

# Rigel 311 - Technical Specifications

## Dynamic Non-invasive Blood Pressure

**Rigel 311** simulates normal hypertensive and hypotensive dynamic, non-invasive blood pressures. Simulations represent typical adult, infant, and neonatal patients. Generates normal, bradycardia, and tachycardia rhythm selections with a wide range of user-programmable weak, normal, and strong peripheral pulse amplitudes.

## Oscillometric NIBP Calibration Tables

**Oscillometric Calibration Tables:** Colin, Criticare, Critikon, Datascope, Hewlett-Packard, Marquette, Protocol Systems, SpaceLabs.

*Please contact the factory for the availability of other oscillometric calibration tables.*

## Preprogrammed Target Value Selections

Systolic/Diastolic (MAP):  
60/30 (40)  
80/50 (67)  
100/65 (75)  
120/80 (90)  
150/100 (115)  
200/150 (165)  
and 255/195 (215)

**Repeatability:**  $<\pm 1\%$  of selected target value

## Independent Systolic/Diastolic Pressures

**Independent Systolic/Diastolic:** Adult Systolic/Diastolic pressures can be changed in 1mmHg steps.

## Preprogrammed Peripheral Pulse Waveforms

**Pulse Amplitude @ MAP:** 2.0 mmHg (nominal adult value)

**Pulse Volume range:** 0 to 4.4 ml

**Pulse Rise Time:** 80 msec (minimum)

**Heart Rates:**

**Pre-Sets:** 30, 40, 60, 80, 120, 160, 200, 240 BPM

**Selectable Range:** 20-240 BPM, 5 bpm steps 1 BPM steps via Serial Remote

**Heart Rate Accuracy:**  $\pm 1\%$  of selected rate

## User Programmable Target Value Shifts

**Horizontal Axis:** Preprogrammed target value selections can be shifted in 1.0 mmHg steps over a maximum range of  $\pm 100$  mmHg to increase or decrease dynamic pressure values.

**Vertical Axis:** Relative amplitude can be shifted in 1% increments over a maximum range from 0 to 200% to simulate weak, normal, and strong peripheral pulses.

## Displayed Graphics

- Dynamic Real-Time NIBP Cuff Pressure waveform
- Programmed peripheral pulse waveform
- Envelope waveform

## Displayed Real-Time Parameters

Instantaneous Cuff Pressure:	0.0 to 410 mmHg
Peak Cuff Pressure:	0.0 to 410 mmHg peak
Inflate/Deflate Time:	0.1 to 999.9 seconds
Inflate/Deflate Rate:	0.1 to 999.9 mmHg/second
Total Measurement Time:	0.0 to 999.9 seconds maximum

Heart Rate  
Systolic/Diastolic (Mean)  
Target Values  
User-Programmed Vertical and Horizontal Shifts

## System Leak Testing

Start Pressure:	200 mmHg nominal, 410 mmHg maximum
Elapsed Time:	60 Seconds
Leak Rate Range:	0.25 to 410 mmHg maximum
Input Overpressure Limit:	± 1500 mmHg Automatic or Manual Inflation
Digital Readouts:	Manometer, Start Pressure, Pressure Drop, Elapsed Time, Leak Rate

## Digital Manometer

<b>Pressure Range:</b>	0.0 w 410 mmHg
<b>Measurement Parameters:</b>	Instantaneous and peak
<b>Input Overpressure Limit:</b>	± 1500 mmHg
<b>Accuracy:</b>	± 0.5 mmHg, traceable to NIST (NBS)
<b>Standards Resolution:</b>	± 0.1 mmHg

## Pop-Off Valve Testing

**Automatically tests operation of the monitor's relief valve**

<b>Measurement Parameters:</b>	Instantaneous and peak pressure
<b>Maximum Pressure:</b>	410 mmHg
<b>Input Overpressure Limit:</b>	1500 mmHg Automatic or Manual Inflation

## Accuracy

<b>Systolic/Diastolic (mean) Arterial Pressure:</b>	Based on programmed set points on the oscillometric pulse envelope.
<b>Static Pressure:</b>	± 0.5% mmHg

## Autosequences

User can program up to five sequences to test NIBP monitors with a specific series of **Rigel 311** performance tests.

These tests can include:

- Static Pressure Test
- Leak Test
- Pop-Off Test
- Dynamic MBP Tests: Program up to eight of the Adult--Neonatal-Arrhythmia NIBP selections Each selection can be cycled up to 99 times during the test sequence. Test report with results can be printed.

## Cuff Mandrels

- Plastic & Aluminum Cylinders
- Medium Adult (3.75" OD, 7" width)
- Neonate (1 .25" OD, 1 .7" width)

Adult & Neonate mandrels are built into **Rigel 311** for portability and ease of use. Please contact the factory for the availability of other cuff mandrels.

## Cuff Adapters

Cuff adapters insert between the NIBP device, cuff and analyzer. These adapters are compatible with oscillometric and selected auscultatory NIBP monitors.

- Male/Female LUER Locking
- Female/Male LUER Non-Locking Taper
- Male/Male Hose Barb (large 5/32 in.)
- Male/Male Hose Barb (small 1/8 in.)
- Male/Female Clippard (Critikon, Siemens)
- Colder/CPU (Marquette, Protocol Systems)
- OBAC Quick Release (Hewlett-Packard)
- Self Test Accessories
- Pressure Bulb Assembly (tees into any Cuff Adapter)
- Self system leak test hose (plugged at distal end)

## Digital Interfaces

**RS-232C/Serial:** Bi-directional. Downloads cuff measurement data and controls performance tests features with a compatible computer or via the medTester.

**Parallel/Printer:** Centronics compatible

**Pulse Sync:** 0 to 5 VDC (TTL)

## Display

Full Alphanumeric/Non-glare Graphic LCD

**Resolution:** 240 vertical x 320 horizontal with contrast controls

**Dot Pitch:** 0.30 mm

## Power

110-240 VAC, 50 watts average, 100 watts peak, 50-60 Hz, Desktop Switcher

**Output:** 24VDC @ 2.2A, 6 foot cable

**Safety Agency Approvals:** UL, CSA, TUV

**Internal Battery:** Rapid-charge nickel cadmium

**Voltage:** 19.2V

**Capacity:** 1.2A-Hr, 150 NIBP Simulations

**Charge Time:** 12 Hours

## Weight

<4.5 Kg with internal battery

## Dimensions

203 x 127 x 305 (WxHxL in mm)

**Case:** Aluminum with non-skid feet and heavy duty carrying handle.

## Standard Accessories

- External Power Supply & Cord
- Adult & Neonate Cuff Mandrels
- Eight Cuff Adapters
- Pressure Bulb Assembly
- Self system leak test hose
- Operation/Service Manual
- Internal Pump
- Internal Battery