



# DATA SHEET



## Model: ESM-10S/ESM-12S

# Compact Patient Monitor

### Size and Weight

Size	ESM-12S	175mm X 320mm X 262mm
	ESM-10S	168mm X 288mm X 236mm
Weight	< 4kg	

### Power

Standard According to	IEC 60601-1 and IEC 60601-1-2	
Input voltage	AC (100-240) V(±10%)	
Frequency	50Hz/60Hz	
Input power	100VA	

### Display

Type	Color TFT LCD	
Size(diagonal)	12.1" / 10.4" ESM-12S/ESM-10S	
Resolution	800×600 pixels	

### Recorder(Optional)

Type	Thermal dot array	
Paper width	50 mm ±1mm	
Recording speed	12.5 mm/s, 25 mm/s, 50 mm/s	
Recording waveform	Maximum 3 tracks	

### Battery

Type	Rechargeable Li-ion battery 11.1V 2.5Ah / 5.0Ah	
Operating time	>240 / 480 minutes (2.5Ah / 5.0Ah)	
(1 new and fully charged battery at 25°C temperature, connecting SpO2 sensor & NIBP work on AUTO mode for 30 minutes interval)		
Charge time	<6 / 12 hours(2.5Ah / 5.0Ah)	

### Data Storage

Alarm event	3000 groups and associated waveform	
Trend	180h, minimum resolution is 1min 6h, minimum resolution is 5s	
ARR event	3000 groups and associated waveform	
NIBP	2400 groups	
Holographic waveform	72 hours	

### Interfacing & I/O devices

Keyboard & Mouse	Support	
Barcode Scanner	Support 1D barcode (USB connector)	
Wired network	1 standard RJ45 interfaces	
Wifi (option)	Protocol: IEEE802.11a/b/g/n	
Wifi frequency	Dual Band: 2.4G/5G	
USB socket	2 sockets	
Video output	1 VGA (option)	
Multifunctional port	nurse call / defibrillation sync. / analog output	

### ECG

Lead	3 lead: I, II, III	
	5 lead: I, II, III, aVR, aVL, aVF, Vx	
	6-lead: I, II, III, aVR, aVL, aVF, Va, Vb	
	12-lead: I, II, III, aVR, aVL, aVF, V1~V6 (S12 option)	
	Auto: identify leads automatically	

CMRR	Monitor / Operation mode ≥ 110 dB Diagnostic mode ≥ 100 dB	
Bandwidth (-3dB)	Monitor mode: 0.5 Hz to 40 Hz Operation mode: 1 Hz to 25Hz	
Input impedance	≥ 5.0 MΩ	
Input signal range	-10.0mV~+10.0mV	
Electrode offset potential	± 500 Mv d.c.	
System noise	≤ 30 μVpp (RTI)	
Recovery time after defibrillation:	waveform recover to baseline in 10s	
Sweep speed	6.25mm/s, 12.5 mm/s, 25 mm/s, 50mm/s.	

### ST segment

Measurement range	-2.0 mV to +2.0 mV	
Accuracy	-0.8 mV to +0.8 mV: ±0.02 mV or ±10% (whichever is greater)	
Resolution	0.01mV	

### Heart Rate

Measurement range	Adult	10 bpm to 300 bpm
	Pediatric & Neonatal	10 bpm to 350 bpm
Resolution	1 bpm	
Accuracy	±1% or ±1 bpm, whichever is greater	

### Arrhythmia analysis

27 Kinds (ASYSTOLE, BRADYCARDIA, TACHYCARDIA, EXTREME BRADYCARDIA, EXTREME TACHYCARDIA, VENTRICULAR BRADYCARDIA, VENTRICULAR TACHYCARDIA, NONSUSTAINED VENTRICULAR TACHYCARDIA, VENTRICULAR FIBRILATION, ATRIAL FIBRILATION, ATRIAL FIBRILATION END, R ON T, VENTRICULAR RHYTHM, PNC, PNP, PAUSE, PVC, PAUSES/MIN HIGH, RUNNING PVCs, COUPLET, BIGEMINY, TRIGEMINY, FREQUENT PVCs, MISSED BEAT, ECG NOISE, IRREGULAR RHYTHM, IRREGULAR RHYTHM END)

### Respiration

Lead	Selected from: I (RA-LA) or II (RA-LL)	
Measurement range	0 rpm to 150 rpm	
Resolution	1 rpm	
Accuracy	±2 rpm or ±2% , whichever is the greater	
Delay of apnea alarm	Adjustable delay time: 10s ~ 60s	

### QT analysis

Measurement range	QT: 200ms~700ms QTc: 200ms~700ms ΔQTc: -500ms~500ms QT-HR: Adult: 15bpm~150bpm Pediatric/neonatal:15bpm~180bpm	
Resolution	QT, QTc, ΔQTc: 1ms QT-HR: 1bpm	
Accuracy	QT: ±30ms	

### NIBP

Measurement way	Automatic oscillometry	
Measurement mode	Manual , Auto, STAT	
Intervals for Auto measurement: 1/2/2.5/3/5/10/15/20/30min, 1/1.5/2/4/8h		
STAT mode cycle time 5 minutes.		
Systolic range	Adult	30 to 270 mmHg
	Pediatric	30 to 235 mmHg
	Neonatal	30 to 135 mmHg
Diastolic range	Adult	10 to 220 mmHg
	Pediatric	10 to 220 mmHg
	Neonatal	10 to 110 mmHg
Mean range	Adult	20 to 235 mmHg

	Pediatric	20 to 235 mmHg
	Neonatal	20 to 125 mmHg
Pressure accuracy	Static:	±3 mmHg
	Clinic:	mean error ±5 mmHg
	Standard deviation:	≤8 mmHg
	Inflation time for cuff	Less than 40s. (standard adult cuff)
Cuff pressure range	0 to 300 mmHg	
PR range	40 bpm to 240 bpm	
Measurement time	20s to 45s (typical value)	
Lead standard	AHA, IEC	
Gain	Auto, 2.5 mm/Mv (×0.25), 5 mm/mV (×0.5),	
	10 mm/mV (×1), 20 mm/mV (×2), 40 mm/mV (×4)	

### SpO2

Measurement range	0% ~ 100%
Accuracy(clinical)	70% ~ 100% ≤3% (SpO2 probe included)
	0% ~ 69% unspecified

### PR

Measurement range	25 bpm to 300 bpm
Resolution	1bpm
Accuracy	± 3bpm

### PI

Measurement range	0.05~20.00%
Resolution	0.01%
Accuracy	±0.1% or ±10% of reading, whichever is greater

### RESP (from pleth)

Measurement range	0 rpm ~90 rpm
Resolution	1 rpm
Accuracy	± 2rpm

### Temperature(Dual-Temp ESM-12S only)

Parameter	T1,T2,TD
Probe	YSI400 series probe (2252Ω @25°C)
Measurement range	0.0°C to 50.0°C(32°F to 122°F)
Accuracy	±0.1°C or ±1°F (exclusive of probe)
Resolution	0.1°C or 1°F
Unit	°C or °F

### IBP (Option for ESM-12S only)

Sensitivity of transducer	5uV/V/ mmHg, ±2%
Impedance of transducer	300Ω to 3000Ω
Measurement range	-50 mmHg to +360 mmHg
Measurement accuracy	±2 mmHg or ±2% of the reading, whichever is the greater (exclusive of transducer)
Resolution	1 mmHg
Unit	mmHg, kPa, cmH2O
Transducer sites	ART/CVP/ICP/PA/Ao/UAP/BAP/FAP//LAP/RAP/UV/P LV/PAWP, additionally, P1 & P2 are arbitrary sites

### PPV

Measurement range	0~50%
Resolution	1.00%

### Standard configuration :

3/5/6 lead ECG, HR, SpO2, PI, RESP(from pleth), NIBP, Temp, Dual-Temp(12S), Capacitive Touch Screen, Rechargeable Li-ion battery (2.5Ah).

### Option:

ESM-10S : Drip monitor(DM), Rechargeable Li-ion battery (5Ah),

ESM-12S : Drip monitor(DM), 12 lead ECG, Voice assistant, Nurse call / Defibrillation sync. /VGA output, Rechargeable Li-ion battery (5Ah). 2-IBP, C.O., Mainstream/Microflow EtCO2.

Others: Thermal Printer, Rolling stand, Wall mount

### PR

Measurement range	30 bpm to 300 bpm
Resolution	1bpm
Accuracy	±1% or ±1bpm whichever is greater

Software overpressure protection	Adult	(297±3) mmHg
	Pediatric	(252±3) mmHg
	Neonatal	(147±3) mmHg

### MicroFlow CO2 (Option for ESM-12S only)

Measurement range	0% to 25% (0 mmHg to 190 mmHg)
Unit	0.1% or 1mmHg
Unit	%, mmHg, kPa
Accuracy	± (0.43% + 8% of reading)
Preheating time	<10s (Report concentration and achieve highest accuracy)
Rise time	<3s (including delay time and rise time)
Sample Flow Rate	50±10mL/min
awRR range	0 rpm to 150 rpm
awRR accuracy	±1 rpm

### Mainstream CO2 (Option for ESM-12S only)

Measurement range	0% to 25% (0 mmHg to 190 mmHg)
Resolution	0.1% or 1mmHg
Preheating time	<10s
Rise time	<90ms
Unit	%, mmHg, kPa
Accuracy	± (0.43% + 8% of reading)
awRR range	0 rpm to 150 rpm
awRR accuracy	±1 rpm

### C.O. (Option for ESM-12S only)

Measurement range	C.O.	0.1 L/min to 20 L/min
	TB	23.00°C ~ 43.00°C
	TI	-1.0°C ~ 27.0°C
Resolution	C.O.	0.1 L/min
	TB	0.01°C
	TI	0.1°C
Accuracy	C.O.	±5% or ±0.1L/min, whichever is greater
	TB	±0.1°C
	TI	±0.1°C

### Drip Monitor (option)

Measurement range	Drip rate 5~200 Drops/min ( 1mL of conventional tube =20 drops )
Accuracy	±2 digit or ±2% (whichever is greater)
Unit	Drops/min, mL/h, can be automatically converted (1mL conventional tube=20 drops is mainly used.)
Liquid stop function	Alarm and stop liquid when infusion is completed. Alarm when drip rate is abnormal.



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