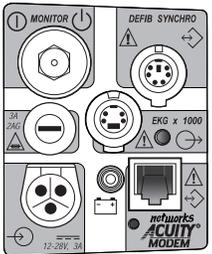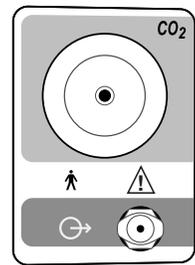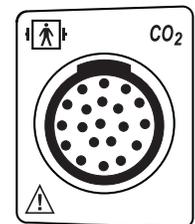**Left Side AAMI Panel**
(Philips also available)
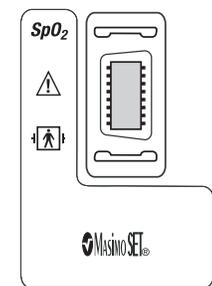
Right Side Panel

Sidestream CO₂ Option

Mainstream CO₂ Option

SpO₂ Options

General
- Adult/Pediatric/Neonatal factory/custom patient modes
- Electrosurgery interference suppression (ESIS): all channels except Impedance Respiration
- All channels electrically isolated
- Communications option
- Networks to Acuity® Central Station

ECG
- Automatic 3- and 5-lead detection
- Selectable leads: I, II, III, aV_R, aV_L, aV_F, V
- Lead fault detection and auto-reconfigure
- Adult mode bandwidth: 0.5 to 40 Hz monitor mode, 0.05 to 40 Hz extended mode
- AAMI 6-pin connector
- Heart rate measurement range: 25 to 300 bpm (display)
- Heart rate accuracy: ± 3 bpm or 3%
- Pacer detection and display
- ESIS (electrosurgery interference suppression)
- Defib sync connector
- Real-time ECG output, delay < 3 msec
- ESU and defibrillator protected
- Sweep speed: 12.5, 25, and 50 mm/sec
- User-selectable size (mV/cm): 4, 2, 1, 0.5, 0.2
- QRS tone: high/med/low/off
- 3.9 sec waveform duration and freeze buffer at 25 mm/sec
- QRS detector range:
  Adult or pediatric mode:
  0.22 to 5.0 mV (RTI)
  Neonatal mode: 0.1 to 5.0 mV
  Neonatal width: 40 to 120 msec
  Pediatric width: 40 to 120 msec
  Adult width: 70 to 120 msec

Noninvasive Blood Pressure (NIBP)
- Oscillometric method
- Automatic (intervals between 1 and 60 min) and manual modes
- Quick action NIBP Start/Stop button
- TurboCuf: 5 min of repeated NIBP readings
- Systolic, diastolic, mean display
- On-screen manometer
- Store and view all data (up to 128 readings)
- Large NIBP numeric display format
- Standard cuff sizes: Neonate #1- #5, Infant, Child, Small Adult, Adult, Large Adult, Thigh
- Cuff overpressure protection
- Typical measurement time: 30 to 45 secs
- Smartcuf® NIBP technology

NIBP
Patient mode-specific operation:
Neonate mode
- Initial cuff inflation pressure: 90 mmHg
- Maximum allowable cuff pressure: 132 mmHg
- Systolic range: 25 to 120 mmHg
- Diastolic range: 10 to 105 mmHg
- Mean range: 10 to 110 mmHg

Pediatric mode
- Initial cuff inflation pressure: 120 mmHg
- Maximum allowable cuff pressure: 170 mmHg
- Systolic range: 30 to 160 mmHg
- Diastolic range: 15 to 130 mmHg
- Mean range: 15 to 140 mmHg

(NIBP, continued)
Adult mode
- Initial cuff inflation pressure: 160 mmHg
- Maximum allowable cuff pressure: 270 mmHg
- Systolic range: 30 to 260 mmHg
- Diastolic range: 20 to 235 mmHg
- Mean range: 20 to 255 mmHg

Temperature
- Two YSI 400/700 compatible channels
- Range: 0 to 50 °C
- Display: T1, T2 and Delta temp
- Units: °C or °F
- Accuracy: ± 0.1 °C (10 to 50 °C), ± 0.2 °C (0 to 9.9 °C)
- Optional HP side panel has one temp channel for YSI 400 probes with Philips connector

IBP
- One or two channels
- Pressure range: -30 to 300 mmHg
- Pulse rate measurement range: 25 to 250 bpm
- Display: 5 scales or semiautomatic rescaling
- Format: Sys/Dia/Mean, user selectable
- User-selectable labels: P1, P2, ART, PA, CVP, ICP; Neonate mode only: UA, UV
- Transducer requirements: 5 µV/V/mmHg
- Zero adjustment: ± 200 mmHg including transducer offset
- Numeric pressure accuracy: ± 2 mmHg or 2% of reading, plus transducer error
- Standard 6-pin connector, or HP 12-pin on HP-compatible side panel option

Impedance Pneumography Respiration
- Two user-selectable leads: RA-LA, RA-LL
- Automatic cardiovascular artifact (CVA) rejection
- Respiration rate range:
  Adult/Pediatric modes: 0 (apnea), 2 to 150 RPM
  Neonate mode: 0 (apnea), 3 to 150 RPM
- Respiration detection threshold: 140 milliohms or 2X CVA, whichever is greater
- Respiration rate accuracy: ± 2 breaths/min or ± 2%
- Apnea alarm delay settings:
  Adult/Pediatric modes: 6, 10, 15, 20, 25, 30 sec
  Neonate mode: 6, 10, 15, 20 sec
- Sweep speed: 3.13, 6.25, 12.5 mm/sec

Pulse Oximetry (SpO₂)
Masimo
- Masimo SET® sensors
- Waveform and pulse amplitude meter
- Pulse tone pitch indicator
- Saturation range: 1 to 100%
- Probe accuracy: 25 to 41 °C
  No Motion
  Adult/Pediatric: 70 to 100% ± 2 digits
                    0 to 69% unspecified
  Neonatal: 70 to 100% ± 3 digits
                    0 to 69% unspecified
  During Motion
  Adult/Pediatric/Neonatal: 70 to 100% ± 3 digits
                    0 to 69% unspecified
- Pulse rate measurement range (Adult/Pediatric/Neonatal):
  No Motion: 26 to 239 bpm
  During Motion: 26 to 239 bpm
- Pulse rate accuracy:
  No Motion: ± 3 digits
  During Motion: ± 5 digits

(Pulse Oximetry, continued)
Nellcor
- Nellcor *OxiMax*® sensors
- Waveform and pulse amplitude meter
- Pulse tone pitch indicator
- Saturation range: 1 to 100%
- Probe Accuracy: DS-100A, 70 to 100%, 28 to 42 °C, ± 3
- Pulse rate measurement range: 25 to 249 bpm
- Pulse rate accuracy: ± 3 bpm

CO₂ Options
Display
- Screen display: CO_2 waveform and $EtCO_2$ and $INCO_2$ (when in alarm) numerics
- Waveform scale: (maximum) 0 to 100 mmHg, 0 to 14%, 0 to 14 kPa
- Numeric range display: $EtCO_2$: 0 to 99 mmHg, 0 to 13.2 kPa, 0 to 23.1%; $INCO_2$: 8[a] to 25 mmHg, 1.1[a] to 5 kPa, 1.1[a] to 5%
- Units: mmHg, kPa, %; user-selectable
- Sweep speed: 3.13, 6.25, 12.5 mm/sec; user-selectable
- Response modes: Fast: 15 sec sampling time period; Normal: 30 sec sampling time period; Slow: 45 sec sampling time period
- Gas compensation: Off: CO_2 value = calculated CO_2 value; O_2 > 50%, No N_2O: CO_2 value = calculated CO_2 value x 1.03; N_2O > 50%: CO_2 value = calculated CO_2 value x 0.952
- Alarm limit ranges: $EtCO_2$: 0 to 99 mmHg, 0 to 13.2 kPa, 0-13.2%; $INCO_2$: 2 to 25 mmHg, 0.2 to 5 kPa, % (no lower limit)
- Resolution: 1 mmHg
- Accuracy:
  Mainstream[b]: 0 to 30 mmHg, ± 3 mmHg
                31 to 99 mmHg, ± 10% of value
  Sidestream[c]: 0 to 30 mmHg, ± 3 mmHg
                31 to 99 mmHg, ± 10% of value
- Altitude Error: ± 0.4%/1,000 ft (304.8 m)

Breath Rate Display
- Screen display: Numeric
- Breath rate (BR) source: When CO_2 is active, CO_2 is the BR source. Otherwise, RESP from ECG is the RR source
- Units: Breaths/Minute
- Range:
  Adult/Ped: 0 (apnea), 2 to 150 breaths/min
  Neonate: 0 (apnea), 3 to 150 breaths/min
- Resolution: ± 1 breaths/min
- Accuracy: ± 1 breaths/min or ± 5%, whichever is greater[d]
- Alarm limits range:
  Adult/Ped: 2 to 150 breaths/min
  Neonate: 3 to 150 breaths/min

CO₂ Performance
- Per ISO 9918:1993(E)/EN 864:1996

Apnea Alarms and Tickets
- Apnea ticket: Set to auto print after apnea event and after 1 minute continued apnea
- Apnea alarm accuracy: ± 2 sec
- Apnea delay setting:
  Adult/Ped: 6, 10, 15, 20, 25, 30 seconds
  Neonate: 6, 10, 15, 20 seconds

Barometric Pressure
- Pressure compensation: automatic
- Operating range: -2,000 to 15,000 ft, -610 to 4572 m, (817 to 429 mmHg)
- Screen display: Numeric (CO_2 Status Window)
- Units: mmHg or kPa
- Accuracy: ± 3 mmHg or 2.5% of difference from calibration pressure, whichever is greater

Sidestream CO₂ Option (SSCO₂)
- Sensor type: Sidestream, internal
- Principle of operation: Nondispersive, infrared, single-beam, single-path/wavelength, ratiometric
- Operating ambient temperature: 5 to 40 °C
- Startup time: 30 seconds typical, 3 minutes maximum
- Rise time: 240 ms (10% to 90%) at 175 ml/min
- Delay time: 1.12 seconds maximum[e]
- Total system response time: 1.36 seconds (Rise Time and Delay Time)[e]
- Calibration: Verify semiannually, calibrate only as required
- Sampling chamber: Internal (replaceable by service technician)
- Pneumatic and exhaust system: Integral
- Barometric pressure compensation: Automatic
- BTPS, ATPS, STPD: CO_2 value = calculated CO_2 value x 0.977
- Sampling line: 7-foot sampling line, ID 0.055 in (1.4 mm), for use with disposable single-use cannula (CO_2 only or CO_2 sampling/O_2 delivery)
- Flow rate: 90 or 175 ml/min, user-selectable

Mainstream CO₂ Option (MSCO₂)
- CO_2 waveform, $EtCO_2$, $INCO_2$ ($INCO_2$ when in alarm), Apnea and Breath Rate display
- Waveform rise time: < 120 msec (to 90% after step change)

[a] Lower if in alarm
[b] Based on these airway conditions: Sensor temperature 42 °C, Airway adapter temperature = 33 °C, water vapor pressure = 38 mmHg; Standard gas mixture = CO_2 in balance air, fully hydrated at 33 °C; Barometric pressure = 760 mmHg and flow = 60 ml/min
[c] Based on the following additional airway conditions: Sample line = 7 ft, 0.055 in ID (2.13 m, 1.4 mm ID); Sample flow rate = 175 ml/min; Respiratory rate ≤ 50 bpm, stable to ± 3 breaths/min; Inspired/Expired time ratio = 1:2; Barometric pressure = 760 mmHg
[d] For Sidestream CO_2, this applies only for BR ≤ 60
[e] Based on the following additional airway conditions: Sample line = 7 ft, 0.055 in ID (2.13 m, 1.4 mm ID); Sample flow rate = 175 ml/min

Mainstream CO₂ Sensor

- Mainstream NDIR single-beam, single path/wavelength, ratiometric
- Warm-up time (CO_2 sensor and monitor): 45 sec typical, 3 minutes maximum
- Automatic zeroing
- No routine calibration
- Operating altitude: -2,000 to 15,000 ft (817-429 mmHg)
- Dimensions: 1.003 (H) x 1.036 (W) x 0.78 (L) in
- Weight: 15 g (0.5 oz)
- Cable length: 10 ft (3.05 m) nominal

CO₂ Airway Adapters

- Disposable or multi-use
- Size: 15 mm ID (meet ISO specifications)
- Single or multi-use adult/pediatric airway adapter for patients who weigh ≥ 5 kg:
  Added deadspace: < 6 cc (0.37 cu in)
- Single-use low-deadspace airway adapter for patients who weigh < 5 kg
- Added deadspace: < 0.6 cc (0.037 cu in)

Printer Option

- Thermal hot dot
- Numeric annotation: date, time and all active parameters
- Number of waveforms printed simultaneously: up to 3
- Print speeds: 6.25, 12.5, 25.0 mm/sec
- Format: 53 mm wide print area on 60 mm wide paper
  Operating modes:
  - Continuous: start/stop real-time printouts with all active numerics and up to 3 waveforms
  - Snapshot: 8 sec (32 sec for CO_2/Resp) of immediate history for all active numerics and up to 3 waveforms
  - Alarm Print: 20 seconds total/12 seconds prior to alarming parameter
  - Auto Print: Snapshot print out every 15 or 30 min, or 1, 2 or 4 hours
  - Freeze Print: 8 sec printout (32 sec for CO_2/Resp)
  - Trend Print: On demand or Auto Trend every 4 hours. Up to 8 hours in tabular format.
  - OxyCRG Trend Print: Print-only function (CO_2 or Resp must be installed): 2 min printout of trended HR/PR and SpO_2 numerics and compressed CO_2 or Resp waveforms (CO_2 is priority source), with annotation and MIN/MAX tabular report
  - OxyCRG on Alarm: Set to print out 60 sec after HR/PR or SpO_2 alarm or 75 sec after BR/RR or Apnea alarm
  - Apnea Ticket: Auto print HR/PR, SpO_2 and elapsed time after apnea event and after 1 minute of continued apnea
  - Cuff Ticket: Auto print NIBP, HR/PR, SpO_2, CO_2 and RR/BR after each NIBP reading

Alarms

- All parameters: upper/lower limits
- All parameters: Adult/Pediatric/Neonate patient mode-specific limits
- Factory default or programmable settings for all patient modes
- Alarm indicator: red
- Alarm(s) off indicator: amber
- Audible alarm tone: high/med/low
- Alarm silence: 90 seconds
- One-button Stat Set for all alarm limits

(except Apnea Delay)
- EQ Alert: amber

Trends

- Tabular numeric format
- All parameters trended/viewable
- Resolution: non-NIBP trends entered every 2 min
- NIBP trends entered after each reading
- Duration: 5 hours non-NIBP trends (up to 150 readings)
- 8 hours NIBP trends (up to 128 readings)
- Page up/down trend view

Electroluminescent (EL) Display

- Integral Contrast Enhancement (ICE™) technology
- High-brite, high-resolution EL
- Matrix: 552 x 256 pixels
- Active viewing area: 145.75 x 67.56 mm
- Pixel size: 0.203 x 0.203 mm
- Viewing angle: > 160°
- "On" pixel luminance: > 9.0 fL
- Character height:
  Large: 11.03 mm
  Medium: 7.34 mm
  Small: 3.64 mm
- Color: amber on black background

Environmental

- Operating temperature: 0 to 40 °C (monitor), + 5 to 40 °C (printer)
- Operating relative humidity: 15 to 95%, noncondensing (MIL STD 810E), monitor 35 to 85%, noncondensing (MIL STD 810E), printer
- Operating altitude: -2,000 to 15,000 ft
- Shipping/Storage temperature: -20 to 60 °C
- Shock: 50 g (monitor); 30 g (expansion module/printer)
- Vibration, random and sinusoidal: Designed to meet RTCA DO-160C, categories N & C (monitor)
- Electromagnetic compatibility (EMC): per IEC 601-1-2
- Drip-proof per IEC 529, level IPX1 (monitor)

Physical

- Monitor with SpO_2 Module:
  Size: 6.6 in (W) x 8.2 in (D) x 7.5 in (H) (17 x 21 x 19 cm)
  Weight: 9.12 lb (4.1 kg)
- Monitor with Expansion Module (with Printer/SpO_2/$MSCO_2$/$SSCO_2$)
  Size: 9.6 in (W) x 8.2 in (D) x 7.6 in (H)
  Weight: 13.5 lb (6.1 kg)

Power

- Rechargeable sealed lead acid internal battery pack
- Internal recharger
- Input voltage: 12 to 28 VDC
- AC power adapter: 100 to 120 VAC, 50 to 60 Hz (North America/Japan) 220 to 240 VAC, 50 to 60 Hz (International)
- Operating time on battery, typical*: Monitor with SpO_2 option: 5 hours; Monitor with Expansion Module (Printer, SpO_2/CO_2): 3 hours; Monitor only: 2 hours
- Battery recharge time: 6 to 8 hours (when monitor OFF)
- Battery recharge time: 8 to 12 hours (when monitor ON)

*Fully charged, new battery at 25 °C, NIBP and Snapshot (if applicable) every 15 minutes, all accessories used.

Inservice Mode

- Includes two sets of simulated patient data including waveforms, for training and education

Certifications/Standards

- Complies with relevant AAMI, IEC, EN, CSA and UL standards. CE marked according to the European Medical Device Directive. CSA Certificate of Compliance for use in the U.S. and Canada.
  VA Contract V797P-3486k
  DSCP Contract SP0200-97-D-8021

Military Specification Approvals

- Certain configurations USAF approved for rotary- and fixed-wing aircraft
- Operating Temperature, Humidity, Altitude, and Rapid Decompression MIL STD 810E
- Meets RTCA DO-160D, Sec. 21, category M
- Vibration, Random and Sinusoidal: Designed to meet RTCA DO-160C, Sec. 8, categories N&C (monitor)
- Electromagnetic compatibility (EMC): per IEC 601-1-2, MILSTD 461D USAF, CE 102, CS 101, CS 114, CS 115, CS 116, RE 102, RS 103
- Drip proof per IEC 529, level IPX1 (monitor)

Masimo SET®

Only Masimo SET SpO_2 sensors should be used with Masimo pulse oximetry. Masimo and Masimo SET are registered trademarks of Masimo Corporation.

NELLCOR

Only Nellcor® OxiMax® pulse oximetry sensors should be used with the Nellcor pulse oximetry option. Nellcor and OxiMax are registered trademarks of Nellcor Puritan Bennett, Inc.

Smartcuf®

All Propaq vital signs monitors come standard with Smartcuf technology, to improve NIBP accuracy in the presence of motion.

WelchAllyn®

Advancing Frontline Care™

8500 S.W. Creekside Place
Beaverton, OR 97008-7107
phone 503.530.7500
fax 503.526.4200
toll-free 800.289.2500
technical support 800.289.2501
www.welchallyn.com

The Welch Allyn® Propaq Encore®

Proven performance in portable vital signs monitoring.

The Propaq Encore is configurable with:

- Heart/Pulse rate
- 3- or 5-lead ECG
- Motion-tolerant noninvasive blood pressure
- Invasive blood pressure (up to 2 channels)*
- Temperature (2 channels)
- Masimo® SET motion-tolerant pulse oximetry orNellcor® OxiMax® pulse oximetry
- Capnography (mainstream and/or sidestream)*
- Impedance respiration/apnea
- *Optional

WelchAllyn®

Advancing Frontline Care™