FRESENIUS MEDICAL CARE

Acute Blood Purification

multi**Filtrate**PRO

The multi Filtrate**PRO has been carefully designed and equipped with a wide range of features intended to support your ICU team in patient care and to offer you state-of-the-art therapies.**

multi**Filtrate**PRO specifications and features

General	
Medical device name	multi**Filtrate**PRO
Medical device type	Hemofiltration device
Manufacturer	Fresenius Medical Care AG & Co. KGaA, Else-Kröner-Str. 1, 61352 Bad Homburg
Intended purpose of the medical device	Control, operation and monitoring of extracorporeal treatment
Risk class (according to Annex VIII Medical Device Regulation 2017/745)	IIb
Notified body number	0123
Dimensions H × W × D	Approx. 167 × 65 × 69 cm (not counting filter holder)
Floor space	Approx. 59 × 69 cm
Weight	Approx. 95 kg w/o fluid bags, safe working load: 45 kg

Certification
According Medical Devices Regulation ((EU) 2017/745), IEC 60601-1-1, IEC 60601-1-2, IEC 60601-1-6, IEC 60601-1-8, IEC 60601-1-9, IEC 60601-2-16, IEC 61000-3-2, IEC 61000-3-3, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, IEC 60950-1, IEC 60364-7-710, SO 15223-1, ISO 80369-7, ISO 20417, applicable for multi**Filtrate**PRO-HL7-Connector: IEC 62368-1, EN 300328, EN 301489-1, EN 301489-17, EN 301893

Therapy modalities	
Systemic anticoagulation	CVVHD, Pre or Post CVVHDF, Pre and/or Post CVVH, pCVVHD, TPE
RCA	Ci-Ca CVVHD, Ci-Ca postCVVHDF

Electrical data	
Line voltage	100–240 VAC, 50/60 Hz
Current consumption (incl. integrated fluid heating system)	Max. 4.4 A (240 V AC) Max. 12 A (100 V AC)
Internal power supply	+24 V DC, 35 A short-circuit-proof, 800 W max. total output power
Average power consumption	< 105 W plus fluid heaters with approx. 4 W per 100 ml/h dialysate and substituate flow
Battery for emergency operation	2 × 12 V/7.2 Ah, maintenance-free, lead-acid, > 15 min (blood circulation)
Type of protection against electrical shock	Protection class I
Level of protection against electrical shock	Type CF (200 to 230 V, 50 Hz), (100 to 127 V, 50 Hz), (100 to 127 V, 60 Hz) Type BF (240 V, 50 Hz), (200 to 240 V, 60 Hz)
Degree of protection against ingress of foreign bodies and liquids	IP21
External connections	Potential free remote alarm/nurse call, RJ-45 Ethernet port for data exchange
Connectivity to HIS/PDMS	Via multi**Filtrate**PRO-HL7-Connector (optional)

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Floor space: approx. 59 × 69 cm

User interface	
Monitor	15", TFT LCD, high resolution touchscreen, 1024 × 768, horizontally/vertically adjustable
Event storage	Events of approx. 2 years
Service menu	Access via ServiceCard
Flow rate ranges*	
Blood:	
CKRT	10 to 500 ml/min, ±10 %
Pediatric mode 8 kg/16 kg	10 to 100 ml/min/200 ml/min, ±10 %
TPE	30 to 300 ml/min, ±10 %
Substituate/replacement:	
CKRT	0; 600 to 4,800 ml/h
TPE	0; 10 to 50 ml/min
Dialysate:	
CKRT	0; 600 to 4,800 ml/h
Pediatric mode 8 kg/16 kg	380 to 1,000 ml/h/1,500 ml/h
Effluent	Up to 10,800 ml/h, automatically adjusted
Patient fluid removal:	
CKRT	0; 10 to 990 ml/h
Pediatric mode 8 kg/16 kg	0; 10 to 200 ml/h/400 ml/h
Citrate (Ci)	10 to 600 ml/h, ±10 %
Calcium (Ca)	0; 1 to 100 ml/h, ±10 %
Heparin via integrated syringe pump	Continuous: 0.5 to 25 ml/h, ±5 % Bolus function: 0.1 to 5 ml Syringe size: 30 ml, 50 ml
Fluid	
Measurement principle	Gravimetric fluid management based on four scales
Load capacity per scale	Max. 12 kg
Resolution per scale	1 g
Linearity deviation	Max. ±1 %
Maximum cumulated balancing error during treatment	500 g (within up to 72 h) Pediatric mode: 50 g
Integrated heating system	
Substituate temperature	Off, 35 to 39°C
Dialysate temperature	Off, 35 to 39°C
Alarm threshold	42°C
Access pressure	
Display range	–300 to +300 mmHg
Accuracy	10 mmHg

Return pressure	
Display range	–100 to +500 mmHg
Accuracy	10 mmHg
Pre-filter pressure	
Measurement range	–50 to +750 mmHg
Accuracy	10 mmHg
Transmembrane pressure	
Display range CKRT	–300 to +500 mmHg
TPE	–60 to +270 mmHg
Accuracy	20 mmHg
Filtrate pressure	
Measurement range	–50 to +750 mmHg
Air detector	
Measurement principle	Ultrasound transmission
Sensitivity	Blood flow < 100 ml/min: Alarms single air bubble ≥ 20 µl Blood flow ≥ 100 ml/min: Alarms single air bubble ≥ 50 µl or 10 air bubbles between 20 µl to 50 µl each
Optical detector	
Measurement principle	Infrared transmission
Function	Detection of blood in extracorporeal circuit
Blood leak detector	
Measurement principle	Optical
Sensitivity:	
CKRT/TPE	≤ 0.5 mL blood/min (32 % Hct)
Pediatric mode	≤ 0.1 mL blood/min (32 % Hct)
Cassette detector	
Optical sensor to differentiate therapy modality	Heparin CKRT, Ci-Ca CKRT, Pediatric CKRT
Disinfection	
Method of disinfection (depending on disinfectant)	Wipe disinfection, scrub and wipe disinfection
Disinfectants	Incidin Extra N, Freka-NOL, ClearSurf, ClearSurf Wipes

*Flow rate ranges, limits and increments vary depending on the therapy modality selected.