

# Introduction

The monitor is applicable for clinical monitoring in operating room, postoperative observation room, ICU/CCU ward, emergency room, etc. of adult, pediatric and neonate. The patient's vital parameters (ECG (including ST-segment measurement and arrhythmia analysis), RESP, SpO<sub>2</sub>, P<sub>R</sub>, NIBP, TEMP, IBP and CO<sub>2</sub>, etc.) can be monitored. Monitored information can be displayed, reviewed, printed and stored..

## Function

- 1) 17.3" high-definition touch screen design, easy and convenient to operate, elegant and concise in appearance.
- 2) Independent physiological and technical alarm function, convenient for medical staff to quickly know patient's condition.
- 3) Modular design: the modules can be configured and combined flexibly and conveniently, expanded and upgraded at any time, meets the monitoring requirements of different departments on different parameters.
- 4) Support dynamic hot-plugging parameter module: no need to restart the device, plug-and-play, change the monitoring parameters at any time as clinical requirements.
- 5) Adopt high-performance processor, stable, reliable and fast to process information.
- 6) Patient information can be rapidly entered, patient type (adult / neonate / pediatric) can be quickly switched, meets the requirements of different departments.
- 7) Abundant analysis functions: 23 arrhythmia, full-lead ST-segment and pacing analysis; multiple calculation functions (such as calculation of drug concentration, titration table, hemodynamics, ventilation, oxygenation, renal function, etc.).
- 8) With the functions of waveform freezing, holographic waveform storage and review.
- 9) Automatic data storage in case of power failure; achieves large-capacity data storage.
- 10) With HDMI expansion interface, the display screen can be connected according to clinical requirements.
- 11) Built-in large-capacity detachable lithium battery, ensures uninterrupted monitoring.
- 12) Fanless design, ensures no noise and low power consumption during working.
- 13) 3-channel built-in recorder used to print real-time waveform is optional.
- 14) Connect to Central Monitoring System developed by our company by WiFi / Wired, convenient to transmit patient's real-time data.
- 15) Standby mode, be applied to ICU, avoids affecting patient's rest, one-button switching, reduces the workload of medical staff.

## Performance

- (1) ECG

☐ Lead type:

3-lead: I, II, III

5-lead: I, II, III, aVR, aVL, aVF, V

12-lead: I, II, III, aVR, aVL, aVF, V1,V2,V3,V4,V5,V6

☐ Gain: 2.5 mm/mV, 5.0 mm/mV, 10 mm/mV, 20 mm/mV, 40 mm/mV

☐ Scan speed: 6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s

☐ HR

Measurement and alarm range:

Adult: 15 ~ 300 bpm

Pediatric/neonate: 15 ~ 350 bpm

Resolution: 1 bpm

Accuracy:  $\pm 1\%$  or  $\pm 1$  bpm, whichever is greater

☐ ST-segment detection

Measurement and alarm range: - 2.0 mV ~ + 2.0 mV

Accuracy: - 0.8 mV ~ + 0.8 mV:  $\pm 0.04$  mV or  $\pm 10\%$ , whichever is greater

Other range: unspecified

☐ Arrhythmia analysis: 23 kinds

☐ Pacemaker: yes

## (2) RESP

☐ Measurement mode: R-F (RA-LL) impedance

☐ Respiration rate:

Measurement range: 0 rpm ~ 150 rpm

Resolution: 1 rpm

Accuracy: 7 ~ 150 rpm,  $\pm 2$  rpm or  $\pm 2\%$ , whichever is greater;

0 ~ 6 rpm, unspecified

☐ Apnea delay: 10 ~ 60s, not alarm

☐ Scan speed: 6.25 mm/s, 12.5 mm/s, 25 mm/s, 50mm/s

## (3) NIBP

☐ Measurement mode: Oscillometry

☐ Working mode: Manual/AUTO/Continuous/ Sequential

☐ Measurement interval in AUTO mode: 1 min, 2 min, 2.5 min, 3 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 h, 1.5 h, 2 h, 3 h, 4 h, 8 h

☐ Measurement period in Continuous mode: 5 minutes

☐ Measurement and alarm range: 0~300mmHg

☐ Resolution: 1 mmHg

☐ Cuff pressure accuracy:  $\pm 3$  mmHg

☐ Measurement accuracy:

Maximal mean deviation:  $\pm 5$  mmHg

Maximal standard deviation: 8 mmHg

☐ Over-pressure protection:

Adult mode:  $297 \pm 3$  mmHg

Pediatric mode:  $260 \text{ mmHg} \pm 3 \text{ mmHg}$

Neonatal mode:  $147 \pm 3$  mmHg

#### (4) CONTEC SpO<sub>2</sub>

☐ Measurement range: 0 % ~ 100 %

☐ Resolution: 1 %

☐ Accuracy: 70 % ~ 100 %,  $\pm 2$  %;  
0 % ~ 69 %, unspecified

☐ PR

Measurement and alarm range: 25 ~ 250 bpm

Accuracy:  $\pm 2$  bpm or  $\pm 2$  %, whichever is greater

#### (5) TEMP

☐ Channel: dual-channel

☐ Measurement range: 0 ~ 50 °C

☐ Resolution: 0.1 °C

☐ Accuracy:  $\pm 0.1$  °C

#### (6) CO<sub>2</sub>

☐ Measurement mode: mainstream or sidestream

☐ CO<sub>2</sub> measurement range: 0 ~ 150 mmHg

☐ Accuracy:

0 ~ 40 mmHg:  $\pm 2$  mmHg

41 ~ 70 mmHg:  $\pm 5$  %

71 ~ 100 mmHg:  $\pm 8$  %

101 ~ 150 mmHg:  $\pm 10$  %

☐ AwRR measurement range:

Sidestream: 2 ~ 120 rpm

Mainstream: 2 ~ 150 rpm

☐ AwRR accuracy:  $\pm 1$  rpm

☐ Apnea alarm: yes

#### (7) IBP

☐ Channel: 4-channel

☐ Label: ART, PA, CVP, RAP, LAP, ICP, P1, P2

☐ Measurement and alarm range: -50 ~ 300 mmHg

- ☐ Resolution: 1 mmHg
- ☐ Accuracy:  $\pm 2\%$  or 1 mmHg, whichever is greater
- (8) Power supply: 100V-240V $\sim$  50Hz/60Hz
- (9) Safety class: class I, defibrillation-proof type CF applied part
- (10) Waterproof degree: IPX2

## Accessories

Category Accessory name

Module / main unit TS18 main unit

TS13 multi-parameter module

ECG cable 5-lead, American standard, TPU

SpO2 probe Digital fingertip SpO2 probe for adult (CMS-N-SPO2 6P, 3M, yellow)

TEMP probe R25=2.252K TEMP probe, skin surface type, CMS-N-TEMP 2P, PVC, L=3M

NIBP cuff BP extension tube, L=3M

Adult cuff (25 ~ 35 cm)

## Physical characteristic

Parts Dimension (L × W × H) Weight Remark

TS18 main unit 420 mm×166 mm×338 mm 4.5 kg (standard configuration, excluding accessories)  
Standard configuration (including battery), excluding module, recorder and accessories.

Multi-parameter module 137 mm × 70 mm × 105 mm 0.7 kg

IBP module 137 mm × 35 mm × 105 mm 0.3 kg

Sidestream CO2 module 137 mm × 35 mm × 105 mm 0.3 kg

Mainstream CO2 module 137 mm × 35 mm × 105 mm 0.25 kg

## Optional configuration

No. Function name

1 TS13 mainstream CO2 module

2 12-lead ECG

3 TS1 main unit

4 CO2 module TS13 sidestream CO2 module

5 IBP module TS13 IBP module