OKUMAN Healthcare
Dedicated Hospital Solutions

DFM 600

Defibrillator/Monitor

Standard Configuration
ECG, RESP, Thermal Recorder

Optional
12-Lead ECG, NIBP, TEMP, PR, $EtCO_2$, IBP, SPO_2

Safety Standards
ISO 13485:2016 approved, CE marking according to MDD93/42/EEC

Physical Characteristics

Size:	323 mm × 277 mm × 338 mm
Weight:	7.2 kg
Screen Size:	8.4" TFT Screen
Resolution:	800 × 600
Waveforms:	4 waveforms

Operation Environment

Temperature:	0~45°C
Humidity:	10%~95%, non-condensation
Water Resistance:	IP44 (without external power)
Solids Resistance:	IP4X
Power requirement:	100-240 V~, 50/60 Hz±1 Hz
Battery type:	Rechargeable Lithium-ion battery
Battery capacity:	4500 mAh, d.c.14.8 V
Battery number:	Max 2
Battery recharging Time:	Less than 2 hours to 80% and less than 3 hours to 100% with equipment power off
Battery backup: (Two new, fully charged battery)	Monitoring Mode: 12 hours; Defib Mode: 420 times (360J charge at intervals of 1 minute without recording); Pacing Mode: 9 hours (50 Ω load impedance, Pacing rate: 80 bpm, Pacing output: 60 mA, without recording)
Brightness:	Manual from 1 to 10

Indicators

Two alarm indicators
Power indicator
Battery indicator
Maintain indicator
Error indicator
QRS beep and alarm sound
Operating key sound

Interface

USB interface
RJ45 interface
AC power input
VGA interface
Multi-functional connector

Data storage

Alarm Event:	200 groups
Patient profiles:	1000 groups
Wave Review:	48 hours
NIBP Review:	2000 groups
Trend Graph:	160 hours
Trend Table:	160 hours
ECG report:	500 cases of 12-lead ECG diagnosis report (Up to 5 case reports per patient)
Voice recording:	Max 240 min in total; (Up to 60 min for each patient)
Marked events:	Available
Power-off storage:	Yes
Alarm:	User-adjustable High and Low 3-level Limits; Prioritized audio and visual alarms
Network:	Connected to Central Monitoring System by hardwire/wireless

Recorder

Type:	Built-in; Thermal array
Channel:	4 channel waveforms
Real-time recording:	3s, 16s, 32s, auto
Speed:	12.5/25/50 mm/s
Record width:	80 mm
Resolution:	8 dot/mm (Horizontal and vertical)
Background grid:	Configurable
External printer:	Yes

Defibrillator

Operating mode:	Manual Mode, AED Mode, Synchronous defibrillation
Waveform:	Biphasic truncated exponential waveform, with impedance compensation
Defibrillation pathway:	External defibrillation & Internal defibrillation
Electrode type:	External defibrillation electrode plate, multifunctional electrode pads and internal defibrillation electrode plate
External defibrillation electrode plate:	Supports charging, discharging, energy selection and other operational functions; Charging completion indicator

Charge Time: (Battery power)	Less than 5 seconds to 200 Joules with a new, fully charged battery Less than 8 seconds to 360 Joules with a new, fully charged battery
Energy accuracy:	±1.5J or ±10% of setting, whichever is higher, into 50Ω ±2J or 15% of setting, whichever is higher, into 25Ω, 75Ω, 100Ω, 125Ω, 150Ω, 175Ω,
Patient Impedance Range:	25~300Ω(External defibrillation); 15~250Ω(Internal defibrillation)
Defibrillation proof:	Type CF: ECG, RESP, SpO_2, NIBP, IBP, TEMP, PR; Type BF: CO_2

Manual Mode

External defibrillation:	1J~360J
Internal defibrillation:	1J~50J
Synchronous Cardioversion:	Energy transfer begins within 60ms of the QRS peak; Energy transfer begins within 25ms of the External Sync signal

AED

Output Energy:	User configurable
AED Shock Series:	Configurable

Ambulance Fixing Bracket (Optional)

DFM 600 Ambulance Fixing Bracket (It is used together with DFM 600 Packet)

Noninvasive Pacing

Waveform:	Monophasic square wave pulse
Pulse Width:	20 ms
Accuracy:	±5%
Pacing Mode:	Demand or fixed
Pacing rate:	40 bpm to 170 bpm
Accuracy:	±1 bpm or ±1.5% (whichever is higher)
Pacing output:	0 mA to 200 mA
Accuracy:	±5% or ±5 mA, whichever is higher
4:1 pacing:	Pacing pulse frequency reduced by factor of 4 when activated

Monitoring ECG

Lead Type:	3 lead ECG, 5 lead ECG, 12 leads ECG, AUTO
Lead selection:	12-Lead I; II; III; aVR; aVL;aVF; V1~V6 5-lead: I; II; III; aVR; aVL; aVF; V 3-lead: I; II; III
Multi-lead synchronization analysis:	Available ECG size: Auto, 1.25 mm/mV (×0.125), 2.5 mm/mV (×0.25), 5 mm/mV (×0.5), 10 mm/mV (×1), 20 mm/mV (×2), 40 mm/mV (×4),
Accuracy:	Less than ±5%
Sweep speed:	6.25 mm/s, 12.5 mm/s, 25 mm/s, 50 mm/s
Accuracy:	Less than ±10% Heart Rate
Measurement& alarm range:	Adult: 15~300bpm Pediatric/Neonate: 15~350 bpm
Resolution:	1 bpm
Accuracy:	±1% or ±1bpm (whichever is higher)
Bandwidth:	MON: 0.5~40 Hz DIA: 0.05~150 Hz Treat: 1~20 Hz ST: 0.05~40 Hz
CMRR:	MON: >105 dB DIA: >90 dB Treat: >105 dB ST: >105 dB
Input Impedance:	≥5 MΩ
Input signal range:	±8 mV
HR trigger value:	200 μV
Lead off detection current:	Measuring electrode: <0.1 μA Driving electrode: <1 μA
Pacemaker pulse suppression switch:	Manual selection when the pacemaker is turned on
Analog output:	Magnification: 1:1000; Accuracy: ±5% Bandwidth: 0.5 Hz~40 Hz Delay: ≤35 ms
ST Detection:	-2.0 mV~+2.0 mV

Resolution:	0.01 mV
Accuracy:	-0.8 mV ~ +0.8 mV: ±0.02 mV or ±10%; Others: Unspecified
System noise:	Less than 25 μV
Calibration voltage:	1 mV;
Accuracy:	±5%
Arrhythmia Analysis:	26 Types
Pacemaker detection:	Detectable

Defibrillation ECG

Lead Type:	Single lead ECG
Heart Rate measurement& alarm range:	Adult: 15~300 bpm Pediatric/Neonate:15~350 bpm
Resolution:	1 bpm
Accuracy:	±1% or ±1 bpm (whichever is higher)
Bandwidth:	Defib: 1~20 Hz
CMRR:	Defib: >105 dB
Input Impedance:	≥5 MΩ
Input signal range:	±8 mV
HR trigger value	200 μV
Arrhythmia Analysis:	5 Types

Respiration

Method:	RA-LL Impedance Method
RR measurement range:	Adult: 0~120 bpm Pediatric/Neonate: 0 ~150 bpm
Accuracy:	7~150 rpm: ±2 rpm or ±2% (whichever is greater) 0~6 rpm: unspecified
Apnea Alarm:	Adult: 10s~60s Ped/Neo: 10s~20s
Accuracy:	±5s
Alarm:	Audible and visual alarm; alarm events reviewable

NIBP

Method	Automatic oscillometric
Work mode:	Manual / Automatic/Continuous
Measurement Time:	Adjustable (1~720min)
Maximum measurement time:	Adu/Ped: 120s; Neo: 85s
Measurement Unit:	mmHg / kPa selectable
Measurement types:	Systolic, Diastolic, Mean
Range of systolic pressure:	Adult Mode:40~270 mmHg Pediatric Mode:40~200mmHg Neonate Mode 40~135 mmHg
Range of diastolic pressure:	Adult Mode:10~215 mmHg Pediatric Mode:10~150 mmHg Neonate Mode 10~100 mmHg
Range of mean pressure:	Adult Mode:20~235 mmHg Pediatric Mode:20~165 mmHg Neonate Mode 20~110 mmHg
Over pressure protection:	Both Hardware and software over pressure protection
Accuracy:	±3% or ±3 bpm, whichever is greater
Resolution:	1 bpm
Alarm:	Systolic, Diastolic, Mean PR form
NIBP:	40 bpm~240 bpm

Nellcor SpO_2

Measurement range:	0~100%
Resolution:	1%
Accuracy:	±2% (70~100%, Adu/Ped, motionless) ±3% (70~100%, Neo, motionless) 1~69% unspecified
Alarm range:	20~100%
PR Measurement Range:	20~300 bpm
Resolution:	1 bpm
Accuracy:	±3 bpm (20~250 bpm) Unspecified (251~300 bpm)
Alarm range:	20~350 bpm

Masimo SpO_2

Measurement&alarm range:	1~100%
Resolution:	1%
Accuracy:	±2% (70~100%, Ped/Adu, non-motion) ±3% (70~100%, Neo, motionless); 1~69% unspecified
Alarm range	1~100%
PR Measurement Range:	25~240 bpm
Resolution:	1 bpm
Accuracy:	±3%(non-motion) ±5% (in motion);
Alarm range:	20~350 bpm
PI value: Resolution:	0.02~20% 0.01% (0.02%~9.99%) 0.1% (10.0%~20.0%)
Accuracy:	Unspecified
SIQ:	Available

Okuman SpO_2

Measurement&alarm range:	0~100%
Resolution:	1%
Accuracy:	±2% (70~100%, Ped/Adu, non-motion) ±3% (70~100%, Neo, non-motion); 0~69% unspecified
PR Measurement Range:	20~254 bpm
Resolution:	1 bpm
Accuracy:	±2 bpm
Alarm range:	20~350 bpm
PI value:	0.05~20%
Resolution:	0.01% (0.05%~9.99%) 0.1% (10.0%~20.0%)
Accuracy:	Unspecified
SIQ:	Available

Temperature (Dual Channel)

Measurement & alarm range:	0~50°C
TEMP sensor:	Standard configuration- skin TEMP sensor
Resolution:	0.1°C
Accuracy:	±0.1°C (except sensor error)
Channel type:	T1, T2, TD (Temperature Difference)

MASIMO $EtCO_2$ (Sidestream)

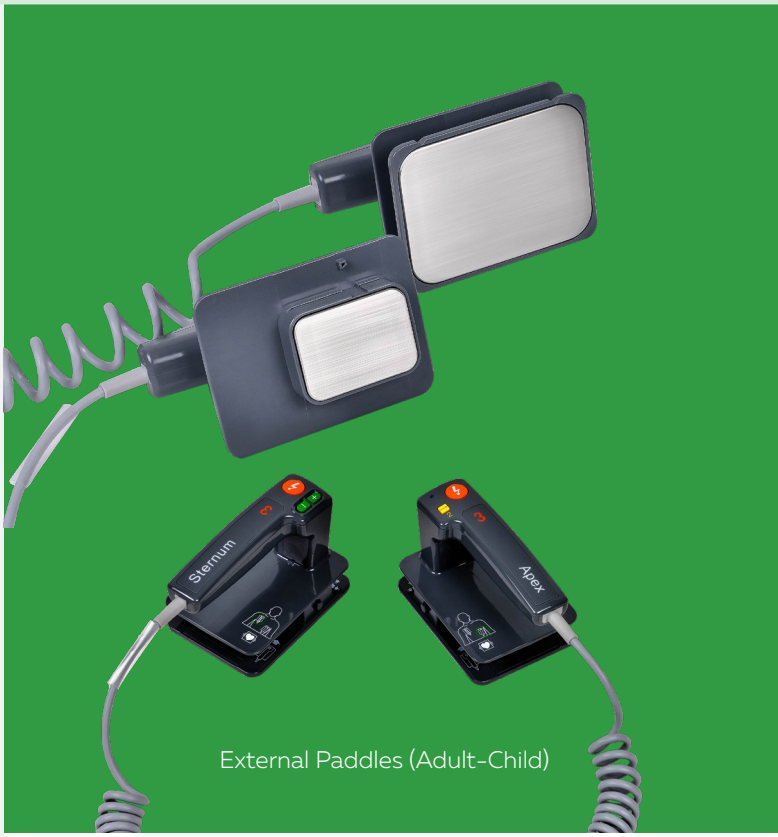
Measurement range:	0~190 mmHg, 0~25% (at 760 mmHg)
Accuracy:	± (2.25 mmHg +4% of reading)
Resolution:	1 mmHg
awRR range:	0~150 rpm
awRR accuracy:	±1 rpm
Response time:	<240 msec (10% to 90%)
Delay time:	<2s

Respironics $EtCO_2$ (Sidestream)

Measurement range:	0~150 mmHg, 0to 25% (at 760 mmHg)
Accuracy:	± 2 mmHg (0 – 40 mmHg) ± 5% of reading (41 – 70 mmHg) ± 8% of reading (71 –100 mmHg) ±10% of reading (101~150 mmHg)
Resolution:	1 mmHg
awRR range:	0~150 rpm
awRR accuracy:	±1 rpm
Response time:	<240 msec (10% to 90%)
Delay time:	<2s

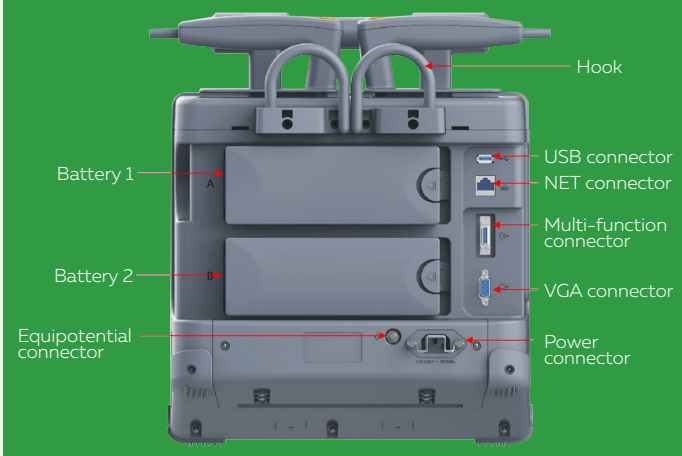
IBP

Channel:	2 Channels
Measured Pressure:	ART, PA, CVP, RAP, LAP, ICP, LV, AO, UAP, BAP, FAP, UVP, IAP, P1, P2, P3, P4
Measurement Unit:	mmHg/ kPa/ cmH_2O selectable
Measurement range:	ART: 0~300mmHg PA: -6~120 mmHg CVP: -10~40 mmHg RAP: -10~40 mmHg LAP: -10~40 mmHg ICP: -10~40 mmHg LV: 0~300 mmHg AO: 0~300 mmHg UAP: 0~300 mmHg BAP: 0~300 mmHg FAP: 0~300 mmHg UVP: -10~ 40 mmHg IAP: -10~40 mmHg P1, P2: -50~300 mmHg
Accuracy:	±2% or ±1 mmHg (whichever is greater)
Resolution:	0.1 kPa or 1 mmHg (-50 mmHg~+300 mmHg)
Alarm Range:	-50 mmHg~+300 mmHg
PR from IBP:	20 bpm~350 bpm
Resolution:	1 bpm
Accuracy:	±1% or ±1 bpm, whichever is higher
PPV/SPV measurement:	Available
PAWP measurement:	Available



External Paddles (Adult-Child)


Smart Battery



Back View of DFM 600

OKUMAN

OKUMAN Medikal Sistemler A.Ş.
Kazım Karabekir Caddesi 95/95 06060 Iskitler
Ankara / Turkey

info@okuman.com.tr
www.okuman.com.tr

Phone: +90 312 384 05 20
Fax : +90 312 384 19 75

CE
1984

Catalog ID: DFM 600 004-092022-EN