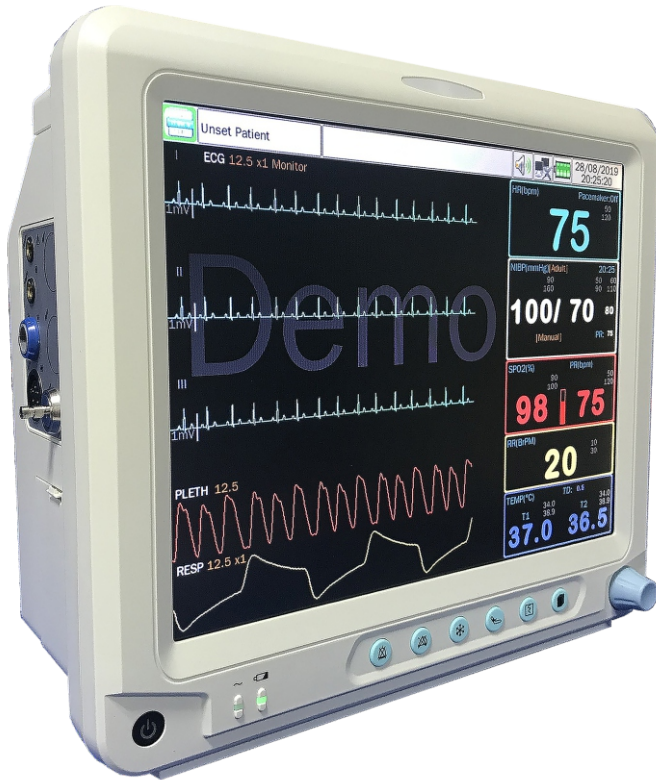




Maxwell



F5 Multi-parameter Patient Monitor (12.1 inches)

Technical Data Sheet

F5 patient monitor is designed to match the pace and unique needs of adult, pediatric and neonatal intensive care; anesthesia and peri-operative care; OR and cardiac care environments.

An optional **USB Mouse/Keyboard control** eases navigation and data entry.

An optional **HDMI output** eases observation from a long distance.

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Features

Core

- Newly advanced A9 main board with Linux OS. Calculating speed is 4 times faster than traditional products
- Support **storage** of 2160 hours trend table and graph review, 2 hours waveform review, 2000 groups NIBP review and 2000 alarm events review.

Body

- **12.1 inch** high brightness TFT **LED**
- Support display **9-13 waveforms**
- Support **7 channel** ECG waveform display simultaneously
- Optional touch screen
- Optional **HDMI** output

Printer

- Built-in-high-speed 50mm thermal printer (Brand: SEIKO, Japan)

Central System

- Optional **built-in wireless network module**, supporting wired or wireless connection to the central monitoring station
- Optional Support HL7 (Health Level Seven)

Alarm

- Three level acousto-optic alarm
- Sensor-Off alarm
- Paper out alarm
- Support alarm review
- Support alarm pause

Linux OS

- Support **operation with mouse and computer keyboard** (Option)
- **Multi-display mode** to meet different clinical requirement, including standard interface, big font, OxyCRG, trend graph, NIBP review and full leads ECG interface.
- **NIBP self-test mode:** including overpressure test, static pressure test and air leakage test.
- **Generate ID** automatically when register a new patient. support **medical history search** by patient ID, name and mobile number.
- 18 types of **Arrhythmia analysis** and real-time **S-T** segment analysis and **pacemaker detection**.
- **Drug calculation and titration table**
- Support **multi-language** display
- Support **online software upgrading** by net/USB



ECG Full Lead



Big Font Display



Standard Display



Oxy CRG



Trend Table



NIBP Review

Interface

Transducer socket

- ECG
- SPO2
- NIBP
- IBP 1 / IBP 2
- TEMP 1 /TEMP 2
- TEMP 2 / Mainstream EtCo2 / AG (multi-gas)
- Sidestream EtCO2

Input device interface

- This optional interface provides an USB ports to enable the monitor to be connected to off-the-shelf input devices:
- Mouse: any specified trackball or USB mouse may be used for navigation and data entry.
- Computer keyboard: an USB computer keyboard can be used for data entry instead of the on-screen pop-up keyboard.

[Remark: user has to restart the machine after plug and unplug the mouse / computer keyboard.]

- Knob (Standard)
- Touch screen (Optional)

[Remark: Touch screen cannot be used simultaneously with mouse / computer keyboard.]

LAN / Central monitor system interface

- The LAN port is for connecting the monitor to a central monitor system network.

Service Features

- The Support Tool helps technical personnel to
 - carry out configuration, upgrades and troubleshooting on an individual monitor.
 - back up the monitor settings.
- The Service Mode is password-protected and ensures that only trained staff can access service tests and tasks. It includes Skin Type, Brightness Setting, Clear Data, NIBP Calibration and Touch Screen Calibration.
- The Support Tool uses the USB interface of the monitor for software upgrading.

Performance Specifications

Dimension and Weight

- Dimension: 312mm*290mm*150mm
- Weight: 3.4kg (excluding accessories)

Power Supply

- Voltage: AC100~240V, 50/60HZ, Power≤60W

Display

- 12.1" color TFT LED
- Resolution: 800*600 pixels

Battery (Pluggable)

- Type: Rechargeable lithium battery 14.8V/2200mAh
- Charge Cycle: ≥500 times
- Working time: 2 hours (optional second-battery for 4-5 hours)

Recorder (Option)

- Method: Thermal printer
- Paper width: 50 mm (1.97 in)
- Printing speed: 12.5/ 25/ 50 mm/s
- Trace: Max. 3 tracks
- Recording way: Real-time Recording, Review Printing, Periodic Recording, Alarm Recording

Alarm

- Level: Low, medium and high
- Indication: Auditory and visual
- Alarm volume adjustable
- Alarm pause time: 1min, 2min
- Parameter alarm type: Latch/ Unlatch

Input Device

- Knob (Standard)
- Keypad input (Standard)
- Mouse/ Keyboard input (option)
- Touch screen (Optional)

System Output & Extensible Interface

- Ethernet Network: 1 standard RJ45 socket
- USB Port: 1
- Video Output: 1 HDMI port (option)

Operating Environment

- Temperature: 5 ~ 40 °C
- Humidity: 15% ~ 80% (non-condensing)
- Atmosphere pressure: 86 KPa ~ 110 KPa

Transportation and Storage Environment

- Temperature: -20~50 °C
- Humidity: 10%~90% (non-condensing)
- Atmosphere pressure: 86 KPa ~ 110 KPa

Safety

- IEC60601-1 Approved, CE marking according to MDD93/42/EEC
- With reference to RoHS Directive 2011/65/EU recasting

Trend & Reviewing

- Trend: 2160 hours
- ARR events: 128 groups of ARR events and associated waveform
- NIBP measurement reviewing: 2000 groups
- Waveform review: 2 hours
- Alarm event: 2000 groups of parameter alarms events and associated parameter

ECG

- Lead mode: 3/5 Leads, I, II, III or I, II, III, AVR, AVL, AVF, V
- Protection: Breakdown Voltage 4000VAC 50/60Hz; Defibrillator proof
- Gain: 2.5mm/mV(×0.25), 5.0mm/mV(×0.5), 10mm/mV(×1), 20mm/mV(×2), 40 mm/ mV(×4), Auto
- Sweep speed: 6.25mm/s, 12.5mm/s, 25mm/s, 50mm/s
- ECG signal range: ±12 mV (Gain ×0.25)
- Accuracy: ±1bpm/ ±1%, whichever is greater
- Resolution: 1 bpm
- Leakage Current < 10 μA
- Baseline Recovery:
 - ≤ 3s after defibrillation (Monitor mode)
 - ≤ 1s after defibrillation (Surgery mode)
- Bandwidth: Surgery 1 ~ 25 Hz
 - Monitor 0.5 ~ 40 Hz
 - Diagnostic 0.05 ~ 120 Hz
- Indication of Electrode Separation: Every electrode (exclusive of RL)

Heart Rate

- Measure range:
 - Adult: 0bpm; 10 ~ 300 bpm
 - Neo/Ped: 0bpm; 10 ~ 350 bpm
- Resolution: 1 bpm
- Accuracy: ± 1% or ± 1bpm, whichever is greater

ST Measurement

- Range: -2.0 ~ +2.0 mV
- Accuracy: -0.8mV ~ +0.8mV: ±0.02mV or ±10%, whichever is greater
- Other range: unspecified
- Resolution: 0.01mV

Respiration

- Method: Impedance between RA-LL, RA-LA
- Gain: ×0.25, ×0.50, ×1, ×2, ×4
- Respiration Rate: 0bpm, 6 ~ 150 BrPM
- Sweep speed: 6.25 mm/s, 12.5 mm/s, 25mm/s
- Resolution: 1 BrPM
- Accuracy: ±2 bpm or ±2%, whichever is greater
- Apnea Alarm: 10 ~ 60 s

NIBP

- Method: Oscillometric
- Measure mode: Manual, Auto, STAT
- Measure Interval in AUTO Mode 1~480 min
- STAT mode cycle time: Keep 5 minutes, at 5 seconds interval
- Measure and Alarm Range:

Adult:	SYS: 30 ~ 270 mmHg
	DIA: 10 ~ 220 mmHg
	MEAN: 20 ~ 235 mmHg
Pediatric:	SYS: 40 ~ 235 mmHg
	DIA: 10 ~ 220 mmHg
	MEAN: 20 ~ 225 mmHg
Neonate:	SYS: 30 ~ 135 mmHg
	DIA: 10 ~ 110 mmHg
	MEAN: 20 ~ 125 mmHg
- Static pressure accuracy: ±3mmHg
- Resolution: 1mmHg
- Accuracy: Maximum Mean error ±5mmHg
Maximum Standard deviation ≤8mmHg
- Over pressure Protection: Dual protection via software & hardware

Temperature

- Technique: Thermistor probe (2.25K)
- Channel: Dual-channel, provide T1; T2; ΔT
- Measuring and Alarm Range:
 - 0.0 °C ~ 50 °C (32°F ~ 122°F)
- Unit: Celsius (°C), Fahrenheit (°F)
- Resolution: 0.1 °C or 1 °F
- Accuracy: ±0.1 °C (exclusive probe)

Performance Specifications

SpO2 (Digital Technic)

- Measurement Range: 0 ~ 100 %
- Resolution: 1 %
- Response Modes: Low, Medium, High
- Accuracy: $\pm 2\%$ (70% ~ 100%)
 $\pm 3\%$ (35% ~ 69%)
Unspecified (0 ~ 34%)
- Support Pitch tone and multi-level volume
- User-selectable waveform speed:
6.25, 12.5, 25, 50 mm/s

Pulse Rate

- Measuring and Alarm Range: 25~250bpm
- Accuracy: $\pm 1\%$ or ± 1 bpm, whichever is greater
- Resolution: 1bpm

Nellcor-SpO2 (Option)

- Measurement Range: 0 ~ 100 %
- Resolution: 1 %
- Accuracy: 70% ~ 100%, $\pm 2\%$ (adult)
70% ~ 100%, $\pm 3\%$ (Neonate)
70% ~ 100%, $\pm 2\%$ (Low Perfusion)
0% ~ 69%, unspecified

Pulse Rate

- Measurement range: 20 ~ 300 bpm
- Resolution: 1bpm
- Accuracy:
 ± 3 bpm (20 ~ 250 bpm)
unspecified (251~300 bpm)

Masimo SpO2 (Option)

- Measurement Range: 0 ~ 100 %
- Resolution: 1 %
- Accuracy:
70% ~ 100%, $\pm 2\%$ (adult/ pediatric, non-motion conditions)
70% ~ 100%, $\pm 3\%$ (neonate, non-motion conditions)
70% ~ 100%, $\pm 3\%$ (motion conditions)
0% ~ 69% unspecified

Pulse Rate

- Measurement range: 25 ~ 240 bpm
- Resolution: 1bpm
- Accuracy: ± 3 bpm (non-motion condition)

EtCO2 (Mainstream/ Sidestream) (Option)

- Measure method: Non-dispersive infrared (NDIR)
- Measure Range: 0 ~ 19.7% (0 ~ 150 mmHg)
0 ~ 20 kPa
- Resolution: 0.1 mmHg
- CO2 Accuracy:
0 ~ 40 mmHg, ± 2 mmHg
41 ~ 70 mmHg, $\pm 5\%$ of reading
71 ~ 100 mmHg, $\pm 8\%$ of reading
101 ~ 150 mmHg, $\pm 10\%$ of reading
at 760 mmHg, ambient temperature of 25°C)
- Respiratory Rate: Range: 3 ~ 150 BrPM
Accuracy: ± 1 bpm

EtCO2 (Micro-stream) (Option)

- Measure method: Non-dispersive infrared (NDIR)
- Measure Range: 0 ~ 19.7% (0 ~ 150 mmHg)
0 ~ 20 kPa
- Sample Rate: 50 mL/min ± 10 mL/min
- Resolution: 0.1 mmHg (0 ~ 50 mmHg)
0.25 mmHg (50 ~ 114 mmHg)
- CO2 Accuracy: 0 ~ 40 mmHg, ± 2 mmHg
41 ~ 70 mmHg, $\pm 5\%$ of reading
71 ~ 100 mmHg, $\pm 8\%$ of reading
101 ~ 150 mmHg, $\pm 10\%$ of reading
at 760 mmHg, ambient temperature of 35°C)
- Respiratory Rate: Range: 3 ~ 120 BrPM
Accuracy: ± 1 bpm

Depth of Anesthesia (CSI) (Option)

- EEG sensitivity: $\pm 400\mu V$
- Noise: $< 2\mu V$ p-p, $< 0.4\mu V$ RMS, 1-250 Hz
- CMRR: > 140 dB
- Input impedance: > 50 Mohm
- Sample rate: 2000 samples/sec, (14 bits equivalent)
- BS%: 0-100, filter 1-42 Hz, 1 sec. display update
- EMG: 0-100 Logarithmic. Filter 75-85 Hz, 1 sec. update
- Alarms: High / Low with user selectable limit
- Artifact rejection: Automatic
- Sensor impedance range: 0 - 10 kOhm / measurement current 0.01 μA

Multi-gas/O2 (Anesthetic Gas) (Option)

- Method: Infrared absorption
- Gas sorts: CO2, N2O, Des, Iso, Enf, Sevo, Hal, O2 (Optional paramagnetic sensor)
- Calibration: Room air calibration performed automatically when changing airway
Airway adapt (< 5 sec)
- Measurement range:
CO2: 0~25%, N2O : 0~100%
O2: 0~100%, Enf, Iso, Hal: 0~25%,
Sevo, Des: 0~25%
- Data output: Fi and ET values
- Respiration rate: 0~ 150 BrPM
- Other: Up to 5 waveforms displayed
Agent mixture detection
MAC value displayed

IBP (Option)

- Max Channel: 2
- Measurement way: Thermal resistance way
- Press Sensor: Sensitivity 5 $\mu V/V/mmHg$, $\pm 2\%$
Impedance 300 to 3000 Ω
- Resolution: 1 mmHg
- Unit: mmKg, kPa, cmH2O
- Transducer sites:
Arterial Pressure (ART)
Pulmonary Arterial (PA)
Left Arterial (LAP)
Right Arterial (RAP)
Central Venous Pressure (CVP)
Intracranial Pressure (ICP)
PI / P2
- Measuring and alarm range:
ART 0 ~ +350mmHg
PA -10 ~ +120 mmHg
CVP/ RAP/ LAP/ ICP -10 ~ +40 mmHg
PI / P2 -50 ~ +350mmHg
- Accuracy:
Static: ± 1 mmHg or $\pm 2\%$, whichever is greater (exclusive of transducer)
 ± 4 mmHg or $\pm 4\%$, whichever is greater (inclusive of transducer)
Dynamic: ± 4 mmHg or $\pm 4\%$, whichever is greater

* Specifications subject to change without prior notice

Model Configuration

Standard Config.	12.1 inch LED, 3/5 Lead ECG, NIBP, SpO2, Pulse Rate, Temperature, Respiration
Optional Config.	1/2 IBP, 2-Temperature, Nellcor SpO2, Masimo SpO2, EtCO2 (Mainstream/Sidestream/Microstream), Anesthesia Depth Monitoring (CSM module), Multi-gas (AG) Monitoring
Optional Accessories:	Touch Screen, Printer, USB Mouse/Computer Keyboard Input Function, Central Monitoring Station, Neo/Ped Accessories, HDMI Output, Wall-mounting, Trolley,
Remark:	1) User can NOT choose USB mouse function and WIFI at the same time. 2) User can NOT choose touch screen and USB mouse function at the same time.

Gallery for Optional Accessories:



Nellcor Extension Cable



Reusable Nellcor NeoProbe



Reusable Ped. SpO2 Probe



Disposable Ped SpO2 Probe



Disposable NeoSpO2 Probe



IBP Disposable Kits



HDMI to VGA transverter



Central Monitoring Station



Trolley with Basket



Wall-mount with basket



Printer



AG Mainstream Probe



AGIRMA Airway Adapter
(Adult/Infant)



AG Sidestream Analyser



Disposable Electrodes of
Anaesthesia Depth
Monitoring

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