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P/N:ENG-uMEC 100/120/150-210285X4P-20230629

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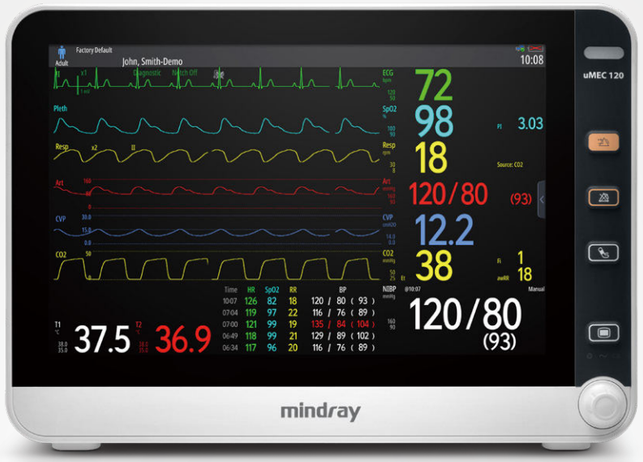
uMEC 100/120/150

Patient Monitor

Optimized uses at your fingertips

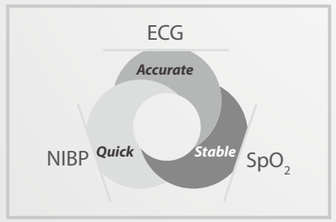
With Mindray's 30-year experience in patient monitoring, uMEC series patient monitors cater to clinical needs by offering precise and stable measurement of essential parameters. When monitoring is reliable, you can naturally be more confident with your clinical decisions.



Note: For uMEC 100/120/150, the models supplied in different regions are different. Consult Mindray sales engineers for details.

Excellent Performance

- Mindray's patented Multi-lead ECG Algorithm
- NIBP quick-measurement technique
- Anti-interference SpO_2 algorithm
- External USB storage supported
- Large capacity for data storage
- Up to 12-hour continuous runtime with one Lithium-ion battery



Essentially advanced measurements

2400 ***hours trends***
5000 ***events***
5000 ***NIBP measurements***
120 ***hours full disclosure***

Huge data capacity

12 ***hours***

Long battery working time

Ease of Use

- Standard touch screen. Easy to use
- Support gestures operations. Including adjust the screen brightness, adjust the alarm volume and switch a screen
- Flat UI design. Improve interaction experience
- Support self-learning. Make it easier for caregivers to use
- Support EWS, GCS and ECG 24h summary clinical assistive applications. Provide comprehensive analytical results for caregivers
- Minimum 3.5kg weight with battery
- Storage space to store accessories, cables etc

Gestures operations

Storage space

Self learning

Reliability

- 0.75 m drop-protection and IPX1 water resistance
- Low power consumption and fanless design
- Robust housing resists aging and yellowing, with high corrosion resistance
- Mindray accessories with quality material and production technique
- Working temperature is 0~40℃, unaffected by extremes

Drop protection

Mindray accessories

uMEC 100/120/150

Patient Monitor

Data Sheet

Physical Specifications

Weight	uMEC 100: 3.5 kg uMEC 120: 4 kg uMEC 150: 5 kg (Standard configuration, standard battery excluding recorder and accessories.)
Size	uMEC 100: 300 x 210 x 165 mm uMEC 120: 350 x 250 x 180 mm uMEC 150: 430 x 300 x 190 mm
Display screen	Color touchscreen uMEC 100: 10.1-inch, 1024 x 600 pixels uMEC 120: 12.1-inch, 1280 x 800 pixels uMEC 150: 15.6-inch, 1366 x 768 pixels
Display channel	uMEC 100: Up to 8 waveform channels uMEC 120: Up to 10 waveform channels uMEC 150: Up to 12 waveform channels
Drop test	0.75m

ECG

Meet standards of IEC 60601-2-27 and IEC 60601-2-25.

Lead set	3-lead: I, II, III 5-lead: I, II, III, aVR, aVL, aVF, V 6-lead: I, II, III, aVR, aVL, aVF, Va, Vb 12-lead: I, II, III, aVR, aVL, aVF, V1 to V6

Automatic 3/5/6/12 - lead recognition.

Input signal range	± 10 mV (p-p)
Electrode offset potential tolerance	± 800 mV
Sweep speed	6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
Gain	x 0.125, x 0.25, x 0.5, x 1, x 2, x 4, Auto
Waveform format	Standard, Cabrera
Bandwidth	Diagnostic mode: 0.05 to 150 Hz Monitor mode: 0.5 to 40 Hz Surgical mode: 1 to 20 Hz ST mode: 0.05 to 40 Hz Emphasis mode: 2 to 18 Hz Customise mode: available Highpass frequencies (0.01Hz, 0.05Hz, 0.15Hz, 0.25Hz, 0.32Hz, 0.5Hz, 0.67Hz); available Lowpass frequencies (25Hz, 35Hz, 45Hz, 75Hz, 100Hz, 150Hz)
CMRR	Diagnostic mode: >90 dB Monitor, Surgical, ST, Emphasis mode: >105 dB Customise mode: >105 dB (Lowpass frequency <40Hz), >90 dB (Lowpass frequency >40Hz)
Pace detection	Amplitude: ± 2 mV to ± 700 mV Width: 0.1 to 2 ms Rise time: 10 to 100 µs
Defib. protection	Withstand 5000V (360J) defibrillation
Baseline recovery time	<5 s
Multi-lead(2) algorithm	Yes

Provides Glasgow resting 12-lead ECG algorithm

Heart Rate

HR rang	Adult: 10 to 300 bpm Pediatric/Neonate: 10 to 350 bpm
HR accuracy	± 1 bpm or ± 1%, whichever is greater.
HR resolution	1 bpm

Arrhythmia Analysis

Intended use for adult, pediatric and neonate.

Multi-lead, 27 classifications. Asystole, V-Fib/V-Tach, V-Tach, Vent Brady, Extreme Tachy, Extreme Brady, Vent Rhythm, PVCs/min, Pauses/min, Couplet, Bigeminy, Trigeminy, R on T, Run PVCs, PVC, Tachy, Brady, Missed Beats, PNP, PNC, Multiform PVC, Nonsus V-Tach, Pause, Irregular Rhythm, A-Fib (for adult only), SVT, SVCs/min.

ST Segment Analysis

Intended use for adult, pediatric and neonate.

ST range	- 2.5 to + 2.5 mV RTI
ST accuracy	± 0.02 mV or ± 10%, whichever is greater (- 0.8 to + 0.8 mV)
ST resolution	0.01 mV

QT Analysis

Intended use for adult, pediatric, and neonate.

Parameters	QT, QTc, ΔQTc
QTc formula	Bazett, Fridericia, Framingham, or Hodges
QT/QTc range	200 to 800 ms
QT accuracy	± 30 ms
QT resolution	4 ms
QTc resolution	1 ms
QT-HR range	Adult: 15 to 150 bpm Pediatric/Neonate: 15 to 180 bpm

Respiration

Lead	I, II and Auto
RR range	0 to 200 rpm (RR source is CO_2 or ECG) 4 to 70 rpm (RR source is SpO_2)
RR accuracy	when RR source is CO_2 or ECG: ± 1 rpm (0 to 120 rpm) ± 2 rpm (121 to 200 rpm) when RR source is SpO_2: Arms ≤3rpm, mean deviation: [-1,1]rpm
RR resolution	1 rpm
Sweep speed	3 mm/s, 6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
Apnea time	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s

SpO_2

Meet standards of ISO 80601-2-61.

Module	Mindray
Range	0 to 100 %
Resolution	1%
Accuracy	± 2% (70 to 100%, Adult/Pediatric:) ± 3% (70 to 100%, Neonate) Unspecified (0 to 69%)
Refreshing rate	≤2 s
Perfusion index (PI)	Yes
Pitch tone	Yes

PR

PR range	20 to 300 bpm (from SpO_2) 20 to 350 bpm (from IBP, available for uMEC 120 and uMEC 150 only) 30 to 300 bpm (from NIBP)
PR accuracy	± 3 bpm (20 to 300 bpm, from SpO_2) ±1 bpm or ±1 %, whichever is greater (from IBP, available for uMEC 120 and uMEC 150 only) ± 3 bpm or ±3 %, whichever is greater (from NIBP)
Refreshing rate	≤ 2 s

Temperature

Meet standard of ISO 80601-2-56.

Technique	Thermal resistance
Channels	1 or 2 channels (for uMEC 120 & uMEC 150 only)
Temp range	0 to 50 °C (32 to 122 °F)
Temp accuracy	± 0.1 °C or ± 0.2 °F (without probe)
Temp resolution	0.1 °C
Refreshing rate	≤ 2 s

NIBP

Meet standards of ISO 80601-2-30.

Technique	Oscillometry
Operation mode	Manual, Auto, STAT, Sequence, Clock
Parameters	Systolic, Diastolic, Mean
Max measurement time	Adult/Pediatric: 120 s, Neonate: 90 s
Systolic range	Adult: 25 to 290 mmHg Pediatric: 25 to 240 mmHg Neonate: 25 to 140 mmHg
Diastolic range	Adult: 10 to 250 mmHg Pediatric: 10 to 220 mmHg Neonate: 10 to 115 mmHg
Mean range	Adult: 15 to 260 mmHg Pediatric: 15 to 225 mmHg Neonate: 15 to 125 mmHg
NIBP accuracy	Max mean error: ± 5 mmHg Max standard deviation: 8 mmHg
NIBP resolution	1 mmHg
Assisting venous puncture	Yes

IBP (for uMEC 120 & uMEC 150 only)

Meet standard of IEC 60601-2-34.

Channels	2 channels
Sensitivity	5 μV/V/mmHg
Impedance range	300 to 3000 Ω
IBP range	-50 to 360 mmHg
IBP accuracy	±1 mmHg or ±2 %, whichever is greater (without sensor)
IBP resolution	1 mmHg
PPV range	0 to 50 %
PAWP	Yes
ICP measurement	Yes

Support waveforms overlapping.

C.O. (for uMEC 120 & uMEC 150 only)

Technique	Thermodilution
C.O. range	0.1 to 20 L/min
C.O. accuracy	±0.1 L/min or ±5%, whichever is greater
C.O. resolution	0.1 L/min
TB range	23 to 43 °C
TI range	0 to 27 °C
TB & TI accuracy	± 0.1 °C (without sensor)
TB & TI resolution	0.1 °C

Artema Sidestream CO_2 (for uMEC 120 & uMEC 150 only)

Meet standard of ISO 80601-2-55.

CO_2 sample flow rate

120 ml/min (DRYLINE II ™ watertrap for adult/pediatric)

90/70 ml/min (DRYLINE II ™ watertrap for neonate)

CO_2 sample flow rate accuracy	±15 ml/min or ±15 %, whichever is greater.
CO_2 response time	≤ 5.0 s @ 120ml/min (for adult/pediatric) ≤ 4.5 s @ 90 ml/min (for neonate) ≤ 5.0 s @ 70 ml/min (for neonate)
CO_2 range	0-150 mmHg
CO_2 accuracy	Full accuracy mode: 0 - 40 mmHg: ± 2 mmHg 41 - 76 mmHg: ± 5% of reading 77 - 150 mmHg: ± 10% of reading ISO accuracy mode: Add ± 2 mmHg to the full accuracy mode
CO_2 resolution	1 mmHg
awRR range	0 to 150 rpm
awRR accuracy	± 1 rpm (0 to 60 rpm) ± 2 rpm (61 to 150 rpm)
Apnea time	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s

Oridion Microstream CO_2 (for uMEC 120 & uMEC 150 only)

Meet standard of ISO 80601-2-55.

Sample flow rate	$50^{+15}{}_{-7.5}$ ml/min
Initialization time	30 s (typical)
Response time	4.6 s (typical)
CO_2 range	0 to 99 mmHg
CO_2 accuracy	±2 mmHg (0 to 38 mmHg) ±5 % of the reading (8% increased in error for every 1 mmHg if the reading is more than 38 mmHg) (39 to 99 mmHg)
awRR range	0 to 150 rpm
awRR accuracy	±1 rpm (0 to 70 rpm) ±2 rpm (71 to 120 rpm) ±3 rpm (121 to 150 rpm)
Apnea time	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s

Mindray Mainstream CO_2 (for uMEC 120 & uMEC 150 only)

Meet standard of ISO 80601-2-55.

Rise time	< 60 ms
CO_2 range	0 to 150 mmHg
CO_2 accuracy	±2 mmHg (0 to 40 mmHg) ±5% of the reading (41 to 70 mmHg) ±8% of the reading (71 to 100 mmHg) ±10% of the reading (101 to 150 mmHg)
awRR range	0 to 150 rpm
awRR accuracy	±1 rpm
Apnea time	10 s, 15 s, 20 s, 25 s, 30 s, 35 s, 40 s

Data Review

For internal card	
Trends data	Up to 4 hours @ 5 s Up to 120 hours @ 1min Up to 1200 hours @ 10 min
Events	Up to 1000 events, including parameter alarms, arrhythmia events technical alarms, and so on. 128 arrhythmia events
NIBP	Up to 1600 sets
For external card	
Trends data	Up to 240 hours @ 1min Up to 2400 hours @ 10 min
Events	Up to 5000 events, including parameter alarms, arrhythmia events technical alarms, and so on. 128 arrhythmia events
NIBP	Up to 5000 sets
For internal & external card	
OxyCRG	Up to 24 hours of OxyCRG events
ST review	Up to 120 hours, one group of ST segment waveforms is stored every 5 min.
Full disclosure	Up to 120 hours for one waveform. The specific storage time depends on the waveforms stored and the number of stored waveforms.

Alarms

Audible indicator	Yes, 3 different alarm tones
Visible indicator	Red/yellow LED, and alarm message display

Provide AlarmSight infographic alarm indicator.

Special Functions

Clinical Assistive Application (CAA): ST Graphic ™, EWS, GCS, 24h ECG summary, NIBP analysis

Calculations (Drug, Hemodynamic, Oxygenation, Ventilation, Renal), and Titration table.

Wi-Fi Communications

Protocol	IEEE 802.11a/b/g/n/ac
Modulation mode	BPSK, QPSK, 16QAM, 64QAM, 256QAM
Operating frequency	2.412 to 2.472 GHz 5.18 to 5.32 GHz 5.5 to 5.7 GHz 5.745 to 5.825 GHz
Wireless baud rate	IEEE 802.11a: 6 to 54 Mbps IEEE 802.11b: 1 to 11 Mbps IEEE 802.11g: 6 to 54 Mbps IEEE 802.11n: MCS0-MCS7 IEEE 802.11ac: MCS0-MCS8
Output power	< 20dBm (CE requirement: detection Mode: RMS) < 30dBm (FCC requirement: detection Mode: peak power)
Operating mode	As station, access AP for data transmission
Data security	Standards: WPA-PSK, WPA2-PSK, WPA-Enterprise, WPA2-Enterprise EAP method: EAP-FAST. EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, PEAP-TLS, LEAP Encryption: TKIP and AES

Interfacing

Main unit	AC power connector (1) VGA port (1) Network connector (1), RJ45 USB 2.0 connector (2) Equipotential grounding terminal (1) Analog output / defibrillator Synchronization / nurse call (1)
Barcode scanner	Support 1D and 2D barcode
Thermal recorder	3 traces (paper 50 mm width, 20 m length)
Network printer	Support

Power

Line voltage	100 to 240 VAC (±10 %)
Maximum current	2.0A
Frequency	50/60 Hz
Battery	Rechargeable lithium-ion battery, 2600mAh/5200mAh uMEC 100≥6 hours run time (2600mAh) uMEC 100≥12 hours run time (5200mAh) uMEC 120≥4.5 hours run time (2600mAh) uMEC 120≥10 hours run time (5200mAh) uMEC 150≥4 hours run time (2600mAh) uMEC 150≥9 hours run time (5200mAh)
Recharge time	3.5 hours to 90% (2600mAh, power off) 7 hours to 90% (5200mAh, power off)

Environmental requirements

Temperature	Operating: 0 to 40 °C Storage: -20 to 60 °C
Humidity	Operating: 15 to 95 % (noncondensing) Storage: 10 to 95 % (noncondensing)
Barometric	Operating: 427.5 to 805.5 mmHg (57 to 107.4 kPa) Storage: 120 to 805.5 mmHg (16 to 107.4 kPa)

Not all of the functions are available in all geographies. Please contact your local Mindray sales representative for the most current information.

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uMEC 60/uMEC 70/uMEC 80/uMEC 100/ uMEC 120/uMEC 150

Patient Monitor

Operator’s Manual

CE 0123

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Release time: 2023-07

Revision: 2.0

CAUTION

- **During the cleaning procedure, disable the touch operation by switching off the monitor or locking the touchscreen.**
- **Any contact of cleaners or disinfectants with connectors or metal parts may cause corrosion.**

25.4 Disinfecting the Monitor

Disinfect the equipment as required in your hospital's servicing schedule. Cleaning the equipment before disinfecting is recommended. Always dilute and use disinfectants according to the manufacturer's instructions. The following table lists approved disinfectants:

Product Name	Product Type	Manufacturer
PDI Super Sani-Cloth® Germicidal Disposable Wipe	Wipes	PDI Inc.
Ethanol, 70%	Liquid	/
Isopropanol, 70%	Liquid	/
Sodium hypochlorite bleach, 0.5%	Liquid	/
Hydrogen peroxide, 3%	Liquid	/
Rely+On™ Virkon® High Level surface Disinfectant, 1%	Powder	Antec International Ltd
1-Propanol, 50%	Liquid	/

25.5 Cleaning and Disinfecting the Accessories

To clean and disinfect the following accessories, using cleansers, disinfectants, and methods described in this manual:

- NIBP air hose
- SpO_2 cable

For other accessories, you should consult the instructions delivered with the accessories.

CAUTION

- **Fluids entering the NIBP air hose can damage the equipment. When cleaning or disinfecting the NIBP air hose, prevent liquid from entering the hose.**
- **Periodically inspect the NIBP air hose and connector for signs of wear or deterioration after cleaning or disinfecting the NIBP air hose. Replace the NIBP air hose if you detect a leak. Dispose of damaged NIBP air hose according to local laws for disposal of hospital waste.**
- **Never immerse or soak the accessories in any liquid.**
- **Never clean or disinfect the connectors and metal parts.**
- **Use only Mindray approved cleaners and disinfectants and methods listed in this section to clean or disinfect the accessories. Warranty does not cover damage caused by unapproved substances or methods.**
- **To avoid long term damage, the accessories should be disinfected only when necessary as determined by your hospital's policy.**

25.5.1 Cleaning the Accessories

You should clean the accessories on a regular basis. Before cleaning the accessories, consult your hospital's regulations for cleaning the accessories.

To clean the accessories, follow this procedure:

1. Clean the accessories with a soft cloth moistened with water or ethanol (70%).

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Accessories and Consumables

CATALOGUE 2022.07

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P/N:ENG-Accessories and Consumables Catalogue-210210X142P-20220728

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Rolling stands

Picture	Model	Part No.	No. Description	Purchasing Unit
		045-003133-00	Roll Stand A (≤ 23kg, fixed-angle) (for N22/N19)	Each
		045-000915-00	Roll Stand B (≤15kg, fixed-angle, with two baskets) + Adapter (for N17/N15/ePM15/ePM15M)	Each
		045-003255-00	Roll Stand C (≤6kg, fixed-angle, with two brakets and barrel fix mounting) + Quick lock (for N12, ePM under 12" inch screen)	Each
		045-000924-00	Roll stand (for N12, ePM and uMEC under 12" inch screen)	Each

Picture	Model	Part No.	No. Description	Purchasing Unit
		045-003053-00	Basic rolling stand (for ePM under 12" inch screen and uMEC series in ROW market)	Each
		045-003052-00	VS series basic rolling stand (ONLY for ROW market)	Each
		045-004267-00	Rolling Stand (Standard) + commen Quick lock (compact with all existing models under 12" inch screen and VS)	Each
		045-004268-00	VS 8/9 Rolling Stand (Advanced) + commen Quick lock	Each
		045-004269-00	VS 8/9 Rolling Stand (Advanced, with extended battery capacity) + commen Quick lock (the extended battery 115-034132-00 need to be purchased separately)	Each