

BC Marketplace

A UNIT OF BC GROUP INTERNATIONAL, INC.



2015 CATALOG

Distributor :



PT. Scientia Pelita
Jl. Dr. Saharjo No.181C
Jakarta - 12860
Telp. 021-8309845
Fax. 021-8297973
Email: info@scientiapelita.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.

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. We just introduced our new ESU-2400H Electrosurgery Analyzer with enhanced ability to detect waveforms with a higher sampling rate. (Upgrade path for previous models available.)

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.



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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
- ◆ 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
- ◆ 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)
- ◆ RS232 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 natural choice.

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

SPECIFICATIONS



Models:	SA-2000	SA-2001	SA-2005	SA-2010	SA-20i05
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
RS232	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 (ohms)	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)

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; has US Plug & Socket) and CS-2000-E (European Version; has 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



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 a 1 Amp current source for testing the ground continuity in equipment. This device facilitates testing to IEC 601 requirements, where a 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



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 717 "Schuko"
DUT RECEPTACLE	CS-2000-U	Hospital Grade NEMA 5-15R
	CS-2000-E	European CEE 717 "Schuko"
CONNECTIONS		LINE PLUG 3 Pin Locking Plug for Safety Analyzer Cables Cable Connection (See Description section for Compatible Safety Analyzers) Detachable Kelvin Cable (BC20-20114) for DUT Ground Connection
Physical		
SIZE		7.03 x 3.94 x 1.56 Inches (180 x 100 x 40 mm)
ENCLOSURE		ABS Plastic Back-printed Loxan 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 55 °C (-40 to 140 °F)

Flip for product pricing - Page B

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 (Non-Kelvin), optional for external measurement mode
- ◆ BC20-20151 – Chassis Cable (Kelvin), one comes with the unit



SA-2500

NEW 

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 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)

Meas. No.	Meas. Name	Measured	Limit (UL)	Limit (LL)
1	Line Voltage	115.0 V	115.0 V	115.0 V
2	Device Under Test Current	0.00 A	0.00 A	0.00 A
3	Earth/Ground Lead Resistance	0.00 Ohm	0.00 Ohm	0.00 Ohm
4	External Resistance	0.00 Ohm	0.00 Ohm	0.00 Ohm
5	External Leakage Current	0.00 mA	0.00 mA	0.00 mA
6	Source Receptacle Wiring Integrity	Pass	Pass	Pass
7	MAP (Isolation) Function	Pass	Pass	Pass
8	True RMS Readings	Pass	Pass	Pass
9	90 to 240 VAC Operation	Pass	Pass	Pass
10	Touch Control Keys - No Knobs	Pass	Pass	Pass
11	Audible Feedback	Pass	Pass	Pass
12	Automatic Delay on Power Polarity Reversal to DUT	Pass	Pass	Pass
13	Soft-Sided Carrying Case	Pass	Pass	Pass
14	International Versions Available	Pass	Pass	Pass

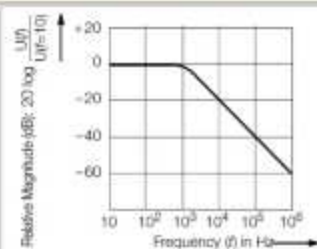
Sample
Report
(Included)

SPECIFICATIONS

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.



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 Optional Battery Eliminator
- ◆ Full Remote Operation via RS232
- ◆ Flash Programmable, Field Upgradeable
- ◆ Battery Eliminator

Optional

- ◆ SpO₂ Simulation
- ◆ Cardiac Output
- ◆ Fetal/Maternal Output
- ◆ Remote PSR-2200



PS-2240

The PS-2200 Multi-Parameter Patient Simulator Series is the most comprehensive, easy to use simulator 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, SpO₂, 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, 140,160,180,200,220,240,2 60,280, 300 BPM
Accuracy	± 1%
Amplitude	.05, .10, .15, .20, .25, .30, .35, .4 0, .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, .4 0, .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, 8 0, 90, 100, 120, 130, 140, 150, 1 60, 170, 180, 190, 200 ms
Amplitude	.05, .10, .15, .20, .25, .30, .35, .4 0, .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(Optional)	
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

To Compare Patient Simulators,
see chart on Page 14.

Flip for product pricing - Page D

PS-2210
with Cardiac
Output Option



Features - PSR-2200 Remote

- ◆ Large Easy to Read 128 x 64 pixel Graphical LCD Display
- ◆ Small and 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, Performance Waves, etc. Use the included PC Software utility to assign any outputs you like to any or all 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 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.

Normal Sinus Rhythm	60 BPM	1.0 mV Adult
ST	0.0 mV	Art: none
30 BrPM	3.0 ohms	
37.0 C	86.6	ECG-4Lead

Key Number	Sequence Step	Time until next step
------------	---------------	----------------------

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

1) Static	0 mmHg
2) Static	0 mmHg
3) Static	0 mmHg
4) Static	0 mmHg
Group Settings:	N/A

Assign names to each of the 18 programmable keys.

Key List
12) NSR 30Bpm Apnea
13) Pace Atrial 10mV
14) Perf Sine 50Hz
15) Fetal Auto 5mV
16) Cardiac Faulty Inj

Select outputs from any simulator waveform or output group.

Operating Mode
Normal Sinus Rhythm
Arrhythmias
Pacemaker
Performance
Fetal/Maternal

Compatibility

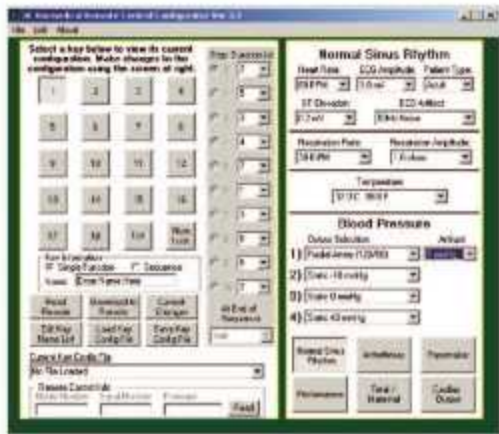
Requires a PC running Microsoft® Windows 8, Windows 7, Windows Vista, Windows XP Home Version, Windows XP Professional, Windows 2000 (Service Pack 2 or higher), Windows NT, Windows 98, with a USB Port (required optional USB to Serial Adapter).

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 RS232 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.

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 Optional Battery Eliminator
- ◆ Full Remote Operation via RS232
- ◆ Flash Programmable, Field Upgradeable
- ◆ Battery Eliminator

Optional

- ◆ SpO₂ 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 & Finger SIMTM 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	0.1,0.5,5,10,40,30,60,100 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	0,20,40,60,100,200,250,300 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/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 (86,98.6,104.0 °F)
Accuracy	± 0.1 °C (± 0.1 °F)
Type	YSI Series 400 and 700
SpO ₂ Simulation (MSP-2100 & Finger SIMTM Req'd.)	
Rate	30 to 300 BPM
SpO ₂ Output	80, 90 & 97%



COMPARE



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

To Compare Patient Simulators,
see chart on Page 14

← Flip for product pricing - Page D →

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 126x64 pixels	1 LCD Graphical 126x64 pixels	2 LCD Graphical 126x64 pixels
Backlight	No	No	No	Yes	Yes	Yes
Lead Test Terminals	Yes	No	Yes	No	Yes	Yes
RS232	No	No	No	Yes	Yes	Yes
Power	1-3 Volt Battery	1-3 Volt Battery	1-3 Volt Battery	2-8 Volt Batteries	2-8 Volt Batteries	2-8 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	6	6
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	-	-	-	-	6	6
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						
SpO ₂ 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 2.96" x .97"	5.15" x 2.89" x 1.06"	7.26" x 4.46" x 1.51"	6.63" x 5.5" x 1.63"	6.63" x 5.5" x 1.63"	6.63" x 5.5" x 1.63"
Weight	< 1 Lbs	≤ 0.5 Lbs (0.23 kg)	< 1 Lbs	< 2 Lbs	< 2 Lbs	< 2 Lbs

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 9 V Batteries (Battery Eliminator Furnished)
- ◆ 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 test 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	E.T.J.	
MEASUREMENT TIME WINDOW	100 ms	
ABSOLUTE MAX PEAK VOLTAGE	8000 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	≤ 20 J
ACCURACY	± 100 J ± 2 J = 100 J ± 2% of reading	± 20 J ± 0.4 J = 20 J ± 2% of reading
TRIGGER LEVEL	100 V	
PLAYBACK AMPLITUDE	1 mV / 1000 V Lead I	1 mV / 1000 V Lead II
TEST PULSE	125 J ± 20%	5 J ± 20%
OSCILLOSCOPE OUTPUT ATTENUATION	1000:1	200:1
CARDIOVERSION	DELAY RESOLUTION	0 to 6000 ms
	ACCURACY	± 1 ms
		± 2 ms
WAVEFORM PLAYBACK	OUTPUT SCREEN	LEAD I & PLATES 200:1 Time Base Expansion
	TIMING WINDOW	Starts at peak of each R-wave
SYNC TIME MEASUREMENTS	TEST WAVEFORMS	All waveform simulations available
	DELAY TIME ACCURACY	± 1 ms

PATIENT SIMULATOR		
	EGG NSR	30, 40, 45, 60, 80, 90, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300 BPM
EGG WAVEFORM	SINE	0.1, 0.2, 0.5, 1, 10, 40, 50, 80, 100 Hz
RATES	SQUARE	0.125, 2.500 Hz
	TRIANGLE	2.000, 2.500 Hz
	PULSE WAVE	20, 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
	OUTPUT	200 times Amplitude
	ACCURACY	± 5%
QRS DURATION		80 ms
LEAD TO LEAD IMPEDANCE		1000 Ω
		Ventricular Fibrillation
		Atrial Fibrillation
		Second Degree A-V Block
		Right Bundle Branch Block
		Premature Atrial Contraction
EGG ARRHYTHMIA SELECTIONS	PVC Early	
	PVC Standard	
	PVC R on T	
	Multifocal PVC	
	Bigeminy	
	Run of 5 PVCs	
		Ventricular Tachycardia
		Ayastole
		Coarse Ventricular Fibrillation
		Fine Ventricular Fibrillation
EGG SHOCK ADVISORY		Multifocal Ventricular Tachycardia @ 140 BPM
		Multifocal Ventricular Tachycardia @ 160 BPM
ALGORITHM TEST SELECTIONS		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 600 ppm
	ACCURACY	± 1% or 2 ppm (whichever is greater)
PULSE WIDTH	RANGE	0.8 to 99 ms
	ACCURACY	± 1% or ± 0.3 ms (whichever is greater)
VOLTAGE	VARIABLE LOAD INPUT	200 V
	FIXED LOAD INPUT	15 V
OSCILLOSCOPE OUTPUT	AMPLITUDE ATTENUATION	0 - 15 V 10:24:1 15 - 60 V 41:1 = 60 V 164:1
	MAX OUTPUT	200 V
DEMAND SENSITIVITY	WAVEFORMS	Square, Triangle, Hysteresis
	WIDTH	10, 25, 40, 100, 1000 ms
OUTPUT AMPLITUDE	ECG OUTPUT	0 to 4 mV
	PACER INPUT (50 TO 400 OHMS)	0 to 10 mV / 50 Ω
OUTPUT RESOLUTION	PACER INPUT (500 TO 2300 OHMS & OPEN)	0 to 100 mV
	DEFIBRILLATOR PLATES	0 to 10 mV
OUTPUT ACCURACY	ECG OUTPUT	40 μV
	PACER INPUT (50 TO 400 OHMS)	40 μV
INPUT RATE	PACER INPUT (500 TO 2300 OHMS & OPEN)	1 mV
	DEFIBRILLATOR PLATES	0.1 mV
PACING SENSING	ACCURACY	± 2%
	ACCURACY	± 2%
REFRACTORY PERIOD	PACING	20 to 500 ms
	ACCURACY	± 2 ms
50/60 HZ INTERFERENCE TEST SIGNAL	PACER INPUT	50 Ω 0.1, 2, 3, 4, 5, 6, 7, 8, 9, 10 mV 100 Ω 0.2, 0.4, 0.6, 0.8, 1.0 mV 150 Ω 0.3, 0.6, 0.9, 1.2 mV 200 Ω 0.4, 0.8, 1.2, 1.6 mV 300 Ω 0.6, 1.2, 1.8, 2.4 mV 400 Ω 0.8, 1.6, 2.4, 3.2 mV ≥ 500 Ω 1.0, 2.0, 3.0, 4.0 mV
	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 LIMIT	RANGE	4 to 300 mA (100 Ω load)
	ACCURACY	± 5% or ± 0.5 mA (whichever is greater)
PULSE CURRENT LIMIT	50 - 600 Ω	700 Ω 200 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	140 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.



Programmable Autosequence

- ◆ PC Based Software
- ◆ Create up to 50 Autosequence
- ◆ 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.

PROGRAMMING AUTO SEQUENCES OVERVIEW

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

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).

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.

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 ohm Loads, 25 ohm Steps



NEW 



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.

Automatic detection of loads, no settings to change or configure in the DA-2006/P. Ensure that the correct load is selected in the Defibrillator output pulse measurement.



Are you testing your defibrillator with the right loads?

The DA-2006 series and DA-2006-VL are the right answer for you. Not all patients are the same, use the DA-2006-VL to test your defibrillator with test loads from 25 to 200 ohms, 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 WAVEFORMS	PLAYBACK LAST PULSE	START CHARGE TIMER	PRINT HEADER	MORE 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.



Need to calibrate any
Defibrillator?



Typical DA-CS-06 Setup
Defibrillator Analyzer Calibration
System

**NEW** 

Features - NIBP-1040-BE

- ◆ NIBP, IBP, ECG, Temp, Arrhythmias, Respiration, Leak Detect & Much More
- ◆ Small, Hand-Held, 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
- ◆ SpO₂ 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 μ V/V/mmHg
- ◆ Leak Rate Test
- ◆ ECG Arrhythmia Waveforms
- ◆ ECG Arrhythmia Sequence
- ◆ YSI 400 & 700 Simulation Temperature



Shown with
NIBP-1040-BE
Cardiac Output

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.

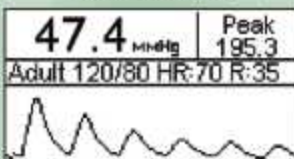
The Flash Memory allows for field upgrades with downloads from our website.

Screen Views

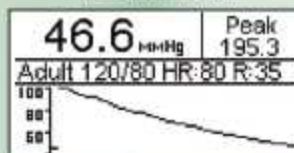
Main Display



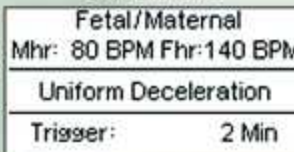
Output Waveform Screen
(NOTE: The output Waveform is NOT Physiologically Correct)



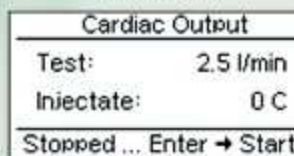
Pressure Graph Screen



FETAL/MATERNAL



CARDIAC OUTPUT



MODEL SUMMARY

NIBP-1040KIT-E - Includes 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
Neonatal 70/40	IBP
Alarm Test	Static IBP
Arrhythmia Sequence	RS232
Leak Test	
Manometer	
Cardiac Output	
Fetal Maternal	

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%

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/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
 Injectate Flow: 2.5, 5.0, 10.0 L/MIN
 Other Outputs: Faulty - Injectate
 Left-to-Right Shunt
 Calibrated Temperature Pulse

Overview - NIBP-1030-BE

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

NIBP-1020 NIBP, Peak Detect, Full Range Manometer, ECG, Pace Respiration and Performance waveforms.

NIBP-1010 NIBP, Peak Detect and Full Range Manometer

NIBP-1030-BE



NIBP-1020



NIBP-1010

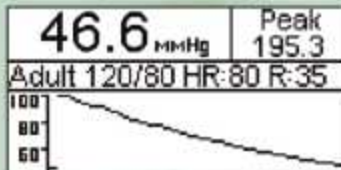


Screen Views

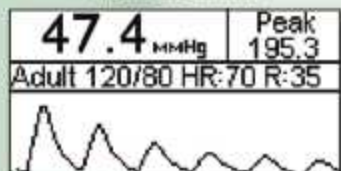
Main Display



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: $\pm (1\%$ of Reading + 0.5 mmHg)
Simulation Rate: 80, 94 BPM (synchronized to ECG)
Accuracy: $\pm 1\%$

ECG NSR

Rate: 30, 60, 120, 240 BPM; $\pm 1\%$
Amplitude: 2.75 mV; $\pm 2\%$ @ Lead II

ECG Performance

Sine Wave: 10, 60, 100 Hz; $\pm 1\%$
Square Wave: 0.125, 2.000 Hz; $\pm 1\%$
Triangle Wave: 2.000 Hz; $\pm 1\%$

Pacemaker Waveforms

Amplitude: 3 mV; ($\pm 10\%$ Accuracy)
Width: 6 ms; ($\pm 5\%$ Accuracy)

Respiration

Impedance: Delta 3.0 Ω ($\pm 10\%$ Accuracy)
Baseline: 1000 Ω ($\pm 5\%$ Accuracy)

MODEL SUMMARY

AVAILABLE MODELS:

NIBP-1010	Basic unit
NIBP-1010-P	+ Peak
NIBP-1010-BP	+ Battery & peak
NIBP-1010-KIT	NIBP-1010-BP, 5 adapters & soft carrying case
NIBP-1020	Basic unit with ECG
NIBP-1020-PA	+ Peak & alarm
NIBP-1020-BPA	+ Battery, peak & alarm
NIBP-1020-KIT	NIBP-1020-BPA, 5 adapters & soft carrying case
NIBP-1030	Base unit
NIBP-1030-B	+ built-in rechargeable battery
NIBP-1030-BE	+ Universal Patient Lead Connectors
NIBP-1030KIT	NIBP-1030-B, soft carrying case and 5 adapters
NIBP-1030KIT-E	Same as above with Universal Patient Lead Connectors
NIBP-1040KIT-E	NIBP-1040-BE with Cardiac Output & Fetal Maternal, Universal Patient Lead Connectors soft carrying case and 5 adapters

Optional Accessories

Soft Carrying Case	Luer Adapter
Bulb Adapter	Marquette Adapter
DINAMAP/Critikon Adapter	Pulse Oximetry Module
Quick Disconnect Adapter	FingerSim™ Replacement Set

Features - ESU-2400H

- ◆ The Industry's Most Comprehensive and Most Accurate Full-Featured Analyzer
- ◆ Measure Advanced Generator Outputs with Pulsed RF at Up to 3 Different Amplitudes
- ◆ Up to 16 million samples
- ◆ 1% Measurement Accuracy
- ◆ Based Upon Years of Collaborative Work with Leading Electrosurgery Industry Manufacturers
- ◆ Industry Standard RF Current Measurement
- ◆ DFA™ Technology Ultra High Speed Digitization of The Complex RF Waveform
- ◆ Compatible with The Latest ESU Generator Platforms by The Major ESU Manufacturers
- ◆ 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), RS232, 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 Force Triad & 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

**NEW**

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 outputs 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 ohms in 1 ohm 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-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

Advanced Pulsed Mode Measurements

Pulse Mode Config



Pulse Mode



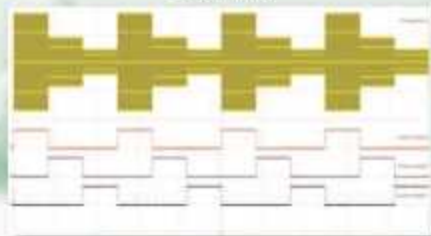
Pulse Mode 2



Pulse Mode 3



Pulse Mode 3
Scope Capture



SPECIFICATIONS

MEASUREMENTS	
A/D Resolution	14 Bits
A/D Speed	84 MSPS
Bandwidth	90 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 Watt
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 2)

Features - ESU-2400

- NEW** ♦ Automated One Button Force Triad Autosequence included
- ♦ Industry Standard RF Current Measurement
- ♦ DFA™ Technology Ultra High Speed Digitization of The Complex RF Waveform
- ♦ 1% Measurement Accuracy
- ♦ Compatible with The Latest ESU Generator Platforms by The Major ESU Manufacturers
- ♦ 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), RS232, 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 Force Triad & 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 ohms in 1 ohm increments. It is micro-processor 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.

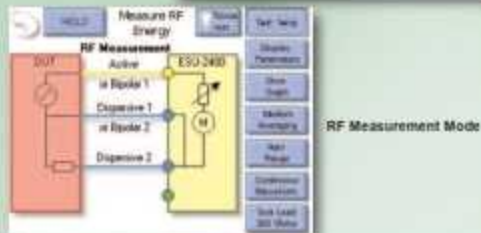
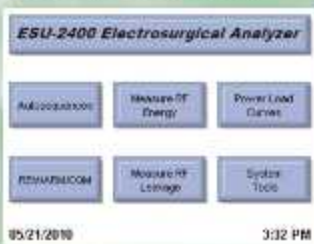
The ESU-2400, unlike most conventional ESU Analyzers, has internal high voltage setup relays to control the measurement path, allowing the user to switch between Power measurements, Leakage measurements, REM/ARM/CQM testing, or even run an autosequence that could include any or all of these tests – without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



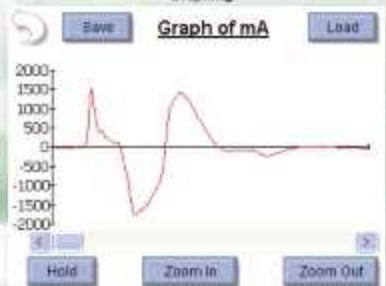
QGM Screen



ESU-2400 Graph Mode Example



On-Screen Graphing



SPECIFICATIONS

28

ESU ANALYZER SERIES

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 Watt
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	13 to 30 °C (55 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 2)



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 Ohms In 50 Ohm Steps
- ◆ External Test Loads Supported
- ◆ Auxiliary Test Load – 200 Ohms
- ◆ Independent Variable CQM Test Load 1 to 500 Ohms In 1 Ohm 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 RS232 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.

SPECIFICATIONS

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 100.0 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 80 °C (-4 to 140 °F)
Humidity Limit	20 to 80% RH, Non-Condensing
Connections	Communications USB, DB9 Loads: 4mm safety jacks

63	0.5	Load Int 50 Ext 100 Sum 150 Int/Ext
mA	Watts	
DISPLAY/CHANGE	HOLD	RECGM SETUP

Return Electrode Control Quality Monitor Test			
150 Ohms			
▲	▼		EXIT



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

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.



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 RS232
- ◆ 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 field service 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.

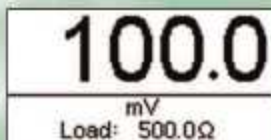
DFA™ Technology achieves the high level of accuracy and functionality demanded by ESU manufacturers worldwide, and replaces the Fluke® Model 8920A instrument previously utilized in such applications. The ESU-2050 uses external precision load resistors and an external wide band toroidal current transformer 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



Two Display Zone Screen with mV & Watts Parameters Selected



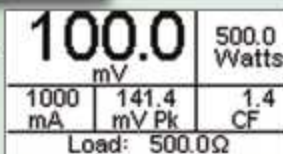
Three Display Zone Screen with mV, Watts & mA Parameters Selected



Four Display Zone Screen with mV, Watts, mA & mV Pk Parameters Selected



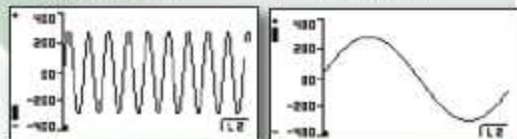
Five Display Zone Screen with mV, Watts, mA, mV Peak & CF Parameters Selected



ESU-2050 Graph Mode Example

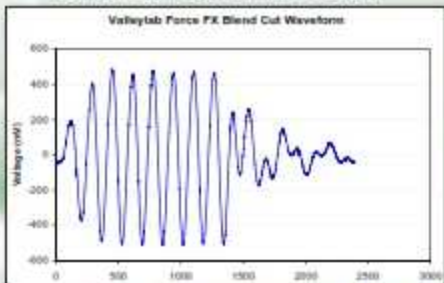
Fully Zoomed Out

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 (50ohm)	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 3.1" x 8.0" 86.4 x 231.4 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

Features - ESU-2000A

- ◆ Small & Simple to Use
- ◆ Lightweight
- ◆ 6 Selectable Loads from 50 to 500 ohms
- ◆ No Load Switching Relays
- ◆ Return Contact Monitor Test with 1 ohm Steps
- ◆ RF Power, Current & Leakage Measurement
- ◆ No Batteries or Power Cords
- ◆ Easy-to-Read Color-Coded Meter
- ◆ High Speed Fuse Protects Meter

Accessories Included

- ◆ ESM-1 Switching Module
- ◆ Red, Black & Green Patch Cords
- ◆ Insulated Alligator Clips & Ground adapter
- ◆ 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 ohm variable resistance with 1 ohm 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)	

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	Yes
Multiple Pulsed Waveforms Compatibility	2400H Only	No	No	No	No
Measurement accuracy	1 % of reading on RMS Current	2.5 % of reading on RMS Current, 5 % for reading RMS Power	1% reading, > 50 mV, up to 1 MHz; 3% reading, > 50 mV, 1 to 10 MHz	1% reading, > 50 mV, up to 1 MHz; 3% reading, > 50 mV, 1 to 10 MHz	± 0% 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	15	5	15	15	x 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	7.5 x 10.0 x 22.5 Inches 190.1 x 254.0 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 6.0 Inches 86.4 x 231.4 x 203.2 mm	3.4 x 9.1 x 6.0 Inches 86.4 x 231.4 x 203.2 mm	5.36 x 6.65 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 (1.62 kg)

Pressure Meters



Features - DPM 2300 Series

- ◆ Large Graphics Display With Cursor Selection Of Options And Setup
- ◆ High Resolution 24 Bit Measurement
- ◆ $\pm 0.05\%$ 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, cmH₂O@20 °C, inH₂O@4 °C, inH₂O@20 °C, inH₂O@60 °F, kg/cm², kPa, mBar, Bar)
- ◆ MAX And MIN Pressure Value Capture And Storage
- ◆ Digital Calibration & Zero Adjust
- ◆ 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:

- ◆ RS232 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
- ◆ $\pm 0.5\%$ FS Accuracy

Analog Output Option Adds:

- ◆ DC Output Proportional to the Displayed Pressure or Temperature
- ◆ $\pm 0.1\%$ FS Output Accuracy



DPM-2300

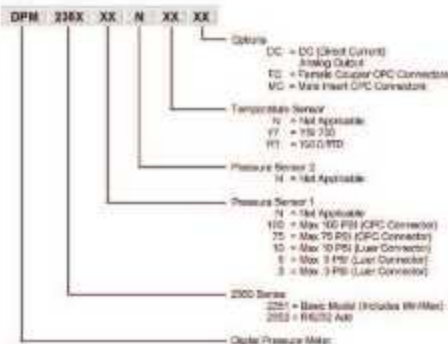
The DPM-2300 Series is a microprocessor based, High Precision, High Resolution Digital Pressure Meter Family. These meters measure both gas and liquid pressures and provide multiple engineering unit displays for the results. The unit may have one or two pressure sensors and an optional temperature sensor 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 RS232 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 16 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 (193.3 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 (ANSINEDA 1004A 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) DB9 MINI-DIN Receptacle Pinout:  <small>NOTE: See Viewport and Interface</small>	

MODEL SUMMARY



SPECIAL MODEL:

Recommended model for use with TSI
 Certifier-FA Respiratory Vent Test System:
DPM-235175NNFC
 or **DPM-23017510NFC**



DPM-2350
 w/Female CPC

Pressure Meters



Features - DPM-2200 Series

- ◆ Single or Dual Pressure Sensors
- ◆ Large Graphics Display with Cursor Selection of Options & Parameters Setup
- ◆ $\pm 0.05\%$ 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, cmH₂O@20 °C, inH₂O@4 °C, inH₂O@20 °C, inH₂O@60 °F, kg/cm², 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
- ◆ RS232 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
- ◆ $\pm 0.5\%$ FS Accuracy

Analog Output Option Adds:

- ◆ DC Output Proportional to the Displayed Pressure or Temperature
- ◆ $\pm 0.1\%$ 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. An analog output option is also 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 RS232 communication, Temperature measurement and DC Analog Outputs.

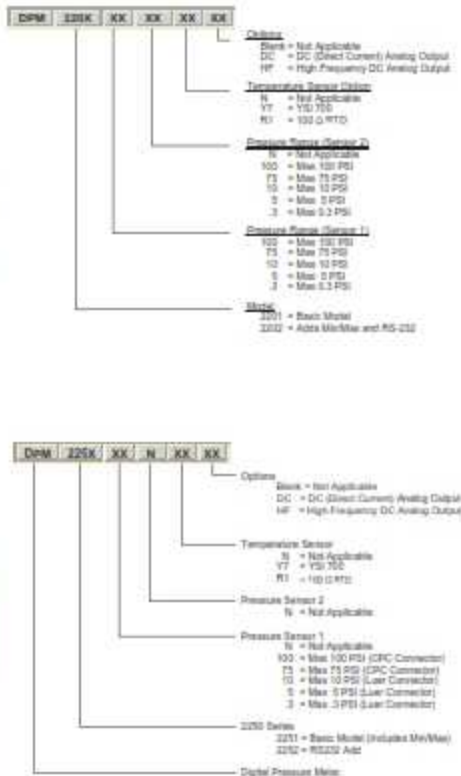
SPECIFICATIONS

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	0.01 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-toxic, 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 1004A or equivalent)	
BATTERY ELIMINATOR	5 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:  <small>© 2000 Fluke Corporation</small> <small>www.fluke.com</small>

DPM-2250



MODEL SUMMARY



OPTIONAL ACCESSORIES FOR DPM SERIES

BC20 - 21110	BATTERY ELIMINATOR (UNIVERSAL)
BC20 - 41361	RS232 COMMUNICATION CABLE, USB/A/M TO MINI DIN MALE
BC20 - 30100	BC BIOMEDICAL SMALL SOFT SIDED CARRYING CASE
BC20 - 01000	UNIVERSAL PRESSURE ADAPTER KIT
BC20 - 01000	YSI TEMPERATURE PROBE
BC20 - 01008	RTD (100 Ω) TEMPERATURE PROBE



Features - DPM-2000 Series

- ◆ Pressure Ranges:
 - 13.50 to 100.00 PSI
 - 701 to 5190 mmHg @ 20 °C
 - 951 to 7043 cmH₂O @ 20 °C
 - 374 to 2773 inH₂O @ 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
- ◆ RS232 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 RS232.

The DPM-2001 is the base model. The DPM-2001PLUS adds a "Min/Max" feature plus a RS232 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), .1% of full scale accuracy, -13.50 to 100.00 PSI range, digital zero adjust and four pressure scales: PSI, inH₂O, cmH₂O 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	3 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	3V Alkaline Battery (ANSINEDA 1004A or equivalent)
BATTERY ELIMINATOR	3 VDC, 200 mA BC20-21110 BATTERY ELIMINATOR (UNIVERSAL)
POWER CONSUMPTION	ON < 15 mA OFF < 40 µA
BATTERY LIFE	CONTINUOUS 80 hours OFF 1 year BAUD 115200
RS-232 COMMUNICATIONS	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 RS232
DPM-2100	Basic Unit + Capture, RS232 and Temp

Optional Accessories

BC20 - 21110	Battery Eliminator (Universal)
BC20 - 21102	RS232 Communication Cable
BC20 - 30106	Soft Carrying Case
BC20 - 01005	Universal Adapter Kit



DPM-2001



DPM-2100

Features - FingerSims™

- ◆ Easy to Use SpO₂ Simulator
- ◆ Quick Testing of Pulse Oximetry Systems including Sensors
- ◆ 80, 90 & 97% Saturation Levels
- ◆ Inexpensive & Accurate

Features - MSP-2100

- ◆ Accepts the FingerSims™ to Provide SpO₂ Outputs
- ◆ Pulse Synchronized with PS-2100, PS-2200 & NIBP-1000 Series Products via Aux Port
- ◆ Powered via Aux Port

Features - SPO-2000

- ◆ Accepts the FingerSims™ to Provide SpO₂ Outputs
- ◆ 30, 60, 90, 120, 150 & 180 BPM Pulse Rates
- ◆ External AC Adapter
- ◆ Compact & Cost-Effective
- ◆ Maintenance Free



The FingerSims™ tests your SpO₂ 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 SpO₂ saturation levels. Plus FingerSims™ work with any style Pulse Oximetry Finger Sensor. The FingerSims™ provide SpO₂ 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.



**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.)*



**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™ 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

Operating Temp. 65 to 90 °F

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

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)

**Wouldn't it be nice to have
calibrated fingers?**



**BC Biomedical
FingerSims™**



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



NIBP-1010 with MSP-2100 & FingerSims™



PS-2110 with MSP-2100 & FingerSims™

← Flip for product pricing - Page 1 →

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
- ◆ $\pm 1\%$ 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



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: $\pm 1\%$ of reading ± 1 digit

Display

- ◆ Graphic LCD, 128 X 64 pixel

Power Requirements

- ◆ 9V Alkaline
- ◆ Optional AC adapter



Features - ULT-2000 Series

- ◆ Tests the Upper & Lower Leakage Current Limits per Ultrasound Mfr. Specifications
- ◆ Range 0.5 to 500 μ A - 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
- ◆ $\pm 1\%$ 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
- ◆ RS232 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 surpasses 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.

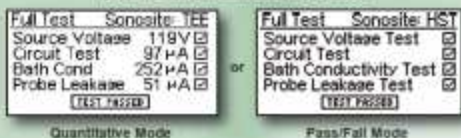
Compatibility with Dale Technology[®] DALE800, Fluke Biomedical[®] ULT800 adapters and Dual Conductivity Probes allow you to upgrade to the very latest technology platform, while safeguarding your prior investment in adapters and probes. A wide variety of BC Biomedical adapters and accessories are available.

SCREEN VIEWS

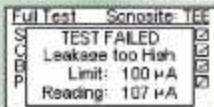
Typical Passing Results Display



Typical Passing Results Display Choices

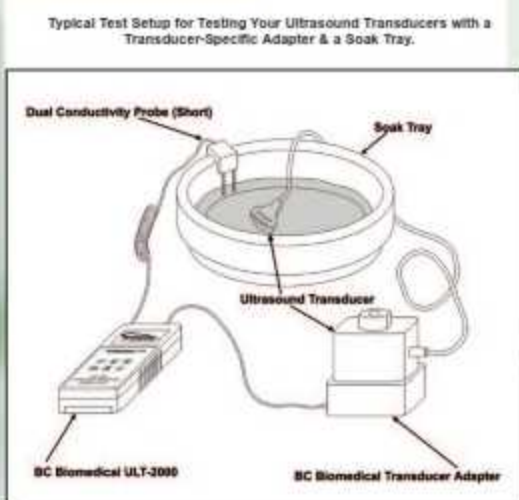
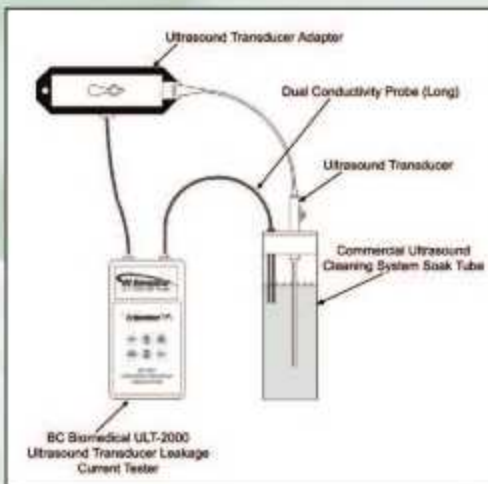


Typical Failed Results Display



Quantitative Mode & Pass/Fail Mode

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



BC20-42300
Optional
ULT-2000 Printer



ULT-PA-29 Adapter

Flip for product pricing - Page C

SPECIFICATIONS

Source Voltage	90 to 275 VAC, $\pm 1\%$ FS
Leakage Current	0.50 to 10.00 μA , $\pm 0.5\%$ μA 10 to 250 μA , $\pm 1\%$ FS 250 to 500 μA , $\pm 1\%$ FS
Conductivity Current	0.5 to 500 μA , $\pm 1\%$ 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 (0.50 kg)
Power Consumption	On: < 300 mA Off: < 250 μA
Battery	9V Lithium (ANSI/NEDA 1604C or equivalent)
Battery Life	Continuous: > 100 Full Tests (Note: Backlight set to OFF) OFF: > 1 Year
Battery Eliminator (Optional)	BC20-21110 Battery Eliminator (Universal)







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

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ULTRASOUND LEAKAGE TESTER SERIES

Ultrasound Transducer Adapter Cross Reference

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Ultrasound Leakage Tester Series

BC Adapter Part #	Manufacturer	Transducer Compatibility	Ultrasound Platform	Connector Key
ULT-PA-10	Siemens/ Acuson	V5M (TEE), V7M (TEE), EV6-C4, etc.	Sequoia	Micro-pinless (PC board) 
ULT-PA-11	SonoSite	ICT7-4, ITC6-5, C60, etc.	160/160+, Titan	Micro-pinless (PC board) 
ULT-PA-12	Siemens	6.5EV13, ECS-4, etc.	Call for Details	260-pin ITT Cannon ZIF 
ULT-PA-13	Siemens/ Acuson	Acuson/Siemens 156-pin and V810B Transducers, and ATL UM4, UM9 and ATL 5MHz Bi Plane	125XP	156-pin ITT Cannon ZIF
ULT-PA-14	Philips/ATL	HP/Agilent/Philips 21311A, 21309A, 21370A, 21361A Transducers	Philips/HP 4500, Sonos 5500/7500	260-pin ITT Cannon ZIF 
ULT-PA-16	GE	GE LogIQ (for use with GE LogIQ Transducers 3, 5, 7, 9 and GE Vivid Transducers 3, 5, 7, 6T, 9T and GE P9603AU Transducers), 6T (TEE), 9T (TEE), E6C	LOGIQ, Vivid & GE P9603AU	260-pin ITT Cannon ZIF 
ULT-PA-17	Philips/ATL	Philips IE33 and IU22 diagnostic ultrasound TEE transducers - S7-2 (TEE), S7-3i (TEE), S3-1, C8-4w, C8-5, etc. with belled housing	IE33&IU22	260-pin ITT Cannon ZIF 
ULT-PA-18	Philips/HP	HP/Agilent/Philips (no center post on transducer connector) 21202A, 21364A, 21365A, 21366A, 21367A Transducers	Call for Details	Micro-pinless (PC board)

To download the current cross reference sheet in PDF format, go to:
<http://testequipmentandtools.com/catalog/ULT2000SeriesReference.pdf>

1-888-223-6763 - bcgroupintl.com

Ultrasound Transducer Adapter Cross Reference

BC Adapter Part #	Manufacturer	Transducer Compatibility	Ultrasound Platform	Connector Key
ULT-PA-19	Philips	All Philips CX50 Laptop System based transducers	CX50 Platform	200-pin Tyco Electronics Mini Connector 
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 PVF Series, 2B701-753E, etc.	156-pin ZIF 
ULT-PA-21	Hitachi	HI VISION 900, 9500, 8500, 8500, EUB-2000, EUB-925, EUB-405 Plus	EUP-E592M, EUP-Series Probes in general	200-pin ITT Cannon ZIF 
ULT-PA-22	Ultraschallkopf - Aloka	UST-934N/9395, UST-945BP/945BP, ASU-32-3-M, ASU-32-WSJ, UST-906/9012, UST-9014DTU	SSD-620, SSD-600	200-pin ITT Cannon ZIF 
ULT-PA-23	ALL	ALL Transducers	All Platforms	ALL Configurations
ULT-PA-24	Philips/ ATL	L7-4 and similar 200-pin transducers with beveled housing	Call for Details	200-pin ITT Cannon ZIF 
ULT-PA-25	GE	GE LogiqBook Probes - GE VIVID i 6T, 9T, etc. Probes	Vivid	200-pin Tyco Electronics Mini Connector 
ULT-PA-26	Acuson	For use with Acuson/Siemens 360-pin Transducers	Artares	360-pin ITT Canon ZIF 
ULT-PA-27	GE	GE YMS/RT (for use with GE YMS/RT Transducers)	Call for Details	Call for Details
ULT-PA-29	Zonare	Zonare Medical Systems (all transducers)	All Zonare Platforms	165-pin Proprietary Custom Connector 
ULT-PA-30	GE Vivid E9	GE Vivid E9	Call for Details	

To download the current cross reference sheet in PDF format, go to:
<http://testequipmentandtools.com/catalog/ULT2000SeriesReference.pdf>

"Soft Touch" ULT Adapter Family Continues to Grow



PHILIPS®

SIEMENS®



ZONARE



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-27

Conductivity Probes

			
ULT-PA-29	ULT-PA-30	ULT-PC-10	ULT-PC-15
			
ULT-PC-20	ULT-PC-25	ULT-PC-30	

Features - USP-100A

- ◆ Digital Reading
- ◆ Continuous or Pulsed Power
- ◆ Integrated Carrying Case
- ◆ 0.2 to 30.0 Watt Range
- ◆ Accuracy = $\pm 3\%$ +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
- ◆ $\pm 3\%$ + One Count Accuracy
- ◆ 2.5 Second Integration
- ◆ 0.05 Watt Display Sensitivity

Features - USP-30

- ◆ Analog Reading
- ◆ 0.15 to 30.0 Watt Range
- ◆ Continuous or Pulsed Power
- ◆ 1 to 10 MHz Frequency Response
- ◆ Integrated Carrying Case
- ◆ Built-in Transducer Holder



USP-100A

The USP-100A Ultrasound Power Meter was developed to test therapeutic transducers according to AIUM, JCAHO, FDA and NIST guidelines. The compact and light weight USP-100A 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-100A SPECIFICATIONS

Measure Range
Resolution
Accuracy
Transducer Frequency
Maximum Transducer Diameter
Test Medium

0.2 to 30 Watts
 ± 200 mW
 $\pm 3\%$ +One Count Reading
0.5 to 10 MHz
3"

Stabilization Time
Display
Line Power
Battery
Dimensions
Weight

Degassed, distilled water
at normal room temp
2.5 sec
3-Digit LCD, 1.3" High
120 or 240 VAC Plug-in AC Adapter
4-AA, 20 hrs. continuous battery life
8.5" H x 12" L x 8.75" W
11 Lbs



USP-50SP SPECIFICATIONS

Power Range
Resolution
Minimum Detectable Power
Display Sensitivity
Accuracy
Stabilization
Maximum Transducer Diameter
Transducer Operating Frequency
Test Media
Display

0 to 30 Watts
 $+ 50$ mW, $\pm .01$ gram
0.05 Watts
0.05 Watts
 $\pm 3\%$ @10 Watts
2.5 Second Integration
4 1/2" Inches
0.5 to 10 MHz
Degassed Water
7 segment 6 Digit 0.6"
(15mm) high LCD

Battery
Power Supply
Size
Weight

4-AA: battery life over 40 hrs.; "Lo-Bat" Indicator
120 VAC to 12 VAC 500 mA adapter with 6 Ft. cord
7.0" x 10.5" x 8.5" (H x L x W)
10 Lbs



USP-30 SPECIFICATIONS

Power Range
Resolution
Minimum Detectable Power Level
Minimum Accuracy
Expected Accuracy
Display
Display Sensitivity
Zeroing Method
Test Tank Lining
Test

150 mW to 30 Watts
 ± 150 mW
 ± 150 mW
 $\pm 5\%$
 $\pm 4\%$

Test Tank Liquid Capacity
Test Tank Dimensions
Inside
Cone Target
Dimensions(w/Case)
Power
Weight(w/Case)

Vernier Dial
 ± 0.01 g or ± 150 mW
Manually Adjusted
0.5" neoprene rubber
Medium Degassed,
distilled water at normal room temp
1,350 mL
Outside 5.75" Dia. x 5.55"
4.5" Dia. x 5.25" D
3.5" Dia. x 2" H
19" H x 17" L x 7" W
Not required
18 Lbs



Features - AMM-15

- ◆ Microprocessor Based Portable Battery Operated Instrument
- ◆ Digital Display - 40 to +80 °F Dew Point
- ◆ ± 2 °F From + 20 TO +80 °F
- ◆ ± 4 °F From - 40 TO +20 °F
- ◆ Samples Compressed Air Up to 120 PSIG
- ◆ 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°F ±2 °F Dew point from +20 to +80°F
Dry Bulb Accuracy	±1 °F
Maximum Inlet Temperature	185°F. Heat Sink Tubing Permits Maximum Inlet Temperature to 550 °F (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

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.

Anesthetic Agent Analyzer

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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 O₂, CO₂, and N₂O
- ◆ 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

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ANESTHETIC AGENT ANALYZER

Gas Monitoring		Display	
Method:	Sidestream; Non-dispersive infrared (NDIR)	Main Display:	Active color TFT
Identified Gases:	Halothane, Enflurane, Isoflurane, Desflurane, Sevoflurane, CO ₂ , N ₂ O, Oxygen	Size:	5.5" Display Area
Concentration Units:	Vol%, Torr, kPa, mmHg	Resolution:	Internal Display; 320 x 240 pixels
Flow Rates:	100 ml/min, 150 ml/min, 200 ml/min	External Video:	640 x 480 pixels
Agent Detection		Number of Traces:	3 maximum
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 ₂ O: 0 to 99% Oxygen: 0 to 100%	Controls	
Measurement Accuracy:	Agents: ± (0.1% abs. + 4% reading) CO ₂ : ± 0.2% abs. or 4% of reading N ₂ O: ± (1.5% abs. + 4% of reading) Oxygen: ± 3 vol% (for 0-90%), ± 4 vol% (for 91-99%)	Keys:	7; membrane-activated
Time to Detect Agent:	< 15 seconds @ 200ml/min	Rotary knob:	Push and rotate; 24 steps/turn
Agent Detection Resolution:	0.1 Volume Percent	System Outputs	
Mixed Gas Threshold:	0.2 vol. % +10% of total concentrations	Com Ports:	Com 1: RS232-compatible, Serial DB-9 Com 2: Serial/Analog. mini-DIN8
Rise Time:	Agents: 450 msec CO ₂ : 350 msec N ₂ O: 400 msec Oxygen: 600 msec	Video Port:	Color VGA compatible, High Density D-Sub 15
Respiration Rate		Alarms	
Range:	1 to 60 breaths/minute	Alarm Characteristics:	EN 475, Adjustable; with audible and visual indications.
Accuracy:	± 2 breaths/minute or 2% of reading	Alarm Levels:	High, Medium, Low, Informational
System Features		Alarm Modes:	Adult/Pediatric/Neonate High and low limit settings for each mode.
Occlusion Clearing:	Automatic	Trends	
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.	Memory:	24 hours of stored data, History available with external VGA display
Warm-up Time:	1 minute to first waveforms; < 20 minutes to full accuracy	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 °C; 59 to 95 °F
		Storage Temperature:	-5 to 50 °C; 23 to 122 °F
		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



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 CO₂ and N₂O. 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 display measurement values.

SPECIFICATIONS

	Range		Accuracy
	Measurements	CO ₂	0 - 10%
10 - 20%			± (0.3% ABS + 4% REL)
N ₂ O		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 ₂ O, AA < 300 ms, O ₂ < 300 ms		
Monitoring	Numerical data available with the FlowAnalyzer		
	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		

Benchtop Flow 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 O₂

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 CO₂, N₂O, Halothane, Enflurane, Isoflurane, Sevoflurane and Desflurane



PFC-3000

The PFC-3000 series of instruments measures flow, pressure, temperature, humidity and O₂ 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

Flow & Pressure Measurements			FFC-300GA	FFC-300UV	FFC-300DL	
Flow	Measuring direction	bidirectional	*	*	*	
	Temperature compensated	yes	*	*	*	
	Pressure compensated	yes	*	*	*	
	Humidity compensated	yes	*	*	*	
	O ₂ compensated	yes	*	*	*	
	High	± 300 L/min	± 1.75%* or ± 0.1 L/min**	*	*	*
Pressure	Low	± 20 L/min	± 1.75%* or ± 0.04 L/min**	*	*	
	High	0 - 145 PSI	± 1%* or ± 0.15 PSI**	*	*	
	Average	± 112.3 mmHg	± 0.75%* or ± 0.08 mmHg**	Differential	Relative	Relative
	Low	0 - 3.75 mmHg	± 1%* or ± 0.01 mmHg**	*	*	*
	High Flow Port	0 - 112.3 mmHg	± 0.75%* or ± 0.08 mmHg**	*	*	*
	Satometer	0 - 80.75 mmHg (abs)	± 1%* or ± 1.70 mmHg**	*	*	*
Measuring unit	Flow	L/min, L/s, cm ³ /min, mL/s	*	*	*	
	Pressure	bar, mbar, cmH ₂ O, mmHg, Torr, mmHg, hPa, kPa, mmHg, PSI	*	*	*	
Additional Measuring Values						
Oxygen	Concentration	0 - 100%				
	Pressure compensated	yes				
Temperature	High Flow Port	0 - 50°C				
	High Flow Port	-10 - 50°C				
Air humidity	High Flow Port	0 - 100%RH				
	High Flow Port	0 - 100%RH				
CO ₂	Concentration	0 - 10%				
	Concentration	10 - 20%				
N ₂ O	Concentration	0 - 100%				
	Concentration	0 - 5%				
HAL, ISO, ENF	Concentration	5 - 12%				
	Concentration	10 - 15%				
SEV	Concentration	0 - 10%				
	Concentration	0 - 22%				
DES	Concentration	22 - 25%				
	Concentration	22 - 25%				
Gas types		Air, Air/O ₂ , N ₂ /O ₂ , Heliox (21% O ₂), He/O ₂ , N ₂ , CO ₂ , customized gas types	*	*	*	
Gas Conditions		ATP, ATPD, ATPS, AP21, STP, STPH, STPS, BTPD, 0/1013, 20/981, 15/1013, 25/991, 20/1013	*	*	*	
Respiratory Parameters						
Rate	Rate	1 - 1000 bpm				
	Time	T ₁ , T ₂				
IE ratio	IE ratio	1/300 - 300/1				
	Ti/Total	0 - 100%				
Breath volumes	VE, Vte@Flow Low	± 10 L				
	VE, Vte@Flow High	± 10 L				
Minute volumes	VI, Ve	0 - 300 L/min				
	Pressure	F _{max} , F _{min} , F _{Exp} , F _{max}				
Peakflow	Peakflow Insp./Exp.	± 300 L/min				
	Compliance	C _{max}				
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-3000 2 hrs)	*	*	*	
	Power consumption	25 VA(W)	*	*	*	
	Weight	~8.5 Lbs (3.8 kg)	*	*	*	
	Dimensions (w x d x h)	6.07 x 9.84 x 4.72 inches (150 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 - 45 °C (59 - 104 °F)	*	*	*	
	Humidity	10 - 90% RH, Non-condensing	*	*	*	
Accessories		CE, CSA	*	*	*	

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

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)



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

Specifications

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 ₂ O	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 ₂ O	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:Exp	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.

To Order 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	4080	4082
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)

TSI Certifier[®] FA Ventilator Test System

65

CE

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)



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

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TSI Certifier[®] FA

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 ₂ O	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 ₂ O	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 10:1	±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.

To Order 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



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-1000N Features

- ◆ Two Compliances
- ◆ Two Separately Adjustable Resistances
- ◆ Leak Simulator on Each Lung



CE



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



LS-1000N

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

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 easy to use, compact package. The LS-1000E EasyLung is a simple, low-cost, general purpose test lung with no variable controls. LS-1000N is the ideal tool to test neonatal and infant ventilators.

SPECIFICATIONS



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.



These test lungs are manufactured in accordance with CE requirements.

← Flip for product pricing - Page X →



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 measure
- ◆ 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 $\pm 0.025\%$ 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	$\pm 0.025\%$ of indicated reading ± 1 LSD
Linear Measurement	$\pm 0.2\% \pm 1$ 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

**Contact measurement
using standard
accessories**



**Standard
Accessories**

← Flip for product pricing BB →

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



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BC Quality Program

In Alphabetical Order

78XX Test Box (Ohmeda®)Y	GilmontZ	Power Line DisturbanceLL
Absolute Pressure MetersP,Q	Gossen Light MeterOQ	PowerXplorerLL
Accessories, BiomedicalDD	Halogen Leak DetectorsU	Pressure GaugesP,U
AlnorS	Hand Pumps (Pressure/Vac)U	Pressure Meter Adapter KitsZ
AmvexS	HEPA VacuumsPP,RR	Pulse Oximetry SimsJ
Analytical BalancesCC	HVACS	ReminRR
Analytical Instruments, Inc.AA	ImagingNN	Remote Control, Pat SimD
Anesthesia Test Equip.W,Y,Z	Infrared ThermometersMM	Resistors, LoadF
Anesthetic Agent AnalyzerZ	Infusion Pump AnalyzersJ	Respiratory Test Equip. V,W,X,Y,Z
AnsonicsU	Intl. Safety AnalyzerB	RespirometersY
Atrix MRI VacuumPP	Invasive Blood PressureEE	Rice LakeCC
BacharachR	Kart-A-BagRR	Safety Analyzer CablesB,DD
BalometersS	Kelvin & Chassis CablesB,DD	Safety AnalyzersA,B
Battery EliminatorsII	Key InstrumentsT	ScalesCC
BC BiomedicalA,B,D,E,F,G,I,J, K,M,N,V,X,Y,Z,BB,DD,EE,FF,GG,HH,I	Krytox LubricantY	ScopometersJ
Biomedical Test Equip., Misc	Laser Heads/Power WattmetersCC	Simulators, PatientA,D,H
	Leak DetectorsU	Smart ManometerQ,P
	Light MetersBB	Snoop Leak DetectorU
	Low Pressure Warning DevicesU	Sound Level MetersCC
	Lung SimsX	Spectrum AnalyzersJJ
	MagnumU	SpO ₂I
	Mass FlowmetersT,Y	SPO-2000I
	MathesonT	Static KitRR
	Maxtec Oxygen AnalyzerAA	StopwatchesJ,CC
	Medical GasU,T	TachometersBB
	Medical Gas Fitting KitsT	TC-1726BB
	MeriamU,P,Q	TEE TesterC
	MiniOxAA	TemperatureMM
	Michigan InstrumentsX	Temperature AdaptersMM
	MultimetersKK,LL	Test Lead SetsKK
	Multi-Parameter SimsD,H	Test LungsX
	Nellcor SpO ₂I	TGAR
	NIBPH	Thermo-AnemometersS
	NIBP Adapter/Fitting KitJ,DD	ThermometersMM
	Nitrogen Purging RegulatorT	TIFU,BB,MM
	Nitrous Oxide MonitorsR,T	Torque ScrewdriversRR
	Noise DosimetersBB	TSI CertifierU
	OhmicM,T	Ultrasonic Leak DetectorsC
	OphirCC	Ultrasound AdaptersC
	OscilloscopesJJ	Ultrasound Imaging PhantomNN
	Oxygen AnalyzersAA	Ultrasound Leak TesterU
	Oxygen Lube Thread SealantY	Ultrasound WattmetersK,L
	Oxygen MonitorsAA	UMAK
	Oxygen SensorsAA	Unfors RaysafeOO,PP
	Pacemaker TesterE	UW6 Ultrasound WattmeterK
	Particulate FiltersT	Vacuums, ServicePP,RR
	Patient SimsA,D,H	Ventilator AnalyzersW,V
	Pearson CTF	WeightsCC
	Phantom, UltrasoundNN	WesternU
	Physical TherapyJ	WKA Pressure GaugesU
	Pocket Testers (Nellcor)I	
	Power Cord OptionsHH	

(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.



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 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, and has 10 Patient Lead connectors
- The SA-2010S has all of the SA-2010 features, plus adds an ECG Patient Simulator
- RS232 -R Option add \$125

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

Flip for more info on this series - Pages 4-2

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



Model



SA-2000



SA-2001



SA-2005



SA-2010



SA-2010S

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
RS232 -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"

SA-2010 Layout





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. Additional power cords can be purchased at any time.

SA-2000-INTL Base International Unit Model

- A. SA-2001-INTL Base Plus Point-to-Point and Voltage
- SA-2005-INTL 5 Test Lead Model
- SA-2010-INTL 10 Test Lead Model
- SA-2010S-INTL SA-2010-INTL w/built-in ECG Sim

- Additional Power Cords (each)
- RS232 -R Option

← Flip for more info on this series - Pages 3-4 →

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)

CS-2000-U 110 V (U.S. Version)

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 med Testers

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

E. BC20-20111 BC Biomedical External (red) Cable (BC Biomedical/Dale Technology® Type)

BC20-20115 BC Biomedical Kelvin Cable (BCB Type)

F. BC Biomedical SA-2500

The SA-2500 is a Microprocessor based Electrical Safety Analyzer.

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

Safety Analyzer Cables For SA-2500

G. BC20-20150 Chassis Cable (Non-Kelvin), optional for external measurement mode

BC20-20151 Chassis Cable (Kelvin), one comes with the unit



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

ULT-2020 Base Plus Meter Mode and Datalogging

Optional Accessories For ULT Series:

- ULT-PC-10 Dual Conductivity Probe (Short)
- ULT-PC-15 Dual Conductivity Probe (Medium)
- ULT-PC-20 Dual Conductivity Probe Set (Long & Short)
- ULT-PC-25 For Gus System
- ULT-PC-30 Dual Conductivity Probe (Flexible)
- BC20-42200 Cidex® Compatible Tray (20")
- BC20-42310 5 Rolls of Printer Paper
- BC20-42321 Printer Cable
- BC20-41361 RS232 Communication Cable, USB(A)M to Mini DIN Male
- BC20-41337 RS232 Communication Cable
- BC20-41339 USB to RS232 Adapter
- BC20-42330 ULT Print Kit Includes
 - BC20-30107 Medium Soft Sided Carrying Case
 - BC20-42321 Printer Cable
 - BC20-42310 5 Rolls of Printer Paper
 - BC20-42300 External Printer
- BC20-42331 ULT Kit Includes
 - BC20-30106 Carrying Case
 - BC20-41337 RS232 Communication Cable
 - BC20-41339 USB to RS232 Adapter

← Flip for more info on this series - Pages 47-52 →

Ultrasound Transducer Adapters (use with ULT-2000 Series)

- ULT-PA-10 Acuson/Siemens 8V5,15L8W,V5M,3V2C
- ULT-PA-11 Sonosite Transducers, including TEE
- ULT-PA-12 Acuson/Siemens 260-PIN
- ULT-PA-13 Acuson/Siemens 156-PIN,V510B,
- ULT-PA-14 ATL/Philips C9-5 Curved Array,
- B.** ULT-PA-16 GE LogicQ and GE P9603AU
- ULT-PA-17 Philips/ATL IE33 and iU22
- ULT-PA-18 Philips/HP 4500, Sonos 5500/7500
- C.** ULT-PA-19 Philips CX50 Laptop Platform Only
- ULT-PA-20 Toshiba PVF Series, 2B701-753E
- ULT-PA-21 Hitachi EUP-ES52M, EUP-Series Probes
- ULT-PA-22 Aloka SSD-620, SSD-650
- ULT-PA-24 Philips/ATL 256-pin, w/belled housing
- ULT-PA-25 GE LogiqBook Laptop platform transducers
- ULT-PA-27 GE YMS/RT use with YMS/RT transducers
- ULT-PA-29 Zonare Medical Systems
- D.** ULT-PA-30 GE Vivid E9

A



B



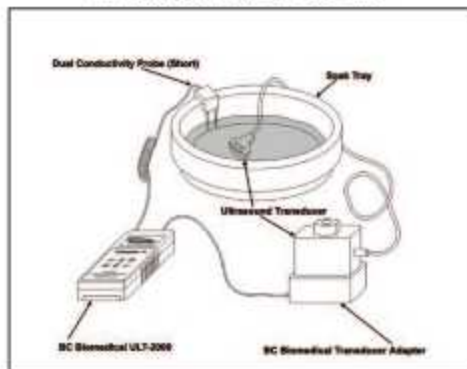
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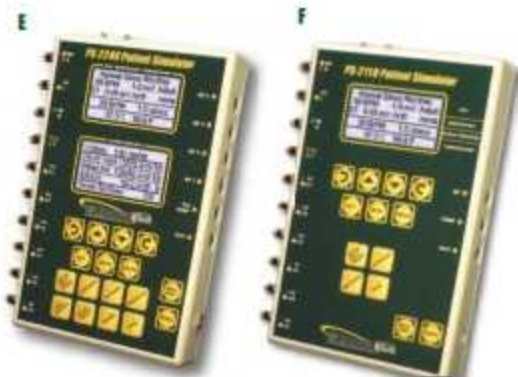


D



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





For Complete selection of cables go to Pages
EE-GG

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 SpO₂ simulation option makes this series a truly unique and versatile tool.

- Powered by two 9V batteries or optional battery eliminator
- Display backlight
- Full remote operation via RS232
- Flash programmable for upgrades
- SpO₂, Cardiac Output and Fetal/Maternal options
- Special programmable training modes

← Flip 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
- PS-2220 Patient Simulator with 4 BP Channels
- PS-2210 Patient Simulator with 4 BP Channels
- PS-2105 Patient Simulator with 4 BP Channels
- F. PS-2110 Patient Simulator with 4 BP Channels

Optional

- MSP-2100 Pulse Oximetry Module
- BC20-02300 Fetal/Maternal Option
- BC20-02400 Cardiac Output Option
(Includes MCO-2100 Interface Module)

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

G. BC Biomedical Patient Simulator Remote PSR-2200

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.

← Flip for more info on this series - Pages 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
- I. PS-2006 6 Test Lead Model
- J. PS-2010 10 Test Lead Model

← Flip for more info on this item - Pages 13 →

MicroSim Cardiac Output Simulator 1111

- 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
- 1103 HP Merlin Cable
- 1106 Marquette Cable.
- Other Cables Needed? Call for Pricing

K. Universal Banana-to-Snap/ECG Adapters BC20-17024

- Set of 10 Adapters
- Accepts 3 & 4 mm ECG Leads

L. Banana-to-Snap/ECG Adapters BC20-17025

- Set of 10 Adapters
- Accepts only 3 mm ECG Leads

BC Biomedical Defibrillator Analyzer Series DA-2006

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

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)
- BC20-00432 Internal Paddle Adapters (Set Included)
- BC20-41341 Communication Cable
- BC20-41339 Communication Cable Adapter
- BC20-30108 Soft Carrying Case

B. DA-2006-VL

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.

Flip for more info on this series - Pages 15-20

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

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

D. DA-CS-06

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.

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

Optional Accessories:

- G. BC20-00120 Replacement Accessory Kit
- BC20-30108 Soft Carrying Case





H



H. BC Biomedical ESU-2300 ESU Analyzer with Kit

- 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
- BC20-21105 Universal Power Supply (Power cord not included see page HH)
- BC20-41341 Communication Cable (DB9F to DB9M)
- BC20-41352 Communication Cable (USB)

← Flip for more info on this series - Pages 29-30 →

I



I. BC Biomedical ESU-2050 ESU Analyzer

- 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

- Same As ESU-2050 Plus Pulse Mode

Replacement Accessories:

- BC20-21104 Universal Power Supply
- BC20-41341 Comm. Cable (RS232)
- BC20-41352 Comm. Cable (USB)
- BC20-00232 Cable, CT (3' BNC to BNC)
- BC20-00126 Accessory Kit

← Flip for more info on this series - Pages 31-32 →

Optional ESU-2050 Series Accessories

J. Pearson CT (for ESU-2050 Only)

- BC20-00230 4100 Pearson CT 1:1
- BC20-00231 411 Pearson CT 0.1:1
- CT Calibration

J



K



K. CQM (for ESU-2050 Only)

CQM-2000 (REM/ARM/CQM Test Module)

L. Vishay-Dale NH-250 Precision Power Resistors & Adapters

- | 250 W | 1% | Tolerance | Non-Inductive |
|------------|--|-----------|------------------------------|
| BC20-00200 | 5 Ω | | BC20-00211 3000 Ω |
| BC20-00201 | 10 Ω | | BC20-00212 4000 Ω |
| BC20-00202 | 20 Ω | | BC20-00213 5000 Ω |
| BC20-00203 | 30 Ω | | BC20-00214 1 Ω (50W) |
| BC20-00204 | 50 Ω | | BC20-00215 125 Ω |
| BC20-00205 | 100 Ω | | BC20-00216 150 Ω |
| BC20-00206 | 200 Ω | | BC20-00217 400 Ω |
| BC20-00207 | 300 Ω | | BC20-00218 800 Ω |
| BC20-00208 | 500 Ω | | BC20-00219 1500 Ω |
| BC20-00209 | 1000 Ω | | BC20-00220 10 Ω (50W) |
| BC20-00210 | 2000 Ω | | |
| BC20-00240 | Power Resistor Banana Jack Adapter Set (2) | | |

• Calibration for each resistor

Resistor Sets

- BC20-00251 Valleylab Force2 Performance Check Set (100 & 300 Ω)
- BC20-00252 Valleylab Force2 Calibration Set (1, 50, 100, 200, 300, 1000, 3000, 4000 Ω)
- BC20-00253 Valleylab ForceFX™ Performance Check Set (100, 200, 300, 500 Ω)
- BC20-00254 Valleylab ForceFX™ Calibration Set (10, 20, 100, 200, 300, 500, 1000, 2000, 3000 Ω)
- BC20-00255 ForceTriad™ Performance Check Set (100, 300, 500 Ω)
- BC20-00256 ForceTriad™ Calibration Set (5, 10, 20, 30, 50, 100, 200, 300, 500, 1000, 2000, 3000 Ω)
- BC20-00257 Valleylab ForceTriad™ (special debug mode) (20, 100, 200, 300, 1000, 5000 Ω)
- BC20-00258 Complete Set for Valleylab Generators

• Calibration for each resistor

L



(Shown w/Optional Adapters)



A. BC Biomedical ESU-2400H ESU Analyzer with Kit

The ESU-2400H represents a totally new standard in full featured electrosurgery analyzers, with unprecedented measurement analysis and enhanced pulsed waveform compatibility.

BC Biomedical ESU-2400 ESU Analyzer with Kit

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
- 1 to 6400 ohms in 1 ohm increments

← Flip for more info on this series - Pages 25-28 →



B. BC Biomedical TRL-2420 TISSUE RESPONSE LOAD

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
- BC20-21107 100-240 V Universal Power Supply

- D. - BC20-00131 ForceTriad™ PM Kit

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

The latest ESU-2400 update includes an Autosequence for running the new PM procedure. The Autosequences uses the accessory kit to guide the operator through more than 100 steps that are in the new PM test procedure.

- BC20-41360 Cable, Communication USB Null Modem
- BC20-41361 Cable, Communication USB Null Modem (ESU-2400)
- E. - BC20-03004 Foot Switch Simulator, triggers Cut/Coag Bipolar on Covidien Force FX™/ForceTriad™

BC Biomedical Foot Switch Cable for ESU-2400

- BC20-03000 Unterminated Foot Switch Cable
- BC20-03001 Force FX™ Foot Switch Cable
- BC20-03002 Conmed Foot Switch Cable
- BC20-03003 Covidien ForceTriad™ Foot Switch Cable

A



B



C



D



E





NIBP-1040-BE With optional Cardiac output

Sample Adapter



BC Biomedical NIBP-1000 Simulator Series

The NIBP-1000 Series is a new Family of high quality, low cost, high function 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)**
- Full Range Manometer • Flash Programmable
 - Back Light
 - Adult, Neonatal and Hypertensive modes
 - Full Graphical Display • RS232
 - SpO₂ Ready - Compatible w/ **MSP-2100** Module (Page 20)
 - Includes One Free Adapter of Your Choice (if none specified, **BC20-40716** will be sent)
- Optional Features:**
- -P Peak Pressure Detect
 - -BP Peak Detect & Battery (Built-in Rechargeable)

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

- G. NIBP-1020 (NIBP, ECG Pace & Resp)**
- 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
 - -BPA Peak Detect, Alarm & Battery (Built-in Rechargeable)

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

- NIBP-1030**
- 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

NIBP-1030KIT
Includes NIBP-1030-B, Soft Carrying Case, & Five Adapters

H. NIBP-1030-BE
Add Extended Patient Lead Connectors
NIBP-1030KIT-E
Includes NIBP-1030-BE, Soft Carrying Case, & Five Adapters

I. NIBP-1040KIT-E
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
 - **BC20-41337** RS232 Communication Cable
 - **BC20-41361** RS232 Communication Cable, USB(A)M to Mini DIN Male
 - **J. BC20-40714** DINAMAP/Critikon Adapter
 - **K. BC20-40715** Quick Disconnect Adapter
 - **L. BC20-40716** Luer Adapter
 - **M. BC20-40717** Marquette Adapter
 - **N. BC20-40608** Bulb Adapter
 - **BC20-41339** USB to RS232 Adapter
- Invasive Blood Pressure Cables can be found on page EE

← Flip for more info on this series - Pages 21-24 →

NIBP Adapter Kit BC20-40005

Connector kit for NIBP testers. Save time and money by buying this kit. Includes 11 connectors, pictured and identified on page DD, letter C.

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).

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

← Flip for more info on this product - Pages 43-44 →

C. BC Biomedical SPO-2000 Pulse Oximeter Module

- 30, 60, 90, 120, 150 & 180 BPM Pulse Rates
- Requires BC Biomedical FingerSim™ 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

← Flip 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

← Flip 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)

F. Nellcor SRC-2 Pocket Tester

Quickly and conveniently tests most of the Nellcor oximeters.



Wouldn't it be nice to have calibrated fingers?



BC Biomedical
FingerSim™



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

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

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

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

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

Individual Components:

- **IPA-1000** Infusion Pump Analyzer Display
- **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** Universal Battery Eliminator

← Flip for more info on this series → Pages 45-46 →



H. Infusion Pump Testing Kit BC26-40606-C

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

I. Extech 475040 Digital Force Gauge

Measures push/pull to 176 oz/5000 g

J. Chatillon Pull Scale (IC-100)

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



**DON'T FORGET
A CARRYING
CASE FOR YOUR
EQUIPMENT**

A. BC Biomedical USP-100A Digital Ultrasound Wattmeter

A compact, digital and affordable way to test both 1 & 3 MHz therapy ultrasounds. Great size for field service.

- 0.1 to 30.0 Watt range, $\pm 5\%$ accuracy
- 1 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"x8"x8.75" / 7 lbs
- RS232 Port

CE

B. BC Biomedical USP-50SP Digital Ultrasound Wattmeter .

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

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

← Flip for more info on this series - Pages 53-54 →

D. UMA UMR-3D Digital Ultrasound Wattmeter

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
- $\pm 3\%$ Accuracy
- Digital readout

Optional Accessories:

- RS232 Port & Software (captures data on your PC).

E. UW6 Ultrasound Wattmeter

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 1/2" deep
- Height 7 1/2" (10 3/4" with Clamp Post)



D



E



F



G



H



I



J



K



E. UPM-DT-1000PA New!

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. This high resolution and fast response make the UPM-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-1AV

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-10AV

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-100AV

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

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 is highly portable. Making for quick easy set up.

K. UPM-30

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-1AV	UPM DT-10AV	UPM-DI-100AV	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	NA
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	NA
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	NA
Electrical Safety	CE, CISA	CE, CSA	CE, CSA	CE, CSA	CE, ICES	NA
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 6.75"W	7"H x 10.5" L x 6.5"W * 6"H x 16.75" L x 12"W	15"H x 17" L x 7"W
Weight	16 Lbs Net	16 Lbs Net	16 Lbs Net	11 Lbs Net	6.5 Lbs * 9.75 Lbs Net	16 Lbs Net
Carrying Case	Black Anodized Aluminum	Black Anodized Aluminum	Black Anodized Aluminum	Black Anodized Aluminum	Molded polyethylene	Black Anodized Aluminum



DC 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

(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
- Second Pressure Sensor
- Temp Option (YSI 700 or RTD)

DPM-2302.

(adds RS232 Serial Communications)

- Same features and options as the DPM-2301 with the RS232
- 0.05% FS Pressure Accuracy

Optional Features & Accessories:

- DC DC Output
- Second Pressure Sensor.
- Temp Option (YSI 700 or RTD)
- BC20-21110 Universal Battery Eliminator
- BC20-41361 Communication RS232, USB(A/M) to Mini DIN Male
- BC20-41337 RS232 Communication Cable.
- BC20-41339 USB to RS232 Adapter

B. DPM-2351

(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
- Temp Option (YSI 700 or RTD)

DPM-2352

(adds RS232 Serial Communications)

- Same features and options as the DPM-2351 with the RS232
- 0.05% FS Pressure Accuracy

Optional Features:

- DC DC Output
- Temp Option (YSI 700 or RTD)

DPM-235175NNFC

DPM-23017510NFC

(for ventilator and anesthesia service applications)

DPM 230X X X X X

- Options**
 - DC = DC (Direct Current) Analog Output
 - PC = Female Quick Disconnect
 - MC = Male Quick Disconnect
 - Box = Special Casing Configuration, see note
- Temperature Sensor Option**
 - 71 = Not Applicable
 - 77 = YSI 700
 - 81 = YSI 0 RTD
- Pressure 2 Range (Left Port)**
 - 71 = Not Applicable
 - 100 = Max 100 PSI (Default Quick Disconnect)
 - 150 = Max 150 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 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 3 PSI (Default Male Luer Lock)
- Model**
 - 2301 = Basic Model
 - 2302 = Adds RS-232

Note: The PC or MC options are not applicable when the "Box" option is specified.

DPM 234X XX N XX XX

- Options**
 - DC = DC (Direct Current) Analog Output
 - PC = Female Connector (CPC Connectors)
 - MC = Male Inset CPC Connectors
- Temperature Sensor**
 - 71 = Not Applicable
 - 77 = YSI 700
 - 81 = YSI 0 RTD
- Pressure Sensor 2**
 - 71 = Not Applicable
- Pressure Sensor 1**
 - 71 = 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 Mini/Micro)
 - 2352 = RS232 Add
- Digital Pressure Meter**

← Flip for more info on this product → Pages 37-38 →



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)

- One Independent Pressure Range
 - Choose Your Pressure Range: 0.3, 5, 10, 75 or 100 PSI
- DPM-2202 (Min and Max, RS232)**

Optional Features:

- DC DC Output
- HF High Frequency Output
- Second Pressure Sensor
- Temp Option (YSI 700 or RTD)

DPM-2251 (Differential Pressure, Vacuum)

- Choose Your Pressure Range: .3, 5, 10, 75 or 100 PSI
- DPM-2252 (Min and Max, RS232)**

Optional Features:

- DC DC Output
- HF High Frequency Output
- Temp Option (YSI 700 or RTD)

← Flip for more info on this product - Pages 39-40 →

Eye Surgery Equipment USERS PLEASE NOTE:

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

DPM-220210010NHF

- 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 RS232 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, InH₂O or CmH₂O.

DPM-2001 (Pressure, Vacuum)

- Pressure to 100 PSI
- Vacuum to -13.50 PSI

DPM-2001PLUS

- Same features and options as the DPM-2001 with the addition of MIN/MAX Capture and RS232

DPM-2100

- Same features and options as the DPM-2001PLUS with the addition of Temperature capabilities to be used with any YSI 700 probe.

← Flip for more info on this product - Pages 41-42 →

Optional Accessories for BC Biomedical DPM Family

- **BC20-21110** Battery Eliminator - 9VDC
- **BC20-30106** Soft Carrying Case
- **BC20-01006** YSI 700 Temp Probe
- **BC20-21102** RS232 Communications Cable
- **BC20-41337** RS232 Communications Cable
- **BC20-41361** RS232 Communication Cable, USB(A)M to Mini DIN Male

Universal Manometer Adapter Kit BC20-01005

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
 Y1 = YSI 700
 R1 = 100 Ω RTD

Pressure Range (Standard)

- 100 = Max 100 PSI
 75 = Max 75 PSI
 10 = Max 10 PSI
 5 = Max 5 PSI
 0.3 = Max 0.3 PSI

Pressure Range (Special)

- 100 = Max 100 PSI
 75 = Max 75 PSI
 10 = Max 10 PSI
 5 = Max 5 PSI
 0.3 = Max 0.3 PSI

Model

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

DPM 220X 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
 Y1 = YSI 700
 R1 = 100 Ω RTD

Pressure Range

- 100 = Max 100 PSI
 75 = Max 75 PSI
 10 = Max 10 PSI
 5 = Max 5 PSI
 0.3 = Max 0.3 PSI

Model

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

C



D



C. Meriam M1 Smart Manometers

M100 Digital Manometer: $\pm 0.25\%$ FS

Model	Type	Range
M100-2	DN0020	0 to 20" H ₂ O Differential
M100-7	DN0138	0 to 138" H ₂ O Differential
M100-8	DN0416	0 to 416" H ₂ O Differential
M100-9	DN0832	0 to 832" H ₂ O Differential
M100-10	DN2000	0 to 2000" H ₂ O Differential
M100-20	GN0005	0 to 5 PSI Gauge
M100-11	GN0015	0 to 15 PSI Gauge
M100-12	GN0030	0 to 30 PSI Gauge
M100-13	GN0050	0 to 50 PSI Gauge
M100-5	GN0100	0 to 100 PSI Gauge
M100-14	AN0775	0 to 775 mmHg Absolute
M100-4	AN1551	0 to 1551 mmHg Absolute
M100-22	AN2565	0 to 2565 mmHg Absolute

M101 Single Function Calibrator $\pm 0.1\%$ FS

Model	Type	Range
M101-2	DN0020	0 to 20" H ₂ O Differential
M101-7	DN0138	0 to 138" H ₂ O Differential
M101-8	DN0416	0 to 416" H ₂ O Differential
M101-9	DN0832	0 to 832" H ₂ O Differential
M101-10	DN2000	0 to 2000" H ₂ O Differential
M101-20	GN0005	0 to 5 PSI Gauge
M101-11	GN0015	0 to 15 PSI Gauge
M101-12	GN0030	0 to 30 PSI Gauge
M101-13	GN0050	0 to 50 PSI Gauge
M101-5	GN0100	0 to 100 PSI Gauge
M101-14	AN0775	0 to 775 mmHg Absolute
M101-4	AN1551	0 to 1551 mmHg Absolute
M101-22	AN2565	0 to 2565 mmHg Absolute

• NIST Certificate with Data (Z1065)

D. Meriam M2 Smart Manometers

M200LS Lab Standard Smart Manometer: $\pm 0.01\%$ FS

• Prices include NIST Calibration Certificate

Model	Type	Range
M200LS	GI0015	0 to 15,000 PSI Gauge
M200LS	GI0030	0 to 30,000 PSI Gauge
M200LS	GI0050	0 to 50,000 PSI Gauge
M200LS	GI0100	0 to 100,000 PSI Gauge
M200LS	GI0300	0 to 300,000 PSI Gauge
M200LS	GI0500	0 to 500,000 PSI Gauge
M200LS	DN0028	0 to 28,000 in H ₂ O Differential
M200LS	DN0200	0 to 200,000 in H ₂ O Differential
M200LS	DN2000	0 to 2000,0 in H ₂ O Differential
M200LS	AI0017	0 to 900 mmHg Absolute
M200LS	AI0038	0 to 2000 mmHg Absolute

M200 Smart Manometer: $\pm 0.05\%$ FS

• Prices include NIST Calibration Certificate

Accuracy Adder: +/- 0.025% FS Base

Model	Type	Range
M200	DN0010	0 to 10 in H ₂ O Differential, Non-isolated, (+/- 0.05% FS only)
M200	DN0028	0 to 28 in H ₂ O Differential, Non-isolated
M200	DN0200	0 to 200 in H ₂ O Differential, Non-isolated
M200	DN0415	0 to 415 in H ₂ O Differential, Non-isolated
M200	DN2000	0 to 2000 in H ₂ O Differential, Non-isolated

A. Meriam M2 Smart Manometers (Continued)

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

B. Meriam MG-F16BN Digital Pressure Gauges

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

NIST Certificate with Data (Z1065)

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 aren't sure what you need our knowledgeable staff will guide you in choosing a system that will work for you.



C. Bacharach N₂O Trace Gas Analyzer 3015-4790

Bacharach's TGA (Trace Gas Analyzer) is an advanced N₂O 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 N₂O Levels
- Maintenance-free infrared N₂O sensor
- Two Year Warranty

Optional and Replacement Accessories:

- 3015-3420 Inlet Filters
- BC20-30114 TGA Hard Carrying Case

C E. B. Viasensor G200-00N Nitrous Oxide monitor

Nitrous oxide monitor 0 to 1,000 ppm N₂O with internal pump.
 - Includes: battery charger, sample tube/filters, Soda Lime CO₂ removal kit, operating manual and supplied in a Hard Carry Case.

Viasensor CO₂ Analyzers

CO₂ Analyzer ranges are 0-10,000 ppm, 0-20% and 0-100% and all include internal pumps.

- Accessories Included: Battery Charger - Sample tube - Filters - operating manual.

- E. **G100-00N** CO₂, (0-20%)
- G100-10N** CO₂, (0-20%) O₂, (0-100%)
- G100-01N** CO₂, (0-20%) RH Probe 15mm
- G100-11N** CO₂, (0-20%) O₂, (0-100%)
RH Probe 15mm
- G110-00N** CO₂, (0-100%)
- G110-10N** CO₂, (0-100%) O₂, (0-100%)
- G110-01N** CO₂, (0-100%) RH Probe 15mm
- G110-11N** CO₂, (0-100%) O₂, (0-100%)
RH Probe 15mm
- G150-00N** CO₂, (0-10,000 ppm)
- G150-10N** CO₂, (0-10,000 ppm) O₂, (0-100%)
- G150-01N** CO₂, (0-10,000 ppm) RH Probe 15mm
- G150-11N** CO₂, (0-10,000 ppm) O₂, (0-100%)
RH Probe 15mm

- Accessories

- G-TP-5** temperature probe
- F. G-HCASE** Hard 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.



2014-2015 CATALOGS



**BC
 BIOMEDICAL
 CATALOG**

**BC
 MARKETPLACE
 CATALOG**



A. Alnor EBT-731 Electronic Balancing Tool

CE The Alnor EBT 731 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 EBT 731 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
- 800218** Temperature Probe
- 800219** Temperature/Humidity Probe
- 801090** 16pt Velocity Matrix
- 801207** 1' x 5' and 3' x 3' hood expansion kit
- 801206** 1' x 4' and 2' x 4' hood expansion kit

HVAC Thermo-Anemometers**B. The Alnor Velometer® AVM410 Thermal Anemometer**

Testing device for the HVAC test & balance professional that features a multipurpose digital manometer, capture hood, relative humidity and temperature probe, Airflow probe, pitot probe, static pressure probes or a velocity matrix (optional).

- Alnor AVM410**
- Alnor AVM430**

Extech 407123 Handheld units. Measure velocity & temp.

Environmental Sensors Monitoring Equipment

- Z-100** Ethylene Oxide Monitor
- Z-200** Glutaraldehyde Monitor
- C. Z-300** Formaldehyde Monitor





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



E. Ohmic AMN-15 Dew Point Meter

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

- 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 Connector 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 Connector 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 O₂ sensor

G. Medical Gas Outlet Fitting Kit BC20-40630

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 B & C)

Gelman Particulate Filters & Accessories

- 1119 Poly Holder for 47 mm filters (50 PSI Max)
- H. 1235 Aluminum Holder for 47 mm filters
- 7245 Petri dishes, 47 mm filter protection (per 100)
- I. 51147 Forceps for handling filters
- 66149 PTFE Filters 47 mm x 0.45 micron (pack)
- 66408 47 mm x 0.45 micron filters (pack)

Flowmeters

All prices include Calibration Certificate.

- FR4A65BVBN Key Instruments 1 to 10 SCFM Air
- J. FR4A67BVBN Key Instruments 0.5 to 5 SCFM Air
- FR4A70BVBN Key Instruments 30 to 300 PM Air
- K. B18J201B126 Matheson 260 L w/Valve
- B18J201B127 Matheson 320 L w/Valve

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

L. Geotech G210-10N Gas Analyzer

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.

Geotech G210-11N Gas Analyzer

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

Geotech CO₂ Analyzers

G110-00N CO₂, (0-100%)

- Accessories Included: Battery Charger - Sample tube - Filters - operating manual.

M. Medical Gas Hard Carrying Case 221609

Diced foam. Customize to meet your needs. Usable 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

- Brass body resists corrosion
- Easy-to-read 2" pressure gauge
- Self re-seating pressure relief valve protects against over-pressurization
- Size / Weight: 7.5"x4.5"x6.5" / 3 Lbs 3 oz

Medical Gas Installation Tools

CE

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

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

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 1/4" MNPT connection.

Amprobe ULD-300 Ultrasonic Leak Detector

TIF Halogen Leak Detectors

Carrying Case included with all models.

TIFXL-1A Single Sensitivity Range

TIFRX-1A Dual Sensitivity Range

D. TIFXP-1A Seven Sensitivity Settings

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

E. 123 Package

F. Snoop[®] Liquid Leak Detector

Specialty formulated liquid that adheres to vertical surfaces with better and longer bubbling to indicate leaks.

Pack of Six 2 oz bottles

Pack of Five 8 oz bottles

One Gallon bottle

G. Magnum Pro Combo Pneumatic Calibration Pump

Model# MVP-600

- 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)

B34700 650 mmHg Vacuum Hand Pump (for Meriam Smart Manometer AJ Models)

I. WIKA Analog Pressure Gauges w/ Calibration Certificate

Model	Range	Accuracy	Size
232.54/30	0 to 0030" Hg	$\pm 1.5\%$ FS	2.5"
232.54/100	0 to 0100 PSI	$\pm 1.5\%$ FS	2.5"
232.54/300	0 to 0300 PSI	$\pm 1.5\%$ FS	2.5"
232.54/30-4"	0 to 0030" Hg	$\pm 1.0\%$ FS	4.0"
232.54/100-4"	0 to 0100 PSI	$\pm 1.0\%$ FS	4.0"
232.54/300-4"	0 to 0300 PSI	$\pm 1.0\%$ FS	4.0"
232.54/1000-4"	0 to 1000 PSI	$\pm 1.0\%$ FS	4.0"
232.54/3000-4"	0 to 3000 PSI	$\pm 1.0\%$ FS	4.0"

- 2.5" gauges 1.5% FS Accuracy

- 4" 1% FS Accuracy

A



B



C



D



E



F



G



H



I



Or cleaning available

Call for more ranges

Handheld



Handheld



CE J. TSI Certifier-FA PLUS High Flow Vent Test System

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
- **4073** Oxygen Sensor Kit: Adds O₂ measurement capability to Certifier FA Test System
- **1303860** Printer Cable
- **1208061** Extra Battery Pack/Charger Kit

CE 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,

Parameter	Specification
High Flow Air or O ₂	0 to 300 SLPM; $\pm 2\%$ of reading or ± 0.075 SLPM
High Flow Air/O ₂ Mix	0 to 300 SLPM; $\pm 4\%$ of reading or ± 0.1 SLPM
Low Flow Air or O ₂	0.01 to 15.00 SLPM; $\pm 2\%$ of reading or ± 0.010 SLPM
Low Flow N ₂ O	0.01 to 15.00 SLPM; $\pm 4\%$ of reading or ± 0.025 SLPM
Volume Air or O ₂	0 to 10 L; $\pm 2\%$ of reading or ± 0.02 SLPM
Volume Air/O ₂ Mix	0 to 10 L; $\pm 4\%$ of reading or ± 0.02 SLPM
High Pressure	N/A (See DPM -235175NNFC, DPM -23017510NFC Listed Below)
Low Pressure	-25 to 150 cmH ₂ O; $\pm 0.75\%$ of reading or ± 0.20 cmH ₂ O
Breath Rate	0.5 to 120 BPM ($\pm 5\%$)
I:Time	0.25 to 60 seconds (± 0.01 sec.) (E:Time Not Displayed)
I:E Ratio	1:100.0 to 100.0:1 ($\pm 5\%$)
Minute Volume	0 to 99.00 stp L ($\pm 7\%$)
Barometric Pressure	362 to 1,500 mmHg; ± 8 mmHg
Oxygen	0 to 100%; $\pm 2\%$ at Calibration Conditions
Portability	Complete Kit Case - 11"x11"x4" / 3 lbs
Power	Four AA - Battery Life: 15 to 20 Hours

NIST Traceable Calibration Certificate and soft-sided carrying case)

Optional Accessories:

- Recommended Digital Pressure Meters for ventilator and anesthesia service applications
- **DPM-235175NNFC** (High precision DPM with 75 PSI Range)
- **DPM-23017510NFC** (High precision DPM with 75 & 10 PSI Range)
- **4072** Low Flow Module.
- **4073** Oxygen Kit: Adds O₂ measurement capability to Certifier FA Test System
- **1319288** TSI Certifier Hard Carrying Case
- **BC20-40700** TSI Certifier Protective Boot & Stand
- **BC20-40701** Low Flow Filter
- **BC20-40702** High Flow Filter
- **PSR-11-917J** Replacement O₂ Sensor



A. PFC-3000 FLOW ANALYZER (RENCHTOP) SERIES

The PFC-3000 series of instruments measures flow, pressure, temperature, humidity and O₂ 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

PFC-3000AKIT

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

PFC-3000A-MGA-KIT

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

PFC-3000LKIT

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

PFC-3000L-MGA-KIT

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

PFC-3000VKIT

Biomedical Test-Kit "Ventilation" Includes 1 each: PFC-3000V, LS-2000V, and FlowLab Software

PFC-3000V-MGA-KIT

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

Optional Accessories:

B. FlowLab Software for PFC-3000 Series

C. MGA-3050 Multi Gas Analyzer

← Flip for more info on this product - Pages 61-62 →

D. Mallinckrodt (NPB) BreathLab PTS-2000 Ventilator Analyzer 4-076185-00

- Accurately measures pressure, flow, volume, Oxygen concentration & barometric pressure & N₂O flow
- Measures Air, O₂, Air/O₂ mixture
- User-replaceable O₂ sensor
- Single-multifunction screen; portable, lightweight, rugged design
- 20 selected parameters on 10 user-configurable screens
- Numeric display of two real-time measurements
- Auxiliary menu for O₂ calibration & sensor management
- English & metric units for pressure, flow & volume

Optional Accessories:

- 4-075356-00 BreathLab Software
- 4-075359-00 Model 840 Vent Software
- 4-076164-00 Hard Carrying Case
- 4-076599-00 Model 840 Vent Accessory Kit



E



E. Breath Simulation Module

The Michigan Instruments' Breath Simulation Module is a compact precision device designed to transform the dual adult Training and Test Lung into a spontaneously breathing system. While in this mode, the PneuView system can analyze a simulated patient breath at preset compliances and resistances as well as investigate the characteristics of assisted ventilation. No other apparatus allows for simulated breaths at such a controllable level.

- A physical and digital display of spontaneous breaths, useful in the classroom and in ventilator calibration.
- Accurate control of breath rate, tidal volume and inspiratory time.
- Easy, calibrated ventilation of testing equipment via line-air.
- Simple setup. With a Breath Simulation Module, a spontaneously breathing system can be set up in less than two minutes.

F



F. BC Biomedical LS-2000 Lung Simulator Series

Airway resistance, lung compliance & leakage widely adjustable.

- LS-1000E EasyLung Simulator
- LS-2000A Adult Lung Simulator
- LS-2000I Infant Lung Simulator

BC Biomedical TestLung Infant LS-1000N

The TestLung Infant is the ideal tool to test neonatal and infant ventilators.

- G. LS-1000N TestLung Infant

← Flip for more info on this product - Pages 67-68 →

G



H



H. "Manley" Lung Simulator

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
- I. BC20-40200 Adult



CE 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
- RS232 & 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

B. 4043 Mass Flowmeter 0-200 LPM range

- User selectable Gas calibration (Includes: Air, N₂, O₂, Air/O₂ 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, O₂, N₂ 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.

4143 Mass Flowmeter 0-20 LPM with 3/8" connection.

- User selectable Gas calibration (Includes: Air, N₂, O₂; Flow range up to 20 L/min & 0.25 in O.D. inlet/outlet size)

41403 Mass Flowmeter Same as 4140 but adds N₂O ...

41433 Mass Flowmeter 0-20 Same as 41403 but has 3/8" connection

Optional Accessories:

- **4199** Flowmeter Battery Pack Base

D. Mark B Respirometer

Two Dials. Small dial: 0 to 1 L. Large dial: 0 to 100 L.

Optional Accessories:

- **E. 19-00481** Adapter that connects a respirometer to a ventilator drive gas hose
- **BC20-01007** Respirometer Wright Guard



F. BC78XX Test Box (Ohmeda®)

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)

Special Tools for Anesthesia

G. 10195K29 Krytox® Oxygen-compatible Lubricant (one tube)

H. 1204K32 Dow Corning 111 (Dräger) Stopcock Lubricant/Sealant (two tubes)

A



Pictured with optional 4199

B



C



Pictured with optional 4199

E



D



G



F



H





I. AA-2005 Anesthetic Agent Analyzer

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

← Flip for more info on this product → Pages 67-68

J. VSI-1466 Switching Instrument

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.

K. Riken FI-21 Portable Gas Indicator

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.

Gilmont GF1160 500 ml Flowmeter with fitting kit

- 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

- 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

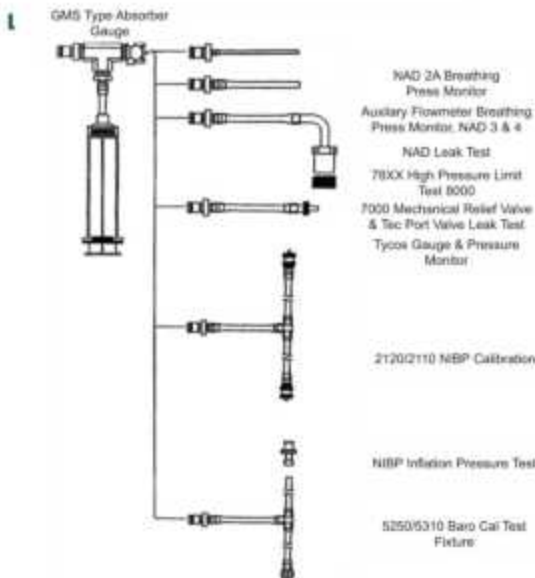
L. BC20-40601 Ohmeda® Low Pressure and Dräger Combo Kit

- **Ohmeda® Tests:** Absorber Gauge, 78XX High Pressure Limit Test, 7000 Mechanical Relief Valve Test, Select-a-tec Port Valve Leak Test, Tyco's Gauge & Pressure Monitor Test, 2120/2110 NIBP Calibration & 5250/5330 Barometric Pressure Calibration

- **Dräger Tests:** NIBP Inflation Pressure Test, Manual Sphygmomanometer, Model 2A Breathing Pressure Monitor, Auxiliary Flowmeter, Model 3 & 4 Breathing Pressure Monitor & Leak Test

Optional Accessories:

- 10-02 CPC Coupler 1/8" MNPT
- 021-140 Inflation Bulb with valve
- 22-02 CPC Connector 1/8" Barb



A. Mini-Ox I Oxygen Analyzer

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% O₂
- Linearity - $\pm 2\%$

Optional Accessories:

- PSR-11-917-J Replacement Sensor

B. Mini-Ox 3000 Oxygen Monitor

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% O₂
- Linearity - $\pm 1\%$

Optional Accessory:

- PSR-11-917-J Replacement Sensor

C. All-2000A Oxygen Analyzer

- Range - 0 to 100% O₂
- Accuracy - $\pm 1\%$ full scale at Constant Temp & Pressure
- Resolution of Display - 0.1% O₂
- Sensor Life - 60 months in Air
- Warranty - Analyzer Two Years, Sensor 18 Months

Optional Accessory:

- All-11-60 Replacement Sensor

D. All-2000M Oxygen Monitor

The All-2000M has all the same features as the All-2000A Oxygen Analyzer, but provides a Low Limit Alarm 15 to 100%.

Optional Accessory:

- All-11-60 Replacement Sensor

E. Maxtec Original Oxygen Analyzer

A gold standard in our O₂ analyzer line up, this model has the sensor inside the analyzer. When attached to the tubing, checking oxygen concentrators for O₂ percentage accuracy is done quickly and with ease.

OM-25 A Internal MAX-250 long-life sensor

OM-25 AE External MAX-250 long-life sensor

F. R2118P12 Handi+ Oxygen Analyzer

The Handi+ is everything it's always been and more! Maxtec has improved the Handi O₂ 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 make it the best of its class.

Replacement Anesthesia O₂ Sensors

(See online guide for more information.)

G. PSR-11-915

PSR-11-915-1

PSR-11-915-2

H. PSR-11-915-3

PSR-11-915-4

Replacement Respiratory O₂ Sensors

(See online guide for more information.)

I. PSR-11-33

PSR-11-33-2

J. PSR-11-55

PSR-11-77

K. PSR-11-917-J

PSR-11-917-M

Handheld**A****B****C****D****E****F****G****H****I****J****K**



L. ILT1496-ELMS Endoscope Light Measurement System

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. ILT74 Hyperbilirubinemia Light Meter / Radiometer

The ILT74 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 Bill-Meter™ with Type B-22 Sensor 53822 Used for measuring all regular Phototherapy lights including fluorescent, halogen & even sunlight.

Olympic Type F-22 Sensor (phototherapy Pads only)
53865

Olympic Type B-22 Sensor (phototherapy lights only)
53860

O. Extech 401025 Visible Light Meter

0 to 5000 Fc & 0 to 50,000 Lux, digital, handheld, ± 5% Accuracy.

Optional Accessory:

- NIST Traceable Calibration Certificate

P. Extech EA30 EasyView Light Meter

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

Tachometers

Q. BC Biomedical TC-1726 Combo Photo/Contact Tachometer without Calibration Certificate

BC Biomedical TC-1726C Combo Photo/Contact Tachometer with NIST Traceable Calibration Certificate.

← Flip for more info on this product - Pages 69-70 →

Optional Accessory:

- BC20-00601 Carrying case
- BC20-00602 12 inch surface speed wheel
- BC20-00603 Convex rubber tip with metal hub
- BC20-00604 10 cm surface speed wheel
- BC20-00605 Concave rubber tip with metal hub
- BC20-00608 Contact adapter assembly
- BC20-40705 Phototach Reflective Strip Material

R. Extech 461893 Photo Tachometer

Extech 461895 Combo Photo/Contact Tachometer

Extech 461995 Laser Combo Photo/Contact Tachometer

Optional Accessory:

- BC20-40705 Phototach Reflective Strip Material (2 ft)



Extech 407355 Noise Dosimeter

Measures total sound exposure over an eight hour period, % dose, dB & more.

Optional Accessories:

- NIST Traceable Calibration Certificate

Extech 407732 Sound Level Meter

High and Low measuring ranges: 35 to 100dB (low) and 65 to 130dB (high)

Optional Accessory:

- NIST Traceable Calibration Certificate.

Extech 407766 Sound Level Calibrator

94 dB & 114 dB Levels @ 1 kHz.

Optional Accessory:

- NIST Traceable Calibration Certificate

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
12823	5 lb
12828	10 lb
12870	20 lb
12833	25 lb
12839	50 lb
12862	100 lb

Precision Weight Sets

12518	1 g to 1 kg Set
12524	1 g to 2 kg Set

Other weights available, please call us with your needs!!

A Certificate of Accuracy (COA) is proof that the nominal values represented by the mass in question have been designed and manufactured to within exacting specifications.

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

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

Ohaus makes a wide variety of digital balances (scales) ranging from portable to lab quality. Options and features available include: draft guards, carrying cases, RS232 output and much more.

D. Extech HW30 Humidity/Thermometer Stopwatch

Digital UP/DOWN timer displays Temperature, Humidity, and Heat Index.

Optional Accessory:

- NIST Traceable Calibration Certificate





Female Plastic Luer Connector



Male HP/Agilent Type Connector



Female Luer Lock Connector



Male Plastic Luer Connector



Male Dinamp Type Connector with Wash Cap



Male Luer Lock Connector



Female Metal Luer Connector



Plastic Double Ended Tubing Connector



Female Metric Screw Type Connector



Male Metal Luer Connector



Male Metric Screw Type Connector



BC Biomedical Soft Carrying Case Series:

Soft-sided, heavyweight Cordura® material carrying cases that are a perfect fit for a multitude of test equipment and test accessories.

- BC20-30106 Small Soft Carrying Case
- E. BC20-30107 Medium Soft Carrying Case
- BC20-30108 Large Soft Carrying Case
- BC20-30109 Large Carrying Case for IPA-1000 Series
- BC20-30111 Carrying Case for NIBP 1000 series

F. NIBP Fitting Kit BC20-40602

- HP cuff adapter
- CPC connector
- Inflation bulb
- Silicone tubing & tee
- Quick coupler with 1/8" MNPT

G. NIBP Adapter Kit BC20-40605

Connector kit for NIBP testers. Save time and money by buying this kit. Includes 11 connectors.

H. Universal Manometer Adapter Kit BC20-01005

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. ESO-2000A Replacement Accessory Kit BC20-00120

ESU-2950 Replacement Accessory Kit BC20-00126

ESU-2300 Replacement Accessory Kit BC20-00125

ESU-2400/W Replacement Accessory Kit BC20-00130

J. Universal Banana-to-Snap/ECG Adapters BC20-17024

- Set of 10 Adapters - Accepts 3 & 4 mm ECG Leads

K. Banana-to-Snap/ECG Adapters BC20-17025

- Set of 10 Adapters - Accepts only 3 mm ECG Leads

L. EP Adapter (Earth Plug 6mm) BC20-41510

M. Ground Lug with a banana jack adapter BC20-17026

Defib & Pace Plates, Adapters & Cables (DA-2006 Series)

- N. BC20-00427 Plastic Protective Plates (Set Included)
- BC20-00432 Internal Paddle Adapters (Set Included)
- BC20-41339 USB to RS232 Adapter
- BC20-41341 Communication Cable
- BC20-00420 PhysioControl - Defib/Pacer
- BC20-00421 Marquette - Defib/Pace
- BC20-00423 Cable, Defib/Pacer Zoll
- BC20-00426 Cable, Defib/Pacer HP/Agilent (Old Style bar rel connector)
- BC20-00433 Cable, Defib/Pacer Test Philips (New Style)

BC20-00434 Cable, Defib/Pacer Test Cardiac Science

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
- BC20-20110 BC Biomedical Chassis (black) Cable (BC Biomedical/Dale Technology® Type)
- P. BC20-20111 BC Biomedical External (red) Cable (BC Biomedical/Dale Technology® Type)
- BC20-20115 BC Biomedical Kelvin Cable (BCB Type)
- BC20-20150 Chassis Cable (Non-Kelvin), optional for external measurement mode
- BC20-20151 Chassis Cable (Kelvin), one comes with the unit

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 current model Fluke Biomedical Multiparameter simulators.

Monitor Manufacturer	Description (BP connector listed below to Male mini DIN at simulator end)	BC Part #	BP Cable Connector Key
Burdick	10-pin Female	BC20-41309	B
Care	5-pin Male	Call Factory	C
Corometrics	3-pin Male / 3-Pin Female	Call Factory	E
Corometrics	12-pin Male (IUP Cable)	BC20-41343	M
Criticare	6-pin Male	BC20-41301	H
Critikon	6-pin Male	BC20-41301	H
Datascope	6-pin Female	BC20-41308	F
Defex DX-1	10-pin Female	BC20-41309	B
Fukuda Denshi FD-2 / DS3300	12-pin Male	BC20-41311	V
Gould/Statham	5-pin Male	Call Factory	C
Hewlett Packard/Agilent/Philips	5-pin Female	Call Factory	J
Hewlett Packard/Agilent/Philips	12-pin Male (40 uV)	BC20-41315	I
Hewlett Packard/Agilent/Philips	12-pin Male (5 uV) (Most common)	BC20-41314	I
Hewlett Packard/Agilent/Philips	12-pin Male (IUP Cable)	BC20-41344	PP
In vivo Research	6-pin Male	BC20-41301	H
Ivy Biomedical	6-pin Male	BC20-41301	H
Kontron/Roche	12-pin Female	BC20-41318	X
GE Marquette 7000	8-pin Male	Call Factory	P
GE Marquette Eagle MQ-3	11-pin Male (Most common)	BC20-41320	N
GE Marquette Twin	7-pin Male / 8-pin Male	Call Factory	D
GE Marquette MQ-2	9-pin Female	BC20-41319	OO
Medical Data Electronics (MDE)	6-pin Male	BC20-41322	H
Mennen Medical	10-pin Male	BC20-41323	II
Nihon Kohden	5-pin Male	BC20-41324	O
North American Drager	6-pin Male	BC20-41301	H
Novamatrix	3-pin Male / 3-pin Female	Call Factory	E
Ohmeda	6-pin Male	BC20-41301	H
Physio Control	6-pin Male	BC20-41301	H
Protocol Systems	6-pin Male	BC20-41301	H
Puritan Bennett	10-pin Female	Call Factory	B
Puritan Bennett PB-2	10-pin Female	BC20-41309	B
Siemens Medical Solutions SM-1	10-pin Male	BC20-41329	HH
Siemens Medical Solutions SM-3	15-pin Male	BC20-41328	Y
SMEC	6-pin Female	BC20-41308	F
Spacelabs (TK-1)	6-pin Male (Most common)	BC20-41301	H
Spacelabs/Squib	5-pin Male	BC20-41331	Q
Tektronix/Squib	6-pin Male	BC20-41301	H
Vitastat	5-pin Male	BC20-41331	Q
Vitatek/Squib	6-pin Male	BC20-41301	H
Witt	6-pin Female	BC20-41355	F
Universal BP Cable	Unterminated Pigtail	BC20-41340	Not Shown
Universal – Adapter	BP Cable Adapter – Mini DIN Male to Large DIN Female	BC20-40736	AA – BB
Universal – Adapter	BP Cable Adapter – Mini DIN Female to Large DIN Male	BC20-40737	BB – AA


Blood Pressure Cables

Cardiac Output Cables

Communication Cables

Temperature Cables

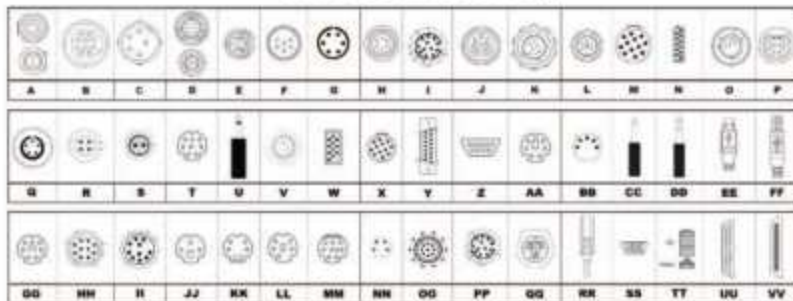
Invasive Blood Pressure Cables – Large DIN



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 Floke Prosim series.

Monitor Manufacturer	Description (BP connector listed below to Male large DIN at simulator end)	BC Part #	BP Cable Connector Key
Burdick	10-pin Female	BC20-40303	B
Care	5-pin Male	Call Factory	C
Corometrics	3-pin Male / 3-Pin Female	Call Factory	E
Corometrics	12-pin Male	Call Factory	M
Criticare	6-pin Male	BC20-40301	H
Critikon	6-pin Male	BC20-40301	H
Datascope	6-pin Female	BC20-40302	F
Datex DX-1	10-pin Female	BC20-40303	B
Fukuda Denshi FD-2 / DS3300	12-pin Male	BC20-40304	V
Gould/Statham	5-pin Male	Call Factory	C
Hewlett Packard/Agilent/Philips	5-pin Female	Call Factory	J
Hewlett Packard/Agilent/Philips	12-pin Male (40 uV)	BC20-40310	I
Hewlett Packard/Agilent/Philips	12-pin Male (5 uV) (Most common)	BC20-40309	I
Invivo Research	6-pin Male	BC20-40301	H
Ivy Biomedical	6-pin Male	BC20-40301	H
GE Marquette 7000	8-pin Male	Call Factory	P
GE Marquette Eagle	11-pin Male	BC20-40308	N
GE Marquette Twin	7-pin Male / 8-pin Male	Call Factory	D
GE Marquette MQ-2	11-pin Male (Most common)	BC20-40307	W
Medical Data Electronics (MDE)	6-pin Male	BC20-40314	H
Mennen Medical	10-pin Male	BC20-40315	II
Nihon Kohden	5-pin Male	BC20-40316	O
North American Drager	6-pin Male	BC20-40301	H
Novamatrix	3-pin Male / 3-pin Female	Call Factory	E
Ohmeda	6-pin Male	BC20-40301	H
Physio Control	6-pin Male	BC20-40301	H
Protocol Systems	6-pin Male	BC20-40301	H
Puritan Bennett	10-pin Female	Call Factory	B
Puritan Bennett PB-2	10-pin Female	BC20-40303	B
Siemens Medical Solutions SM-1	10-pin Male	BC20-40318	HH
Siemens Medical Solutions SM-3	15-pin Male	BC20-40319	Y
SMEC	6-pin Female	BC20-40302	F
Spacelabs (TX-1)	6-pin Male	BC20-40301	H
Spacelabs/Squibb	5-pin Male	BC20-40320	Q
Tektronix/Squibb	6-pin Male	BC20-40301	H
Vitastat	5-pin Male	BC20-40320	Q
Vitatek/Squibb	6-pin Male	BC20-40301	H
Universal BP Cable	Unterminated Pigtail	BC20-40332	Not Shown
Universal – Adapter	BP Cable Adapter – Mini DIN Male to Large DIN Female	BC20-40736	AA – BB
Universal – Adapter	BP Cable Adapter – Mini DIN Female to Large DIN Male	BC20-40737	BB – AA

Cable Connector Key



Temperature Cables



Description	Connector A	Connector B	BC Part #
UT-1 Universal Temp Cable YSI-400 Series (PS-2110 & PS-2200 family)	T (Male)	CC	BC20-41333
UT-2 Universal Temp Cable YSI-700 Series (PS-2110 & PS-2200 family)	T (Male)	DD	BC20-41334
Universal Temperature Cable (Unterminated)	T (Male)	None	BC20-41351
Temperature Cable, Hewlett Packard Simulation Cable	U (3.5 mm Male)	S (Male)	Call Factory
UT-1 Temperature Cable, MaxiSim/416M YSI-400	NN	CC	BC20-30010
UT-2 Temperature Cable, MaxiSim/416M YSI-700	NN	DD	BC20-30020
UT-3 Temperature Cable, MaxiSim/416M Unterminated	NN	None	BC20-30030
Temperature Cable, Hewlett Packard YSI-400	NN	S (Male)	BC20-30035

Cardiac Output Cables



Description	Connector A	Connector B	BC Part #
Cardiac Output Cable, HP Injectate Assembly	CC (1/2 - inch Phone Plug)	R (Female 4-pin)	BC20-41335
Cardiac Output Cable, HP Temperature Cable	A (Female 1/2 - inch Phone Plug)	A (Male 2-pin HP)	BC20-41336

Communication & Miscellaneous Cables



Description	Connector A	Connector B	BC Part #
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
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
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
Communication Cable for DA-2006 & ESU-2000 Series (DB 9 M to DB 9 F)	Z (Male)	Z (Female)	BC20-41341
Communication Cable for PSR-2200 to Host Computer (Mini DIN F to DB 9 F)	GG (Female)	Z (Female)	BC20-41342
Communication Cable for the ESU-2000 Series USB(A)M to USB(B)M	EE	FF	BC20-41352
Communication Cable for DPM-2000 Series (1/8" Phone Plug to DB 9 F)	U (1/8" Male)	Z (Female)	BC20-21102
IPA-1000 Instrument to Chamber Interconnect Cable (Mini DIN M to Mini DIN M)	T (Male)	T (Male)	BC20-40607
Communication RS232, USB(A)M to Mini DIN Male	GG (Male)	EE	BC20-41361



Typical Power Cord Options Available for the SA-2000-INTL Series With C-19 Connector

- A. BC20-20400 North America Hospital Grade
- B. BC20-20401 Japan
- C. BC20-20402 United Kingdom
- D. BC20-20403 Schuko-Continental Europe with Schuko ground adapter
- E. BC20-20409 India/South Africa
- F. BC20-20410 Switzerland
- G. BC20-20412 Italy
- H. BC20-20416 Australia

Typical Power Cord Options Available for the ESU-2050, 2050P, 2300, And ESU-2400 Series With C-13 Connector

- B. BC20-20500 North America
- B. BC20-20501 Japan
- C. BC20-20502 United Kingdom
- D. BC20-20503 Schuko-Continental Europe
- E. BC20-20509 India/South Africa
- F. BC20-20510 Switzerland
- G. BC20-20512 Italy
- H. BC20-20516 Australia

Universal Adapters

- I. BC20-20200 US Plug Adapter(Grounded)
- BC20-20202 UK Plug Adapter
- BC20-20218 US 220V Plug Adapter(Grounded)

Ultrasound Transducer Adapters (use with ULT-2000 Series)

- ULT-PA-10 Acuson/Siemens 8V5, 15L8W, V5M, 3V2C
- ULT-PA-11 Sonosite Transducers, including TEE
- ULT-PA-12 Acuson/Siemens 260-PIN
- ULT-PA-13 Acuson/Siemens 156-PIN, V510B,
- ULT-PA-14 ATL/Philips C9-5 Curved Array,
- ULT-PA-16 GE LogicQ and GE P9603AU
- ULT-PA-17 Philips/ATL IE33 and iU22
- ULT-PA-18 Philips/HP 4500, Sonos 5500/7500
- ULT-PA-19 Philips/CX50
- ULT-PA-20 Toshiba PVF Series, 2B701-753E
- ULT-PA-21 Hitachi EUP-ES52M, EUP-Series Probes
- ULT-PA-22 Aloka SSD-620, SSD-650
- ULT-PA-23 All Transducers
- ULT-PA-24 Philips/ATL 256-pin, w/belted housing
- ULT-PA-25 GE Logic Q, VIVID 6T, 9T etc
- ULT-PA-26 Acuson/Siemens 360-PIN
- ULT-PA-27 GE YMS/RT
- J. ULT-PA-29 Zonare Medical Systems,
- ULT-PA-30 GE Vivid E9

Ultrasound Dual Conductivity Probes (use with ULT-2000 Series)

- K. ULT-PC-10 Short Probe (3.43 inches / 87.1 mm)
- ULT-PC-15 Medium Probe (4.46 inches / 113.2 mm)
- ULT-PC-20 Set. Includes Long Probe (11.58 inches 294.1 mm) and Short Probe (4.69 inches / 124.2 mm)
- L. ULT-PC-25 Adapter cable for Gus cleaning system
- ULT-PC-30 Dual Conductivity Probe (Flexibe)

AC & Battery Eliminator Cross Reference

Part #	Voltage	Item No.	Description
A. BC20-21110	9V	IPA-1000 DPM-2000	Battery Eliminator 9VDC Interchangeable US, UK, AUS and Euro Adapters
BC20-21111	10VDC	DA-2006 PS-2010 PS-2100 PS-2200 ULT-2000	Battery Eliminator Interchangeable US, UK, AUS and Euro Adapters
BC20-21112	12VDC	NIBP-1000 SPO-2000	Battery Eliminator 12VDC Interchangeable US, UK, AUS and Euro Adapters
*BC20-21104	100- 240V	ESU-2050 ESU-2050P	Power Supply, Universal With C-13 Connector
B. *BC20-21105	100- 240V	ESU-2300	Power Supply, Universal With C-13 Connector
C. *BC20-21107	100- 240V	ESU-2400 ESU-2400H	Power Supply, Universal With C-13 Connector

*Power Cord not included, see page HH





D. Fluke ScopeMeter 190-Series

- Fluke 196B/003 (100 MHz Bandwidth)
- Fluke 199BM (200 MHz Bandwidth)
- Fluke 199CM (200 MHz Bandwidth)

E. Fluke 123/003 ScopeMeter

RS232 compatible and comes with a Three Year Warranty.

- 20 MHz Bandwidth
- Two Scope Vertical Channels
- Two DMM Channels

Optional Accessories:

- C125 Soft Carrying Case
- Calibration Certificate

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
- 4901-2K Deluxe 17 piece Kit.



G. BK Digital Storage Oscilloscope Model 2534

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
- 2540B-GEN 60 MHz, 1 GSa/s Digital Storage Oscilloscope with Generator
- 2542B 100 MHz, 1 GSa/s Digital Storage Oscilloscope \$899
- 2542B-GEN 100 MHz, 1 GSa/s Digital Storage Oscilloscope with Generator



H. BK 50 kHz Spectrum Analyzer Model 2658A

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 indispensable tool for engineers and technicians who conduct field measurements in the 50 kHz to 8.5 GHz range.



**We carry the complete line of
BK PRECISION Oscilloscopes.
Contact us with your needs!**

A. EXTECH EX710: 800A AC Clamp Meter

- 0.1 to 600 V
- 0.01 to 800 Amps AC
- Carrying Case, Battery & Test Leads Included

Optional Accessory:

- NIST Traceable Calibration Certificate

Extech EX720 True RMS AC Clamp-On Meter

- 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

Extech EX730 True RMS AC/DC Clamp-On Meter

- 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

Multimeter Test Leads & Accessories

- B. 8043S "Softie" DMM 10 piece lead set
- C. Fluke T-Pak Meter Hanging Kit
- D. Fluke 80K-40 High Voltage DMM Probe with Cal



Model	Fluke 77-4	Fluke 114	Fluke 179	Fluke 87V	Fluke 289
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	3200	6000	6000	20000	50000
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

Equipped with 8 independent channels, the 3-phase PowerGuide 4400 is the only advanced power monitoring instrument to incorporate a color touch screen into its light-weight 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



F. PowerXplorer PX5

The PowerXplorer integrates the most advanced feature set available in a power monitoring instrument, with an easy-to-navigate, color graphical user interface. With high-speed sampling and data capture (1 microsecond/channel), this 8-channel workhorse simultaneously captures and characterizes thousands of parameters, using a range of standard and customizable operating modes. The unique measurement capabilities of the PowerXplorer include capture of low-medium-high frequency transients through peak, waveshape, rms duration and adaptive high-speed sampling, as well as power measurements to clearly characterize non-sinusoidal and unbalanced systems.

G



G. DranTech XTRA/PRO

These multimeters are suitable for universal use in electrical engineering, electrical installation, laboratory applications, telecommunication, technical training, as well as for troubleshooting in the field.

Features & Highlights:

- Voltage 1000 V and current 10 A (Rms or DC) max measurements
- Frequency, RMS value of AC measuring voltage
- 4½-place display (11,999 counts), with display illumination
- Automatic Blocking Sockets to prevent incorrect connection of the measurement cables
- 1 kHz low pass filter for VAC measurements
- Square Wave signal measurement with amplitudes of 2 to 5 V and frequencies from 100 Hz to 1 MHz
- Capacitance measurement to 1000 µF
- Resistance measurement to 40 Meg ohms
- Temperature measurement in degrees Fahrenheit or Celsius
- Thermocouple measurement capabilities of Type J and K thermocouples
- Battery run time, approximately 200 hrs on 2 AA alkalines
- Overload Protection, audible sound is employed if upper voltage or current range is exceeded
- Fuse indicator displays message that the fuse for current measurements needs to be replaced
- Bandwidth - 50 kHz (PRO), 100 kHz (XTRA)
- Frequency - 100 kHz (PRO), 1 MHz (XTRA)
- Memory for data logging - 540 kb (XTRA only)
- Remote configured, and momentary and stored measurement data via the bidirectional infrared interface with DranWin software (XTRA only).



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.

TIF Infrared and Differential Thermometers

Digitally read temperature without contact. Just aim and read.
Laser Sighting.

Prices include Calibration Certificate

- A. TIF3310** Differential Thermometer with Cal, two bead Thermocouples
- B. TIF3320** Differential Thermometer with Cal, two bead Thermocouples and IR Thermometer probe

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
- C. Fluke Series II 52-2** Dual Input, with two bead thermocouples

B. Extech 445580 Humidity/Temperature "Pen"

Pocket convenience.

- Humidity: Range: 10 to 90%; Accuracy: $\pm 5\%$; Resolution: 1%
- Temp: Range: +32 °F to +122 °F; Accuracy: ± 1.5 °F; Resolution: 0.1 °F

Temperature Adapters

Convert your DMM to a Temperature Meter.

- E. Fluke 80TK** DMM Temperature Adapter (w/Calibration Certificate)
- Fluke 80TK** DMM Temperature Adapter (w/o Calibration Certificate)
- F. Fluke 80T-150U** DMM Temperature Adapter (w/Calibration Certificate)
- Fluke 80T-150U** DMM Temperature Adapter (w/o Calibration Certificate)

Thermocouple Probes for Fluke 50-series & Other "K" Type Temperature Meters

- G. Fluke 80PK-1** Bead thermocouple probe
- H. Fluke 80PK-3A** Surface probe
- I. Fluke 80PK-22** Immersion probe
- J. Fluke 80PK-24** Air probe
- K. Fluke 80PK-25** Piercing probe
- L. Fluke 80PK-26** Extended bead probe
- M. Fluke 80PK-27** Ruggedized surface probe



**We carry all Temperature Products from
Extech, TIF, BK & Fluke.
Contact us with your needs!**



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

802264 403 LE-0.7 Precision

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

802260 403GS LE-0.7 Precision

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 (TM) 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

802268 405GSX LE-0.7 Precision

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. 408 LE-0.5 US SPHERICAL LESION PHANTOM

408 LE-0.7 US SPHERICAL LESION PHANTOM.

Q. Gammex RMI Carrying Case for 403/40365 082B-403

Hard-sided carrying case designed with foam to protect any Ultrasound Phantom investment on the inside.



**We carry the complete line of Gammex RMI & other lines of Phantoms.
Call BC for specs & pricing to find the perfect model for you!**

A. RTI COBIA SMART & FLEX QA

The RTI COBIA family of X-ray QA meters has just what you want—simplicity, built-in Color Display, and single modality capability at an affordable price. Starting with the basic COBIA Smart, you can measure Time, kV, Dose, Dose Rate, and HVL. The COBIA FLEX provides additional flexibility with optional internal mAs, along with Plug & Play Probes for measuring mAs, Light, and CT Dose. Current COBIA models are available in Rad, Fluoro, & Dent modalities. COBIAs come with a 2-year factory warranty & 2-year factory recommended calibration cycle.

- 9761001-00 Cobia Smart kV
- 9761002-00 Cobia Smart Dose
- 9761003-00 Cobia Smart kV-Dose

- 9764001-00 Cobia Smart kV
- 9764002-00 Cobia Smart Dose
- 9764003-00 Cobia Smart kV-Dose

- 9762003-00 Cobia Flex w/o internal mAs capability
- 9762004-00 Cobia Smart kV

**B. Unfors RaySafe X2**

For Radiographic and Fluoroscopic measurements, The RaySafe X2 offers more insight with less effort. The X2 R/F sensor is orientation independent so the only thing you need to do is to place it in the X-ray beam and turn on the instrument. The rest is automatic – no menus, no selections. The large, intuitive touch screen of the RaySafe X2 provides more insight with an easy-to-read display of parameters and waveforms. More in-depth information is only a swipe away.

- Complete system in standard case:
 - X2 Base Unit mAs
 - X2 R/F Sensor
 - X2 Flexi Stand
 - X2 Power Supply
 - Cables 2m, 5m, 5m extender, mAs
 - Various documentation

**C. Unfors RaySafe Solo**

The RaySafe Solo simultaneously measures parameters, such as kVp, dose, dose rate, pulses, time, mA and mAs, depending on the model used. While the RaySafe Solo shares the core technology from the market leader RaySafe Xi, it has been adapted to fit a defined need – R/F, Rad, CT, Mammo, Light, Dose, mAs, Dental, or Survey. Options, such as direct HVL and total filtration measurements and waveform display, further enhances the RaySafe Solo experience. With minimal setup time, acquiring your first exposure will take less than one minute.

- RaySafe Solo R/F with mAs 1225010
- RaySafe Solo R/F 1225010
- RaySafe Solo RAD 1225012
- RaySafe Solo dose 1225013
- RaySafe Solo DENT 1225011
- RaySafe Solo CT 1225014
- RaySafe Solo mAs 1225016
- RaySafe Solo light 1225017
- RaySafe Solo MAM 1225018
- RaySafe Solo MAM dose 1225019
- RaySafe Solo HVL 1224010
- RaySafe Solo MAM HVL 1224012
- RaySafe Solo PC kit



D



E



F



G



H



I



J



D. Unfors Raysafe ThinX

RaySafe ThinX has been optimized to meet the need for a basic multi-parameter instrument for simultaneous measurement of dose, dose rate, kVp, HVL, exposure time and pulses. All parameters are conveniently displayed in the large LCD.

- RaySafe ThinX RAD 1302024
- RaySafe ThinX RAD kVp 1302025
- RaySafe ThinX RAD Dose 1302026
- RaySafe ThinX intra 1302023

E. Unfors RaySafe DXR+ 1151011

X-Ray to light field alignment without film! The RaySafe DXR+, Direct X-ray Ruler, represents the latest in today's technology for alignment of the light and radiation field. The RaySafe DXR+ is extremely easy to use as it is powered on by simply exposing the meter. Features include auto reset and auto power off. There is no need to adjust the light field to a square phantom before making an exposure. No time is wasted waiting for films to be developed.

F. Lunar Alignment Kit BC20-35110

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

G. BC20-35115 Aluminum Calibration Standard Assembly

H. BC20-35116 Primary Calibration Clear Step Block

- BC20-35117 Tube Head Wrench

I. Individual components:

- BC20-35010 Aluminum Alloy 101 sheet, 8"x8" 1/4" thick
- BC20-35011 Aluminum sheet, 12"x12" 1/4" thick
- BC20-35020 Copper Alloy 101, 8"x8" 1/32" thick
- BC20-35021 Copper sheet, 12"x12" 1/32" thick
- BC20-35030 Plexiglass sheet, 8"x8" 1/2" thick
- BC20-35031 Plexiglass sheet, 12"x12" 1/2" thick

J. Atrix VACOSMRI Green Supreme ESD-MRI Vacuum

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

For measurement 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/m^2 , 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 $V(\lambda)$.)

B. MAVO - SPOT 2 USB Spotmeter

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

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 certified testings according to the existing safety regulations, above all at work stations, in medical and office systems.

- Measurement of luminance in cd/m^2 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

Monitoring of the ambient light, according to IEC 61223-2 5 (QS -RLd. 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.



B



C



D





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**
VACOMEGASLFH 110 V with HEPA
VACOMEGAS220F 220 V

Optional Accessories:

- **31700-2P** 0.3 Micron Cap. Std. Filter (two pack)
- **VACPACK** Deluxe Back Pack

F. HEPA Express Vacuum VACEXP-04

- 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)
- **730333** 0.12 Micron Cap. HEPA Filter (two pack)

G. Field Portable Static Kit ATIESD-1CPCS

- Includes mat, wrist strap & ground cord.

H. CDI 1002MFRMH ADJ. TORQUE WRENCHES 10-100 ft. lbs

- 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 401SM ADJ. SCREWDRIVER 5-40 in.lbs

- 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

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

- 6" roller-bearing semi-pneumatic wheels - 300 Lbs capacity

K. Remin TriKart 800

- 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 28-734

- Built-in peg boards & cord wrap - Hard plastic casters
- Durable metal & plastic construction
- Size / Weight: 32"x30"x20"Deep / 56 Lbs