

# iM3s

## Patient Monitor

Version 1.4



### Main Unit Specification

#### Physical Specifications

<b>Dimension</b>	Monitor: (77±1) mm (W) × (150±1) mm (H) × (28±1) mm (D) CS-04 Charger Stand: (165±1) mm (L) × (113±1) mm (W) × (164±1) mm (H) CS-05 Extended Stand: (165±1) mm (L) × (113±1) mm (W) × (164±1) mm (H)
<b>Weight</b>	Monitor: <300g (standard configuration, without battery and accessories) Monitor: <350g (standard configuration, with rechargeable battery, without accessories) Monitor: <370g (standard configuration, with AA battery, without accessories) CS-04 Charger Stand: <900g CS-05 Extended Stand: <2,000g (including recorder, not including TEMP module and accessories)

#### Power Supply

<b>Power Supply</b>	CS-04 Charger Stand: 100 V to 240 V~, 50 Hz/60 Hz CS-05 Extended Stand: 100 V to 240 V~, 50 Hz/60 Hz
<b>Current</b>	CS-04 Charger Stand: 0.5 A-0.25 A CS-05 Extended Stand: 0.5 A-0.3 A

#### Monitor Battery

<b>Battery Type</b>	Rechargeable lithium-ion battery or 3 AA batteries
<b>Capacitance</b>	Lithium-ion battery ≥2700 mAh
<b>Operating Time</b>	Lithium-ion battery ≥12 hrs (Standby) Lithium-ion battery ≥8 hrs (Normal working status) AA battery ≥10 hrs (Standby) AA battery ≥6 hrs (Normal working status)
<b>Fast Charging Time</b>	<4 hrs, when the monitor is off (Lithium-ion battery)
<b>Charging Time</b>	≤14 hrs, the monitor is on or in standby mode (Lithium-ion battery)

#### CS-05 Extended Stand Battery

<b>Battery Type</b>	Rechargeable lithium-ion battery
<b>Capacitance</b>	Lithium-ion battery ≥2400 mAh
<b>Operating Time</b>	≥20 hrs (without external modules used) ≥8 hrs (with external modules used)
<b>Fast Charging Time</b>	<3.5 hrs, in OFF status, not connected with monitor

#### Display

<b>Display screen</b>	5-inch color TFT LCD, capacitive touch screen
<b>Resolution</b>	720×1280

#### Data Storage

<b>Round Mode</b>	Patient information, parameters	Minimum
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	data (SpO <sub>2</sub> , NIBP, TEMP measurement data and custom parameters data), storage time, etc.	20000 sets in internal storage
<b>Spot-checking mode</b>	Minimum 20000 sets of spot-checking data for multiple patients	

#### Wi-Fi

<b>IEEE</b>	802.11a/b/g/n
<b>Bandwidth</b>	2.4 GHz & 5 GHz 20 MHz

#### E-link (Bluetooth)

<b>Radio Technology</b>	BR, EDR, BLE
<b>Frequency Range</b>	2402 MHz ~ 2480 MHz
<b>Modulation</b>	GFSK, π/4-DQPSK, 8-DPSK

#### Interfaces and others

<b>USB Port</b>	2
<b>Built-in Barcode Scanner</b>	Optional

#### NIBP

<b>Method</b>	Oscillometric
<b>Mode</b>	Manual, Continuous, Average
<b>Continuous</b>	5 min, interval is 5 s
<b>Measuring Type</b>	SYS, DIA, MAP, PR
<b>Average measurement</b>	Interval: 1/2/3/4/5 min Times: 3/5
<b>Measuring Range</b>	
Adult Mode	SYS: 25 mmHg to 290 mmHg DIA: 10 mmHg to 250 mmHg MAP: 15 mmHg to 260 mmHg
Pediatric Mode	SYS: 25 mmHg to 240 mmHg DIA: 10 mmHg to 200 mmHg MAP: 15 mmHg to 215 mmHg
Neonatal Mode	SYS: 25 mmHg to 140 mmHg DIA: 10 mmHg to 115 mmHg MAP: 15 mmHg to 125 mmHg

<b>Cuff Pressure</b>	
<b>Measuring Range</b>	0 mmHg to 300 mmHg
<b>Pressure Resolution</b>	1 mmHg
<b>Maximum Mean Error</b>	±5 mmHg
<b>Maximum Standard Deviation</b>	8 mmHg
<b>Maximum Measuring Period</b>	Adult/Pediatric: 120 s Neonatal: 90 s

<b>Typical Measuring Period</b>	30 s to 45 s (depend on HR/motion disturbance)
<b>Overpressure Protection</b>	Adult: 297 mmHg $\pm$ 3 mmHg Pediatric: 245 mmHg $\pm$ 3 mmHg Neonatal: 147 mmHg $\pm$ 3 mmHg
<b>Pre-inflation Pressure</b>	
<b>Adult</b>	Default: 160 mmHg Range: Auto/80/100/120/140/150/160/180/200/220/240 mmHg
<b>Pediatric</b>	Default: 140 mmHg Range: Auto/80/100/120/140/150/160/180/200 mmHg
<b>Neonatal</b>	Default: 100 mmHg Range: Auto/60/70/80/100/120 mmHg

### SpO<sub>2</sub>

<b>Measuring Range</b>	0% to 100%
<b>Resolution</b>	1%
<b>Data update period</b>	1 s
<b>Accuracy</b>	Adult/Pediatric: $\pm$ 2% (70% to 100% SpO <sub>2</sub> ) Undefined (0% to 69% SpO <sub>2</sub> ) Neonatal: $\pm$ 3% (70% to 100% SpO <sub>2</sub> ) Undefined (0% to 69% SpO <sub>2</sub> )

### PI (Perfusion Index)

<b>Measuring Range</b>	0-10
<b>Resolution</b>	1

### PR

<b>PR (SpO<sub>2</sub>)</b>	
<b>Measuring range</b>	25 bpm to 300 bpm
<b>Accuracy</b>	$\pm$ 2 bpm
<b>Resolution</b>	1 bpm
<b>PR (NIBP)</b>	
<b>Measuring range</b>	40 bpm to 240 bpm
<b>Accuracy</b>	$\pm$ 3 bpm or 3.5%, whichever is greater
<b>Resolution</b>	1 bpm

### F3000 Module (Covidien Quick TEMP) TEMP

<b>Measuring range</b>	30°C ~ 43°C
<b>Prediction measurement range</b>	35°C ~ 43°C
<b>Cold mode prediction measurement range</b>	33°C ~ 43°C
<b>Sensor type</b>	Oral / Axillary / Rectal
<b>Resolution</b>	0.1°C
<b>Accuracy</b>	Monitoring Mode and Predictive Mode: $\pm$ 0.1°C Quick Predictive Mode: $\pm$ 0.3°C
<b>Typical measurement time</b>	Oral (Quick Predictive Mode): (3 ~ 5) s (non-fever temps); (8 ~ 10) s (fever temps) Oral (Predictive Mode): (6 ~ 10) s Axillary: (8 ~ 12) s Rectal: (10 ~ 14) s Monitoring Mode (all sites): (60 ~ 120) s
<b>Measuring Mode</b>	Direct Mode /Adjusted Mode

### TAT-5000S Module (Exergen Infrared TEMP)

<b>Measuring range</b>	61 °F to 110 °F (16 °C to 43 °C)
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<b>Resolution</b>	(16 °C rounded up from 15.5 °C) 0.1 °C or 0.1 °F
<b>Arterial heat balance Range for Body Temperature</b>	94 °F to 110 °F (34.5 °C to 43 °C)
<b>Clinical Accuracy</b>	$\pm$ 0.2 °F or 0.1 °C Per ASTM E1112
<b>Response time</b>	~0.04 seconds

### T100A (Edan Infrared Forehead TEMP) TEMP

<b>Measuring range</b>	34°C ~ 43°C (93.2 ° F~109.4 ° F)
<b>Accuracy</b>	34.0°C~ 34.9°C: $\pm$ 0.3°C 35.0°C~ 42.0°C: $\pm$ 0.2°C 42.1°C~ 43.0°C: $\pm$ 0.3°C 33°C ~ 43°C
<b>Measuring site</b>	Forehead
<b>Resolution</b>	0.1°C(0.1 ° F)
<b>Response time</b>	<2 s

### Safety Specifications

<b>Compliant with Standards</b>	IEC 60601-1: 2005+A1: 2012; IEC 60601-1-2: 2014; EN 60601-1: 2006+A1: 2013; EN 60601-1-2: 2015; EN 80601-2-30: 2010+A1: 2015; EN ISO 80601-2-56: 2017+A1:2018; EN ISO 80601-2-61: 2017
<b>Anti-electroshock Type</b>	Class I equipment and internal powered equipment
<b>Anti-electroshock Degree</b>	SpO <sub>2</sub> , NIBP: CF F3000 TEMP: BF
<b>Ingress Protection</b>	Monitor IPX44 CS-04 Charger Stand: IPX1 CS-05 Extended Stand: IPX1

### Environmental Specifications

<b>Temperature</b>	Working: +0°C to +40°C (32°F ~ 104°F) With TEMP: +10°C ~ +40°C (50°F ~ 104°F) Transport and Storage: -20°C to +55°C (-4°F ~ 131°F)
<b>Humidity</b>	Working: 15%RH to 95%RH (non-condensing) Transport and Storage: 15%RH to 95%RH (non-condensing)
<b>Altitude</b>	Working: 86 kPa to 106 kPa Transport and Storage: 70 kPa to 106 kPa