 Made in Germany

Electronic Infusion Pump LimLess®

The mobile LimLess® infusion pump is universally used for infusion therapy in hospital and at home. The construction of the device provides sophistication through security systems and easy handling.

www.pfmmedical.com



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Benefits

Made in Germany by pfm medical

The development, production and technical service of the LimLess® infusion pump and the LL 2012 Sets are all done by pfm medical in Germany. pfm medical thus covers the entire value chain and can therefore react to user needs, swiftly and flexibly, enabling us to incorporate any changes directly into the products.

Increased mobility for improved quality of life

The compact construction of the infusion pump and a long battery life allows the patient to be mobile thus improving quality of life.

Easy to operate

The graphical interface and touch display of the infusion pump are intuitive and easy to operate. The infusion parameters that are entered are easy to read and review. It is also possible to operate the display comfortably and fast when wearing gloves.

Increased safety thanks to a dual-processor system

The safety systems inside the infusion pump are provided in duplicate. Based on a principle which is known from aerospace technology, several interdependent control systems monitor one another mutually. Thanks to error messages, which are sent if one of the control units fail, a quick response is enabled and an almost uninterrupted therapy is ensured.

Long battery life

At a flow rate of 125 ml/h, a continuous infusion of approximately 20 hours is ensured. The rechargeable battery can be subjected to at least 500 charging cycles without any noteworthy loss of capacity.

Minute attention to detail in the design

When using the safe (analgesic therapy/PCA), it is still possible to charge and mount the infusion pump directly onto the IV drip stand.

Application

- ▶ Parenteral nutrition/TPN
- ▶ Analgesic therapy/PCA
- ▶ Chemotherapy

- ▶ Antibiotic therapy
- ▶ Desferal therapy
- ▶ Chronotherapy/circadian therapy

Details

- ▶ Demand-oriented application through seven therapy options: Continuous, TPN, 25 doses/chrono, Sine/chrono, Intermittent, Pulse, PCA (chrono = time-controlled)
- ▶ Control display for battery status and charge level
- ▶ Event recorder for documentation of the pump history
- ▶ Adjustable therapy due to extensive range of accessories and consumables
- ▶ Extensive safety features: security systems are duplicated to provide additional safety; ultrasonic air detection; pressure sensor; alarm for malfunctions; code-protected access restrictions

Technical Data

- ▶ **Flow rate** 0.1 – 500.0 ml/h; 0.0 – 99.9 ml/h in PCA mode
- ▶ **Accuracy** ± 5 %
- ▶ **Volume:** 0.1 – 9.999.0 ml
- ▶ **KVO rate:** 0.0 – 5.0 ml/h
- ▶ **Pressure:** adjustable to 0.5/1.0/1.3 bar
- ▶ **Air:** ultrasound sensor, threshold value adjustable to 0.1/0.5/1.0 ml
- ▶ **Pump system:** piston mechanism
- ▶ **Alarms:** infusion ended; battery low; battery empty; air in the line; occlusion; door open/no set; pump malfunction
- ▶ **Power supply:** 100 – 240 V; 50/60 Hz; 15 W max; 0.5 A
- ▶ **Battery:** Li-Ion 7.2 V; 2.150 mAh (rechargeable)
- ▶ **Delivery Volume:** 20 hours at 125 ml/h and fully charged battery
- ▶ **Size:** 135 x 92 x 38 mm (L x W x H)
- ▶ **Weight:** 371 g (without battery); 461 g (with battery)

Ordering information

**LimLess®**

REF	Marking	Version	PU
73001	LimLess® Infusion Pump	Incl. battery, power supply, power cable	1



LL 2012 Set › The LL 2012 Set is used as a connecting tube for pressure infusions according to DIN EN ISA 8536 in conjunction with the LimLess® infusion pump.

REF	Marking	Version	Description	Length	PU
73011	LL 2012/1 Set	With spike		2.2 m	10
73012	LL 2012/2 Set	With spike	1.2 µm filter	2.2 m	10
73013	LL 2012/3 Set	With 150 ml reservoir		2.2 m	10
73014	LL 2012/4 Set	With 150 ml reservoir	0.2 µm filter	2.2 m	10
73015	LL 2012/5 Set	With yellow line	0.2 µm filter	2.2 m	10
73016	LL 2012/6 Set	With Y piece and 2nd line		2.2 m	10
73018	LL 2012/18 Set	With 250 ml reservoir	0.2 µm filter	2.2 m	10
73019	LL 2012/9 Set	With spike, injection port	1.2 µm filter	3.3 m	10
73022	LL 2012/22 Set	With Luer Lock		2.2 m	10
73024	LL 2012/24 Set	With spike	0.2 µm filter	2.2 m	10
73025	LL 2012/25 Set	With spiral exten. and Y piece	1.2 µm filter	3.4 m	10
73026	LL 2012/26 Set	With spiral extension	1.2 µm filter	4.8 m	10
73027	LL 2012/27 Set	With drip chamber		2.2 m	10
73034	LL 2012/34 Set	With spiral exten. and Y piece	0.2 µm Filter	3.4 m	10
73041	LL 2012/41 Set	With UV-light protection		2.2 m	10

Ordering information accessories

**Bolus cable**

REF	PU
73708	1

- › Cable length: 1.5 m
- › Plug connection

**Safe**

REF	Version	PU
73005	for 150 ml reservoir	1

- › Transparent case
- › Lockable

**Charger**

REF	PU
73704	1

- › Integrated mounting device to fix the charger on an IV drip stand
- › Allows charging the infusion pump even while using the safe

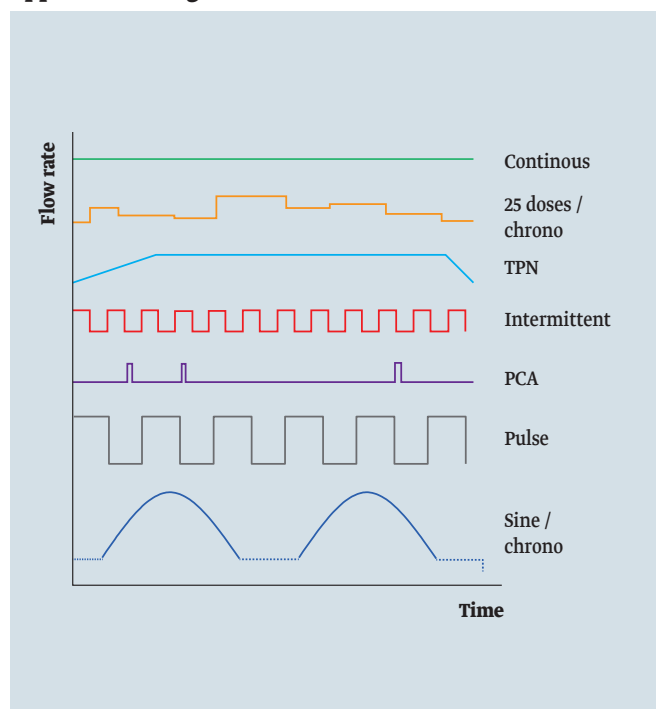
**Power cable**

REF	PU
73707	1

- › Cold-device plug
- › Europlug
- › Cable length: 2 m
- › Also available as UK Version (REF 73707UK)

Function

Application range



Event recorder

Previous infusion settings and events can be recalled. The data is presented for example as follows:

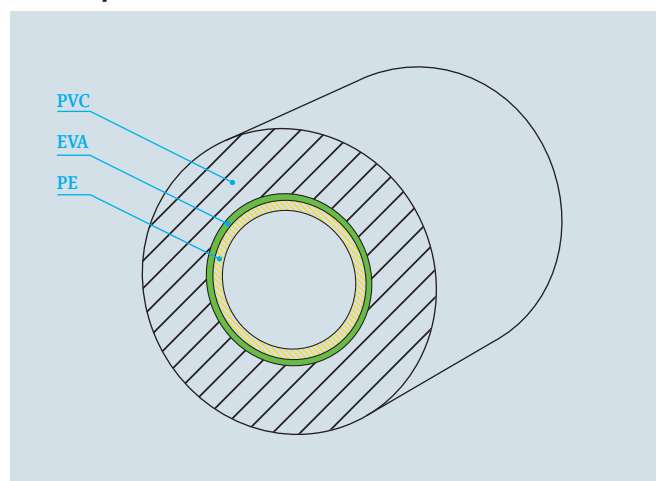
The Event recorder interface displays a list of events with the following details:

Options		08:30
Event:	Therapy stopped	
Event No:	0120	
Time/Date:	08:02:30/11.10.2007	
Event:	Therapy started	
Event No:	0119	
Time/Date:	17:30:30/10.10.2007	
Event:	End priming	
Event No:	0118	
Time/Date:	17:29:15/10.10.2007	

Navigation buttons at the bottom include a downward arrow, a "BACK" button, and an upward arrow.

Material properties

The 3-layer-tube of the LL 2012 Sets



The tube of the LL 2012 Sets in cross section

Three different materials are combined in the tube of the **LL 2012 Sets**.

The innermost layer of the tube, thus the **drug contact surface**, consists of LD-PE (highly branched polyethylene with low density). PE is highly resistant to acids, bases and greasy solvents and excellently suitable for drug administration. It is well tolerated by fats/lipids, which belong to the most aggressive substances and are contained in solutions for parenteral nutrition. Through its nonpolar hydrophobic surface PE also strongly restricts the adsorption of drugs. PE is a pure hydrocarbon and has a high biocompatibility.

The middle layer consists of EVA (ethylene-vinyl acetate-copolymer). EVA is characterized by excellent mechanical properties, e.g. high tensile strength and resistance to ultraviolet radiation.

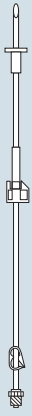
Product benefits

- ▶ **Drug contact surface made of PE = low adhesion and/or intake of drug ingredients**
- ▶ **Integrated air and particle filter (version dependent)**
- ▶ **Integrated check valve**
- ▶ **Kink reversible**
- ▶ **DEHP and latex free**
- ▶ **Individual sterile packing**

The outer layer consists of PVC (polyvinyl chlorid). It is the thickest layer and serves as a supporting framework. PVC is plastic with outstanding mechanical characteristics, which allows safe connection with other plastics, e.g. luer lock connectors. Deformations of the tube caused by kinking or the application of the clamp reset promptly, so that the infusion is not negatively affected. Additionally the LL 2012/5 and LL 2012/41 Sets include a special additive in the tube material which acts as an uv-block for the wave lengths 200 - 450 nm.

Configurations

LL 2012 Set



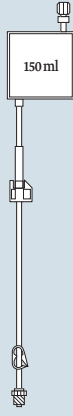
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1 LL 2012/1



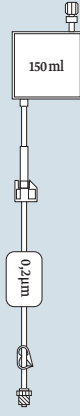
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2 LL 2012/2



3

3 LL 2012/3



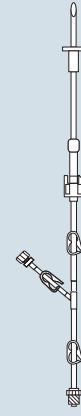
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4 LL 2012/4



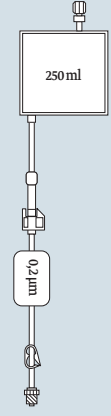
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5 LL 2012/5



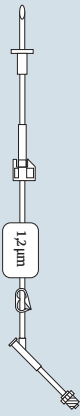
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6 LL 2012/6



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7 LL 2012/18



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8 LL 2012/9



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9 LL 2012/22



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10 LL 2012/24



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11 LL 2012/25



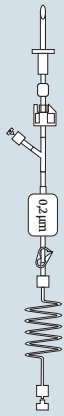
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12 LL 2012/26



13

13 LL 2012/27



14

14 LL 2012/34



15

15 LL 2012/41

Ordering information accessories



Power supply

REF	PU
73703	1

- › Cable length: 1 m



Safety transport case

REF	PU
73800	1

- › Break-proof design
- › Light weight
- › Specially adapted, internal foam molded parts



Small size bag

REF	Version	PU
73003	for use with safe	1

- › Belt or shoulder bag
- › For transporting the LimLess® with infusion bags up to 250 ml



Middle size bag

REF	Version	PU
52006	50 to max. 1000 ml	1

- › Shoulder bag
- › For transporting the LimLess® with infusion bags up to 1000 ml



Backpack

REF	Version	PU
52004	to 3000 ml (e.g. TPN)	1

- › For transporting the LimLess® with infusion bags up to 3000 ml



Backpack for children

REF	Version	PU
52007	to 2000 ml	1

- › For transporting the LimLess® with infusion bags up to 2000 ml



Trolley

REF	PU
52008	1

- › For transporting the backpack

Contact

Should you have any questions our Customer Solutions Team is happy to advise you.

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