

Infinity[®] Delta and Delta XL Patient Monitors

Infinity[®] Delta and Delta XL monitors support all patient acuity levels and all care units in the hospital. With patented Pick and Go[®] technology, the same monitor stays with the patient – at the bedside, on transport, at the cath lab or radiology and back again – eliminating the need to disconnect/reconnect the monitor. This approach enables patient and caregiver mobility, and provides the benefits of standardization without compromising patient care or caregiver preferences. Infinity Delta and Delta XL monitors eliminate the need for dedicated transport monitors, reduce time spent on each transport, and provide continuous patient monitoring and data collection throughout the continuum of care.

Features

- Provides continuous monitoring and data collection
- Eliminates the need for separate transport monitors
- Includes the advanced power and flexibility of the latest Infinity monitoring software

Monitoring Capabilities

Neonatal, pediatric and adult applications

ECG

Displays up to 12 leads

Available leads

I, II, III, aVR, aVF, aVL, V, V+, V1 – V6
 [V, aVR aVF, aVL only with 5- and 6-lead sets,
 V+ only with 6-lead set, V1 to V6 only with
 12-lead pod (12-lead not intended for neonatal)],
 TruST[™] 12-lead reduced lead-set (6-wire):
 I, II, III, aVL, aVR, aVF, dV1, V2, dV3, dV4, V5
 and dV6 (indicated for adults and pediatrics).¹

Measuring range

15 to 300 bpm

Accuracy

±2 bpm or ±1% (whichever is greater)

Frequency ranges

Filter off: 0.05 to 40 Hz display;
 0.05 to 125 Hz printer

Monitoring filter: 0.5 to 40 Hz

ESU filter: 0.5 to 16 Hz



TECHNICAL DATA

¹ Optimum performance of TruST leads is based on a minimum 0.3mV amplitude and QRS duration <180 milliseconds on patients with a body surface area (BSA) of 1.5 – 2.5 m².

QRS Detection Range

| | |
|-----------------------------------|---|
| Amplitude | 0.5 to 5 mV |
| Duration | Adult and pediatric: 70 to 120 msec Neonatal: 40 to 120 msec |
| Alarms | User-selectable upper and lower limits |
| Pacer detection (adult/pediatric) | Leads: I, II or III Amplitude: ± 2 to ± 700 mV Width (d_p): 0.2 to 2.0 msec |
| Accessories | 3-, 5- or 6-lead electrode set or 12-lead pod |

ST (not intended for neonatal)

| | |
|--------------------|--|
| Available leads | Choice of any 3 available ECG leads |
| ST complex length | 892 msec (-300 to +600 msec from fiducial point) |
| Sample rate | 225 samples/sec |
| Frequency response | 0.05 – 40 Hz |

Isoelectric measurement point

| | |
|-----------------|----------------------|
| Measuring range | Start of ECG complex |
| Default | QRS onset – 28 msec |

ST measurement point

| | |
|--------------------------------|--|
| Adjustment range | Fiducial point to end of ECG complex |
| Point default | QRS offset +80 msec |
| Minimum number of normal beats | 1 beat/updated interval |
| Update interval | 15 sec |
| Averaging | Any valid beat in 15 sec |
| Resolution | ± 0.1 mm |
| Trends | Graphical and tabular, as provided by monitor function |
| INOP Alarm | Yes |
| Upper and lower ST alarms | ± 15 mm, ± 0.1 mm increments |
| Alarm delay | None, 15, 30, 45, 60 seconds |

Respiration

| | |
|---------------------|---|
| Sensing leads | I, II (user-selectable) |
| Measuring method | Impedance pneumography |
| Auxiliary current | $\leq 10\mu\text{A}$ for any active electrode |
| Detection threshold | 0.2 Ω to 4.0 Ω in manual mode (user adjustment): 0.30 Ω to 1.5 Ω in auto mode (automatic adjustment) |
| Measuring range | 0 to 155 breaths per min |
| Accuracy | ± 1 breath/min or 2% of rate (whichever is greater) |
| Alarms | User-selectable upper and lower respiration rate |

Pulse Oximetry (SpO₂)

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|----------------------|--|
| Displayed parameters | Saturation (fraction of oxyhemoglobin to functional hemoglobin) and pulse (rate and curve) |
| Measuring method | Absorption-spectrophotometry |
| Measuring range | SpO ₂ : 1 to 100% Pulse: 30 to 250 bpm |
| Accuracy | SpO ₂ : 0 to 69% not specified SpO ₂ : 70 to 100%: ±2% (except Masimo® LNOP-Ear which is ±3.5%, and Nellcor® DS100A which is ±3%) Saturation accuracy range increases by ±1 digit for neonates Pulse: ±3 bpm or ±3% (whichever is greater) |
| Alarms | User-selectable upper and lower limits for SpO ₂ and pulse rate Life-threatening desaturation alarm in neonatal mode only |
| Accessories | Dräger Medical-approved Masimo or Nellcor sensors Dräger Medical reusable SpO ₂ probes (not intended for neonates). |

Second Pulse Oximetry (SpO₂)

| | |
|----------------------|---|
| Displayed parameters | Saturation, Pulse, Delta (Δ) |
| Measuring method | Absorption-spectrophotometry |
| Measuring range | SpO ₂ : 1 to 100% Pulse: 30 to 250 bpm |
| Accuracy | Refer to MicrO ₂ +® Telemetry Pulse Oximetry datasheet |
| Alarms | ΔSpO ₂ % upper alarm limit only Default: adult/pediatric 20%, neonatal 10% ΔSpO ₂ range: 1 to 100%, 1% resolution |

Temperature

| | |
|----------------------|---|
| Displayed parameters | Absolute and delta temperatures |
| Measuring range | Absolute: -5° C to 50° C Delta: 0° C to 55° C |
| Accuracy | Absolute: ±0.1° C Delta: ±0.2° C |
| Alarms | User-selectable upper and lower limits for absolute and delta values |
| Accessories | Dräger Medical-approved core and skin probes |

Noninvasive Blood Pressure (NBP)

| | |
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| Displayed parameters | Systolic, mean and diastolic pressures |
| Measuring method | Oscillometric utilizing step deflation |

Modes of operation

Manual (single measurement); Interval and Continuous (5 minutes)

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|----------------|--|
| Interval times | 1, 2, 2.5, 3, 5, 10, 15, 20, 25, 30, 45, 60, 120 and 240 minutes |
|----------------|--|

Measuring range (default)

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|----------------------|--|
| Adult (270 mmHg) | Heart rate: 30 to 240 bpm Systolic: 30 to 250 mmHg Mean: 20 to 230 mmHg Diastolic: 10 to 210 mmHg |
| Pediatric (180 mmHg) | Heart rate: 30 to 240 bpm Systolic: 30 to 170 mmHg Mean: 20 to 150 mmHg Diastolic: 10 to 130 mmHg |
| Neonatal (140 mmHg) | Heart rate: 30 to 240 bpm Systolic: 30 to 130 mmHg Mean: 20 to 110 mmHg Diastolic: 10 to 100 mmHg |

Cuff pressure

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| Default inflation pressure | Adult (270): 160 mmHg \pm 10 mmHg Pediatric (180): 120 mmHg \pm 10 mmHg Neonatal (140): 110 mmHg \pm 10 mmHg |
| Inflation pressure after a valid measurement | Adult (270): Systolic +25 mmHg \pm 10 mmHg Pediatric (180): Systolic +25 mmHg \pm 10 mmHg Neonatal (140): Systolic +30 mmHg \pm 10 mmHg |
| Maximum inflation pressure | Adult (270): 265 mmHg \pm 5 mmHg Pediatric (180): 180 mmHg \pm 10 mmHg Neonatal (140): 142 mmHg \pm 10 mmHg |
| Minimum inflation pressure | Adult (270): 110 mmHg \pm 10 mmHg Pediatric (180): 90 mmHg \pm 10 mmHg Neonatal (140): 70 mmHg \pm 10 mmHg |
| Connector | Quick-release connector with single airway |

Invasive Blood Pressure

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|----------------------------|--|
| Displays up to 8 pressures | |
| Measuring method | Resistive strain gauge transducer |
| Display resolution | 1 mmHg |
| Measuring range | -50 to 400 mmHg |
| Frequency ranges | DC to 8 Hz, DC to 16 Hz, and DC to 32 Hz (user-selectable) |
| Zero balance | \pm 200 mmHg |
| Transducer specifications | Dräger Medical-approved transducers with a resistance of 200 to 3000 Ω and an equivalent pressure sensitivity of 5 μ V/V/mmHg \pm 10% |
| Accuracy | \pm 1 mmHg or \pm 3%, exclusive of transducer (whichever is greater) |
| IBP alarms | User-selectable upper and lower limits for systolic, mean and diastolic pressures |
| Accessories | Dräger Medical-approved pressure transducers |

Display Specifications

| | |
|-----------------|---|
| Type | Thin Film Transistor-Liquid Crystal Display Active Matrix (TFT-LCD) |
| Size (Delta) | 264 mm (10.4 in.) diagonal |
| Channels | 5 standard, 6, 8 optional |
| Viewing area | 211 x 158 mm (8.3 x 6.2 in.) |
| Resolution | 640 x 480 pixels |
| Size (Delta XL) | 310 mm (12.2 in.) diagonal |
| Channels | 6 standard, 8 optional |
| Viewing area | 246 x 184.5 mm (9.7 x 7.3 in.) |
| Resolution | 800 x 600 pixels |

User Interface

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| Rotary knob | |
| Easy-to-use menu structure and fixed keys | |
| Three alarm levels | Life-threatening, Serious and Advisory |

Connections

MultiMed® Pod, Masimo SET® SmartPod®, HemoMed™ Pod, Pod Comm (Delta: 1 standard, 1 optional; Delta XL: 2 standard), NBP-input, etCO₂ module, Infinity Docking Station, analog output, QRS sync output, RS 232, remote keypad, and Scio® Four modules.

Analog Output

| | |
|---------|------------------------------|
| Signals | ECG, arterial blood pressure |
| Delay | ≤25 msec |

Physical Specifications

| | |
|---------------------------|--|
| Cooling | Convection |
| Size (Delta) H x W x D | 253 x 365 x 190 mm (10.0 x 14.4 x 7.5 in.) |
| Weight (Delta) | 5.8 kg (12.7 lbs.) |
| with external battery | 6.4 kg (14.0 lbs.) |
| Size (Delta XL) H x W x D | 272 x 384 x 190 mm (10.7 x 15.1 x 7.5 in.) |
| Weight (Delta XL) | 6.2 kg (13.6 lbs.) |
| with external battery | 6.8 kg (14.9 lbs.) |

Information Management Capabilities

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|-----------------|--|
| Data storage | 24 hours of trended parameter information |
| Data resolution | 30-second sampling |
| Trend tables | 1-, 5-, 15-, 30- or 60-minute display formats |
| Trend graphs | 1-, 2-, 4-, 8-, 12- or 24-hour display formats |

Electrical Specifications

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|-------------------------|--|
| Input voltage | 11 to 15 VDC |
| Power consumption | ≤70 watts (fully loaded) |
| Patient leakage current | ≤10μA |
| Power adapter | Power requirements: 100 to 120V AC, 3.4A or 200 to 240V AC, 1.7A (switch selectable) Frequency: 50 to 60 Hz Chassis leakage current: <300μA @ 120V AC <500μA @ 220V AC |

Battery Specifications

| | |
|--|---|
| Internal battery | Battery type: lithium-ion Battery capacity: 180 minutes Charging time: 6.5 hours at 25° C |
| External auxiliary battery | Battery type: sealed lead-acid Battery capacity: 50 minutes Charging time: 3.5 hours at 25° C |
| Size (external auxiliary battery) H X W X D | 62 x 182 x 24 mm (2.4 x 7.2 x .9 in.) |
| Weight | 0.635 kg (1.4 lbs.) |

Battery life is specified for new batteries with monitor running under the following conditions: ECG, SpO₂, four invasive blood pressures, two temperature probes, NBP measurement every 15 minutes connected, display at 50% brightness.

Battery life may diminish after extended use.

Environmental Requirements

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|----------------------|--|
| Temperature range | Operating: 10° C to 40° C Storage: -20° C to 40° C |
| Relative humidity | Operating: 20% to 90%, non-condensing Storage: 10% to 95% (with packaging) |
| Atmospheric pressure | Operating: 525 to 795 mmHg (70 to 106 kPa) Storage: 375 to 795 mmHg (50 to 106 kPa) |

Standards

IEC 60601-1 and applicable particular and collateral standards,
IEC 60601-1-2, Electromagnetic compatibility CISPR 11, Class B

The Delta and Delta XL monitors comply with Medical Devices Directive (MDD) 93/42 EEC and bear the CE mark.

Ordering Information

Delta

| | |
|--------------------|-------------------|
| Critical Care | 8419920 (MS18597) |
| Perioperative Care | 8604920 (MS18597) |
| Perinatal Care | MU20522 (MS18597) |

Delta XL

| | |
|--------------------|-------------------|
| Critical Care | 8419940 (MS18596) |
| Perioperative Care | 8604940 (MS18596) |
| Perinatal Care | MU20523 (MS18596) |

Note: Infinity Docking Station/monitor power supply, power cable, MultiMed, and all patient connection and intermediate cables must be ordered separately.

Infinity Docking Stations (IDS)

| | |
|--|---------|
| Docking Station | 5206110 |
| Provides mechanical mounting as well as interfaces for monitor's electrical, network, video, recorder, and RS 232 data export and serial communications. | |
| Mounting Docking Station | 4715319 |
| For use in standalone configurations | |
| Docking Station with integrated MIB | 7489375 |
| Docking Station/Monitor Power Supply | MS18284 |

Note: Powers monitor directly or via Infinity Docking Station

Power Cables

| | |
|--------------------------------|---------|
| Europe, CEE 7 | 4321712 |
| North America, 5-15R | 4321720 |
| Switzerland, SEV 1 01 1 | 4321613 |
| Great Britain, BS 1363 | 1851713 |
| Australia, New Zealand, AS3112 | 1851705 |
| China, power cord | 1859714 |
| Danish power cord | 1851721 |

MultiMed Pods

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|---|---------|
| MultiMed 5 | 3368391 |
| Multi-parameter pods to monitor 3-, 5- or 6- lead ECG, impedance respiration, SpO ₂ and one temperature (two temperatures with Y-cable) | |
| MultiMed 6 | 5191221 |
| Multi-parameter pods to monitor 3-, 5- or 6- lead ECG, impedance respiration, SpO ₂ and one temperature (two temperatures with Y-cable) | |
| NeoMed | 5590539 |
| The NeoMed pod supports monitoring of 3-lead ECG, impedance respiration, two temperatures, SpO ₂ and FiO ₂ . | |
| MultiMed 12 Pod (diagnostic 12-lead ECG and SpO ₂) | 5589663 |

SpO₂ Pod

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|--|---------|
| Masimo SET SpO ₂ SmartPod (see individual datasheet for details) | MS16901 |
|--|---------|

Software Options

Delta

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|--|----------|
| 4 - 6 waveform channel option | 5597914 |
| 6 - 8 waveform channel option | 5597922 |
| 2nd Pod Comm port option | 5597203 |
| Physiological Calculations option | 5201996 |
| Arrhythmia II option | 4322967 |
| Wireless option | 7498087 |
| ARIES (Advanced Review of Ischemia Event System) option | 5597328 |
| VF6 Plus (to enable SmartPods) | MS17033* |

Delta XL

| | |
|--|---------|
| 6 - 8 waveform channel option | 5597922 |
| Physiological Calculator option | 5201996 |
| Arrhythmia II option | 4322967 |
| Wireless option | 7498087 |
| ARIES (Advanced Review of Ischemia Event System) option | 5597328 |
| VF6 Plus (to enable SmartPods) | MS17033 |

Included with new monitor orders

Wireless LAN PC card, and access point installation is required for wireless monitoring and must be ordered through your local Dräger Medical sales representative.

Standard with each monitor, basic arrhythmia monitoring includes: asystole, ventricular fibrillation, ventricular tachycardia and artifact.

Arrhythmia II option augments basic arrhythmia monitoring to include: ventricular run, accelerated idioventricular rhythm, supra-ventricular tachycardia, couplet, bigeminy, tachycardia, bradycardia, pause, artifact, and also supports PVC/min parameter output.

Note: Bradycardia is available as a low heart rate alarm for neonates.

Optional Modules and Hardware Accessories

Hemodynamic Pods

| | |
|---|---------|
| 2 IBP Y-adapter, 10-pin | 5731281 |
| 2 IBP Y-adapter, 7-pin | 5592147 |
| HemoMed | 5588822 |
| Provides management of up to 4 invasive blood pressures and cardiac output. | |
| Hemo2 [®] Pod | 4319435 |
| Hemo2 provides management of up to 2 invasive blood pressures, cardiac output and 1 additional temperature. | |
| Hemo4 [®] Pod | 4315961 |
| Hemo4 Pod provides management of up to 4 invasive blood pressures, cardiac output and 1 additional temperature. | |

etCO₂, Transcutaneous O₂/CO₂ Monitoring

Respiratory Mechanics and Anesthesia Gas Monitoring

| | |
|--|---------|
| etCO ₂ module | 4319310 |
| etCO ₂ pod | 5740738 |
| etCO ₂ Microstream [®] pod | 7870947 |
| etCO ₂ + Respiratory Mechanics pod | 5740704 |
| tcpO ₂ /CO ₂ pod | 5592535 |
| Scio Four modules: (order through) | 6871810 |
| Scio Four Oxi plus module | |
| Scio Four plus module | |
| Scio Four Oxi module | |
| Scio Four module | |

Neurological Monitoring

| | |
|-------------------------------------|---------|
| EEG Pod | 5736744 |
| Trident [®] (NMT) SmartPod | MS15007 |
| BISx [™] SmartPod | MS14796 |

Recorder Options

| | |
|--|---------|
| R50 2-channel recorder | 5952630 |
| R50N 2-channel network recorder | 5740068 |
| Infinity Network laser printer (115 V) | 6556513 |
| Infinity Network laser printer (220 V) | 6556539 |

Other Accessories

| | |
|---|---------|
| Remote keypad | 5203042 |
| Auxiliary battery | 5592097 |
| Auxiliary battery charging station (charges up to four batteries simultaneously) | 5597377 |

Note: Refer to individual module or pod datasheet for details concerning connection cables and adapters, transducers and mounting accessories

BISx is a trademark of Aspect Medical Systems, Inc., and is registered in the USA, EU and other countries.

The Infinity BISx pod is manufactured by Aspect Medical Systems.

Masimo is a registered trademark of Masimo Corporation

MicroStream is a registered trademark of Oridion

Nellcor is a registered trademark of Nellcor Puritan Bennett Inc.

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The quality management system at Dräger Medical Systems, Inc. is certified according to ISO 13485, and Annex II of Directive 93/42/EEC (Medical devices).