Infinity® Kappa Patient Monitor

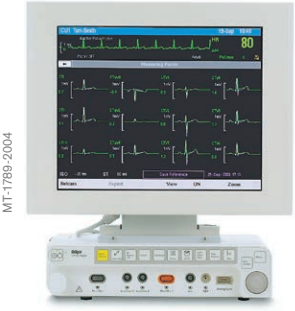
Intended for fixed monitoring at the bedside, the Kappa monitor supports all patients from adults to neonates, in all acuity levels. The standard monitor includes a CPU base unit that is compatible with standard medical-grade, flat-panel displays.

FEATURES

- Works as a standalone device or connects to Infinity® Network via DirectNet or wireless adapter for wired or wireless networking
- Scales using Infinity pods and software options
- Provides user-defined setups (one standard, up to five when equipped with the Advanced Communication Option)

Monitoring Capabilities

Neonatal, pediatric and adult applications



Infinity Kappa
Provides fixed monitoring at the bedside, with a built in power supply.

TECHNICAL DATA

SUPPORTED PARAMETERS

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 neonates)], TruST® 12-lead with 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 (heart rate)	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

[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. TruST 12-lead reduced lead-set ECG algorithm provides 12-lead monitoring using a standard 6-wire lead-set and standard lead placement for limb leads, V2 and V5. ARIES software option enhances TruST 12-lead monitoring with the addition of 12-lead ST Analysis.

CONTINUING TECHNICAL DATA

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 neonates)	
Available leads	With 3-lead ST option: Choice of any 3 available leads With ARIES option: Up to 12 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 to fiducial point
Default	QRS onset – 28 msec

ST measurement point	
Adjustment range	Fiducial point to end of ECG complex
Point default	QRS offset +80 msec
Update interval	15 sec, 1 normal beat required
Resolution	±0.1 mm
Trends	Graphical, tabular and graphical mini-trends
INOP Alarm	Yes
Upper and lower ST alarms	±15 mm, ±0.1 mm increments
Duration of ST event to trigger alarm	None, 15, 30, 45, 60 seconds

Arrhythmia Detection	
Adult and Pediatric	Yes
Neonatal	No. Only bradycardia is available as a low heart rate alarm in neonatal mode
ARR Mode	User Selectable; OFF, Basic or Advanced
Basic ARR (standard)	Asystole, ventricular fibrillation, ventricular tachycardia and artifact (ARR label displayed to register arrhythmia occurrence)
Advanced ARR (option)	Ventricular run, accelerated idioventricular rhythm, supra-ventricular tachycardia, couplet, bigeminy, tachycardia, bradycardia, pause and also supports PVC/min parameter output.

Respiration	
Sensing leads	I, II (user-selectable)
Measuring method	Impedance pneumography
Auxiliary current	≤ 10μA for any active electrode
Detection threshold	0.15Ω to 4.0Ω in manual mode (user adjustment) 0.2Ω to 1.5Ω in auto mode (automatic adjustment)
Measuring range	0 to 155 breaths per min
Accuracy	±1 breath/min or 2% of rate (whichever is greater)
Apnea detection	For neonatal and pediatric patients
Alarms	User-selectable upper and lower respiration rate

Pulse Oximetry (SpO_2)	
SpO_2 algorithm	Masimo® SET® (Signal Extraction Technology) Masimo provides the industry "gold standard" technology for motion tolerant pulse oximetry as documented in Masimo's peer reviewed studies (www.masimo.com). See Infinity Masimo SET SmartPod® datasheet for more detailed specifications.
SpO_2 algorithm	Nellcor™ OxiMax™ [2] See Nellcor OxiMax SmartPod datasheet for more detailed specifications.
SpO_2 algorithm	Dräger's OxiSure® SpO_2 [3]
Dräger's OxiSure SpO_2	
Connection	MultiMed® pods (SpO_2 port)
Displayed parameters	Saturation (fraction of oxyhemoglobin to functional hemoglobin) and pulse (rate and waveform)
Measuring method	Transmission 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% (±3% for neonates; Masimo LNOP-Ear: ±3.5%; Nellcor DS100A: ±3%) 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-approved Masimo or Nellcor sensors Dräger reusable SpO_2 probes (not intended for neonates)
Temperature	
Displayed parameters	Absolute and delta temperatures
Measuring range	Absolute: -5 to 50 °C Delta: 0 to 55 °C
Resolution	0.1° C
Accuracy	Absolute: ±0.1 °C Delta: ±0.2 °C
Alarms	User-selectable upper and lower limits for absolute and delta values
Accessories	Dräger approved core and skin probes
Noninvasive Blood Pressure (NBP)	
Displayed parameters	Systolic, Mean and Diastolic pressures
Measuring method	Oscillometric utilizing step deflation
Modes of operation	Manual (single measurement); Continuous (5 minutes) and Interval
Interval times	1, 2, 2.5, 3, 5, 10, 15, 20, 25, 30, 45, 60, 120 and 240 minutes
Heart rate measuring range	30 to 240 bpm
Pressure measuring range	
Adult	Systolic: 30 to 250 mmHg Mean: 20 to 230 mmHg Diastolic: 10 to 210 mmHg
Pediatric	Systolic: 30 to 170 mmHg Mean: 20 to 150 mmHg Diastolic: 10 to 130 mmHg
Neonatal	Systolic: 30 to 130 mmHg Mean: 20 to 110 mmHg Diastolic: 10 to 100 mmHg

CONTINUING TECHNICAL DATA

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

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

Cardiac Output	
Parameter display	Cardiac output, blood temperature, injectate temperature
Measuring method	Thermodilution
Connection	MPod®-Quad Hemo or HemoMed™ pod
Measuring range	
Cardiac output	0.5 to 20 L/min
Blood temperature	25 to 43 °C (77 to 109 °F)
Injectate temperature	-5 to 30 °C (23 to 86 °F)
Accuracy	
Cardiac output	±5% (with 0 °C injectate)
Injectate temperature	±0.25 °C
Degree of protection against electric shock	Type CF
Defibrillation protection	Defibrillation-Proof Applied Part per IEC 60601-1

DISPLAY SPECIFICATIONS

Type	Medical grade independent TFT active matrix LCD (available sizes 15“, 17“ or 19“)
Channels	4 standard, 6, 8 optional
Resolution	800 x 600 pixels
User interface	Easy-to-use menu structure with rotary knob and fixed keys
Sweep Speed	6.25, 12.5, 25 and 50 mm/s ±10% (accuracy only guaranteed for a 15“ display)

Alarms

Priorities	3; High (Life Threatening), Medium (Serious), Low (Advisory)
Audio alarm tones	User Selectable: Infinity, IEC 1[2] or IEC 2 [2]

Connections

MultiMed cables, HemoMed pod, 3 Pod Communication ports, NBP Input, 1 port for Masimo SET SmartPod or Nellcor OxiMax SmartPod[2] or Scio® Four modules or remote keypad or alarm output, analog output, QRS sync output, RS 232, remote display and DirectNet. Infinity Kappa with Advanced Communication adds connections for up to four MIB-compliant devices, Surgical Display Controller and alternate connections for Scio Four modules.

Analog Output

Signals	ECG, arterial blood pressure
Delay	≤25 msec

Infinity Network

Networking method	Wired via DirectNet Wireless via WLAN PC card
Wireless encryption	None, WEP, WPA2[2]

Provides access to the Infinity Central Station, R50N bedside network recorder, laser printer, nurse call system and remote view.

Physical Specifications

Cooling	Fan
Size H x W x D	102 x 368 x 368 mm (4 x 14.5 x 14.5 in)
Weight	8.4 kg (19 lb)

Information Management Capabilities

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

Power consumption	≤70 watts (fully loaded)
Patient leakage current	≤10 µA
Protection class	Internal Class 1 power supply (per IEC 60601-1)
Power requirements	100 to 240 V AC, 3 A
Frequency	50 to 60 Hz
Chassis leakage current	300 µA @ 120 V AC 500 µA @ 240 V AC

CONTINUING TECHNICAL DATA

BATTERY SPECIFICATIONS

Internal battery	Battery type: lithium-ion
	Battery capacity: 180 minutes
Charging time	6.5 hours at 25 ºC

Battery capacity varies with parameter configuration. The battery capacity specified above is under the following load conditions: MultiMed with SpO_2 sensor[4], 2 temperature probes, HemoMed pod with 4 IBP transducers and a catheter, NBP taking measurements every 15 minutes, and no continuous tone being generated. Advanced Communication Options and medical grade display are not supported during battery operation.

Battery capacity may diminish after extended use.

Environmental Requirements

Temperature range	
Operating	10 to 45 ºC (50 to 113 ºF)
Storage	-15 to 50 ºC (-5 to 122 ºF)
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 60601-1and applicable particular and collateral standards,
IEC 60601-1-2, Electromagnetic compatibility CISPR 11, Class B

ORDERING INFORMATION

Monitor Base Unit	OP90090
Monitor Base Unit with factory-installed advanced communication optio	OP90091

Note: The monitor can be ordered in its base configuration or with a factory-installed advanced communication option. The advanced communication option includes four additional user-defined setups, an alternate connector for the Scio Four modules, plus support for a surgical display controller and MIB. The power cable, MultiMed, and all patient connection and intermediate cables must be ordered separately.

Power Cables

Europe, CEE 7, 2.5 m	4321712
North America, 5-15R, 2.25 m	4321720
Switzerland, SEV 1 01 1, 2.25 m	4321613
Great Britain, BS 1363, 3 m	1851713
Australia, New Zealand, AS3112, 3 m	1851705
China, AS 3112, 3 m	1859714
Denmark, 3 m	1851721
Brazil, NBR14136, 3m	1875523

MultiMed Pods and Cables

Multi-parameter Cables to Monitor ECG (3, 5 or 6 lead-wires), impedance respiration, SpO_2* and one temperature (two temperatures with Y-cable)	
MultiMed Plus, 2.5 m	MS20073
MultiMed Plus OR, 2.5 m Includes integrated ESU filter for operating room environments.	MS20074

MT-1126-2007

MultiMed Pod

MT-2185-2003

HemoMed Pod

MT-9018-2006

Recorder

CONTINUING ORDERING INFORMATION

MultiMed 5, 2.5 m	3368391
MultiMed 6, 2.5 m	5191221
NeoMed, 2.5 m	5590539
ECG (3-lead-wires), impedance respiration, two temperatures, SpO_2* and FiO_2.	
MultiMed or NeoMed Pole/Rail Mount	MP00721
MultiMed 12 Pod[5]	5589663
For diagnostic12-lead ECG and SpO_2*	
*SpO_2 measurements are not available from the MultiMed pods and cables if you are using an alternate source of SpO_2	

SpO_2 Pods

Masimo SET SpO_2 SmartPod[5]	MS16901
Nellcor OxiMax SpO_2 SmartPod[2, 5]	MS23997

Software Options

5 Waveform Channel Option	5597211
6 Waveform Channel Option	5597914
6 - 8 Waveform Channel Option	5597922
Physiological Calculations Option[5]	5201996
Arrhythmia II Option (ACE®)	4322967
Wireless Option**	7498087
3-lead ST Analysis Option (not required with 12-lead option)	5201988
ARIES 12-lead ST Analysis Option	5597328
ARIES/Physiological Calcs/Arrhythmia Package	5443910
OR Mode Option	MS17653
**Wireless LAN PC card (MS25009[2]), and access point installation is required for wireless monitoring.	

Optional Modules and Hardware Accessories

Invasive Blood Pressure Adapters	
2 IBP Y-adapter, 10-pin	5731281
2 IBP Y-adapter, 7-pin	5592147

Hemodynamic Pods

HemoMed Pod[5]	5588822
Provides management of up to 4 invasive blood pressures and cardiac output.	
MPod-Quad Hemo[5]	4315961
Provides management of up to 4 invasive blood pressures, cardiac output and two temperatures.	

PiCCO® SmartPod[5] Kit

PiCCO SmartPod Kit	MS16734
PiCCO technology uses quantitative parameters that are determined both intermittently through PULSION's transpulmonary thermodilution technique and continuously through arterial pulse contour analysis.	
Provides management of up to 4 invasive blood pressures.	
PULSIOCATH arterial thermodilution catheters can be procured from Pulsion directly.	

$etCO_2$, Transcutaneous O_2/CO_2 Gas Monitoring

$etCO_2$ Pod (Mainstream/Sidestream)[5]	5740738
$etCO_2$ Microstream® Pod[5]	7870947
$etCO_2$ + Respiratory Mechanics Pod[5]	5740704
$tcpO_2/CO_2$ Pod[5]	5592535
Scio Four Modules[5]	6871810
Scio Four Oxi Plus, Scio Four plus, Scio Four Oxi and Scio Four Modules	

CONTINUING ORDERING INFORMATION

Neurological Monitoring	
EEG Pod[5]	5736744
Trident® (NMT) SmartPod[5]	MS15007
BISx® SmartPod[5]	MS14796
Printing/Recording Options	
R50 Recorder[5]	5952630
R50N Network Recorder[5]	5740068
Infinity Network Laser Printer (115 V)	6556513
Infinity Network Laser Printer (220 V)	6556539
Other Accessories	
Remote Keypad	5203042
Displays	
15“ Flat Panel Display	MS24381
17“ Flat Panel Display	MS24382
19“ Flat Panel Display	MS24383
Display Mounting Kit	MS14583

[2] Requires VF8 software
[3] Certain markets do not offer this algorithm
[4] Only available with Dräger's OxiSure algorithm.
[5] Refer to individual module or pod datasheet for additional information.

90 51 665 | 07.14-3 | Communications & Sales Marketing | PP | LE | Printed in Germany | Chlorine-free – environmentally compatible | Subject to modifications | © 2014 Drägerwerk AG & Co. KGaA

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