

F15 Series

Fetal & Maternal Monitor

Datasheet



Physical Specifications	Dimensions(D×W×H)	389mm×296mm×82.5mm
	Weight	≤8.0 kg approx.
	Display	15.66 inch 1920*1080 Pixel Multicolor LCD Touch Screen
	Signal Interface	RS232 Interface (DB15) RJ45 Interface HDMI interface Antenna interface
	Ultrasound Transducer	12-Crystal Transducer Cable Length 2.5m Weight 120g Dimension 91±3mm(L)*φ76±3mm (W) *20±2mm (H)
	TOCO Transducer	Cable Length 2.5m Weight 120g Dimension 91±3mm(L)*φ76±3mm (W) *20±2mm (H)
	Remote Event Marker	Cable Length 2.5m Weight 56g
	ECG	Cable Length .055m Weight 58g
	SpO ₂	Cable Length 2m Weight 68g
	NIBP	Cable Length 3.3m Weight 194g
	TEMP	Cable Length 3m Weight 60g
Power Supply	Mains Supply	Operating Voltage 100V ~ 240V~ Operating Frequency 50Hz/60Hz Input Power 1.2 ~ 0.5A
	Rechargeable Li-ion Battery	Nominal Voltage 10.8V Nominal Capacity 5000mAh Continuous Working Time >2 hours Necessary Charge Time <7 hours Cycle Life >300 times
Recording	Recorder	Thermal Dot-matrix Recorder
	Paper	Z-fold, Thermosensitive (Compatible with GE and Philips recorder papers)
	Paper Width	152mm/150mm
	Effective Printing Width	110mm (American Standard) 120mm (International Standard)
	FHR Printout Width	70mm (American Standard) 80mm (International Standard)

	FHR Scaling	30bpm/cm (American Standard) 20bpm/cm (International Standard)
	TOCO Printout Width	40mm
	TOCO Scaling	25%/cm
	Printing Speed	Standard Speed (Real-Time Traces) 1/2/3 cm/min Fast Print Speed (Stored Traces) Up to 15mm/sec
	Accuracy of Data	± 5% (X-Axis) ± 1% (Y-Axis)
	Resolution	8 dots/mm
	Record Information	FHR1/DFHR trace/mark, FHR2 trace/mark, FHR3 trace/mark, TOCO/IUP trace, AFM trace/black mark, fetal movement mark, event mark (and annotation), AUTO-zero symbol, alarm indicator, SOV alarm indicator, Fetal heart signal loss alarm indicator, wireless transducer wireless signal loss alarm indicator, date, time, printing speed, ID, name, FHR2 Offset, FHR3 Offset, HR, SpO ₂ , SYS, DIA, MAP, PR, TEMP, CTG analysis results etc.
FHR	Operating Mode	PW with Autocorrelation
	Working Frequency	(1.0±10%)MHz
	FHR Measurement Range	50bpm ~ 240bpm
	Resolution	1bpm
	Accuracy	±2bpm
	Alarm	FHR Alarm
	Ultrasound Output	$I_{sppa.3} < 190 \text{ W/cm}^2$ $I_{spta.3} < 94 \text{ mW/cm}^2$ $I_{ob} < 3.5 \text{ mW/cm}^2$ $I_{sata} < 3.5 \text{ mW/cm}^2$ $TI < 1.0$ $MI < 1.0$
	Temperature Rise	When applied to the patient, the ultrasound transducer may warm slightly (less than 10 °C (18F°) above ambient temperature). When NOT applied, the ultrasound transducer may warm slightly (less than 10 °C (18F°) above ambient temperature).
	Effective Radiating Area	(942 ± 15%)mm ²
	Dielectric Strength	4000Vrms
Other Info.	p- <1MPa $I_{spta} < 100 \text{ mW/cm}^2$ Max Output Power <15mW	
TOCO	TOCO Range	0 ~ 100
	Non-linear Error	±10%
	Resolution	1%
	Baseline Drift due to Temperature Changes	1 unit/min/°C (free air) 5 units/min/°C (underwater)

	Zero Mode	Automatic (TOCO value becomes zero or below lasting for 30 seconds)/Manual		
	Dielectric Strength	>4000Vrms		
DECG	DFHR Measurement Range	30bpm ~ 240bpm		
	Resolution	1bpm		
	Accuracy	±1bpm		
	Alarm	DFHR Alarm		
	Input Impedance	>10MΩ (Differential, DC50/60Hz) >20MΩ (Common Mode)		
	CMRR	>110dB		
	Noise	<30μVp-p		
	Skin Voltage Tolerance	±500mV		
	Fetal Input Voltage Current	20μVp ~ 3mVp		
IUP	Pressure Range	0mmHg ~ 100mmHg (0.0kP ~ 13.3kPa)		
	Accuracy	±3mmHg		
	Resolution	1mmHg (0.1kPa)		
MFM & AFM	Display Range	0 ~ 999		
	FM Mode	Automatic/Manual		
	AFM Mode	Trace (default)/Black Mark		
	AMF Technique	Pulsed Doppler Ultrasound		
MECG	MHR Measurement Range	30bpm ~ 240bpm		
	MHR Measuring Accuracy	±2bpm		
	Resolution	1bpm		
	MHR Alarm Limits	28bpm ~ 243bpm		
	Alarm	HR Alarm		
	Anti-electric Shock Type	Type CF(complies with IEC 60601-2-27:2011 except clauses about defibrillation-proof)		
	Input Signal Range	±8 mV PP		
	ECG Waveform	Manual control ECG waveform display		
	ECG falls off	Detect Automatically		
	Patient Leakage Current (Limit)		N.C.	S.F.C.
		d.c.	10μA	50μA
	Patient Auxiliary Current (Limit)		N.C.	S.F.C.
d.c.		10μA	50μA	
	a.c.	10μA	50μA	
Differential Input	>2.5MΩ			

	Impedance		
	Display Sensitivity	2.5mm/mV (×0.25), 5mm/mV (×0.5), 10mm/mV (×1), 20mm/mV (×2), AUTO gain	
	Electrode Offset Potential Tolerance	±500mV	
	Auxiliary Current (Leads off detection)	Active electrode <100nA Reference electrode: <900nA	
	Accuracy and Response to Irregular Rhythm	Not supported	
	Bandwidth(-3dB)	Weak filtering 0.05Hz ~ 120Hz Strong filtering 0.5Hz ~ 40Hz	
	Waveform Scan Speed	25mm/s	
	Response time to Change in MHR	MHR range 80bpm ~ 120bpm Range 7s ~ 11s (average 9s) MHR range 80bpm ~ 40bpm Range 8s ~ 12s (average 7.5s)	
	Tall T-wave Rejection	Exceeds ANSI/AAMI EC13-2002 Sect. 3.1.2.1 (C) minimum recommended 1.2mV T-Wave amplitude	
SpO ₂	Measurement Range(EDAN)	50% ~ 100%	
	Measurement Range(Nellcor)	50% ~ 100%	
	Resolution	1%	
	Measuring Accuracy (EDAN)	70% ~ 100%	±2%
		<70%	unspecified
	Measuring Accuracy (Nellcor)	70% ~ 100%	±2%
		<70%	unspecified
	Data update period (EDAN)	15	
	Data update period (Nellcor)	25	
	PR Measurement(EDAN)	Range 25 ~ 300bpm Resolution 1bpm Accuracy ±2bpm	
	PR Measurement (Nellcor)	Range 30 ~ 3240bpm Resolution 1bpm Accuracy ±3bpm	
	SpO ₂ Alarm Limits	50% ~ 100%	
	Alarm	PR Alarm and SpO ₂ Alarm	
Wavelength	Red light (660±3)nm Infrared light (905±10)nm		

		Emitted light energy <15mW
NIBP	Measurement	Systolic Pressure Diastolic Pressure Mean Artery Pressure
	Method	Oscillometric Method
	Measurement Range	Systolic Pressure 40mmHg ~ 270mmHg (5.3kPa ~ 36.0kPa) Diastolic Pressure 10mmHg ~ 215mmHg (1.3kPa ~ 28.7kPa) Mean Artery Pressure 20mmHg ~ 235mmHg (2.7kPa ~ 31.3kPa)
	Resolution	1mmHg (0.1kPa)
	Measuring Accuracy	Max. average deviation $\leq \pm 5$ mmHg ($\leq \pm 0.8$ kPa) Max. standard deviation ≤ 8 mmHg (≤ 1.2 kPa)
	Measuring Time (Normal)	30 ~ 45s
	Measuring Time (MAX)	120s
	Alarm Limits	Systolic Pressure 40mmHg ~ 270mmHg (5.3kPa ~ 36.0kPa) Diastolic Pressure 10mmHg ~ 215mmHg (1.3kPa ~ 28.7kPa) Mean Artery Pressure 20mmHg ~ 235mmHg (2.7kPa ~ 31.3kPa)
	Alarm	Systolic Pressure Diastolic Pressure Mean Artery Pressure Alarm
	Software Over Voltage Protection	(297 \pm 3)mmHg [(39.6 \pm 0.4)kPa]
	Hardware Over Voltage Protection	(320 \pm 10)mmHg [(42.8 \pm 1.3)kPa]
	PR Measurement	Range: 40bpm ~ 240bpm Accuracy: ± 3 bpm or 3.5%, whichever is greater Resolution: 1bpm
	TEMP	Channel
Measurement Range		0°C ~ 50°C
Resolution		0.1°C
Accuracy		At 25°C ~ 45°C, the measurement accuracy is 0.2°C. Other measuring range, the measurement accuracy is 0.3°C.
Unit		°C/°F
Refresh Time		1 ~ 2s
Transient Response Time		≤ 30 s
Alarm Limits		0.0°C ~ 50.0°C
Alarm		TEMP Alarm
Measuring Mode		Direct Mode
Position		Axilla
Data Transmission	Data Export	Ethernet/USB
	Report Format	TRC
	Data Management	MFM-CNS

	System	
	HIS connection	HL7/GDT
Safety Specifications	Standards Compliance	IEC 60601:2005+A1:2012, EN 60601-1:2006+A1:2013, IEC 60601-1-2:2014, EN 60601-1-2:2015, IEC 60601-1-8: 2012, EN 60601-1-8: 2007+A1: 2013 IEC/EN 60601-2-27, IEC/EN 60601-2-37, IEC/EN 60601-2-49, IEC 80601-2-30, ISO 80601-2-61, ISO 80601-2-56, AAMI/ANSI EC13
	Anti-electric Shock Type	Class I equipment with internal power supply
	Anti-electric Shock Degree	MECG,FHR1,FHR2,FHR3,TOCO,MARK,EXT.1, CF DECG, IUP SpO2, NIBP , TEMP CF (Defibrillating-proof)
	Degree of Protection against Harmful Ingress of Water	Main Unit: IPX1, protected against vertically falling water drops when enclosure tilted up to 150 (provided recorder drawer is shut and the monitor is not mounted on the wall vertically) US/TOCO/Fetal&Maternal Modules: IP68, dust-tight and protected against the effects of continuous emersion in water
	Degree of Safety in Presence of Flammable Gases	Equipment not suitable for use in presence of flammable gases
	EMC	CISPR11 Group 1 Class A
	Working System	Continuous running equipment
	Environmental Specifications	Temperature
Relative Humidity		Working 15% ~ 95% (non-condensing) Transport and Storage 15% ~ 95% (non-condensing)
Atmospheric Pressure		Working 86kPa ~ 106kPa Transport and Storage 70kPa ~ 106kPa
Wireless Transducer WIFI Specifications	Techonology	802.11 b/g/n
	Frequency Range	2.4GHz ~ 2.4835GHz
	RF Modulation Schemes	b:CCK/DSSS g:OFDM n:MIMO-OFDM
	EIRP Transmission Power	<20dBm
	Transmission Range (line of sight)	>20m
	CMIIT ID	

Wireless AP WIFI Specifications	Techonology	802.11 b/g/n
	Frequency Range	2.4GHz ~ 2.4835GHz
	RF Modulation Schemes	b:CCK/DSSS g:OFDM n:MIMO-OFDM
	EIRP Transmission Power	<20dBm
	Transmission Range (line of sight)	>20m
	CMIIT ID	
	Wireless Charging Specifications	Working Frequency
NFC Specifications	Working Frequency	13.56MHz
Rechargeable Lithium ion Battery	Type	Rechargeable Lithium-ion Battery
	Continual Working Time	>2 hours
	Necessary charge time from "out of power" to "fully charged"	<7hours
	Necessary charge time from "out of power" to "90% charged"	<5 hours
	Nominal Capacity	5000mAh
	Nominal Voltage	10.8V
	Cycle Life	> 300 times



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