





Manufacturer	Masimo		Kingst	Zug
Model	EMMA™ Capnometer	EMMA™ Capnograph	Capno-T	RICAP®
Mainstream Capnograph				
Certification	CE, 93/42/EEC medical devices instruments; FDA 510(k); UL/CSA 60601-1.		not	CE, CFDA
Standard Compliance	MDD 93/42/EEC EN 60601:1990, Amendment 1 (1991), Amendment 2 (1995), type BF(general) EN 60601-1-2:2001 EN 60601-1-8:2004 EN ISO 21647:2004(respiration gas) EN ISO 5356-1:2004 IEC 60529: 1989 class IP33(proof) EN 1789:2007(transportation)		/	MDD 93/42/EEC EN 60601:1990, Amendment 1 (1991), Amendment 2 (1995), type BF EN 60601-1-2:2001 EN 60601-1-8:2004 EN ISO 21647:2004 EN ISO 5356-1:2004 IEC 60529: 1989 class IP33 EN 1789:2007
Measurement parameters				
ETCO2 concentration	✓	✓	✓	✓
InsCO2 concentration	x	x	x	x
Respiration rate	✓	✓	✓	✓
Patient and application range				
Adult	✓	✓	✓	✓
Children	✓	✓	?	✓
Neonate	✓	✓	?	✓
OR	✓	✓	?	✓
ICU	✓	✓	?	✓
Patient room	✓	✓	?	✓
Emergency transfer	✓	✓	?	✓
Emergency	✓	✓	?	✓
Army	✓	✓	?	✓
Button and button type				
Button quantity	2	2	3	4
Power on/off button	✓	✓	✓	1 button
Silence button	✓	✓	✓	1 button
Up button	Up and silence button are the same	Up and silence button are the same	✓	1 button
Down button	Down and Power on/off button are the same	Down and Power on/off button are the same	✓	1 button
Replay button	x	x	Replay and Power on/off button are the same	x
Other button	x	x	/	x
Touch button	x	x	✓	x
Physic button	✓	✓	x	✓
Touch + Physic button	x	x	✓	x
Screen and content				
Screen	LED	LCD, color screen	TFT LCD, color screen	OLED, High resolution, color screen
ETCO2 result	✓	✓	✓	✓
RR result	✓	✓	✓	✓
ETCO2 unit mmHg	Silk screen, model 1	Model 1	✓	✓
ETCO2 unit kPa	Silk screen, model 2	Model 2	x	✓
ETCO2 mmHg result range	0-99	0-99	/	0-99
ETCO2 kPa result range	0.0-9.9	0.0-9.9	/	0.0-9.9
RR bpm result range	0-199	0-199	/	0-199
RR unit	Silk screen	✓	x	✓
ETCO2 mark	Silk screen	✓	✓	✓
RR mark	Silk screen	✓	✓	✓
Capnography	x	✓	✓	✓
ETCO2 concentration scaleplate	x	x	✓	x
Saturation indicating line of ETCO2 concentration	x	If the CO2 level reaches or exceeds 53 mmHg/7 kPa, a horizontal dashed line will be displayed to indicate that the capnogram is saturated.	x	x
ETCO2 bar graph	LED	x	x	x
Battery mark	LED	✓	✓	✓
Patient ID number	x	x	✓	x
Alarm mark	LED	✓	✓	✓
Bluetooth mark	x	x	x	✓
Function				
Power on	Button power on		Button power on	Button power on
Power off	EMMA switches off automatically 15 Sec after that the EMMA Airway Adapter is removed or 2 min after a No Breath condition is detected and the Alarm Silence button is pressed.	EMMA switches off automatically 15 Sec after that the EMMA Airway Adapter is removed or 2 min after a No Breath condition is detected and the Alarm Silence button is pressed.	/	✓
Airway detection	✓	✓	/	Adapter on/off checker, adapter status check
Sound alarm	✓	✓	✓	✓
Alarm silence	✓	✓	✓	✓
Low battery alarm	"1) The LED light flashes, and continues to flash 30 minutes before the battery is exhausted; 2) The buzzer beeps once every 80S. "	"1) The battery indicator flashes, and continues to flash 30 minutes before the battery is exhausted; 2) The buzzer beeps once every 80S. "	/	"Low Bat" displayed

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CO2 concentration alarm line setting	"1) Long press the mute button to enter the CO2 high limit setting; 2) Long press the switch button to enter the CO2 low limit setting. "	"1) Long press the mute button to enter the CO2 high limit setting; 2) Long press the switch button to enter the CO2 low limit setting. "	/	Via settings menu
RR alarm line setting	x	x	/	Via settings menu
CO2 concentration alarm	✓	✓	/	Visual and audible
No breath/apnea alarm	✓	✓	/	Visual and audible
Screen brightness automatic adjustment	x	1) Purpose: save electricity; 2) When the device is stable, trigger the brightness adjustment function; 3) Important parameter changes, alarms or keystrokes will restore the trigger brightness to the default brightness.	/	Via settings menu
Calibration	No daily calibration required	No daily calibration required	/	No routine calibration
Zero	Manual zero	Manual zero	/	Manual zero
Basic specification				
Weight	"53g (lithium battery) 60g (alkaline battery)"	"53g (lithium battery) 60g (alkaline battery)"	66g (lithium battery)	80g with battery
Size	52×39×39 mm	52×39×39 mm	51 x 43 x 45 mm	60x47x43 mm
Alkaline battery	2 AAA alkaline batteries	2 AAA alkaline batteries	2x AAA alkline	2x AAA alkline
Lithium battery	2×1.5VDC (IEC Type LR03)	2×1.5VDC (IEC Type LR03)	2×1.5VDC (IEC Type LR03)	2×1.5VDC (IEC Type LR03)
Replaceable battery	✓	✓	x	✓
Rechargeable/Charging time	x	x	Rechargeable/4h	x
Working time of full battery energy	Alkaline battery 8h regular use Lithium battery 12h regular use	Alkaline battery 6h regular use Lithium battery 10h regular use	Alkaline battery 6h regular use Lithium battery 10h regular use (Claimed)	Alkaline battery 4h regular use Lithium battery 7h regular use (Tested)
Data transfer	x	x	/	BLE 4, for data transfer out and firmware update
Data storage/replay	x	x	24h	x
Language	English	English	English	English, French, German, Italian, Spanish, Polish
Shork proof	Can withstand a drop of 1 meter	/	Withstands repeated 1 m drops. Meets the shock and vibration requirements for transport of EN ISO 80601-2-55:2011 clause 201.15.3.5.101.2 and EN 1789:2007 clause 6.3.4.2 and 6.4.1.	EN ISO 21647:2004 clause 21.102. 1m drop.
Proof level	IP33 1) Protect 2.5mm diameter and larger solid foreign objects 2) Spraying on the vertical side at any angle not exceeding 60° will not cause harmful effects	IP33 1) Protect 2.5mm diameter and larger solid foreign objects 2) Spraying on the vertical side at any angle not exceeding 60° will not cause harmful effects	/	Waterproof IP33
Performace				
CO2 measurement range	0-99mmHg 0-9.9kPa	0-99mmHg 0-9.9kPa	0-99mmHg 0-9.9kPa	0-99mmHg 0-9.9kPa 0-9.9%
RR measurement range	3-150bpm	3-150bpm	3 - 150 BPM	2-150bpm
CO2 measurement accuracy	0-40mmHg ±2mmHg 41-99mmHg 6% of reading 0-5.3kPa ±0.3kPa 5.4-9.9kPa 6% of reading	0-40mmHg ±2mmHg 41-99mmHg 6% of reading 0-5.3kPa ±0.3kPa 5.4-9.9kPa 6% of reading	0-40mmHg ±2mmHg 41-99mmHg 6% of reading 0-5.3kPa ±0.3kPa 5.4-9.9kPa 6% of reading	0 ~ 99mmHg ± (0.2% + 2% of reading)
RR measurement accuracy	±1bpm	±1bpm	±1bpm	±1bpm
Warm time	0s	0s	15s	0s
Full accuracy time	15s	15s	15s	5s
Enviroment				
Operating temperature	-5~50°C	-5~50°C	5~40°C	0~40°C
Storage temperature	-30~70°C	-30~70°C	/	-30~70°C
Humidity	10-95%, non condensing	10-95%, non condensing	30-75%, non condensing	wider than 10-90%, non condensing
Operating atmospheric pressure	70-120kPa	70-120kPa	86-106kPa	50-120kPa
Storage atmospheric pressure	50-120 kPa	50-120 kPa	/	40-120kPa
Accessories				
Pouch	10 in a box	10 in a box	/	1
Adult/pediatric airway adapter	25 in a box	25 in a box	/	1
Neonate airway adapter	10 in a box	10 in a box	/	1
Lanyard	A bag of 10	A bag of 10	/	1