion Pump Analyzer Bench Top - Multi Channel w/ 2 Flow Modules (IPA-3900-FM)
IPA-3400-3	Infusion Pump Analyzer Bench Top - Multi Channel w/ 3 Flow Modules (IPA-3900-FM)
IPA-3400-4	Infusion Pump Analyzer Bench Top - Multi Channel w/ 4 Flow Modules (IPA-3900-FM)
Individual Components (Included)	
IPA-3900-FM	Flow module for the IPA-3400 series
BC20-41360	Cable, Communication Null Modem for IPA-3400
BC20-00161	IPA-3400 Accessory Kit

Power Cord, North America cord default or choose one below:

BC20-20500 North America
BC20-20501 Japan
BC20-20502 United Kingdom
BC20-20503 Schuko-Continental Europe
BC20-20509 India/South Africa
BC20-20510 Switzerland
BC20-20512 Italy
BC20-20516 Australia

View All Channels

Channel 1: Flow Test		Channel 2: Occlusion Test	
Time: 00:09:50	Avg. Flow: 395.42 mL/hr	Time: 00:05:36	Pressure: 0.442 PSI
		Peak Time: 00:03:25	Pk Pressure: 3.970 PSI
		Bolus Vol: 1.250 mL	Backoff Press: 2.550 PSI
Channel 3: PCA Test		Channel 4	
Time: 00:36:32	Total Volume: 100 mL	Prime Drain	
Bolus Duration: 2:45	Bolus Volume: 20 mL		
Basal Flow: 300 mL/hr	Bolus Flow: 300 mL/hr		

Channel 1 Flow Test | Channel 2 Occl Test | Channel 3 PCA Test | Channel 4 | View All | Settings

IPA-3400 Specifications

Parameter		IPA-3400	
Flow Measurement	Display Range (ml/hr)	0.01 - 2600	
	Flow Rate (ml/hr)	0.10 - 1600	
	Flow Resolution (ml/hr)	0.010 (10 µL)	
	Accuracy	1% rdg + 0.005 mL/hr 0.1 to 9.9 mL/hr 1% rdg 10 to 700 mL/hr 2% rdg 700 to 1600 mL/hr	
	Min Volume (ml)	0.05 (50 µL)	
	Channels	1, 2, 3 or 4 (user-installable)	
Volume Measurement	Volume Range (mL)	0 to 9999	
	Volume Resolution (mL)	0.001 (1.0 µL)	
	Volume Accuracy	1% rdg after 100 µL	
PCA/Bolus Measurement	Display Range (mL)	0.1 to 100	
	Measurement Range (mL)	0.5 to 100	
	Accuracy	+/- 1%	
	Min Bolus Volume (mL)	0.01 (10 µL)	
Elapsed Time	Range	0 - 120 Hours	
	Resolution	1 Second	
	Accuracy	0.5 Second	
Occlusion (Pressure) Test	Range	-258.57 to 2585.75 mmHg (-5 to 50 PSI)	
	Resolution	0.05 mmHg (0.001 PSI)	
	Accuracy	0.1% FS	
Back-Pressure Control	Range	-200 to 600 mmHg (-3.867 to 11.602 PSI)	
	Resolution	0.05 mmHg (0.001 PSI)	
	Accuracy	0.1% FS	
Pressure Units	Selectable	mmHg, PSI, Bar, kPa	
Interface	Fluid Fittings	Inlet	Female Luer
		Drain	Male Luer Lock
	USB	Ports	4 x USB-A Host ports
		Supported Devices	HID-compliant Keyboard, Mouse & Barcode Scanner Printers Flash Disks Bluetooth module
	AUX	Ports	4 (1 per channel)
		Supported Devices	Nurse Call PCA trigger output (optional accessory cable)
	Display	7" Color Touch Screen (800 x 480)	
Power Supply	Voltage	Input - 90 to 264 VAC, 50/60 Hz, 90VA	
Weight		1 chan < 8 lbs 2 chan < 10 lbs 3 chan < 12 lbs 4 chan < 14 lbs	
Size (H x W x D)		7.8 (H) x 9.1 (W) x 10.2 (D)	
Storage Temperature		0 to 50 °C	
Operating Temperature		15 to 40 °C	
Data Storage		Internal 32 GB	

Infusion Pump Analyzer

Infusion Pump Analyzer

Features - IPA-1000 Series

◇ **Easy to Use**

◇ **Easy to Clean**

◇ **Simultaneous Operation of Two Chambers**

◇ **Large Graphics Display with Cursor Selection of Options & Setup of Parameters**

◇ **Auto Chamber Recognition**

◇ **2 Chamber Sizes (3.5 & 35 mL)**

◇ **Out of Sequence Sensing**

◇ **Battery Display (0 to 100%)**

◇ **Similar Function to Dynatech Nevada Model 404A**

◇ **Ranges 0 to 999.9 mL/hr & 0 to 9999 mL/hr**

◇ **± 1% of Reading Flow Accuracy**

◇ **Digital Calibration – No Pots to Turn**

◇ **Software Adjustable Contrast**

◇ **Replaceable Tubes**

◇ **Sealed Level Sensors**

◇ **Programmable End of Test Audio**

◇ **Programmable Auto or Manual Test Start**

Optional

◇ **Battery Eliminator**

35 mL Chamber

3.5 mL Chamber

IPA-1000

595.9
mL/hr

The IPA-1000 Infusion Pump Analyzer Family is designed to test the flow rates of intravenous infusion pumps to ensure their correct operation. It is able to test up to two pumps simultaneously by the volumetric method in milliliters per hour. All tests are controlled by a Microprocessor, which calculates and displays the results.

The fluid path is unobstructed, making them easy to clean. The tubes are plastic, not glass so they are rugged. The cables and chambers are interchangeable. The unit auto-identifies each chamber when it is plugged in. The chamber calibration is stored electronically in each chamber, so all units are interchangeable. This unit is designed to be tough, simple, portable & very user friendly.

MODEL SUMMARY

BC Model	Description
BC10-03103	IPA-1000, (1) 3.5 mL Chamber, (1) Interconnect cable
BC10-03104	IPA-1000, (1) 35 mL Chamber, (1) Interconnect cable
BC10-03105	IPA-1000, (2) 3.5 mL Chambers, (2) Interconnect cables
BC10-03106	IPA-1000, (2) 35 mL Chambers, (2) Interconnect cables
BC10-03107	IPA-1000, (1) 3.5 mL Chamber, (1) 35 mL Chamber, (2) Interconnect cables

Individual Components

IPA-1000	Infusion Pump Analyzer Base Unit
MC3.5-1000	3.5 mL Chamber
MC35-1000	35 mL Chamber

Optional Accessories

BC20-30109	Soft Carrying Case
BC20-40607	IPA-1000 Interconnect Cable
BC20-21110	Battery Eliminator (Universal)

Optional Soft Carrying Case shown with Chambers mounted in shock-resistant inserts. Analyzer & Accessories may be stored in upper compartment.

SPECIFICATIONS

Flow Rate Tests

◈ Performs two independent tests simultaneously

◈ Controls tests automatically, starting, stopping & resetting according to the position of fluid in chamber

◈ Ranges: Automatically selected when chamber is plugged in 0-999.9 mL/hr with 3.5 mL chamber 0-9999 mL/hr with 35 mL chamber

◈ Accuracy: Volumetric chamber: 3.5 or 35 mL(nominal) Overall: ± 1% of reading ± 1 digit

Display

◈ Graphic LCD, 128 X 64 pixel

Power Requirements

◈ 9V Alkaline

◈ Optional AC adapter

Infusion Pump Analyzer

Ultrasound Leakage Tester Series

Features - ULT-2000 Series

CE

◈ **Tests the Upper & Lower Leakage Current Limits per Ultrasound Mfr. Specifications**

◈ **Range 0.5 to 500 µA - Designed to Meet Mfr. Transducer Specifications**

◈ **Large Graphic Display with Backlighting Allows Easy Selection of Options & Setup of Parameters**

◈ **User-Selectable Challenge (Test) Voltage (90 to 275 VAC) & Frequency (50 or 60 Hz)**

◈ **User-Selectable Test Limits**

◈ **Programmable Test Limits Based on Ultrasound Transducer Mfr. & Type**

◈ **±1% F.S. Range Accuracy**

◈ **Auto Ranging for Enhanced Accuracy Over Entire Range**

◈ **Single Button Press for Full System Test**

◈ **Selectable Pass/Fail or Numerical Test Results**

◈ **User-Selectable Display Options**

◈ **Programmable Backlight Timer**

◈ **Flash Programmable, Field Upgradeable**

◈ **Compatible with Dale Technology® & Fluke Biomedical® Adapters & Probes**

◈ **RS-232 Interface**

◈ **PC Utility Software for Configuration Setup & Remote Control**

◈ **Test Results Printable w/Optional Printer**

◈ **On-Board Clock & Calendar Function for Date/Time Stamp of Test Records**

◈ **On-Board Storage for up to 99 Test Records**

◈ **Meter Mode**

◈ **Audio-Visual Test Status Indication**

Are You IAC Section 2.2.3B Compliant?

ULT-2000

The ULT-2000 Series is specifically designed to test the electrical safety of all types of diagnostic ultrasound transducers totally independent of the ultrasound machines on which they are typically used. Although the ULT-2000 can be used on virtually any type of ultrasound transducer, it is especially recommended in the testing of TEE (Transesophageal Echocardiography) transducers prior to each use; as recommended by many TEE ultrasound device manufacturers. The ULT-2000 tests the integrity of the outer insulation barrier of the transducer as well as the capacitive leakage currents that exist.

The ULT-2000 Series is the most advanced instrument of its kind on the market today and adds a totally new dimension to diagnostic ultrasound transducer electrical safety testing. With features and functionality that far surpass competitive products from other manufacturers, the ULT-2000 is easy to set up and use. Operating modes include a simple PASS/FAIL mode as well as a QUANTITATIVE mode that offers actual readings. You can print test results to an optional printer.

Compatibility with Dale Technology® DALE800, Fluke Biomedical® ULT800 adapters and Dual Conductivity Probes allow you to upgrade to the very latest technology platform, while safeguarding your prior investment in adapters and probes. A wide variety of BC Biomedical adapters and accessories are available.

SCREEN VIEWS

Typical Passing Results Display

Test Procedure:
SOURCE TEST to verify voltage used during test.
CIRCUIT TEST to verify measurement circuitry.
BATH CONDUCTIVITY TEST to validate cleaning solution.
PROBE LEAKAGE TEST to measure the leakage current of the DUT.

Full Test   Sonosite: TEE
Source Voltage   119V ☑
Circuit Test   96 µA ☑
Bath Cond   µA ☐
Probe Leakage   µA ☐

Progress Indicator

Test Measurements

Typical Passing Results Display Choices

Full Test   Sonosite: TEE
Source Voltage   119V ☑
Circuit Test   97 µA ☑
Bath Cond   252 µA ☑
Probe Leakage   51 µA ☑
TEST PASSED

or

Full Test   Sonosite: HST
Source Voltage Test   ☑
Circuit Test   ☑
Bath Conductivity Test   ☑
Probe Leakage Test   ☑
TEST PASSED

Quantitative Mode   **Pass/Fail Mode**

Typical Failed Results Display

Full Test   Sonosite: TEE
S   ☑
C   TEST FAILED   ☑
B   Leakage too High   ☑
P   Limit: 100 µA   ☑
Reading: 107 µA

Quantitative Mode & Pass/Fail Mode

**Test your TEE Transducers While
They are being Disinfected in a Commercial Cleaner**

Ultrasound Transducer Adapter

ULT-PC-30

Ultrasound Transducer

Commercial Ultrasound Cleaning System Soak Tube

BC Biomedical ULT-2000
Ultrasound Transducer Leakage Current Tester
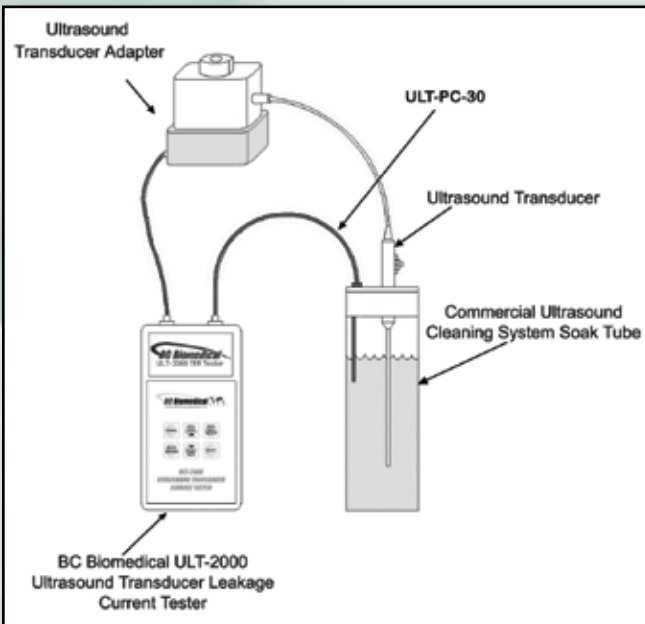
**BC20-42332
Optional ULT-2000
Printer Kit**

SPECIFICATIONS

Source Voltage	90 to 275 VAC, ± 1% FS
Leakage Current	0.50 to 10.00 µA, ± 0.5 µA 10 to 250 µA, ± 1% FS 250 to 500 µA, ± 1% FS
Conductivity Current	0.5 to 500 µA, ± 1% FS
Display	LCD Graphical w/Backlighting 128 x 64 Pixels
Setup Memory	EEPROM, All Parameters
Memory Retention	10 years w/o Power
Operating Range	15 to 30 °C (59 to 86 °F)
Storage Range	-40 to 60 °C (-40 to 140 °F)
Construction	Enclosure - ABS Plastic Face - Lexan, Back Printed
Size	7.27 x 3.97 x 1.80 Inches (184.7 x 100.8 x 45.7 mm)
Weight	< 1.1 lbs (0.68 kg)
Power Consumption	On: < 300 mA Off: < 250 µA
Battery	9V Lithium (ANSI/NEDA 1604LC or equivalent)
Battery Life	Continuous: > 100 Full Tests (Note: Backlight set to OFF) OFF: > 1 Year
Battery Eliminator (Included)	BC20-21111 Battery Eliminator (Universal)

**Typical Test Setup for Testing Your Ultrasound Transducers
with a Transducer-Specific Adapter & a Soak Tray.**

Dual Conductivity Probe (Short)

Soak Tray

Ultrasound Transducer

BC Biomedical ULT-2000

BC Biomedical Transducer Adapter

ULT-PA-29 Adapter

Ultrasound Transducer Adapter Cross Reference

BC Adapter Part #	Manufacturer	Transducer Compatibility	Ultrasound Platform	Connector Key
ULT-PA-10	Siemens/Acuson	V5M (TEE), V7M (TEE), EV8-C4, etc	Acuson Sequoia Ultrasound Systems	Micro-pinless (small pcb)
ULT-PA-11	SonoSite	ICT7-4, ITC8-5, C60, L38/10-5, TEEx	Sonosite Titan and Micromaxx Ultrasound Systems	Micro-pinless (small pcb) 156-pin ZIF
ULT-PA-12	Siemens	6.5EV13, EC9-4, etc	Call for Details	260-pin ZIF
ULT-PA-13	Siemens/Acuson	Siemens/Acuson 156-pin and V510B Transducers, and ATL UM4, UM9 and 5Mhz Bi-plane	128XP	156-pin ITT Cannon ZIF
ULT-PA-14	Philips/ATL	HP/Agilent/Philips 21311A, 21369A, 21378A, 21381A	HP Sonos 4500, 5500,7500, and Imagepoint; ATL HDI 1500,3000,3500, and 5000	260-pin ZIF
ULT-PA-16	GE	GE LogiQ 3, 5, 7, 9 and GE Vivid 3, 5, 7, 6T, 9T	LOGIQ, Vivid & GE P9603AU	260-pin ZIF
ULT-PA-17	Philips/ATL Mindray	Philips iE33 and iU22 diagnostic TEE - S7-2 (TEE), S7-3t (TEE), S3-1, C8-4v, C9-5, et all with bellhousing- Mindray DC8	iE33/iU22	260-pin ZIF
ULT-PA-18	Philips/HP	HP/Agilent/Philips 21202A, 21364A, 21365A, 21366A, 21367A	Call for Details	156-pin ZIF

Ultrasound Transducer Adapter Cross Reference

BC Adapter Part #	Manufacturer	Transducer Compatibility	Ultrasound Platform	Connector Key
ULT-PA-19	Philips Mindray	Mindray M9, M7, TE7 Philips Sparq, CX50, Affiniti 50, Affiniti 70, Epiq 5, Epiq 7	Sparq, CX50, Affiniti 50, Affinity 70, EPIQ 5, EPIQ 7	260 pin micro zif
ULT-PA-20	Acuson/Toshiba	Acuson/Toshiba (for use with Acuson/Siemens XP, Aspen, Capasee, 3-Needle Guide C3 Transducers; ATL 3.5 DFT Transducers; Toshiba PSF-37HT and F Series Transducers)	Toshiba SSH-140A, SSA-270A, and 340A systems	156-pin ZIF
ULT-PA-21	Hitachi	HI VISION 900, 5500, 6500, 8500, EUB-2000, EUB-525, EUB-405 Plus	EUP-ES52M, EUP-Series Probes in general	260-pin ZIF
ULT-PA-22	Ultraschallkopf - Aloka	UST-934N/9395, UST-945BP/945BP, ASU-32-3-M, ASU-32-WSJ, UST-556/5512, UST-5514DTU	SSD-620, SSD-650	260-pin ZIF
ULT-PA-23	ALL	ALL Transducers	All Platforms	ALL Configurations
ULT-PA-24	Philips/ATL	T6210, L7-4 and similar 260-pin transducers with bellhousing	Call for Details	260-pin ZIF
ULT-PA-25	GE	LogiqBook Probes - GE VIVID I 6T, 9T, etc.	Vivid	260 pin micro zif
ULT-PA-26	Acuson Toshiba	PET-512MC, Artida, Aplio XG, Aplio MX, Aplio 80, Aplio 50, Aplio 300, Aplio 500, Aplio XV, Nemio XG, Viamo, Xario XG, and Xario	Antares	360-pin ZIF
ULT-PA-27	GE	YMS/RT (for use with GR YMS/RT Transducers)	Call for Details	156-pin ZIF
ULT-PA-29	Zonare	E9-4	All Zonare Platforms	168-pin Proprietary Custom Connector
ULT-PA-30	GE Vivid E9	4C-D, 6VT-D, Voluson E8, Vivid E9	Call for Details	408 Pin ZIF connector, With Shutters

Ultrasound Leakage Tester Series

"Soft Touch" ULT Adapter Family Continues to Grow

"The BC Biomedical ULT-2020 current leakage tester with the ULT-PA-19 adapter have been validated by Philips Ultrasound for use with the X7-2t, S7-3t, and S8-3t compact connector TEE transducers."

Old Rubber Pad

New "Soft Touch" Connector

Did you know that all ultrasound transducer adapters are not created equally? There are basically two types of adapters available in the market today. The traditional adapters available from other manufacturers utilize a conductive rubber pad within a rigid body that captures the center mounting post of the transducer and pushes the pins of the transducer electrical connector into the surface of this relatively rigid conductive rubber pad. This action creates stress on the individual pins of the transducer connector and can actually bend or break pins under certain conditions.

Ultrasound manufacturers are aware of the existence of this type of adapter, and they will typically not provide warranty repairs to transducers with bent or broken pins caused by the use of these adapters. In fact, most ultrasound manufacturers frown upon the use of this type of adapter because of the physical stress placed upon the pins of the electrical connector. Replacement of a transducer electrical connector due to bent or broken pins can be a very costly experience.

The ULT line of second generation "Soft Touch" transducer adapters, available from BC Group International, completely eliminates the possibility of costly damage. Our second generation adapters utilize the actual multi-pin mating connector for the ultrasound transducer to be tested. The transducer electrical connector is subjected only to the same level of insertion and locking force that is normally seen when the transducer is connected to the ultrasound machine. There are no other undesired mechanical forces on the transducer electrical connector, or the individual pins within it. So why not take steps to avoid unnecessary and costly transducer electrical connector damage as a result of using older generation adapters? Second generation improved design adapters are now available from BC Group International.

Ultrasound Transducer Adapter Reference

ULT-PA-10	**ULT-PA-11**	**ULT-PA-12**	**ULT-PA-13**
ULT-PA-14	**ULT-PA-16**	**ULT-PA-17**	**ULT-PA-18**
ULT-PA-19	**ULT-PA-20**	**ULT-PA-21**	**ULT-PA-22**
ULT-PA-23	**ULT-PA-24**	**ULT-PA-25**	**ULT-PA-26**

ULT-PA-27	**ULT-PA-29**	**ULT-PA-30**

Conductivity Probes

ULT-PC-10	**ULT-PC-15**	**ULT-PC-20**	**ULT-PC-25**	**ULT-PC-30**

CE

Ultrasound Wattmeters

Features - USP-100SP

◈ **Digital Reading**

◈ **Continuous or Pulsed Power**

◈ **Integrated Carrying Case**

◈ **0.2 to 30.0 Watts Range**

◈ **Accuracy = ± 3%+One Count Reading**

◈ **0.5 to 10 MHz Frequency Response**

◈ **3" Max Transducer Diameter**

◈ **Built-in Transducer Holder**

◈ **Degassed Water is the Testing Medium**

◈ **Line Power or Battery Operation**

Features - USP-50SP

◈ **Digital Reading**

◈ **0 to 30 Watts Range**

◈ **± 3% + One Count Accuracy**

◈ **2.5 Second Integration**

◈ **0.05 Watt Display Sensitivity**

Features - USP-30

◈ **Analog Reading**

◈ **0.15 to 30.0 Watts Range**

◈ **Continuous or Pulsed Power**

◈ **1 to 10 MHz Frequency Response**

◈ **Integrated Carrying Case**

◈ **Built-in Transducer Holder**

USP-100SP

The USP-100SP Ultrasound Power Meter was developed to test therapeutic transducers according to AIUM, JCAHO, FDA and NIST guidelines. The compact and light weight USP-100SP meets all the requirements of a portable test instrument with the reliability and proven performance of the Series.

The USP-50SP is designed to measure the ultrasound power output of diagnostic or therapeutic transducers up to 30 watts. The water tank requires only one pint of de-gassed distilled water. If de-gassed water is not available, use distilled water. The principle of measurement is the radiant force method.

The USP-30 is designed to measure the ultrasonic power output of diagnostic or therapeutic transducers up to 30 Watts using the radiation force balance method. The USP-30 consists of a precision mechanical balance, which measures from 0.01 to 10.00 grams, a conical target suspended on a triangular hanger, a water tank, a transducer support rod with clamp and a carrying case. The transducer to be tested is center mounted over the conical target with the transducer's radiating area immersed facedown in the water medium. This system provides a sturdy instrument with good measurement accuracy and economical cost.

USP-100SP Specifications

Measure Range	0.2 to 30 Watts
Resolution	± 200 mW
Accuracy	± 3% +One Count Reading
Transducer Frequency	0.5 to 10 MHz
Maximum Transducer Diameter 3"	
Test Medium	Degassed, distilled water at normal room temp
Stabilization Time	2.5 sec
Display	3-Digit LCD, 1.3" High
Line Power	120 or 240 VAC Plug-in AC Adapter
Battery	4-AA, 20 hrs. continuous battery life
Dimensions	8.5" H x 12" L x 8.75" W
Weight	11 Lbs

USP-50SP Specifications

Power Range	0 to 30 Watts
Resolution	+ 50 mW, ± .01 gram
Minimum Detectable Power	0.05 Watts
Display Sensitivity	0.05 Watts
Accuracy	± 3% @10 Watts
Stabilization	2.5 Second Integration
Maximum Transducer Diameter	4 1/2" Inches
Transducer Operating Frequency	0.5 to 10 MHz
Test Medium	Degassed Water
Display	7 segment 6 Digit 0.6" (15mm) high LCD
Battery	4-AA: battery life over 40 hrs.; "Lo-Bat" Indicator
Power Supply	120 VAC to 12 VAC 500 mA adapter with 6 Ft. cord
Dimensions	7.0" H x 10.5" L x 8.5" W
Weight	10 Lbs

USP-30 Specifications

Power Range	150 mW to 30 Watts
Resolution	± 150 mW
Minimum Detectable Power Level	± 150 mW
Minimum Accuracy	± 5%
Expected Accuracy	± 4%
Display	Vernier Dial
Display Sensitivity	± 0.01g or ± 150mW
Zeroing Method	Manually Adjusted
Test Tank Lining	0.5" neoprene rubber
Test Medium	Degassed, distilled water at normal room temp
Test Tank Liquid Capacity	1,350 mL
Test Tank Dimensions	Outside 5.75" Dia. x 5.55"
Inside	4.5" Dia. x 5.25" D
Cone Target	3.5" Dia. x 2" H
Dimensions(w/Case)	19" H x 17" L x 7" W
Power	Not required
Weight(w/Case)	18 Lbs

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Dew Point Meter

CE

Dew Point Meter
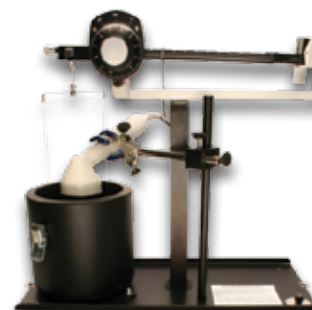
Features - AMM-15

◇ **Microprocessor-Based Portable Battery Operated Instrument**

◇ **Digital Display - 40 to +80 °F Dew Point**

◇ **± 2 °F From + 20 to +80 °F Dew Point**

◇ **± 4 °F From - 40 to +20 °F Dew Point**

◇ **Samples Compressed Air Up to 120 PSIG and 185 °F**

◇ **Quick Connect Fittings, Connection Tubing and Other Adapters Supplied**

◇ **Utilizes Connect Fittings, Filter, Connection Tubing and Other Adapters Supplied**

◇ **Utilizes HC-610 Thin Film Polymer Integrated Water Vapor Sensor**

◇ **RS-232 Computer Interface, Data Logger**

◇ **Logs 2,860 Readings, Selectable Logging Rate**

AMM-15

AMM-15 portable Dew Point Meter(Air-Line Moisture Monitor) is designed to measure the performance of drying systems for air, nitrogen and other compressed gases.

The model AMM-15 measures dew point by utilizing microprocessor circuitry to convert the voltage output of OHMIC's HC-610 precision water vapor sensor and a temperature sensor to dew/frost point temperature by the use of psychrometric equations. Assembled in a rugged hand-held ABS plastic enclosure and equipped with quick disconnect tubing couplings and an internal sensor manifold. An orifice maintains line pressure for true pressure dew point readings. Air or industrial gases are sampled from receivers, pipes, and hoses up to 120 PSIG and 185 °F.

In addition, heat sink tubing is available for sampling from drying systems and ovens up to 550 °F (depending on ambient temperature). The AMM-15 can also be connected to a vacuum pump for sampling from piping, ovens, tanks or manifolds operating at ambient or low pressure.

AMM-15 SPECIFICATIONS

Water Vapor Sensor	HC-610 (Integrated Thin Film Polymer)
Temperature Sensor	10K NTC Thermistor
Dew Point Range	-40 to 80 °F (-40 to 27 °C)
Dry Bulb Temperature Range	0-200 °F (-18 to 93 °C)
Dew Point Accuracy	±4 °F Dew point from -40 to 20 ºF ±2 °F Dew point from 20 to 80 ºF
Dry Bulb Accuracy	±1 °F (-17.2 °C)
Maximum Inlet Temperature	185 °F (85 °C)Heat Sink Tubing Permits Maximum Inlet Temperature to 550 ºF (288 °C) (depending on ambient temp.)
Sensor Response Time	10 Seconds for 63% Step Change
Display Type	3-1/2 Digit LCD; 0.5"
Analog Outputs	0 to 1 VDC
Power	6 VDC, (4) AA Batteries & 120 VAC Adapter
Battery Life	35 Hours Nominal
Inlet Sample Port	Quick Disconnect for 1/4" OD Tubing
Inlet Pressure	120 PSIG Max
Computer Interface	Bi-Directional RS-232. ASCII Delimited Format, 9600 Baud, 8 Bits, 1 Stop, 1 Start, No Parity
Software Required	HyperTerminal or PROCOMM
Data Logger	32 KByte, Non-Volatile Memory
Internal Clock	MM:DD:YY HH:MM:SS Military Time Format
Dimensions	8.25" x 4.0" x 1.6", ABS Plastic Enclosure
Weight	2 Lbs Net (0.9 Kg)

ORDERING INFORMATION

AMM-15: Portable Dew-Point Meter/Logger with carrying case, connection parts, filter, 120 Vac adapter.

In addition, OHMIC Instruments has dew/frost point station monitoring units with alarm features, portable dew point monitors with built-in sampling pumps, and kits for economically testing and installation in OEM dryer panels.

Dew Point Meter

Anesthetic Agent Analyzer

Features - AA-2005

◈ **State-of-the-art non-dispersive infrared (NDIR) technology identifies and measures five anesthetic agent gases:**

Halothane, Enflurane, Isoflurane, Desflurane, and Sevoflurane

◈ **Also measures O_2, CO_2, and N_2O**

◈ **Automatic or manual modes**

◈ **Gas flow sampled at 100, 150 and 200 mL/min**

◈ **Measurement accuracy is not affected by alcohol or ketones**

◈ **Fast warm-up time ensures full accuracy within minutes**

◈ **Auto-calibration**

◈ **Bright, real-time display of waveforms and numerical values provided**

◈ **Lightweight, portable design provides flexible workspace options**

◈ **Service tool for anesthesia service application (NOT FOR CLINICAL USE)**

◈ **VSI-1466 Now Available**

AA-2005

A powerful monitoring tool – proprietary state-of-the-art digital 5-agent gas analysis technology. Versatile, reliable, and incredibly compact. Designed for testing Anesthetic vaporizer output concentration in hospitals and outpatient surgical centers.

The system's reliable performance, ease of use, flexible design, and affordable cost makes it the ideal service tool for anesthesia service applications in hospitals and surgical centers.

• Automatically identifies and quantifies five anesthetic agents.

• Detects and quantifies mixed agents.

• Compatible with color VGA displays and has large screen output capability.

SPECIFICATIONS

Gas Monitoring	
Method:	Sidestream; Non-dispersive; infrared (NDIR)
Identified Gases:	Halothane, Enflurane, Isoflurane, Desflurane, Sevoflurane, CO_2, N_2O, Oxygen
Concentration Units:	Vol%, Torr, kPa, mmHg
Flow Rates:	100 ml/min, 150 ml/min, 200 ml/min

Agent Detection	
Measurement Range:	Halothane: 0 to 10%
	Enflurane: 0 to 10%
	Isoflurane: 0 to 10%
	Desflurane: 0 to 20%
	Sevoflurane: 0 to 10%
	CO_2: 0 to 12.5%
	N_2O: 0 to 99%
	Oxygen: 0 to 100%
Measurement Accuracy:	Agents: ± 0.1% abs. + 4% reading
	CO_2: ± 0.2% abs. or 4% of reading
	N_2O: ± 1.5% abs. + 4% of reading
	Oxygen: ± 3 vol% (for 0-90%), ± 4 vol% (for 91-99%)
Time to Detect Agent:	< 15 seconds @ 200ml/min
Agent Detection Resolution:	0.1 Volume Percent
Mixed Gas Threshold:	0.2 vol. % +10% of total concentrations
Rise Time:	Agents: 450 msec
	CO_2: 350 msec
	N_2O: 400 msec
	Oxygen: 600 msec

Respiration Rate	
Range:	1 to 60 breaths/minute
Accuracy:	± 2 breaths/minute or 2% of reading

System Features	
Occlusion Clearing:	Automatic
Auto Zeroing:	Occurs 30 to 60 minutes. Duration: 3.0 to 7.0 seconds. Manual user calibration not required. Temperature stabilized optical assembly. Auto-calibration; verification recommended every 6-months.
Warm-up Time:	1 minute to first waveforms; < 20 minutes to full accuracy

Display	
Main Display:	Active color TFT
Size:	5.5" Display Area
Resolution:	Internal Display; 320 x 240 pixels
External Video:	640 x 480 pixels
Number of Traces:	3 maximum

Controls	
Keys:	7; membrane-activated
Rotary knob:	Push and rotate; 24 steps/turn

System Outputs	
Com Ports:	Com 1; RS-232-compatible, Serial DB-9.
	Com 2; Serial/Analog, mini-DIN8
Video Port:	Color VGA compatible, High Density D-Sub 15

Alarms	
Alarm Characteristics:	EN 475, Adjustable; with audible and visual indications.
Alarm Levels:	High, Medium, Low, Informational
Alarm Modes:	Adult/Pediatric/Neonate High and low limit settings for each mode.

Trends	
Memory:	24 hours of stored data, History available with external VGA display.
Display:	Tabular, Graphical

Power Requirements	
Voltage:	100, 120, 220, 240 VAC; 50/60 Hz
Power Consumption:	40 W, typical
Battery:	NiMH; Life: 1 hour, typical; Recharge time: 3 hours

Mechanical	
Weight:	≤13 Lbs (5.9 kg)
Size:	16.5cm (H) x 27.9cm (W) x 30.5cm (D); 6.5" (H) x 11.0"(W) x 12.0" (D)

Environmental	
Operating Temperature:	15 to 35 ºC; 59 to 95 ºF
Storage Temperature:	-5 to 50 ºC; 23 to 122 ºF
Operating/Storage Humidity:	15% to 95%, noncondensing
Altitude:	-300m to 3000m (-1,000 to 10,000ft.)
Type of Protection:	Class I Equipment
Degree of Protection:	Type CF, Defibrillator-proof
Protection against ingress:	Ordinary

Anesthetic Agent Analyzer

Multi-Gas Analyzer

Features - MGA-3050

◈ **Displays anesthetic agent output in percentage values**

◈ **Easy-to-use**

◈ **Fast response time**

◈ **Very compact**

◈ **Connects directly to common gas outlet**

MGA-3050 Multi-Gas Analyzer

The MGA-3050 Multi-gas Analyzer connects to any PFC-3000 series Flow Analyzer and is used to measure anesthetic agent concentrations for testing purposes.

The MGA-3050 measures Halothane, Enflurane, Isoflurane, Sevoflurane and Desflurane in percentage values. The MGA-3050 also measures percentage values of CO_2 and N_2O. The MGA-3050 is an excellent instrument for performing vaporizer efficacy tests, but a PFC-3000 series unit is required, since it uses its display to show measurement values.

		Range	Accuracy
Measurements	CO_2	0 - 10%	± (0.2% ABS + 2% REL)
		10 - 20%	± (0.3% ABS + 4% REL)
	N_2O	0 - 100%	± (2% ABS + 2% REL)
	HAL, ISO, ENF	0 - 8%	± (0.15% ABS + 5% REL)
		8 - 12%	± (0.2% ABS + 10% REL)
	SEV	0 - 10%	± (0.15% ABS + 5% REL)
		10 - 15%	± (0.2% ABS + 10% REL)
	DES	0 - 22%	± (0.15% ABS + 5% REL)
		22 - 25%	± (0.2% ABS + 10% REL)
Response Time	CO_2 < 90 ms, N_2O, AA < 300 ms, O_2 < 300 ms		
Monitoring	Numerical data available with the Flow Analyzer		
	Numerical data and real-time curves available with FlowLab software		
	Interface	through RS-232 port	
Physical Data	Weight	< 25 g (excluding cable)	
	Size	1.49 x 1.14 x 1.22 inches (38 x 29 x 31 mm)	
Environmental Data	Operating	10 - 40 °C (50 - 104 °F)	
	Storage	-20 - 50 °C (-4 - 122 °F)	
	Humidity	10 - 95%, non-condensing	
	Atm. pressure	700 - 1200 mbar (3048 m)	
Compliance and Approvals	CE marked according to the 93/42/EEC MDD		
	ISO 11196:1997, EN 864:1996, EN 12598:1999 ISO/DIN 21647:2003,		
	ISO 7767, ASTM-F 1452-92, ASTM-F 1456-92 and ASTM-F 1462-93		

Multi-Gas Analyzer

Respiratory Parameters

16 respiratory parameters can be calculated including PEEP, VTI and Compliance.

Bidirectional Flow Measurement

Two measuring ports evaluate flow, pressure, temperature, humidity and O_2

Pressure Measurements

All pressure information included with up to 6 different pressure sensors.

Gas Standards

13 gas standards and 10 gas types adapt the unit to the tested device.

RT-200 Emulation Mode

The RT-200 emulation mode simulates the RT-200 operating mode while offering a contemporary replacement.

Data Storage

Internally stores all measured and respiratory parameters in order to simplify the testing procedure.

Battery Operation

Convenient and independent work when you are on the go.

USB, RS-232 and External Trigger

Communicates with your test software and ventilator.

Optional Multi-Gas Analyzer

The optional MGA-3050 Sensor offers instant gas concentration measurements of CO_2, N_2O, Halothane, Enflurane, Isoflurane, Sevoflurane and Desflurane.

PFC-3000

The PFC-3000 series of instruments measures flow, pressure, temperature, humidity and O_2 concentrations bidirectionally. The one-of-a-kind Adult, Pediatric and High Frequency ventilation measuring modes make the PFC-3000 the ideal calibration tool for all ventilators, anesthesia machines and spirometers.

The PFC-3000 distinguishes itself from other calibration tools by combining a simple, intuitive, multilingual user interface with the highest precision. With the push of a button, all measured values can be stored directly on the PFC-3000 and later retrieved for documentation purposes.

SPECIFICATIONS

		Range	Accuracy	PFC-3000A	PFC-3000V	PFC-3000L
Flow & Pressure Measurements		Range	Accuracy			
Flow	Measuring direction	bidirectional		•	•	•
	Temperature compensated	yes		•	•	•
	Pressure compensated	yes		•	•	•
	Humidity compensated	yes		•	•	•
	O2 compensated	yes		•	•	•
	High	± 300 L/min	± 1.75%* or ± 0.1 L/min**	•	•	•
	Low	± 20 L/min	± 1.75%* or ± 0.04 L/min**	•	•	•
Pressure	High	0 – 145 PSI	± 1%* or ± 0.15 PSI**	•	•	•
	Average	± 112.5 mmHg	± 0.75%* or ± 0.08 mmHg**	Differential	Relative	Relative
	Low	0 – 3.75 mmHg	± 1%* or ± 0.01 mmHg**			•
	High Flow Port	0 – 112.5 mmHg	± 0.75%* or ± 0.08 mmHg**	•	•	•
	Barometer	0 – 862.5 mmHg (abs)	± 1%* or ± 3.75 mmHg**	•	•	•
	Vacuum pressure	± 750 mmHg	± 0.5%* or ± 1.5 mmHg**		•	
Measuring unit	Flow	L/min, L/s, cfm, mL/min, mL/s		•	•	•
	Pressure	bar, mbar, cmH$_2$O, inH$_2$O, Torr, inHg, hPa, kPa, mmHg, PSI		•	•	•
Additional Measuring Values		Range	Accuracy			
Oxygen	Concentration	0 - 100%	± 1% O2**	•	•	•
	Pressure compensated	yes		•	•	•
Temperature	High Flow Port	0 - 50°C	± 1.75%* or ± 0.5°C**	•	•	•
Dew point	High Flow Port	-10 - 50°C	± 2%* or ± 1°C**	•	•	•
Air humidity	High Flow Port	0 - 100%RH	± 3%**	•	•	•
CO2	Concentration	0 - 10%	± (0.2% ABS + 2% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
		10 - 20%	± (0.3% ABS + 4% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
N2O	Concentration	0 - 100%	± (2% ABS + 2% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
HAL, ISO, ENF	Concentration	0 - 8%	± (0.15% ABS + 5% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
		8 - 12%	± (0.2% ABS + 10% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
SEV	Concentration	0 - 10%	± (0.15% ABS + 5% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
		10 - 15%	± (0.2% ABS + 10% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
DES	Concentration	0 - 22%	± (0.15% ABS + 5% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
		22 - 25%	± (0.2% ABS + 10% REL)	w/ MGA-3050	w/ MGA-3050	w/ MGA-3050
Gas types		Air, Air/O$_2$, N$_2$O/O$_2$, Heliox (21% O$_2$), He/O$_2$, N$_2$, CO$_2$, customized gas types		•	•	•
Gas Conditions		ATP, ATPD, ATPS, AP21, STP, STPH, BTPS, BTPD, 0/1013, 20/981, 15/1013, 25/991, 20/1013		•	•	•
Respiratory Parameters		Range	Accuracy			
Rate		1 - 1000 bpm	± 2.5%** or ±1 bpm	•	•	•
Time	T$_I$,T$_E$	0.05 - 60 s	± 0.02 s	•	•	•
I:E ratio		1:300 - 300:1	± 2.5%*	•	•	•
Ti/Ttotal		0 - 100%	± 5%*	•	•	•
Breath volumes	Vti, Vte(@Flow Low)	± 10 L	± 1.75%* or ± 0.10 mL(>2.4 L/min)	•	•	•
	Vti, Vte(@Flow High)	± 10 L	± 1.75%* or ± 0.20 mL(>6.0 L/min)			
Minute volumes	Vi, Ve	0 - 300 L/min	± 2.5%* or ± 20 mL/min(High) ± 10 mL/min(low)	•	•	•
Pressure	P$_{peak}$, P$_{mean}$, P$_{EEP}$, P$_{plateau}$	0 – 152.96 cmH2O	± 0.75%* or ± 0.1 cmH2O**	•	•	•
Peakflow	Peakflow Insp./Exp.	± 300 L/min	± 1.75%* or ± 0.1 L/min**	•	•	•
Compliance	C$_{stat}$	0 - 1000 mL/mbar	± 3%* or ± 1 mL/mbar**	•	•	•
Trigger	Adult, Pediatric, HFO	Adjustable on flow or pressure curves with user-defined limits.		•	•	•
General Information						
Electrical & Physical Data	AC input	100 - 240 VAC, 50/60 Hz		•	•	•
	Battery (lead rechargeable battery)	3 hrs (with MGA-3050 2 hrs)		•	•	•
	Power consumption	25 VA(W)		•	•	•
	Weight	<8.5 Lbs (3.8 kg)		•	•	•
	Dimensions (w x d x h)	8.67 x 9.84 x 4.72 inches (220 x 250 x 120 mm)		•	•	•
Data Storage		all parameters (measured as well as respiratory values)		•	•	•
Display	Graphic display	Intuitive user interface with numerical measuring values, statistics, volume trigger configuration, gas type selection and calibration menus.		•	•	•
Communication Interfaces		USB for Windows Software FlowLab, Interfaces RS-232 for individual communication, TTL for external trigger.		•	•	•
Calibration		annually		•	•	•
Conditions	Ambient temperature	15 - 40 °C (59 - 104 °F)		•	•	•
	Humidity	10 - 90% RH, Non-condensing		•	•	•
Approvals		CE, CSA		•	•	•

Legend
* Tolerance related to the measured value
** Absolute tolerance (Whichever is greater)

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Benchtop Flow Analyzer

TSI Certifier® FA Plus Ventilator Test System

CE

Certifier® FA Plus is the full-feature system capable of testing virtually all models of ventilators: adult, pediatric, anesthesia, neonatal and high-frequency.

Highlights

◈ **Color touch screen graphical user interface**

◈ **Real-time graphing mode**

◈ **Bi-directional flow measurement**

◈ **Data storage using SD Flash card and internal memory**

◈ **Access stored data through USB interface**

◈ **Report printing capability**

◈ **Rechargeable battery plus AC operation**

Test Parameters

◈ **Flow**

◈ **Peak & Minimum Flow**

◈ **Volume (Inhaled and Exhaled)**

◈ **Minute Volume**

◈ **Low Pressure (Differential)**

◈ **Peak & PEEP Pressure**

◈ **Mean Airway Pressure**

◈ **High Pressure**

◈ **Barometric Pressure**

◈ **Inspiratory Time**

◈ **Expiratory Time**

◈ **I:E Ratio**

◈ **Respiratory Rate**

◈ **Flow & Volume modes - STP, ATP, BTPS, BTPD, plus user-defined**

◈ **Oxygen Concentration (with optional 4073 Kit)**

Handheld Flow Analyzer

TSI Certifier® FA Plus

Certifier® FA Plus Ventilator Test System 4080 can also test a variety of other medical equipment such as anesthesia gas delivery machines, insufflators and oxygen concentrators. Its compact size makes this ventilator tester ideal for use in field service, biomedical shops,and manufacturing.

The fast response and bi-directional sensing sensors makes the Certifier® FA Plus Ventilator Test Systems 4080 capable of testing all types of ventilators including neo-natal and high frequency. This ventilator tester is designed to measure air, oxygen, and nitrous oxide flow and pressure in institutional, home care, field service, laboratory, and production applications.

Optional LS-2000A Lung Simulator

Certifier® FA PLUS	Gas/Mode	Range	Accuracy**
Flow—High Flow Module	Air, O_2	-200 to +300 slpm*	±2% or ±0.075 slpm
	Air/O_2 Mixtures	0 to 300 slpm	±4% or ±0.1 slpm
	N_2	-200 to +300 slpm	±3% or ±0.1 slpm
	CO_2	-40 to +40 slpm	±3% or ±0.1 slpm
Flow—Low Flow Module	Air, O_2	0.01 to 20 slpm	±2% or ±0.01 slpm
	N_2, CO_2	0.01 to 20 slpm	±3% or ±0.01 slpm
	N_2O	0.01 to 20 slpm	±4% or ±0.025 slpm
Volume-High Flow-Inhaled	Air, O_2	0.01 to 10 liters STP	±2% Plus 0.02 liters
	Air/O_2 Mixtures	0.01 to 10 liters STP	±4% Plus 0.02 liters
Volume-High Flow-Exhaled	Air, O_2	0.01 to 10 liters STP	±3% Plus 0.03 liters
	Air/O_2 Mixtures	0.01 to 10 liters STP	±4% Plus 0.04 liters
Volume-Low Flow-Inhaled	Air, O_2	0.01 to 10 liters STP	±2% or ±0.01 liters
	N_2O	0.01 to 10 liters STP	±4% or ±0.01 liters
Minute Volume-High Flow	-	0.01 to 100 liters STP	±3%
Minute Volume-Low Flow	-	0 to 10 liters STP	±3%
Respiratory Times	Ti, Tip, Te	0.04 to 30 seconds	±2% or ±0.01 seconds
I:E Ratios	I:E, I:Eip	1:100 to 100:1	±4%
Respiratory Rate	f	1 to 1500 breaths per minute	±2% or 0.1 bpm
Low Pressure	All	-25 to +150 cmH$_2$O	±0.5% or ±0.15 cmH$_2$O
High Pressure	-	-10 to +150 PSI (-0.7 to 10 bar)	±1% or 0.1 PSI (7 mbar)
Barometric Pressure	-	7 to 23 PSI (500 to 1600 mbar)	±0.16 PSI (11 mbar)
Oxygen Concentration	-	21% to 100%	2% of concentration

*slpm = Standard Liters per Minute **Accuracy stated as a percent of reading at TSI standard gas conditions.

Certifier® FA Plus
Model   *Description*
4080   High-Flow Standard Kit

Optional Modules and Accessories
Model   *Description*
4073   Oxygen Sensor Kit
PSR-11-917-J   Replacement Oxygen Sensor
4082   Low-Flow Module

Part #   *Description*
1208061   Extra battery pack and charger kit
1303860   Printer cable
1602342   Low Flow Filter
BC20-40702   High Flow Filter

4080 High-flow test system
4082 Low-flow kit (sold separately)

Handheld Flow Analyzer

TSI Certifier® FA Ventilator Test System

$C\epsilon$

Certifier® FA is a low-cost test system capable of testing multiple parameters of ventilator performance.

Highlights

◈ **Simple, easy to read, user interface**

◈ **Backlit LCD display**

◈ **Entire kit weighs less than 3 Lbs (1.4 kg)**

◈ **Volumes and flow in BTPS, ATP, or STP**

◈ **Powered by 4-AA Alkaline Batteries**

Test Parameters

◈ **Flow**

◈ **Peak Flow**

◈ **Volume**

◈ **Stacked Volume**

◈ **Minute Volume**

◈ **Low Pressure**

◈ **Peak & PEEP Pressure**

◈ **Barometric Pressure**

◈ **Inspiratory Time**

◈ **I:E Ratio**

◈ **Respiratory Rate**

◈ **Oxygen Concentration (with optional 4073 Kit)**

Handheld Flow Analyzer

Respiratory Ventilator Test System

The Certifier® FA Ventilator Test System 4070 is designed to measure air, oxygen, and nitrous oxide flow and pressure in institutional, home care, field service, laboratory, and production applications. The Certifier® FA ventilator test system is a battery-operated flow analyzer that can also test a variety of other medical equipment, such as anesthesia gas delivery machines and oxygen concentrators.

Their compact size makes these ventilator testers ideal for use in field service, biomedical shops, and manufacturing.

Displays 2 test parameters

Specifications

Certifier® FA	Gas	Range	Accuracy**
Flow—High Flow Module	Air, O_2	0 to 300 slpm*	±2% or ±0.075 slpm
	Air/O_2 Mixtures	0 to 300 slpm	±4% or ±0.1 slpm
Flow—Low Flow Module	Air, O_2	0.01 to 15 slpm	±2% or ±0.01 slpm
	N_2O	0.01 to 15 slpm	±4% or ±0.025 slpm
Volume-High Flow-Inhaled	Air, O_2	0.01 to 10 liters STP	±2% Plus 0.02 liters
	Air/O_2 Mixtures	0.01 to 10 liters STP	±4% Plus 0.02 liters
Volume-Low Flow-Inhaled	Air, O_2	0.01 to 9.999 liters STP	±2% or ±0.01 liters
	N_2O	0.01 to 10 liters STP	±4% or ±0.01 liters
Minute Volume-High Flow	-	0.01 to 99 liters STP	±7%
Minute Volume-Low Flow	-	0 to 9.999 liters STP	±7%
Inspiratory Time	-	0.25 to 60 seconds	±0.01 seconds
I:E Ratio– High Flow	-	1:100 to 100:1	±5%
I:E Ratio– Low Flow	-	1:15 to 15:1	±5%
Respiratory Rate	-	0.5 to 120 breaths per minute	±5%
Low Pressure	-	-25 to +150 cmH$_2$O	±0.75% or ±0.2 cmH$_2$O
Barometric Pressure	-	7 to 29 PSI (500 to 2000 mbar)	±0.16 PSI (11 mbar)
Oxygen Concentration	-	21% to 100%	2% of concentration

*slpm = Standard Liters per Minute **Accuracy stated as a percent of reading at TSI standard gas conditions.

Certifier® FA

Model   Description
4070   High-Flow Standard Kit

Optional Modules and Accessories
Model   Description
4073   Oxygen Sensor Kit
PSR-11-917-J   Replacement Oxygen Sensor
BC20-40701   Replacement Low Flow Filter
BC20-40702   Replacement High Flow Filter
4072   Low-Flow Module

Part #   Description
1319288   Hard shell carrying case

DPM-235175NNFC Digital Pressure Meter

Handheld Flow Analyzer

Lung Simulators

General Features

◇ Easy to Use

◇ Ultra-Portable (< 1 Lbs)

◇ Quick Disassembly

◇ Simple Design

◇ Replacement Parts Available

◇ All Components can be Sterilized

◇ Connects Directly to your Ventilator's Existing Tubing

LS-2000 Series Features

◇ Adjustable Compliance Settings

◇ Adjustable Resistance Settings

◇ Variable Leakage Valve

◇ Simple Design

◇ Fraction of the Price and Size of any Comparable Lung Sim

LS-1000E Features

◇ Unique Double-conus Connector (OD 22 conical, OD 15 conical)

◇ Unbeatable Simplicity & Price

LS-1000M Features

◇ Two Compliances

◇ Two Separately Adjustable Resistances

◇ Leak Simulator on Each Lung

Lung Simulators

LS-2000A, LS-2000I, LS-1000E

LS-1000M

LS-2000A, LS-2000I, LS-1000E, LS-1000M

BC Biomedical's Lung Simulator series is an affordable, ultra-portable and easy to maintain alternative to older models. The LS-2000(A/I) SmartLungs come in Adult and Infant models, offering all the performance and features of large and expensive test lungs in an compact, easy-to-use package. The LS-1000E EasyLung is a simple, low-cost, general purpose test lung with no variable controls. LS-1000M is the ideal tool to test neonatal and infant ventilators.

Models	LS-1000E	LS-2000I	LS-2000A
Use	General Purpose	Infant	Adult
Resistance	20 mbar/L/s	5, 20, 50, 200 mbar/L/s	5, 20, 50, 200 mbar/L/s
Compliance	25 mL/mbar (Vt = 500mL, PEEP = 0 mbar)	1, 2, 3, 5 mL/mbar	10, 15, 20, 30 mL/mbar
Volume	0-1000 mL (with 1L bag)	0-200 mL (with 0.5L bag)	0-600 mL (with 1L bag)
Leak	N/A	0-10 L/min	0-10 L/min
Weight	< 0.5 Lbs (0.23 kg)	< 0.7 Lbs (0.32 kg)	< 0.8 Lbs (0.36 kg)
Dimensions (LxWxH)	11.9" x 4.6" x 1.7" (302.3 x 116.8 x 43.7 mm)	10.7" x 4.6" x 1.6" (271.8 x 116.8 x 40.6 mm)	11.9" x 4.6" x 1.6" (302.3 x 116.8 x 40.6 mm)
Replaceable Components	Yes	Yes	Yes
Sterilizable	Yes	Yes	Yes

The BC Biomedical LS-1000E EasyLung is an affordable, versatile, general purpose test lung that provides a broad spectrum of benefits to the respiratory care field. It is ideal for ventilator manufacturers validating the safety of their products, for ventilator training and for biomedical engineers performing general service procedures. The EasyLung combines singular design with high-quality, replaceable parts. Its unique double-conus multi-connector also ensures a direct connection to all tubing systems.

The SmartLung is unbeatable in terms of price/performance ratio. Resistance (airway resistance), lung compliance and leakage are all adjustable. Its size eliminates the cumbersome side tables needed by large test lungs. Different bag sizes ensure that virtually all patient lungs can be simulated; from babies to adults. The SmartLung does not require any additional adapters and the leak simulation is infinitely adjustable.The SmartLung enables verification of premature baby ventilators as well as mask ventilation. Even the sensitive function of patient flow triggering can be tested with the SmartLung.

Lung Simulators

CE

These test lungs are manufactured in accordance with CE requirements.

Tachometer Series

CE

Applications

⬥ **Ideal for use in production, engineering, inspection, quality control and maintenance.**

Highlights

⬥ **Contact or non-contact measurement**

⬥ **Eight character display with floating decimal point**

⬥ **Sixteen units of measurement**

⬥ **Unit measure always displayed**

⬥ **Four memories (last, maximum, minimum and average)**

⬥ **Most significant display digit flashes to indicate need for battery**

Two models available:

⬥ **TC-1726 without calibration**

⬥ **TC-1726C with NIST calibration certificate**

TC-1726

The BC Biomedical Model 1726 handheld Digital Tachometer is a dual function instrument providing contact and non-contact measurement of rotational and linear motions, with an accuracy of ±0.025% of indicated reading ±1 LSD.

The Model TC-1726 comes complete with a convex tip, concave tip, 10 cm linear measuring wheel, 9V Alkaline battery, and carrying case.

The compact size and light weight of the TC-1726 makes for easy, one-hand operation while the rugged, high-impact housing provides for years of dependable service.

SPECIFICATIONS

Angular Velocity	< 100 Hz: ±(0.025% reading + 1 digit) 100 to 1000 Hz: ±(0.05% reading + 1 digit) >1000 Hz: ±(0.1% reading + 1 digit)
Linear Measurement	± 0.2% ± 1 LSD
Transducer	Built-in photoelectric transducer, 12" operating distance
Display	8 character dot matrix LCD, contrast is adjustable for different viewing angles, 3/8" character height
Contact Adapter	Utilizes interchangeable accessories. Convex tip, concave tip and 10 cm linear measuring wheel included
Battery	9V Alkaline battery (ANSI/NEDA 1604A or equivalent)
Low Battery Indicator	Most significant display character flashes to indicate need for battery replacement
Memory	Last reading, maximum, minimum and average
Dimensions Unit	7.65 x 3.83 x 1.84 Inches (194.3 x 97.3 x 46.7 mm)
Case	10.53 x 7.18 x 2.39 Inches (267.5 x 182.4 x 60.7 mm)
Weight	< 2 Lbs. (0.91 kg)
Operating Temperature	0 to 50 °C (32 to 122 °F)
Storage Temperature	-20 to 70 °C (-4 to 158 °F)
Humidity	< 95% R.H. , Non-condensing

Tachometer series

Contact measurements made by using standard accessories.

Standard Accessories

BC Group
YOUR ONE-STOP BIOMED SHOP

BC Group consists of three interlinking operations: **BC Biomedical**, **BC Marketplace** and **BC Service**. In January 2005, Lloyd Industries added Engineering, Design and Manufacturing capability when they purchased BC Group. With these new tools at our disposal, the list of BC Biomedical products has grown substantially, as is evident in the BC Biomedical portion of this catalog. In January 2009, BC Group moved all departments into one new facility, allowing us to better serve our customers. Additionally, we also have a sales office in Atlanta, GA. BC Group's growth has come from listening to customers and then providing what they want. BC Group is now the second largest manufacturer of Biomedical Test Equipment in the world and growing. We are truly your ONE-STOP BIOMED SHOP.

BC Biomedical
A UNIT OF BC GROUP INTERNATIONAL, INC.

BC Group designs and manufactures a complete line of test equipment under the BC Biomedical label. The familiar Green and Gold overlays tell you that you are getting the latest technology available in the biomedical field today.

BC Biomedical products have been designed with the customer in mind. Most of our instruments are offered as families of products. We do not subscribe to the theory that one size fits all. You choose the features you want and only pay for what you need. The BC Biomedical product offering is extensive but we have many more in the works that will be introduced after this catalog is published. Please check our website for the latest products being introduced or contact us about being added to our BC Group email newsletter list.

BC Marketplace
A UNIT OF BC GROUP INTERNATIONAL, INC.

BC Group distributes over 75 product lines under BC Marketplace. This large group of high quality products, coupled with our own BC Biomedical Line, truely makes us your ONE-STOP BIOMED SHOP.

Why should you buy items from BC Group that can be purchased directly from the OEM? (1) Price - We buy in volume. (2) We have stock. (3) It is expensive for an organization to cut a purchase order. If you need to order 5 items from 5 different vendors, you will be paying much more than if you cut one PO to BC Group for all items. (4) You may only buy one or two items from a vendor in a year where we purchase hundreds of items from that same vendor. If you have any problems with a manufacturer's product, you'll have BC Group as your advocate.

BC Service
A UNIT OF BC GROUP INTERNATIONAL, INC.

BC Group offers support for the Biomedical Industry's test equipment. We calibrate, repair, manage and store test equipment for our customers. There are three components to BC Service: **BC OnSite**, **BC Depot** and **BC eTEAMS**. We have a dedicated technical staff that has been specializing in biomedical test equipment repair and calibration for many years.

BC Depot
A UNIT OF BC GROUP INTERNATIONAL, INC.

BC Group offers test equipment calibration and repair service for all BC Biomedical and most other manufacturers of test equipment at our St. Louis Depot facility. We are ISO 9001:2008 Certified, ISO/IEC 17025:2005 Accredited, NIST Traceable and ANSI Z540 compliant. Quick turnaround time, years of experience calibrating and attractive prices are just some of the reasons our customers keep sending their equipment to BC Group.

BC Onsite
A UNIT OF BC GROUP INTERNATIONAL, INC.

BC Group offers a nationwide, onsite calibration service program that provides some unique benefits. Allow us to come to your facility to minimize downtime and shipping costs, plus there are no travel charges. We offer multi-year discounts on your calibration cost, plus you will enjoy special discounting when purchasing test equipment if you use BC Group as your onsite provider.

BC eTEAMS
A UNIT OF BC GROUP INTERNATIONAL, INC.

BC eTEAMS (Test Equipment Asset Management System) is a web-based program, custom tailored to customer needs. Secure access to the on-line database of equipment, complete with location, calibration certificates and customized management reports make this program an instant favorite of anyone attempting to manage a fleet of test equipment in more than one location. This program can also add the tracking of tools, consumables & other specialized needs as they arise.

BC Structure

Quality
Is at the heart of everything we do at BC Group

BC Group is committed to exceeding customer expectations and enhancing customer satisfaction through the continual improvement of our products, services and quality management system.

BC Group has been ISO certified for over a Decade.

Our Quality Programs

ISO 9001:2008 Certified
ISO 13485:2003 Certified
ISO/IEC 17025:2005 Accredited
ANSI Z540-1 Accredited
FDA Registered & Inspected
FDA - QSR 21 CFR 820 Compliant
FDA - CGMP Compliant
NIST Traceable

BC Quality Program

Engineering
Designing new products and automated test rigs
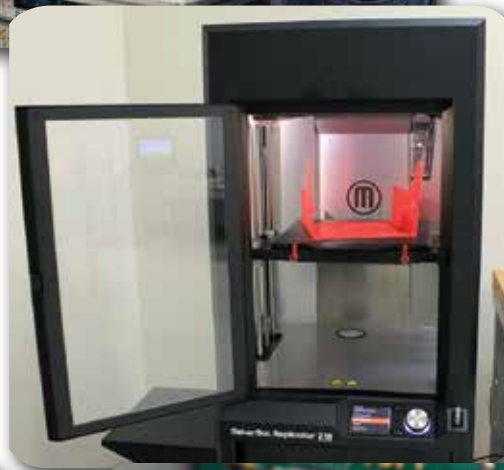
BC Engineering

Having an in house engineering department allows us to respond to new requirements and demands from the field. We design everything from custom enclosures to circuit boards to packaging. We also develop our own software, providing unparalleled service to our customers.

Production
In house manufacturing of components, assemblies and complete products. Proudly made in the USA

Our Production Department Meets the Highest Standards and Operates Under Our Quality Program

BC Group Manufactures and Sells the familiar Green Labeled BC Biomedical product line with all products falling under our overall Quality Program.

1-888-223-6763 - bcgroupintl.com

Depot
Our ISO-17025:2005 Accredited lab calibrates BCB and most other brands of test equipment

For BC Biomedical products and most other Brands of Biomedical Equipment.

BC Group offers Onsite Calibration Services

We bring our Technicians and Expertise to your facility to Minimize Downtime.

BC Onsite
A UNIT OF BC GROUP INTERNATIONAL, INC.

On-Site Benefits:
- No Downtime, PLUS No Shipping, Trip or Travel Charges
- Our Service Center Comes to You!
- Special Benefits for Multi-Year, Multi-Site & Major Account Clients, Including Discounts on Product Purchases

Give BC Onsite a Call
1-888-223-6763

BC Depot

In Alphabetical Order

Manufacturer names are highlighted in red

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Biomedical Products

Look for the BCB Exclusive symbol (pictured to the right) for all of our own BC Biomedical proprietary brand products found throughout this catalog. You will notice that BC Biomedical products will ensure you receive high quality products at minimal cost. The flip side of this catalog is dedicated to the BC Biomedical Products, with full specifications and detailed model information.

BCB Exclusive

BC Biomedical
A UNIT OF BC GROUP INTERNATIONAL, INC.

HOW TO CONTACT US

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www.bcgroupstore.com

Customer Satisfaction & Feedback
We strive for 100% Customer Satisfaction. Your feedback is very important to us & we take each comment seriously. Many of our improvements have been implemented due to recommendations from customers. After each sales or service transaction, please take a moment to complete a Customer Satisfaction survey found in your product shipment paperwork.

Please contact us any time if we fail to meet your expectations.

Pricing Notes
We try to ensure that prices are up-to-date as of printing date but it isn't always possible. For up-to-date pricing, contact us or visit our web site. All prices are in U.S. dollars (USD); International Pricing can be determined by adding 20% to the item's listed price.

ISO 13485:2003
Certified
ISO 9001:2008
Certified
ISO 17025:2005
Accredited

PLEASE NOTE:
Pricing and Specifications may change without notice.
SF-SLS-180 (C) BC 2016-2017 Catalog

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Be sure to check out what is new from the BC Marketplace:

BC Biomedical Infusion Pump Analyzer
Page 92

BC Biomedical ESU-2400H Digital ESU Analyzer
Page 89

BC Biomedical NIBP - Simulator
Page 90

Doing Business with BC Group
We make it easy
Here are the ways to order products and services from us:

- **Buy Online:** Safe, secure internet shopping at www.bcgroupstore.com

- **Credit Card:** MasterCard, Visa, American Express and Discover (Domestic Only) International with prior approval only

- **IMPAC Card:** U.S. Government Purchasing Card

- **C.O.D.:** Cash on Delivery (Money order or Cashier's Check only)

- **C.I.A.:** Cash/Payment in Advance

- **Net 30 Day Terms:** Please contact one of our sales team members if you're interested in this program

- **Wire Transfer:** Electronic Payment ($50 USD additional bank charge added to total amount.)

- **Signature Required:** Our default shipping method is signature required. We must receive authorization in writing to ship without signature.

- **Handling Fee:** Handling fees will apply, when shipping on third party shipping account

- **Blanket Purchase Order:** A BPO for a year or more saves time and administrative costs for your organization

- **Lease-to-Own:** Purchase capital equipment without the up-front cash outlay while enjoying tax benefits and off-balance-sheet financing

- **Biomedical Teaching Institution Discount Program:** Contact us for more information concerning this program

- **Major Account Programs:** Special incentives and support for larger customers, covering both product purchases and test equipment service. We can custom-design a program for you, covering everything from "new-hire" test equipment/tool assortments to complete management of your calibration program. If you're a large ISO, a manufacturer or have multiple sites, be sure to inquire.

- **Faxed-in Orders:** Upon completing our faxable order form, located at www.bcgroupintl.com, feel free to fax it to us at 1-314-638-3200 to ensure prompt processing.

- **Authorized Dealers:** Check www.bcgroupintl.com for a list of dealers.

PLEASE NOTE:
Minimum order with BC Group is $50 domestic, $250 international.

BC Biomedical Safety Analyzer Series

The SA-2000 Series is a Microprocessor-based Electrical Safety Analyzer Family. All five models provide the same basic functions and each comes with a BC20-20110 Chassis (Black) cable for easier testing and BC Biomedical soft carrying case for extra protection.

The SA-2000 Family of Safety Analyzers allows the user to have a great deal of flexibility in testing. Plus any of the basic tests can be run in almost any sequence.

The compact size makes the SA-2000 Family easy to hold and operate. All models operate from 90 to 264V @ 50/60 Hz, with Load Currents up to 20 amps, so there is no need to purchase two different analyzers to cover your testing needs. The SA-2010S is the smallest safety analyzer available with a built-in ECG Patient Simulator.

- The SA-2005 has all of the SA-2000 features, plus adds 5 Patient Lead connectors
- The SA-2010 has all of the SA-2005 features, plus adds 10 Patient Lead connectors
- The SA-2010S has all of the SA-2010 features, plus adds an ECG Patient Simulator
- RS-232 -R Option add $135

For Point-to-Point Testing, please order the BC20-20111 BC Biomedical External (Red) Cable (see page 84).

SA-2010 Layout

Label
3 Neon indicators for Power Receptacle
3.5 digit LCD Display
10 Universal Patient Lead Connectors
Chassis & External Connectors
Unit Indicators: Volts, amps, μAmps and ohms
Fuse Access
Test Point Snaps
Function indicators w/two light touch arrow keys for easy selection: Mains Voltage Device Under Test Current Earth Resistance Lead-to-Earth Resistance Lead-to-Lead Resistance Lead Isolation Leakage External Leakage
LED indicators for 10 Patient Lead inputs w/ two light touch arrow keys for selection
Load Selection indicator & key: AAMI & IEC
ISO Test indicator & key
15/20 AMP Receptacle for DUT power cord
Analyzer Test Receptacle Control indicators & keys

All SA Series Prices Include Soft Carrying Case BC20-30107.

Model Price (ea)	SA-2000 $695/$830-R	SA-2001 $945/$1080-R	SA-2005 $1250/$1385-R	SA-2010 $1485/$1620-R	SA-2010S $1745/$1880-R
Load Current	No	Yes	Yes	Yes	Yes
Ground Resistance	Yes	Yes	Yes	Yes	Yes
Chassis Leakage Current	Yes	Yes	Yes	Yes	Yes
Earth Leakage Current	Yes	Yes	Yes	Yes	Yes
Patient Lead Testing	No	No	Yes	Yes	Yes
RS-232 -R	-R Optional	-R Optional	-R Optional	-R Optional	-R Optional
Lead Isolation	No	No	Yes	Yes	Yes
AAMI & IEC Loads	AAMI Only	Yes	Yes	Yes	Yes
ECG Simulation	No	No	No	No	Yes
Line Voltage	No	Yes	Yes	Yes	Yes
External Fuse Access	Yes	Yes	Yes	Yes	Yes
Voltage Range 90 to 264V	Yes	Yes	Yes	Yes	Yes
Size	8.7" x 5.7" x 1.9"	8.7" x 5.7" x 1.9"	8.7" x 5.7" x 2.4"	8.7" x 5.7" x 2.4"	8.7" x 5.7" x 2.4"

A

B

BC Biomedical International Safety Analyzer Series

The SA-2000-INTL Series is ideal for those needing a power cord that can be selected to meet their international power needs. One power cord is included with purchase. (BC20-20400 North America Power cord is included, if not specified. Power cord selection on page 116.)

SA-2000-INTL Base International Unit Model.............	**$795**
A. **SA-2001-INTL** Base Plus Point-to-Point and Voltage.	**$1045**
SA-2005-INTL 5 Test Lead Model..........................	**$1350**
SA-2010-INTL 10 Test Lead Model..........................	**$1585**
SA-2010S-INTL SA-2010-INTL w/built-in ECG Sim....	**$1845**

• **Additional & Replacement Power Cords** (See page 116)
• **RS-232 -R Option**...**$135**

For more info on this series - Pages 3-4

C

D

E

B. BC Biomedical CS-2000 Series

The CS-2000 is a 1 amp current source series for testing to IEC 601 specs where a 1 amp source current is required.

CS-2000-E 220 V (European Version).......................	**$950**
CS-2000-U 110 V (U.S. Version)..............................	**$830**

Safety Analyzer Cables

C. **BC20-20100** BC Biomedical Kelvin Cable (DNI Type)
• Will fit the following DNI/Fluke Biomedical models: 231, 232, 234, 235, 431, 432, u-Test2000 & all model medTesters........**$145**

D. **BC20-20110** BC Biomedical Chassis (black) Cable
(BC Biomedical/Dale Technology® Type)...................**$95**

E. **BC20-20111** BC Biomedical External (red) Cable
(BC Biomedical/Dale Technology® Type).................**$95**
BC20-20115 BC Biomedical Kelvin Cable (BCB Type) **$115**

F

F. BC Biomedical SA-2500 $3500

The SA-2500 is a Microprocessor based Electrical Safety Analyzer. One power cord is included with purchase. (BC20-20400 North America Power cord is included, if not specified. Power cord selection on page 116.)

There are 2 Modes of operation, Manual and Remote. The Manual mode allows most basic testing functions to be stepped through one at a time. With the Remote mode, measurements are controlled via a PC. The user has the possibility to integrate all measurements into the individual operator interface at the PC and to define test sequences.

• **Additional & Replacement Power Cords** (See page 116)

Safety Analyzer Cables For SA-2500

G

G. **BC20-20150** Chassis Cable (Kelvin), one comes with the unit (SA-2500 Only)....................................**$115**

A. BC Biomedical ULT-2000 TEE Tester Series

The ULT-2000 Series is designed to test the electrical safety of all types of diagnostic ultrasound transducers, totally independent of the ultrasound machine. Both models include PC Utility software and Battery Eliminator.

ULT-2010 Base Model..$1045
ULT-2020 Base Plus Meter Mode and Datalogging $1200

Optional Accessories For ULT Series:

- **ULT-PC-10** Dual Conductivity Probe (Short).................$345
- **ULT-PC-15** Dual Conductivity Probe (Medium)..............$415
- **ULT-PC-20** Dual Conductivity Probe Set (Long & and Extra Long)..$490
- **ULT-PC-25** For Gus System...$135
- **ULT-PC-30** Dual Conductivity Probe (Flexible).............$345
- **BC20-42200** Cidex® Compatible Tray (20")..................$340
- **BC20-42310** 5 Rolls of Printer Paper..............................$24
- **BC20-42321** Printer Cable...$113
- **BC20-41361** RS-232 Communication Cable, USB(A)M to Mini DIN Male...$113
- **BC20-41337** RS-232 Communication Cable..................$113
- **BC20-41339** USB to RS-232 Adapter............................$113
- **BC20-42331 ULT Kit Includes**..............................$275
    - *BC20-30106 Carrying Case*
    - *BC20-41337 RS-232 Communication Cable(DB9)*
    - *BC20-41361 RS-232 Communication Cable(USB)*
- **BC20-42332 Print Kit** $815
  (Includes 1 @ PRN-1130, BC20-42310, BC20-42325 and BC20-30107)

For more info on this series - Pages 53-58

Ultrasound Transducer Adapters (use with ULT-2000 Series)

ULT-PA-10 Acuson/Siemens 8V5,15L8W,V5M,3V2C **$500**
ULT-PA-11 Sonsonite Transducers, including TEE....**$500**
ULT-PA-12 Acuson/Siemens 260-PIN......................**$1050**
ULT-PA-13 Acuson/Siemens 156-PIN,V510B............**$705**
ULT-PA-14 ATL/Philips C9-5 Curved Array..............**$1050**
B. ULT-PA-16 GE LogicQ and GE P9603AU................**$1050**
ULT-PA-17 Philips/ATL iE33 and iU22....................**$1050**
ULT-PA-18 Philips/HP 4500, Sonos 5500/7500.........**$500**
C. ULT-PA-19 Philips CX50 Laptop Platform Only........**$1100**
ULT-PA-20 Toshiba PVF Series, 2B701-753E...........**$705**
ULT-PA-21 Hitachi EUP-ES52M, EUP-Series Probes **$1050**
ULT-PA-22 Aloka SSD-620, SSD-650......................**$1050**
ULT-PA-23 ALL Transducers (Pencil)........................**$575**
ULT-PA-24 Philips/ATL 256-pin, w/belled housing..........**$1050**
ULT-PA-25 GE LogiqBook Laptop platform transducers **$1100**
ULT-PA-27 GE YMS/RT use with YMS/RT transducers **$705**
ULT-PA-28 GE/CGR (for use with GE/CGR Radius and GE SONO Transducers..**$705**
ULT-PA-29 Zonare Medical Systems....................................**$780**
D. ULT-PA-30 GE Vivid E9.......................................**$1180**

A

B   C

D

Typical Test Setup for Testing Your Ultrasound Transducers with a Transducer-Specific Adapter & a Soak Tray.

Dual Conductivity Probe (Short)   Soak Tray

Ultrasound Transducer

BC Biomedical ULT-2000   BC Biomedical Transducer Adapter
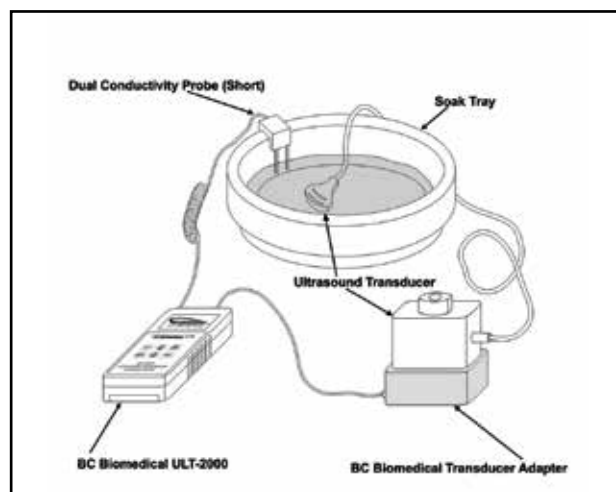
Is your facility compliant?
IAC Standards and Guidelines for Adult Echocardiography Accreditation

2.2.3B The manufacturer's guidelines must be followed for the appropriate care and cleansing of the TEE transducer and adhere to the appropriate infectious disease standards to prevent the transmission of disease. Effective December 31, 2015, the structural and electrical integrity of the transducer must be checked between each use, using an ultrasound transducer leakage tester. "Passed" or "Failed" must be documented in the routine TEE probe cleaning / maintenance log along with action taken if "failed."

E.

F.

BC Biomedical Patient Simulator Series

This Multi-Parameter Patient Simulator Series is the most comprehensive, easy to use family of Simulators on the market. These portable Simulators are intuitive to use since there are NO MORE CODES to enter. The simple scroll control of options makes them the best choice for your routine PM of patient monitoring systems and arrhythmia recognition training needs. The SpO_2 simulation option makes this series a truly unique and versatile tool.

- Powered by two 9V batteries or the battery eliminator
- Display backlight
- Full remote operation via RS-232
- Flash programmable for upgrades
- SpO2, Cardiac Output and Fetal/Maternal options
- Special programmable training modes

For more info on this series - Pages 7-14

- All BP Waveforms available on all BP Channels
- **E.** • PS-2240 Patient Simulator with 4 BP Channels.......**$2085**
  - PS-2220 Patient Simulator with 2 BP Channels.......**$1870**
  - PS-2210 Patient Simulator with 1 BP Channels.......**$1655**
  - PS-2105 Patient Simulator with 0 BP Channels.........**$990**
- **F.** • PS-2110 Patient Simulator with 1 BP Channels.......**$1095**

Optional
- MSP-2100 Pulse Oximetry Module.........................**$445**
- BC20-02300 Fetal/Maternal Option..........................**$495**
- BC20-02400 Cardiac Output Option.........................**$495**
  (Includes MCO-2100 Interface Module)

- **BC Biomedical PSR-2200 Remote available (page 9)**
- BC20-30107 Optional Soft Medium Carrying Case...........$70

G. BC Biomedical Patient Simulator Remote PSR-2200 $765

How would you like to have all of your Patient Simulators' outputs available to you on a handheld, easy-to-use remote control, up to 25' away from your Simulator? The PSR-2200 Programmable Patient Simulator Remote Control with Trending Capability brings an unprecedented level of functionality and ease of use to Patient Simulator remote control. There's nothing else on the market that even comes close to this one.

For more info on this series - Page 9

BC Biomedical ECG Simulator Series

Microprocessor-based ECG Simulators Provides ECG Simulation with four waveforms with constant QRS duration and six machine performance testing waveforms.
- **H.**   **PS-2005** 5 Test Lead Model....................................**$385**
- **I.**   **PS-2006** 6 Test Lead Model....................................**$405**
- **J.**   **PS-2010** 10 Test Lead Model.................................**$500**

For more info on this item - Page 13

MicroSim Cardiac Output Simulator 1111.......................**Call**
- Four Blood flow rates (3,5,6 &7 L/min.) • Compact
- Two Blood temps (37 & 38 °C) • Dual injectile temps (0 & 20 °C)

Optional Accessories:
- **1101** Baxter/Edwards Cable....................................**Call**
- **1103** HP Merlin Cable..**Call**
- **1106** Marquette Cable...**Call**
- Other Cables Needed?...**Call**

K. Universal Banana-to-Snap/ECG Adapters BC20-17024........**$300**
- Set of 10 Adapters • Accepts 3 & 4 mm ECG Leads

L. Banana-to-Snap/ECG Adapters BC20-17025...............**$65**
- Set of 10 Adapters • Accepts **only** 3 mm ECG Leads

For complete selection of cables, go to Pages 113-115.

BC Biomedical Defibrillator Analyzer Series

DA-2006..$2580

A defibrillator analyzer developed for testing all external defibrillators. The unit may operate as a powerful stand alone device or may be incorporated into an automated PC-based and remotely controlled device. Includes: user manual, internal paddle adapters, protective plates and battery eliminator.

A. DA-2006P..$4410

A precision instrument for testing defibrillators and external (transcutaneous) pacemakers. The built-in test procedures and extensive resistance loads for pacer testing make the DA-2006P a versatile test instrument and solid value. Includes: user manual, internal paddle adapters, protective plates and battery eliminator.

Optional Accessories:

- **BC20-00427** Plastic Protective Plates (Set Included) **$24**
- **BC20-00432** Internal Paddle Adapters (Set Included) **$46**
- **BC20-41341** Communication Cable(DB9)..............**$113**
- **BC20-41339** Communication Cable Adapter(USB).**$113**
- **BC20-30108** Soft Carrying Case..........................**$107**

B. DA-2006-VL..$2300

DA-2006-VL, works in conjunction with our DA-2006 Series Defibrillator Analyzers, providing Variable Loads used when testing Defibrillators to assure the proper electrical current is delivered to the heart, per IEC 60601-2-4 and AAMI DF80 standards.

For more info on this series - Pages 15-20

Defib & Pace Adapters (for DA-2006 & DA-2006P)

C. BC20-00420 PhysioControl - Defib/Pace....................**$145**
BC20-00421 Marquette - Defib/Pace..........................**$300**
BC20-00423 Cable, Defib/Pacer Zoll..........................**$145**
BC20-00426 Cable, Defib/Pacer HP/Agilent (Old Style barrel connector)....................................**$145**
BC20-00433 Cable, Defib/Pacer Test Philips (New Style) **$145**
BC20-00434 Cable, Defib/Pacer Test Cardiac Science **$145**

D. DA-CS-06...$5355

A PC-based defibrillator analyzer test system for users who wish to verify the calibration of their analyzers.

Our unique DA-CS-06 Defibrillator Analyzer Calibration Standard system is available to qualified customers that have a need for a defibrillator output energy standard to be used in the calibration of their analyzers, regardless of manufacturer or model.

The DA-CS-06 was originally developed to be used in the calibration of our own DA-2006 and DA-2006P analyzers.

E. PMT-2000 External Pacer Tester & Analyzer w/Case.....**Call**

Evaluating and testing all Atrial/Ventricular Pacemakers including Transthoracic Pacers. Does not adequate to test the Medtronic 5348 and 5388 Pacers.

F. BC Biomedical ESU-2000A ESU Analyzer with Kit......**$2600**

Optional Accessories:
- **G. BC20-00121** Replacement Accessory Kit.............**$400**
- **BC20-30108** Soft Carrying Case..........................**$107**

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L

(Shown w/Optional Adapters)

H. BC Biomedical ESU-2300 ESU Analyzer with Kit........$4630
- True RMS Readings Using DFA® Technology
- Performs Output, RF Leakage and CQM tests
- 15 Selectable Loads from 50 to 750 ohms
- Built-In RF Current Transformer • Crest Factor
- External Load Resistor Capability

  Replacement and Optional Accessories:
  - **BC20-00125** Replacement Accessory Kit...............$460
  - **BC20-21105** Universal Power Supply (Power cord not included see page HH)....................................$75
  - **BC20-41341** Communication Cable (DB9F to DB9M) **$113**
  - **BC20-41352** Communication Cable (USB)...............$31

I. BC Biomedical ESU-2050 ESU Analyzer...................**$5200**
- True RMS Readings Using DFA® Technology
- mV, mV Peak, mA, Crest Factor and Wattage Displays
- Waveform Capture, Storage, Display and Download

  BC Biomedical ESU-2050P ESU Analyzer.................**$5625**
- Same As ESU-2050 Plus Pulse Mode

  Replacement Accessories:
  - **BC20-21104** Universal Power Supply......................$75
  - **BC20-41341** Comm. Cable (DB9) $113
  - **BC20-41352** Comm. Cable (USB)............................$31
  - **BC20-00232** Cable, CT (3' BNC to BNC).................$59
  - **BC20-00126** Accessory Kit....................................$460

Optional ESU-2050 Series Accessories
J. Pearson CT (for ESU-2050 Only)
  - **BC20-00230** 4100 Pearson CT 1:1.........................**$615**
  - **BC20-00230** 4100 Pearson CT 1:1 with Cal...........**$735**
  - **BC20-00231** 411 Pearson CT 0.1:1.......................**$615**
  - **BC20-00231** 411 Pearson CT 1:1 with Cal.............**$735**

K. CQM (for ESU-2050 Only)
  - **CQM-2000** *(REM/ARM/CQM Test Module)*.............**$330**

L. Vishay-Dale NH-250 Precision Power Resistors & Adapters
- 250 W   • 1%   Tolerance   Non-Inductive

BC20-00200 5 Ω	**$134**	**BC20-00211** 3000 Ω	**$134**
BC20-00201 10 Ω	**$134**	**BC20-00212** 4000 Ω	**$134**
BC20-00202 20 Ω	**$134**	**BC20-00213** 5000 Ω	**$134**
BC20-00203 30 Ω	**$134**	**BC20-00214** 1 Ω(50W)	**$27**
BC20-00204 50 Ω	**$134**	**BC20-00215** 125 Ω	**$216**
BC20-00205 100 Ω	**$134**	**BC20-00216** 150 Ω	**$216**
BC20-00206 200 Ω	**$134**	**BC20-00217** 400 Ω	**$216**
BC20-00207 300 Ω	**$134**	**BC20-00218** 800 Ω	**$216**
BC20-00208 500 Ω	**$134**	**BC20-00219** 1500 Ω	**$216**
BC20-00209 1000 Ω	**$134**	**BC20-00220** 10 Ω(50W)	**$27**
BC20-00210 2000 Ω	**$134**		

BC20-00240 Power Resistor Banana Jack Adapter Set (2)....**$24**
  - **Calibration for each resistor**.................................$20

Resistor Sets
  BC20-00251 Valleylab Force2 Performance Check Set *(100 & 300 Ω)*...**$268**
  BC20-00252 Valleylab Force2 Calibration Set *(1, 50, 100, 200, 300, 1000, 3000, 4000 Ω)*.......................**$965**
  BC20-00253 Valleylab ForceFX™ Performance Check Set *(100, 200, 300, 500 Ω)*...**$536**
  BC20-00254 Valleylab ForceFX™ Calibration Set *(10,20, 100, 200, 300, 500, 1000, 2000, 3000 Ω)*..............**$1206**
  BC20-00255 ForceTriad™ Performance Check Set *(100, 300, 500 Ω)*..**$402**
  BC20-00256 ForceTriad™ Calibration Set *(5, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000, 5000 Ω)*............**$1635**
  BC20-00257 Valleylab ForceTriad™ *(special debug mode) (20, 100, 200, 300, 1000, 5000 Ω)*.......................**$804**
  BC20-00258 Complete Set for Valleylab Generators **$2362**
  - **Calibration for each resistor**.................................$20

A. BC Biomedical ESU-2400H ESU Analyzer with Kit….**$11995**
The ESU-2400H represents a totally new standard in full featured electrosurgery analyzers, with unprecedented measurement analysis and enhanced pulsed waveform compatibility.

CE

BC Biomedical ESU-2400 ESU Analyzer with Kit…………**$9960**
The ESU-2400 offers all of the measurement of the ESU-2050P with built-in loads and test automation.
• True RMS Readings Using DFA® Technology
• Performs Output, RF Leakage, CQM, and Power Load
  Curve Tests
• Autosequences Capability
• External Load Resistor Capability
• Calibration Level Accuracy
• 0 to 6400 ohms in 1 ohm increments

B. BC Biomedical TRL-2420 TISSUE RESPONSE LOAD……..**$545**
The TRL-2420 is an accessory to the BC Biomedical ESU-2400 that is used to simulate the effect of changing tissue impedance during electrosurgery. The TRL-2420 contains two incandescent bulbs that are silicone coated for safety. As RF energy from the ESU generator (DUT) is applied to the bulbs, the impedance of the bulb changes, simulating the impedance change of tissue.

Some RF generators have special output modes that detect the change of tissue impedance and automatically turn off the RF output when the change in impedance is detected. The ESU-2400 measures the current at the time when the RF output is turned off.

Replacement Accessories:
C. • **BC20-00130** Accessory Kit...................................**$430**
     • **BC20-21107** 100-240 V Universal Power Supply...**$140**
D. • **BC20-00131** ForceTriad™ PM Kit.........................**$485**

Contains everything you need to perform the newly revised ForceTriad™ PM procedure:
        • External 200 Ohm load and REM cable for Cross
          Coupling Tests
        • Footswitch Adapter for UFP Port Tests
        • Bipolar Cable for Autobipolar Tests
        • Convenient Carrying Case
E. • **BC20-00132** Conmed PM Kit...............................**$635**
     • **BC20-00133** Conmed Automation Kit **$600**

The latest ESU-2400 update includes an Autosequence for running the new PM procedure. The Autosequences use the accessory kit to guide the operator through more than 100 steps that are in the new PM test procedure.
     • **BC20-41361** Cable, Communication RS-232, USB(A)M
       to Mini DIN Male...**$113**

BC Biomedical Foot Switch Cables and Simulators for ESU-2400
        • **BC20-03000** Unterminated Foot Switch Cable..........**$230**
        • **BC20-03001** Force FX™ Foot Switch Cable..............**$440**
        • **BC20-03002** Conmed Foot Switch Cable..................**$440**
        • **BC20-03003** Covidien ForceTriad™ Foot Switch Cable **$440**
F. • **BC20-03004** Foot Switch Simulator, triggers
         Cut/Coag/ Bipolar on Covidien Force FX™/ForceTriad™.....**$440**
G. • **BC20-03005** Monopolar Handpiece Simulator..............**$440**
        • **BC20-03006** Foot Switch Cable - Olympus ESG-100....**$440**
        • **BC20-03007** Foot Switch Cable - Olympus ESG-400....**$440**
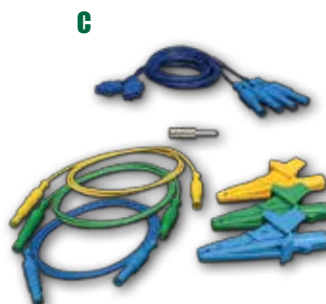
F   G

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NIBP-1040-BE with Included Cardiac Output Interface

Sample Adapter

J   K   L   M

N
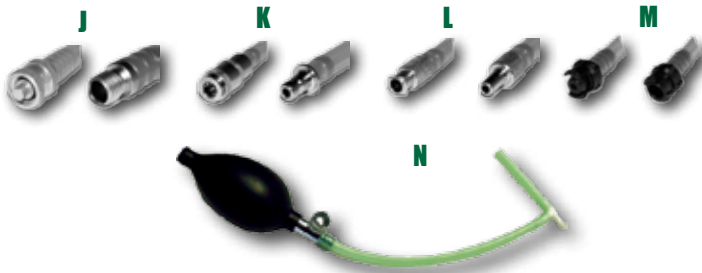
BC Biomedical NIBP-1000 Simulator Series

The NIBP-1000 Series is a new Family of high quality, low cost, high functioning Microprocessor-based NIBP Simulators. They were designed to meet the demand for a small, easy-to-use unit with a multitude of features to fit your exact needs.

All NIBP-1000's come with a universal AC adapter

F. NIBP-1010 (NIBP Only)...**$1195** CE
- Full Range Manometer • Flash Programmable
- Back Light
- Adult, Neonatal and Hypertensive modes
- Full Graphical Display • RS-232
- SpO$_2$ Ready - Compatible w/**MSP-2100** Module (Page **46**)
- Includes One Free Adapter of Your Choice
  (If none specified, BC20-40716 will be sent)
  Optional Features:
  - **-P**   Peak Pressure Detect.....................................**$100**
  - **-BP** Peak Detect & Battery (Built-in Rechargeable)**$425**

NIBP-1010KIT (NIBP only)..**$1795**
Includes NIBP-1010-BP, Soft Carrying Case & Five Adapters

G. NIBP-1020 (NIBP, ECG Pace & Resp)......................**$1395** CE
Has all of the NIBP-1010 features plus: • Pace • Respiration
• ECG - NSR • ECG - Test waveforms • Back Light
- Includes One Free Adapter of Your Choice
  (If none specified, BC20-40716 will be sent)
  Optional Features:
  - **-PA**   Peak Pressure Detect & Alarm.......................**$100**
  - **-BPA** Peak Detect, Alarm & Battery (Built-in Rechargeable)...**$425**

NIBP-1020KIT (NIBP, ECG Pace & Resp).....................**$1995**
Includes NIBP-1020-BPA, Soft Carrying Case & Five Adapters

NIBP-1030...**$1995** CE
Has all of the NIBP-1020 features plus: • IBP • Temp
• Arrhythmia • Leak Detect • Back Light
- Includes One Free Adapter of Your Choice
  (If none specified, BC20-40716 will be sent)
  Optional Feature:
  - **-B** Built-in Rechargeable Battery..........................**$400**

NIBP-1030KIT...**$2495**
Includes NIBP-1030-B, Soft Carrying Case, & Five Adapters
H.NIBP-1030-BE..**$2495**
Add Extended Patient Lead Connectors
NIBP-1030KIT-E...**$2595**
Includes NIBP-1030-BE, Soft Carrying Case, & Five Adapters CE
I.NIBP-1040Kit-E...**$3495**
Includes NIBP-1040-BE with ECG, Arrhy, IBP, Pace, Temp & Resp, Performance Waveforms, CO & FM plus ext leads, and Soft Carrying Case, & Five Adapters

Optional Accessories for NIBP-1000 Series:
- **BC20-30111** Soft Carrying Case..............................**$52**
- **BC20-41337** RS-232 Communication Cable...........**$113**
- **BC20-41361** RS-232 Communication Cable, USB(A)M to Mini DIN Male................................**$113**
- **J. BC20-40714** DINAMAP/Critikon Adapter............**$40**
- **K. BC20-40715** Quick Disconnect Adapter..............**$40**
- **L. BC20-40716** Luer Adapter.................................**$40**
- **M. BC20-40717** Marquette Adapter.........................**$40**
- **N. BC20-40608** Bulb Adapter.................................**$40**
- **BC20-41339** USB to RS-232 Adapter................**$113**
- Invasive Blood Pressure Cables can be found on page **113**

NIBP Adapter Kit BC20-40605…………………………**$92**
Connector kit for NIBP testers. Save time and money by buying this kit. Includes 11 connectors, pictured and identified on page **112**

BC Biomedical FingerSims™

Provides SpO₂ outputs of 80, 90 & 97%. Simply squeeze on the FingerSims™ to generate a "pulse" or include a calibrated pulse rate by adding the SPO-2000 or the MSP-2100.

A. Starter Kit FS-1000-SK (includes: 3 FingerSims™: 80, 90 & 97%, FingerSims™ Holder, Carrying Case & User Manual) **$345**

B. Replacement Set FS-1000-RS (80, 90 & 97% FingerSims™ only)...**$295**

For more info on this product - Pages 43-44

C. BC Biomedical SPO-2000 Pulse Oximeter Module......**$795**
• 30, 60, 90, 120, 150 & 180 BPM Pulse Rates
• Requires BC Biomedical FingerSims™ to provide SpO₂ outputs of 80, 90 & 97%
• AC Adapter • Compact & cost-effective
• Maintenance-free

Optional Accessory:
• **BC20-40110** Hard Carrying Case for SPO-2000, FingerSims™ & Accessories......................................**$93**

For more info on this product - Pages 43

D. BC Biomedical MSP-2100 Pulse Oximeter Module
• Requires BC Biomedical FingerSims™ and one of the following simulators: PS-2100, PS-2200 or NIBP-1000 to provide SpO₂ outputs of 80, 90 & 97%
• Powered by Aux port

MSP-2100..**$445**

For more info on this product - Pages 43

E. Nellcor SRC-MAX Pocket Tester Series
The SRC-MAX is intended for qualified technicians to functionally test Nellcor OXIMAX technology-based pulse oximeters and OEM OXIMAX technology-based monitors.

SRC-MAX (Basic Model)..**$740**

A

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(FingerSims™ not included)

Would it be nice to have calibrated fingers?

?%

?%

?%

?%

?%

?%

?%

97%

90%

80%
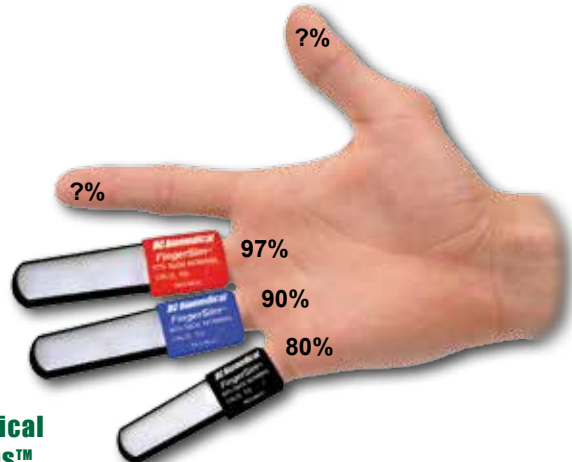
BC Biomedical FingerSims™

G

NEW

G. BC Biomedical IPA-3400 System

The IPA-3400 Infusion Pump Analyzer System is a Microprocessor-based system that tests flow rates.
- **IPA-3400-1** One Channel $4750
- **IPA-3400-2** Two Channels $6250
- **IPA-3400-3** Three Channels $8100
- **IPA-3400-4** Four Channels $9950

IPA-3900FM - Add on Channel Module....................$1850

Optional Accessory Kit:
- **BC20-00161** Replacement Accessory Kit..............$400
- **BC20-41360** Communication cable USB Null $113

BC Biomedical IPA-1000 System

The IPA-1000 Infusion Pump Analyzer System is a Microprocessor-based system that tests flow rates.

BC10-03103 Includes IPA-1000 plus one 3.5 mL Chamber & one Interconnect cable..$1765

BC10-03104 Includes IPA-1000 plus one 35 mL Chamber & one Interconnect cable..$1765

BC10-03105 Includes IPA-1000 plus two 3.5 mL Chambers & two Interconnect cables.......................................$2140

BC10-03106 Includes IPA-1000 plus two 35 mL Chambers & two Interconnect cables.......................................$2140

H. BC10-03107 Includes IPA-1000 plus one 3.5 mL Chamber, one 35 mL Chamber & two Interconnect cables.............$2140

Individual Components:
- **IPA-1000** Infusion Pump Analyzer Display............$1315
- **MC3.5-1000** 3.5 mL Chamber................................$478
- **MC35-1000** 35 mL Chamber..................................$478

Optional Accessories:
- **BC20-30109** Soft Carrying Case...........................$130
- **BC20-40607** IPA-1000 Interconnect Cable..............$36
- **BC20-21111** Universal Battery Eliminator................$57

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I. Infusion Pump Testing Kit BC20-40606-C...............$375

This test kit contains the necessary components to manually perform the most basic Infusion Pump testing. Includes:
- 500 mL graduated cylinder
- 60 PSI pressure meter for occlusion testing
- Digital stopwatch/timer

J. Extech 475040 Digital Force Gauge........................$400

Measures push/pull to 176 oz/5000 g
- Calibration Certificate..$125

K. Chatillon Pull Scale (IC-100)................................$281
- Calibration Certificate..$60

J **K**

Measures push/pull to 100 lb x 1 lb
- Easy to Use
- Japanned finish, plated hook and loop
- Precision Steel Springs individually calibrated with certified weights
- Heavy Duty Construction
- Large Avoirdupois Readings
- Accuracy ±1 Graduation
- Metric and Pound Equivalents

A. BC Biomedical USP-100SP Digital Ultrasound Wattmeter.......**$2465**

A compact, digital and affordable way to test both 1 & 3 MHz therapy ultrasounds. Great size for field service.
- 0.2 to 30.0 Watt Measure range, ± 3% accuracy
- 0.5 to 10 MHz Frequency response
- 3" Max transducer diameter
- Built-in transducer holder
- Degassed Water Testing medium
- Eight AA Batteries or 120V power
- Size / Weight: 8.5" H x 12" L x 8.75" W / 11 lbs
- RS-232 Port

B. BC Biomedical USP-50SP Digital Ultrasound Wattmeter......**$2675**

The USP-50SP, is designed to measure the ultrasound power output of diagnostic or therapeutic transducers up to 30 Watts. The water tank requires only one pint of de-gassed distilled water. If de-gassed water is not available, use distilled water. The principle of measurement is the radiant force method.

C. BC Biomedical USP-30 Ultrasound Wattmeter............**$1745**

Simple yet accurate. Uses a unique "balance beam" apparatus. Turn dial to balance indicator, take a dial reading and multiply by the calibration factor on the USP-30 to calculate Watts.
- Comes with a removable carrying lid
- 1 & 3 MHz Response
- Built-in transducer holder

For more info on this series - Pages 59-60

D. UMA UMR-3D Digital Ultrasound Wattmeter...............**$3025**

From UMA -The people who developed the original soft membrane/water-coupled ultrasound wattmeter. Housed in a rugged metal case.
- 1 & 3 MHz Response • Built-in transducer holder
- Sealed water well • ± 3% Accuracy • Digital readout

E. UW6 Ultrasound Wattmeter......................................**$3450**

The UW 6 Ultrasound Wattmeter is compact, simple to use, portable and ruggedly built. It can be powered by a 9 Volt alkaline battery or by using the AC adapter supplied with the unit. The unit features an auto zero function to help speed up operations. A calibration check weight is provided with the unit making it easy to verify calibration in the field.
- Measurement range 0.1 to 30 Watts
- Input Power Level 0 to 30 W
- Input Frequency 0.5 to 10 MHz
- Resolution 0.1 W
- Dimensions 9" wide x 14 ½" deep
- Height 7 ½" (10 ¾" with Clamp Post)

Educational Assistance Program

BC Group has designed a program to assist schools with Biomedical Training Courses to obtain the latest *BC Biomedical Test Equipment* at a discounted price. A discount will be granted to qualified educational institutions on orders for *BC Biomedical Products.*

(when the products are used for instructional purposes).

For more information, contact our St. Charles Sale office via email sales@bcgroupintl.com or phone 888-223-6763
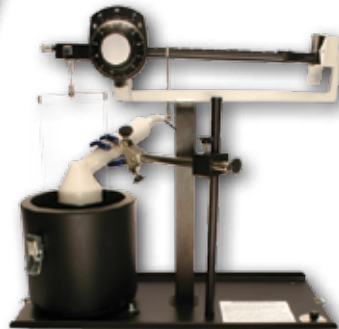
F. UPM-DT-1000PA……………………………………**$5175**
Electronic ULTRASOUND POWER METER. Resolution 1 mW (Highest resolution). Fastest Response (Under 3 seconds). Range 0 to 30 Watts at a frequency of 0.5 to 10 MHz. Digital display, RS-232 interface. Carrying case. The high resolution and fast response makes the UMP-DT-1000PA ideal for R&D and manufacturing.

It features a high contrast alphanumeric LCD display. Membrane "touch buttons" enable quick setup, selection of units for the power reading (grams or watts "custom mode"), and printer output control.

G. UPM-DT-1PA……………………………………**$4785**
Electronic ULTRASOUND POWER METER. Resolution 2 mW or 1.5 mW in grams mode. Range 0 to 30 Watts at a frequency of 0.5 to 10 MHz. Digital display, RS-232 interface. Carrying case.

It features a high contrast alphanumeric LCD display. Membrane "touch buttons" enable quick setup, selection of units for the power reading (grams or watts "custom mode"), and printer output control.

H. UPM-DT-10PA……………………………………**$3225**
Electronic ULTRASOUND POWER METER. Resolution 20 mW or 15 mW in grams mode. Range 0 to 30 Watts at a frequency of 0.5 to 10 MHz. DIgital display, RS-232 interface. Carrying case.

It features a high contrast alphanumeric LCD display. Membrane "touch buttons" enable quick setup, selection of units for the power reading (grams or watts "custom mode"), and printer output control.

I. UPM-DT-100SP……………………………………**$2465**
Electronic ULTRASOUND POWER METER. Resolution 200 mW or 150 mW in grams mode. Range 0 to 30 Watts at a frequency of 0.5 to 10 MHz. DIgital display, RS-232 interface. Carrying case.

It features a high contrast alphanumeric LCD display. Membrane "touch buttons" enable quick setup, selection of units for the power reading (grams or watts "custom mode"), and printer output control.

J. UPM-DT-50SP……………………………………**$2675**
Electronic ULTRASOUND POWER METER. Resolution 50 mW. Range 0 to 30 Watts at a frequency of 0.5 to 10 MHz. Digital display. Optional USB or RS-232 interface. Includes molded polyethylene case.

It has a smaller footprint and it's highly portable. Making for quick easy set up.

K. UPM-30……………………………………**$1745**
Mechanical ULTRASOUND POWER METER. Resolution 150 mW. Range 0 to 30 Watts at a frequency of 0.5 to 10 MHz. Carrying case. Mechanical base manual zero.

It consists of a precision mechanical balance, which measures from 0.01 to 10.00 grams, a conical target suspended on a hanger, a water tank, a transducer support rod with clamp, and a carrying case

Selection Guide For Ohmic's Ultrasound Power Meters
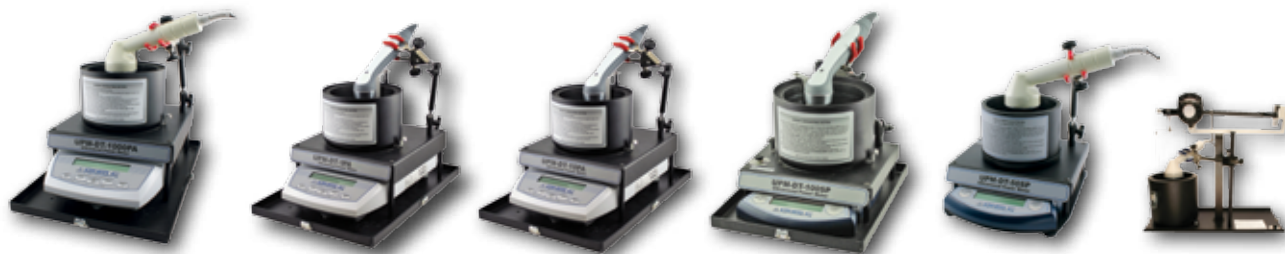
	UPM DT-1000PA	UPM DT-1PA	UPM DT-10PA	UPM-DT-100SP	UPM-DT-50SP	UPM-30
Power Range	0- 30 Watts	0- 30 Watts	0- 30 Watts	0- 30 Watts	0- 30 Watts	0- 30 Watts
Transducer Range	0.5-10MHz	0.5-10MHz	0.5-10MHz	0.5-10MHz	0.5-10MHz	0.5-10MHz
Resolution	1 mW (1.5 mW in grams)	2 mW (1.5 mW in grams)	20 mW (15 mW in grams)	200 mW (150 mW in grams)	50 mW	±150mW (±0.01g)
Display Sensitivity	0.001 Watt	0.002 Watt	0.02 Watt	0.2 Watt	0.05 Watt	N/A
Accuracy	± 3% @10 Watts, 25°C	± 3% @10 Watts, 25°C	± 3% @10 Watts, 25°C	± 3% @10 Watts, 25°C	± 3% @10 Watts, 25°C	± 5%
Zeroing Method	Push to Zero	Push to Zero	Push to Zero	Push to Zero	Push to Zero	Vernier Dial
Stabilization	<3.0 Second Integration	≤3.0 Second Integration	≤3.0 Second Integration	≤3.0 Second Integration	≤3.0 Second Integration	N/A
Cone Target Size	3.25" diameter x 1.125" high	3.25" diameter x 1.125" high	3.25" diameter x 1.125" high	3.25" diameter x 1.125" high	3.25" diameter x 1.125" high	3.25" diameter x 1.125" high
Test Media	Degassed Water	Degassed Water	Degassed Water	Degassed Water	Degassed Water	Degassed Water
Max Transducer Size	4 1/2" Diameter	4 1/2" Diameter	4 1/2" Diameter	4 1/2" Diameter	4" Diameter	4 1/2" Diameter
Computer Interface	RS-232, 600-19200 Baud *USB Optional	RS-232, 600-19200 Baud *USB Optional	RS-232, 600-19200 Baud *USB Optional	RS-232, 600-19200 Baud *USB Optional	RS-232, 600-19200 Baud *USB Optional	Does not apply
Power	120 VAC/12 VAC 500 mA adapter 6 Ft. cord	120 VAC/12 VAC 500 mA adapter 6 Ft. cord	120 VAC/12 VAC 500 mA adapter 6 Ft. cord	120 VAC/12 VAC 500 mA adapter 6 Ft. cord or 4 AA's	120 VAC/12 VAC 500 mA adapter 6 Ft. cord or 4 AA's	Not required
EMI Rating	CE, CSA, UL	CE, CSA, UL	CE, CSA, UL	CE, CSA, UL	CE, ICES	N/A
Electrical Safety	CE, CSA	CE, CSA	CE, CSA	CE, CSA	CE, ICES	N/A
Size	11"H x 15" L x 10"W	11"H x 15" L x 10"W	11"H x 15" L x 10"W	8"H x 12" L x 8.75"W	7"H x 10.5" L x 8.5"W (In case) * 6"H x 16.75" L x 12"W (assembled)	19"H x 17" L x 7"W
Weight	16 Lbs Net	16 Lbs Net	16 Lbs Net	11 Lbs Net	8.5 Lbs * 9.75 Lbs Net	18 Lbs Net
Carrying Case	Black Anodized Aluminum	Black Anodized Aluminum	Black Anodized Aluminum	Black Anodized Aluminum	Molded polyethylene	Black Anodized Aluminum
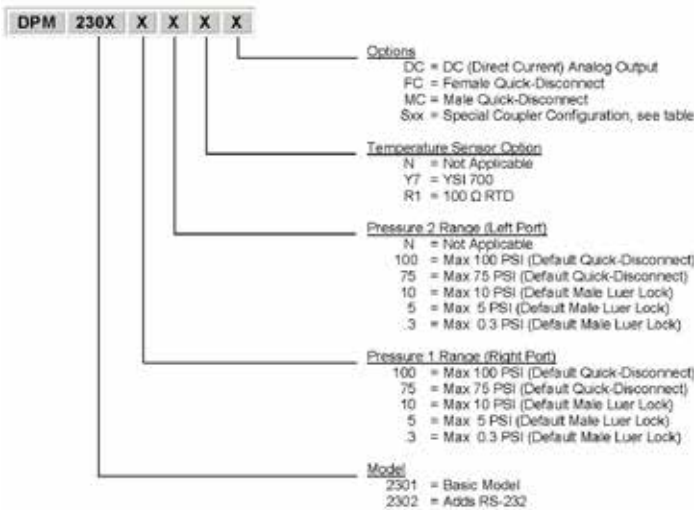
A

B
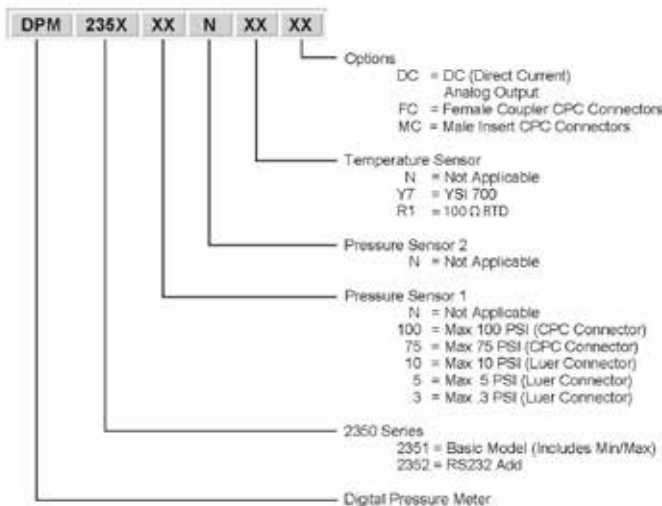
BC Biomedical DPM-2300 Series

The DPM-2300 Series is a Microprocessor-based High Precision, High Resolution Digital Pressure Meter family. These meters measure both gas and liquid pressures and provide multiple engineering unit displays for the results. The unit (except the 2350 Series) may have one or two pressure sensors and an optional temperature sensor input to measure pressure and temperature all in one meter.

A. DPM-2301..**$900** CE
(High Precision Pressure/Vacuum Meter w/enhanced res.)
• MAX and MIN Pressure Value Capture and Storage
• ± 0.05% FS Pressure Accuracy
   Optional Features:
   • **DC** DC Output..**$130**
   • **Second Pressure Sensor**....................................**$195**
   • **Temp Option** (**YSI 700** or **RTD**)............................**$130**

DPM-2302..**$995** CE
(adds RS-232 Serial Communications)
• Same features and options as the DPM-2301 with the RS-232
• ± 0.05% FS Pressure Accuracy
   Optional Features:
   • **DC** DC Output..**$130**
   • **Second Pressure Sensor**....................................**$195**
   • **Temp Option** (**YSI 700** or **RTD**)............................**$130**

CE

B. DPM-2351..**$900**
(High Precision Differential Pressure/Vacuum Meter w/ enhanced res.)
• MAX and MIN Pressure Value Capture and Storage
• ± 0.05% FS Pressure Accuracy
   Optional Features:
   • **DC** DC Output..**$130**
   • **Temp Option** (**YSI 700** or **RTD**)............................**$130**

DPM-2352..**$995** CE
(adds RS-232 Serial Communications)
• Same features and options as the DPM-2351 with the RS-232
• ± 0.05% FS Pressure Accuracy
   Optional Features:
   • **DC** DC Output..**$130**
   • **Temp Option** (**YSI 700** or **RTD**)............................**$130**

CE

DPM-235175NNFC...**$900**
DPM-23017510NFC...**$1040**
   (for ventilator and anesthesia service applications)

For more info on this product - Pages 37-38

DPM 230X X X X X

Options
DC = DC (Direct Current) Analog Output
FC = Female Quick-Disconnect
MC = Male Quick-Disconnect
Sxx = Special Coupler Configuration, see table

Temperature Sensor Option
N = Not Applicable
Y7 = YSI 700
R1 = 100 Ω RTD

Pressure 2 Range (Left Port)
N = Not Applicable
100 = Max 100 PSI (Default Quick-Disconnect)
75 = Max 75 PSI (Default Quick-Disconnect)
10 = Max 10 PSI (Default Male Luer Lock)
5 = Max 5 PSI (Default Male Luer Lock)
.3 = Max 0.3 PSI (Default Male Luer Lock)

Pressure 1 Range (Right Port)
100 = Max 100 PSI (Default Quick-Disconnect)
75 = Max 75 PSI (Default Quick-Disconnect)
10 = Max 10 PSI (Default Male Luer Lock)
5 = Max 5 PSI (Default Male Luer Lock)
.3 = Max 0.3 PSI (Default Male Luer Lock)

Model
2301 = Basic Model
2302 = Adds RS-232

Note: The FC or MC options are not applicable when the "–Sxx" option is specified.

DPM 235X XX N XX XX

Options
DC = DC (Direct Current) Analog Output
FC = Female Coupler CPC Connectors
MC = Male Insert CPC Connectors

Temperature Sensor
N = Not Applicable
Y7 = YSI 700
R1 = 100 Ω RTD

Pressure Sensor 2
N = Not Applicable

Pressure Sensor 1
N = Not Applicable
100 = Max 100 PSI (CPC Connector)
75 = Max 75 PSI (CPC Connector)
10 = Max 10 PSI (Luer Connector)
5 = Max 5 PSI (Luer Connector)
.3 = Max .3 PSI (Luer Connector)

2350 Series
2351 = Basic Model (Includes Min/Max)
2352 = RS232 Add

Digital Pressure Meter

A. BC Biomedical DPM-2200 Series

The DPM-2200 Series is a Microprocessor-based Digital Pressure Meter Family. They measure both gas and liquid pressures and provide 13 engineering unit displays for the results. The unit (except the 2250 Series) can have one or two pressure sensors and an optional temperature sensor input to measure pressure and temperature all in one meter.

DPM-2201 (Pressure, Vacuum)...$840
• MAX and MIN Pressure Value Capture and Storage
• ± 0.05% FS Pressure Accuracy
• One Independent Pressure Range
• Choose Your Pressure Range: 0.3, 5, 10, 75 or 100 PSI
DPM-2202 (Min and Max, RS-232)..................................$920

Optional Features:
• **DC** DC Output..$130
• **HF** High Frequency Output...................................$250
• **Second Pressure Sensor**...............................$195
• **Temp Option** (**YSI 700** or **RTD**)....................$130

DPM-2251 (Differential Pressure, Vacuum).....................$840
• Choose Your Pressure Range: 0.3, 5, 10, 75 or 100 PSI
DPM-2252 (Min and Max, RS-232)..................................$920

Optional Features:
• **DC** DC Output..$130
• **HF** High Frequency Output...................................$250
• **Temp Option** (**YSI 700** or **RTD**)..........................$130

For more info on this product - Pages 39-40

DPM-220210010NHF...$1310
• 100 PSI-10 PSI-No Temp-HF output

B. BC Biomedical DPM-2000 Series

This Microprocessor-based Family of Pressure/Vacuum Meters offers positive and negative pressure and is fully compatible with liquids and gases. The DPM-2001PLUS adds Capture and RS-232 capabilities to the DPM-2001 Base Model. While the DPM-2100 adds Temperature to the DPM-2001PLUS Model. All Models allow Selectable Engineering Units, including: PSI, MmHg, InH$_2$O or CmH$_2$O.

DPM-2001 (Pressure, Vacuum).......................................$790
• Pressure to 100 PSI
• Vacuum to –13.50 PSI
DPM-2001PLUS..$900
• Same features and options as the DPM-2001 with the addition of MIN/MAX Capture and RS-232.
DPM-2100...$1015
• Same features and options as the DPM-2001PLUS with the addition of Temperature capabilities to be used with any YSI 700 probe.

For more info on this product - Pages 41-42

Optional Accessories for BC Biomedical DPM Family
• **BC20-21111** Universal Battery Eliminator $57
• **BC20-30106** Soft Carrying Case.............................$49
• **BC20-01006** YSI 700 Temp Probe.........................$150
• **22-02** 1/8" Hose Barb Non-valved In-Line CPC Coupling Insert (Male)...$10
• **BC20-21102** RS-232 Communications Cable (DPM-2000/2100) (DB9)....................$113
• **BC20-41337** RS-232 Communications Cable (DPM-2200/2300) (DB9)....................$113
• **BC20-41361** RS-232 Communication Cable (DPM-2200/2300) (USB)....................$113

Universal Manometer Adapter Kit BC20-01005..............$125
Everything you need to connect a pressure meter, regardless of application, all in one small case.
• 25 different fittings: CPC, luer, pipe, barb, etc.
• Inflation bulb with valve • Tygon tubing & more

A   **B**

DPM	220X	XX	XX	XX	XX

Options
Blank = Not Applicable
DC = DC (Direct Current) Analog Output
HF = High Frequency DC Analog Output

Temperature Sensor Option
N = Not Applicable
Y7 = YSI 700
R1 = 100 Ω RTD

Pressure Range (Sensor 2)
N = Not Applicable
100 = Max 100 PSI
75 = Max 75 PSI
10 = Max 10 PSI
5 = Max 5 PSI
.3 = Max 0.3 PSI

Pressure Range (Sensor 1)
100 = Max 100 PSI
75 = Max 75 PSI
10 = Max 10 PSI
5 = Max 5 PSI
.3 = Max 0.3 PSI

Model
2201 = Basic Model
2202 = Adds Min/Max and RS-232

DPM	225X	XX	N	XX	XX

Options
Blank = Not Applicable
DC = DC (Direct Current) Analog Output
HF = High Frequency DC Analog Output

Temperature Sensor Option
N = Not Applicable
Y7 = YSI 700
R1 = 100Ω RTD

Pressure Range
100 = Max 100 PSI
75 = Max 75 PSI
10 = Max 10 PSI
5 = Max 5 PSI
.3 = Max 0.3 PSI

Model
2251 = Basic Differential Model
2252 = Adds Min/Max and RS-232

EYE SURGERY EQUIPMENT USERS PLEASE NOTE:

Recommended part number for DPM Pressure Meter when servicing Eye Surgery Equipment.

DPM-220210010NHF

C

D

C. Meriam M1 Smart Manometers
M100 Digital Manometer: ±0.25% FS

Model	Type	Range	Price
M100-2	DN0028	0 to 28" H_2O Differential	**$449**
M100-7	DN0138	0 to 138" H_2O Differential	**$449**
M100-8	DN0416	0 to 416" H_2O Differential	**$449**
M100-9	DN0832	0 to 832" H_2O Differential	**$449**
M100-10	DN2000	0 to 2000" H_2O Differential	**$449**
M100-20	GN0005	0 to 5 PSI Gauge	**$449**
M100-11	GN0015	0 to 15 PSI Gauge	**$449**
M100-12	GN0030	0 to 30 PSI Gauge	**$449**
M100-13	GN0050	0 to 50 PSI Gauge	**$449**
M100-5	GN0100	0 to 100 PSI Gauge	**$449**
M100-14	AN0775	0 to 775 mmHg Absolute	**$476**
M100-4	AN1551	0 to 1551 mmHg Absolute	**$476**
M100-22	AN2585	0 to 2585 mmHg Absolute	**$476**

M101 Single Function Calibrator ±0.1% FS

Model	Type	Range	Price
M101-2	DN0028	0 to 28" H_2O Differential	**$520**
M101-7	DN0138	0 to 138" H_2O Differential	**$520**
M101-8	DN0416	0 to 416" H_2O Differential	**$520**
M101-9	DN0832	0 to 832" H_2O Differential	**$520**
M101-10	DN2000	0 to 2000" H_2O Differential	**$520**
M101-20	GN0005	0 to 5 PSI Gauge	**$520**
M101-11	GN0015	0 to 15 PSI Gauge	**$520**
M101-12	GN0030	0 to 30 PSI Gauge	**$520**
M101-13	GN0050	0 to 50 PSI Gauge	**$520**
M101-5	GN0100	0 to 100 PSI Gauge	**$520**
M101-14	AN0775	0 to 775 mmHg Absolute	**$549**
M101-4	AN1551	0 to 1551 mmHg Absolute	**$549**
M101-22	AN2585	0 to 2585 mmHg Absolute	**$549**

• NIST Certificate with Data (Z1065)..$90

D. Meriam M2 Smart Manometers
M200LS Lab Standard Smart Manometer: ±0.01% FS
• Prices include NIST Calibration Certificate

Model	Type	Range	Price
M200LS	GI0015	0 to 15.000 PSI Gauge	**$1534**
M200LS	GI0030	0 to 30.000 PSI Gauge	**$1534**
M200LS	GI0050	0 to 50.000 PSI Gauge	**$1534**
M200LS	GI0100	0 to 100.00 PSI Gauge	**$1534**
M200LS	GI0300	0 to 300.00 PSI Gauge	**$1534**
M200LS	GI0500	0 to 500.00 PSI Gauge	**$1534**
M200LS	DN0028	0 to 28.000 in H_2O Differential	**$1592**
M200LS	DN0200	0 to 200.00 in H_2O Differential	**$1476**
M200LS	DN2000	0 to 2000.0 in H_2O Differential	**$1476**
M200LS	AI0017	0 to 900 mmHg Absolute	**$1824**
M200LS	AI0038	0 to 2000 mmHg Absolute	**$1824**

M200 Smart Manometer: ±0.05% FS
• Prices include NIST Calibration Certificate
Accuracy Adder: +/- 0.025% FS Base+ $173

Model	Type	Range	Price
M200	DN0010	0 to 10 in H_2O Differential, Non-isolated, (+/- 0.05% FS only)	**$1384**
M200	DN0028	0 to 28 in H_2O Differential, Non-isolated	**$1152**
M200	DN0200	0 to 200 in H_2O Differential, Non-isolated	**$1013**
M200	DN0415	0 to 415 in H_2O Differential, Non-isolated	**$1013**
M200	DN2000	0 to 2000 in H_2O Differential, Non-isolated	**$1013**

A. Meriam M2 Smart Manometers (Continued)

Model	Type	Range	Price
M200	GI0015	0 to 15 PSI Gauge, Isolated	$1130
M200	GI0030	0 to 30 PSI Gauge, Isolated	$1130
M200	GI0050	0 to 50 PSI Gauge, Isolated	$1130
M200	GI0100	0 to 100 PSI Gauge, Isolated	$1130
M200	GI0300	0 to 300 PSI Gauge, Isolated	$1130
M200	GI0500	0 to 500 PSI Gauge, Isolated	$1130
M200	GI1000	0 to 1000 PSI Gauge, Isolated	$1130
M200	GI3000	0 to 3000 PSI Gauge, Isolated	$1130
M200	CI0015	-15 to +15 PSI Compound, Isolated	$1170
M200	CI0030	-15 to +30 PSI Compound, Isolated	$1170
M200	CI0050	-15 to +50 PSI Compound, Isolated	$1170
M200	CI0100	-15 to +100 PSI Compound, Isolated	$1170
M200	CI0300	-15 to +300 PSI Compound, Isolated	$1170
M200	CI0500	-15 to +500 PSI Compound, Isolated	$1170
M200	CI1000	-15 to +1000 PSI Compound, Isolated	$1170
M200	CI3000	-15 to +3000 PSI Compound, Isolated	$1170
M200	AI0017	0 to 17 PSIA Absolute, Isolated (0-900 mmHg)	$1130
M200	AI0038	0 to 38 PSIA Absolute, Isolated (0-2000 mmHg)	$1130
M200	AI0100	0 to 100 PSIA Absolute, Isolated (0-5200 mmHg)	$1130
M200	AI1000	0 to 1000 PSIA Absolute, Isolated (0-5200 mmHg)	$1130

B. Meriam MG-F16BN Digital Pressure Gauges

Model	Type	Accuracy	Range	Price
MG-F16BN	9P206-1	±0.25%	-30 inHg to 15 PSIG	$446
MG-F16BN	9P206-3	±0.25%	-30 inHg to 100 PSIG	$446
MG-F16BN	9P206-5	±0.25%	-30 inHg to 200 PSIG	$446
MG-F16BN	9P206-7	±0.25%	0 to 5 PSIG	$446
MG-F16BN	9P206-8	±0.1%	0 to 5 PSIG	$546
MG-F16BN	9P206-9	±0.25%	0 to 15 PSIG	$446
MG-F16BN	9P206-10	±0.1%	0 to 15 PSIG	$546
MG-F16BN	9P206-11	±0.25%	0 to 60 PSIG	$446
MG-F16BN	9P206-12	±0.1%	0 to 60 PSIG	$546
MG-F16BN	9P206-13	±0.25%	0 to 100 PSIG	$446
MG-F16BN	9P206-14	±0.1%	0 to 100 PSIG	$546
MG-F16BN	9P206-15	±0.25%	0 to 200 PSIG	$446
MG-F16BN	9P206-16	±0.1%	0 to 200 PSIG	$546
MG-F16BN	9P206-17	±0.25%	0 to 300 PSIG	$446
MG-F16BN	9P206-18	±0.1%	0 to 300 PSIG	$546
MG-F16BN	9P206-19	±0.25%	0 to 500 PSIG	$446
MG-F16BN	9P206-20	±0.1%	0 to 500 PSIG	$546
MG-F16BN	9P206-21	±0.25%	0 to 1000 PSIG	$446
MG-F16BN	9P206-22	±0.1%	0 to 1000 PSIG	$546
MG-F16BN	9P206-23	±0.25%	0 to 2000 PSIG	$446
MG-F16BN	9P206-24	±0.1%	0 to 2000 PSIG	$546
MG-F16BN	9P206-25	±0.25%	0 to 3000 PSIG	$446
MG-F16BN	9P206-26	±0.1%	0 to 3000 PSIG	$546
MG-F16BN	9P206-27	±0.25%	0 to 5000 PSIG	$446
MG-F16BN	9P206-28	±0.1%	0 to 5000 PSIG	$546

• NIST Certificate with Data (Z1065)   **$220**

A

B

BC Group Asset Management

We can even develop, implement and manage a calibration exchange program for your organization. The flexibility of our system guarantees that we can meet your needs and if you are not sure what you need our knowledgeable staff will guide you in choosing a system that will work for you.

C. Image C

D Image D **E** Image E

F Image F

Shown in carrying case

BC Group Custom Kits

Looking to Standardize on a set of Test Equipment and Tools for your operation? BC Group has the capability to design custom instrument cases and instrument kits as well as manage your entire asset management program.

C. Bacharach N_2O Trace Gas Analyzer 3015-4790...........**$4295**
Bacharach's TGA (Trace Gas Analyzer) is an advanced N_2O Analyzer. It uses a highly accurate, non-dispersive IR cell providing superior stability and repeatability, with a measurement resolution of 1ppm-full range. It provides measurements in either ppm, real time or elapsed time TWA and it has a leak check mode with audible and visual alarms. It has an internal sampling pump and the self-contained purge-air bag provides a constant zero, enabling the Analyzer to be used in contaminated environments. The TGA has data-logging capabilities to store up to two hundred tests, which can be downloaded to a printer or to a computer.

• Continuous data-logging stores up to two hundred readings
• Time weighted average and elapsed time weighted average
• Real time is also a measurement mode
• Built-in purge cycle using a bladder bag provides a constant zero
• Displays ppm/TWA simultaneously
• Internal pump for remote sampling w/low flow indicator
• Built-in user-activated alarm
• 8 - 12 hours of operation on a full charge
• Rapid detection of changing N_2O Levels
• Maintenance-free infrared N_2O sensor
• Two Year Warranty

Optional and Replacement Accessories:
• 3015-3420 Inlet Filters **$29**
• BC20-30114 TGA Hard Carrying Case **$395**

CE **D. Viasensor G200-00N Nitrous Oxide monitor** **$3985**
Nitrous oxide monitor 0 to 1,000 ppm N_2O with internal pump.

• Includes: battery charger, sample tube/filters, Soda Lime CO_2 removal kit, operating manual and supplied in a hard carrying case.

Viasensor CO_2 Analyzers

CO_2 Analyzer ranges are 0-10,000 ppm, 0-20% and 0-100% and all include internal pumps.

• Accessories Include: Battery Charger - Sample tube - Filters - Operating Manual.

E.   G100-00N CO_2, (0-20%) **$2345**
       G100-10N CO_2, (0-20%) 0_2, (0-100%)......................**$2610**
       G100-01N CO_2, (0-20%) RH Probe 15mm...............**$3329**
       G100-11N CO_2, (0-20%) 0_2, (0-100%)
                  RH Probe 15mm...................................**$3385**
       G110-00N CO_2, (0-100%) **$2345**
       G110-10N CO_2, (0-100%) 0_2, (0-100%) **$2610**
       G110-01N CO_2, (0-100%) RH Probe 15mm.............**$3329**
       G110-11N CO_2, (0-100%) 0_2, (0-100%)
                  RH Probe 15mm **$3385**
       G150-00N CO_2, (0-10,000 ppm)............................**$2345**
       G150-10N CO_2, (0-10,000 ppm) 0_2, (0-100%)...........**$2610**
       G150-01N CO_2, (0-10,000 ppm) RH Probe 15mm....**$3329**
       G150-11N CO_2, (0-10,000 ppm) 0_2, (0-100%)
                  RH Probe 15mm **$3385**
• Accessories
       G-TP-5 temperature probe..**$105**
F.   G-HCASE Hard case...**$160**

CE

A. Alnor EBT731 Electronic Balancing Tool......................**$3195**
The Alnor EBT731 Balometer Electronic Balancing Tool features a detachable, multi-purpose digital manometer that can be used with a variety of common test and balance tools, such as pitot, air foil, temperature, relative humidity probes or a 16-point velocity matrix. The EBT731 will become the tool of choice for contractors and facilities' personnel because of its ergonomic design and extremely lightweight.

• Accessories for the Alnor EBT731

800187	Air Flow Probe	$395
800218	Temperature Probe	$295
800219	Temperature/Humidity Probe	$390
801090	16point Velocity Matrix	$390
801207	1' x 5' and 3' x 3' hood expansion kit	$500
801206	1' x 4' and 2' x 4' hood expansion kit	$500

HVAC Thermo-Anemometers
B. The Alnor Velometer® AVM410 Thermal Anemometer
A Testing device for the HVAC test & balance professional that features a multi-purpose digital manometer, capture hood, relative humidity and temperature probe, airflow probe, pitot probe, static pressure probes or a velocity matrix (optional).

Alnor AVM410 ....**$655**
Alnor AVM430 ....**$1010**

Extech 407123 Handheld units. measures velocity & temp......**$440**
• Calibration Certificate..**$125**

Environmental Sensors Monitoring Equipment

Z-100	Ethylene Oxide Monitor	$875
Z-200	Glutaraldehyde Monitor	$975
C. Z-300	Formaldehyde Monitor	$1275

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B

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BC Onsite
A UNIT OF BC GROUP INTERNATIONAL, INC.

On-Site Benefits:
- No Downtime, PLUS No Shipping, Trip or Travel Charges
- Our Service Center Comes to You!
- Special Benefits for Multi-Year, Multi-Site & Major Account Clients, including: Discounts on Product Purchases

Give BC Onsite a Call
1-888-223-6763

E

F

PLEASE NOTE: Flowmeter/Pressure Gauge Shown is NOT INCLUDED.

G

H   I

J   K

L   M

E. Ohmic AMM-15 Dew Point Meter $1125
Verifies dew point of pressurized medical gases per ANSI & NFPA99. Range of -40° to 80°F. Max temp of +140°F. Max pressure of 175 PSI.

F. Brass Fitting Kit BC20-40610 ....$215
- 1 Brass Elbow 45° 1/4" MNPT x 1/4"FNPT
- 1 Brass Bushing 3/8" MNPT x 1/4" FNPT
- 1 Brass Tee 3/8" x 3/8" x 3/8" FNPT
- 1 Brass Bushing 3/8" MNPT x 1/8" FNPT 1
- 1 Brass Nipple 3/8" NPT
- 3 Quick Connectors 1/4" MNPT
- 1 Brass Elbow 90° 1/4" FNPT x 1/4" FNPT
- 1 Extension Hose - 2' 1/4" MNPT (Both Ends)
- 2 Brass Bushing 3/8" MNPT x 1/4" FNPT
- 2 Quick Connectors 1/4" MNPT
- Coupler x Coupler Assy (Two 1/4" MNPT Couplers & one nipple)
- 21 Quick Connectors 1/8" FNPT With Bushing (For Adapters)
- 1 Flexible pipe for O_2 sensor

G. Medical Gas Outlet Fitting Kit BC20-40630 ....$484
Contains all of the fittings/adapters needed to test most outlets (Ohmeda®, Diamond, DISS, Puritan-Bennett & Chemtron) for common gases: Air, Oxygen, Nitrous Oxide, Vacuum, Evac and Nitrogen.

Fitting Kit Combo BC20-40530 (Includes F & G) $699

Gelman Particulate Filters & Accessories
    1119 Poly Holder for 47 mm filters (50 PSI Max)........$142
H. **1235** Aluminum Holder for 47 mm filters.....................$695
    7245 Petri dishes, 47 mm filter protection (per 100)......$65
I. **51147** Forceps for handling filters.................................$45
    66149 PTFE Filters 47 mm x 0.45 micron (pack)........$475
    66408 47 mm x 0.45 micron filters (pack)...................$195

Flowmeters
All prices include Calibration Certificate.
    2530A4A65BVBN Brooks Instruments 1 to 10 SCFM Air...$350
J. **2530A4A67BVBN** Brooks Instruments 0.5 to 5 SCFM Air.$350
    2530A4A70BVBN Brooks Instruments 30 to 300 PM Air......$350
K. **B18J201B126** Matheson 260 L w/Valve.....................$665
    B18J201B127 Matheson 320 L w/Valve....................$665

Be sure to check out TSI Mass Flowmeters on Page 107.

*L. Viasensor G210-10N Gas Analyzer $5540
Measures 0-100% Nitrous Oxide, 0-100% Oxygen and 0-2,000 ppm Carbon Dioxide
- Accessories Included: battery charger, operating manual, supplied in a Hard Carry Case.

*Viasensor G210-11N Gas Analyzer $5992
Measures 0-100% Nitrous Oxide, 0-100% Oxygen, 0-2,000 ppm Carbon Dioxide and 0-500 ppm Carbon Monoxide
- Accessories Included: battery charger, operating manual, supplied in a Hard Carry Case.

*Requiring BC80-00246 Flow Restrictor.............................$45
Viasensor CO_2 Analyzers
    G110-00N CO_2, (0-100%) $2343
- Accessories Include: Battery Charger - Sample tube - Filters - operator manual.

M. Medical Gas Hard Carrying Case 221609....................$311
Diced foam. Customize to meet your needs. Useable for any test equipment but this is the ideal size for a medical gas assortment. Dimensions: 21.5"x15.5"x9".

CE

A. Western N₂ Purging Regulator RFS-7P..................... **$361**
- Brass body, resists corrosion
- Easy-to-read 2" pressure gauge
- Self reseating pressure relief valve protects against over-pressurization
- Size / Weight: 7.5"x4.5"x6.5" / 3 Lbs 3 oz

CE

Medical Gas Installation Tools

These two devices allow medical gas installers to comply with NFPA 99 2002, where it requires that the Nitrogen source of the purge gas shall be monitored and the installer shall be audibly alerted when the source content is low.

B. LPWD Low Pressure Warning Device.........................**$340**
Designed to monitor pressurized gas and alarm when pressure drops below a user adjustable pressure range 25 to 110 PSI with a 300 PSI Max pressure rating.

C. S3000-1/4 Low N₂ Pressure Gauge............................**$200**
A general purpose 0 to 4000 PSI gauge suitable for use with Nitrogen. This gauge will alarm both visually and audibly when pressures fall below 500 PSI (± 150 PSI). Gauge has a 2" face and a ¼" MNPT connection.

Amprobe ULD-300 Ultrasonic Leak Detector......................**$340**

TIF Halogen Leak Detectors

Carrying Case included with all models.
TIFXL-1A Single Sensitivity Range............................**$151**
TIFRX-1A Dual Sensitivity Range..............................**$203**
D. TIFXP-1A Seven Sensitivity Settings.........................**$233**

Ansonics Ultrasonic Son-Tector Leak Detector Packages

A preventative maintenance tool, used to rapidly locate and pinpoint leaks and malfunctions in a wide variety of equipment.
112 Package...**$1045**
E. 123 Package...**$1150**

F. Snoop® Liquid Leak Detector

Specially formulated liquid that adheres to vertical surfaces with better and longer bubbling to indicate leaks.
Pack of Six 2 oz bottles..**$40**
Pack of Five 8 oz bottles...**$45**
One Gallon bottle...**$98**

G. Magnum Pro Combo Pneumatic Calibration Pump Model# MVP-600..**$649**
- Contoured cushion handles
- Oversized check valve for smooth controlled operation
- Mash proof vent valve (No Needle Valve)

H. Meriam Hand Pumps

B34686 145 PSI Pressure Hand Pump (for Meriam Smart Manometer DN & GI Models)...........................**$448**
B34700 650 mmHg Vacuum Hand Pump (for Meriam Smart Manometer AI Models).......................................**$448**

I. WIKA Analog Pressure Gauges w/ Calibration Certificate

Model	Range	Accuracy	Size	Price
232.54/30	0 to 0030" Hg	± 2/1/2% FS	2.5"	**$140**
232.54/100	0 to 0100 PSI	± 2/1/2% FS	2.5"	**$140**
232.54/300	0 to 0300 PSI	± 2/1/2% FS	2.5"	**$140**
232.54/30-4"	0 to 0030" Hg	± 1.0% FS	4.0"	**$190**
232.54/100-4"	0 to 0100 PSI	± 1.0% FS	4.0"	**$190**
232.54/300-4"	0 to 0300 PSI	± 1.0% FS	4.0"	**$190**
232.54/1000-4"	0 to 1000 PSI	± 1.0% FS	4.0"	**$190**
232.54/3000-4"	0 to 3000 PSI	± 1.0% FS	4.0"	**$190**

- 2.5" gauges 1.5% FS Accuracy
- 4" 1% FS Accuracy

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O₂ cleaning available

Call for more ranges

Handheld

J

Complete 4080 system

K

Handheld

Basic 4070 system

J. TSI Certifier-FA PLUS® High Flow Vent Test System ...$4500

4080 - Includes Controller Module (Model 4088) and High Flow Module (Model 4081) AC adapter, bacteria filter, pressure tubing and adapters, operator's manual, National Laboratory traceable Certificate of Calibration and soft-sided carrying case.

- Color touch screen graphical user interface
- Graph mode Supports Adult, pediatric, anesthesia, Neonatal & high frequency ventilators
- Bi-directional & unidirectional gas flow capabilities
- Print & data storage - 1 MB of internal storage & 64 MB optional SD flash card
- Volumes & flow in BTPS, BTPD, Actual, Standard or user defined standard
- Calibrations for Air, Oxygen, Air/Oxygen mixture, nitrogen, Nitrous Oxide (low flow module only) & carbon dioxide
- High pressure port – to 150 PSIG
- Rates up to 1500 BPM

Optional Accessories:
- **4082** Low Flow Module..$880
- **4073** Oxygen Sensor Kit: Adds O_2 measurement capability to Certifier FA® Test System..........$320
- **1303860** Printer Cable...$45
- **1208061** Extra Battery Pack/Charger Kit................$130

K. TSI Certifier-FA® Respiratory Vent Test System

Simply the best way to test ventilators, Oxygen concentrators and other respiratory and flow devices. A complete measurement solution for Air, Oxygen and Nitrous Oxide.

4070 High Flow Test System (Includes controller module, high flow module, four AA batteries, filter, pressure tubing and adapters, flow module mounting bracket, screwdriver, manual, NIST Traceable Calibration Certificate and soft-sided carrying case) $2900

Parameter	Specification
High Flow Air or O_2	0 to 300 SLPM; ± 2% of reading or ± 0.075 SLPM
High Flow Air/O_2 Mix	0 to 300 SLPM; ± 4% of reading or ± 0.1 SLPM
Low Flow Air or O_2	0.01 to 15.00 SLPM; ± 2% of reading or ± 0.010 SLPM
Low Flow N_2O	0.01 to 15.00 SLPM; ± 4% of reading or ± 0.025 SLPM
Volume Air or O_2	0 to 10 L; ± 2% of reading or ± 0.02 SLPM
Volume Air/O_2 Mix	0 to 10 L; ± 4% of reading or ± 0.02 SLPM
High Pressure	N/A *(See DPM-235175NNFC, DPM-23017510NFC Listed Below)*
Low Pressure	-25 to 150 cmH_2O; ± 0.75% of reading or ± 0.20 cmH_2O
Breath Rate	0.5 to 120 BPM (± 5%)
I:Time	0.25 to 60 seconds (± 0.01 sec.) (E:Time Not Displayed)
I:E Ratio	1:100.0 to 100.0:1 (± 5%)
Minute Volume	0 to 99.00 stp L (± 7%)
Barometric Pressure	362 to 1,500 mmHga; ± 8 mmHga
Oxygen	0 to 100%; ± 2% at Calibration Conditions
Portability	Complete Kit Case - 11"x8"x4" / 3 lbs
Power	Four AA - Battery Life 15 to 20 Hours

Optional Accessories:
Recommended Digital Pressure Meters for ventilator and anesthesia service applications

DPM-235175NNFC (High precision DPM with 75 PSI Range)..$900
DPM-23017510NFC (High precision DPM with 75 & 10 PSI Range) $1040
- **4072** Low Flow Module $850
- **4073** Oxygen Kit: Adds O_2 measurement capability to Certifier FA® Test System $320
- **1319288** TSI Certifier® Hard Carrying Case $220
- **BC20-40700** TSI Certifier® Protective Boot & Stand $65
- **BC20-40701** Low Flow Filter.................................$25
- **BC20-40702** High Flow Filter $25
- **PSR-11-917J** Replacement O_2 Sensor $105

A. PFC-3000 FLOW ANALYZER (BENCHTOP) SERIES

The PFC-3000 series of instruments measure flow, pressure, temperature, humidity and O_2 concentrations bidirectionally. The one-of-a-kind Adult, Pediatric and High Frequency ventilation measuring modes make the PFC-3000 the ideal calibration tool for all ventilators, anesthesia machines and spirometers.

PFC-3000A Basic Flow Analyzer....................................**$8025**

PFC-3000AKIT **$9275**
Biomedical Test-Kit "Ventilation" Includes 1 each: PFC-3000A, LS-2000A, and FlowLab Software

PFC-3000A-MGA-KIT **$14425**
Biomedical Test-Kit "Ventilation & Anesthesia" Includes 1 each: PFC-3000A, LS-2000A, MGA-3050 and FlowLab Software

PFC-3000L Basic Flow Analyzer with additional low pressure sensor...**$8825**

PFC-3000LKIT **$10075**
Biomedical Test-Kit "Ventilation" Includes 1 each: PFC-3000L, LS-2000L, and FlowLab Software

PFC-3000L-MGA-KIT **$15225**
Biomedical Test-Kit "Ventilation & Anesthesia" Includes 1 each: PFC-3000L, LS-2000A, MGA-3050 and FlowLab Software

PFC-3000V Basic Flow Analyzer with additional vacuum sensor for vacuum measurements................................**$8825**

PFC-3000VKIT **$10075**
Biomedical Test-Kit "Ventilation" Includes 1 each: PFC-3000V, LS-2000V, and FlowLab Software

PFC-3000V-MGA-KIT **$15225**
Biomedical Test-Kit "Ventilation & Anesthesia" Includes 1 each: PFC-3000V, LS-2000A, MGA-3050 and FlowLab Software

Optional Accessories:

B. FlowLab Software Software for PFC-3000 Series....**$375**

C. MGA-3050 Multi Gas Analyzer................................**$5150**

D. Mallinckrodt (NPB) BreathLab PTS-2000 Ventilator Analyzer

4-076185-00 .... **$9850**

• Accurately measures pressure, flow, volume, Oxygen concentration & barometric pressure & N_2O flow
• Measures Air, O_2, Air/O_2 mixture
• User-replaceable O_2 sensor
• Single multi-function screen; portable, lightweight, rugged design
• 20 selected parameters on 10 user-configurable screens
• Numeric display of two real time measurements
• Auxiliary menu for O_2 calibration & sensor management
• English & Metric units for pressure, flow & volume

Optional Accessories:
• **4-075356-00** BreathLab Software....................................**$572**
• **4-075359-00** Model 8 40 Vent Software........................**$1120**
• **4-076164-00** Hard Carrying Case....................................**$560**
• **4-076599-00** Model 840 Vent Accessory Kit **$865**

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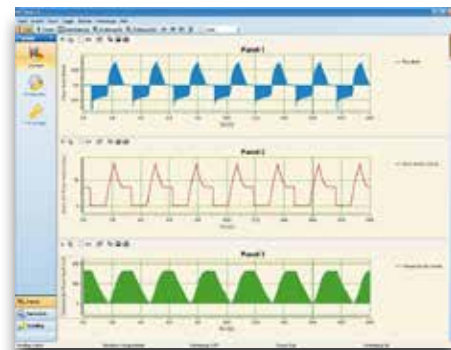
E. BC Biomedical Lung Simulator Series

Airway resistance, lung compliance & leakage widely adjustable.

LS-1000E EasyLung Simulator.......................................$220

- Unique Double-conus Connector (OD 22 conical, OD 15 conical)
- Unbeatable Simplicity & Price

LS-2000A Adult Lung Simulator....................................$875
LS-2000I Infant Lung Simulator...................................$875

- Adjustable Compliance Settings
- Adjustable Resistance Settings
- Variable Leakage Valves
- Simple Design
- Fraction of the Price and Size of any Comparable Lung Sim

F. IMT Medical SmartLung SL-2000-2L $900

SmartLung 2000 2L – the cleverest and most reliable way to check function and precision of ventilators and anaesthesia machines. Top performance and quality at a low price.

The SmartLung 2000 2L simulates the lung of adults and is the only test lung which covers settings according to standards IEC 60601-2-12, IEC 60601-2-13, EN 794-3.

BC Biomedical TestLung Infant LS-1000M

The TestLung Infant is the ideal tool to test neonatal and infant ventilators.

G. LS-1000M TestLung Infant $155

- Volume 20 mL @ PEEP = 0mbar; PInsp = 30 mbar
- Compliance 0.7 mL/mbar @Vt 20 mL
- Dimensions 45 mm × 150 mm
- Weight 25 g
- Material Silicone

H. "Manley" Lung Simulator..$3800

A long-time industry favorite. Acts as a simulated physiological load for the ventilator being tested.

- Volume range: 0.3 to 1.0 L
- Variable airway resistances
- Variable compliances

We service Manley Lung Sims & carry replacement parts!

Test Lungs

10107 Infant...$125
I. BC20-40200 Adult $125

TSI General Purpose Mass Flowmeters
- Flow rate, volume, temperature, pressure in one instrument
- High accuracy - 2% of reading
- Multi-gas, user selectable
- Built-in temperature & pressure sensors for high accuracy without external compensation
- Standard L/minute or Volumetric L/minute
- RS-232 & Analog outputs

A. 4040 Mass Flowmeter The TSI Mass Flowmeter 4040 can be used for a multitude of gas flow measurement applications. Whether measuring gas flows in a laboratory or manufacturing setting, TSI general-purpose mass flowmeters provide accurate results with multiple data output options. The display versions come complete with accessories making setup and operation fast and convenient...**$975**

B. 4043 Mass Flowmeter 0-200 LPM range.........................**$975**

- User selectable Gas calibration
(Includes: Air, N_2, O_2, Air/O_2 Mix; Flow up to 300L/min & 22 mm ISO tapered O.D. inlet/outlet size)

C. 4140 Mass Flowmeter The TSI Mass Flowmeter 4140 (0.01-20L/min Air, O_2, N_2 1/4" tube) can be used for a multitude of gas flow measurement applications. Whether measuring gas flows in a laboratory or manufacturing setting, TSI general-purpose mass flowmeters provide accurate results with multiple data output options. The display versions come complete with accessories making setup and operation fast and convenient...................**$895**

4143 Mass Flowmeter 0-20 LPM with 3/8" connection.....**$895**

- User selectable Gas calibration (Includes: Air, N_2, O_2; Flow range up to 20 L/min & 0.25 in O.D. inlet/outlet size)

41403 Mass Flowmeter Same as 4140 but adds N_2O......**$990**
41433 Mass Flowmeter 0-20 Same as 41403 but has 3/8" connection...**$990**

Optional Accessories:
- **4199** Flowmeter Battery Pack Base..............................**$120**

D. BC78XX Test Box (Ohmeda®)...**$365**
Test box simplifies testing of Ohmeda® anesthesia ventilators. Includes a 24" connecting cable.
Optional Accessory:
- **BC78XX-CABLE** Replacement 24" cable (also fits Ohmeda® 78XX test box model)......................................**$70**

Special Tools for Anesthesia

E. 10195K29 Krytox® Oxygen-compatible Lubricant (one tube)..**$125**
F. 1204K32 Dow Corning 111 (Dräger) Stopcock Lubricant/Sealant (two tubes)..**$50**

Pictured with optional 4199

Pictured with optional 4199

Contact us
for your Anesthesia Price Guide
an easy reference for all of your test equipment needs.

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I. AA-2005 Anesthetic Agent Analyzer..........................$5995
The BC Biomedical AA-2005 Anesthetic Agent Analyzer measures vaporizer output concentration using a digital display. This unit uses a state-of-the-art, non-dispersive infrared (NDIR) technology and measures concentration in percentage values for Desflurane (Suprane), Sevoflurane, Isoflurane (Forane), Halothane as well as Enflurane (Ethrane). The AA-2005 also detects and quantifies mixed agents.
   • **BC20-30114** Hard Case...**$395**

J. KCG-1000 Kit..$372
Contains the following three canisters: BC20-43014 1% Isoflurane, BC20-43017 4% Desflurane and BC20-43018 1% Sevoflurane
• **BC20-43012** AA-2005 Cal Gas - 10% CO2-N27EO2 (Mixture-10% Carbon Dioxide, Balance Nitrogen)..................................**$124**
• **BC20-43013** AA-2005 Cal Gas - 80% O2 $124.00 (Mixture – 80% Oxygen, Balance Nitrogen).................................**$124**
• **BC20-43014** AA-2005 Cal Gas - 1% Isoflurane (Mixture - 1% Isoflurane, 5% Carbon Dioxide, 60% Nitrous Oxide, Balance Nitrogen)...**$124**
• **BC20-43016** AA-2005 Cal Gas - 1% Halothane (Mixture - 1% Halothane, 5% Carbon Dioxide, 60% Nitrous Oxide, Balance Nitrogen)...**$186**
• **BC20-43017** AA-2005 Cal Gas - 4% Desflurane (Mixture - 4% Desflurane, 5% Carbon Dioxide, 60% Nitrous Oxide, Balance Nitrogen)...**$124**
• **BC20-43018** AA-2005 Cal Gas - 1% Sevoflurane (Mixture - 1% Sevoflurane, 5% Carbon Dioxide, 60% Nitrous Oxide, Balance Nitrogen) **$124**

K. VSI-1466 Switching Instrument....................................$455
The Model VSI-1466 is a Microprocessor-based Valve Switching Instrument. It provides automatic switching of two independent gas flows to one common exhaust port.

L. Riken FI-21 Portable Gas Indicator.............................$3683
This Anesthetic Gas Indicator measures vaporizer output concentration using a digital display and does not require correction factors. Measures concentration in percentage for Desflurane (Suprane), Sevoflurane, Isoflurane (Forane) and Halothane. The battery-operated FI-21 allows the user to select the carrier gas (O2 or Air) and has an internal pump. Includes: Sampling Tube, Carrying Case and Sampling "T" Piece.

M. Riken FI-8000 Portable Gas Indicator.........................$3683
This Anesthetic Gas Indicator measures vaporizer output concentration using a digital display and does not require correction factors. Measures concentration in percentage for Desflurane (Suprane), Sevoflurane, Isoflurane (Forane) and Halothane. The battery operated FI-8000P allows the user to select the carrier gas (O2 or Air) and has an internal pump. Includes: Sampling Tube and Sampling "T" Piece.

Gilmont GF1160 500 mL Flowmeter with fitting kit.............$499
   • To check monitor pump flow rates
   • Correlated flowtable
   • Calibration Certificate Included

Anesthesia Pressure Meter Adapter Kits
   • Easily connect a pressure meter to popular anesthesia machines.
   BC20-40600 Ohmeda® High Pressure Kit.......................**$190**
      • For testing: Model I & II Secondary Regulator, Excel Secondary Regulator, 7000 Vent Primary Regulator, Modulus CD & Mod II Plus Primary & Secondary and 78XX Primary Regulator
   BC20-40601 Ohmeda® Low Pressure and Drager Combo Kit
   ....**$190**
   Optional Accessories:
      • **10-02** CPC Coupler 1/8" MNPT............................**$15**
      • **021-140** Inflation Bulb with valve.........................**$15**
      • **22-02** CPC Connector 1/8" Barb............................**$10**

Handheld

A. Mini-Ox I Oxygen Analyzer $417
This portable unit comes with battery life indicators, an easy-to-use thumb wheel calibration dial and a push-button ON/OFF switch. Powered by one 9V battery, the MiniOX I Oxygen Analyzer provides up to 1400 hours of use.

- Range - 0 to 100% O_2
- Linearity - ± 2%

Optional Accessories:
- **PSR-11-917-J** Replacement Sensor $105

B. Mini-Ox 3000 Oxygen Monitor $665
Features high and low Oxygen concentration alarms, automatic calibration, battery life indicators & alarms, sensor/cable disconnect alarm and an alarm verification indicator. The MiniOX 3000 Oxygen Monitor is perfect for "in-line" Oxygen monitoring in such applications as hospital and home ventilators, NICU and anesthesia delivery equipment.
- Range - 0 to 100% O_2
- Linearity - ± 1%

Optional Accessory:
- **PSR-11-917-J** Replacement Sensor $105

C. AII-2000A Oxygen Analyzer $375
- Range - 0 to 100% O_2
- Accuracy - ± 1% full scale at Constant Temp. & Pressure
- Resolution of Display - 0.1% O_2
- Sensor Life - 60 months in Air
- Warranty - Analyzer Two Years, Sensor 18 Months

Optional Accessory:
- **AII-11-60** Replacement Sensor $105

D. AII-2000M Oxygen Monitor $575
The AII-200M has all the same features as the AII-2000A Oxygen Analyzer, but provides a Low Limit Alarm 15 to 100%.
Optional Accessory:
- **AII-11-60** Replacement Sensor $105

E. AII-2000 Palm O2 Oxygen Analyzer $295
This palm size oxygen analyzer features an advanced galvanic oxygen sensor that measures from 0.05% to 100% oxygen over a 32 month operating life with no maintenance required. 13,000 hours of battery use and wide variety of optional accessories make it an ideal cost effective choice for checking O2 levels delivered to patients by anesthesia machines, ventilators, pediatric incubators and hoods, during emergency transport or concentrators

F. R218P12 Handi+ Oxygen Analyzer $195
The Handi+ is everything it has always been and more! Maxtec has improved the Handi+ O_2 analyzer to better meet your needs for oxygen analysis. The simple to use, one-touch calibration button, new overmold, and calibration reminder combined with the traditional 2-year warranty, auto-off and size makes it the best of its class.

Replacement Anesthesia O2 Sensors
(See online guide for more information.)
G. PSR-11-915	....	$140
PSR-11-915-1	....	$250
PSR-11-915-2	....	$160
H. PSR-11-915-3	....	$160
PSR-11-915-4	....	$250

Replacement Respiratory O2 Sensors
(See online guide for more information.)
I. PSR-11-33	....	$80
PSR-11-33-2	....	$80
J. PSR-11-55	....	$100
PSR-11-77	....	$100
K. PSR-11-917-J	....	$105
PSR-11-917-M	....	$105

L. ILT1490-ELMS Endoscope Light Measurement System **$2500**
The Endoscope Light Measurement System (ELMS) is a handheld endoscope testing instrument designed to measure the luminous radiation of standard medical endoscopic light sources, fiber bundles and endoscopes. An endoscope light QC system.

M. ILT74CE Hyperbilirubinemia Light Meter / Radiometer **$999**
The ILT74CE Hyperbilirubinemia Light Meter / Radiometer was specifically designed to easily measure the exposure level of standard hyperbilirubinemia therapy systems directly in the patient plane.

N. Olympic Bilimeter Irradiance Measuring Instrument Mode 22 Bili-Meter™ with Type B-22 Sensor 53822 used for measuring all regular Phototherapy lights Including fluorescent, halogen & even sunlight..**$2200**

> **Olympic Type F-22** Sensor (phototherapy Pads only) 53865...**$682.50**
> **Olympic Type B-22** Sensor (phototherapy Lights only) 53860...**$682.50**

O. Extech 401025 Visible Light Meter...............................**$150**
0 to 5000 Fc & 0 to 50,000 Lux, digital, handheld, ± 5% Accuracy.

> Optional Accessory:
> • **NIST Traceable Calibration Certificate**.................**$125**

P. Extech EA30 EasyView Light Meter...............................**$190**
• Widest range to 40,000 Fc/ 400,000 Lux is ideal for outdoor applications
• Utilizes precision silicon photodiode sensor
• Complete with a built-in stand, remote sensor with a protective cover, protective rubber holster, a five foot coiled cable for easy storage & six AAA batteries

> Optional Accessory:
> • **NIST Traceable Calibration Certificate**.................**$125**

Tachometers
Q.   BC Biomedical TC-1726 Combo Photo/Contact Tachometer without Calibration Certificate.................**$355**
BC Biomedical TC-1726C Combo Photo/Contact Tachometer with NIST Traceable Calibration Certificate **$420**

> Optional Accessory:
> • **BC20-00601** Carrying case **$54**
> • **BC20-00602** 12 inch surface speed wheel **$80**
> • **BC20-00603** Convex rubber tip with metal hub **$26**
> • **BC20-00604** 10 cm surface speed wheel.....................**$18**
> • **BC20-00605** Concave rubber tip with metal hub **$25**
> • **BC20-00608** Contact adapter assembly......................**$66**
> • **BC20-40705** Phototach Reflective Strip Material **$13**

R.   Extech 461893 Photo Tachometer **$210**
Extech 461895 Combo Photo/Contact Tachometer...**$270**
Extech 461995 Laser Combo Photo/Contact Tachometer **$310**

> Optional Accessory:
> • **BC20-40705** Phototach Reflective Strip Material (2 ft) ..**$13**

Extech 407355 Noise Dosimeter...........................**$700**
Measures total sound exposure over an eight-hour period. % dose, dB & more.

Optional Accessories:
   • **NIST Traceable Calibration Certificate**...................**$125**

Extech 407732 Sound Level Meter......................................**$200**
High and Low measuring ranges: 35 to 100dB (low) and 65 to 130dB (high)

Optional Accessory:
   • **NIST Traceable Calibration Certificate**...................**$125**

Extech 407766 Sound Level Calibrator...............................**$420**
94 dB & 114 dB Levels @ 1 kHz.

Optional Accessory:
   • **NIST Traceable Calibration Certificate**...................**$125**

A. Rice Lake Precision Weights & Weight Sets (Class F)
Precision Laboratory Stainless Steel Weight Sets for testing analytical balances and digital scales.

Cast Iron Grip Handle Weights for Testing Patient Scales

Part #	Weight	Not Cal'd	w/NIST
12823	5 lb	$ 55	$130
12828	10 lb	$ 72	$147
12870	20 lb	$ 92	$167
12833	25 lb	$115	$190
12839	50 lb	$130	$205
12862	100 lb	$550	$625

Precision Weight Sets

12518	1 g to 1 kg Set	$405	$740
12524	1 g to 2 kg Set	$470	$850

Other weights available, please call us with your needs!!

With **National Institute of Standards & Technology** (**NIST**) Certification, the individual weight or weight set is automatically assigned a serial number.

B. Ophir Smart Display Laser Meters & Heads......................**Call**
Any of the more than 70 Ophir smart heads are calibrated and configured to measure laser power and energy with that head.

C. Ohaus Analytical Balance/Scales....................................**Call**
Ohaus makes a wide variety of digital balances (scales) ranging from portable to lab quality. Options and features available include: draft guards, carrying cases, RS-232 output and much more.

D. Extech HW30 Humidity/Thermometer Stopwatch.............**$45**
Digital UP/DOWN timer displays Temperature, Humidity, and Heat Index.
   Optional Accessory:
   • **NIST Traceable Calibration Certificate**....................**$15**
   (Time function only)

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Female Plastic
Luer Connector

Male Plastic
Luer Connector

Female Metal
Luer Connector

Male Metal
Luer Connector

Male HP/Agilent
Type Connector

Male Dinamap
Type Connector
with Wash Cap

Plastic Double
Ended Tubing
Connector

Female Luer Lock
Connector

Male Luer Lock
Connector

Female Metric
Screw Type
Connector

Male Metric
Screw Type
Connector

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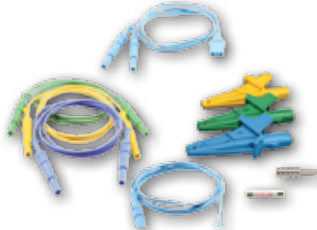
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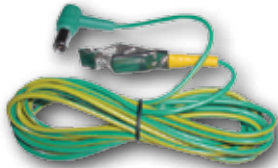## BC Biomedical Soft Carrying Case Series
The Soft-sided, heavyweight Cordura® material carrying cases are a perfect fit for a multitude of test equipment and test accessories.

	BC20-30106	Small Soft Carrying Case.................**$49**
E.	**BC20-30107**	Medium Soft Carrying Case.............**$70**
	BC20-30108	Large Soft Carrying Case...............**$107**
	BC20-30109	Large Carrying Case for IPA-1000 Series **$130**
	BC20-30111	Carrying Case for NIBP 1000 series.....**$52**

F. NIBP Fitting Kit BC20-40602..**$70**
• HP cuff adapter • CPC connector
• Inflation bulb • Silicone tubing & tee
• Quick coupler with 1/8" MNPT

G. NIBP Adapter Kit BC20-40605.......................................**$92**
Connector kit for NIBP testers. Save time and money by buying this kit. Includes 11 connectors.

H. Universal Manometer Adapter Kit BC20-01005............**$125**
Everything you need to connect a pressure meter, regardless of application.
• 25 different fittings: CPC, luer, pipe, barb, etc.
• Inflation bulb with valve • Tygon tubing & more

I. ESU-2000A Replacement Accessory Kit BC20-00121....**$400**

ESU-2050 Replacement Accessory Kit BC20-00126.....**$460**

ESU-2300 Replacement Accessory Kit BC20-00125.....**$460**

ESU-2400/H Replacement Accessory Kit BC20-00130 **$430**

J. Universal Banana-to-Snap/ECG Adapters BC20-17024......**$300**
• Set of 10 Adapters • Accepts 3 & 4 mm ECG Leads

K. Banana-to-Snap/ECG Adapters BC20-17025..................**$65**
• Set of 10 Adapters • Accepts <u>only</u> 3 mm ECG Leads

L. EP Adapter (Earth Plug 6mm) BC20-41510......................**$25**

M. Ground Lug with a banana jack adapter BC20-17026 **$10**

Defib & Pace Plates, Adapters & Cables (DA-2006 Series)

N.	**BC20-00427**	Plastic Protective Plates (Set Included) **$24**
	BC20-00432	Internal Paddle Adapters (Set Included) **$46**
	BC20-41339	USB to RS-232 Adapter.........................**$113**
	BC20-41341	Communication Cable...........................**$113**
	BC20-00420	PhysioControl - Defib/Pace **$145**
	BC20-00421	Marquette - Defib/Pace...........................**$300**
	BC20-00423	Cable, Defib/Pacer Zoll $125 ....**$145**
	BC20-00426	Cable, Defib/Pacer HP/Agilent (Old Style barrel connector) **$145**
	BC20-00433	Cable, Defib/Pacer Test Philips (New Style) **$145**
	BC20-00434	Cable, Defib/Pacer Test Cardiac Science **$145**

Safety Analyzer Cables
O. **BC20-20100** BC Biomedical Kelvin Cable (DNI Type). Fit the following DNI/Fluke Biomedical® models: 231, 232, 234, 235, 431, 432, u-Test 2000 & all medTesters.....**$145**
BC20-20110 BC Biomedical Chassis (black) Cable (BC Biomedical/Dale Technology® Type).....................**$95**

P. **BC20-20111** BC Biomedical External (red) Cable (BC Biomedical/Dale Technology® Type).....................**$95**
BC20-20115 BC Biomedical Kelvin Cable (BCB Type)**$115**
BC20-20150 Chassis Cable (Kelvin), one comes with the unit (SA-2500 Only)..**$115**

Invasive Blood Pressure Cables – Mini DIN

For use with BC Biomedical brand Multiparameter Patient Simulators. These cables come with the mini DIN style connector (see connector style AA in the connector reference), which is the same as the connector supplied on older (vintage) Bio-Tek Instruments simulators and old model Fluke® Biomedical Multi-parameter simulators.

Monitor Manufacturer	Description (BP connector listed below to Male mini DIN at simulator end)	BC Part #	BP Cable Connector Key	Price
Burdick	10-pin Female	BC20-41309	B	$145
Corometrics	12-pin Male (IUP Cable)	BC20-41343	M	$165
Criticare	6-pin Male	BC20-41301	H	$145
Critikon	6-pin Male	BC20-41301	H	$145
Datascope	6-pin Female	BC20-41308	F	$145
Datex DX-1	10-pin Female	BC20-41309	B	$145
Fukuda Denshi FD-2 / DS3300	12-pin Male	BC20-41311	V	$145
Hewlett Packard/Agilent/Philips	12-pin Male (40 uV)	BC20-41315	I	$145
Hewlett Packard/Agilent/Philips	12-pin Male (5 uV) **(Most common)**	BC20-41314	I	$145
Hewlett Packard/Agilent/Philips	12-pin Male (IUP Cable)	BC20-41344	PP	$165
Invivo Research	6-pin Male	BC20-41301	H	$145
Ivy Biomedical	6-pin Male	BC20-41301	H	$145
Kontron/Roche	12-pin Female	BC20-41318	X	$145
GE Marquette Eagle MQ-3	11-pin Male **(Most common)**	BC20-41320	N	$145
GE Marquette MQ-2	9-pin Female	BC20-41319	OO	$145
Medical Data Electronics (MDE)	6-pin Male	BC20-41322	H	$145
Mennen Medical	10-pin Male	BC20-41323	II	$145
Mindray V Series	5-pin Male	BC20-41367	WW	$145
Mortara	12-pin Male (5 uV) **(Most common)**	BC20-41314	I	$145
Nihon Kohden* (See Note)	5-pin Male	BC20-41324	O	$145
North American Drager	6-pin Male	BC20-41301	H	$145
Ohmeda	6-pin Male	BC20-41301	H	$145
Physio Control	6-pin Male	BC20-41301	H	$145
Protocol Systems	6-pin Male	BC20-41301	H	$145
Puritan Bennett PB-2	10-pin Female	BC20-41309	B	$145
Siemens Medical Solutions SM-1	10-pin Male	BC20-41329	HH	$145
Siemens Medical Solutions SM-3	15-pin Male	BC20-41328	Y	$145
SMEC	6-pin Female	BC20-41308	F	$145
Spacelabs (TK-1)	6-pin Male **(Most common)**	BC20-41301	H	$145
Spacelabs/Squib	5-pin Male	BC20-41331	Q	$145
Tektronix/Squib	6-pin Male	BC20-41301	H	$145
Vitastat	5-pin Male	BC20-41331	Q	$145
Vitatek/Squib	6-pin Male	BC20-41301	H	$145
Witt	6-pin Female	BC20-41355	F	$145
Universal BP Cable	Unterminated Pigtail	BC20-41340	Not Shown	$64
Universal – Adapter	BP Cable Adapter – Mini DIN Male to Large DIN Female	BC20-40736	AA – BB	$56
Universal – Adapter	BP Cable Adapter – Mini DIN Female to Large DIN Male	BC20-40737	BB – AA	$56

*To use the BC20-41324 IBP Cable with Nihon Kohden Smart Series Monitors, you will need the JP-910P cable adapter. The JP-910P can be bought directly from Nihon Kohden.

Blood Pressure Cables

Cardiac Output Cables

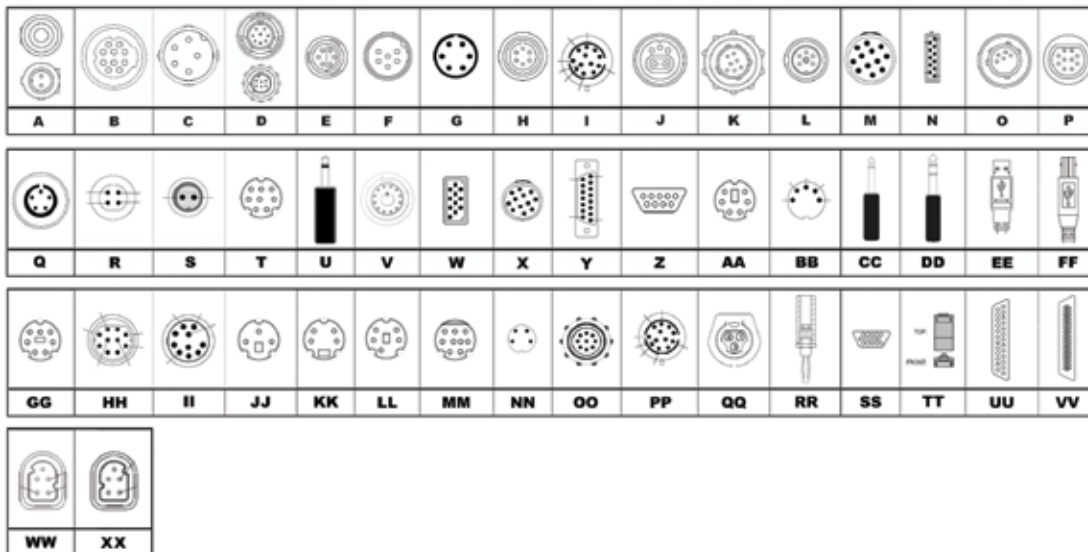**Communication Cables**

Temperature Cables

Invasive Blood Pressure Cables – Large DIN

These cables come with the large 5-pin DIN connector (see connector style BB in the connector reference) which is the same as the connector supplied on older vintage Dynatech Nevada, DNI Nevada Blood Pressure cables and new Fluke® Prosim series.

Monitor Manufacturer	Description (BP connector listed below to Male large DIN at simulator end)	BC Part #	BP Cable Connector Key	Price
Burdick	10-pin Female	BC20-40303	B	$145
Criticare	6-pin Male	BC20-40301	H	$145
Critikon	6-pin Male	BC20-40301	H	$145
Datascope	6-pin Female	BC20-40302	F	$145
Datex DX-1	10-pin Female	BC20-40303	B	$145
Fukuda Denshi FD-2 / DS3300	12-pin Male	BC20-40304	V	$145
Hewlett Packard/Agilent/Philips	12-pin Male (40 uV)	BC20-40310	I	$145
Hewlett Packard/Agilent/Philips	12-pin Male (5 uV) **(Most common)**	BC20-40309	I	$145
Invivo Research	6-pin Male	BC20-40301	H	$145
Ivy Biomedical	6-pin Male	BC20-40301	H	$145
GE Marquette Eagle	11-pin Male	BC20-40308	N	$145
GE Marquette MQ-2	11-pin Male **(Most common)**	BC20-40307	W	$145
Medical Data Electronics (MDE)	6-pin Male	BC20-40314	H	$145
Mennen Medical	10-pin Male	BC20-40315	II	$145
Nihon Kohden	5-pin Male	BC20-40316	O	$145
North American Drager	6-pin Male	BC20-40301	H	$145
Ohmeda	6-pin Male	BC20-40301	H	$145
Physio Control	6-pin Male	BC20-40301	H	$145
Protocol Systems	6-pin Male	BC20-40301	H	$145
Puritan Bennett PB-2	10-pin Female	BC20-40303	B	$145
Siemens Medical Solutions SM-1	10-pin Male	BC20-40318	HH	$145
Siemens Medical Solutions SM-3	15-pin Male	BC20-40319	Y	$145
SMEC	6-pin Female	BC20-40302	F	$145
Spacelabs (TK-1)	6-pin Male	BC20-40301	H	$145
Spacelabs/Squib	5-pin Male	BC20-40320	Q	$145
Tektronix/Squib	6-pin Male	BC20-40301	H	$145
Vitastat	5-pin Male	BC20-40320	Q	$145
Vitatek/Squib	6-pin Male	BC20-40301	H	$145
Universal BP Cable	Unterminated Pigtail	BC20-40332	Not Shown	$56
Universal – Adapter	BP Cable Adapter – Mini DIN Male to Large DIN Female	BC20-40736	AA – BB	$56
Universal – Adapter	BP Cable Adapter – Mini DIN Female to Large DIN Male	BC20-40737	BB – AA	$56

Cable Connector Key

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF

GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV

WW	XX

Temperature Cables

Description	Connector A	Connector B	BC Part #	Price
UT-1 Universal Temp Cable YSI-400 Series (PS-2110 & PS-2200 Series & NIBP-1030, NIBP-1040)	T (Male)	CC	BC20-41333	$93
UT-2 Universal Temp Cable YSI-700 Series (PS-2110 & PS-2200 Series & NIBP-1030, NIBP-1040)	T (Male)	DD	BC20-41334	$93
Universal Temperature Cable (Unterminated)	T (Male)	None	BC20-41351	$67
UT-1 Temperature Cable, MaxiSim/416M YSI-400	NN	CC	BC20-30010	$98
UT-2 Temperature Cable, MaxiSim/416M YSI-700	NN	DD	BC20-30020	$98
UT-3 Temperature Cable, MaxiSim/416M Unterminated	NN	None	BC20-30030	$67
Temperature Cable, Hewlett Packard YSI-400	NN	S (Male)	BC20-30035	$188
Temperature Cable, Mindray YSI-400 (PS-2110 & PS-2200 Series & NIBP-1030, NIBP-1040)	XX	CC	BC20-41366	$93

Cardiac Output Cables

Description	Connector A	Connector B	BC Part #	Price
Cardiac Output Cable, HP Injectate Assembly	CC (¼ - inch Phone Plug)	R (Female 4-pin)	BC20-41335	$144
Cardiac Output Cable, HP Temperature Cable	A (Female ¼ - inch Phone Plug)	A (Male 2-pin HP)	BC20-41336	$242

Communication & Miscellaneous Cables

Description	Connector A	Connector B	BC Part #	Price
Communications cable for PS-2100, PS-2200, ULT & NIBP Series, DPM-2200, DPM-2300 Series (Mini DIN M to DB 9 F) – also used with BC Flash Update Programming Utility Software	GG (Male)	Z (Female)	BC20-41337	$113
Communication Cable for PSR-2200 to MPS-450 & Marq III (Mini DIN F to DB 9 M) – adapts the standard PSR-2200 Remote to the listed Fluke® Biomedical simulators	GG (Female)	Z (Male)	BC20-41338	$113
Cable Adapter for PS-2100, PS-2200, ULT & NIBP Series, DA-2006 (USB to DB 9 M) – used on a PC that does not have an RS232 port – includes cable and CD with driver software	EE	Z (Male)	BC20-41339	$113
Communication Cable for DA-2006 & ESU-2000 Series (DB 9 M to DB 9 F)	Z (Male)	Z (Female)	BC20-41341	$113
Communication Cable for PSR-2200 to Host Computer (Mini DIN F to DB 9 F)	GG (Female)	Z (Female)	BC20-41342	$113
Communication Cable for the ESU-2000 Series USB(A)M to USB(B)M	EE	FF	BC20-41352	$31
Communication Cable for DPM-2000 Series (1/8" Phone Plug to DB 9 F)	U (1/8" Male)	Z (Female)	BC20-21102	$113
IPA-1000 Instrument to Chamber Interconnect Cable (Mini DIN M to Mini DIN M)	T (Male)	T (Male)	BC20-40607	$36
Cable, Communication USB Null Modem (ESU-2400 to PC), USB(A)M to USB(A)M	EE	EE	BC20-41360	$113
Communication RS232, USB(A)M to Mini DIN Male	GG (Male)	EE	BC20-41361	$113

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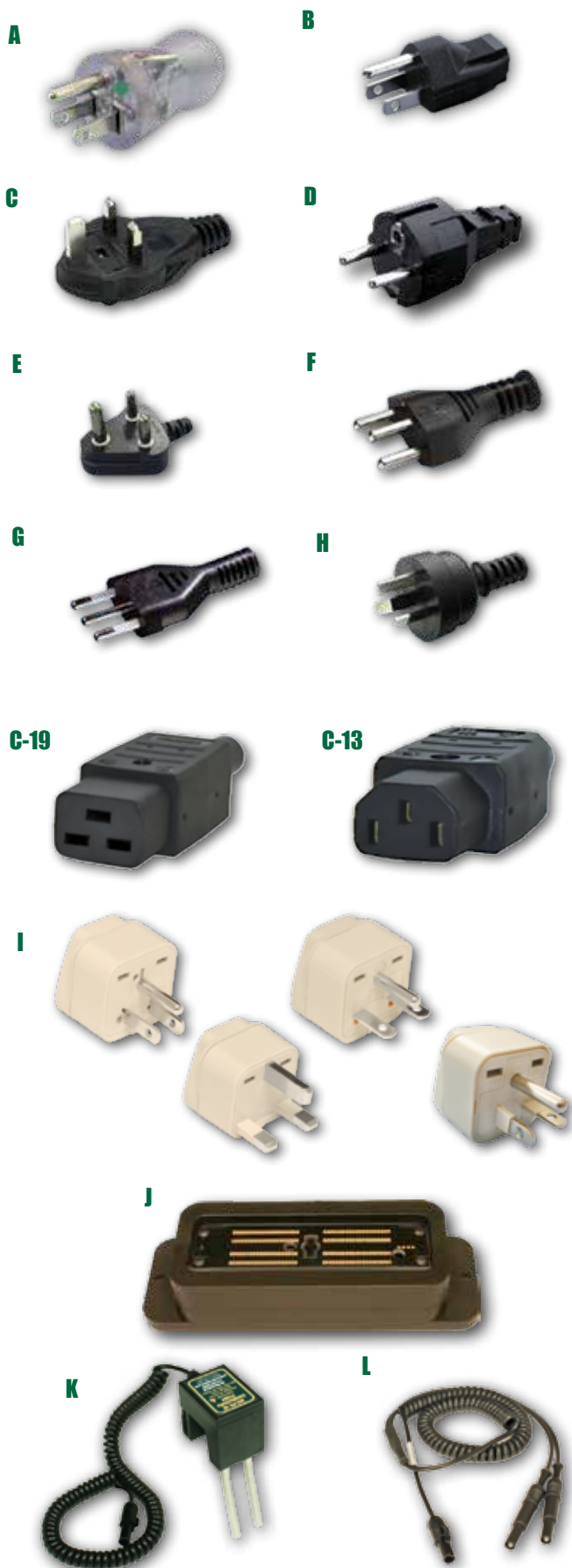
Typical Power Cord Options Available for the SA-2000-INTL Series & SA-2500 With C-19 Connector

- **A.** **BC20-20400** North America Hospital Grade.............$64
- **B.** **BC20-20401** Japan...$64
- **C.** **BC20-20402** United Kingdom................................$64
- **D.** **BC20-20403** Schuko-Continental Europe with Schuko ground adapter...$80
- **E.** **BC20-20409** India/South Africa.............................$64
- **F.** **BC20-20410** Switzerland.......................................$64
- **G.** **BC20-20412** Italy...$64
- **H.** **BC20-20416** Australia...$64

Typical Power Cord Options Available for the ESU-2050, 2050P, 2300, ESU-2400, and IPA-3400 Series With C-13 Connector

- **B.** **BC20-20500** North America....................................$64
- **B.** **BC20-20501** Japan...$64
- **C.** **BC20-20502** United Kingdom................................$64
- **D.** **BC20-20503** Schuko-Continental Europe................$64
- **E.** **BC20-20509** India/South Africa.............................$64
- **F.** **BC20-20510** Switzerland.......................................$64
- **G.** **BC20-20512** Italy...$64
- **H.** **BC20-20516** Australia...$64

Universal Adapters

- **I.** **BC20-20200** US Plug Adapter(Grounded).....................$19
- **BC20-20201** Universal US 220V(Grounded).................$19
- **BC20-20202** UK Plug Adapter.................................$19
- **BC20-20218** US 220V Plug Adapter(Grounded)..........$19

Ultrasound Transducer Adapters (use with ULT-2000 Series)

- **ULT-PA-10** Acuson/Siemens 8V5,15L8W,V5M,3V2C $500
- **ULT-PA-11** Sonsonite Transducers, including TEE $500
- **ULT-PA-12** Acuson/Siemens 260-PIN.....................$1050
- **ULT-PA-13** Acuson/Siemens 156-PIN,V510B............$705
- **ULT-PA-14** ATL/Philips C9-5 Curved Array.............$1050
- **ULT-PA-16** GE LogicQ and GE P9603AU...............$1050
- **ULT-PA-17** Philips/ATL iE33 and iU22 ....$1050
- **ULT-PA-18** Philips/HP 4500, Sonos 5500/7500.........$500
- **ULT-PA-19** Philips/CX50...$1100
- **ULT-PA-20** Toshiba PVF Series, 2B701-753E...........$705
- **ULT-PA-21** Hitachi EUP-ES52M, EUP-Series Probes.....$1050
- **ULT-PA-22** Aloka SSD-620, SSD-650.....................$1050
- **ULT-PA-23** All Transducers.....................................$575
- **ULT-PA-24** Philips/ATL 256-pin, w/belled housing..........$1050
- **ULT-PA-25** GE Logic Q, VIVID 6T,9T etc.................$1100
- **ULT-PA-26** Acuson/Siemens 360-PIN.....................$1765
- **ULT-PA-27** GE YMS/RT..$705
- **ULT-PA-28** GE/CGR (for use with GE/CGR Radius and GE SONO Transduc...$705
- **J.** **ULT-PA-29** Zonare Medical Systems..............................$780
- **ULT-PA-30** GE Vivid E9...$1180

Ultrasound Dual Conductivity Probes (use with ULT-2000 Series)

- **K.** **ULT-PC-10** Short Probe (3.43 inches / 87.1 mm).......$345
- **ULT-PC-15** Medium Probe (4.46 inches / 113.2 mm)$415
- **ULT-PC-20** Set, Includes Long Probe (11.58 inches / 294.1 mm) and Short Probe (4.89inches / 124.2 mm)$490
- **L.** **ULT-PC-25** Adapter cable for Gus cleaning system $135
- **ULT-PC-30** Dual Conductivity Probe (Flexible).........$345

AC & Battery Eliminator Cross Reference

	Part #	Voltage	Item No.	Description	Price
A.	BC20-21111	10VDC	ULT-2000 IPA-1000 DPM-2000	Battery Eliminator Interchangeable US, UK, AUS and Euro Adapters	**$57**
	BC20-21112	12VDC	NIBP-1010(only) SPO-2000	Battery Eliminator 12VDC Interchangeable US, UK, AUS and Euro Adapters	**$57**
	BC20-21113	12VDC	UPM-DT-1000PA UPM-DT-1PA UPM-DT-10PA UPM-DT-100SP UPM-DT-50SP USP-50SP USP-100A	Battery Eliminator 12VDC Interchangeable US, UK, AUS and Euro Adapters	**$57**
	BC20-21114	10VDC	DA-2006 PS-2010 PS-2100 PS-2200	Battery Eliminator Interchangeable US, UK, AUS and Euro Adapters	**$57**
B.	BC20-21115	12VDC	NIBP-1020 NIBP-1030 NIBP-1040	Battery Eliminator Interchangeable US, UK, AUS and Euro Adapters	**$57**
	BC20-21116	6VDC	AMM-15	Battery Eliminator 6VDC	**$57**
C.	*BC20-21104	6VDC	ESU-2050 ESU-2050P	Power Supply,Universal With C-13 Connector	**$75**
D.	*BC20-21105	9VDC	ESU-2300	Power Supply,Universal With C-13 Connector	**$75**
	*BC20-21107	12VDC	ESU-2400 ESU-2400H	Power Supply,Universal With C-13 Connector	**$140**
	*BC20-21108	12VDC	PFC-3000	Power Supply,Universal With C-13 Connector	**$82**

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*Power Cord not included, see page HH

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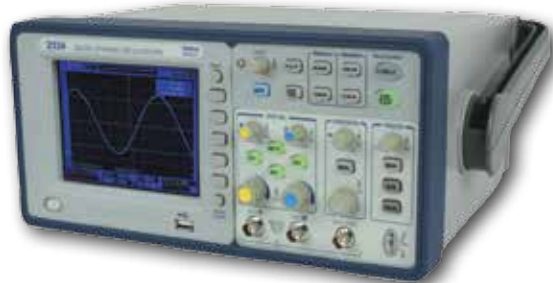
H

D. Fluke ScopeMeter 190-Series
Fluke 196B/003 (100 MHz Bandwidth)........................**Call**
Fluke 199BM (200 MHz Bandwidth)..........................**Call**
Fluke 199CM (200 MHz Bandwidth)..........................**Call**

E. Fluke 123/003 ScopeMeter..**Call**
RS-232 compatible and comes with a 3-Year Warranty.
• 20 MHz Bandwidth • Two Scope Vertical Channels
• Two DMM Channels

Optional Accessories:
• **C125** Soft Carrying Case.......................................**Call**
• Calibration Certificate..**Call**

F. Gold Scope Probe Kits
The "Gold Probe" has been designed specifically for use with Tektronix, Hewlett Packard and other high performance oscilloscopes. The Gold-plated tips, sprung hook, ground lead, alligator tip and other critical interconnect points within the Gold Probe, provide excellent contacts for probing low-level analog signals.

4901-2 Basic 7-piece Kit..**$53**
4901-2K Deluxe 17-piece Kit......................................**$82**

G. BK Digital Storage Oscilloscope Model 2534 ....**Call**
The 2540B, 2542B, 2540B-GEN, and 2542B-GEN dual channel 60 MHz and 100 MHz digital storage oscilloscopes (DSO) deliver performance and value, all-in-one portable solution. Maximize productivity using extensive features such as digital filtering, waveform recorder, PASS/FAIL limit testing, and automatic measurements. These oscilloscopes offer powerful tools in a small affordable package with deep waveform memory up to 2.4 Mpts plus LAN and USB PC interface. The 2540B-GEN and 2542B-GEN models add a built-in arbitrary waveform generator (AWG). These digital oscilloscopes are ideal for applications in design and debugging, service and repair, and education.

2540B 60 MHz, 1 GSa/s Digital Storage Oscilloscope..........**Call**
2540B-GEN 60 MHz, 1 GSa/s Digital Storage Oscilloscope
with Generator..**Call**
2542B 100 MHz, 1 GSa/s Digital Storage Oscilloscope........**Call**
2542B-GEN 100 MHz, 1 GSa/s Digital Storage Oscilloscope
with Generator ....**Call**

H. BK 50 kHz Spectrum Analyzer Model 2658A **$10995**
B&K Precision's 2658A is a compact, lightweight and cost-effective spectrum analyzer for quick and precise signal investigations, especially away from the bench. At a weight of only 4 pounds (1.8 kg), the 2658A is, by far, the lightest full-featured spectrum analyzer available. Yet it delivers performance and features comparable to a full-size bench spectrum analyzer and can operate up to 4 hours on a single battery.

With its ease of use, measurement flexibility and unmatched portability, the 2658A spectrum analyzer is an indispensible tool for engineers and technicians who conduct field measurements in the 50 kHz to 8.5 GHz range.

A. EXTECH EX710: 800A AC Clamp Meter...........................**$90**
- 0.1 to 600 V
- 0.01 to 800 Amps AC
- Carrying Case, Battery & Test Leads Included
  Optional Accessory:
  - **NIST Traceable Calibration Certificate**................**$125**

Extech EX720 True RMS AC Clamp-On Meter.....................**$120**
- 0.1 to 600 V
- 0.01 to 800 Amps AC
- -4 to 1400 °F (-20 to 760 °C)
- Case, Battery & Test Leads Included
  Optional Accessory:
  - **NIST Traceable Calibration Certificate**................**$125**

Extech EX730 True RMS AC/DC Clamp-On Meter...............**$170**
- 0.1 to 600 V
- 0.01 to 800 Amps AC
- -4 to 1400 °F (-20 to 760 °C)
- Case, Battery & Test Leads Included
  Optional Accessory:
  - **NIST Traceable Calibration Certificate**................**$125**

Multimeter Test Leads & Accessories
B. 8043S "Softie" DMM 10 piece lead set.........................**$28**
C. Fluke T-Pak Meter Hanging Kit....................................**Call**
D. Fluke 80K-40 High Voltage DMM Probe with Cal.......**$220**

Model	Fluke 77-4	Fluke 114	Fluke 179	Fluke 87V	Fluke 289
Price	$320	$150	$350	$450	$600
Price w/Cal Cert	$360	$190	$390	$485	$640
True RMS	No	AC	AC	AC	AC/DC
Basic Accuracy	0.3%	0.5%	0.09%	0.05%	0.025%
Bandwidth	No	No	No	20 kHz	100 kHz
Auto/Man. Ranging	Yes	Yes	Yes	Yes	Yes
Digits	3.5	3.5	3.5	4.5	4.5
Counts	3,200	6,000	6,000	20,000	50,000
Temp.	No	No	+400 °C +752 °F	+1090 °C +1994 °F	+1350 °C +2462 °F
Datalogging	No	No	No	No	Yes

We carry a wide variety of Digital Multimeters.
If you do not see what you need, please feel free to contact us.

E

E. PowerGuide 4400..**Call**
Equipped with 8 independent channels, the 3-phase PowerGuide 4400 is the only advanced power monitoring instrument to incorporate a color touchscreen into its lightweight design. Automated setups provide instant detection of circuits and configurations, ensuring that the instrument is ready to successfully collect data. Users can select the length and mode of data collection, including troubleshooting, data logging, power quality surveys, energy and load balancing.

F. STARLINE Instruments

The new generation of STARLINE instruments including METRAHIT BASE, PRO, TECH and X-TRA, are extremely rugged, reliable digital multimeters with housings made of impact-resistant plastic. They feature an ultramodern design and are equipped with state-of-the-art technology.

F

- METRAHIT BASE..**Call**
- PRO...**Call**
- TECH...**Call**
- X-TRA...**Call**

Common features of the A series:
- Resolution: ± 12,000 digits, 4½-place
- 3 connector jacks with patented automatic blocking sockets (ABS)
- TRMS AC and AC / DC function
- Voltage measurement with a basic accuracy of ± 0.05% (V DC)
- Automatic and manual measuring range selection
- Automatic storage of measured values: DATA / MIN / MAX
- Large, light-blue illuminated display with extra-large characters (15 mm) and an analog bar graph for dynamic processes
- Separate battery and fuse compartments
- IP 52 protection against dust and water
- Measuring categories: 1000 V CAT III and 600 V CAT IV
- Made in Germany
- DAkkS calibration certificate included

G

METRAHIT	BASE	PRO	TECH	X-TRA
Order number	M241A	M242A	M243A	M240A
Number of multimeter functions	12	16	20	23
Bandwidth (TRMS)	1 kHz	10 kHz	10 kHz	20 kHz
Frequency measurement	100 kHz	100 kHz	100 kHz	1 MHz
Current measurement	Clamp	x	x	x
Low-pass filter (1 kHz)		x	x	x
Capacitance measurement			x	x
IR interface				x
Data memory (4 MBit = 512 kB)				x
Mains connection				x
Rubber holster	Optional	Optional	Optional	x

G. METRAHIT 2+ ....**Call**
The METRAHIT 2+ provides users with all the measuring functions of a highly diverse multimeter: convincing technology with all voltage, resistance, current and temperature measuring ranges, and additional measuring functions and automatic functions.

DRANETZ BMI

The Source for Power Monitoring Equipment and Services

Dranetz-BMI has long been recognized as the world's number one source for power monitoring equipment and services. From versatile handheld power quality monitors used for portable troubleshooting applications, to permanently installed systems for continuous power quality process improvement, trust the experts at Dranetz-BMI to find a solution that's right for your business.

Digital Thermometers

Measurement range:
J-type: -346 °F to 2192 °F
K-type: -328 °F to 2501 °F

Prices include Calibration Certificate
Fluke Series II 51-2 Single Input, with one bead
thermocouple...**$350**

A. Fluke Series II 52-2 Dual Input, with two bead
thermocouples **$400**

*If Calibration Certificate is **not** needed, deduct **$50** from price.*

B. Extech 445580 Humidity/Temperature "Pen"............... **$66**

Pocket convenience.
• Humidity: Range: 10 to 90%; Accuracy: ± 5%; Resolution: 1%
• Temp: Range: 32 °F to 122 °F; Accuracy: ± 1.5 °F; Resolution:
 0.1 °F

• **NIST Traceable Calibration Certificate**................**$125**

Temperature Adapters
Convert your DMM to a Temperature Meter.

C. Fluke 80TK DMM Temperature Adapter
(w/Calibration Certificate)..**$195**

Fluke 80TK DMM Temperature Adapter
(w/o Calibration Certificate)...**$150**

D. Fluke 80T-150UA DMM Temperature Adapter
(w/Calibration Certificate)..**$315**

Fluke 80T-150U DMM Temperature Adapter
(w/o Calibration Certificate)...**$270**

Thermocouple Probes for Fluke 50-series & Other "K" Type Temperature Meters

E. Fluke 80PK-1 Bead thermocouple probe.....................**Call**
F. Fluke 80PK-3A Surface probe...................................**Call**
G. Fluke 80PK-22 Immersion probe................................**Call**
H. Fluke 80PK-24 Air probe..**Call**
I. Fluke 80PK-25 Piercing probe.....................................**Call**
J. Fluke 80PK-26 Extended bead probe.........................**Call**
K. Fluke 80PK-27 Ruggedized surface probe.................**Call**
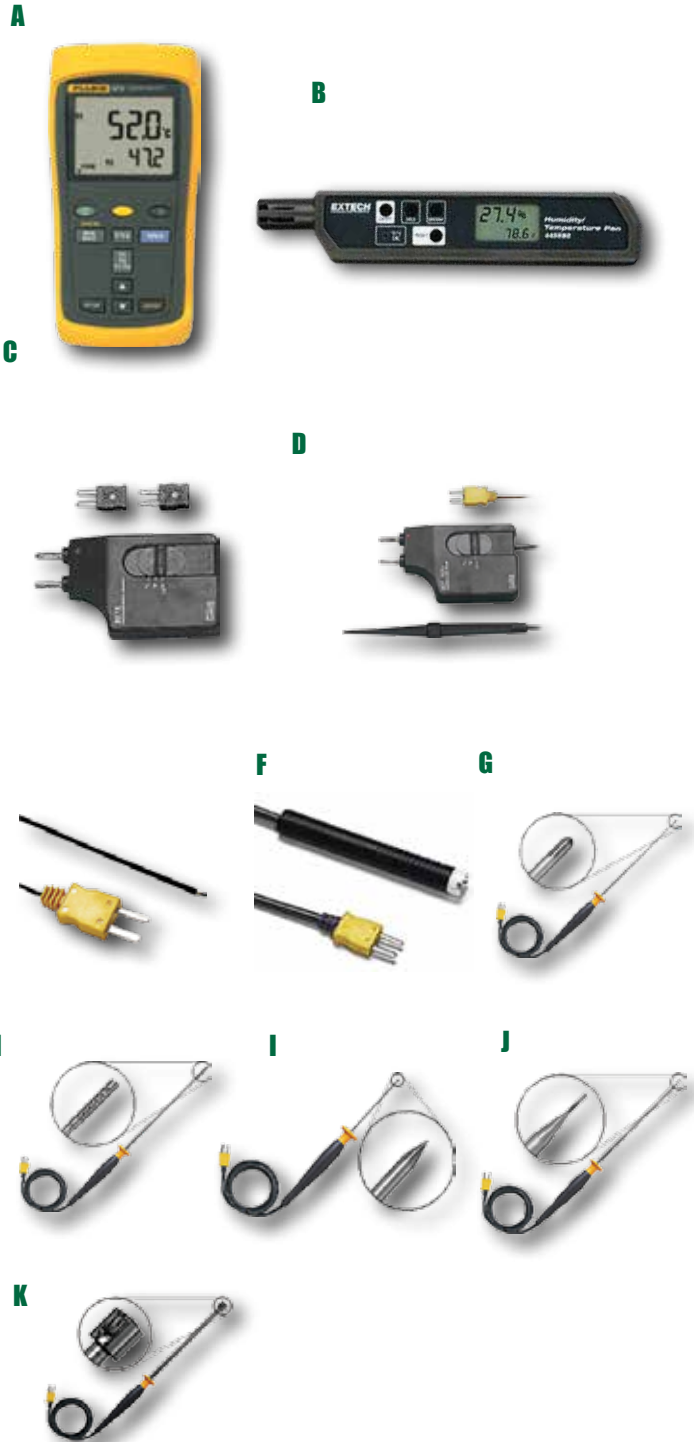
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O

Gammex RMI Multi-Purpose Phantom Series
Performs the following tests:
- Axial and Lateral Resolution at multiple depths
- Cyst imaging at multiple depths • Depth of penetration
- Image uniformity • Dead Zone
- Vertical and Horizontal Distance Accuracy
   802263 403 LE-0.5 Precision..................................**$3544**
   802264 403 LE-0.7 Precision..................................**$3545**

Gammex RMI Multi-Purpose Grey Scale Phantom Series
Use this series of phantoms for the following tests:
- Axial and Lateral Resolution at multiple depths
- Cyst imaging at multiple depths • Depth of penetration
- Image uniformity • Dead Zone
- Vertical and Horizontal Distance Accuracy
- Grey Scale qualitative and quantitative evaluations
N. **802259** 403GS LE-0.5 Precision.............................**$3945**
   802260 403GS LE-0.7 Precision.............................**$3944**

P

Gammex RMI Multi-Purpose Grey Scale Phantom Series
Advanced tissue mimicking gel and grey scale targets are designed for the exacting standards of today's high-resolution ultrasound systems. The Precision Resolution Grey Scale Phantom GAMMEX 405GSX LE incorporates our Tissue Mimicking™ gel which provides a smoother background texture than conventional TM gels. This gel reduces the backscatter that is inherent in graphite-based TM gels and is fully compatible with the latest in tissue harmonics equipment and technology. The phantom can be scanned using normal control settings and ensures that the performance measured closely approximates the scanner's performance in a clinical examination. In addition, the phantom has a composite film scanning surface that has improved transmission properties so more of the ultrasonic beam can be transmitted and received. Attenuation: 0.5 ±0.05 dB/cm/MHz
O. **802267** 405GSX LE-0.5 Precision............................**$4150**
   802268 405GSX LE-0.7 Precision............................**$4169**

Q

Gammex RMI Tissue Mimicking QC Phantom Series
Spherical Lesion Phantom This phantom is used to test the resolution of Ultrasound scanners. It tests in 3 dimensions: axial, lateral and elevational.
P. **802271 408 LE-0.5 US** SPHERICAL LESION PHANTOM
   ....**$6716**
   802157 408 LE-0.7 US SPHERICAL LESION PHANTOM
   ....**$6716**

Q. Gammex RMI Carrying Case for 403/403GS 082B-403
Hard-sided carrying case designed with foam to protect any Ultrasound Phantom Investment on the inside.
   ....**$265**

We carry the complete line of Gammex RMI & other lines of Phantoms.
Call BC Group for specs & pricing to find the perfect model for you!

A

A. The Radcal Rapid-Gold+..**Call**

The Rapid-Gold+ is a highly capable diagnostic measurement solution offering support for Radcal's Solid-State sensors and advanced diagnostic functionality.

Systems Solutions

The Rapid-Gold+ provides a tailored solution to your individual diagnostic measurement needs when paired with:

• Radcal's broad selection of Gold Standard sensors
• user friendly display that facilitates recording and reporting of results quickly and easily
• carrying case to transport your custom solution securely and conveniently

Sensor Selection

The Rapid-Gold+ supports Radcal's full line of Solid-state Dose Diodes, and Solid-state Multisensors featuring the most accurate and compact stacked sensor design available.

Software and Display Technology

Radcal offers a number of display options including a compact tablet, a full-size tablet with keyboard, or you can use your own computer for a fully integrated and economical solution. In each case, the Accu-Gold and Accu-Gold Excel software provides a rich, user friendly, and automated environment in which to record, view, and archive your measurements.

Functionality

The Rapid-Gold+ provides a comprehensive set of parameters including Dose, Dose Rate, Waveform, Exposure time, kV, Filtration, HVL, and mA (optional).

Modalities

The Rapid-Gold+ is well suited for Radiography, Fluoroscopy, Mammography, CT, and Dental applications.

RAPID-GOLD+ FEATURES, BENEFITS AND SENSORS:	
KEY FEATURES	**BENEFITS**
Solid State sensors	Rad/Fluoro/Dental Sensor and Mammography Sensor
Simultaneous measurements	Up to 16 user selectable parameters viewable from each measurement
Customizable view screens	Create data display profile either before or after the exposure
Plug and Play sensors	Truly Interchangeable Accu-Gold+ Multisensors with other Rapid-Gold+ and Accu-Gold+ meters
Real time waveforms	Real time simultaneous dose rate, kV, and mA waveforms
Data recall	Entire measurement sessions can be quickly recalled and added to at any time
Matrix display	Use Matrix display to view measurement results from the control room
Scope type waveform analysis	Analyze kV, dose, and mA waveform measurement values in detail
Export data	Export data to Excel, user templates or clipboard

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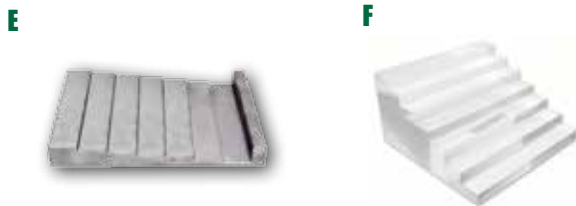
B. Spatial Resolution Line Pair Patterns..............................**Call**
These test patterns are designed for quick quantitative assessments of the limiting spatial resolution of an x-ray system. The line pair patterns consist of a thin foil of Lead sandwiched between plastic plates. In the foil, linear slits are cut with a range of widths, these alternate with linear bars of the foil of equal width. One slit and one bar is referred to as a line pair, and the width of each group of lines is specified in terms of the number of line pairs per mm (LP/mm). The observer counts the number of groups in which he can resolve the slits from the bars and as such can determine the resolving capability of the x-ray system in terms of LP/mm. A wide range of pattern designs is available with varying ranges of LP/mm and foil thicknesses

C. Focal Spot Star Patterns...**Call**
These test patterns are designed for quick quantitative assessments of the focal spot size of an x-ray system. The star pattern comprises a thin foil of Lead into which are cut a pattern of slits diverging from a central point which can be used to measure the Xray focal spot size. The separation between slits increases linearly with distance from the centre. When imaged with an X-ray source, the finite size of the X-ray source will cause the lines to blur together within a certain distance of the centre. The radius of the blur will be directly proportional to the size of the focal spot.

D. Lunar Alignment Kit BC20-35110...................................**$11000**
Kit includes:
- BC20-35111 Lower Alignment Rod (DPX/Prodigy)
- BC20-35112 Alignment Extension Assembly for Prodigy
- BC20-35113 Aperture Alignment Plate for Prodigy
- BC20-35114 Peaking Brass Plate for Prodigy

E. • BC20-35115 Aluminum Calibration Standard Assembly
F. • BC20-35116 Primary Calibration Clear Step Block
- BC20-35117 Tube Head Wrench

G. Individual components:
BC20-35010 Aluminum Alloy 101 sheet, 8"x8" 1/4" thick..............$304.95
BC20-35011 Aluminum sheet, 12"x12" 1/4" thick $307.00
BC20-35020 Copper Alloy 101 , 8"x8" 1/32" thick $154.95
BC20-35021 Copper sheet, 12"x12" 1/32" thick $181.90
BC20-35030 Plexiglass sheet, 8"x8" 1/2" thick $28.95
BC20-35031 Plexiglass sheet, 12"x12" 1/2" thick $56.45

H. Atrix VACOSMRI Green Supreme ESD-MRI Vacuum...............**$400**
The Atrix International VACOSMRI Omega Green Supreme ESD-Safe Hospital & MRI Service Vacuum System comes standard with a True HEPA Filter, a 15' Non-Metallic Hose, a 16" ESD-Safe Flexible Wand, an ESD-Safe Crevice Tool, and a Shoulder Strap, which is perfect for maintaining MRI machines. The standard 15' Hose allows service personnel to keep a safe distance away from any magnetic field. The Atrix VACOSMRI GREEN Supreme Hospital & MRI Service Vacuum is made from High Impact Starex Flame Retardant ABS Polymer and features over-heat protection.

Kit includes:
- 15' non-metallic hose
- 16" ESD-Safe flexible wand
- ESD-Safe crevice tool
- Shoulder strap

A. MAVOLUX 5032 C USB & 5032 B USB Light Meters................**Call**

For measuremement and control of light sources such as street lights, public buildings sports facilities, and quality control in the manufacturing of lamps and light sources.

- Precision digital measuring instrument for measuring luminance in lux or footcandles
- Luminance measurement in cd/m2, or in footlamberts with luminance attachment as accessory
- Large measuring ranges - high resolution - classified in accordance with DIN 5032-7 and CIE no. 69
- The silicon photodiode is color corrected, (i.e. its spectral sensitivity is matched to that of the human eye V(I).)

B. MAVO - SPOT 2 USB Spotmeter..**Call**

Luminance 1° Spot Meter attachment that provides very precise readings for this high-end meter.

From a minimum distance of 1m, and out to infinity, this accessory can be used to obtain precise luminance readings for many applications involving photography, sports venues, street lighting, museums, projection screens, desk lighting and any architectural need.

- SLR viewfinder with measuring circle of 1° and viewing field of 15°
- Measuring from the distance of 1 m to ∞, with close-up lenses (optional) down to 34 cm
- Contact measurement with optional Measuring Probe Backlight display illumination with LCD read-out in the viewfinder

C. MAVO-MONITOR USB Light Meter..**Call**

The Gossen Mavo Monitor is a digital precision light meter for measuring luminance with the measuring sensor placed directly on the luminous or back-lighted surface, for instance with monitors (Crt/Lcd), TV screens, light boxes, light panels, traffic signs and ground glass.

An easy-to-handle, user-friendly light meter for professional applications in industry and service, for special checks and certfied testings according to the existing safety regulations, above all at work stations, in medical and office systems.

- Measurement of luminance in cd/m² or fL
- Easy operation
- 3½ place display
- Storage of up to 100 measured values
- USB 1.1 port
- Automatic and manual measuring range selection

D. M505G Mavo-Max..**Call**

Monitoring of the ambient light, according to IEC 61223-2 5 (QS -RLdt. Nov. 20, 2003). The MAVO-MAX extends the repeating cycles to six months for testing the constancy at imaging display systems concerning the "veil luminance" and the "max brightness contrast". In case of repeat measurements in the course of inspection or constancy tests, the repetition of the "veil luminance" measurement will not be required. Therefore, it saves the waiting time of up to 60 minutes, which must be observed for this procedure to ensure stability of the imaging display.
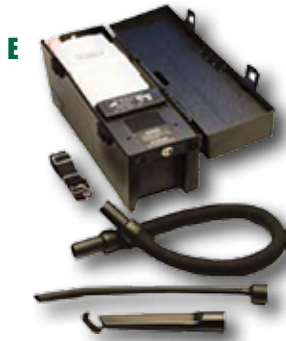
E. Omega Supreme Electronic Vacuum
- ESD-Safe • EMI/RFI line filtered
- Accessories store inside lid • 0.3 Micron Filter
- Size / Weight: 19"x 8"x10" / 11 Lbs

   VACOMEGASLF 110 V **$310**
   VACOMEGASLFH 110 V with HEPA........................**$326**
   VACOMEGAS220F 220 V.......................................**$254**

  Optional Accessories:
- **31700-2P** 0.3 Micron Cap. Std. Filter (two pack).......**$28**
- **VACPACK** Deluxe Back Pack..................................**$85**

F. HEPA Express Vacuum VACEXP-04.................................**$199**
- Safe for electronics, EMI/RFI Filtered
- HEPA grade filtration in a small powerful size

  Optional Accessories:
- **710333** 0.3 Micron Cap. Std. Toner Filter (two pack)......**$25**
- **730333** 0.12 Micron Cap. HEPA Filter (two pack)....**$44**

G. Field Portable Static Kit ATIESD-1CPGS..........................**$65**
- Includes mat, wrist strap & ground cord.

H. CDI 10002MRMH ADJ. TORQUE WRENCHES 10-100 ft. lbs.........
....**$272**
- Metal Handle Dual Scale. The metal handle series offers the user a rugged, industrial strength torque wrench able to withstand the rigors of professional use. Handles are lightly knurled for a tough, non-slip grip. Individually serialized with matching certificate of calibration traceable to N.I.S.T.

I. CDI KL45-401SM ADJ. SCREWDRIVER 5-40 Inch/Pound.......**$337**
- Adjustable models offer versatility for applications that require more than one torque value. A simple, cam-over design prevents over-tightening and possible damage to components. Individually serialized with matching certificate of calibration traceable to N.I.S.T.

Complete CDI Torque Product Line....................................**Call**

Remin Kart-A-Bag Carts
- Ten Year Limited Warranty
- Solid chrome-plated steel with heavy-duty wheels
- Captive elastic cord to secure load
- Durable & heavy-duty

J. Remin Super 600..**$196**
- 6" roller-bearing semi-pneumatic wheels • 300 Lbs capacity

K. Remin TriKart 800..**$246**
- 6" roller-bearing semi-pneumatic wheels • 300 Lbs capacity
- Tilt-back swivel casters

*Other models, sizes & capacities available,
call for specs & prices!*

L. PM Cart Lite 20-734...**$551**
- Built-in peg boards & cord wrap • Hard plastic casters
- Durable metal & plastic construction
- Size / Weight: 32"x30"x20"Deep / 56 Lbs

Why Should I Purchase a NIBP-1040?

Features:	BC Biomedical NIBP-1040 Kit™	Fluke ProSim 8™	Fluke ProSim 4™	Pronk SC-5 SimCube™	Pronk SC-4 Simcube™	Clinical Dynamics AccuPulse™	Rigel BP-SiM™
Non-Invasive Blood Pressure Simulator Comparison Chart							
NIBP Simulation	Included	Included	Included	Included	Included	Included	Included
Manometer	Included	Included	Included	Included	Included	Included	Included
SpO$_2$	Optional	Optional	Not Available	Not Available	Not Available	Not Available	Not Available
ECG Simulation	Included	Included	Included	Included	Included	Included	Not Available
Performance waveform	Included	Included	Not Available	Not Available	Not Available	Included	Not Available
Patient Simulation	Included	Included	Included	Included	Included	Optional	Not Available
Pacer	Included	Included	Included	Included	Included	Optional	Not Available
Respiration	Included	Included	Included	Included	Included	Optional	Not Available
IBP Simulation	Included	Included	Included	Included	Not Available	Optional	Not Available
Temperature	Included	Included	Not Available	Not Available	Not Available	Optional	Not Available
Arrhythmias	Included	Included	Included	Included	Not Available	Optional	Not Available
Leak Detection	Included	Included	Included	Included	Not Available	Included	Included
Extended Leads	Included	Included	Not Available	Not Available	Not Available	Optional	Not Available
Cardiac Output	Included	Included	Not Available	Not Available	Not Available	Not Available	Not Available
Fetal/Maternal	Included	Included	Not Available	Not Available	Not Available	Not Available	Not Available
Internal Battery	Included	Included	Included	Optional	Optional	Included	Included
Peak Detection	Included	Included	Not Available	Included	Included	Included	Included
Alarm	Included	Included	Included	Included	Included	Not Available	Not Available

Why Should I Purchase an ESU-2400?

ESU Comparison Chart					
Item	**BC Biomedical ESU-2400H**	**BC Biomedical ESU-2400**	**BC Biomedical ESU-2050P**	**Rigel Uni-Therm**	**Fluke Biomedical QA-ES III**
1% Measurement Accuracy	Included	Included	Included	Not Available	Not Available
Current Measurement Method	Included	Included	Included	Included	Included
1 Ohm Load Resolution	Included	Included	Not Available	Not Available	Not Available
Tissue Response Simulation	Optional	Optional	Not Available	Not Available	Not Available
High Crest Factor	Included	Included	Included	Not Available	Not Available
1 % REM/CQM/ARM Accuracy	Included	Included	Optional	Not Available	Not Available
Basic Pulsed Mode Measurement	Included	Included	Included	Not Available	Not Available
Advanced Pulsed Mode Measurements	Included	Not Available	Not Available	Not Available	Not Available
Fully Automated PM procedure for ForceTriad™ 101 steps	Included	Included	Not Available	Not Available	Not Available
Communication with DUT	Included	Included	Not Available	Not Available	Not Available
Required loads for ForceTriad™ Autobipolar Testing	Included	Included	Not Available	Included	Not Available
Easy to use Touch Screen Interface	Included	Included	Not Available	Not Available	Not Available
Automated Software Updates through web interface	Included	Included	Not Available	Not Available	Not Available
Networking ability for virtually unlimited data storage	Included	Included	Not Available	Not Available	Not Available
Can save test results to PDF format locally for maximum stand-alone operability	Included	Included	Not Available	Not Available	Not Available

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- Clinical Engineering
- Service Manager

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Benchtop Flow Analyzer

See Page 65-66

✓ Cardiac Output
✓ Fetal Maternal
✓ Arrhythmias
✓ Performance
✓ Respiration
✓ NIBP
✓ ECG
✓ IBP
✓ Temp
✓ SpO_2

**NIBP-1040Kit-E
Patient Simulator**

See Page 21-22

**TSI Certifier-FA® PLUS
Flow Analyzer**

See Page 67-68