

ECG General:

Full 12-Lead ECG; independent outputs for each signal lead
 - color coded to AHA and IEC Standards.
 Output Impedances: 500, 1000, 1500, & 2000 ohms
 ECG Amplitude: 0.05 - 5.5 mV
 Amplitude Accuracy: ± (2% setting + 0.05 mV)
 High Level ECG: 500x lead II signal
 High Level Accuracy: ± 5%
 Rate Accuracy: ± 0.25 BPM

Normal Sinus Rhythm:

Rates: 10-360 BPM, 1 BPM steps, Accuracy ± 0.25BPM
 user defined presets (15), user input specific rates
 Amplitudes (Lead II): 0.05mV to 0.5mV (0.05mV steps);
 0.5mV to 5.5 mV (0.25mV steps)
 Neonatal Mode: ECG QRS width is reduced from 80ms
 to 40ms.
 Artifact: 50Hz, 60Hz, muscle, baseline, respiration
 Axis Deviation: Normal , horizontal, and vertical.

ECG Performance Testing:

Square Wave: 0.125, 2, 2.5Hz
 Triangle Wave: 0.125, 2, 2.5Hz
 Pulse: 30, 60 BPM with 60ms pulse
 Sine Waves: 0.05 - 200 Hz.
 QRS and R Wave Detection Test:
 Rate: 30 - 250 BPM triangle wave
 Width: 8 - 200ms
 ST Segment Adjustment (Lead II):
 Rate: 60 BPM; ST Segment: ± 80% of ECG amplitude
 Tall T wave:
 Rate: 80 BPM; ST Segment: 0 - 150% of ECG amplitude

Fetal / IUP(ch1 only) Simulations:

Fetal heart rates: 60 to 240 BPM 1 BPM steps
 12 Preset rates, user defineable
 Uniform, Early and Late Deceleration,
 Uniform Acceleration
 Dynamic intrauterine pressure (IUP) waveform:
 Positive bell shaped pressure curve
 Peak pressure: 50 or 90 mmHg,
 Contraction duration: 90 sec
 IUP Period: 2, 3, 5 min and Manual
 Pressure transducer sensitivity: 5 or 40 m v/v/mmHg
 Input/output impedance: 300 ohms ±10%

2 Blood Pressure Channels:

Electrically Isolated Channels
 Transducer Sensitivity: 5 or 40 µV/V/mmHg
 Input/output impedance: 300 ohms ±10%
 Excitation : 2 to 16 Vp; DC to 5000Hz
 Calibrated Rate: 80 BPM normal sinus rhythm
 Static Levels BP1/2:
 -10 to 400 mmHg in 1 mmHg steps
 15 User defined presets; user input specific pressures
 Accuracy: ± (1% of setting + 1mmHg)

Dynamic Simulations:

Arterial (120/80)
 Arterial (90/40)
 Arterial (160/110)
 Radial Artery (120/80)
 Left Ventricle (120/0)
 Right Ventricle (25/0)
 Pulmonary Artery (25/10)
 Pulmonary Artery Wedge(25/2)
 Right Atrium [CVP] (120/0)
 Left Atrium (14/4)
 Swan-Ganz (channel 1 only)
 Automatic (every 15, 25sec) with Pause
 Manual, advance is manually triggered
 Artifact/Respiration (larger of):
 5mmHg or 5%
 10mmHg or 10%

Pacemaker:

Pulse Amplitude: -700mV to +700mV
 Pulse Polarity: Positive or negative.
 Pulse Width: 0.1, 0.2, 0.5, 1.0, 2.0 ms
 Accuracy : ±(5% setting + 0.2mV) Lead II
 Pacer Rhythm:
 Ventricular
 Asynchronous 75 BPM
 Demand with frequent sinus beat
 Demand with occasional sinus beat
 A-V sequential
 Non-capture
 Non-function
 Atrial
 Atrial 80 BPM
 A-V sequential

Temperature:

20 - 42°C in 0.5°C increments
 Accuracy: ±0.01 °C high precision simulations
 (30, 32, 35, 37, 40, 42 °C)
 ±0.03 °C general
 Probe Compatibility: 400 or 700 series YSI

Respiration:

Baseline Impedance:
 500, 1000, 1500, 2000 ohms on LEADS I, II, III
 Impedance Variations (Delta):
 0.05 to 1.0Ω in 0.05Ω increments;
 1.0 to 5.0Ω in 0.25Ω increments;
 Rates: 10 to 150 BrPM; 1 BrPM steps; 0 BrPM for APNEA
 Apnea Selections: 12, 22, 32 seconds, and continuous
 Respiratory Effort (Inspiration/Expiration Ratio:) 1/1, 1/2,
 1/3, 1/4, 1/5
 Ventilated 1/1
 Respiration Lead LA or LL

Cardiac Output:

Baseline Temperature: 36, 37 and 38°C, ±0.03 °C
 8 Inject Temperatures 0, 2, 20 & 24°C; Spacelabs and
 Phillips
 1 user adjustable
 Simulations:
 C.O. of 3, 4, 5, 6, 7l/min
 Slow Injectate Curve
 Faulty Injectate Curve
 Left to Right Shunt Curve
 Cal Pulse: 1°C for 1 second

Arrhythmia Selections:

General 1

Asystole 1
 Asystole 2
 Asystole 3
 PVC1 Bigeminy
 PVC1 Trigeminy
 PVC2 Bigeminy
 PVC2 Trigeminy
 Premature Atrial Contraction (PAC)
 Nodal Premature Nodal Contraction (PNC)
 Multifocal PVC (once)
 Frequent Multifocal PVCs

Ventricular Arrhythmia (PVC1\left or 2\right)

PVC Ventricular (once)
 PVC Ventricular (every 10th beat)
 PVC Early, Ventricular
 PVC R-on-T, Ventricular
 PVC 6/Minute
 PVC 12/Minute
 PVC 24/Minute
 Pair PVCs (1 time event)
 Run 5 PVCs (1 time event)
 Run 11 PVCs (1 time event)

Conduction Defects:

First Degree Heart Block
 Mobitz I, Second Degree Heart Block
 Mobitz II, Second Degree Heart Block
 Third Degree Heart Block
 Right Bundle Branch Block
 Left Bundle Branch Block

Fibrillations

Coarse Atrial Fibrillation
 Fine Atrial Fibrillation
 Coarse Ventricular Fibrillation
 Fine Ventricular Fibrillation

Supraventricular Arrhythmia

Atrial Tachycardia
 Paroxysmal Atrial Tachycardia
 Supraventricular Rhythm @ 90 & 120 BPM
 Supraventricular Tachycardia @ 140, 150, 160,
 180, 190, 200, 210 & 220 BPM
 NSR @ 160 BPM

General 2

Atrial Flutter
 Sinus Arrhythmia
 Missed Beat @ 80 BPM (1 time event)
 Miss every 10th @ 80 BPM
 Miss every 10th @ 120 BPM
 Nodal Rhythm
 Sinus Bradycardia <60 BPM

AutoSettings

Unlimited number of user programmable,
 simulation parameter setups available.

Communication / User Interface:

via vPad-A1 Base Unit
 Android 5" tablet:
 Touchscreen User Interface
 Wired (USB) or Bluetooth mode
 WiFi
 16 GB memory
 Dual XBUS for Datrend test automation

Power Supply:

via vPad-A1 Base Unit
 External AC adapter
 Internal rechargeable Li-Ion batteries (for 10 hrs
 of simulation with full charge)

Dimensions:

98mm x 208mm x 56mm (3.85" x 8.2" x 2.21")
 PS Unit (incl. A1 Base)

Weight:

660g (1.44lb) PS Unit (incl. A1 Base)
 200g (0.44lb) wireless tablet interface

Environment:

15°C to 40°C, 10% to 90% RH, Indoor Use Only,
 Category II

All specifications subject to change without notice.



130 - 4020 Viking Way, Richmond BC, Canada V6V 2L4
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vPad-O₂TM - Performance Specifications

Saturation (SpO₂):

Range: 30% to 100%
Increments: 1%
Presets: 6, user definable
Range of adjustment and presets may vary according to pulse oximeter specifications

SpO₂ Accuracy:

Saturation within DUT specified range:
±1 count + specified accuracy of the DUT

Heart Rate:

Range: 20 to 300 BPM
Increments: 1 BPM
Presets : 6, user definable
Accuracy: ± 0.25 BPM (sync mode)
otherwise, ±1 BPM

Pulse Amplitude:

Range: 0 to 100%
Increments: 1% steps.
Presets : 6, user definable
Accuracy: ± 1%

Signal Artifact:

Four preset simulations:
Movement
Tapping (Spike artifact)
Shivering (Tremor artifact)
Shake Table (2.5Hz Sinewave)

Auto Presets:

Unlimited preset patient simulations
Default Auto Presets:
Normal Adult
Hypoxia
Movement Artifact
Tachycardia
Bardycardia
Neonate
Low Perfusion
No perfusion
Tremor (Shivering Artifact)

Alarm Tests:

Automated test sequences for determining oximeter alarm response time to:
Low Saturation
Low Heart Rate
High Heart Rate
Low Perfusion
Signal Artifact
Five defaults, plus unlimited programmable alarm sequences

Communication / User Interface:

via vPad-A1 Base Unit
Android 5" tablet:
Touchscreen User Interface
Wired (USB) or Bluetooth mode
WiFi
16 GB memory
Dual XBUS for Datrend test automation

Power Supply:

via vPad-A1 Base Unit
External AC adapter
Internal rechargeable Li-Ion batteries (for 10 hrs of simulation with full charge)

Dimensions:

98mm x 208mm x 30mm (3.85" x 8.2" x 1.18") A1 Base
90mm x 160mm x 24mm (3.54" x 6.3" x 0.95") SpO₂ Probe

Weight:

440g (0.96lb) A1 base
122g (0.27lb) SpO₂ Probe

Environment:

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Manufacturer Envelopes:

GE Dinamap and Dinamap Pro
Critikon Dinamap Plus
Datascope Passport
Welch-Allyn Spot LXi and 52000
Fukuda Dynascope
Colin Press-Mate
...and more custom simulations

Pressure Units:

mmHg, mbar, kPa, inH₂O, cmH₂O

BP Presets:

Systolic/Diastolic (mmHg)

Adult	Neonatal
255/195	150/100
200/150	120/80
150/100	100/65
120/80	80/50
100/65	60/30
80/50	35/15
60/30	

BP Simulation:

Simulation type: oscillometric
Rate Range: 20 – 240 BPM
Accuracy: ±0.25 BPM in sync mode
±1 BPM otherwise
Amplitude: 0 – 2 mL
1.25 mmHg into 500ml cuff
Amplitude Range: 0 – 150%
Amplitude Accuracy: better than 0.5%
AutoSettings: unlimited, user definable

Envelope Shift:

± 50 mmHg max
Minimum Diastolic: 15 mmHg
Maximum Systolic: 275 mmHg

Manometer:

Pressure Range: 0.0 to 400.0 mmHg
Accuracy: ± 0.5 mmHg
Resolution: 0.1 mmHg

Regulated Pressure Source:

Pressure Range: 10.0 to 400.0 mmHg
Accuracy: ± 0.5 mmHg
Resolution: 0.1 mmHg

Leak Test:

Automatic/manual Inflation
Automatic Timer
Leak Test Time: 30 - 600 seconds (user defined)
Target Pressure: 20 to 400 mmHg
Range: 0 to 200 mmHg/min
User Definable Presets: 12
User Definable AutoSettings: unlimited

OverPressure Test:

Automatic/manual Inflation
Range: 20 - 400 mmHg
Release Time: 1-999 sec
User Definable Presets: 12
User Definable AutoSettings: unlimited

Standard Features / Accessories:

- Autosequences
- Unlimited User Defined Settings
- vPad-A1 Power Base / Display
- Universal Hose Adapter Kit

Communication / User Interface:

via vPad-A1 Base Unit
Android 5" tablet:
Touchscreen User Interface
Wired (USB) or Bluetooth mode
WiFi
16 GB memory
Dual XBUS for Datrend test automation

Power Supply:

External AC adapter
Internal rechargeable Li-Ion batteries (for 200+ simulations with full charge)

Dimensions:

98mm x 275mm x 97mm (3.87" x 10.82" x 3.80")
BP Unit (incl. A1 Base)

Weight:

1080g (2.38lb) BP Unit (incl. A1 Base)
200g (0.44lb) wireless tablet interface

Environment:

15°C to 40°C, 10% to 90% RH,
Indoor Use Only, Category II

Please contact the factory for the availability of other calibration tables, or visit our web site for updates at www.datrend.com

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